

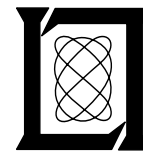
**Project Report
ATC-346
Volume 2**

**Evaluation of TCAS II Version 7.1
Using the FAA Fast-Time Encounter
Generator Model-Appendix**

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29 April 2009

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Appendix A SCENARIO DEFINITIONS FOR TCAS II TESTING

| ENCOUNTER CLASS | PARAMETER VARIED | RANGE | STEP SIZE | MULTIPLICATION FACTOR |
|-----------------|--------------------|-----------------|-----------|-----------------------|
| 0,10 | alt sep @ CPA | -750, 750 ft | 250 | 7 |
| | Vertical rate AC1 | -400, 400 fpm | 400 | 3 |
| | Vertical rate AC2 | 0, 400 fpm | 400 | 2 |
| | AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 |
| | | | | 84 |
| 1,11 | alt sep @ CPA | -750, 750 ft | 250 | 7 |
| | Vertical rate AC1 | -400, 400 fpm | 400 | 3 |
| | Vertical rate AC2 | 1000, 5000 fpm | 2000 | 3 |
| | Alt bins | -20, 20 ft | 40 | 2 |
| | AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 |
| | | | | 252 |
| 2,12 | alt sep @ CPA | -750, 750 ft | 250 | 7 |
| | Vertical rate AC1 | -400, 400 fpm | 400 | 3 |
| | Vertical rate AC2 | 1000, 5000 fpm | 2000 | 3 |
| | Vertical accel AC2 | 0.05, 0.35 g | 0.1 | 4 |
| | Time accel AC2 | 20, 30 sec | 5 | 3 |
| | Alt bins | -20, 20 ft | 40 | 2 |
| | AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 |
| | | | | 3024 |
| 3,13 | alt sep @ CPA | -1000, 1000 ft | 250 | 9 |
| | Vertical rate AC1 | -400, 400 fpm | 400 | 3 |
| | Vertical rate AC2 | 1000, 5000 fpm | 2000 | 3 |
| | Vertical accel AC2 | -0.35,-0.05 g | 0.1 | 4 |
| | Time accel AC2 | 20, 30 sec | 5 | 3 |
| | Alt bins | -20, 20 ft | 40 | 2 |
| | AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 |
| | | | | 3888 |
| 4,14 | alt sep @ CPA | -750, 750 ft | 250 | 7 |
| | Vertical rate AC1 | -5000, 5000 fpm | 2000 | 6 |
| | Vertical rate AC2 | 1000, 5000 fpm | 2000 | 3 |
| | Alt bins | -20, 20 ft | 40 | 2 |
| | AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 |
| | | | | 504 |
| 5,15 | alt sep @ CPA | -750, 750 ft | 250 | 7 |
| | Vertical rate AC1 | -5000, 5000 fpm | 2000 | 6 |
| | Vertical rate AC2 | 1000, 5000 fpm | 2000 | 3 |
| | Vertical accel AC2 | 0.05, 0.35 g | 0.1 | 4 |
| | Time accel AC2 | 20, 30 sec | 5 | 3 |
| | Alt bins | -20, 20 ft | 40 | 2 |
| | AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 |
| | | | | 6048 |

| ENCOUNTER CLASS | PARAMETER VARIED | RANGE | STEP SIZE | MULTIPLICATION FACTOR | |
|-----------------|--------------------|--------------------------------|-----------|-----------------------|--|
| 6,16 | alt sep @ CPA | -750, 750 ft | 250 | 7 | |
| | Vertical rate AC1 | -5000, 5000 fpm | 2000 | 6 | |
| | Vertical rate AC2 | -5000, 1000 fpm | 2000 | 3 | |
| | Vertical accel AC2 | 0.05, 0.35 g | 0.1 | 4 | |
| | Time accel AC2 | 20, 30 sec | 5 | 3 | |
| | Alt bins | -20, 20 ft | 40 | 2 | |
| | AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 | |
| | | | | 6048 | |
| 7,17 | alt sep @ CPA | -750, 750 ft | 250 | 7 | |
| | Vertical rate AC1 | 1000, 5000 fpm | 2000 | 3 | |
| | Vertical rate AC2 | -5000, 5000 fpm | 2000 | 6 | |
| | Vertical accel AC1 | 0.05, 0.25 g | 0.1 | 3 | |
| | Vertical accel AC2 | +/-0.05, 0.35g | 0.1 | 4 | |
| | | Sign same as vertical rate | | | |
| | Time accel AC1 | 25 sec | | 1 | |
| | Time accel AC2 | 20, 30 sec | 5 | 3 | |
| AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 | | |
| | | | | 9072 | |
| 8,18 | alt sep @ CPA | -750, 750 ft | 250 | 7 | |
| | Vertical rate AC1 | -5000, -1000 fpm | 2000 | 3 | |
| | Vertical rate AC2 | -5000, 5000 fpm | 2000 | 6 | |
| | Vertical accel AC1 | 0.05, 0.25 g | 0.1 | 3 | |
| | Vertical accel AC2 | +/-0.05, 0.35g | 0.1 | 4 | |
| | | Sign same as vertical rate | | | |
| | Time accel AC1 | 25 sec | | 1 | |
| | Time accel AC2 | 20, 30 sec | 5 | 3 | |
| AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 | | |
| | | | | 9072 | |
| 9,19 | alt sep @ CPA | -1000, 1000 ft | 250 | 9 | |
| | Vertical rate AC1 | 1000, 5000 fpm | 2000 | 3 | |
| | Vertical rate AC2 | -5000, 5000 fpm | 2000 | 6 | |
| | Vertical accel AC1 | -0.15, -0.05 g | 0.1 | 2 | |
| | Vertical accel AC2 | +/-0.05 to 0.35g | 0.1 | 4 | |
| | | Sign opposite of vertical rate | | | |
| | Time accel AC1 | 25 sec | | 1 | |
| | Time accel AC2 | 20, 30 sec | 5 | 3 | |
| AC1 alt @ CPA | 3700, 7500 ft | 3800 | 2 | | |
| | | | | 7776 | |

Appendix B NUMBER OF ENCOUNTERS RUN

Number of Encounters Run Breakdown by Encounter Class and Equipage Baseline and Logic Under Test (Datasets 1 – 4)

| Class | Parameter Variations | Both Pilots Respond (26 equip. pairs) | One Pilot Non-responding (30 equip. pairs) |
|-------|----------------------|--|---|
| 0/10 | 84 | 2184 | 2520 |
| 1/11 | 252 | 6552 | 7560 |
| 2/12 | 3024 | 78624 | 90720 |
| 3/13 | 3888 | 101088 | 116640 |
| 4/14 | 504 | 13104 | 15120 |
| 5/15 | 6048 | 157248 | 181440 |
| 6/16 | 6048 | 157248 | 181440 |
| 7/17 | 9072 | 235872 | 272160 |
| 8/18 | 9072 | 235872 | 272160 |
| 9/19 | 7776 | 202176 | 233280 |

Total = 1,189,968 1,373,040

Number of Encounters Run Breakdown by Encounter Class and Equipage Interoperability collections (Datasets 5 and 6)

| Class | Parameter Variations | Both Pilots Respond (42 equip. pairs) | One Pilot Non-responding (30 equip. pairs) |
|-------|----------------------|--|---|
| 0/10 | 84 | 3528 | 2520 |
| 1/11 | 252 | 10584 | 7560 |
| 2/12 | 3024 | 127008 | 90720 |
| 3/13 | 3888 | 163296 | 116640 |
| 4/14 | 504 | 21168 | 15120 |
| 5/15 | 6048 | 254016 | 181440 |
| 6/16 | 6048 | 254016 | 181440 |
| 7/17 | 9072 | 381024 | 272160 |
| 8/18 | 9072 | 381024 | 272160 |
| 9/19 | 7776 | 326592 | 233280 |

Total = 1,922,256 1,373,040

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Appendix C DEFINITION OF EQUIPAGE PAIRS BY DATA COLLECTION

Dataset 1 - 26 equipage pairs

6.04a, V7-100, V7-25

Pilot Responding

| | Data file | AC1 | AC2 |
|-----|-----------|----------------|-------------------------|
| 1. | A | Mode C | non-resp TCAS (planned) |
| 2. | B | Mode C | 6.04a |
| 3. | C | Mode C | V7-100 |
| 4. | D | Mode C | V7-25 |
| 5. | E | 6.04a low ID | 6.04a high ID |
| 6. | F | 6.04a low ID | V7-100 high ID |
| 7. | G | 6.04a high ID | V7-100 low ID |
| 8. | H | 6.04a low ID | V7-25 high ID |
| 9. | I | 6.04a high ID | V7-25 low ID |
| 10. | J | V7-100 low ID | V7-100 high ID |
| 11. | K | V7-100 low ID | V7-25 high ID |
| 12. | L | V7-100 high ID | V7-25 low ID |
| 13. | M | V7-25 low ID | V7-25 high ID |
| 14. | N | non-resp TCAS | Mode C (planned) |
| 15. | O | 6.04a | Mode C |
| 17. | P | V7-25 | Mode C |
| 16. | Q | V7-100 | Mode C |
| 18. | R | 6.04a high ID | 6.04a low ID |
| 19. | S | V7-100 high ID | 6.04a low ID |
| 20. | T | V7-100 low ID | 6.04a high ID |
| 21. | U | V7-25 high ID | 6.04a low ID |
| 22. | V | V7-25 low ID | 6.04a high ID |
| 23. | W | V7-100 high ID | V7-100 low ID |
| 24. | X | V7-25 high ID | V7-100 low ID |
| 25. | Y | V7-25 low ID | V7-100 high ID |
| 26. | Z | V7-25 high ID | V7-25 low ID |

Dataset 2 - 30 equipage pairs
6.04a, V7-25
Pilot Responding and Pilot Non-responding (PNR)

| | Data file | AC1 | AC2 |
|-----|-----------|-------------------|-------------------------|
| 1. | A | Mode C | non-resp TCAS (planned) |
| 2. | B | Mode C | 6.04a |
| 3. | C | Mode C | V7-25 |
| 4. | D | 6.04a low ID | 6.04a high ID |
| 5. | E | 6.04a low ID | V7-25 high ID |
| 6. | F | 6.04a high ID | V7-25 low ID |
| 7. | G | 6.04a low ID | 6.04a PNR high ID |
| 8. | H | 6.04a high ID | 6.04a PNR low ID |
| 9. | I | 6.04a low ID | V7-25 PNR high ID |
| 10. | J | 6.04a high ID | V7-25 PNR low ID |
| 11. | K | V7-25 low ID | V7-25 high ID |
| 12. | L | V7-25 low ID | 6.04a PNR high ID |
| 13. | M | V7-25 high ID | 6.04a PNR low ID |
| 14. | N | V7-25 low ID | V7-25 PNR high ID |
| 15. | O | V7-25 high ID | V7-25 PNR low ID |
| 16. | P | non-resp TCAS | Mode C (planned) |
| 17. | Q | 6.04a | Mode C |
| 18. | R | V7-25 | Mode C |
| 19. | S | 6.04a high ID | 6.04a low ID |
| 20. | T | V7-25 high ID | 6.04a low ID |
| 21. | U | V7-25 low ID | 6.04a high ID |
| 22. | V | 6.04a PNR high ID | 6.04a low ID |
| 23. | W | 6.04a PNR low ID | 6.04a high ID |
| 24. | X | V7-25 PNR high ID | 6.04a low ID |
| 25. | Y | V7-25 PNR low ID | 6.04a high ID |
| 26. | Z | V7-25 high ID | V7-25 low ID |
| 27. | AA | 6.04a PNR high ID | V7-25 low ID |
| 28. | BB | 6.04a PNR low ID | V7-25 high ID |
| 29. | CC | V7-25 PNR high ID | V7-25 low ID |
| 30. | DD | V7-25 PNR low ID | V7-25 high ID |

Dataset 3 - 26 equipage pairs
6.04a, V7.1-100, V7.1-25
Pilot Responding

| | Data file | AC1 | AC2 |
|-----|-----------|------------------|-------------------------|
| 1. | A | Mode C | non-resp TCAS (planned) |
| 2. | B | Mode C | 6.04a |
| 3. | C | Mode C | V7.1-100 |
| 4. | D | Mode C | V7.1-25 |
| 5. | E | 6.04a low ID | 6.04a high ID |
| 6. | F | 6.04a low ID | V7.1-100 high ID |
| 7. | G | 6.04a high ID | V7.1-100 low ID |
| 8. | H | 6.04a low ID | V7.1-25 high ID |
| 9. | I | 6.04a high ID | V7.1-25 low ID |
| 10. | J | V7.1-100 low ID | V7.1-100 high ID |
| 11. | K | V7.1-100 low ID | V7.1-25 high ID |
| 12. | L | V7.1-100 high ID | V7.1-25 low ID |
| 13. | M | V7.1-25 low ID | V7.1-25 high ID |
| 14. | N | non-resp TCAS | Mode C (planned) |
| 15. | O | 6.04a | Mode C |
| 17. | P | V7-25 | Mode C |
| 16. | Q | V7-100 | Mode C |
| 18. | R | 6.04a high ID | 6.04a low ID |
| 19. | S | V7.1-100 high ID | 6.04a low ID |
| 20. | T | V7.1-100 low ID | 6.04a high ID |
| 21. | U | V7.1-25 high ID | 6.04a low ID |
| 22. | V | V7.1-25 low ID | 6.04a high ID |
| 23. | W | V7.1-100 high ID | V7.1-100 low ID |
| 24. | X | V7.1-25 high ID | V7.1-100 low ID |
| 25. | Y | V7.1-25 low ID | V7.1-100 high ID |
| 26. | Z | V7.1-25 high ID | V7.1-25 low ID |

Dataset 4 - 30 equipage pairs
6.04a, V7.1-25
Pilot Responding and Pilot Non-responding (PNR)

| | Data file | AC1 | AC2 |
|-----|-----------|---------------------|-------------------------|
| 1. | A | Mode C | non-resp TCAS (planned) |
| 2. | B | Mode C | 6.04a |
| 3. | C | Mode C | V7-25 |
| 4. | D | 6.04a low ID | 6.04a high ID |
| 5. | E | 6.04a low ID | V7.1-25 high ID |
| 6. | F | 6.04a high ID | V7.1-25 low ID |
| 7. | G | 6.04a low ID | 6.04a PNR high ID |
| 8. | H | 6.04a high ID | 6.04a PNR low ID |
| 9. | I | 6.04a low ID | V7.1-25 PNR high ID |
| 10. | J | 6.04a high ID | V7.1-25 PNR low ID |
| 11. | K | V7.1-25 low ID | V7.1-25 high ID |
| 12. | L | V7.1-25 low ID | 6.04a PNR high ID |
| 13. | M | V7.1-25 high ID | 6.04a PNR low ID |
| 14. | N | V7.1-25 low ID | V7.1-25 PNR high ID |
| 15. | O | V7.1-25 high ID | V7.1-25 PNR low ID |
| 16. | P | non-resp TCAS | Mode C (planned) |
| 17. | Q | 6.04a | Mode C |
| 18. | R | V7-25 | Mode C |
| 19. | S | 6.04a high ID | 6.04a low ID |
| 20. | T | V7-25 high ID | 6.04a low ID |
| 21. | U | V7-25 low ID | 6.04a high ID |
| 22. | V | 6.04a PNR high ID | 6.04a low ID |
| 23. | W | 6.04a PNR low ID | 6.04a high ID |
| 24. | X | V7.1-25 PNR high ID | 6.04a low ID |
| 25. | Y | V7.1-25 PNR low ID | 6.04a high ID |
| 26. | Z | V7.1-25 high ID | V7.1-25 low ID |
| 27. | AA | 6.04a PNR high ID | V7.1-25 low ID |
| 28. | BB | 6.04a PNR low ID | V7.1-25 high ID |
| 29. | CC | V7.1-25 PNR high ID | V7.1-25 low ID |
| 30. | DD | V7.1-25 PNR low ID | V7.1-25 high ID |

Dataset 5 - 42 equipage pairs
Interoperability V7-100, V7-25, V7.1-100, V7.1-25
Pilot Responding

| | Data file | AC1 | AC2 |
|-----|-----------|------------------|---------------------------|
| 1. | A | V7-100 non-resp | Mode C (planned) |
| 2. | B | Mode C | V7-100 non-resp (planned) |
| 3. | C | V7-100 | Mode C |
| 4. | D | Mode C | V7-100 |
| 5. | E | V7-100 low ID | V7-100 high ID |
| 6. | F | V7-100 high ID | V7-100 low ID |
| 7. | G | V7-100 low ID | V7-25 high ID |
| 8. | H | V7-100 high ID | V7-25 low ID |
| 9. | I | V7-25 | Mode C |
| 10. | J | Mode C | V7-25 |
| 11. | K | V7-25 low ID | V7-100 high ID |
| 12. | L | V7-25 high ID | V7-100 low ID |
| 13. | M | V7-25 low ID | V7-25 high ID |
| 14. | N | V7-25 high ID | V7-25 low ID |
| 15. | O | V7.1-100 | Mode S |
| 17. | P | V7.1-100 low ID | V7-100 high ID |
| 16. | Q | V7.1-100 high ID | V7-100 low ID |
| 18. | R | V7.1-100 low ID | V7-25 high ID |
| 19. | S | V7.1-100 high ID | V7-25 low ID |
| 20. | T | V7.1-100 low ID | V7.1-100 high ID |
| 21. | U | V7.1-100 high ID | V7.1-100 low ID |
| 22. | V | V7-25 low ID | V7.1-100 high ID |
| 23. | W | V7-25 high ID | V7.1-100 low ID |
| 24. | X | V7-100 low ID | V7.1-100 high ID |
| 25. | Y | V7-100 high ID | V7.1-100 low ID |
| 26. | Z | Mode S | V7.1-100 |
| 27. | AA | Mode S | V7.1-25 |
| 28. | BB | V7.1-25 | Mode S |
| 29. | CC | V7.1-25 low ID | V7-100 high ID |
| 30. | DD | V7.1-25 high ID | V7-100 low ID |
| 31. | EE | V7.1-25 low ID | V7-25 high ID |
| 32. | FF | V7.1-25 high ID | V7-25 low ID |
| 33. | GG | V7.1-25 low ID | V7.1-100 high ID |
| 34. | HH | V7.1-25 high ID | V7.1-100 low ID |
| 35. | II | V7.1-25 low ID | V7.1-25 high ID |
| 36. | JJ | V7.1-25 high ID | V7.1-25 low ID |
| 37. | KK | V7.1-100 low ID | V7.1-25 high ID |
| 38. | LL | V7.1-100 high ID | V7.1-25 low ID |
| 39. | MM | V7-25 low ID | V7.1-25 high ID |
| 40. | NN | V7-25 high ID | V7.1-25 low ID |
| 41. | OO | V7-100 low ID | V7.1-25 high ID |
| 42. | PP | V7-100 high ID | V7.1-25 low ID |

Dataset 6 - 30 equipage pairs
Interoperability V7-25,V7.1-25
Pilot Responding and Pilot Non-responding (PNR)

| | Data file | AC1 | AC2 |
|-----|-----------|---------------------|---------------------|
| 1. | A | V7 non-resp | Mode C (planned) |
| 2. | B | Mode C | V7.0 (planned) |
| 3. | C | V7-25 | Mode C |
| 4. | D | Mode C | V7-25 |
| 5. | E | V7-25 low ID | V7-25 high ID |
| 6. | F | V7-25 high ID | V7-25 low ID |
| 7. | G | V7-25 low ID | V7.1-25 high ID |
| 8. | H | V7-25 high ID | V7.1-25 low ID |
| 9. | I | V7.1-25 | Mode S |
| 10. | J | Mode S | V7.1-25 |
| 11. | K | V7.1-25 low ID | V7-25 high ID |
| 12. | L | V7.1-25 high ID | V7-25 low ID |
| 13. | M | V7.1-25 low ID | V7.1-25 high ID |
| 14. | N | V7.1-25 high ID | V7.1-25 low ID |
| 15. | O | V7-25 PNR low ID | V7-25 high ID |
| 16. | P | V7-25 PNR high ID | V7-25 low ID |
| 17. | Q | V7.1-25 PNR low ID | V7-25 high ID |
| 18. | R | V7.1-25 PNR high ID | V7-25 low ID |
| 19. | S | V7-25 PNR low ID | V7.1-25 high ID |
| 20. | T | V7-25 PNR high ID | V7.1-25 low ID |
| 21. | U | V7.1-25 PNR low ID | V7.1-25 high ID |
| 22. | V | V7.1-25 PNR high ID | V7.1-25 low ID |
| 23. | W | V7-25 low ID | V7-25 PNR high ID |
| 24. | X | V7-25 high ID | V7-25 PNR low ID |
| 25. | Y | V7.1-25 low ID | V7-25 PNR high ID |
| 26. | Z | V7.1-25 high ID | V7-25 PNR low ID |
| 27. | AA | V7-25 low ID | V7.1-25 PNR high ID |
| 28. | BB | V7-25 high ID | V7.1-25 PNR low ID |
| 29. | CC | V7.1-25 low ID | V7.1-25 PNR high ID |
| 30. | DD | V7.1-25 high ID | V7.1-25 PNR low ID |

Appendix D CAS LOGIC PARAMETER VALUES

Thresholds for Logic Versions 6.04a, 7 and 7.1

| Own Altitude (ft) (Note 1) | Radio Altitude or Pressure Altitude | | | | | | |
|---|-------------------------------------|------------------|------------------|-------------------|-----------------------|-----------------------|-----------------|
| | Up to 1,000 | 1,000 – 2,350 | 2,350 – 5,000 | 5,000 – 10,000 | 10,000 – 20,000 | 20,000 – 42,000 | Above 42,000 |
| Sensitivity Level | 2 | 3 | 4 | 5 | 6 | 7 | 7 |
| Alarm Time [TAU] (sec) | | 15 | 20 | 25 | 30 | 35 | 35 |
| Incremental Protected Volume [DMOD] (nmi) (Note 2) | | 0.20 | 0.35 | 0.55 | 0.80 | 1.10 | 1.10 |
| Alarm Time for TA [TAUTA] (sec) | 20 | 25 | 30 | 40 | 45 | 48 | 48 |
| Vertical Threshold for TA [ZTHRТА] (ft) | 850 | 850 | 850 | 850 | 850 | 850 | 1200 |
| Vertical Threshold for RA [ZTHR] (ft) | | 600 | 600 | 600 | 600 | 700 | 800 |
| Vertical Threshold for Positive RA [ALIM] (ft) | | 300 | 300 | 350 | 400 | 600 | 700 |

Note 1: Pressure altitude is referenced to 1013.25 millibars (29.92 inches of mercury).
When radio altitude and pressure altitude imply different SLs, TCAS selects the lower SL.

Note 2: Alarm times (TAU and TAUTA) and Incremental Protection Volume (DMOD) are selected according to the higher of own and threat SL, unless own SL is ≤ 2 .

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Appendix E CLASS WEIGHTS

CLASS WEIGHTS¹

| Class | Weight |
|--------|--------|
| | |
| 1 | 0.0197 |
| 2 | 0.0004 |
| 3 | 0.0033 |
| 4 | 0.0145 |
| 5 | 0.0025 |
| 6 | 0.0029 |
| 7 | 0.0002 |
| 8 | 0.0005 |
| 9 | 0.0001 |
| 10 + 0 | 0.3973 |
| 11 | 0.1929 |
| 12 | 0.0759 |
| 13 | 0.1081 |
| 14 | 0.1167 |
| 15 | 0.0205 |
| 16 | 0.0256 |
| 17 | 0.0019 |
| 18 | 0.0094 |
| 19 | 0.0074 |
| | |
| Total: | 1.0000 |

¹ McLaughlin, M.P., and Zeitlin, A.D., "Safety Study of TCAS II for Logic Version 6.04a.", The MITRE Corporation, McLean Va, MTR 93W0000234, November 1993.

¹ McLaughlin, M.P., and Zeitlin, A.D., "Safety Study of TCAS II for Logic Version 6.04a.", The MITRE Corporation, McLean Va, MTR 93W0000234, November 1993.

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Appendix F PERFORMANCE STATISTICS

MITRE encounter classes: 0,10 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of July 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view: 1512

| | Class | 0 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|-------|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 |
| Crossing RAs/ RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Crossing RAs/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cr. RA NMACs/ cross RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cr. RA NMACs/ NMACs* (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACs*/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avg warning time** (sec) | 22.50 | 23.00 | 23.00 | 23.00 | 23.00 | 23.00 | 23.00 |
| Avg alt sep at CPA* (ft) | 671.03 | 688.55 | 614.90 | 674.63 | 648.67 | 657.05 | |

| | Class | 10 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|-------|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 |
| Crossing RAs/ RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Crossing RAs/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cr. RA NMACs/ cross RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cr. RA NMACs/ NMACs* (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACs*/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avg warning time** (sec) | 20.52 | 21.02 | 20.99 | 21.02 | 20.99 | 21.01 | |
| Avg alt sep at CPA* (ft) | 669.68 | 640.41 | 627.69 | 654.05 | 656.62 | 637.56 | |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

MITRE encounter classes: 0,10 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of: July 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view: 1512
 Total incorrectly labeled RAs: 0

| | Class | 0 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | |
| Crossing RAs/ RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Crossing RAs/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ cross RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ NMACs* (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| NMACs*/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Avg warning time** (sec) | 22.50 | 23.00 | 23.00 | 23.00 | 23.00 | 23.00 | |
| Avg alt sep at CPA* (ft) | 671.03 | 688.55 | 614.90 | 674.63 | 648.67 | 657.05 | |

| | Class | 10 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | |
| Crossing RAs/ RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Crossing RAs/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ cross RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ NMACs* (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| NMACs*/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Avg warning time** (sec) | 20.52 | 21.02 | 20.99 | 21.02 | 20.99 | 21.01 | |
| Avg alt sep at CPA* (ft) | 669.68 | 640.41 | 627.69 | 654.05 | 656.62 | 637.56 | |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

MITRE encounter classes: 2,12 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of: July 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view: 54424
 Total incorrectly labeled RAs: 8

| | Class | 2 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|--------|----------|-------------|-----------------|---------|----------|--|
| | 6.04A | V7.1-100 | V7.1-25 | 6.04A/ | 6.04A/ | V7.1-25/ | |
| | only | ft only | ft only | V7.1-100 | V7.1-25 | V7.1-100 | |
| RAs/ runs (%) | 99.60 | 99.14 | 98.94 | 99.32 | 99.07 | 99.03 | |
| Crossing RAs/ RAs (%) | 2.45 | 2.39 | 1.94 | 2.52 | 2.15 | 2.20 | |
| Crossing RAs/ runs (%) | 2.44 | 2.37 | 1.92 | 2.51 | 2.13 | 2.18 | |
| Cr. RA NMACs/ cross RAs (%) | 3.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ NMACs* (%) | 5.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| NMACs*/ runs (%) | 1.46 | 0.33 | 0.35 | 0.71 | 0.53 | 0.35 | |
| Avg warning time** (sec) | 15.52 | 16.43 | 16.71 | 16.43 | 16.73 | 16.57 | |
| Avg alt sep at CPA* (ft) | 610.62 | 686.49 | 694.30 | 649.73 | 657.23 | 691.15 | |

| | Class | 12 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|--------|----------|-------------|-----------------|---------|----------|--|
| | 6.04A | V7.1-100 | V7.1-25 | 6.04A/ | 6.04A/ | V7.1-25/ | |
| | only | ft only | ft only | V7.1-100 | V7.1-25 | V7.1-100 | |
| RAs/ runs (%) | 75.10 | 79.57 | 80.82 | 79.62 | 80.87 | 80.19 | |
| Crossing RAs/ RAs (%) | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | |
| Crossing RAs/ runs (%) | 0.00 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | |
| Cr. RA NMACs/ cross RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ NMACs* (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| NMACs*/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Avg warning time** (sec) | 14.53 | 13.59 | 13.27 | 13.60 | 13.26 | 13.43 | |
| Avg alt sep at CPA* (ft) | 729.76 | 729.86 | 733.12 | 729.60 | 728.83 | 731.00 | |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

MITRE encounter classes: 3,13 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of: July 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view: 69984
 Total incorrectly labeled RAs: 0

| | Class | 3 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 65.69 | 65.58 | 65.77 | 65.58 | 65.77 | 65.68 | |
| Crossing RAs/ RAs (%) | 7.50 | 10.60 | 11.56 | 11.18 | 12.11 | 11.00 | |
| Crossing RAs/ runs (%) | 4.92 | 6.95 | 7.60 | 7.33 | 7.97 | 7.22 | |
| Cr. RA NMACs/ cross RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ NMACs* (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| NMACs*/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Avg warning time** (sec) | 16.75 | 17.85 | 18.16 | 17.86 | 18.17 | 18.01 | |
| Avg alt sep at CPA* (ft) | 737.01 | 733.94 | 724.23 | 737.47 | 732.48 | 729.91 | |

| | Class | 13 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 62.06 | 62.50 | 60.12 | 62.52 | 60.01 | 61.26 | |
| Crossing RAs/ RAs (%) | 14.97 | 10.39 | 11.33 | 11.84 | 12.78 | 10.96 | |
| Crossing RAs/ runs (%) | 9.29 | 6.50 | 6.81 | 7.40 | 7.67 | 6.72 | |
| Cr. RA NMACs/ cross RAs (%) | 1.06 | 0.38 | 0.00 | 0.33 | 0.32 | 0.18 | |
| Cr. RA NMACs/ NMACs* (%) | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | |
| NMACs*/ runs (%) | 0.10 | 0.02 | 0.00 | 0.02 | 0.02 | 0.01 | |
| Avg warning time** (sec) | 19.85 | 21.08 | 21.04 | 21.10 | 21.10 | 21.07 | |
| Avg alt sep at CPA* (ft) | 878.79 | 873.19 | 839.04 | 880.29 | 865.22 | 856.60 | |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

MITRE encounter classes: 4,14 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of: JULY 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view : 9072
 Total incorrectly labeled RAs : 0

| | Class | 4 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 96.70 | 96.98 | 97.25 | 96.84 | 96.84 | 97.12 | |
| Crossing RAs/ RAs (%) | 7.67 | 5.81 | 5.79 | 6.67 | 6.67 | 5.80 | |
| Crossing RAs/ runs (%) | 7.42 | 5.63 | 5.63 | 6.46 | 6.46 | 5.63 | |
| Cr. RA NMACs/ cross RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ NMACs* (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| NMACs*/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Avg warning time** (sec) | 19.67 | 20.28 | 20.13 | 20.30 | 20.20 | 20.21 | |
| Avg alt sep at CPA* (ft) | 948.61 | 1290.23 | 1269.35 | 1119.94 | 1108.84 | 1279.63 | |

| | Class | 14 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | |
| Crossing RAs/ RAs (%) | 10.42 | 6.25 | 5.73 | 8.85 | 8.33 | 5.99 | |
| Crossing RAs/ runs (%) | 7.14 | 4.29 | 3.93 | 6.07 | 5.71 | 4.11 | |
| Cr. RA NMACs/ cross RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ NMACs* (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| NMACs*/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Avg warning time** (sec) | 14.14 | 14.68 | 14.63 | 14.68 | 14.63 | 14.66 | |
| Avg alt sep at CPA* (ft) | 709.93 | 780.38 | 783.25 | 743.59 | 745.95 | 781.72 | |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

MITRE encounter classes: 5,15 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of: July 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view: 108864
 Total incorrectly labeled RAs: 0

| | Class | 5 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 95.77 | 94.40 | 94.25 | 95.15 | 95.01 | 94.29 | |
| Crossing RAs/ RAs (%) | 4.97 | 4.88 | 4.74 | 5.31 | 5.23 | 4.84 | |
| Crossing RAs/ runs (%) | 4.76 | 4.61 | 4.47 | 5.05 | 4.97 | 4.56 | |
| Cr. RA NMACs/ cross RAs (%) | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ NMACs* (%) | 3.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| NMACs*/ runs (%) | 0.31 | 0.09 | 0.03 | 0.16 | 0.10 | 0.06 | |
| Avg warning time** (sec) | 16.28 | 16.89 | 17.35 | 16.87 | 17.25 | 17.12 | |
| Avg alt sep at CPA* (ft) | 752.78 | 902.71 | 918.69 | 828.87 | 835.88 | 909.67 | |

| | Class | 15 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 78.07 | 71.97 | 72.12 | 72.64 | 70.99 | 72.16 | |
| Crossing RAs/ RAs (%) | 8.84 | 8.95 | 7.34 | 9.71 | 9.02 | 8.10 | |
| Crossing RAs/ runs (%) | 6.90 | 6.44 | 5.29 | 7.06 | 6.40 | 5.85 | |
| Cr. RA NMACs/ cross RAs (%) | 6.67 | 1.19 | 1.45 | 2.45 | 2.10 | 1.31 | |
| Cr. RA NMACs/ NMACs* (%) | 66.67 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | |
| NMACs*/ runs (%) | 0.69 | 0.08 | 0.08 | 0.17 | 0.13 | 0.08 | |
| Avg warning time** (sec) | 14.89 | 15.17 | 14.70 | 15.11 | 14.95 | 14.93 | |
| Avg alt sep at CPA* (ft) | 839.91 | 971.05 | 951.10 | 908.09 | 899.64 | 961.36 | |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

MITRE encounter classes: 6,16 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of: July 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view: 108756
 Total incorrectly labeled RAs: 108

| | Class | 6 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|--------|----------|-------------|-----------------|---------|----------|--|
| | 6.04A | V7.1-100 | V7.1-25 | 6.04A/ | 6.04A/ | V7.1-25/ | |
| | only | ft only | ft only | V7.1-100 | V7.1-25 | V7.1-100 | |
| RAs/ runs (%) | 94.53 | 93.95 | 94.11 | 94.27 | 94.22 | 93.97 | |
| Crossing RAs/ RAs (%) | 16.41 | 16.07 | 14.75 | 16.79 | 16.09 | 15.41 | |
| Crossing RAs/ runs (%) | 15.51 | 15.10 | 13.88 | 15.83 | 15.16 | 14.48 | |
| Cr. RA NMACs/ cross RAs (%) | 0.61 | 0.14 | 0.15 | 0.30 | 0.14 | 0.14 | |
| Cr. RA NMACs/ NMACs* (%) | 34.62 | 12.50 | 33.33 | 24.32 | 14.29 | 22.22 | |
| NMACs*/ runs (%) | 0.27 | 0.17 | 0.06 | 0.19 | 0.15 | 0.09 | |
| Avg warning time** (sec) | 18.07 | 18.65 | 18.79 | 18.65 | 18.75 | 18.72 | |
| Avg alt sep at CPA* (ft) | 838.85 | 971.73 | 971.80 | 909.65 | 911.20 | 972.31 | |

| | Class | 16 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|--------|----------|-------------|-----------------|---------|----------|--|
| | 6.04A | V7.1-100 | V7.1-25 | 6.04A/ | 6.04A/ | V7.1-25/ | |
| | only | ft only | ft only | V7.1-100 | V7.1-25 | V7.1-100 | |
| RAs/ runs (%) | 78.57 | 84.75 | 84.87 | 85.14 | 84.65 | 84.85 | |
| Crossing RAs/ RAs (%) | 15.44 | 8.35 | 8.99 | 10.69 | 11.33 | 8.69 | |
| Crossing RAs/ runs (%) | 12.13 | 7.08 | 7.63 | 9.10 | 9.59 | 7.37 | |
| Cr. RA NMACs/ cross RAs (%) | 0.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cr. RA NMACs/ NMACs* (%) | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| NMACs*/ runs (%) | 0.04 | 0.04 | 0.00 | 0.02 | 0.00 | 0.04 | |
| Avg warning time** (sec) | 20.01 | 18.28 | 17.83 | 18.27 | 17.97 | 18.06 | |
| Avg alt sep at CPA* (ft) | 905.29 | 953.51 | 929.78 | 931.34 | 920.83 | 942.57 | |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

MITRE encounter classes: 7,17 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of: July 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view: 163240
 Total incorrectly labeled RAs: 56

| | Class | 7 | TCAS - TCAS | Both Responding | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 |
| RAs/ runs (%) | 99.36 | 99.06 | 99.15 | 99.30 | 99.18 | 99.08 |
| Crossing RAs/ RAs (%) | 3.32 | 3.27 | 2.29 | 3.34 | 2.81 | 2.70 |
| Crossing RAs/ runs (%) | 3.30 | 3.24 | 2.27 | 3.32 | 2.78 | 2.68 |
| Cr. RA NMACs/ cross RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cr. RA NMACs/ NMACs* (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACs*/ runs (%) | 1.60 | 0.65 | 0.22 | 1.05 | 0.48 | 0.32 |
| Avg warning time** (sec) | 14.60 | 15.10 | 15.67 | 15.13 | 15.65 | 15.40 |
| Avg alt sep at CPA* (ft) | 618.23 | 696.53 | 744.37 | 658.32 | 684.77 | 721.27 |

| | Class | 17 | TCAS - TCAS | Both Responding | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 |
| RAs/ runs (%) | 71.63 | 72.19 | 73.44 | 73.09 | 71.62 | 72.84 |
| Crossing RAs/ RAs (%) | 1.89 | 1.03 | 1.39 | 1.41 | 1.91 | 1.23 |
| Crossing RAs/ runs (%) | 1.35 | 0.74 | 1.02 | 1.03 | 1.37 | 0.90 |
| Cr. RA NMACs/ cross RAs (%) | 17.11 | 14.29 | 10.34 | 11.11 | 16.77 | 11.76 |
| Cr. RA NMACs/ NMACs* (%) | 92.86 | 85.71 | 100.00 | 76.47 | 100.00 | 80.00 |
| NMACs*/ runs (%) | 0.25 | 0.12 | 0.11 | 0.15 | 0.23 | 0.13 |
| Avg warning time** (sec) | 15.76 | 15.97 | 15.33 | 15.87 | 15.67 | 15.67 |
| Avg alt sep at CPA* (ft) | 855.58 | 941.52 | 909.94 | 899.05 | 881.93 | 924.93 |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

MITRE encounter classes: 8,18 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of: July 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view: 162900
 Total incorrectly labeled RAs: 396

| | Class | 8 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 93.02 | 93.31 | 94.36 | 93.56 | 94.11 | 93.86 | |
| Crossing RAs/ RAs (%) | 8.89 | 7.22 | 6.73 | 7.93 | 7.73 | 7.06 | |
| Crossing RAs/ runs (%) | 8.27 | 6.74 | 6.35 | 7.42 | 7.28 | 6.62 | |
| Cr. RA NMACs/ cross RAs (%) | 0.70 | 0.00 | 0.00 | 0.10 | 0.05 | 0.11 | |
| Cr. RA NMACs/ NMACs* (%) | 3.76 | 0.00 | 0.00 | 0.78 | 0.54 | 1.33 | |
| NMACs*/ runs (%) | 1.55 | 0.78 | 0.39 | 0.91 | 0.66 | 0.54 | |
| Avg warning time** (sec) | 15.34 | 16.16 | 16.19 | 16.15 | 16.24 | 16.18 | |
| Avg alt sep at CPA* (ft) | 719.05 | 776.20 | 775.91 | 753.97 | 757.84 | 776.96 | |

| | Class | 18 | TCAS - TCAS | Both Responding | | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|--|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 | |
| RAs/ runs (%) | 77.24 | 82.64 | 86.16 | 82.81 | 85.33 | 84.14 | |
| Crossing RAs/ RAs (%) | 14.66 | 13.04 | 12.90 | 13.62 | 13.41 | 13.08 | |
| Crossing RAs/ runs (%) | 11.33 | 10.78 | 11.11 | 11.28 | 11.44 | 11.01 | |
| Cr. RA NMACs/ cross RAs (%) | 2.65 | 2.24 | 0.22 | 2.03 | 0.95 | 0.55 | |
| Cr. RA NMACs/ NMACs* (%) | 70.59 | 100.00 | 100.00 | 70.37 | 81.82 | 100.00 | |
| NMACs*/ runs (%) | 0.43 | 0.24 | 0.02 | 0.33 | 0.13 | 0.06 | |
| Avg warning time** (sec) | 18.10 | 18.04 | 16.94 | 18.11 | 17.21 | 17.54 | |
| Avg alt sep at CPA* (ft) | 893.43 | 944.15 | 928.27 | 935.57 | 933.20 | 936.37 | |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

MITRE encounter classes: 9,19 Date processed: 5/ 9/ 8
 Based on FAA Technical Center data of: July 2007 DATASET 7
 Total TCAS-TCAS runs for single point of view: 139927
 Total incorrectly labeled RAs: 41

| | Class | 9 | TCAS - TCAS | Both Responding | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 |
| RAs/ runs (%) | 69.32 | 68.76 | 68.32 | 68.87 | 68.30 | 68.48 |
| Crossing RAs/ RAs (%) | 28.98 | 27.88 | 28.26 | 29.34 | 29.22 | 27.98 |
| Crossing RAs/ runs (%) | 20.09 | 19.17 | 19.31 | 20.20 | 19.96 | 19.16 |
| Cr. RA NMACs/ cross RAs (%) | 0.86 | 0.34 | 0.14 | 0.69 | 0.40 | 0.17 |
| Cr. RA NMACs/ NMACs* (%) | 76.47 | 55.56 | 100.00 | 91.30 | 85.71 | 55.56 |
| NMACs*/ runs (%) | 0.22 | 0.12 | 0.03 | 0.15 | 0.09 | 0.06 |
| Avg warning time** (sec) | 17.65 | 18.51 | 18.70 | 18.52 | 18.74 | 18.60 |
| Avg alt sep at CPA* (ft) | 813.67 | 812.35 | 801.34 | 816.56 | 813.69 | 805.99 |

| | Class | 19 | TCAS - TCAS | Both Responding | | |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-------------------|----------------------|
| | 6.04A only | V7.1-100 ft only | V7.1-25 ft only | 6.04A/ V7.1-100 | 6.04A/ V7.1-25 | V7.1-25/ V7.1-100 |
| RAs/ runs (%) | 74.29 | 74.15 | 73.00 | 74.08 | 72.13 | 73.31 |
| Crossing RAs/ RAs (%) | 23.59 | 18.82 | 18.71 | 21.12 | 20.62 | 18.78 |
| Crossing RAs/ runs (%) | 17.52 | 13.96 | 13.66 | 15.64 | 14.87 | 13.77 |
| Cr. RA NMACs/ cross RAs (%) | 2.51 | 1.17 | 0.28 | 1.68 | 1.10 | 0.87 |
| Cr. RA NMACs/ NMACs* (%) | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACs*/ runs (%) | 0.44 | 0.16 | 0.04 | 0.26 | 0.16 | 0.12 |
| Avg warning time** (sec) | 20.71 | 21.36 | 21.23 | 21.43 | 21.43 | 21.39 |
| Avg alt sep at CPA* (ft) | 979.75 | 980.57 | 967.44 | 986.31 | 985.10 | 974.11 |

* NMACs and average alt. sep. at CPA are based on simulation truth
 ** Average warning time includes negative times (ie, RA occurs after CPA)

Appendix G REVERSAL ANALYSIS PROGRAM 1

Encounter classes: 0,10 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007 Total Encounters : 2016

| Class | | Planned = CROSSING | | | | | | | | |
|----------------------------|-----|--------------------|----------|---------|-------|----------|---------|----------|---------|---------|
| | | 6.04A | V7.1-100 | V7.1-25 | 6.04A | V7.1-100 | V7.1-25 | V7.1-100 | V7.1-25 | V7.1-25 |
| | | NonTCAS | NonTCAS | NonTCAS | only | 6.04A | 6.04A | only | only | 7.1-100 |
| RAs/ runs | (%) | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 |
| Total NMACs/ runs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ RAs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fast Reverse/ Reversals | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACS/ 1 Rev. | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Class | | Planned = NON-CROSSING | | | | | | | | |
|----------------------------|-----|------------------------|----------|---------|-------|----------|---------|----------|---------|---------|
| | | 6.04A | V7.1-100 | V7.1-25 | 6.04A | V7.1-100 | V7.1-25 | V7.1-100 | V7.1-25 | V7.1-25 |
| | | NonTCAS | NonTCAS | NonTCAS | only | 6.04A | 6.04A | only | only | 7.1-100 |
| RAs/ runs | (%) | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 |
| Total NMACs/ runs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ RAs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fast Reverse/ Reversals | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACS/ 1 Rev. | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 1,11 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 6048 Total incorrectly labeled RAs : 0

| | | Class 1 Planned = CROSSING | | | | | | | | |
|--------------------------------|--|----------------------------|----------|---------|-------|----------|---------|----------|---------|---------|
| | | 6.04A | V7.1-100 | V7.1-25 | 6.04A | V7.1-100 | V7.1-25 | V7.1-100 | V7.1-25 | V7.1-25 |
| | | NonTCAS | NonTCAS | NonTCAS | only | 6.04A | 6.04A | only | only | 7.1-100 |
| RAs/ runs (%) | | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 |
| Total NMACs/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ RAs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fast Reverse/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | Class 11 Planned = NON-CROSSING | | | | | | | | |
|--------------------------------|--|---------------------------------|----------|---------|-------|----------|---------|----------|---------|---------|
| | | 6.04A | V7.1-100 | V7.1-25 | 6.04A | V7.1-100 | V7.1-25 | V7.1-100 | V7.1-25 | V7.1-25 |
| | | NonTCAS | NonTCAS | NonTCAS | only | 6.04A | 6.04A | only | only | 7.1-100 |
| RAs/ runs (%) | | 60.71 | 71.43 | 71.43 | 60.71 | 71.43 | 71.43 | 71.43 | 71.43 | 71.43 |
| Total NMACs/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ RAs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fast Reverse/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 2,12 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 72568 Total incorrectly labeled RAs : 8

| | | Class 2 | | Planned = CROSSING | | | | | | |
|--------------------------------|--|------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 99.14 | 99.19 | 98.97 | 99.60 | 99.32 | 99.07 | 99.14 | 98.94 | 99.03 |
| Total NMACS/ runs (%) | | 6.45 | 4.44 | 2.77 | 1.46 | 0.71 | 0.53 | 0.33 | 0.35 | 0.35 |
| Induced/ NMACS (%) | | 94.53 | 84.66 | 85.45 | 91.38 | 89.29 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 2.04 | 8.72 | 7.89 | 0.00 | 0.48 | 0.28 | 0.66 | 0.33 | 0.48 |
| Reversals/ RAs (%) | | 2.06 | 8.79 | 7.97 | 0.00 | 0.48 | 0.28 | 0.66 | 0.33 | 0.48 |
| Fast Reverse/ Reversals (%) | | 6.17 | 0.00 | 0.32 | 0.00 | 0.00 | 4.55 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 11.56 | 10.22 | 0.00 | 18.42 | 4.55 | 11.54 | 0.00 | 10.53 |
| Induced NMAC/ NMACS (%) | | 0.00 | 85.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 |

| | | Class 12 | | Planned = NON-CROSSING | | | | | | |
|--------------------------------|--|------------------|---------------------|------------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 73.27 | 79.62 | 80.87 | 75.10 | 79.62 | 80.87 | 79.57 | 80.82 | 80.19 |
| Total NMACS/ runs (%) | | 0.19 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS (%) | | 100.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs (%) | | 0.91 | 0.58 | 0.53 | 0.00 | 0.22 | 0.17 | 0.43 | 0.14 | 0.26 |
| Reversals/ RAs (%) | | 1.25 | 0.72 | 0.65 | 0.00 | 0.27 | 0.21 | 0.54 | 0.18 | 0.33 |
| Fast Reverse/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

* NMACS and average alt. sep. at CPA are based on simulation truth

Encounter classes: 3,13 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 93312 Total incorrectly labeled RAs : 0

| | | Class 3 Planned = CROSSING | | | | | | | | |
|--------------------------------|--|----------------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 65.75 | 65.58 | 65.77 | 65.69 | 65.58 | 65.77 | 65.58 | 65.77 | 65.68 |
| Total NMACS/ runs (%) | | 0.89 | 0.70 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs (%) | | 1.06 | 0.81 | 0.54 | 0.00 | 0.38 | 0.27 | 0.73 | 0.54 | 0.64 |
| Reversals/ RAs (%) | | 1.60 | 1.24 | 0.82 | 0.00 | 0.58 | 0.41 | 1.11 | 0.82 | 0.97 |
| Fast Reverse/ Reversals (%) | | 30.77 | 33.33 | 55.00 | 0.00 | 14.29 | 20.00 | 14.81 | 20.00 | 17.02 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | Class 13 Planned = NON-CROSSING | | | | | | | | |
|--------------------------------|--|---------------------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 59.29 | 59.17 | 58.33 | 62.06 | 62.52 | 60.01 | 62.50 | 60.12 | 61.26 |
| Total NMACS/ runs (%) | | 0.76 | 0.37 | 0.22 | 0.10 | 0.02 | 0.02 | 0.02 | 0.00 | 0.01 |
| Induced/ NMACS (%) | | 96.77 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 |
| Reversals/ runs (%) | | 6.89 | 7.92 | 9.39 | 0.00 | 2.66 | 2.86 | 5.20 | 5.34 | 5.25 |
| Reversals/ RAs (%) | | 11.62 | 13.38 | 16.09 | 0.00 | 4.25 | 4.76 | 8.31 | 8.89 | 8.56 |
| Fast Reverse/ Reversals (%) | | 38.43 | 39.01 | 43.34 | 0.00 | 31.80 | 32.62 | 35.38 | 36.70 | 35.98 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.43 | 0.47 | 0.00 | 0.23 |
| Induced NMAC/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 |

* NMACS and average alt. sep. at CPA are based on simulation truth

Encounter classes: 4,14 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 12096 Total incorrectly labeled RAs : 0

Class 4 Planned = CROSSING

| | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
|--------------------------------|------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| RAs/ runs (%) | 97.25 | 97.25 | 97.25 | 96.70 | 96.84 | 96.84 | 96.98 | 97.25 | 97.12 |
| Total NMACS/ runs (%) | 0.00 | 0.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 | 0.00 | 0.07 |
| Reversals/ RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 | 0.00 | 0.07 |
| Fast Reverse/ Reversals (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 |
| NMACS/ 1 Rev. (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACS (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Class 14 Planned = NON-CROSSING

| | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
|--------------------------------|------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| RAs/ runs (%) | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 |
| Total NMACS/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.36 | 0.00 | 0.71 | 0.00 | 0.36 |
| Reversals/ RAs (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.52 | 0.00 | 1.04 | 0.00 | 0.52 |
| Fast Reverse/ Reversals (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 | 100.00 | 0.00 | 100.00 |
| NMACS/ 1 Rev. (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACS (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

* NMACS and average alt. sep. at CPA are based on simulation truth

Encounter classes: 5,15 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 145152 Total incorrectly labeled RAs : 0

| | | Class 5 | | Planned = CROSSING | | | | | | |
|--------------------------------|--|------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 95.76 | 95.60 | 95.70 | 95.77 | 95.15 | 95.01 | 94.40 | 94.25 | 94.29 |
| Total NMACS/ runs (%) | | 3.93 | 3.00 | 1.56 | 0.31 | 0.16 | 0.10 | 0.09 | 0.03 | 0.06 |
| Induced/ NMACS (%) | | 73.19 | 61.40 | 67.57 | 100.00 | 93.55 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 0.81 | 4.01 | 3.36 | 0.00 | 0.25 | 0.23 | 0.30 | 0.34 | 0.32 |
| Reversals/ RAs (%) | | 0.85 | 4.19 | 3.51 | 0.00 | 0.26 | 0.24 | 0.31 | 0.36 | 0.34 |
| Fast Reverse/ Reversals (%) | | 0.00 | 6.05 | 4.39 | 0.00 | 6.38 | 18.60 | 7.14 | 28.13 | 18.03 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 15.53 | 10.03 | 0.00 | 14.89 | 4.65 | 32.14 | 6.25 | 16.39 |
| Induced NMAC/ NMACS (%) | | 0.00 | 81.36 | 93.75 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

| | | Class 15 | | Planned = NON-CROSSING | | | | | | |
|--------------------------------|--|------------------|---------------------|------------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 73.85 | 74.77 | 73.27 | 78.07 | 72.64 | 70.99 | 71.97 | 72.12 | 72.16 |
| Total NMACS/ runs (%) | | 1.19 | 1.07 | 0.81 | 0.69 | 0.17 | 0.13 | 0.08 | 0.08 | 0.08 |
| Induced/ NMACS (%) | | 29.03 | 17.86 | 19.05 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 1.88 | 3.72 | 2.91 | 0.00 | 1.42 | 1.11 | 2.68 | 2.15 | 2.40 |
| Reversals/ RAs (%) | | 2.54 | 4.97 | 3.98 | 0.00 | 1.95 | 1.57 | 3.73 | 2.98 | 3.32 |
| Fast Reverse/ Reversals (%) | | 12.24 | 22.68 | 15.79 | 0.00 | 32.43 | 39.66 | 38.57 | 44.64 | 41.60 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 3.09 | 2.63 | 0.00 | 4.05 | 3.45 | 1.43 | 3.57 | 2.40 |
| Induced NMAC/ NMACS (%) | | 0.00 | 100.00 | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

* NMACS and average alt. sep. at CPA are based on simulation truth

Encounter classes: 6,16 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 145044 Total incorrectly labeled RAs : 108

| Class 6 Planned = CROSSING | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
|--------------------------------|--|------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| RAs/ runs (%) | | 94.43 | 94.58 | 94.68 | 94.53 | 94.27 | 94.22 | 93.95 | 94.11 | 93.97 |
| Total NMACS/ runs (%) | | 1.77 | 1.20 | 0.71 | 0.27 | 0.19 | 0.15 | 0.17 | 0.06 | 0.09 |
| Induced/ NMACS (%) | | 43.79 | 39.13 | 55.88 | 46.15 | 64.86 | 85.71 | 87.50 | 66.67 | 77.78 |
| Reversals/ runs (%) | | 1.32 | 2.78 | 2.56 | 0.00 | 0.59 | 0.42 | 0.90 | 0.70 | 0.79 |
| Reversals/ RAs (%) | | 1.40 | 2.94 | 2.71 | 0.00 | 0.62 | 0.45 | 0.96 | 0.75 | 0.84 |
| Fast Reverse/ Reversals (%) | | 42.06 | 24.06 | 28.57 | 0.00 | 16.96 | 39.51 | 18.60 | 38.81 | 29.33 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 3.17 | 19.55 | 8.57 | 0.00 | 8.04 | 7.41 | 4.65 | 2.99 | 4.00 |
| Induced NMAC/ NMACS (%) | | 100.00 | 25.00 | 42.86 | 0.00 | 66.67 | 66.67 | 50.00 | 0.00 | 33.33 |

| Class 16 Planned = NON-CROSSING | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
|---------------------------------|--|------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| RAs/ runs (%) | | 78.73 | 85.85 | 85.73 | 78.57 | 85.14 | 84.65 | 84.75 | 84.87 | 84.85 |
| Total NMACS/ runs (%) | | 0.79 | 0.24 | 0.08 | 0.04 | 0.02 | 0.00 | 0.04 | 0.00 | 0.04 |
| Induced/ NMACS (%) | | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 0.00 | 100.00 |
| Reversals/ runs (%) | | 9.87 | 8.96 | 9.24 | 0.00 | 2.42 | 2.61 | 4.72 | 5.03 | 4.93 |
| Reversals/ RAs (%) | | 12.53 | 10.44 | 10.77 | 0.00 | 2.84 | 3.09 | 5.57 | 5.93 | 5.81 |
| Fast Reverse/ Reversals (%) | | 30.68 | 32.02 | 29.79 | 0.00 | 24.39 | 27.82 | 25.00 | 28.13 | 27.49 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.43 | 0.00 | 0.81 | 0.00 | 0.83 | 0.00 | 0.80 |
| Induced NMAC/ NMACS (%) | | 0.00 | 0.00 | 100.00 | 0.00 | 100.00 | 0.00 | 100.00 | 0.00 | 100.00 |

* NMACS and average alt. sep. at CPA are based on simulation truth

Encounter classes: 7,17 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 217672 Total incorrectly labeled RAs : 56

| Class 7 Planned = CROSSING | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
|--------------------------------|--|------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| RAs/ runs (%) | | 99.60 | 99.58 | 99.40 | 99.36 | 99.30 | 99.18 | 99.06 | 99.15 | 99.08 |
| Total NMACS/ runs (%) | | 9.63 | 7.79 | 4.66 | 1.60 | 1.05 | 0.48 | 0.65 | 0.22 | 0.32 |
| Induced/ NMACS (%) | | 81.93 | 74.56 | 85.54 | 98.00 | 96.17 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 2.66 | 13.23 | 12.48 | 0.00 | 0.84 | 0.38 | 1.21 | 0.43 | 0.57 |
| Reversals/ RAs (%) | | 2.67 | 13.29 | 12.55 | 0.00 | 0.84 | 0.38 | 1.22 | 0.44 | 0.58 |
| Fast Reverse/ Reversals (%) | | 5.72 | 3.33 | 3.92 | 0.00 | 5.74 | 4.21 | 3.97 | 0.00 | 3.50 |
| 1 Reversal/ Reversals (%) | | 99.40 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 2.73 | 17.21 | 13.50 | 0.00 | 22.97 | 12.63 | 25.83 | 22.22 | 21.68 |
| Induced NMAC/ NMACS (%) | | 22.22 | 83.45 | 97.62 | 0.00 | 95.83 | 100.00 | 100.00 | 100.00 | 100.00 |

| Class 17 Planned = NON-CROSSING | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
|---------------------------------|--|------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| RAs/ runs (%) | | 74.32 | 75.89 | 74.71 | 71.63 | 73.09 | 71.62 | 72.19 | 73.44 | 72.84 |
| Total NMACS/ runs (%) | | 0.95 | 0.41 | 0.76 | 0.25 | 0.15 | 0.23 | 0.12 | 0.11 | 0.13 |
| Induced/ NMACS (%) | | 57.41 | 30.43 | 69.77 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 0.56 | 2.15 | 2.13 | 0.00 | 0.15 | 0.12 | 0.23 | 0.25 | 0.25 |
| Reversals/ RAs (%) | | 0.76 | 2.83 | 2.85 | 0.00 | 0.20 | 0.17 | 0.32 | 0.34 | 0.34 |
| Fast Reverse/ Reversals (%) | | 18.75 | 12.30 | 12.40 | 0.00 | 23.53 | 21.43 | 30.77 | 35.71 | 32.14 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 12.50 | 6.56 | 14.05 | 0.00 | 5.88 | 50.00 | 30.77 | 35.71 | 35.71 |
| Induced NMAC/ NMACS (%) | | 100.00 | 87.50 | 70.59 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

* NMACS and average alt. sep. at CPA are based on simulation truth

Encounter classes: 8,18 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 21733 Total incorrectly labeled RAs : 396

| Class | | 8 Planned = CROSSING | | | | | | | | |
|--------------------------------|--|----------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 93.39 | 94.06 | 94.64 | 93.02 | 93.56 | 94.11 | 93.31 | 94.36 | 93.86 |
| Total NMACs/ runs (%) | | 5.95 | 4.68 | 2.74 | 1.55 | 0.91 | 0.66 | 0.78 | 0.39 | 0.54 |
| Induced/ NMACS (%) | | 80.55 | 71.76 | 78.07 | 85.92 | 85.16 | 93.51 | 94.50 | 88.89 | 93.33 |
| Reversals/ runs (%) | | 3.89 | 9.65 | 8.27 | 0.00 | 1.33 | 0.93 | 2.29 | 1.47 | 1.82 |
| Reversals/ RAs (%) | | 4.16 | 10.26 | 8.74 | 0.00 | 1.42 | 0.99 | 2.45 | 1.56 | 1.94 |
| Fast Reverse/ Reversals (%) | | 37.32 | 18.89 | 14.08 | 0.00 | 13.14 | 13.46 | 15.31 | 11.17 | 14.90 |
| 1 Reversal/ Reversals (%) | | 99.63 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 3.69 | 12.22 | 7.08 | 0.00 | 10.46 | 3.08 | 14.06 | 4.37 | 9.41 |
| Induced NMAC/ NMACs (%) | | 90.00 | 78.79 | 97.56 | 0.00 | 100.00 | 87.50 | 100.00 | 77.78 | 100.00 |

| Class | | 18 Planned = NON-CROSSING | | | | | | | | |
|--------------------------------|--|---------------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 81.87 | 83.94 | 86.45 | 77.24 | 82.81 | 85.33 | 82.64 | 86.16 | 84.14 |
| Total NMACs/ runs (%) | | 1.98 | 1.18 | 0.51 | 0.43 | 0.33 | 0.13 | 0.24 | 0.02 | 0.06 |
| Induced/ NMACS (%) | | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 15.02 | 17.09 | 14.85 | 0.00 | 4.11 | 4.04 | 7.74 | 7.62 | 7.53 |
| Reversals/ RAs (%) | | 18.35 | 20.36 | 17.18 | 0.00 | 4.96 | 4.73 | 9.36 | 8.84 | 8.95 |
| Fast Reverse/ Reversals (%) | | 41.41 | 43.16 | 38.31 | 0.00 | 22.87 | 22.69 | 25.86 | 24.37 | 23.04 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.16 | 1.97 | 0.65 | 0.00 | 5.28 | 1.19 | 3.12 | 0.32 | 0.80 |
| Induced NMAC/ NMACs (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 9,19 Date processed: 8/27/ 7 DATA SET NUMBER 7
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 186583 Total incorrectly labeled RAs : 41

| Class 9 | | Planned = CROSSING | | | | | | | | |
|--------------------------------|--|--------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 68.90 | 68.51 | 68.05 | 69.32 | 68.87 | 68.30 | 68.76 | 68.32 | 68.48 |
| Total NMACs/ runs (%) | | 1.13 | 0.40 | 0.41 | 0.22 | 0.15 | 0.09 | 0.12 | 0.03 | 0.06 |
| Induced/ NMACS (%) | | 8.14 | 23.33 | 9.68 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 1.60 | 2.84 | 1.90 | 0.00 | 0.79 | 0.53 | 1.11 | 0.44 | 0.72 |
| Reversals/ RAs (%) | | 2.32 | 4.14 | 2.79 | 0.00 | 1.15 | 0.78 | 1.61 | 0.64 | 1.05 |
| Fast Reverse/ Reversals (%) | | 23.14 | 23.26 | 21.53 | 0.00 | 21.67 | 24.69 | 16.67 | 9.09 | 8.26 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 6.51 | 4.86 | 0.00 | 5.00 | 3.70 | 9.52 | 3.03 | 6.42 |
| Induced NMAC/ NMACs (%) | | 0.00 | 42.86 | 42.86 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

| Class 19 | | Planned = NON-CROSSING | | | | | | | | |
|--------------------------------|--|------------------------|---------------------|--------------------|---------------|-------------------|------------------|------------------|-----------------|--------------------|
| | | 6.04A NonTCAS | V7.1-100 NonTCAS | V7.1-25 NonTCAS | 6.04A only | V7.1-100 6.04A | V7.1-25 6.04A | V7.1-100 only | V7.1-25 only | V7.1-25 7.1-100 |
| RAs/ runs (%) | | 72.76 | 71.77 | 71.22 | 74.29 | 74.08 | 72.13 | 74.15 | 73.00 | 73.31 |
| Total NMACs/ runs (%) | | 2.35 | 0.90 | 0.49 | 0.44 | 0.26 | 0.16 | 0.16 | 0.04 | 0.12 |
| Induced/ NMACS (%) | | 80.21 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 13.52 | 13.13 | 10.94 | 0.00 | 2.88 | 2.98 | 5.33 | 5.74 | 5.49 |
| Reversals/ RAs (%) | | 18.58 | 18.29 | 15.35 | 0.00 | 3.88 | 4.13 | 7.19 | 7.87 | 7.48 |
| Fast Reverse/ Reversals (%) | | 30.71 | 29.42 | 29.01 | 0.00 | 25.93 | 27.16 | 28.00 | 27.51 | 27.66 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.57 | 0.46 | 0.00 | 1.96 | 2.32 | 3.06 | 0.66 | 1.94 |
| Induced NMAC/ NMACs (%) | | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Appendix H REVERSAL ANALYSIS PROGRAM 2

Separation Differences

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 0,10 VERSION 7.1 ONLY
 PLANNED CROSSING 160 PLANNED NON-CROSSING 512 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 336 LOSSES : 0 NO CHANGE : 144

| PLANNED CROSSING | | RA COUNT = 144 | NMAC COUNT = 0 | | | | |
|------------------|----------|----------------|----------------|-----------|-----------|------------|--------|
| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
| 0 FT | | 0 | 0 | 0 | 64 | 0 | 0 |
| 250 FT | | 0 | 0 | 50 | 14 | 0 | 0 |
| 500 FT | | 8 | 0 | 6 | 2 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

| PLANNED NON-CROSSING | | RA COUNT = 336 | NMAC COUNT = 0 | | | | |
|----------------------|----------|----------------|----------------|-----------|-----------|------------|--------|
| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
| 0 FT | | 0 | 0 | 8 | 24 | 0 | 0 |
| 250 FT | | 0 | 12 | 100 | 14 | 2 | 0 |
| 500 FT | | 136 | 40 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

-----REVERSED RAs - GAINS : 0 LOSSES : 0 NO CHANGE : 0

| PLANNED CROSSING | | RA COUNT = 0 | NMAC COUNT = 0 | | | | |
|------------------|----------|--------------|----------------|-----------|-----------|------------|--------|
| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

| PLANNED NON-CROSSING | | RA COUNT = 0 | NMAC COUNT = 0 | | | | |
|----------------------|----------|--------------|----------------|-----------|-----------|------------|--------|
| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 1,11 VERSION 7.1 ONLY
 PLANNED CROSSING 1568 PLANNED NON-CROSSING 448 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 1380 LOSSES : 0 NO CHANGE : 420

PLANNED CROSSING RA COUNT = 1480 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 80 | 110 | 98 |
| 250 FT | | 0 | 0 | 138 | 142 | 108 | 92 |
| 500 FT | | 48 | 122 | 164 | 58 | 40 | 16 |
| 750 FT | | 200 | 8 | 40 | 16 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 320 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 88 | 8 | 0 | 0 |
| 500 FT | | 76 | 48 | 4 | 0 | 0 | 0 |
| 750 FT | | 96 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

-----REVERSED RAs - GAINS : 0 LOSSES : 0 NO CHANGE : 0

PLANNED CROSSING RA COUNT = 0 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 0 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 2,12 VERSION 7.1 ONLY
 PLANNED CROSSING 15872 PLANNED NON-CROSSING 8320 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 17317 LOSSES : 1198 NO CHANGE : 3776

PLANNED CROSSING RA COUNT = 15642 NMAC COUNT = 48

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 58 | 536 | 1834 | 906 | 122 |
| 250 FT | | 0 | 1062 | 2586 | 1310 | 304 | 52 |
| 500 FT | | 204 | 2220 | 1221 | 236 | 42 | 24 |
| 750 FT | | 1018 | 460 | 188 | 56 | 4 | 16 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 54 | 0 | 0 | 0 | 0 |
| 500 FT | | 114 | 128 | 0 | 0 | 0 |
| 750 FT | | 755 | 121 | 11 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 6649 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 220 | 1242 | 32 | 16 | 14 |
| 500 FT | | 976 | 988 | 568 | 52 | 88 | 48 |
| 750 FT | | 1578 | 466 | 150 | 120 | 16 | 60 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 10 | 5 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

-----REVERSED RAs - GAINS : 38 LOSSES : 62 NO CHANGE : 0

PLANNED CROSSING RA COUNT = 77 NMAC COUNT = 7

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 1 | 1 | 0 | 0 | 0 |
| 750 FT | | 0 | 18 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 23 | 9 | 25 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 23 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 1 | 9 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 8 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 1 | 3 | 1 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 3,13 VERSION 7.1 ONLY
 PLANNED CROSSING 14784 PLANNED NON-CROSSING 16320 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 15214 LOSSES : 10 NO CHANGE : 3536

PLANNED CROSSING RA COUNT = 9616 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 170 | 2092 | 288 | 300 |
| 250 FT | | 0 | 210 | 2448 | 424 | 206 | 200 |
| 500 FT | | 2306 | 632 | 46 | 90 | 14 | 16 |
| 750 FT | | 106 | 48 | 14 | 2 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 4 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 9144 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 52 | 448 | 12 | 0 |
| 250 FT | | 0 | 37 | 1583 | 882 | 184 | 50 |
| 500 FT | | 864 | 1078 | 878 | 526 | 145 | 54 |
| 750 FT | | 140 | 632 | 491 | 270 | 44 | 0 |
| 1000 FT | | 120 | 261 | 299 | 88 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 6 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

-----REVERSED RAs - GAINS : 915 LOSSES : 37 NO CHANGE : 0

PLANNED CROSSING RA COUNT = 94 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 89 | 5 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 858 NMAC COUNT = 2

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 122 | 459 | 74 | 0 | 0 |
| 500 FT | | 0 | 104 | 62 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 27 | 0 | 0 | 0 | 0 |
| 500 FT | | 10 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 4,14 VERSION 7.1 ONLY
 PLANNED CROSSING 2912 PLANNED NON-CROSSING 1120 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 3066 LOSSES : 4 NO CHANGE : 520

PLANNED CROSSING RA COUNT = 2826 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 20 | 110 | 350 |
| 250 FT | | 0 | 112 | 100 | 180 | 184 | 384 |
| 500 FT | | 0 | 170 | 158 | 116 | 84 | 266 |
| 750 FT | | 296 | 80 | 52 | 40 | 56 | 64 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 4 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 764 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 16 | 38 | 24 | 14 |
| 250 FT | | 0 | 14 | 98 | 32 | 32 | 16 |
| 500 FT | | 96 | 98 | 54 | 46 | 36 | 22 |
| 750 FT | | 128 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

-----REVERSED RAs - GAINS : 6 LOSSES : 0 NO CHANGE : 0

PLANNED CROSSING RA COUNT = 2 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 2 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 4 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 2 | 2 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 5,15 VERSION 7.1 ONLY
 PLANNED CROSSING 37952 PLANNED NON-CROSSING 10432 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 36841 LOSSES : 1155 NO CHANGE : 4946

PLANNED CROSSING RA COUNT = 35671 NMAC COUNT = 2

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 10 | 570 | 1706 | 1528 | 2500 |
| 250 FT | | 0 | 1718 | 3407 | 2842 | 1972 | 2253 |
| 500 FT | | 372 | 3985 | 2615 | 1535 | 852 | 804 |
| 750 FT | | 2572 | 1536 | 865 | 532 | 476 | 16 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 104 | 0 | 0 | 0 | 0 |
| 500 FT | | 246 | 26 | 0 | 0 | 0 |
| 750 FT | | 536 | 66 | 27 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 7271 NMAC COUNT = 2

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 68 | 356 | 87 | 32 |
| 250 FT | | 0 | 91 | 374 | 311 | 114 | 318 |
| 500 FT | | 640 | 477 | 433 | 418 | 392 | 407 |
| 750 FT | | 1362 | 64 | 190 | 330 | 308 | 349 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 15 | 0 | 0 | 0 | 0 |
| 500 FT | | 31 | 24 | 0 | 0 | 0 |
| 750 FT | | 39 | 41 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

-----REVERSED RAs - GAINS : 294 LOSSES : 78 NO CHANGE : 0

PLANNED CROSSING RA COUNT = 121 NMAC COUNT = 21

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 5 | 9 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 1 | 0 | 0 |
| 500 FT | | 0 | 4 | 0 | 0 | 0 | 0 |
| 750 FT | | 0 | 12 | 18 | 8 | 2 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 23 | 11 | 0 | 0 | 0 |
| 750 FT | | 5 | 0 | 23 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 251 NMAC COUNT = 6

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 1 | 0 | 0 | 0 |
| 250 FT | | 0 | 6 | 21 | 33 | 22 | 1 |
| 500 FT | | 0 | 6 | 47 | 20 | 5 | 1 |
| 750 FT | | 0 | 12 | 16 | 38 | 6 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 6 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 8 | 0 | 0 | 0 |
| 750 FT | | 1 | 1 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 6,16 VERSION 7.1 ONLY
 PLANNED CROSSING 38208 PLANNED NON-CROSSING 10176 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 37128 LOSSES : 579 NO CHANGE : 6038

PLANNED CROSSING RA COUNT = 35612 NMAC COUNT = 28

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 67 | 668 | 2019 | 1701 | 2201 |
| 250 FT | | 0 | 946 | 3420 | 2725 | 1748 | 2888 |
| 500 FT | | 1342 | 3351 | 2179 | 1295 | 937 | 1586 |
| 750 FT | | 2584 | 1223 | 784 | 407 | 251 | 808 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 28 | 0 | 0 | 0 | 0 |
| 500 FT | | 28 | 56 | 0 | 0 | 0 |
| 750 FT | | 370 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 8133 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 12 | 588 | 692 | 299 | 128 |
| 500 FT | | 744 | 653 | 409 | 363 | 268 | 122 |
| 750 FT | | 1368 | 641 | 445 | 374 | 584 | 346 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 0 | 0 | 0 | 0 |
| 750 FT | | 97 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

-----REVERSED RAs - GAINS : 756 LOSSES : 46 NO CHANGE : 0

PLANNED CROSSING RA COUNT = 303 NMAC COUNT = 12

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 18 | 21 | 139 | 44 | 3 |
| 250 FT | | 0 | 10 | 21 | 16 | 5 | 0 |
| 500 FT | | 0 | 4 | 3 | 7 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 4 | 2 | 0 | 0 | 0 |
| 750 FT | | 0 | 2 | 4 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 499 NMAC COUNT = 3

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 8 | 73 | 104 | 3 | 0 |
| 500 FT | | 0 | 143 | 77 | 8 | 0 | 0 |
| 750 FT | | 0 | 35 | 8 | 6 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

LOSSES (FT) PLAN SEP

| | | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|---------|--|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 3 | 0 | 0 | 0 | 0 |
| 500 FT | | 12 | 0 | 0 | 0 | 0 |
| 750 FT | | 13 | 6 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 7,17 VERSION 7.1 ONLY
 PLANNED CROSSING 49880 PLANNED NON-CROSSING 22696 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 53552 LOSSES : 4808 NO CHANGE : 7194

PLANNED CROSSING RA COUNT = 49080 NMAC COUNT = 106

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 66 | 1551 | 4079 | 2602 | 1365 |
| 250 FT | | 0 | 3663 | 6750 | 4444 | 1163 | 812 |
| 500 FT | | 266 | 6696 | 3498 | 1056 | 236 | 148 |
| 750 FT | | 3322 | 1755 | 550 | 230 | 76 | 20 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 262 | 0 | 0 | 0 | 0 |
| 500 FT | | 1021 | 244 | 0 | 0 | 0 |
| 750 FT | | 2276 | 715 | 214 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 16474 NMAC COUNT = 9

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 70 | 359 | 53 | 190 |
| 250 FT | | 0 | 33 | 842 | 1110 | 538 | 918 |
| 500 FT | | 1268 | 1609 | 1888 | 867 | 650 | 604 |
| 750 FT | | 2338 | 656 | 1047 | 826 | 254 | 278 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 7 | 0 | 0 | 0 | 0 |
| 500 FT | | 18 | 10 | 0 | 0 | 0 |
| 750 FT | | 28 | 12 | 1 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

-----REVERSED RAs - GAINS : 155 LOSSES : 248 NO CHANGE : 0

PLANNED CROSSING RA COUNT = 348 NMAC COUNT = 82

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 9 | 0 | 0 | 9 |
| 500 FT | | 0 | 17 | 3 | 2 | 0 | 13 |
| 750 FT | | 0 | 35 | 4 | 18 | 6 | 3 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 2 | 0 | 0 | 0 | 0 |
| 500 FT | | 6 | 50 | 0 | 0 | 0 |
| 750 FT | | 33 | 35 | 103 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 55 NMAC COUNT = 19

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 6 | 14 | 0 | 4 |
| 500 FT | | 0 | 0 | 4 | 0 | 0 | 0 |
| 750 FT | | 0 | 5 | 3 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 0 | 19 | 0 | 0 | 0 |
| 750 FT | | 0 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 8,18 VERSION 7.1 ONLY
 PLANNED CROSSING 55984 PLANNED NON-CROSSING 16592 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 52655 LOSSES : 2635 NO CHANGE : 8932

PLANNED CROSSING RA COUNT = 51502 NMAC COUNT = 211

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 221 | 1424 | 4282 | 2006 | 2044 |
| 250 FT | | 0 | 3394 | 7321 | 3145 | 1829 | 1811 |
| 500 FT | | 1984 | 6073 | 2871 | 1689 | 1019 | 582 |
| 750 FT | | 3930 | 1574 | 901 | 538 | 267 | 172 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 197 | 0 | 0 | 0 | 0 |
| 500 FT | | 483 | 377 | 0 | 0 | 0 |
| 750 FT | | 929 | 341 | 98 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 12720 NMAC COUNT = 0

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 138 | 1072 | 734 | 288 | 494 |
| 500 FT | | 1408 | 952 | 906 | 614 | 372 | 348 |
| 750 FT | | 1610 | 899 | 937 | 900 | 430 | 408 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 19 | 8 | 0 | 0 | 0 |
| 750 FT | | 138 | 45 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

-----REVERSED RAs - GAINS : 1638 LOSSES : 660 NO CHANGE : 0

PLANNED CROSSING RA COUNT = 1036 NMAC COUNT = 102

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 5 | 62 | 241 | 50 | 0 |
| 250 FT | | 0 | 26 | 36 | 12 | 2 | 0 |
| 500 FT | | 0 | 29 | 6 | 0 | 0 | 0 |
| 750 FT | | 0 | 56 | 0 | 0 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 26 | 0 | 0 | 0 | 0 |
| 500 FT | | 6 | 63 | 0 | 0 | 0 |
| 750 FT | | 181 | 157 | 78 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 1262 NMAC COUNT = 16

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 3 | 93 | 31 | 0 | 0 |
| 500 FT | | 0 | 474 | 120 | 21 | 8 | 0 |
| 750 FT | | 0 | 228 | 81 | 41 | 11 | 2 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 0 | 0 | 0 | 0 |
| 500 FT | | 50 | 8 | 0 | 0 | 0 |
| 750 FT | | 63 | 7 | 21 | 0 | 0 |
| 1000 FT | | 0 | 0 | 0 | 0 | 0 |

SEP. DIFF. = ABS(ACH. SEP.) - ABS(PLANNED SEP.) DATASET 7 CLASSES 9,19 VERSION 7.1 ONLY
 PLANNED CROSSING 30312 PLANNED NON-CROSSING 31896 JULY 2007 data BOTH PILOTS RESP
 -----NON REVERSED RAs -- GAINS : 37202 LOSSES : 652 NO CHANGE : 4355

PLANNED CROSSING RA COUNT = 20541 NMAC COUNT = 4

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 62 | 535 | 1565 | 1353 | 1106 |
| 250 FT | | 0 | 870 | 3614 | 1950 | 745 | 683 |
| 500 FT | | 2930 | 1982 | 819 | 206 | 34 | 48 |
| 750 FT | | 253 | 702 | 105 | 28 | 0 | 16 |
| 1000 FT | | 198 | 210 | 15 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 6 | 0 | 0 | 0 | 0 |
| 500 FT | | 4 | 0 | 0 | 0 | 0 |
| 750 FT | | 182 | 0 | 0 | 0 | 0 |
| 1000 FT | | 287 | 33 | 0 | 0 | 0 |

PLANNED NON-CROSSING RA COUNT = 21668 NMAC COUNT = 2

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 274 | 1463 | 485 | 56 |
| 250 FT | | 2 | 303 | 2552 | 1702 | 421 | 120 |
| 500 FT | | 510 | 2089 | 1943 | 1193 | 572 | 518 |
| 750 FT | | 442 | 700 | 1489 | 579 | 375 | 632 |
| 1000 FT | | 20 | 703 | 1137 | 354 | 302 | 592 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 4 | 0 | 0 | 0 | 0 |
| 500 FT | | 25 | 4 | 0 | 0 | 0 |
| 750 FT | | 31 | 0 | 0 | 0 | 0 |
| 1000 FT | | 68 | 4 | 4 | 0 | 0 |

-----REVERSED RAs - GAINS : 1707 LOSSES : 277 NO CHANGE : 0

PLANNED CROSSING RA COUNT = 226 NMAC COUNT = 16

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 2 | 3 | 4 | 2 |
| 250 FT | | 0 | 26 | 32 | 20 | 3 | 0 |
| 500 FT | | 0 | 9 | 14 | 8 | 6 | 0 |
| 750 FT | | 0 | 10 | 6 | 0 | 0 | 0 |
| 1000 FT | | 0 | 4 | 0 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 12 | 0 | 0 | 0 | 0 |
| 500 FT | | 7 | 6 | 0 | 0 | 0 |
| 750 FT | | 4 | 5 | 4 | 0 | 0 |
| 1000 FT | | 5 | 7 | 21 | 6 | 0 |

PLANNED NON-CROSSING RA COUNT = 1758 NMAC COUNT = 33

| GAINS (FT) | PLAN SEP | NO GAIN | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|------------|----------|---------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 2 | 0 | 0 | 0 | 0 |
| 250 FT | | 0 | 76 | 519 | 127 | 3 | 0 |
| 500 FT | | 0 | 363 | 223 | 13 | 4 | 0 |
| 750 FT | | 0 | 91 | 131 | 0 | 0 | 0 |
| 1000 FT | | 0 | 4 | 2 | 0 | 0 | 0 |

| LOSSES (FT) | PLAN SEP | >0..250 | >250..500 | >500..750 | >750..1000 | > 1000 |
|-------------|----------|---------|-----------|-----------|------------|--------|
| 0 FT | | 0 | 0 | 0 | 0 | 0 |
| 250 FT | | 25 | 0 | 0 | 0 | 0 |
| 500 FT | | 89 | 53 | 0 | 0 | 0 |
| 750 FT | | 13 | 7 | 0 | 0 | 0 |
| 1000 FT | | 9 | 0 | 2 | 2 | 0 |

Appendix I NMAC TABLES (Both Pilots Responding)

MITRE encounter class: 0 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 0.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 8
 Normalizing number for TCAS-TCAS cells: 16

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|------------|-----------|-----|-----|
| | | --- | V7.1-100 R | V7.1-25 R | --- | --- |
| A | | --- | 0 | 0 | 0 | --- |
| i | | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

Table 0.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 8
 Normalizing number for TCAS-TCAS cells: 16

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

MITRE encounter class: 0 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 0.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 8
 Normalizing number for TCAS-TCAS cells: 16

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

Table 0.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 12
 Normalizing number for TCAS-TCAS cells: 24

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 0 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 0.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 12
 Normalizing number for TCAS-TCAS cells: 24

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

Table 0.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 12
 Normalizing number for TCAS-TCAS cells: 24

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 10 | 10 | 10 | --- |
| i | V6.04A R | 10 | 20 | 20 | 20 | --- |
| r | V7.1-100 R | 10 | 20 | 20 | 20 | --- |
| c | V7.1-25 R | 10 | 20 | 20 | 20 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

MITRE encounter class: 0 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 0.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 12
 Normalizing number for TCAS-TCAS cells: 24

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 2 | 2 | 2 | --- |
| i | V6.04A R | 2 | 4 | 4 | 4 | --- |
| r | V7.1-100 R | 2 | 4 | 4 | 4 | --- |
| c | V7.1-25 R | 2 | 4 | 4 | 4 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | --- | --- | --- | --- | --- | --- |

Table 0.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 12
 Normalizing number for TCAS-TCAS cells: 24

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 8 | 8 | 8 | --- |
| i | V6.04A R | 8 | 16 | 16 | 16 | --- |
| r | V7.1-100 R | 8 | 16 | 16 | 16 | --- |
| c | V7.1-25 R | 8 | 16 | 16 | 16 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 10 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 10.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 4
 Normalizing number for TCAS-TCAS cells: 8

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 10.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 4
 Normalizing number for TCAS-TCAS cells: 8

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 10 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 10.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 4
 Normalizing number for TCAS-TCAS cells: 8

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 10.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 60
 Normalizing number for TCAS-TCAS cells: 120

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 10 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 10.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 60
 Normalizing number for TCAS-TCAS cells: 120

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 10.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 60
 Normalizing number for TCAS-TCAS cells: 120

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 38 | 38 | 38 | --- |
| i | V6.04A R | 38 | 76 | 76 | 76 | --- |
| r | V7.1-100 R | 38 | 76 | 76 | 76 | --- |
| c | V7.1-25 R | 38 | 76 | 76 | 76 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 10 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 10.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 60
 Normalizing number for TCAS-TCAS cells: 120

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 22 | 22 | 22 | --- |
| i | V6.04A R | 22 | 44 | 44 | 44 | --- |
| r | V7.1-100 R | 22 | 44 | 44 | 44 | --- |
| c | V7.1-25 R | 22 | 44 | 44 | 44 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 10.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 60
 Normalizing number for TCAS-TCAS cells: 120

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 4 | 4 | 4 | --- |
| i | V6.04A R | 4 | 8 | 8 | 8 | --- |
| r | V7.1-100 R | 4 | 8 | 8 | 8 | --- |
| c | V7.1-25 R | 4 | 8 | 8 | 8 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 10 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

| Classes: 0, 10 SUMMARY | | | |
|------------------------|-------|----------|--------------|
| | TOTAL | CROSSING | NON CROSSING |
| # ENCOUNTERS | 2184 | 520 | 1664 |
| PLANNED | 168 | 40 | 128 |
| NMAC's | 288 | 192 | 96 |
| NMAC's resolved | 288 | 192 | 96 |
| NMAC's undetected | 0 | 0 | 0 |
| NMAC's unresolved | 0 | 0 | 0 |
| NON NMAC's | 1728 | 288 | 1440 |
| NON NMAC's NO RA | 576 | 48 | 528 |
| NON NMAC's induced | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 0 | 0 |

| Altitude Separation at CPA for Classes: 0, 10 | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|-------|
| Version 7.1 Logic | | | | | | | |
| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
| PLANNED | 336 | 0 | 168 | 504 | 672 | 0 | 672 |
| NMAC's resolved | 0 | 0 | 0 | 15 | 51 | 157 | 65 |
| NMAC's undetected | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 0 | 0 | 0 | 0 | 576 |
| NON NMAC's induced | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

MITRE encounter class: 1 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 1.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 36
 Normalizing number for TCAS-TCAS cells: 72

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|------------|-----------|-----|-----|
| | | | V7.1-100 R | V7.1-25 R | | --- |
| A | | --- | 0 | 0 | 0 | --- |
| r | | 0 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

Table 1.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 36
 Normalizing number for TCAS-TCAS cells: 72

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| r | V6.04A R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

MITRE encounter class: 1 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 1.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 36
 Normalizing number for TCAS-TCAS cells: 72

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

Table 1.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 160
 Normalizing number for TCAS-TCAS cells: 320

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 1 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 1.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 160
 Normalizing number for TCAS-TCAS cells: 320

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 22 | 15 | 15 | --- |
| i | V6.04A R | 0 | 8 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 2 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 5 | 0 | 0 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

Table 1.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 160
 Normalizing number for TCAS-TCAS cells: 320

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 127 | 134 | 134 | --- |
| i | V6.04A R | 149 | 290 | 298 | 300 | --- |
| r | V7.1-100 R | 149 | 296 | 298 | 300 | --- |
| c | V7.1-25 R | 149 | 293 | 298 | 300 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

MITRE encounter class: 1 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 1.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 160
 Normalizing number for TCAS-TCAS cells: 320

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 11 | 11 | 11 | --- |
| i | V6.04A R | 11 | 22 | 22 | 20 | --- |
| r | V7.1-100 R | 11 | 22 | 22 | 20 | --- |
| c | V7.1-25 R | 11 | 22 | 22 | 20 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

Table 1.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 160
 Normalizing number for TCAS-TCAS cells: 320

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 36 | 36 | 36 | --- |
| i | V6.04A R | 36 | 72 | 72 | 72 | --- |
| r | V7.1-100 R | 36 | 72 | 72 | 72 | --- |
| c | V7.1-25 R | 36 | 72 | 72 | 72 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

MITRE encounter class: 11 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 11.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

Table 11.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 11 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 11.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

Table 11.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 56
 Normalizing number for TCAS-TCAS cells: 112

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 11 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 11.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 56
 Normalizing number for TCAS-TCAS cells: 112

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 11.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 56
 Normalizing number for TCAS-TCAS cells: 112

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 34 | 40 | 40 | --- |
| i | V6.04A R | 34 | 68 | 80 | 80 | --- |
| r | V7.1-100 R | 40 | 80 | 80 | 80 | --- |
| c | V7.1-25 R | 40 | 80 | 80 | 80 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 11 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 11.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 56
 Normalizing number for TCAS-TCAS cells: 112

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 22 | 16 | 16 | --- |
| i | V6.04A R | 22 | 44 | 32 | 32 | --- |
| r | V7.1-100 R | 16 | 32 | 32 | 32 | --- |
| c | V7.1-25 R | 16 | 32 | 32 | 32 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

Table 11.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 56
 Normalizing number for TCAS-TCAS cells: 112

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

MITRE encounter class: 11 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Classes: 1, 11 SUMMARY

| | TOTAL | CROSSING | NON CROSSING |
|--------------------|-------|----------|--------------|
| # ENCOUNTERS | 6552 | 5096 | 1456 |
| PLANNED | 504 | 392 | 112 |
| NMAC's | 864 | 864 | 0 |
| NMAC's resolved | 864 | 864 | 0 |
| NMAC's undetected | 0 | 0 | 0 |
| NMAC's unresolved | 0 | 0 | 0 |
| NON NMAC's | 5184 | 3840 | 1344 |
| NON NMAC's NO RA | 666 | 258 | 408 |
| NON NMAC's induced | 0 | 0 | 0 |
| NON NMAC nuisance | 67 | 67 | 0 |

Altitude Separation at CPA for Classes: 1, 11
Version 7.1 Logic

| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
|--------------------|--------|--------|--------|--------|--------|--------|-------|
| PLANNED | 1008 | 0 | 672 | 1344 | 2016 | 0 | 2016 |
| NMAC's resolved | 0 | 0 | 24 | 63 | 50 | 73 | 654 |
| NMAC's undetected | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 0 | 0 | 0 | 0 | 666 |
| NON NMAC's induced | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 0 | 3 | 19 | 21 | 12 | 12 |

MITRE encounter class: 2 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 2.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 432
 Normalizing number for TCAS-TCAS cells: 864

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|------------|-----------|-----|-----|
| | | | V7.1-100 R | V7.1-25 R | | --- |
| A | | --- | 0 | 0 | 0 | --- |
| i | | | | | | |
| r | | 0 | 0 | 0 | 0 | --- |
| c | | | | | | |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| a | | | | | | |
| f | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 2.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 432
 Normalizing number for TCAS-TCAS cells: 864

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 1 | --- |
| i | | | | | | |
| r | V6.04A R | 14 | 5 | 0 | 0 | --- |
| c | | | | | | |
| r | V7.1-100 R | 27 | 6 | 0 | 0 | --- |
| a | | | | | | |
| f | V7.1-25 R | 15 | 0 | 0 | 0 | --- |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 2 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 2.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 432
 Normalizing number for TCAS-TCAS cells: 864

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 1 | --- |
| i | V6.04A R | 14 | 5 | 0 | 0 | --- |
| r | V7.1-100 R | 27 | 6 | 0 | 0 | --- |
| c | V7.1-25 R | 15 | 0 | 0 | 0 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 2.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1552
 Normalizing number for TCAS-TCAS cells: 3104

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 63 | 18 | 22 | --- |
| i | V6.04A R | 179 | 53 | 18 | 16 | --- |
| r | V7.1-100 R | 131 | 32 | 13 | 14 | --- |
| c | V7.1-25 R | 72 | 26 | 14 | 14 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 2 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 2.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1552
 Normalizing number for TCAS-TCAS cells: 3104

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 360 | 382 | 377 | --- |
| i | V6.04A R | 254 | 450 | 305 | 317 | --- |
| r | V7.1-100 R | 305 | 455 | 310 | 301 | --- |
| c | V7.1-25 R | 257 | 425 | 288 | 288 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 2.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1552
 Normalizing number for TCAS-TCAS cells: 3104

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1105 | 1128 | 1130 | --- |
| i | V6.04A R | 1109 | 2591 | 2771 | 2763 | --- |
| r | V7.1-100 R | 1108 | 2607 | 2771 | 2781 | --- |
| c | V7.1-25 R | 1205 | 2623 | 2772 | 2776 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 2 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 2.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1552
 Normalizing number for TCAS-TCAS cells: 3104

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 24 | 24 | 23 | --- |
| i | V6.04A R | 10 | 10 | 10 | 8 | --- |
| r | V7.1-100 R | 8 | 10 | 10 | 8 | --- |
| c | V7.1-25 R | 18 | 30 | 30 | 26 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

Table 2.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1552
 Normalizing number for TCAS-TCAS cells: 3104

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 432 | 432 | 431 | --- |
| i | V6.04A R | 418 | 859 | 864 | 864 | --- |
| r | V7.1-100 R | 405 | 858 | 864 | 864 | --- |
| c | V7.1-25 R | 417 | 864 | 864 | 864 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

MITRE encounter class: 12 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 12.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 12.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 12 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 12.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

Table 12.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1040
 Normalizing number for TCAS-TCAS cells: 2080

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 4 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 4 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 12 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 12.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1040
 Normalizing number for TCAS-TCAS cells: 2080

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 6 | 6 | 4 | --- |
| i | V6.04A R | 10 | 10 | 10 | 10 | --- |
| r | V7.1-100 R | 9 | 8 | 8 | 8 | --- |
| c | V7.1-25 R | 3 | 2 | 2 | 2 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 12.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1040
 Normalizing number for TCAS-TCAS cells: 2080

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 736 | 826 | 828 | --- |
| i | V6.04A R | 768 | 1562 | 1726 | 1726 | --- |
| r | V7.1-100 R | 811 | 1640 | 1736 | 1728 | --- |
| c | V7.1-25 R | 847 | 1698 | 1706 | 1698 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 12 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 12.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1040
 Normalizing number for TCAS-TCAS cells: 2080

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 298 | 208 | 208 | --- |
| i | V6.04A R | 258 | 508 | 344 | 344 | --- |
| r | V7.1-100 R | 216 | 432 | 336 | 344 | --- |
| c | V7.1-25 R | 190 | 380 | 372 | 380 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 12.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1040
 Normalizing number for TCAS-TCAS cells: 2080

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 12 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Classes: 2, 12 SUMMARY

| | TOTAL | CROSSING | NON CROSSING |
|--------------------|-------|----------|--------------|
| # ENCOUNTERS | 78624 | 51584 | 27040 |
| PLANNED | 6048 | 3968 | 2080 |
| NMAC's | 10368 | 10368 | 0 |
| NMAC's resolved | 10300 | 10300 | 0 |
| NMAC's undetected | 0 | 0 | 0 |
| NMAC's unresolved | 68 | 68 | 0 |
| NON NMAC's | 62208 | 37248 | 24960 |
| NON NMAC's NO RA | 5067 | 249 | 4818 |
| NON NMAC's induced | 693 | 685 | 8 |
| NON NMAC nuisance | 5172 | 5074 | 98 |

Altitude Separation at CPA for Classes: 2, 12
Version 7.1 Logic

| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
|--------------------|--------|--------|--------|--------|--------|--------|-------|
| PLANNED | 12096 | 0 | 9184 | 15008 | 24192 | 0 | 24192 |
| NMAC's resolved | 0 | 348 | 818 | 997 | 1331 | 1670 | 5136 |
| NMAC's undetected | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 68 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 0 | 0 | 0 | 0 | 5067 |
| NON NMAC's induced | 693 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 801 | 622 | 593 | 1018 | 831 | 1307 |

MITRE encounter class: 3 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 3.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 368
 Normalizing number for TCAS-TCAS cells: 736

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|------------|-----------|-----|-----|
| | | | V7.1-100 R | V7.1-25 R | | --- |
| A | | --- | 0 | 0 | 0 | --- |
| r | | 0 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

Table 3.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 368
 Normalizing number for TCAS-TCAS cells: 736

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| r | V6.04A R | 33 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 26 | 0 | 0 | 0 | --- |
| r | V7.1-25 R | 3 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

MITRE encounter class: 3 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 3.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 368
 Normalizing number for TCAS-TCAS cells: 736

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 33 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 26 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 3 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 3.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1480
 Normalizing number for TCAS-TCAS cells: 2960

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 3 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 3.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1480
 Normalizing number for TCAS-TCAS cells: 2960

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 9 | 14 | 14 | --- |
| i | V6.04A R | 0 | 2 | 0 | 2 | --- |
| r | V7.1-100 R | 0 | 1 | 0 | 2 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 2 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | --- | --- | --- | --- | --- | --- |

Table 3.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1480
 Normalizing number for TCAS-TCAS cells: 2960

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 839 | 834 | 834 | --- |
| i | V6.04A R | 846 | 1694 | 1696 | 1696 | --- |
| r | V7.1-100 R | 840 | 1695 | 1696 | 1694 | --- |
| c | V7.1-25 R | 847 | 1698 | 1698 | 1694 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 3 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 3.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1480
 Normalizing number for TCAS-TCAS cells: 2960

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 632 | 632 | 632 | --- |
| i | V6.04A R | 634 | 1264 | 1264 | 1262 | --- |
| r | V7.1-100 R | 640 | 1264 | 1264 | 1264 | --- |
| c | V7.1-25 R | 633 | 1262 | 1262 | 1264 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 3.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1480
 Normalizing number for TCAS-TCAS cells: 2960

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 368 | 368 | 368 | --- |
| i | V6.04A R | 335 | 736 | 736 | 736 | --- |
| r | V7.1-100 R | 342 | 736 | 736 | 736 | --- |
| c | V7.1-25 R | 365 | 736 | 736 | 736 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 13 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 13.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 64
 Normalizing number for TCAS-TCAS cells: 128

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 13.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 64
 Normalizing number for TCAS-TCAS cells: 128

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 1 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 13 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 13.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 64
 Normalizing number for TCAS-TCAS cells: 128

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 1 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 13.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1976
 Normalizing number for TCAS-TCAS cells: 3952

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 19 | 2 | 2 | --- |
| i | V6.04A R | 11 | 4 | 0 | 0 | --- |
| r | V7.1-100 R | 13 | 2 | 1 | 0 | --- |
| c | V7.1-25 R | 7 | 2 | 1 | 0 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 13 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 13.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1976
 Normalizing number for TCAS-TCAS cells: 3952

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 59 | 23 | 25 | --- |
| i | V6.04A R | 28 | 34 | 13 | 18 | --- |
| r | V7.1-100 R | 28 | 12 | 14 | 16 | --- |
| c | V7.1-25 R | 14 | 7 | 4 | 7 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 13.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1976
 Normalizing number for TCAS-TCAS cells: 3952

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1128 | 1189 | 1190 | --- |
| i | V6.04A R | 1046 | 2474 | 2499 | 2496 | --- |
| r | V7.1-100 R | 1031 | 2504 | 2503 | 2504 | --- |
| c | V7.1-25 R | 1014 | 2453 | 2457 | 2455 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 13 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 13.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1976
 Normalizing number for TCAS-TCAS cells: 3952

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 770 | 762 | 759 | --- |
| i | V6.04A R | 891 | 1440 | 1440 | 1438 | --- |
| r | V7.1-100 R | 904 | 1434 | 1434 | 1432 | --- |
| c | V7.1-25 R | 941 | 1490 | 1490 | 1490 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

Table 13.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1976
 Normalizing number for TCAS-TCAS cells: 3952

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 64 | 64 | 64 | --- |
| i | V6.04A R | 63 | 128 | 128 | 128 | --- |
| r | V7.1-100 R | 64 | 128 | 128 | 128 | --- |
| c | V7.1-25 R | 64 | 128 | 128 | 128 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 13 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Classes: 3, 13 SUMMARY

| | TOTAL | CROSSING | NON CROSSING |
|--------------------|--------|----------|--------------|
| # ENCOUNTERS | 101088 | 48048 | 53040 |
| PLANNED | 7776 | 3696 | 4080 |
| NMAC's | 10368 | 8832 | 1536 |
| NMAC's resolved | 10305 | 8770 | 1535 |
| NMAC's undetected | 0 | 0 | 0 |
| NMAC's unresolved | 63 | 62 | 1 |
| NON NMAC's | 82944 | 35520 | 47424 |
| NON NMAC's NO RA | 33288 | 15173 | 18115 |
| NON NMAC's induced | 64 | 0 | 64 |
| NON NMAC nuisance | 348 | 46 | 302 |

Altitude Separation at CPA for Classes: 3, 13
 Version 7.1 Logic

| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
|--------------------|--------|--------|--------|--------|--------|--------|-------|
| PLANNED | 12096 | 0 | 10248 | 13944 | 24192 | 0 | 48384 |
| NMAC's resolved | 0 | 115 | 283 | 1026 | 1381 | 3550 | 3950 |
| NMAC's undetected | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 63 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 0 | 0 | 0 | 0 | 33288 |
| NON NMAC's induced | 64 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 109 | 80 | 24 | 90 | 0 | 45 |

MITRE encounter class: 4 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 4.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 60
 Normalizing number for TCAS-TCAS cells: 120

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|------------|-----------|-----|-----|
| | | | V7.1-100 R | V7.1-25 R | | --- |
| A | | --- | 0 | 0 | 0 | --- |
| i | | | | | | |
| r | | 0 | 0 | 0 | 0 | --- |
| c | | | | | | |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| a | | | | | | |
| f | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 4.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 60
 Normalizing number for TCAS-TCAS cells: 120

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 1 | 0 | --- |
| i | | | | | | |
| r | V6.04A R | 0 | 0 | 0 | 0 | --- |
| c | | | | | | |
| r | V7.1-100 R | 1 | 0 | 0 | 0 | --- |
| a | | | | | | |
| f | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 4 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 4.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 60
 Normalizing number for TCAS-TCAS cells: 120

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 1 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 1 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

Table 4.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 304
 Normalizing number for TCAS-TCAS cells: 608

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 4 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 4.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 304
 Normalizing number for TCAS-TCAS cells: 608

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 25 | 22 | 24 | --- |
| i | V6.04A R | 28 | 14 | 4 | 5 | --- |
| r | V7.1-100 R | 20 | 5 | 1 | 1 | --- |
| c | V7.1-25 R | 23 | 5 | 1 | 1 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 4.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 304
 Normalizing number for TCAS-TCAS cells: 608

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 269 | 272 | 270 | --- |
| i | V6.04A R | 266 | 574 | 584 | 583 | --- |
| r | V7.1-100 R | 274 | 583 | 587 | 587 | --- |
| c | V7.1-25 R | 271 | 583 | 587 | 587 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 4 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 4.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 304
 Normalizing number for TCAS-TCAS cells: 608

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 10 | 10 | 10 | --- |
| i | V6.04A R | 10 | 20 | 20 | 20 | --- |
| r | V7.1-100 R | 10 | 20 | 20 | 20 | --- |
| c | V7.1-25 R | 10 | 20 | 20 | 20 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

Table 4.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 304
 Normalizing number for TCAS-TCAS cells: 608

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 60 | 59 | 60 | --- |
| i | V6.04A R | 60 | 120 | 120 | 120 | --- |
| r | V7.1-100 R | 59 | 120 | 120 | 120 | --- |
| c | V7.1-25 R | 60 | 120 | 120 | 120 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | | | | | | |

MITRE encounter class: 14 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 14.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 12
 Normalizing number for TCAS-TCAS cells: 24

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 14.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 12
 Normalizing number for TCAS-TCAS cells: 24

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 14 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 14.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 12
 Normalizing number for TCAS-TCAS cells: 24

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

Table 14.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 128
 Normalizing number for TCAS-TCAS cells: 256

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 14 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 14.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 128
 Normalizing number for TCAS-TCAS cells: 256

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1 | 2 | 1 | --- |
| i | V6.04A R | 0 | 1 | 0 | 0 | --- |
| r | V7.1-100 R | 1 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 14.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 128
 Normalizing number for TCAS-TCAS cells: 256

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 83 | 82 | 83 | --- |
| i | V6.04A R | 84 | 167 | 168 | 168 | --- |
| r | V7.1-100 R | 83 | 168 | 168 | 168 | --- |
| c | V7.1-25 R | 84 | 168 | 168 | 168 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 14 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 14.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 128
 Normalizing number for TCAS-TCAS cells: 256

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 44 | 44 | 44 | --- |
| i | V6.04A R | 44 | 88 | 88 | 88 | --- |
| r | V7.1-100 R | 44 | 88 | 88 | 88 | --- |
| c | V7.1-25 R | 44 | 88 | 88 | 88 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | --- | --- | --- | --- | --- | --- |

Table 14.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 128
 Normalizing number for TCAS-TCAS cells: 256

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 12 | 12 | 12 | --- |
| i | V6.04A R | 12 | 24 | 24 | 24 | --- |
| r | V7.1-100 R | 12 | 24 | 24 | 24 | --- |
| c | V7.1-25 R | 12 | 24 | 24 | 24 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 14 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Classes: 4, 14 SUMMARY

| | TOTAL | CROSSING | NON CROSSING |
|--------------------|-------|----------|--------------|
| # ENCOUNTERS | 13104 | 9464 | 3640 |
| PLANNED | 1008 | 728 | 280 |
| NMAC's | 1728 | 1440 | 288 |
| NMAC's resolved | 1726 | 1438 | 288 |
| NMAC's undetected | 0 | 0 | 0 |
| NMAC's unresolved | 2 | 2 | 0 |
| NON NMAC's | 10368 | 7296 | 3072 |
| NON NMAC's NO RA | 1296 | 240 | 1056 |
| NON NMAC's induced | 0 | 0 | 0 |
| NON NMAC nuisance | 185 | 179 | 6 |

Altitude Separation at CPA for Classes: 4, 14
 Version 7.1 Logic

| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
|--------------------|--------|--------|--------|--------|--------|--------|-------|
| PLANNED | 2016 | 0 | 1344 | 2688 | 4032 | 0 | 4032 |
| NMAC's resolved | 0 | 14 | 11 | 35 | 146 | 166 | 1354 |
| NMAC's undetected | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 0 | 0 | 0 | 0 | 1296 |
| NON NMAC's induced | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 2 | 10 | 20 | 94 | 38 | 21 |

MITRE encounter class: 5 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 5.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 796
 Normalizing number for TCAS-TCAS cells: 1592

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|--------|------------|-----------|-----|
| | | Non-TCA | V6.04A | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCA | --- | 0 | 0 | 0 | --- |
| r | V6.04A | 0 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| a | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| f | | | | | | |
| t | | | | | | |
| l | --- | --- | --- | --- | --- | --- |

Table 5.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 796
 Normalizing number for TCAS-TCAS cells: 1592

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 6 | 14 | 4 | --- |
| r | V6.04A R | 94 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 96 | 2 | 0 | 0 | --- |
| a | V7.1-25 R | 44 | 0 | 0 | 0 | --- |
| f | | | | | | |
| t | | | | | | |
| l | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 5 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 5.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 796
 Normalizing number for TCAS-TCAS cells: 1592

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 6 | 14 | 4 | --- |
| i | V6.04A R | 94 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 96 | 2 | 0 | 0 | --- |
| c | V7.1-25 R | 44 | 0 | 0 | 0 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 5.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3948
 Normalizing number for TCAS-TCAS cells: 7896

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 102 | 46 | 42 | --- |
| i | V6.04A R | 171 | 29 | 5 | 4 | --- |
| r | V7.1-100 R | 129 | 24 | 9 | 7 | --- |
| c | V7.1-25 R | 58 | 15 | 4 | 3 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 5 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 5.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3948
 Normalizing number for TCAS-TCAS cells: 7896

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 512 | 539 | 541 | --- |
| i | V6.04A R | 625 | 502 | 358 | 406 | --- |
| r | V7.1-100 R | 549 | 345 | 247 | 279 | --- |
| c | V7.1-25 R | 504 | 330 | 243 | 275 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 5.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3948
 Normalizing number for TCAS-TCAS cells: 7896

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 3127 | 3155 | 3159 | --- |
| i | V6.04A R | 2957 | 6989 | 7153 | 7106 | --- |
| r | V7.1-100 R | 3061 | 7149 | 7260 | 7230 | --- |
| c | V7.1-25 R | 3184 | 7151 | 7245 | 7218 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 5 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 5.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3948
 Normalizing number for TCAS-TCAS cells: 7896

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 207 | 208 | 206 | --- |
| i | V6.04A R | 195 | 376 | 380 | 380 | --- |
| r | V7.1-100 R | 209 | 378 | 380 | 380 | --- |
| c | V7.1-25 R | 202 | 400 | 404 | 400 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

Table 5.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3948
 Normalizing number for TCAS-TCAS cells: 7896

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 790 | 782 | 792 | --- |
| i | V6.04A R | 702 | 1592 | 1592 | 1592 | --- |
| r | V7.1-100 R | 700 | 1590 | 1592 | 1592 | --- |
| c | V7.1-25 R | 752 | 1592 | 1592 | 1592 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 15 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 15.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 68
 Normalizing number for TCAS-TCAS cells: 136

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 15.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 68
 Normalizing number for TCAS-TCAS cells: 136

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 22 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 23 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 17 | 0 | 0 | 0 | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 15 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 15.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 68
 Normalizing number for TCAS-TCAS cells: 136

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 22 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 23 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 17 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 15.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1236
 Normalizing number for TCAS-TCAS cells: 2472

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 7 | 3 | 0 | --- |
| i | V6.04A R | 2 | 18 | 4 | 4 | --- |
| r | V7.1-100 R | 2 | 5 | 2 | 2 | --- |
| c | V7.1-25 R | 4 | 3 | 2 | 2 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 15 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 15.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1236
 Normalizing number for TCAS-TCAS cells: 2472

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 100 | 120 | 119 | --- |
| i | V6.04A R | 6 | 83 | 79 | 76 | --- |
| r | V7.1-100 R | 2 | 45 | 43 | 38 | --- |
| c | V7.1-25 R | 0 | 48 | 41 | 36 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 15.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1236
 Normalizing number for TCAS-TCAS cells: 2472

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 750 | 739 | 741 | --- |
| i | V6.04A R | 925 | 1811 | 1837 | 1838 | --- |
| r | V7.1-100 R | 948 | 1878 | 1883 | 1886 | --- |
| c | V7.1-25 R | 911 | 1817 | 1825 | 1828 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 15 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 15.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1236
 Normalizing number for TCAS-TCAS cells: 2472

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 379 | 374 | 376 | --- |
| i | V6.04A R | 303 | 560 | 552 | 554 | --- |
| r | V7.1-100 R | 284 | 544 | 544 | 546 | --- |
| c | V7.1-25 R | 321 | 604 | 604 | 606 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

Table 15.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1236
 Normalizing number for TCAS-TCAS cells: 2472

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 68 | 68 | 68 | --- |
| i | V6.04A R | 46 | 136 | 136 | 136 | --- |
| r | V7.1-100 R | 45 | 136 | 136 | 136 | --- |
| c | V7.1-25 R | 51 | 136 | 136 | 136 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 15 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Classes: 5, 15 SUMMARY

| | TOTAL | CROSSING | NON CROSSING |
|--------------------|--------|----------|--------------|
| # ENCOUNTERS | 157248 | 123344 | 33904 |
| PLANNED | 12096 | 9488 | 2608 |
| NMAC's | 20736 | 19104 | 1632 |
| NMAC's resolved | 20414 | 18844 | 1570 |
| NMAC's undetected | 0 | 0 | 0 |
| NMAC's unresolved | 322 | 260 | 62 |
| NON NMAC's | 124416 | 94752 | 29664 |
| NON NMAC's NO RA | 11856 | 4705 | 7151 |
| NON NMAC's induced | 708 | 648 | 60 |
| NON NMAC nuisance | 7091 | 6255 | 836 |

Altitude Separation at CPA for Classes: 5, 15
Version 7.1 Logic

| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
|--------------------|--------|--------|--------|--------|--------|--------|-------|
| PLANNED | 24192 | 0 | 18368 | 30016 | 48384 | 0 | 48384 |
| NMAC's resolved | 0 | 439 | 771 | 1348 | 2170 | 2663 | 13023 |
| NMAC's undetected | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 322 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 0 | 0 | 0 | 0 | 11856 |
| NON NMAC's induced | 708 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 1144 | 1259 | 1152 | 1485 | 562 | 1489 |

MITRE encounter class: 6 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 6.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 864
 Normalizing number for TCAS-TCAS cells: 1728

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|------------|-----------|-----|-----|
| | | | V7.1-100 R | V7.1-25 R | | --- |
| A | | --- | 0 | 0 | 0 | --- |
| r | | 4 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| l | | --- | --- | --- | --- | --- |

Table 6.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 864
 Normalizing number for TCAS-TCAS cells: 1728

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 5 | 0 | 1 | --- |
| r | V6.04A R | 86 | 14 | 1 | 1 | --- |
| c | V7.1-100 R | 70 | 12 | 2 | 2 | --- |
| r | V7.1-25 R | 29 | 3 | 2 | 2 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| l | | --- | --- | --- | --- | --- |

MITRE encounter class: 6 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 6.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 864
 Normalizing number for TCAS-TCAS cells: 1728

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 5 | 0 | 1 | --- |
| i | V6.04A R | 90 | 14 | 1 | 1 | --- |
| r | V7.1-100 R | 70 | 12 | 2 | 2 | --- |
| c | V7.1-25 R | 29 | 3 | 2 | 2 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 6.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3912
 Normalizing number for TCAS-TCAS cells: 7824

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 49 | 30 | 28 | --- |
| i | V6.04A R | 25 | 12 | 12 | 14 | --- |
| r | V7.1-100 R | 15 | 12 | 14 | 10 | --- |
| c | V7.1-25 R | 10 | 10 | 4 | 4 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 6 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 6.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3912
 Normalizing number for TCAS-TCAS cells: 7824

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 125 | 88 | 83 | --- |
| i | V6.04A R | 389 | 372 | 326 | 314 | --- |
| r | V7.1-100 R | 365 | 133 | 118 | 128 | --- |
| c | V7.1-25 R | 378 | 96 | 100 | 118 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 6.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3912
 Normalizing number for TCAS-TCAS cells: 7824

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 3477 | 3535 | 3542 | --- |
| i | V6.04A R | 3231 | 7004 | 7046 | 7052 | --- |
| r | V7.1-100 R | 3273 | 7239 | 7248 | 7242 | --- |
| c | V7.1-25 R | 3275 | 7280 | 7278 | 7262 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 6 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 6.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3912
 Normalizing number for TCAS-TCAS cells: 7824

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 261 | 259 | 259 | --- |
| i | V6.04A R | 267 | 436 | 440 | 444 | --- |
| r | V7.1-100 R | 259 | 440 | 444 | 444 | --- |
| c | V7.1-25 R | 249 | 438 | 442 | 440 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 6.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3912
 Normalizing number for TCAS-TCAS cells: 7824

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 859 | 864 | 863 | --- |
| i | V6.04A R | 774 | 1714 | 1727 | 1727 | --- |
| r | V7.1-100 R | 794 | 1716 | 1726 | 1726 | --- |
| c | V7.1-25 R | 835 | 1725 | 1726 | 1726 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 16 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 16.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 16.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 16 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 16.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 16.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1272
 Normalizing number for TCAS-TCAS cells: 2544

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 4 | 1 | 1 | --- |
| i | V6.04A R | 16 | 1 | 1 | 0 | --- |
| r | V7.1-100 R | 5 | 0 | 1 | 1 | --- |
| c | V7.1-25 R | 1 | 0 | 1 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 16 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 16.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1272
 Normalizing number for TCAS-TCAS cells: 2544

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 27 | 16 | 16 | --- |
| i | V6.04A R | 109 | 63 | 55 | 57 | --- |
| r | V7.1-100 R | 117 | 47 | 34 | 36 | --- |
| c | V7.1-25 R | 86 | 44 | 29 | 29 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 16.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1272
 Normalizing number for TCAS-TCAS cells: 2544

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 977 | 1084 | 1085 | --- |
| i | V6.04A R | 870 | 2154 | 2178 | 2177 | --- |
| r | V7.1-100 R | 961 | 2173 | 2201 | 2199 | --- |
| c | V7.1-25 R | 992 | 2176 | 2190 | 2191 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 16 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 16.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1272
 Normalizing number for TCAS-TCAS cells: 2544

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 264 | 171 | 170 | --- |
| i | V6.04A R | 277 | 326 | 310 | 310 | --- |
| r | V7.1-100 R | 189 | 324 | 308 | 308 | --- |
| c | V7.1-25 R | 193 | 324 | 324 | 324 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

Table 16.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 1272
 Normalizing number for TCAS-TCAS cells: 2544

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| l | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 16 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

| Classes: 6, 16 SUMMARY | | | |
|------------------------|--------|----------|--------------|
| | TOTAL | CROSSING | NON CROSSING |
| # ENCOUNTERS | 157248 | 124176 | 33072 |
| PLANNED | 12096 | 9552 | 2544 |
| NMAC's | 20736 | 20736 | 0 |
| NMAC's resolved | 20502 | 20502 | 0 |
| NMAC's undetected | 4 | 4 | 0 |
| NMAC's unresolved | 230 | 230 | 0 |
| NON NMAC's | 124416 | 93888 | 30528 |
| NON NMAC's NO RA | 9644 | 5522 | 4122 |
| NON NMAC's induced | 282 | 249 | 33 |
| NON NMAC nuisance | 3898 | 3133 | 765 |

| Altitude Separation at CPA for Classes: 6, 16 | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|-------|
| Version 7.1 Logic | | | | | | | |
| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
| PLANNED | 24192 | 0 | 17836 | 30548 | 48384 | 0 | 48384 |
| NMAC's resolved | 0 | 484 | 1246 | 1875 | 1850 | 2097 | 12950 |
| NMAC's undetected | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 230 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 2 | 0 | 2 | 0 | 9640 |
| NON NMAC's induced | 282 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 294 | 282 | 535 | 930 | 389 | 1468 |

MITRE encounter class: 7 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 7.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 1212
 Normalizing number for TCAS-TCAS cells: 2424

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|------------|-----------|-----|-----|
| | | | V7.1-100 R | V7.1-25 R | | --- |
| A | | --- | 0 | 0 | 0 | --- |
| r | | 0 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

Table 7.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 1212
 Normalizing number for TCAS-TCAS cells: 2424

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 125 | 122 | 40 | --- |
| r | V6.04A R | 92 | 4 | 4 | 0 | --- |
| c | V7.1-100 R | 125 | 6 | 0 | 0 | --- |
| r | V7.1-25 R | 44 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

MITRE encounter class: 7 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 7.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 1212
 Normalizing number for TCAS-TCAS cells: 2424

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 125 | 122 | 40 | --- |
| i | V6.04A R | 92 | 4 | 4 | 0 | --- |
| r | V7.1-100 R | 125 | 6 | 0 | 0 | --- |
| c | V7.1-25 R | 44 | 0 | 0 | 0 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 7.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5023
 Normalizing number for TCAS-TCAS cells: 10046

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 422 | 313 | 262 | --- |
| i | V6.04A R | 562 | 196 | 159 | 55 | --- |
| r | V7.1-100 R | 411 | 92 | 81 | 40 | --- |
| c | V7.1-25 R | 235 | 64 | 39 | 28 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 7 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 7.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5023
 Normalizing number for TCAS-TCAS cells: 10046

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1063 | 1018 | 1095 | --- |
| i | V6.04A R | 1002 | 1696 | 1474 | 1439 | --- |
| r | V7.1-100 R | 933 | 1489 | 1282 | 1236 | --- |
| c | V7.1-25 R | 1010 | 1340 | 1166 | 1089 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 7.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5023
 Normalizing number for TCAS-TCAS cells: 10046

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 3508 | 3665 | 3630 | --- |
| i | V6.04A R | 3439 | 8116 | 8383 | 8512 | --- |
| r | V7.1-100 R | 3654 | 8423 | 8649 | 8724 | --- |
| c | V7.1-25 R | 3739 | 8592 | 8797 | 8867 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 7 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 7.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5023
 Normalizing number for TCAS-TCAS cells: 10046

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 30 | 27 | 36 | --- |
| i | V6.04A R | 20 | 38 | 30 | 40 | --- |
| r | V7.1-100 R | 25 | 42 | 34 | 46 | --- |
| c | V7.1-25 R | 39 | 50 | 44 | 62 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 7.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5023
 Normalizing number for TCAS-TCAS cells: 10046

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1087 | 1090 | 1172 | --- |
| i | V6.04A R | 1120 | 2420 | 2420 | 2424 | --- |
| r | V7.1-100 R | 1087 | 2418 | 2424 | 2424 | --- |
| c | V7.1-25 R | 1168 | 2424 | 2424 | 2424 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 17 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 17.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 84
 Normalizing number for TCAS-TCAS cells: 168

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 17.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 84
 Normalizing number for TCAS-TCAS cells: 168

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 12 | 12 | 9 | --- |
| i | V6.04A R | 11 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 4 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 4 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 17 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 17.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 84
 Normalizing number for TCAS-TCAS cells: 168

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 12 | 12 | 9 | --- |
| i | V6.04A R | 11 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 4 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 4 | 0 | 0 | 0 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 17.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2753
 Normalizing number for TCAS-TCAS cells: 5506

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 21 | 2 | 15 | --- |
| i | V6.04A R | 10 | 14 | 7 | 8 | --- |
| r | V7.1-100 R | 5 | 10 | 7 | 5 | --- |
| c | V7.1-25 R | 15 | 18 | 10 | 6 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 17 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 17.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2753
 Normalizing number for TCAS-TCAS cells: 5506

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 40 | 42 | 36 | --- |
| i | V6.04A R | 44 | 40 | 16 | 19 | --- |
| r | V7.1-100 R | 41 | 28 | 16 | 15 | --- |
| c | V7.1-25 R | 64 | 33 | 19 | 17 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 17.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2753
 Normalizing number for TCAS-TCAS cells: 5506

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1951 | 2023 | 1982 | --- |
| i | V6.04A R | 1983 | 4290 | 4335 | 4239 | --- |
| r | V7.1-100 R | 2025 | 4342 | 4371 | 4280 | --- |
| c | V7.1-25 R | 1959 | 4183 | 4219 | 4129 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 17 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 17.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2753
 Normalizing number for TCAS-TCAS cells: 5506

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 741 | 686 | 720 | --- |
| i | V6.04A R | 716 | 1162 | 1148 | 1240 | --- |
| r | V7.1-100 R | 682 | 1126 | 1112 | 1206 | --- |
| c | V7.1-25 R | 715 | 1272 | 1258 | 1354 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 17.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2753
 Normalizing number for TCAS-TCAS cells: 5506

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 72 | 72 | 75 | --- |
| i | V6.04A R | 73 | 168 | 168 | 168 | --- |
| r | V7.1-100 R | 80 | 168 | 168 | 168 | --- |
| c | V7.1-25 R | 80 | 168 | 168 | 168 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 17 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

| Classes: 7, 17 SUMMARY | | | |
|------------------------|--------|----------|--------------|
| | TOTAL | CROSSING | NON CROSSING |
| # ENCOUNTERS | 235872 | 162110 | 73762 |
| PLANNED | 18144 | 12470 | 5674 |
| NMAC's | 31104 | 29088 | 2016 |
| NMAC's resolved | 30490 | 28526 | 1964 |
| NMAC's undetected | 0 | 0 | 0 |
| NMAC's unresolved | 614 | 562 | 52 |
| NON NMAC's | 186624 | 120552 | 66072 |
| NON NMAC's NO RA | 15701 | 563 | 15138 |
| NON NMAC's induced | 3112 | 2959 | 153 |
| NON NMAC nuisance | 18802 | 18332 | 470 |

| Altitude Separation at CPA for Classes: 7, 17 | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|-------|
| Version 7.1 Logic | | | | | | | |
| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
| PLANNED | 36288 | 0 | 26656 | 45920 | 72576 | 0 | 72576 |
| NMAC's resolved | 0 | 1408 | 2161 | 3260 | 3061 | 4084 | 16516 |
| NMAC's undetected | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 614 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 0 | 0 | 0 | 0 | 15701 |
| NON NMAC's induced | 3112 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 3501 | 3295 | 2382 | 3575 | 2332 | 3717 |

MITRE encounter class: 8 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 8.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 1296
 Normalizing number for TCAS-TCAS cells: 2592

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|------------|-----------|-----|-----|
| | | | V7.1-100 R | V7.1-25 R | | --- |
| A | | --- | 4 | 0 | 0 | --- |
| r | | 0 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

Table 8.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 1296
 Normalizing number for TCAS-TCAS cells: 2592

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 89 | 72 | 26 | --- |
| r | V6.04A R | 69 | 30 | 5 | 6 | --- |
| c | V7.1-100 R | 113 | 33 | 6 | 4 | --- |
| r | V7.1-25 R | 58 | 6 | 6 | 6 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

MITRE encounter class: 8 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 8.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 1296
 Normalizing number for TCAS-TCAS cells: 2592

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 93 | 72 | 26 | --- |
| i | V6.04A R | 69 | 30 | 5 | 6 | --- |
| r | V7.1-100 R | 113 | 33 | 6 | 4 | --- |
| c | V7.1-25 R | 58 | 6 | 6 | 6 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 8.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5702
 Normalizing number for TCAS-TCAS cells: 11404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 186 | 93 | 52 | --- |
| i | V6.04A R | 485 | 188 | 92 | 57 | --- |
| r | V7.1-100 R | 377 | 126 | 103 | 56 | --- |
| c | V7.1-25 R | 247 | 116 | 84 | 48 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 8 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 8.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5702
 Normalizing number for TCAS-TCAS cells: 11404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 734 | 742 | 797 | --- |
| i | V6.04A R | 817 | 857 | 668 | 662 | --- |
| r | V7.1-100 R | 823 | 925 | 670 | 700 | --- |
| c | V7.1-25 R | 731 | 787 | 619 | 656 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 8.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5702
 Normalizing number for TCAS-TCAS cells: 11404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 4262 | 4421 | 4454 | --- |
| i | V6.04A R | 3999 | 9667 | 10052 | 10137 | --- |
| r | V7.1-100 R | 4116 | 9685 | 10043 | 10104 | --- |
| c | V7.1-25 R | 4373 | 9803 | 10003 | 10026 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 8 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 8.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5702
 Normalizing number for TCAS-TCAS cells: 11404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 520 | 446 | 399 | --- |
| i | V6.04A R | 401 | 692 | 592 | 548 | --- |
| r | V7.1-100 R | 386 | 668 | 588 | 544 | --- |
| c | V7.1-25 R | 351 | 698 | 698 | 674 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 8.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 5702
 Normalizing number for TCAS-TCAS cells: 11404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1203 | 1224 | 1270 | --- |
| i | V6.04A R | 1227 | 2562 | 2587 | 2586 | --- |
| r | V7.1-100 R | 1183 | 2559 | 2586 | 2588 | --- |
| c | V7.1-25 R | 1238 | 2586 | 2586 | 2586 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 18 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 18.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 18.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 18 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 18.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 0
 Normalizing number for TCAS-TCAS cells: 0

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

Table 18.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2074
 Normalizing number for TCAS-TCAS cells: 4148

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 16 | 31 | 12 | --- |
| i | V6.04A R | 66 | 17 | 18 | 6 | --- |
| r | V7.1-100 R | 18 | 9 | 10 | 5 | --- |
| c | V7.1-25 R | 9 | 5 | 0 | 1 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | --- | --- | --- | --- | --- | --- |
| t | --- | --- | --- | --- | --- | --- |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 18 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 18.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2074
 Normalizing number for TCAS-TCAS cells: 4148

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 252 | 256 | 233 | --- |
| i | V6.04A R | 101 | 325 | 182 | 159 | --- |
| r | V7.1-100 R | 42 | 186 | 110 | 85 | --- |
| c | V7.1-25 R | 39 | 118 | 85 | 63 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 18.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2074
 Normalizing number for TCAS-TCAS cells: 4148

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1468 | 1520 | 1512 | --- |
| i | V6.04A R | 1493 | 3264 | 3512 | 3521 | --- |
| r | V7.1-100 R | 1615 | 3439 | 3592 | 3594 | --- |
| c | V7.1-25 R | 1781 | 3611 | 3619 | 3604 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 18 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 18.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2074
 Normalizing number for TCAS-TCAS cells: 4148

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 338 | 267 | 317 | --- |
| i | V6.04A R | 414 | 542 | 436 | 462 | --- |
| r | V7.1-100 R | 399 | 514 | 436 | 464 | --- |
| c | V7.1-25 R | 245 | 414 | 444 | 480 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 18.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 2074
 Normalizing number for TCAS-TCAS cells: 4148

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 18 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

| Classes: 8, 18 SUMMARY | | | |
|------------------------|--------|----------|--------------|
| | TOTAL | CROSSING | NON CROSSING |
| # ENCOUNTERS | 235872 | 181948 | 53924 |
| PLANNED | 18144 | 13996 | 4148 |
| NMAC's | 31104 | 31104 | 0 |
| NMAC's resolved | 30571 | 30571 | 0 |
| NMAC's undetected | 4 | 4 | 0 |
| NMAC's unresolved | 529 | 529 | 0 |
| NON NMAC's | 186624 | 136848 | 49776 |
| NON NMAC's NO RA | 14377 | 8205 | 6172 |
| NON NMAC's induced | 2533 | 2310 | 223 |
| NON NMAC nuisance | 13424 | 11188 | 2236 |

| Altitude Separation at CPA for Classes: 8, 18 | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|-------|
| Version 7.1 Logic | | | | | | | |
| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
| PLANNED | 36288 | 0 | 26712 | 45864 | 72576 | 0 | 72576 |
| NMAC's resolved | 0 | 1240 | 2500 | 3033 | 3413 | 3877 | 16508 |
| NMAC's undetected | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 529 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 5 | 0 | 4 | 0 | 14368 |
| NON NMAC's induced | 2533 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 2646 | 2330 | 1932 | 2473 | 1626 | 2417 |

MITRE encounter class: 9 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of March 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 9.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 579
 Normalizing number for TCAS-TCAS cells: 1158

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|-----------|-----|-----|-----|
| | | V7.1-100 R | V7.1-25 R | | | --- |
| A | | --- | 0 | 0 | 0 | --- |
| r | | 0 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

Table 9.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 579
 Normalizing number for TCAS-TCAS cells: 1158

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 18 | 8 | 4 | --- |
| r | V6.04A R | 61 | 0 | 0 | 0 | --- |
| c | V7.1-100 R | 15 | 0 | 0 | 0 | --- |
| r | V7.1-25 R | 24 | 0 | 0 | 0 | --- |
| a | | --- | --- | --- | --- | --- |
| f | | --- | --- | --- | --- | --- |
| t | | --- | --- | --- | --- | --- |
| 1 | | --- | --- | --- | --- | --- |

MITRE encounter class: 9 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of March 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 9.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 579
 Normalizing number for TCAS-TCAS cells: 1158

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 18 | 8 | 4 | --- |
| i | V6.04A R | 61 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 15 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 24 | 0 | 0 | 0 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 9.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3210
 Normalizing number for TCAS-TCAS cells: 6420

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 5 | 3 | 1 | --- |
| i | V6.04A R | 2 | 18 | 11 | 7 | --- |
| r | V7.1-100 R | 4 | 12 | 9 | 2 | --- |
| c | V7.1-25 R | 2 | 7 | 7 | 2 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 9 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of March 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 9.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3210
 Normalizing number for TCAS-TCAS cells: 6420

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 53 | 64 | 47 | --- |
| i | V6.04A R | 118 | 126 | 121 | 105 | --- |
| r | V7.1-100 R | 108 | 131 | 137 | 147 | --- |
| c | V7.1-25 R | 93 | 111 | 150 | 135 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 9.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3210
 Normalizing number for TCAS-TCAS cells: 6420

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1955 | 1938 | 1956 | --- |
| i | V6.04A R | 1930 | 4000 | 4006 | 4010 | --- |
| r | V7.1-100 R | 1917 | 3977 | 3968 | 3949 | --- |
| c | V7.1-25 R | 1900 | 3928 | 3879 | 3889 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 9 "planned = CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of March 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 9.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3210
 Normalizing number for TCAS-TCAS cells: 6420

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1197 | 1205 | 1206 | --- |
| i | V6.04A R | 1160 | 2276 | 2282 | 2298 | --- |
| r | V7.1-100 R | 1181 | 2300 | 2306 | 2322 | --- |
| c | V7.1-25 R | 1215 | 2374 | 2384 | 2394 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 9.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3210
 Normalizing number for TCAS-TCAS cells: 6420

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 561 | 571 | 575 | --- |
| i | V6.04A R | 518 | 1158 | 1158 | 1158 | --- |
| r | V7.1-100 R | 564 | 1158 | 1158 | 1158 | --- |
| c | V7.1-25 R | 555 | 1158 | 1158 | 1158 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 19 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of March 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 19.1

Number of unresolved Failures with neither aircraft having an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 285
 Normalizing number for TCAS-TCAS cells: 570

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 0 | 0 | 0 | --- |
| i | V6.04A R | 0 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

Table 19.2

Number of unresolved Failures with at least one aircraft having an RA
 (based on simulation truth).

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 285
 Normalizing number for TCAS-TCAS cells: 570

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 32 | 0 | 0 | --- |
| i | V6.04A R | 5 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| r | | | | | | |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| 1 | --- | --- | --- | --- | --- | --- |

MITRE encounter class: 19 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of March 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 19.3

Total number of unresolved Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that resulted in an
 NMAC, based on simulation truth): 285
 Normalizing number for TCAS-TCAS cells: 570

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 32 | 0 | 0 | --- |
| i | V6.04A R | 5 | 0 | 0 | 0 | --- |
| r | V7.1-100 R | 0 | 0 | 0 | 0 | --- |
| c | V7.1-25 R | 0 | 0 | 0 | 0 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 19.4

Number of induced Failures
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3702
 Normalizing number for TCAS-TCAS cells: 7404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 115 | 50 | 31 | --- |
| i | V6.04A R | 35 | 36 | 18 | 21 | --- |
| r | V7.1-100 R | 22 | 24 | 13 | 10 | --- |
| c | V7.1-25 R | 8 | 5 | 9 | 3 | --- |
| a | --- | --- | --- | --- | --- | --- |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 19 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of March 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 19.5

Number of nonNMAC RAs with Reduced Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3702
 Normalizing number for TCAS-TCAS cells: 7404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 142 | 272 | 138 | --- |
| i | V6.04A R | 105 | 289 | 170 | 115 | --- |
| r | V7.1-100 R | 131 | 161 | 94 | 79 | --- |
| c | V7.1-25 R | 102 | 94 | 71 | 61 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 19.6

Number of nonNMAC RAs with Increased Separation
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3702
 Normalizing number for TCAS-TCAS cells: 7404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 2423 | 2315 | 2425 | --- |
| i | V6.04A R | 2412 | 5305 | 5388 | 5388 | --- |
| r | V7.1-100 R | 2363 | 5405 | 5427 | 5395 | --- |
| c | V7.1-25 R | 2405 | 5379 | 5338 | 5316 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 19 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of March 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Table 19.7

Number of encounters without an RA
 (based on simulation truth)

Normalizing Number = number of planned encounters not resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3702
 Normalizing number for TCAS-TCAS cells: 7404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 1022 | 1065 | 1108 | --- |
| i | V6.04A R | 1150 | 1774 | 1828 | 1880 | --- |
| r | V7.1-100 R | 1186 | 1814 | 1870 | 1920 | --- |
| c | V7.1-25 R | 1187 | 1926 | 1986 | 2024 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

Table 19.8

Number of RAs Resolving NMACs
 (based on simulation truth)

Normalizing Number = number of planned encounters resulting in failure
 Normalizing number for cells in first row and column
 (number of planned encounters that did not result in an
 NMAC, based on simulation truth): 3702
 Normalizing number for TCAS-TCAS cells: 7404

| | | A i r c r a f t 2 | | | | |
|---|------------|-------------------|----------|------------|-----------|-----|
| | | Non-TCAS | V6.04A R | V7.1-100 R | V7.1-25 R | --- |
| A | Non-TCAS | --- | 253 | 285 | 285 | --- |
| i | V6.04A R | 280 | 570 | 570 | 570 | --- |
| r | V7.1-100 R | 285 | 570 | 570 | 570 | --- |
| c | V7.1-25 R | 285 | 570 | 570 | 570 | --- |
| r | --- | --- | --- | --- | --- | --- |
| a | | | | | | |
| f | | | | | | |
| t | | | | | | |
| l | | | | | | |

MITRE encounter class: 19 "planned = NON CROSSING" Date processed: 8/16/ 7
 Based on FAA Technical Center data of March 2007
 Version 7.1 = V7.0 + CP112E + CP115 + CP116 "data files J1 K1"
 Failure : CPA <= 100.0 ft based on simulation truth

Classes: 9, 19 SUMMARY

| | TOTAL | CROSSING | NON CROSSING |
|--------------------|--------|----------|--------------|
| # ENCOUNTERS | 202176 | 98514 | 103662 |
| PLANNED | 15552 | 7578 | 7974 |
| NMAC's | 20736 | 13896 | 6840 |
| NMAC's resolved | 20569 | 13766 | 6803 |
| NMAC's undetected | 0 | 0 | 0 |
| NMAC's unresolved | 167 | 130 | 37 |
| NON NMAC's | 165888 | 77040 | 88848 |
| NON NMAC's NO RA | 51840 | 28100 | 23740 |
| NON NMAC's induced | 492 | 92 | 400 |
| NON NMAC nuisance | 3670 | 1646 | 2024 |

Altitude Separation at CPA for Classes: 9, 19
 Version 7.1 Logic

| | <= 100 | <= 200 | <= 300 | <= 400 | <= 500 | <= 600 | > 600 |
|--------------------|--------|--------|--------|--------|--------|--------|-------|
| PLANNED | 24192 | 0 | 19852 | 28532 | 48384 | 0 | 96768 |
| NMAC's resolved | 0 | 633 | 880 | 2102 | 2612 | 3207 | 11135 |
| NMAC's undetected | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NMAC's unresolved | 167 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC's NO RA | 0 | 0 | 1 | 0 | 1 | 0 | 51838 |
| NON NMAC's induced | 492 | 0 | 0 | 0 | 0 | 0 | 0 |
| NON NMAC nuisance | 0 | 565 | 375 | 560 | 585 | 163 | 1422 |

Appendix J SUMMARY NMAC TABLES (Both Pilots Responding)

MITRE encounter classes: 0,10 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 2.0 DATASET 7

Table 0.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 0.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 10.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 10.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

MITRE encounter classes: 1,11 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**)= 1.00 Significance threshold (>>) = 2.0 DATASET 7

Table 1.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 1.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 11.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 11.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

MITRE encounter classes: 2,12 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**)= 1.00 Significance threshold (>)= 2.0 DATASET 7

Table 2.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.579 | 0.000 | 0.000 | 0.347 | 0.000 | 0.000 |
| One Mode C | 1.620 | ** >> 3.125 | ** 1.852 | ----- | ----- | ----- |

Table 2.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 1.707 | 0.419 | 0.451 | 0.805 | 0.677 | 0.451 |
| One Mode C | 7.796 | 4.800 | 3.028 | ----- | ----- | ----- |

Table 12.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 12.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.192 | 0.192 | 0.000 | ----- | ----- | ----- |

MITRE encounter classes: 3,13 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**)= 1.00 Significance threshold (>>) = 2.0 DATASET 7

Table 3.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 4.484 | 3.533 | 0.408 | ----- | ----- | ----- |

Table 3.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 13.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.781 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 13.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.101 | 0.025 | 0.000 | 0.025 | 0.025 | 0.013 |
| One Mode C | 0.759 | 0.380 | 0.228 | ----- | ----- | ----- |

MITRE encounter classes: 4,14 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 2.0 DATASET 7

Table 4.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | ** 1.667 | 0.000 | ----- | ----- | ----- |

Table 4.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 14.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 14.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

MITRE encounter classes: 5,15 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 2.0 DATASET 7

Table 5.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | ** 0.063 | 0.000 | 0.000 |
| One Mode C | 6.281 | ** >> 6.910 | 3.015 | ----- | ----- | ----- |

Table 5.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.367 | 0.114 | 0.038 | 0.184 | 0.120 | 0.070 |
| One Mode C | 3.457 | 2.216 | 1.266 | ----- | ----- | ----- |

Table 15.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 16.176 | ** >> 16.912 | 12.500 | ----- | ----- | ----- |

Table 15.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.728 | 0.081 | 0.081 | 0.182 | 0.142 | 0.081 |
| One Mode C | 0.364 | 0.202 | 0.162 | ----- | ----- | ----- |

MITRE encounter classes: 6,16 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 2.0 DATASET 7

Table 6.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.810 | 0.116 | 0.116 | 0.376 | 0.116 | 0.116 |
| One Mode C | 5.498 | 4.051 | 1.736 | ----- | ----- | ----- |

Table 6.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.153 | ** 0.179 | 0.051 | 0.153 | 0.153 | 0.089 |
| One Mode C | 0.946 | 0.575 | 0.486 | ----- | ----- | ----- |

Table 16.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 16.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.039 | 0.039 | 0.000 | 0.020 | 0.000 | 0.039 |
| One Mode C | 0.786 | 0.236 | 0.079 | ----- | ----- | ----- |

MITRE encounter classes: 7,17 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 2.0 DATASET 7

Table 7.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.165 | 0.000 | 0.000 | ** 0.206 | 0.000 | 0.000 |
| One Mode C | 8.952 | ** >> 10.190 | 3.465 | ----- | ----- | ----- |

Table 7.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 1.951 | 0.806 | 0.279 | 1.249 | 0.592 | 0.393 |
| One Mode C | 9.795 | 7.207 | 4.947 | ----- | ----- | ----- |

Table 17.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 13.690 | 9.524 | 7.738 | ----- | ----- | ----- |

Table 17.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.254 | 0.127 | 0.109 | 0.154 | 0.236 | 0.136 |
| One Mode C | 0.563 | 0.127 | 0.545 | ----- | ----- | ----- |

MITRE encounter classes: 8,18 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**)= 1.00 Significance threshold (>>) = 2.0 DATASET 7

Table 8.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 1.157 | 0.231 | 0.231 | 0.733 | 0.231 | 0.193 |
| One Mode C | 6.250 | ** >> 7.137 | 3.241 | ----- | ----- | ----- |

Table 8.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 1.649 | 0.903 | 0.421 | 0.956 | 0.759 | 0.614 |
| One Mode C | 5.884 | 4.121 | 2.622 | ----- | ----- | ----- |

Table 18.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 18.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.410 | 0.241 | 0.024 | 0.325 | 0.133 | 0.060 |
| One Mode C | 1.977 | 1.181 | 0.506 | ----- | ----- | ----- |

MITRE encounter classes: 9,19 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 All TCAS Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 2.0 DATASET 7

Table 9.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 6.822 | 1.986 | 2.418 | ----- | ----- | ----- |

Table 9.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.280 | 0.140 | 0.031 | 0.179 | 0.109 | 0.070 |
| One Mode C | 0.109 | 0.109 | 0.047 | ----- | ----- | ----- |

Table 19.3 - Percent of unresolved failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 6.491 | 0.000 | 0.000 | ----- | ----- | ----- |

Table 19.4 - Percent of induced failures

| | 6.04A only | 7.1-100 ft only | 7.1-25 ft only | 6.04A/ 7.1-100 | 6.04A/ 7.1-25 | 7.1-25/ 7.1-100 |
|------------|---------------|--------------------|-------------------|-------------------|------------------|--------------------|
| TCAS-TCAS | 0.486 | 0.176 | 0.041 | 0.284 | 0.176 | 0.128 |
| One Mode C | 2.026 | 0.972 | 0.527 | ----- | ----- | ----- |

Appendix K SUMMARY NMAC TABLES (One Pilot Non-responding)

MITRE encounter classes: 0,10 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 0.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|----------------|------------------|-------------------------|----------------|--------------------|---------------------|
| | 6.04A only | 7.1-25 only | 7.1-25/ 6.04A | 6.04A only | 7.1-25 only | 6.04A/ 7.1-25NR | 7.1-25/ 6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 0.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|----------------|------------------|-------------------------|----------------|--------------------|---------------------|
| | 6.04A only | 7.1-25 only | 7.1-25/ 6.04A | 6.04A only | 7.1-25 only | 6.04A/ 7.1-25NR | 7.1-25/ 6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 10.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|----------------|------------------|-------------------------|----------------|--------------------|---------------------|
| | 6.04A only | 7.1-25 only | 7.1-25/ 6.04A | 6.04A only | 7.1-25 only | 6.04A/ 7.1-25NR | 7.1-25/ 6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 10.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|----------------|------------------|-------------------------|----------------|--------------------|---------------------|
| | 6.04A only | 7.1-25 only | 7.1-25/ 6.04A | 6.04A only | 7.1-25 only | 6.04A/ 7.1-25NR | 7.1-25/ 6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

MITRE encounter classes: 1,11 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 1.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 1.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 3.750 | 3.750 | 3.750 | 3.750 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 11.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 11.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

MITRE encounter classes: 2,12 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 2.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.579 | 0.000 | 0.000 | 2.315 | 1.157 | 1.678 | 1.157 |
| One Mode C | 1.620 | 1.852 | ----- | ----- | ----- | ----- | ----- |

Table 2.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 1.707 | 0.451 | 0.677 | 11.662 | 8.344 | 10.341 | 8.650 |
| One Mode C | 7.796 | 3.028 | ----- | ----- | ----- | ----- | ----- |

Table 12.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 12.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.192 | 0.000 | ** 0.288 | 0.000 |
| One Mode C | 0.192 | 0.000 | ----- | ----- | ----- | ----- | ----- |

MITRE encounter classes: 3,13 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 3.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.543 | 0.000 | 0.543 | 0.000 |
| One Mode C | 4.484 | 0.408 | ----- | ----- | ----- | ----- | ----- |

Table 3.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.135 | 0.135 | 0.135 | ** 0.152 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 13.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.781 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 13.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.101 | 0.000 | 0.025 | 2.024 | 0.215 | 1.088 | 0.797 |
| One Mode C | 0.759 | 0.228 | ----- | ----- | ----- | ----- | ----- |

MITRE encounter classes: 4,14 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 4.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 6.667 | 6.667 | 6.667 | 6.667 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 4.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 1.974 | 1.809 | ** 2.138 | 1.809 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 14.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 33.333 | 16.667 | 27.083 | 22.917 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 14.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

MITRE encounter classes: 5,15 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 5.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 7.946 | 6.501 | 7.883 | 6.376 |
| One Mode C | 6.281 | 3.015 | ----- | ----- | ----- | ----- | ----- |

Table 5.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.367 | 0.038 | 0.120 | 5.351 | 3.540 | 5.180 | 3.375 |
| One Mode C | 3.457 | 1.266 | ----- | ----- | ----- | ----- | ----- |

Table 15.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 30.882 | 23.162 | 29.044 | 25.735 |
| One Mode C | 16.176 | 12.500 | ----- | ----- | ----- | ----- | ----- |

Table 15.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.728 | 0.081 | 0.142 | 0.546 | 0.303 | 0.182 | 0.263 |
| One Mode C | 0.364 | 0.162 | ----- | ----- | ----- | ----- | ----- |

MITRE encounter classes: 6,16 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 6.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.810 | 0.116 | 0.116 | 3.877 | 1.910 | 3.588 | 1.852 |
| One Mode C | 5.498 | 1.736 | ----- | ----- | ----- | ----- | ----- |

Table 6.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.153 | 0.051 | 0.153 | 4.141 | 3.087 | 4.001 | 3.310 |
| One Mode C | 0.946 | 0.486 | ----- | ----- | ----- | ----- | ----- |

Table 16.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 16.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.039 | 0.000 | 0.000 | 2.909 | 0.079 | 1.533 | 1.238 |
| One Mode C | 0.786 | 0.079 | ----- | ----- | ----- | ----- | ----- |

MITRE encounter classes: 7,17 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 7.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.165 | 0.000 | 0.000 | 8.416 | 4.827 | 6.663 | 5.342 |
| One Mode C | 8.952 | 3.465 | ----- | ----- | ----- | ----- | ----- |

Table 7.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 1.951 | 0.279 | 0.592 | 14.399 | 9.974 | 13.359 | 10.109 |
| One Mode C | 9.795 | 4.947 | ----- | ----- | ----- | ----- | ----- |

Table 17.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 22.619 | 12.500 | 17.857 | 17.560 |
| One Mode C | 13.690 | 7.738 | ----- | ----- | ----- | ----- | ----- |

Table 17.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.254 | 0.109 | 0.236 | 0.318 | ** | 0.291 | ** |
| One Mode C | 0.563 | 0.545 | ----- | ----- | ----- | ----- | ----- |

MITRE encounter classes: 8,18 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 8.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 1.157 | 0.231 | 0.231 | 4.090 | 1.755 | 2.855 | 2.006 |
| One Mode C | 6.250 | 3.241 | ----- | ----- | ----- | ----- | ----- |

Table 8.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 1.649 | 0.421 | 0.759 | 7.655 | 5.516 | 7.541 | 5.476 |
| One Mode C | 5.884 | 2.622 | ----- | ----- | ----- | ----- | ----- |

Table 18.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| One Mode C | 0.000 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 18.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.410 | 0.024 | 0.133 | 6.304 | 0.530 | 4.062 | 2.218 |
| One Mode C | 1.977 | 0.506 | ----- | ----- | ----- | ----- | ----- |

MITRE encounter classes: 9,19 Date processed: 8/16/ 7
 Based on FAA Technical Center data of July 2007 Some TCAS Non-Responding
 Failure: separation at CPA <= 100 ft based on simulation truth
 Ratio threshold (**) = 1.00 Significance threshold (>>) = 1.0 % DATASET 8

Table 9.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 1.986 | 0.950 | 1.641 | 0.864 |
| One Mode C | 6.822 | 2.418 | ----- | ----- | ----- | ----- | ----- |

Table 9.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.280 | 0.031 | 0.109 | 1.379 | 0.639 | 0.942 | 0.787 |
| One Mode C | 0.109 | 0.047 | ----- | ----- | ----- | ----- | ----- |

Table 19.3 - Percent of unresolved failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.000 | 0.000 | 0.000 | 0.000 | ** 0.088 | 0.000 | ** 0.088 |
| One Mode C | 6.491 | 0.000 | ----- | ----- | ----- | ----- | ----- |

Table 19.4 - Percent of induced failures

| | BOTH TCAS RESPONDING | | | ONE TCAS NON-RESPONDING | | | |
|------------|----------------------|-------------|--------------|-------------------------|-------------|----------------|-----------------|
| | 6.04A only | 7.1-25 only | 7.1-25/6.04A | 6.04A only | 7.1-25 only | 6.04A/7.1-25NR | 7.1-25/6.04A NR |
| TCAS-TCAS | 0.486 | 0.041 | 0.176 | 5.126 | 0.331 | 2.411 | 1.553 |
| One Mode C | 2.026 | 0.527 | ----- | ----- | ----- | ----- | ----- |

Appendix L REVERSAL ANALYSIS PROGRAM 1 (One Pilot Non-responding)

Encounter classes: 0,10 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 2352 Total incorrectly labeled RAs : 0

| | | Class 0 | | Planned = CROSSING | | | | | | |
|----------------------------|-----|--------------|---------|--------------------|----------|----------|---------|----------|---------|----------|
| | | 6.04A | V7.1-25 | 6.04A R | V7.1-25R | 6.04A R | 6.04A R | V7.1-25R | 6.04A R | V7.1-25R |
| | | NonTCAS | NonTCAS | only | only | V7.1-25R | 6.04AN | 7.1-25N | 7.1-25N | 6.04AN |
| RAs/ runs | (%) | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 | 90.00 |
| Total NMACS/ runs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ RAs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fast Reverse/ Reversals | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACS/ 1 Rev. | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACS | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | Class 10 | | Planned = NON-CROSSING | | | | | | |
|----------------------------|-----|---------------|---------|------------------------|----------|----------|---------|----------|---------|----------|
| | | 6.04A | V7.1-25 | 6.04A R | V7.1-25R | 6.04A R | 6.04A R | V7.1-25R | 6.04A R | V7.1-25R |
| | | NonTCAS | NonTCAS | only | only | V7.1-25R | 6.04AN | 7.1-25N | 7.1-25N | 6.04AN |
| RAs/ runs | (%) | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 | 65.63 |
| Total NMACS/ runs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ RAs | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fast Reverse/ Reversals | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACS/ 1 Rev. | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACS | (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

* NMACS and average alt. sep. at CPA are based on simulation truth

Encounter classes: 1,11 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 7056 Total incorrectly labeled RAs : 0

| Class 1 | | Planned = CROSSING | | | | | | | | |
|--------------------------------|--|--------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 | 94.39 |
| Total NMACS/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.06 | 3.06 | 3.06 | 3.06 |
| Induced/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.40 | 1.02 | 0.64 |
| Reversals/ RAs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.49 | 1.08 | 0.68 |
| Fast Reverse/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 63.64 | 75.00 | 60.00 |
| Induced NMAC/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 |

| Class 11 | | Planned = NON-CROSSING | | | | | | | | |
|--------------------------------|--|------------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 60.71 | 71.43 | 60.71 | 71.43 | 71.43 | 60.71 | 71.43 | 71.43 | 71.43 |
| Total NMACS/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ RAs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fast Reverse/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

* NMACS and average alt. sep. at CPA are based on simulation truth

Encounter classes: 2,12 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 84648 Total incorrectly labeled RAs : 24

| | | Class 2 | | Planned = CROSSING | | | | | | |
|--------------------------------|--|------------------|--------------------|--------------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 99.14 | 98.97 | 99.60 | 98.94 | 99.07 | 99.55 | 98.97 | 99.07 | 99.07 |
| Total NMACs/ runs (%) | | 6.45 | 2.77 | 1.46 | 0.35 | 0.53 | 9.63 | 6.78 | 8.46 | 7.02 |
| Induced/ NMACS (%) | | 94.53 | 85.45 | 91.38 | 100.00 | 100.00 | 94.76 | 96.28 | 95.68 | 96.41 |
| Reversals/ runs (%) | | 2.04 | 7.89 | 0.00 | 0.33 | 0.28 | 0.00 | 8.13 | 4.94 | 3.99 |
| Reversals/ RAs (%) | | 2.06 | 7.97 | 0.00 | 0.33 | 0.28 | 0.00 | 8.21 | 4.99 | 4.03 |
| Fast Reverse/ Reversals (%) | | 6.17 | 0.32 | 0.00 | 0.00 | 4.55 | 0.00 | 0.47 | 0.26 | 0.63 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 10.22 | 0.00 | 0.00 | 4.55 | 0.00 | 19.38 | 20.15 | 19.24 |
| Induced NMAC/ NMACs (%) | | 0.00 | 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |

| | | Class 12 | | Planned = NON-CROSSING | | | | | | |
|--------------------------------|--|------------------|--------------------|------------------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 73.27 | 80.87 | 75.10 | 80.82 | 80.87 | 75.10 | 80.84 | 80.87 | 80.87 |
| Total NMACs/ runs (%) | | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.29 | 0.00 |
| Induced/ NMACS (%) | | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 | 100.00 | 0.00 |
| Reversals/ runs (%) | | 0.91 | 0.53 | 0.00 | 0.14 | 0.17 | 0.00 | 0.38 | 0.43 | 0.36 |
| Reversals/ RAs (%) | | 1.25 | 0.65 | 0.00 | 0.18 | 0.21 | 0.00 | 0.48 | 0.54 | 0.45 |
| Fast Reverse/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 33.33 | 0.00 |
| Induced NMAC/ NMACs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 3,13 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 108864 Total incorrectly labeled RAs : 0

| | | Class 3 | | Planned = CROSSING | | | | | | |
|--------------------------------|--|------------------|--------------------|--------------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 65.75 | 65.77 | 65.69 | 65.77 | 65.77 | 65.69 | 65.77 | 65.77 | 65.77 |
| Total NMACs/ runs (%) | | 0.89 | 0.08 | 0.00 | 0.00 | 0.00 | 0.22 | 0.11 | 0.22 | 0.12 |
| Induced/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 50.00 | 100.00 | 50.00 | 100.00 |
| Reversals/ runs (%) | | 1.06 | 0.54 | 0.00 | 0.54 | 0.27 | 0.00 | 0.68 | 0.35 | 0.35 |
| Reversals/ RAs (%) | | 1.60 | 0.82 | 0.00 | 0.82 | 0.41 | 0.00 | 1.03 | 0.53 | 0.53 |
| Fast Reverse/ Reversals (%) | | 30.77 | 55.00 | 0.00 | 20.00 | 20.00 | 0.00 | 18.00 | 15.38 | 19.23 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | Class 13 | | Planned = NON-CROSSING | | | | | | |
|--------------------------------|--|------------------|--------------------|------------------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 59.29 | 58.33 | 62.06 | 60.12 | 60.01 | 62.13 | 60.66 | 60.01 | 61.20 |
| Total NMACs/ runs (%) | | 0.76 | 0.22 | 0.10 | 0.00 | 0.02 | 1.96 | 0.21 | 1.05 | 0.77 |
| Induced/ NMACS (%) | | 96.77 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 6.89 | 9.39 | 0.00 | 5.34 | 2.86 | 0.00 | 5.91 | 3.22 | 3.00 |
| Reversals/ RAs (%) | | 11.62 | 16.09 | 0.00 | 8.89 | 4.76 | 0.00 | 9.74 | 5.37 | 4.91 |
| Fast Reverse/ Reversals (%) | | 38.43 | 43.34 | 0.00 | 36.70 | 32.62 | 0.00 | 33.20 | 28.90 | 31.02 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.43 | 0.00 | 1.04 | 3.42 | 0.00 |
| Induced NMAC/ NMACs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 4,14 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 14112 Total incorrectly labeled RAs : 0

| Class 4 Planned = CROSSING | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
|--------------------------------|--|------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| RAs/ runs (%) | | 97.25 | 97.25 | 96.70 | 97.25 | 96.84 | 96.98 | 97.25 | 96.84 | 97.25 |
| Total NMACs/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.75 | 2.61 | 2.88 | 2.61 |
| Induced/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 60.00 | 57.89 | 61.90 | 57.89 |
| Reversals/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 3.37 | 2.13 | 1.37 |
| Reversals/ RAs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 3.46 | 2.20 | 1.41 |
| Fast Reverse/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 16.33 | 19.35 | 20.00 |
| Induced NMAC/ NMACs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 |

| Class 14 Planned = NON-CROSSING | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
|---------------------------------|--|------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| RAs/ runs (%) | | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 | 68.57 |
| Total NMACs/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.86 | 1.43 | 2.32 | 1.96 |
| Induced/ NMACS (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Reversals/ runs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.39 | 2.50 | 0.89 |
| Reversals/ RAs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.95 | 3.65 | 1.30 |
| Fast Reverse/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 Reversal/ Reversals (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Induced NMAC/ NMACs (%) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 5,15 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 169344 Total incorrectly labeled RAs : 0

| Class 5 Planned = CROSSING | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
|--------------------------------|--|------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| RAs/ runs (%) | | 95.76 | 95.70 | 95.77 | 94.25 | 95.01 | 95.83 | 94.97 | 95.01 | 95.70 |
| Total NMACs/ runs (%) | | 3.93 | 1.56 | 0.31 | 0.03 | 0.10 | 5.79 | 4.04 | 5.63 | 3.88 |
| Induced/ NMACS (%) | | 73.19 | 67.57 | 100.00 | 100.00 | 100.00 | 76.96 | 72.98 | 76.52 | 72.42 |
| Reversals/ runs (%) | | 0.81 | 3.36 | 0.00 | 0.34 | 0.23 | 0.00 | 4.13 | 2.77 | 1.93 |
| Reversals/ RAs (%) | | 0.85 | 3.51 | 0.00 | 0.36 | 0.24 | 0.00 | 4.35 | 2.91 | 2.02 |
| Fast Reverse/ Reversals (%) | | 0.00 | 4.39 | 0.00 | 28.13 | 18.60 | 0.00 | 2.30 | 1.52 | 2.19 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 10.03 | 0.00 | 6.25 | 4.65 | 0.00 | 22.07 | 23.05 | 23.77 |
| Induced NMAC/ NMACs (%) | | 0.00 | 93.75 | 0.00 | 100.00 | 100.00 | 0.00 | 93.06 | 95.87 | 94.25 |

| Class 15 Planned = NON-CROSSING | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
|---------------------------------|--|------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| RAs/ runs (%) | | 73.85 | 73.27 | 78.07 | 72.12 | 70.99 | 78.07 | 73.68 | 70.99 | 75.27 |
| Total NMACs/ runs (%) | | 1.19 | 0.81 | 0.69 | 0.08 | 0.13 | 2.13 | 1.50 | 1.69 | 1.59 |
| Induced/ NMACS (%) | | 29.03 | 19.05 | 100.00 | 100.00 | 100.00 | 24.32 | 19.23 | 10.23 | 15.66 |
| Reversals/ runs (%) | | 1.88 | 2.91 | 0.00 | 2.15 | 1.11 | 0.00 | 4.74 | 3.24 | 1.71 |
| Reversals/ RAs (%) | | 2.54 | 3.98 | 0.00 | 2.98 | 1.57 | 0.00 | 6.43 | 4.56 | 2.27 |
| Fast Reverse/ Reversals (%) | | 12.24 | 15.79 | 0.00 | 44.64 | 39.66 | 0.00 | 20.24 | 13.61 | 25.84 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 2.63 | 0.00 | 3.57 | 3.45 | 0.00 | 6.07 | 1.18 | 10.11 |
| Induced NMAC/ NMACs (%) | | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 0.00 | 60.00 | 100.00 | 33.33 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 6,16 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 169020 Total incorrectly labeled RAs : 324

| Class 6 | | Planned = CROSSING | | | | | | | | |
|--------------------------------|--|--------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 94.43 | 94.68 | 94.53 | 94.11 | 94.22 | 94.53 | 94.45 | 94.22 | 94.81 |
| Total NMACs/ runs (%) | | 1.77 | 0.71 | 0.27 | 0.06 | 0.15 | 4.10 | 2.87 | 3.93 | 3.05 |
| Induced/ NMACS (%) | | 43.79 | 55.88 | 46.15 | 66.67 | 85.71 | 82.97 | 87.98 | 83.47 | 89.00 |
| Reversals/ runs (%) | | 1.32 | 2.56 | 0.00 | 0.70 | 0.42 | 0.00 | 3.58 | 1.96 | 1.79 |
| Reversals/ RAs (%) | | 1.40 | 2.71 | 0.00 | 0.75 | 0.45 | 0.00 | 3.79 | 2.08 | 1.89 |
| Fast Reverse/ Reversals (%) | | 42.06 | 28.57 | 0.00 | 38.81 | 39.51 | 0.00 | 8.19 | 8.56 | 10.53 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 3.17 | 8.57 | 0.00 | 2.99 | 7.41 | 0.00 | 21.64 | 24.87 | 16.08 |
| Induced NMAC/ NMACs (%) | | 100.00 | 42.86 | 0.00 | 0.00 | 66.67 | 0.00 | 83.11 | 74.19 | 90.91 |

| Class 16 | | Planned = NON-CROSSING | | | | | | | | |
|--------------------------------|--|------------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 78.73 | 85.73 | 78.57 | 84.87 | 84.65 | 79.18 | 85.67 | 84.65 | 86.52 |
| Total NMACs/ runs (%) | | 0.79 | 0.08 | 0.04 | 0.00 | 0.00 | 2.98 | 0.08 | 1.53 | 1.24 |
| Induced/ NMACS (%) | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 9.87 | 9.24 | 0.00 | 5.03 | 2.61 | 0.00 | 7.06 | 3.93 | 3.34 |
| Reversals/ RAs (%) | | 12.53 | 10.77 | 0.00 | 5.93 | 3.09 | 0.00 | 8.24 | 4.64 | 3.86 |
| Fast Reverse/ Reversals (%) | | 30.68 | 29.79 | 0.00 | 28.13 | 27.82 | 0.00 | 20.06 | 18.50 | 21.76 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.00 | 0.43 | 0.00 | 0.00 | 0.00 | 0.00 | 0.84 | 2.00 | 0.00 |
| Induced NMAC/ NMACs (%) | | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 0.00 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 7,17 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 253848 Total incorrectly labeled RAs : 168

| Class | | 7 Planned = CROSSING | | | | | | | | |
|--------------------------------|--|----------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 99.60 | 99.40 | 99.36 | 99.15 | 99.18 | 99.52 | 99.30 | 99.18 | 99.44 |
| Total NMACs/ runs (%) | | 9.63 | 4.66 | 1.60 | 0.22 | 0.48 | 13.24 | 8.97 | 12.06 | 9.18 |
| Induced/ NMACS (%) | | 81.93 | 85.54 | 98.00 | 100.00 | 100.00 | 87.64 | 89.54 | 89.26 | 88.69 |
| Reversals/ runs (%) | | 2.66 | 12.48 | 0.00 | 0.43 | 0.38 | 0.00 | 9.55 | 6.84 | 4.94 |
| Reversals/ RAs (%) | | 2.67 | 12.55 | 0.00 | 0.44 | 0.38 | 0.00 | 9.61 | 6.89 | 4.97 |
| Fast Reverse/ Reversals (%) | | 5.72 | 3.92 | 0.00 | 0.00 | 4.21 | 0.00 | 0.17 | 0.23 | 0.32 |
| 1 Reversal/ Reversals (%) | | 99.40 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 2.73 | 13.50 | 0.00 | 22.22 | 12.63 | 0.00 | 23.81 | 19.18 | 24.41 |
| Induced NMAC/ NMACs (%) | | 22.22 | 97.62 | 0.00 | 100.00 | 100.00 | 0.00 | 99.65 | 98.47 | 99.67 |

| Class | | 17 Planned = NON-CROSSING | | | | | | | | |
|--------------------------------|--|---------------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 74.32 | 74.71 | 71.63 | 73.44 | 71.62 | 73.26 | 74.29 | 71.62 | 75.13 |
| Total NMACs/ runs (%) | | 0.95 | 0.76 | 0.25 | 0.11 | 0.23 | 0.99 | 0.78 | 0.81 | 0.88 |
| Induced/ NMACS (%) | | 57.41 | 69.77 | 100.00 | 100.00 | 100.00 | 31.53 | 52.27 | 34.78 | 41.00 |
| Reversals/ runs (%) | | 0.56 | 2.13 | 0.00 | 0.25 | 0.12 | 0.00 | 1.16 | 0.74 | 0.52 |
| Reversals/ RAs (%) | | 0.76 | 2.85 | 0.00 | 0.34 | 0.17 | 0.00 | 1.57 | 1.03 | 0.69 |
| Fast Reverse/ Reversals (%) | | 18.75 | 12.40 | 0.00 | 35.71 | 21.43 | 0.00 | 7.58 | 3.57 | 5.08 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 12.50 | 14.05 | 0.00 | 35.71 | 50.00 | 0.00 | 10.61 | 1.19 | 22.03 |
| Induced NMAC/ NMACs (%) | | 100.00 | 70.59 | 0.00 | 100.00 | 100.00 | 0.00 | 42.86 | 0.00 | 61.54 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 8,18 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 252828 Total incorrectly labeled RAs : 1188

| Class | | 8 Planned = CROSSING | | | | | | | | |
|--------------------------------|--|----------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 93.39 | 94.64 | 93.02 | 94.36 | 94.11 | 93.59 | 94.52 | 94.11 | 94.71 |
| Total NMACs/ runs (%) | | 5.95 | 2.74 | 1.55 | 0.39 | 0.66 | 6.99 | 4.82 | 6.67 | 4.83 |
| Induced/ NMACS (%) | | 80.55 | 78.07 | 85.92 | 88.89 | 93.51 | 89.23 | 93.25 | 92.08 | 92.31 |
| Reversals/ runs (%) | | 3.89 | 8.27 | 0.00 | 1.47 | 0.93 | 0.00 | 6.73 | 4.18 | 3.34 |
| Reversals/ RAs (%) | | 4.16 | 8.74 | 0.00 | 1.56 | 0.99 | 0.00 | 7.12 | 4.44 | 3.53 |
| Fast Reverse/ Reversals (%) | | 37.32 | 14.08 | 0.00 | 11.17 | 13.46 | 0.00 | 2.60 | 2.99 | 4.06 |
| 1 Reversal/ Reversals (%) | | 99.63 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 3.69 | 7.08 | 0.00 | 4.37 | 3.08 | 0.00 | 17.47 | 21.39 | 16.67 |
| Induced NMAC/ NMACs (%) | | 90.00 | 97.56 | 0.00 | 77.78 | 87.50 | 0.00 | 98.78 | 97.60 | 100.00 |

| Class | | 18 Planned = NON-CROSSING | | | | | | | | |
|--------------------------------|--|---------------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| | | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
| RAs/ runs (%) | | 81.87 | 86.45 | 77.24 | 86.16 | 85.33 | 78.47 | 86.73 | 85.33 | 87.30 |
| Total NMACs/ runs (%) | | 1.98 | 0.51 | 0.43 | 0.02 | 0.13 | 6.54 | 0.53 | 4.06 | 2.22 |
| Induced/ NMACS (%) | | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Reversals/ runs (%) | | 15.02 | 14.85 | 0.00 | 7.62 | 4.04 | 0.00 | 9.91 | 5.77 | 4.81 |
| Reversals/ RAs (%) | | 18.35 | 17.18 | 0.00 | 8.84 | 4.73 | 0.00 | 11.42 | 6.77 | 5.51 |
| Fast Reverse/ Reversals (%) | | 41.41 | 38.31 | 0.00 | 24.37 | 22.69 | 0.00 | 18.73 | 15.87 | 19.05 |
| 1 Reversal/ Reversals (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | | 0.16 | 0.65 | 0.00 | 0.32 | 1.19 | 0.00 | 1.09 | 2.51 | 1.00 |
| Induced NMAC/ NMACs (%) | | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Encounter classes: 9,19 Date processed: 8/27/ 7 DATA SET NUMBER 8
 Based on FAA Technical Center data of: July 2007
 Total Encounters : 217605 Total incorrectly labeled RAs : 123

Class 9 Planned = CROSSING

| | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
|--------------------------------|------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| RAs/ runs (%) | 68.90 | 68.05 | 69.32 | 68.32 | 68.30 | 69.42 | 68.35 | 68.30 | 68.58 |
| Total NMACs/ runs (%) | 1.13 | 0.41 | 0.22 | 0.03 | 0.09 | 1.46 | 0.69 | 1.05 | 0.80 |
| Induced/ NMACS (%) | 8.14 | 9.68 | 100.00 | 100.00 | 100.00 | 79.64 | 78.85 | 76.10 | 83.47 |
| Reversals/ runs (%) | 1.60 | 1.90 | 0.00 | 0.44 | 0.53 | 0.00 | 1.29 | 1.08 | 0.89 |
| Reversals/ RAs (%) | 2.32 | 2.79 | 0.00 | 0.64 | 0.78 | 0.00 | 1.89 | 1.57 | 1.30 |
| Fast Reverse/ Reversals (%) | 23.14 | 21.53 | 0.00 | 9.09 | 24.69 | 0.00 | 3.06 | 12.27 | 14.81 |
| 1 Reversal/ Reversals (%) | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | 0.00 | 4.86 | 0.00 | 3.03 | 3.70 | 0.00 | 5.10 | 4.91 | 2.22 |
| Induced NMAC/ NMACs (%) | 0.00 | 42.86 | 0.00 | 100.00 | 100.00 | 0.00 | 80.00 | 75.00 | 100.00 |

Class 19 Planned = NON-CROSSING

| | 6.04A NonTCAS | V7.1-25 NonTCAS | 6.04A R only | V7.1-25R only | 6.04A R V7.1-25R | 6.04A R 6.04AN | V7.1-25R 7.1-25N | 6.04A R 7.1-25N | V7.1-25R 6.04AN |
|--------------------------------|------------------|--------------------|-----------------|------------------|---------------------|-------------------|---------------------|--------------------|--------------------|
| RAs/ runs (%) | 72.76 | 71.22 | 74.29 | 73.00 | 72.13 | 74.41 | 73.28 | 72.13 | 73.49 |
| Total NMACs/ runs (%) | 2.35 | 0.49 | 0.44 | 0.04 | 0.16 | 4.70 | 0.31 | 2.24 | 1.45 |
| Induced/ NMACS (%) | 80.21 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 98.00 | 100.00 | 99.57 |
| Reversals/ runs (%) | 13.52 | 10.94 | 0.00 | 5.74 | 2.98 | 0.00 | 7.79 | 3.86 | 4.13 |
| Reversals/ RAs (%) | 18.58 | 15.35 | 0.00 | 7.87 | 4.13 | 0.00 | 10.64 | 5.36 | 5.62 |
| Fast Reverse/ Reversals (%) | 30.71 | 29.01 | 0.00 | 27.51 | 27.16 | 0.00 | 20.27 | 20.94 | 19.58 |
| 1 Reversal/ Reversals (%) | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 |
| NMACS/ 1 Rev. (%) | 0.00 | 0.46 | 0.00 | 0.66 | 2.32 | 0.00 | 2.09 | 2.76 | 0.91 |
| Induced NMAC/ NMACs (%) | 0.00 | 100.00 | 0.00 | 100.00 | 100.00 | 0.00 | 96.15 | 100.00 | 83.33 |

* NMACs and average alt. sep. at CPA are based on simulation truth

Appendix M V7.1 REPRESENTATIVE NMACs (Both Pilots Responding)

Change 7.1 Representative NMAC Unres01

Encounter Class : 8

Reit Number : 4813

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 2 |
| AC1 low ID | 0 |
| Vertical tracker | 25 ft |
| Planned separation | 0 ft |
| AC1 rates : | -5000 fpm |
| AC2 rates : | -3000 fpm |
| AC1 acceleration : | 0.05 g |
| AC2 acceleration : | -0.25 g |
| AC1 acceleration time : | CPA – 25 sec |
| AC2 acceleration time : | CPA – 30 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| <u>100 ft</u> | <u>25 ft</u> | |
|---------------|--------------|------------------------------|
| 93 | 93 | % of RAs were non-crossing |
| 100 | 100 | % of NMACs were non-crossing |
| 97 | 98 | % of RAs were not reversed |
| 86 | 95 | % of NMACs were not reversed |

Comments

AC1 has high vertical rate. At the time AC2 issued the reversal, AC1 was just beginning to level off. At the time AC2 reversed, this looked like an SA01a encounter (vertical chase).

SIMULATION RESULTS FOR 6.04A, V7, and V7.1 JULY 2007 DATA ENCOUNTER C8H4813
 LOGIC THRESHOLDS SL = 6 ZTHR = 600 TAUR = 30 TAUV = 30 ALIM = 350
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(-5000.0,0.0) AC2 RATES(0.0,-3000.0)
 AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.25g @ CPA -30 AC1 CPA ALT 7500

 4813 6.04A RH VS 6.04A RL 8 -607.74 CROSSING_ENC
 10 AC1: 3165122 TA :13 |TAUR| POTRA@28 (6FT) | DES @40 [X]
 5 AC2: 3265022 TA :13 |TAUR| LD2 @38 [X] | LD2 @49

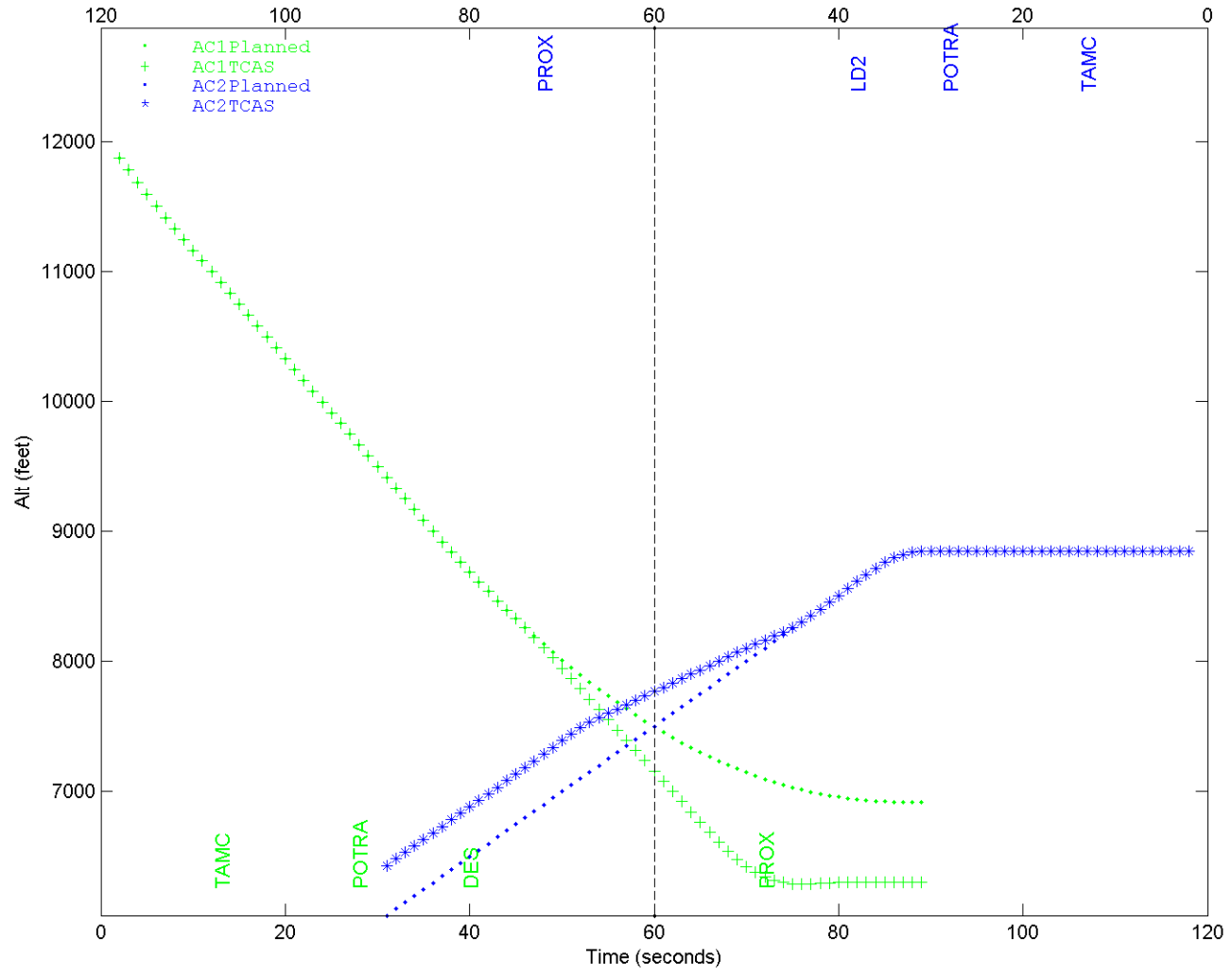
 4813 V7 100 FT RH VS V7 100 FT RL 8 -542.36 CROSSING_ENC
 10 AC1: 3171133 TA :13 |TAUR| POTRA@28 | DES @39 [X] | DCL @63
 5 AC2: 3271033 TA :13 |TAUR| POTRA@28 (LVW) | LD2 @38 [X] | LD2 @49

 4813 V7 25 FT RH VS V7 25 FT RL 8 656.79 NON_CROSSING_ENC
 10 AC1: 3175144 TA :13 |TAUR| POTRA@28 | DDES @38 [NX]
 5 AC2: 3275044 TA :13 |TAUR| POTRA@28 (LVW) | DES @38 [NX] | DCL @56

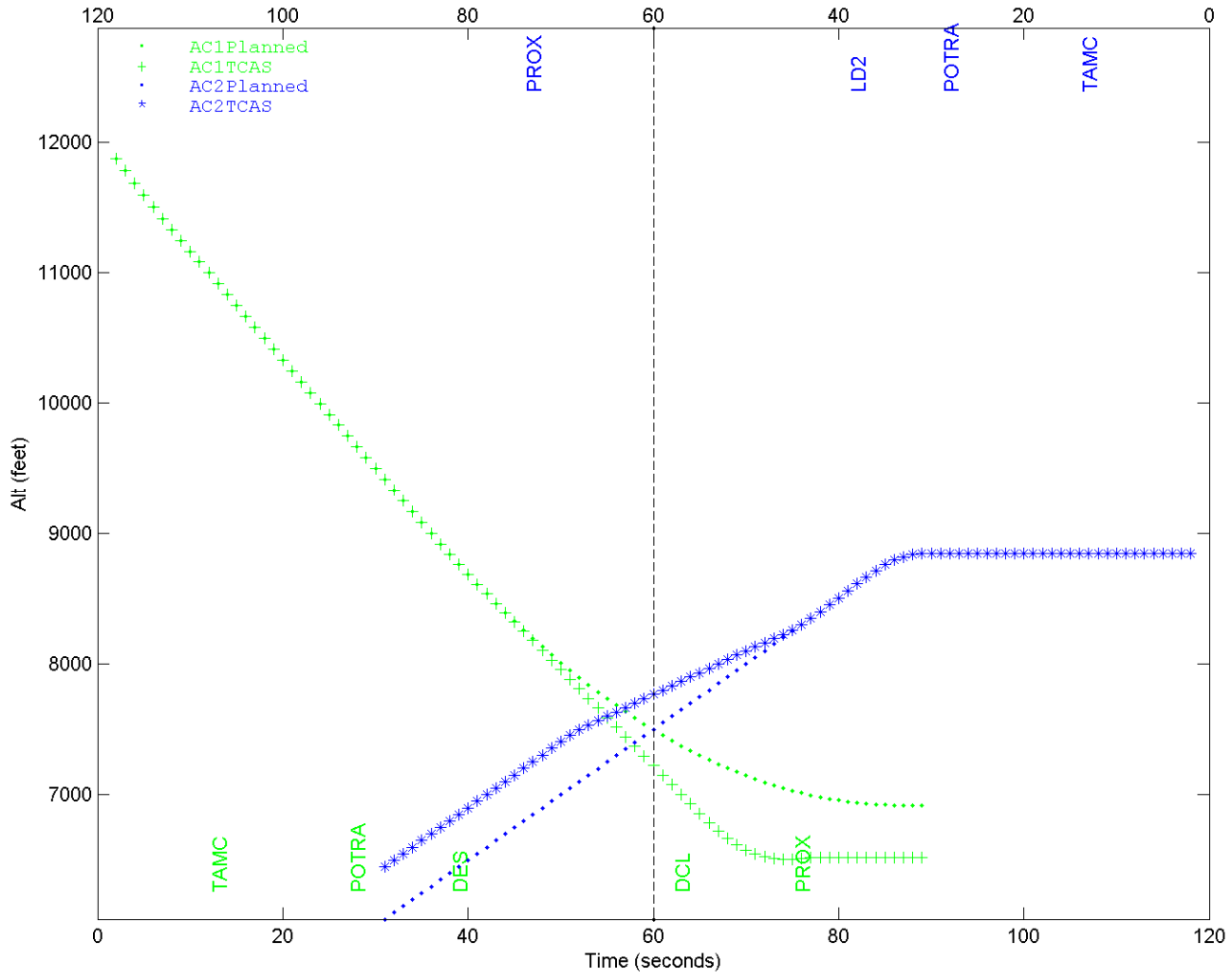
 4813 V7.1 100 FT RH VS V7.1 100 FT RL 8 -870.35 CROSSING_ENC
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 5.19 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC1: 7171133 TA :13 |TAUR| POTRA@28 | DES @39 [X] | DCL @53
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 11.36 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC2: 7271033 TA :13 |TAUR| POTRA@28 (LVW) | DDES @38 [X] | DDES @49

 4813 V7.1 25 FT RH VS V7.1 25 FT RL 8 -51.35 CROSSING_ENC
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 14.18 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC1:*REV*7175144 TA :13 |TAUR| POTRA@28 | DDES @38 [NX] | DES @50 | IDES @52
 CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 5.60 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC2:*REV*7275044 TA :13 |TAUR| POTRA@28 (LVW) | DES @38[NX] | CL @49 | ICL @54

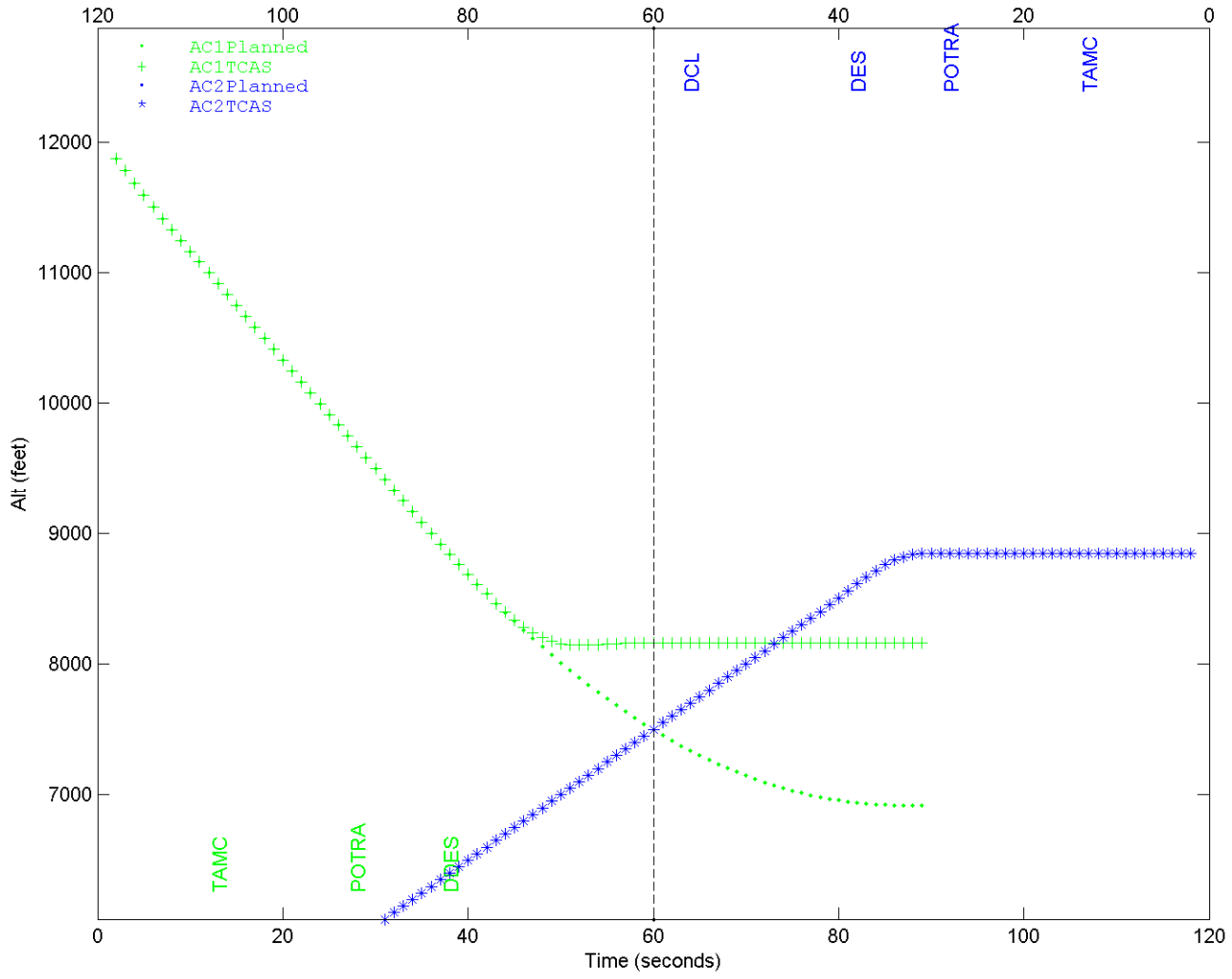
reit: 4813 cata: 818 simmode: 3165122 6.04A Vs 6.04A C8H4813A

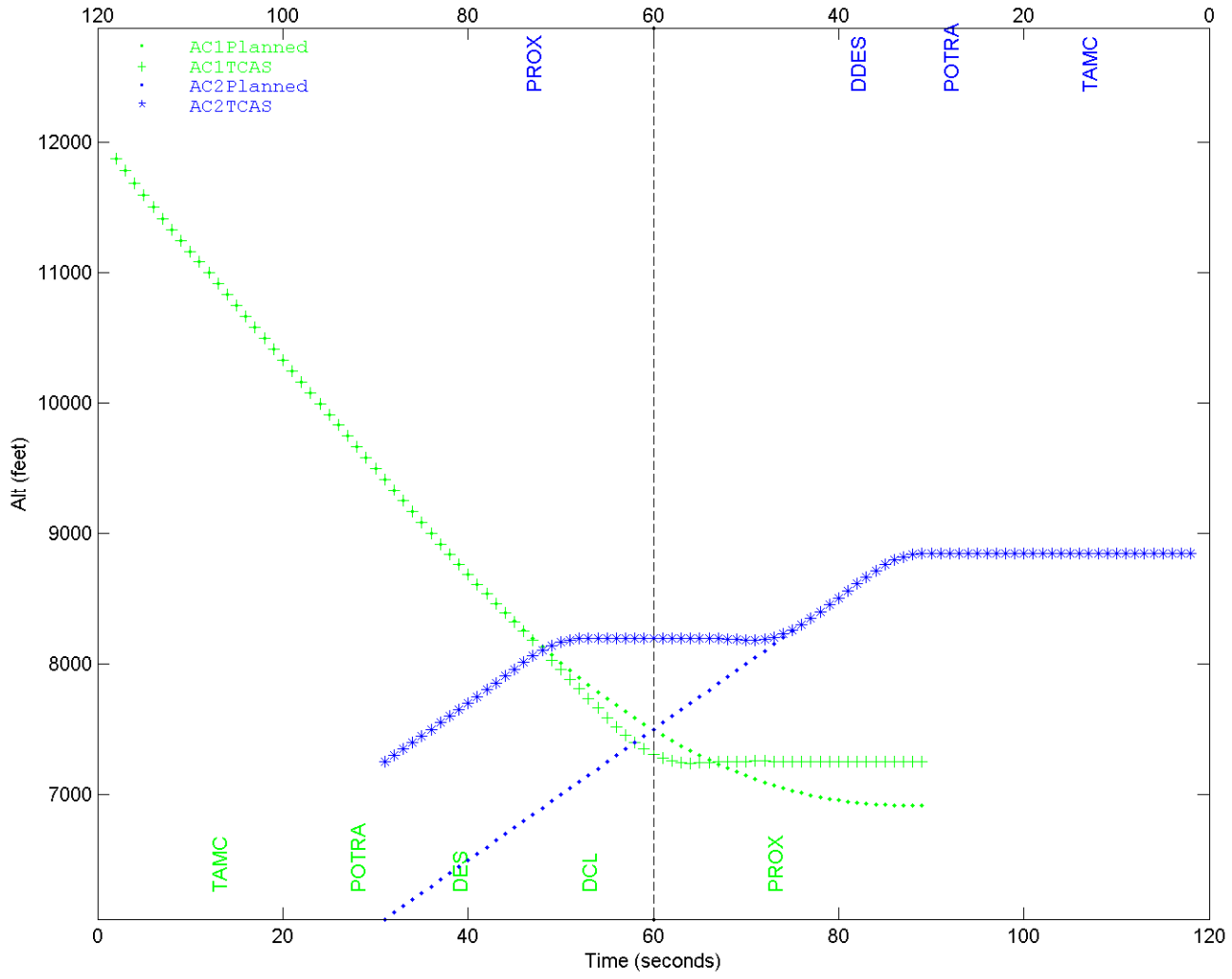


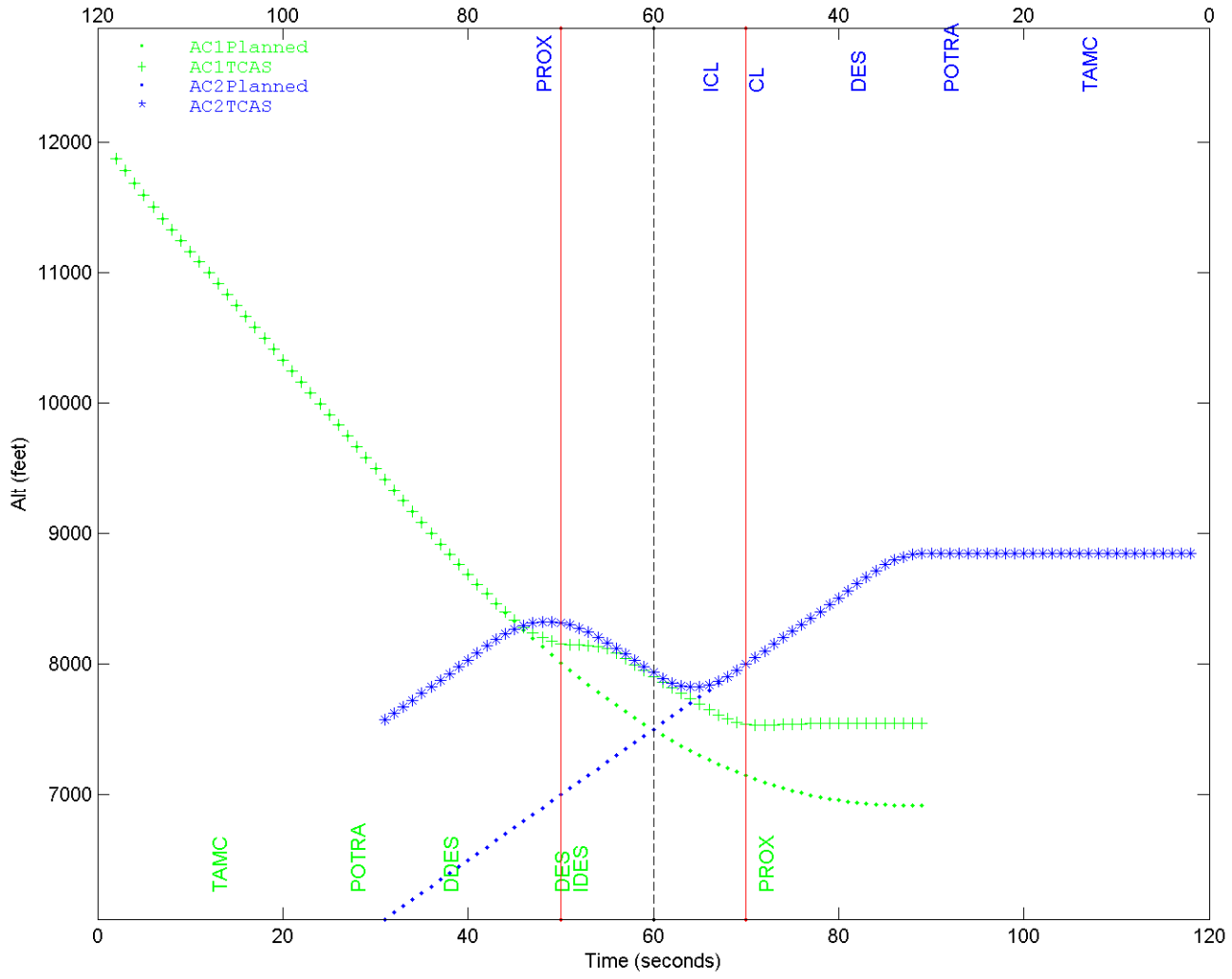
reit: 4813 cata: 818 simmode: 3271033 V7-100 Vs V7-100 C8H4813B



reit: 4813 cata: 818 simmode: 3275044 V7-25 Vs V7-25 C8H4813C







Change 7.1 Representative NMAC Ind01

Encounter Class : 5

Reit Number : 4213

NMAC Characterization

| | | |
|-------------------------------|------------------|-----|
| Number of encounters in group | 8 | |
| AC1 low ID | 8 | |
| Vertical tracker | 100 | ft |
| Planned separation | -500 | ft |
| AC1 rates : | 1000, 3000 | fpm |
| AC2 rates : | 3000, 5000 | fpm |
| AC1 acceleration : | 0 | g |
| AC2 acceleration : | 0.15, 0.25, 0.35 | g |
| AC1 acceleration time : | no acceleration | |
| AC2 acceleration time : | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |

Performance Statistics for entire encounter class

| <u>100 ft</u> | <u>25 ft</u> | |
|---------------|--------------|------------------------------|
| 95 | 95 | % of RAs were non-crossing |
| 100 | 100 | % of NMACs were non-crossing |
| 99 | 99 | % of RAs were not reversed |
| 68 | 94 | % of NMACs were not reversed |

Comments

At the time the reversal was chosen, this looked like a vertical chase scenario. Four of these encounters occur in the high altitude simulations. They are exactly the same encounter geometries that failed in the standard lower altitude simulations.


```

SIMULATION RESULTS FOR 6.04A, V7, and V7.1 JULY 2007 DATA ENCOUNTER C5L4213
LOGIC THRESHOLDS SL = 5  ZTHR = 600  TAUR = 25  TAUV = 25  ALIM = 350
PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,5000.0)
      AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -25 AC1 CPA ALT 7480
-----
  4213  6.04A RL VS 6.04A RH 5 327.84 CROSSING_ENC
  5 AC1: 3165022 TA :19 |PVMD| MCL @41 [NX]| ICL @46

10 AC2: 3265122 TA :19 |PVMD| POTRA@40 (DFD) | DES @41 [NX]| IDES @53

-----
  4213  V7 100 FT RL VS V7 100 FT RH 5 544.57 CROSSING_ENC
  5 AC1: 3171033 TA :19 |PVMD| CL @41[NX]| DDES @63

10 AC2: 3271133 TA :19 |PVMD| LC1 @40[NX]| DCL @45| DES @46| IDES @49| DCL @63

-----
  4213  V7 25 FT RL VS V7 25 FT RH 5 544.57 CROSSING_ENC
  5 AC1: 3175044 TA :19 |PVMD| CL @41[NX]| DDES @63

10 AC2: 3275144 TA :19 |PVMD| LC1 @40[NX]| DCL @45| DES @46| IDES @49| DCL @63

-----
  4213  V7.1 100 FT RL VS V7.1 100 FT RH 5 -29.90 CROSSING_ENC
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 5.00 REV_AVOID 02 TIME_REV_AVOID 0.0
  5 AC1:*REV*7171033 TA :19 |PVMD| CL @41[NX]| DES @52

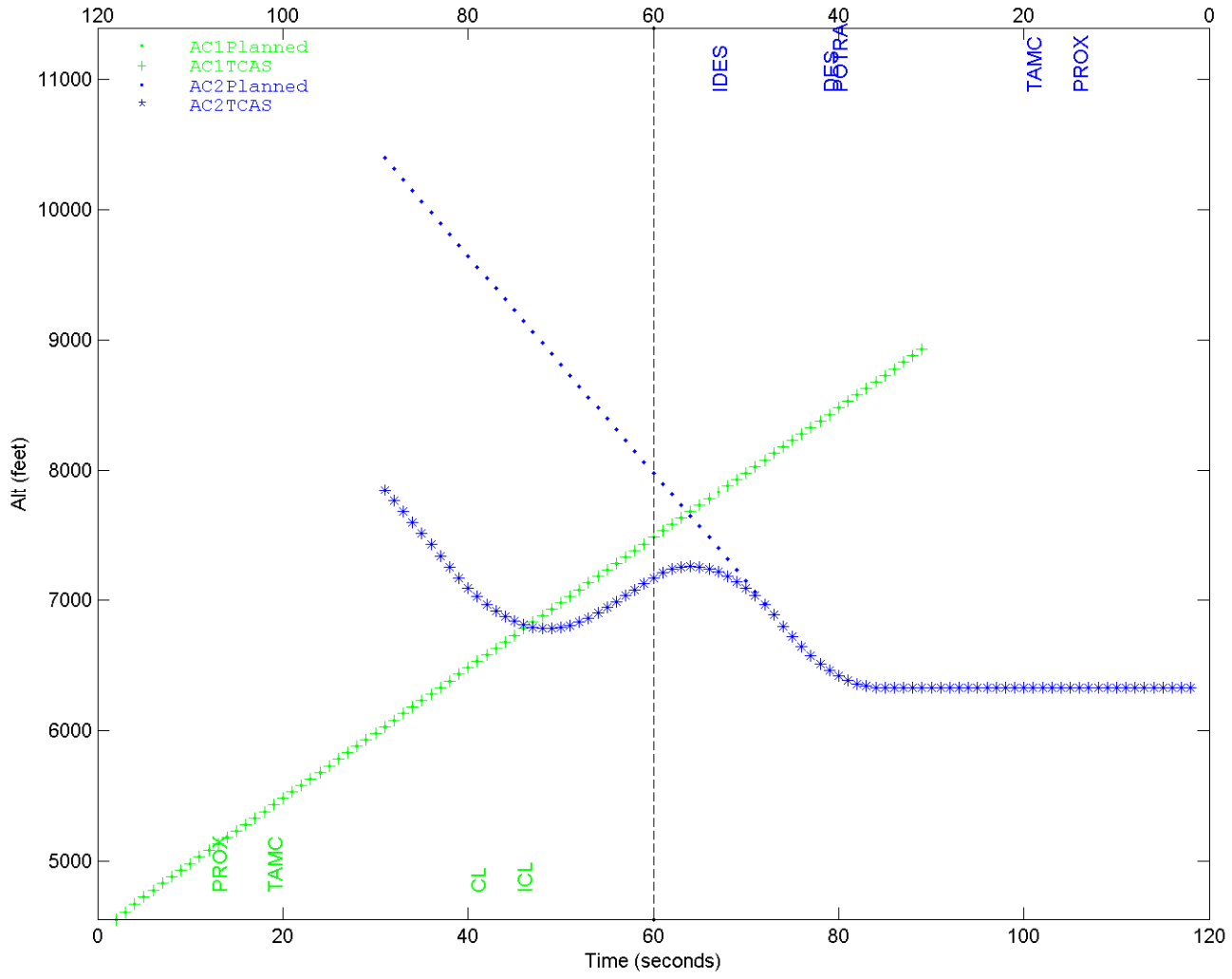
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 13.22 REV_AVOID 02 TIME_REV_AVOID 0.0
10 AC2:*REV*7271133 TA :19 |PVMD| DCL @40[NX]| DES @46| IDES @49| CL @52| ICL @54

-----
  4213  V7.1 25 FT RL VS V7.1 25 FT RH 5 544.57 CROSSING_ENC
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 5.00 REV_AVOID 02 TIME_REV_AVOID 0.0
  5 AC1: 7175044 TA :19 |PVMD| CL @41 [NX]| DDES @63

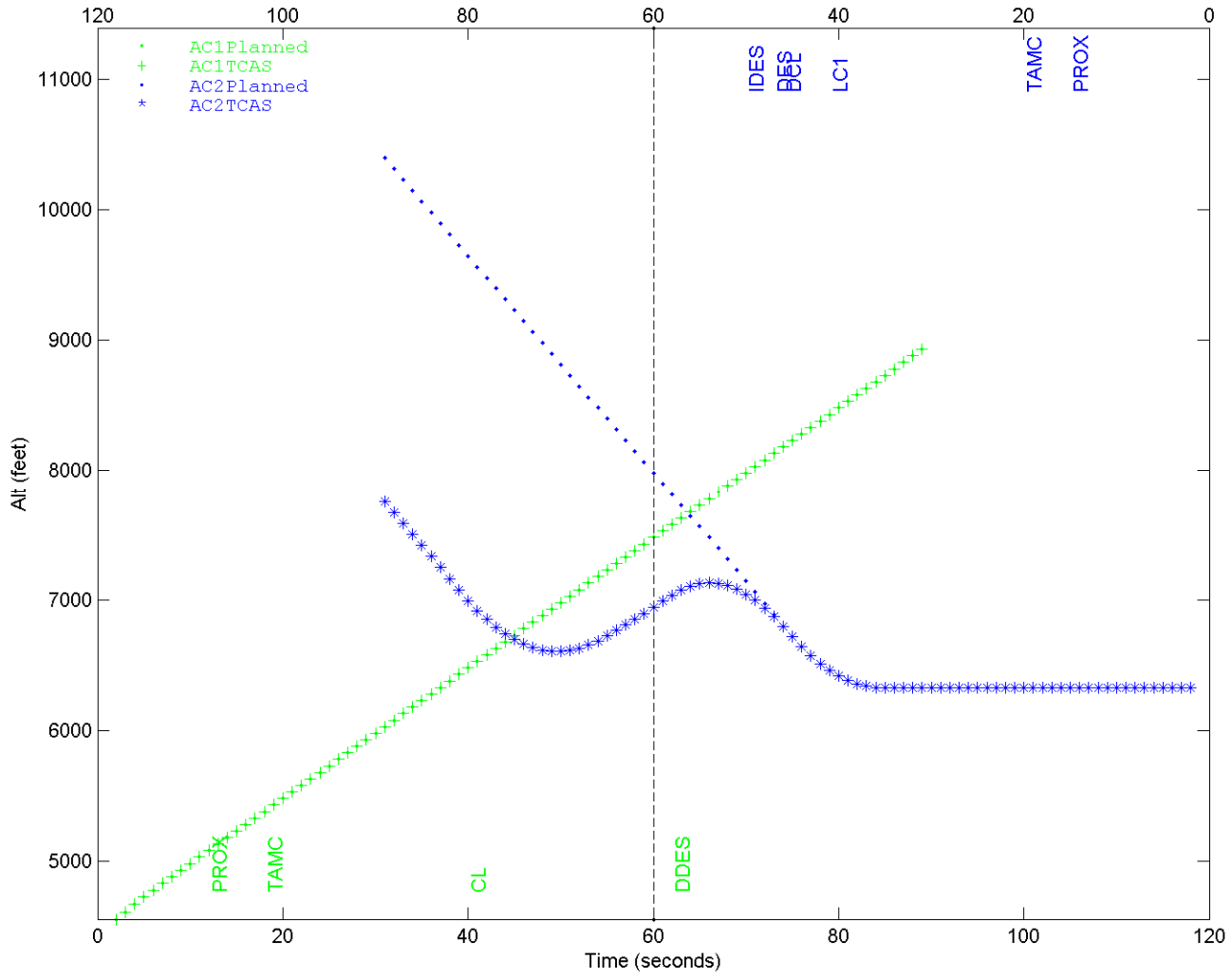
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 13.22 REV_AVOID 02 TIME_REV_AVOID 0.0
10 AC2: 7275144 TA :19 |PVMD| DCL @40 [NX]| DES @46 | IDES @49 | DCL @63

```

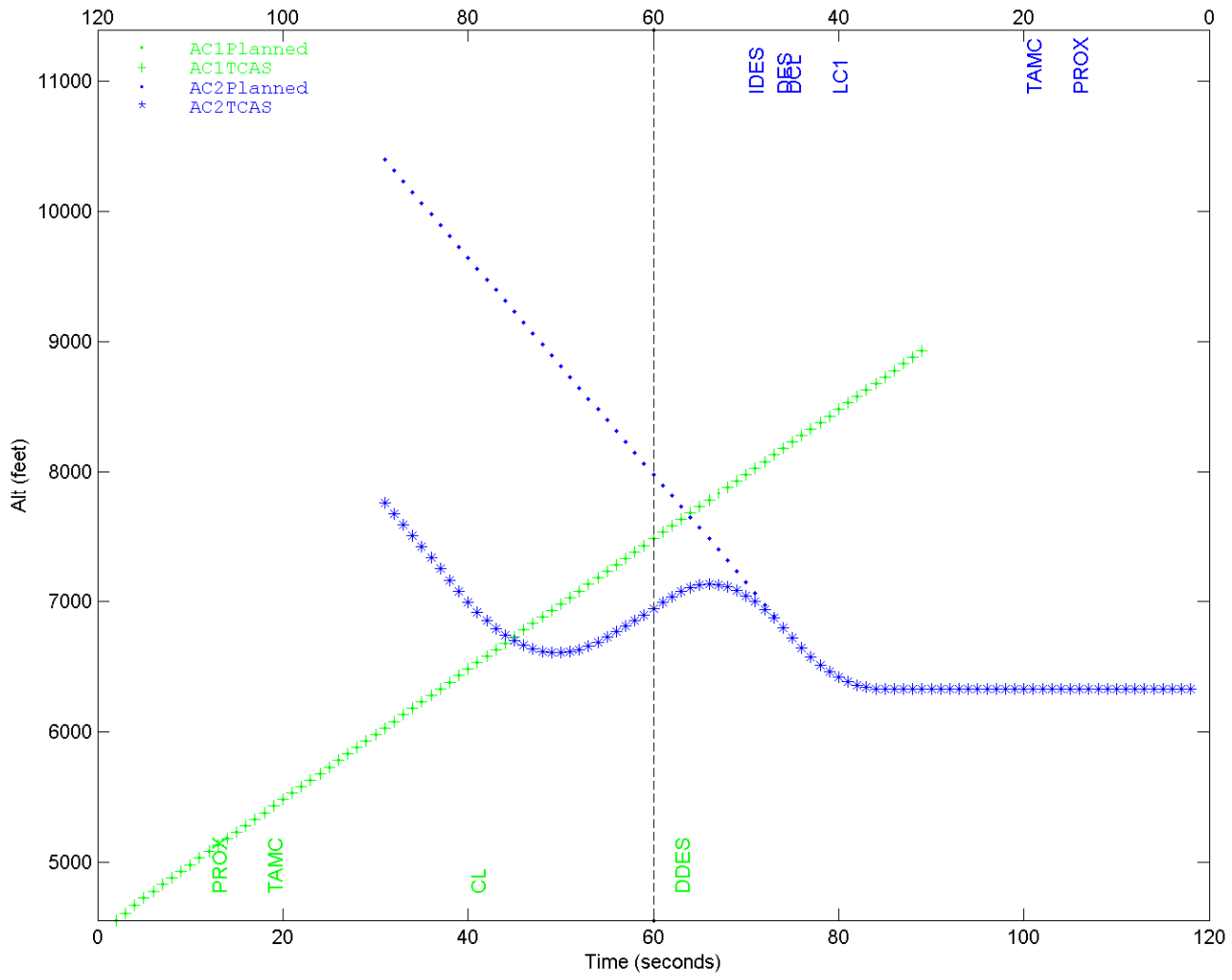
reit: 4213 cata: 515 simmode: 3165022 6.04A Vs 6.04A C5L4213A



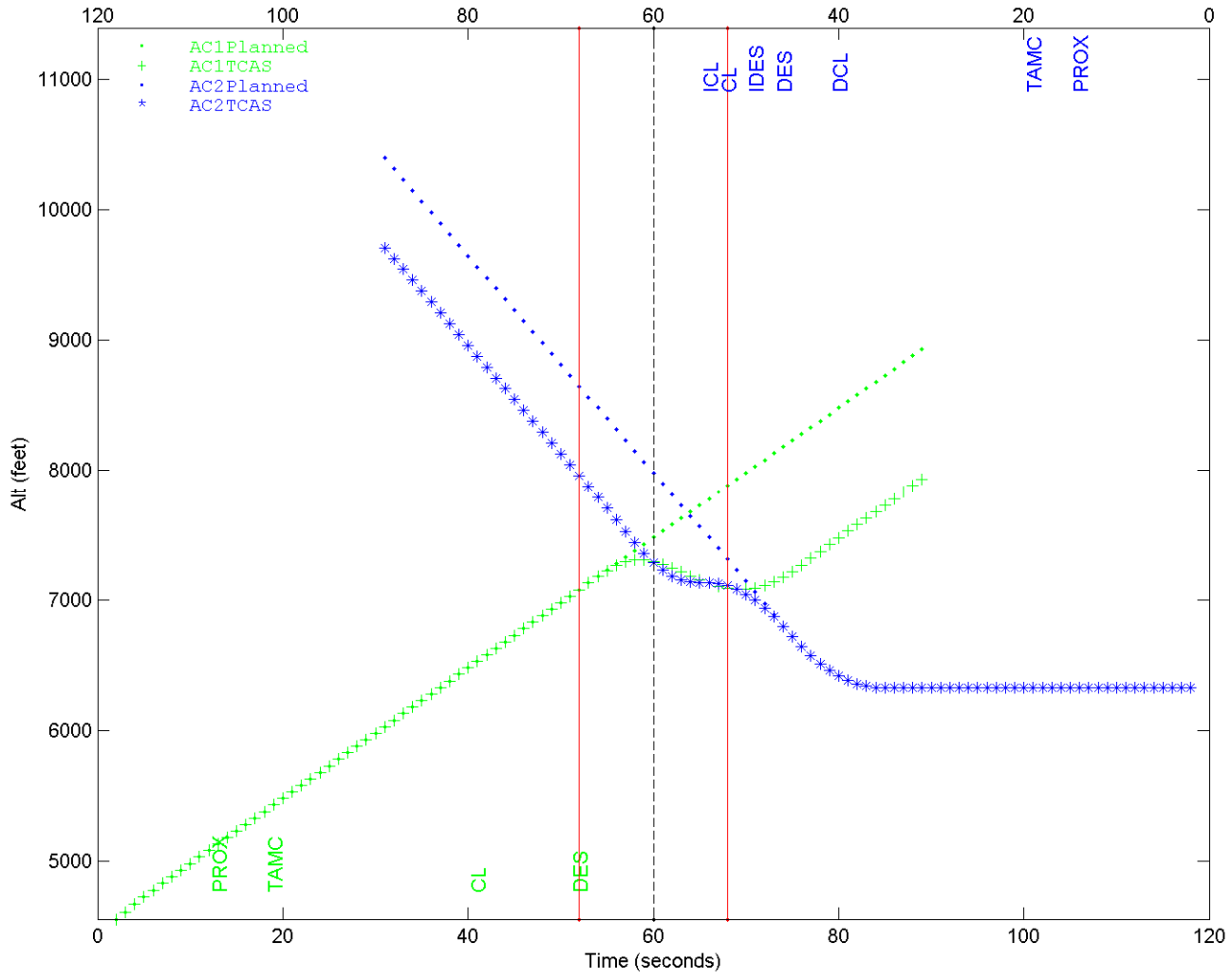
reit: 4213 cata: 515 simmode: 3171033 V7-100 Vs V7-100 C5L4213B



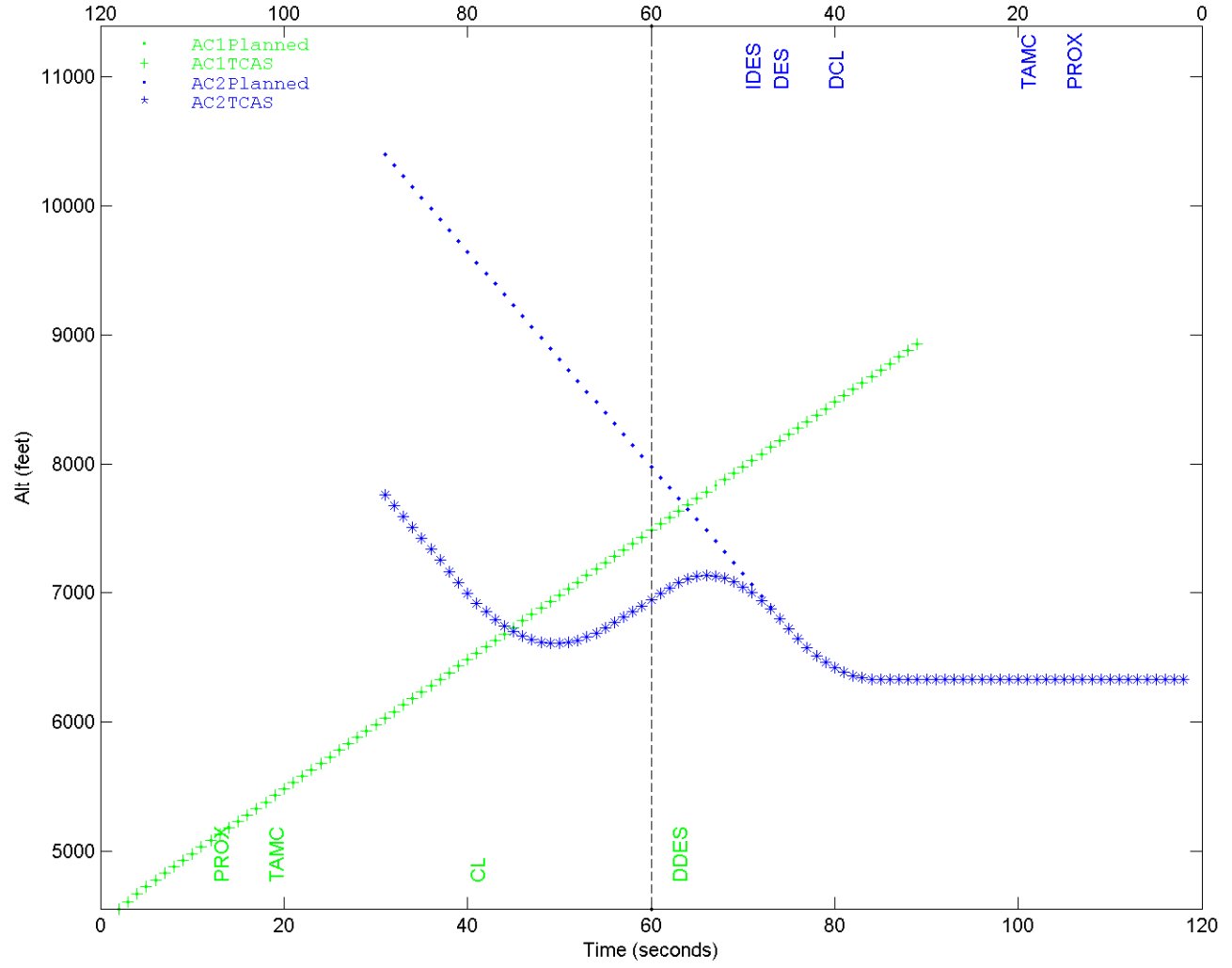
reit: 4213 cata: 515 simmode: 3175044 V7-25 Vs V7-25 C5L4213C



reit: 4213 cata: 515 simmode: 7171033 V7.1-100 Vs V7.1-100 C5L4213D



reit: 4213 cata: 515 simmode: 7175044 V7.1-25 Vs V7.1-25 C5L4213E



Change 7.1 Representative NMAC Ind02

Encounter Class : 6

Reit Number : 3409

NMAC Characterization

| | | |
|-------------------------------|-----------------|-----|
| Number of encounters in group | 2 | |
| AC1 low ID | 0 | |
| Vertical tracker | 100 | ft |
| Planned separation | -750 | ft |
| AC1 rates : | -3000 | fpm |
| AC2 rates : | -5000 | fpm |
| AC1 acceleration : | 0 | g |
| AC2 acceleration : | 0.25 | g |
| AC1 acceleration time : | no acceleration | |
| AC2 acceleration time : | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |

Performance Statistics for entire encounter class

| <u>100 ft</u> | <u>25 ft</u> | |
|---------------|--------------|------------------------------|
| 84 | 85 | % of RAs were non-crossing |
| 87 | 67 | % of NMACs were non-crossing |
| 99 | 99 | % of RAs were not reversed |
| 95 | 97 | % of NMACs were not reversed |

Comments

Low ID AC2 initiated the reversal. At this time AC2 was below AC1 and descending.

SIMULATION RESULTS FOR 6.04A, V7, and V7.1 JULY 2007 DATA ENCOUNTER C6H3409
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-3000.0,-3000.0) AC2 RATES(-5000.0,0.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -30 AC1 CPA ALT 7480

 3409 6.04A RH VS 6.04A RL 6 835.25 CROSSING_ENC
 10 AC1: 3165122 TA :13 |PVMD| CL @38 [NX]| LD2 @52
 5 AC2: 3265022 TA :13 |PVMD| MDES @36 [NX]| DES @37 | IDES @40 | DES @57

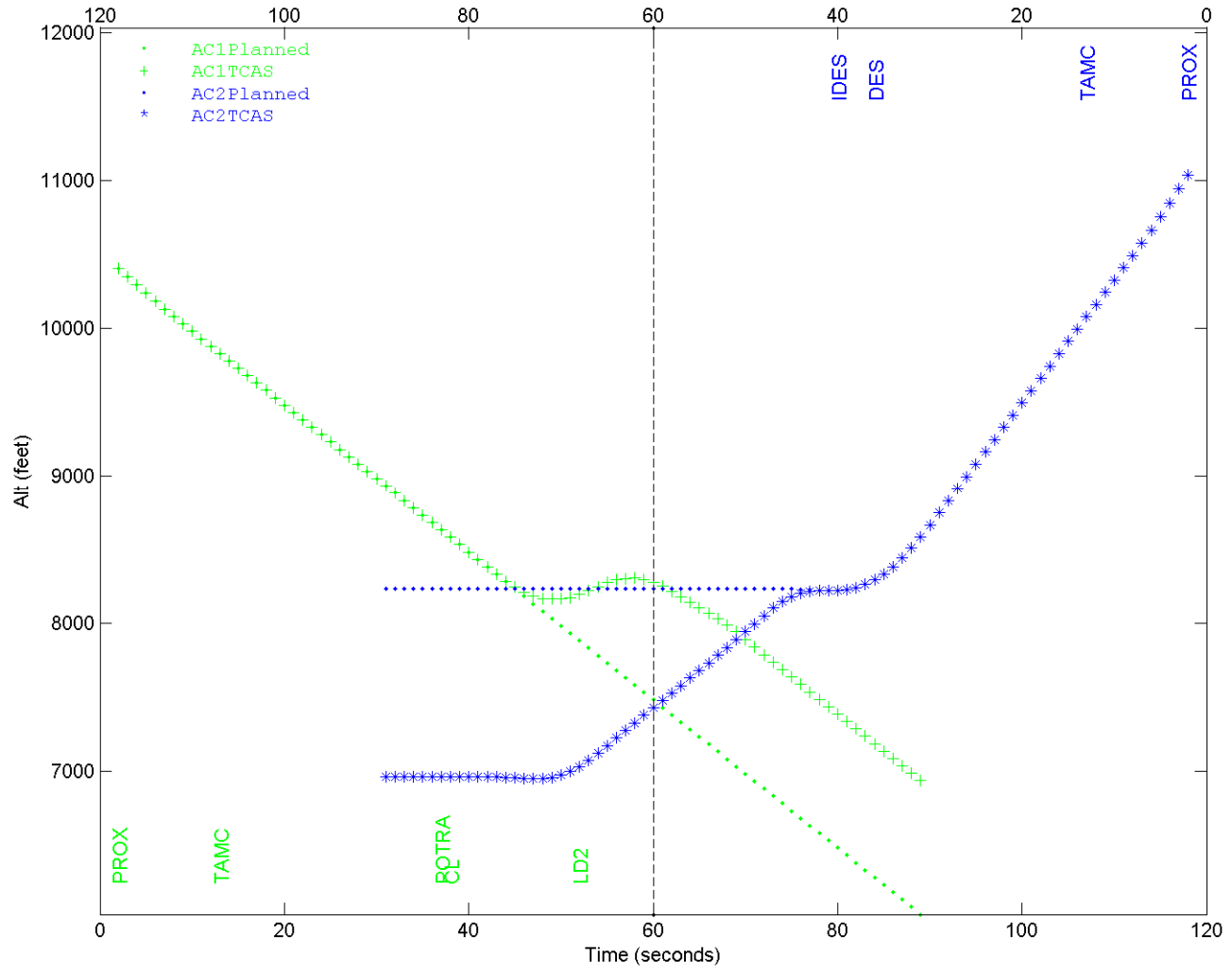
 3409 V7 100 FT RH VS V7 100 FT RL 6 849.10 CROSSING_ENC
 10 AC1: 3171133 TA :13 |PVMD| LD5 @37 [NX]| DDES @43 | CL @44 | DDES @54
 5 AC2: 3271033 TA :13 |PVMD| DES @36 [NX]| DCL @52

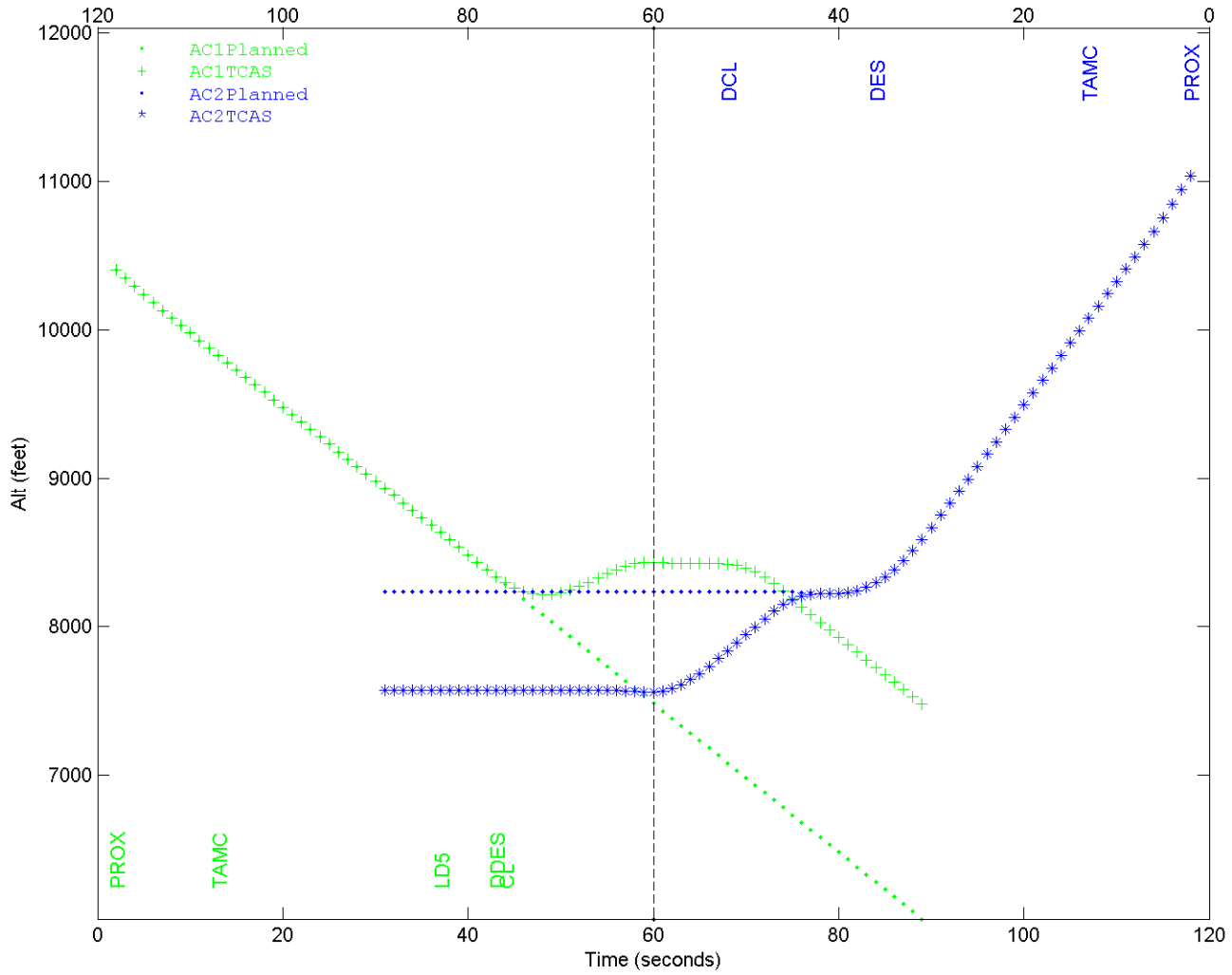
 3409 V7 25 FT RH VS V7 25 FT RL 6 968.34 CROSSING_ENC
 10 AC1: 3175144 TA :13 |PVMD| LD1 @35 [NX]| LD5 @40 | CL @41 | DDES @51
 5 AC2: 3275044 TA :13 |PVMD| DES @36 [NX]| DCL @53

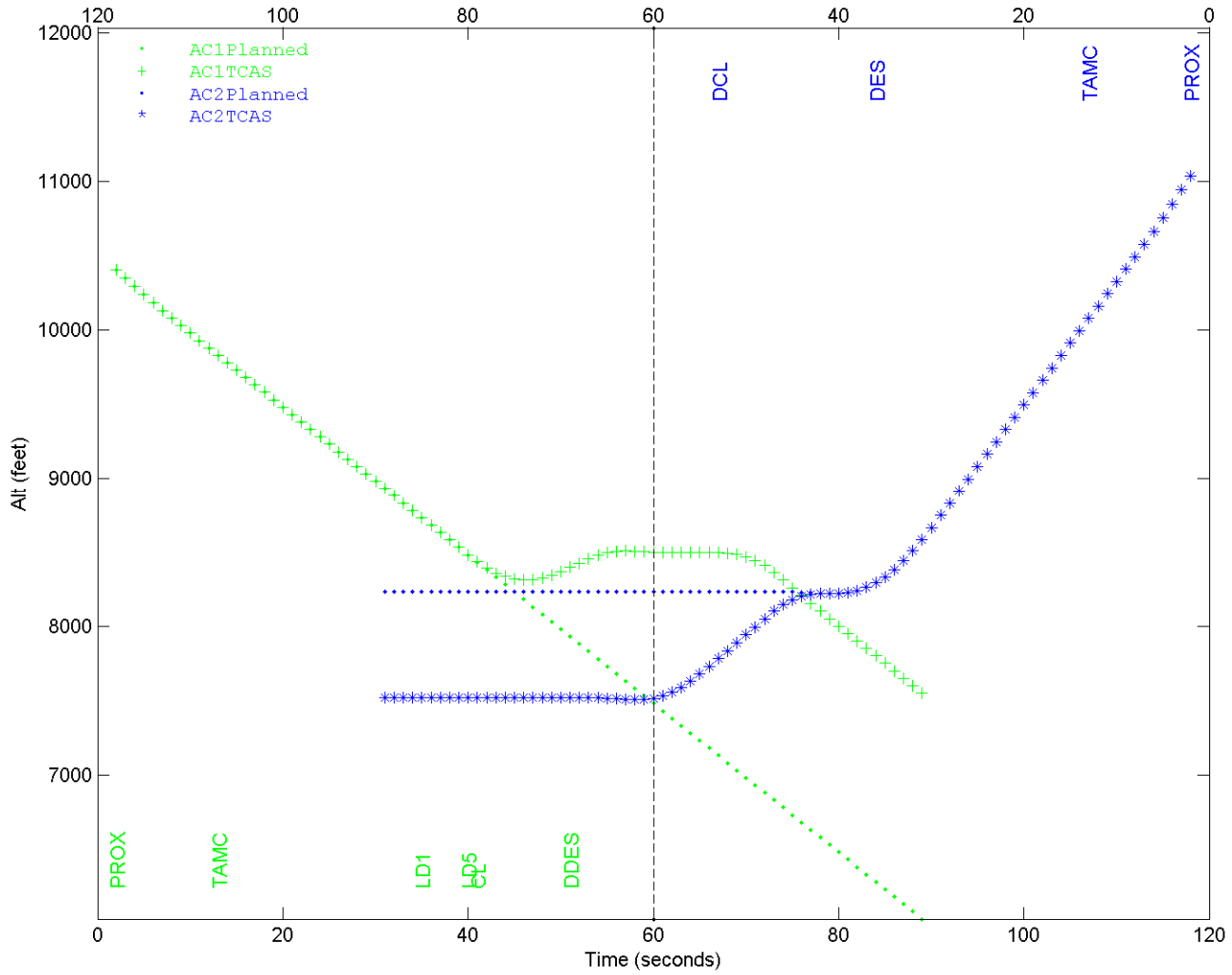
 3409 V7.1 100 FT RH VS V7.1 100 FT RL 6 68.12 CROSSING_ENC
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 11.25 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC1:*REV*7171133 TA :13 |PVMD| DDES @37 [NX]| CL @44 | DES @49 | IDES @53
 CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 10.12 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC2:*REV*7271033 TA :13 |PVMD| DES @36 [NX]| CL @48 | ICL @51

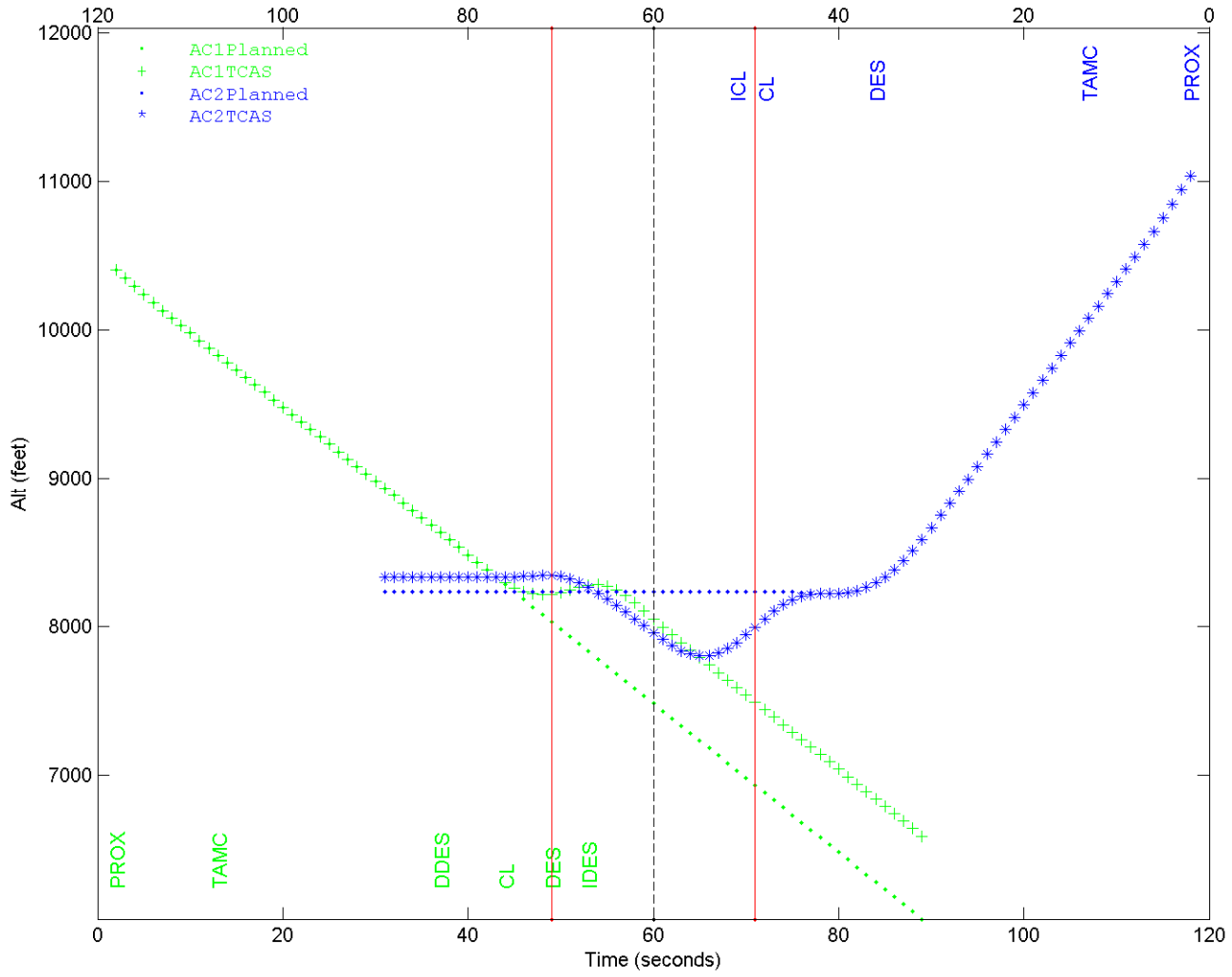
 3409 V7.1 25 FT RH VS V7.1 25 FT RL 6 968.34 CROSSING_ENC
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 11.25 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC1: 7175144 TA :13 |PVMD| DDES @35 [NX]| CL @41 | DDES @51
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 10.12 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC2: 7275044 TA :13 |PVMD| DES @36 [NX]| DCL @53

reit: 3409 cata: 616 simmode: 3165122 6.04A Vs 6.04A C6H3409A

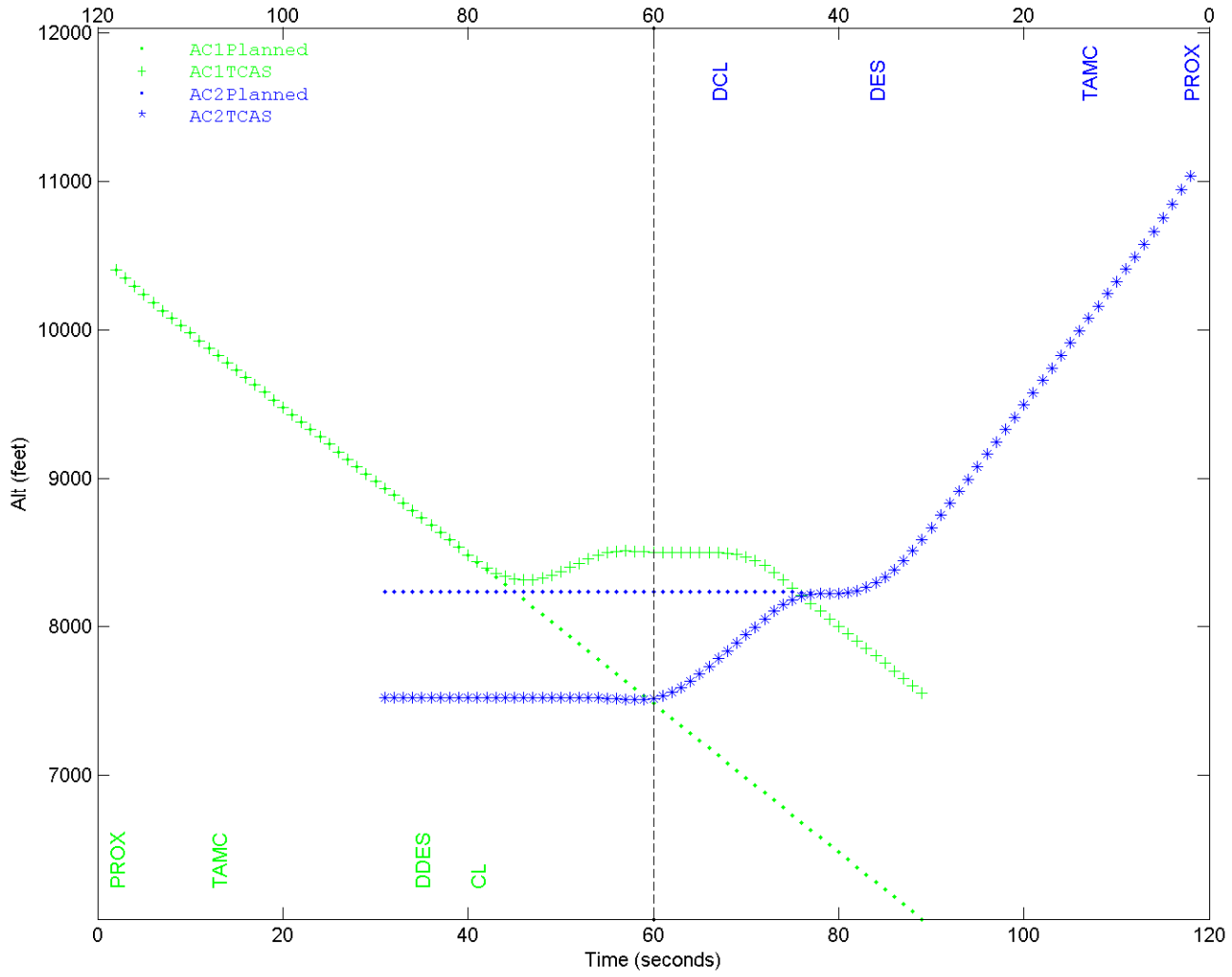








reit: 3409 cata: 616 simmode: 7275044 V7.1-25 Vs V7.1-25 C6H3409E



Change 7.1 Representative NMAC Ind03

Encounter Class : 7

Reit Number : 749

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 1 |
| AC1 low ID | 1 |
| Vertical tracker | 100 |
| Planned separation | -750 ft |
| AC1 rates : | 3000 fpm |
| AC2 rates : | 5000 fpm |
| AC1 acceleration : | 0.05 g |
| AC2 acceleration : | 0.15 g |
| AC1 acceleration time : | CPA – 25 sec |
| AC2 acceleration time : | CPA – 25 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| <u>100 ft</u> | <u>25 ft</u> | |
|---------------|--------------|------------------------------|
| 97 | 98 | % of RAs were non-crossing |
| 100 | 100 | % of NMACs were non-crossing |
| 99 | 99 | % of RAs were not reversed |
| 74 | 78 | % of NMACs were not reversed |

Comments

AC2 with higher vertical rate had DES. At the time of the reversal this looked like a vertical chase scenario.

Same encounter with 25 foot tracker picked different sense initial commands with vastly different outcome.

SIMULATION RESULTS FOR 6.04A, V7, and V7.1 JULY 2007 DATA ENCOUNTER C7L749
 LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
 PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES (0.0,3000.0) AC2 RATES(0.0,5000.0)
 AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL 0.15g @ CPA -25 AC1 CPA ALT 3700

 749 6.04A RL VS 6.04A RH 7 645.84 CROSSING_ENC
 5 AC1: 3165022 TA :30 |TAUR| CL @40 [NX]| ICL @44 | DDES @57
 10 AC2: 3265122 TA :30 |TAUR| DES @40 [NX]| LC1 @55

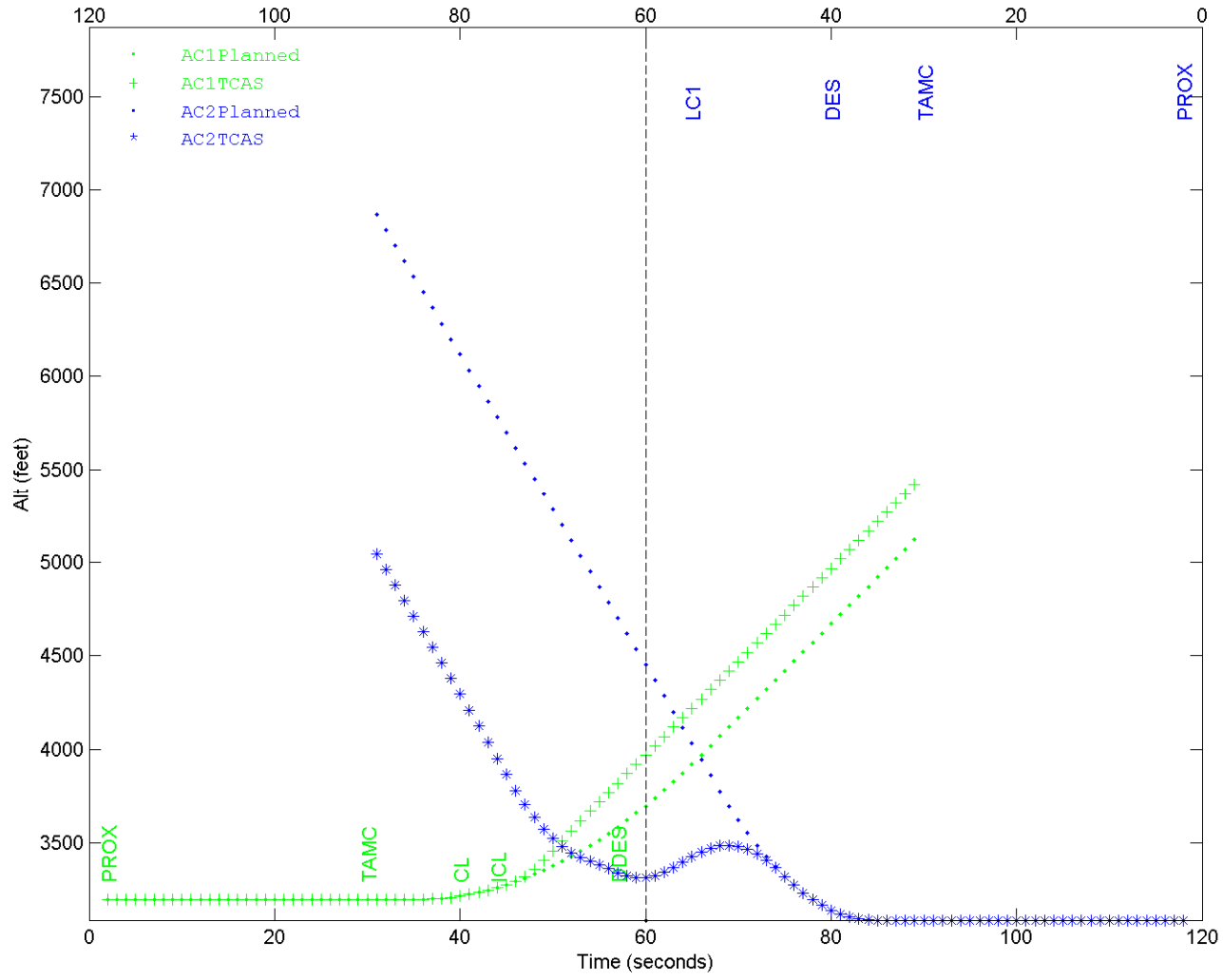
 749 V7 100 FT RL VS V7 100 FT RH 7 659.71 CROSSING_ENC
 5 AC1: 3171033 TA :30 |TAUR| CL @40 [NX]| ICL @45 | DDES @57
 10 AC2: 3271133 TA :30 |TAUR| DES @40 [NX]| DCL @56

 749 V7 25 FT RL VS V7 25 FT RH 7 -1255.91 CROSSING_ENC
 5 AC1: 3175044 TA :30 |TAUR| POTRA@40 | DES @41 [NX]| DCL @51
 10 AC2: 3275144 TA :30 |TAUR| POTRA@40 | CL @41 [NX]| DDES @55

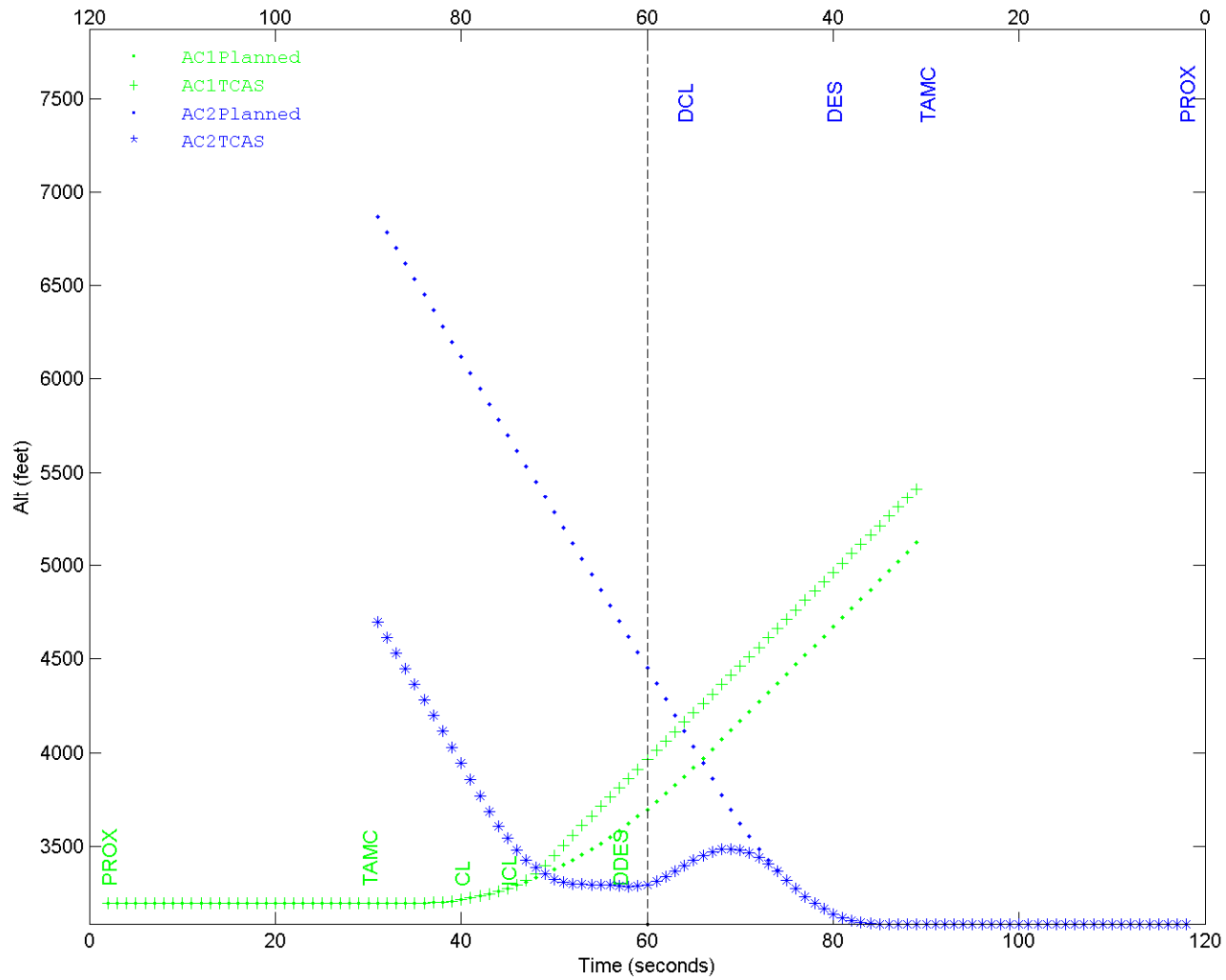
 749 V7.1 100 FT RL VS V7.1 100 FT RH 7 66.58 CROSSING_ENC
 CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 6.48 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC1:*REV*7171033 TA :30 |TAUR| CL @40 [NX]| ICL @45 | DES @51 | IDES @54
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 13.06 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC2:*REV*7271133 TA :30 |TAUR| DES @40 [NX]| CL @51 | ICL @53

 749 V7.1 25 FT RL VS V7.1 25 FT RH 7 -1255.91 CROSSING_ENC
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 9.97 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC1: 7175044 TA :30 |TAUR| POTRA@40 | DES @41 [NX]| DCL @51
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 7.42 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC2: 7275144 TA :30 |TAUR| POTRA@40 | CL @41 [NX]| DDES @55

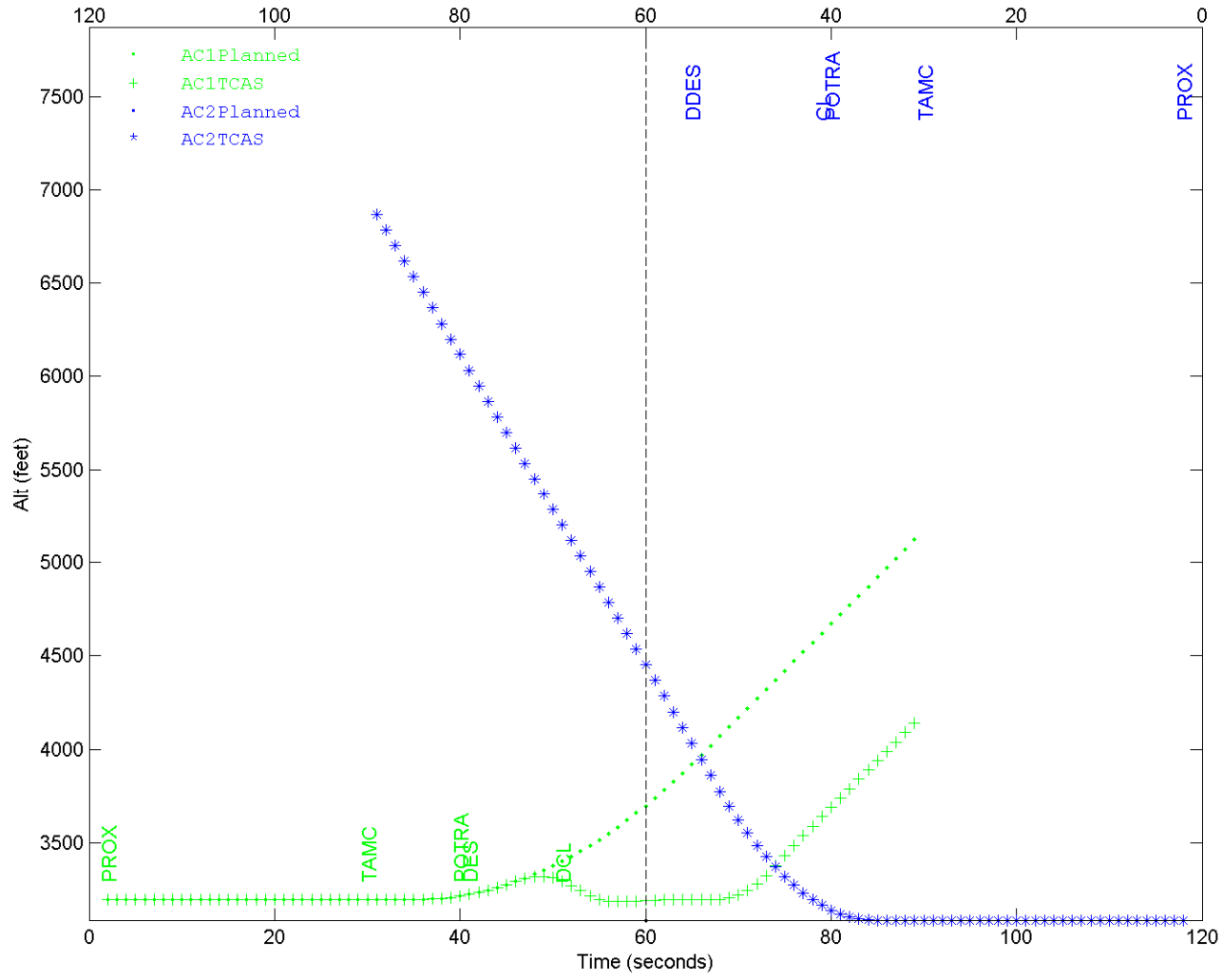
reit: 749 cata: 717 simmode: 3165022 6.04A Vs 6.04A C7L749A



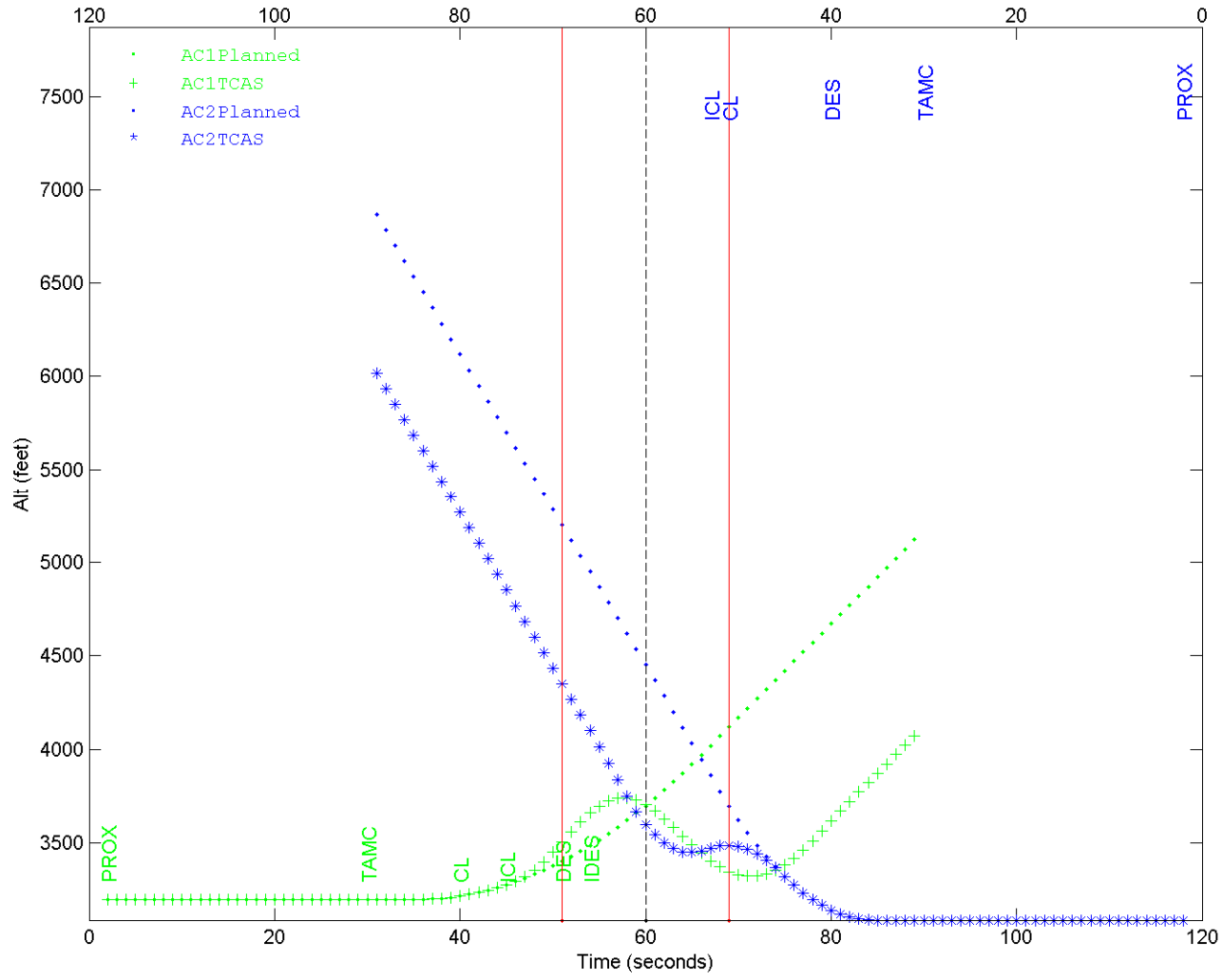
reit: 749 cata: 717 simmode: 3171033 V7-100 Vs V7-100 C7L749B

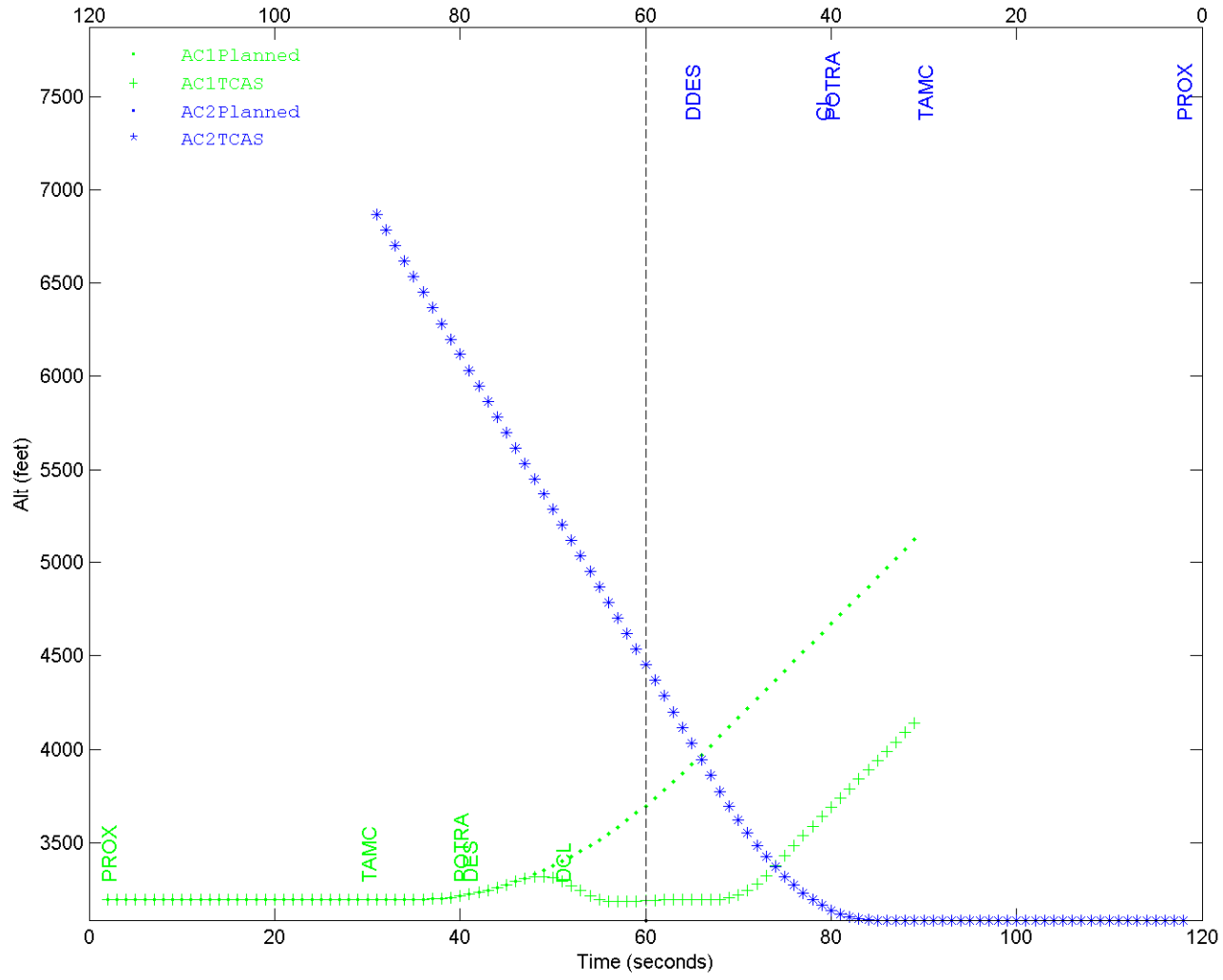


reit: 749 cata: 717 simmode: 3175044 V7-25 Vs V7-25 C7L749C



reit: 749 cata: 717 simmode: 7171033 V7.1-100 Vs V7.1-100 C7L749D





Change 7.1 Representative NMAC Ind04

Encounter Class : 8

Reit Number : 1422

NMAC Characterization

| | | |
|-------------------------------|-------------|-----|
| Number of encounters in group | 5 | |
| AC1 low ID | 5 | |
| Vertical tracker | 100 | ft |
| Planned separation | -750, 750 | ft |
| AC1 rates : | -1000 | fpm |
| AC2 rates : | -3000, 3000 | fpm |
| AC1 acceleration : | 0.15, 0.25 | g |
| AC2 acceleration : | -0.35, 0.35 | g |
| AC1 acceleration time : | CPA – 25 | sec |
| AC2 acceleration time : | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |

Performance Statistics for entire encounter class

| <u>100 ft</u> | <u>25 ft</u> | |
|---------------|--------------|------------------------------|
| 93 | 93 | % of RAs were non-crossing |
| 100 | 100 | % of NMACs were non-crossing |
| 97 | 98 | % of RAs were not reversed |
| 86 | 95 | % of NMACs were not reversed |

Comments

Higher vertical rate AC2 received positive RA in opposite sense.
 At time reversal was selected AC2 barely beginning to level off.
 This appeared to be an SA01 encounter.
 Four of the encounters ended with +/- 94 feet separation.

SIMULATION RESULTS FOR 6.04A, V7, and V7.1 JULY 2007 DATA ENCOUNTER C8L1422
 LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
 PLANNED ENCOUNTER. SEP = 750.0 AC1 RATES(-1000.0,0.0) AC2 RATES(0.0,-3000.0)
 AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.35g @ CPA -20 AC1 CPA ALT 3700

 1422 6.04A RL VS 6.04A RH 8 -624.73 CROSSING_ENC
 5 AC1: 3165022 TA :30 |TAUR| DES @40[NX]| IDES @47 | MDES @62
 10 AC2: 3265122 TA :30 |TAUR| DDES @40[NX]| DDES @42 | CL @45 | ICL @51 | MCL @61

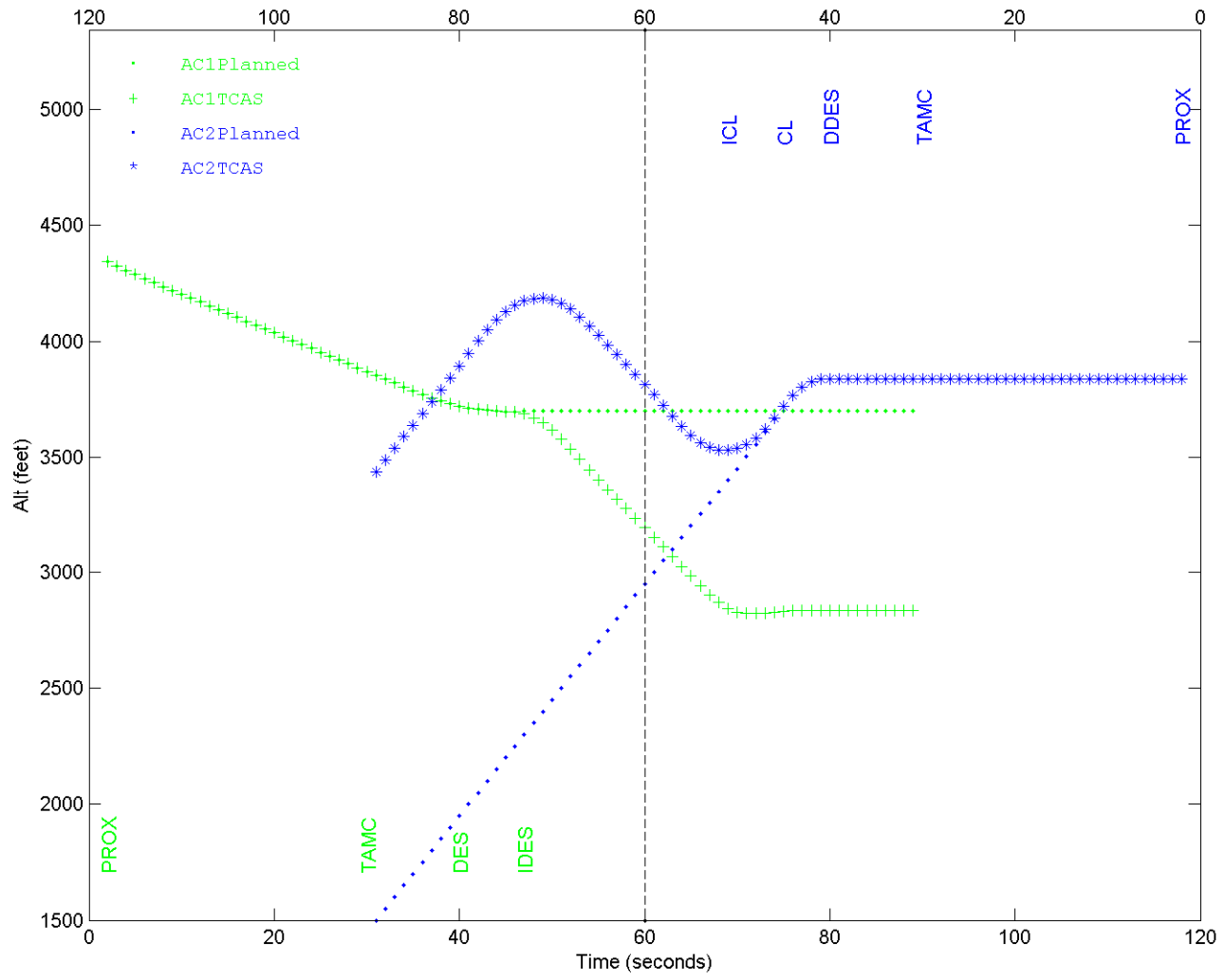
 1422 V7 100 FT RL VS V7 100 FT RH 8 -617.01 CROSSING_ENC
 5 AC1: 3171033 TA :30 |TAUR| DES @40[NX]| IDES @48 | DCL @63
 10 AC2: 3271133 TA :30 |TAUR| DDES @40[NX]| DDES @42 | CL @44| ICL @50| DDES @63

 1422 V7 25 FT RL VS V7 25 FT RH 8 -517.48 CROSSING_ENC
 5 AC1: 3175044 TA :30 |TAUR| DES @40[NX]| IDES @48 | DCL @63
 10 AC2: 3275144 TA :30 |TAUR| DDES @40[NX]| CL @41 | DDES @63

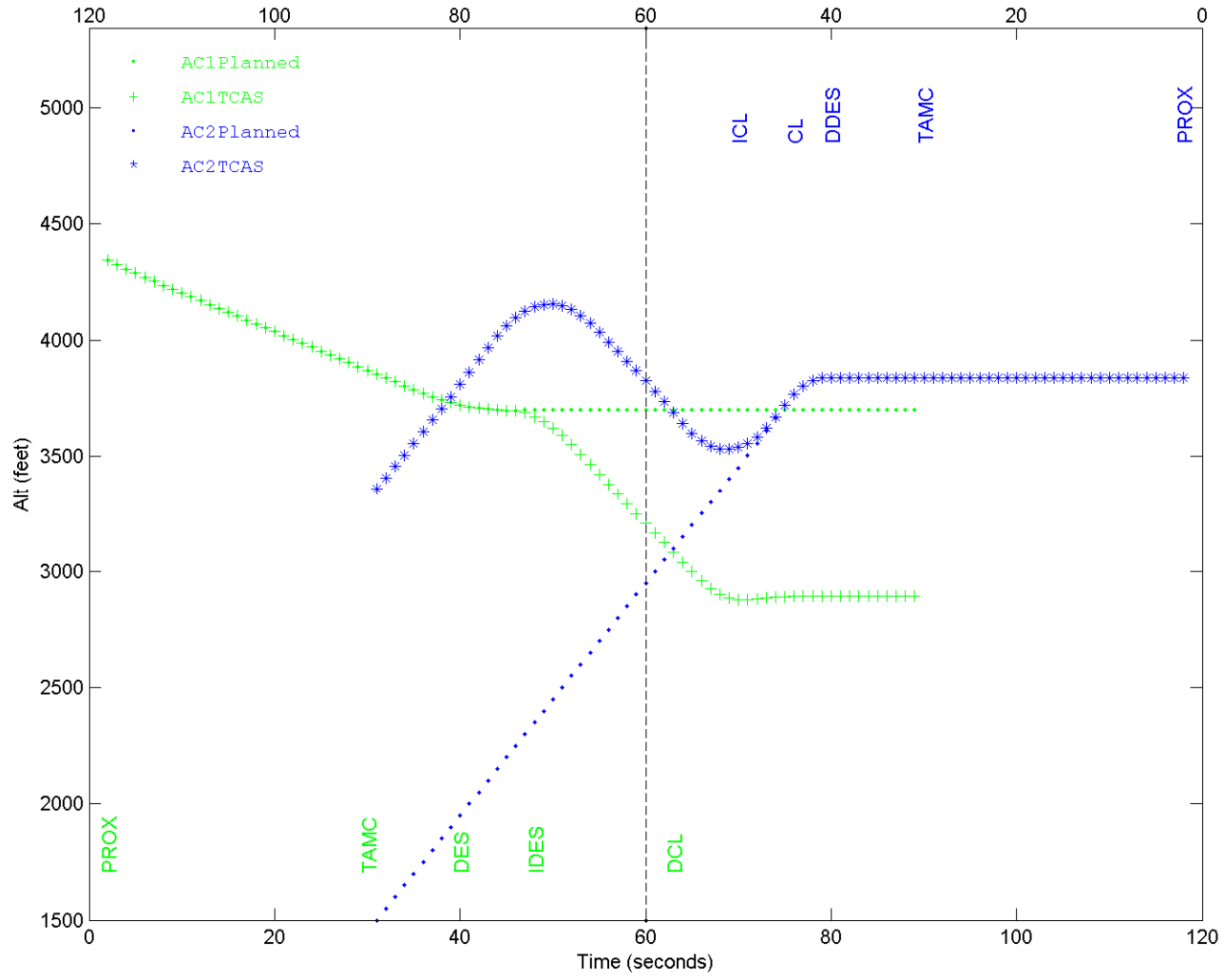
 1422 V7.1 100 FT RL VS V7.1 100 FT RH 8 72.05 CROSSING_ENC
 CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 7.69 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC1:*REV*7171033 TA :30 |TAUR| DES @40[NX]| IDES @48 | CL @51 | ICL @53
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 12.31 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC2:*REV*7271133 TA :30 |TAUR| DDES @40[NX]| DDES @42 | CL @44| ICL @50| DES@51

 1422 V7.1 25 FT RL VS V7.1 25 FT RH 8 -517.48 CROSSING_ENC
 CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 7.69 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC1: 7175044 TA :30 |TAUR| DES @40 [NX]| IDES @48 | DCL @63
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 12.31 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC2: 7275144 TA :30 |TAUR| DDES @40 [NX]| CL @41 | DDES @63

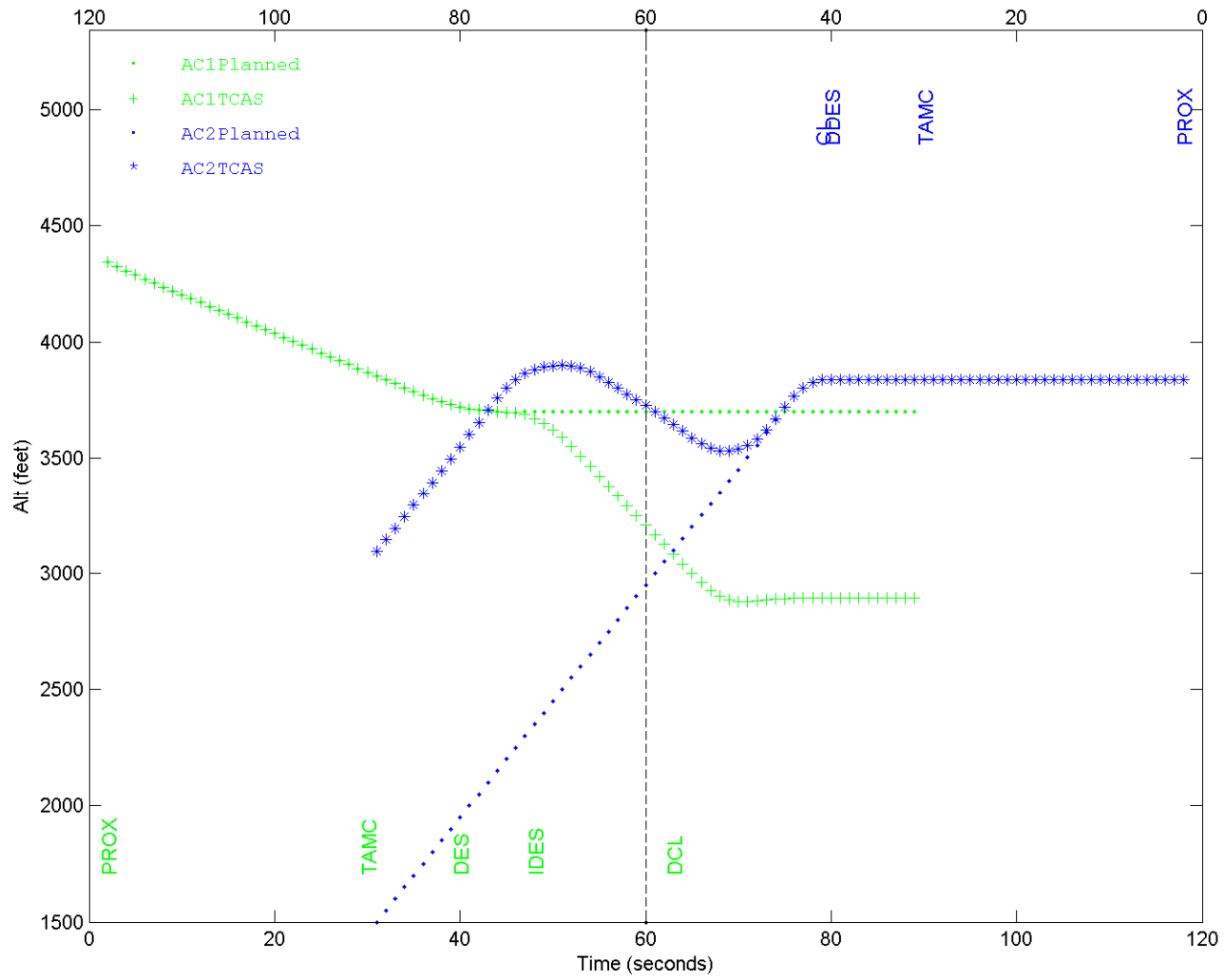
reit: 1422 cata: 818 simmode: 3165022 6.04A Vs 6.04A C8L1422A



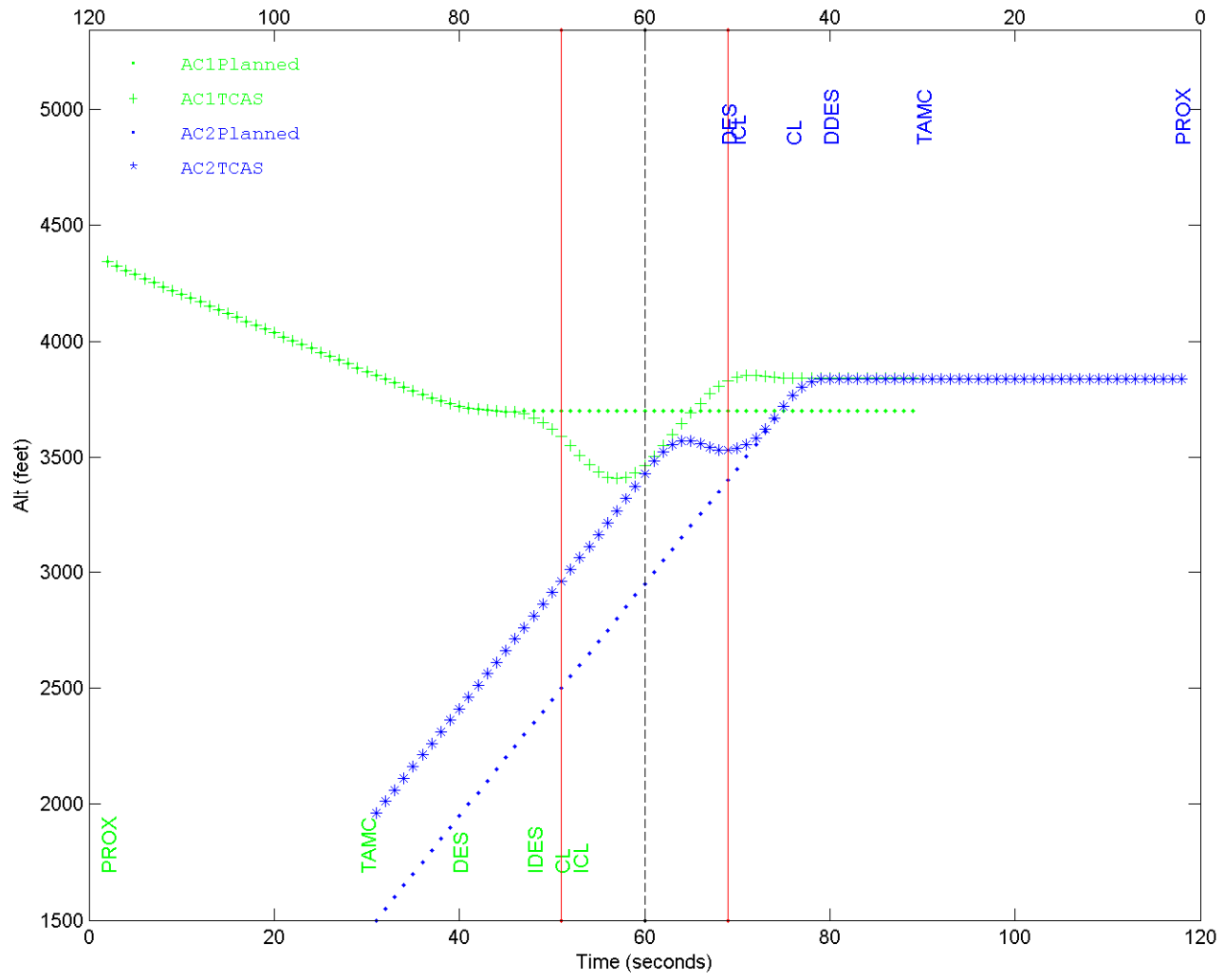
reit: 1422 cata: 818 simmode: 3171033 V7-100 Vs V7-100 C8L1422B

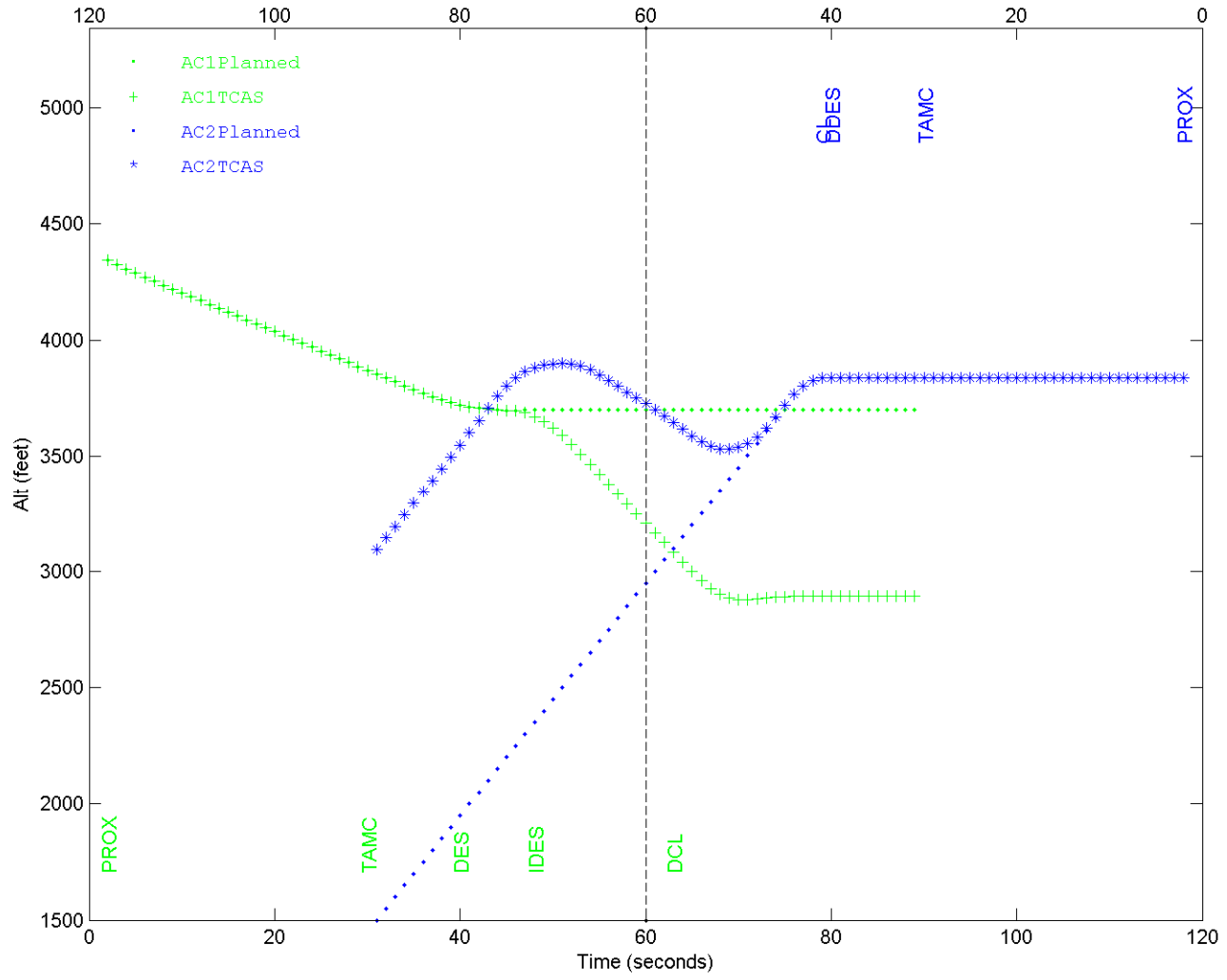


reit: 1422 cata: 818 simmode: 3175044 V7-25 Vs V7-25 C8L1422C



reit: 1422 cata: 818 simmode: 7171033 V7.1-100 Vs V7.1-100 C8L1422D





Change 7.1 Representative NMAC Ind05

Encounter Class : 9

Reit Number : 5644

NMAC Characterization

| | | |
|-------------------------------|--------------|-----|
| Number of encounters in group | 4 | |
| AC1 low ID | 0 | |
| Vertical tracker | 100 | ft |
| Planned separation | 750, 1000 | ft |
| AC1 rates : | 5000 | fpm |
| AC2 rates : | 5000 | fpm |
| AC1 acceleration : | -0.05 | g |
| AC2 acceleration : | -0.15, -0.25 | g |
| AC1 acceleration time : | CPA – 25 | sec |
| AC2 acceleration time : | CPA – 25, 30 | sec |
| Encounters with reversed RAs | 100 | % |

Performance Statistics for entire encounter class

| <u>100 ft</u> | <u>25 ft</u> | |
|---------------|--------------|------------------------------|
| 72 | 72 | % of RAs were non-crossing |
| 44 | 0 | % of NMACs were non-crossing |
| 93 | 93 | % of RAs were not reversed |
| 97 | 99 | % of NMACs were not reversed |

Comments

AC2 with low ID initiated reversal.
 At the time of reversal AC1 reducing climb rate, almost level.
 Looked like vertical chase scenario (allowing for tracker lag).

SIMULATION RESULTS FOR 6.04A, V7, and V7.1 JULY 2007 DATA ENCOUNTER C9H5644
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 1000.0 AC1 RATES(5000.0,0.0) AC2 RATES(5000.0,0.0)
 AC1 ACCEL -0.05g @ CPA -25 AC2 ACCEL -0.25g @ CPA -30 AC1 CPA ALT 7500

 5644 6.04A RH VS 6.04A RL 9 -990.41 NON_CROSSING_ENC
 10 AC1: 3165122 TA :25 |TAUR| POTRA@34 (DFD) | DES @35 [NX]| LC2 @50
 5 AC2: 3265022 TA :24 |TAUR| MCL @34 [NX]| CL @35 | ICL @40 | LD1 @53

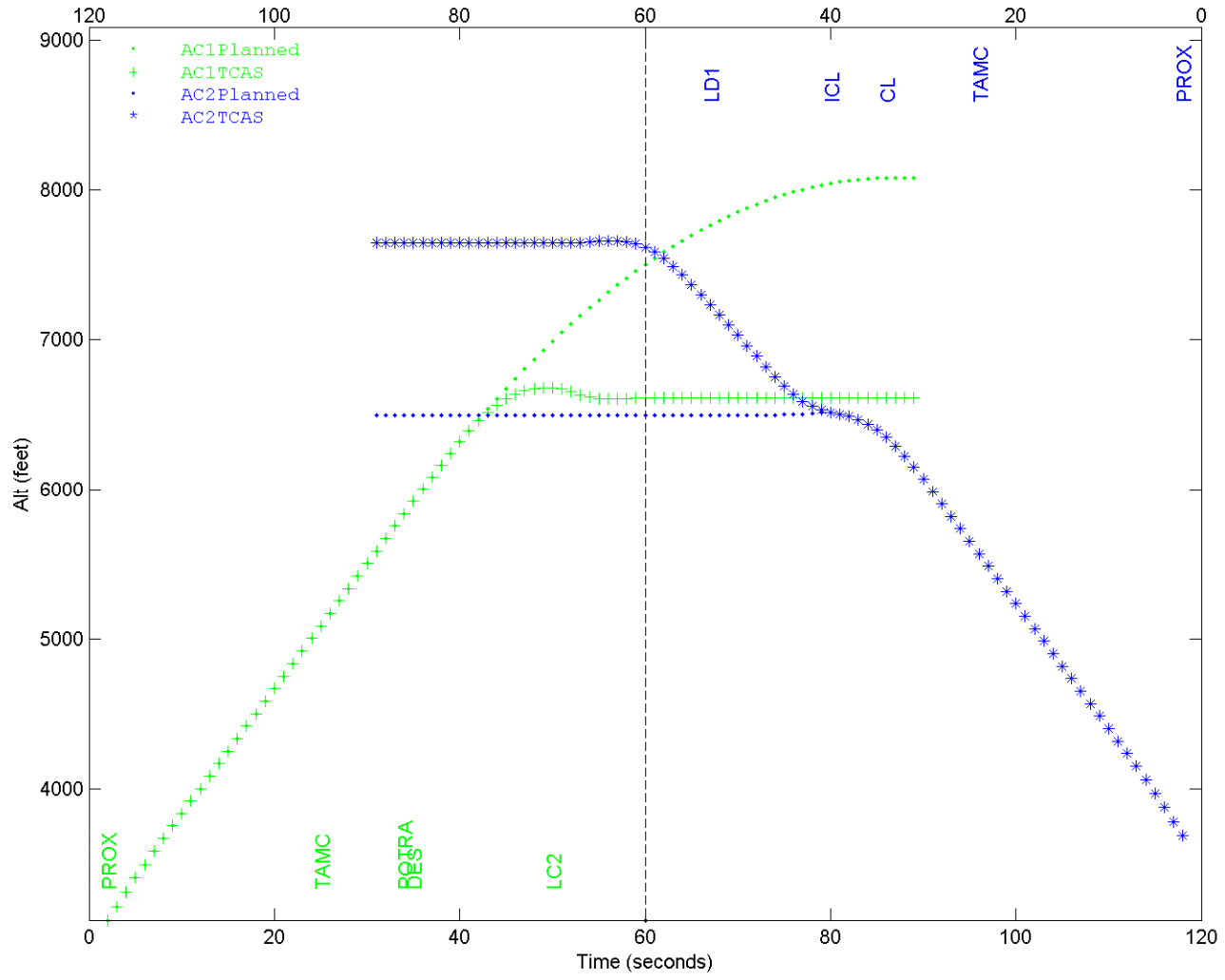
 5644 V7 100 FT RH VS V7 100 FT RL 9 -984.73 NON_CROSSING_ENC
 10 AC1: 3171133 TA :25 |TAUR| LC2 @34 [NX]| LC1 @39 | DES @40 | DCL @50
 5 AC2: 3271033 TA :24 |TAUR| CL @34 [NX]| DDES @51

 5644 V7 25 FT RH VS V7 25 FT RL 9 -1117.44 NON_CROSSING_ENC
 10 AC1: 3175144 TA :25 |TAUR| LC5 @34 [NX]| DES @40 | DCL @50
 5 AC2: 3275044 TA :24 |TAUR| CL @34 [NX]| DDES @54

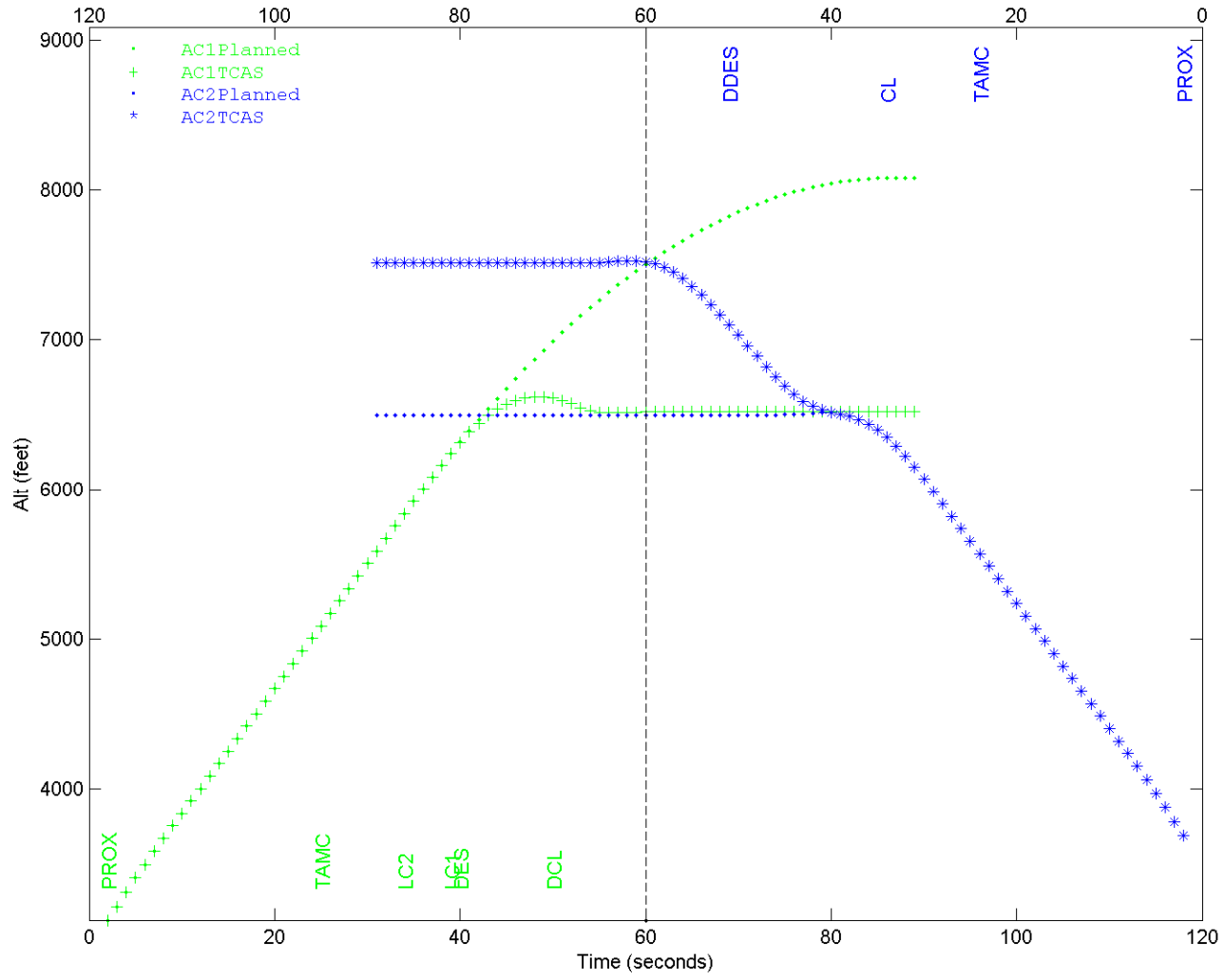
 5644 V7.1 100 FT RH VS V7.1 100 FT RL 9 47.04 CROSSING_ENC
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 15.01 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC1:*REV*7171133 TA :25 |TAUR| DCL @34 [NX]| DES @40 | CL @47 | ICL @50
 CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 10.15 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC2:*REV*7271033 TA :24 |TAUR| CL @34 [NX]| DES @46 | IDES @51

 5644 V7.1 25 FT RH VS V7.1 25 FT RL 9 -1117.44 NON_CROSSING_ENC
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 15.01 REV_AVOID 02 TIME_REV_AVOID 0.0
 10 AC1: 7175144 TA :25 |TAUR| DCL @34 [NX]| DES @40 | DCL @50
 CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 10.15 REV_AVOID 02 TIME_REV_AVOID 0.0
 5 AC2: 7275044 TA :24 |TAUR| CL @34 [NX]| DDES @54

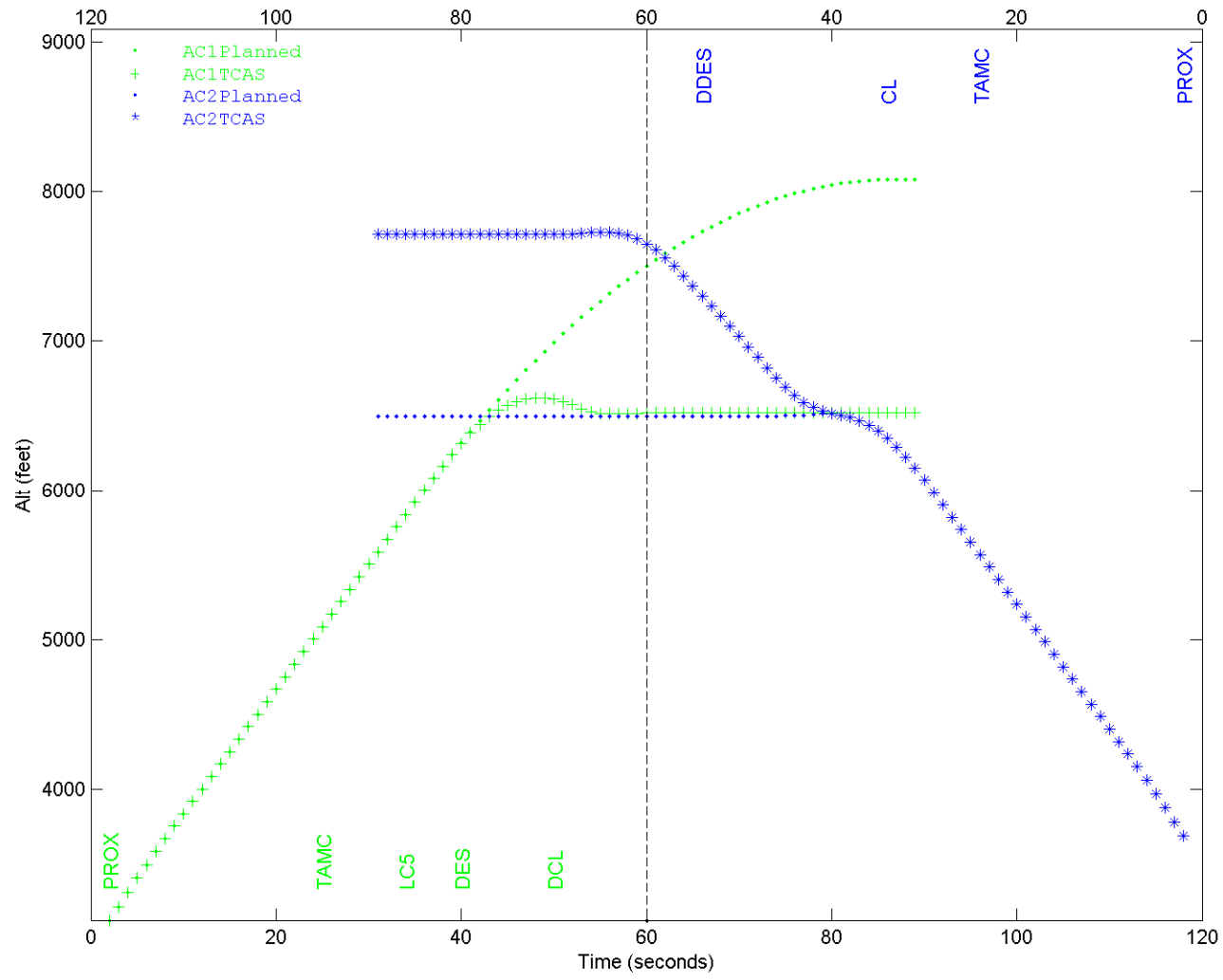
reit: 5644 cata: 919 simmode: 3165122 6.04A Vs 6.04A C9H5644A

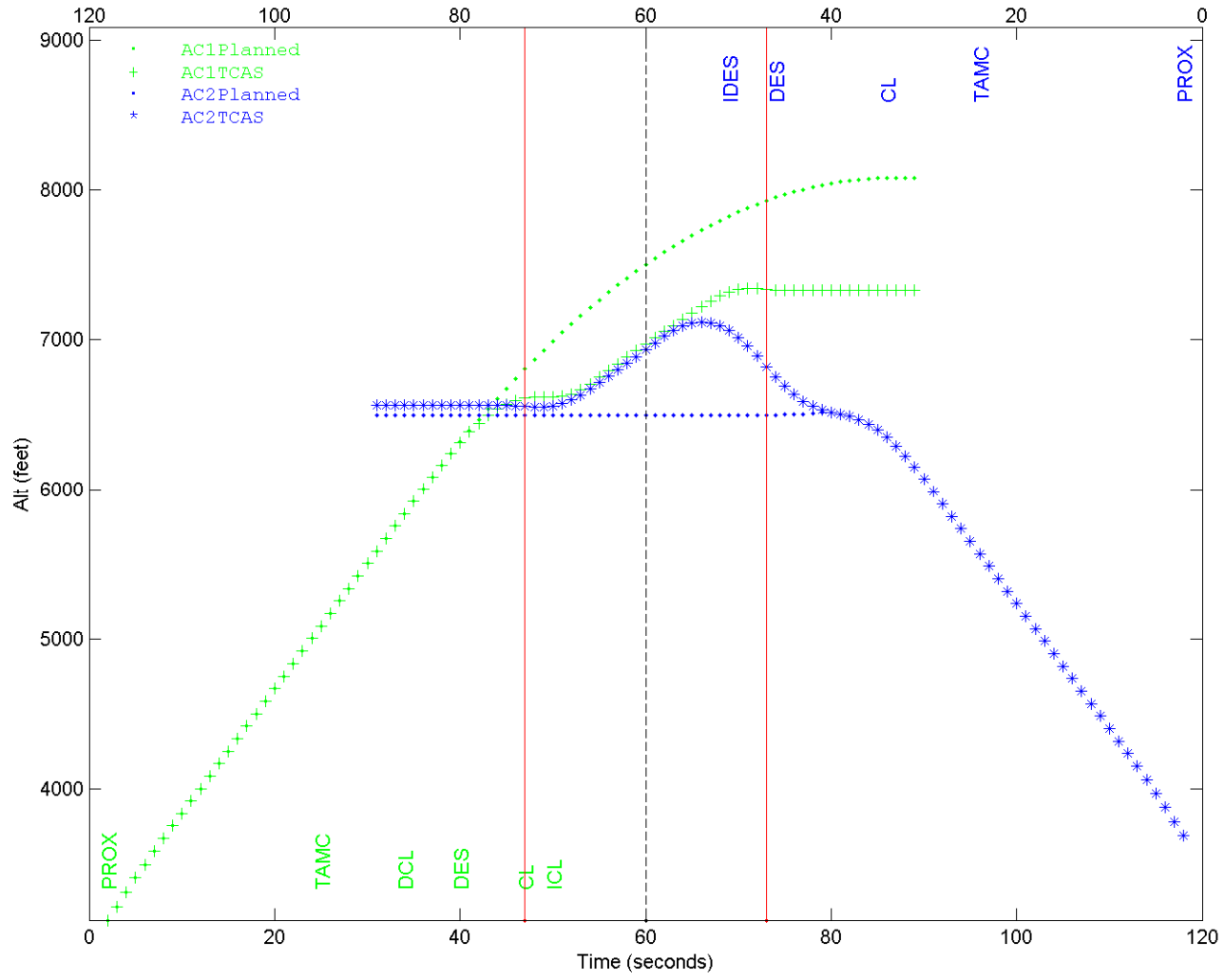


reit: 5644 cata: 919 simmode: 3271033 V7-100 Vs V7-100 C9H5644B

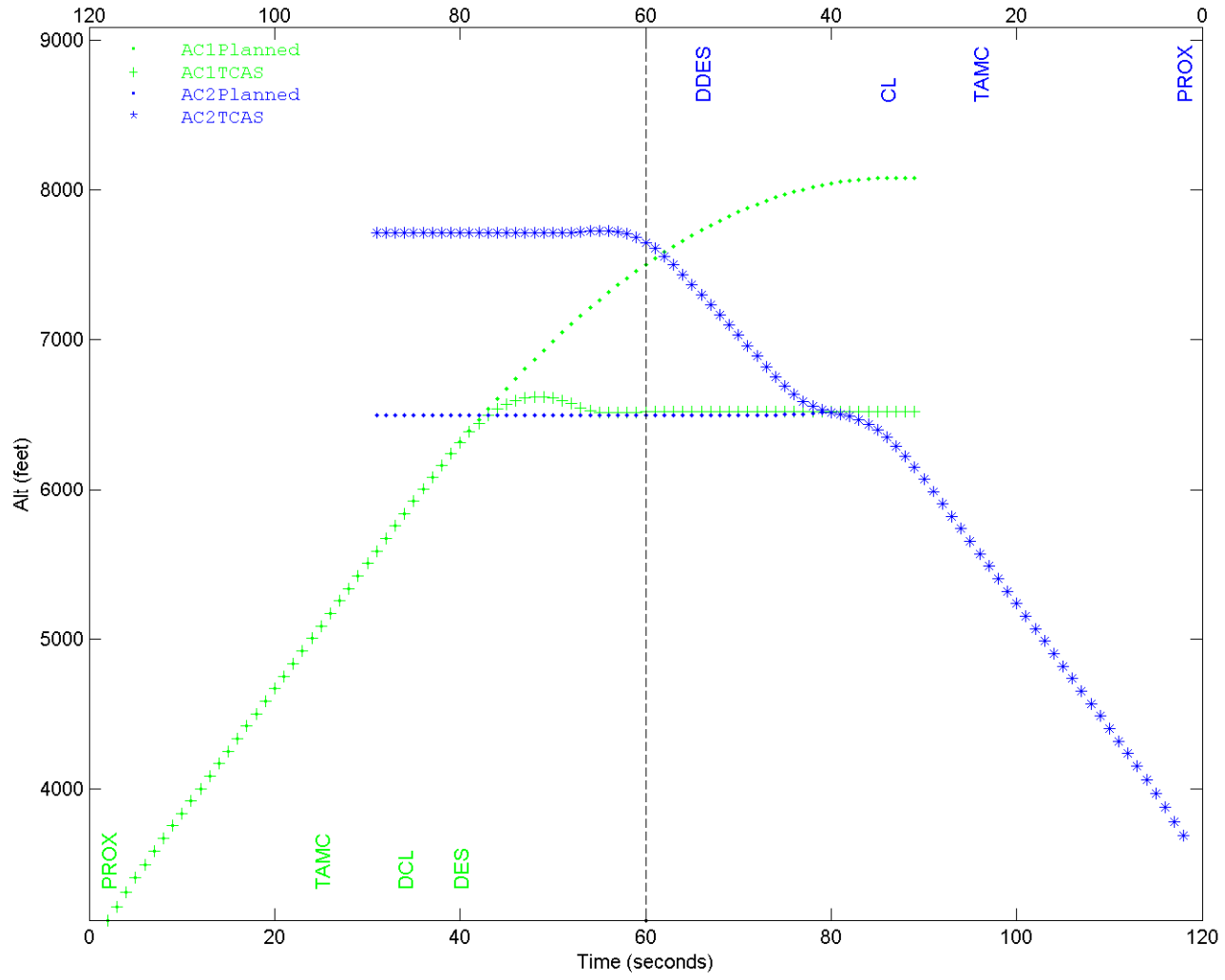


reit: 5644 cata: 919 simmode: 3275044 V7-25 Vs V7-25 C9H5644C





reit: 5644 cata: 919 simmode: 7275044 V7.1-25 Vs V7.1-25 C9H5644E



Change 7.1 Representative NMAC Ind06

Encounter Class : 18

Reit Number : 793

NMAC Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 1 | |
| AC1 low ID | 1 | |
| Vertical tracker | 100 | ft |
| Planned separation | 500 | ft |
| AC1 rates : | -3000 | fpm |
| AC2 rates : | -3000 | fpm |
| AC1 acceleration : | -0.05 | g |
| AC2 acceleration : | -0.25 | g |
| AC1 acceleration time : | CPA – 25 | sec |
| AC2 acceleration time : | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |

Performance Statistics for entire encounter class

| <u>100 ft</u> | <u>25 ft</u> | |
|---------------|--------------|------------------------------|
| 87 | 87 | % of RAs were non-crossing |
| 0 | 0 | % of NMACs were non-crossing |
| 91 | 91 | % of RAs were not reversed |
| 97 | 99 | % of NMACs were not reversed |

Comments

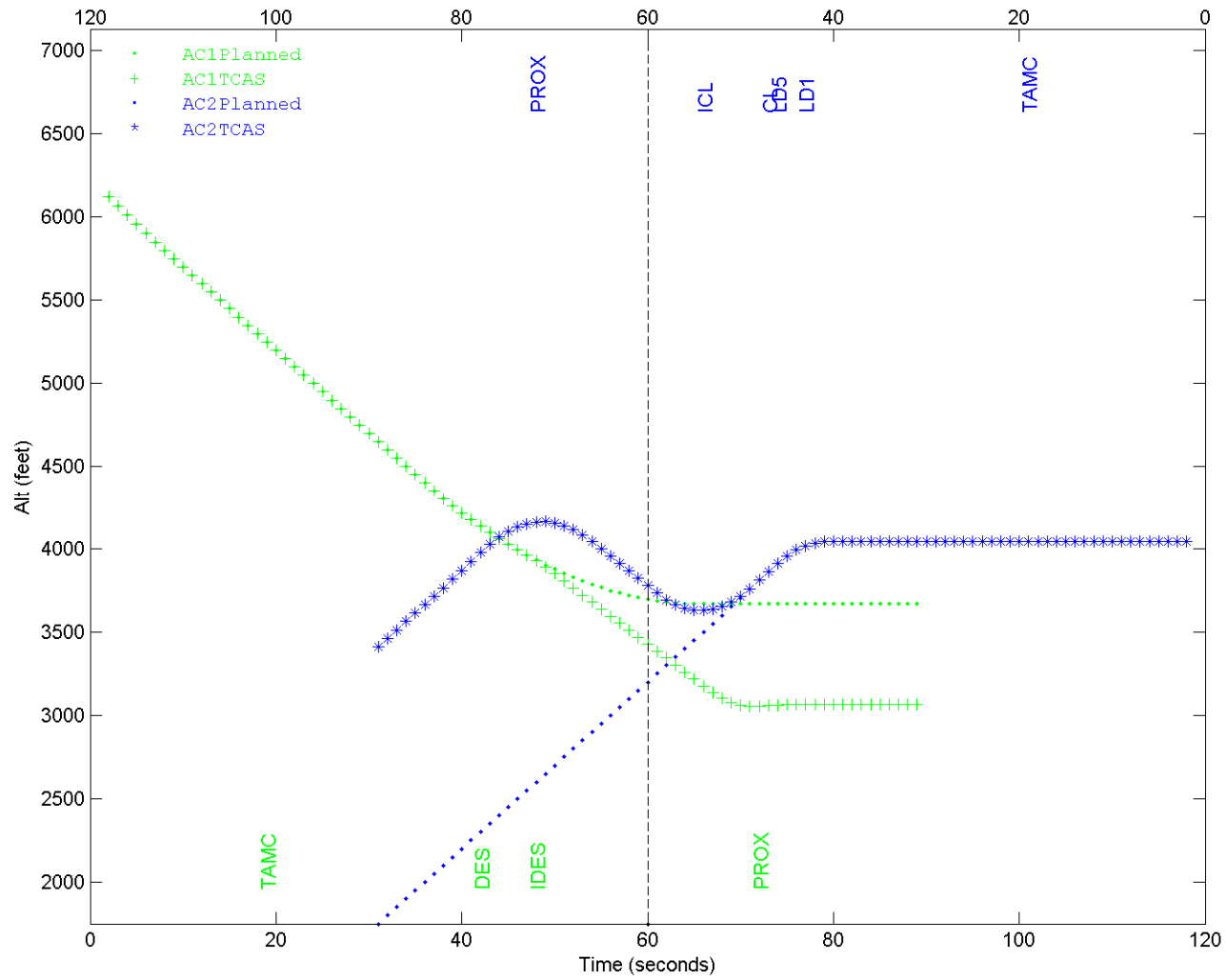
This is a late reversal (7 seconds prior to CPA).
Version 7-25 and Version 7.1-25 had earlier effective reversals for this encounter.

```

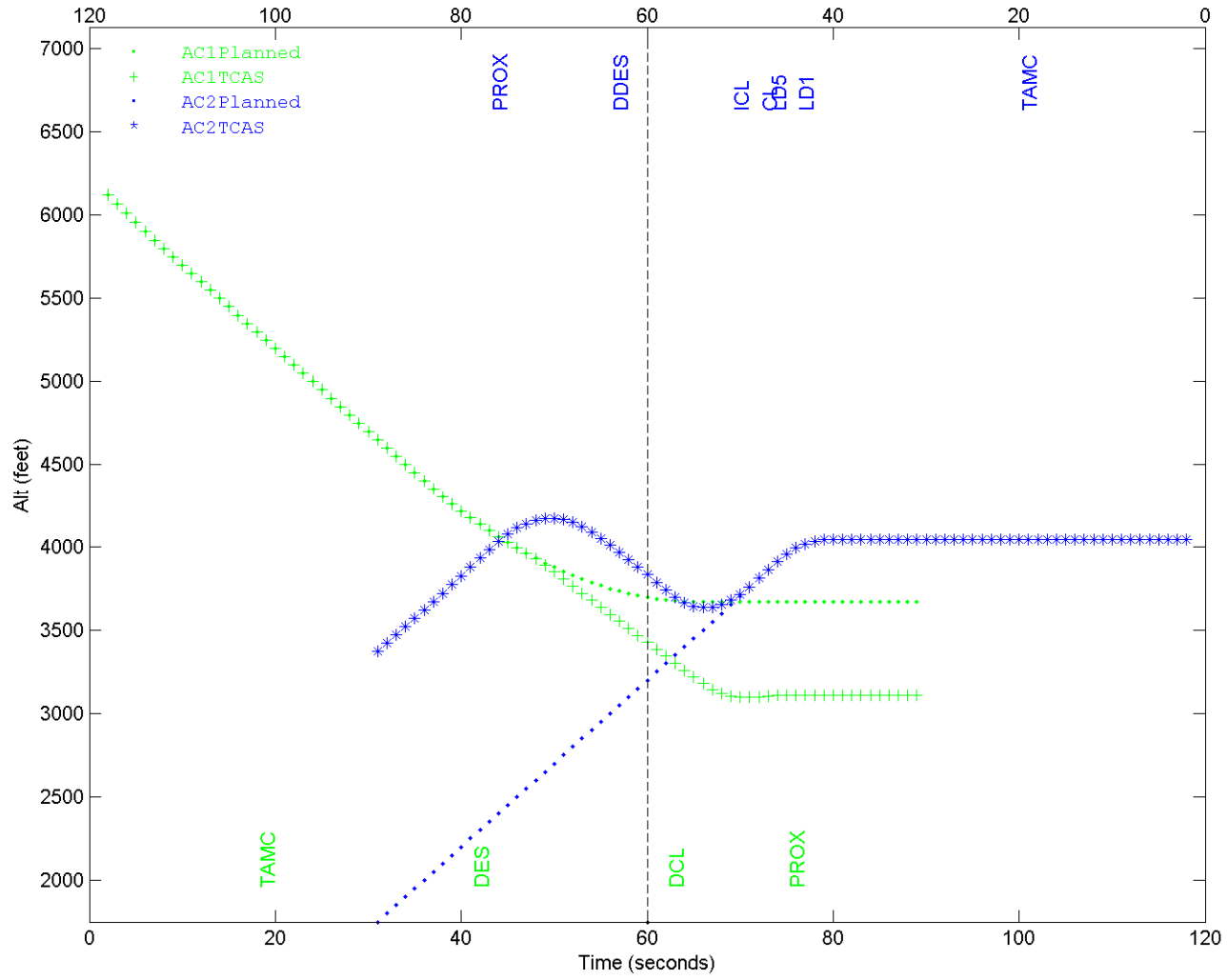
SIMULATION RESULTS FOR 6.04A, V7, and V7.1 JULY 2007 DATA ENCOUNTER C8L793
LOGIC THRESHOLDS SL = 4  ZTHR = 600  TAUR = 20  TAUV = 20  ALIM = 300
PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(-3000.0,0.0) AC2 RATES(0.0,-3000.0)
AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.25g @ CPA -20 AC1 CPA ALT 3700
-----
793 6.04A RL VS 6.04A RH 18 -363.61 CROSSING_ENC
5 AC1: 3165022 TA :19 |PVMD| DES @42 [X] | IDES @48
10 AC2: 3265122 TA :19 |PVMD| LD1 @43 [NX]| LD1 @45 | LD5 @46 | CL @47 | ICL @54
-----
793 V7 100 FT RL VS V7 100 FT RH 18 -413.22 CROSSING_ENC
5 AC1: 3171033 TA :19 |PVMD| DES @42 [X] | DCL @63
10 AC2: 3271133 TA :19 |PVMD| LD1 @43 [NX]| LD1 @45 | LD5 @46| CL @47| ICL @50| DDES @63
-----
793 V7 25 FT RL VS V7 25 FT RH 18 644.04 NON_CROSSING_ENC
5 AC1:*REV*3175044 TA :19 |PVMD| DES @43[NX]| CL @48 | DDES @56
10 AC2:*REV*3275144 TA :19 |PVMD| LD1 @42[NX]| LD5 @45 | CL @46| DES @48| DCL @63
-----
793 V7.1 100 FT RL VS V7.1 100 FT RH 18 -32.50 CROSSING_ENC
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 6.02 REV_AVOID 02 TIME_REV_AVOID 0.0
5 AC1:*REV*7171033 TA :19 |PVMD| DES @42 [X] | CL @53
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 13.88 REV_AVOID 02 TIME_REV_AVOID 0.0
10 AC2:*REV*7271133 TA :19 |PVMD| LD1 @43 [NX]| DDES @45| CL @47| ICL @50| DES@53
-----
793 V7.1 25 FT RL VS V7.1 25 FT RH 18 644.04 NON_CROSSING_ENC
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 6.02 REV_AVOID 02 TIME_REV_AVOID 0.0
5 AC1:*REV*7175044 TA :19 |PVMD| DES @43[NX]| CL @48 | DDES @56
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 13.17 REV_AVOID 02 TIME_REV_AVOID 0.0
10 AC2:*REV*7275144 TA :19 |PVMD| LD1 @42[NX]| DDES @45 | CL @46| DES @48| DCL @63

```

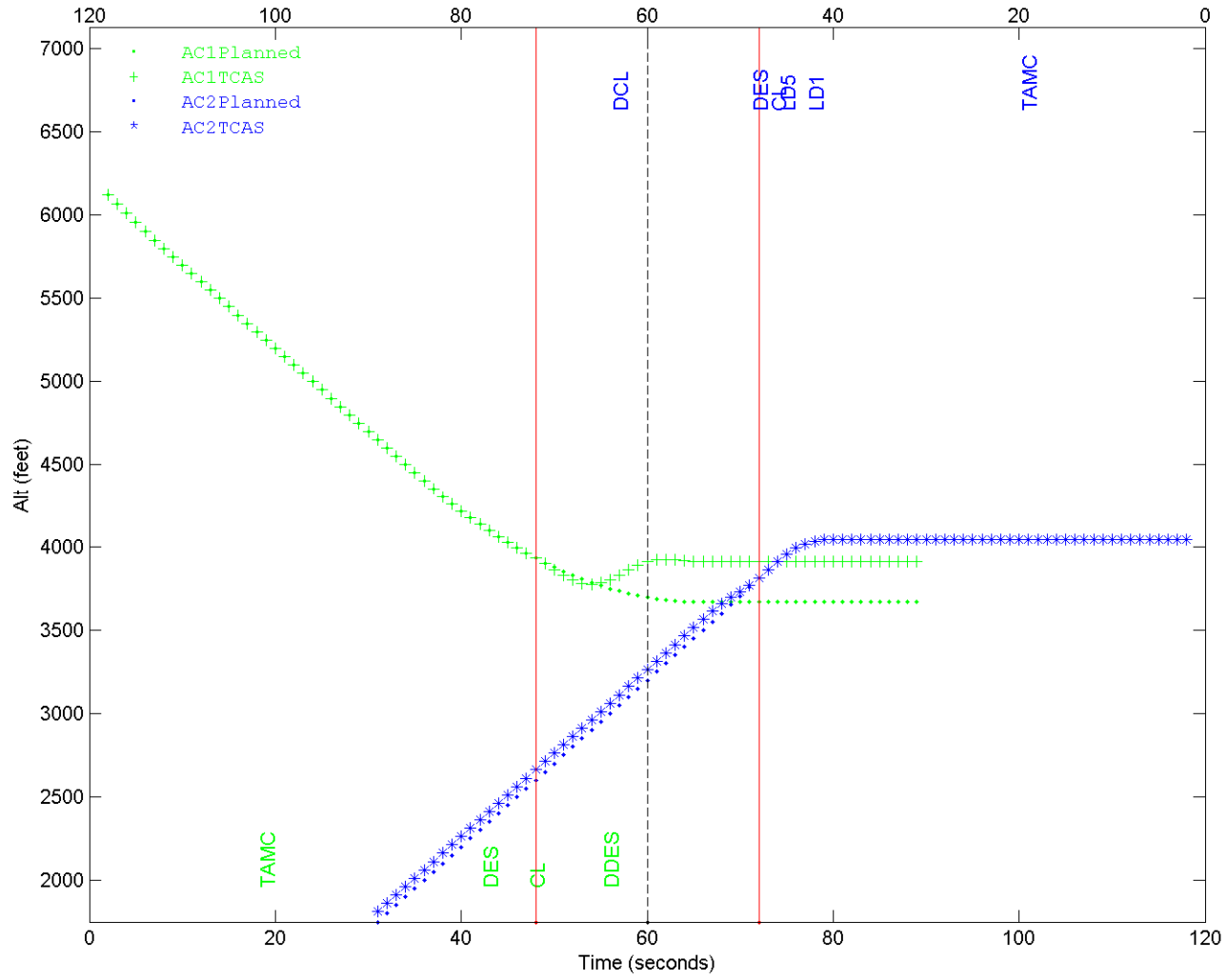
reit: 793 cata: 818 simmode: 3165022 6.04A Vs 6.04A C8L793A

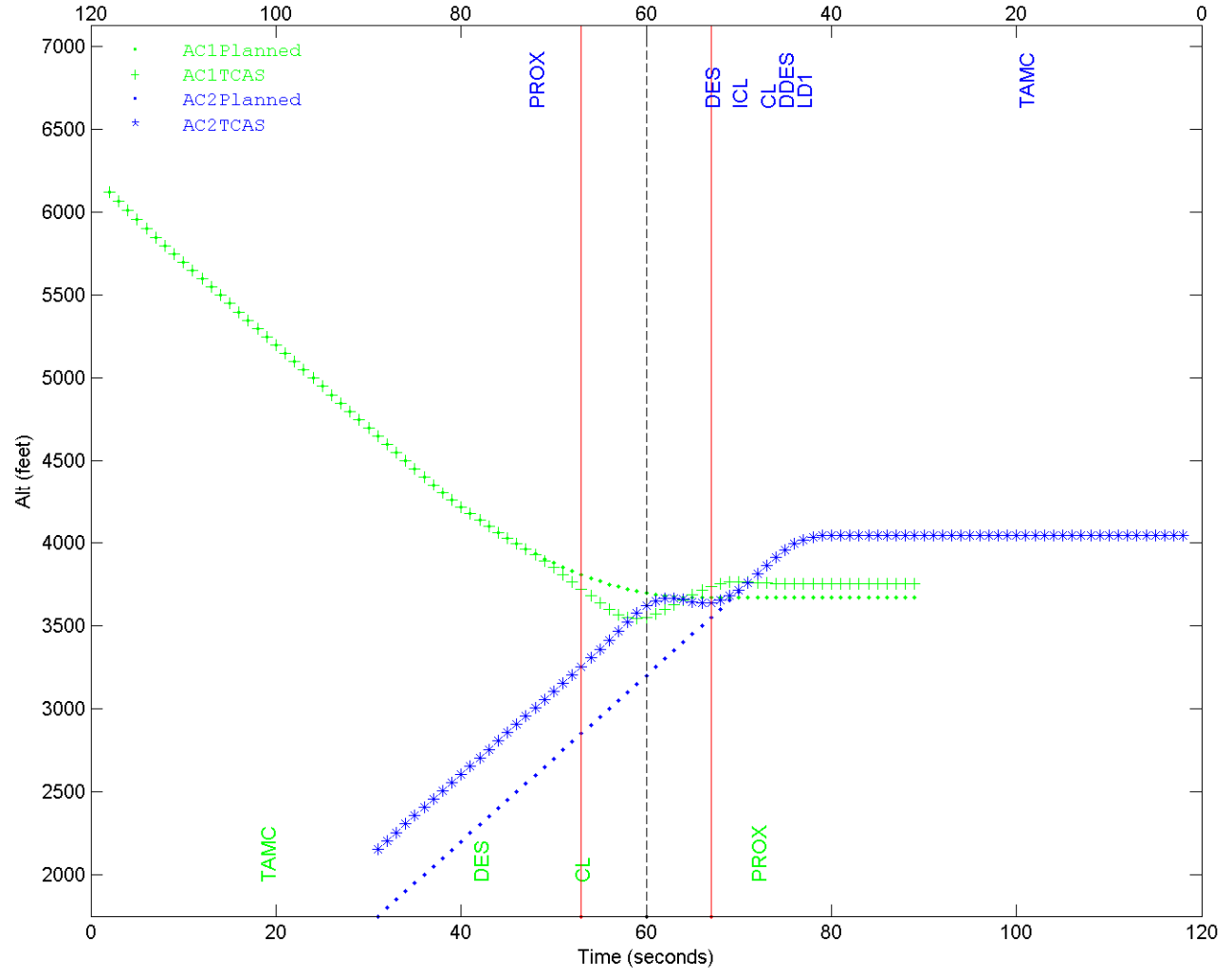


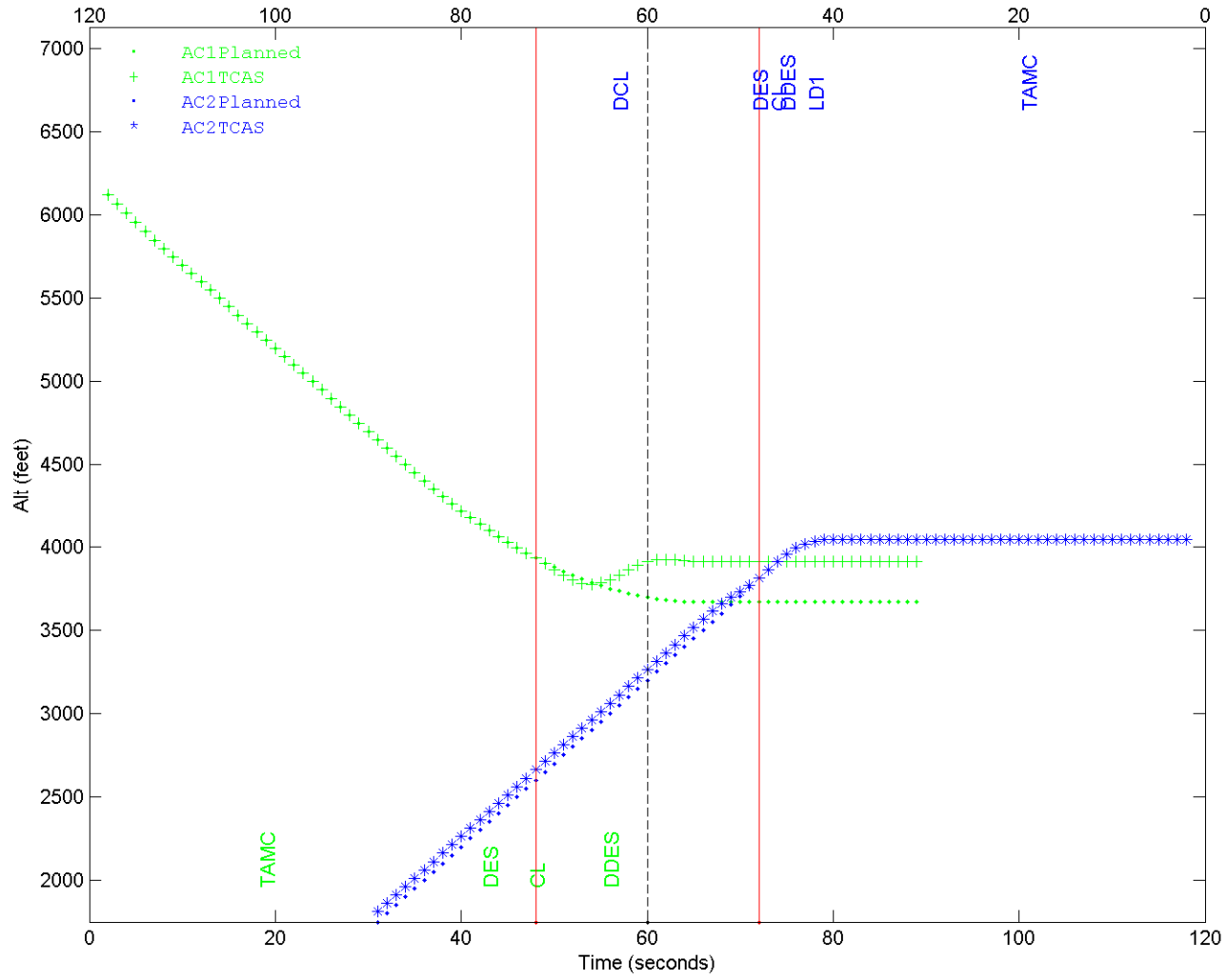
reit: 793 cata: 818 simmode: 3171033 V7-100 Vs V7-100 C8L793B



reit: 793 cata: 818 simmode: 3175044 V7-25 Vs V7-25 C8L793C







Appendix N V7.1 REPRESENTATIVE SAVES (One Pilot Non-Responding)

Change 7.1 Non-responding Representative Save 01

Encounter Class: 2

Reit Number : 1981

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 38 | |
| AC1 low ID | no | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | -500, -750 | ft |
| AC1 rates: | 0 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.35 | g |
| AC2 acceleration time: | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

| | |
|---------------------------|--------|
| Logic change solving NMAC | CP112E |
|---------------------------|--------|

Comments

Climbing vertical chase caused by response to initial RA.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L221981
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(0.0,0.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.35g @ CPA -30 AC1 CPA ALT 7480

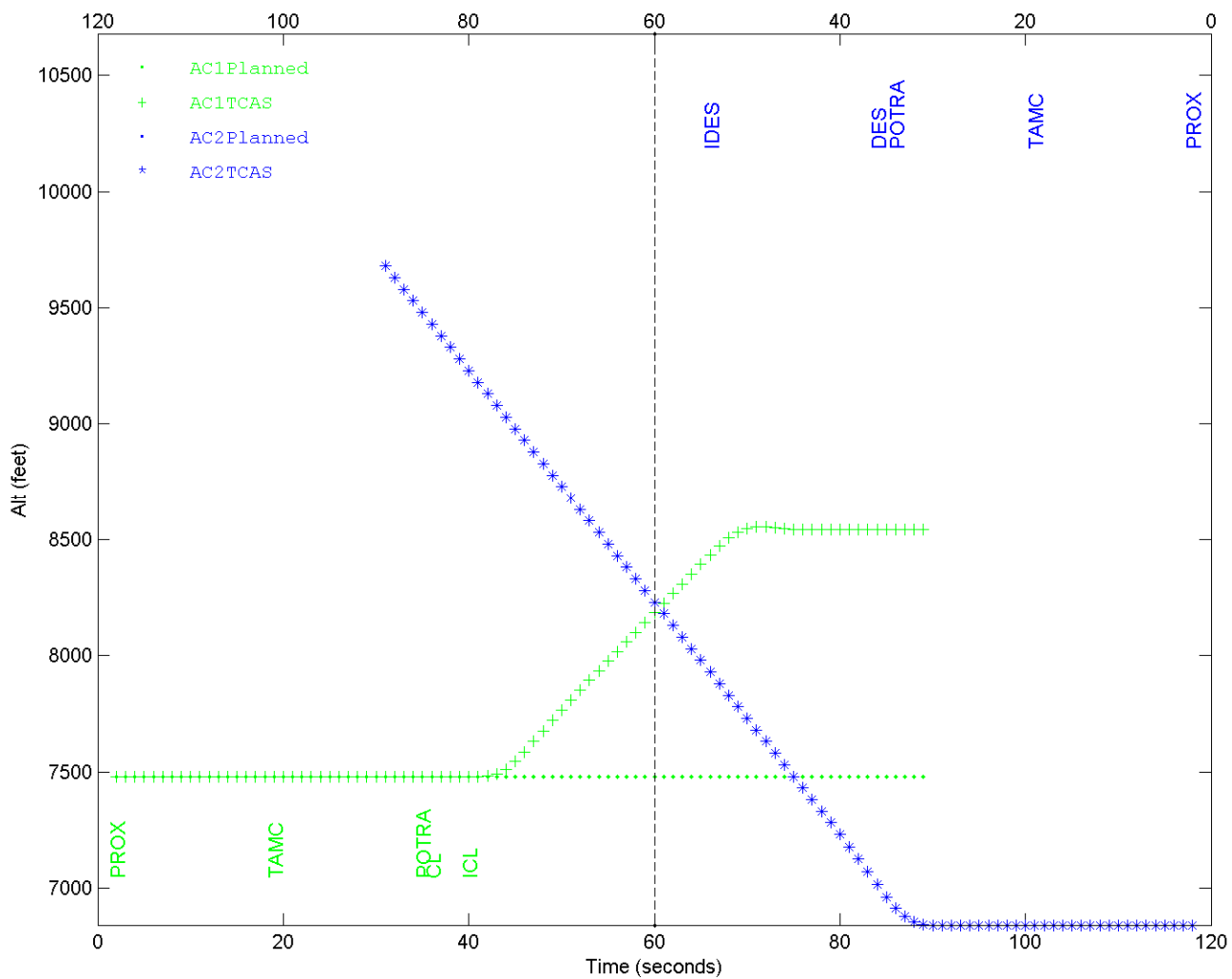
1981 6.04A R L VS 6.04A NR H 2 -46.18 CROSSING_ENC
5 AC1: 4165024 TA:19 |RELZ| CL @36 [NX]| ICL @40
10 AC2: 4265142 TA:19 |TAUR| POTRA@34(DFD)| DES @36[NX]| IDES @54 ##NON-RESPONDING##

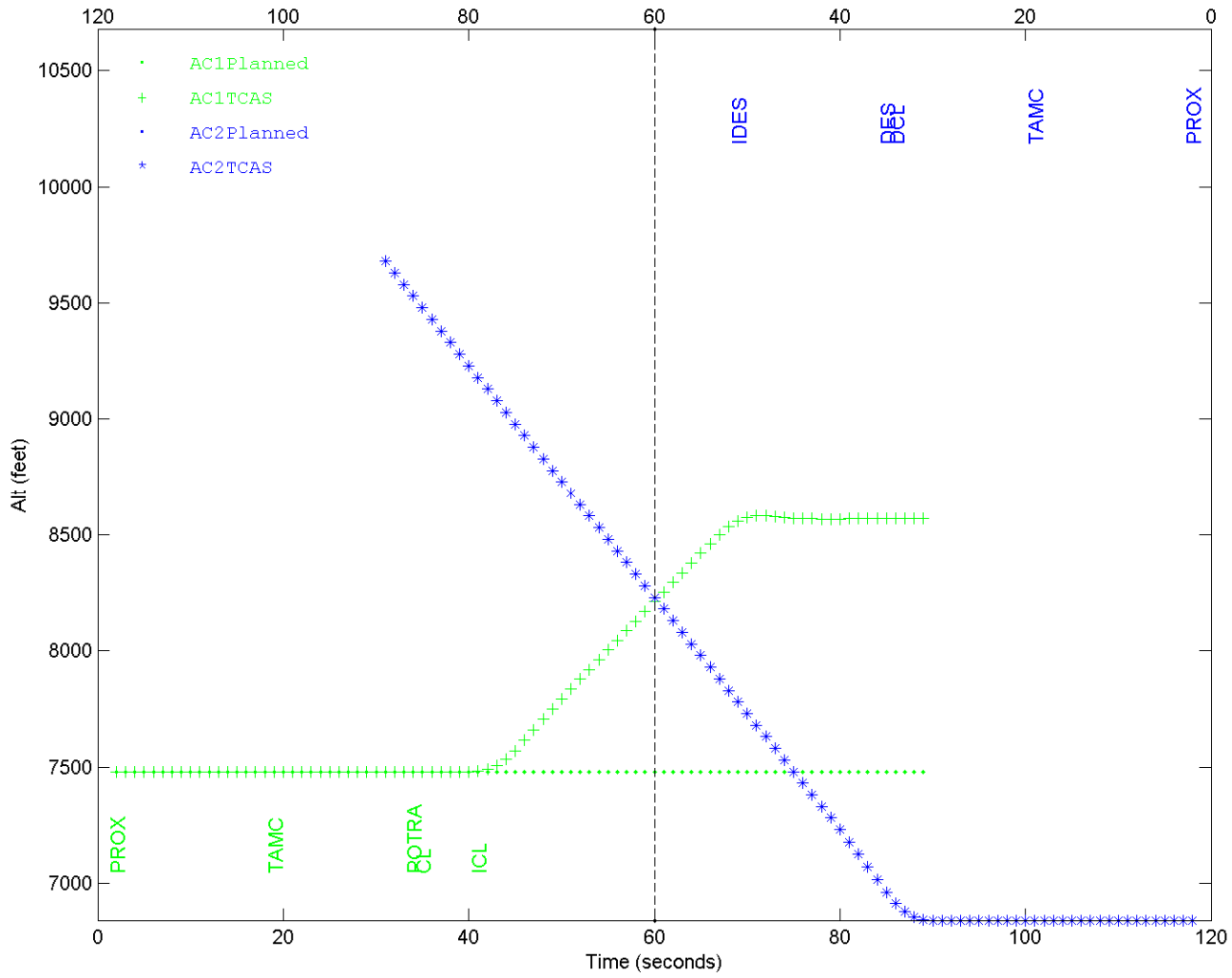
1981 V7 25 FT R L VS V7 25 FT NR H 2 -19.13 CROSSING_ENC
5 AC1: 4175035 TA:19 |TAUR| POTRA@34 | CL @35 [NX]| ICL @41
10 AC2: 4275153 TA:19 |TAUR| DCL @34 [NX]| DES @35 | IDES @51 ##NON-RESPONDING##

1981 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 2 -544.11 CROSSING_ENC
5 AC1:*REV*8175035 TA:19 |TAUR| POTRA@34 | CL @35 [NX]| ICL @41 | DES @48 | IDES @51 | DCL @63
10 AC2:*REV*8275153 TA:19 |TAUR| DCL @34 [NX]| DES @35 | CL @48 | DDES @63 ##NON-RESPONDING##

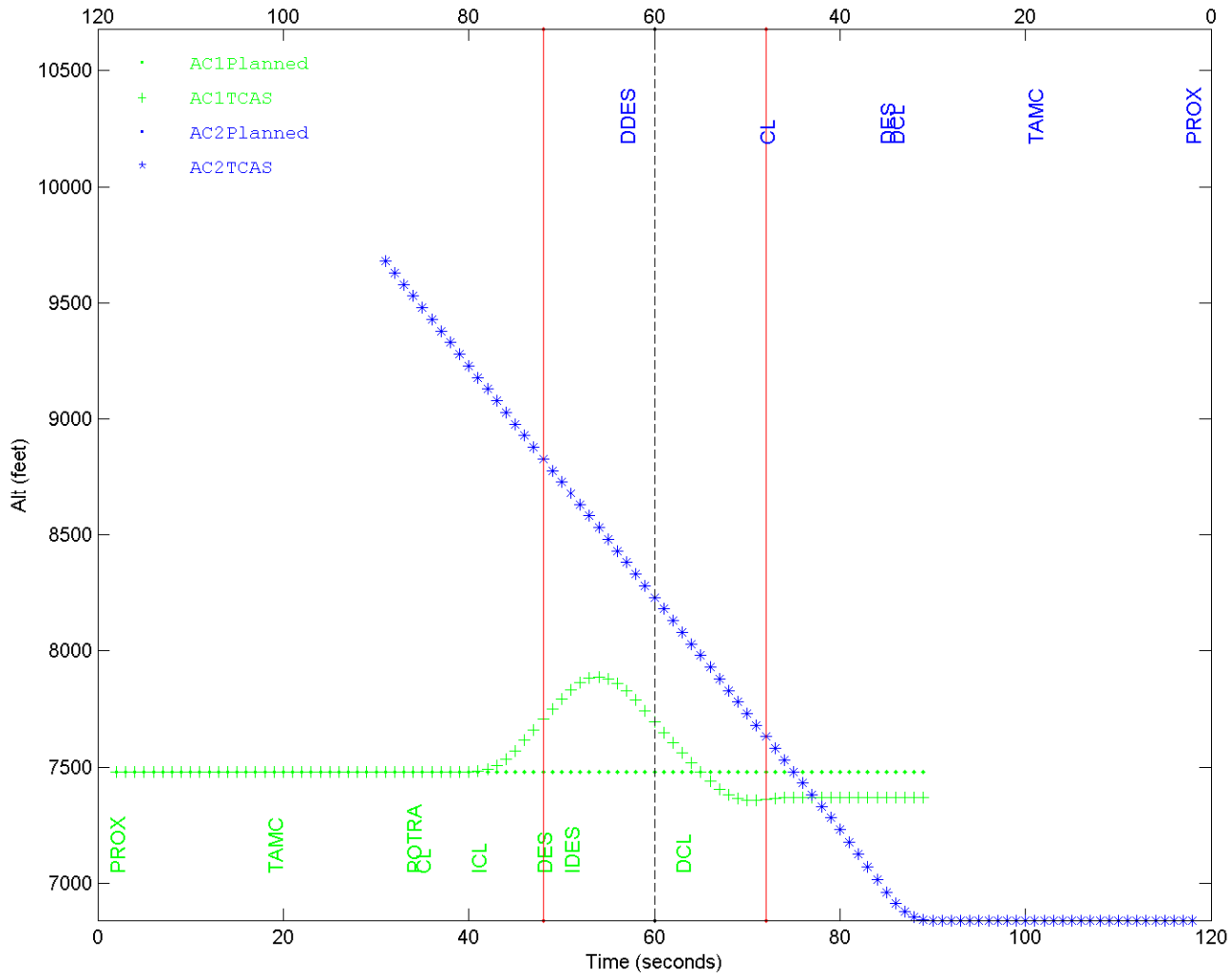
1981 V7.1 25 FT R L VS V7.1 25 FT NR H 2 -544.11 CROSSING_ENC
5 AC1:*REV*8175035 TA:19 |TAUR| POTRA@34 | CL @35 [NX]| ICL @41 | DES @48 | IDES @51 | DCL @63
10 AC2:*REV*8275153 TA:19 |TAUR| DCL @34 [NX]| DES @35 | CL @48 | DDES @63 ##NON-RESPONDING##

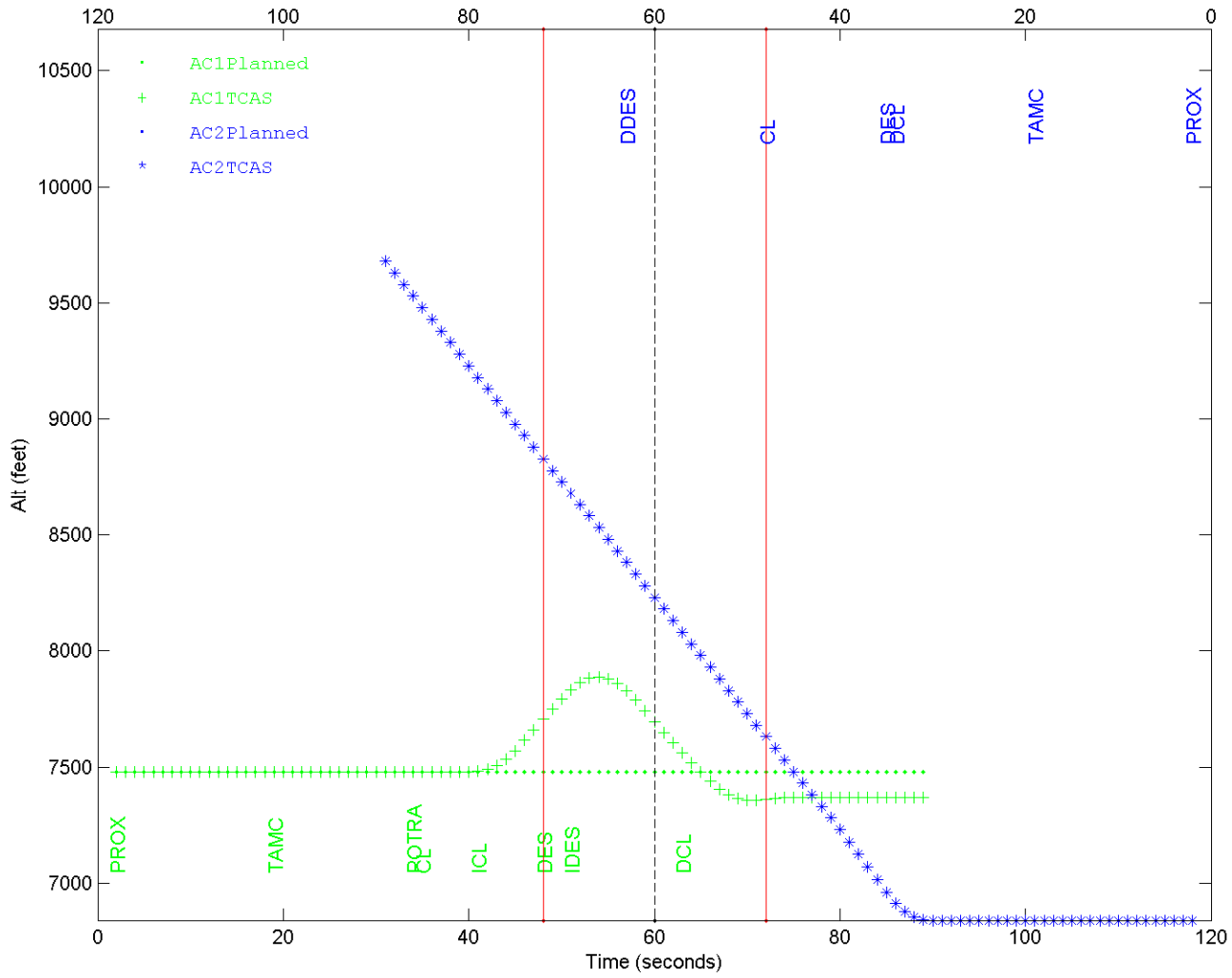
reit: 1981 cata: 212 simmode: 4165024 6.04A Vs 6.04A L221981A





reit: 1981 cata: 212 simmode: 8175035 CP112EV1.2-25 Vs CP112EV1.2-25 L221981C





Change 7.1 Non-responding Representative Save 02

Encounter Class: 2

Reit Number : 2772

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 2 | |
| AC1 low ID | no | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | -750 | ft |
| AC1 rates: | 0 | fpm |
| AC2 rates: | 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.35 | g |
| AC2 acceleration time: | CPA – 20 | sec |
| Encounters with reversed RAs | 0 | % |
| Vertical chase | no | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Responding aircraft received LOLO instead of AVSA.

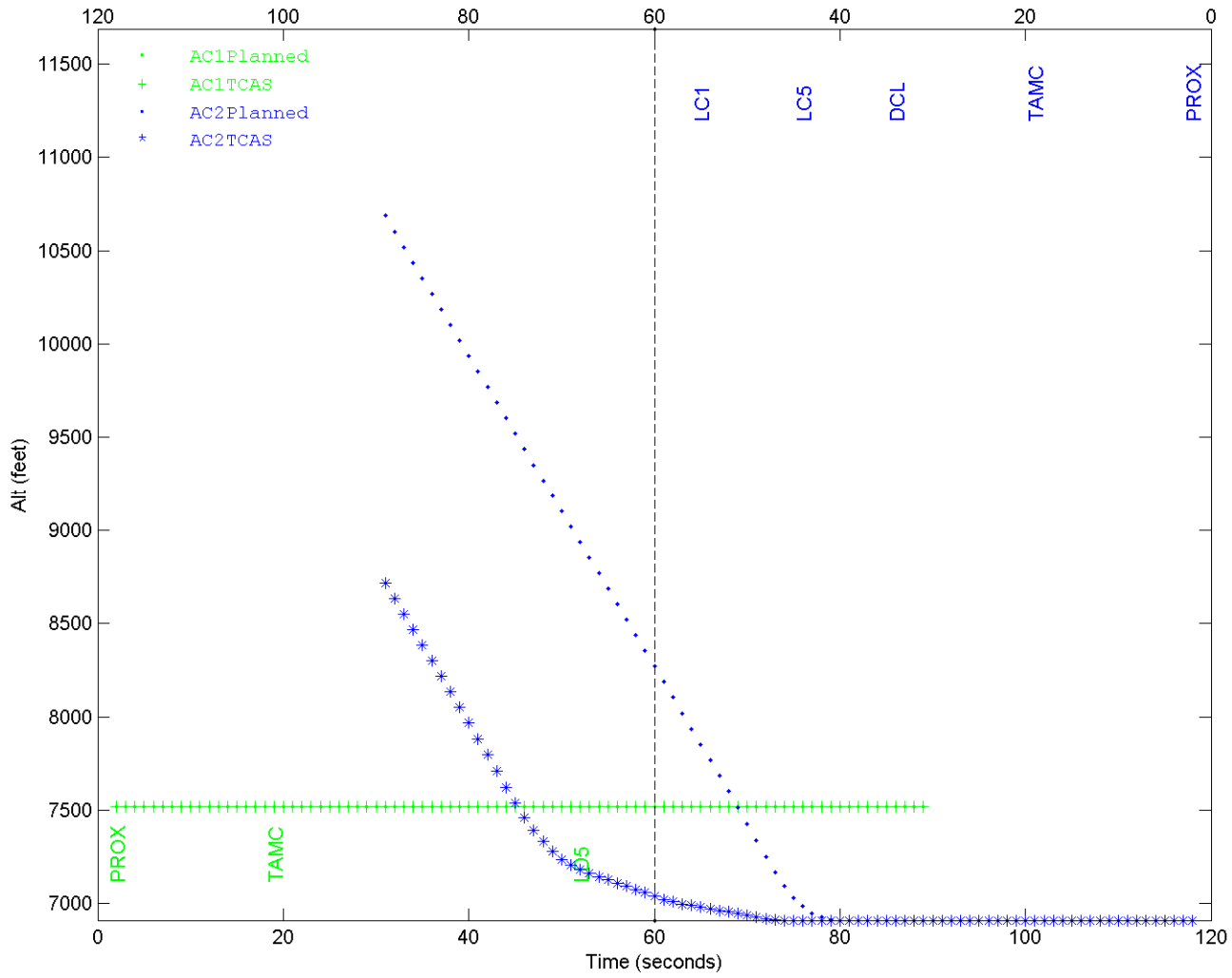
SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H122772
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(0.0,0.0) AC2 RATES(0.0,5000.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.35g @ CPA -20 AC1 CPA ALT 7520

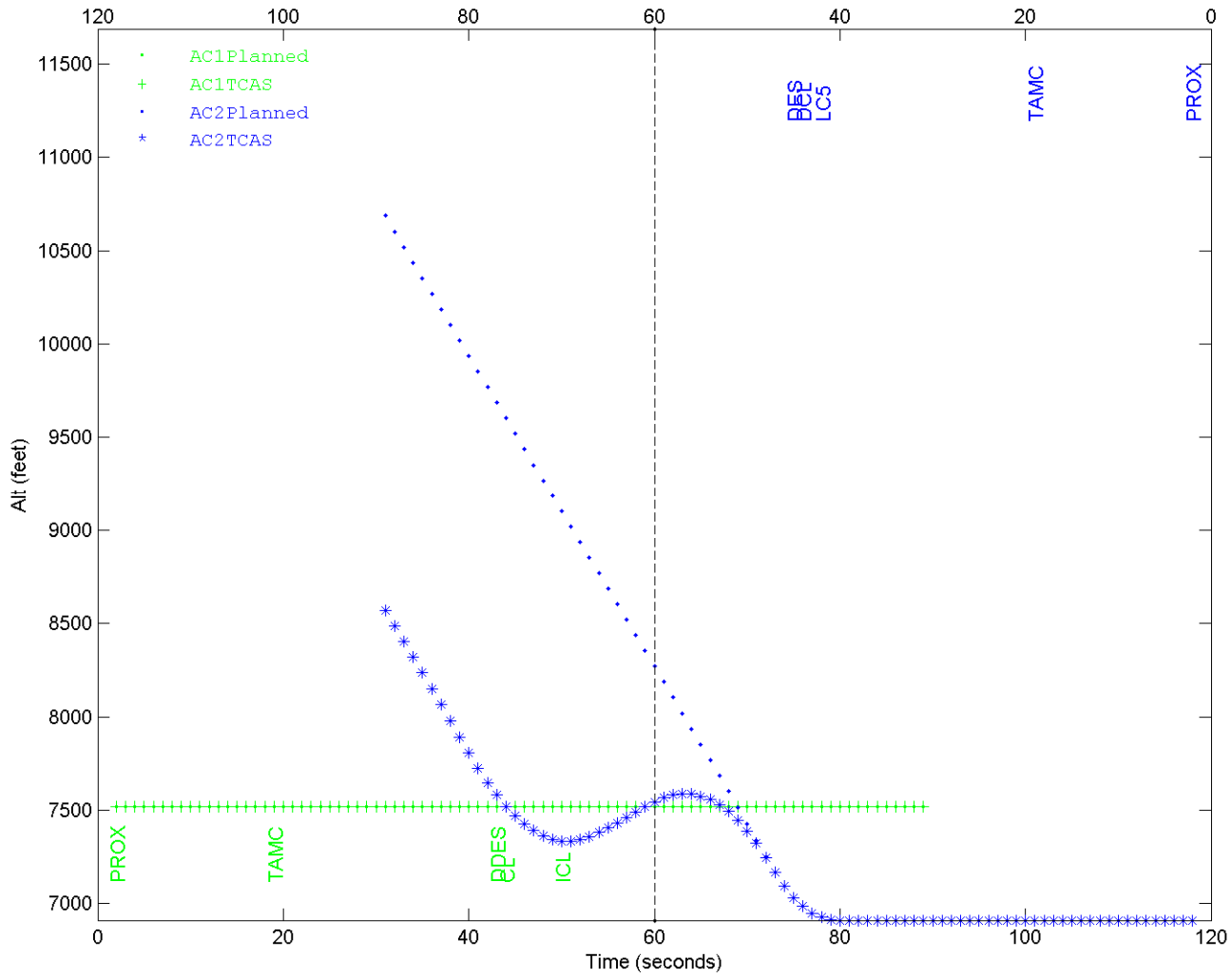
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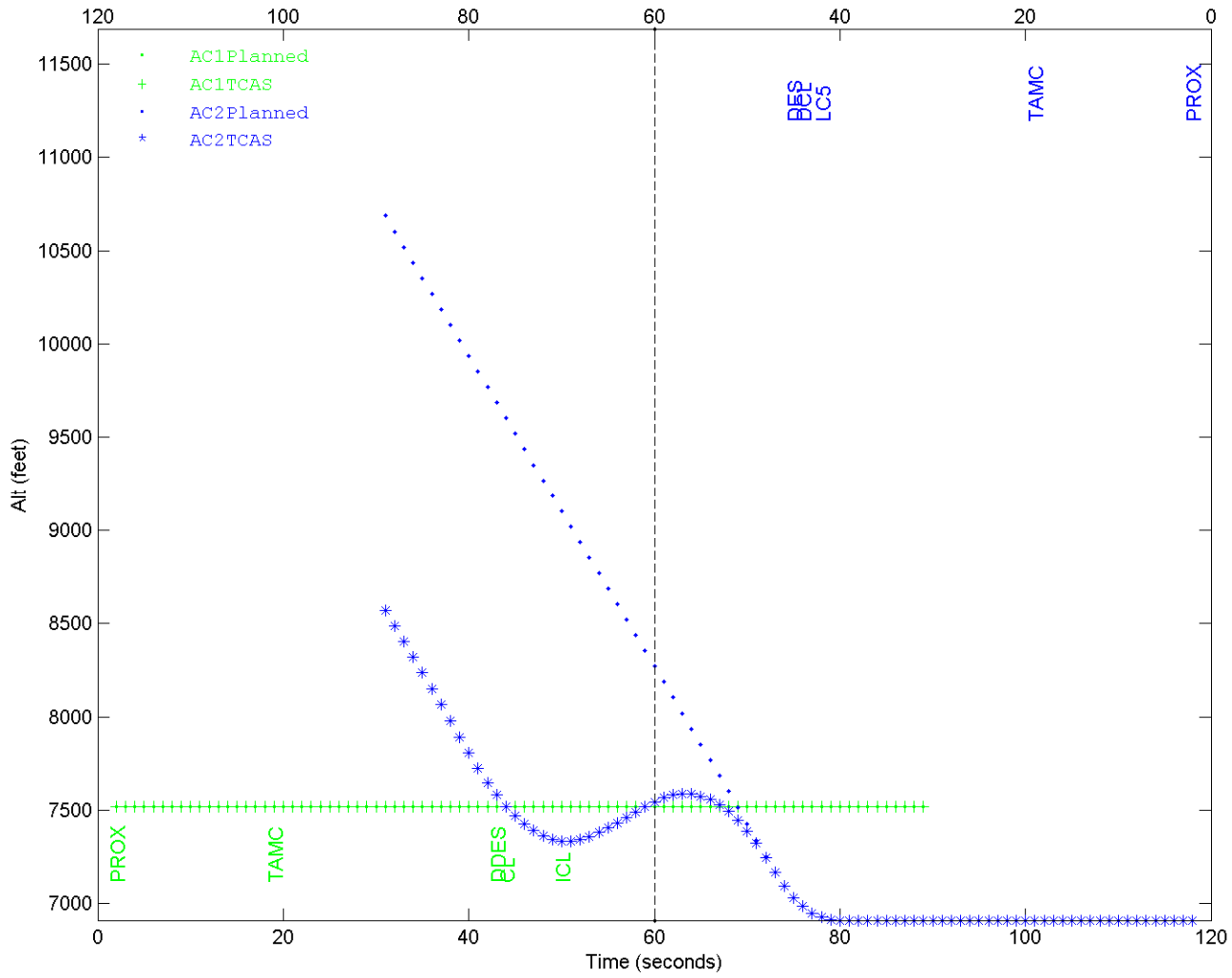
-----
2772 6.04A NR H VS 6.04A NR L 2 475.27 NON_CROSSING_ENC
10 AC1: 4165142 TA :19 |PVMD| LD5 @52 [NX] ##NON-RESPONDING##
5 AC2: 4265024 TA :19 |TAUR| DCL @34 [NX]| LC5 @44 | LC1 @55
-----
2772 V7 25 FT NR H VS V7 25 FT R L 2 -12.65 CROSSING_ENC
10 AC1: 4275053 TA :19 |PVMD| DDES @43 [NX]| CL @44 | ICL @50 ##NON-RESPONDING##
5 AC2: 4175135 TA :19 |RELZ| LC5 @42 [NX]| LC5 @43 | DCL @44 | DES @45
-----
2772 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 2 -12.65 CROSSING_ENC
10 AC1: 8275053 TA :19 |PVMD| DDES @43 [NX]| CL @44 | ICL @50 ##NON-RESPONDING##
5 AC2: 8175135 TA :19 |RELZ| LC5 @42 [NX]| LC5 @43 | DCL @44 | DES @45
-----
2772 V7.1 25 FT NR H VS V7.1 25 FT R L 2 110.14 CROSSING_ENC
10 AC1: 8275053 TA :19 |PVMD| DDES @43 [NX]| CL @44 | ICL @50 ##NON-RESPONDING##
5 AC2: 8175135 TA :19 |RELZ| LC5 @42 [NX]| DCL @43 | DES @46 | IDES @49

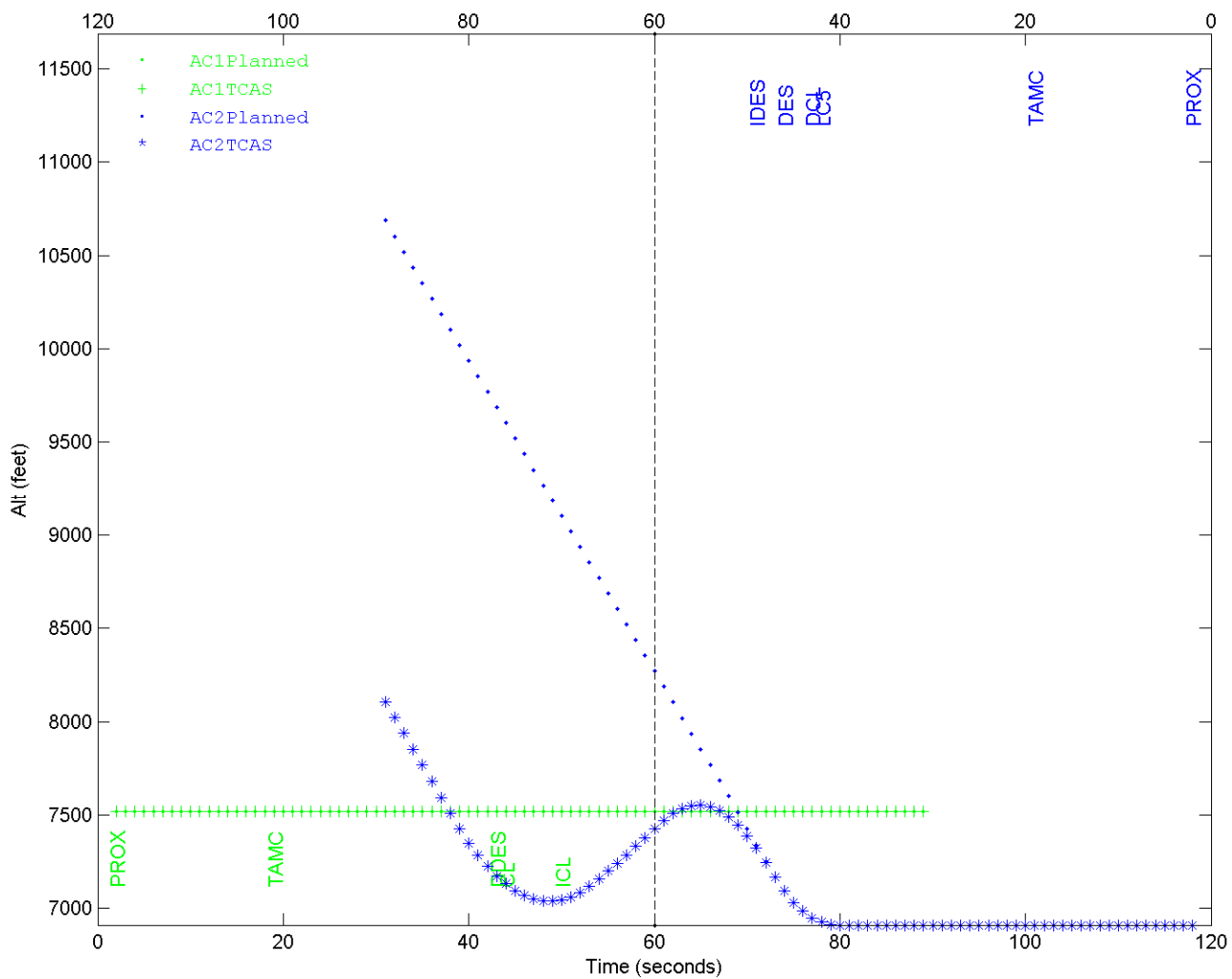
```

reit: 2772 cata: 212 simmode: 4165142 6.04A Vs 6.04A H122772A









Change 7.1 Non-responding Representative Save 03

Encounter Class: 4

Reit Number : 338

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 6 | |
| AC1 low ID | yes | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | +/-500 | ft |
| AC1 rates: | 1000, 3000 | fpm |
| AC2 rates: | 1000, 3000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | none | |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L14338
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(3000.0,3000.0) AC2 RATES(1000.0,1000.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.00g @ CPA 0 AC1 CPA ALT 7480

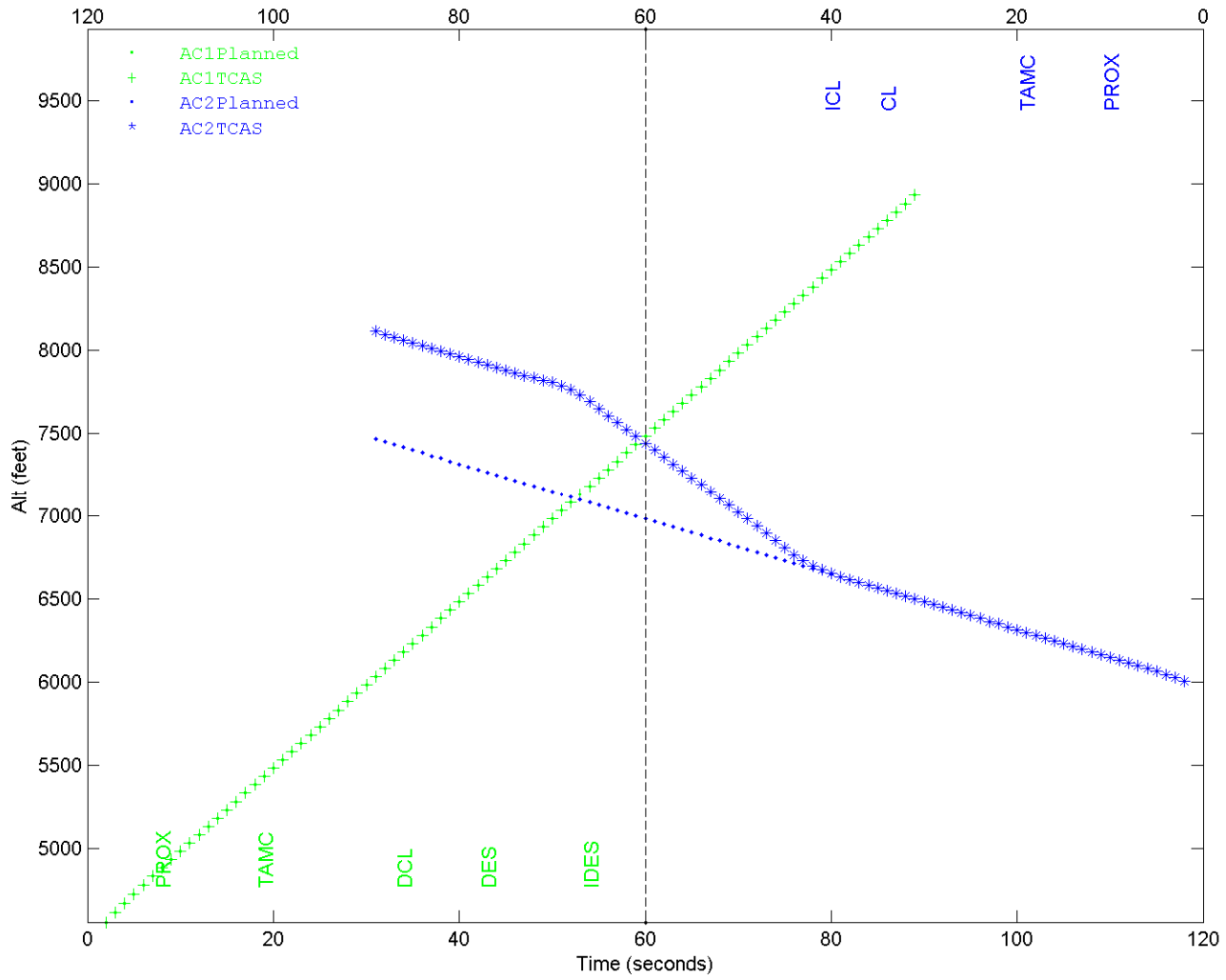
 338 6.04A NR L VS 6.04A R H 4 41.66 CROSSING_ENC
 5 AC1: 4165042 TA :19 |TAUR| DCL @34 [NX]| DES @43 | IDES @54 ##NON-RESPONDING##
 10 AC2: 4265124 TA :19 |TAUR| CL @34 [NX]| ICL @40

 338 V7 25 FT NR L VS V7 25 FT R H 4 58.33 CROSSING_ENC
 5 AC1: 4175053 TA :19 |TAUR| DCL @34 [NX]| DES @50 | IDES @52 ##NON-RESPONDING##
 10 AC2: 4275135 TA :19 |TAUR| CL @34 [NX]| ICL @41

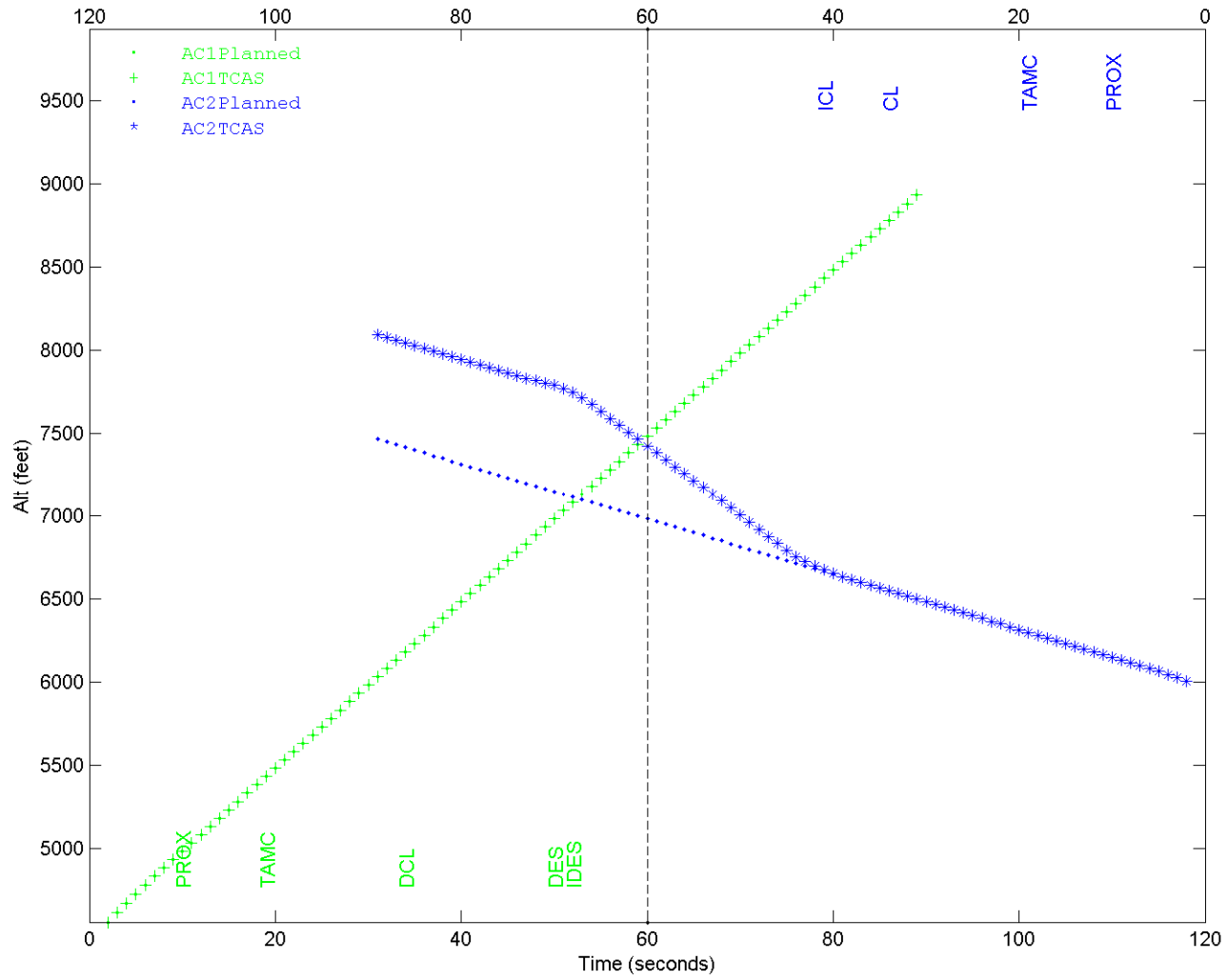
 338 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 4 660.98 CROSSING_ENC
 5 AC1:*REV*8175053 TA :19 |TAUR| DCL @34 [NX]| CL @46 | DDES @63 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :19 |TAUR| CL @34 [NX]| ICL @41 | DES @46 | DCL @63

 338 V7.1 25 FT NR L VS V7.1 25 FT R H 4 660.98 CROSSING_ENC
 5 AC1:*REV*8175053 TA :19 |TAUR| DCL @34 [NX]| CL @46 | DDES @63 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :19 |TAUR| CL @34 [NX]| ICL @41 | DES @46 | DCL @63

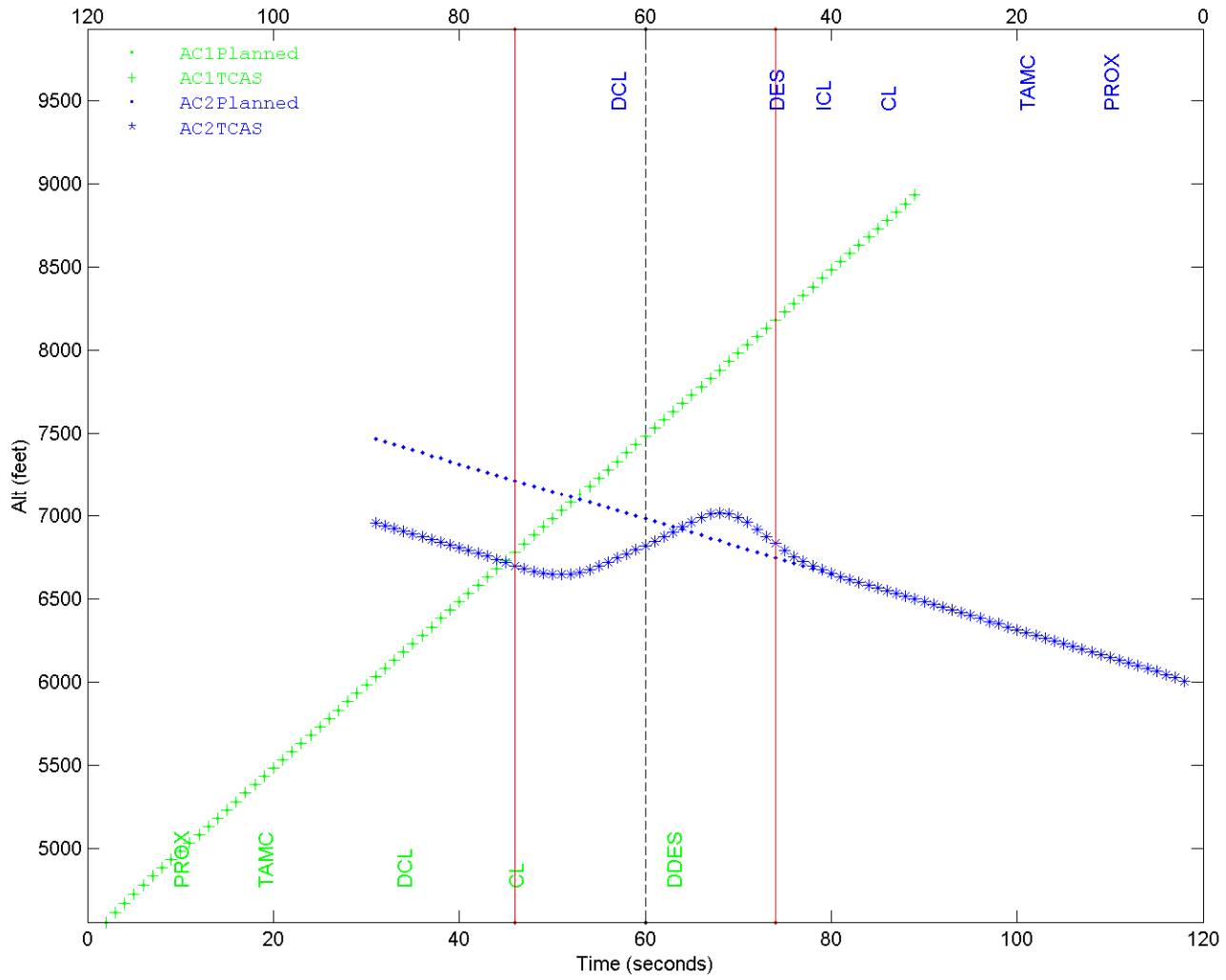
reit: 338 cata: 414 simmode: 4165042 6.04A Vs 6.04A L14338A

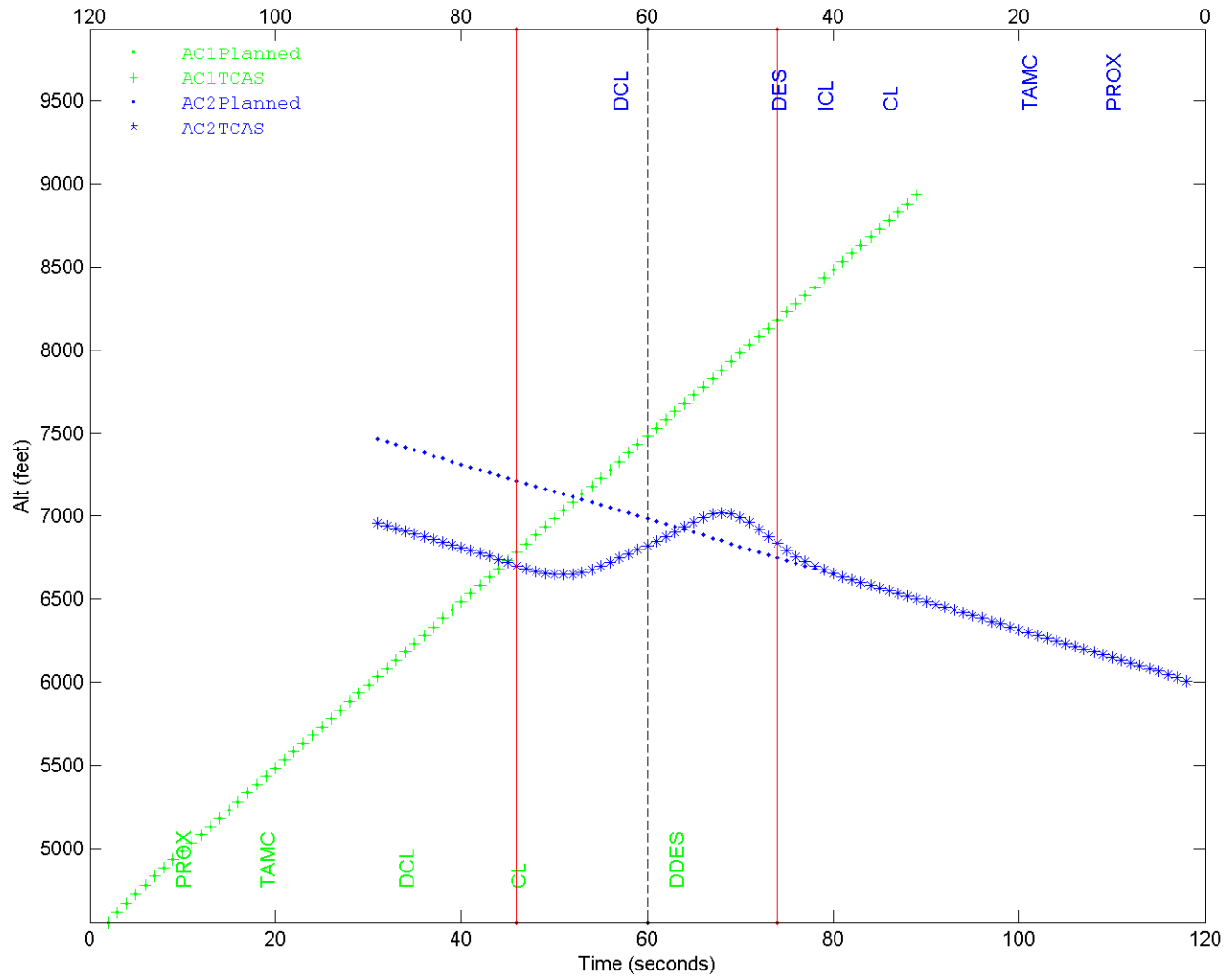


reit: 338 cata: 414 simmode: 4175053 V7-25 Vs V7-25 L14338B



reit: 338 cata: 414 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L14338C





Change 7.1 Non-responding Representative Save 04

Encounter Class: 5

Reit Number : 665

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 12 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | -750 | ft |
| AC1 rates: | -1000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.25 | g |
| AC2 acceleration time | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L25665
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-1000.0,-1000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -25 AC1 CPA ALT 3680

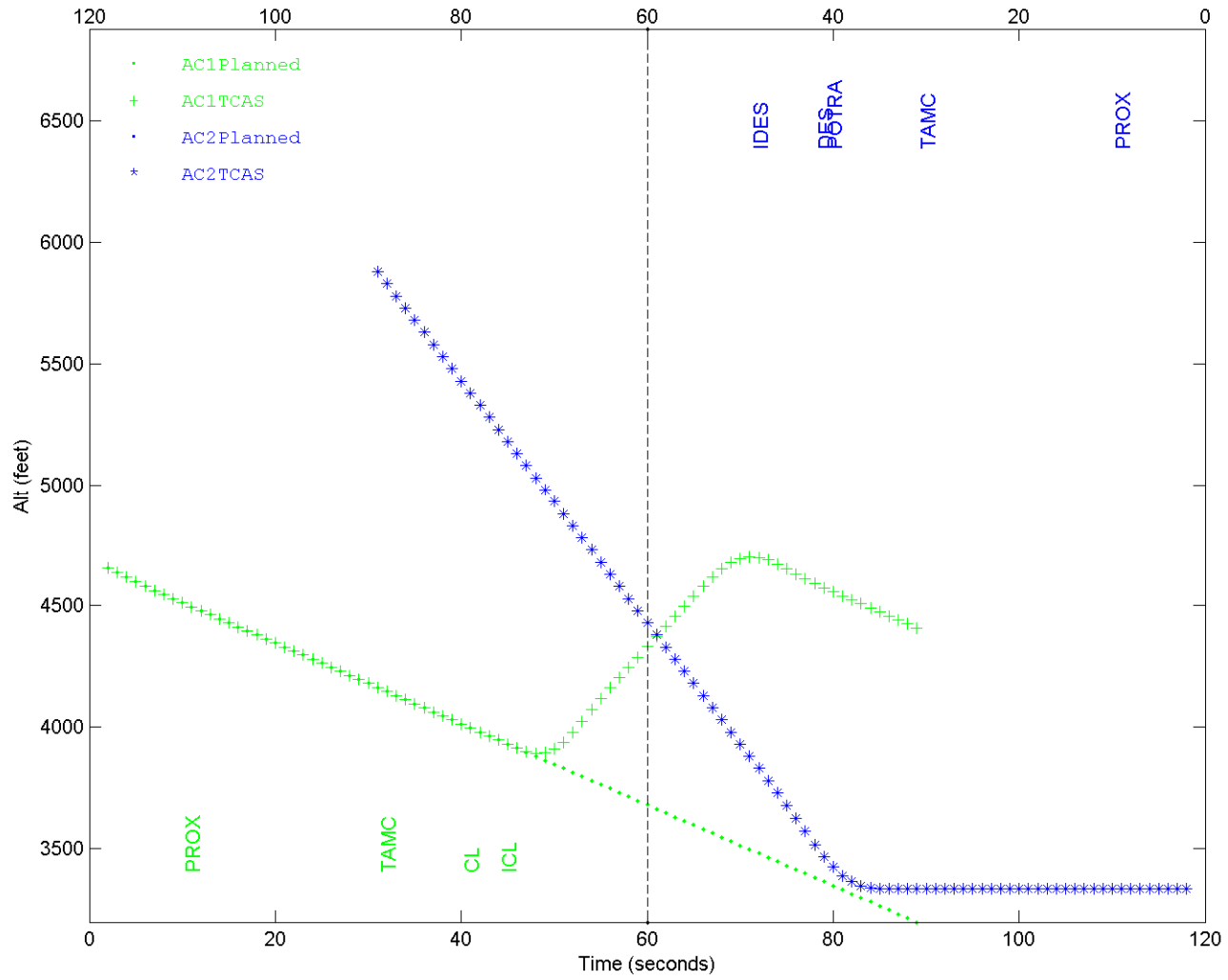
665 6.04A R L VS 6.04A NR H 5 -99.95 CROSSING_ENC
5 AC1: 4165024 TA :32 |RELZ| CL @41 [NX]| ICL @45
10 AC2: 4265142 TA :30 |TAUR| POTRA@40 (DFD) | DES @41 [NX]| IDES @48 ##NON-RESPONDING##

665 V7 25 FT R L VS V7 25 FT NR H 5 -84.43 CROSSING_ENC
5 AC1: 4175035 TA :31 |TAUR| POTRA@40 | CL @41 [NX]| ICL @44
10 AC2: 4275153 TA :30 |TAUR| DES @40 [NX] ##NON-RESPONDING##

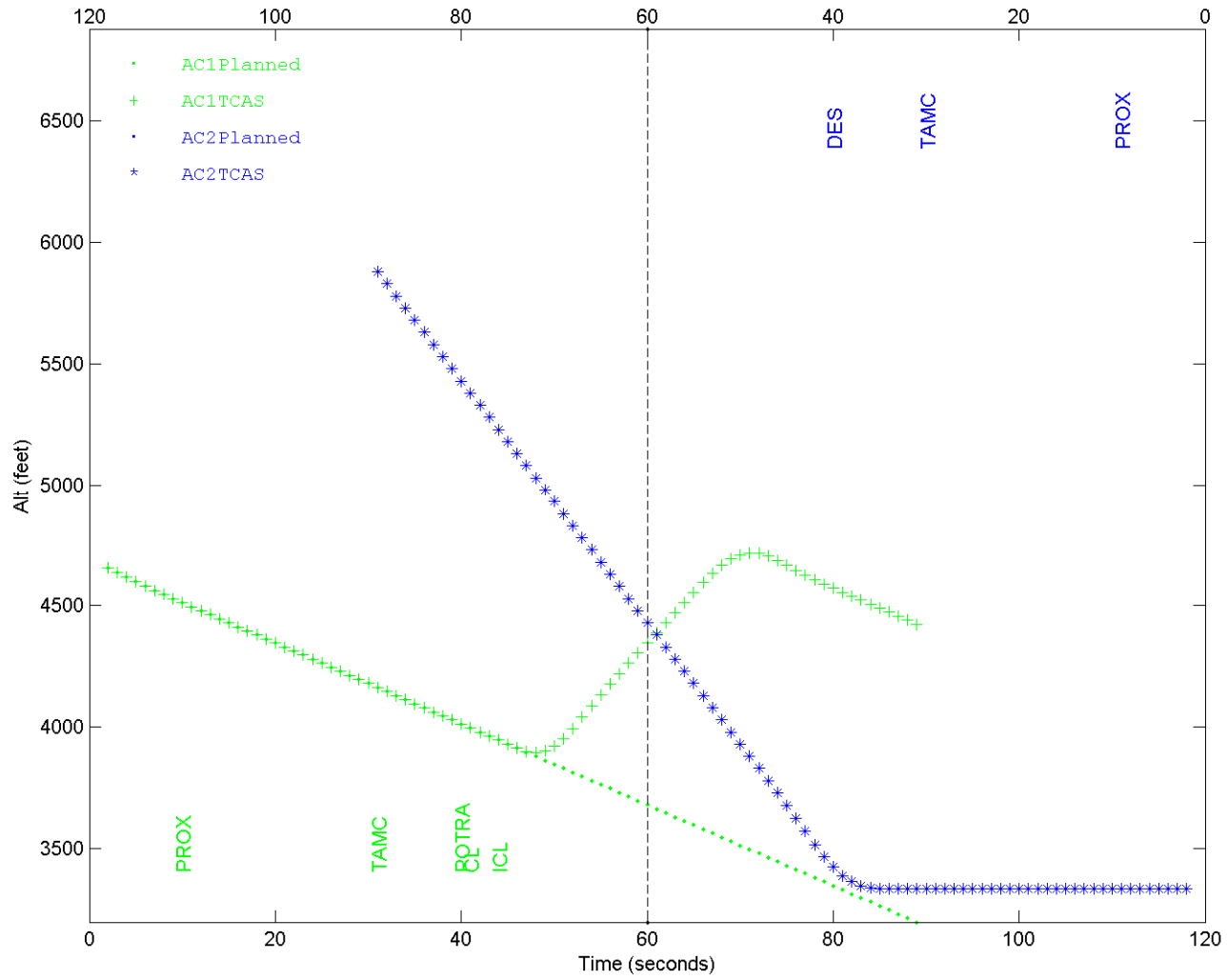
665 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 5 -135.10 CROSSING_ENC
5 AC1:*REV*8175035 TA :31 |TAUR| POTRA@40 | CL @41 [NX]| ICL @44 | DES @55
10 AC2:*REV*8275153 TA :30 |TAUR| DES @40 [NX]| CL @55 ##NON-RESPONDING##

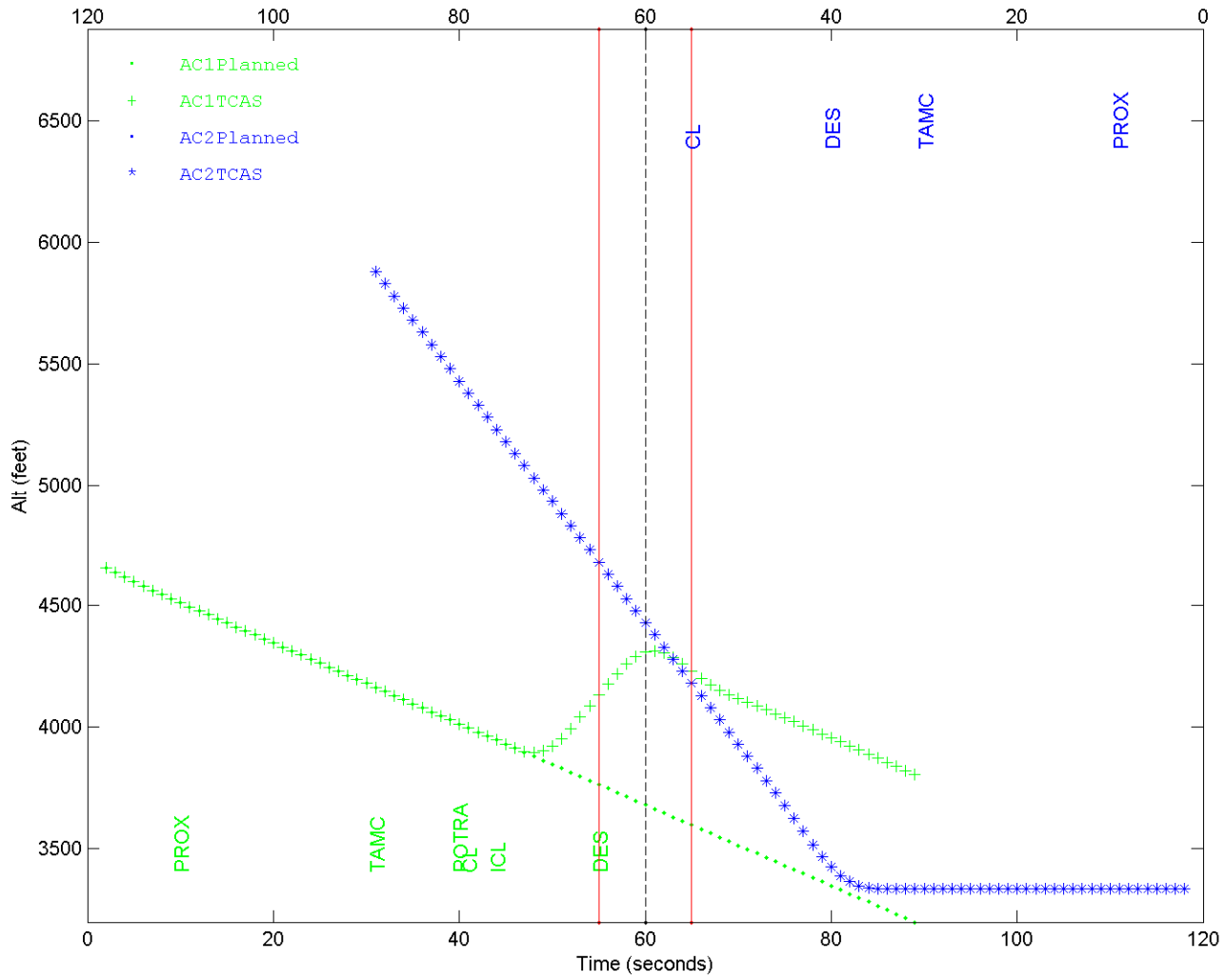
665 V7.1 25 FT R L VS V7.1 25 FT NR H 5 -135.10 CROSSING_ENC
5 AC1:*REV*8175035 TA :31 |TAUR| POTRA@40 | CL @41 [NX]| ICL @44 | DES @55
10 AC2:*REV*8275153 TA :30 |TAUR| DES @40 [NX]| CL @55 ##NON-RESPONDING##

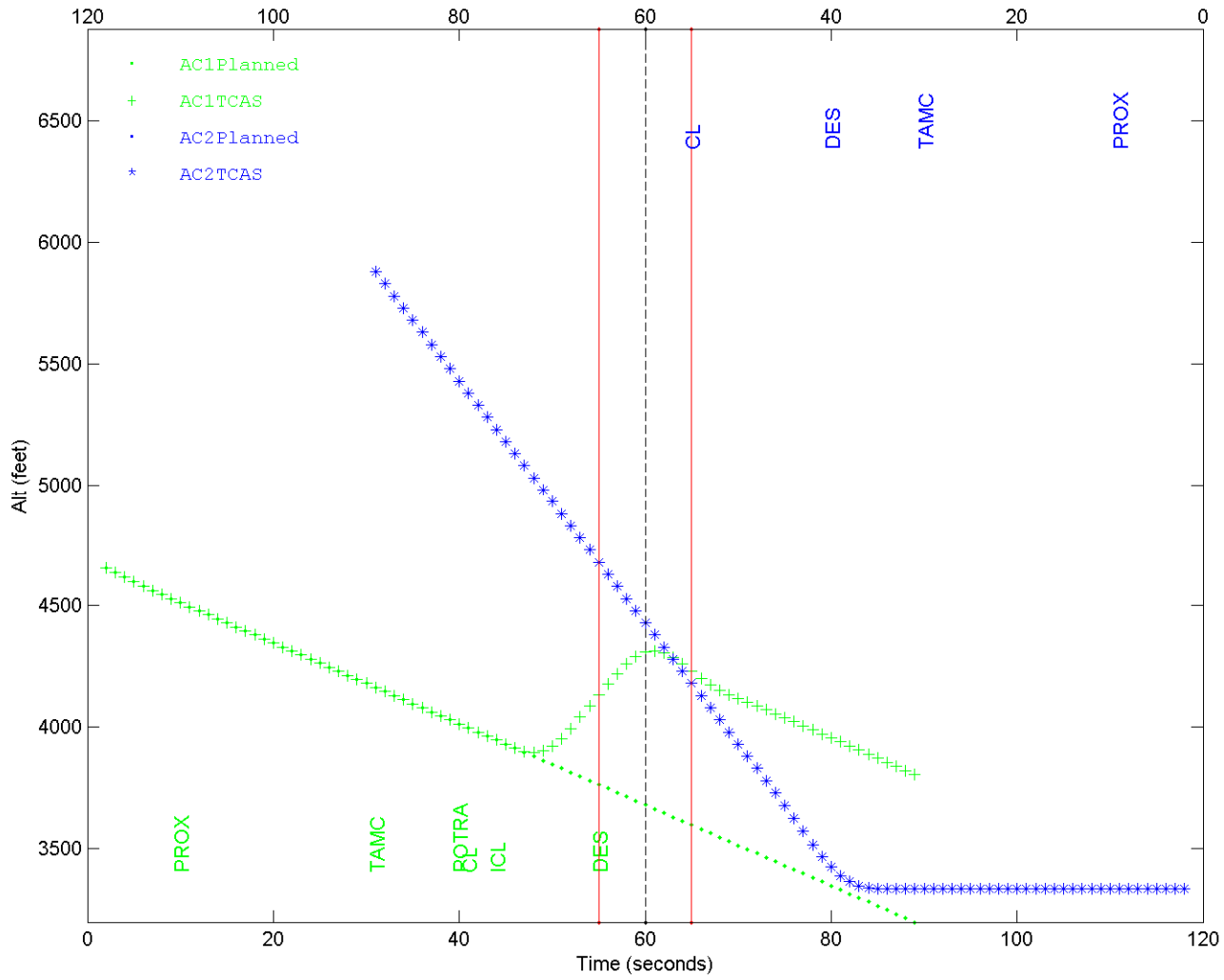
reit: 665 cata: 515 simmode: 4165024 6.04A Vs 6.04A L25665A



reit: 665 cata: 515 simmode: 4175035 V7-25 Vs V7-25 L25665B







Change 7.1 Non-responding Representative Save 05

Encounter Class: 5

Reit Number : 3870

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 12 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | -500 | ft |
| AC1 rates: | 1000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.15 | g |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H253870
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(1000.0,1000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.15g @ CPA -30 AC1 CPA ALT 7480

3870 6.04A R H VS 6.04A NR L 5 -58.75 CROSSING_ENC

10 AC1: 4165124 TA :19 |TAUR| CL @36 [NX]| ICL @40

5 AC2: 4265042 TA :19 |TAUR| LC5 @34 [NX]| DCL @38 | DES @39 | IDES @53 ##NON-
RESPONDING##

3870 V7 25 FT R H VS V7 25 FT NR L 5 -66.65 CROSSING_ENC

10 AC1: 4275035 TA :19 |PVMD| CL @35 [NX]| ICL @41

5 AC2: 4175153 TA :19 |TAUR| LC5 @34 [NX]| DCL @39 | DES @40 | IDES @51 ##NON-
RESPONDING##

3870 CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L 5 -674.96 CROSSING_ENC

10 AC1:*REV*8275035 TA :19 |PVMD| CL @35[NX]| ICL @41| DES @47| IDES @51| DCL @63

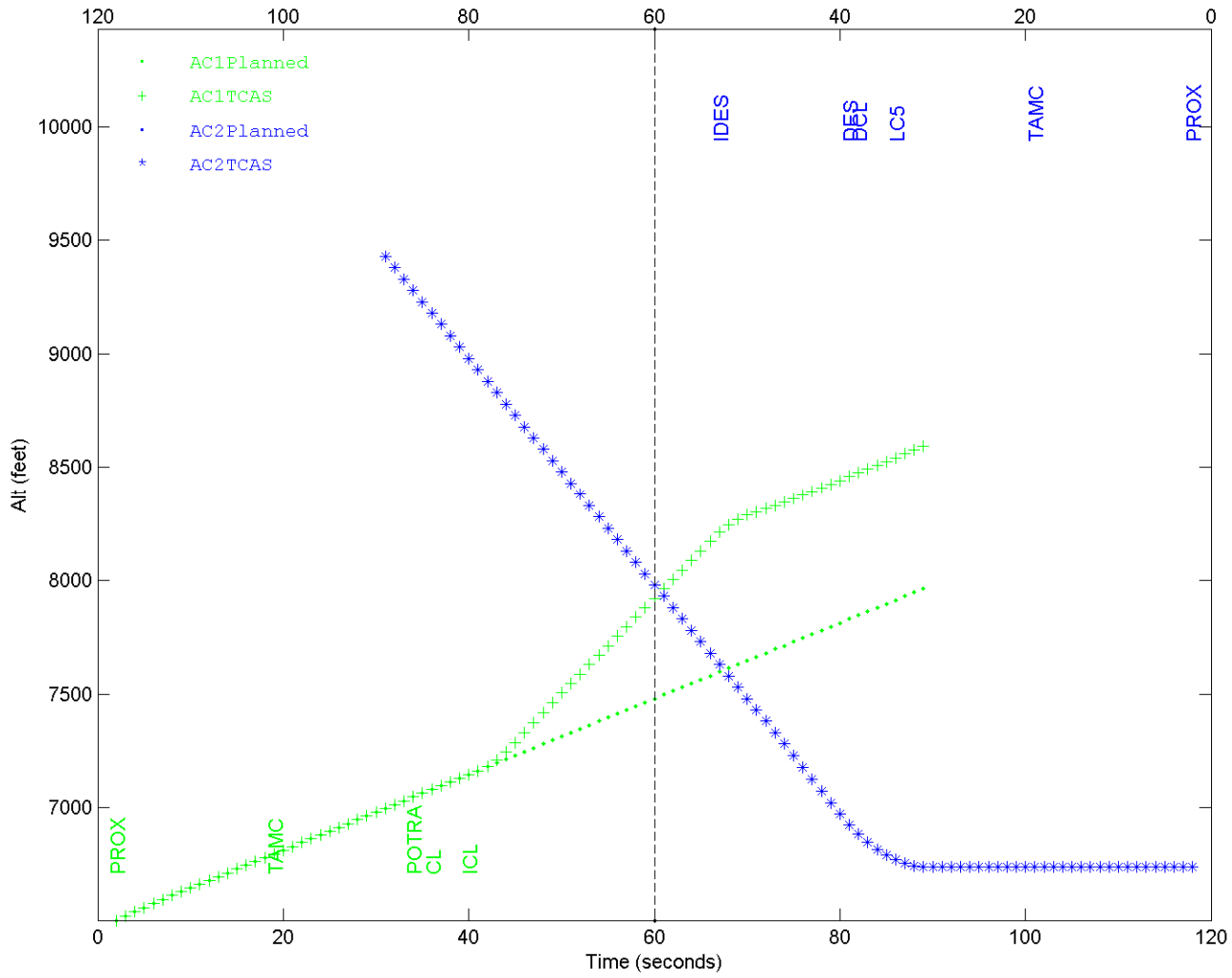
5 AC2:*REV*8175153 TA :19 |TAUR| LC5 @34[NX]| DCL @39| DES @40| CL @46| DDES @63 ##NON-
RESPONDING##

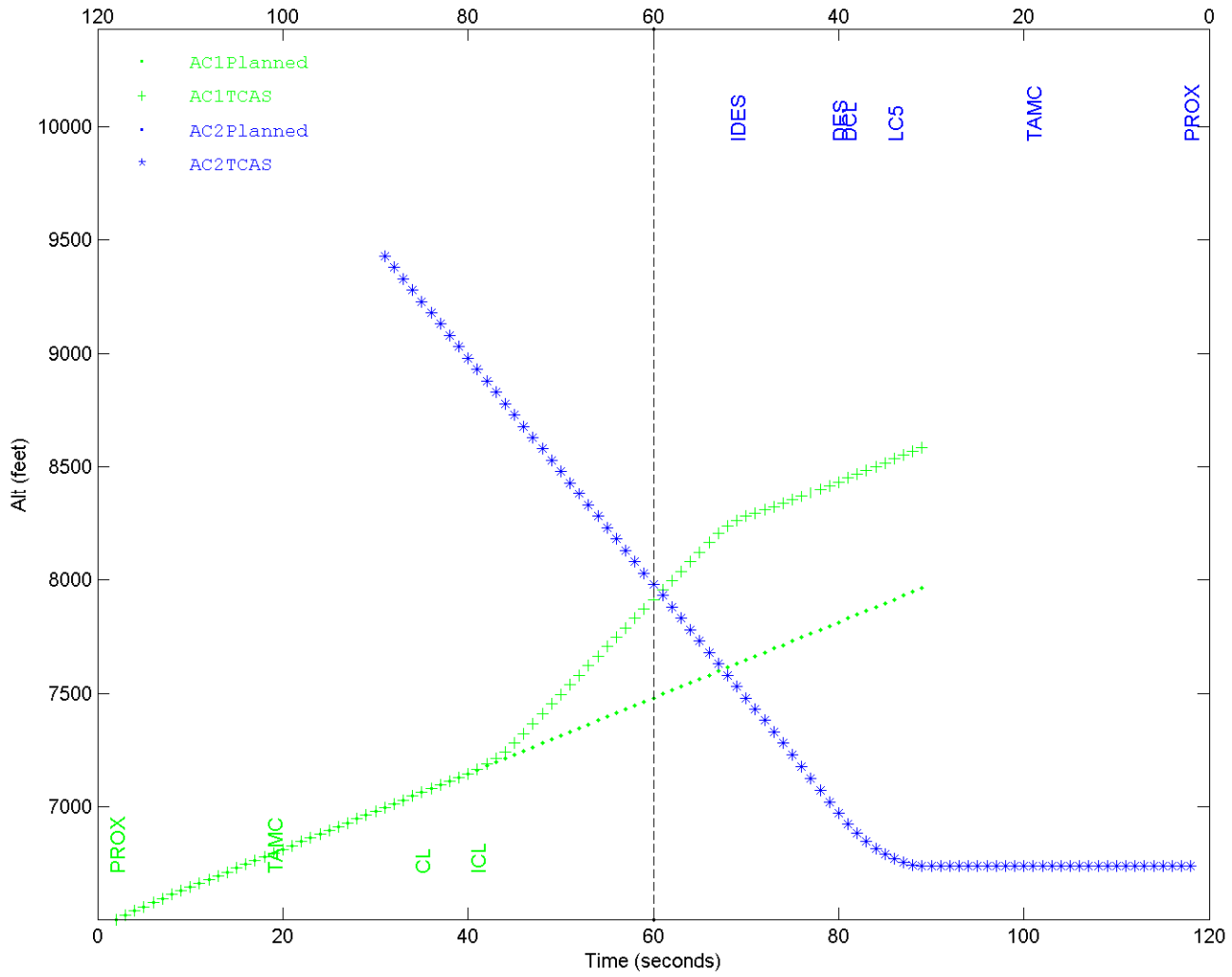
3870 V7.1 25 FT R H VS V7.1 25 FT NR L 5 -731.94 CROSSING_ENC

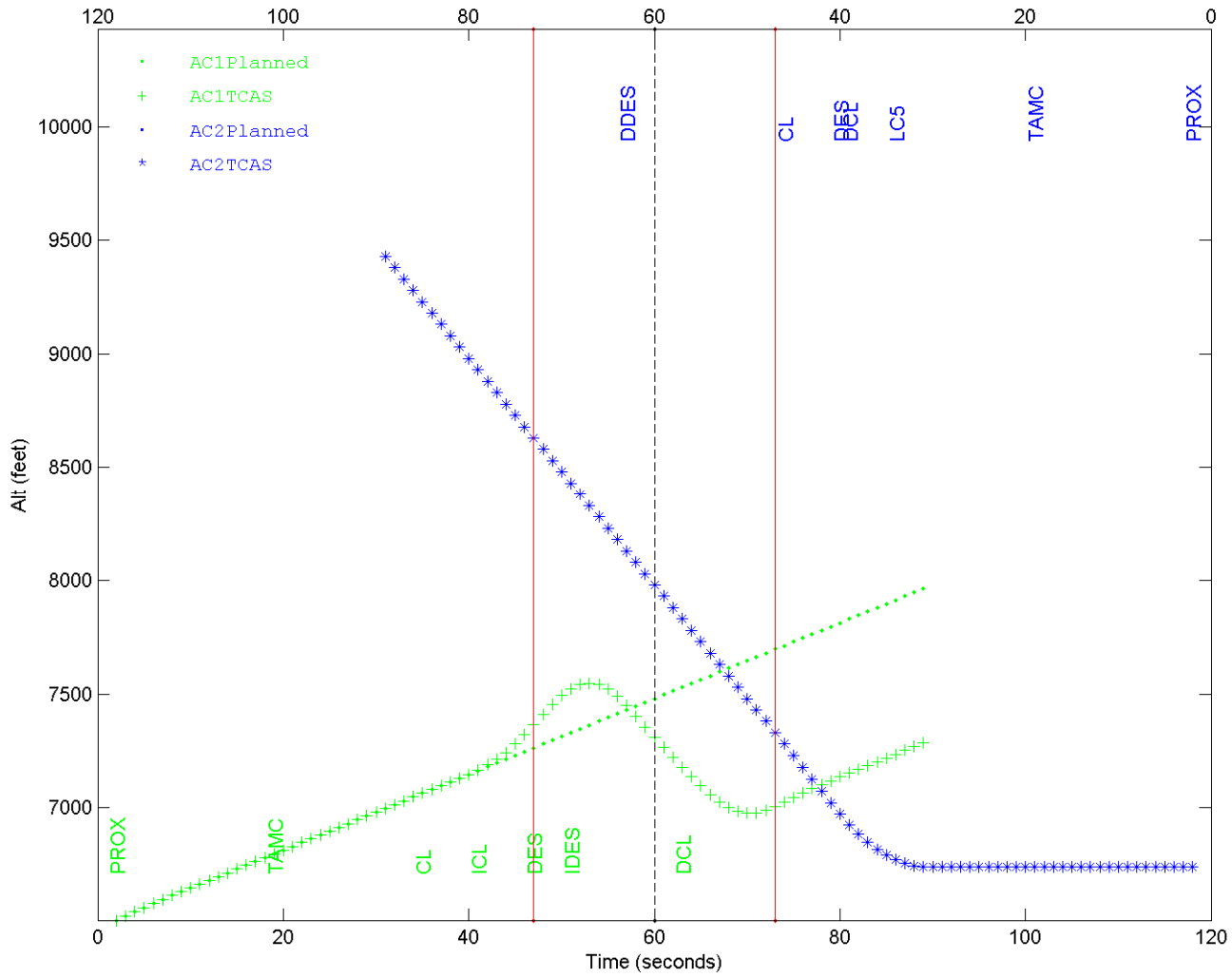
10 AC1:*REV*8275035 TA :19 |PVMD| CL @35 [NX]| ICL @41 | DES @45 | DCL @57

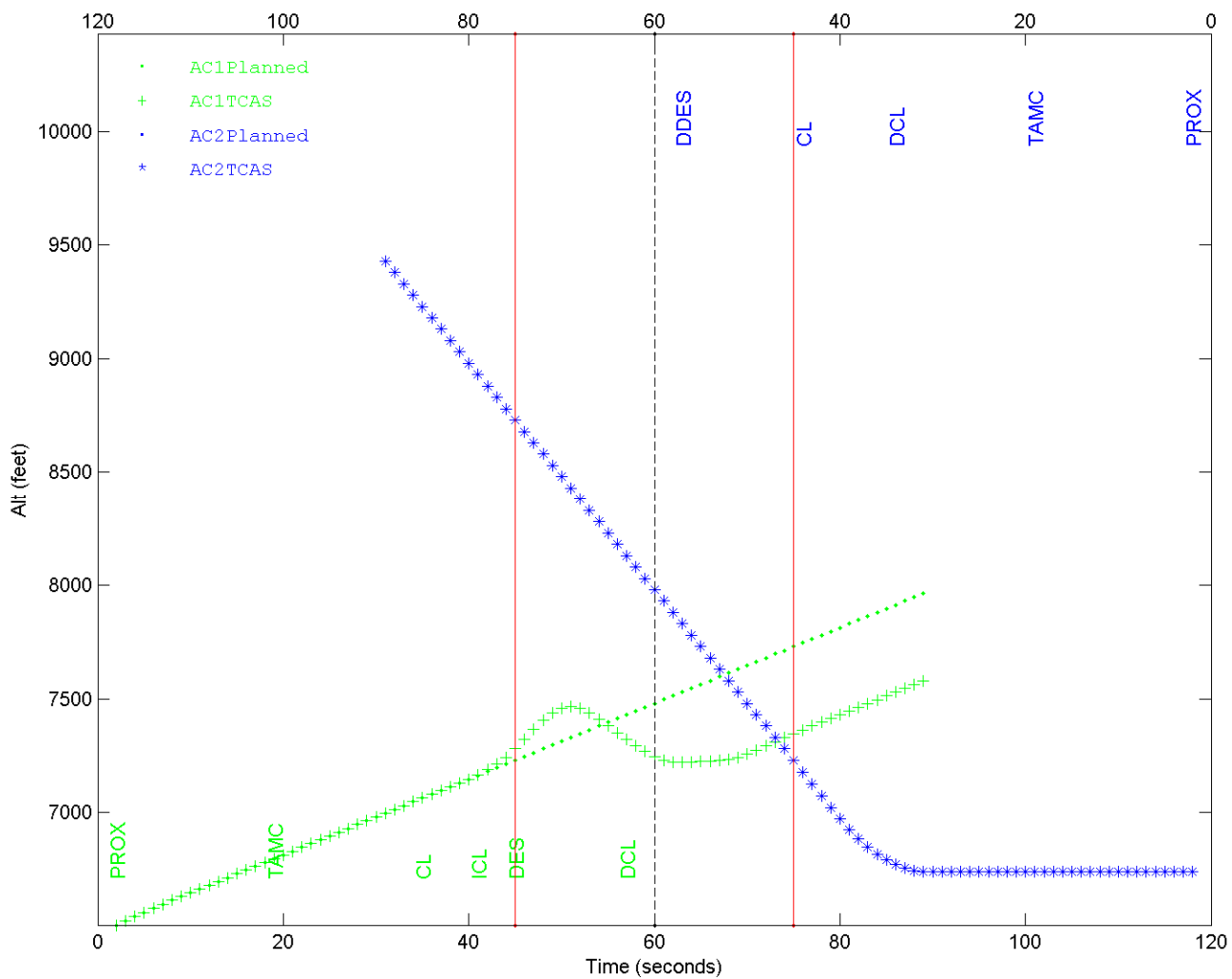
5 AC2:*REV*8175153 TA :19 |TAUR| DCL @34 [NX]| CL @44 | DDES @57 ##NON-RESPONDING##

reit: 3870 cata: 515 simmode: 4165124 6.04A Vs 6.04A H253870A









Change 7.1 Non-responding Representative Save 06

Encounter Class: 5

Reit Number : 1033

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 25 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.05 | g |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned maneuver.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L251033
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.05g @ CPA -30 AC1 CPA ALT 3680

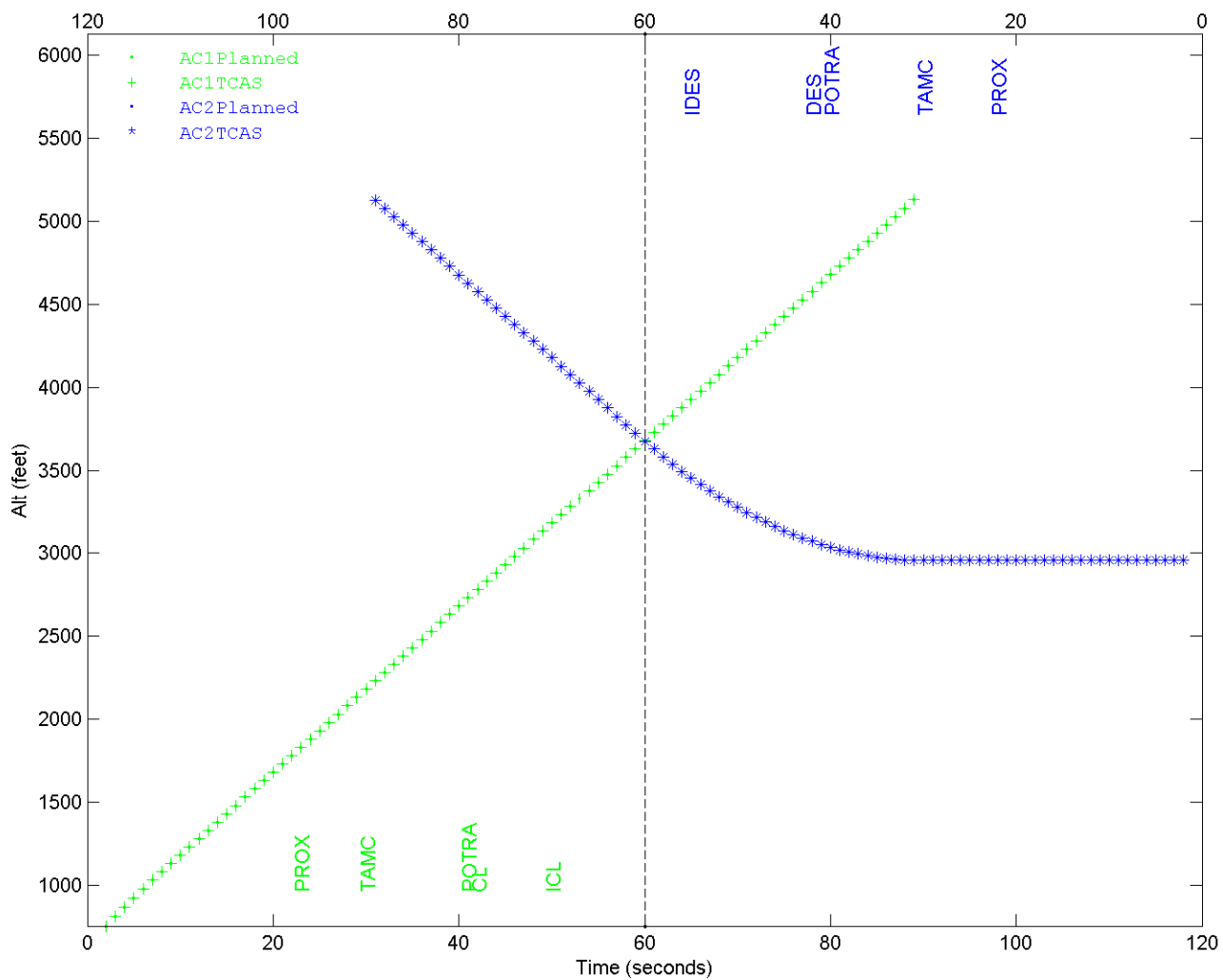
1033 6.04A R L VS 6.04A NR H 5 0.00 CROSSING_ENC
5 AC1: 4165024 TA :30 |PVMD| CL @42 [X] | ICL @50
10 AC2: 4265142 TA :30 |TAUR| POTRA@40 (DFD)| DES @42 [X] | IDES @55 ##NON-RESPONDING##

1033 V7 25 FT R L VS V7 25 FT NR H 5 0.00 CROSSING_ENC
5 AC1: 4175035 TA :30 |TAUR| CL @40 [X]
10 AC2: 4275153 TA :30 |TAUR| LC5 @40 [X]| DCL @50 | DES @51 | IDES @53 ##NON-RESPONDING##

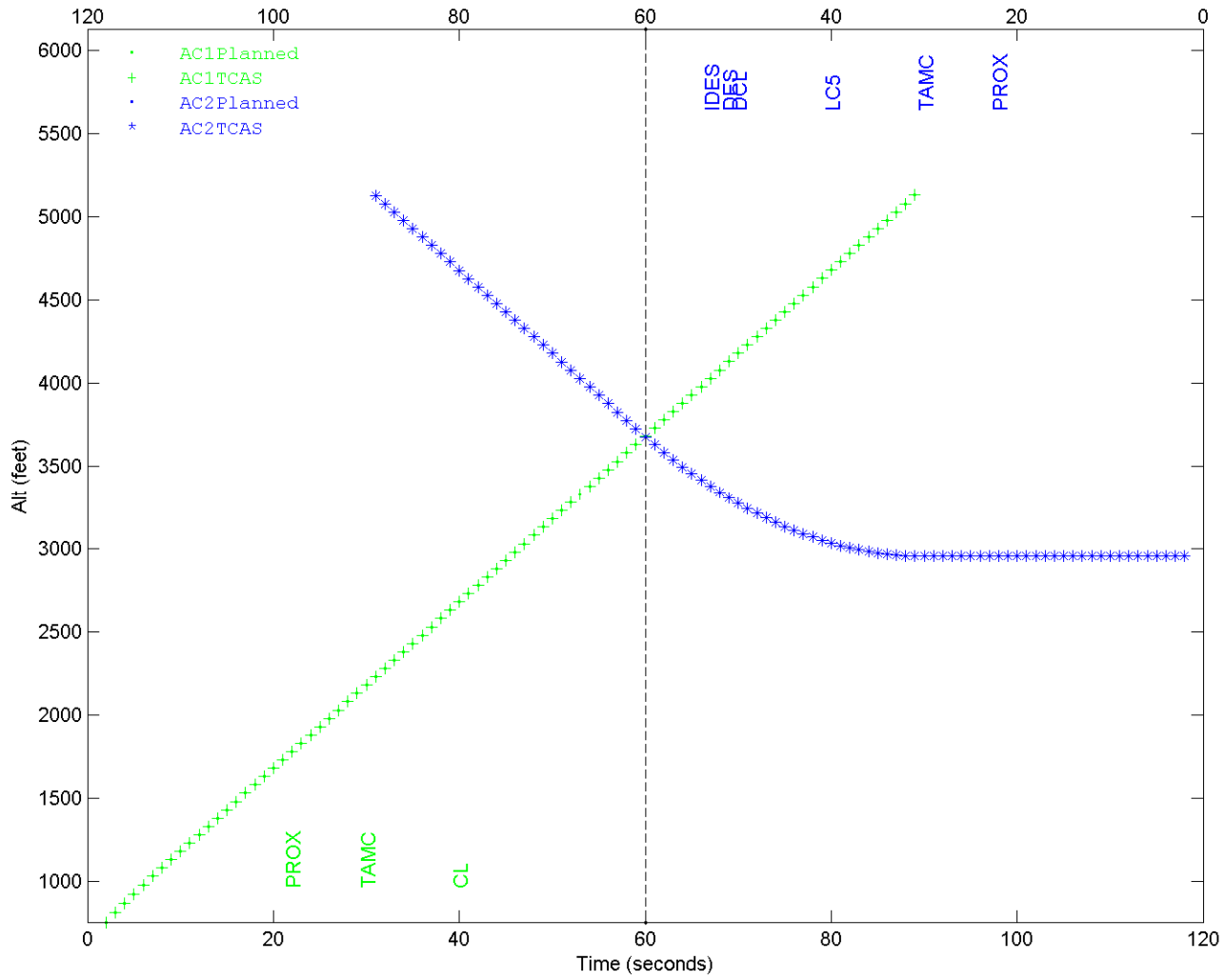
1033 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 5 -275.88 NON_CROSSING_ENC
5 AC1:*REV*8175035 TA :30 |TAUR| CL @40 [X]| DES @51 | IDES @53
10 AC2:*REV*8275153 TA :30 |TAUR| LC5 @40 [X]| DCL @50 | CL @51 | ICL @53 ##NON-RESPONDING##

1033 V7.1 25 FT R L VS V7.1 25 FT NR H 5 -275.88 NON_CROSSING_ENC
5 AC1:*REV*8175035 TA :30 |TAUR| CL @40 [X] | DES @51 | IDES @53
10 AC2:*REV*8275153 TA :30 |TAUR| DCL @40 [X] | CL @51 | ICL @53 ##NON-RESPONDING##

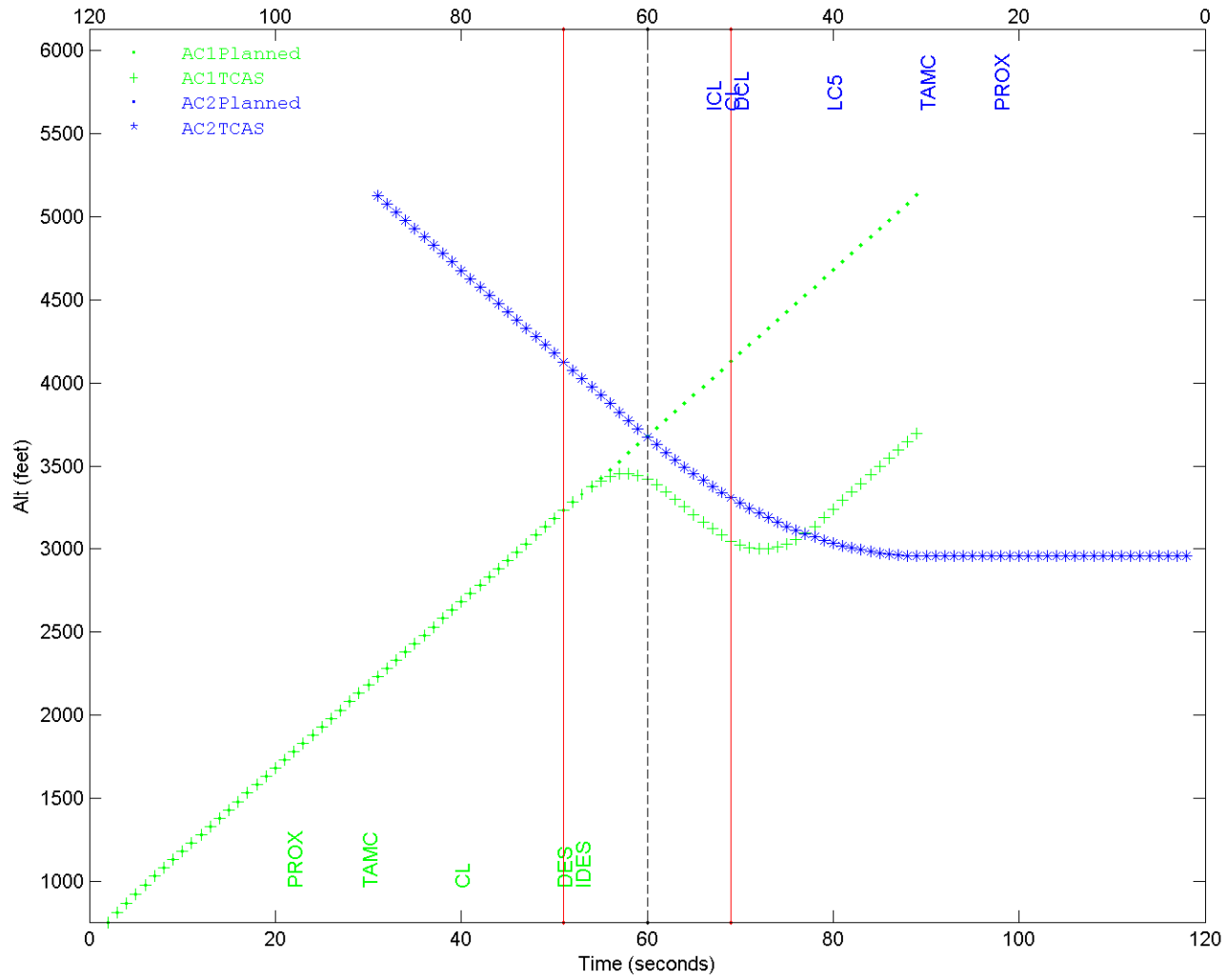
reit: 1033 cata: 515 simmode: 4165024 6.04A Vs 6.04A L251033A

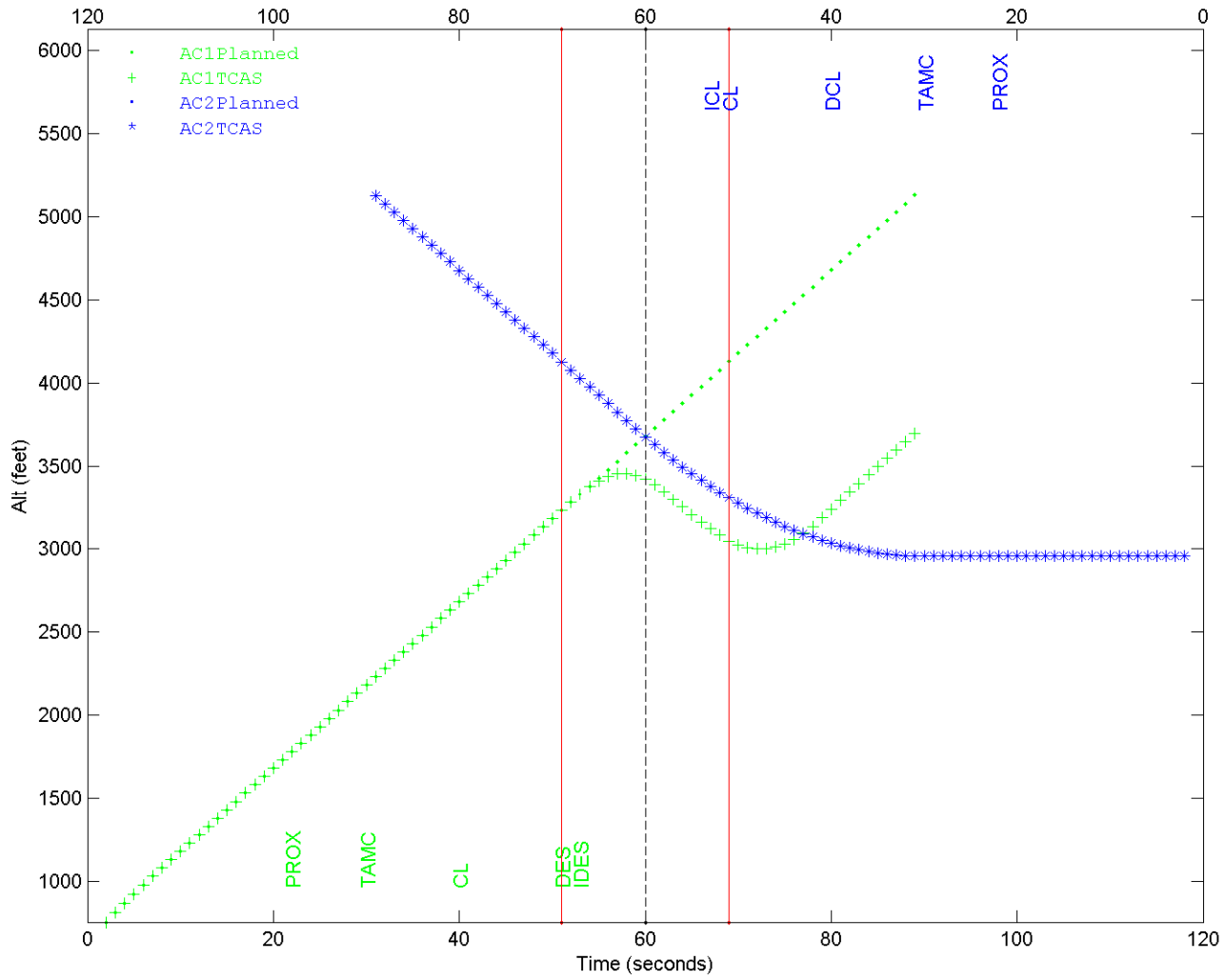


reit: 1033 cata: 515 simmode: 4175035 V7-25 Vs V7-25 L251033B



reit: 1033 cata: 515 simmode: 8175035 CP112EV1.2-25 Vs CP112EV1.2-25 L251033C





Change 7.1 Non-responding Representative Save 07

Encounter Class: 5

Reit Number : 5569

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 3 | |
| AC1 low ID | no | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.05 | g |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Climbing vertical chase caused by planned maneuver.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H255569
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,3000.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.05g @ CPA -30 AC1 CPA ALT 7520

```
-----
5569 6.04A R H VS 6.04A NR L 5 0.00 CROSSING_ENC

10 AC1: 4165124 TA :19 |PVMD| CL @39 [X] | ICL @44

5 AC2: 4265042 TA :19 |TAUR| LC5 @37 [X] | LC5 @41 | DCL @46 | DES @47
      | IDES @53 ##NON-RESPONDING##

-----
5569 V7 25 FT R H VS V7 25 FT NR L 5 0.00 CROSSING_ENC

10 AC1: 4275035 TA :19 |PVMD| CL @38 [X]

5 AC2: 4175153 TA :19 |TAUR| POTRA@34 (LVW) | LC5 @37 [X]| LC5 @38 | DCL @46
      | DES @47 | IDES @51 ##NON-RESPONDING##

-----
5569 CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L 5 -90.08 NON_CROSSING_ENC

10 AC1:*REV*8275035 TA :19 |PVMD| CL @38 [X] | DES @54

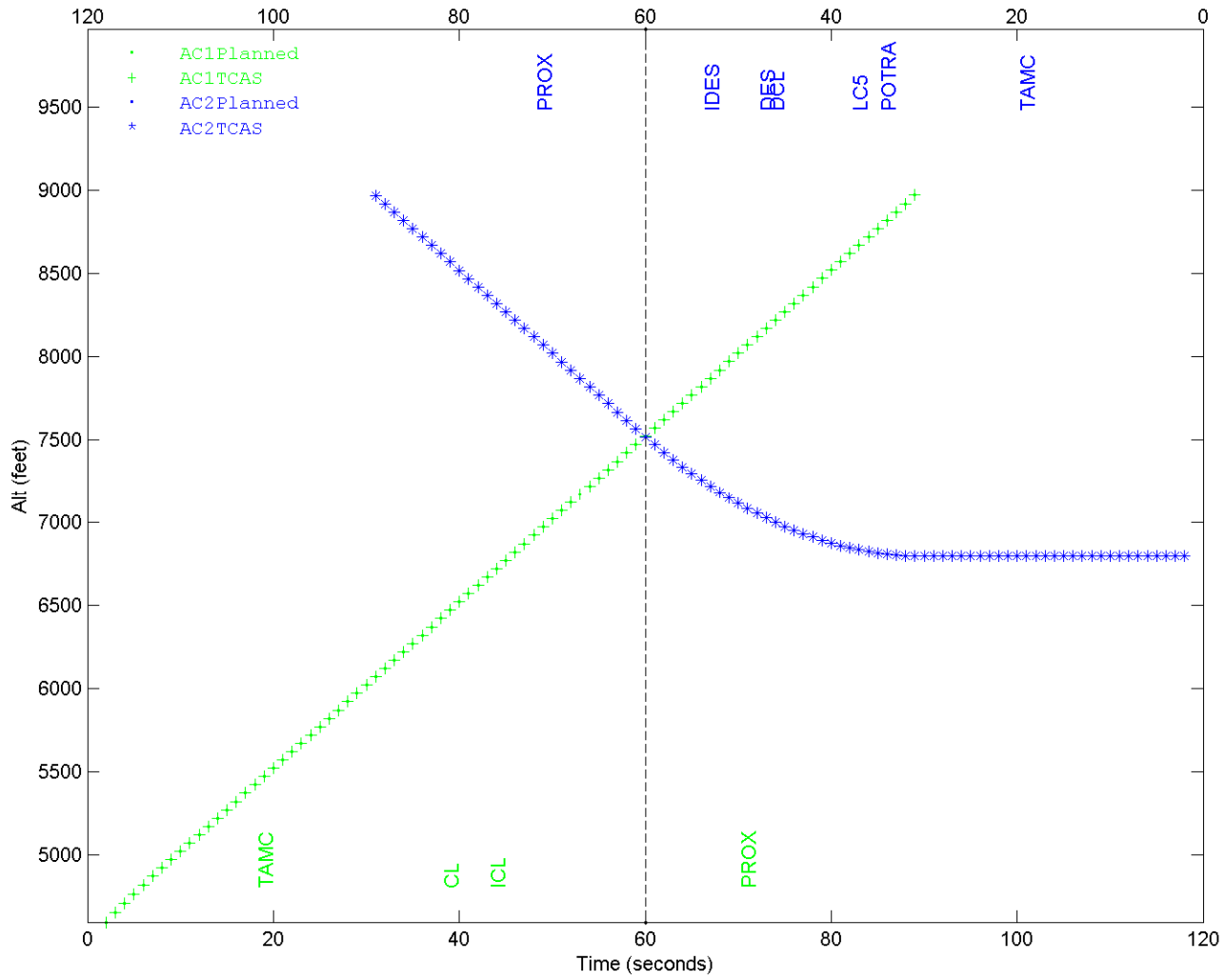
5 AC2:*REV*8175153 TA :19 |TAUR| POTRA@34 (LVW) | LC5 @37 [X]| LC5 @38 | DCL @46
      | DES @47 | IDES @51 | CL @53 ##NON-RESPONDING##

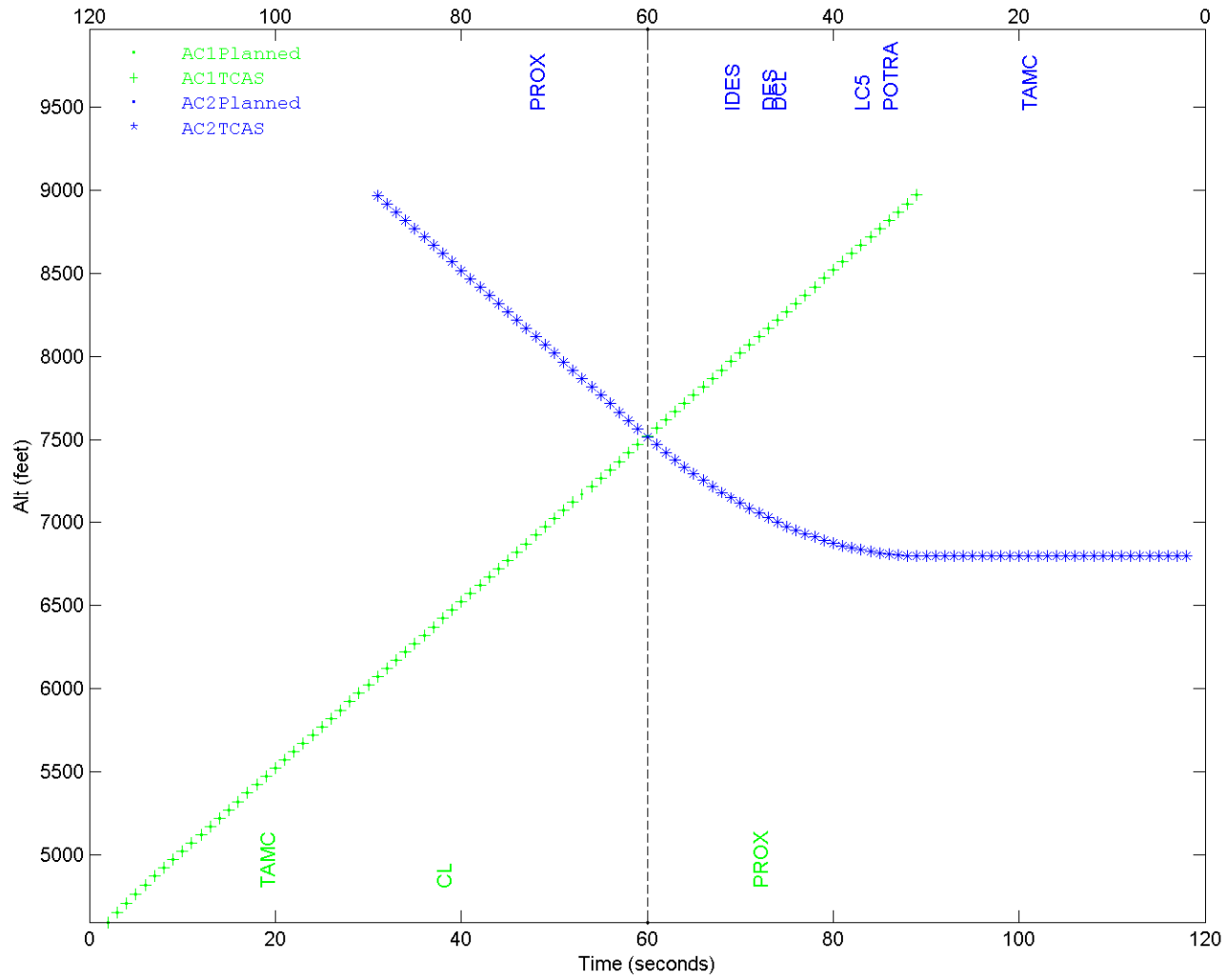
-----
5569 V7.1 25 FT R H VS V7.1 25 FT NR L 5 -451.89 NON_CROSSING_ENC

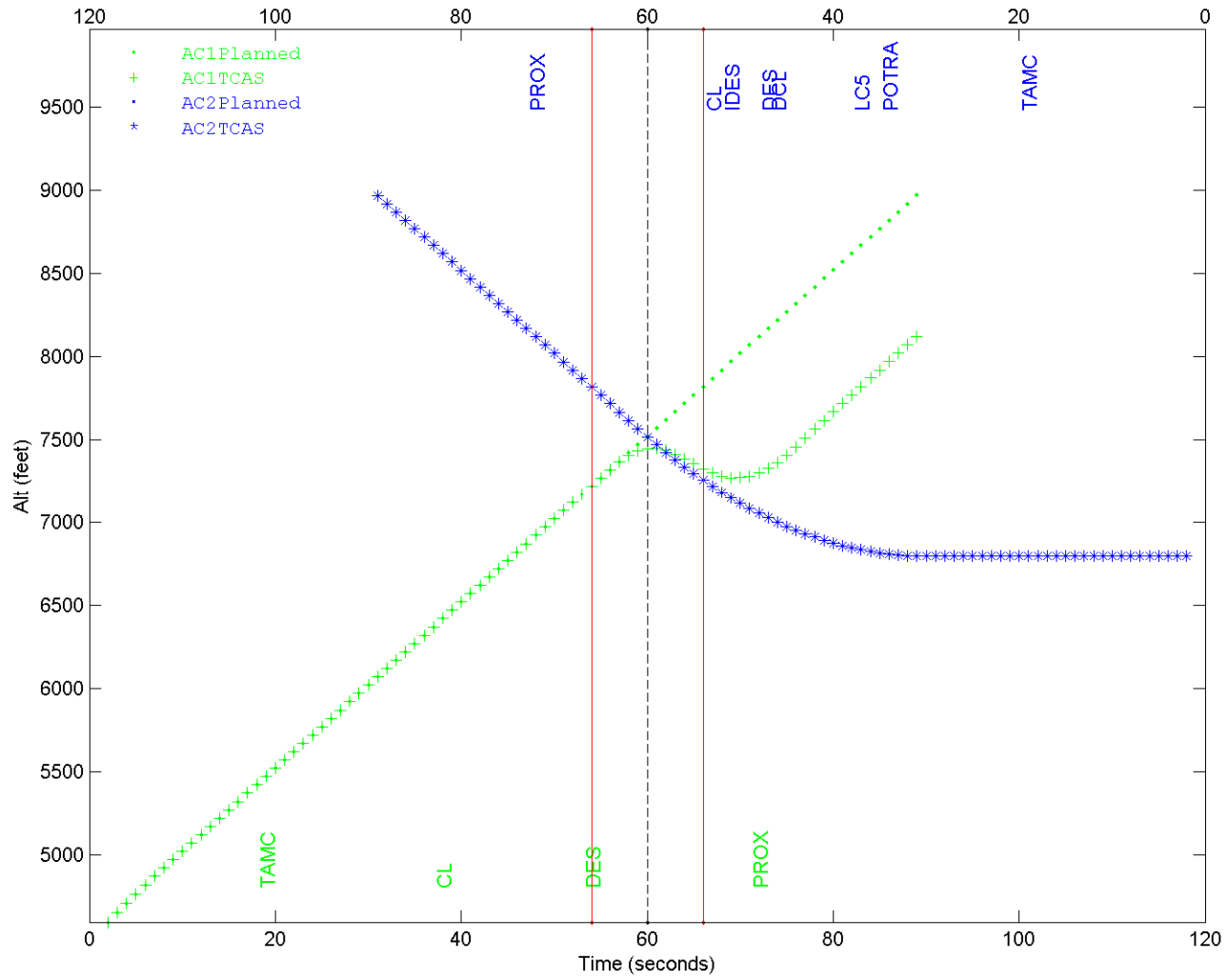
10 AC1:*REV*8275035 TA :19 |PVMD| CL @38 [X] | DES @49 | IDES @51 | DCL @63

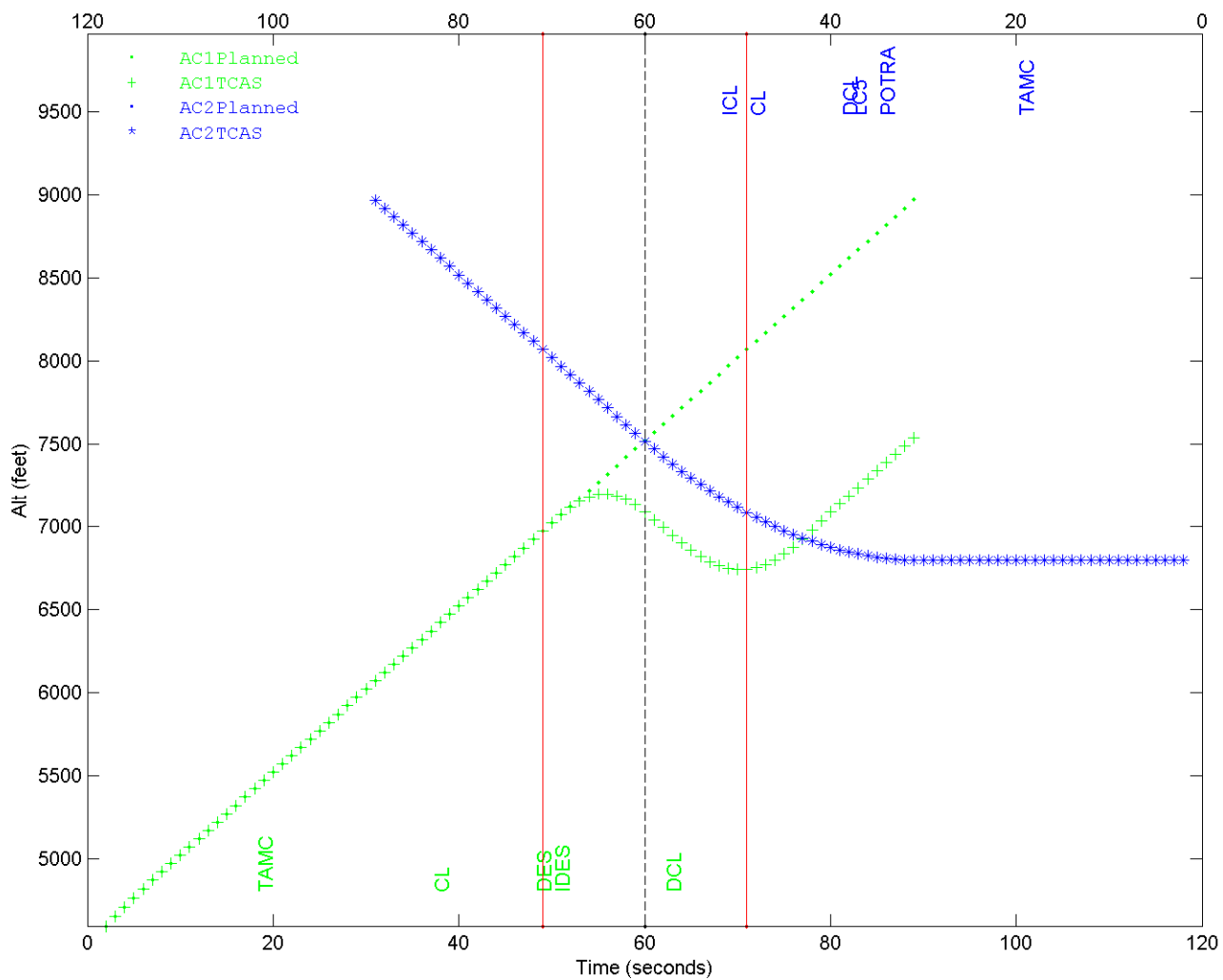
5 AC2:*REV*8175153 TA :19 |TAUR| POTRA@34 (LVW)| LC5 @37 [X]| DCL @38 | CL @48
      | ICL @51 ##NON-RESPONDING##
```


reit: 5569 cata: 515 simmode: 4165124 6.04A Vs 6.04A H255569A









Change 7.1 Non-responding Representative Save 08

Encounter Class: 5

Reit Number : 3710

Encounter Characterization

| | | |
|-------------------------------|---------------------|-----|
| Number of encounters in group | 8 | |
| AC1 low ID | yes | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | -500, -750 | ft |
| AC1 rates: | -1000, -3000, -5000 | fpm |
| AC2 rates: | 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.25 | g |
| AC2 acceleration time | CPA – 25 | sec |
| Encounters with reversed RAs | 0 | % |
| Vertical chase | no | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Responding aircraft received LOLO rather than AVSA.
Strengthening of DES to IDES came 5 seconds sooner.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L153710
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-1000.0,-1000.0) AC2 RATES(0.0,5000.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -25 AC1 CPA ALT 7480

```

-----
3710 6.04A NR L VS 6.04A R H 5 -12.45 CROSSING_ENC

5 AC1: 4165042 TA :42 |TAUV| CL @42 [NX]| ICL @46 ##NON-RESPONDING##
10 AC2: 4265124 TA :39 |TAUV| POTRA@41 (DFD) | DES @42 [NX]| IDES @52

-----
3710 V7 25 FT NR L VS V7 25 FT R H 5 94.02 NON_CROSSING_ENC

5 AC1: 4175053 TA :40 |TAUV| POTRA@41 | CL @42 [NX]| ICL @49 ##NON-RESPONDING##
10 AC2: 4275135 TA :39 |TAUV| LC5 @41 [NX]| DCL @42 | DES @43 | IDES @52

-----
3710 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 5 94.02 NON_CROSSING_ENC

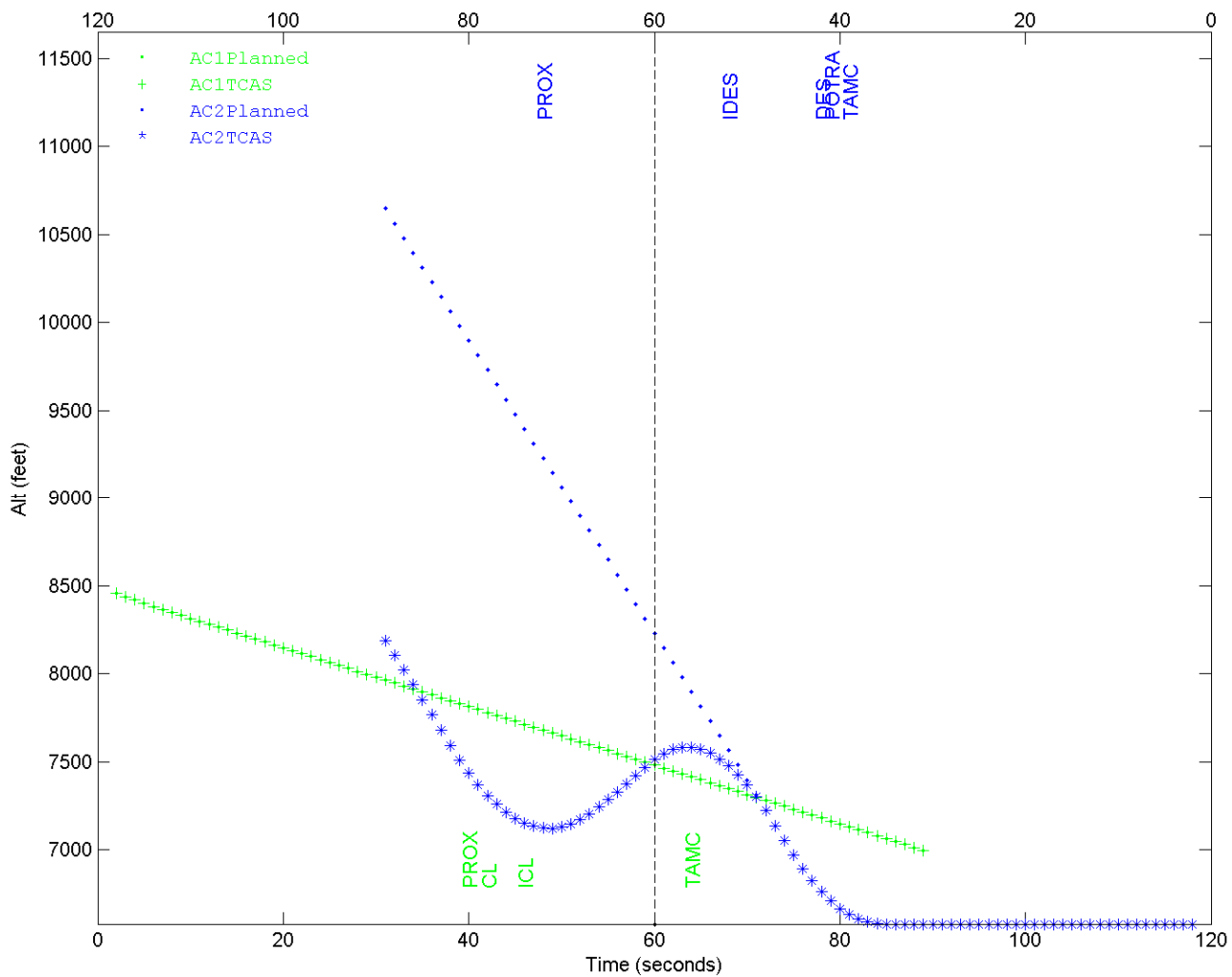
5 AC1: 8175053 TA :40 |TAUV| POTRA@41 | CL @42 [NX]| ICL @49 ##NON-RESPONDING##
10 AC2: 8275135 TA :39 |TAUV| LC5 @41 [NX]| DCL @42 | DES @43 | IDES @52

-----
3710 V7.1 25 FT NR L VS V7.1 25 FT R H 5 209.39 NON_CROSSING_ENC

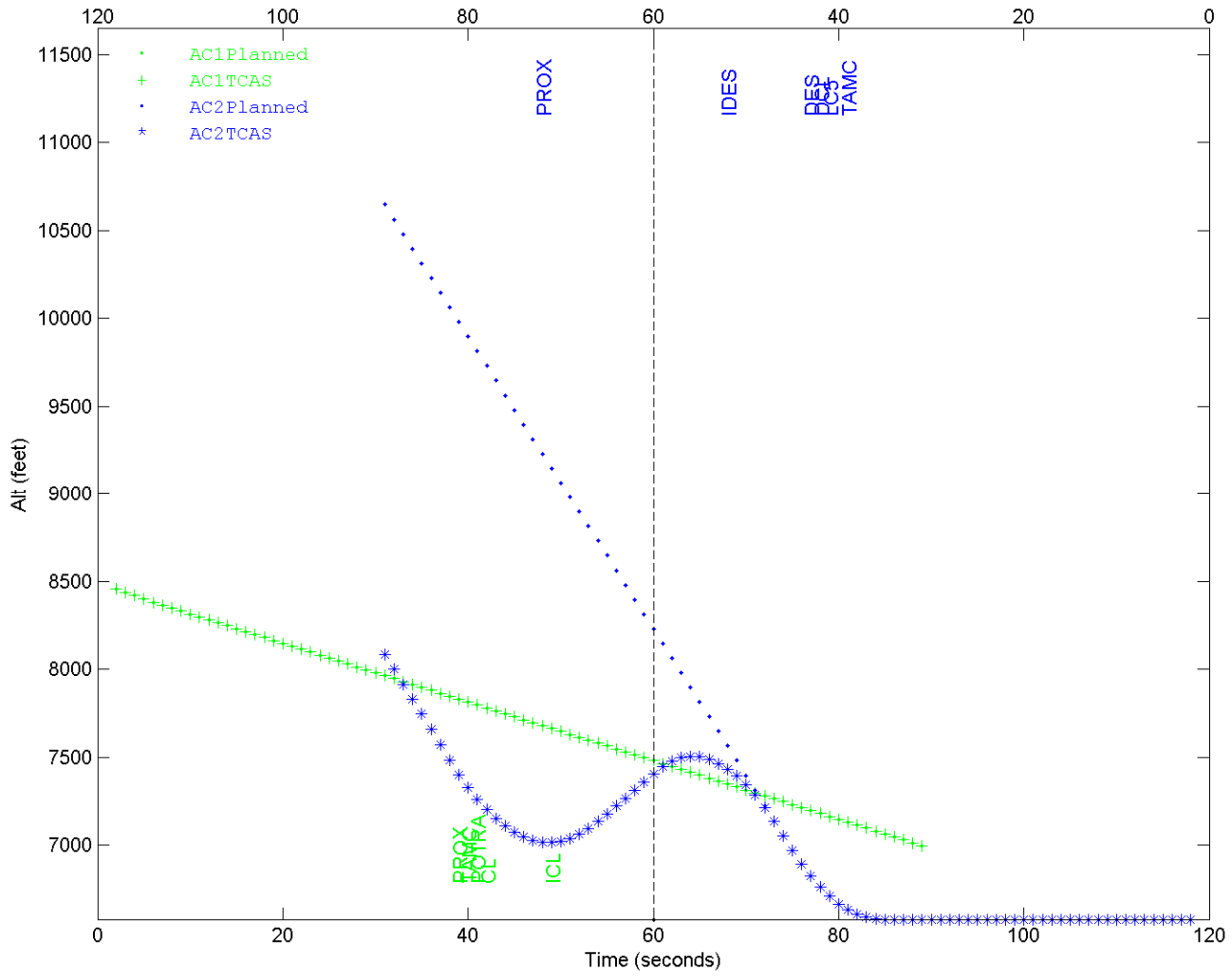
5 AC1: 8175053 TA :40 |TAUV| POTRA@41 | CL @42 [NX]| ICL @49 ##NON-RESPONDING##
10 AC2: 8275135 TA :39 |TAUV| DCL @41 [NX]| DES @44 | IDES @47

```

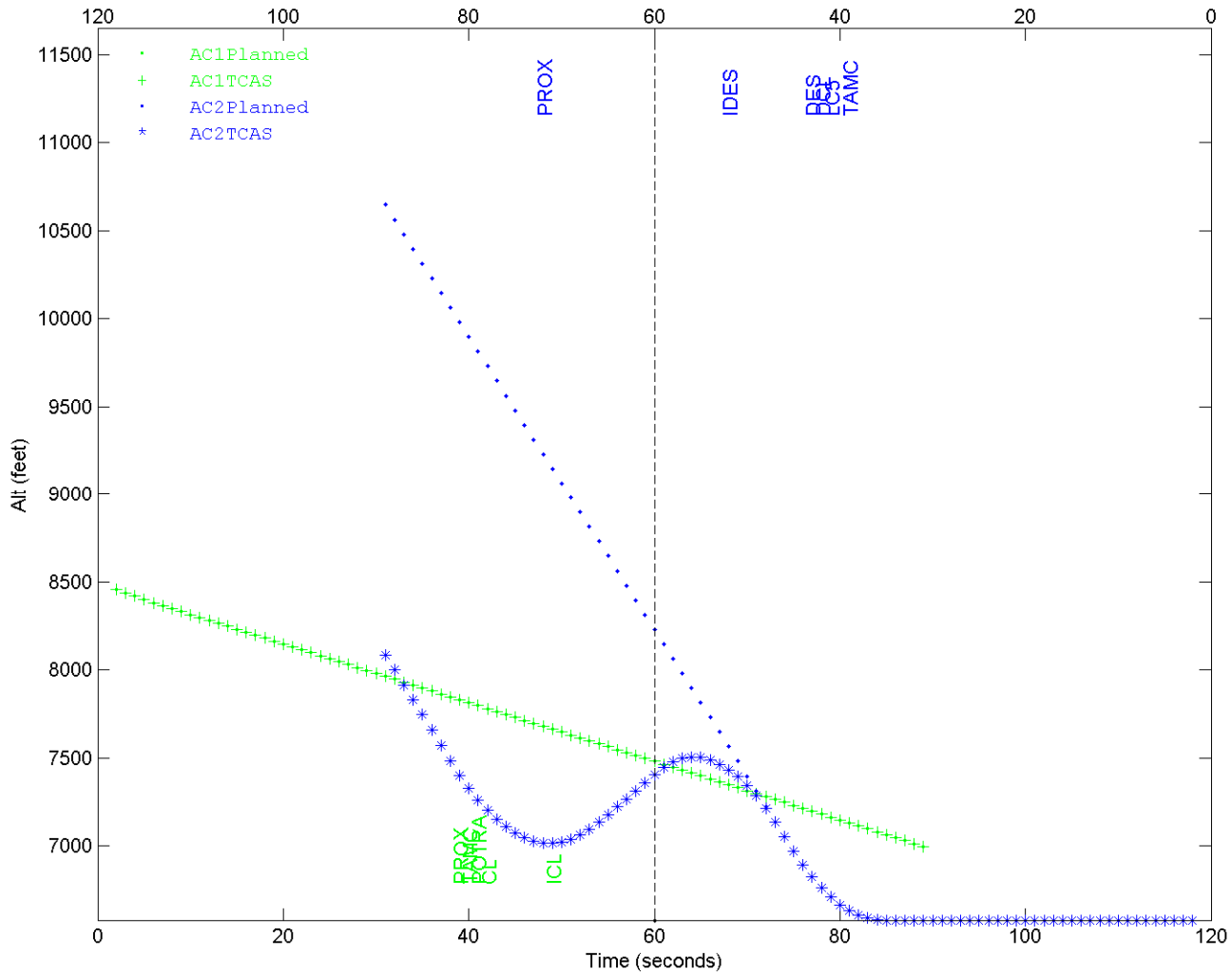
reit: 3710 cata: 515 simmode: 4165042 6.04A Vs 6.04A L153710A



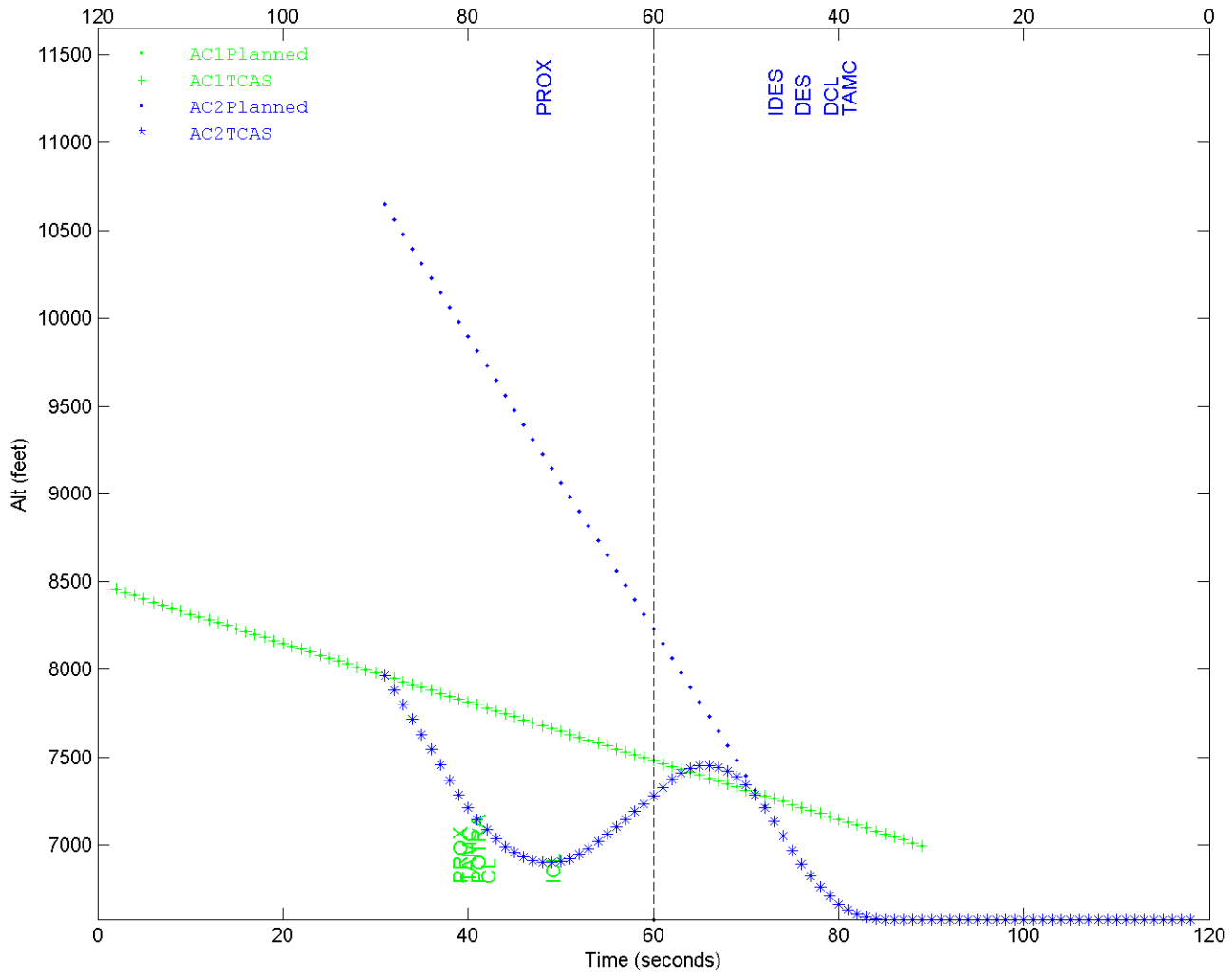
reit: 3710 cata: 515 simmode: 4175053 V7-25 Vs V7-25 L153710B



reit: 3710 cata: 515 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L153710C



reit: 3710 cata: 515 simmode: 8175053 V7.1-25 Vs V7.1-25 L153710D



Change 7.1 Non-responding Representative Save 09

Encounter Class: 6

Reit Number : 4792

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 11 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | -3000 | fpm |
| AC2 rates: | -5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.05 | g |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Pre-existing descending vertical chase.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L264792
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(-3000.0,-3000.0) AC2 RATES(-5000.0,0.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.05g @ CPA -30 AC1 CPA ALT 7520

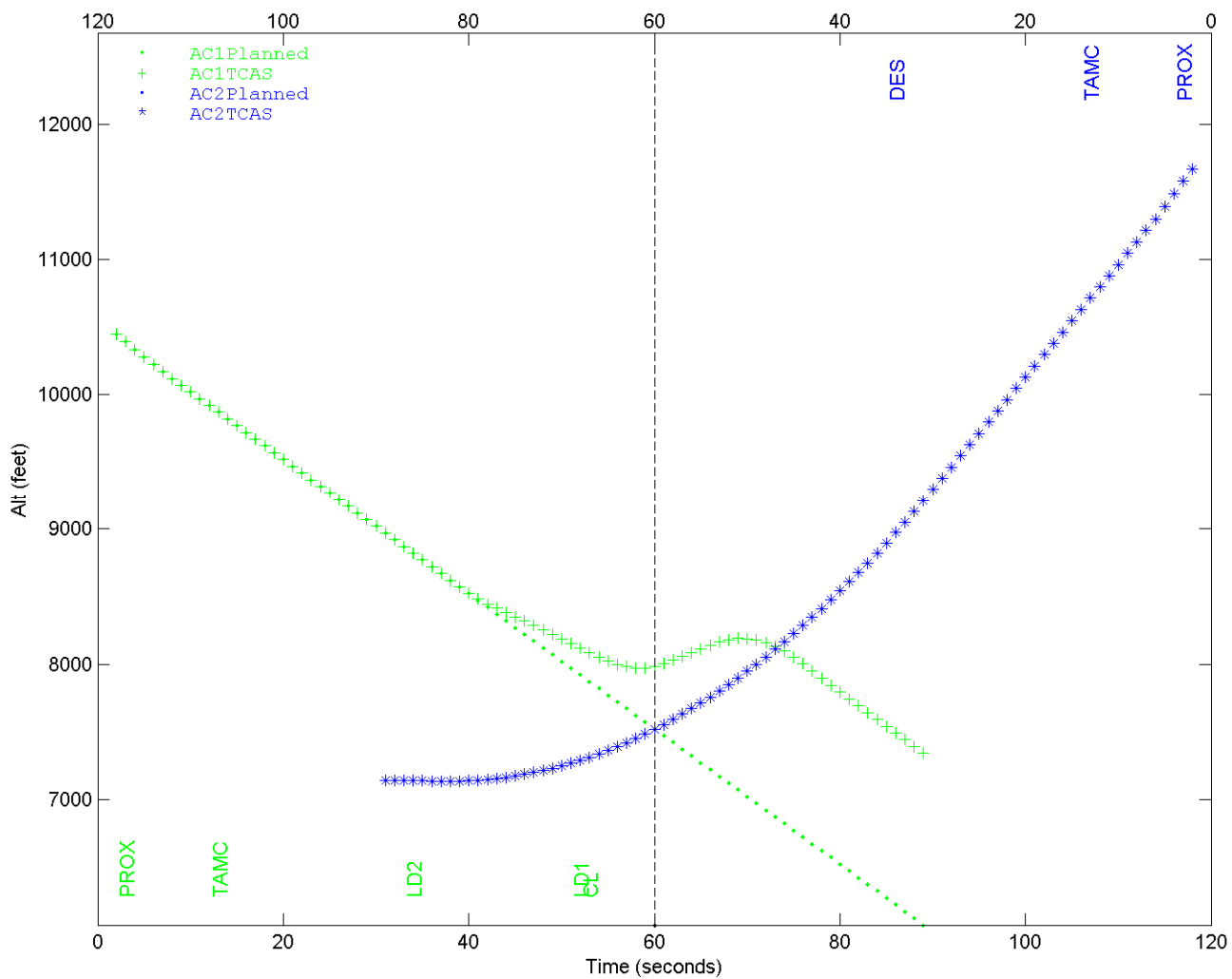
 4792 6.04A R L VS 6.04A NR H 6 477.50 CROSSING_ENC
 5 AC1: 4165024 TA :13 |TAUR| LD2 @34 [X] | LD2 @43 | LD1 @52 | CL @53
 10 AC2: 4265142 TA :13 |TAUR| DES @34 [X] ##NON-RESPONDING##

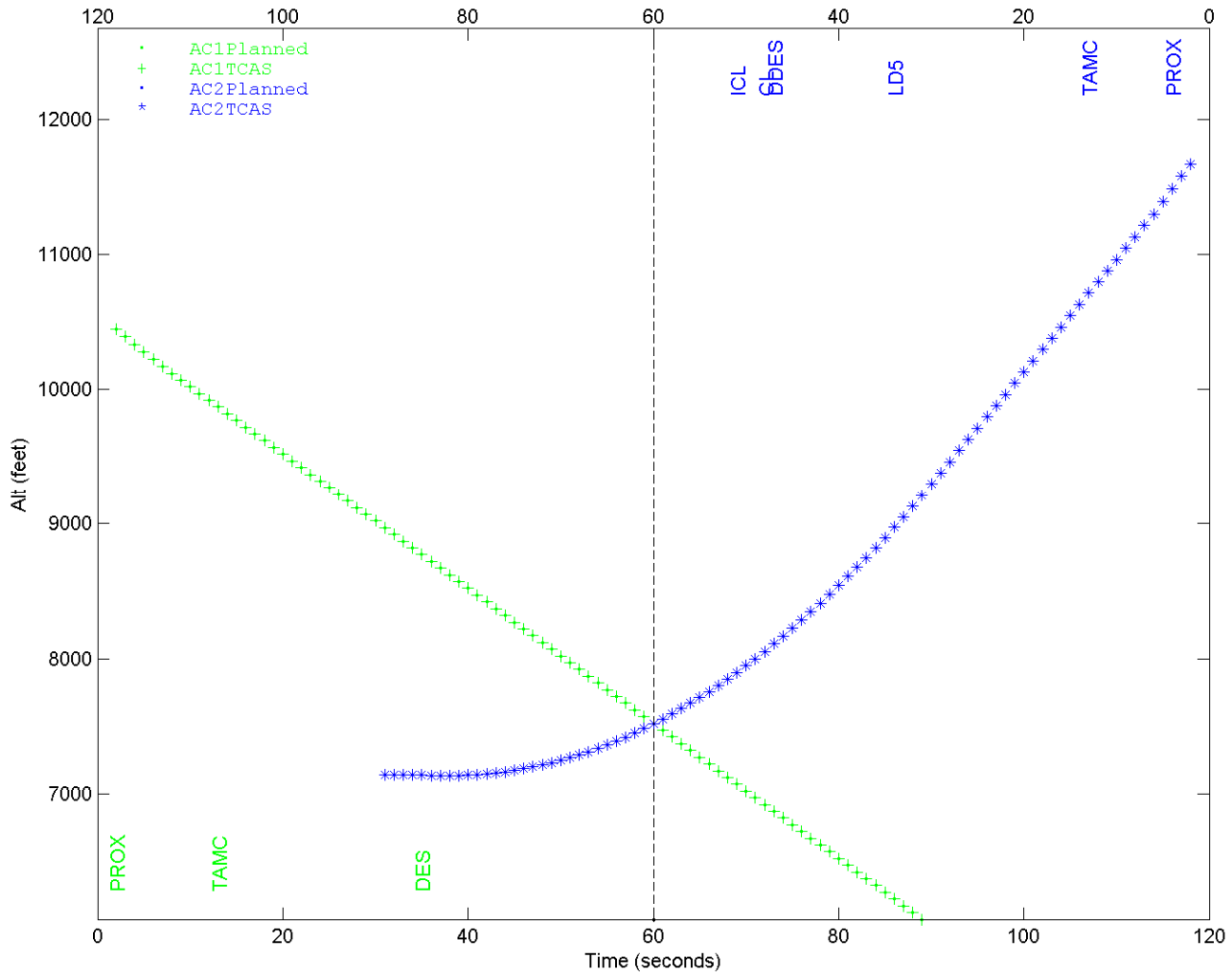
 4792 V7 25 FT R L VS V7 25 FT NR H 6 -0.01 CROSSING_ENC
 5 AC1: 4175035 TA :13 |PVMD| DES @35 [NX]
 10 AC2: 4275153 TA :13 |TAUR| LD5 @34 [NX]| DDES @47 | CL @48 | ICL @51 ##NON-RESPONDING##

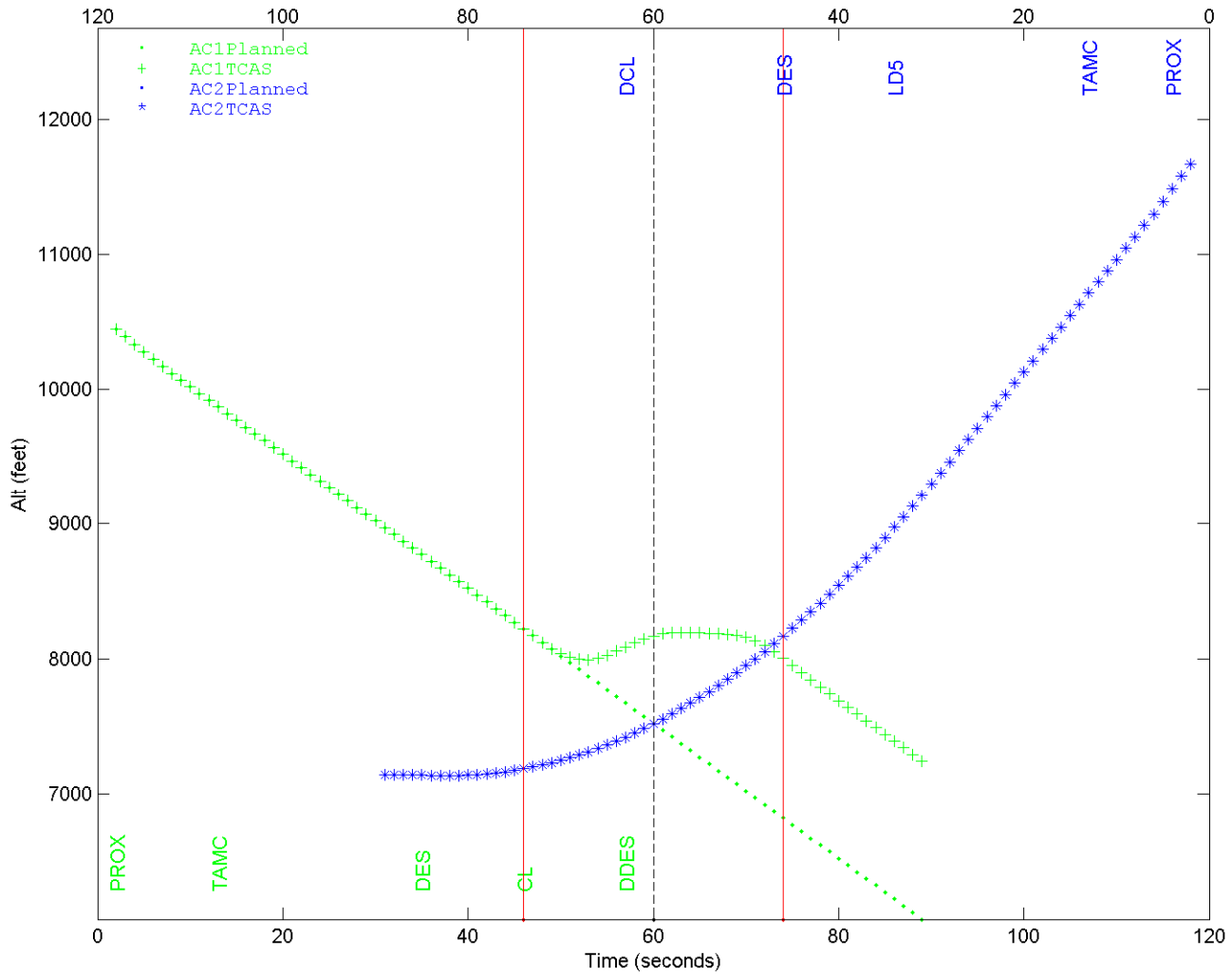
 4792 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 6 646.20 CROSSING_ENC
 5 AC1:*REV*8175035 TA :13 |PVMD| DES @35 [NX]| CL @46 | DDES @57
 10 AC2:*REV*8275153 TA :13 |TAUR| LD5 @34 [NX]| DES @46 | DCL @63 ##NON-RESPONDING##

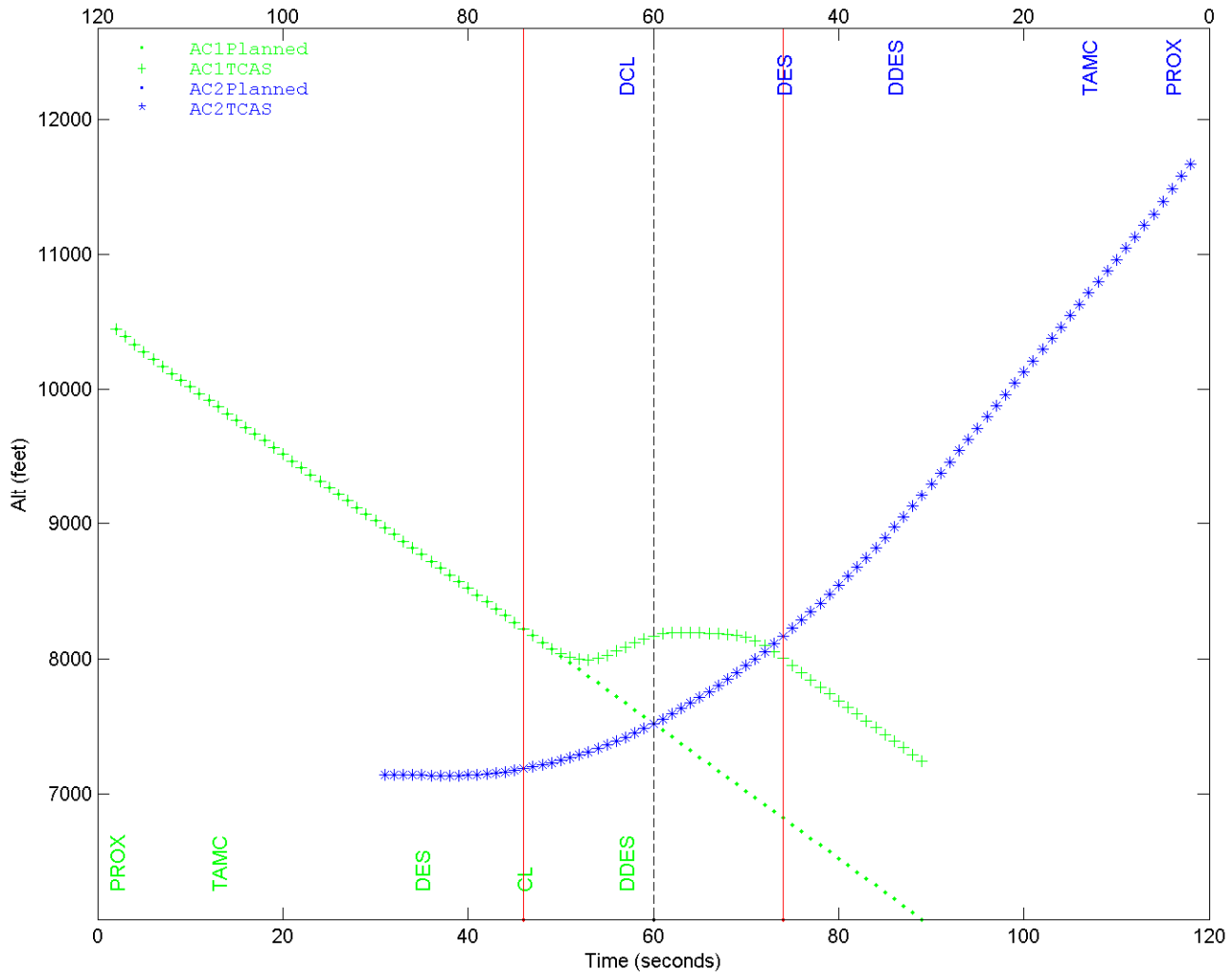
 4792 V7.1 25 FT R L VS V7.1 25 FT NR H 6 646.20 CROSSING_ENC
 5 AC1:*REV*8175035 TA :13 |PVMD| DES @35 [NX]| CL @46 | DDES @57
 10 AC2:*REV*8275153 TA :13 |TAUR| DDES @34 [NX]| DES @46 | DCL @63 ##NON-RESPONDING##

reit: 4792 cata: 616 simmode: 4165024 6.04A Vs 6.04A L264792A









Change 7.1 Non-responding Representative Save 10

Encounter Class: 6

Reit Number : 7480

Encounter Characterization

| | | |
|-------------------------------|---------------------|-----|
| Number of encounters in group | 149 | |
| AC1 low ID | no | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | -250, +/-500, 750 | ft |
| AC1 rates: | -1000, -3000, -5000 | fpm |
| AC2 rates: | -1000, -3000, -5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.25 | g |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Descending vertical chase caused by response to initial RA.

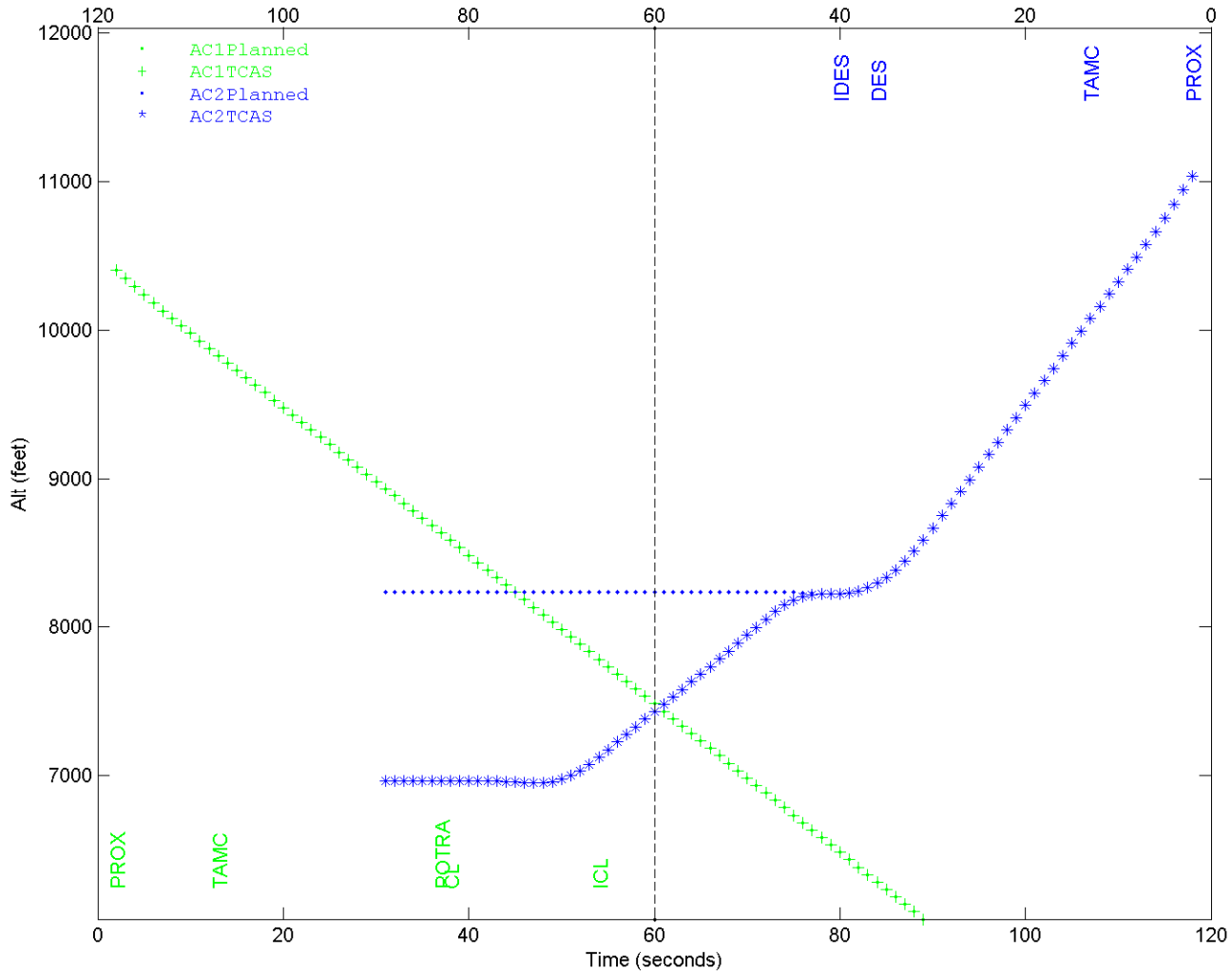
SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H163409
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-3000.0,-3000.0) AC2 RATES(-5000.0,0.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -30 AC1 CPA ALT 7480

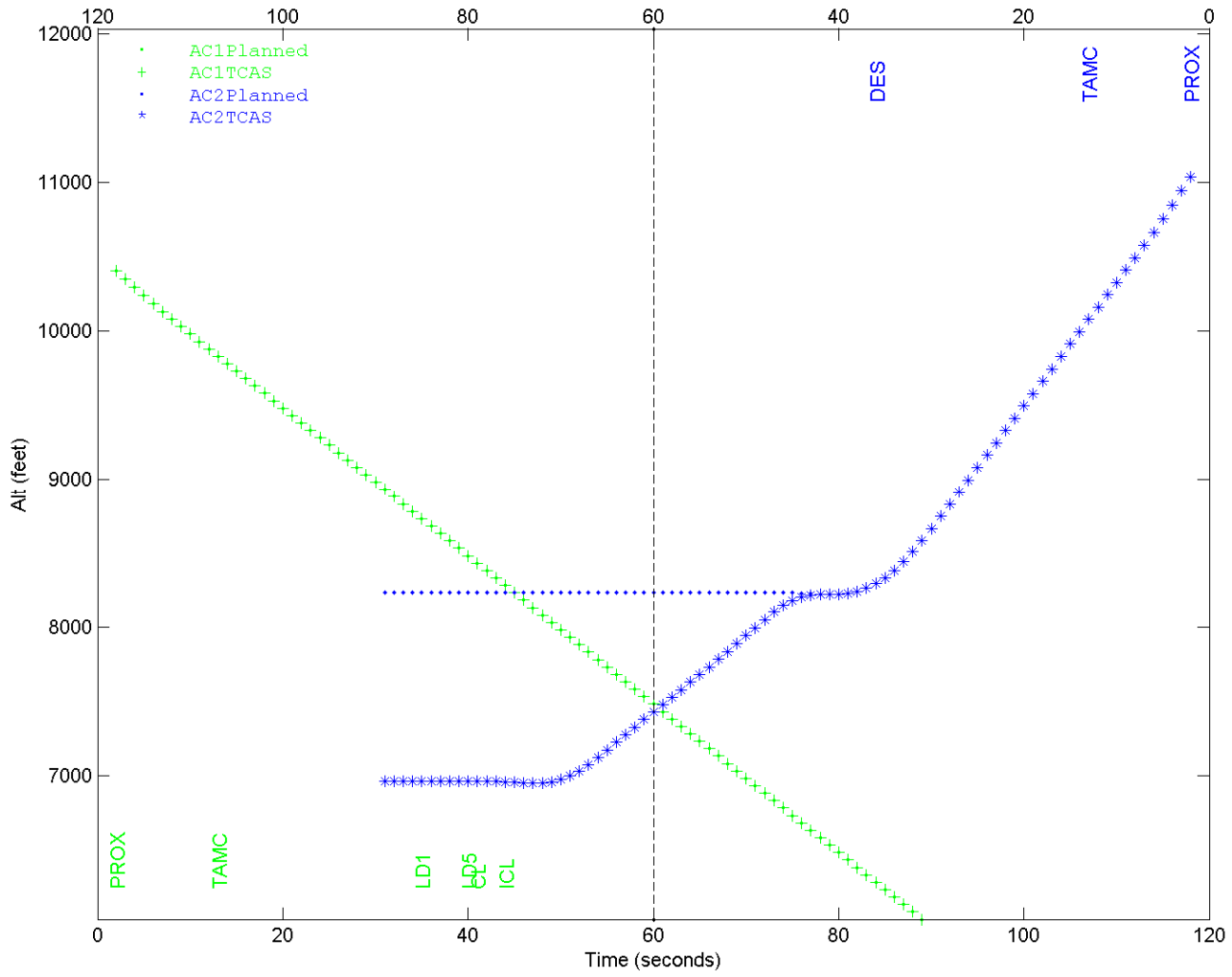
 3409 6.04A NR H VS 6.04A NR L 6 54.71 CROSSING_ENC
 10 AC1: 4165142 TA :13 |PVMD| CL @38 [NX]| ICL @54 ##NON-RESPONDING##
 5 AC2: 4265024 TA :13 |PVMD| MDES @36 [NX]| DES @37 | IDES @40

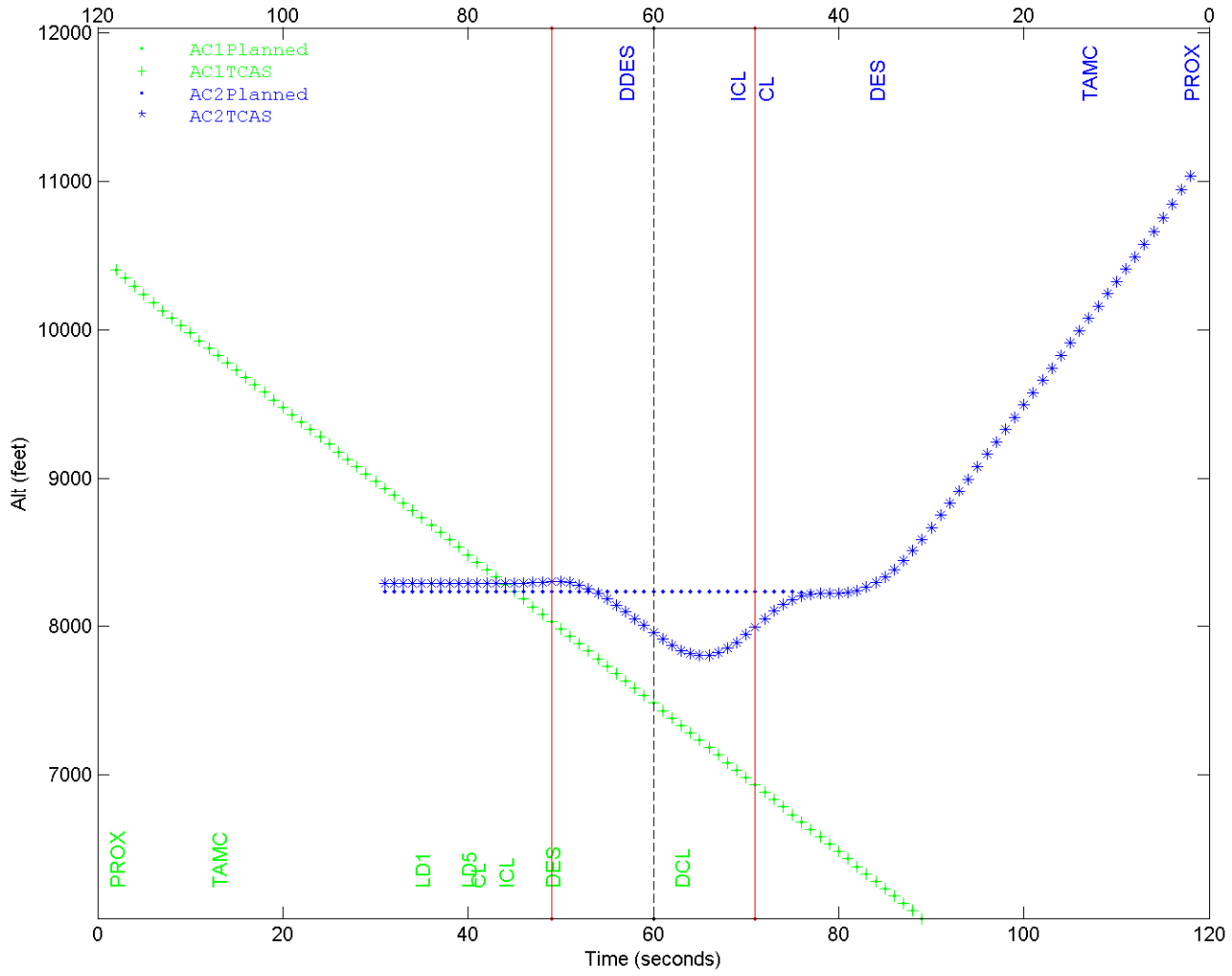
 3409 V7 25 FT NR H VS V7 25 FT R L 6 54.71 CROSSING_ENC
 10 AC1: 4275053 TA :13 |PVMD| LD1 @35 [NX]| LD5 @40 | CL @41 | ICL @44 ##NON-RESPONDING##
 5 AC2: 4175135 TA :13 |PVMD| DES @36 [NX]

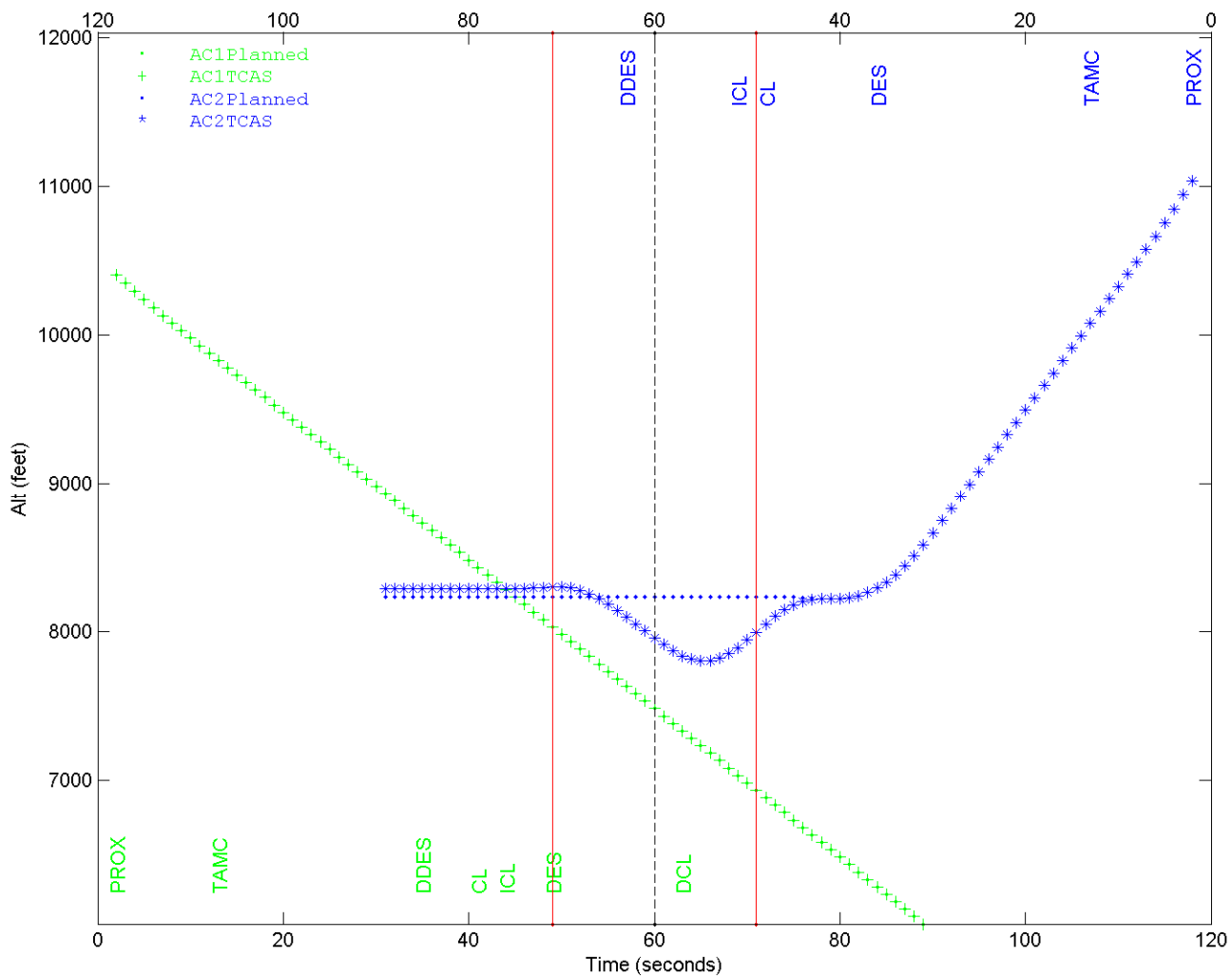
 3409 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 6 -490.30 CROSSING_ENC
 10 AC1:*REV*8275053 TA :13 |PVMD| LD1 @35 [NX]| LD5 @40| CL @41 | ICL @44 | DES @49 | DCL @63
 ##NON-RESPONDING##
 5 AC2:*REV*8175135 TA :13 |PVMD| DES @36 [NX]| CL @48 | ICL @51 | DDES @63

 3409 V7.1 25 FT NR H VS V7.1 25 FT R L 6 -490.30 CROSSING_ENC
 10 AC1:*REV*8275053 TA :13 |PVMD| DDES @35 [NX]| CL @41 | ICL @44 | DES @49
 | DCL @63 ##NON-RESPONDING##
 5 AC2:*REV*8175135 TA :13 |PVMD| DES @36 [NX]| CL @48 | ICL @51 | DDES @63









Change 7.1 Non-responding Representative Save 11

Encounter Class: 6

Reit Number : 4806

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 1 | |
| AC1 low ID | no | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | -3000 | fpm |
| AC2 rates: | -5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.05 | g |
| AC2 acceleration time | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Pre-existing descending vertical chase.

Addition of CP115 allowed reversal that did not occur with CP112E alone.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H264806
 LOGIC THRESHOLDS SL = 6 ZTHR = 600 TAUR = 30 TAUUV = 30 ALIM = 400
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(-3000.0,-3000.0) AC2 RATES(-5000.0,0.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.05g @ CPA -20 AC1 CPA ALT 7520

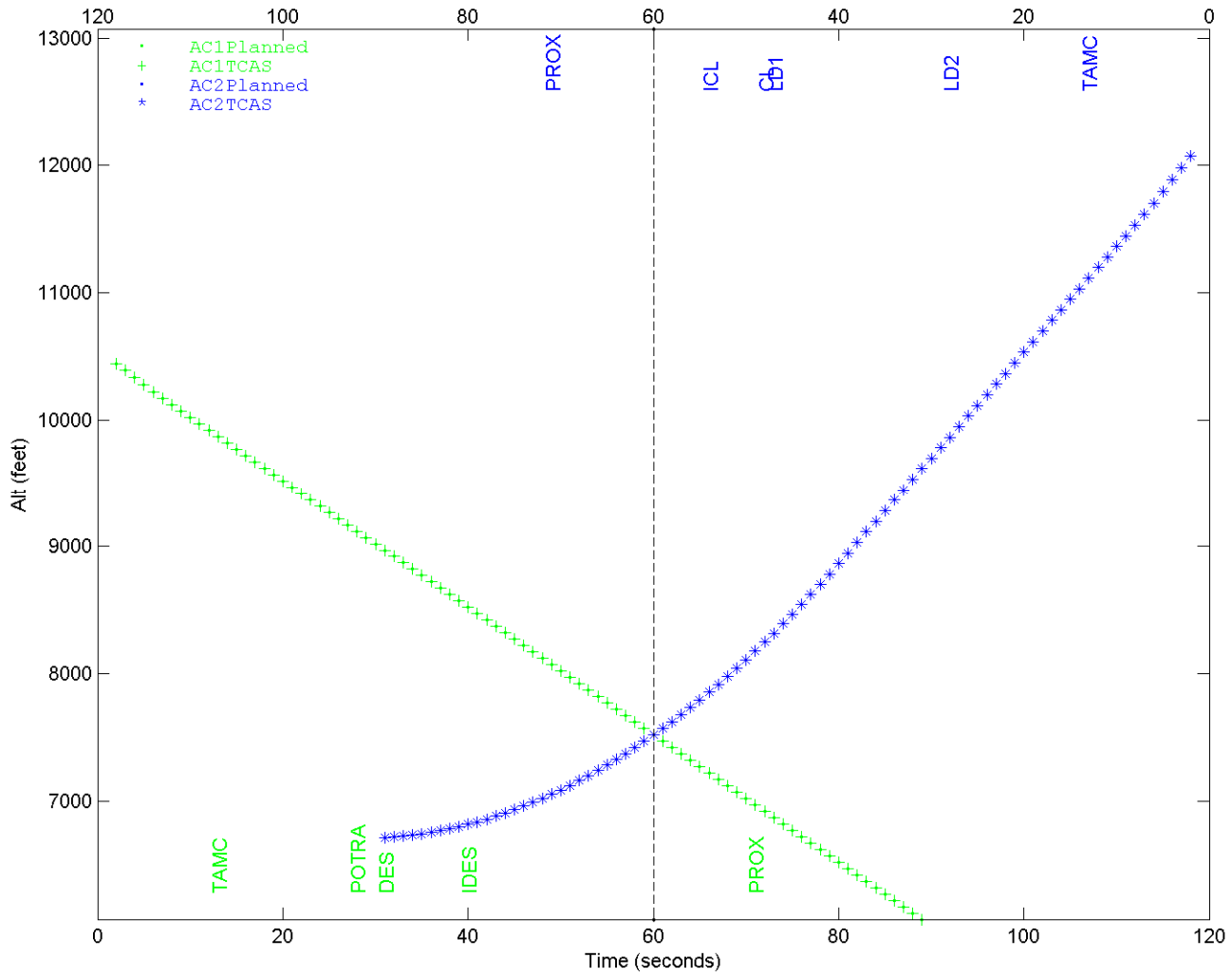
 4806 6.04A R H VS 6.04A NR L 6 -0.01 CROSSING_ENC
 10 AC1: 4165124 TA :13 |TAUR| POTRA@28 (6FT) | POTRA@29 (VTT) | MDES @31 [NX]| IDES @40
 5 AC2: 4265042 TA :13 |TAUR| LD2 @28 [NX]| LD1 @47 | CL @48 | ICL @54 ##NON-
 RESPONDING##

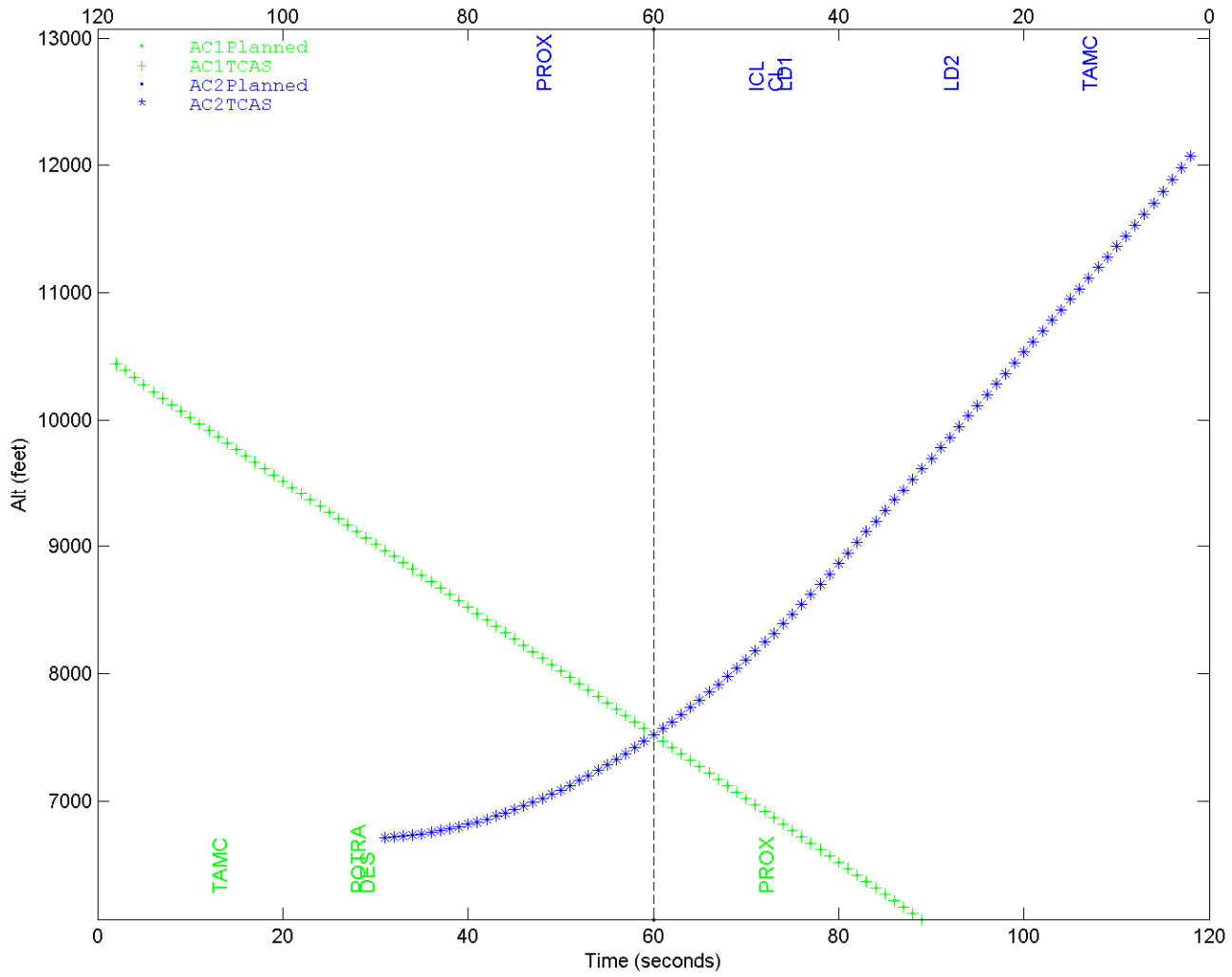
 4806 V7 25 FT R H VS V7 25 FT NR L 6 -0.01 CROSSING_ENC
 10 AC1: 4275035 TA :13 |TAUR| POTRA@28 (VTT) | DES @29 [NX]
 5 AC2: 4175153 TA :13 |TAUR| LD2 @28 [NX]| LD1 @46 | CL @47 | ICL @49 ##NON-
 RESPONDING##

 4806 CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L 6 -0.01 CROSSING_ENC
 10 AC1: 8275035 TA :13 |TAUR| POTRA@28 (VTT) | DES @29 [NX]
 5 AC2: 8175153 TA :13 |TAUR| LD2 @28 [NX]| LD1 @46 | CL @47 | ICL @49 ##NON-
 RESPONDING##

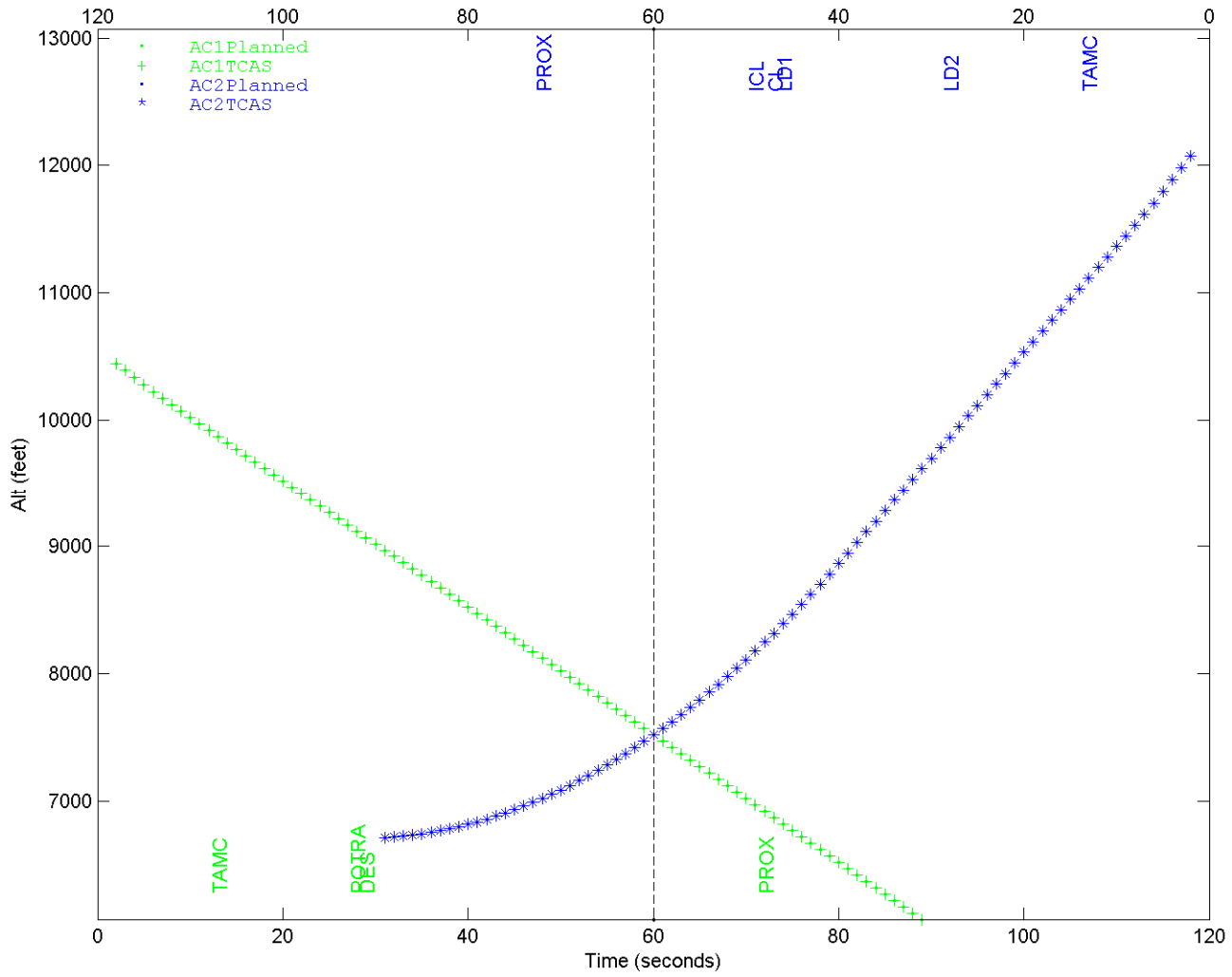
 4806 V7.1 25 FT R H VS V7.1 25 FT NR L 6 543.54 CROSSING_ENC
 10 AC1:*REV*8275035 TA :13 |TAUR| POTRA@28 (VTT)| DES @29 [NX]| CL @48 | ICL @50
 | DDES @63
 5 AC2:*REV*8175153 TA :13 |TAUR| DDES @28 [NX]| DES @47 | DCL @63 ##NON-RESPONDING##

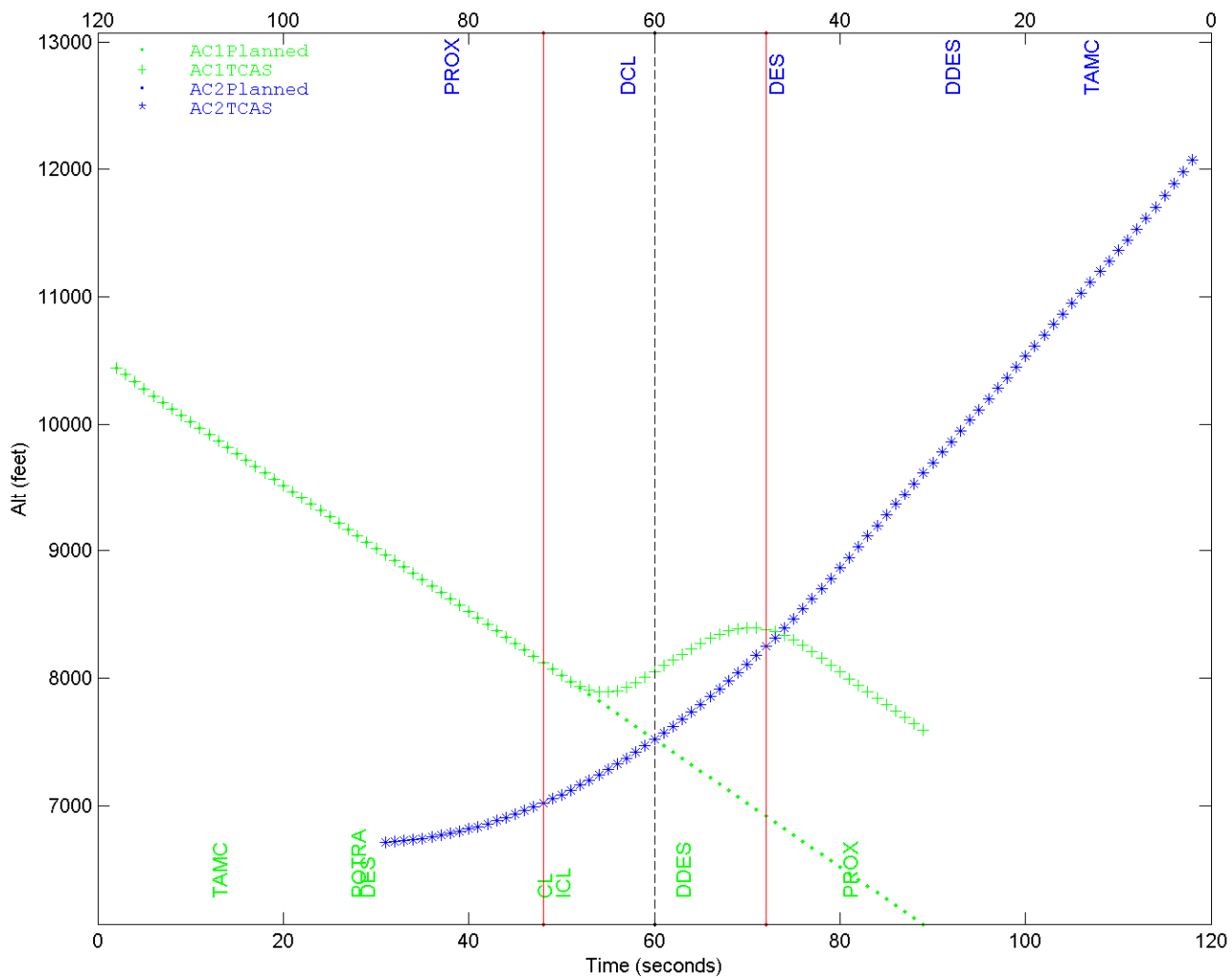
reit: 4806 cata: 616 simmode: 4165124 6.04A Vs 6.04A H264806A





reit: 4806 cata: 616 simmode: 8275035 CP112EV1.2-25 Vs CP112EV1.2-25 H264806C





Change 7.1 Non-responding Representative Save 12

Encounter Class: 6

Reit Number : 4815

Encounter Characterization

| | | |
|-------------------------------|------------------|-----|
| Number of encounters in group | 16 | |
| AC1 low ID | yes | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | -250, -500, -750 | ft |
| AC1 rates: | -3000, -5000 | fpm |
| AC2 rates: | -3000, -5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.05 | g |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Pre-existing descending vertical chase.
Addition of CP115 allowed reversal that did not occur with CP112E alone.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L164815
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(-3000.0,-3000.0) AC2 RATES(-3000.0,0.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.05g @ CPA -30 AC1 CPA ALT 7520

4815 6.04A NR L VS 6.04A R H 6 82.04 CROSSING_ENC

5 AC1: 4165042 TA :13 |TAUR| LD2 @34 [NX]| LD1 @45 | CL @46 | ICL @54
##NON-RESPONDING##

10 AC2: 4265124 TA :13 |TAUR| MDES @34 [NX]| DES @38 | IDES @40

4815 V7 25 FT NR L VS V7 25 FT R H 6 82.04 CROSSING_ENC

5 AC1: 4175053 TA :19 |TAUR| LD2 @34 [NX]| LD1 @36 | DDES @51 | CL @52 | ICL @54
##NON-RESPONDING##

10 AC2: 4275135 TA :19 |TAUR| DES @34 [NX]

4815 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 6 82.04 CROSSING_ENC

5 AC1: 8175053 TA :19 |TAUR| LD2 @34 [NX]| LD1 @36| DDES @51| CL @52 | ICL @54
##NON-RESPONDING##

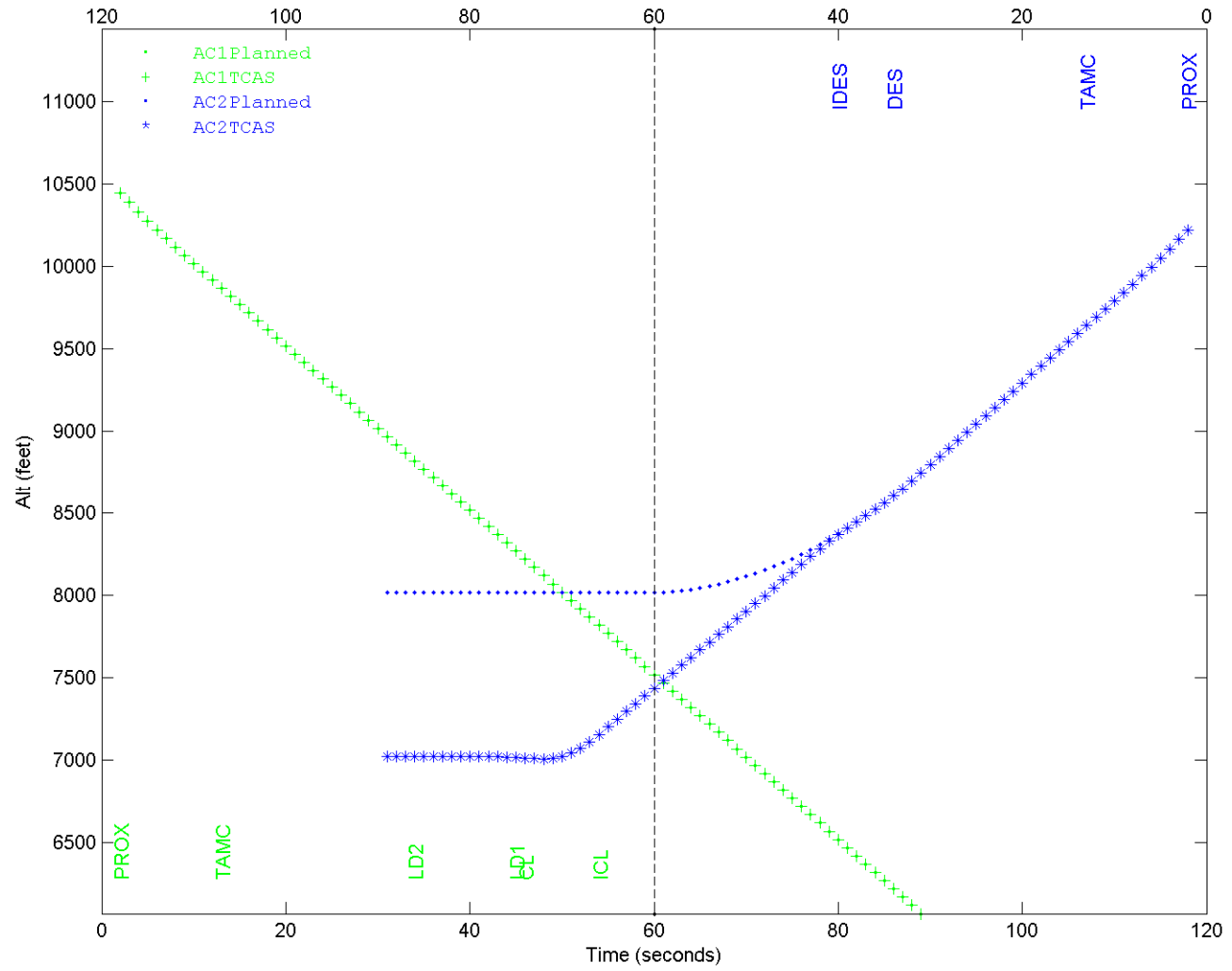
10 AC2: 8275135 TA :19 |TAUR| DES @34 [NX]

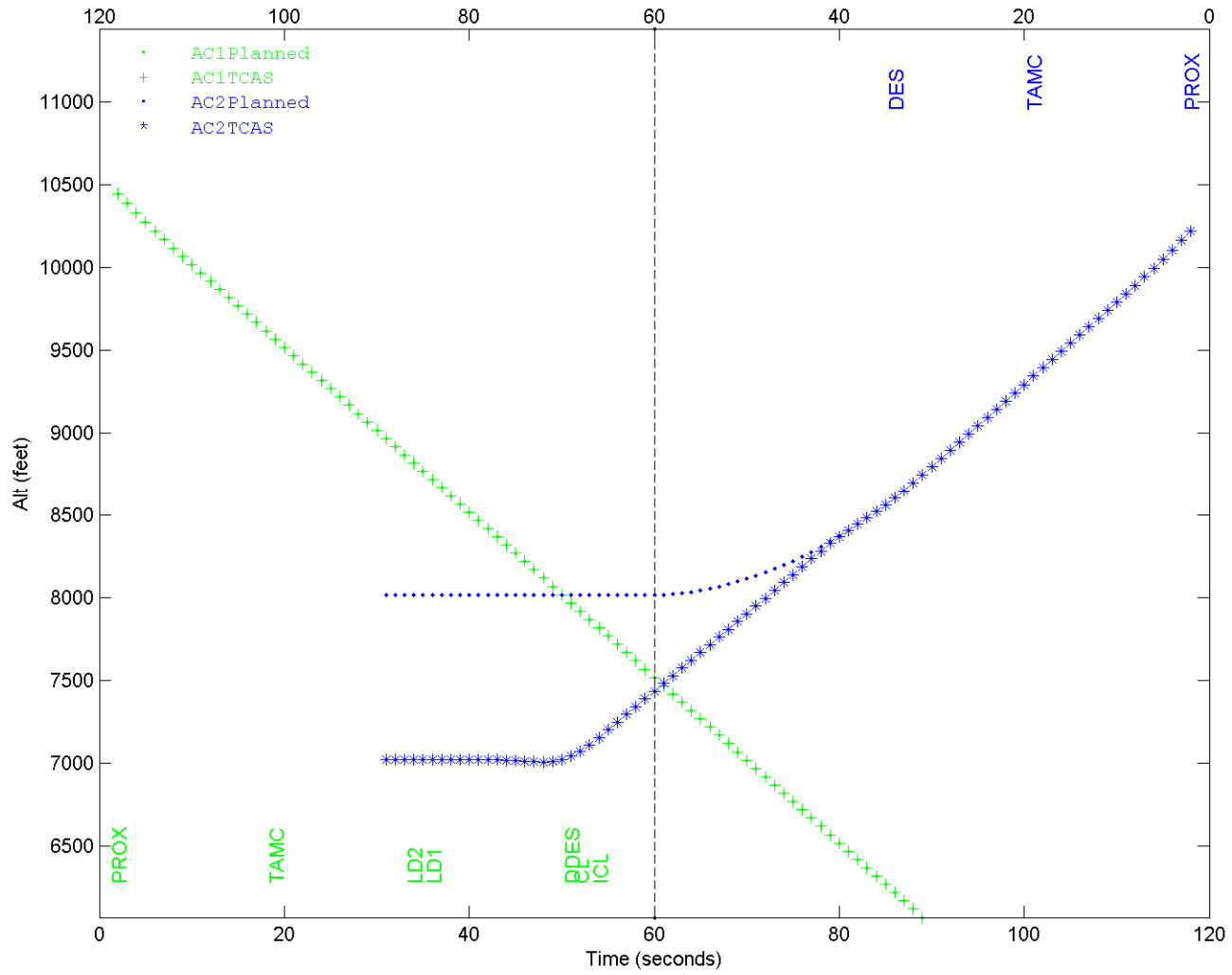
4815 V7.1 25 FT NR L VS V7.1 25 FT R H 6 -631.70 CROSSING_ENC

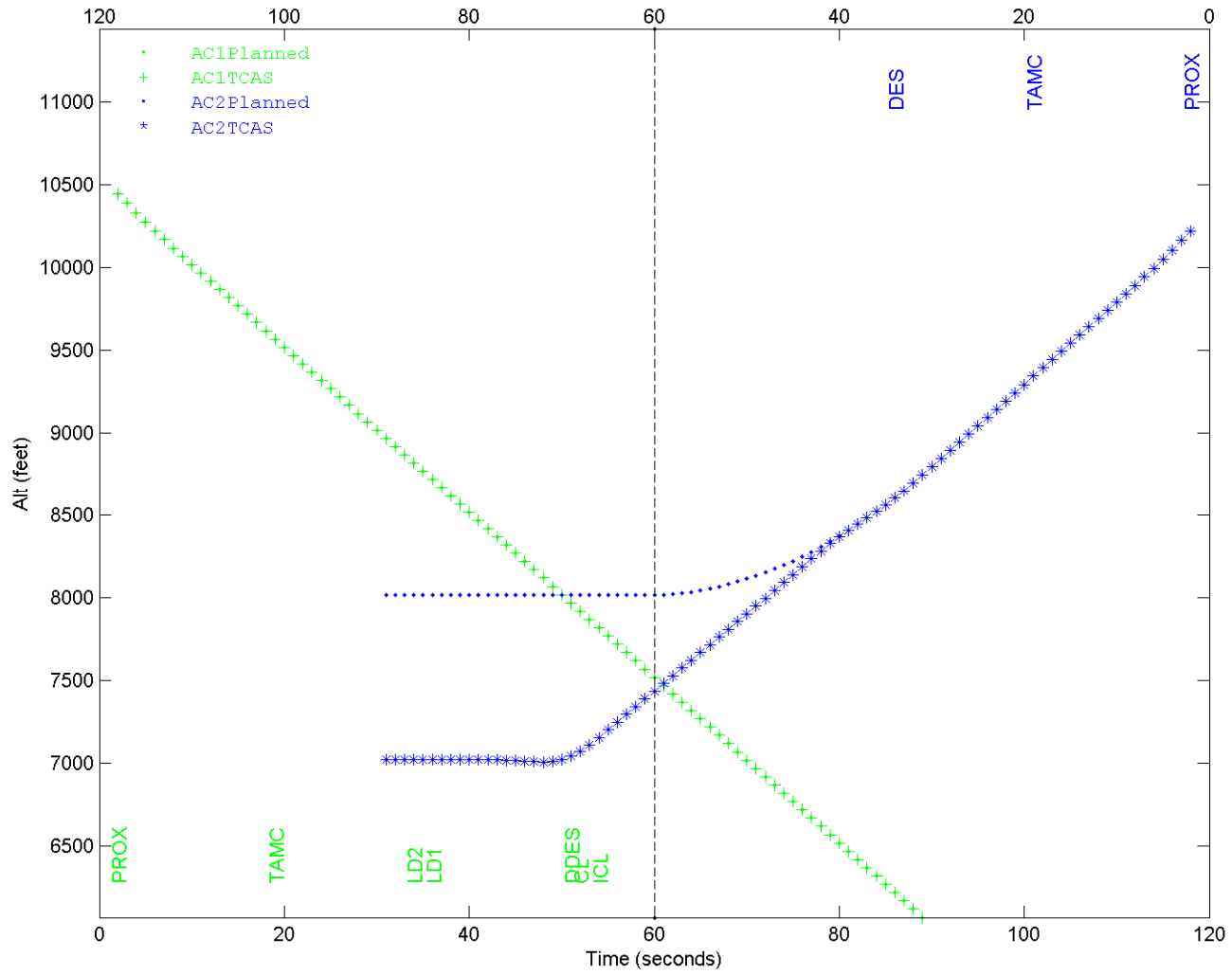
5 AC1:*REV*8175053 TA :19 |TAUR| DDES @34 [NX]| DES @46 | DCL @63
##NON-RESPONDING##

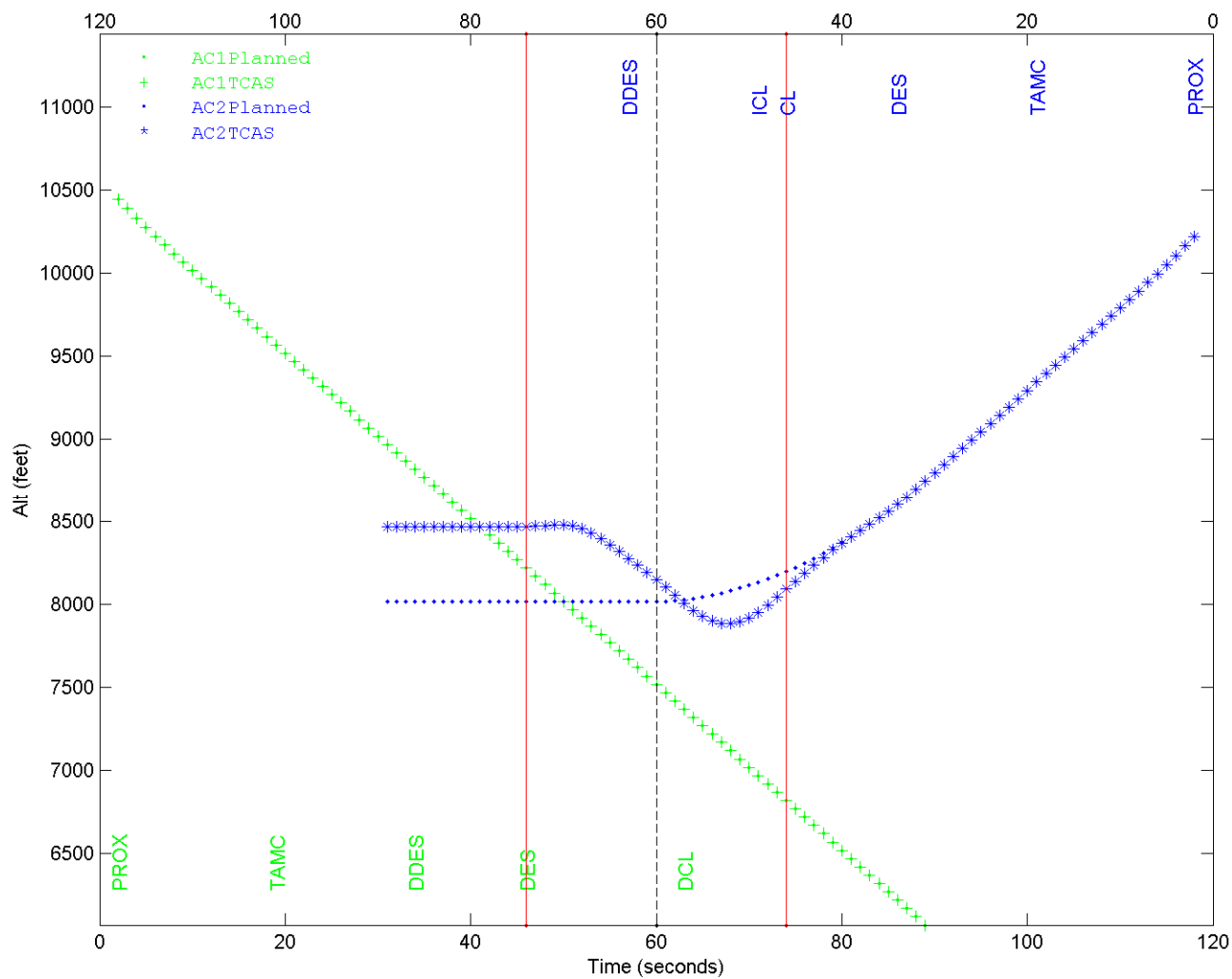
10 AC2:*REV*8275135 TA :19 |TAUR| DES @34 [NX]| CL @46 | ICL @49 | DDES @63

reit: 4815 cata: 616 simmode: 4165042 6.04A Vs 6.04A L164815A









Change 7.1 Non-responding Representative Save 13

Encounter Class: 7

Reit Number : 8285

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 35 | |
| AC1 low ID | yes | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000, 5000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | 0.15 | g |
| AC1 acceleration time | CPA – 25 | sec |
| AC2 acceleration time | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA and planned maneuver.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L178285
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(0.0,3000.0) AC2 RATES(0.0,3000.0)
 AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL 0.15g @ CPA -25 AC1 CPA ALT 7500

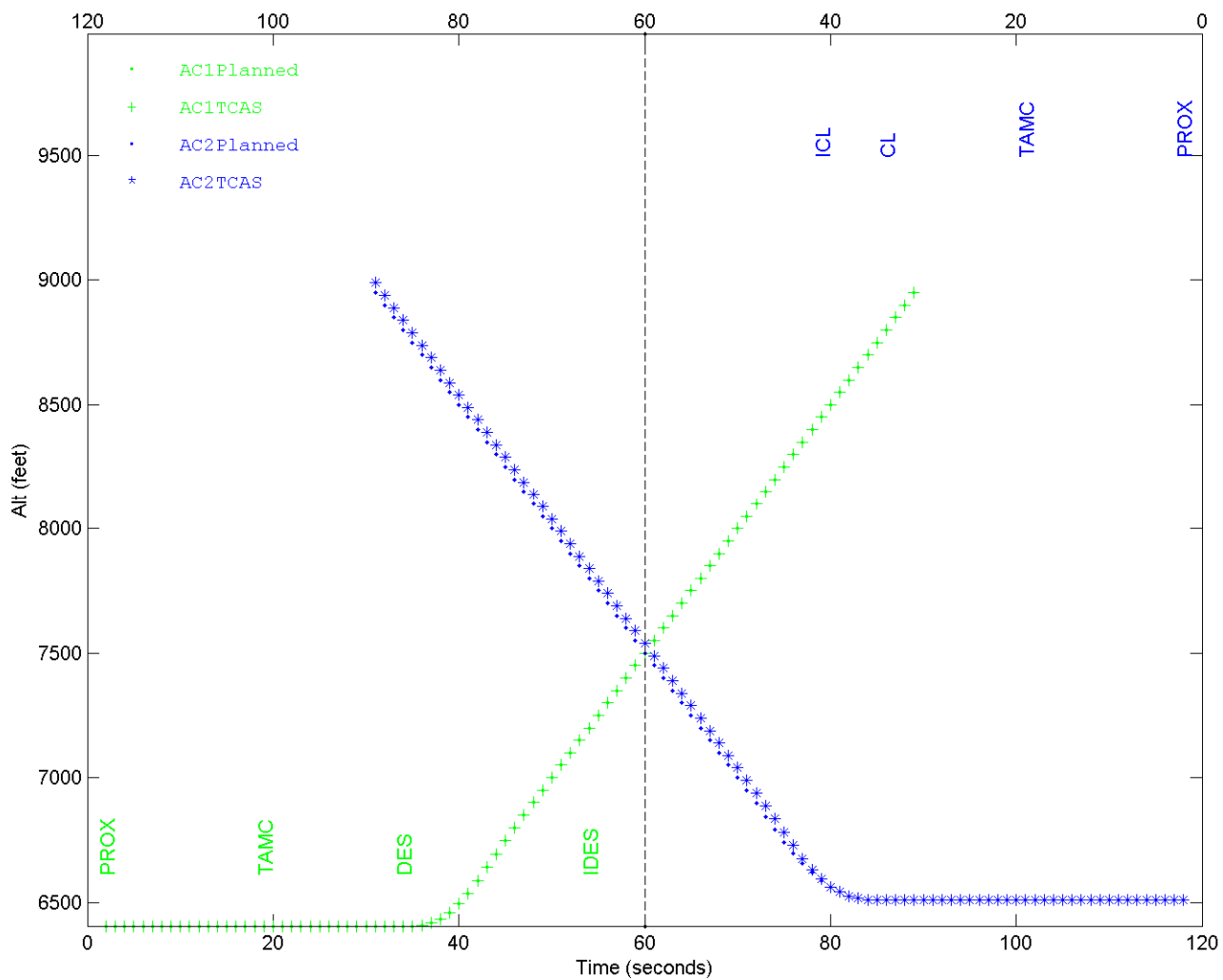
 8285 6.04A NR L VS 6.04A R H 7 -39.05 NON_CROSSING_ENC
 5 AC1: 4165042 TA :19 |TAUR| DES @34 [NX]| IDES @54 ##NON-RESPONDING##
 10 AC2: 4265124 TA :19 |TAUR| CL @34 [NX]| ICL @41

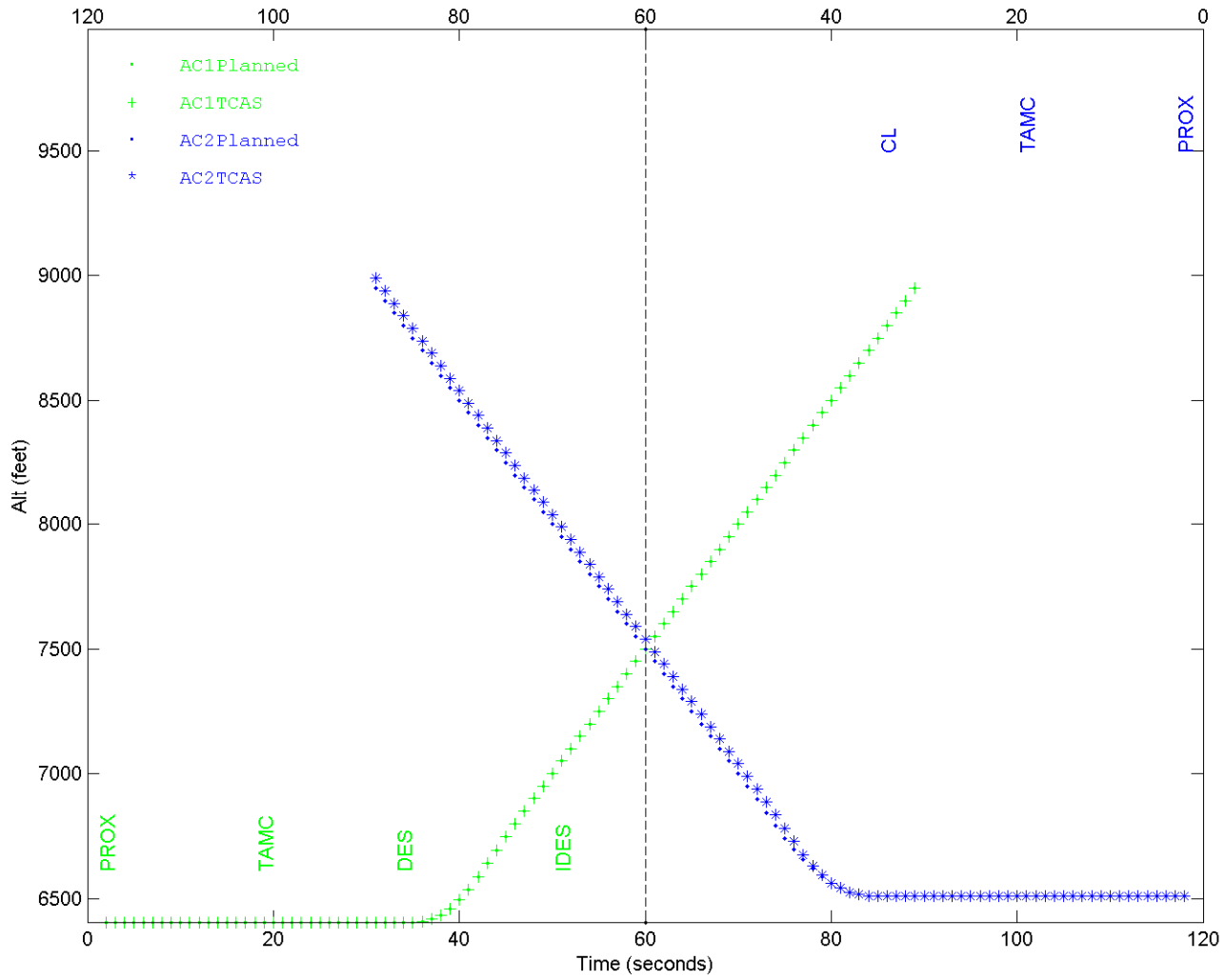
 8285 V7 25 FT NR L VS V7 25 FT R H 7 -39.05 NON_CROSSING_ENC
 5 AC1: 4175053 TA :19 |TAUR| DES @34 [NX]| IDES @51 ##NON-RESPONDING##
 10 AC2: 4275135 TA :19 |TAUR| CL @34 [NX]

 8285 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 7 682.16 CROSSING_ENC
 5 AC1:*REV*8175053 TA :19 |TAUR| DES @34 [NX]| CL @45 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :19 |TAUR| CL @34 [NX]| DES @45 | DCL @57

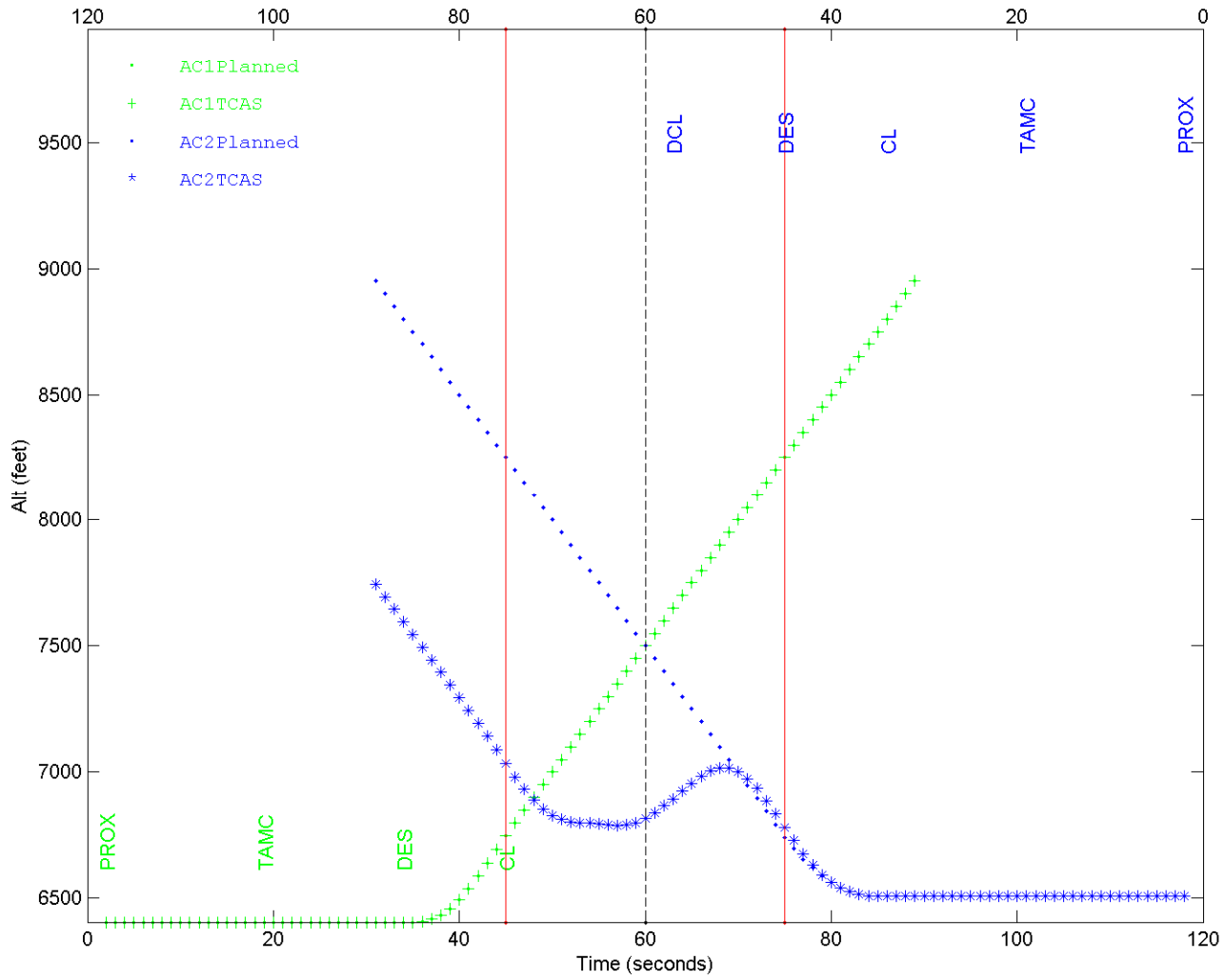
 8285 V7.1 25 FT NR L VS V7.1 25 FT R H 7 682.16 CROSSING_ENC
 5 AC1:*REV*8175053 TA :19 |TAUR| DES @34 [NX]| CL @45 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :19 |TAUR| CL @34 [NX]| DES @45 | DCL @57

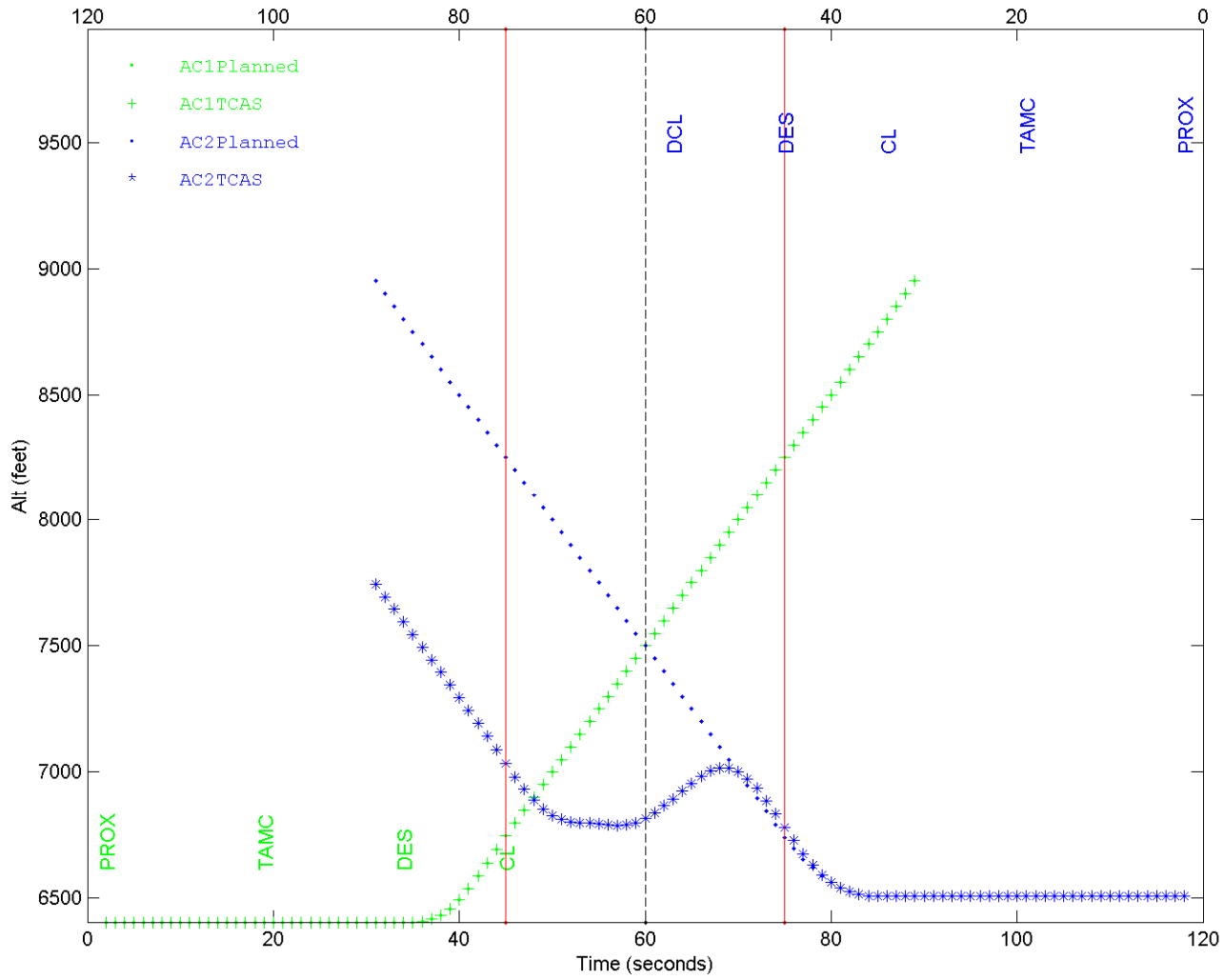
reit: 8285 cata: 717 simmode: 4165042 6.04A Vs 6.04A L178285A





reit: 8285 cata: 717 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L178285C





Change 7.1 Non-responding Representative Save 14

Encounter Class: 7

Reit Number : 1023

Encounter Characterization

| | | |
|-------------------------------|---------------------|-----|
| Number of encounters in group | 28 | |
| AC1 low ID | no | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | 750 | ft |
| AC1 rates: | 1000, 3000, 5000 | fpm |
| AC2 rates: | -1000, -3000, -5000 | fpm |
| AC1 acceleration: | 0.05 | g |
| AC2 acceleration: | -0.05 | g |
| AC1 acceleration time | CPA – 25 | sec |
| AC2 acceleration time | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA and planned maneuver.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H171023
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 750.0 AC1 RATES(0.0,5000.0) AC2 RATES(0.0,-5000.0)
AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.05g @ CPA -20 AC1 CPA ALT 3700

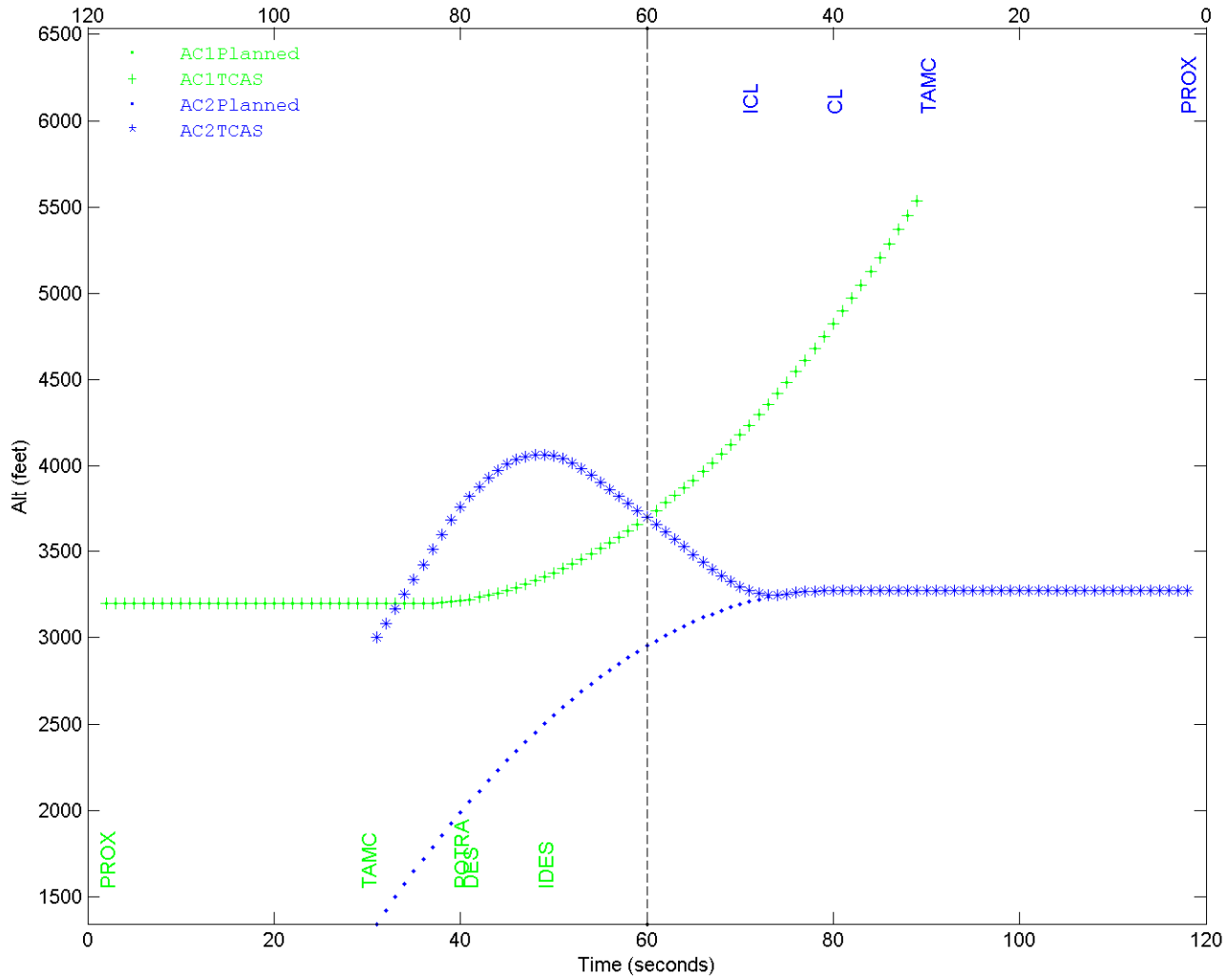
1023 6.04A NR H VS 6.04A NR L 7 3.59 CROSSING_ENC
10 AC1: 4165142 TA :30 |TAUR| POTRA@40 (DFD | DES @41 [NX]| IDES @49 ##NON-RESPONDING##
5 AC2: 4265024 TA :30 |TAUR| CL @40 [NX]| ICL @49

1023 V7 25 FT NR H VS V7 25 FT R L 7 -34.63 CROSSING_ENC
10 AC1: 4275053 TA :30 |TAUR| DES @40 [NX]##NON-RESPONDING##
5 AC2: 4175135 TA :30 |TAUR| CL @40 [NX]| ICL @46

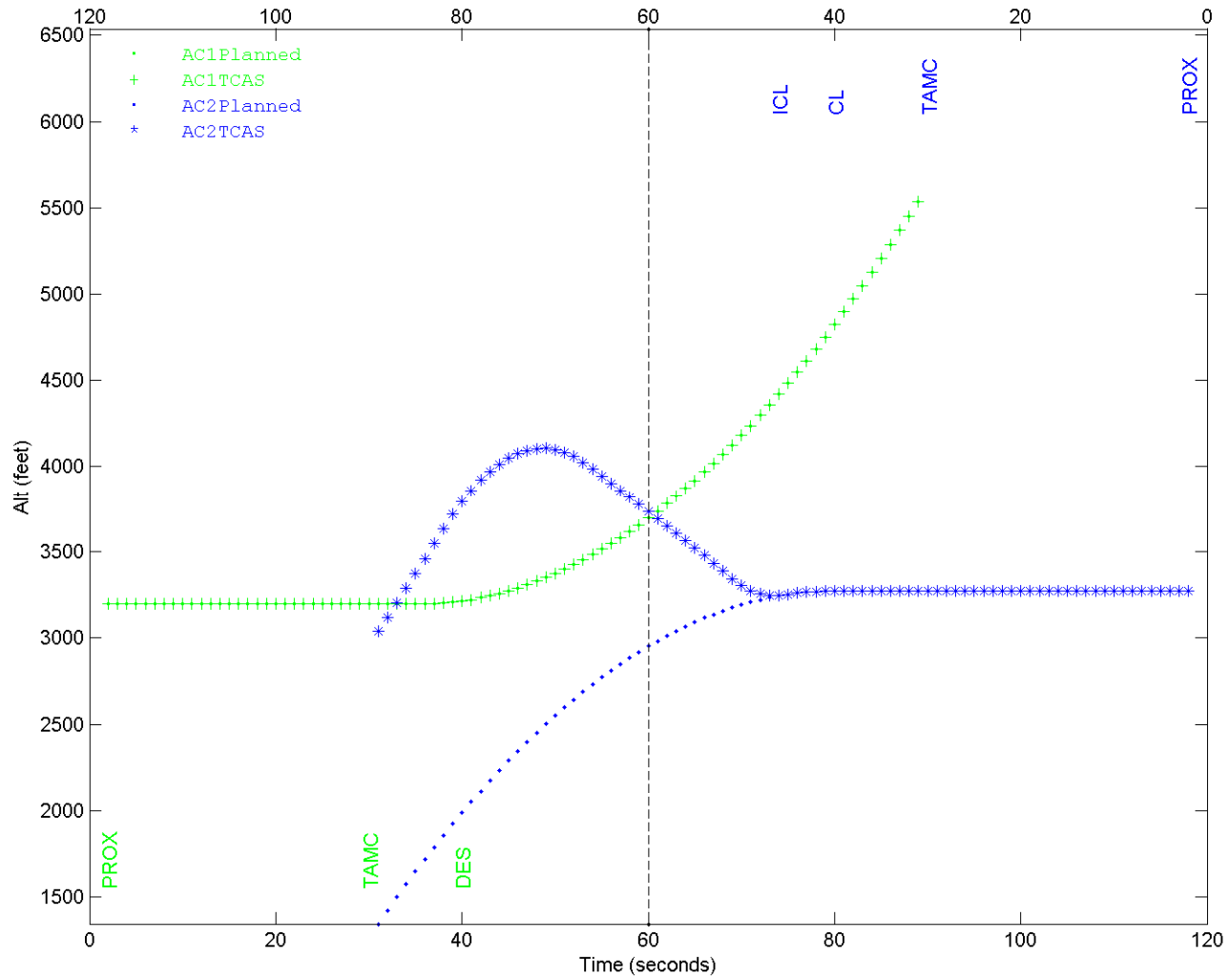
1023 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 7 241.25 CROSSING_ENC
10 AC1:*REV*8275053 TA :30 |TAUR| DES @40 [NX]| CL @52 ##NON-RESPONDING##
5 AC2:*REV*8175135 TA :30 |TAUR| CL @40 [NX]| ICL @46 | DES @51 | IDES @53

1023 V7.1 25 FT NR H VS V7.1 25 FT R L 7 241.25 CROSSING_ENC
10 AC1:*REV*8275053 TA :30 |TAUR| DES @40 [NX]| CL @52 ##NON-RESPONDING##
5 AC2:*REV*8175135 TA :30 |TAUR| CL @40 [NX]| ICL @46 | DES @51 | IDES @53

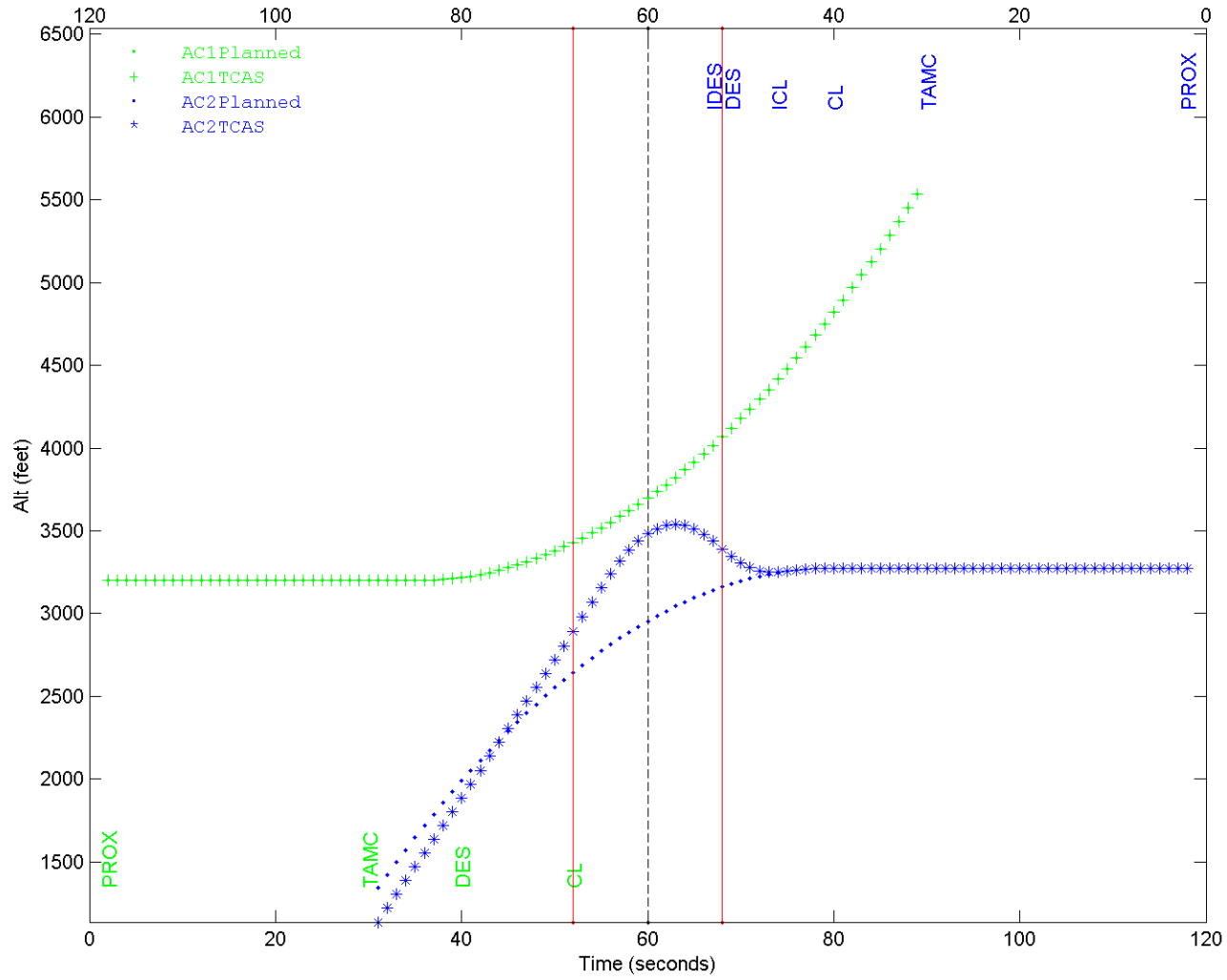
reit: 1023 cata: 717 simmode: 4165142 6.04A Vs 6.04A H171023A



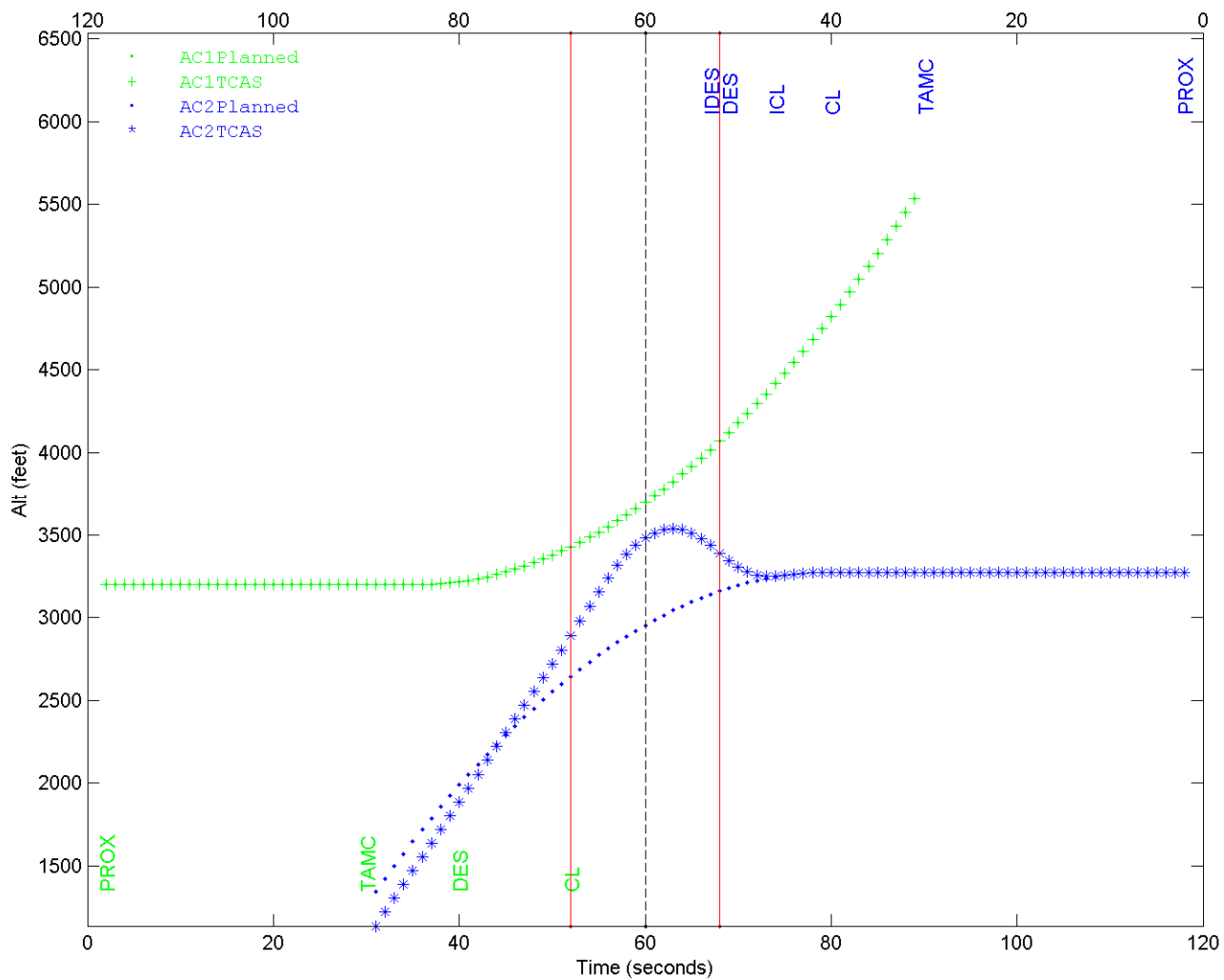
reit: 1023 cata: 717 simmode: 4275053 V7-25 Vs V7-25 H171023B



reit: 1023 cata: 717 simmode: 8275053 CP112EV1.2-25 Vs CP112EV1.2-25 H171023C



reit: 1023 cata: 717 simmode: 8275053 V7.1-25 Vs V7.1-25 H171023D



Change 7.1 Non-responding Representative Save 15

Encounter Class: 7

Reit Number : 8151

Encounter Characterization

| | | |
|-------------------------------|------------------------|-----|
| Number of encounters in group | 79 | |
| AC1 low ID | yes | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | +/-250, +/-500, +/-750 | ft |
| AC1 rates: | 1000, 3000, 5000 | fpm |
| AC2 rates: | 1000, 3000, 5000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | 0.05 | g |
| AC1 acceleration time | CPA – 25 | sec |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC CP112E

Comments

Climbing vertical chase caused by planned maneuvers.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L178151
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 250.0 AC1 RATES(0.0,3000.0) AC2 RATES(0.0,3000.0)
 AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL 0.05g @ CPA -30 AC1 CPA ALT 7500

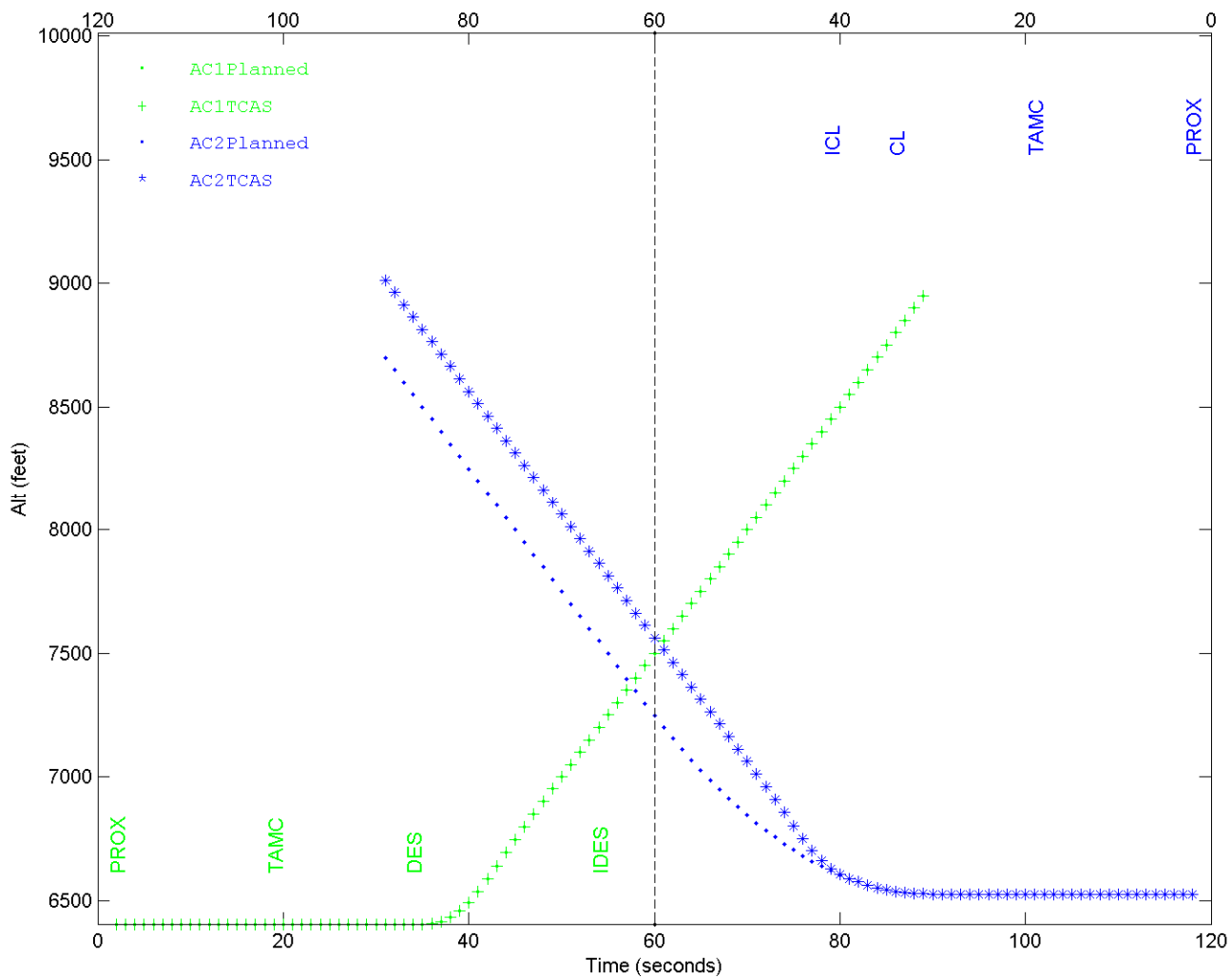
 8151 6.04A NR L VS 6.04A R H 7 -62.83 NON_CROSSING_ENC
 5 AC1: 4165042 TA :19 |TAUR| DES @34 [NX]| IDES @54 ##NON-RESPONDING##
 10 AC2: 4265124 TA :19 |TAUR| CL @34 [NX]| ICL @41

 8151 V7 25 FT NR L VS V7 25 FT R H 7 -62.83 NON_CROSSING_ENC
 5 AC1: 4175053 TA :19 |TAUR| DES @34 [NX]| IDES @52 ##NON-RESPONDING##
 10 AC2: 4275135 TA :19 |TAUR| CL @34 [NX]

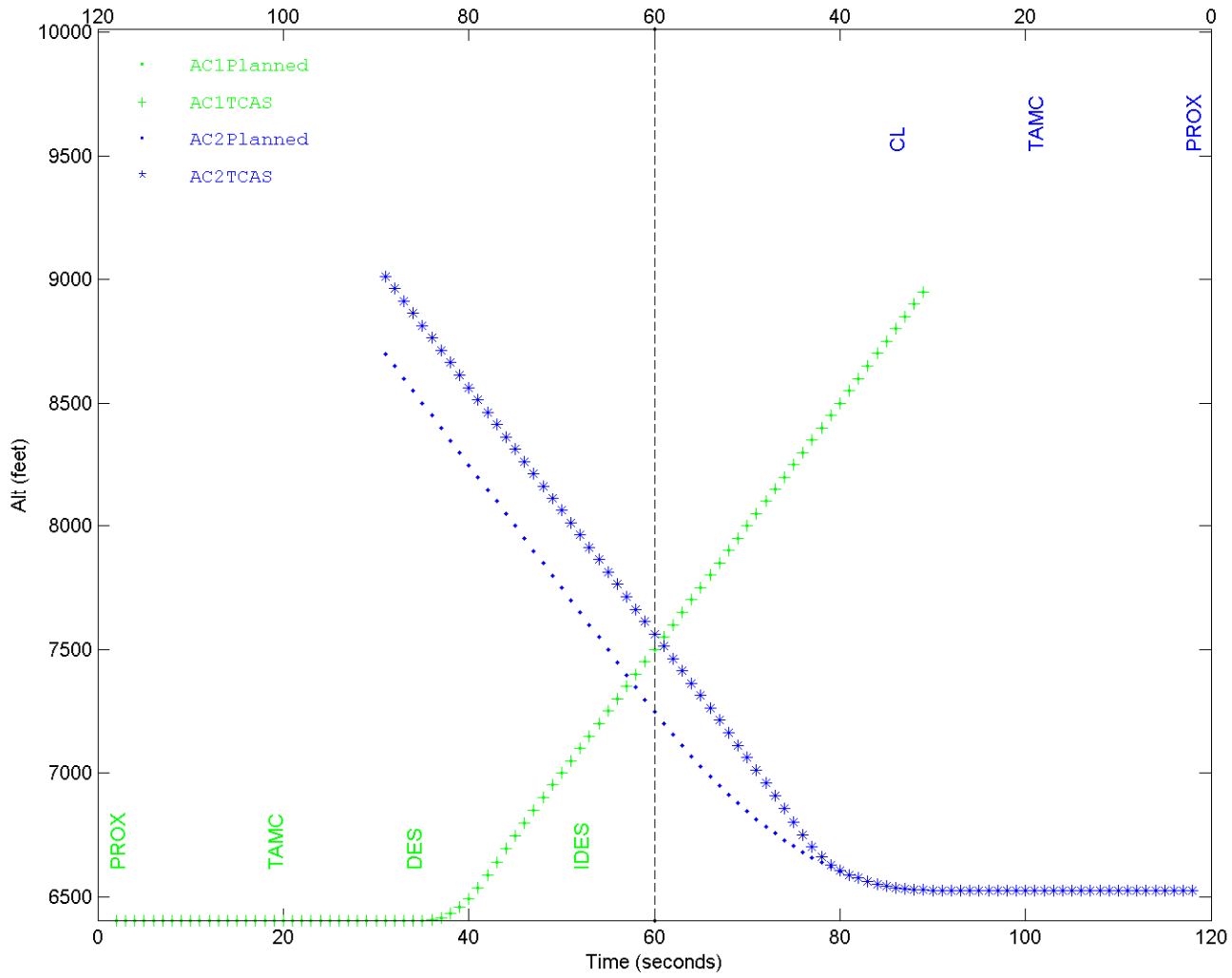
 8151 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 7 658.38 CROSSING_ENC
 5 AC1:*REV*8175053 TA :19 |TAUR| DES @34 [NX]| CL @45 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :19 |TAUR| CL @34 [NX]| DES @45 | DCL @57

 8151 V7.1 25 FT NR L VS V7.1 25 FT R H 7 658.38 CROSSING_ENC
 5 AC1:*REV*8175053 TA :19 |TAUR| DES @34 [NX]| CL @45 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :19 |TAUR| CL @34 [NX]| DES @45 | DCL @57

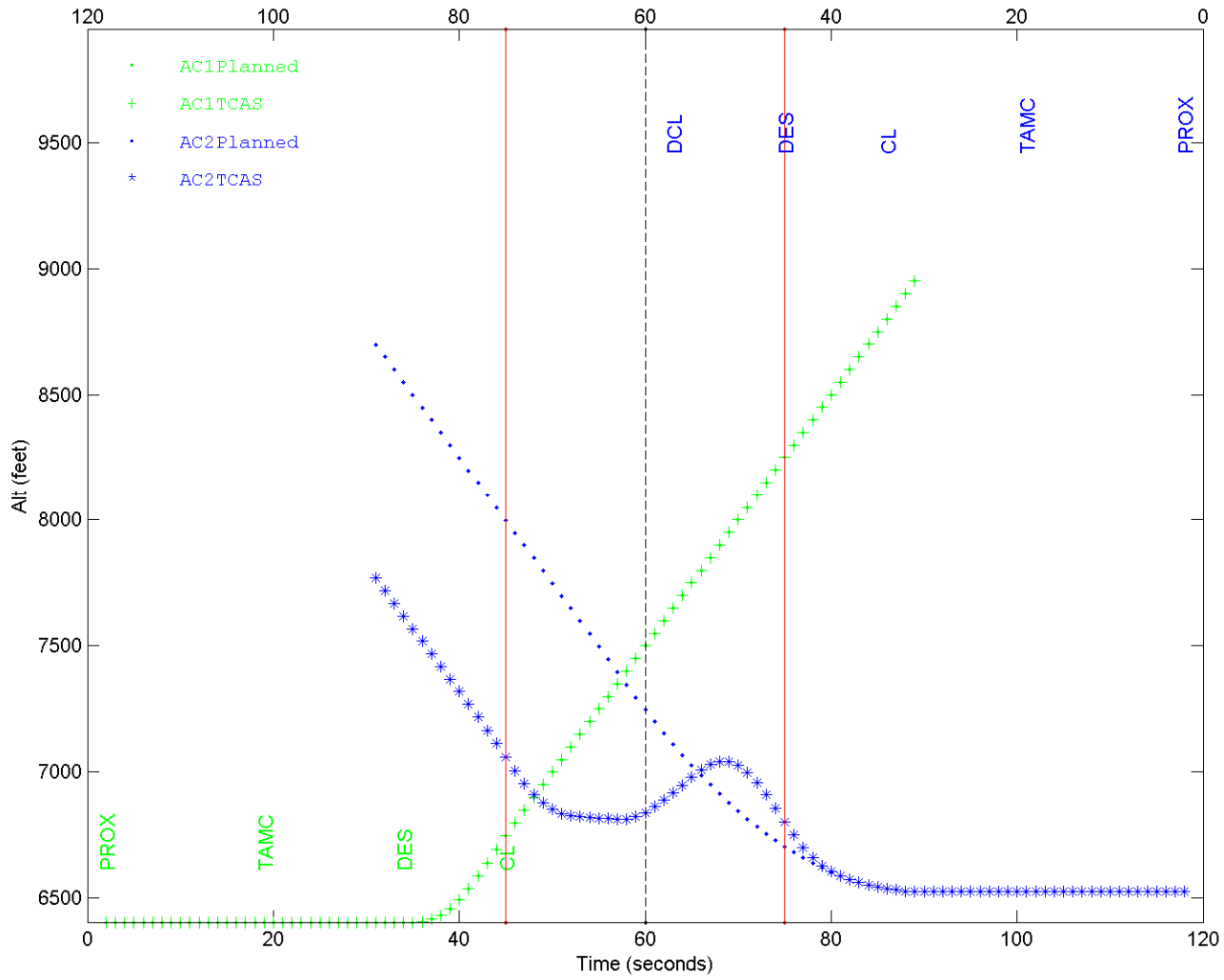
reit: 8151 cata: 717 simmode: 4165042 6.04A Vs 6.04A L178151A

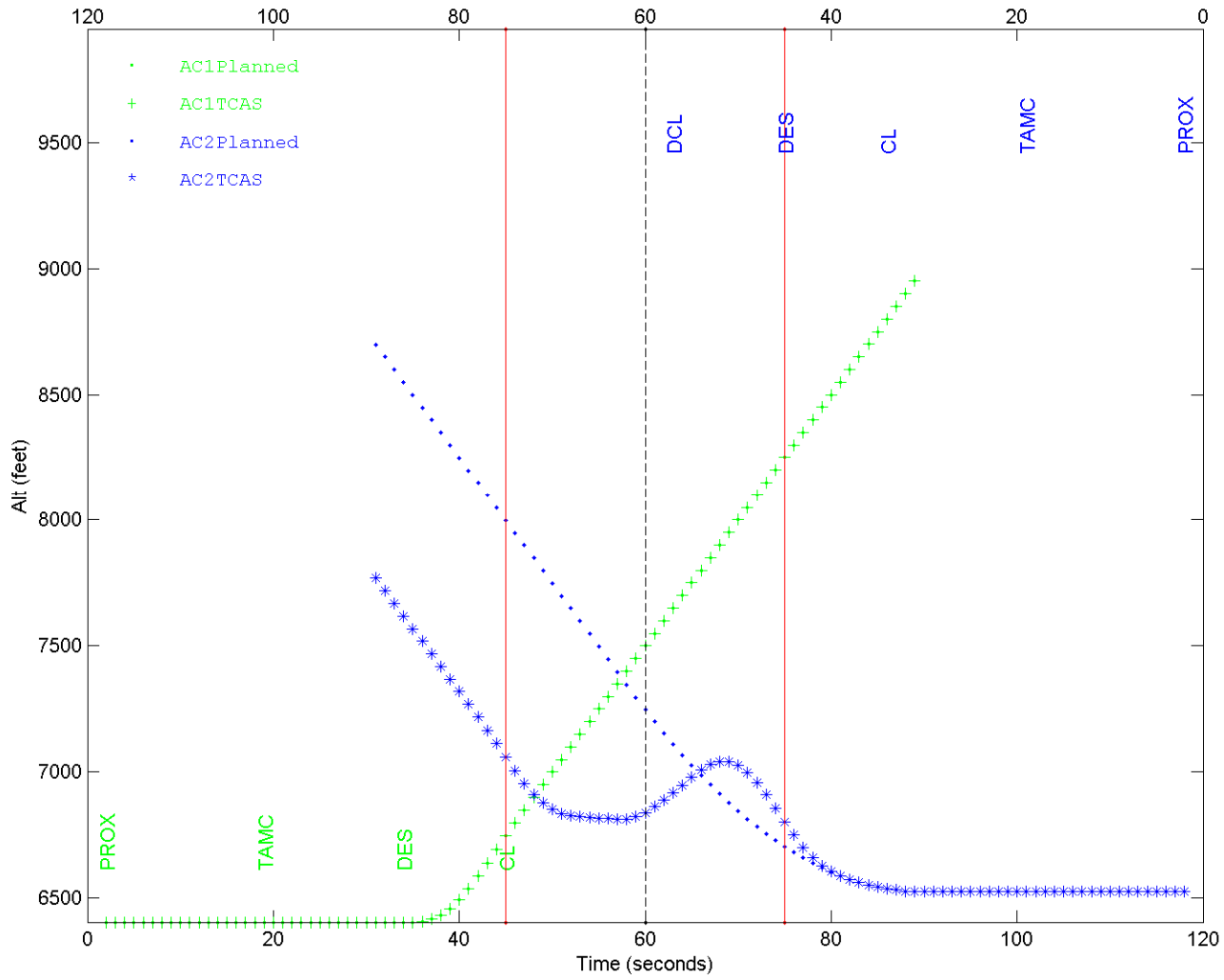


reit: 8151 cata: 717 simmode: 4175053 V7-25 Vs V7-25 L178151B



reit: 8151 cata: 717 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L178151C





Change 7.1 Non-responding Representative Save 16

Encounter Class: 7

Reit Number : 3868

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 1 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | 0.25 | g |
| AC1 acceleration time | CPA – 25 | sec |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Climbing vertical chase caused by planned maneuvers.
LOLO in non-responding low ID aircraft allowed reversal not observed with CP112E alone.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L173868
 LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(0.0,3000.0) AC2 RATES(0.0,3000.0)
 AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL 0.25g @ CPA -30 AC1 CPA ALT 3700

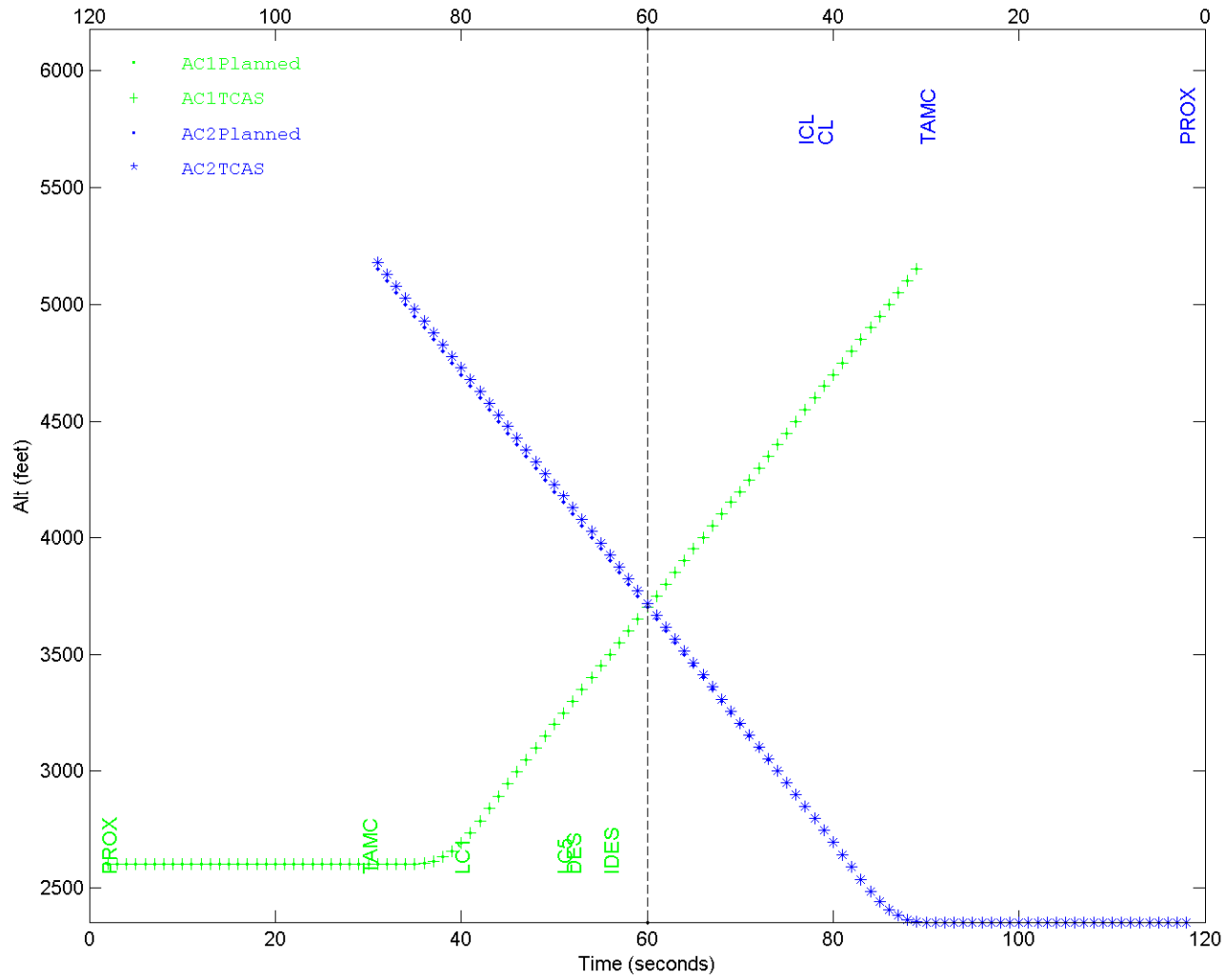
 3868 6.04A NR L VS 6.04A R H 7 -19.40 CROSSING_ENC
 5 AC1: 4165042 TA :30 |TAUR| LC1 @40 [NX]| LC5 @51 | DES @52 | IDES @56
 ##NON-RESPONDING##
 10 AC2: 4265124 TA :30 |PVMD| MCL @41 [NX]| ICL @43

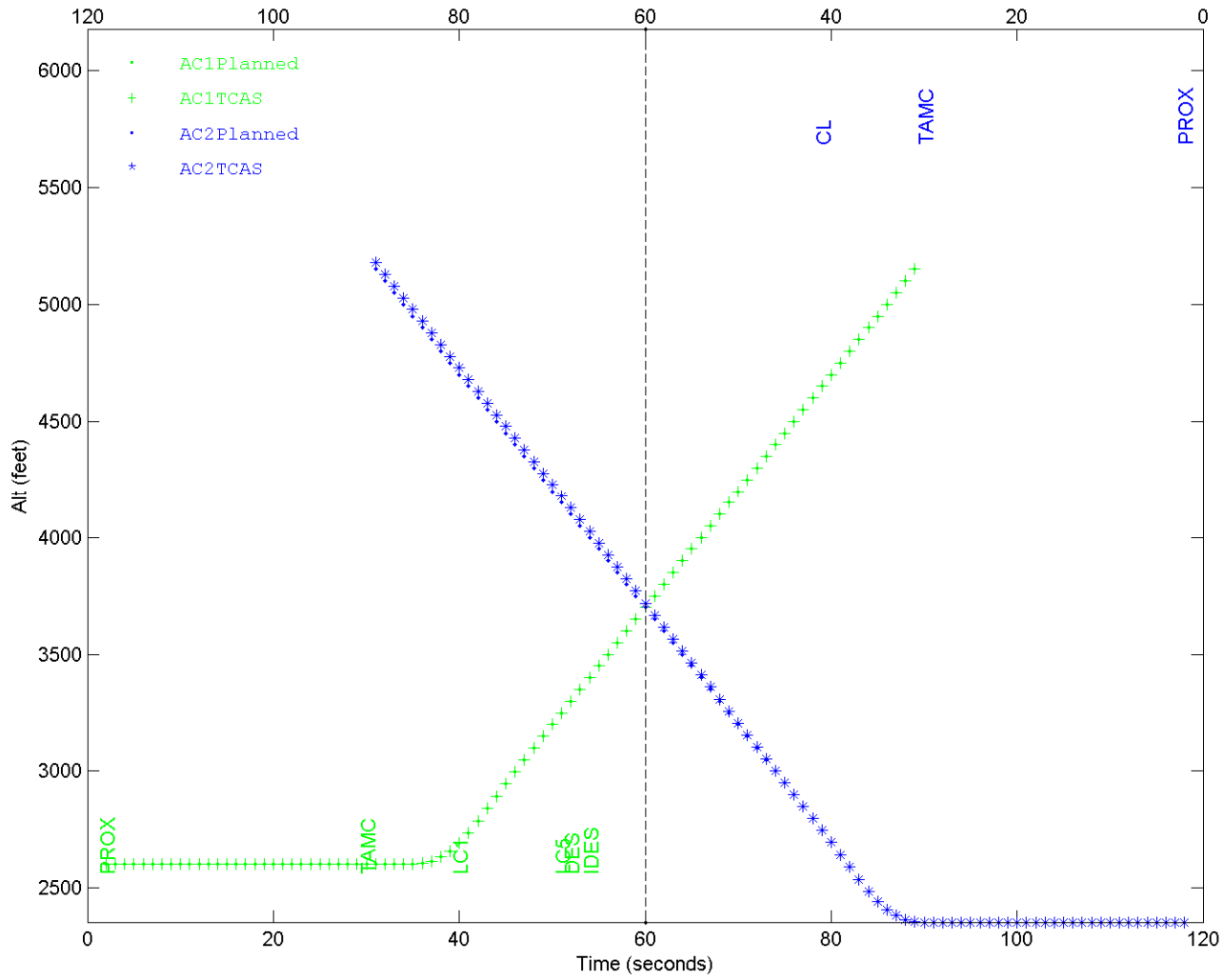
 3868 V7 25 FT NR L VS V7 25 FT R H 7 -19.40 CROSSING_ENC
 5 AC1: 4175053 TA :30 |TAUR| LC1 @40 [NX]| LC5 @51 | DES @52 | IDES @54
 ##NON-RESPONDING##
 10 AC2: 4275135 TA :30 |PVMD| CL @41 [NX]

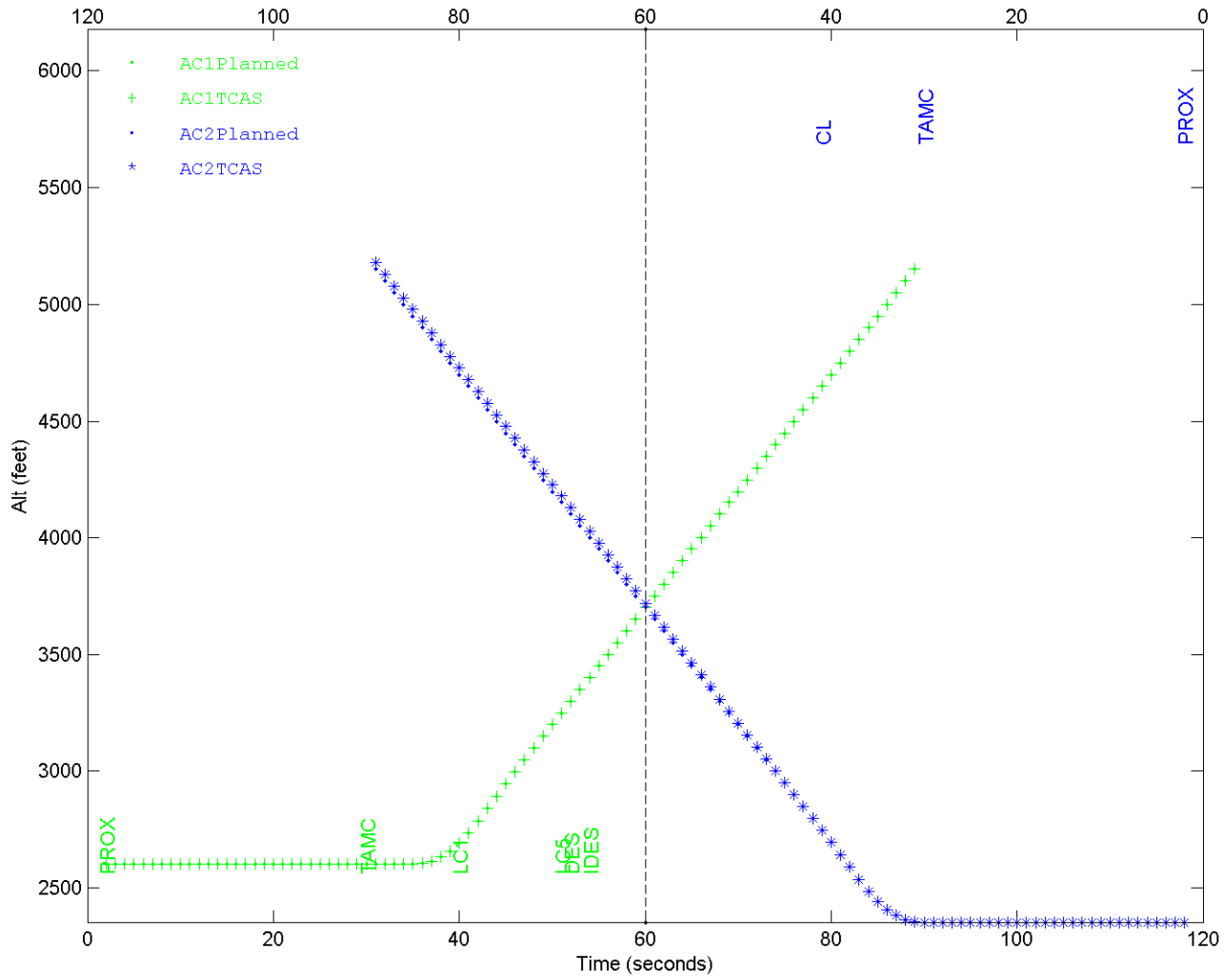
 3868 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 7 -19.40 CROSSING_ENC
 5 AC1: 8175053 TA :30 |TAUR| LC1 @40 [NX]| LC5 @51 | DES @52 | IDES @54
 ##NON-RESPONDING##
 10 AC2: 8275135 TA :30 |PVMD| CL @41 [NX]

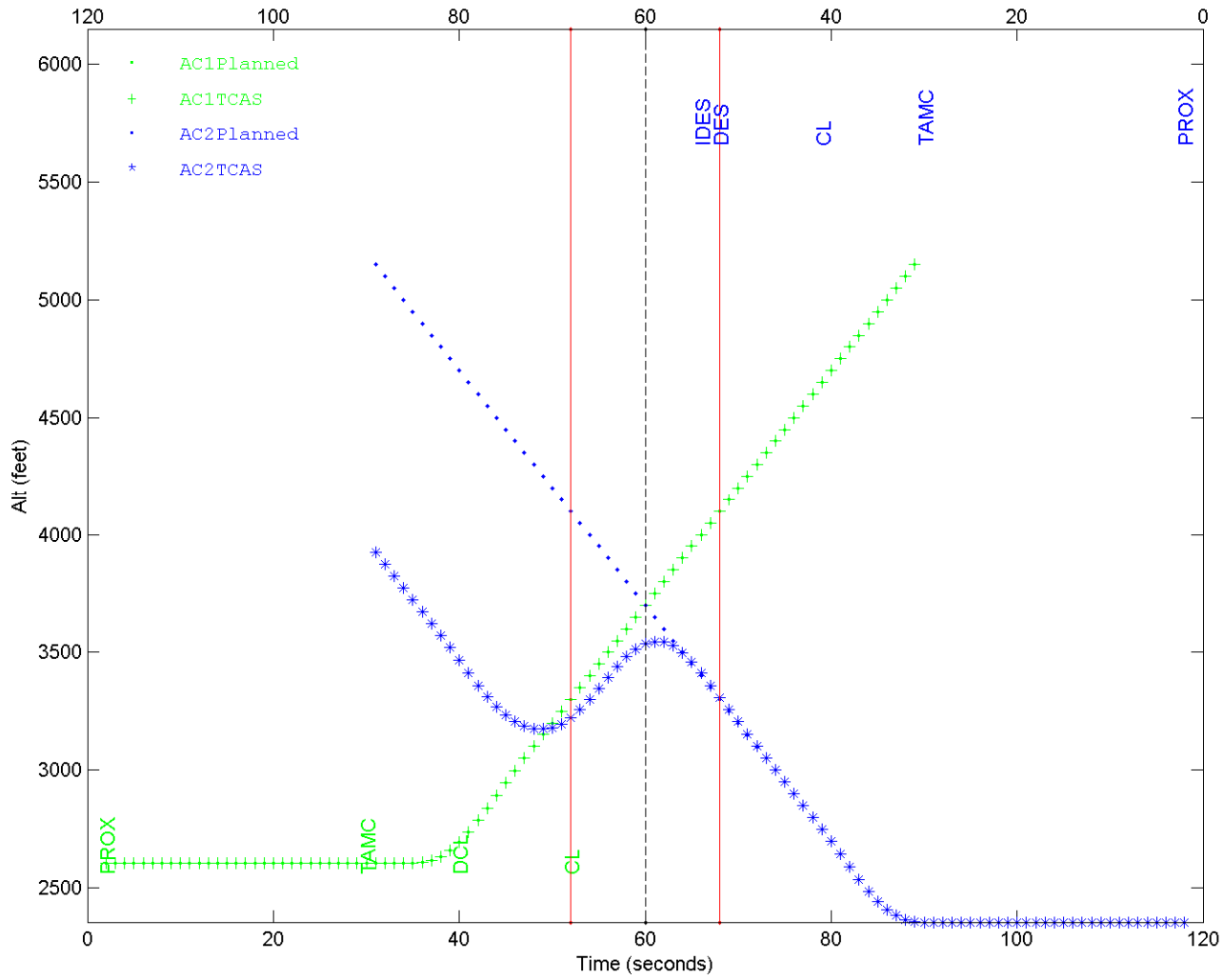
 3868 V7.1 25 FT NR L VS V7.1 25 FT R H 7 183.29 CROSSING_ENC
 5 AC1:*REV*8175053 TA :30 |TAUR| DCL @40 [NX]| CL @52 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :30 |PVMD| CL @41 [NX]| DES @52 | IDES @54

reit: 3868 cata: 717 simmode: 4165042 6.04A Vs 6.04A L173868A









Change 7.1 Non-responding Representative Save 17

Encounter Class: 7

Reit Number : 8611

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 2 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 750 | ft |
| AC1 rates: | 5000 | fpm |
| AC2 rates: | -1000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | -0.05 | g |
| AC1 acceleration time | CPA – 25 | sec |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 0 | % |
| Vertical chase | no | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

LOLO in responding low ID aircraft allowed reversal not observed with CP112E alone.
IDES command came 5 seconds earlier with CP115.

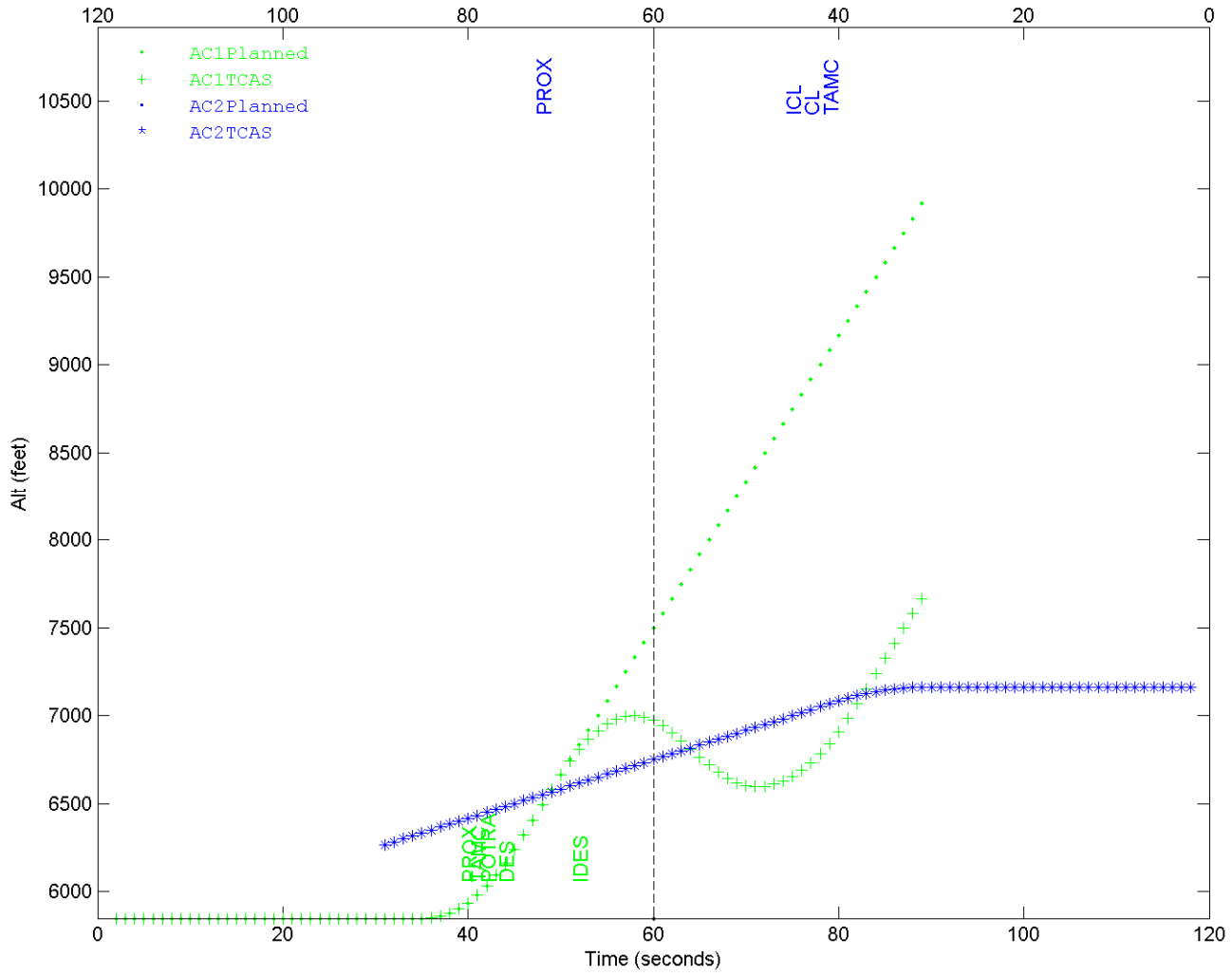
SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H278611
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 750.0 AC1 RATES(0.0,5000.0) AC2 RATES(0.0,-1000.0)
 AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL -0.05g @ CPA -30 AC1 CPA ALT 7500

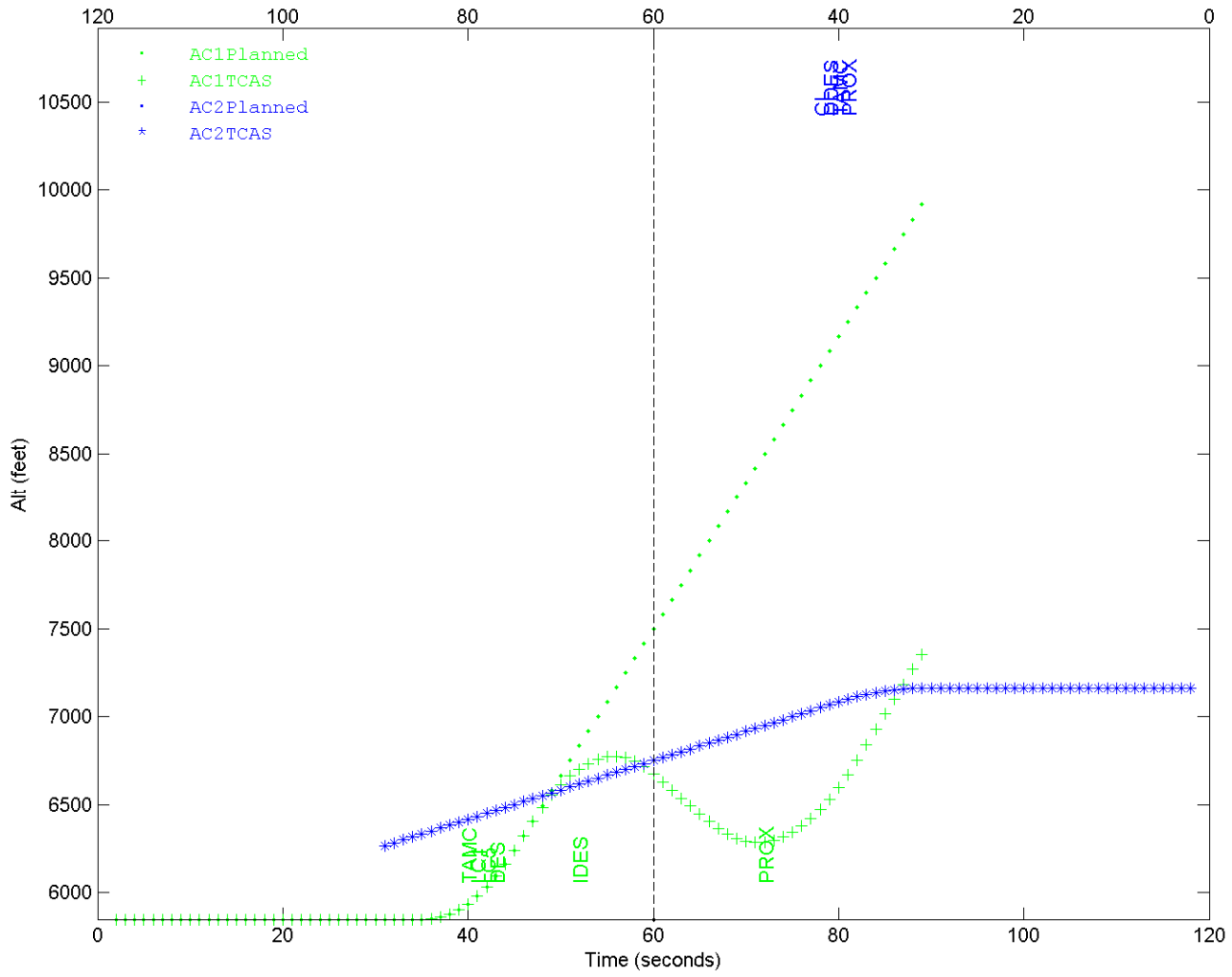
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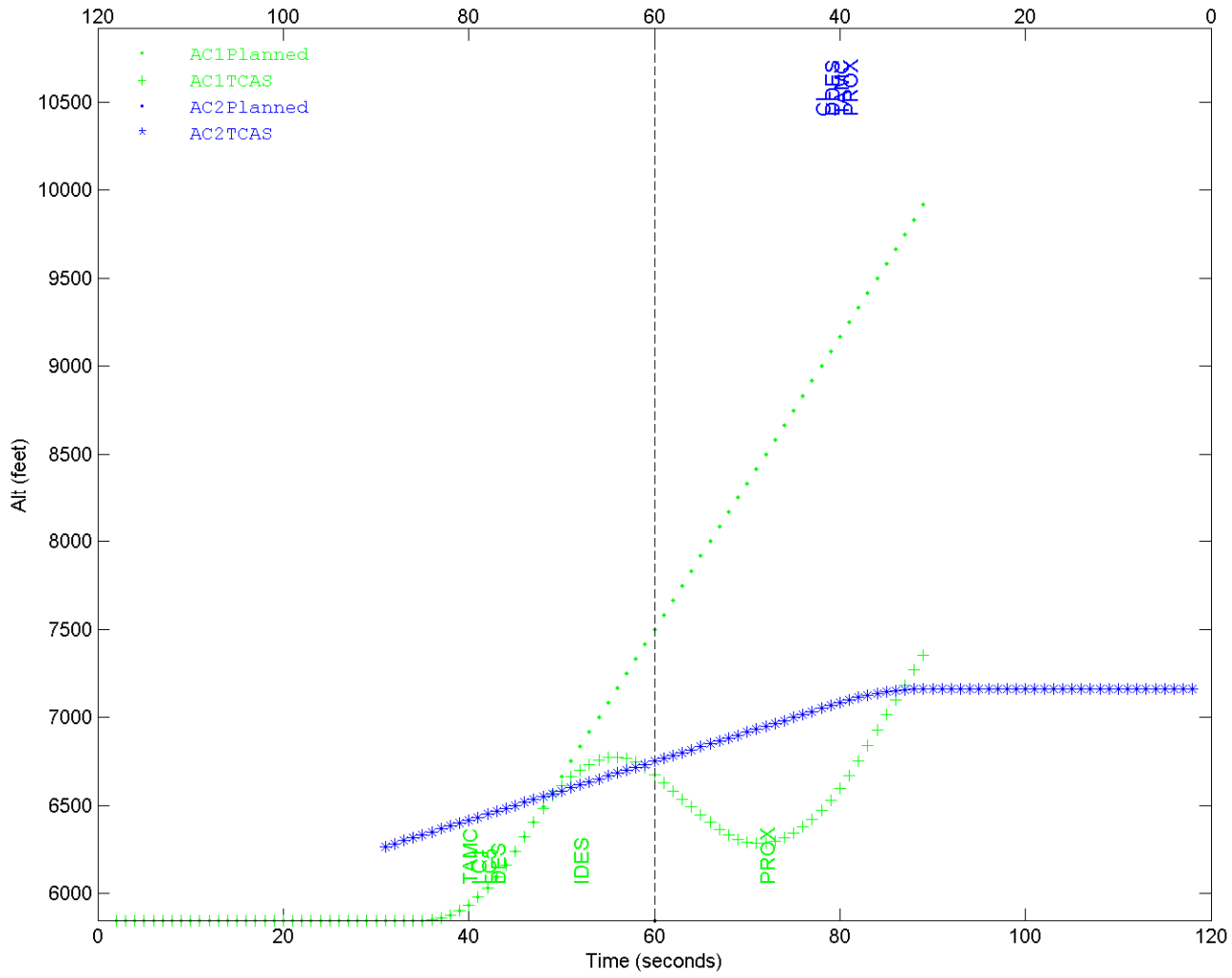
-----
 8611  6.04A R H VS 6.04A NR L    7    205.47    CROSSING_ENC
10 AC1:    4165124 TA :41 |TAUV| POTRA@42 (DFD) | DES @44 [NX]| IDES @52
 5 AC2:    4265042 TA :41 |TAUV| CL @43 [NX]| ICL @45 ##NON-RESPONDING##
-----
 8611  V7 25 FT R H VS V7 25 FT NR L    7    -94.02    NON_CROSSING_ENC
10 AC1:    4275035 TA :40 |TAUV| LC1 @41 [NX]| LC5 @42 | DES @43 | IDES @52
 5 AC2:    4175153 TA :40 |TAUV| DDES @41 [NX]| CL @42 ##NON-RESPONDING##
-----
 8611  CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L    7 -94.02 NON_CROSSING_ENC
10 AC1:    8275035 TA :40 |TAUV| LC1 @41 [NX]| LC5 @42 | DES @43 | IDES @52
 5 AC2:    8175153 TA :40 |TAUV| DDES @41 [NX]| CL @42 ##NON-RESPONDING##
-----
 8611  V7.1 25 FT R H VS V7.1 25 FT NR L    7 -209.40    NON_CROSSING_ENC
10 AC1:    8275035 TA :40 |TAUV| DCL @41 [NX]| DES @44 | IDES @47
 5 AC2:    8175153 TA :40 |TAUV| DDES @41 [NX]| CL @42 ##NON-RESPONDING##

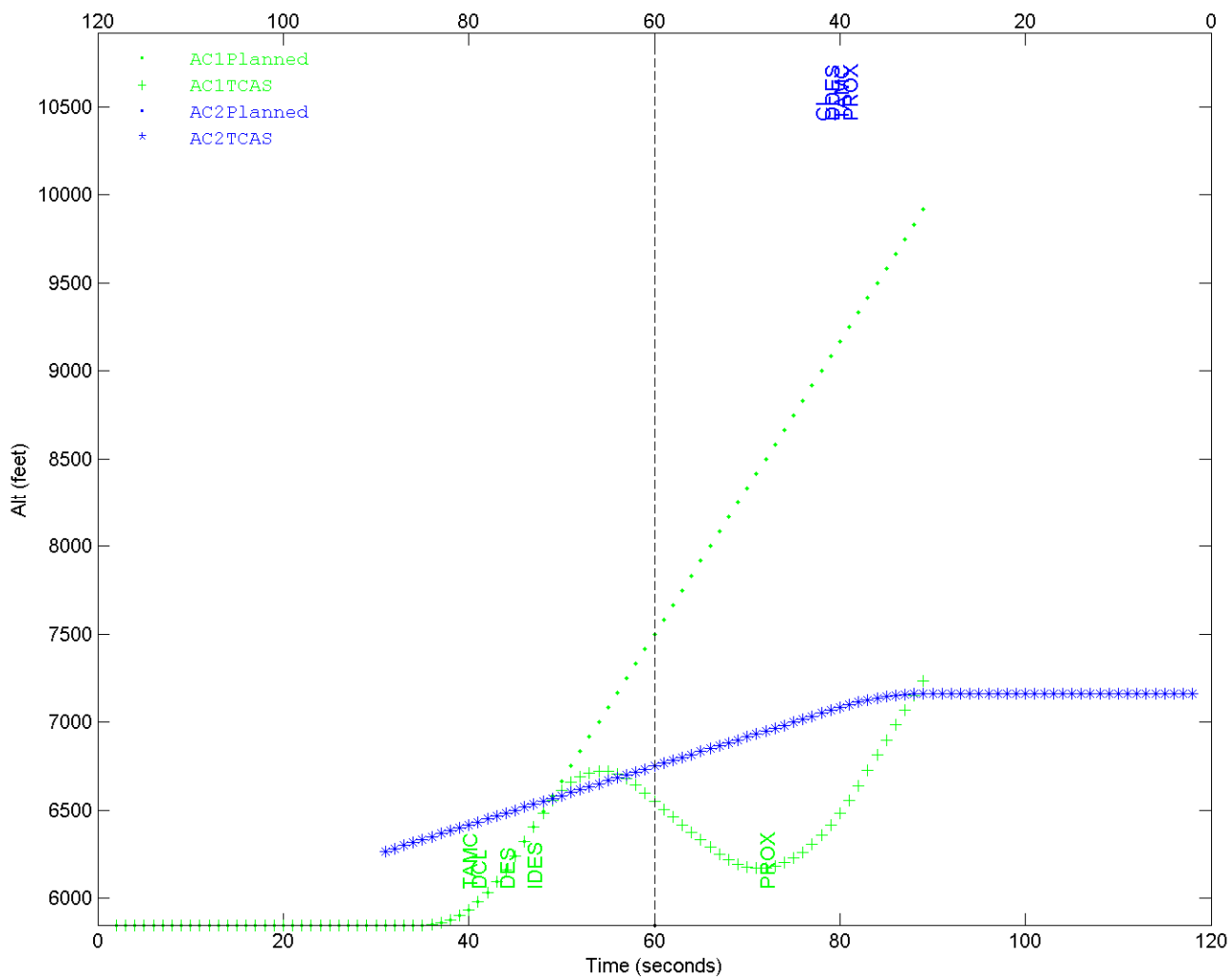
```

reit: 8611 cata: 717 simmode: 4165124 6.04A Vs 6.04A H278611A









Change 7.1 Non-responding Representative Save 18

Encounter Class: 8

Reit Number : 4939

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 8 | |
| AC1 low ID | no | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | -5000 | fpm |
| AC2 rates: | -3000 | fpm |
| AC1 acceleration: | 0.05 | g |
| AC2 acceleration: | -0.35 | g |
| AC1 acceleration time | CPA – 25 | sec |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Descending vertical chase caused by planned maneuver.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H184939
 LOGIC THRESHOLDS SL = 6 ZTHR = 600 TAUR = 30 TAUV = 30 ALIM = 350
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(-5000.0,0.0) AC2 RATES(0.0,-3000.0)
 AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.35g @ CPA -30 AC1 CPA ALT 7500

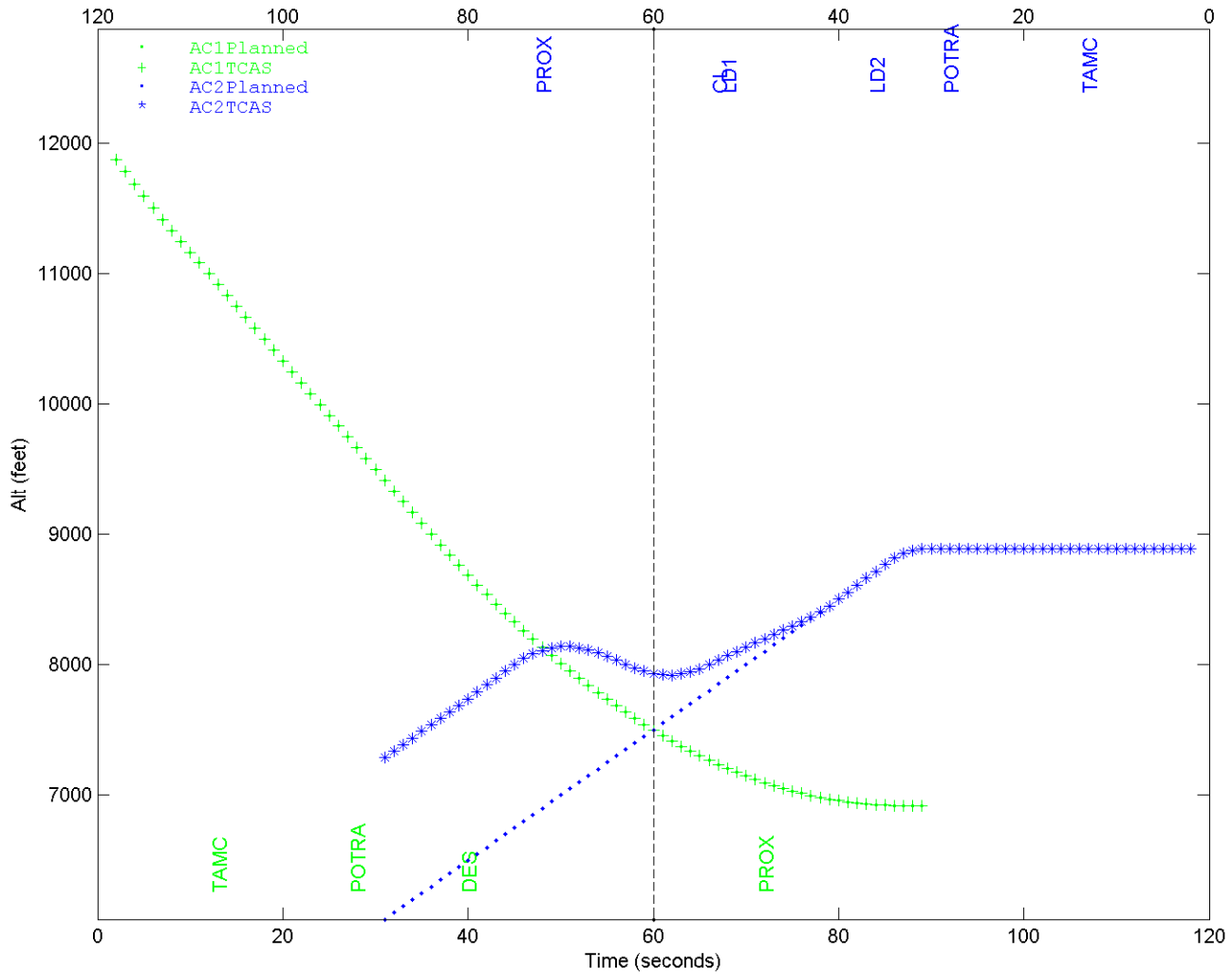
 4939 6.04A NR H VS 6.04A NR L 8 -444.17 CROSSING_ENC
 10 AC1: 4165142 TA:13 |TAUR| POTRA@28 (6FT) | DES @40 [X]
 ##NON-RESPONDING##
 5 AC2: 4265024 TA:13 |TAUR| LD2 @36 [X] | LD2 @49 | LD1 @52 | CL @53

 4939 V7 25 FT NR H VS V7 25 FT R L 8 0.00 CROSSING_ENC
 10 AC1: 4275053 TA:13 |TAUR| POTRA@28 | LD5 @37 [NX]| CL @49 | ICL @51
 ##NON-RESPONDING##
 5 AC2: 4175135 TA:13 |TAUR| POTRA@28 (LVW) | DES @37 [NX]

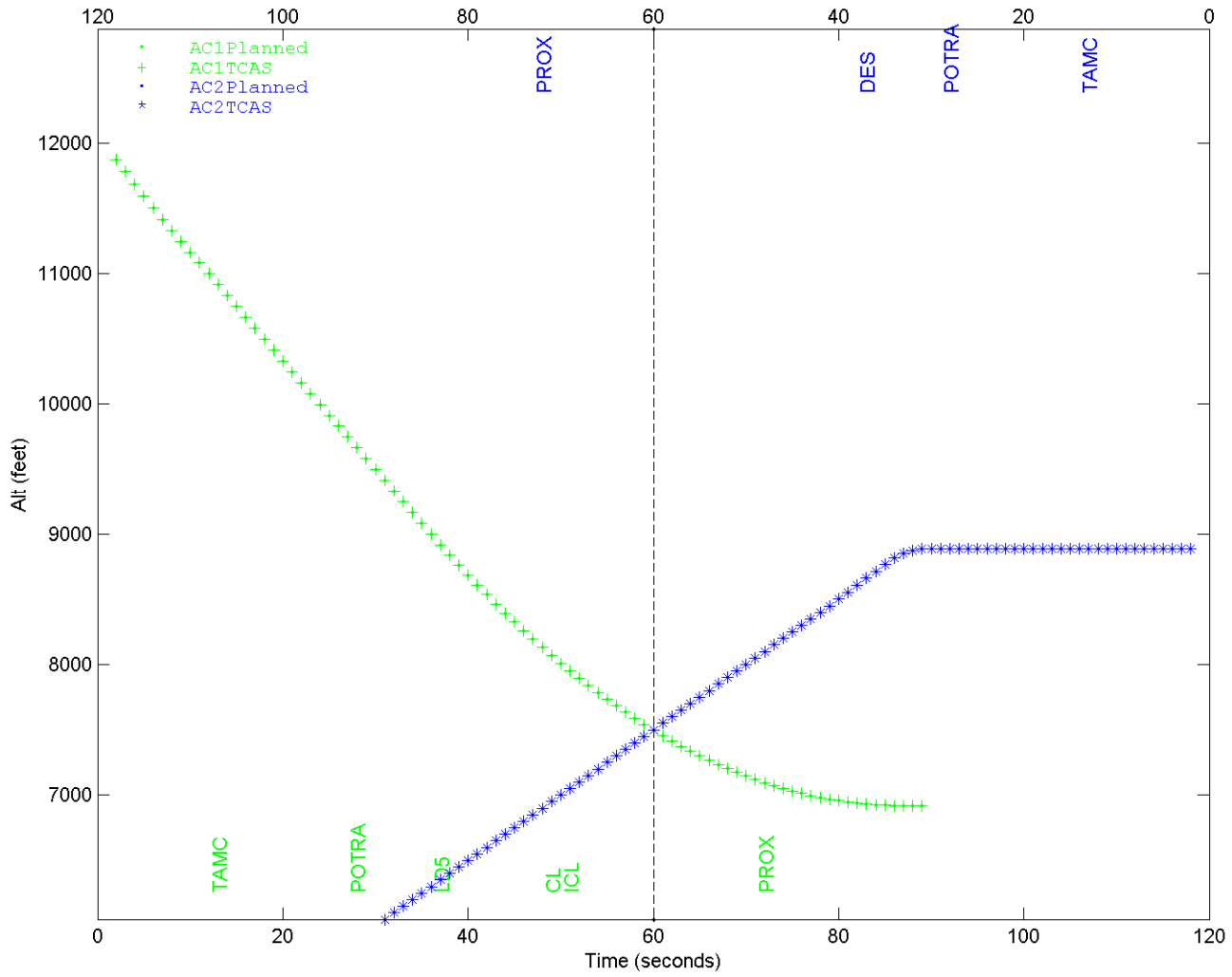
 4939 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 8 -543.55 CROSSING_ENC
 10 AC1:*REV*8275053 TA:13 |TAUR| POTRA@28 | LD5 @37 [NX]| DES @49| DCL @63
 ##NON-RESPONDING##
 5 AC2:*REV*8175135 TA:13 |TAUR| POTRA@28(LVW)| DES @37[NX]| CL @48| ICL @51
 |DDES @63

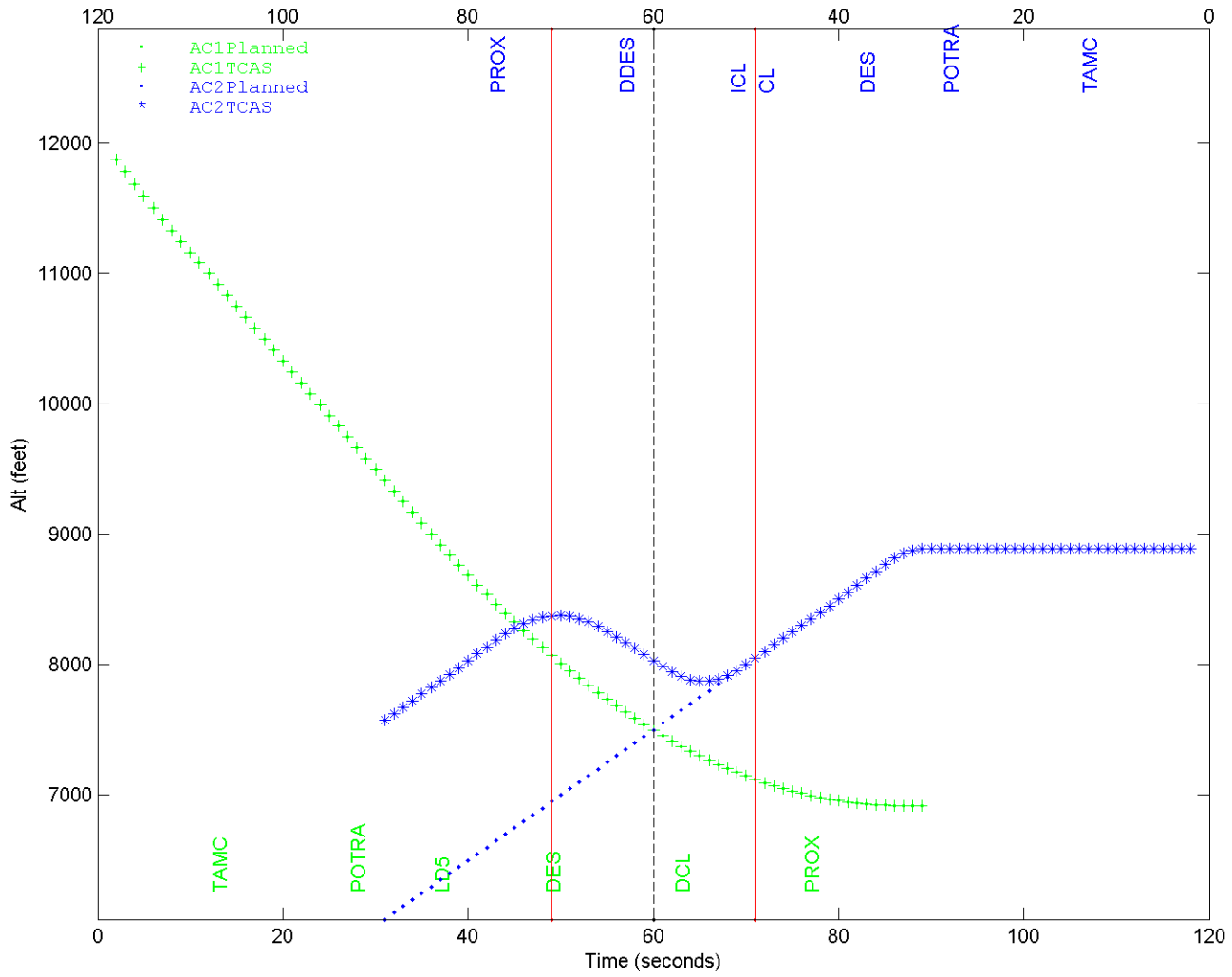
 4939 V7.1 25 FT NR H VS V7.1 25 FT R L 8 -543.55 CROSSING_ENC
 10 AC1:*REV*8275053 TA:13 |TAUR| POTRA@28 | DDES @37 [NX]| DES @49| DCL @63
 ##NON-RESPONDING##
 5 AC2:*REV*8175135 TA:13 |TAUR| POTRA@28 (LVW) | DES @37 [NX]| CL @48| ICL @51
 | DDES @63

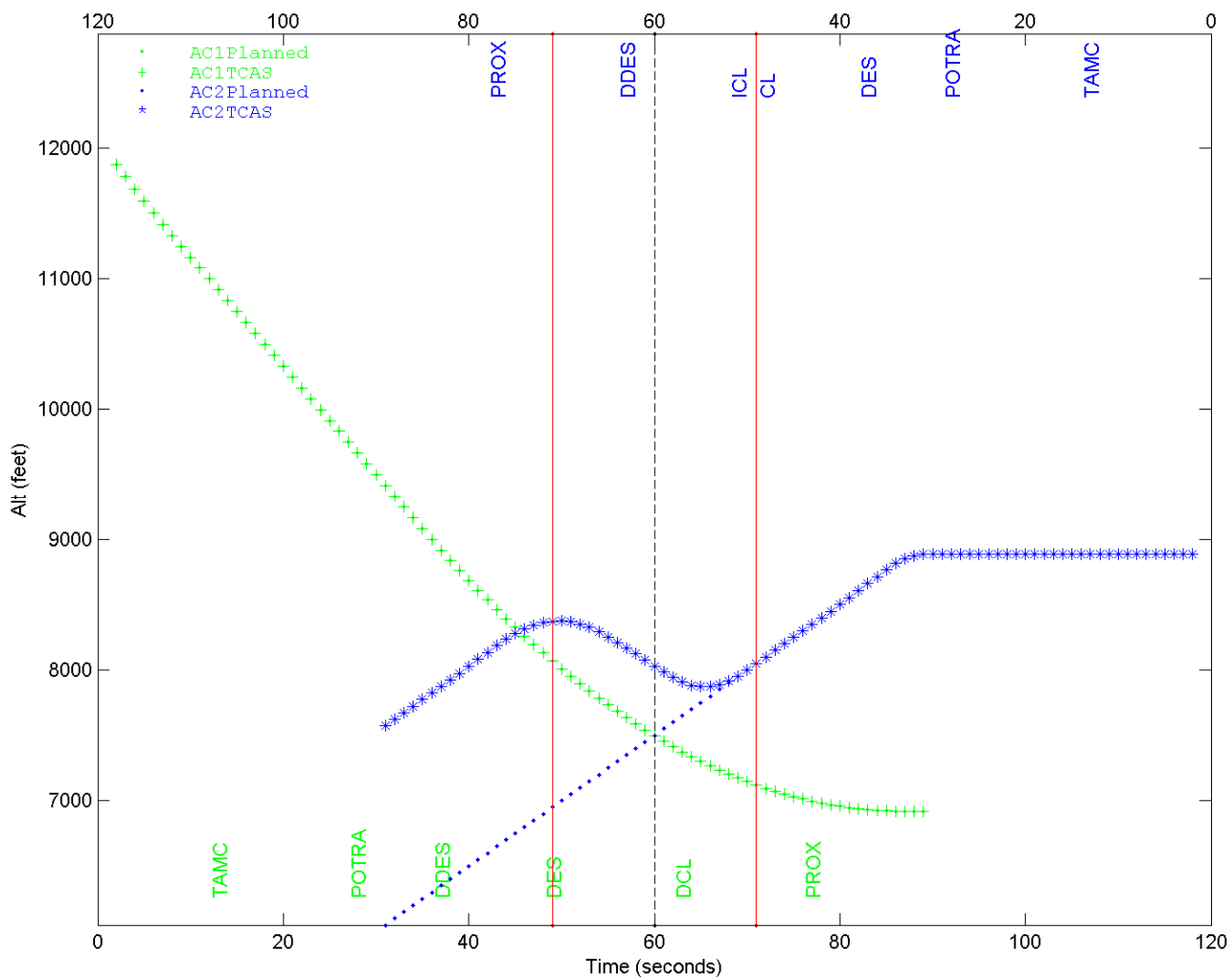
reit: 4939 cata: 818 simmode: 4165142 6.04A Vs 6.04A H184939A



reit: 4939 cata: 818 simmode: 4275053 V7-25 Vs V7-25 H184939B







Change 7.1 Non-responding Representative Save 19

Encounter Class: 8

Reit Number : 3026

Encounter Characterization

| | | |
|-------------------------------|---------------------|-----|
| Number of encounters in group | 56 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | -250, 500, +/-750 | ft |
| AC1 rates: | -1000, -3000, -5000 | fpm |
| AC2 rates: | -1000, -3000, -5000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | -0.05 | g |
| AC1 acceleration time | CPA – 25 | sec |
| AC2 acceleration time | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Descending vertical chase caused by response to initial RA.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L283026
 LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
 PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(-5000.0,0.0) AC2 RATES(0.0,-5000.0)
 AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL -0.05g @ CPA -30 AC1 CPA ALT 3700

```

-----
3026 6.04A R L VS 6.04A NR H 8 77.09 CROSSING_ENC

5 AC1: 4165024 TA :19 |PVMD| MDES @43 [NX]| DES @44 | IDES @45
10 AC2: 4265142 TA :19 |PVMD| CL @45 [NX]| ICL @49 ##NON-RESPONDING##

-----
3026 V7 25 FT R L VS V7 25 FT NR H 8 60.73 CROSSING_ENC

5 AC1: 4175035 TA :19 |PVMD| DES @42 [NX]
10 AC2: 4275153 TA :19 |PVMD| LD1 @42 [NX]| LD1 @43 | LD5 @44 | CL @45
      | ICL @49 ##NON-RESPONDING##

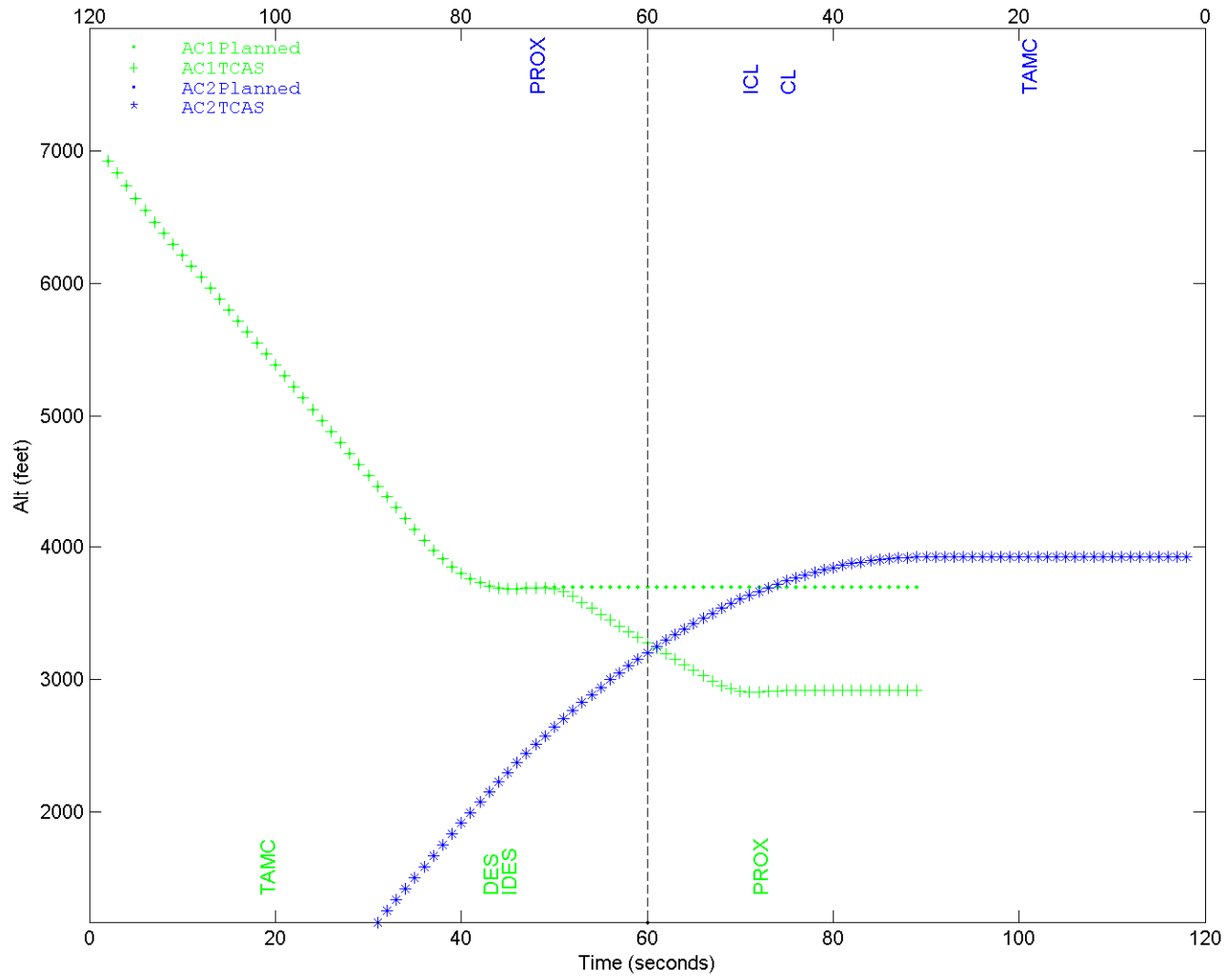
-----
3026 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 8 201.49 CROSSING_ENC

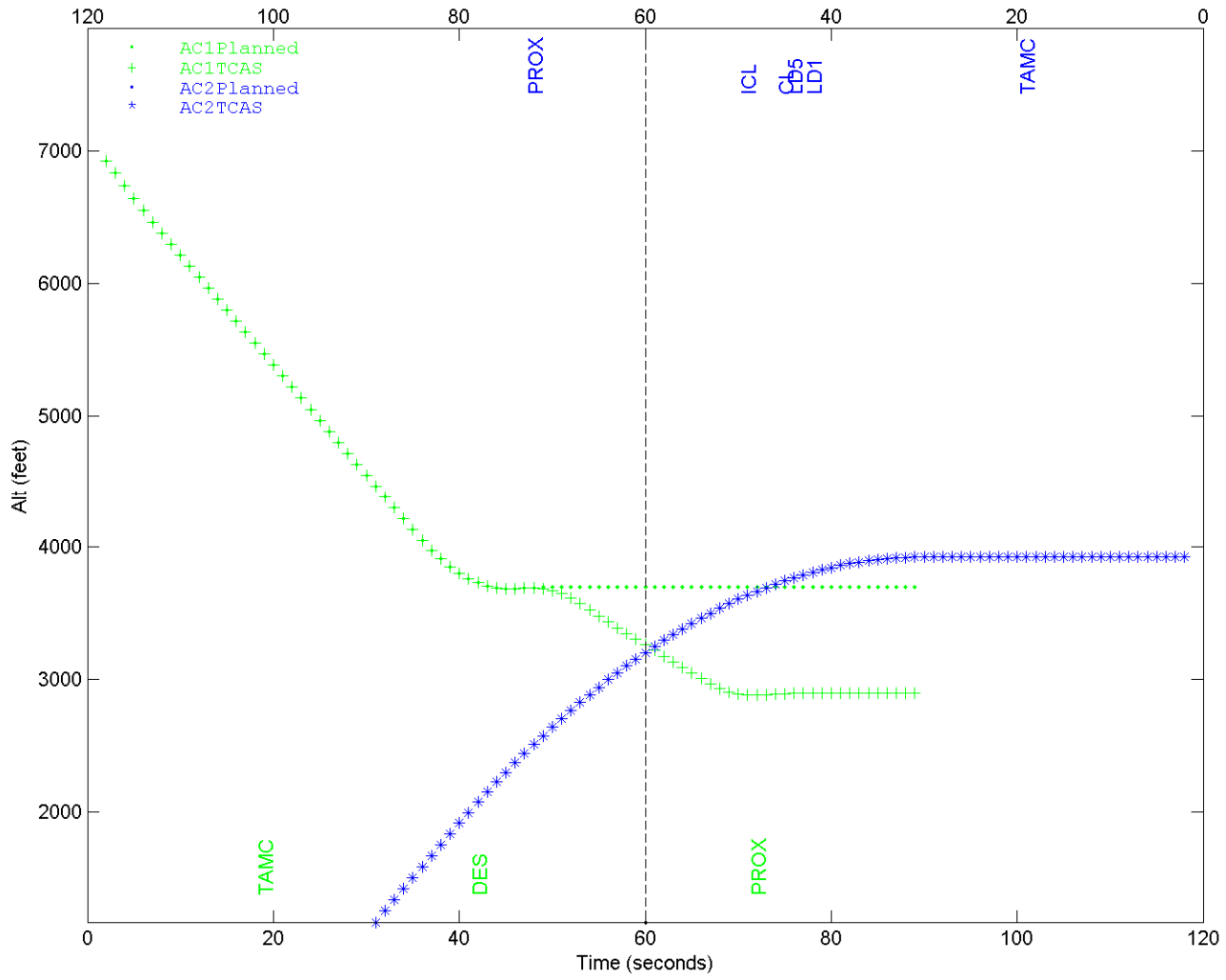
5 AC1:*REV*8175035 TA :19 |PVMD| DES @42 [NX]| CL @53
10 AC2:*REV*8275153 TA :19 |PVMD| LD1 @42 [NX]| LD1 @43 | LD5 @44 | CL @45
      | ICL @49 | DES @53 ##NON-RESPONDING##

-----
3026 V7.1 25 FT R L VS V7.1 25 FT NR H 8 201.49 CROSSING_ENC

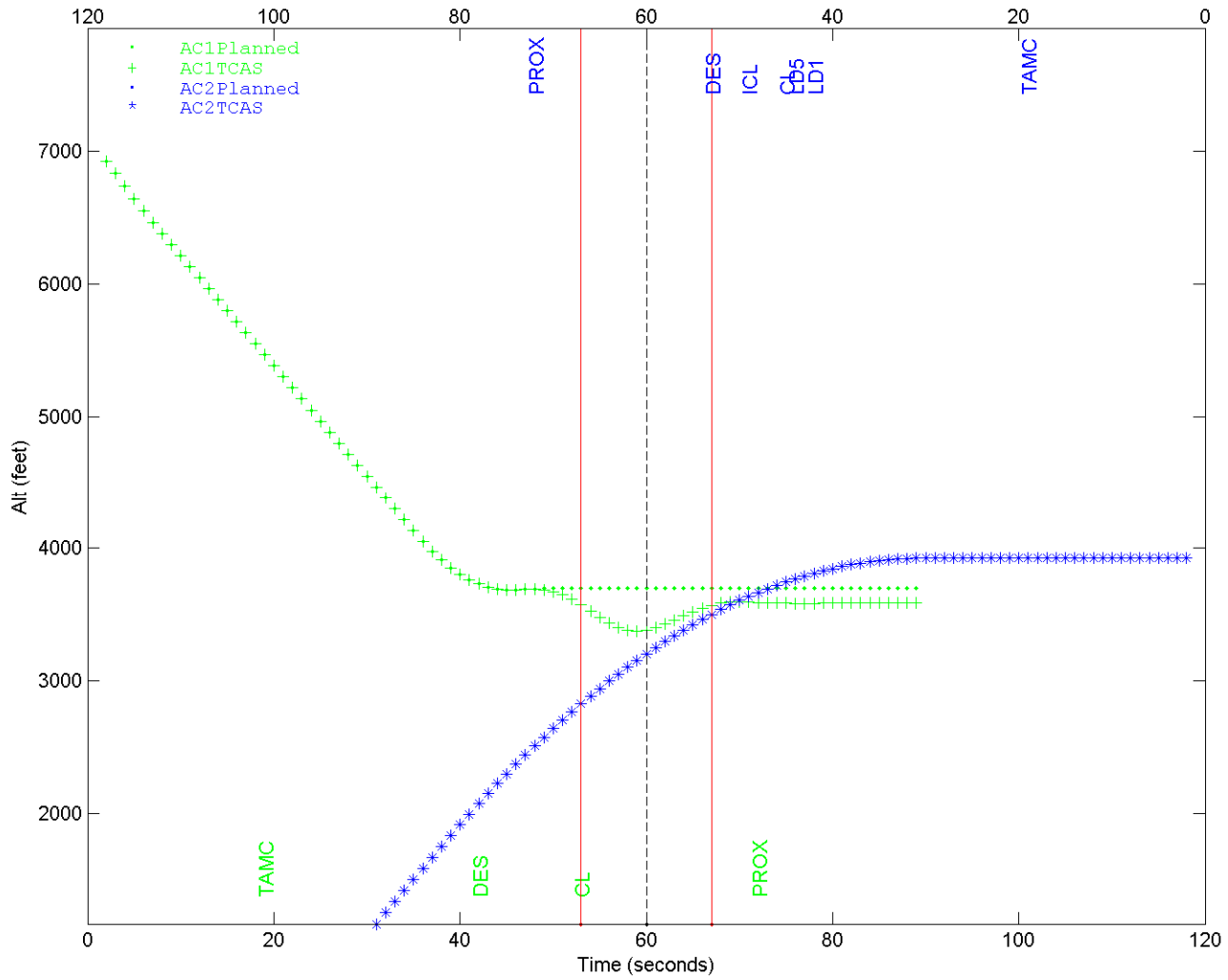
5 AC1:*REV*8175035 TA :19 |PVMD| DES @42 [NX]| CL @53
10 AC2:*REV*8275153 TA :19 |PVMD| LD1 @42 [NX]| DDES @43 | CL @45 | ICL @49
      | DES @53 ##NON-RESPONDING##

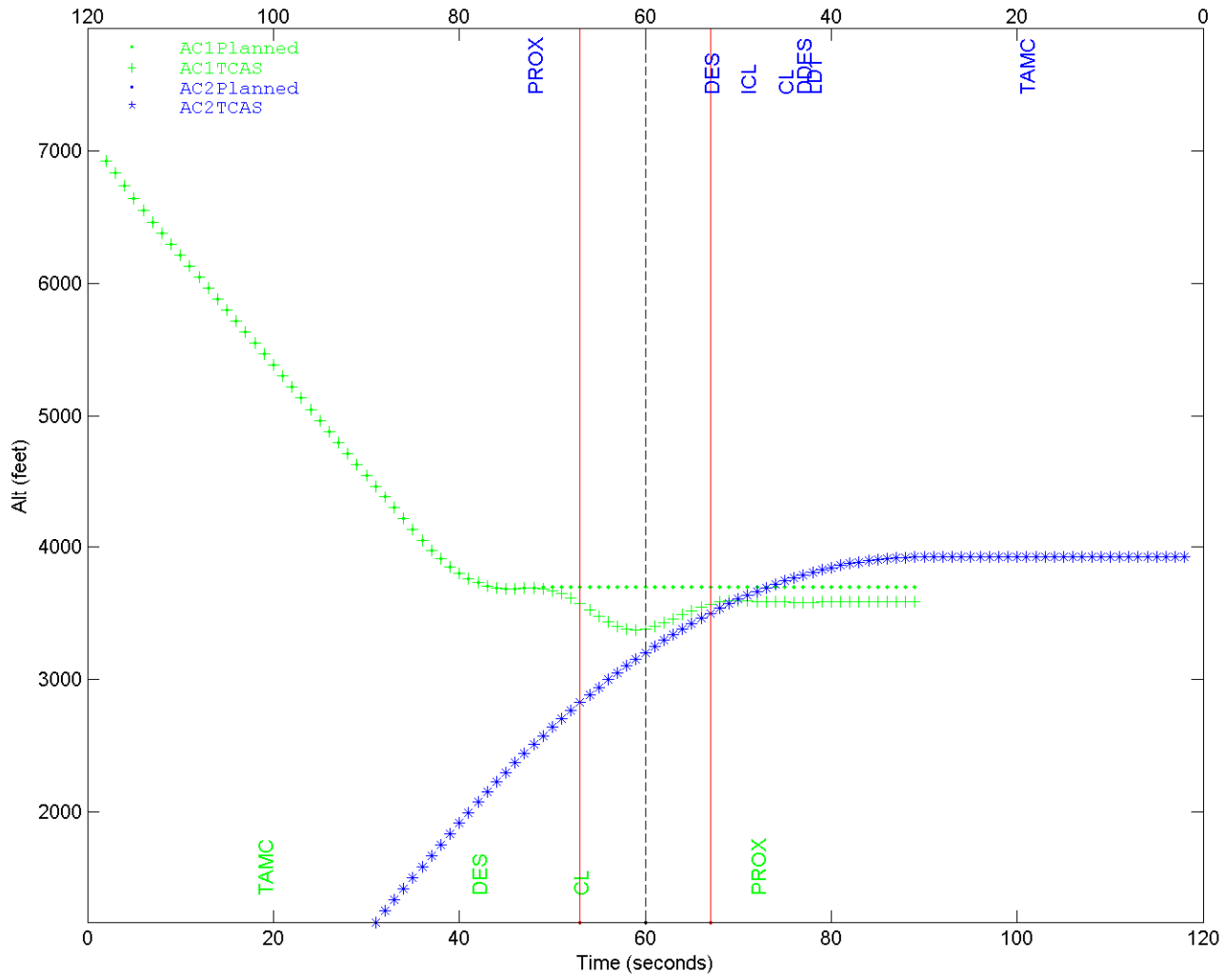
```



reit: 3026 cata: 818 simmode: 8175035 CP112EV1.2-25 Vs CP112EV1.2-25 L283026C





Change 7.1 Non-responding Representative Save 20

Encounter Class: 8

Reit Number : 8792

Encounter Characterization

| | | |
|-------------------------------|---------------------|-----|
| Number of encounters in group | 40 | |
| AC1 low ID | no | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | -500, -750 | ft |
| AC1 rates: | -1000, -3000, -5000 | fpm |
| AC2 rates: | +/-3000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | 0.15 | g |
| AC1 acceleration time | CPA – 25 | sec |
| AC2 acceleration time | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA and planned maneuver.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H288792
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-1000.0,0.0) AC2 RATES(0.0,3000.0)
 AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL 0.15g @ CPA -25 AC1 CPA ALT 7500

```

-----
 8792  6.04A R H VS 6.04A NR L      8    -67.86    CROSSING_ENC

10 AC1:      4165124 TA :19 |TAUR| POTRA@34 (DFD) | CL @35 [NX]| ICL @44
 5 AC2:      4265042 TA :19 |TAUR| DES @34 [NX]| IDES @53 ##NON-RESPONDING##

-----
 8792  V7 25 FT R H VS V7 25 FT NR L      8    -76.19    CROSSING_ENC

10 AC1:      4275035 TA :19 |TAUR| CL @34 [NX]| ICL @46
 5 AC2:      4175153 TA :19 |TAUR| DES @34 [NX]| IDES @49 ##NON-RESPONDING##

-----
 8792  CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L      8   -641.58    CROSSING_ENC

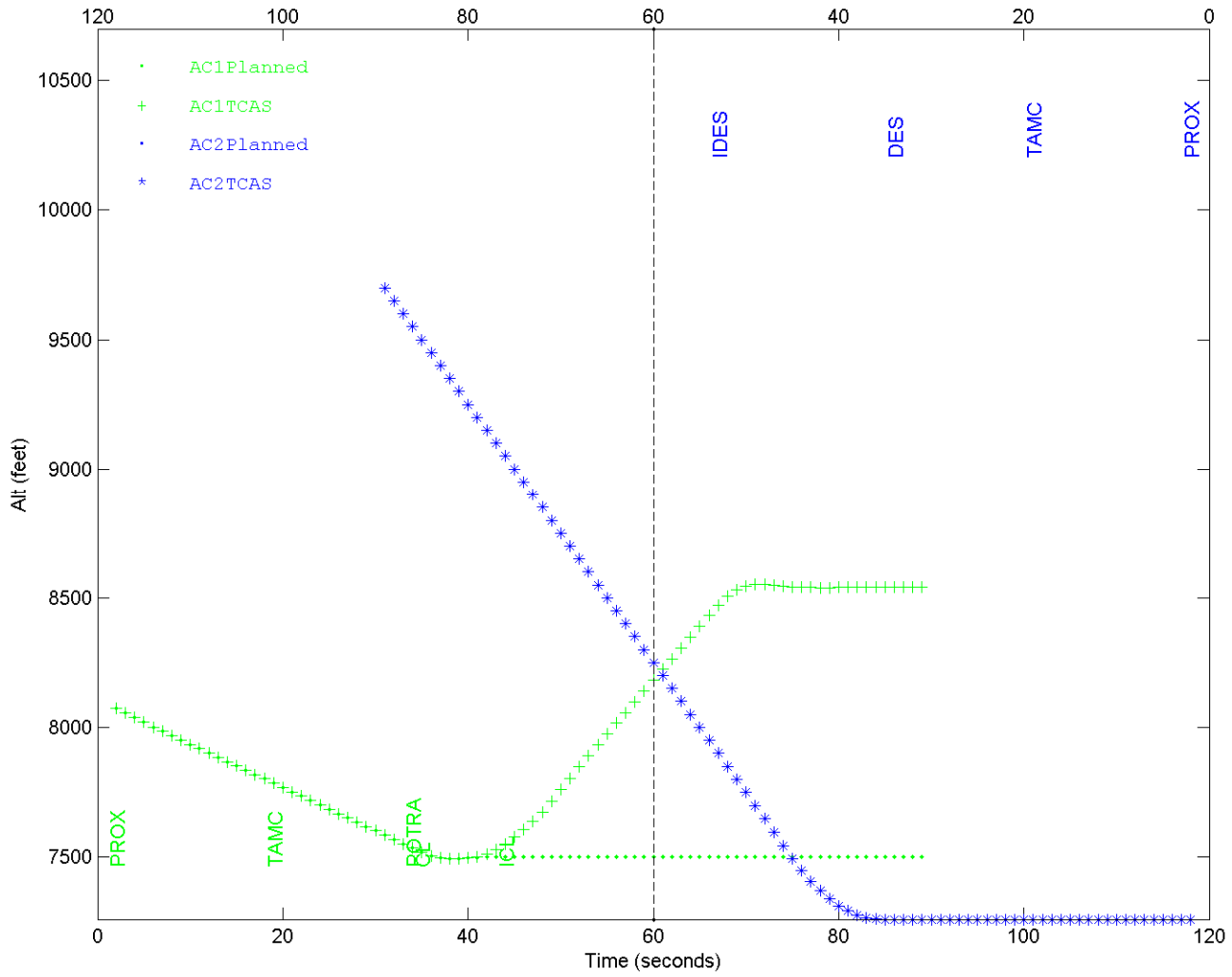
10 AC1:*REV*8275035 TA :19 |TAUR| CL @34 [NX]| ICL @46 | DES @47 | DCL @63
 5 AC2:*REV*8175153 TA :19 |TAUR| DES @34 [NX]| CL @46 | DDES @63 ##NON-RESPONDING##

-----
 8792  V7.1 25 FT R H VS V7.1 25 FT NR L      8   -641.58    CROSSING_ENC

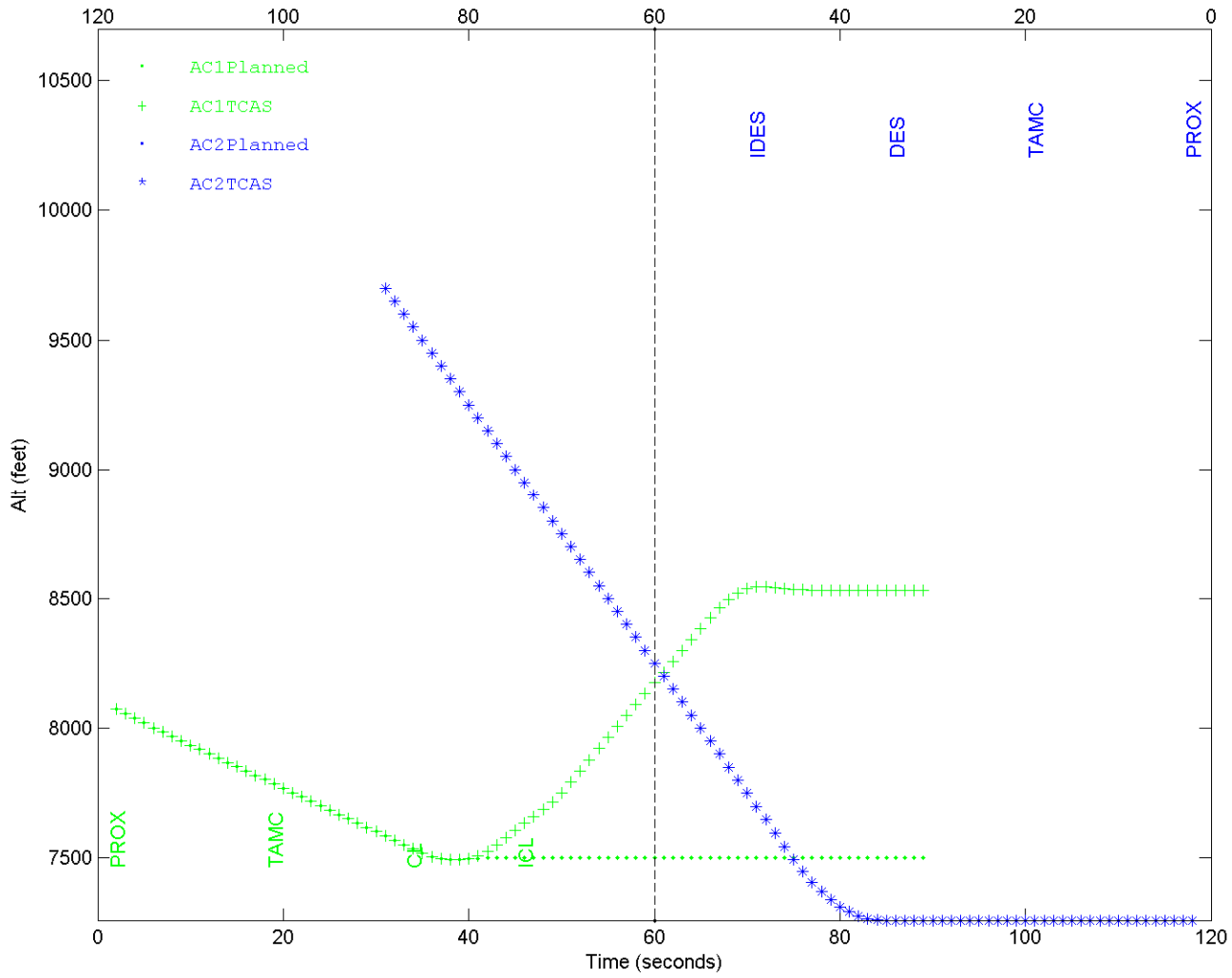
10 AC1:*REV*8275035 TA :19 |TAUR| CL @34 [NX]| ICL @46 | DES @47 | DCL @63
 5 AC2:*REV*8175153 TA :19 |TAUR| DES @34 [NX]| CL @46 | DDES @63 ##NON-RESPONDING##

```

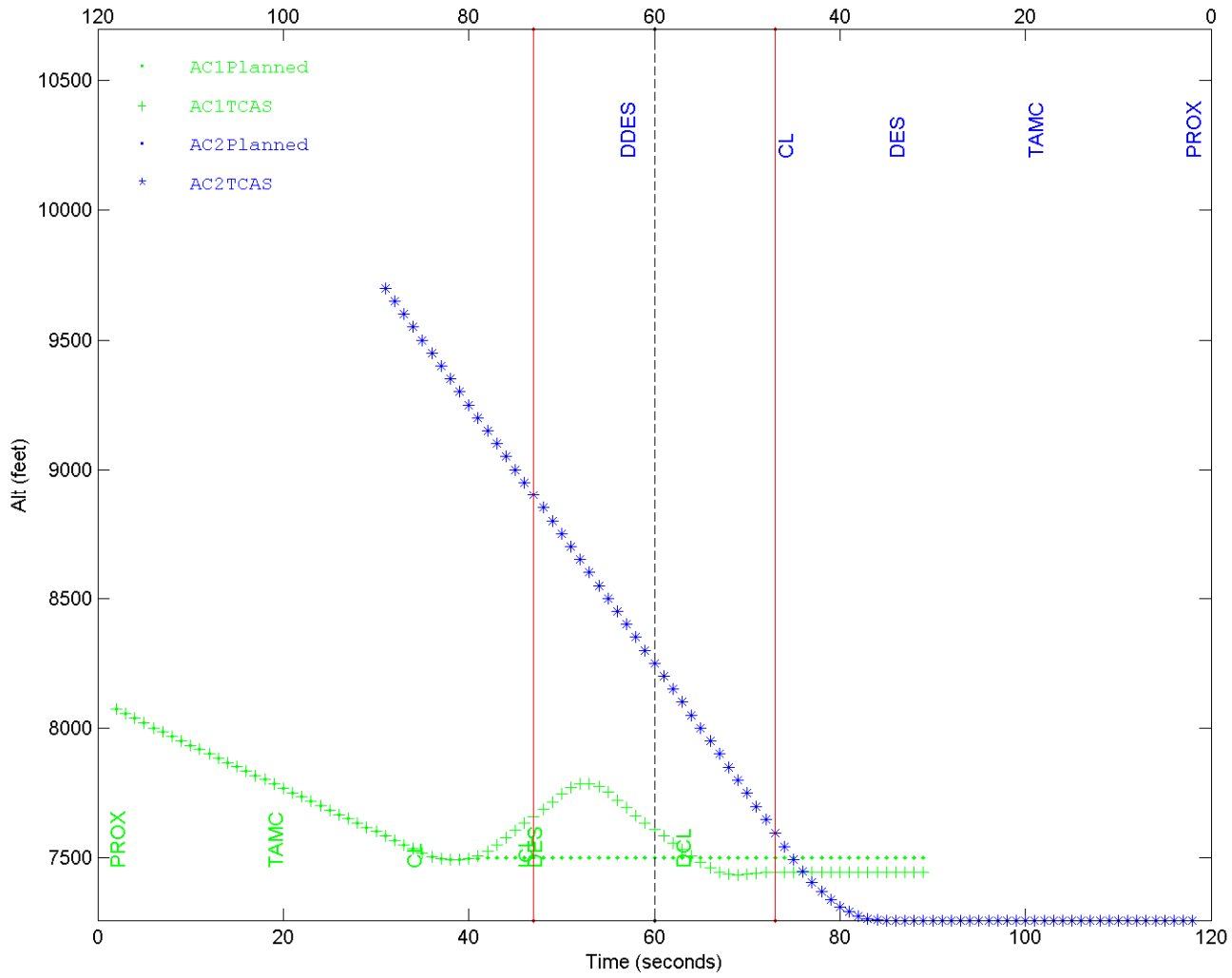
reit: 8792 cata: 818 simmode: 4165124 6.04A Vs 6.04A H288792A



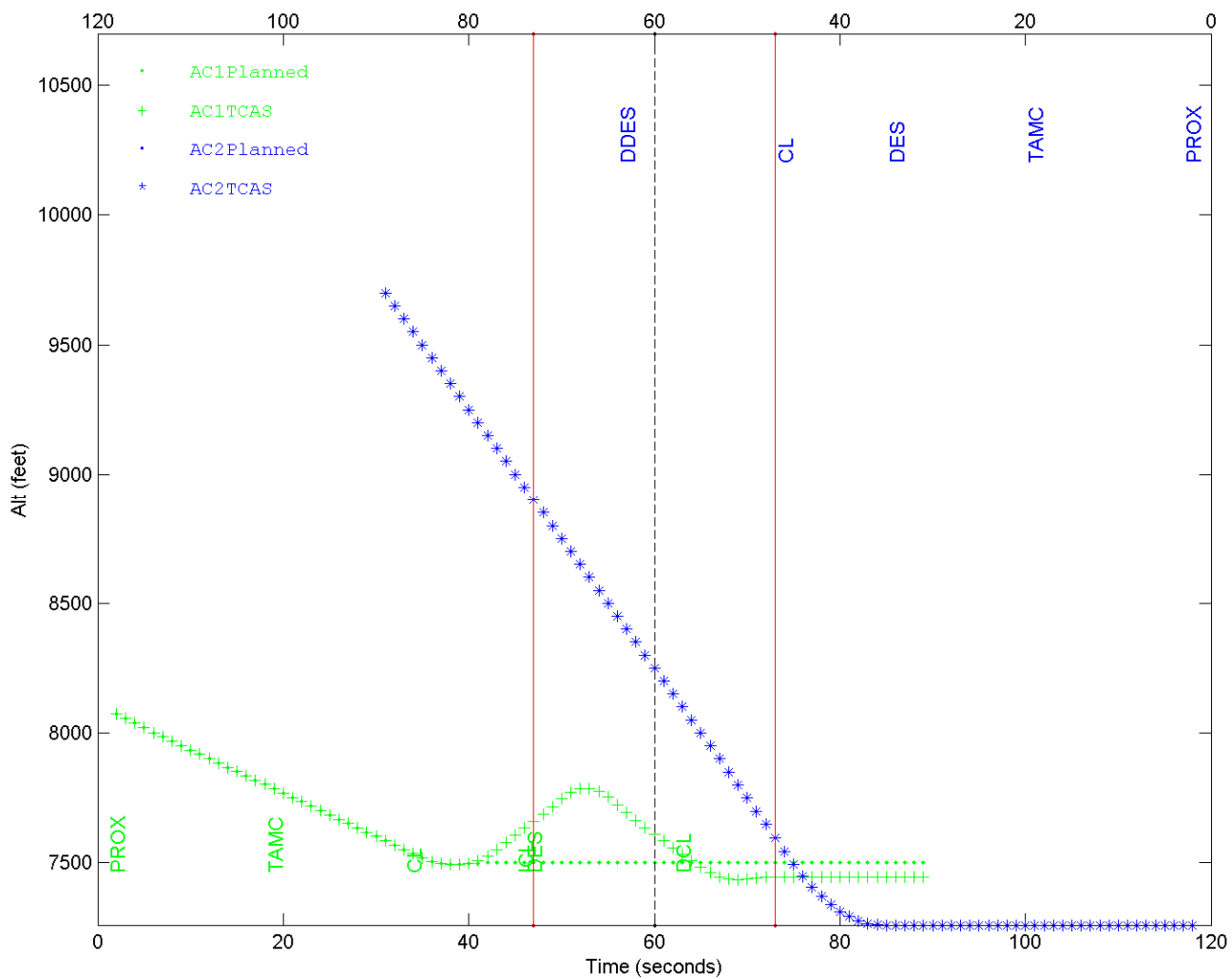
reit: 8792 cata: 818 simmode: 4275035 V7-25 Vs V7-25 H288792B



reit: 8792 cata: 818 simmode: 8275035 CP112EV1.2-25 Vs CP112EV1.2-25 H288792C



reit: 8792 cata: 818 simmode: 8275035 V7.1-25 Vs V7.1-25 H288792D



Change 7.1 Non-responding Representative Save 21

Encounter Class: 9

Reit Number : 4040

Encounter Characterization

| | | |
|-------------------------------|------------------------------|-----|
| Number of encounters in group | 21 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 250, +/-500, +/-750, +/-1000 | ft |
| AC1 rates: | 1000, 3000, 5000 | fpm |
| AC2 rates: | 1000, 3000, 5000 | fpm |
| AC1 acceleration: | -0.05 | g |
| AC2 acceleration: | -0.05 | g |
| AC1 acceleration time | CPA – 25 | sec |
| AC2 acceleration time | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L294040
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(1000.0,0.0) AC2 RATES(5000.0,0.0)
AC1 ACCEL -0.05g @ CPA -25 AC2 ACCEL -0.05g @ CPA -25 AC1 CPA ALT 7500

4040 6.04A R L VS 6.04A NR H 9 -35.70 CROSSING_ENC

5 AC1: 4165024 TA :19 |TAUR| POTRA@34 (6FT) | CL @36 [NX]| ICL @40
10 AC2: 4265142 TA :19 |TAUR| POTRA@34 (DFD) | DES @36 [NX]| IDES @53 ##NON-
RESPONDING##

4040 V7 25 FT R L VS V7 25 FT NR H 9 -18.79 CROSSING_ENC

5 AC1: 4175035 TA :19 |TAUR| POTRA@34 | CL @35 [NX]| ICL @41
10 AC2: 4275153 TA :19 |TAUR| DCL @34 [NX]| DES @38 | IDES @41 ##NON-RESPONDING##

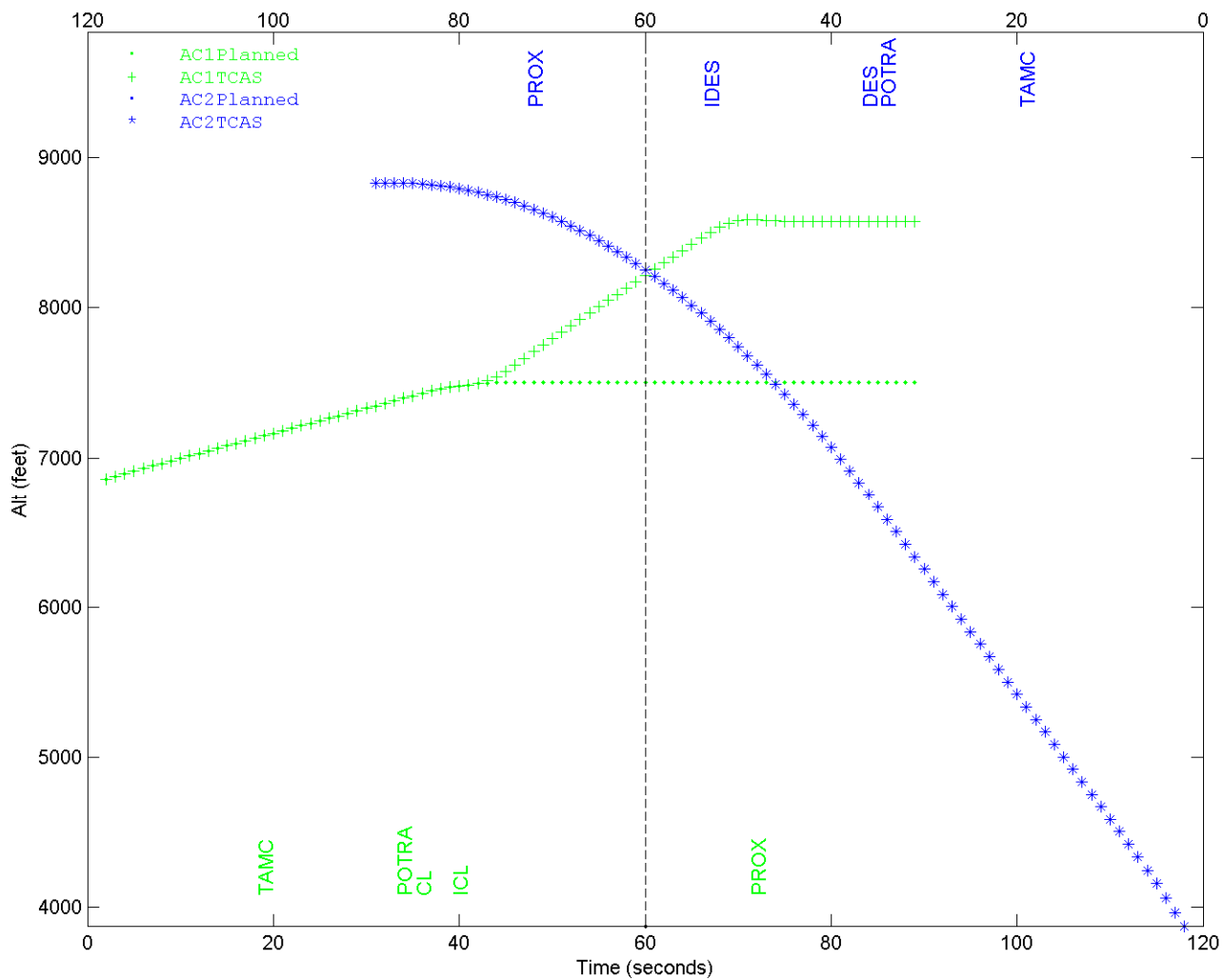
4040 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 9 -543.77 CROSSING_ENC

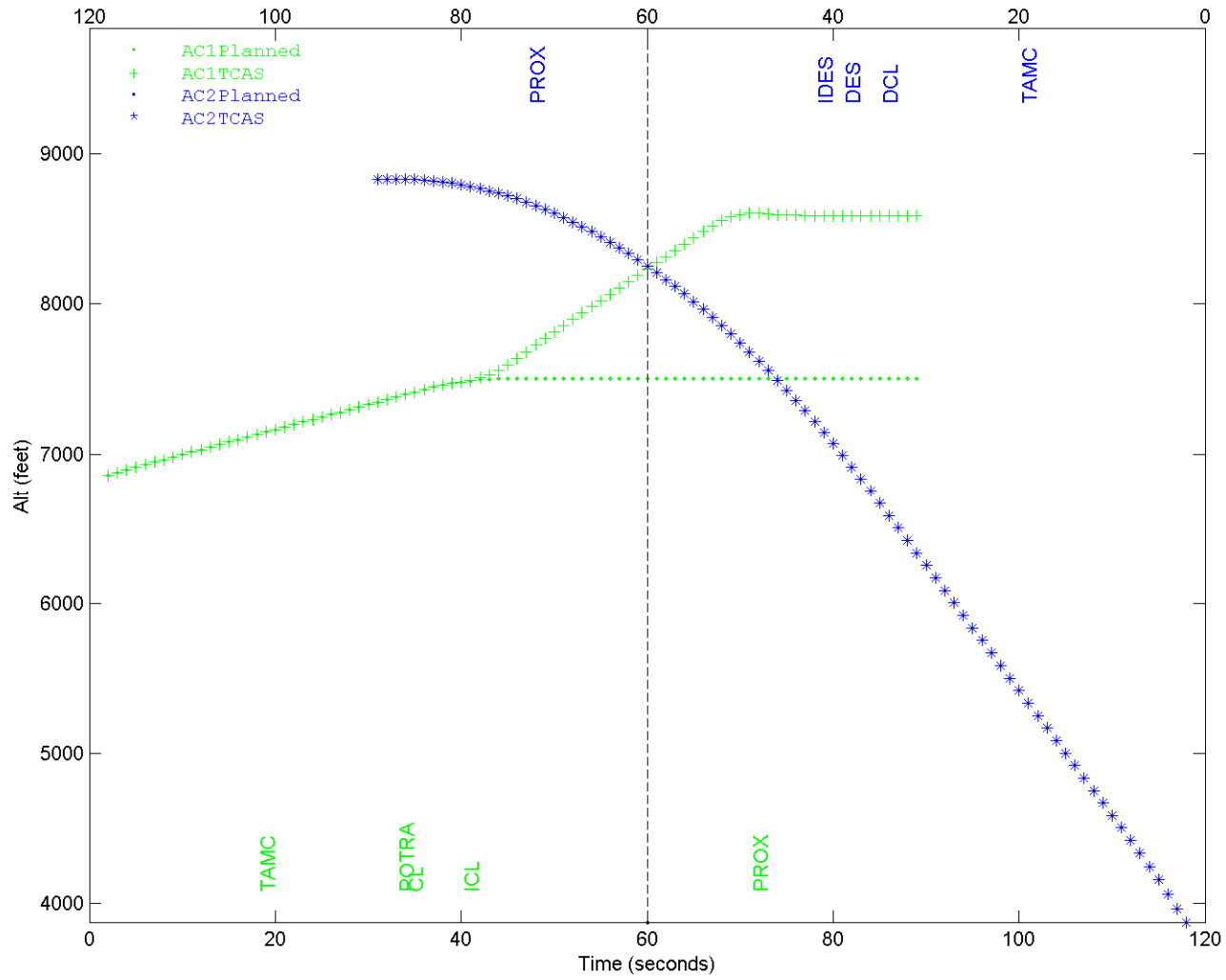
5 AC1:*REV*8175035 TA :19 |TAUR| POTRA@34 | CL @35 [NX]| ICL @41 | DES @48 | IDES @51 | DCL
@63
10 AC2:*REV*8275153 TA :19 |TAUR| DCL @34[NX]| DES @38| IDES @41| CL @48| DDES @63 ##NON-
RESPONDING##

4040 V7.1 25 FT R L VS V7.1 25 FT NR H 9 -543.77 CROSSING_ENC

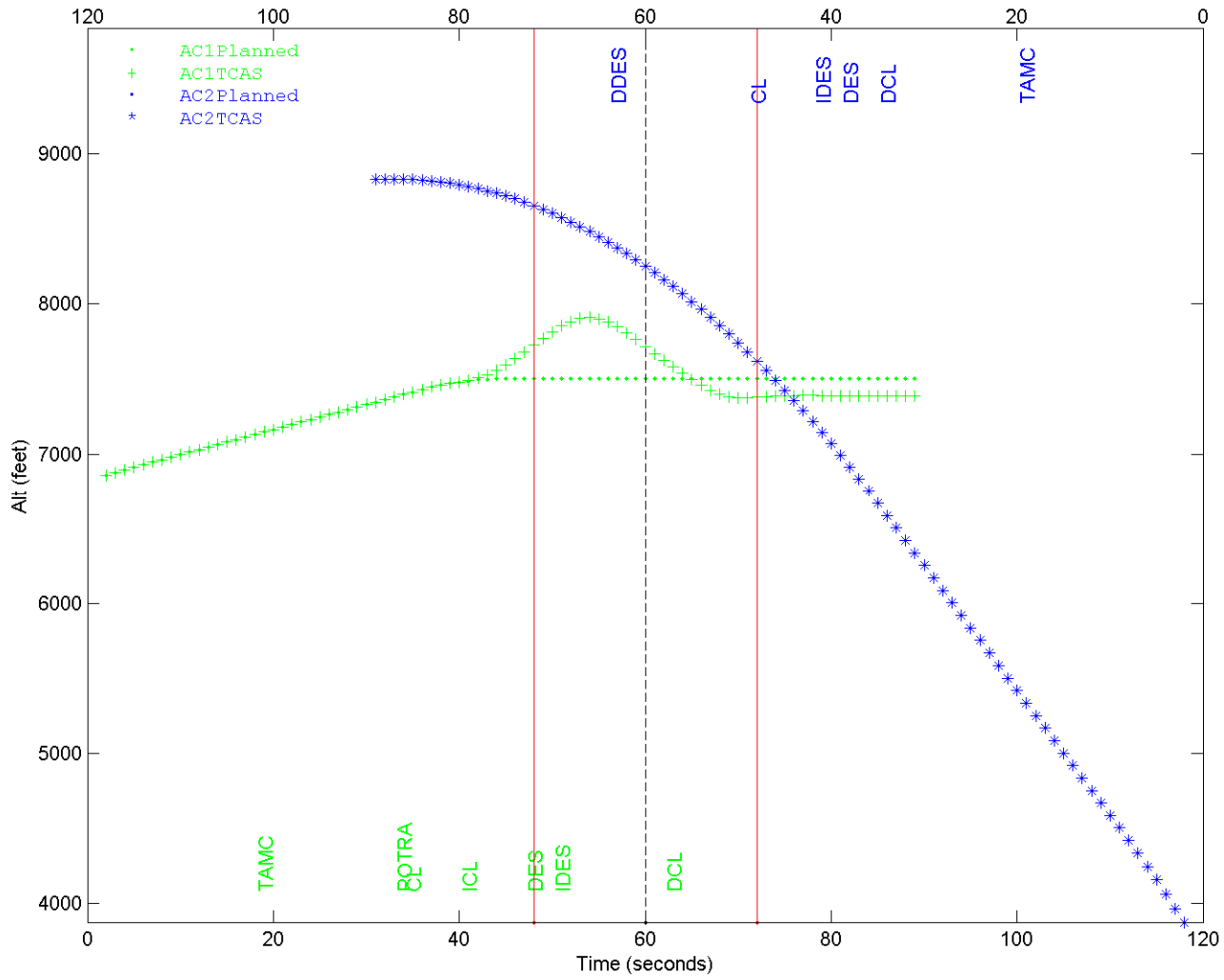
5 AC1:*REV*8175035 TA :19 |TAUR| POTRA@34 | CL @35[NX]| ICL @41| DES @48| IDES @51 | DCL @63
10 AC2:*REV*8275153 TA :19 |TAUR| DCL @34 [NX]| DES @38| IDES @41| CL @48| DDES @63 ##NON-
RESPONDING##

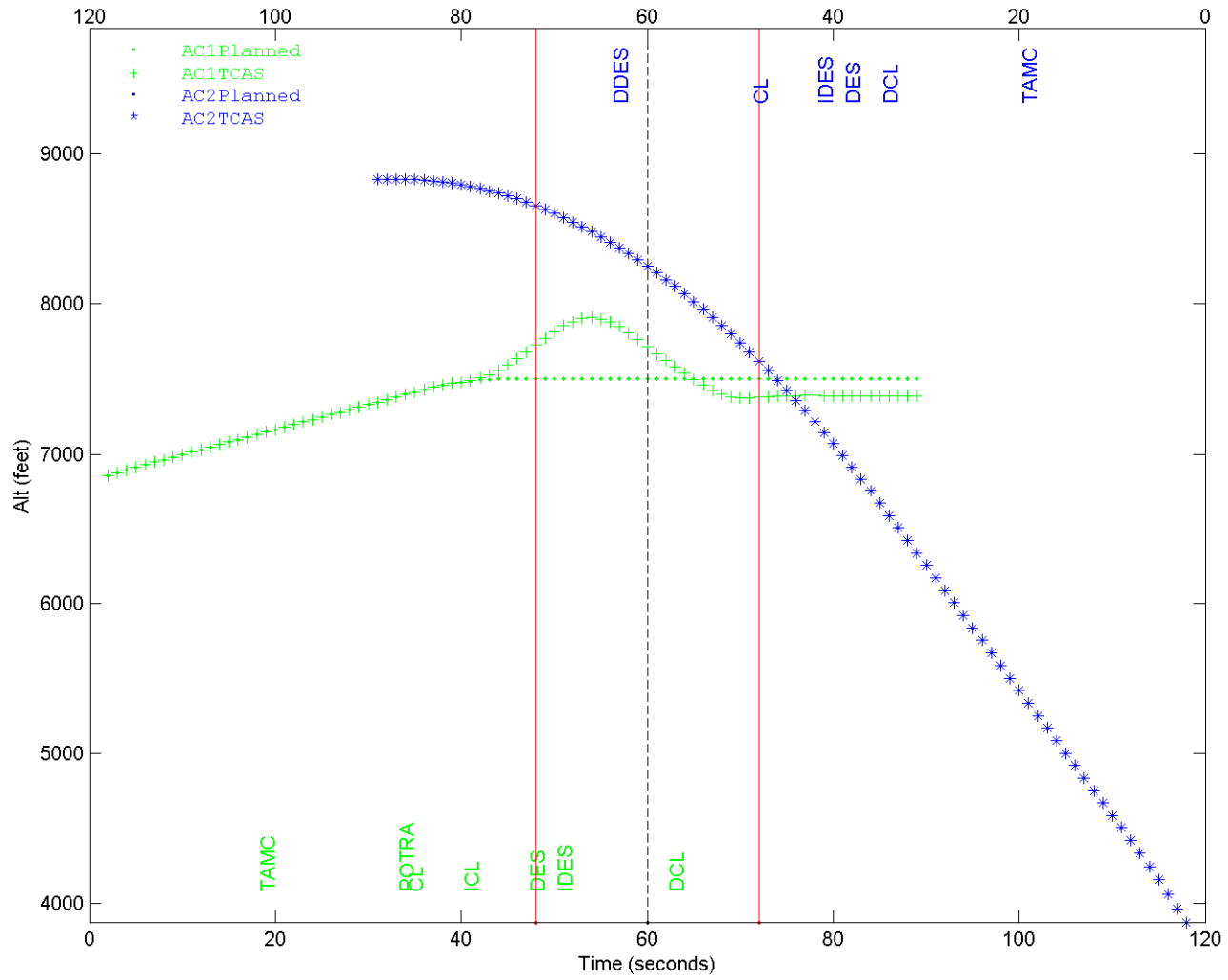
reit: 4040 cata: 919 simmode: 4165024 6.04A Vs 6.04A L294040A





reit: 4040 cata: 919 simmode: 8175035 CP112EV1.2-25 Vs CP112EV1.2-25 L294040C





Change 7.1 Non-responding Representative Save 22

Encounter Class: 14

Reit Number : 473

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 7 | |
| AC1 low ID | no | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000, 5000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | none | |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Pre-existing climbing vertical chase.
Low ID aircraft initiated reversal.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H14473
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(3000.0,3000.0) AC2 RATES(3000.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.00g @ CPA 0 AC1 CPA ALT 7520

473 6.04A NR H VS 6.04A NR L 14 0.00 NON_CROSSING_ENC
10 AC1: 4165142 TA :20 |TAUR| POTRA@34 (DFD) | DES @35 [NX]| IDES @54 ##NON-RESPONDING##

5 AC2: 4265024 TA :20 |TAUR| MCL @34 [NX]| ICL @41

473 V7 25 FT NR H VS V7 25 FT R L 14 0.00 NON_CROSSING_ENC
10 AC1: 4275053 TA :20 |TAUR| LC1 @34 [NX]| LC5 @48 | DES @49 | IDES @51 ##NON-RESPONDING##

5 AC2: 4175135 TA :20 |TAUR| CL @34 [NX]

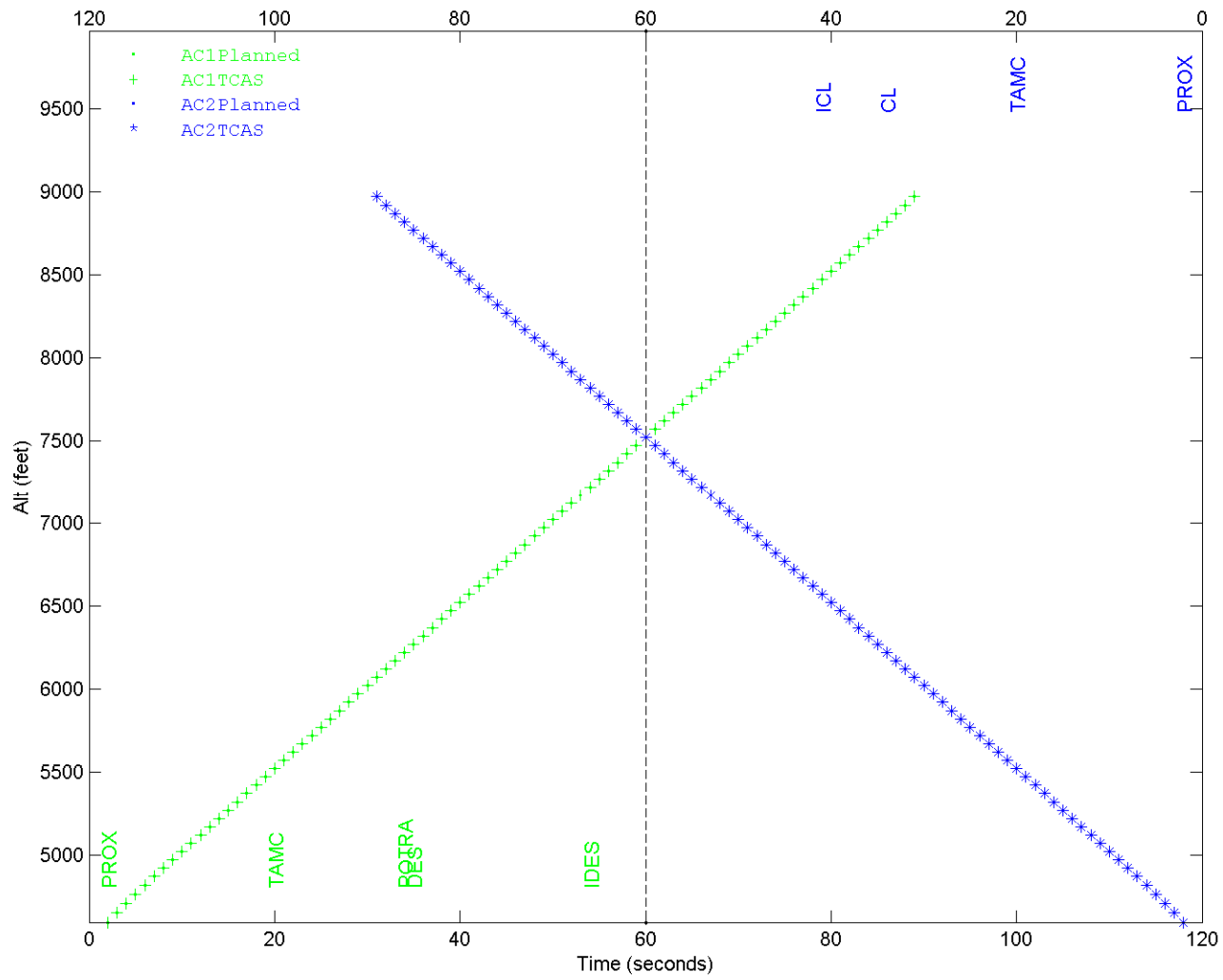
473 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 14 721.21 NON_CROSSING_ENC
10 AC1:*REV*8275053 TA :20 |TAUR| LC1 @34 [NX]| CL @46 ##NON-RESPONDING##

5 AC2:*REV*8175135 TA :20 |TAUR| CL @34 [NX]| DES @45 | DCL @57

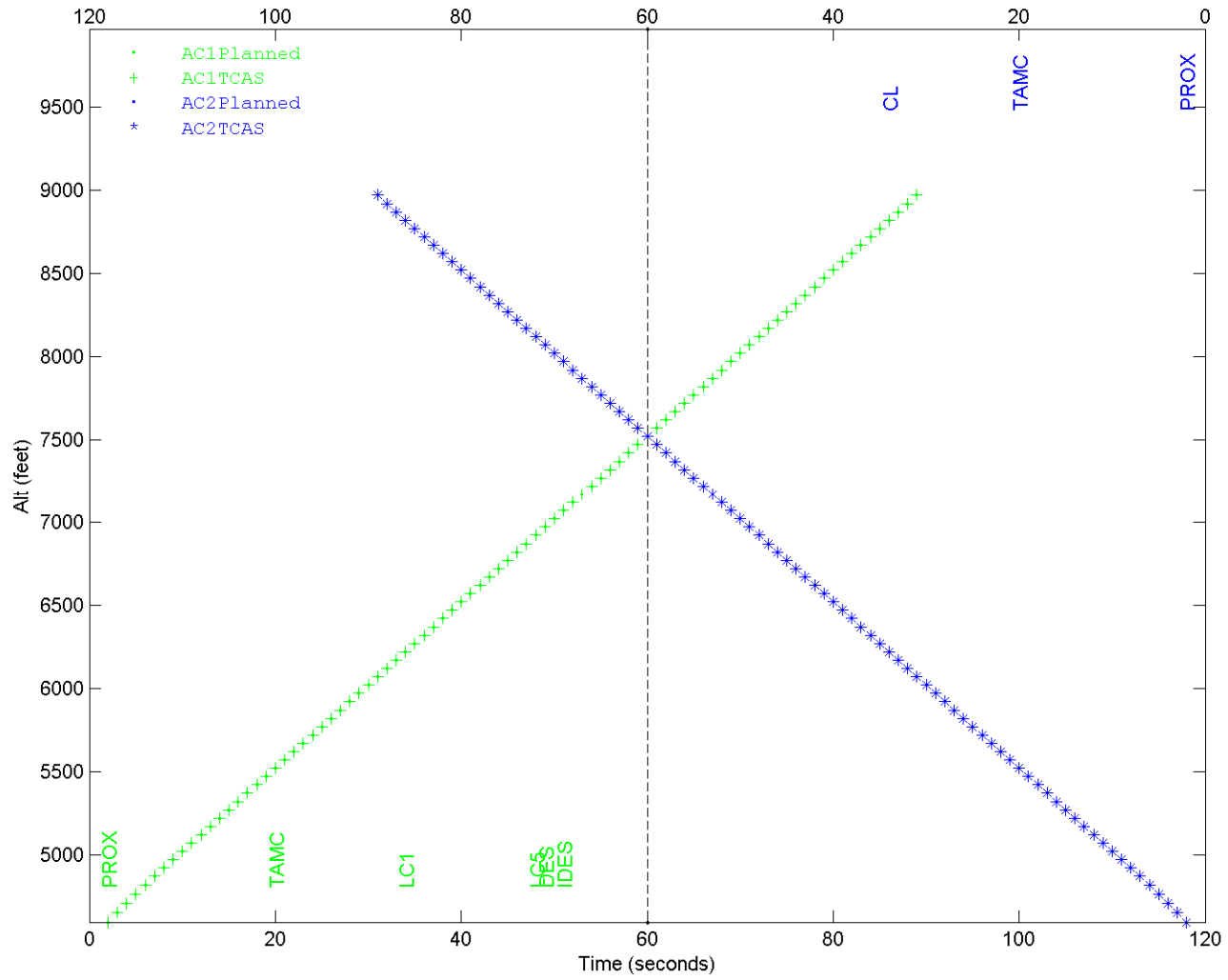
473 V7.1 25 FT NR H VS V7.1 25 FT R L 14 721.21 NON_CROSSING_ENC
10 AC1:*REV*8275053 TA :20 |TAUR| DCL @34 [NX]| CL @46 ##NON-RESPONDING##

5 AC2:*REV*8175135 TA :20 |TAUR| CL @34 [NX]| DES @45 | DCL @57

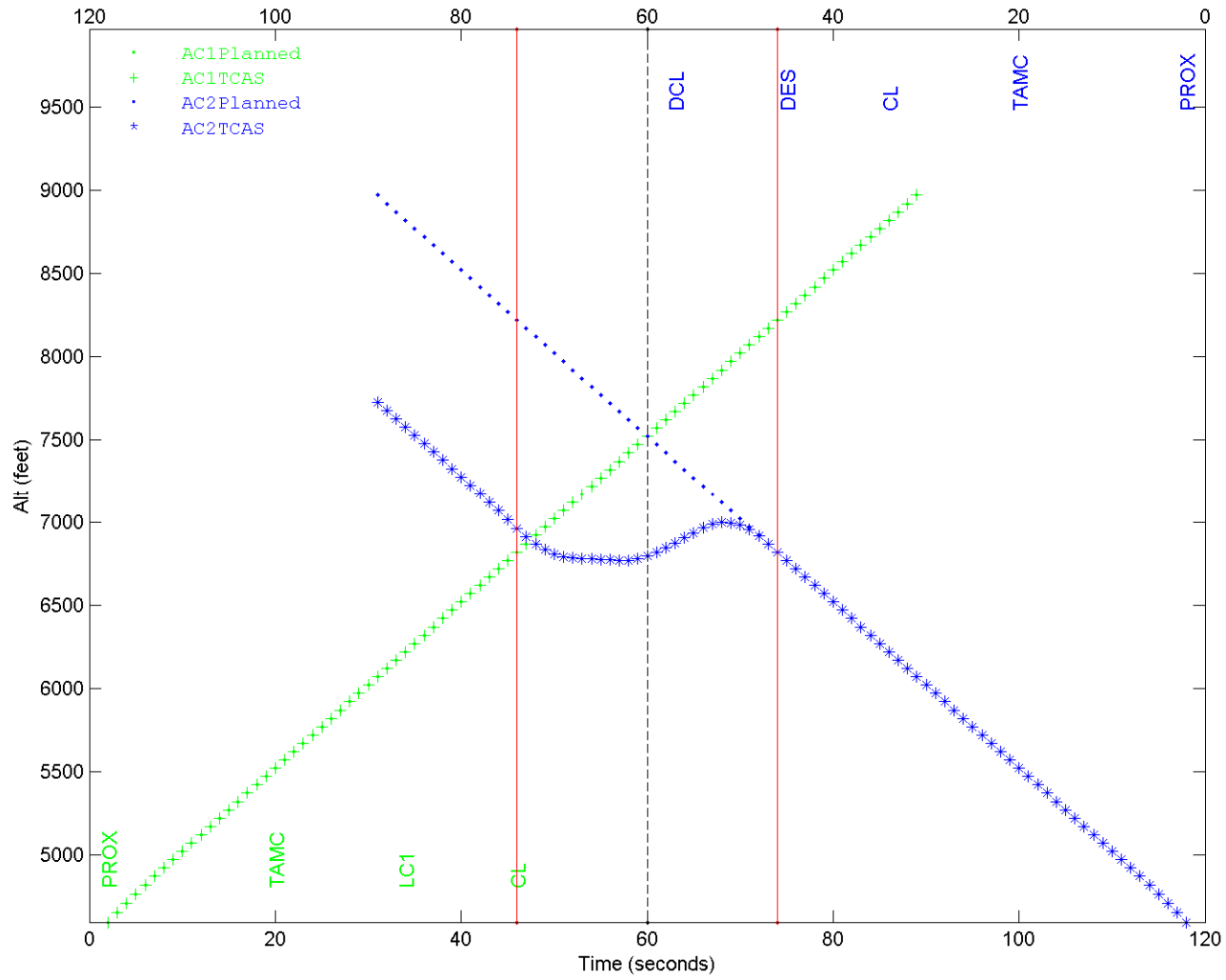
reit: 473 cata: 414 simmode: 4165142 6.04A Vs 6.04A H14473A

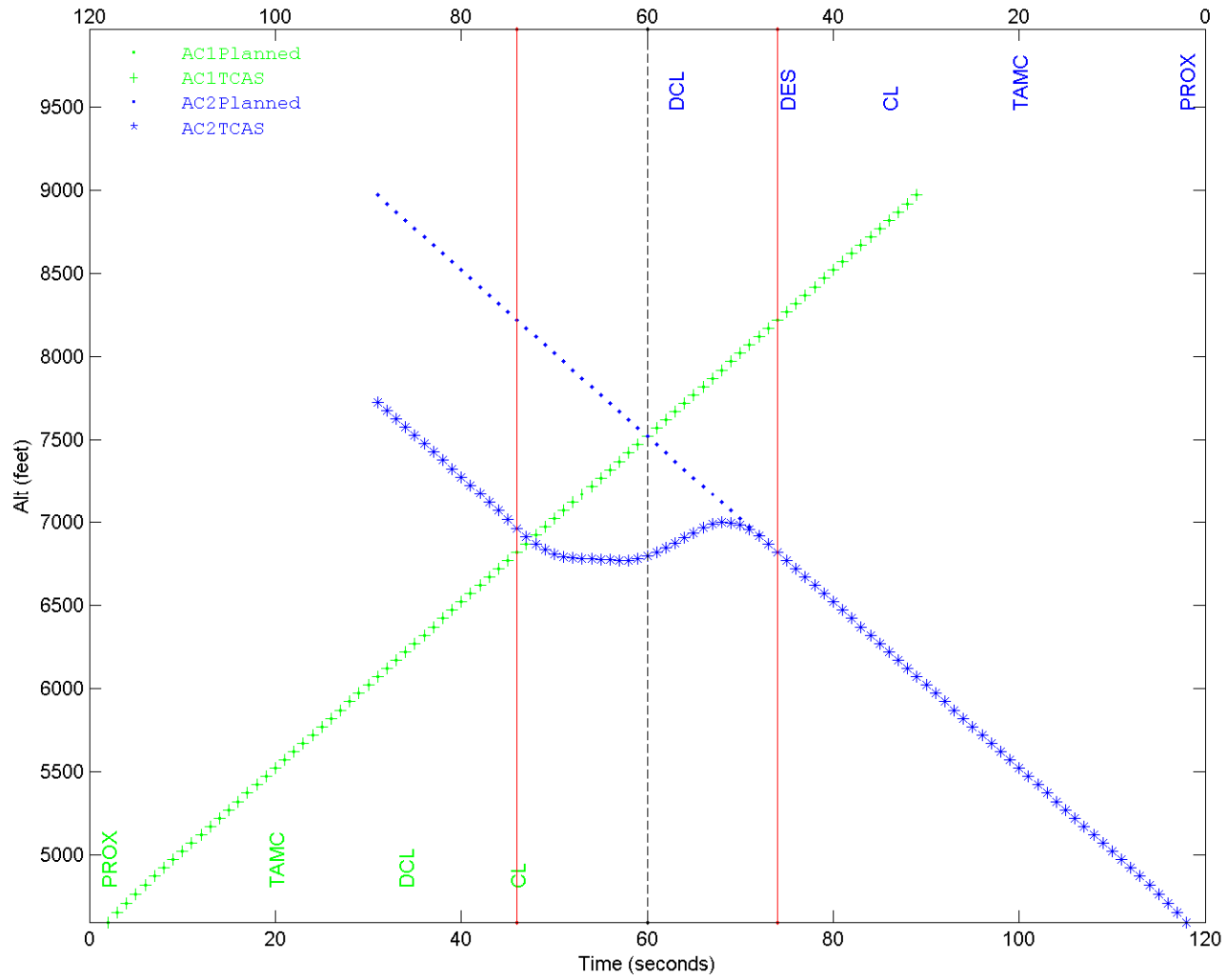


reit: 473 cata: 414 simmode: 4275053 V7-25 Vs V7-25 H14473B



reit: 473 cata: 414 simmode: 8275053 CP112EV1.2-25 Vs CP112EV1.2-25 H14473C





Change 7.1 Non-responding Representative Save 23

Encounter Class: 14

Reit Number : 473

Encounter Characterization

| | | |
|-------------------------------|------|-----|
| Number of encounters in group | 1 | |
| AC1 low ID | yes | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | none | |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Pre-existing climbing vertical chase.
Non-responding aircraft received LOLO instead of AVSA. RA reversal solved NMAC.
CP112E only did not resolve this encounter.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L14473
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(3000.0,3000.0) AC2 RATES(3000.0,3000.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.00g @ CPA 0 AC1 CPA ALT 7520

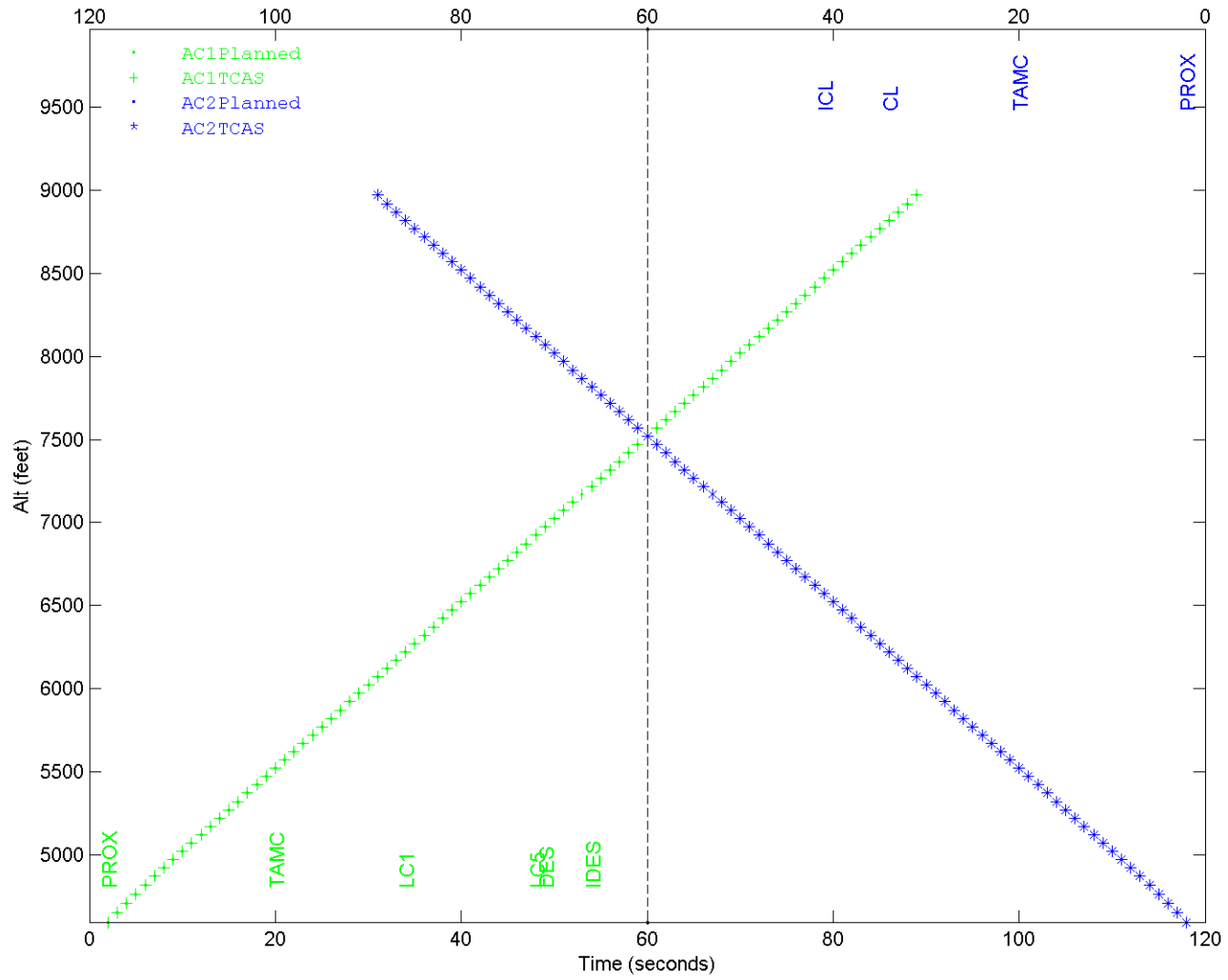
 473 6.04A NR L VS 6.04A R H 14 0.00 NON_CROSSING_ENC
 5 AC1: 4165042 TA :20 |TAUR| LC1 @34 [NX]| LC5 @48 | DES @49 | IDES @54 ##NON-RESPONDING##
 10 AC2: 4265124 TA :20 |TAUR| MCL @34 [NX]| ICL @41

 473 V7 25 FT NR L VS V7 25 FT R H 14 0.00 NON_CROSSING_ENC
 5 AC1: 4175053 TA :20 |TAUR| LC1 @34 [NX]| LC5 @48 | DES @49 | IDES @51 ##NON-RESPONDING##
 10 AC2: 4275135 TA :20 |TAUR| CL @34 [NX]

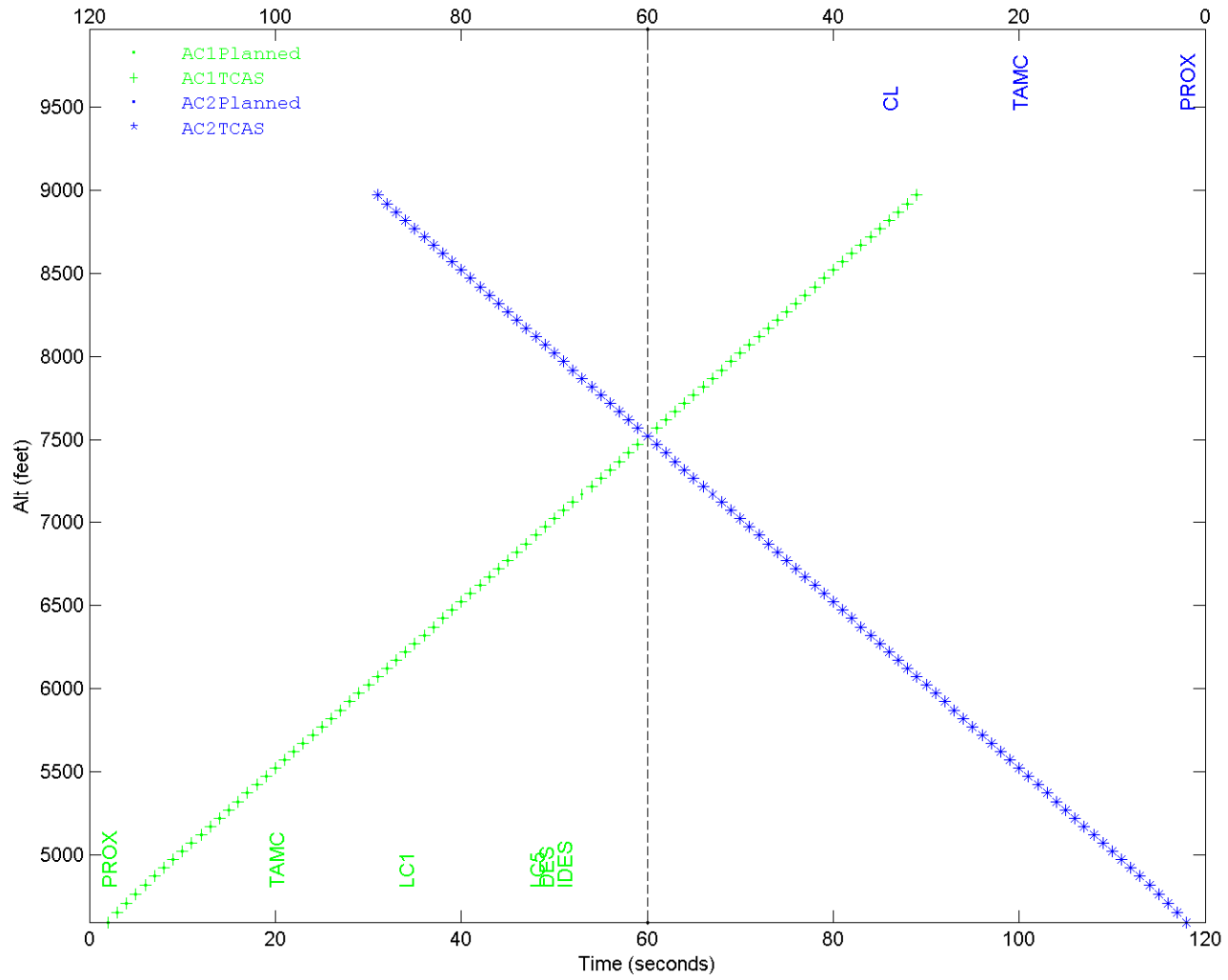
 473 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 14 0.00 NON_CROSSING_ENC
 5 AC1: 8175053 TA :20 |TAUR| LC1 @34 [NX]| LC5 @48 | DES @49 | IDES @51 ##NON-RESPONDING##
 10 AC2: 8275135 TA :20 |TAUR| CL @34 [NX]

 473 V7.1 25 FT NR L VS V7.1 25 FT R H 14 722.87 NON_CROSSING_ENC
 5 AC1:*REV*8175053 TA :20 |TAUR| DCL @34 [NX]| CL @46 | DDES @63 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :20 |TAUR| CL @34 [NX]| DES @46 | IDES @49 | DCL @57

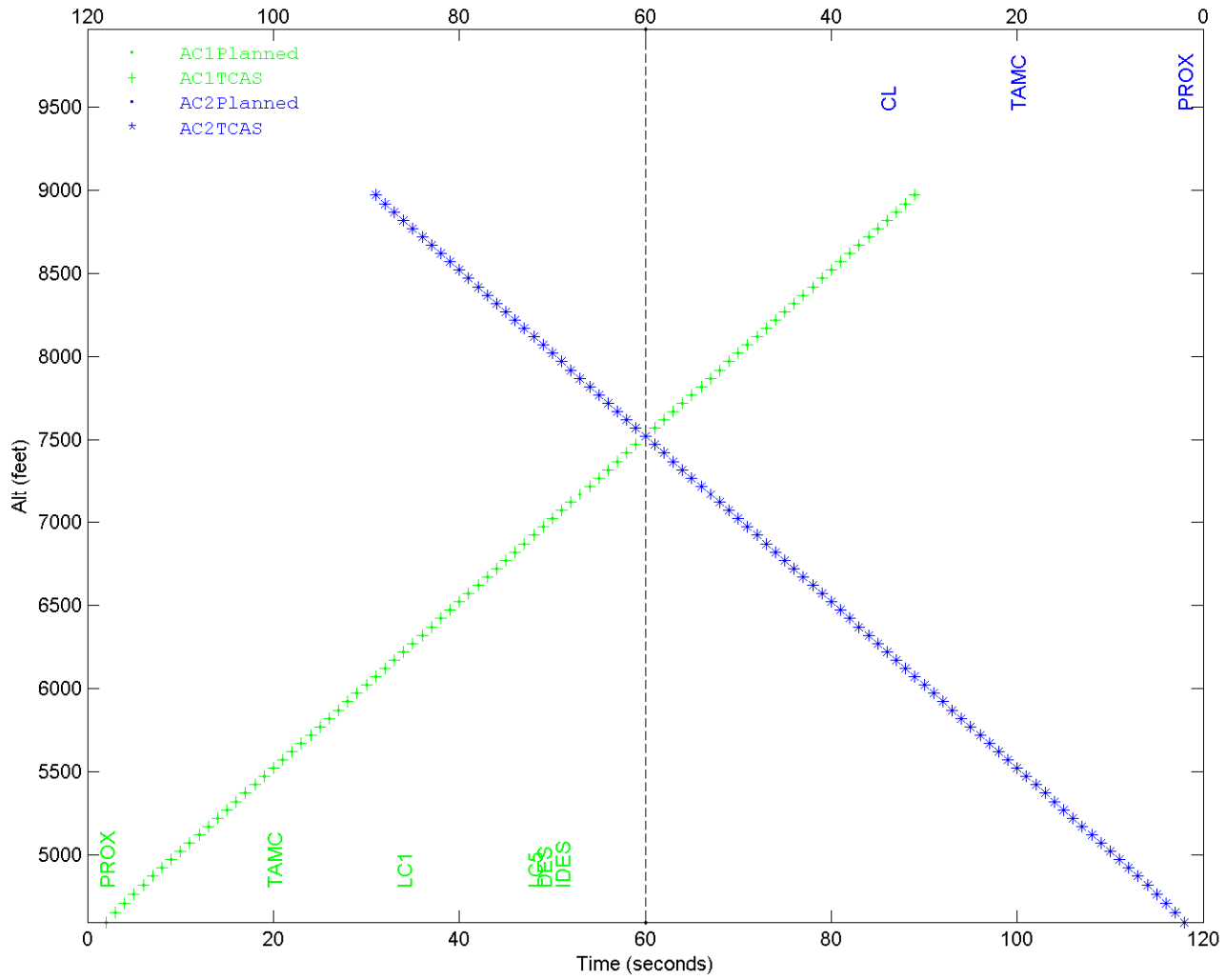
reit: 473 cata: 414 simmode: 4165042 6.04A Vs 6.04A L14473A

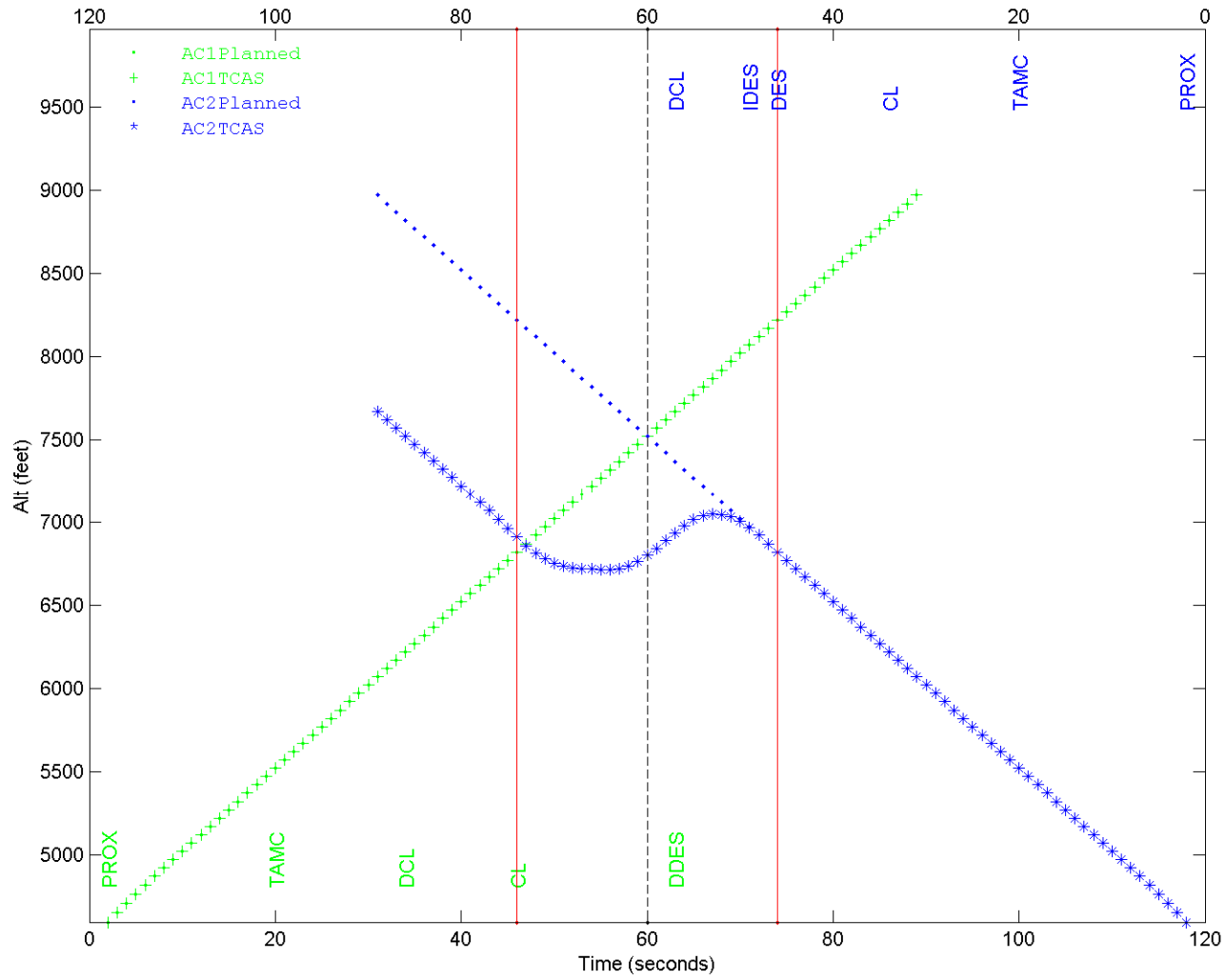


reit: 473 cata: 414 simmode: 4175053 V7-25 Vs V7-25 L14473B



reit: 473 cata: 414 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L14473C





Change 7.1 Non-responding Representative Save 24

Encounter Class: 15

Reit Number : 5632

Encounter Characterization

| | | |
|-------------------------------|------------------|-----|
| Number of encounters in group | 17 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0, -250 | ft |
| AC1 rates: | 1000, 3000, 5000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.15 | g |
| AC2 acceleration time: | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned maneuver.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L255632
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.15g @ CPA -30 AC1 CPA ALT 7520

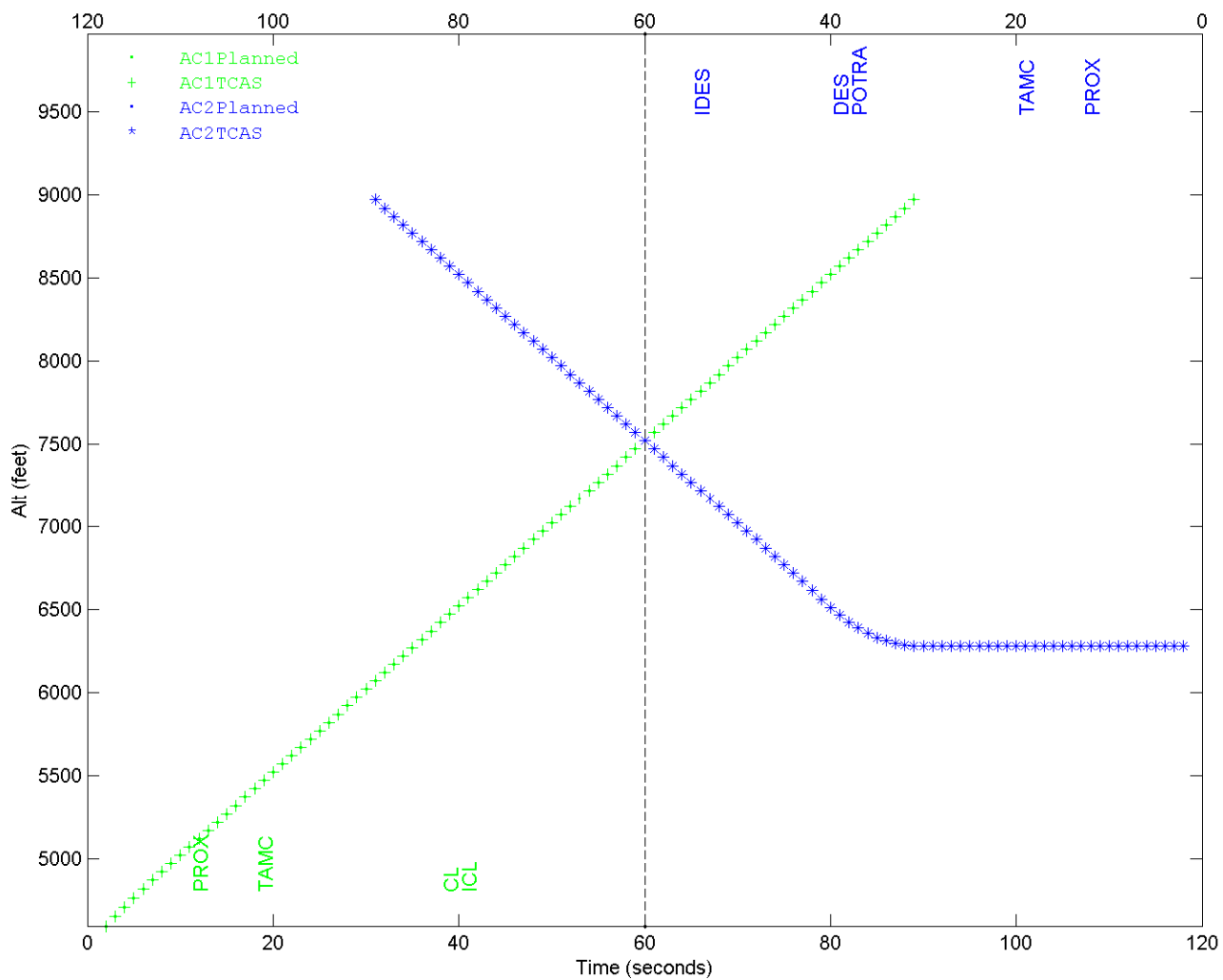
5632 6.04A R L VS 6.04A NR H 15 0.00 NON_CROSSING_ENC
5 AC1: 4165024 TA :19 |PVMD| MCL @39 [NX]| ICL @41
10 AC2: 4265142 TA :19 |PVMD| POTRA@37 (DFD) | DES @39 [NX]| IDES @54 ##NON-
RESPONDING##

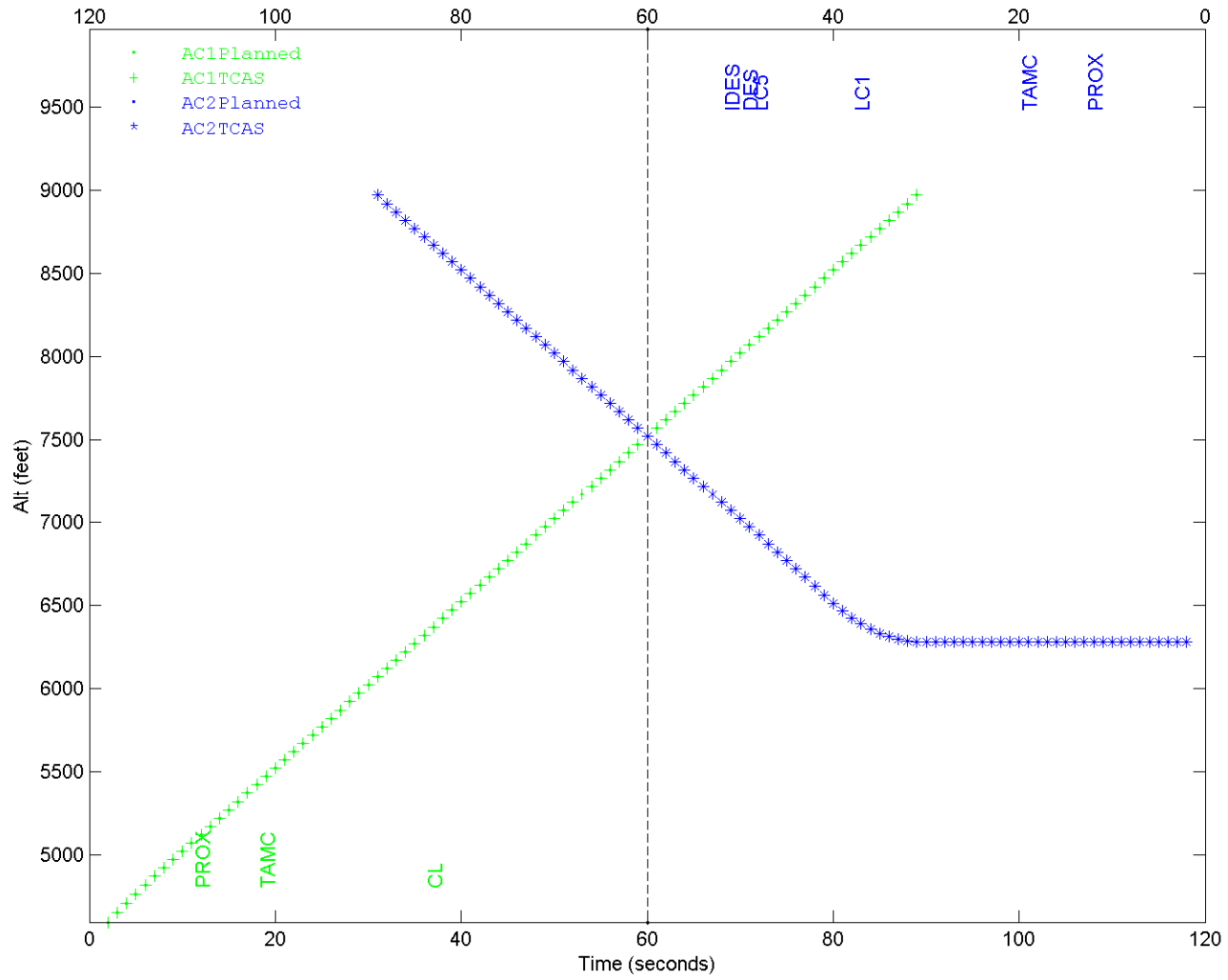
5632 V7 25 FT R L VS V7 25 FT NR H 15 0.00 NON_CROSSING_ENC
5 AC1: 4175035 TA :19 |PVMD| CL @37 [NX]
10 AC2: 4275153 TA :19 |PVMD| LC1 @37 [NX]| LC5 @48 | DES @49 | IDES @51 ##NON-RESPONDING##

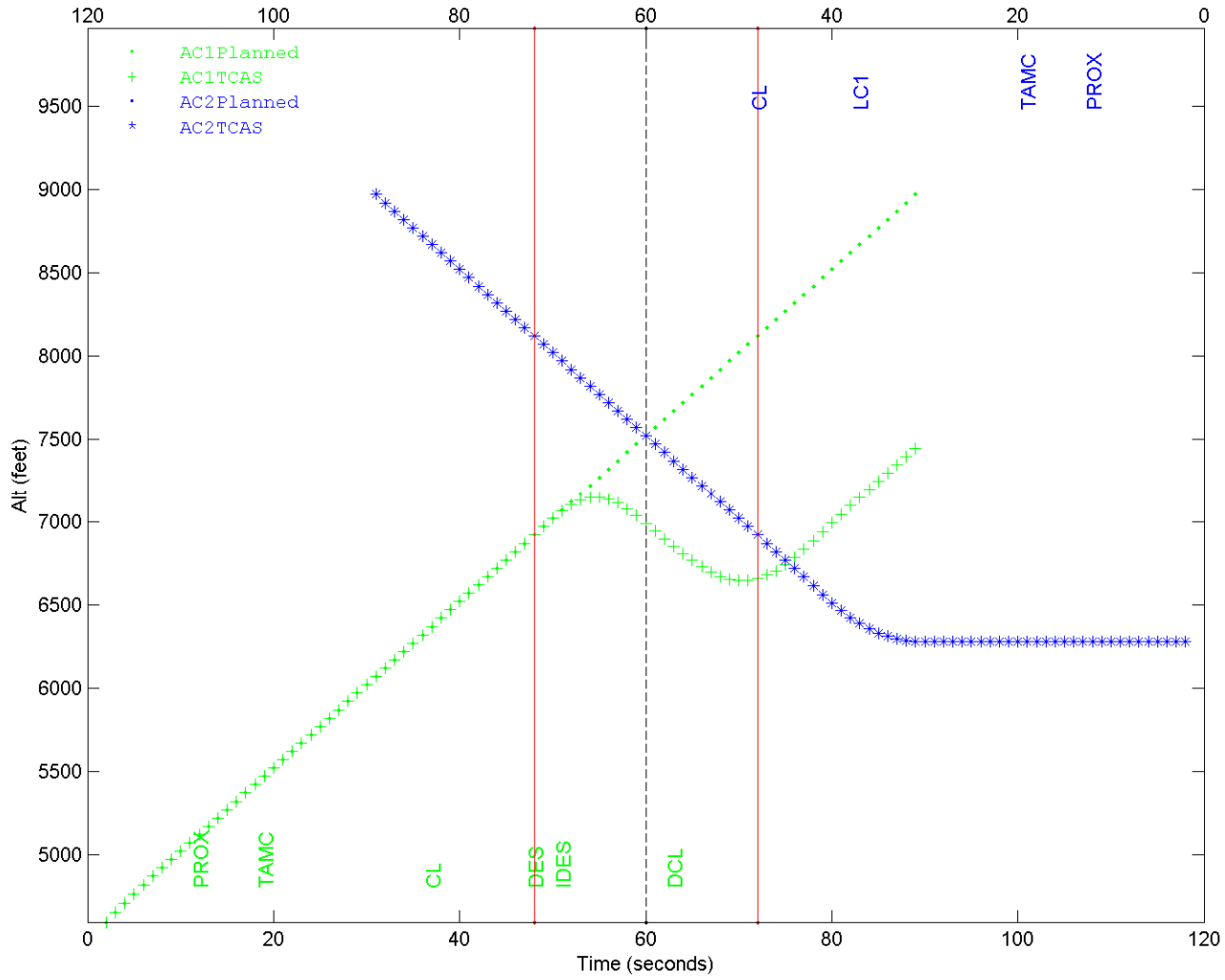
5632 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 15 -543.55 NON_CROSSING_ENC
5 AC1:*REV*8175035 TA :19 |PVMD| CL @37 [NX]| DES @48 | IDES @51 | DCL @63
10 AC2:*REV*8275153 TA :19 |PVMD| LC1 @37 [NX]| CL @48 ##NON-RESPONDING##

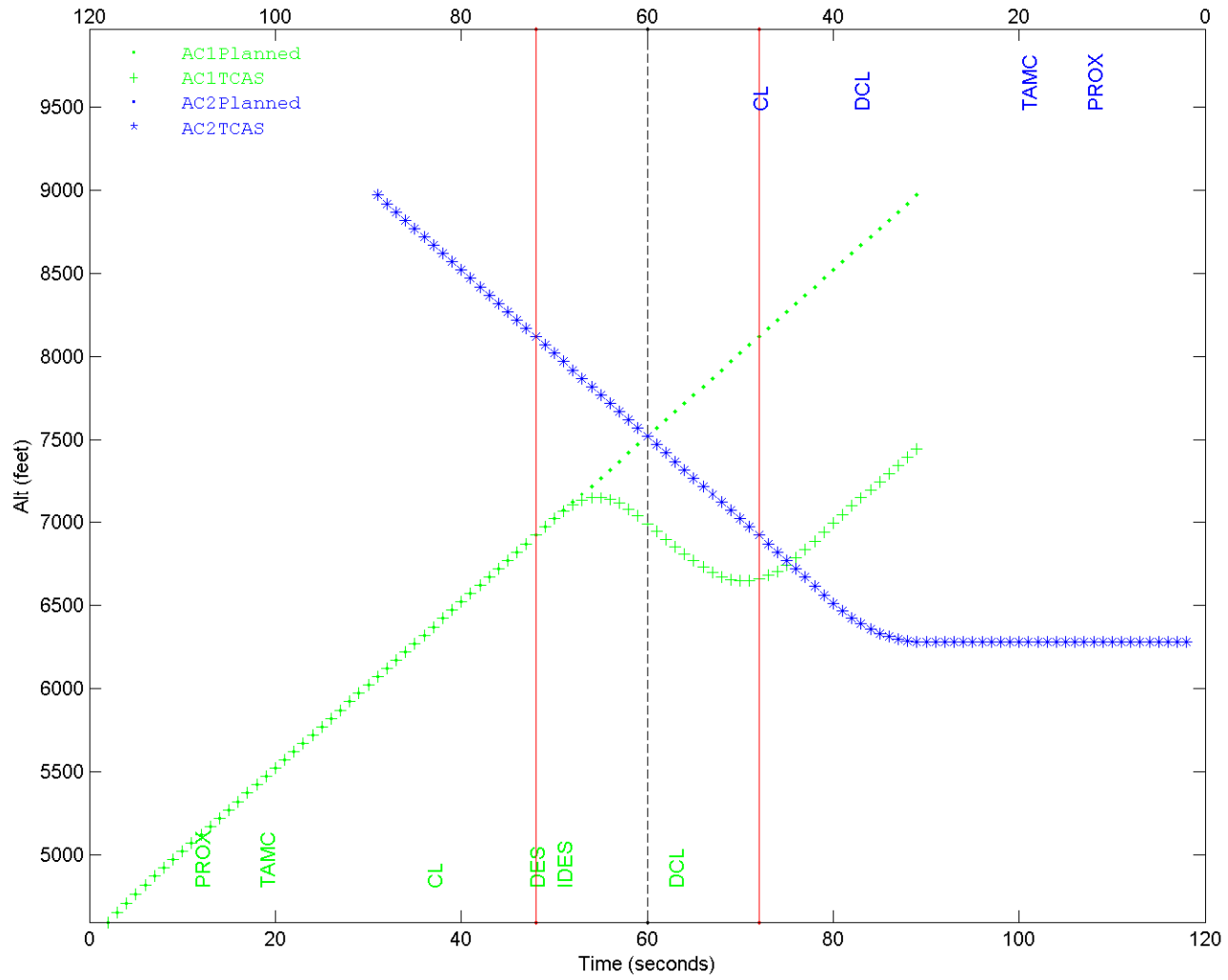
5632 V7.1 25 FT R L VS V7.1 25 FT NR H 15 -543.55 NON_CROSSING_ENC
5 AC1:*REV*8175035 TA :19 |PVMD| CL @37 [NX]| DES @48 | IDES @51 | DCL @63
10 AC2:*REV*8275153 TA :19 |PVMD| DCL @37 [NX]| CL @48 ##NON-RESPONDING##

reit: 5632 cata: 515 simmode: 4165024 6.04A Vs 6.04A L255632A









Change 7.1 Non-responding Representative Save 25

Encounter Class: 15

Reit Number : 5632

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 3 | |
| AC1 low ID | no | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.25 | g |
| AC2 acceleration time: | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

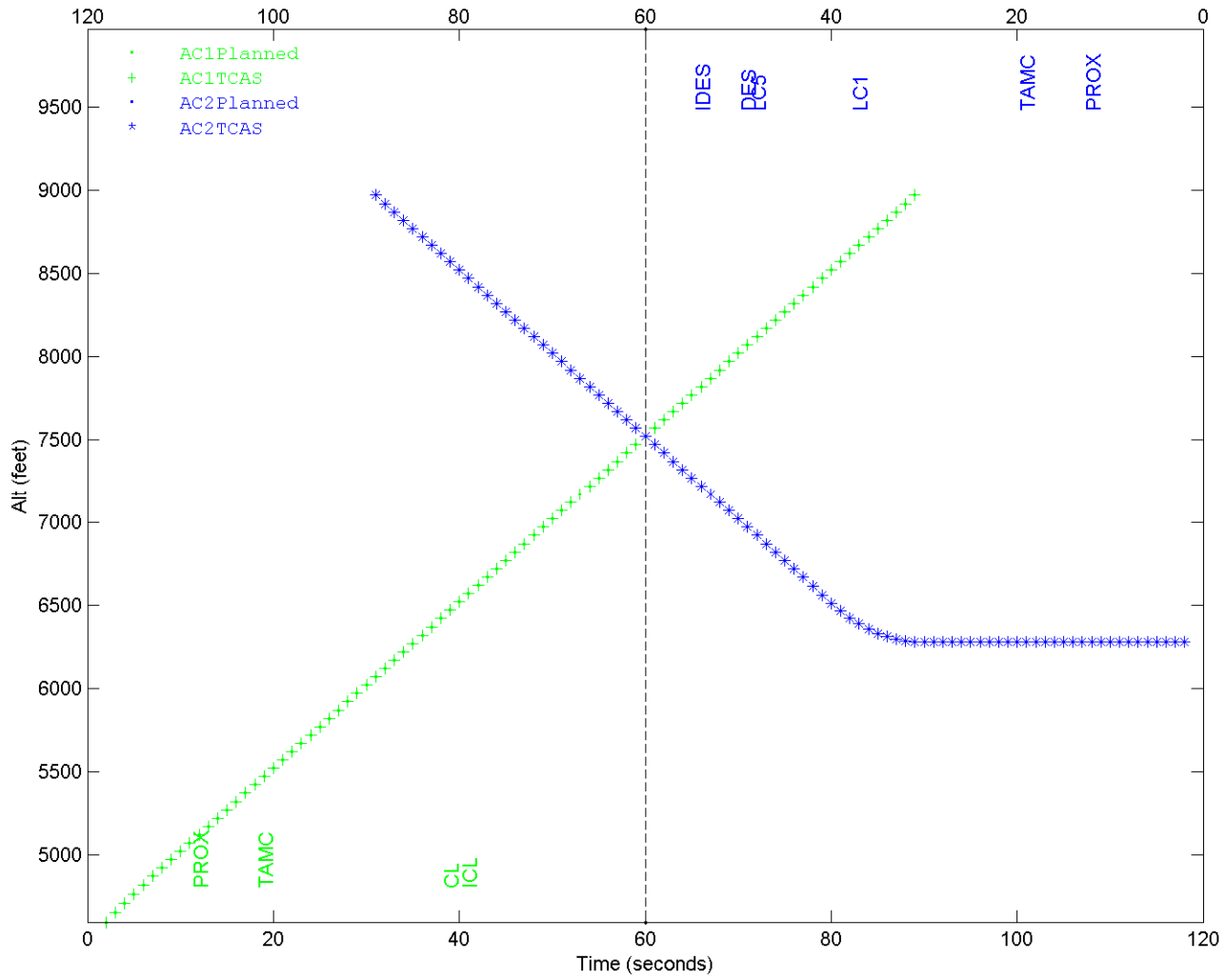
Comments

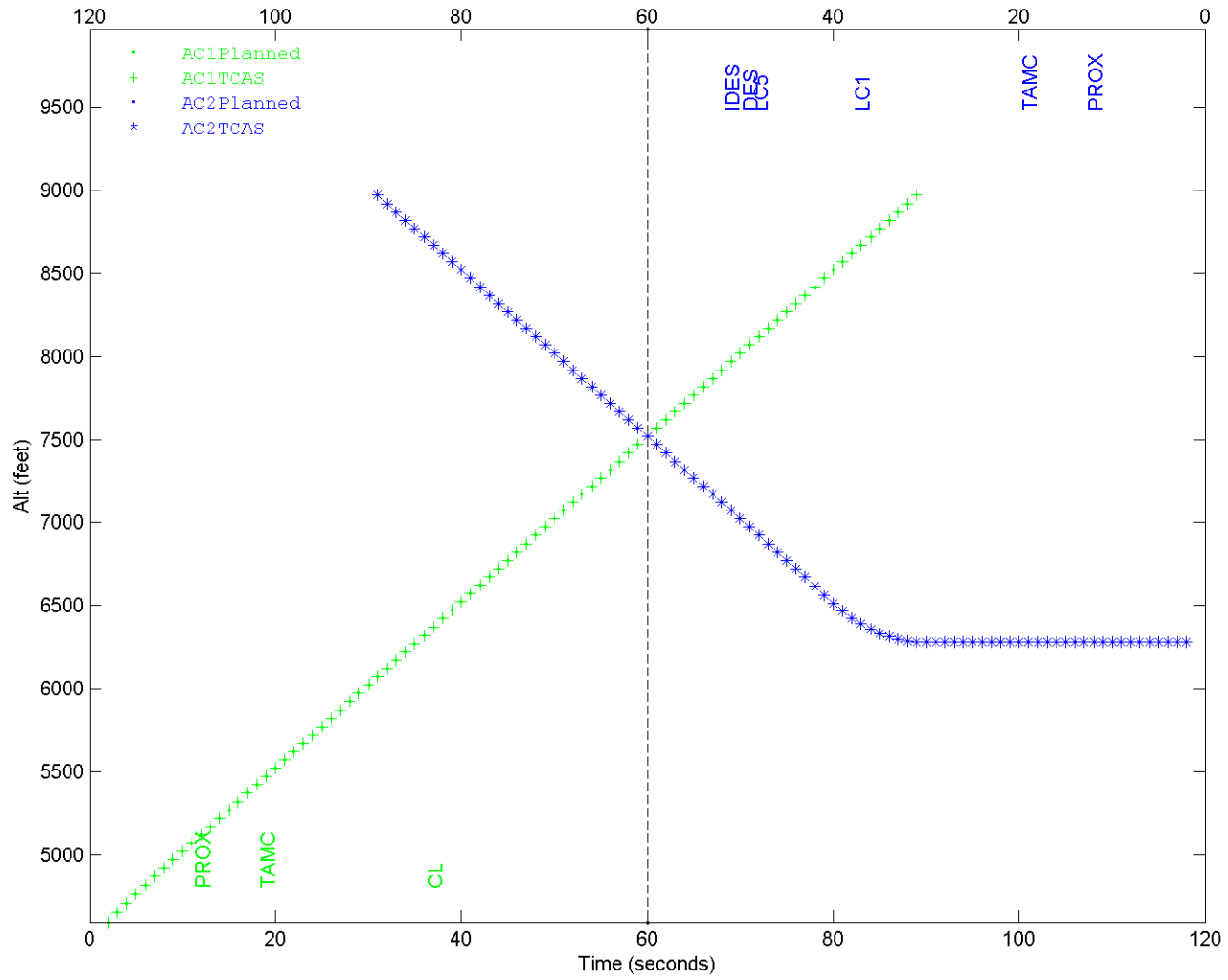
Climbing vertical chase caused by planned maneuver.
CP112E-only did not reverse, did not resolve NMAC.

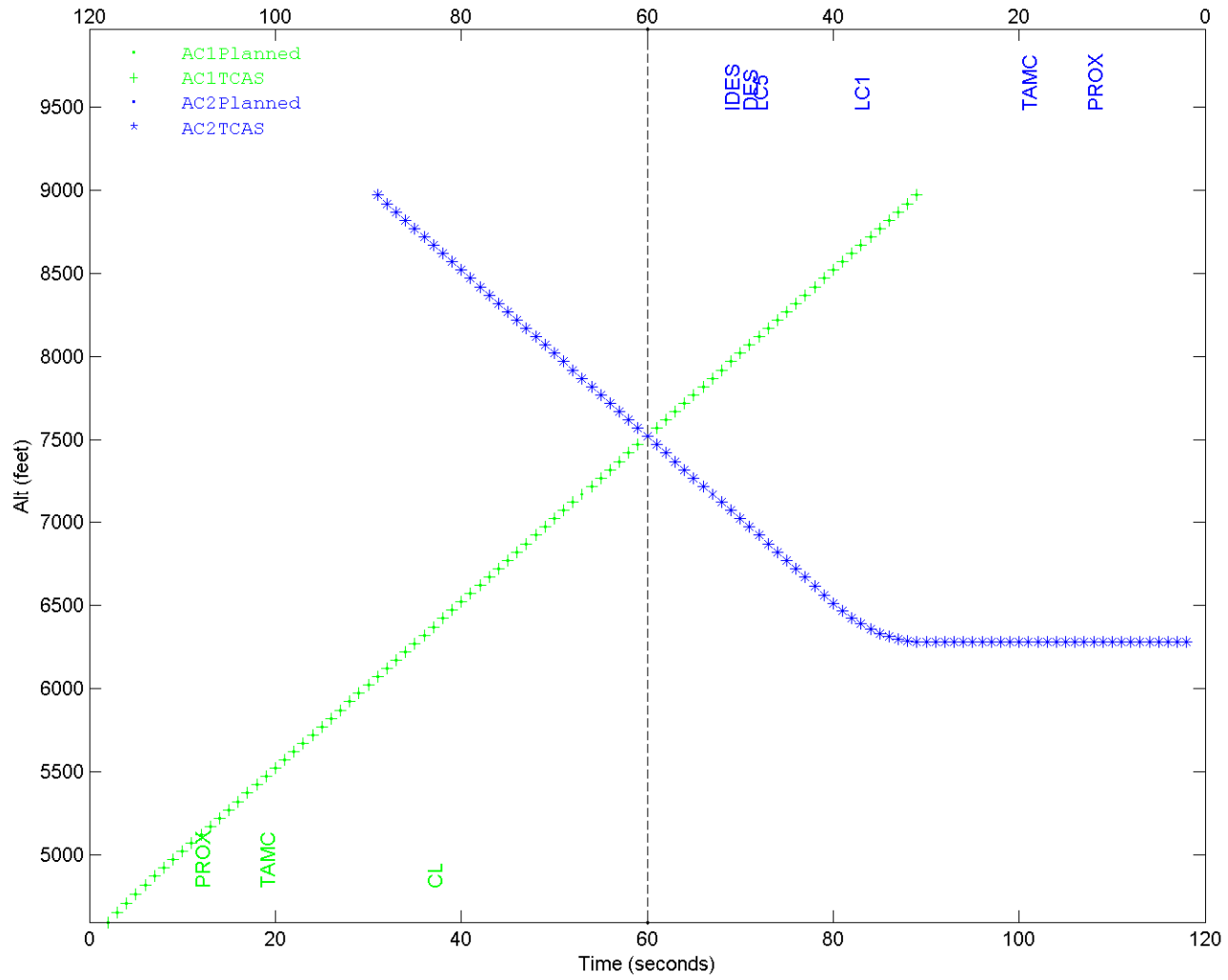
SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H255632
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,3000.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.15g @ CPA -30 AC1 CPA ALT 7520

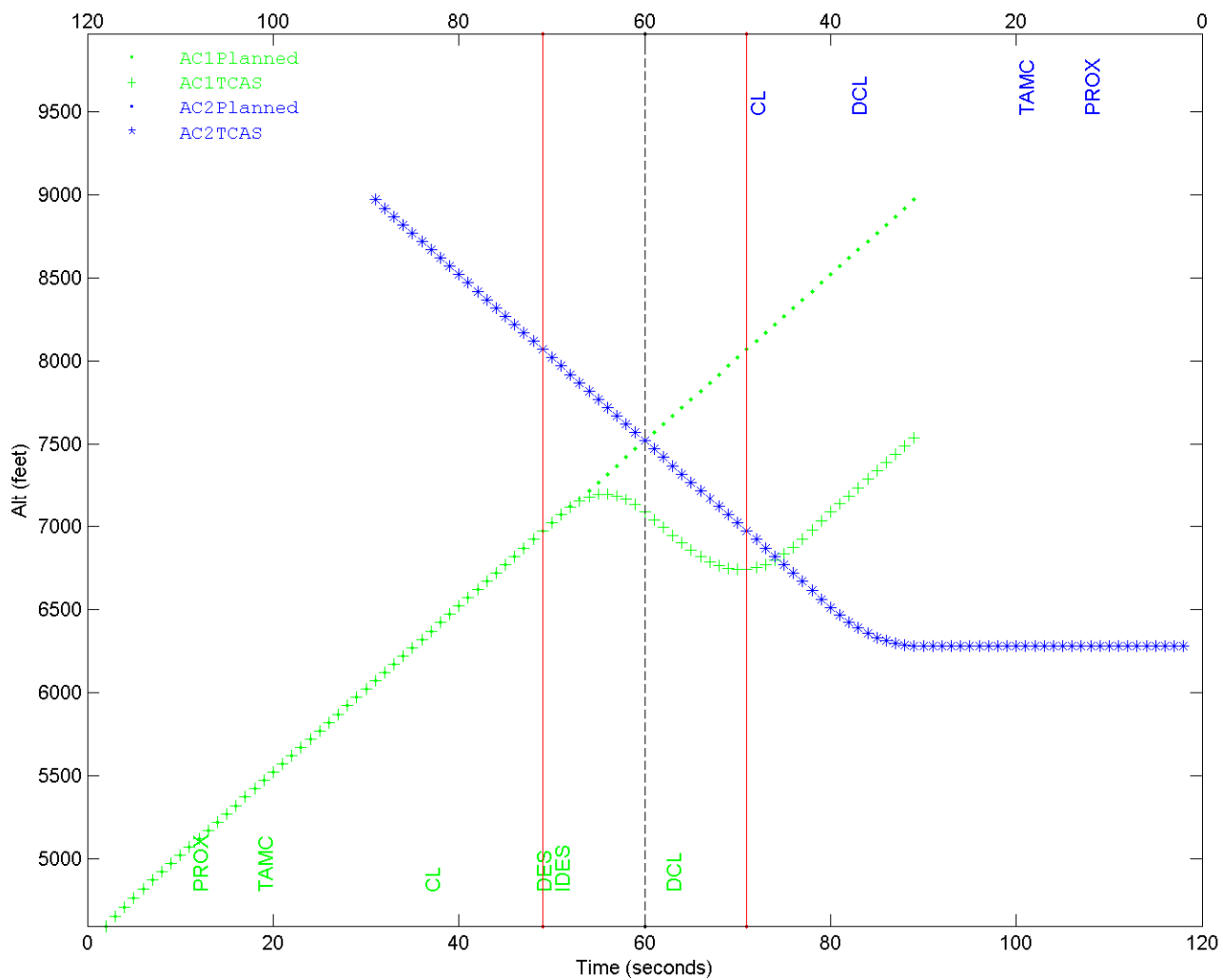
```
-----
5632 6.04A R H VS 6.04A NR L 15 0.00 NON_CROSSING_ENC
10 AC1: 4165124 TA :19 |PVMD| MCL @39 [NX]| ICL @41
5 AC2: 4265042 TA :19 |PVMD| LC1 @37 [NX]| LC5 @48 | DES @49 | IDES @54
      ##NON-RESPONDING##
-----
5632 V7 25 FT R H VS V7 25 FT NR L 15 0.00 NON_CROSSING_ENC
10 AC1: 4275035 TA :19 |PVMD| CL @37 [NX]
5 AC2: 4175153 TA :19 |PVMD| LC1 @37 [NX]| LC5 @48 | DES @49 | IDES @51
      ##NON-RESPONDING##
-----
5632 CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L 15 0.00 NON_CROSSING_ENC
10 AC1: 8275035 TA :19 |PVMD| CL @37 [NX]
5 AC2: 8175153 TA :19 |PVMD| LC1 @37 [NX]| LC5 @48 | DES @49 | IDES @51
      ##NON-RESPONDING##
-----
5632 V7.1 25 FT R H VS V7.1 25 FT NR L 15 -451.89 NON_CROSSING_ENC
10 AC1:*REV*8275035 TA :19 |PVMD| CL @37 [NX]| DES @49 | IDES @51 | DCL @63
5 AC2:*REV*8175153 TA :19 |PVMD| DCL @37 [NX]| CL @48 ##NON-RESPONDING##
```

reit: 5632 cata: 515 simmode: 4165124 6.04A Vs 6.04A H255632A









Change 7.1 Non-responding Representative Save 26

Encounter Class: 15

Reit Number : 4253

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 3 | |
| AC1 low ID | no | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.35 | g |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC CP115

Comments

Climbing vertical chase caused by planned maneuver.
CP112E-only reversed one second later, did not resolve NMAC.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H254253
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,3000.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.35g @ CPA -25 AC1 CPA ALT 7480

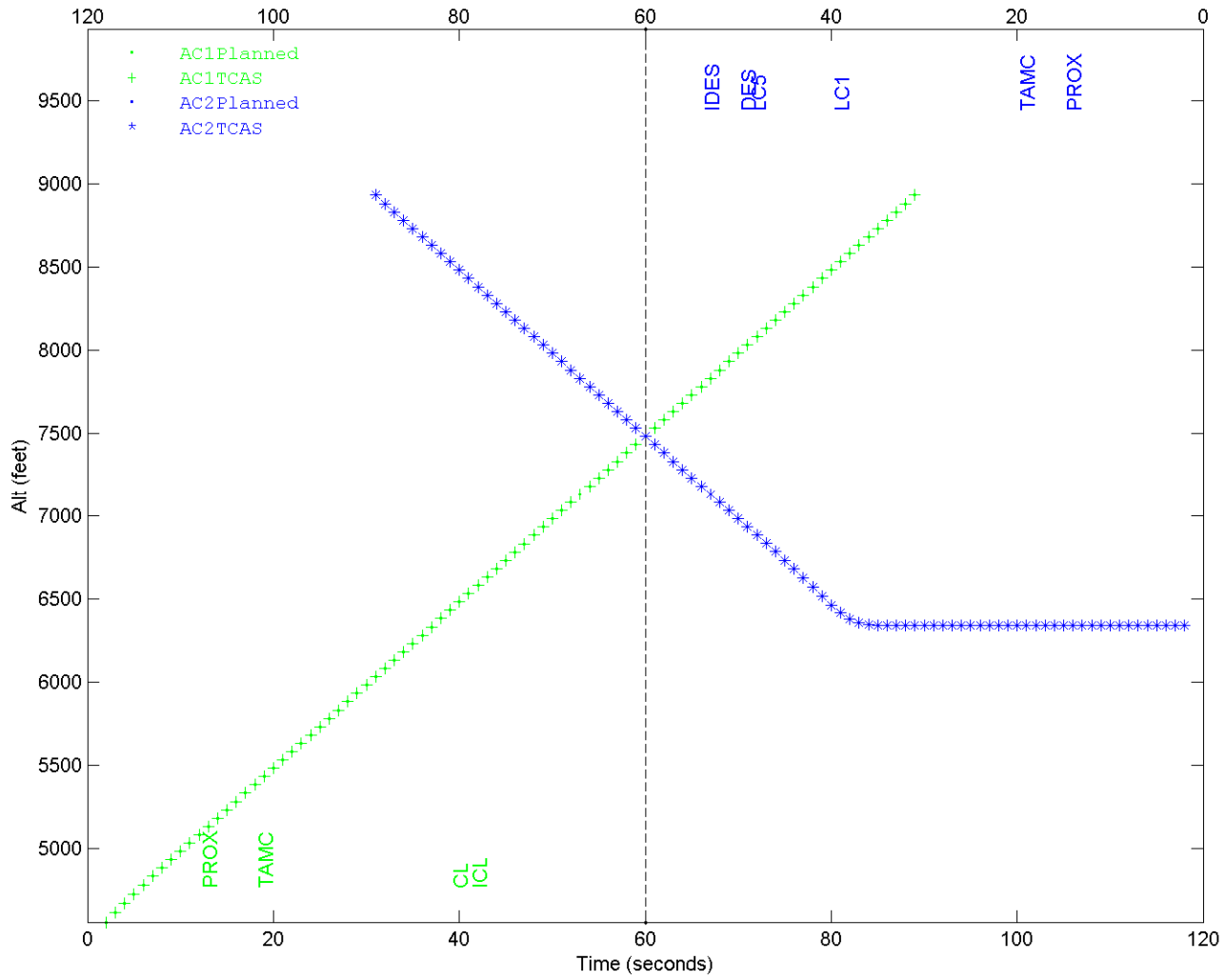
 4253 6.04A R H VS 6.04A NR L 15 0.00 NON_CROSSING_ENC
 10 AC1: 4165124 TA :19 |PVMD| MCL @40 [NX]| ICL @42
 5 AC2: 4265042 TA :19 |PVMD| LC1 @39 [NX]| LC5 @48 | DES @49 | IDES @53
 ##NON-RESPONDING##

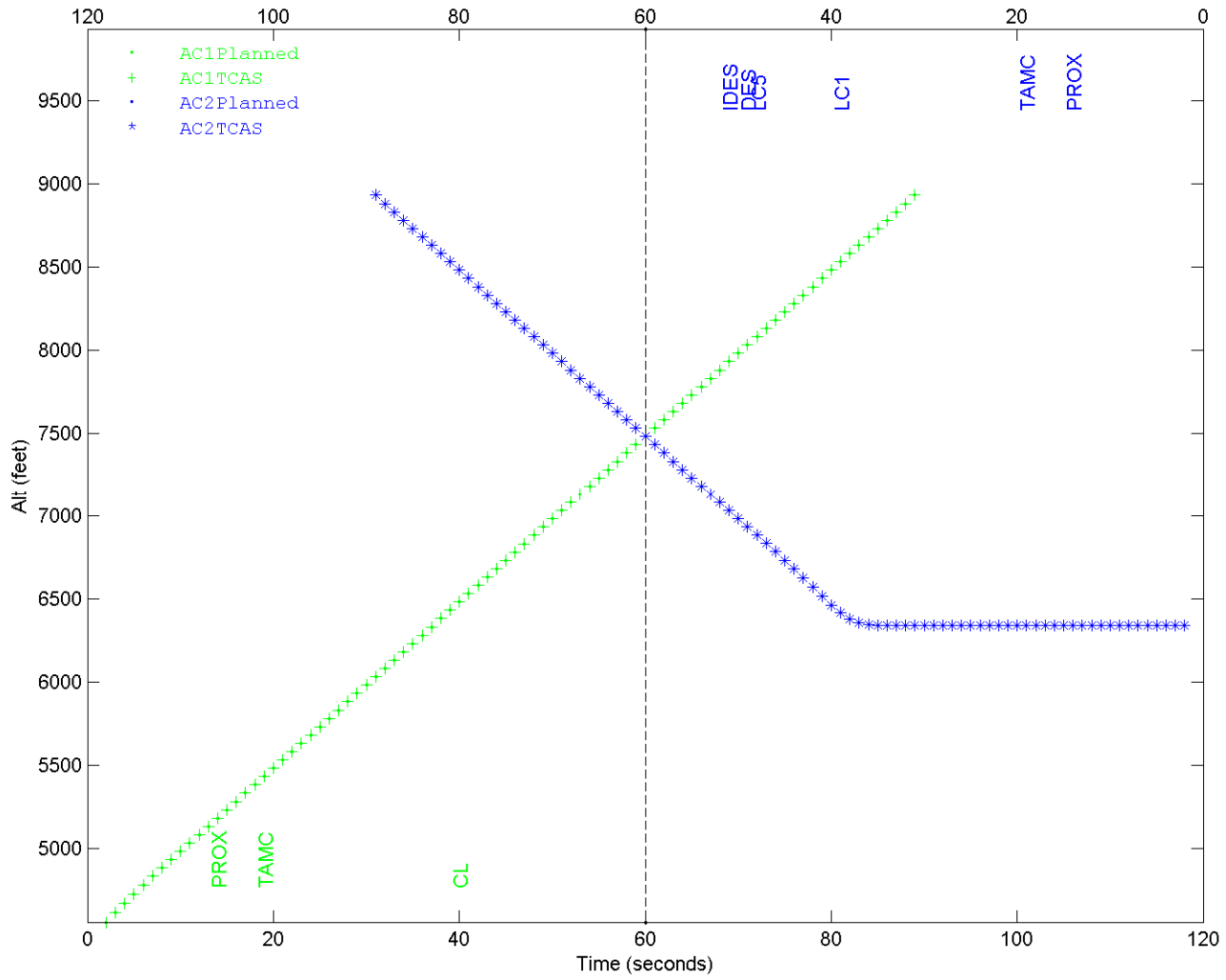
 4253 V7 25 FT R H VS V7 25 FT NR L 15 0.00 NON_CROSSING_ENC
 10 AC1: 4275035 TA :19 |PVMD| CL @40 [NX]
 5 AC2: 4175153 TA :19 |PVMD| LC1 @39 [NX]| LC5 @48 | DES @49 | IDES @51
 ##NON-RESPONDING##

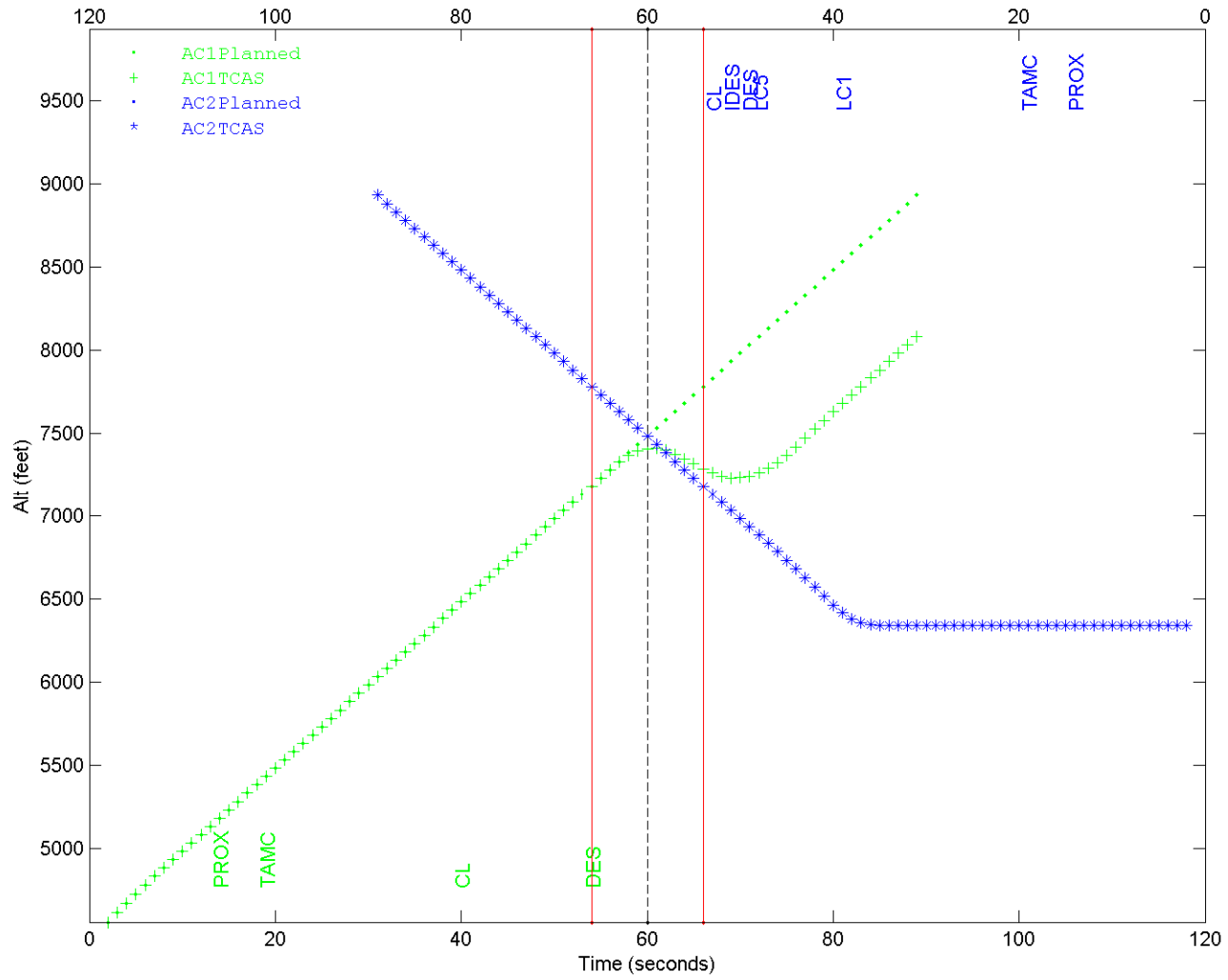
 4253 CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L 15 -90.08 NON_CROSSING_ENC
 10 AC1:*REV*8275035 TA :19 |PVMD| CL @40 [NX]| DES @54
 5 AC2:*REV*8175153 TA :19 |PVMD| LC1 @39 [NX]| LC5 @48| DES @49| IDES @51| CL @53
 ##NON-RESPONDING##

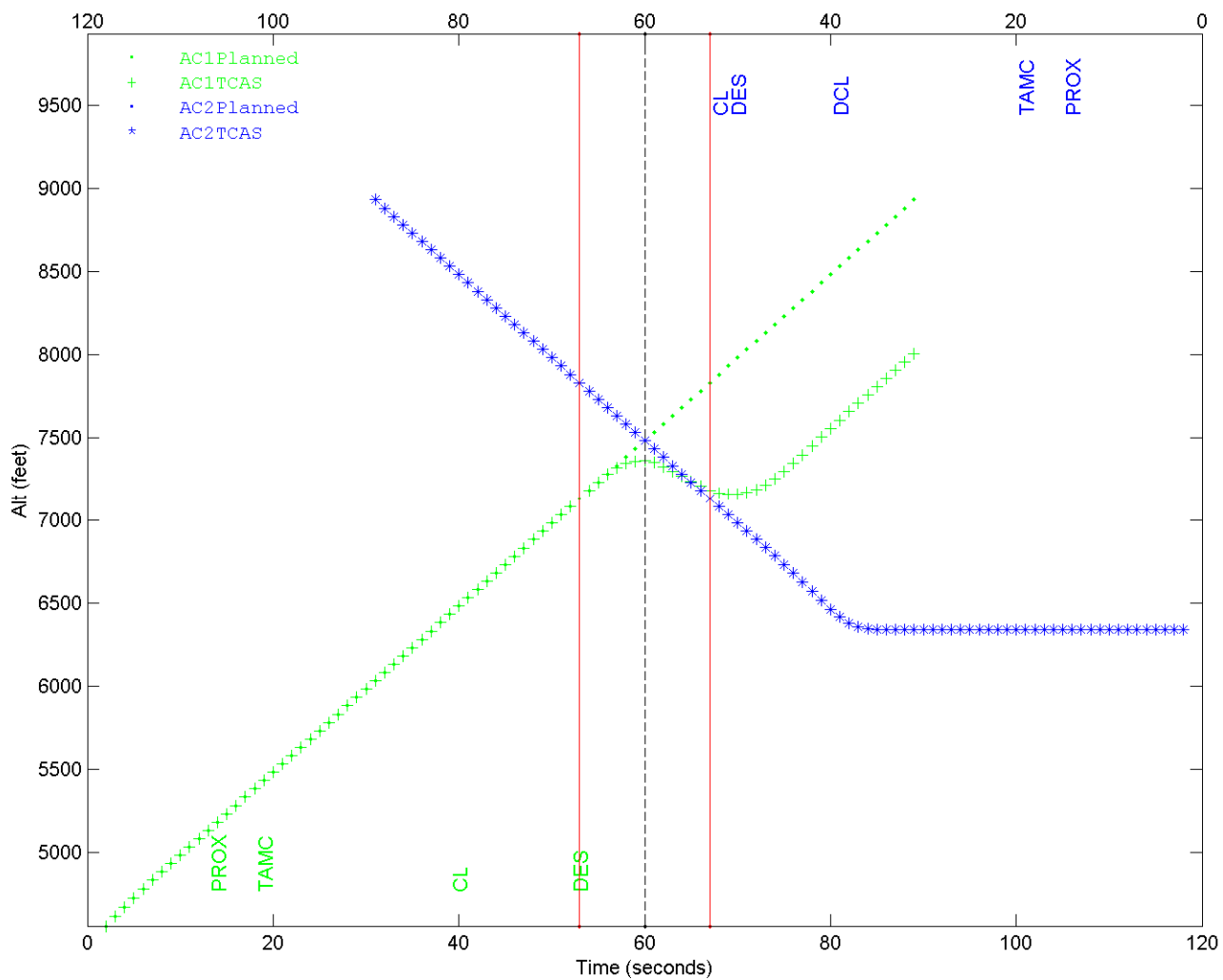
 4253 V7.1 25 FT R H VS V7.1 25 FT NR L 15 -140.75 NON_CROSSING_ENC
 10 AC1:*REV*8275035 TA :19 |PVMD| CL @40 [NX]| DES @53
 5 AC2:*REV*8175153 TA :19 |PVMD| DCL @39 [NX]| DES @50 | CL @52
 ##NON-RESPONDING##

reit: 4253 cata: 515 simmode: 4165124 6.04A Vs 6.04A H254253A









Change 7.1 Non-responding Representative Save 27

Encounter Class: 16

Reit Number : 357

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 7 | |
| AC1 low ID | no | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | -750 | ft |
| AC1 rates: | -3000 | fpm |
| AC2 rates: | -3000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.15 | g |
| AC2 acceleration time: | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Pre-existing descending vertical chase.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H16357
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-3000.0,-3000.0) AC2 RATES(-3000.0,0.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.15g @ CPA -20 AC1 CPA ALT 3680

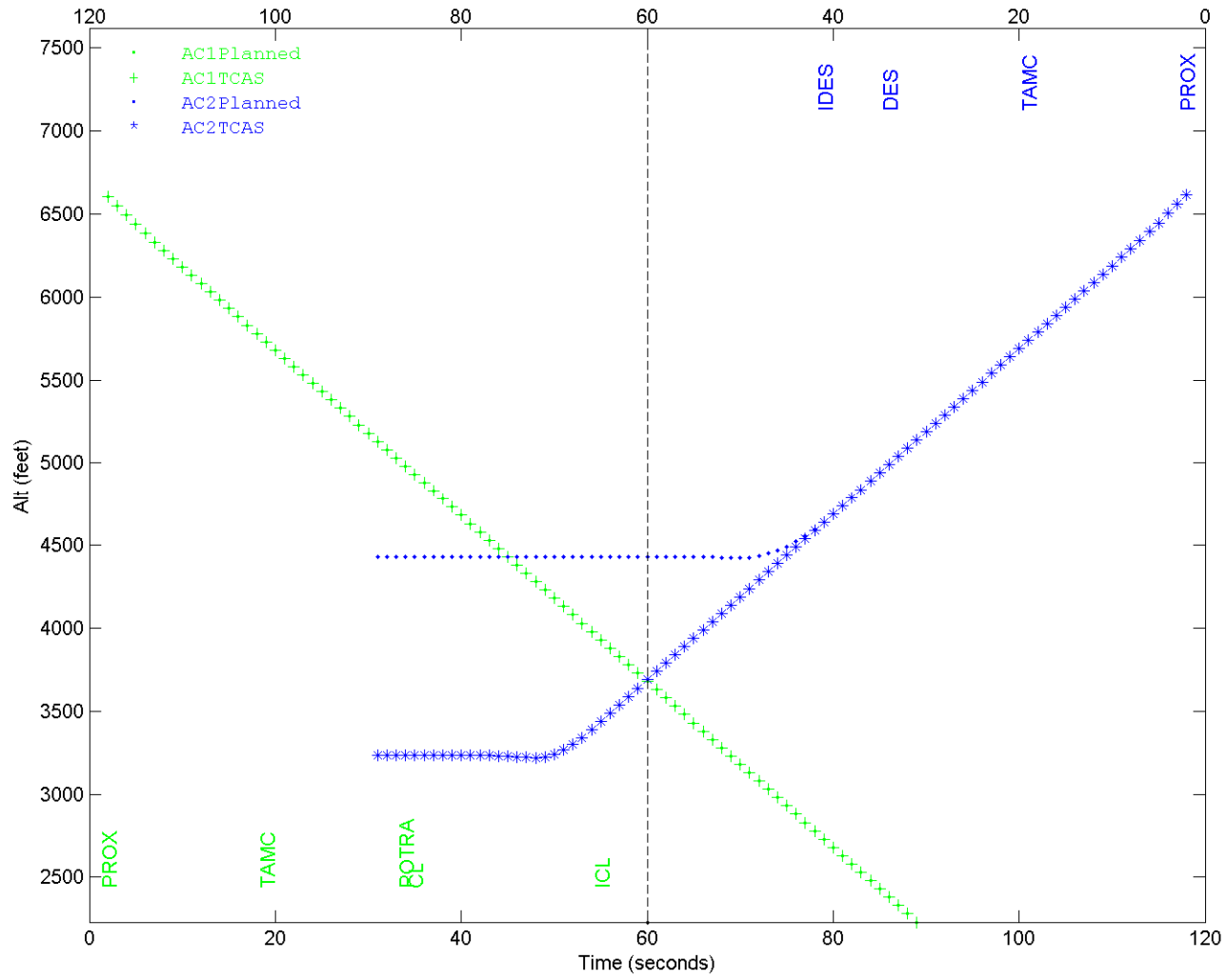
 357 6.04A NR H VS 6.04A NR L 16 -9.02 NON_CROSSING_ENC
 10 AC1: 4165142 TA :19 |TAUR| POTRA@34 (DFD)| CL @35 [NX]| ICL @55 ##NON-RESPONDING##
 5 AC2: 4265024 TA :19 |TAUR| MDES @34 [NX]| IDES @41

 357 V7 25 FT NR H VS V7 25 FT R L 16 -9.02 NON_CROSSING_ENC
 10 AC1: 4275053 TA :19 |TAUR| LD1 @34 [NX]| LD5 @49 | CL @50 | ICL @52 ##NON-RESPONDING##
 5 AC2: 4175135 TA :19 |TAUR| DES @34 [NX]

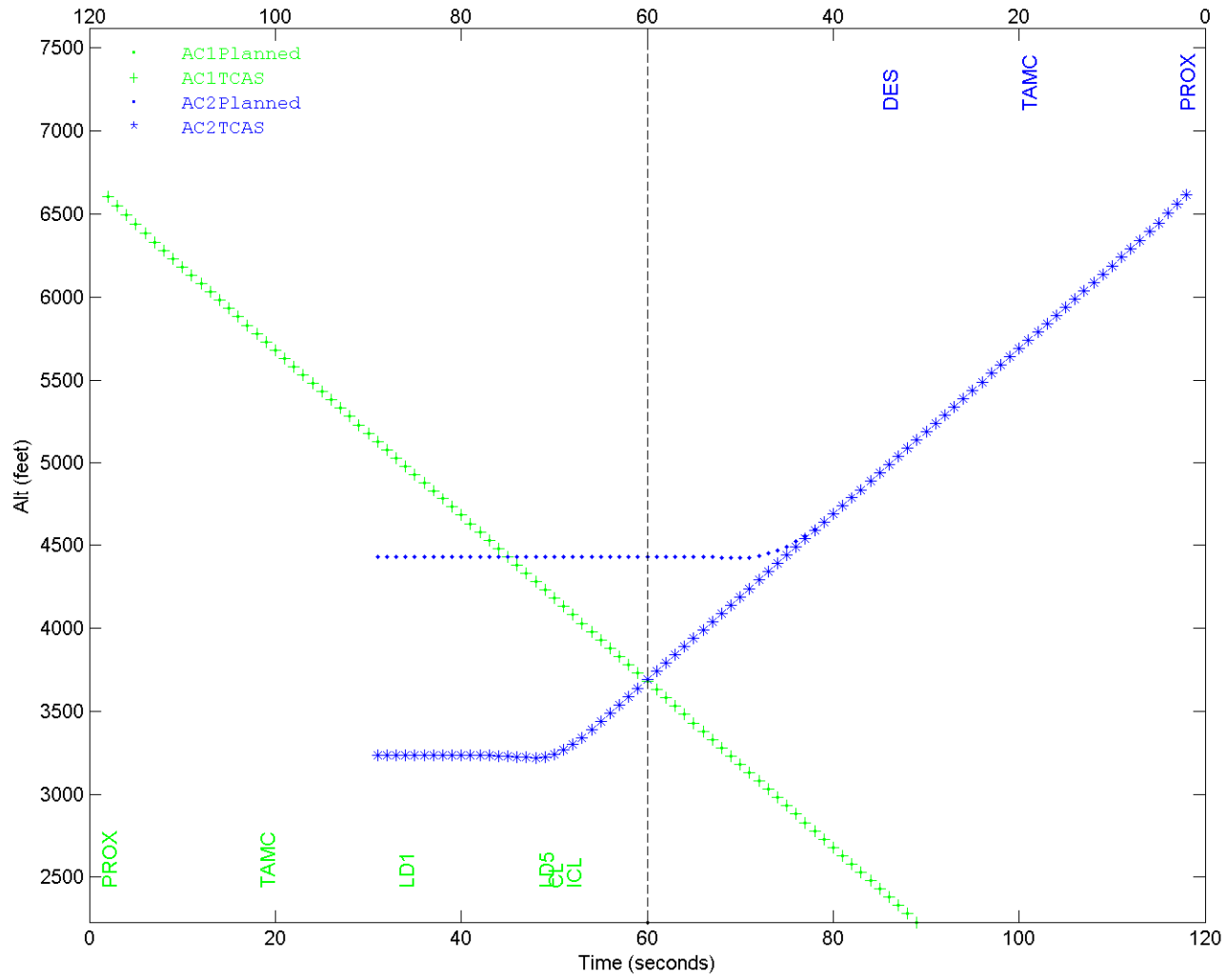
 357 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 16 -718.17 NON_CROSSING_ENC
 10 AC1:*REV*8275053 TA :19 |TAUR| LD1 @34 [NX]| DES @46 | DCL @57 ##NON-RESPONDING##
 5 AC2:*REV*8175135 TA :19 |TAUR| DES @34 [NX]| CL @45 | DDES @56

 357 V7.1 25 FT NR H VS V7.1 25 FT R L 16 -718.17 NON_CROSSING_ENC
 10 AC1:*REV*8275053 TA :19 |TAUR| DDES @34 [NX]| DES @46 | DCL @57 ##NON-RESPONDING##
 5 AC2:*REV*8175135 TA :19 |TAUR| DES @34 [NX]| CL @45 | DDES @56

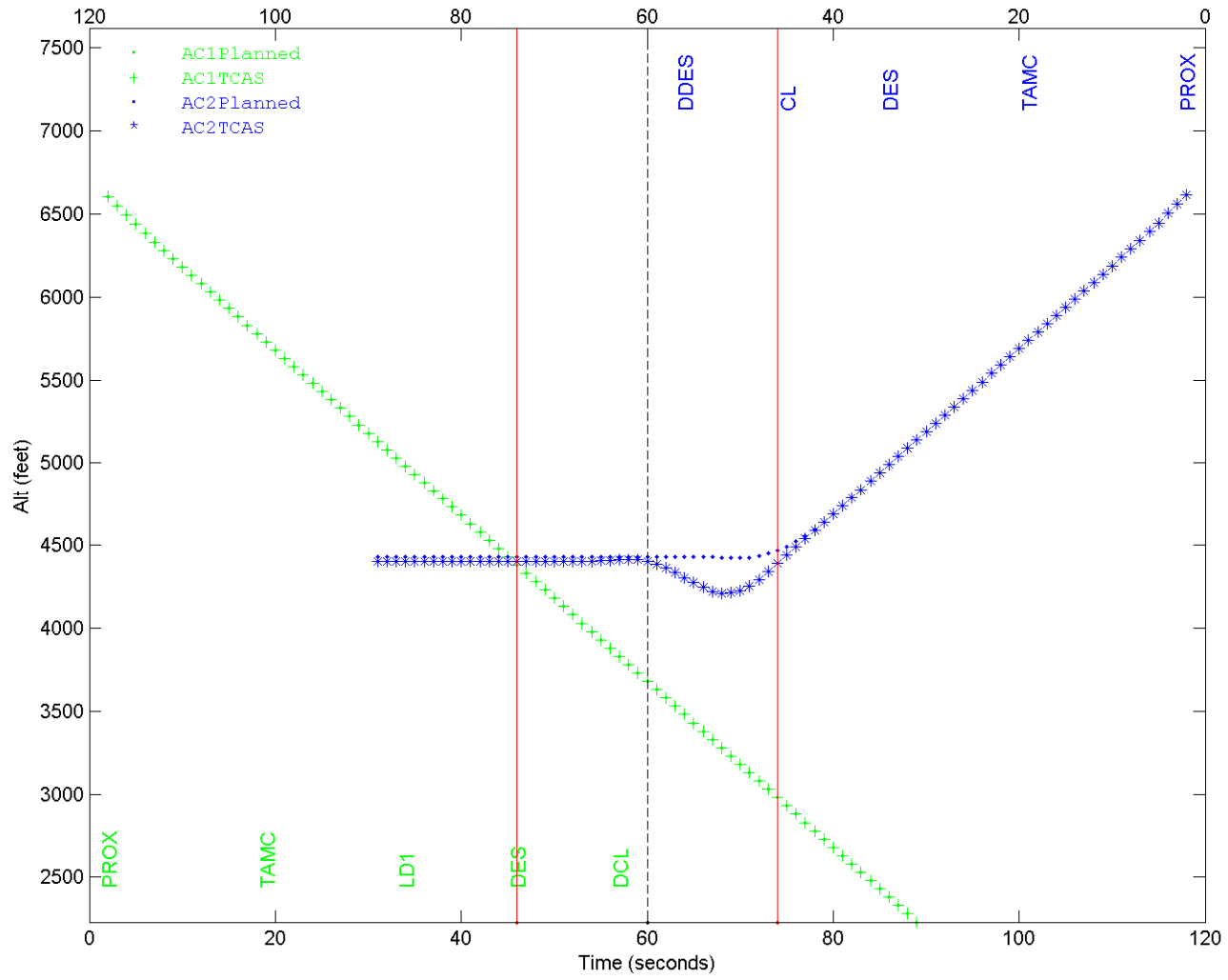
reit: 357 cata: 616 simmode: 4165142 6.04A Vs 6.04A H16357A

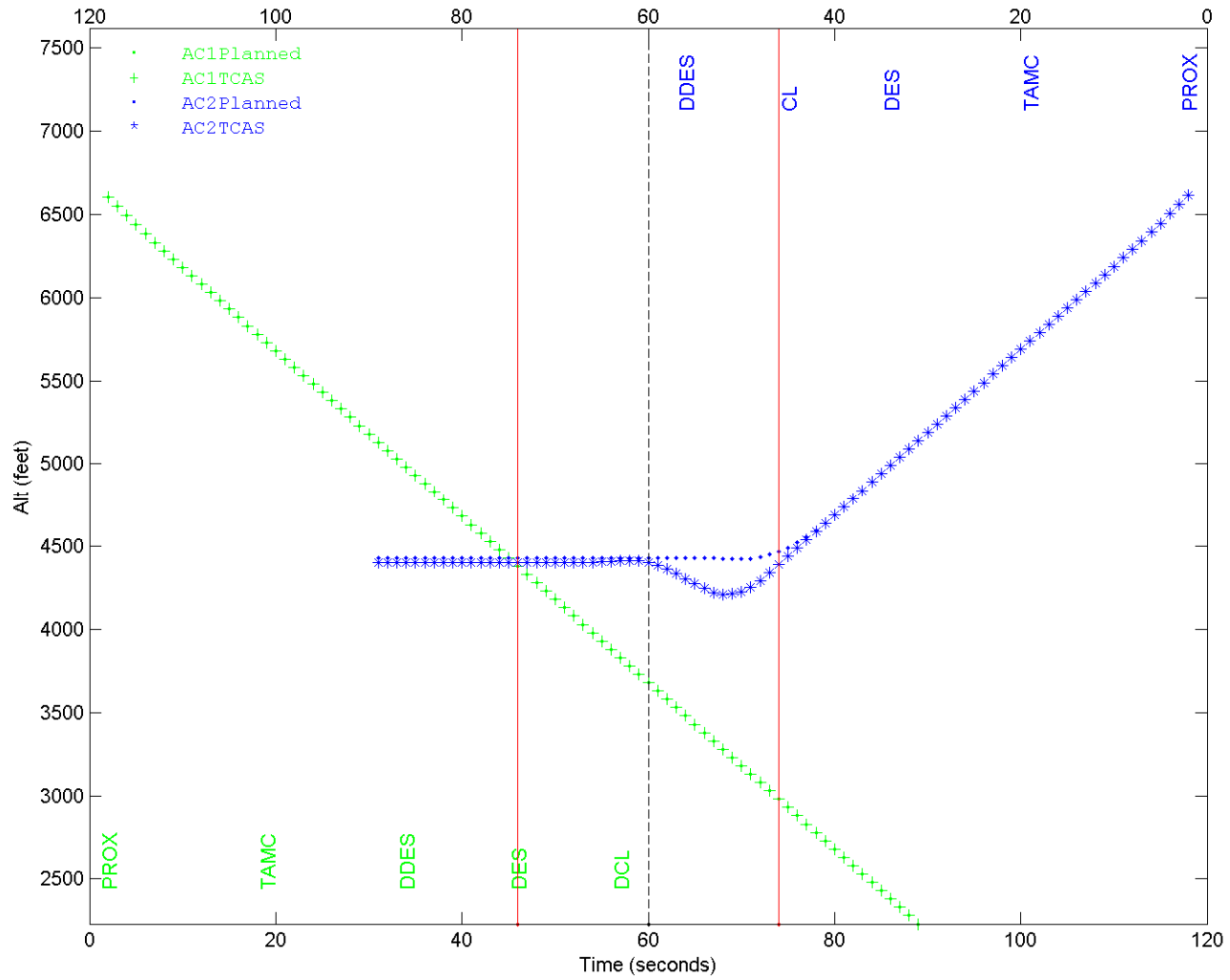


reit: 357 cata: 616 simmode: 4275053 V7-25 Vs V7-25 H16357B



reit: 357 cata: 616 simmode: 8275053 CP112EV1.2-25 Vs CP112EV1.2-25 H16357C





Change 7.1 Non-responding Representative Save 28

Encounter Class: 17

Reit Number : 7025

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 37 | |
| AC1 low ID | yes | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 0, -500 | ft |
| AC1 rates: | 3000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | 0.15 | g |
| AC2 acceleration: | 0.35 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned maneuvers.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L277025
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(0.0,3000.0) AC2 RATES(0.0,3000.0)
 AC1 ACCEL 0.15g @ CPA -25 AC2 ACCEL 0.35g @ CPA -25 AC1 CPA ALT 7500

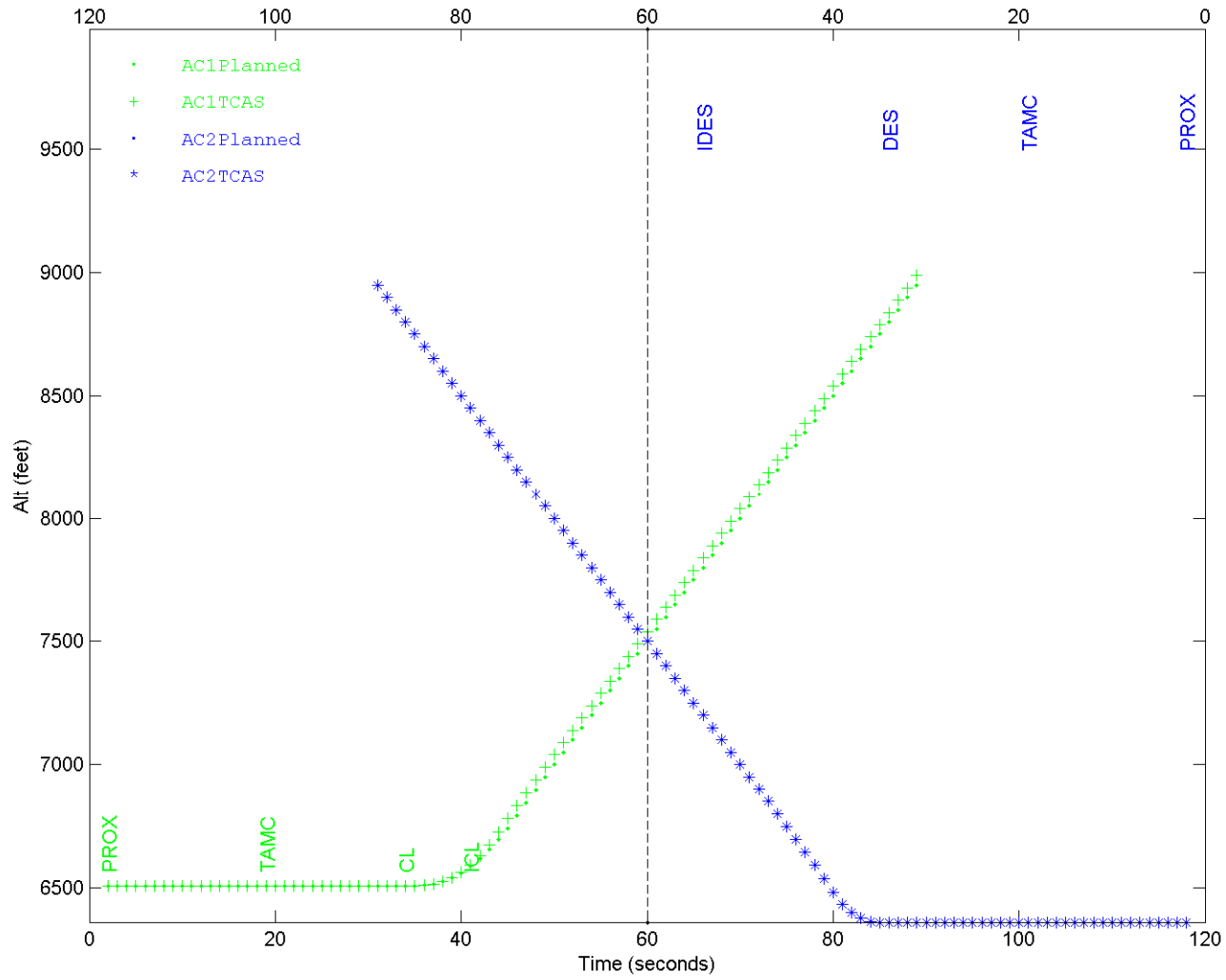
 7025 6.04A R L VS 6.04A NR H 17 39.05 NON_CROSSING_ENC
 5 AC1: 4165024 TA :19 |TAUR| CL @34 [NX]| ICL @41
 10 AC2: 4265142 TA :19 |TAUR| DES @34 [NX]| IDES @54 ##NON-RESPONDING##

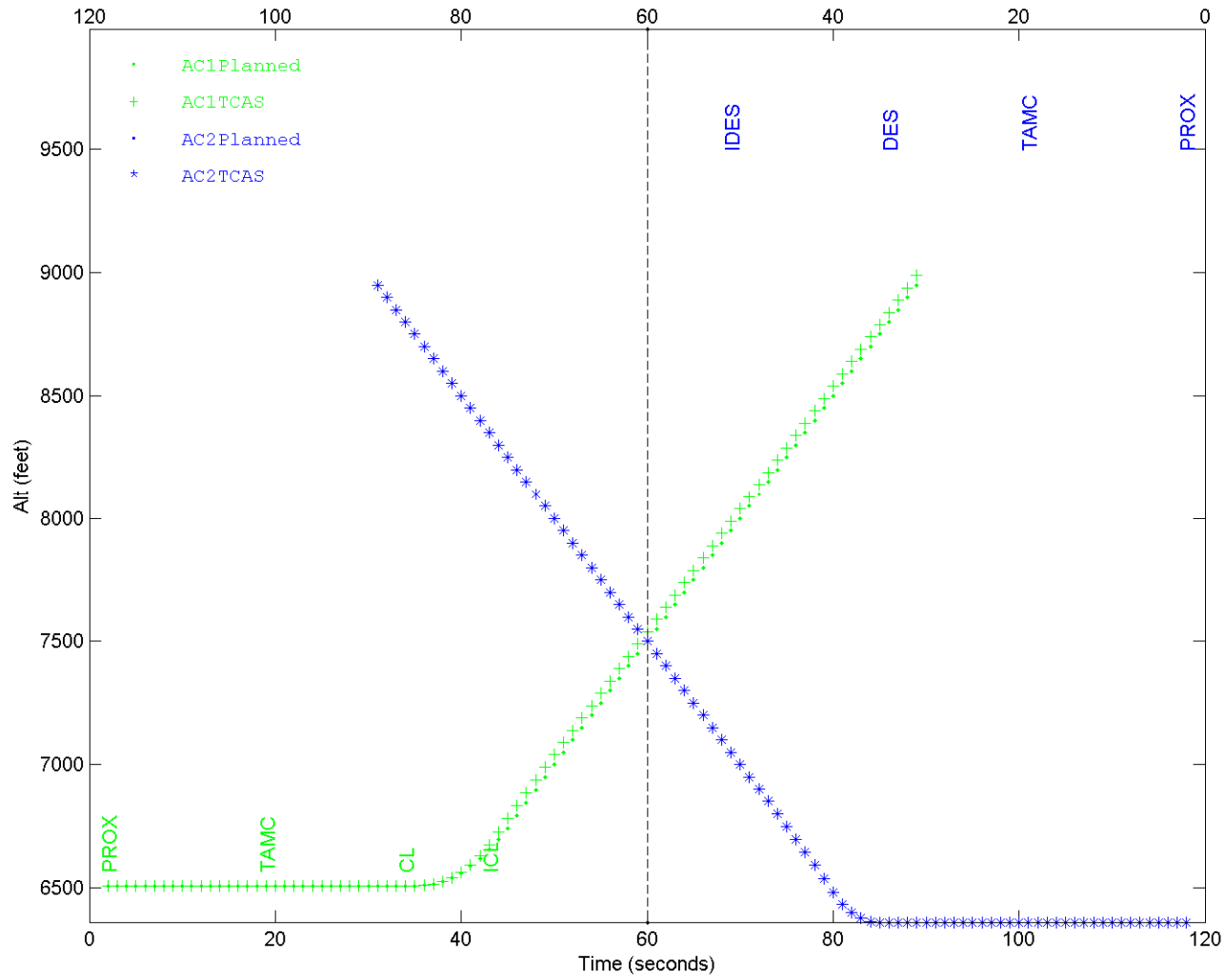
 7025 V7 25 FT R L VS V7 25 FT NR H 17 39.05 NON_CROSSING_ENC
 5 AC1: 4175035 TA :19 |TAUR| CL @34 [NX]| ICL @43
 10 AC2: 4275153 TA :19 |TAUR| DES @34 [NX]| IDES @51 ##NON-RESPONDING##

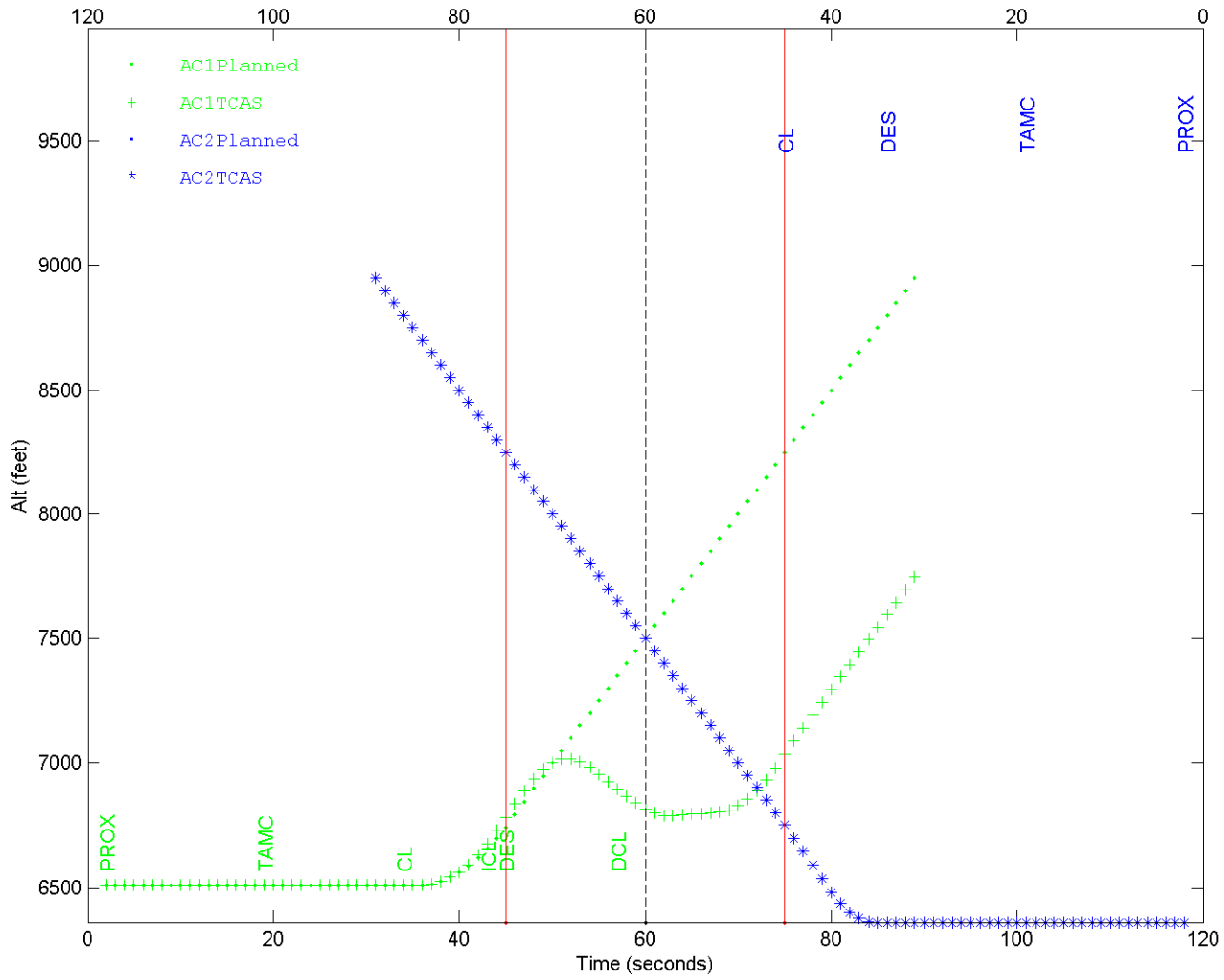
 7025 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 17 -682.16 CROSSING_ENC
 5 AC1:*REV*8175035 TA :19 |TAUR| CL @34 [NX]| ICL @43 | DES @45 | DCL @57
 10 AC2:*REV*8275153 TA :19 |TAUR| DES @34 [NX]| CL @45 ##NON-RESPONDING##

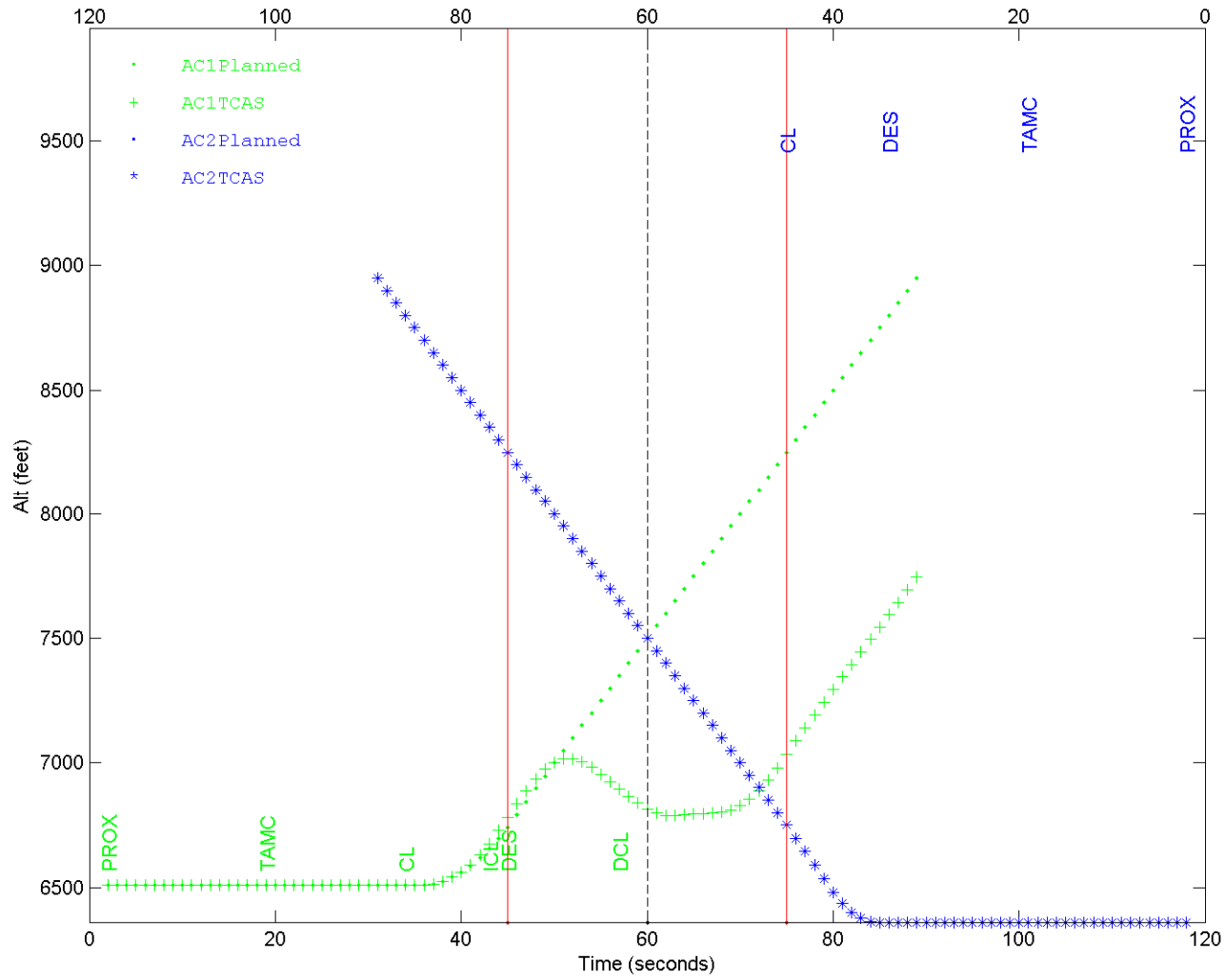
 7025 V7.1 25 FT R L VS V7.1 25 FT NR H 17 -682.16 CROSSING_ENC
 5 AC1:*REV*8175035 TA :19 |TAUR| CL @34 [NX]| ICL @43 | DES @45 | DCL @57
 10 AC2:*REV*8275153 TA :19 |TAUR| DES @34 [NX]| CL @45 ##NON-RESPONDING##

reit: 7025 cata: 717 simmode: 4165024 6.04A Vs 6.04A L277025A









Change 7.1 Non-responding Representative Save 29

Encounter Class: 18

Reit Number : 6574

Encounter Characterization

| | | |
|-------------------------------|---------------|-----|
| Number of encounters in group | 13 | |
| AC1 low ID | no | |
| Non-responding AC | 2 | |
| Vertical tracker | 25 | ft |
| Planned separation | 250, 500, 750 | ft |
| AC1 rates: | -3000, -5000 | fpm |
| AC2 rates: | -3000, -5000 | fpm |
| AC1 acceleration: | 0.15 | g |
| AC2 acceleration: | -0.05 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

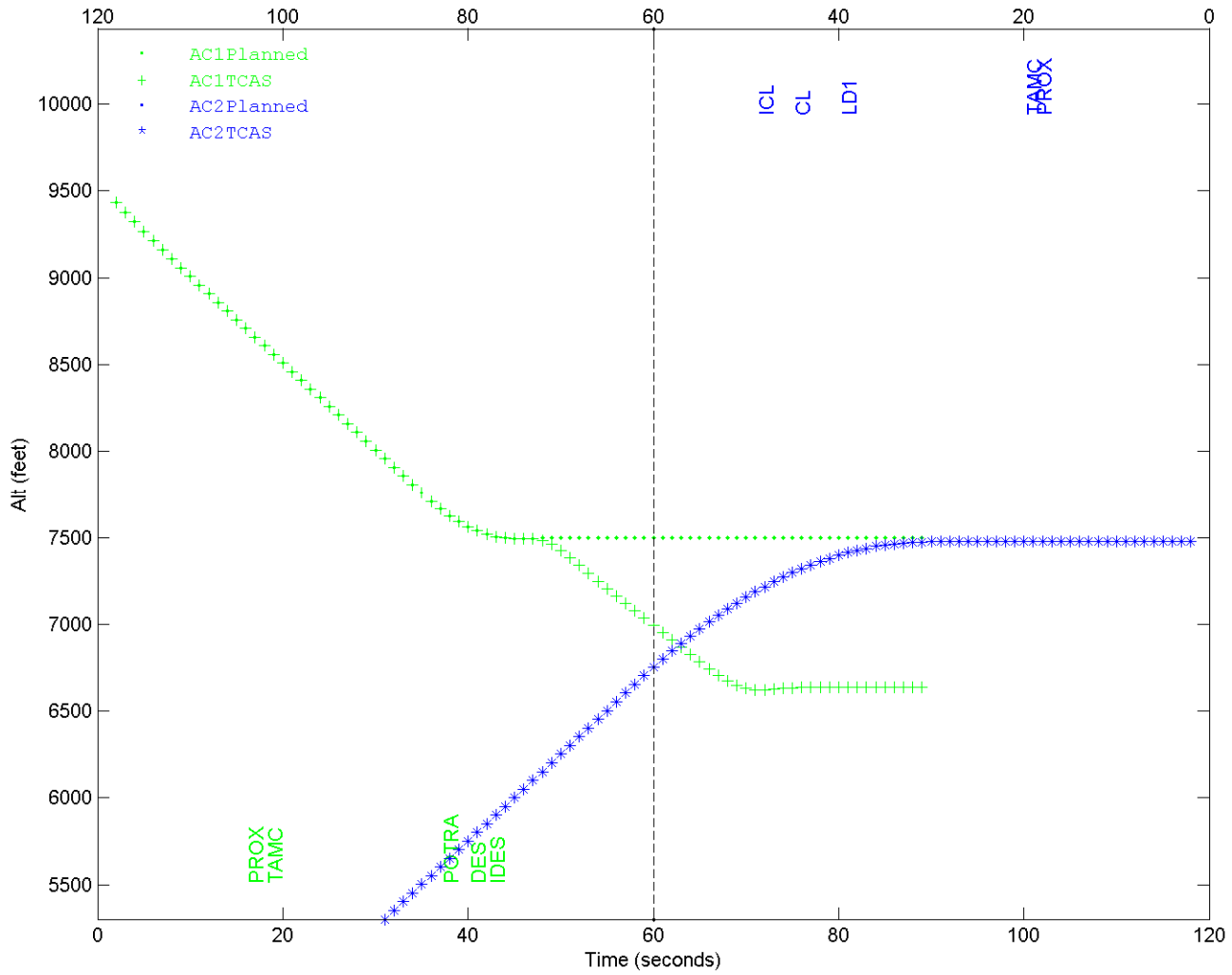
Comments

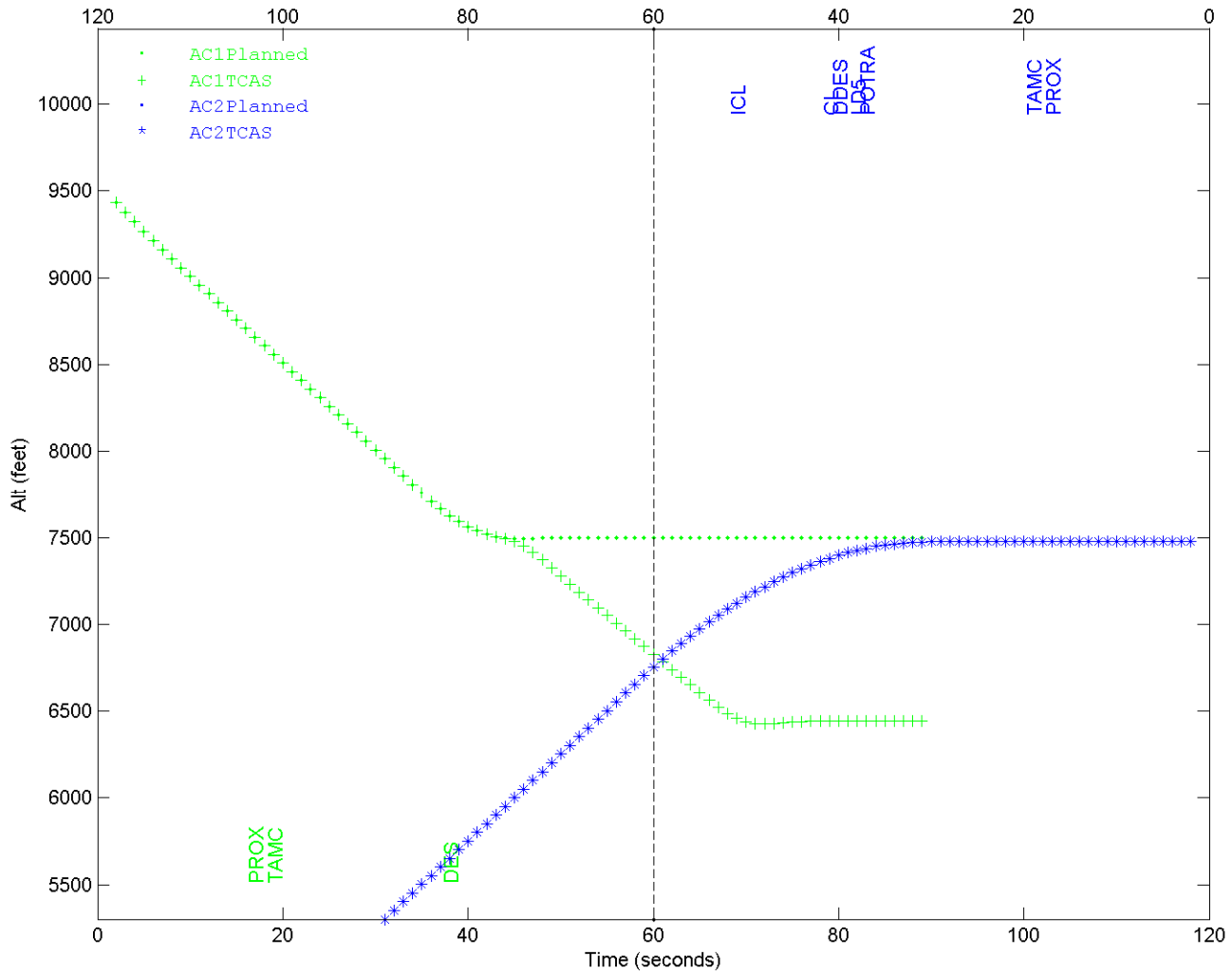
Descending vertical chase caused by response to initial RA.

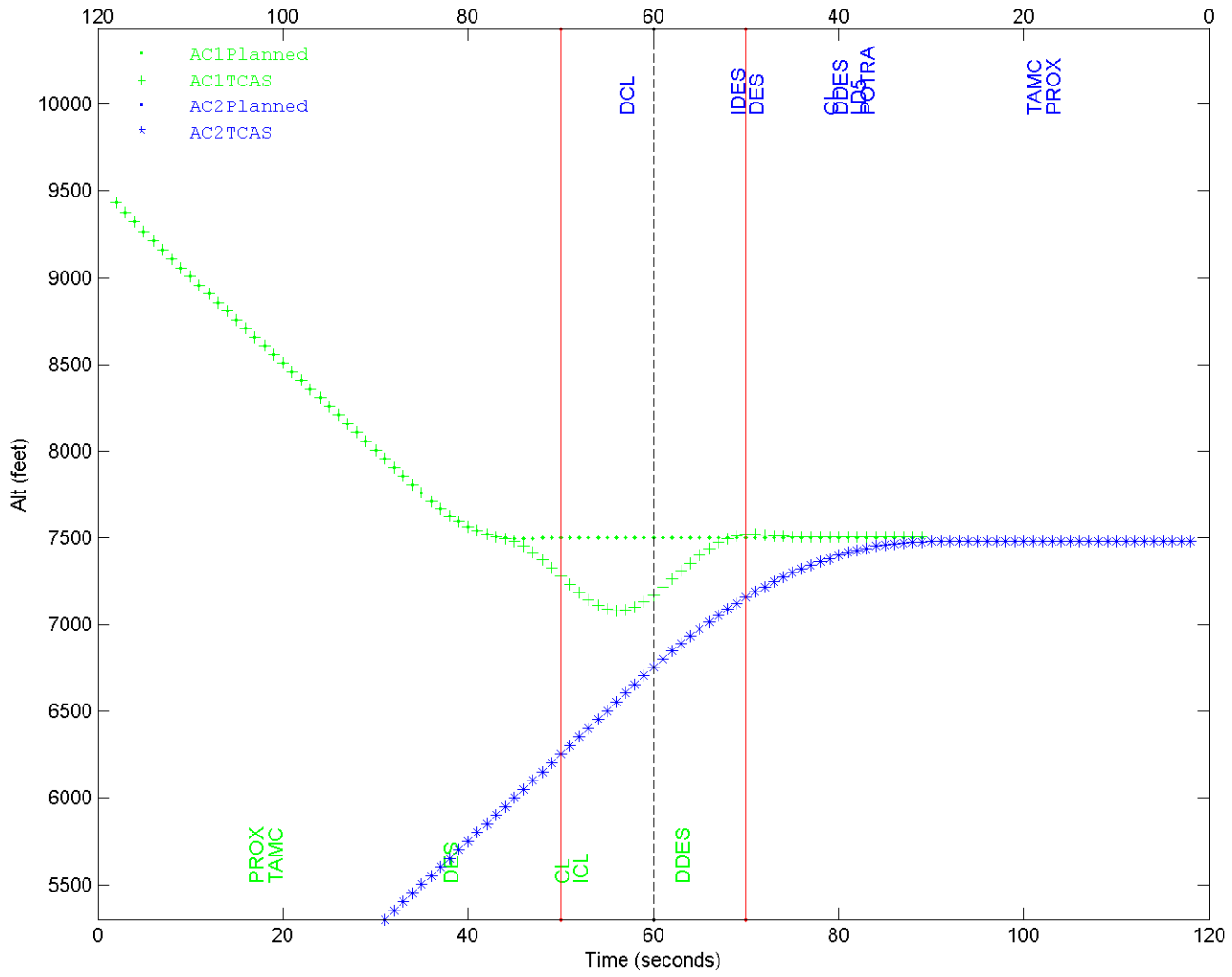
SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H286574
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 750.0 AC1 RATES(-3000.0,0.0) AC2 RATES(0.0,-3000.0)
AC1 ACCEL 0.15g @ CPA -25 AC2 ACCEL -0.05g @ CPA -30 AC1 CPA ALT 7500

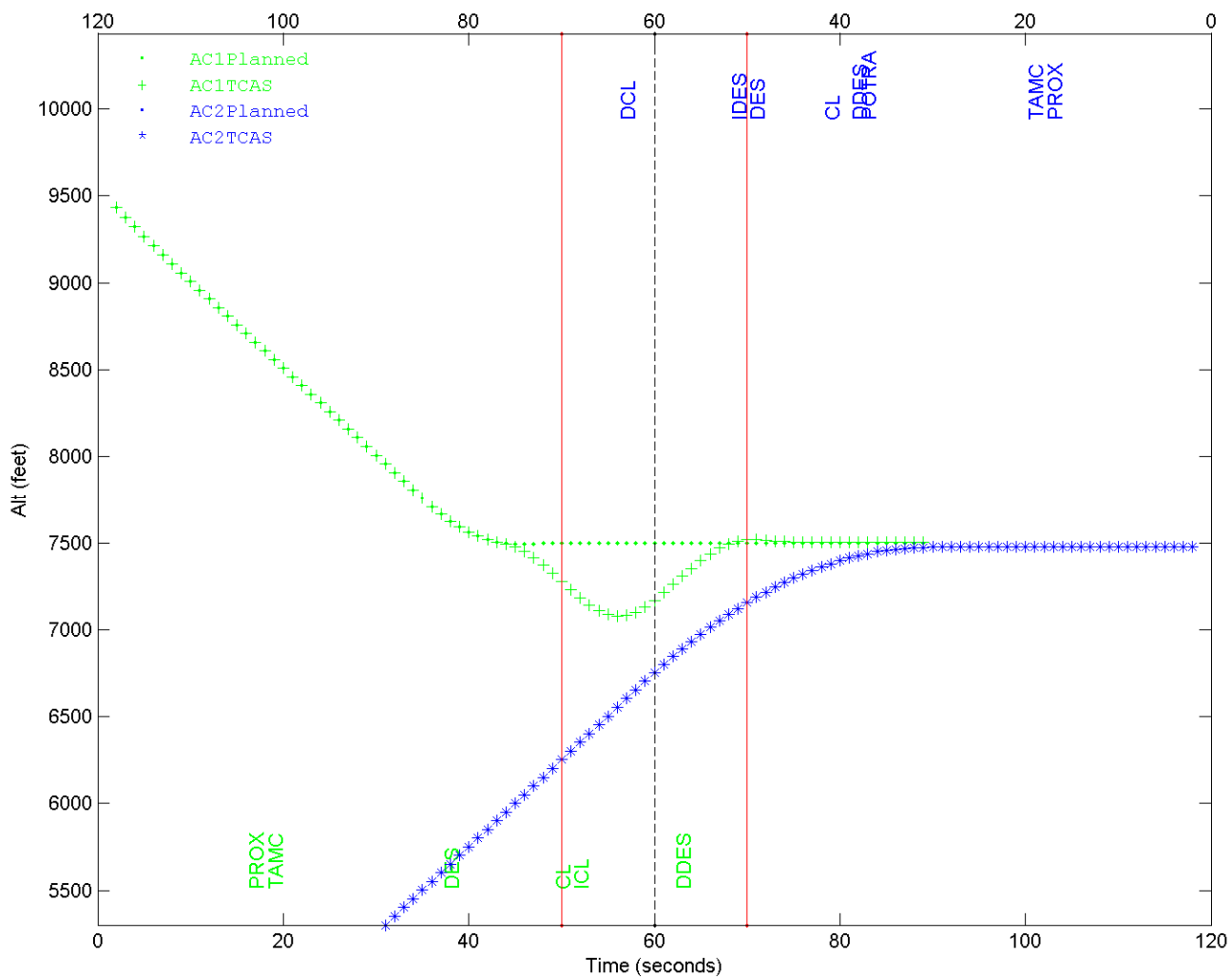
```
-----  
6574 6.04A R H VS 6.04A NR L 18 243.76 NON_CROSSING_ENC  
  
10 AC1: 4165124 TA:19 |PVMD| DES @41 [X]| IDES @43  
  
5 AC2: 4265042 TA:19 |PVMD| LD1 @39 [X]| CL @44 | ICL @48 ##NON-RESPONDING##  
  
-----  
6574 V7 25 FT R H VS V7 25 FT NR L 18 77.74 NON_CROSSING_ENC  
  
10 AC1: 4275035 TA:19 |PVMD| DES @38 [X]  
  
5 AC2: 4175153 TA:19 |PVMD| POTRA@37(LVW)| LD5 @38[X]| DDES @40| CL @41| ICL @51  
##NON-RESPONDING##  
  
-----  
6574 CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L 18 437.32 NON_CROSSING_ENC  
  
10 AC1:*REV*8275035 TA:19 |PVMD| DES @38 [X] | CL @50 | ICL @52 | DDES @63  
  
5 AC2:*REV*8175153 TA:19 |PVMD| POTRA@37 (LVW)| LD5 @38 [X] | DDES @40 | CL @41  
| DES @49 | IDES @51 | DCL @63 ##NON-RESPONDING##  
  
-----  
6574 V7.1 25 FT R H VS V7.1 25 FT NR L 18 437.32 NON_CROSSING_ENC  
  
10 AC1:*REV*8275035 TA:19 |PVMD| DES @38 [X] | CL @50 | ICL @52 | DDES @63  
  
5 AC2:*REV*8175153 TA:19 |PVMD| POTRA@37 (LVW) | DDES @38 [X]| CL @41 | DES @49  
| IDES @51 | DCL @63 ##NON-RESPONDING##
```

reit: 6574 cata: 818 simmode: 4165124 6.04A Vs 6.04A H286574A









Change 7.1 Non-responding Representative Save 30

Encounter Class: 19

Reit Number : 5662

Encounter Characterization

| | | |
|-------------------------------|---------------------|-----|
| Number of encounters in group | 7 | |
| AC1 low ID | yes | |
| Non-responding AC | 1 | |
| Vertical tracker | 25 | ft |
| Planned separation | 250, 500, 750, 1000 | ft |
| AC1 rates: | 3000, 5000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | -0.05 | g |
| AC2 acceleration: | -0.25 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Pre-existing climbing vertical chase made worse by response to initial RA.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L195662
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = 1000.0 AC1 RATES(5000.0,0.0) AC2 RATES(5000.0,0.0)
 AC1 ACCEL -0.05g @ CPA -25 AC2 ACCEL -0.25g @ CPA -20 AC1 CPA ALT 7500

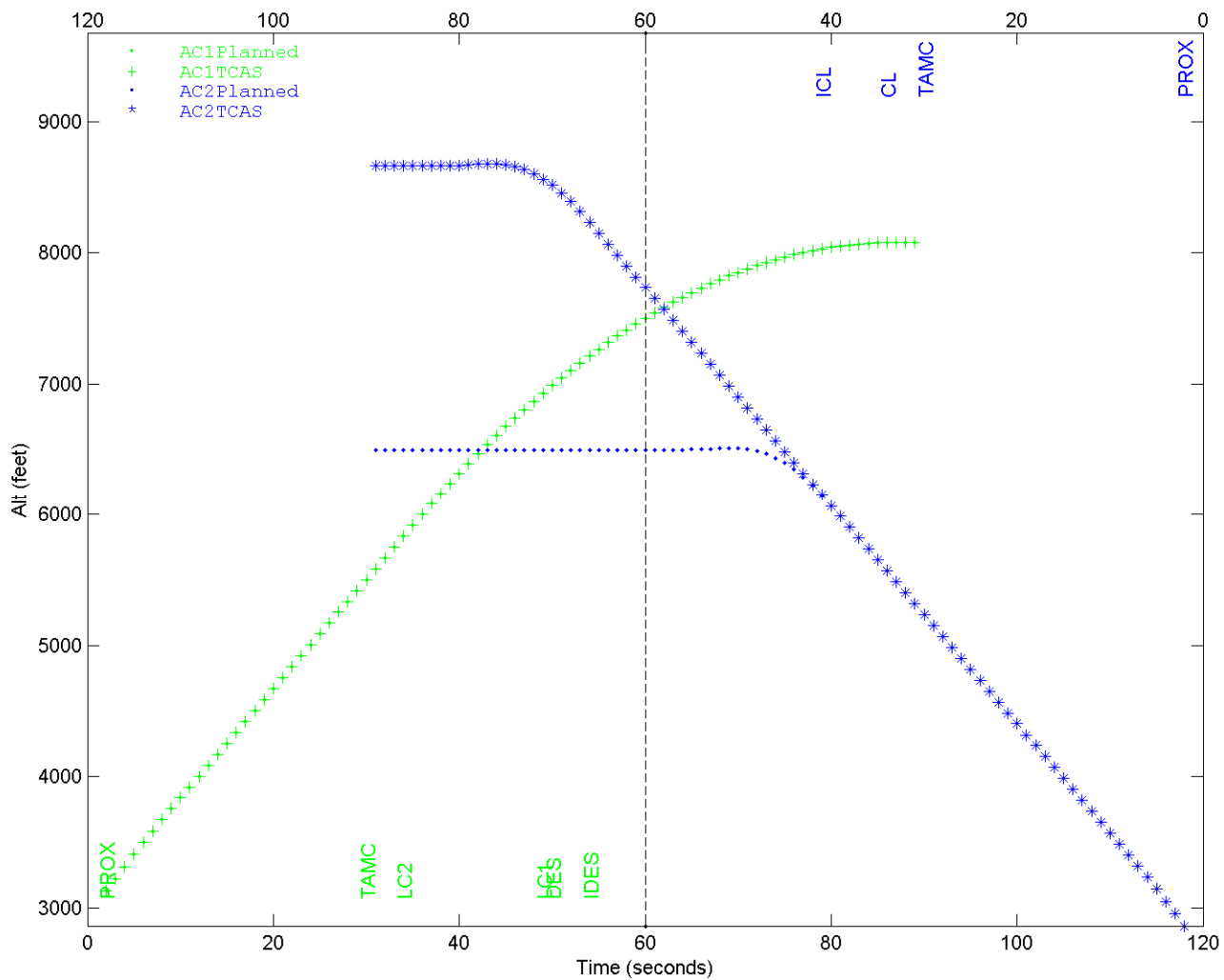
 5662 6.04A NR L VS 6.04A R H 19 -234.97 CROSSING_ENC
 5 AC1: 4165042 TA :30 |TAUR| LC2 @34 [X] | LC1 @49 | DES @50 | IDES @54
 ##NON-RESPONDING##
 10 AC2: 4265124 TA :30 |TAUR| CL @34 [X] | ICL @41

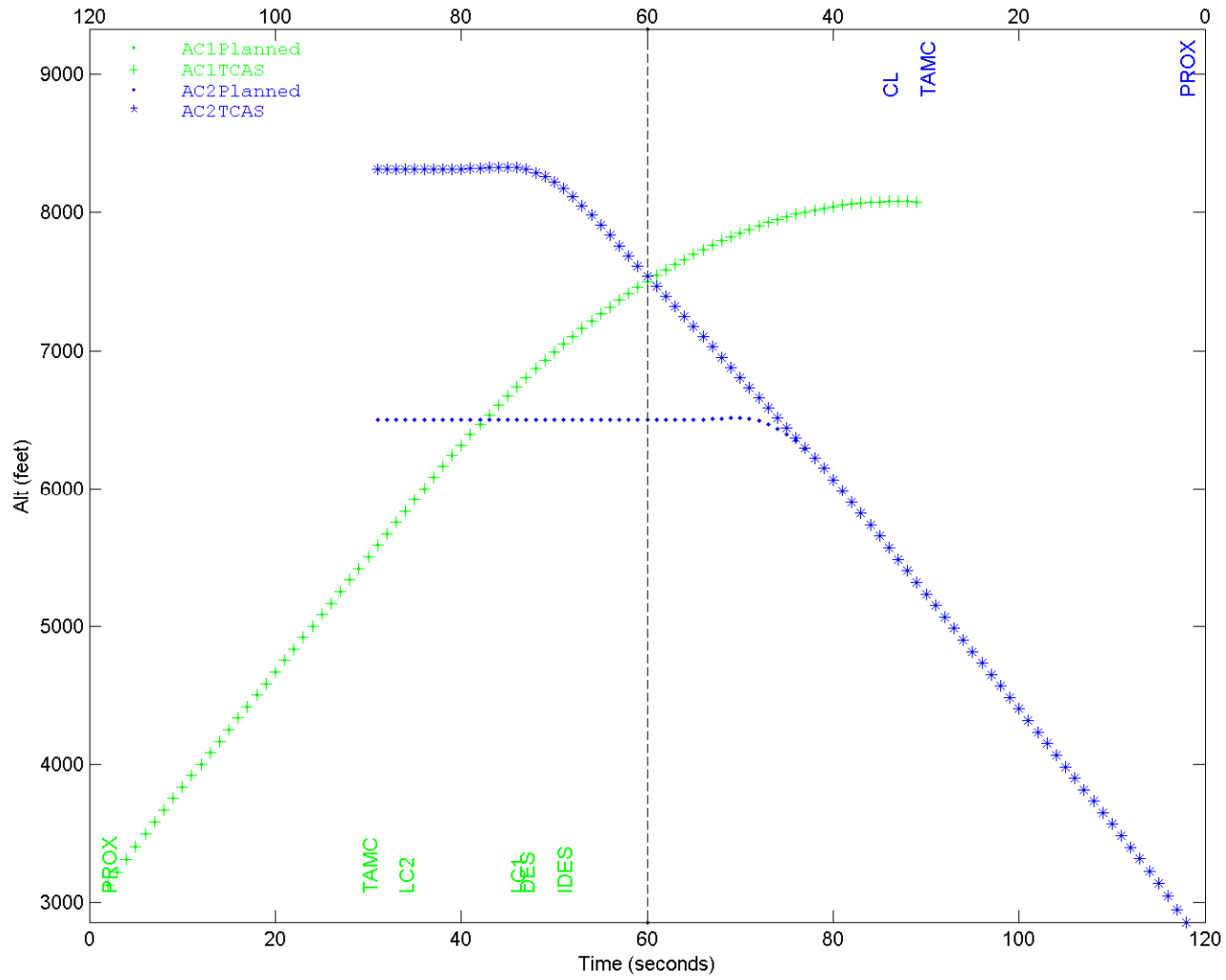
 5662 V7 25 FT NR L VS V7 25 FT R H 19 -41.19 CROSSING_ENC
 5 AC1: 4175053 TA :30 |TAUR| LC2 @34 [X] | LC1 @46 | DES @47 | IDES @51
 ##NON-RESPONDING##
 10 AC2: 4275135 TA :30 |TAUR| CL @34 [X]

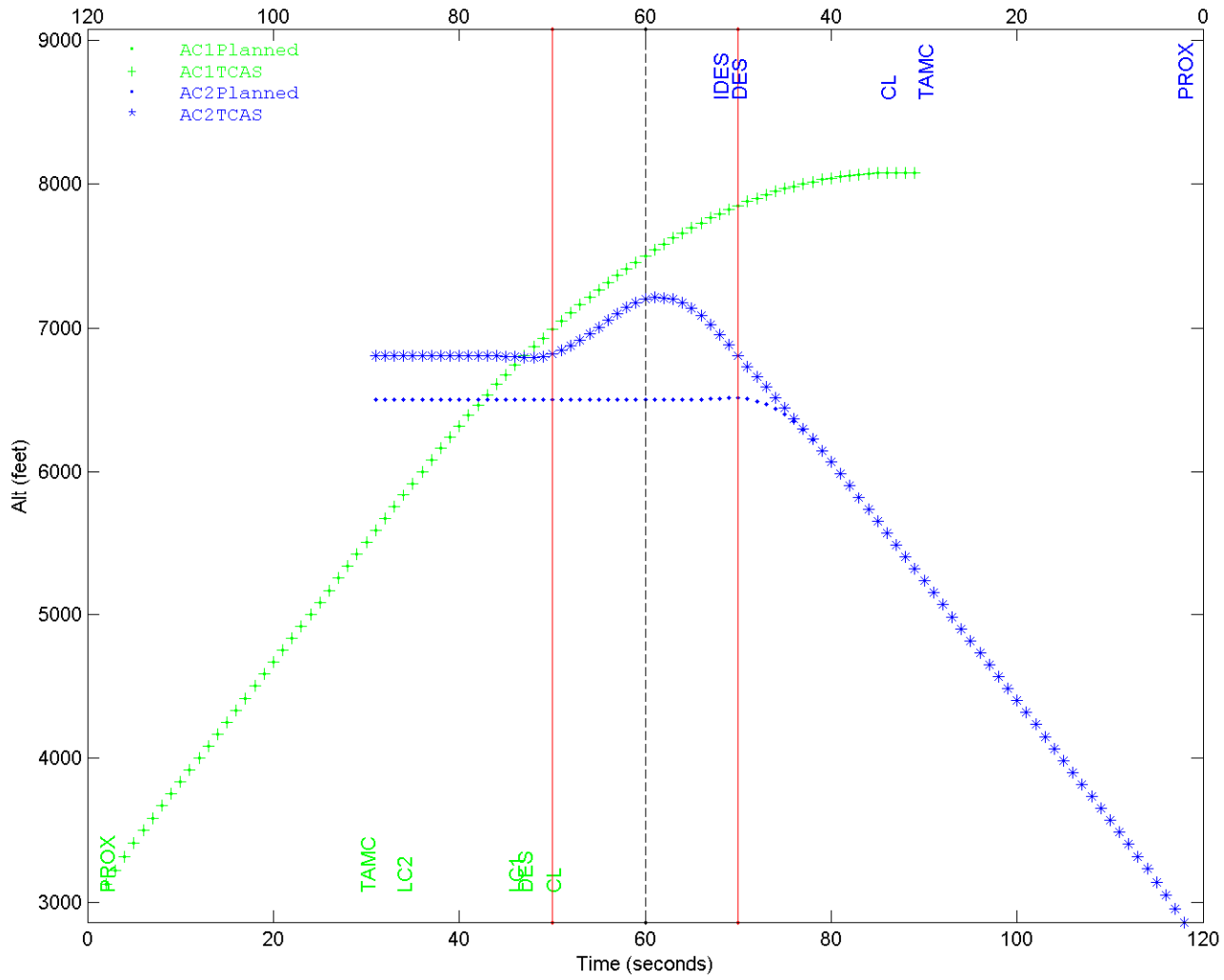
 5662 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 19 319.14 NON_CROSSING_ENC
 5 AC1:*REV*8175053 TA :30 |TAUR| LC2 @34 [X] | LC1 @46 | DES @47 | CL @50
 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :30 |TAUR| CL @34 [X] | DES @50 | IDES @52

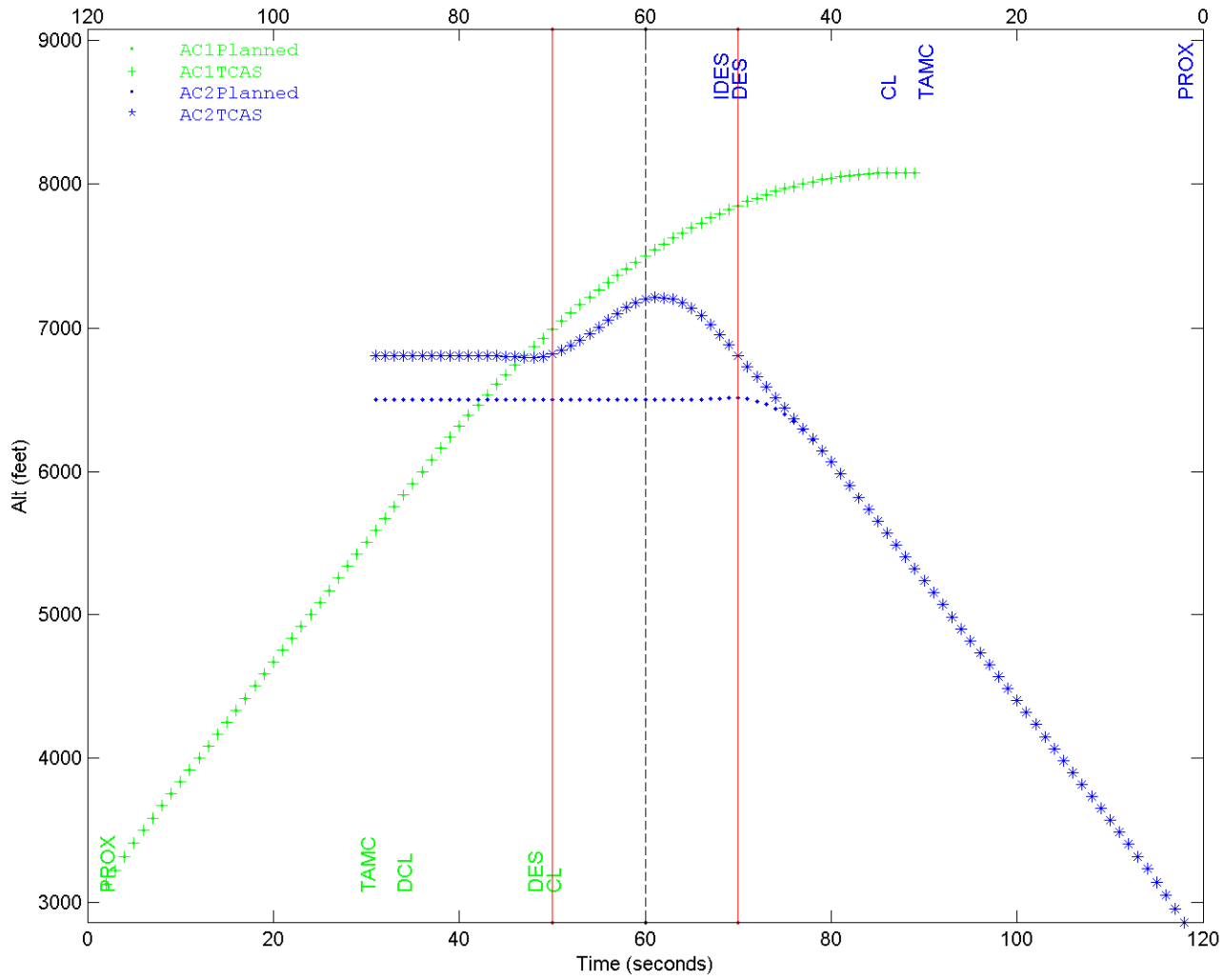
 5662 V7.1 25 FT NR L VS V7.1 25 FT R H 19 319.14 NON_CROSSING_ENC
 5 AC1:*REV*8175053 TA :30 |TAUR| DCL @34 [X] | DES @48 | CL @50
 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :30 |TAUR| CL @34 [X] | DES @50 | IDES @52

reit: 5662 cata: 919 simmode: 4165042 6.04A Vs 6.04A L195662A









Appendix O V7.1 REPRESENTATIVE NMACs (One Pilot Non-responding)

Unresolved NMACs

Change 7.1 Non-responding Representative NMAC Unres1

Encounter Class: 6

Reit Number : 6585

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 2 |
| AC1 low ID | yes |
| Non-responding AC | 2 |
| Vertical tracker | 25 ft |
| Planned separation | 0 ft |
| AC1 rates: | -1000 fpm |
| AC2 rates: | -5000 fpm |
| AC1 acceleration: | none |
| AC2 acceleration: | 0.15 g |
| AC2 acceleration time: | CPA – 20 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 85 | % of RAs were non-crossing |
| 67 | % of NMACs were non-crossing |
| 96 | % of RAs were not reversed |
| 78 | % of NMACs were not reversed |

Comments

Caused by CP112E. Aircraft 2 planned level-off maneuver defeated the new reversal.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L26585
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(-1000.0,-1000.0) AC2 RATES(-5000.0,0.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.15g @ CPA -20 AC1 CPA ALT 3680

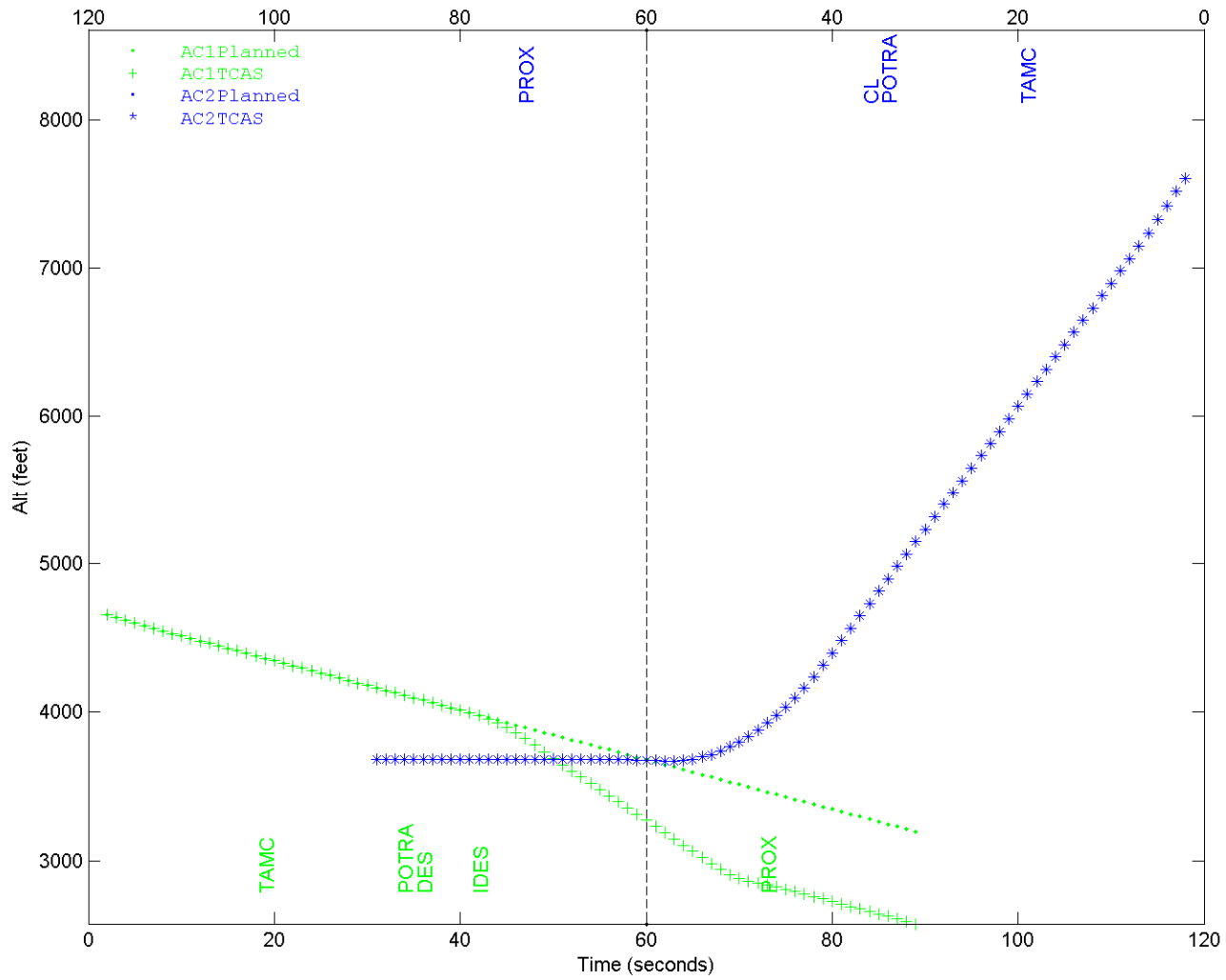
585 6.04A R L VS 6.04A NR H 6 -408.34 NON_CROSSING_ENC
5 AC1: 4165024 TA :19 |TAUR| POTRA@34 (6FT)| DES @36 [NX]| IDES @42| MDES @60
10 AC2: 4265142 TA :19 |TAUR| POTRA@34 (DFD)| CL @36 [NX] ##NON-RESPONDING##

585 V7 25 FT R L VS V7 25 FT NR H 6 -433.34 NON_CROSSING_ENC
5 AC1: 4175035 TA :19 |TAUR| POTRA@34 | DES @35 [NX]| IDES @41
10 AC2: 4275153 TA :19 |TAUR| CL @34 [NX] ##NON-RESPONDING##

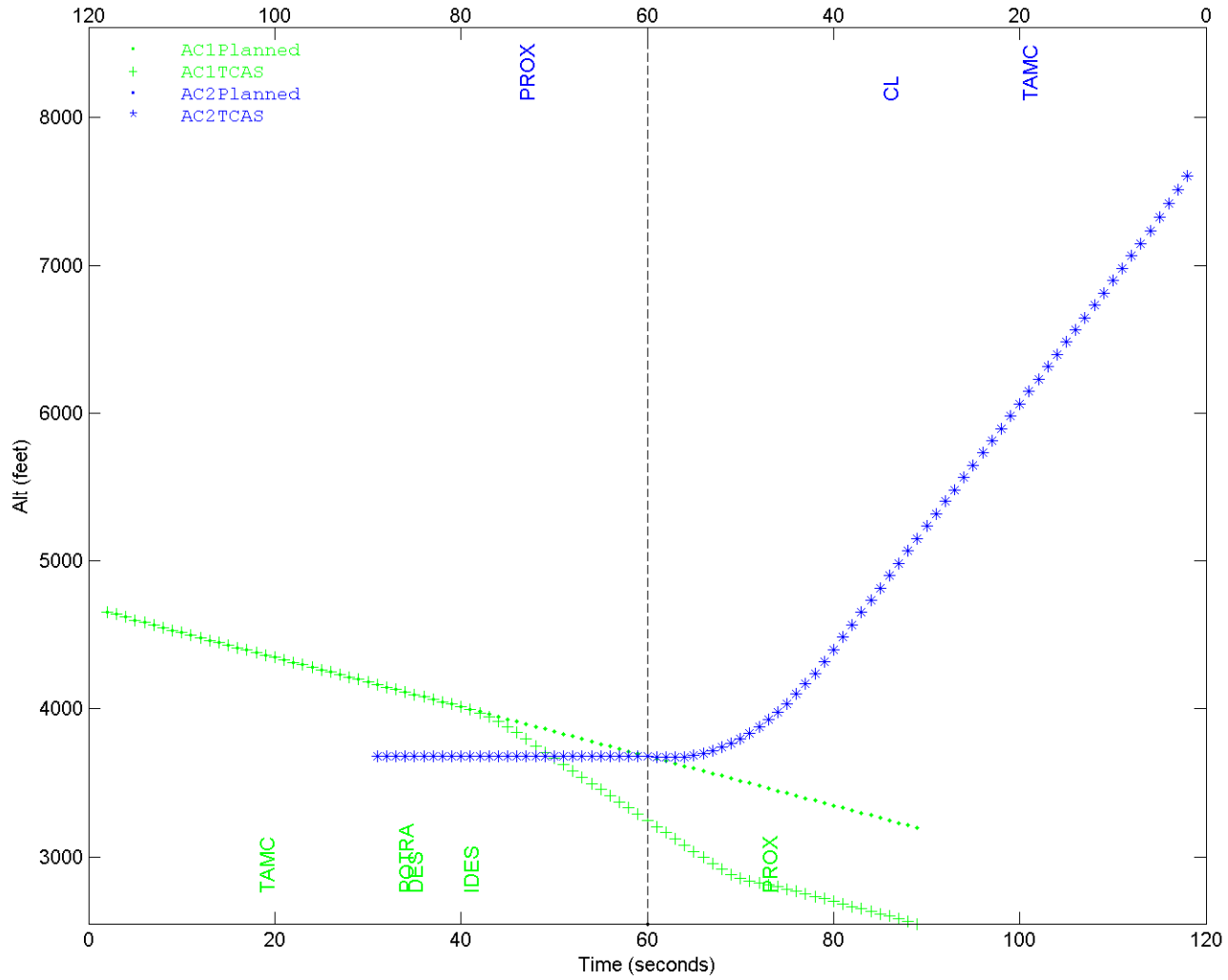
585 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 6 91.64 CROSSING_ENC
5 AC1:*REV*8175035 TA :19 |TAUR| POTRA@34 | DES @35[NX]| IDES @41| CL @48| ICL@51
10 AC2:*REV*8275153 TA :19 |TAUR| CL @34[NX]| DES @48 ##NON-RESPONDING##

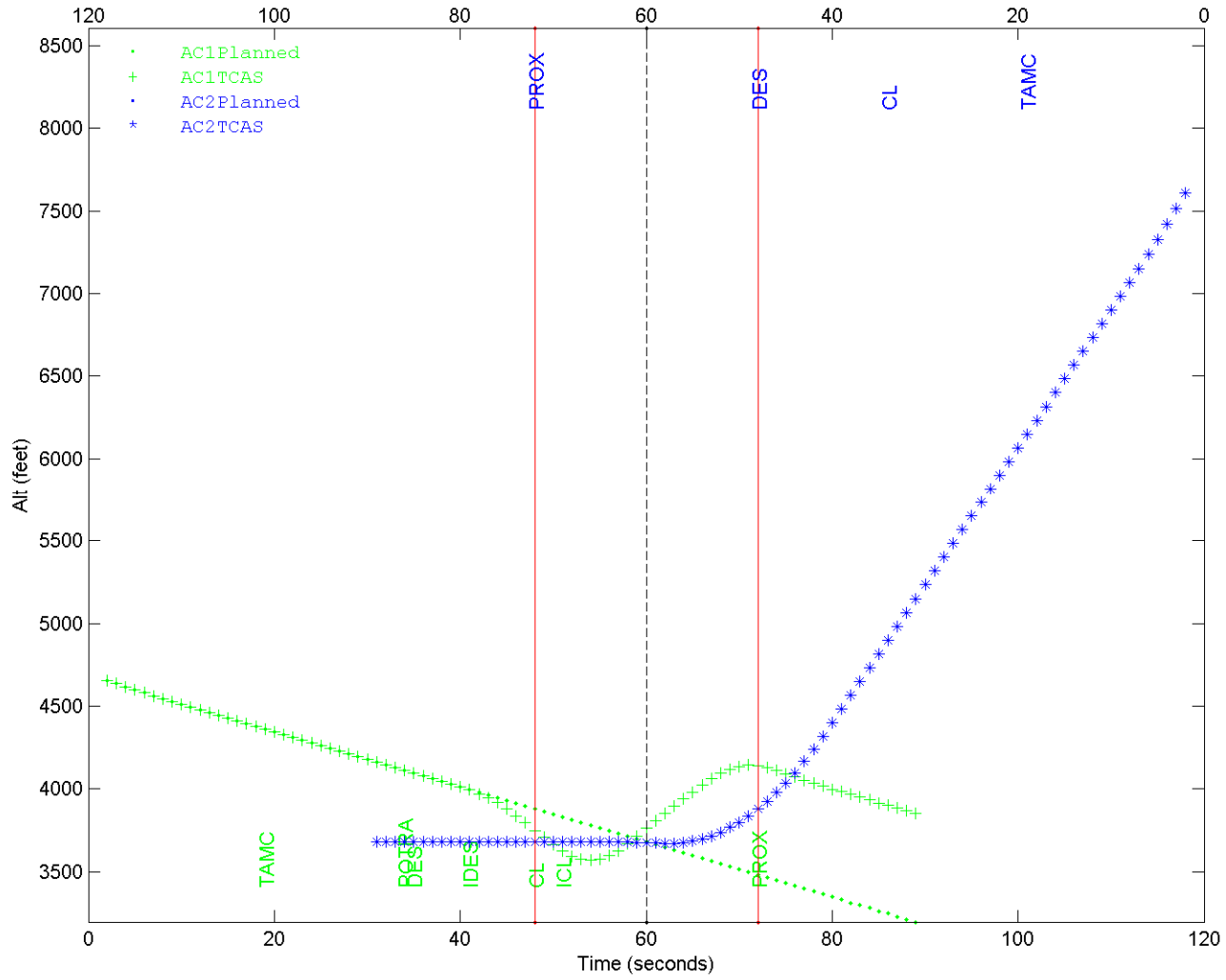
585 V7.1 25 FT R L VS V7.1 25 FT NR H 6 91.64 CROSSING_ENC
5 AC1:*REV*8175035 TA :19 |TAUR| POTRA@34 | DES @35[NX]| IDES @41| CL @48| ICL@51
10 AC2:*REV*8275153 TA :19 |TAUR| CL @34 [NX]| DES @48 ##NON-RESPONDING##

reit: 585 cata: 616 simmode: 4165024 6.04A Vs 6.04A L26585A

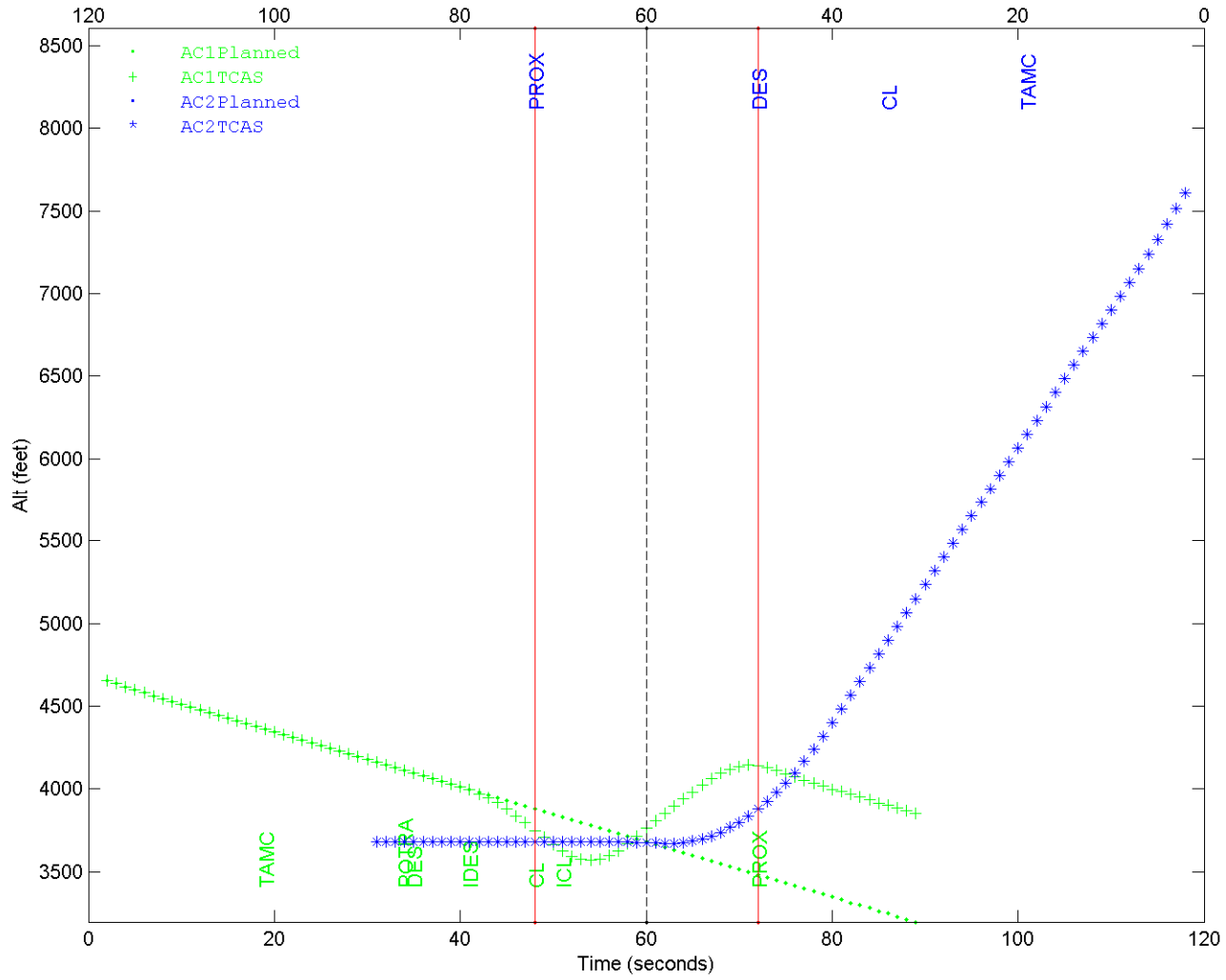


reit: 585 cata: 616 simmode: 4175035 V7-25 Vs V7-25 L26585B





reit: 585 cata: 616 simmode: 8175035 V7.1-25 Vs V7.1-25 L26585D



Change 7.1 Non-responding Representative NMAC Unres2

Encounter Class: 9

Reit Number : 7421

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 1 |
| AC1 low ID | no |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | 0 ft |
| AC1 rates: | 5000 fpm |
| AC2 rates: | 3000 fpm |
| AC1 acceleration: | -0.15 g |
| AC2 acceleration: | -0.15 g |
| AC1 acceleration time: | CPA – 25 sec |
| AC2 acceleration time: | CPA – 20 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 72 | % of RAs were non-crossing |
| 0 | % of NMACs were non-crossing |
| 98 | % of RAs were not reversed |
| 95 | % of NMACs were not reversed |

Comments

New reversal is triggered by responding aircraft. Aircraft 1 planned level-off maneuver defeats new reversal.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H197421
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(5000.0,0.0) AC2 RATES(3000.0,0.0)
AC1 ACCEL -0.15g @ CPA -25 AC2 ACCEL -0.15g @ CPA -20 AC1 CPA ALT 7500

7421 6.04A NR H VS 6.04A NR L 19 -704.79 NON_CROSSING_ENC

10 AC1: 4165142 TA :19 |TAUR| POTRA@34 (DFD)| DES @35 [NX]| LC1 @53 ##NON-RESPONDING##

5 AC2: 4265024 TA :19 |TAUR| MCL @34 [NX]| ICL @40 | LD5 @55

7421 V7 25 FT NR H VS V7 25 FT R L 19 -704.79 NON_CROSSING_ENC

10 AC1: 4275053 TA :19 |TAUR| LC1 @34 [NX] ##NON-RESPONDING##

5 AC2: 4175135 TA :19 |TAUR| CL @34 [NX]| DDES @55

7421 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 19 77.57 CROSSING_ENC

10 AC1:*REV*8275053 TA :19 |TAUR| LC1 @34 [NX]| CL @46 | ICL @49 ##NON-RESPONDING##

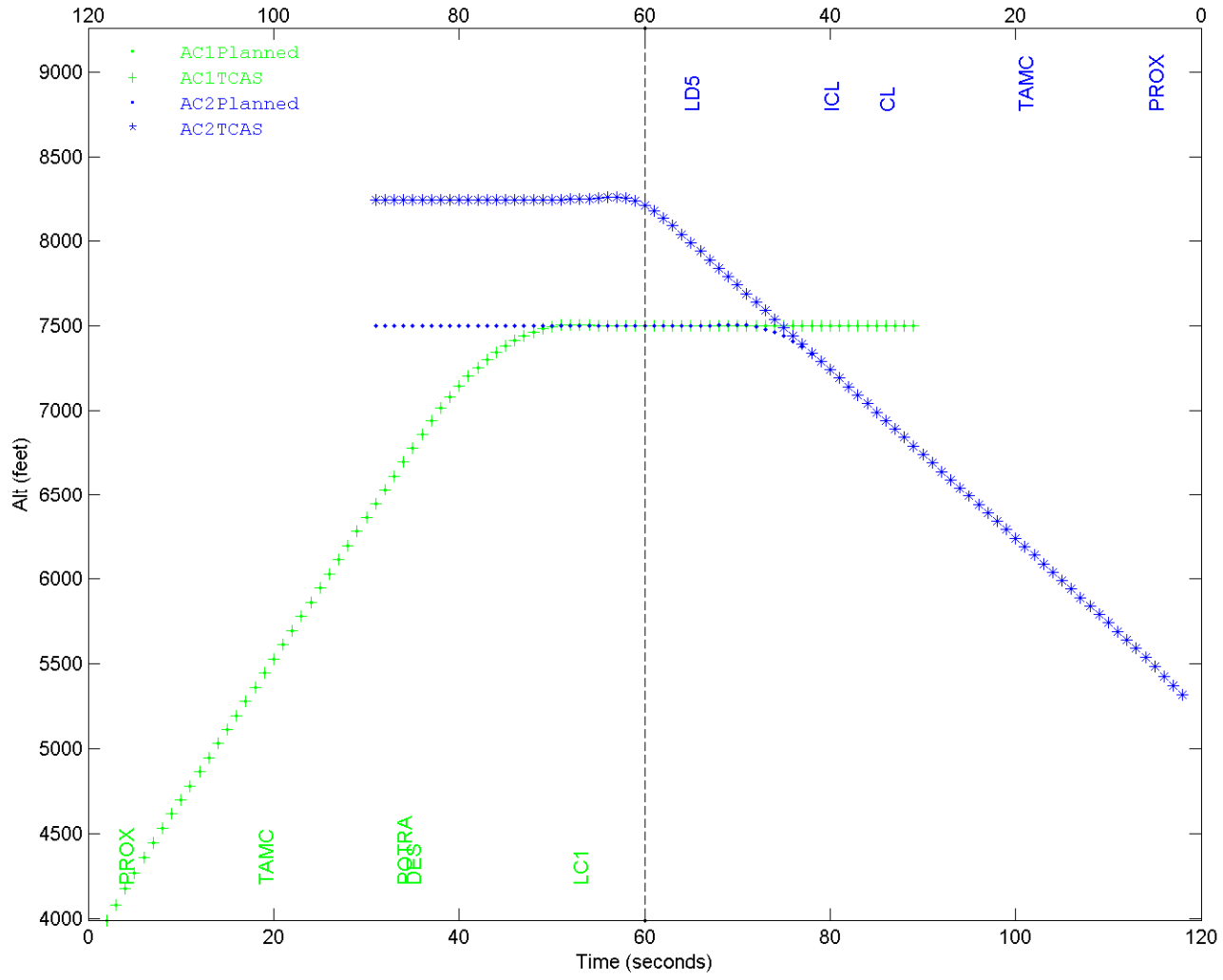
5 AC2:*REV*8175135 TA :19 |TAUR| CL @34 [NX]| DES @45 | IDES @48

7421 V7.1 25 FT NR H VS V7.1 25 FT R L 19 77.57 CROSSING_ENC

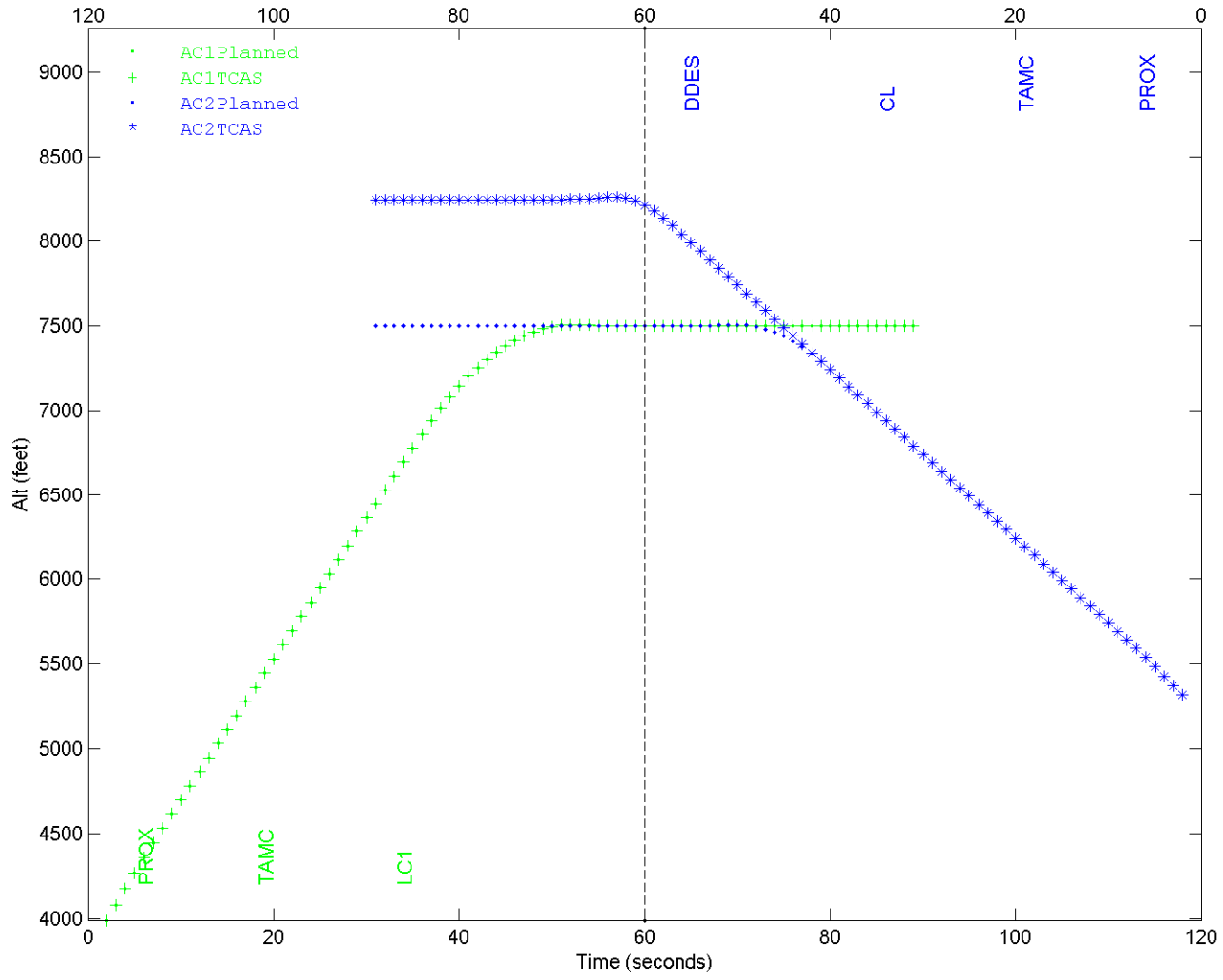
10 AC1:*REV*8275053 TA :19 |TAUR| DCL @34 [NX]| CL @46 | ICL @49 ##NON-RESPONDING##

5 AC2:*REV*8175135 TA :19 |TAUR| CL @34 [NX]| DES @45 | IDES @48

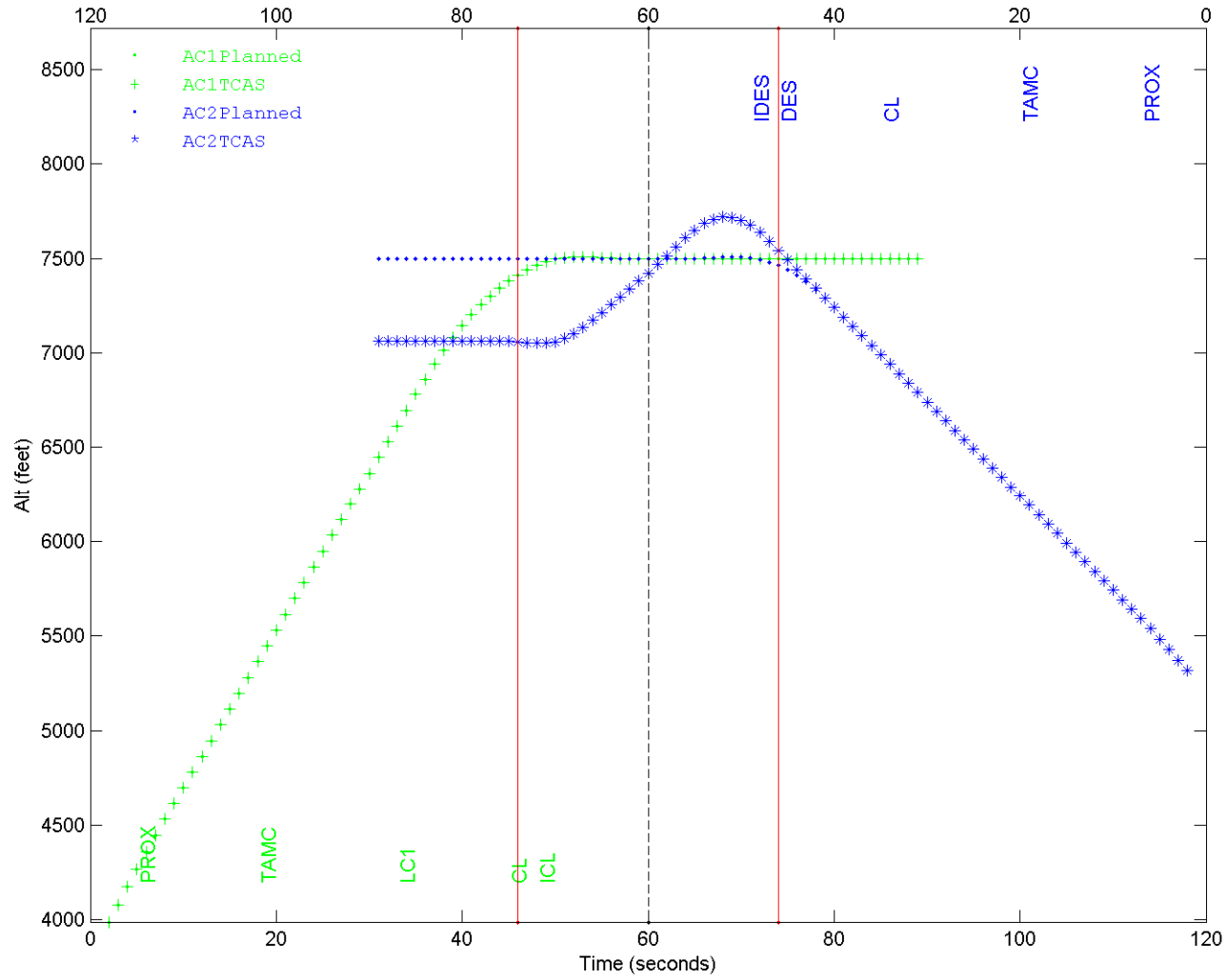
reit: 7421 cata: 919 simmode: 4165142 6.04A Vs 6.04A H197421A

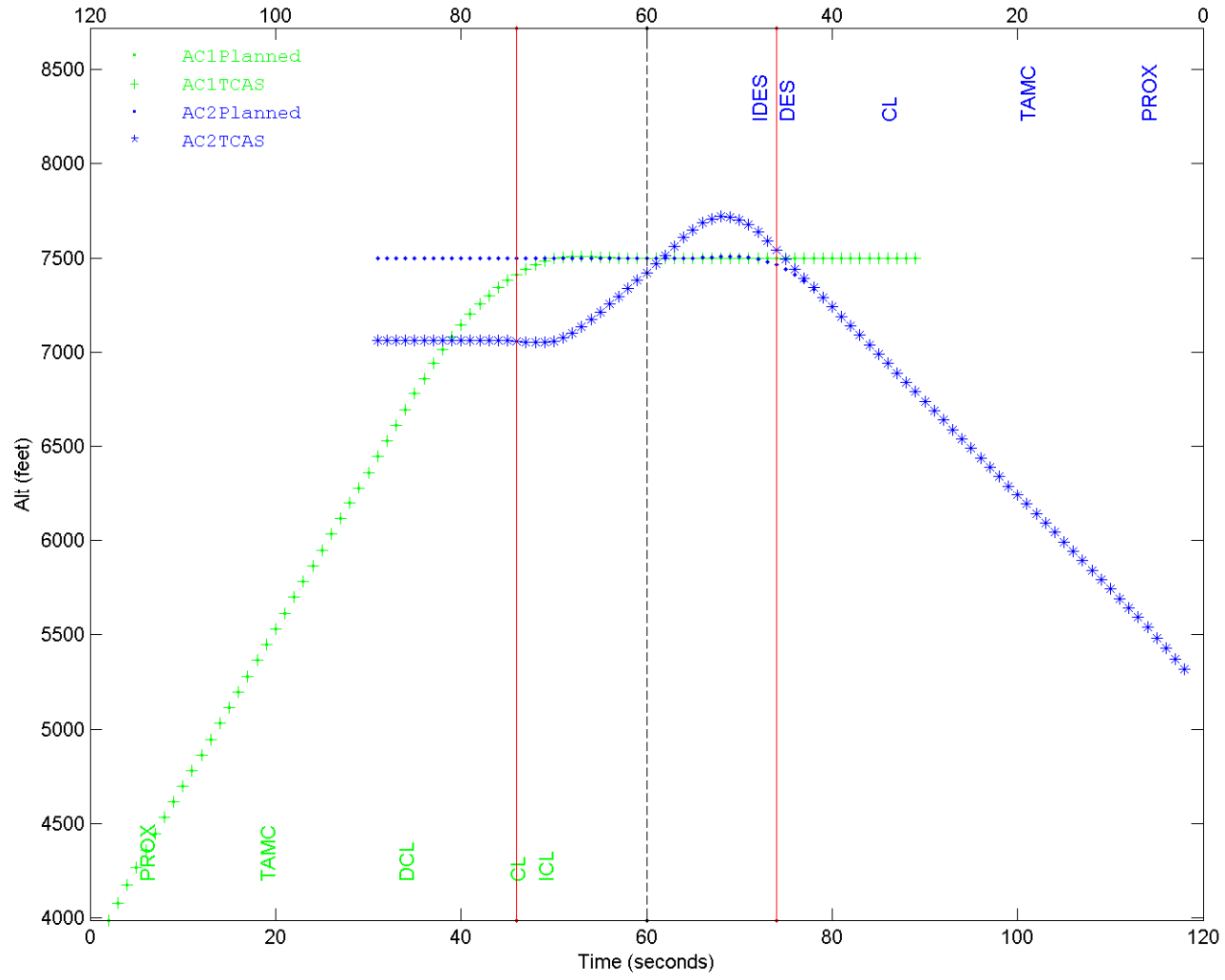


reit: 7421 cata: 919 simmode: 4275053 V7-25 Vs V7-25 H197421B



reit: 7421 cata: 919 simmode: 8275053 CP112EV1.2-25 Vs CP112EV1.2-25 H197421C





Induced NMACs

Change 7.1 Non-responding Representative NMAC Ind01

Encounter Class: 5

Reit Number : 4496

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 3 |
| AC1 low ID | no |
| Non-responding AC | 2 |
| Vertical tracker | 25 ft |
| Planned separation | +/-500 ft |
| AC1 rates: | 5000 fpm |
| AC2 rates: | 3000 fpm |
| AC1 acceleration: | none |
| AC2 acceleration: | 0.35 g |
| AC2 acceleration time: | CPA – 30 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 95 | % of RAs were non-crossing |
| 100 | % of NMACs were non-crossing |
| 96 | % of RAs were not reversed |
| 78 | % of NMACs were not reversed |

Comments

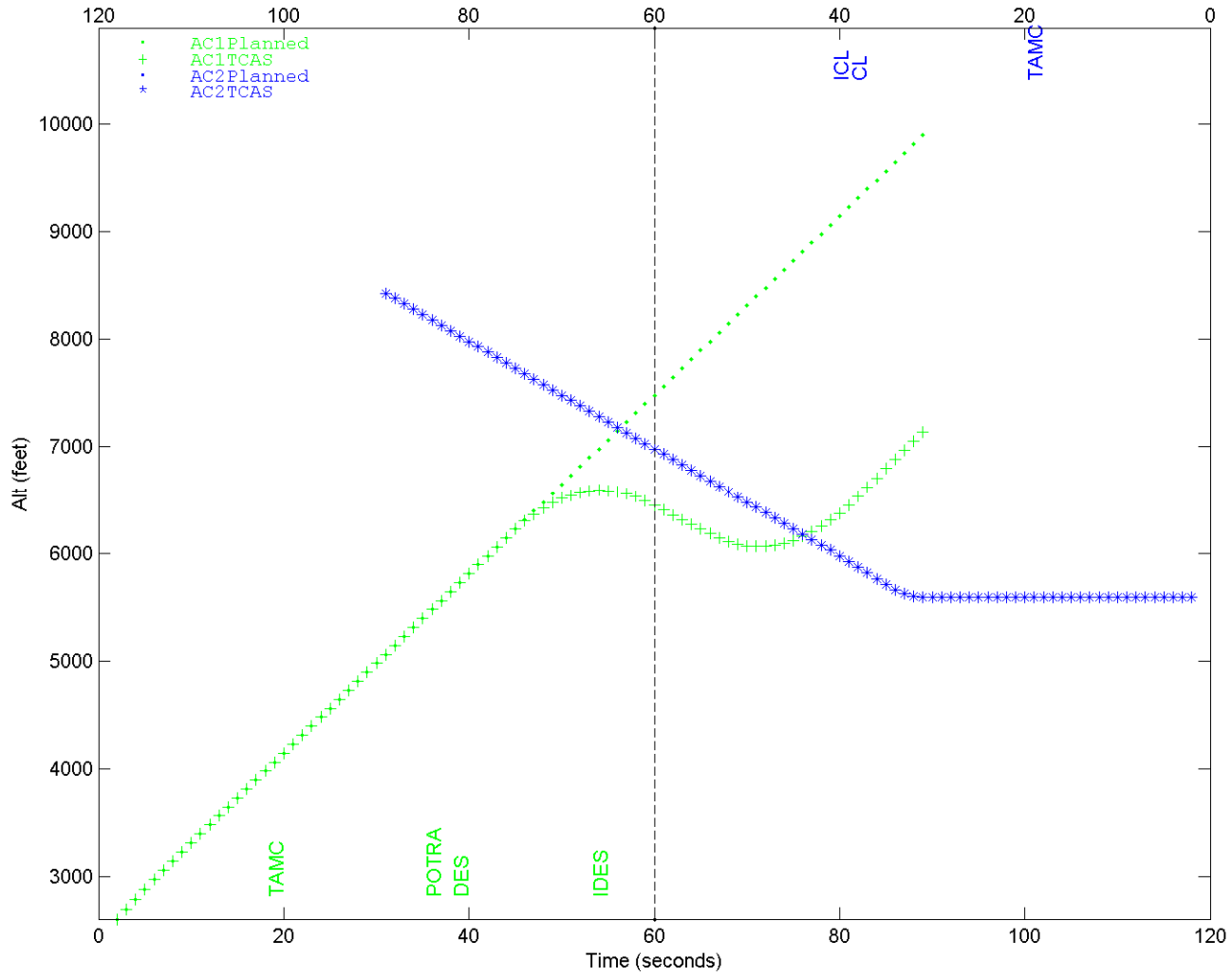
New reversal. Caused by CP112E. Non-responding aircraft 2 triggers reversal. Aircraft 1 climbing at 5000 fpm just beginning to show response to initial DES RA when reversal is forced by aircraft 2.

```

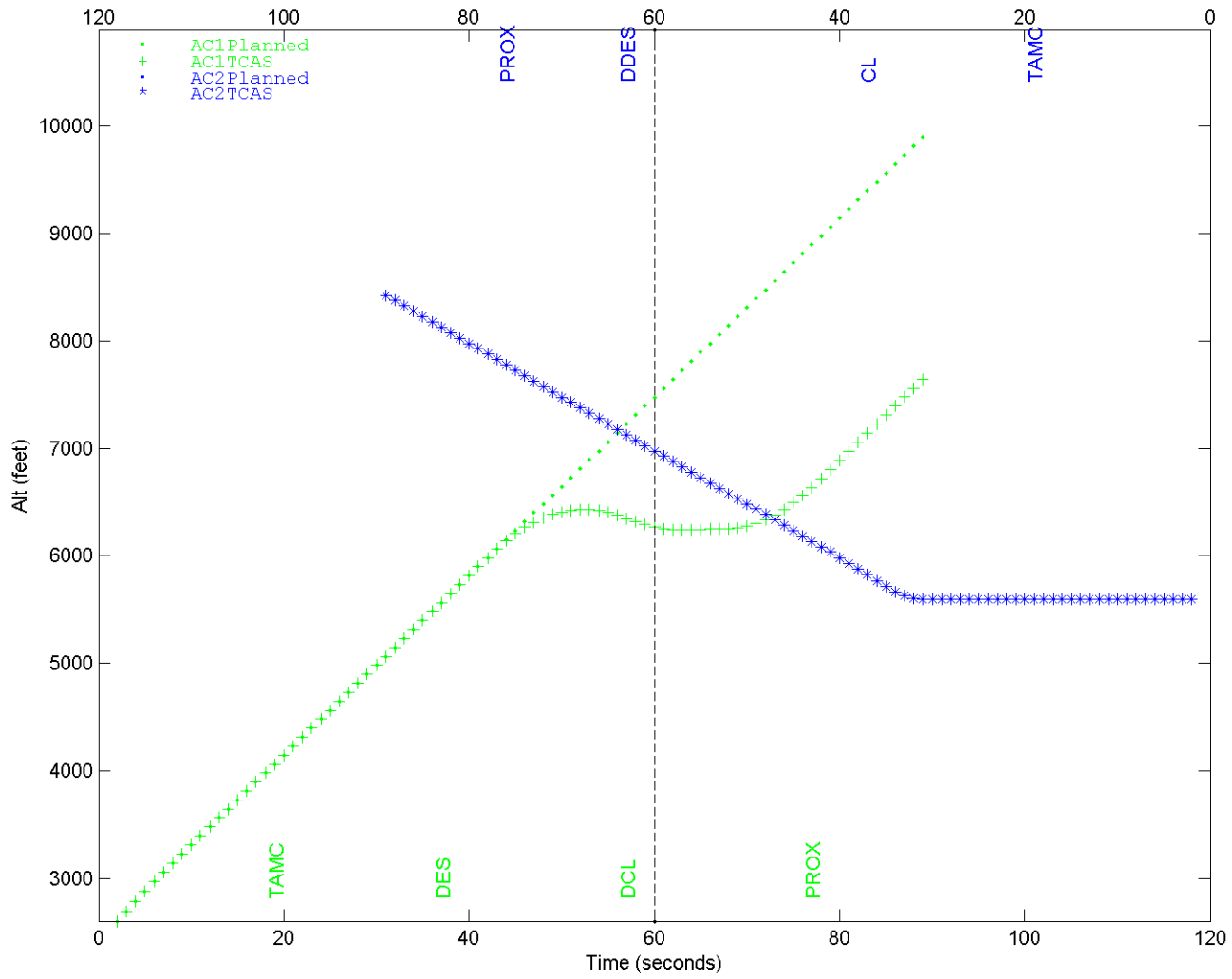
SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H254496
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(5000.0,5000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.35g @ CPA -30 AC1 CPA ALT 7480
-----
4496 6.04A R H VS 6.04A NR L 5 -543.08 CROSSING_ENC
10 AC1: 4165124 TA :19 |PVMD| POTRA@36 (DFD)| DES @39 [NX]| IDES @54
5 AC2: 4265042 TA :19 |PVMD| MCL @38 [NX]| ICL @40 | MCL @60 ##NON-RESPONDING##
-----
4496 V7 25 FT R H VS V7 25 FT NR L 5 -716.41 NON_CROSSING_ENC
10 AC1: 4275035 TA :19 |PVMD| DES @37 [NX]| DCL @57
5 AC2: 4175153 TA :19 |PVMD| CL @37 [NX]| DDES @63 ##NON-RESPONDING##
-----
4496 CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L 5 -58.43 CROSSING_ENC
10 AC1:*REV*8275035 TA :19 |PVMD| DES @37 [NX]| CL @49
5 AC2:*REV*8175153 TA :19 |PVMD| CL @37 [NX]| DES @48 | IDES @53 ##NON-RESPONDING##
-----
4496 V7.1 25 FT R H VS V7.1 25 FT NR L 5 -58.43 CROSSING_ENC
10 AC1:*REV*8275035 TA :19 |PVMD| DES @37 [NX]| CL @49
5 AC2:*REV*8175153 TA :19 |PVMD| CL @37 [NX]| DES @48 | IDES @53 ##NON-RESPONDING##

```

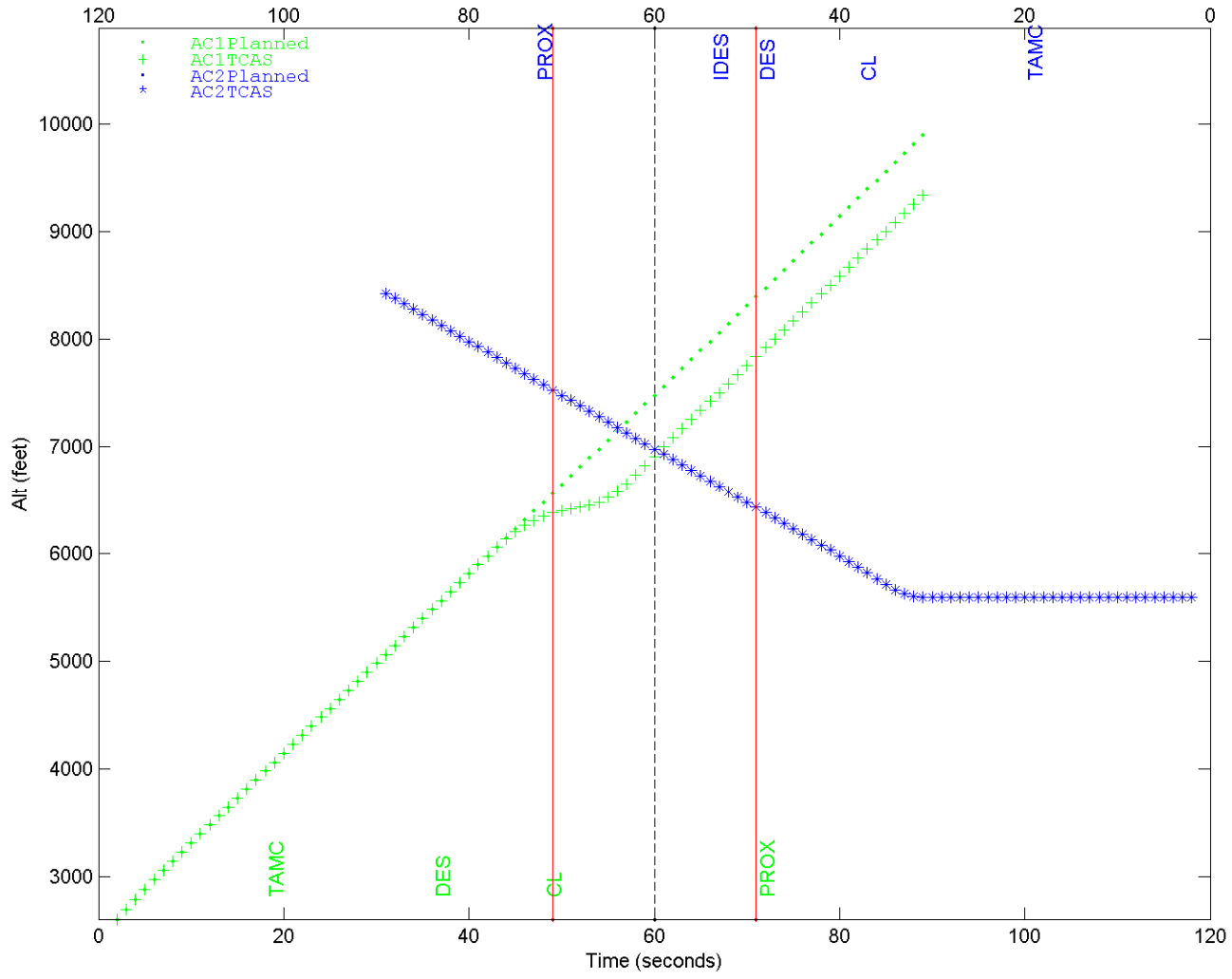
reit: 4496 cata: 515 simmode: 4165124 6.04A Vs 6.04A H254496A

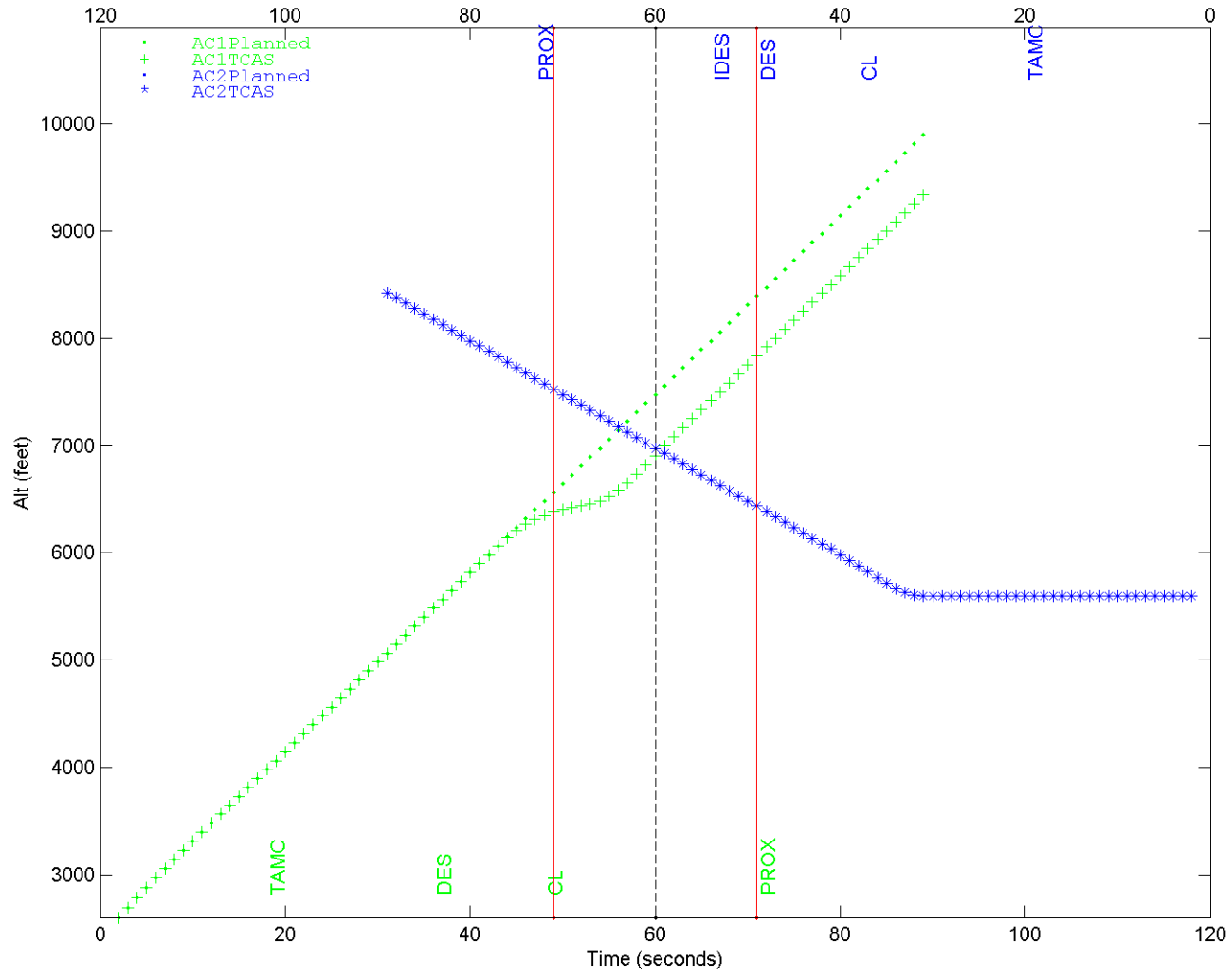


reit: 4496 cata: 515 simmode: 4275035 V7-25 Vs V7-25 H254496B



reit: 4496 cata: 515 simmode: 8275035 CP112EV1.2-25 Vs CP112EV1.2-25 H254496C





Change 7.1 Non-responding Representative NMAC Ind02

Encounter Class: 5

Reit Number : 650

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 2 |
| AC1 low ID | no |
| Non-responding AC | 2 |
| Vertical tracker | 25 ft |
| Planned separation | -500 ft |
| AC1 rates: | -1000 fpm |
| AC2 rates: | 1000 fpm |
| AC1 acceleration: | none |
| AC2 acceleration: | 0.25 g |
| AC2 acceleration time: | CPA – 20 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 95 | % of RAs were non-crossing |
| 100 | % of NMACs were non-crossing |
| 96 | % of RAs were not reversed |
| 78 | % of NMACs were not reversed |

Comments

New NMAC is caused by CP112E. Aircraft 1 and aircraft 2 are essentially co-altitude when initial RA occurs.

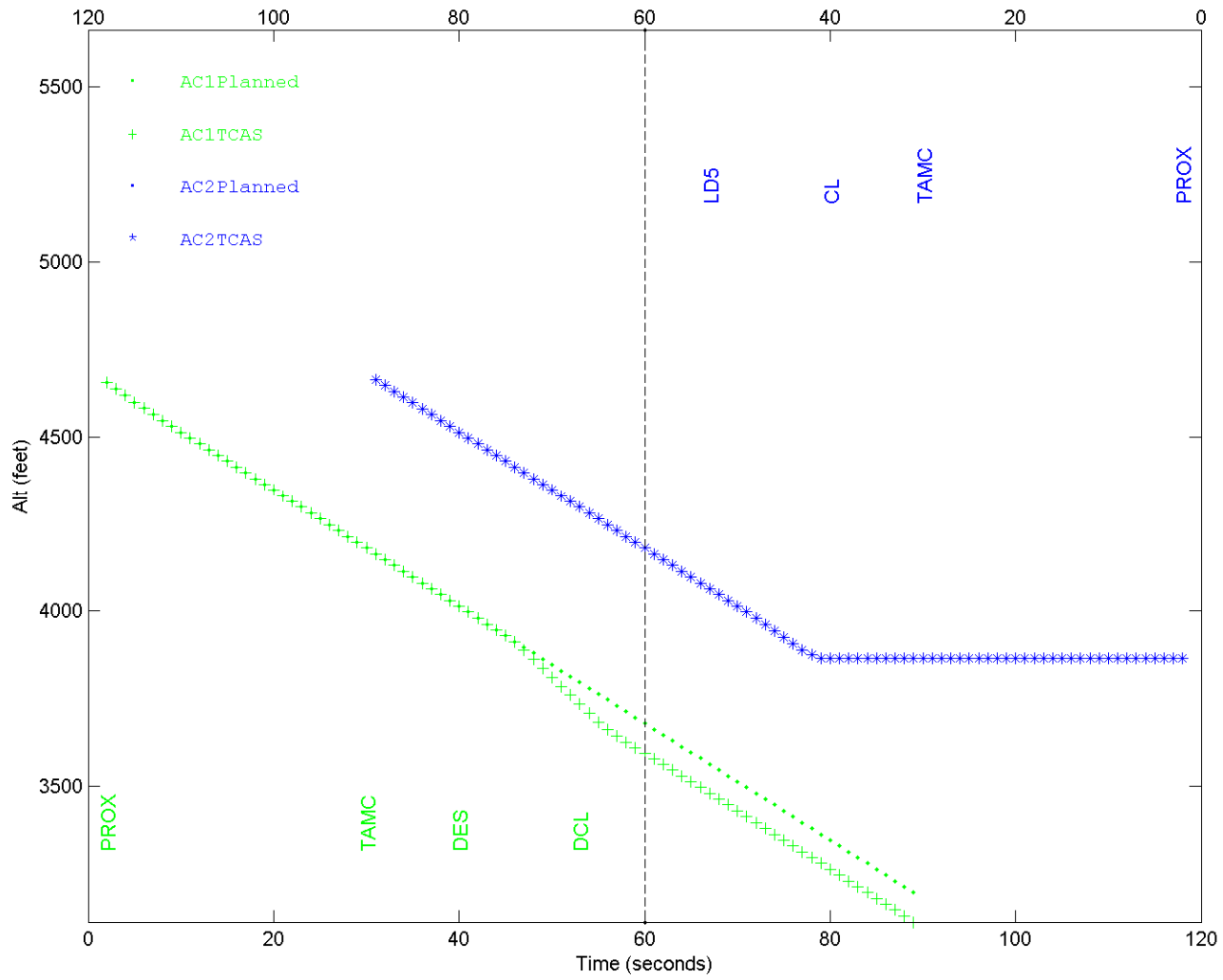
Level aircraft gets DES RA and descending aircraft gets CL.

With 6.04a level aircraft gets CL RA and descending aircraft gets DES RA with much better outcome.

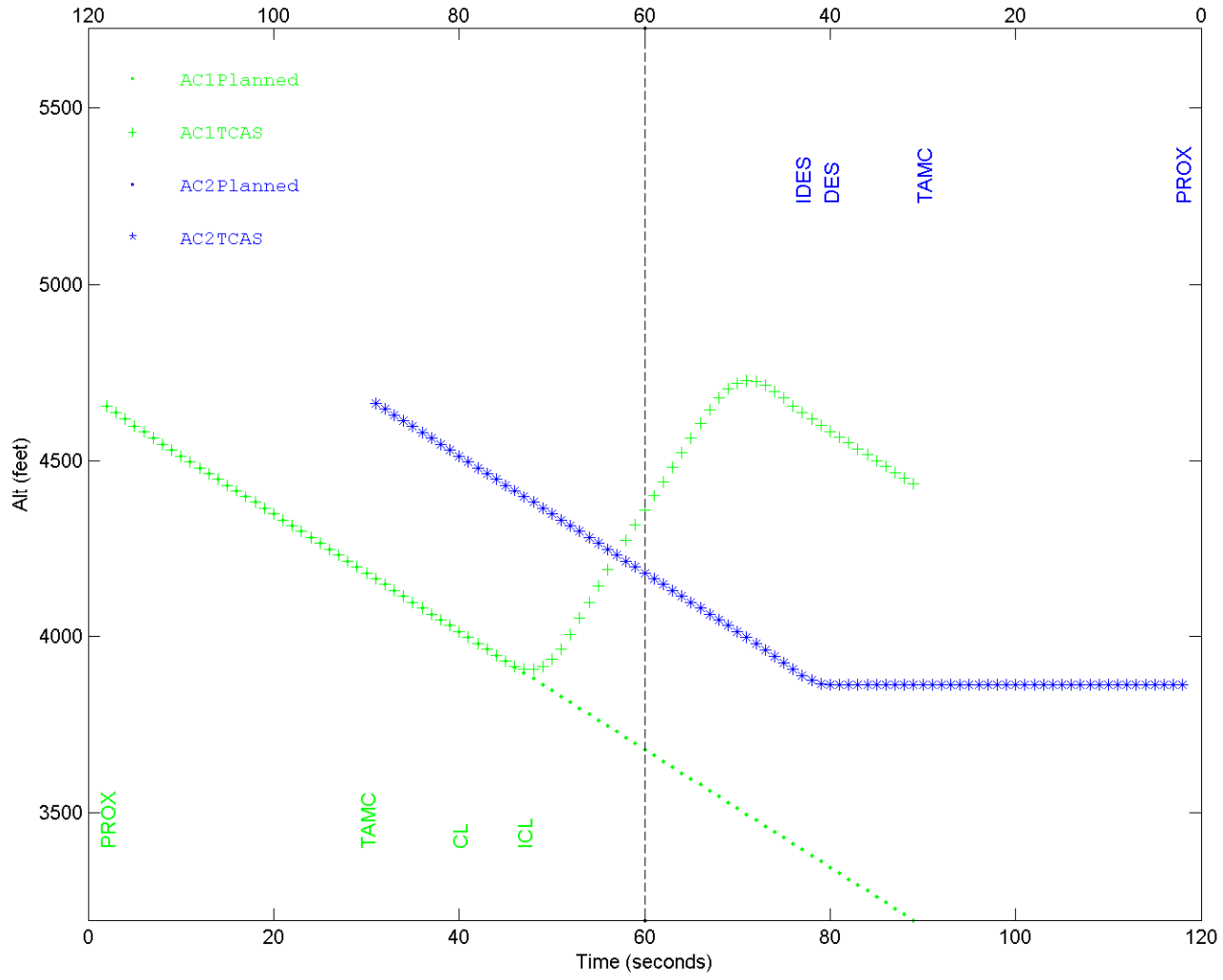
SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L25650
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(-1000.0,-1000.0) AC2 RATES(0.0,1000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -20 AC1 CPA ALT 3680

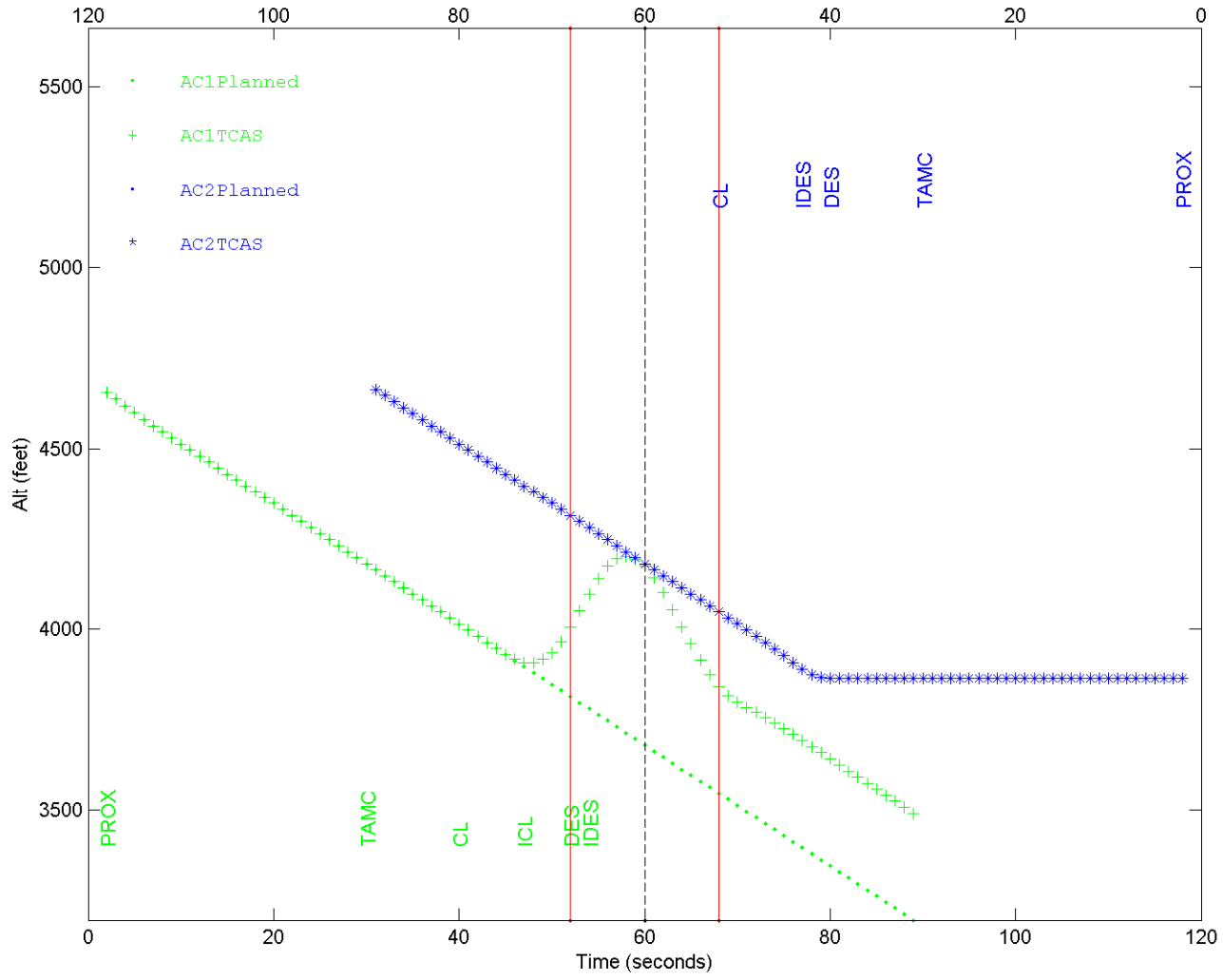
```
-----  
650 6.04A R L VS 6.04A NR H 5 -583.33 CROSSING_ENC  
5 AC1: 4165024 TA :30 |TAUR| DES @40 [X] | DCL @53  
10 AC2: 4265142 TA :30 |TAUR| CL @40 [X] | LD5 @53 ##NON-RESPONDING##  
-----  
650 V7 25 FT R L VS V7 25 FT NR H 5 175.62 CROSSING_ENC  
5 AC1: 4175035 TA :30 |TAUR| CL @40 [NX]| ICL @47  
10 AC2: 4275153 TA :30 |TAUR| DES @40 [NX]| IDES @43 ##NON-RESPONDING##  
-----  
650 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 5 -27.06 CROSSING_ENC  
5 AC1:*REV*8175035 TA :30 |TAUR| CL @40 [NX]| ICL @47 | DES @52 | IDES @54  
10 AC2:*REV*8275153 TA :30 |TAUR| DES @40 [NX]| IDES @43 | CL @52 ##NON-RESPONDING##  
-----  
650 V7.1 25 FT R L VS V7.1 25 FT NR H 5 -27.06 CROSSING_ENC  
5 AC1:*REV*8175035 TA :30 |TAUR| CL @40 [NX]| ICL @47 | DES @52 | IDES @54  
10 AC2:*REV*8275153 TA :30 |TAUR| DES @40 [NX]| IDES @43 | CL @52 ##NON-RESPONDING##
```

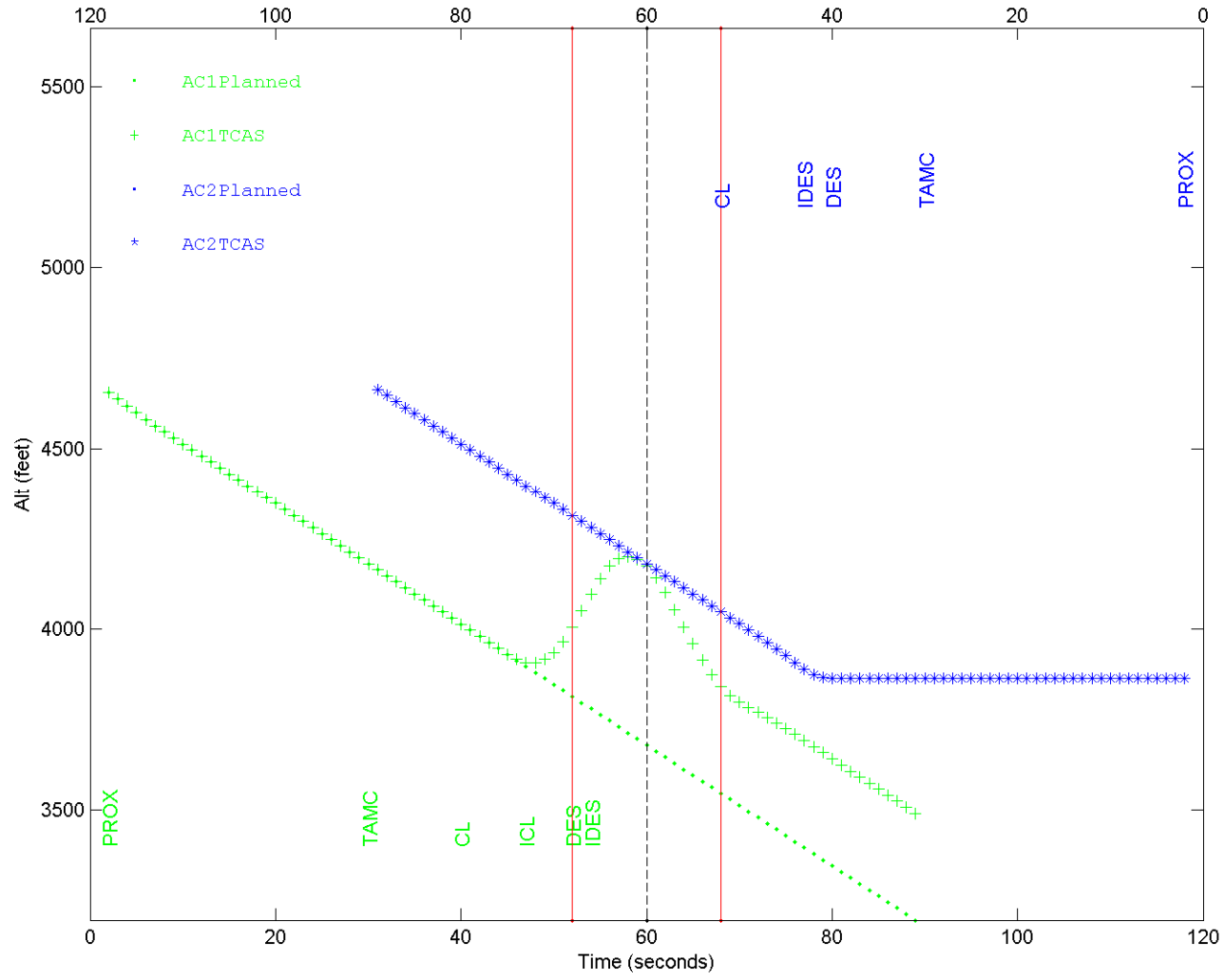
reit: 650 cata: 515 simmode: 4165024 6.04A Vs 6.04A L25650A



reit: 650 cata: 515 simmode: 4175035 V7-25 Vs V7-25 L25650B







Change 7.1 Non-responding Representative NMAC Ind03

Encounter Class: 5

Reit Number : 5718

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 2 |
| AC1 low ID | yes |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | -500 ft |
| AC1 rates: | 3000 fpm |
| AC2 rates: | 5000 fpm |
| AC1 acceleration: | none |
| AC2 acceleration: | 0.25 g |
| AC2 acceleration time: | CPA – 30 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 95 | % of RAs were non-crossing |
| 100 | % of NMACs were non-crossing |
| 96 | % of RAs were not reversed |
| 78 | % of NMACs were not reversed |

Comments

New NMAC is caused by CP115. This encounter is not an NMAC for CP112E.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L155718
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,5000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -30 AC1 CPA ALT 7520

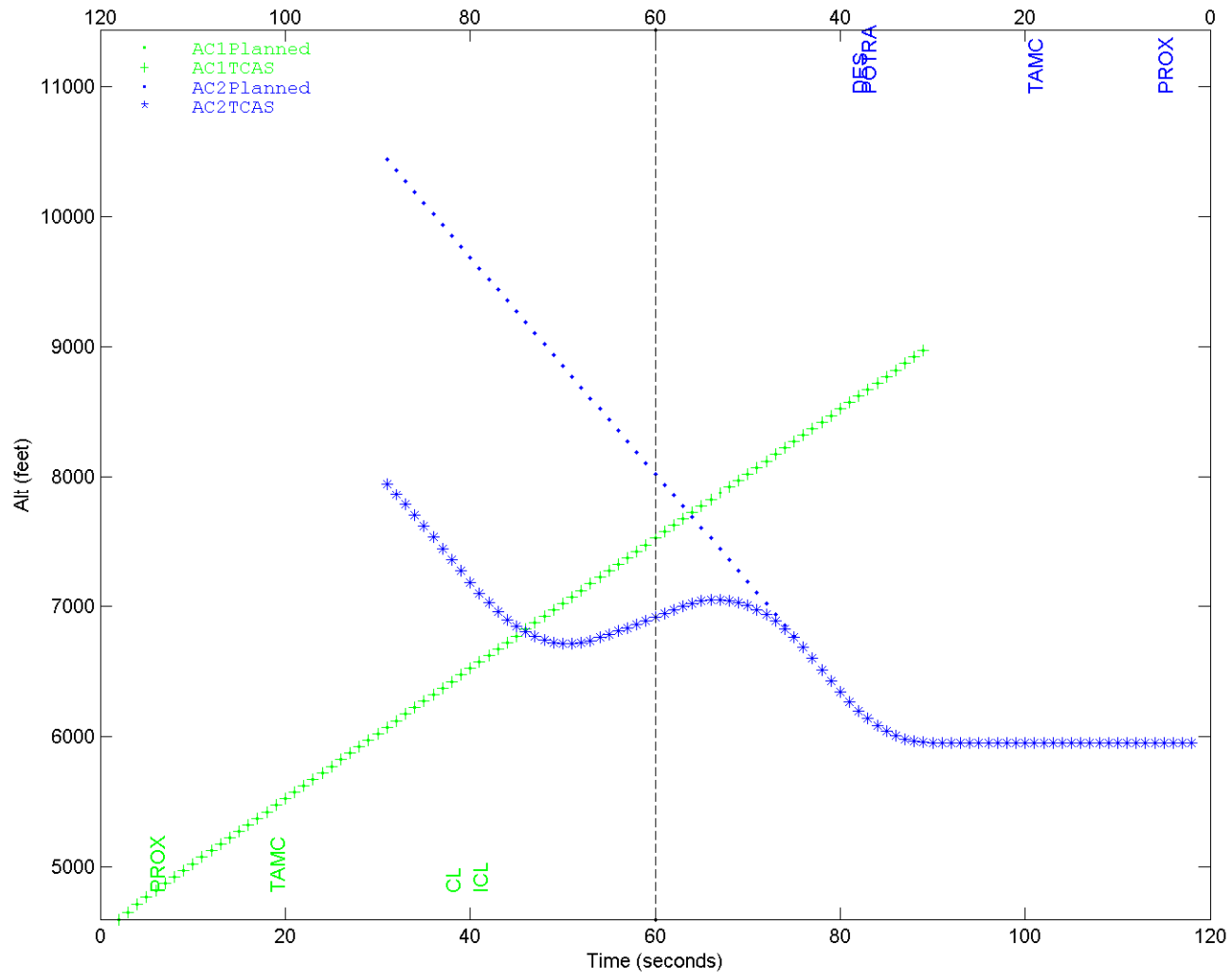
5718 6.04A NR L VS 6.04A R H 5 612.09 CROSSING_ENC
5 AC1: 4165042 TA :19 |PVMD| MCL @38 [NX]| ICL @41 | MCL @60 ##NON-RESPONDING##
10 AC2: 4265124 TA :19 |PVMD| POTRA@37 (DFD) | DES @38 [NX]

5718 V7 25 FT NR L VS V7 25 FT R H 5 870.16 CROSSING_ENC
5 AC1: 4175053 TA :19 |PVMD| POTRA@37 | CL @38 [NX] ##NON-RESPONDING##
10 AC2: 4275135 TA :19 |PVMD| LC2 @37 [NX]| LC1 @41| DES @42| IDES @45 | DCL @55

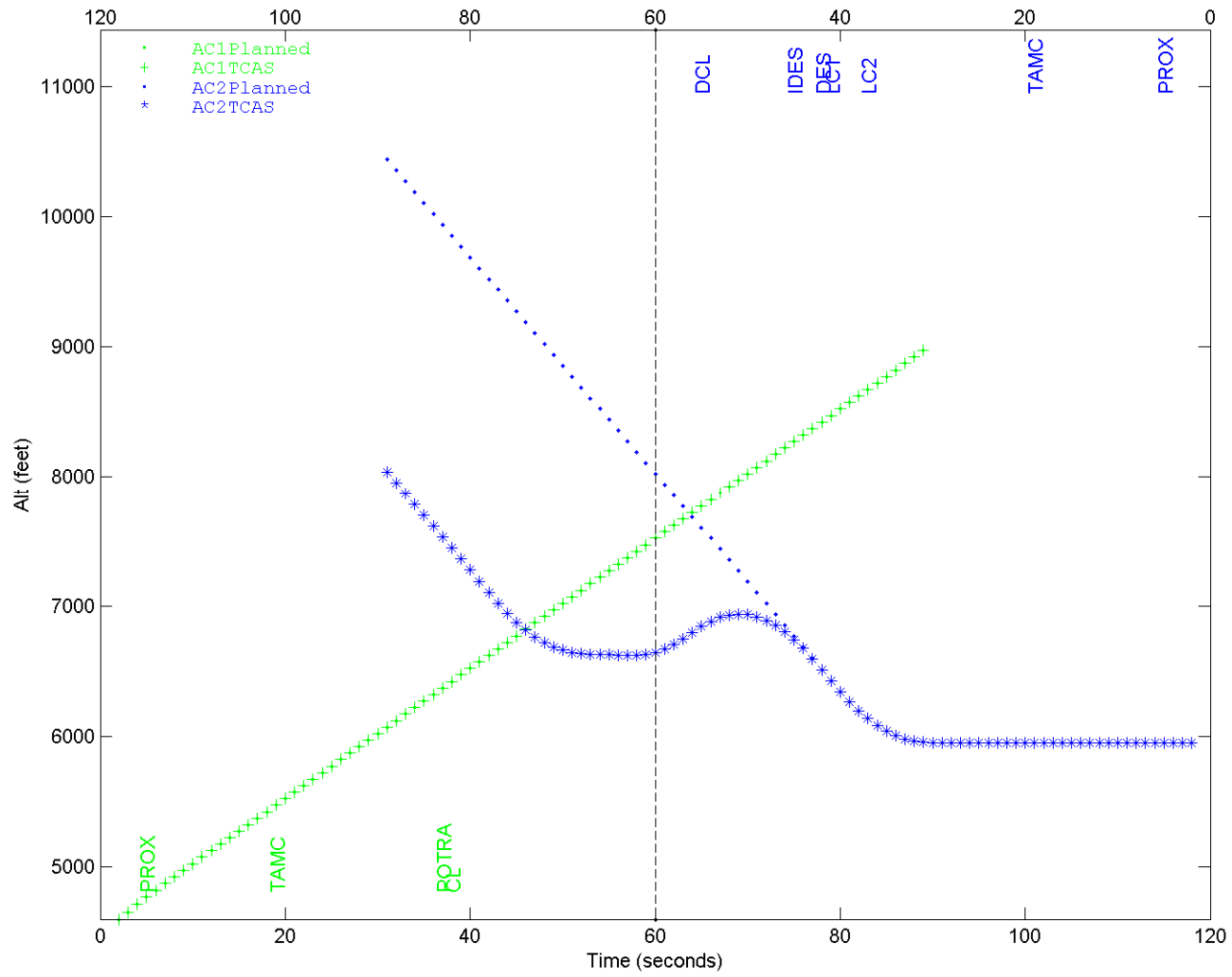
5718 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 5 174.24 CROSSING_ENC
5 AC1:*REV*8175053 TA :19 |PVMD| POTRA@37 | CL @38 [NX]| DES @49 ##NON-RESPONDING##
10 AC2:*REV*8275135 TA :19 |PVMD| LC2 @37[NX]| LC1 @41| DES @42| IDES @45| CL @49
| ICL @51

5718 V7.1 25 FT NR L VS V7.1 25 FT R H 5 58.42 CROSSING_ENC
5 AC1:*REV*8175053 TA :19 |PVMD| POTRA@37 | CL @38 [NX]| DES @49 | IDES @51 ##NON-RESPONDING##
10 AC2:*REV*8275135 TA :19 |PVMD| DCL @37 [NX]| CL @49

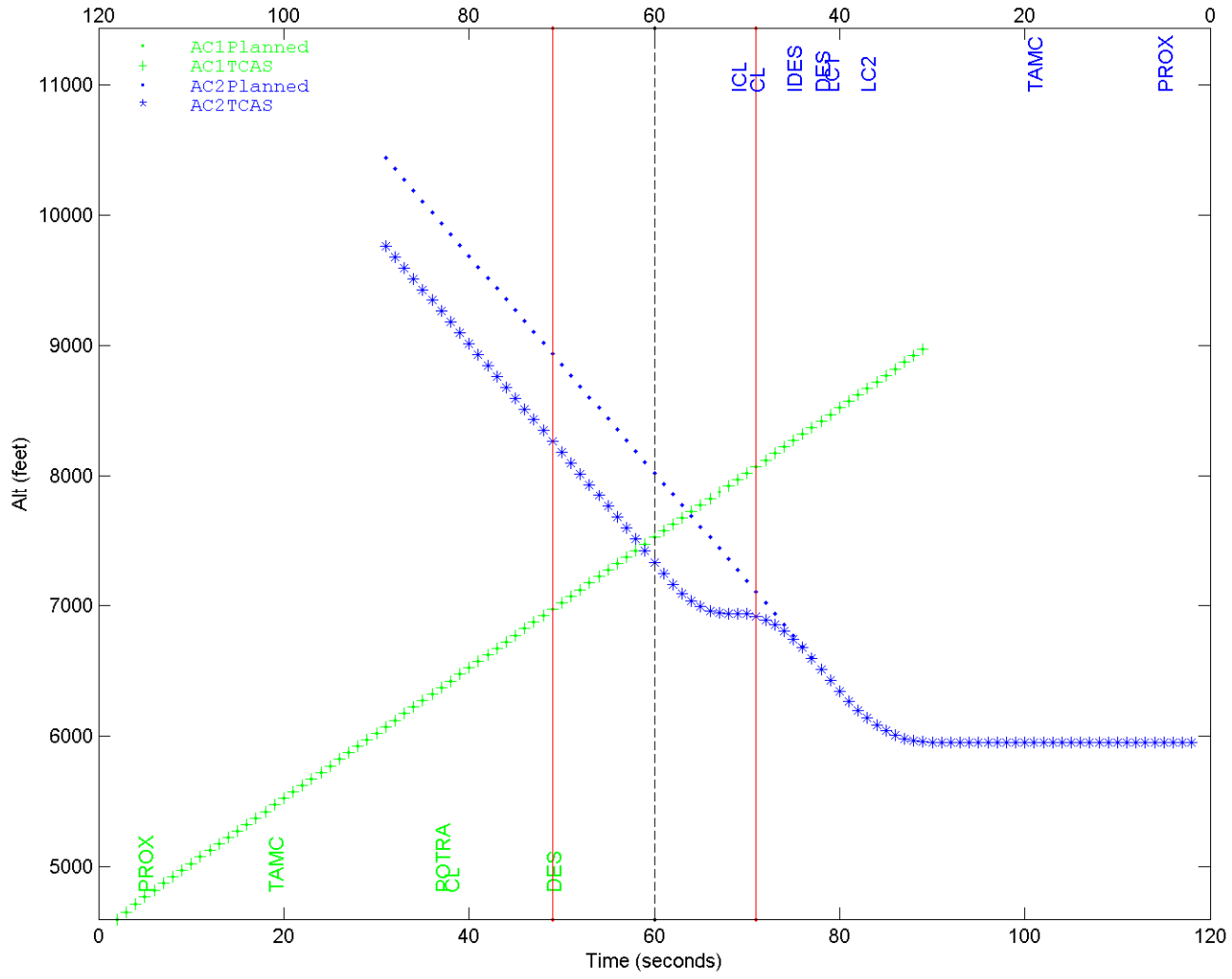
reit: 5718 cata: 515 simmode: 4165042 6.04A Vs 6.04A L155718A

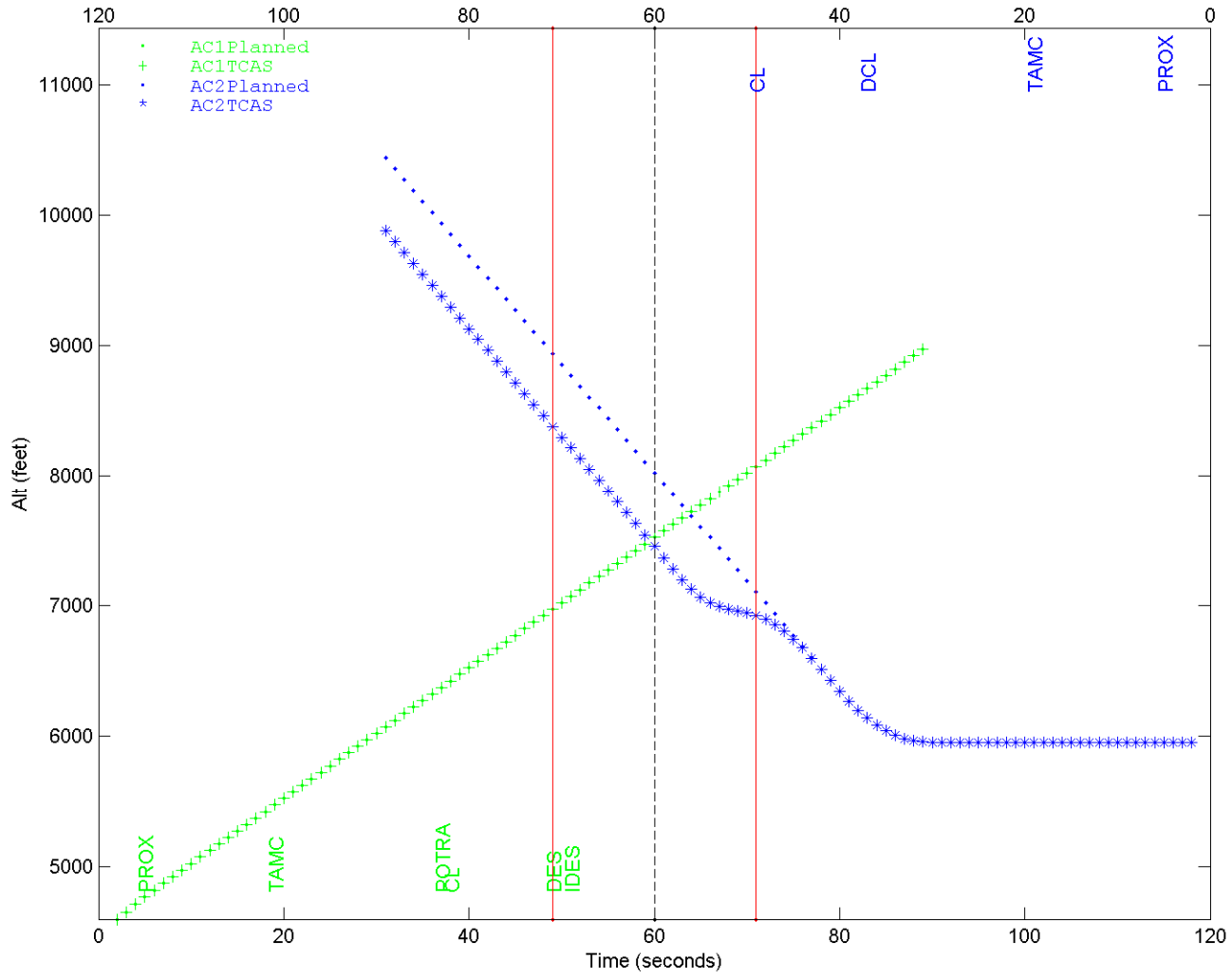


reit: 5718 cata: 515 simmode: 4175053 V7-25 Vs V7-25 L155718B



reit: 5718 cata: 515 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L155718C





Change 7.1 Non-responding Representative NMAC Ind04

Encounter Class: 6

Reit Number : 3352

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 1 |
| AC1 low ID | no |
| Non-responding AC | 2 |
| Vertical tracker | 25 ft |
| Planned separation | -500 ft |
| AC1 rates: | -3000 fpm |
| AC2 rates: | -5000 fpm |
| AC1 acceleration: | none |
| AC2 acceleration: | 0.15 g |
| AC2 acceleration time: | CPA – 25 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 85 | % of RAs were non-crossing |
| 67 | % of NMACs were non-crossing |
| 96 | % of RAs were not reversed |
| 78 | % of NMACs were not reversed |

Comments

New NMAC caused by CP112E. CP115 + CP112E better than just CP112E, but still NMAC.
Non-responding aircraft 2 planned level-off maneuver triggers reversal to climb.
6.04a was NMAC also.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H263352
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(-3000.0,-3000.0) AC2 RATES(-5000.0,0.0)
 AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.15g @ CPA -25 AC1 CPA ALT 7480

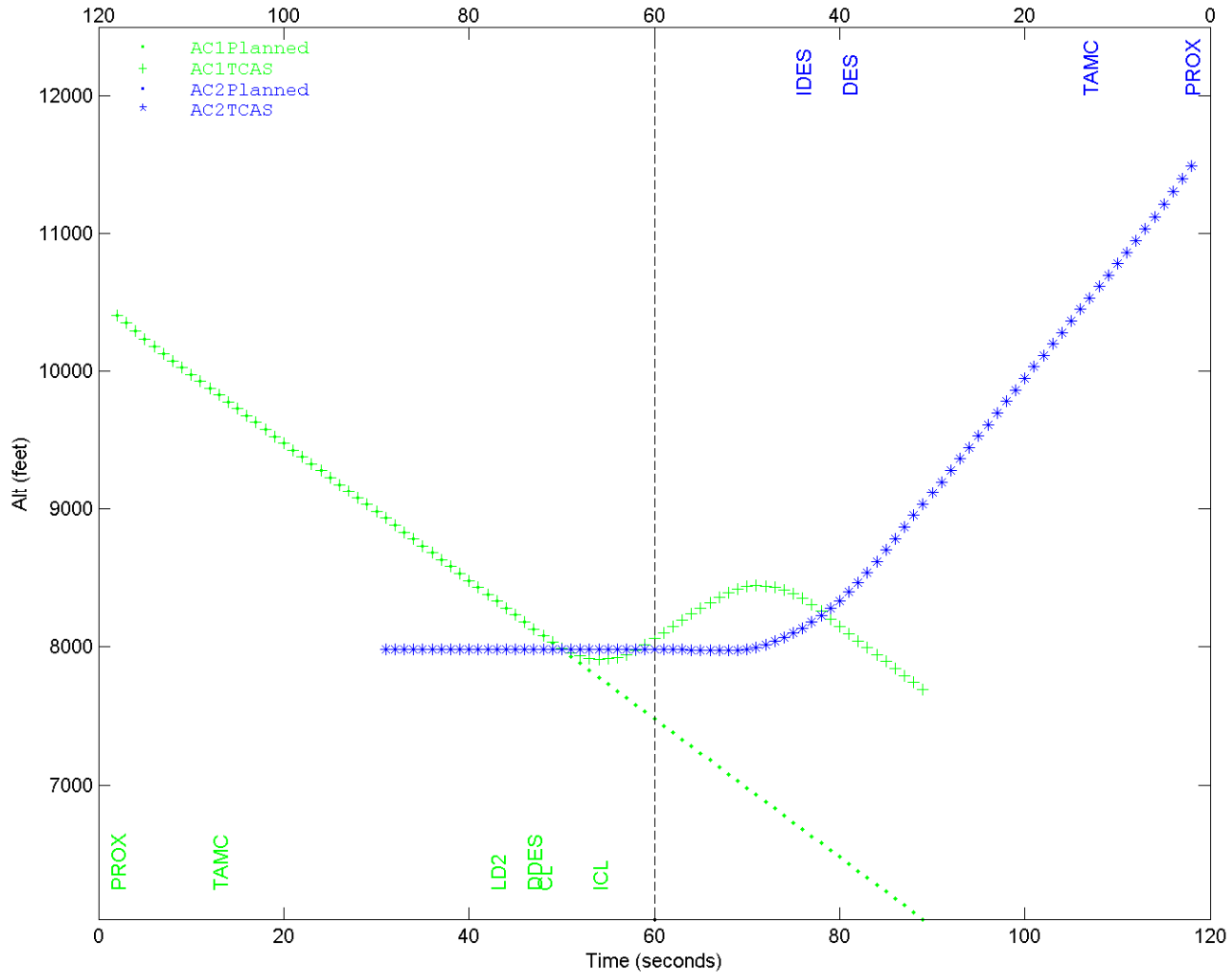
 3352 6.04A R H VS 6.04A NR L 6 90.89 CROSSING_ENC
 10 AC1: 4165124 TA :13 |PVMD| LD2 @43 [NX]| DDES @47 | CL @48 | ICL @54
 5 AC2: 4265042 TA :13 |PVMD| MDES @39 [NX]| DES @41 | IDES @44 ##NON-
 RESPONDING##

 3352 V7 25 FT R H VS V7 25 FT NR L 6 386.10 CROSSING_ENC
 10 AC1: 4275035 TA :13 |PVMD| LD2 @40 [NX]| LD1 @44 | DDES @45 | CL @46 | ICL
 @49
 5 AC2: 4175153 TA :13 |PVMD| DES @39 [NX]##NON-RESPONDING##

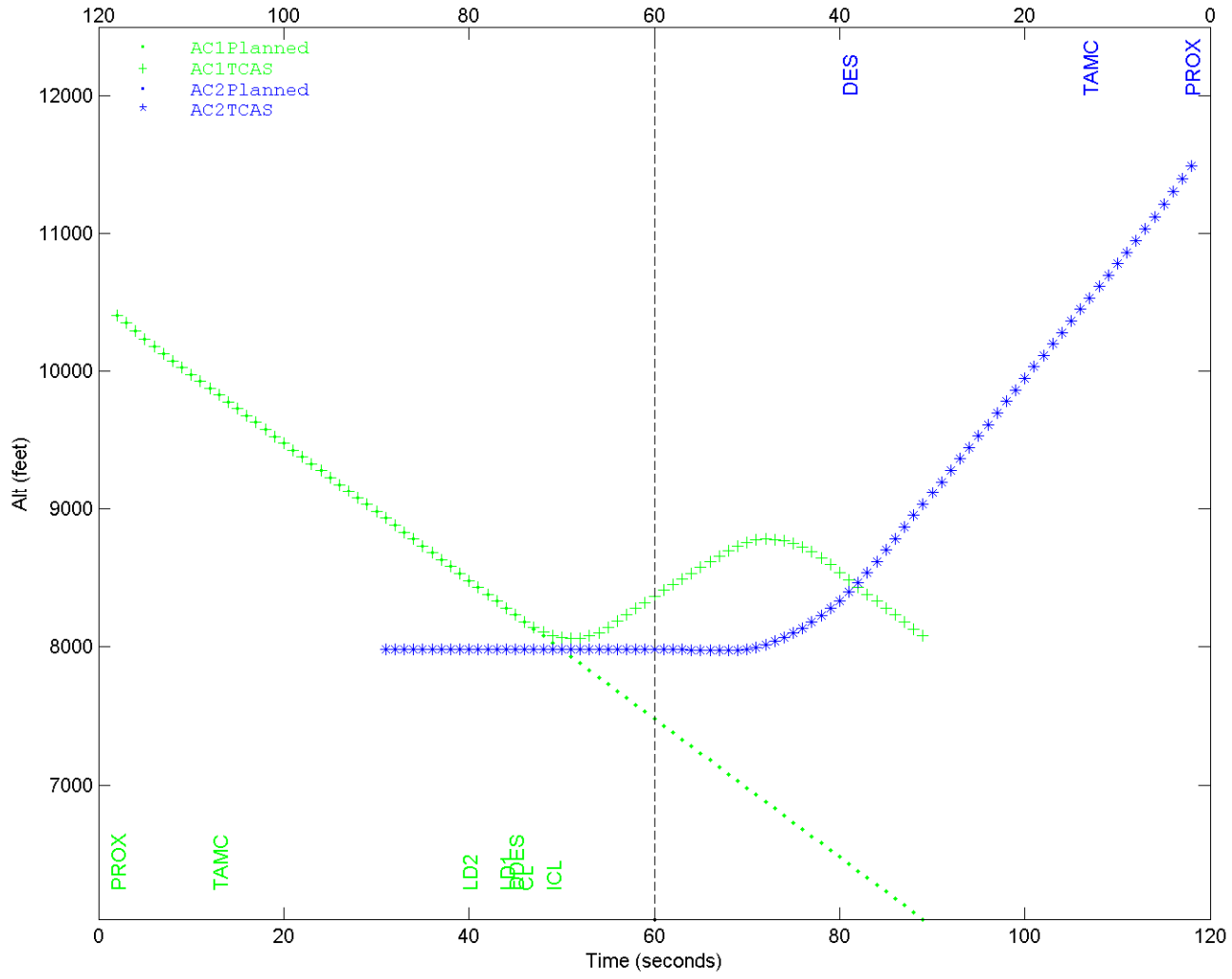
 3352 CP112EV1.2 25 FT R H VS CP112EV1.2 25 FT NR L 6 -13.75 CROSSING_ENC
 10 AC1:*REV*8275035 TA :13 |PVMD| LD2 @40 [NX]| LD1 @44 | DDES @45 | CL @46
 | ICL @49 | DES @51 | IDES @53
 5 AC2:*REV*8175153 TA :13 |PVMD| DES @39 [NX]| CL @50 ##NON-RESPONDING##

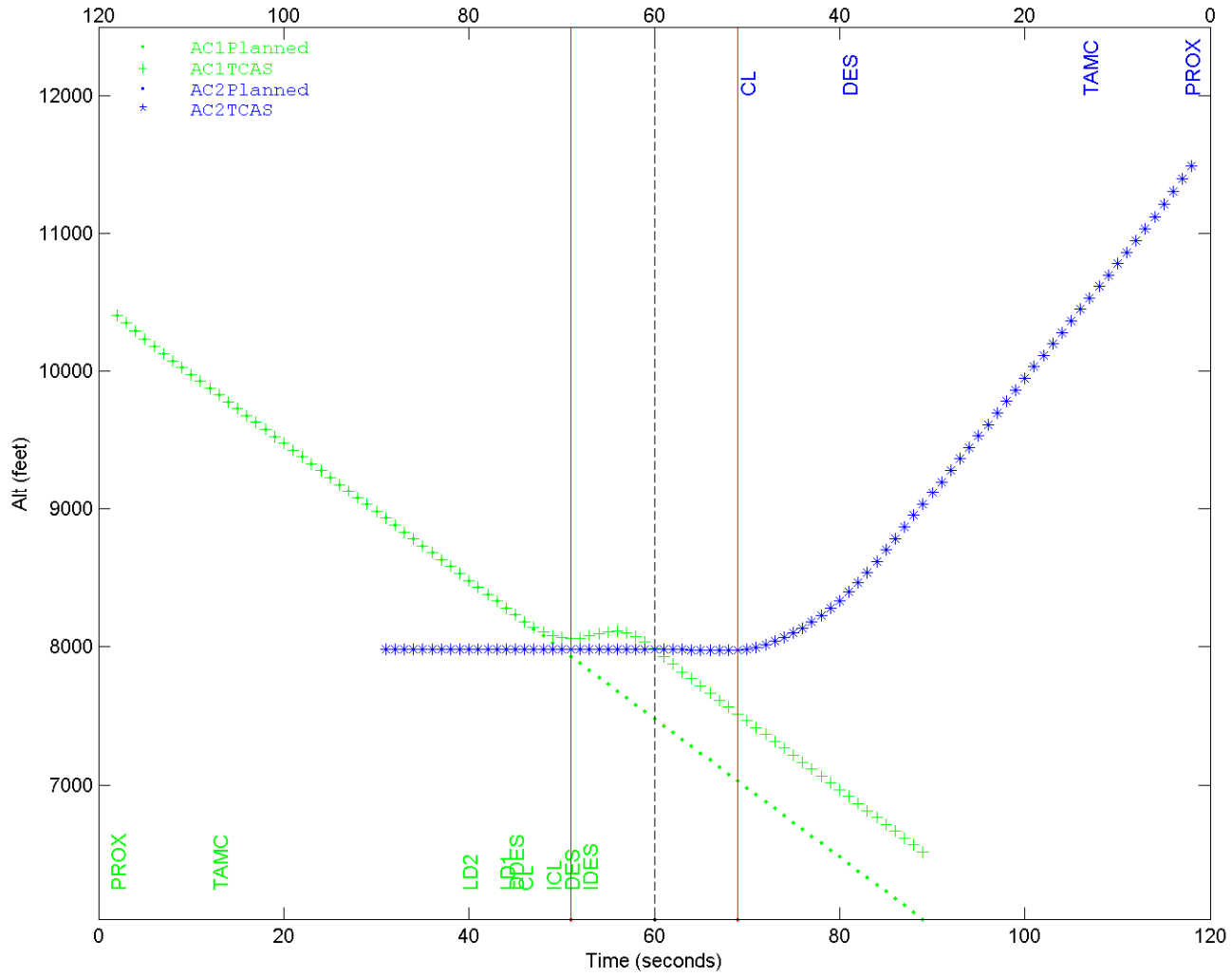
 3352 V7.1 25 FT R H VS V7.1 25 FT NR L 6 -58.79 CROSSING_ENC
 10 AC1:*REV*8275035 TA :13 |PVMD| DDES @40 [NX]| CL @49 | DES @51 | IDES @53
 5 AC2:*REV*8175153 TA :13 |PVMD| DES @39 [NX]| CL @50 ##NON-RESPONDING##

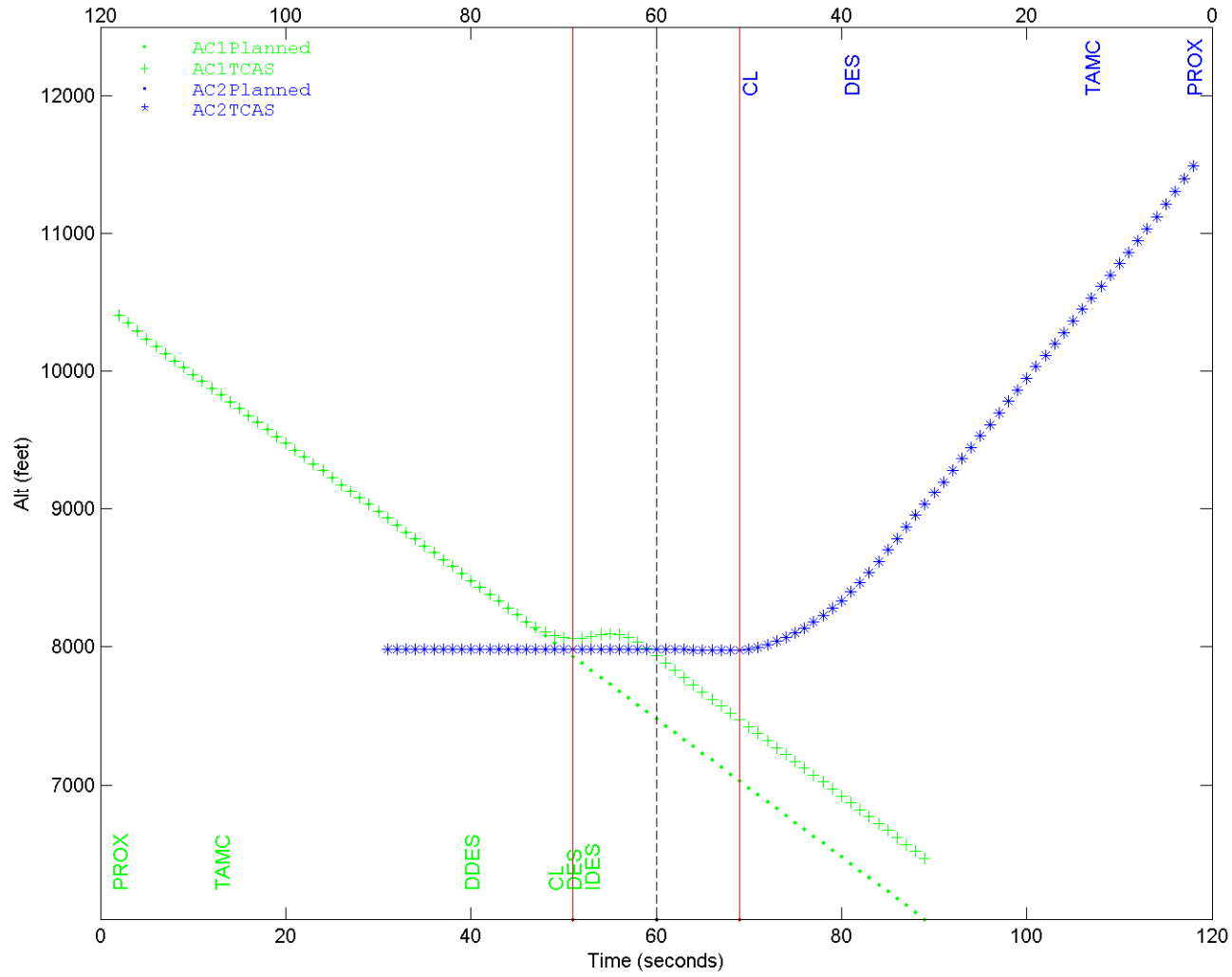
reit: 3352 cata: 616 simmode: 4165124 6.04A Vs 6.04A H263352A



reit: 3352 cata: 616 simmode: 4275035 V7-25 Vs V7-25 H263352B







Change 7.1 Non-responding Representative NMAC Ind05

Encounter Class: 7

Reit Number : 184

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 10 |
| AC1 low ID | no |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | 250, 500 ft |
| AC1 rates: | 1000 fpm |
| AC2 rates: | -1000 fpm |
| AC1 acceleration: | 0.05 g |
| AC2 acceleration: | -0.15 g |
| AC1 acceleration time: | CPA – 25 sec |
| AC2 acceleration time: | CPA – 20 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 98 | % of RAs were non-crossing |
| 100 | % of NMACs were non-crossing |
| 91 | % of RAs were not reversed |
| 76 | % of NMACs were not reversed |

Comments

New reversal at CPA – 7 or 8 seconds. Benign vertical rates. CP112E caused NMAC.
Planned descend by initially level responding aircraft at time of CL RA causes delay in response.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H17184
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(0.0,1000.0) AC2 RATES(0.0,-1000.0)
AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.15g @ CPA -20 AC1 CPA ALT 3700

184 6.04A NR H VS 6.04A NR L 7 -121.41 CROSSING_ENC
10 AC1: 4165142 TA :30 |TAUR| POTRA@40 (DFD)| DES @41 [NX]| IDES @50 ##NON-RESPONDING##

5 AC2: 4265024 TA :30 |TAUR| CL @40 [NX]| ICL @51

184 V7 25 FT NR H VS V7 25 FT R L 7 -175.62 CROSSING_ENC

10 AC1: 4275053 TA :30 |TAUR| DES @40 [NX] ##NON-RESPONDING##

5 AC2: 4175135 TA :30 |TAUR| CL @40 [NX]| ICL @47

184 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 7 27.03 CROSSING_ENC

10 AC1:*REV*8275053 TA :30 |TAUR| DES @40 [NX]| CL @53 ##NON-RESPONDING##

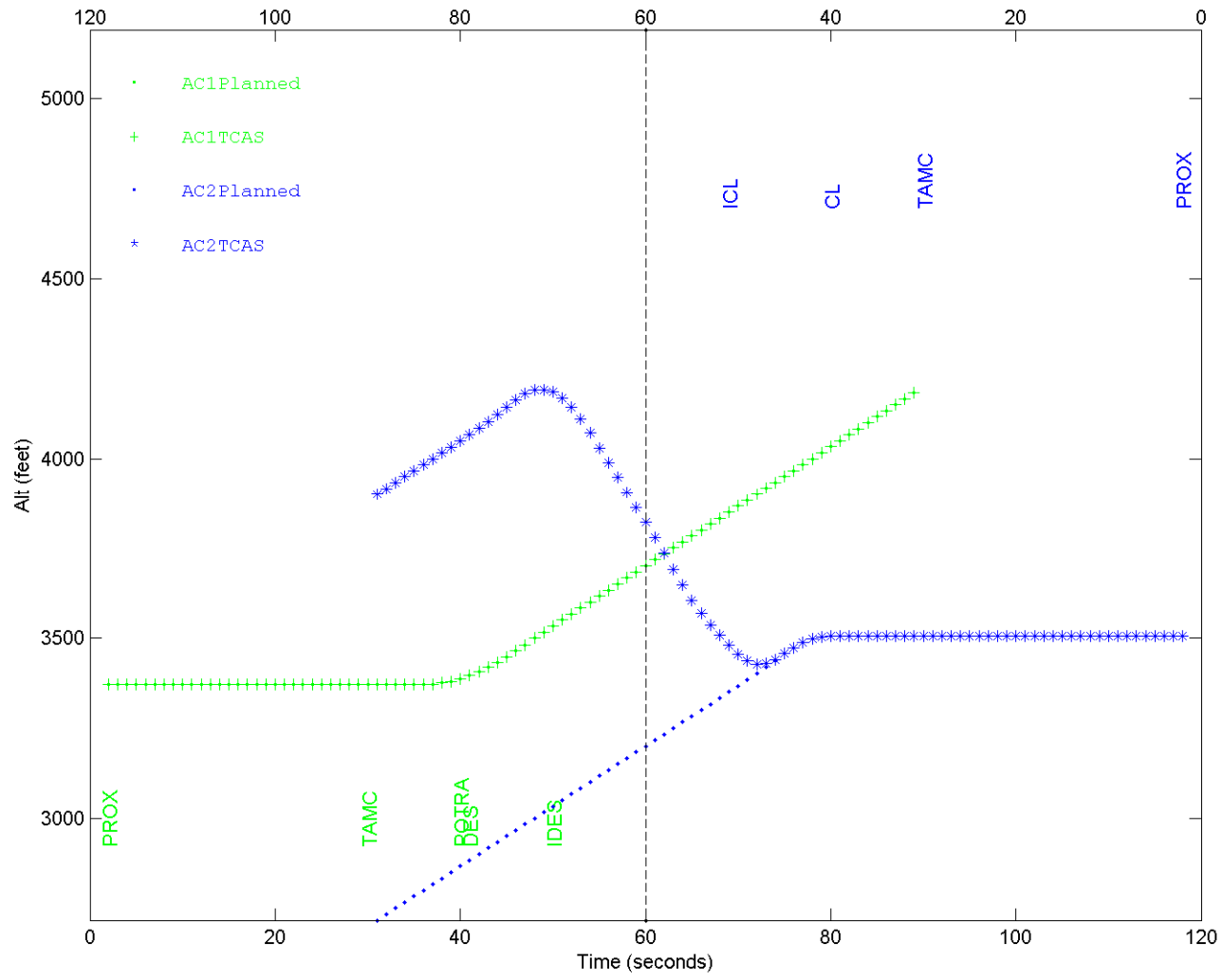
5 AC2:*REV*8175135 TA :30 |TAUR| CL @40 [NX]| ICL @47 | DES @52

184 V7.1 25 FT NR H VS V7.1 25 FT R L 7 27.03 CROSSING_ENC

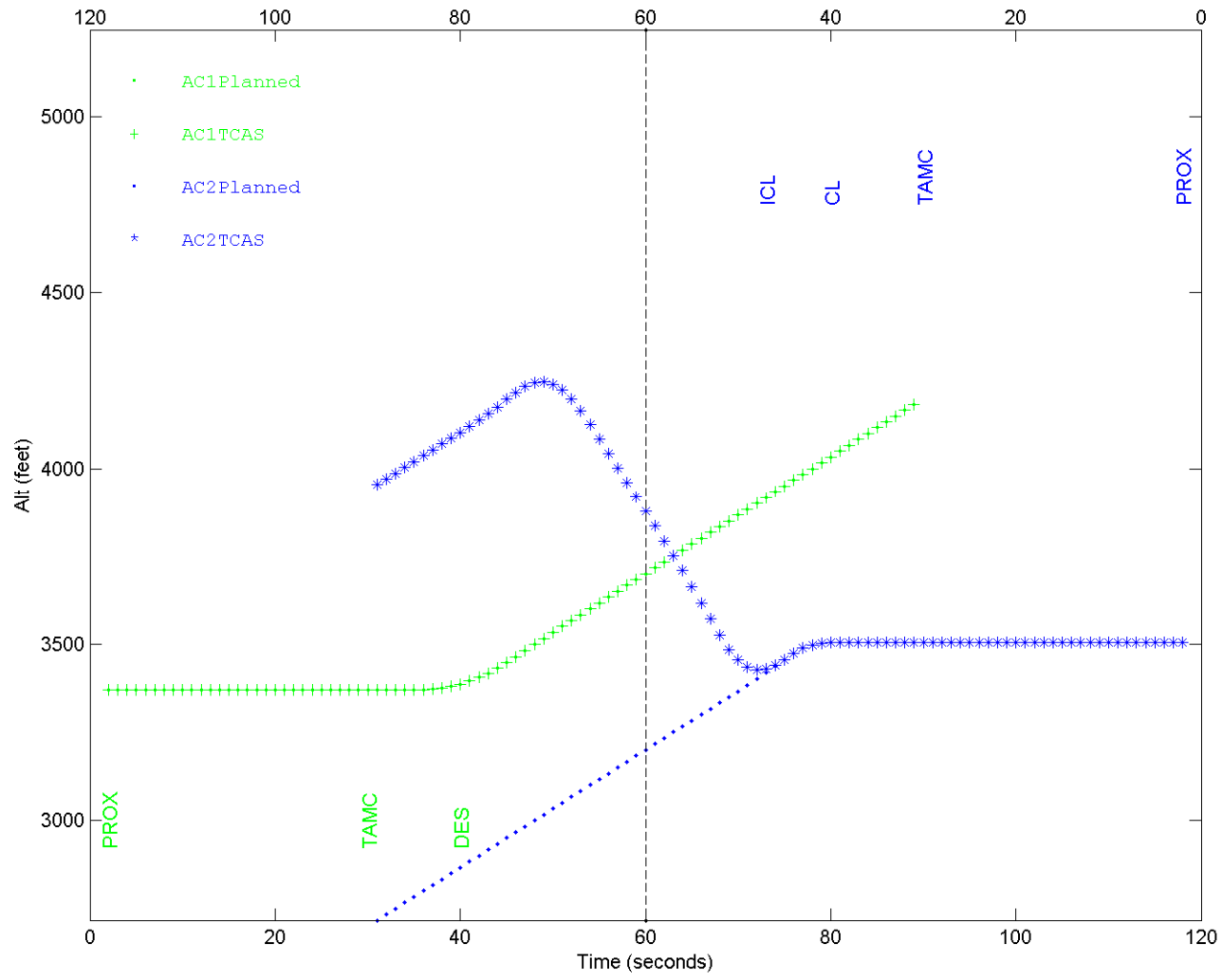
10 AC1:*REV*8275053 TA :30 |TAUR| DES @40 [NX]| CL @53 ##NON-RESPONDING##

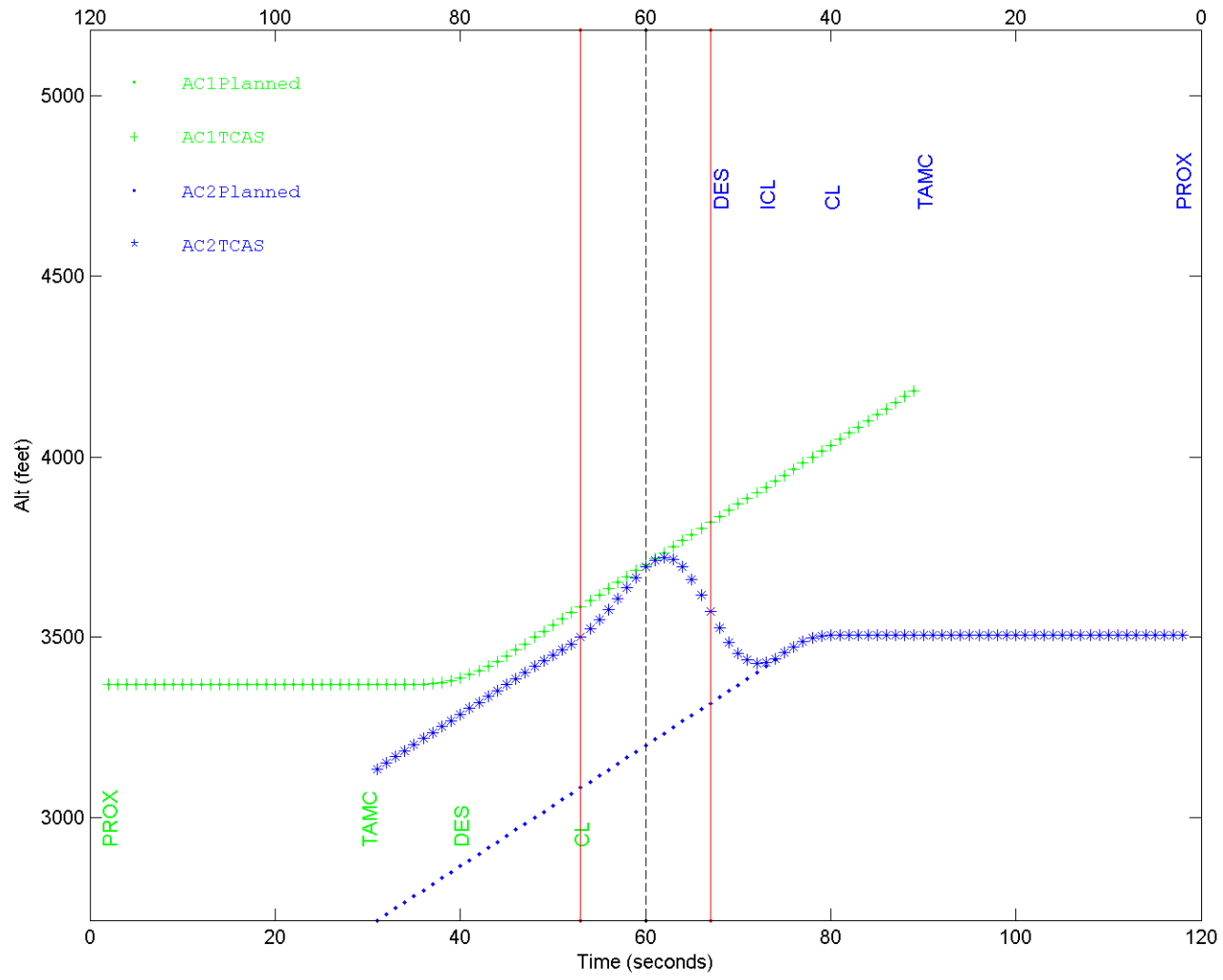
5 AC2:*REV*8175135 TA :30 |TAUR| CL @40 [NX]| ICL @47 | DES @52

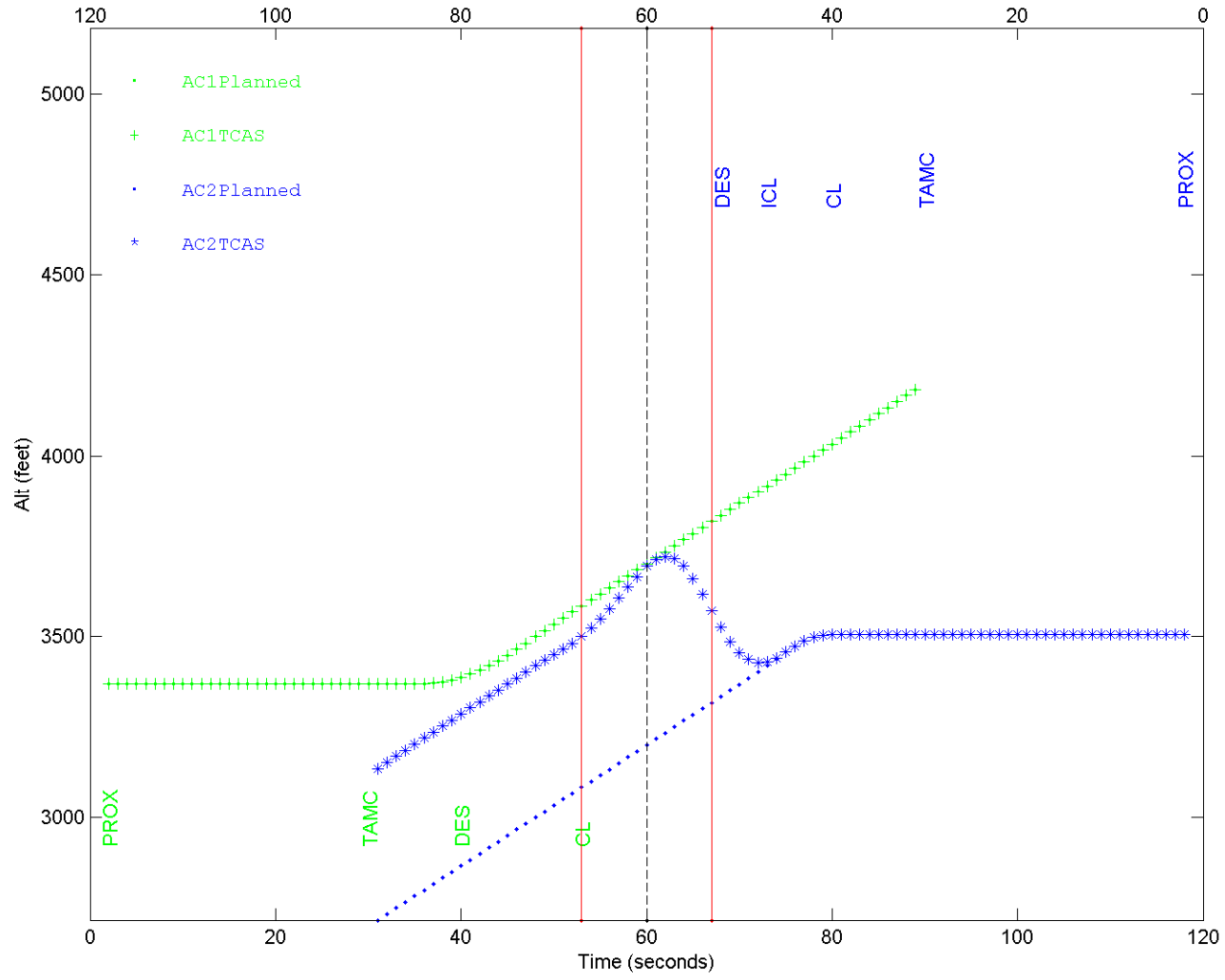
reit: 184 cata: 717 simmode: 4165142 6.04A Vs 6.04A H17184A



reit: 184 cata: 717 simmode: 4275053 V7-25 Vs V7-25 H17184B







Change 7.1 Non-responding Representative NMAC Ind06

Encounter Class: 7

Reit Number : 6916

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 1 |
| AC1 low ID | yes |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | -750 ft |
| AC1 rates: | 3000 fpm |
| AC2 rates: | 5000 fpm |
| AC1 acceleration: | 0.15 g |
| AC2 acceleration: | 0.25 g |
| AC1 acceleration time: | CPA – 25 sec |
| AC2 acceleration time: | CPA – 30 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 98 | % of RAs were non-crossing |
| 100 | % of NMACs were non-crossing |
| 91 | % of RAs were not reversed |
| 76 | % of NMACs were not reversed |

Comments

New reversal at CPA – 14 seconds. Excellent outcomes for 6.04a and Version 7. CP112E caused NMAC.

Planned 5000 fpm climb by responding aircraft 2 at 30 seconds triggers DES RA at 34 seconds. Non responding aircraft 1 gets CL RA 1 second later and begins planned climb at this time. Aircraft 2 begins to respond to DES just as reversal to CL is given.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L176916
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(0.0,3000.0) AC2 RATES(0.0,5000.0)
AC1 ACCEL 0.15g @ CPA -25 AC2 ACCEL 0.25g @ CPA -30 AC1 CPA ALT 7500

6916 6.04A NR L VS 6.04A R H 7 827.42 CROSSING_ENC

5 AC1: 4165042 TA :19 |TAUR| CL @34 [NX]| ICL @40 | MCL @56 ##NON-
RESPONDING##

10 AC2: 4265124 TA :19 |TAUR| DES @34 [NX]| LC2 @53

6916 V7 25 FT NR L VS V7 25 FT R H 7 841.81 CROSSING_ENC

5 AC1: 4175053 TA :19 |TAUR| POTRA@34 | CL @35 [NX]| ICL @41 | DDES @55
##NON-RESPONDING##

10 AC2: 4275135 TA :19 |TAUR| DES @34 [NX]| DCL @53

6916 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 7 -24.84 CROSSING_ENC

5 AC1:*REV*8175053 TA :19 |TAUR| POTRA@34| CL @35[NX]| ICL @41| DES @46| IDES @51
##NON-RESPONDING##

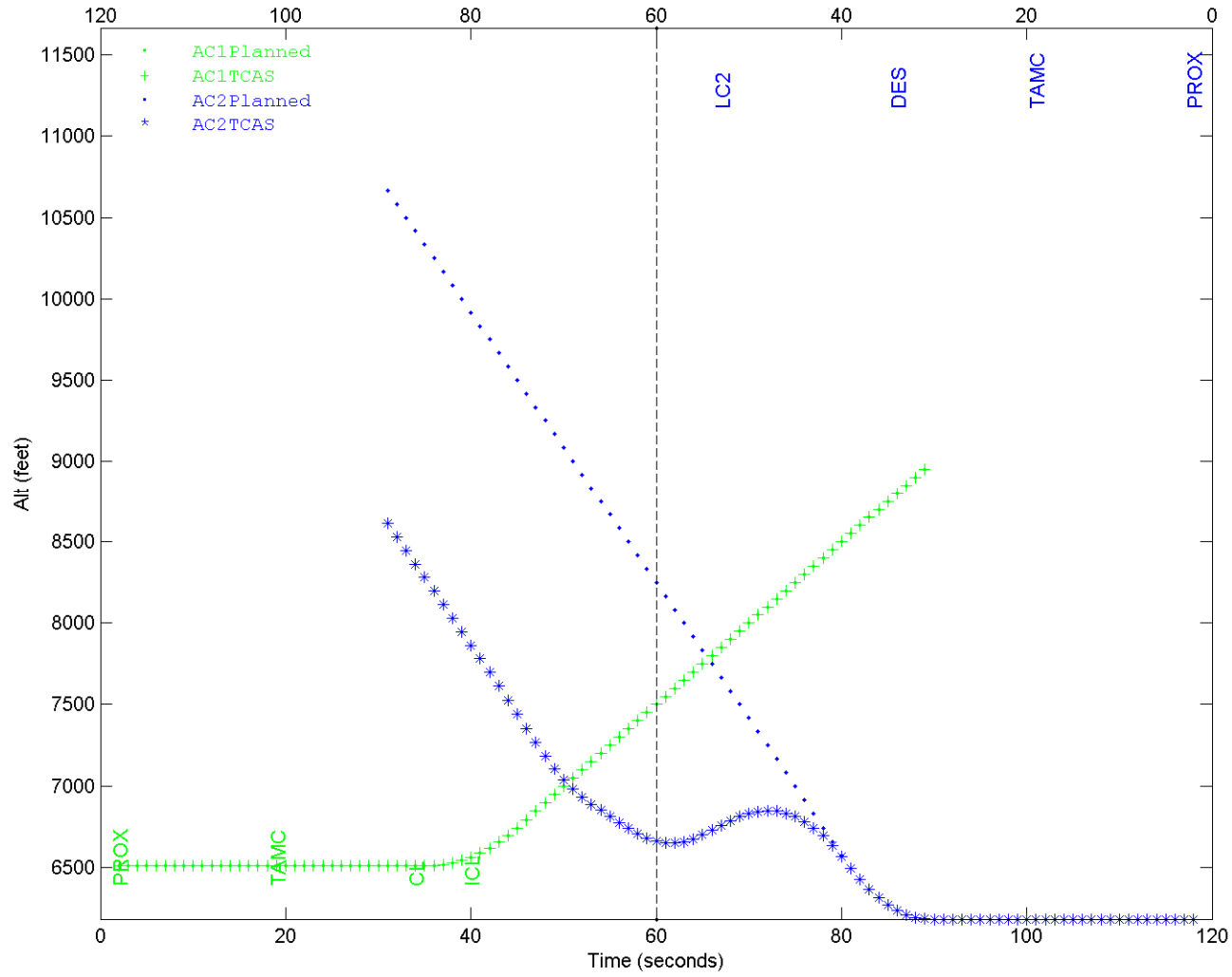
10 AC2:*REV*8275135 TA :19 |TAUR| DES @34 [NX]| CL @46 | ICL @49

6916 V7.1 25 FT NR L VS V7.1 25 FT R H 7 -24.84 CROSSING_ENC

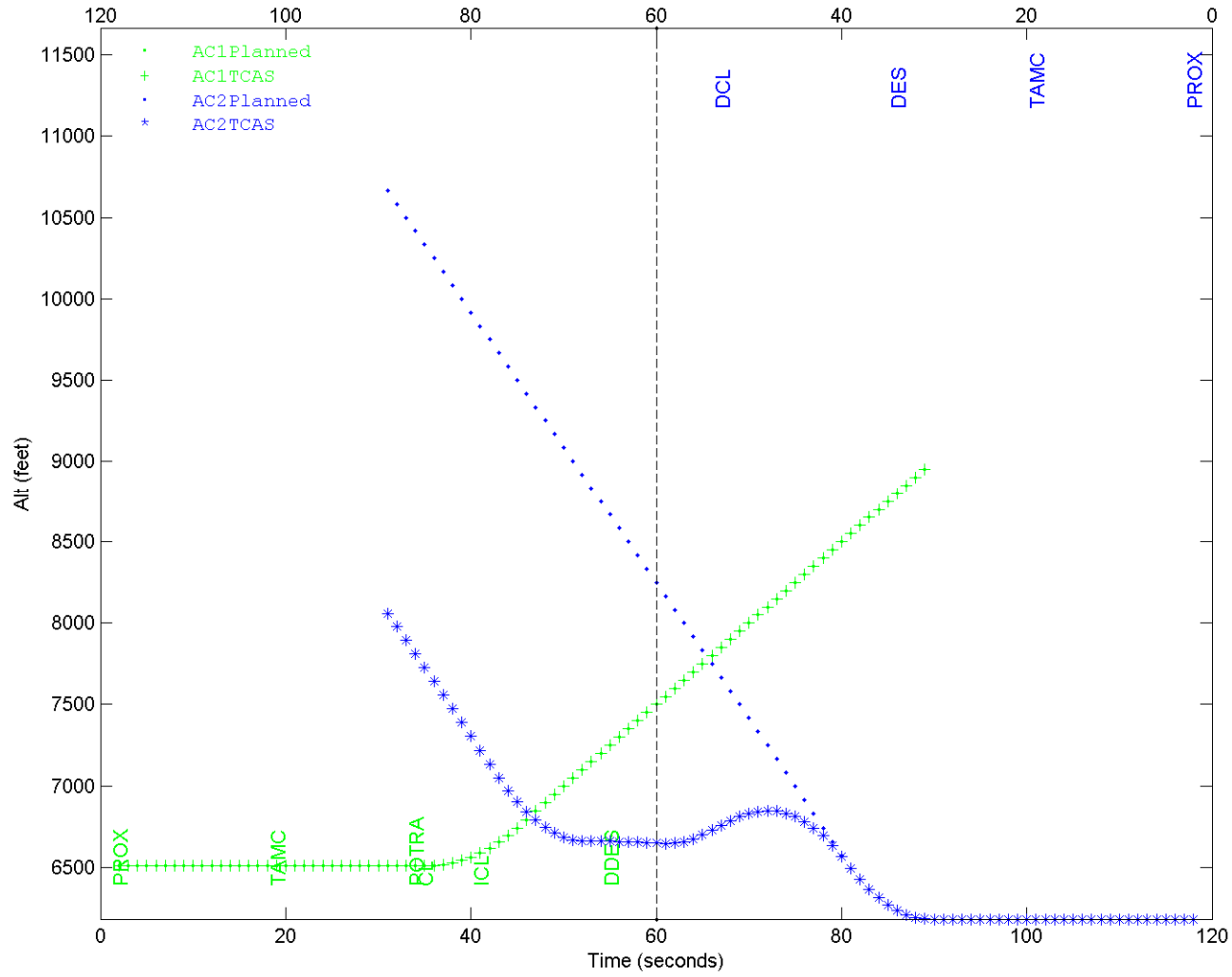
5 AC1:*REV*8175053 TA :19 |TAUR| POTRA@34| CL @35[NX]| ICL @41| DES @46| IDES @51
##NON-RESPONDING##

10 AC2:*REV*8275135 TA :19 |TAUR| DES @34 [NX]| CL @46 | ICL @49

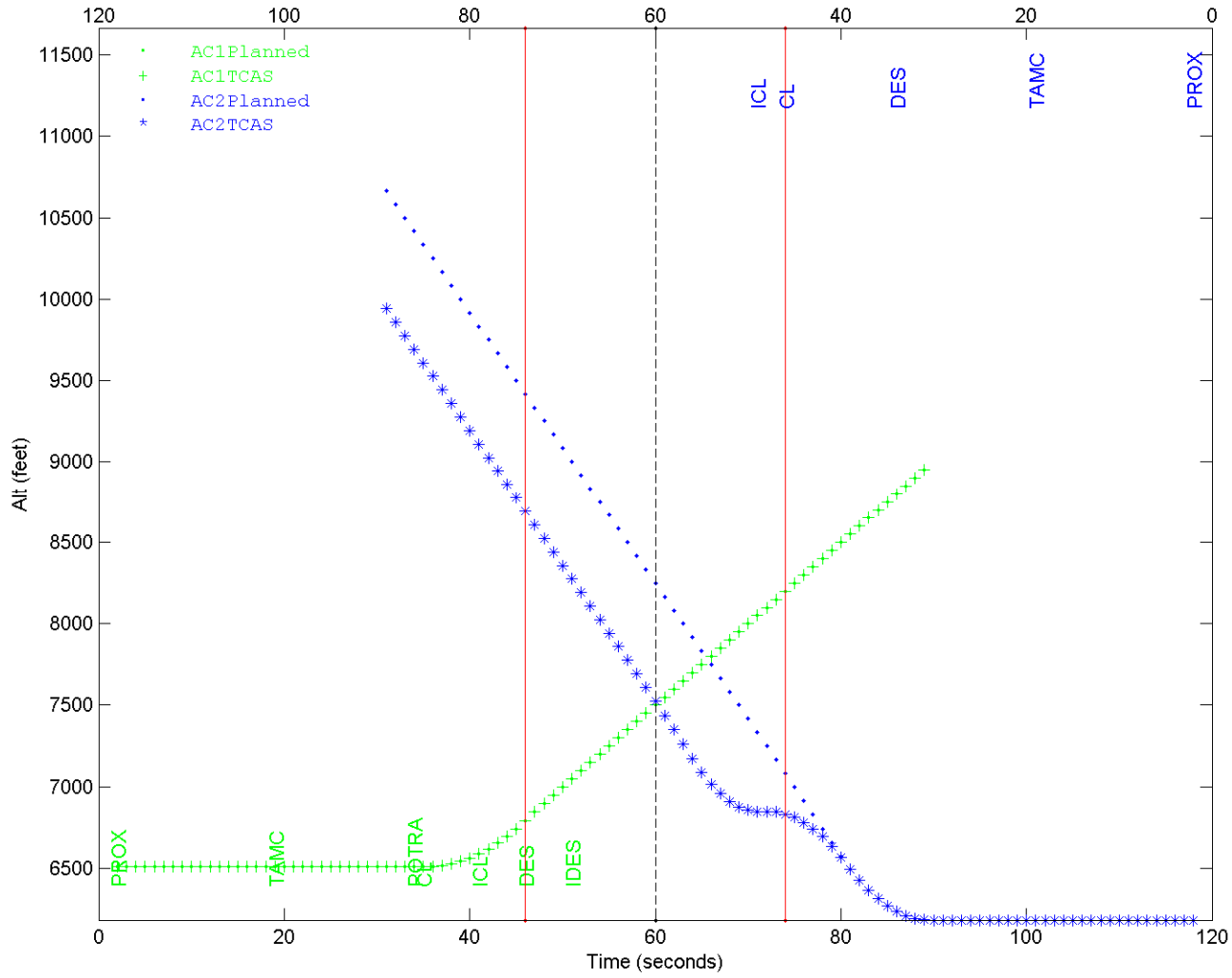
reit: 6916 cata: 717 simmode: 4165042 6.04A Vs 6.04A L176916A

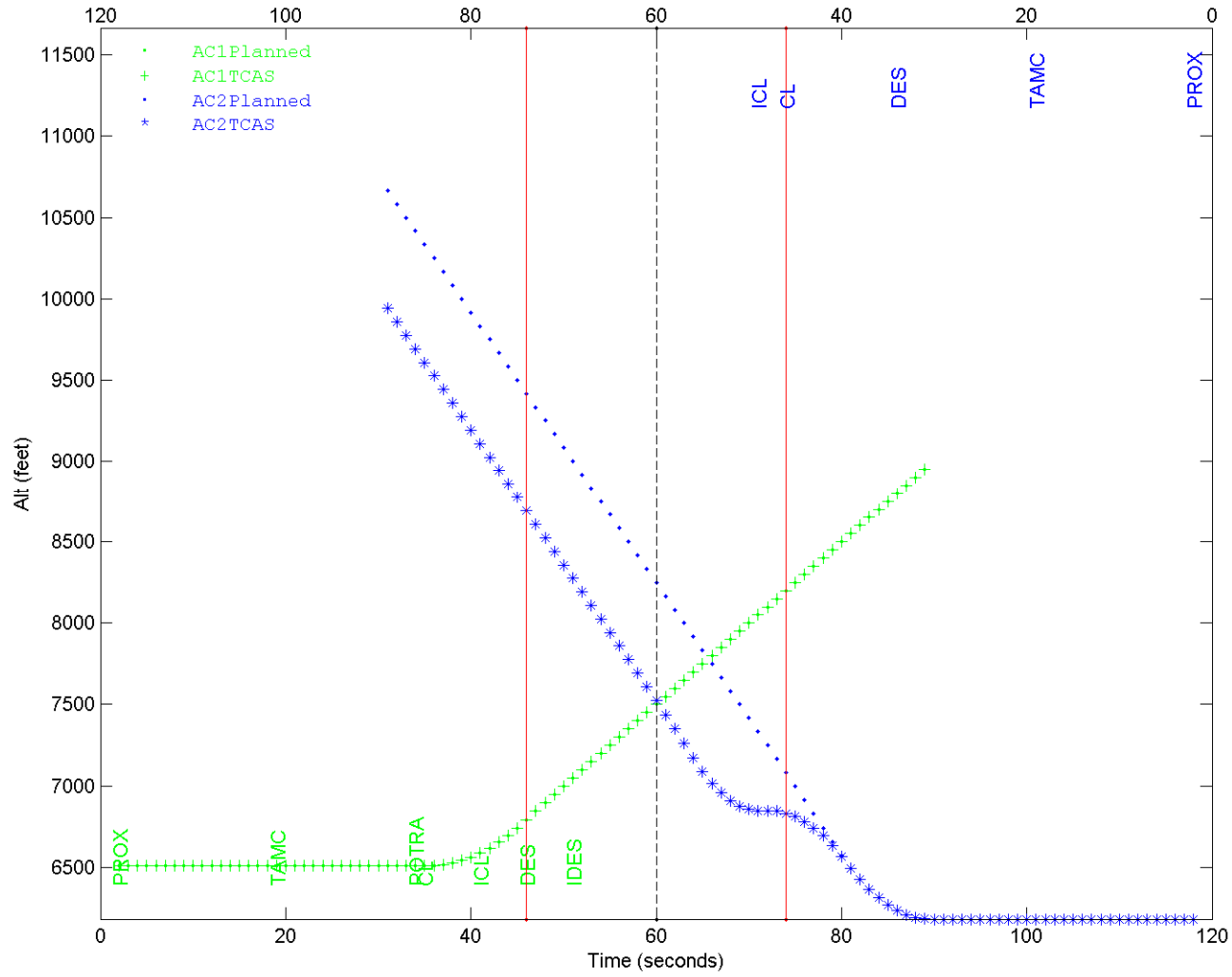


reit: 6916 cata: 717 simmode: 4175053 V7-25 Vs V7-25 L176916B



reit: 6916 cata: 717 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L176916C





Change 7.1 Non-responding Representative NMAC Ind07

Encounter Class: 8

Reit Number : 780

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 2 |
| AC1 low ID | yes |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | 250 ft |
| AC1 rates: | -3000 fpm |
| AC2 rates: | -3000 fpm |
| AC1 acceleration: | 0.05 g |
| AC2 acceleration: | -0.25 g |
| AC1 acceleration time: | CPA – 25 sec |
| AC2 acceleration time: | CPA – 30 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 93 | % of RAs were non-crossing |
| 100 | % of NMACs were non-crossing |
| 93 | % of RAs were not reversed |
| 83 | % of NMACs were not reversed |

Comments

New reversal at CPA – 8 or 10 seconds. CP112E almost resolved the situation, but still caused NMAC.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L18780
 LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
 PLANNED ENCOUNTER. SEP = 250.0 AC1 RATES(-3000.0,0.0) AC2 RATES(0.0,-3000.0)
 AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.25g @ CPA -30 AC1 CPA ALT 3700

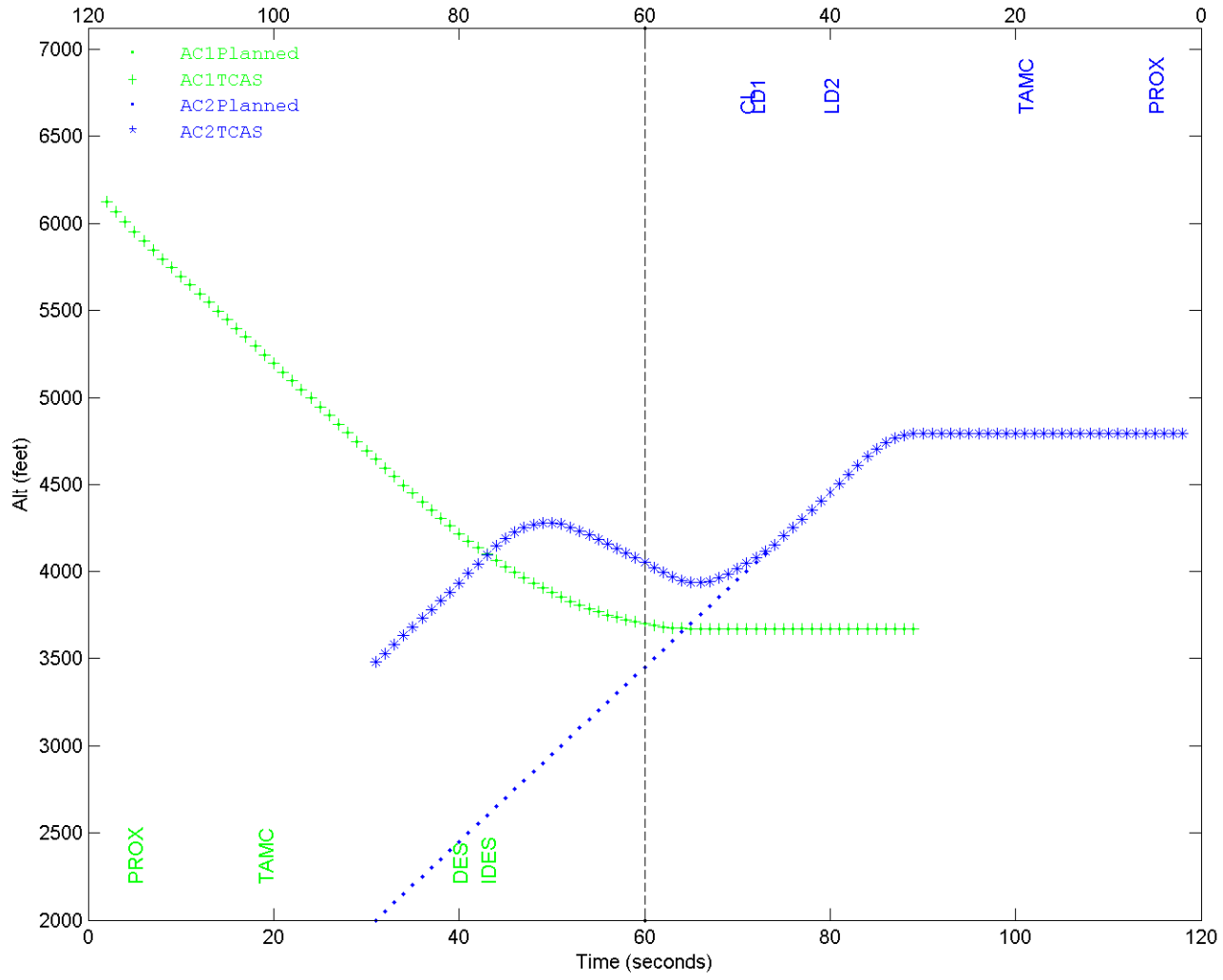
 780 6.04A NR L VS 6.04A R H 8 -354.53 CROSSING_ENC
 5 AC1: 4165042 TA :19 |TAUR| MDES @40 [NX]| IDES @43 | DES @62 ##NON-RESPONDING##
 10 AC2: 4265124 TA :19 |TAUR| LD2 @40 [NX]| LD1 @48 | CL @49

 780 V7 25 FT NR L VS V7 25 FT R H 8 264.65 CROSSING_ENC
 5 AC1: 4175053 TA :19 |TAUR| DDES @40 [X] | CL @53 ##NON-RESPONDING##
 10 AC2: 4275135 TA :19 |TAUR| DES @40 [X]

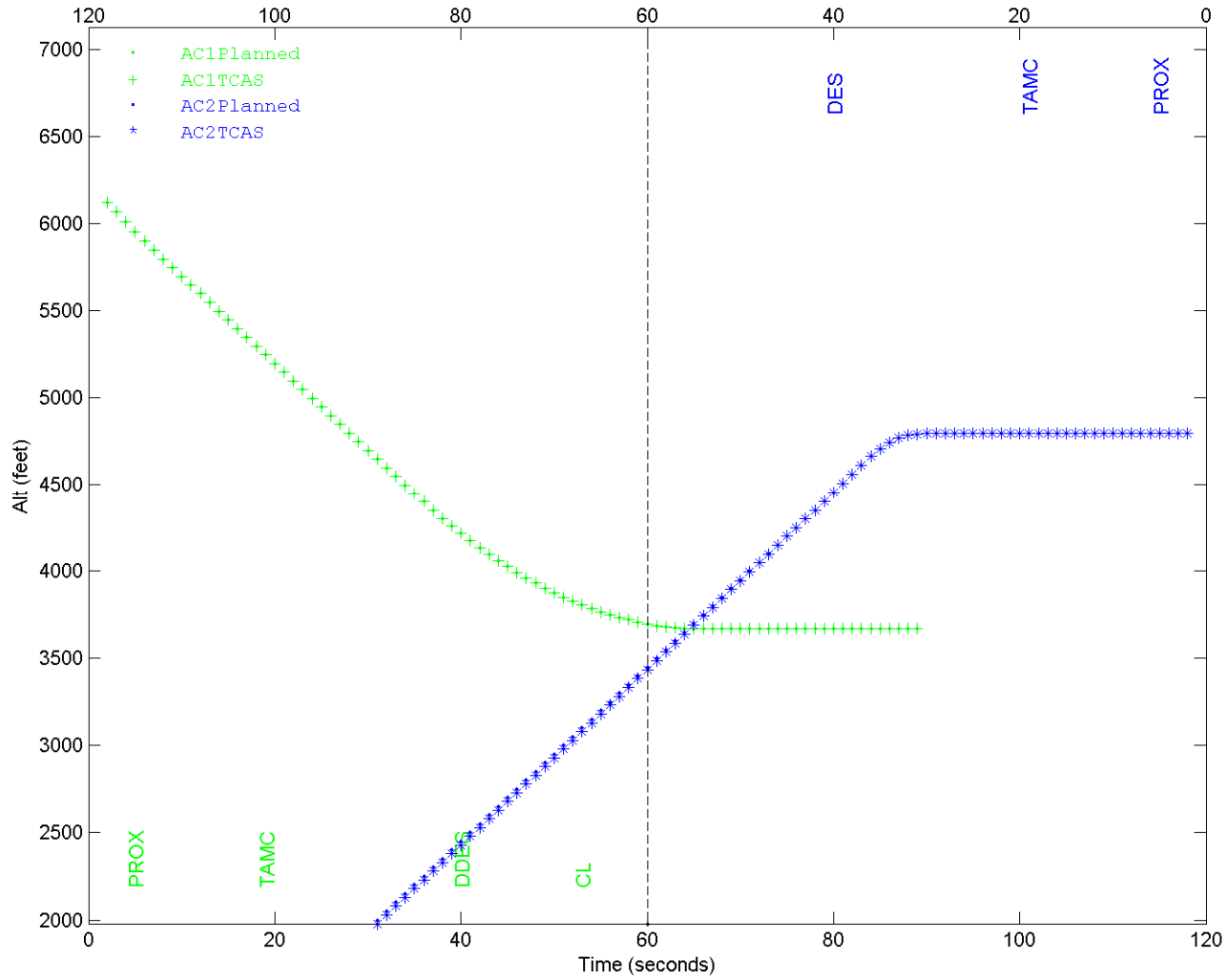
 780 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 8 -95.68 CROSSING_ENC
 5 AC1:*REV*8175053 TA :19 |TAUR| DDES @40 [X] | DES @50 | IDES @53 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :19 |TAUR| DES @40 [X] | CL @50 | ICL @53

 780 V7.1 25 FT NR L VS V7.1 25 FT R H 8 -95.68 CROSSING_ENC
 5 AC1:*REV*8175053 TA :19 |TAUR| DDES @40 [X] | DES @50 | IDES @53 ##NON-RESPONDING##
 10 AC2:*REV*8275135 TA :19 |TAUR| DES @40 [X] | CL @50 | ICL @53

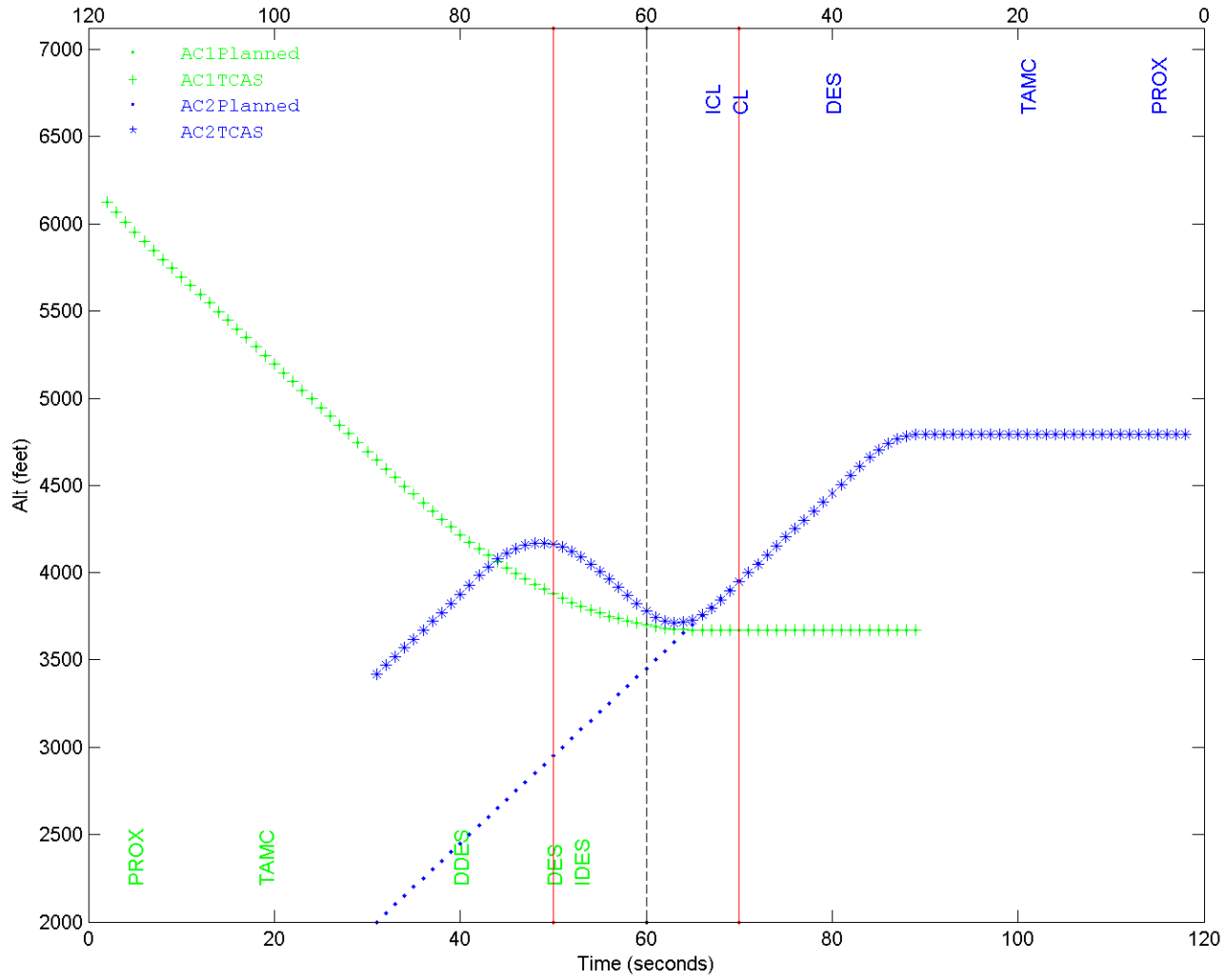
reit: 780 cata: 818 simmode: 4165042 6.04A Vs 6.04A L18780A



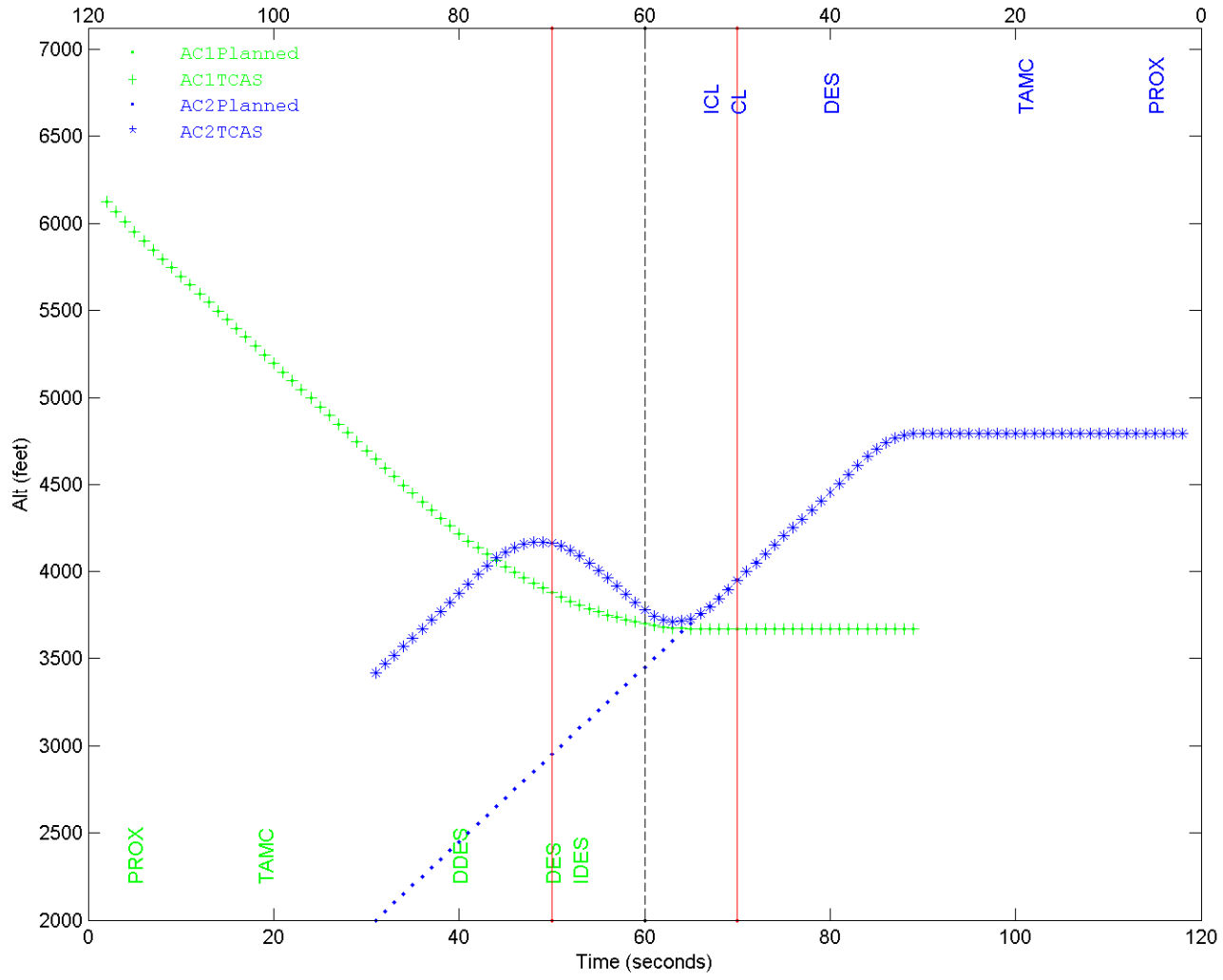
reit: 780 cata: 818 simmode: 4175053 V7-25 Vs V7-25 L18780B



reit: 780 cata: 818 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L18780C



reit: 780 cata: 818 simmode: 8175053 V7.1-25 Vs V7.1-25 L18780D



Change 7.1 Non-responding Representative NMAC Ind08

Encounter Class: 8

Reit Number : 2068

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 3 |
| AC1 low ID | yes |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | 250 ft |
| AC1 rates: | -1000 fpm |
| AC2 rates: | -3000 fpm |
| AC1 acceleration: | 0.15 g |
| AC2 acceleration: | -0.05 g |
| AC1 acceleration time: | CPA – 25 sec |
| AC2 acceleration time: | CPA – 25 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 93 | % of RAs were non-crossing |
| 100 | % of NMACs were non-crossing |
| 93 | % of RAs were not reversed |
| 83 | % of NMACs were not reversed |

Comments

New reversal at CPA – 8 seconds. CP112E caused NMAC, less than 1 foot achieved separation. Planned maneuvers defeat initial RAs. Only one aircraft complies with reversal.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L282068
 LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
 PLANNED ENCOUNTER. SEP = 250.0 AC1 RATES(-3000.0,0.0) AC2 RATES(0.0,-1000.0)
 AC1 ACCEL 0.15g @ CPA -25 AC2 ACCEL -0.05g @ CPA -25 AC1 CPA ALT 3700

```
-----
2068 6.04A R L VS 6.04A NR H 8 361.15 CROSSING_ENC

5 AC1: 4165024 TA :19 |PVMD| CL @49 [NX]

10 AC2: 4265142 TA :19 |PVMD| POTRA@48 (DFD) | DES @49 [NX]
    ##NON-RESPONDING##

-----
2068 V7 25 FT R L VS V7 25 FT NR H 8 -202.89 CROSSING_ENC

5 AC1: 4175035 TA :30 |PVMD| DES @41 [NX]| IDES @50

10 AC2: 4275153 TA :30 |TAUR| LD5 @40 [NX]| CL @43 | ICL @53
    ##NON-RESPONDING##

-----
2068 CP112EV1.2 25 FT R L VS CP112EV1.2 25 FT NR H 8 -0.21 CROSSING_ENC

5 AC1:*REV*8175035 TA :30 |PVMD| DES @41 [NX]| IDES @50| CL @52 | ICL @54

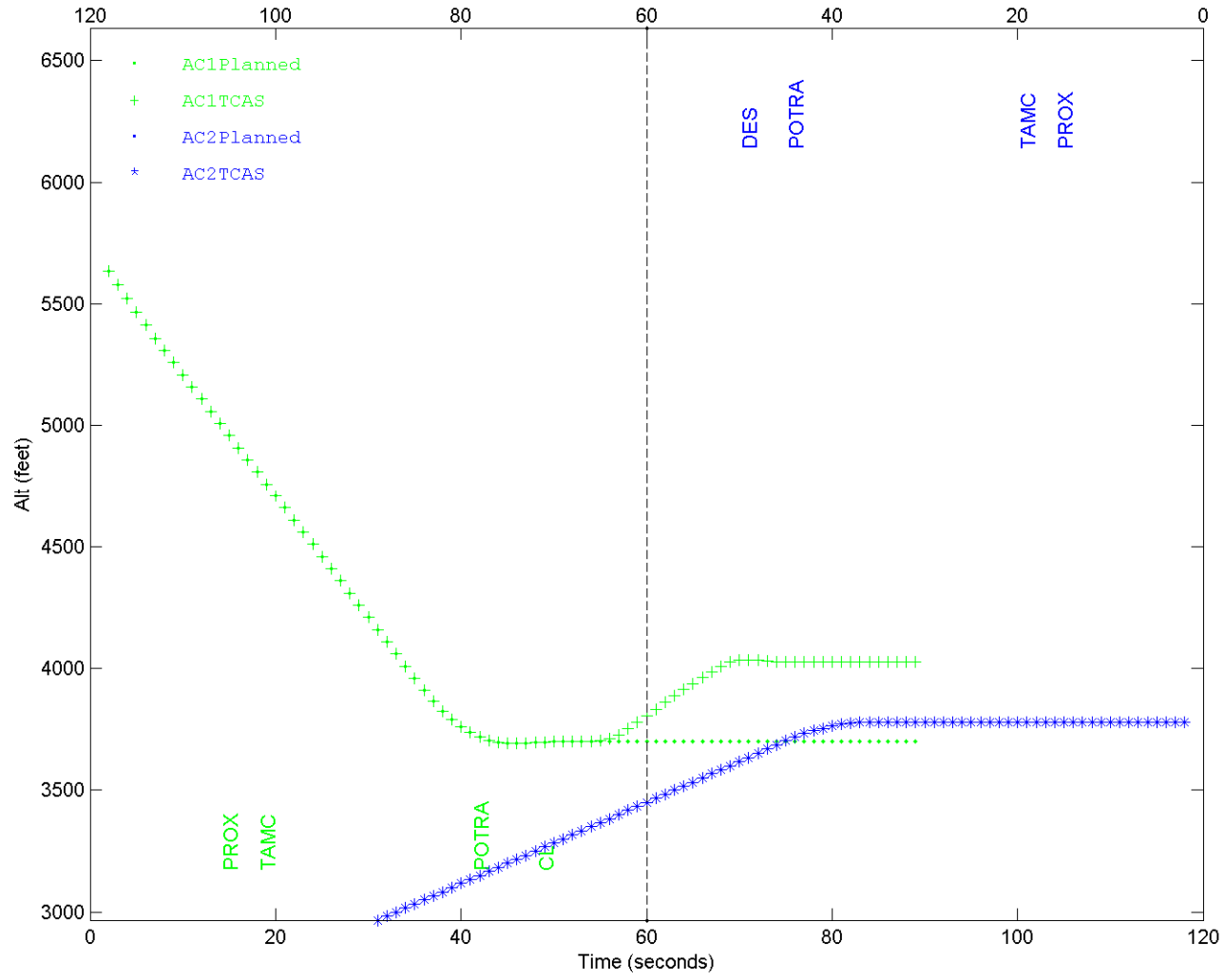
10 AC2:*REV*8275153 TA :30 |TAUR| LD5 @40 [NX]| CL @43 | DES @52 | IDES @54
    ##NON-RESPONDING##

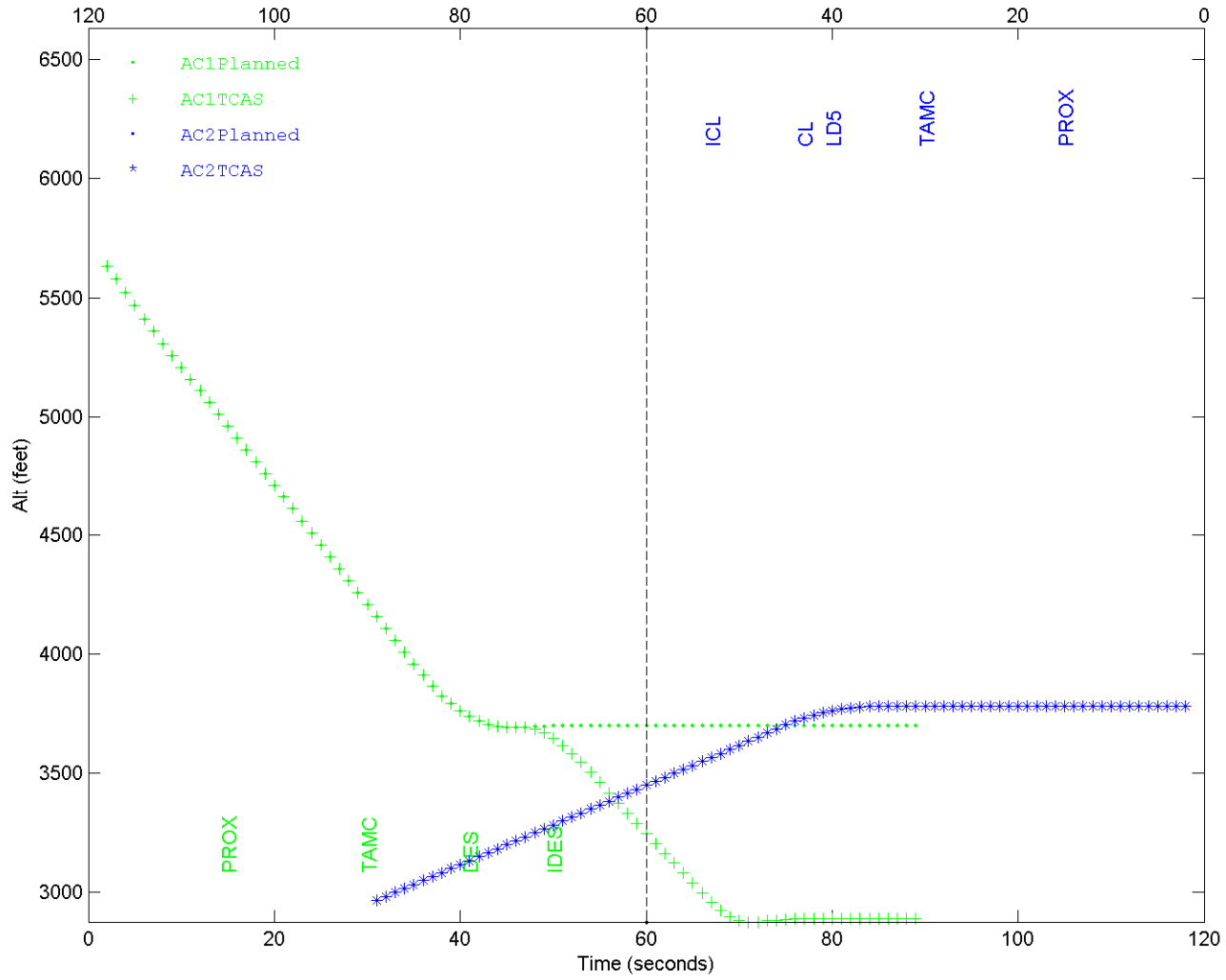
-----
2068 V7.1 25 FT R L VS V7.1 25 FT NR H 8 -0.21 CROSSING_ENC

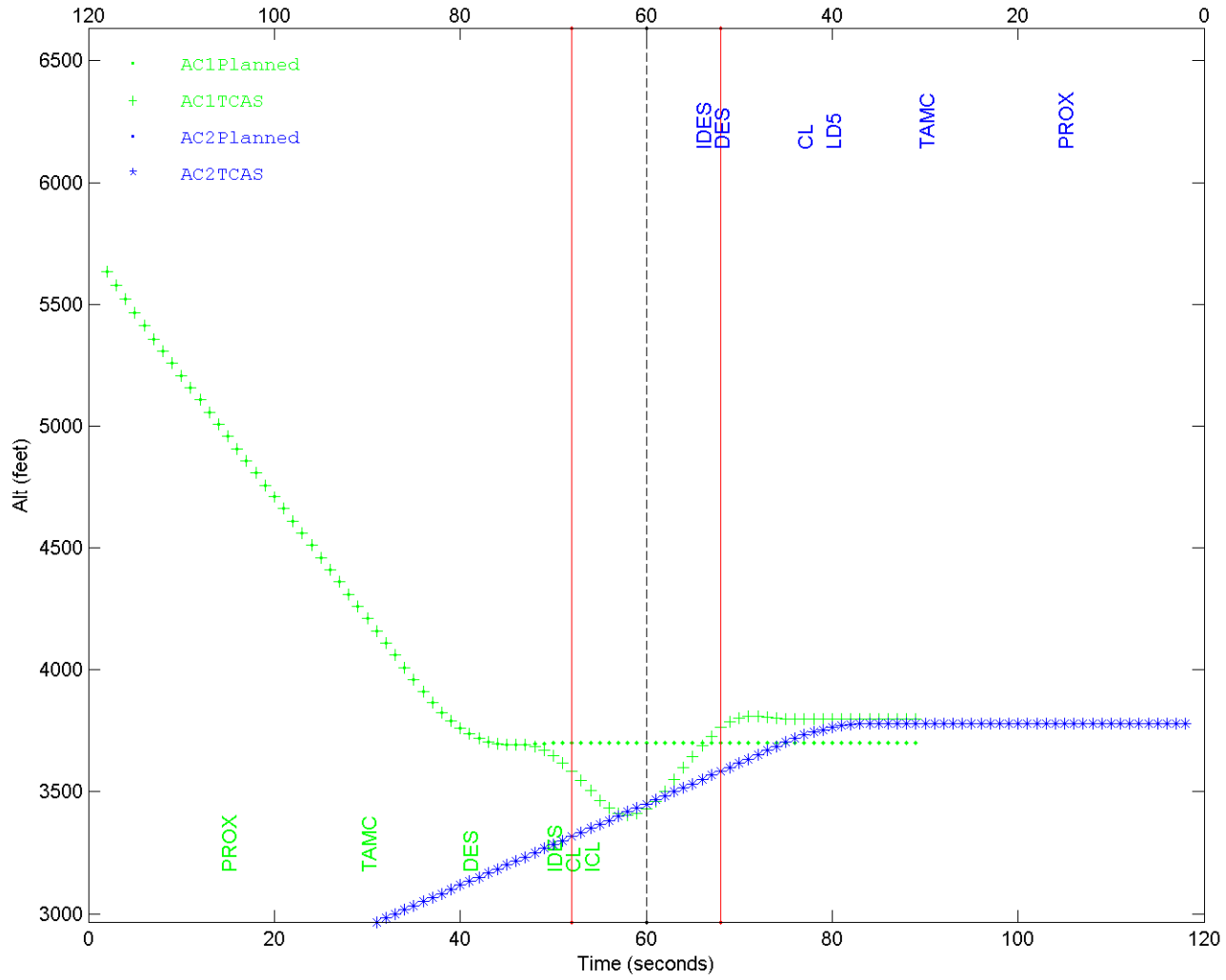
5 AC1:*REV*8175035 TA :30 |PVMD| DES @41 [NX]| IDES @50 | CL @52 | ICL @54

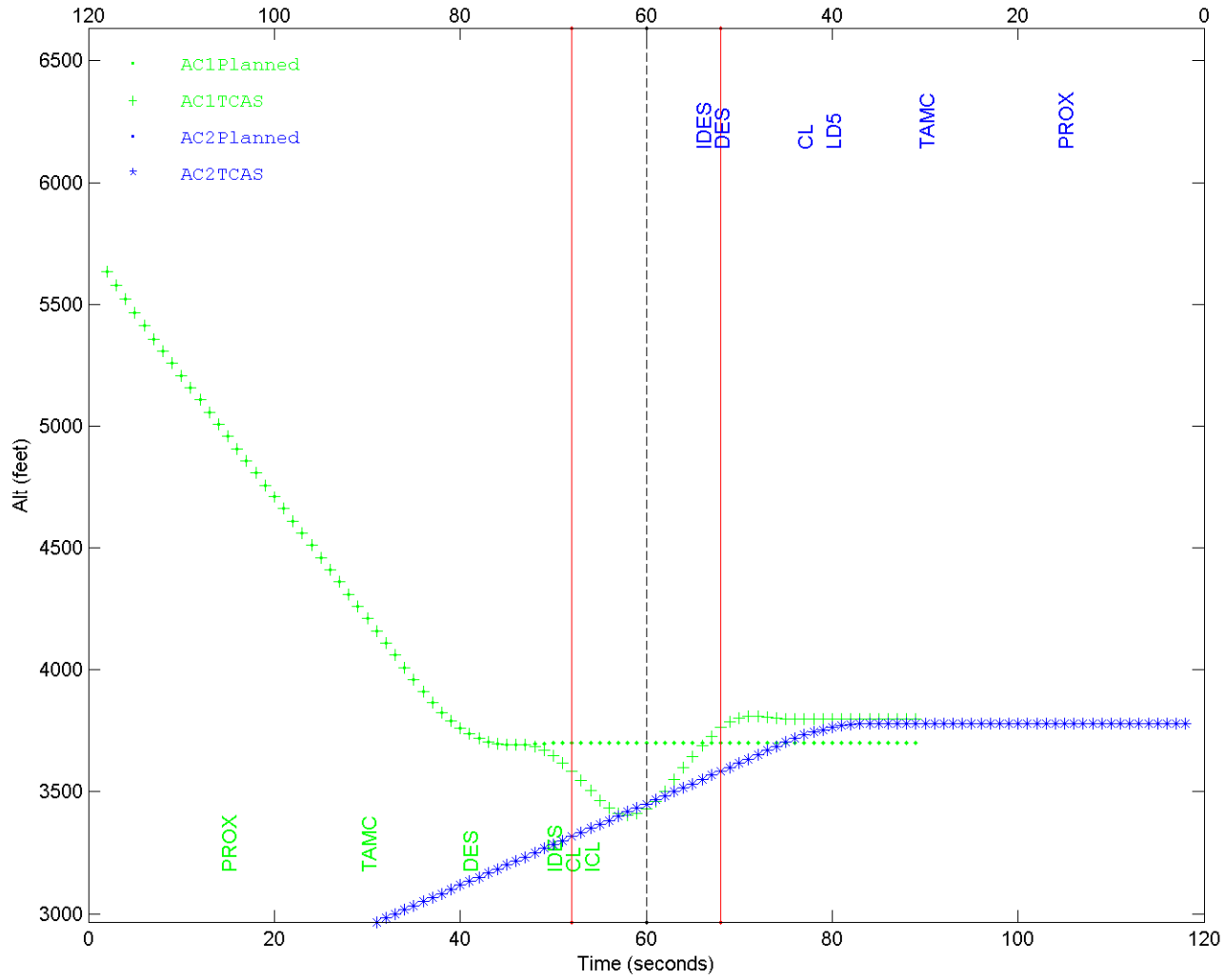
10 AC2:*REV*8275153 TA :30 |TAUR| LD5 @40 [NX]| CL @43 | DES @52 | IDES @54
    ##NON-RESPONDING##
```

reit: 2068 cata: 818 simmode: 4165024 6.04A Vs 6.04A L282068A









Change 7.1 Non-responding Representative NMAC Ind09

Encounter Class: 9

Reit Number : 4678

NMAC Characterization

| | |
|-------------------------------|----------------------|
| Number of encounters in group | 6 |
| AC1 low ID | yes |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | 250, +/- 500, 750 ft |
| AC1 rates: | 1000, 3000, 5000 fpm |
| AC2 rates: | 3000, 5000 fpm |
| AC1 acceleration: | -0.05 g |
| AC2 acceleration: | -0.05 g |
| AC1 acceleration time: | CPA – 25 sec |
| AC2 acceleration time: | CPA – 30 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 72 | % of RAs were non-crossing |
| 0 | % of NMACs were non-crossing |
| 98 | % of RAs were not reversed |
| 95 | % of NMACs were not reversed |

Comments

New NMAC caused by CP112E. This is a climbing vertical chase.

Planned level-off by non-responding aircraft combined with descent of responding aircraft generated NMAC.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L194678
 LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
 PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(3000.0,0.0) AC2 RATES(5000.0,0.0)
 AC1 ACCEL -0.05g @ CPA -25 AC2 ACCEL -0.05g @ CPA -30 AC1 CPA ALT 7500

```
-----
4678 6.04A NR L VS 6.04A R H 9 494.22 CROSSING_ENC

5 AC1: 4165042 TA :19 |PVMD| MCL @35 [NX]| ICL @40 | CL @55
    ##NON-RESPONDING##

10 AC2: 4265124 TA :19 |TAUR| POTRA@34 (DFD) | DES @35 [NX]

-----
4678 V7 25 FT NR L VS V7 25 FT R H 9 528.66 CROSSING_ENC

5 AC1: 4175053 TA :19 |PVMD| CL @36 [NX] ##NON-RESPONDING##

10 AC2: 4275135 TA :19 |TAUR| LC5 @34 [NX]| DCL @46 | DES @47 | DCL @57

-----
4678 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 9 -71.71 CROSSING_ENC

5 AC1:*REV*8175053 TA :19 |PVMD| CL @36 [NX]| DES @47 | IDES @51
    ##NON-RESPONDING##

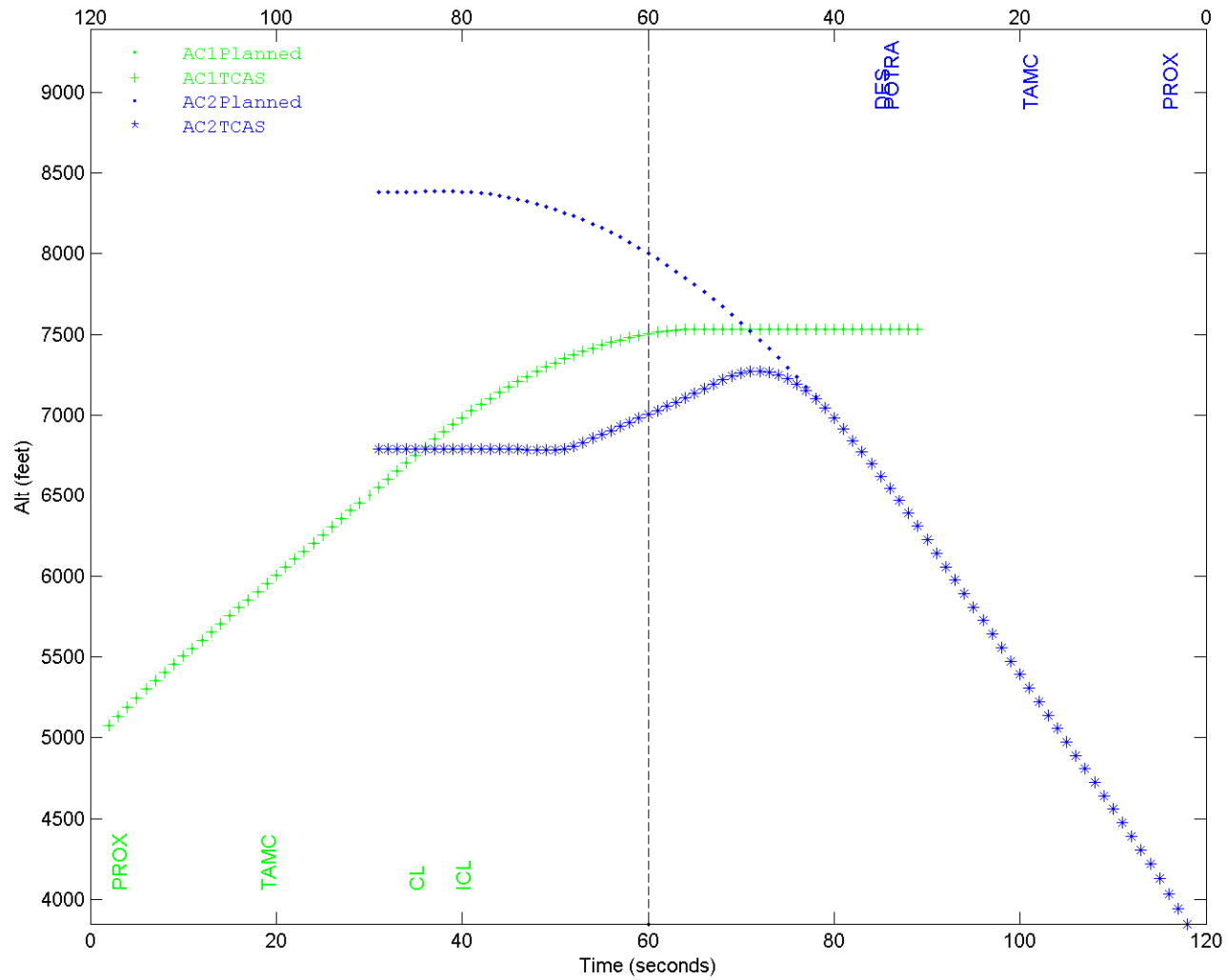
10 AC2:*REV*8275135 TA :19 |TAUR| LC5 @34 [NX]| DCL @46 | CL @47 | ICL @50

-----
4678 V7.1 25 FT NR L VS V7.1 25 FT R H 9 -71.71 CROSSING_ENC

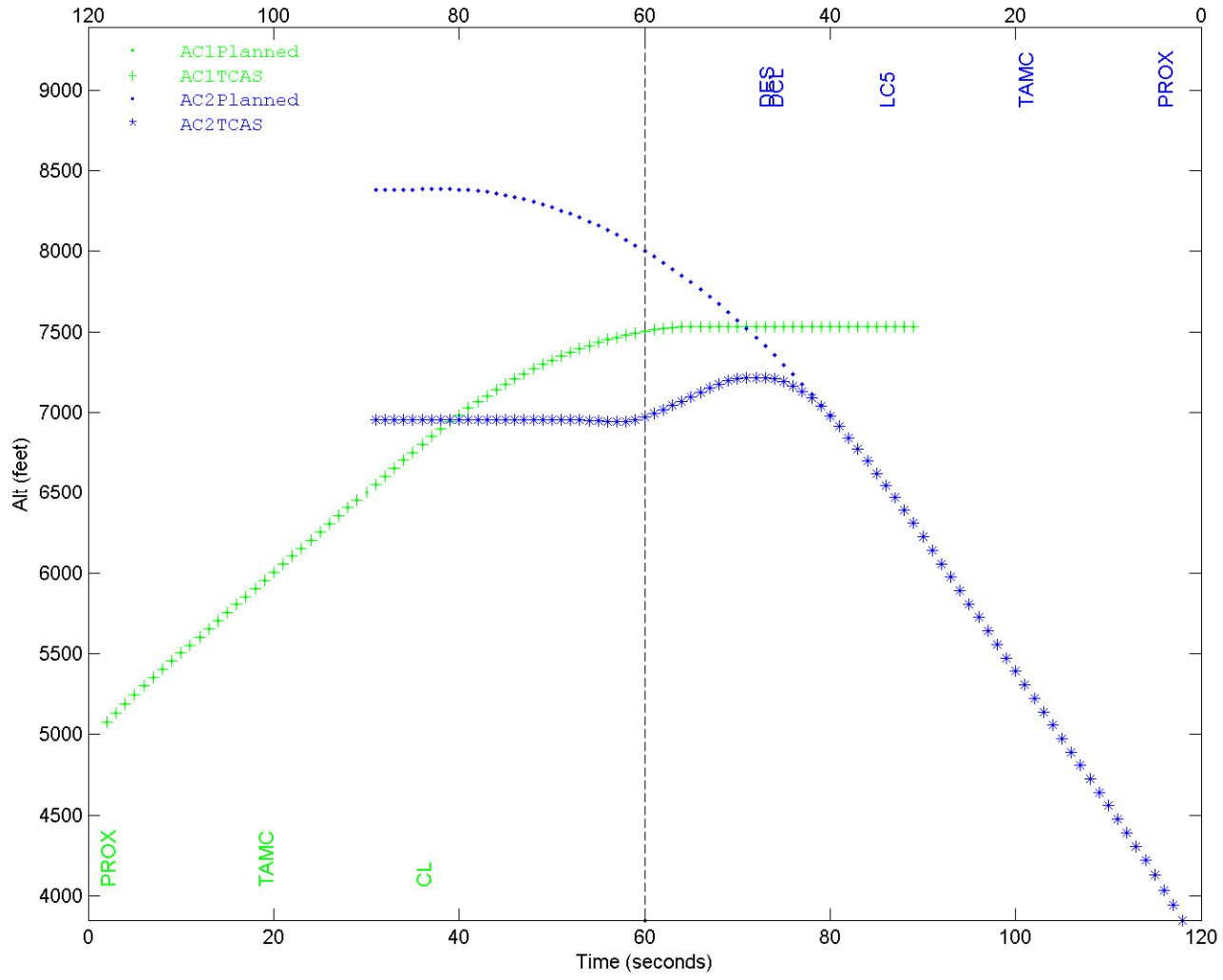
5 AC1:*REV*8175053 TA :19 |PVMD| CL @36 [NX]| DES @47 | IDES @51
    ##NON-RESPONDING##

10 AC2:*REV*8275135 TA :19 |TAUR| DCL @34 [NX]| CL @47 | ICL @50
```

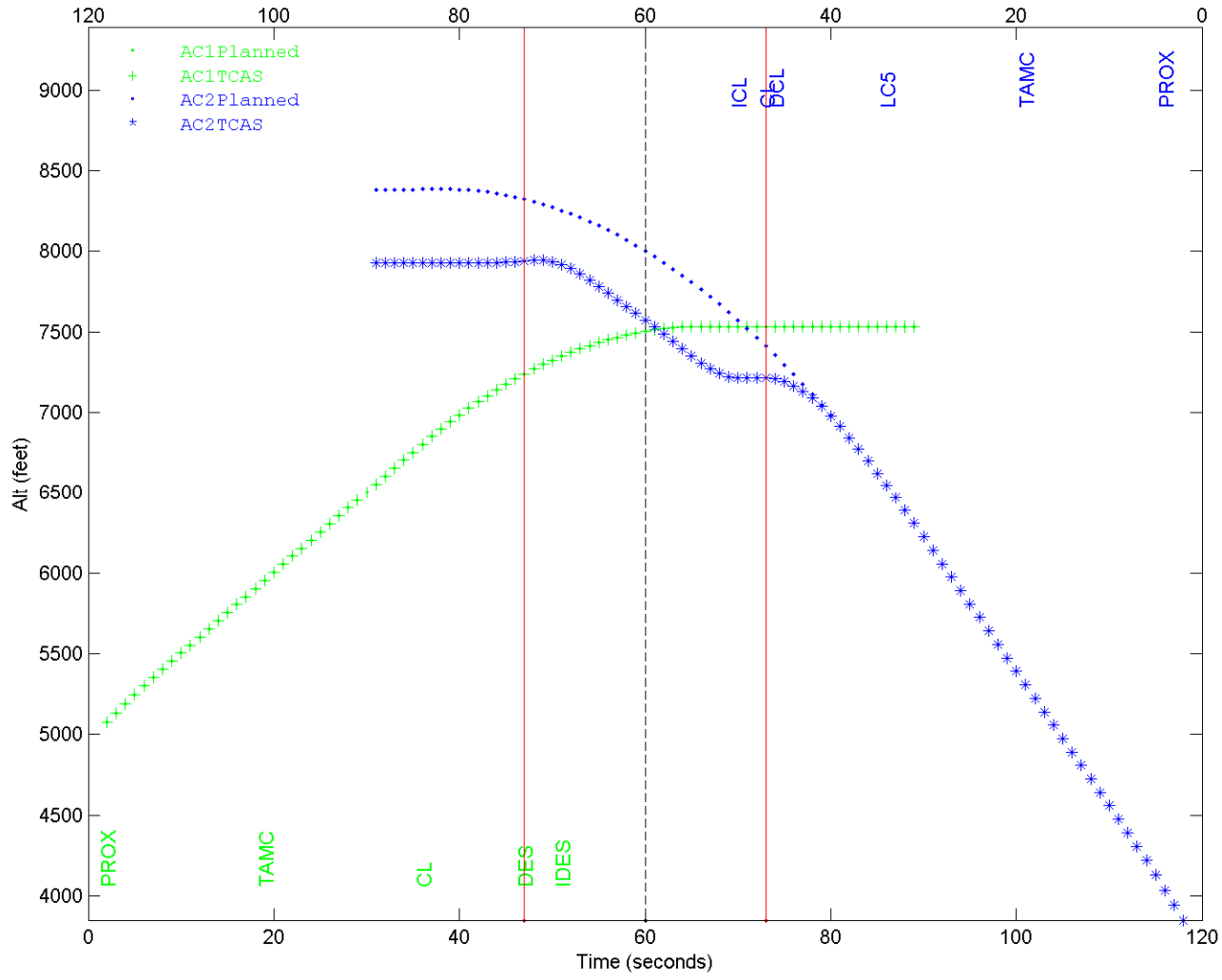
reit: 4678 cata: 919 simmode: 4165042 6.04A Vs 6.04A L194678A

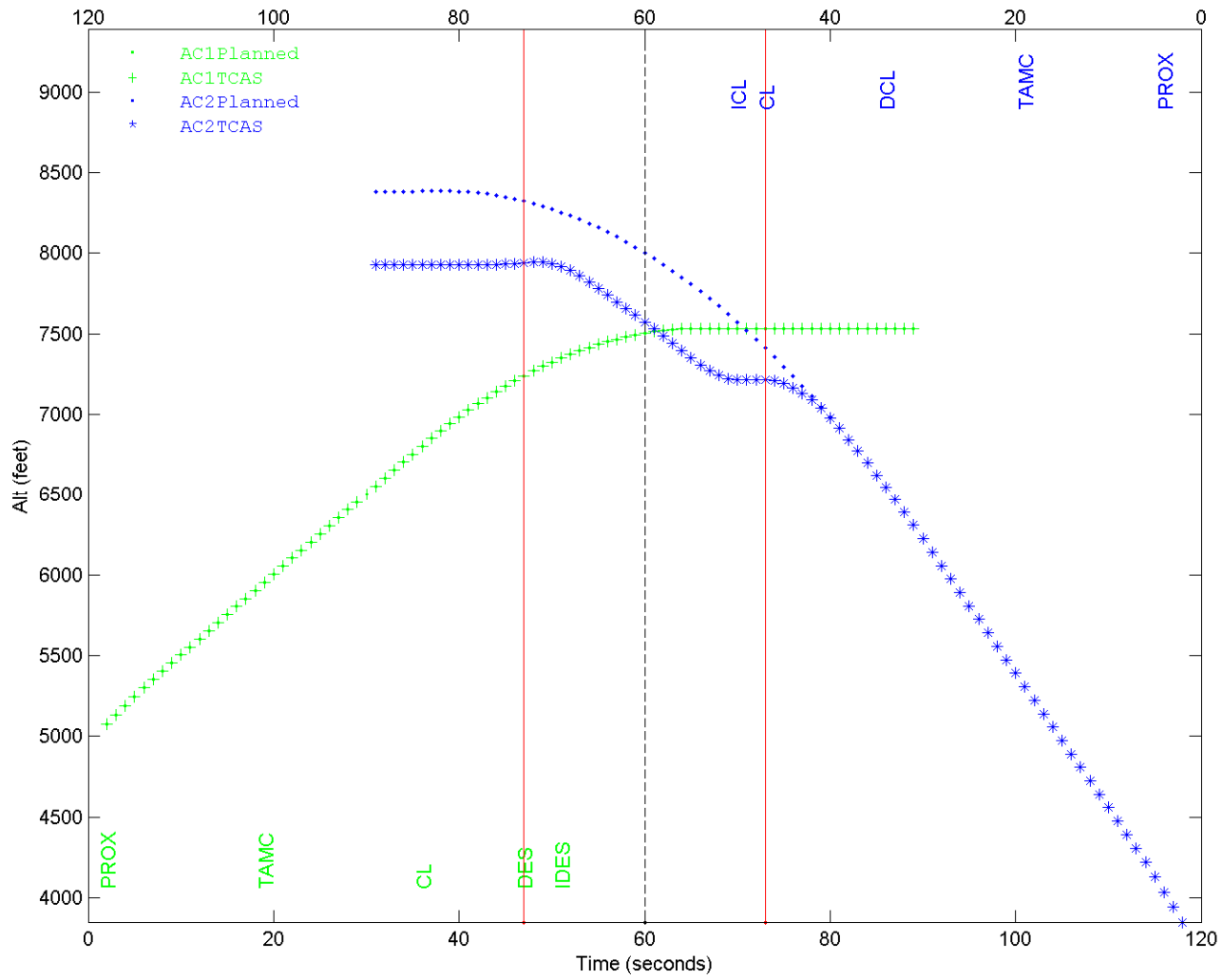


reit: 4678 cata: 919 simmode: 4175053 V7-25 Vs V7-25 L194678B



reit: 4678 cata: 919 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L194678C





Change 7.1 Non-responding Representative NMAC Ind10

Encounter Class: 15

Reit Number : 1237

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 1 |
| AC1 low ID | no |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | -250 ft |
| AC1 rates: | 3000 fpm |
| AC2 rates: | 3000 fpm |
| AC1 acceleration: | none |
| AC2 acceleration: | 0.35 g |
| AC2 acceleration time: | CPA – 20 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 93 | % of RAs were non-crossing |
| 0 | % of NMACs were non-crossing |
| 94 | % of RAs were not reversed |
| 94 | % of NMACs were not reversed |

Comments

New NMAC caused by CP115. CP112E did not have NMAC or reversal.
CP115 led to different sense for first positive RA.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H151237
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = -250.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.35g @ CPA -20 AC1 CPA ALT 3680

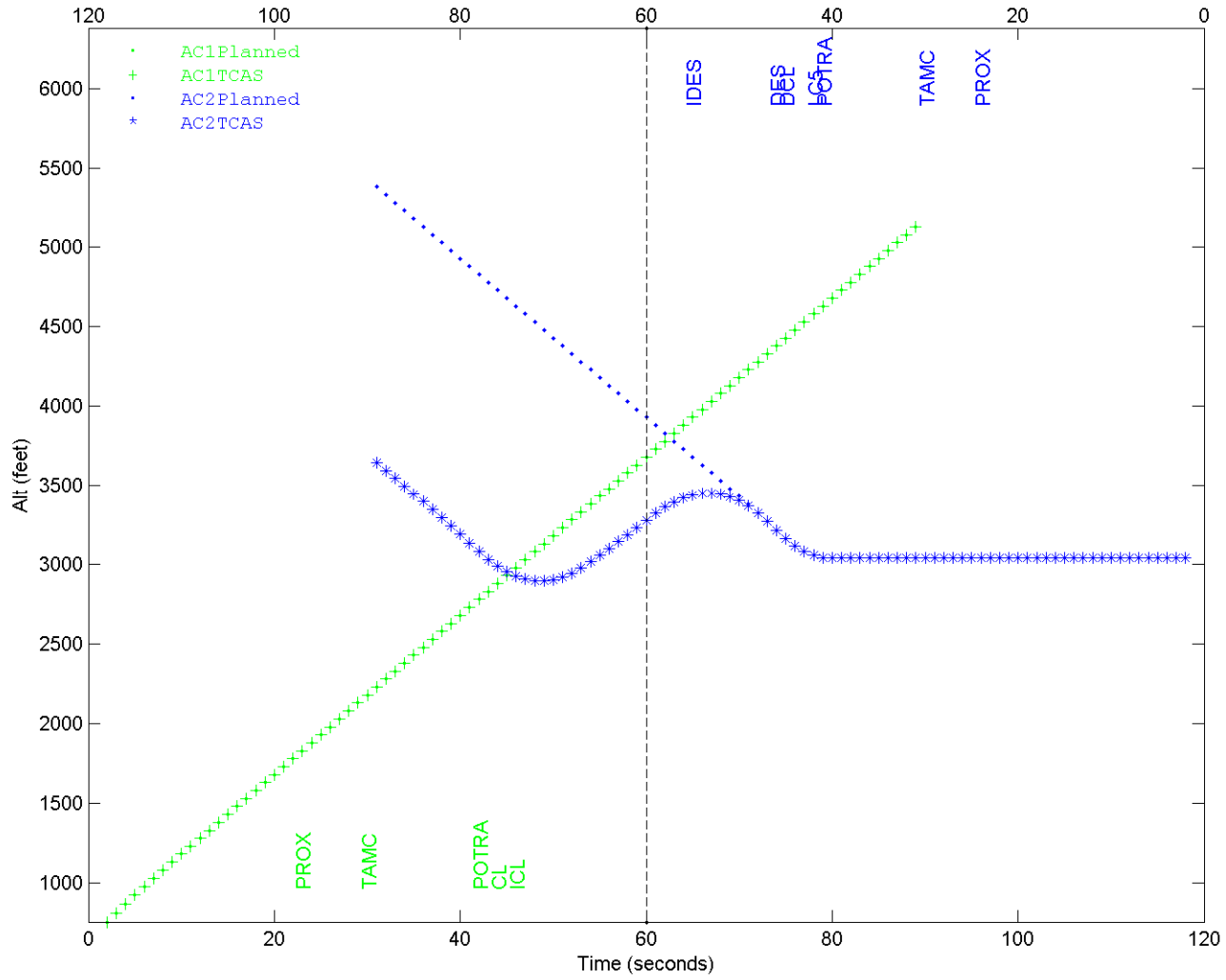
1237 6.04A NR H VS 6.04A NR L 15 412.99 CROSSING_ENC
10 AC1: 4165142 TA :30 |PVMD| CL @44 [X]| ICL @46 ##NON-RESPONDING##
5 AC2: 4265024 TA :30 |PVMD| LC5 @42[X]| LC5 @44 | DCL @45 | DES @46| IDES @55

1237 V7 25 FT NR H VS V7 25 FT R L 15 525.32 CROSSING_ENC
10 AC1: 4275053 TA :30 |TAUR| CL @40 [X]| DDES @63 ##NON-RESPONDING##
5 AC2: 4175135 TA :30 |TAUR| LC5 @40[X]| LC5 @43 | DCL @46| DES @47 | DCL @63

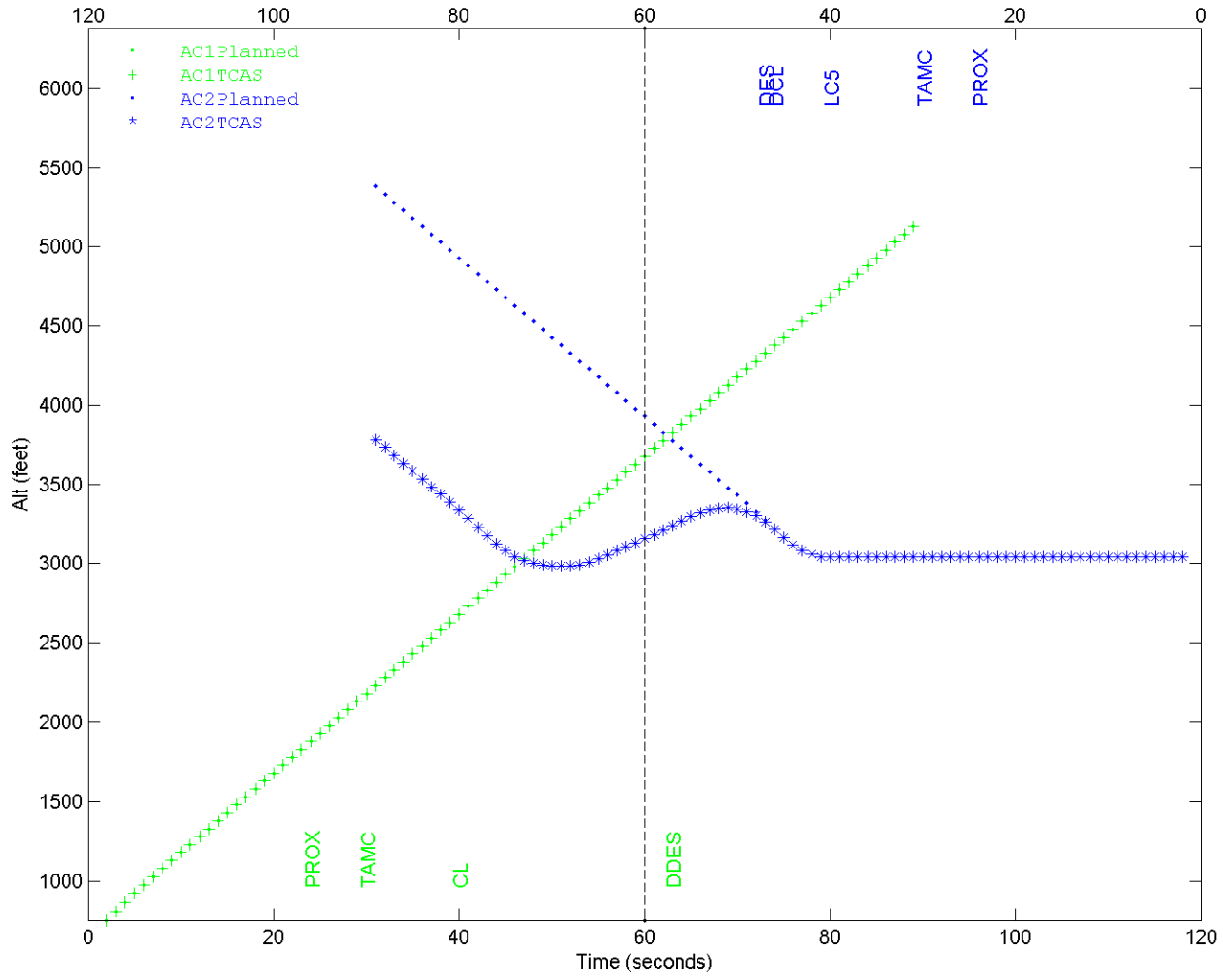
1237 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 15 525.32 CROSSING_ENC
10 AC1: 8275053 TA :30 |TAUR| CL @40 [X]| DDES @63 ##NON-RESPONDING##
5 AC2: 8175135 TA :30 |TAUR| LC5 @40[X]| LC5 @43| DCL @46| DES @47 | DCL @63

1237 V7.1 25 FT NR H VS V7.1 25 FT R L 15 55.60 CROSSING_ENC
10 AC1:*REV*8275053 TA :30 |TAUR| CL @40 [X]| DES @51 | IDES @53 ##NON-RESPONDING##
5 AC2:*REV*8175135 TA :30 |TAUR| LC5 @40 [X]| DCL @43 | CL @50 | ICL @53

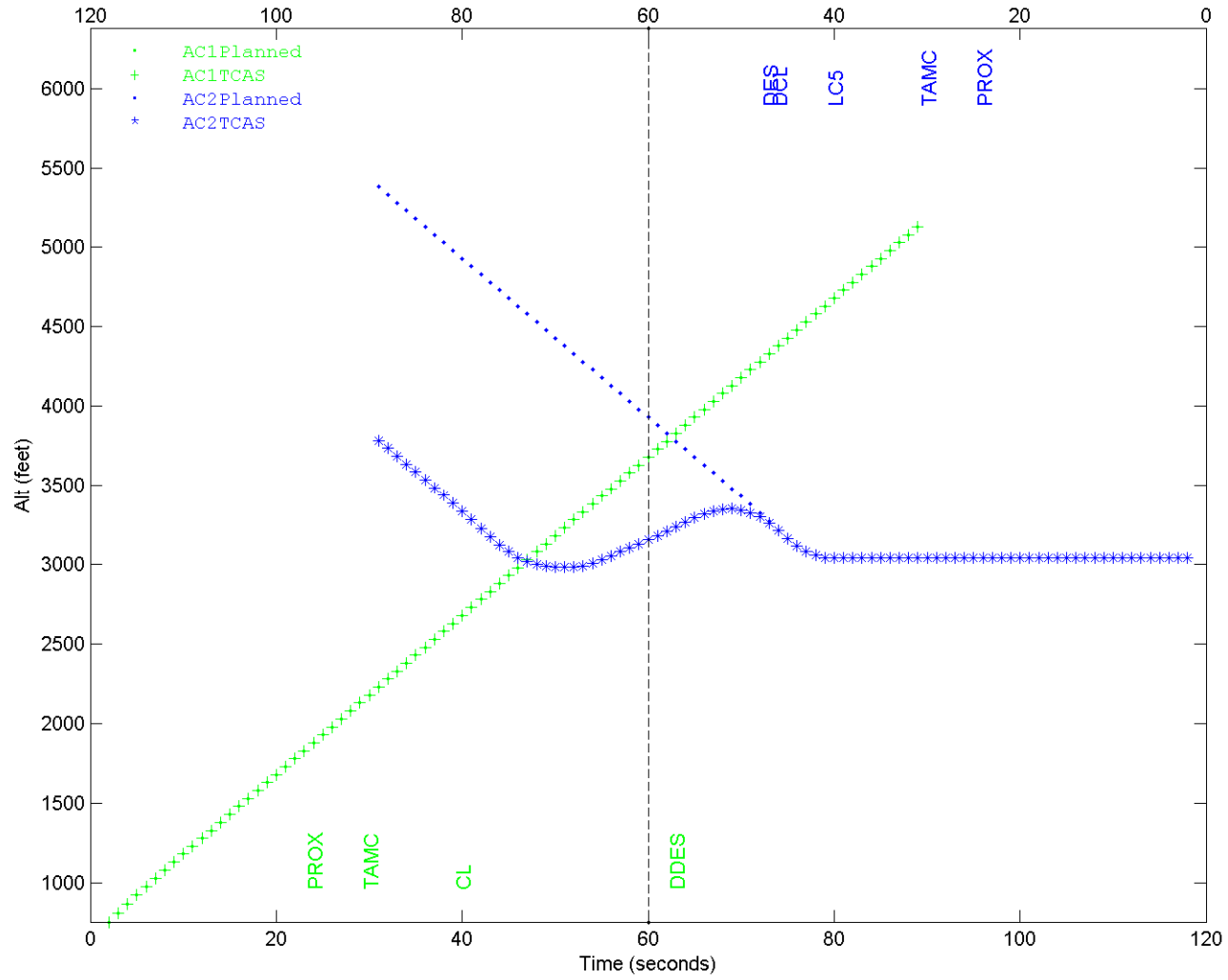
reit: 1237 cata: 515 simmode: 4165142 6.04A Vs 6.04A H151237A

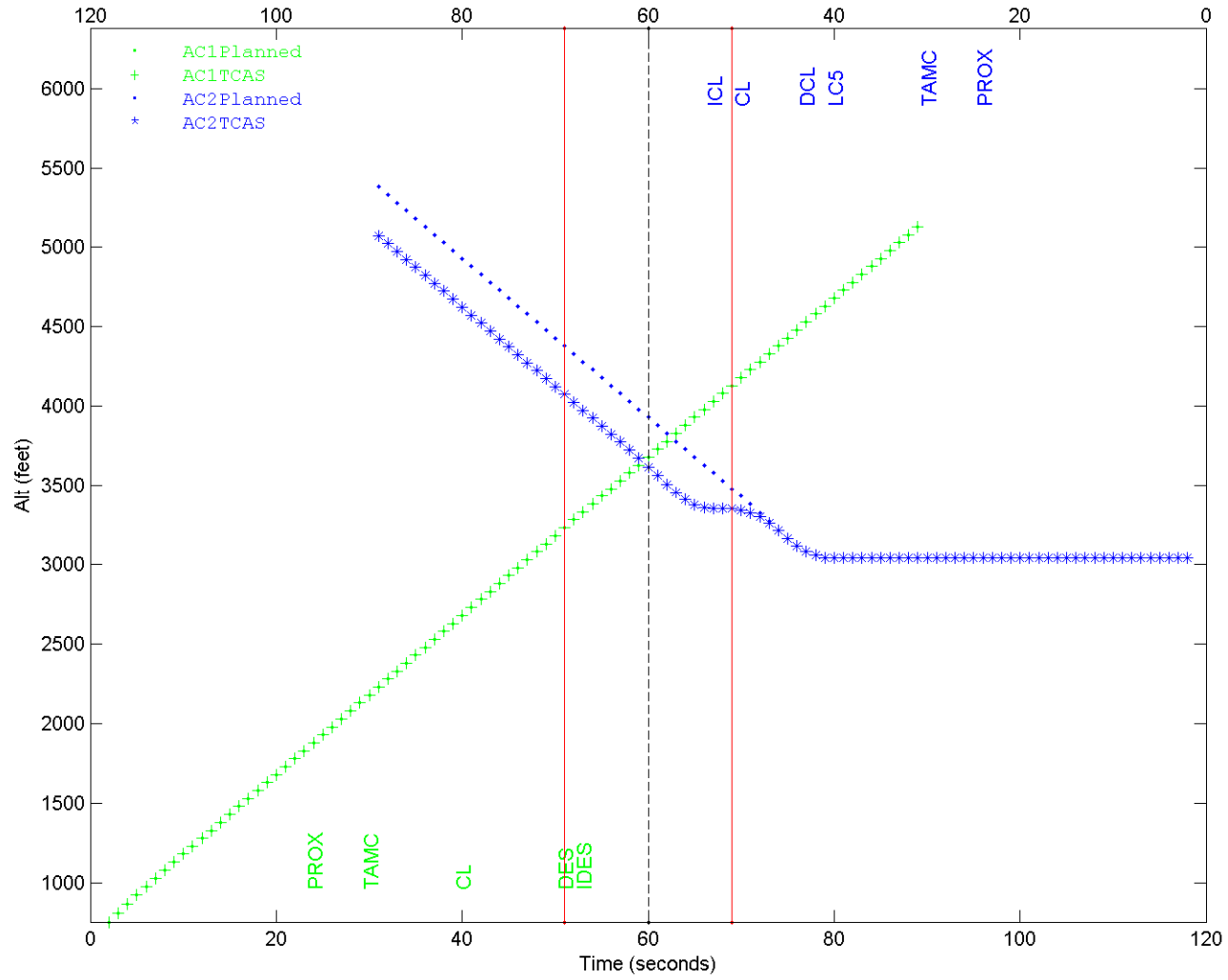


reit: 1237 cata: 515 simmode: 4275053 V7-25 Vs V7-25 H151237B



reit: 1237 cata: 515 simmode: 8275053 CP112EV1.2-25 Vs CP112EV1.2-25 H151237C





Change 7.1 Non-responding Representative NMAC Ind11

Encounter Class: 19

Reit Number : 7251

NMAC Characterization

| | |
|-------------------------------|----------------|
| Number of encounters in group | 5 |
| AC1 low ID | no |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | -250, 500 ft |
| AC1 rates: | 3000, 5000 fpm |
| AC2 rates: | 3000, 5000 fpm |
| AC1 acceleration: | -0.15 g |
| AC2 acceleration: | -0.05 g |
| AC1 acceleration time: | CPA – 25 sec |
| AC2 acceleration time: | CPA – 25 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 87 | % of RAs were non-crossing |
| 0 | % of NMACs were non-crossing |
| 89 | % of RAs were not reversed |
| 98 | % of NMACs were not reversed |

Comments

CP112E caused new NMAC. Climbing vertical chase.
 Planned level-off by non responding aircraft defeats the reversal.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER H197251
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -250.0 AC1 RATES(5000.0,0.0) AC2 RATES(3000.0,0.0)
AC1 ACCEL -0.15g @ CPA -25 AC2 ACCEL -0.05g @ CPA -25 AC1 CPA ALT 7500

7251 6.04A NR H VS 6.04A NR L 19 -701.06 NON_CROSSING_ENC

10 AC1: 4165142 TA :19 |TAUR| POTRA@34 (DFD | DES @35 [NX]| LC1 @53 ##NON-RESPONDING##

5 AC2: 4265024 TA :19 |TAUR| MCL @34 [NX]| ICL @40 | LD5 @55

7251 V7 25 FT NR H VS V7 25 FT R L 19 -701.06 NON_CROSSING_ENC

10 AC1: 4275053 TA :19 |TAUR| LC1 @34 [NX] ##NON-RESPONDING##

5 AC2: 4175135 TA :19 |TAUR| CL @34 [NX]| DDES @55

7251 CP112EV1.2 25 FT NR H VS CP112EV1.2 25 FT R L 19 81.30 CROSSING_ENC

10 AC1:*REV*8275053 TA :19 |TAUR| LC1 @34 [NX]| CL @46 | ICL @49 ##NON-RESPONDING##

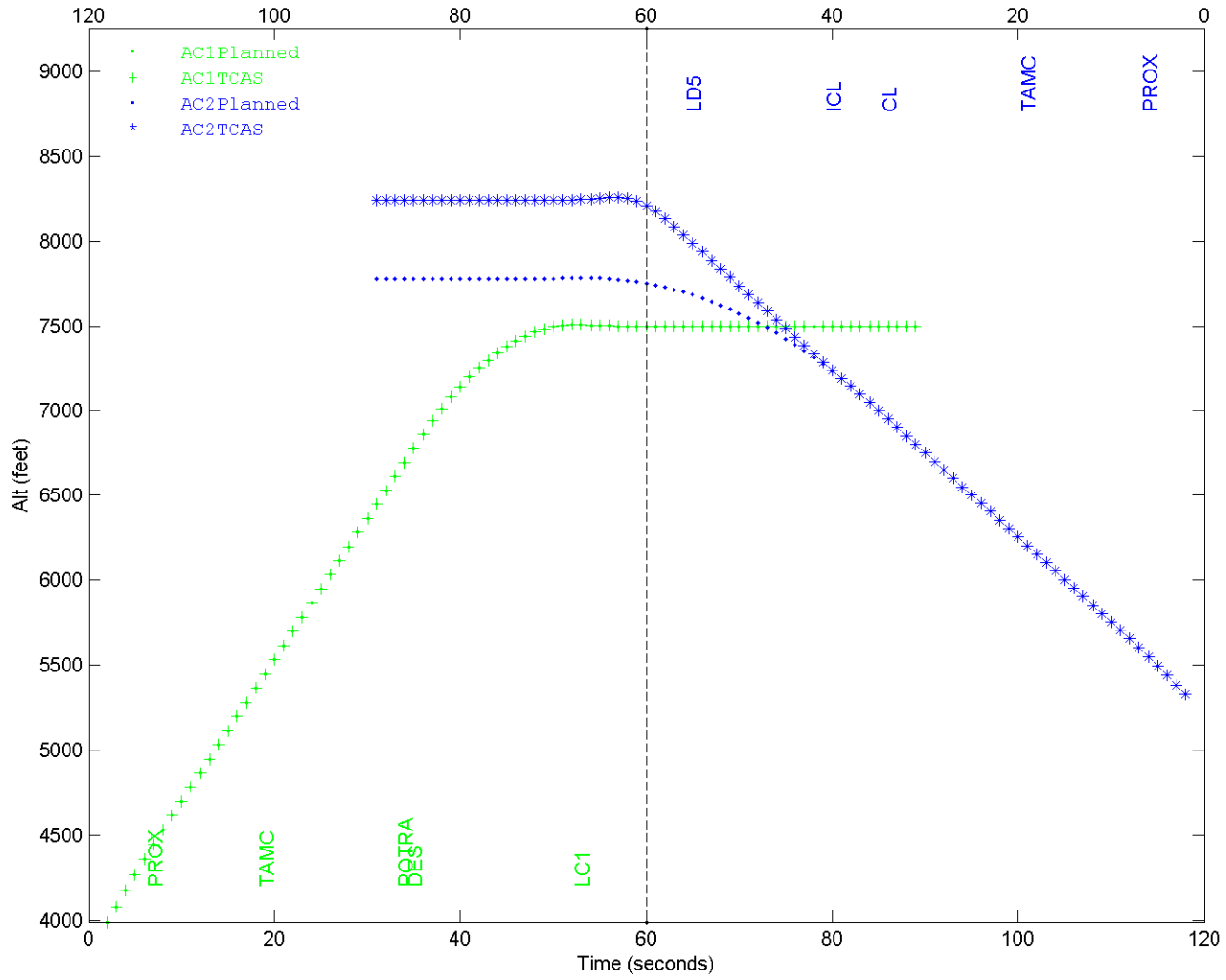
5 AC2:*REV*8175135 TA :19 |TAUR| CL @34 [NX]| DES @45 | IDES @48

7251 V7.1 25 FT NR H VS V7.1 25 FT R L 19 81.30 CROSSING_ENC

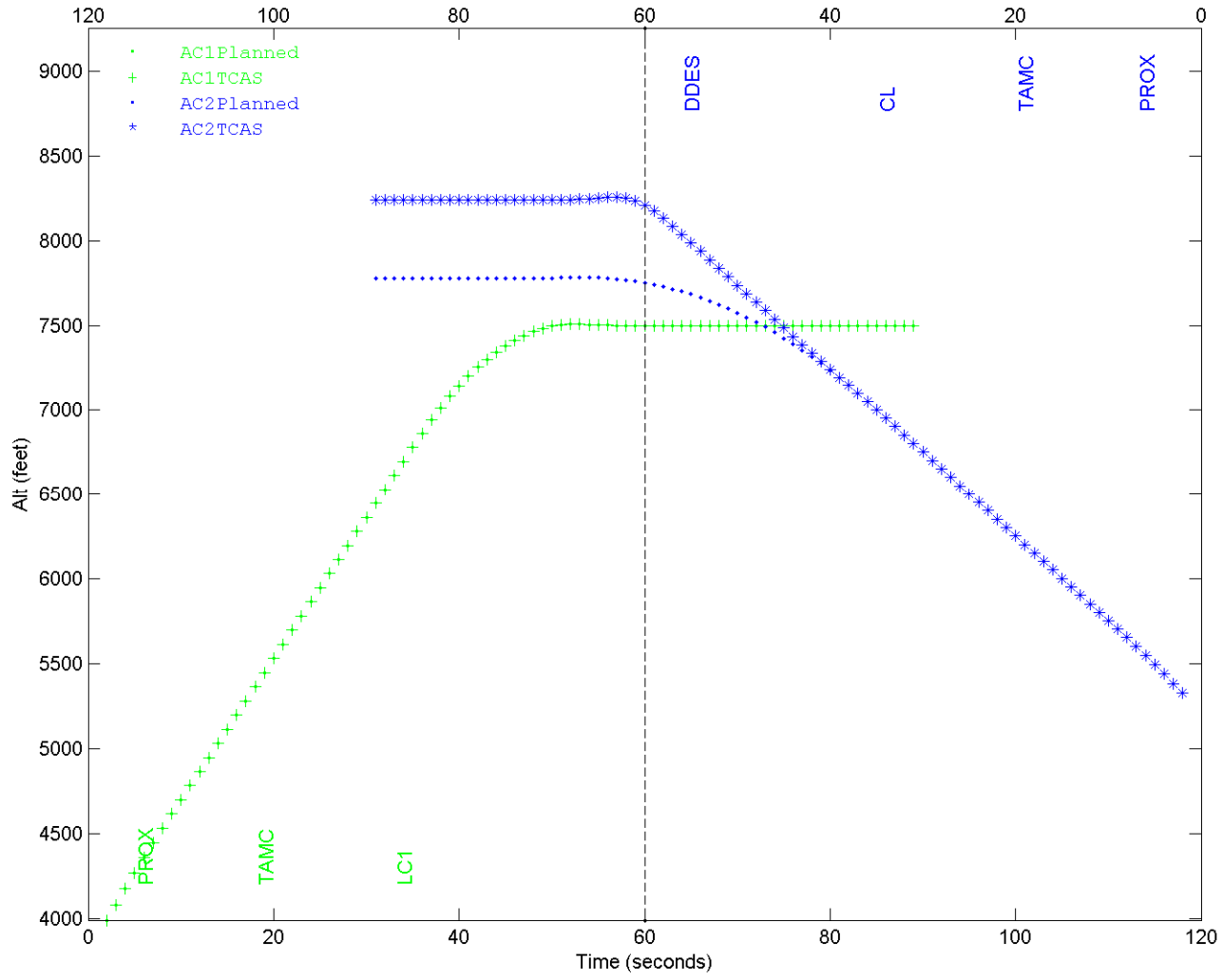
10 AC1:*REV*8275053 TA :19 |TAUR| DCL @34 [NX]| CL @46 | ICL @49 ##NON-RESPONDING##

5 AC2:*REV*8175135 TA :19 |TAUR| CL @34 [NX]| DES @45 | IDES @48

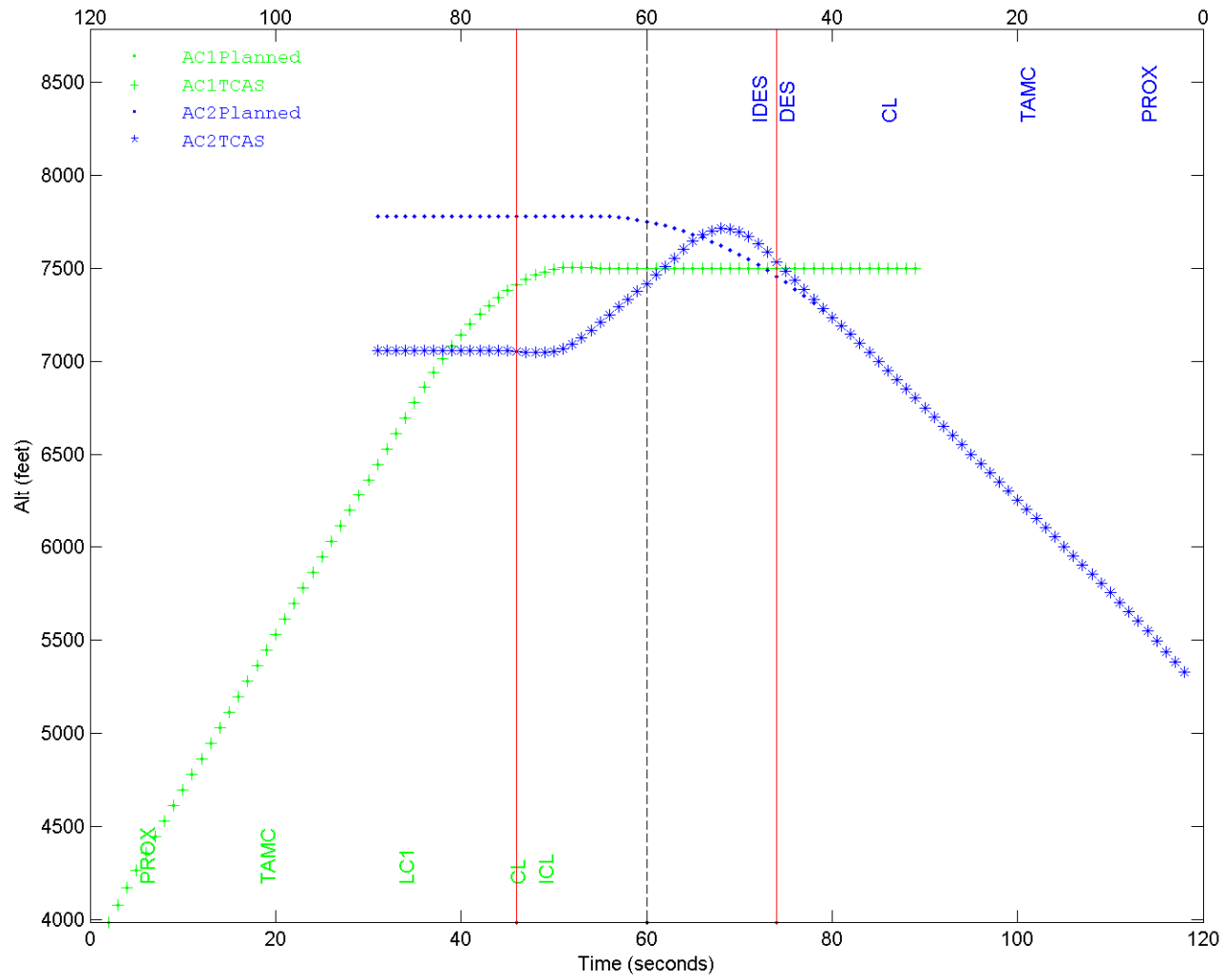
reit: 7251 cata: 919 simmode: 4165142 6.04A Vs 6.04A H197251A

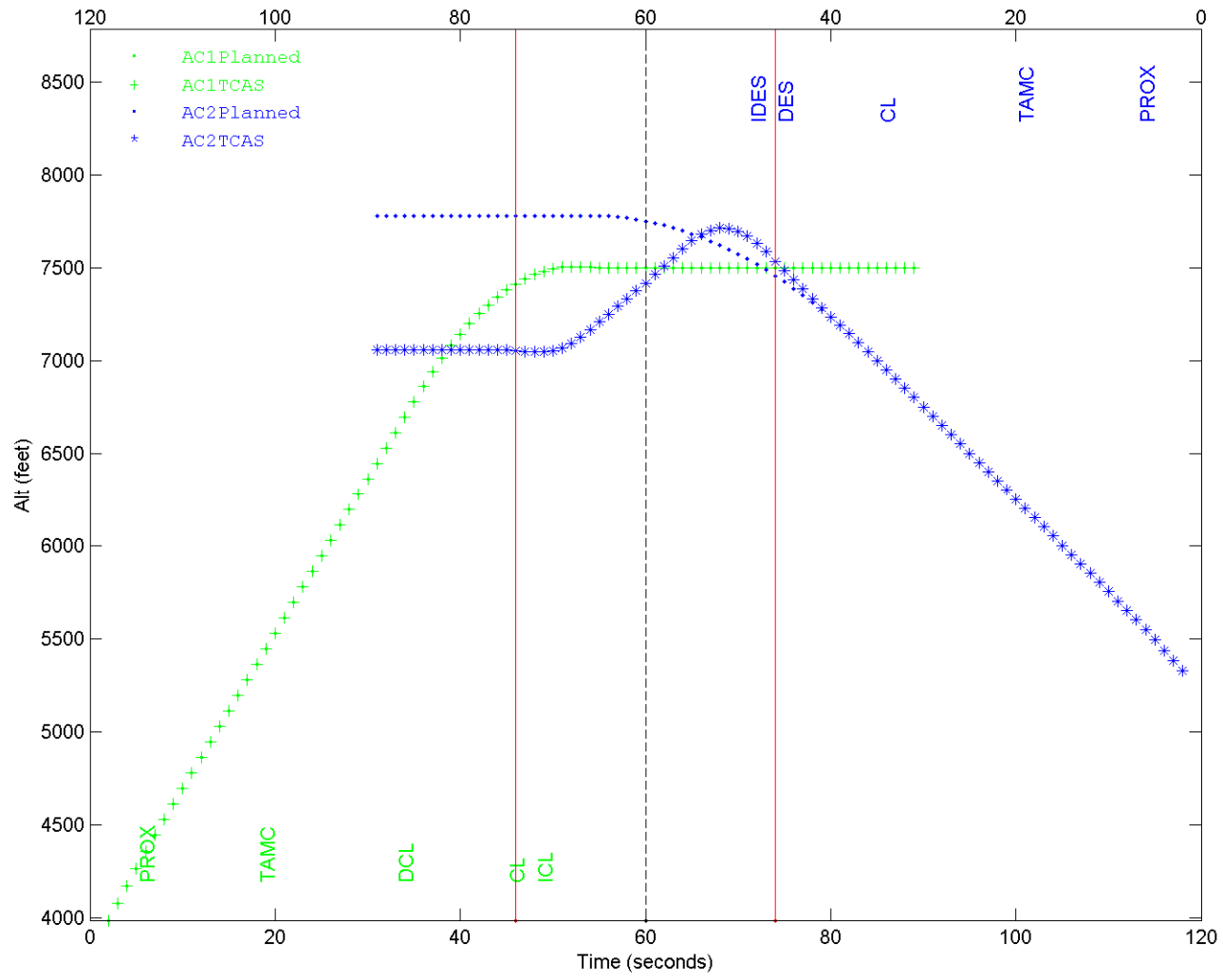


reit: 7251 cata: 919 simmode: 4275053 V7-25 Vs V7-25 H197251B



reit: 7251 cata: 919 simmode: 8275053 CP112EV1.2-25 Vs CP112EV1.2-25 H197251C





Change 7.1 Non-responding Representative NMAC Ind12

Encounter Class: 19

Reit Number : 1289

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 1 |
| AC1 low ID | yes |
| Non-responding AC | 1 |
| Vertical tracker | 25 ft |
| Planned separation | 750 ft |
| AC1 rates: | 3000 fpm |
| AC2 rates: | 5000 fpm |
| AC1 acceleration: | -0.05 g |
| AC2 acceleration: | -0.35 g |
| AC1 acceleration time: | CPA – 25 sec |
| AC2 acceleration time: | CPA – 20 sec |
| Encounters with reversed RAs | 100 % |

Performance Statistics for entire encounter class

| | |
|--------------|------------------------------|
| <u>25 ft</u> | |
| 87 | % of RAs were non-crossing |
| 0 | % of NMACs were non-crossing |
| 89 | % of RAs were not reversed |
| 98 | % of NMACs were not reversed |

Comments

New reversal. CP115 caused NMAC. Climbing vertical chase. CP112E did not have a reversal or an NMAC.

First positive RA delayed 1 second with CP112E + CP115 compared to CP112E.

SIMULATION RESULTS FOR 6.04A, V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER L191289
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 750.0 AC1 RATES(3000.0,0.0) AC2 RATES(5000.0,0.0)
AC1 ACCEL -0.05g @ CPA -25 AC2 ACCEL -0.35g @ CPA -20 AC1 CPA ALT 3700

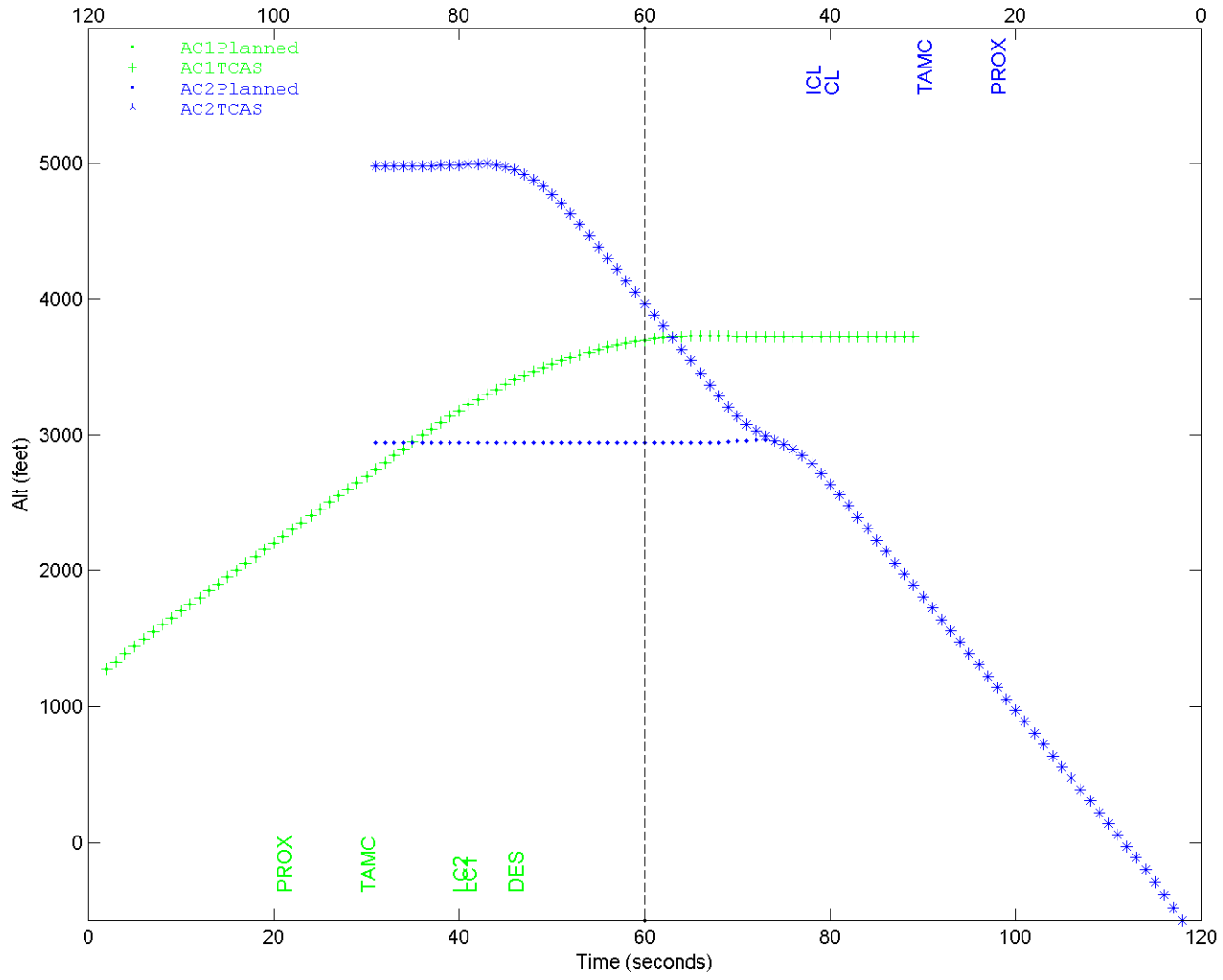
1289 6.04A NR L VS 6.04A R H 19 -270.50 CROSSING_ENC
5 AC1: 4165042 TA :30 |TAUR| LC2 @40 [X]| LC1 @41 | DES @46 ##NON-RESPONDING##
10 AC2: 4265124 TA :30 |TAUR| CL @40 [X]| ICL @42 | CL @60

1289 V7 25 FT NR L VS V7 25 FT R H 19 -184.28 CROSSING_ENC
5 AC1: 4175053 TA :30 |TAUR| LC2 @40 [X] | LC1 @42 | DES @44 | IDES @49 ##NON-RESPONDING##
10 AC2: 4275135 TA :30 |TAUR| CL @40 [X]

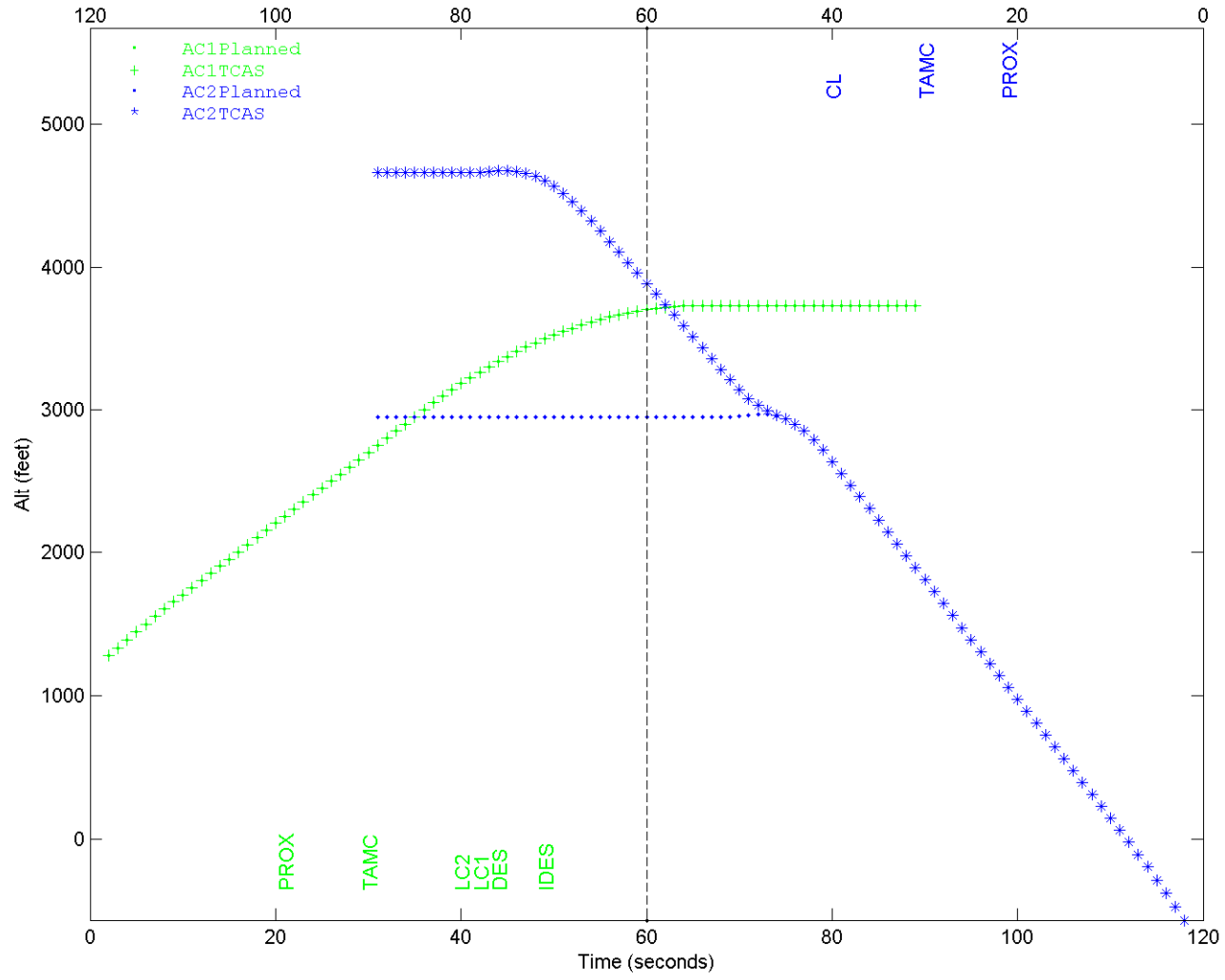
1289 CP112EV1.2 25 FT NR L VS CP112EV1.2 25 FT R H 19 -184.28 CROSSING_ENC
5 AC1: 8175053 TA :30 |TAUR| LC2 @40 [X]| LC1 @42 | DES @44 | IDES @49 ##NON-RESPONDING##
10 AC2: 8275135 TA :30 |TAUR| CL @40 [X]

1289 V7.1 25 FT NR L VS V7.1 25 FT R H 19 91.60 NON_CROSSING_ENC
5 AC1:*REV*8175053 TA :30 |TAUR| DCL @40[X]| DES @45| IDES @49 | CL @51| ICL @53 ##NON-RESPONDING##
10 AC2:*REV*8275135 TA :30 |TAUR| CL @40 [X] | DES @51 | IDES @53

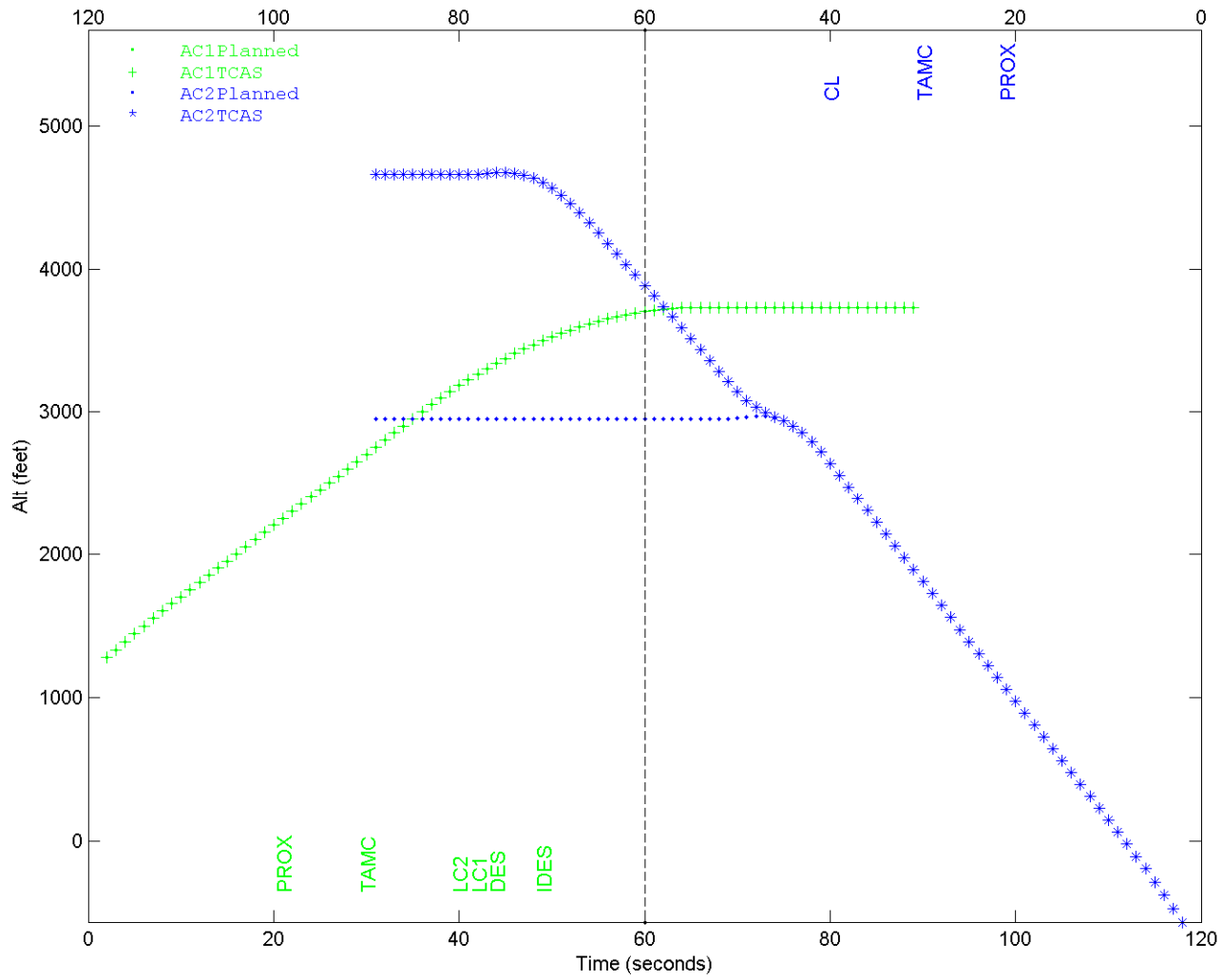
reit: 1289 cata: 919 simmode: 4165042 6.04A Vs 6.04A L191289A

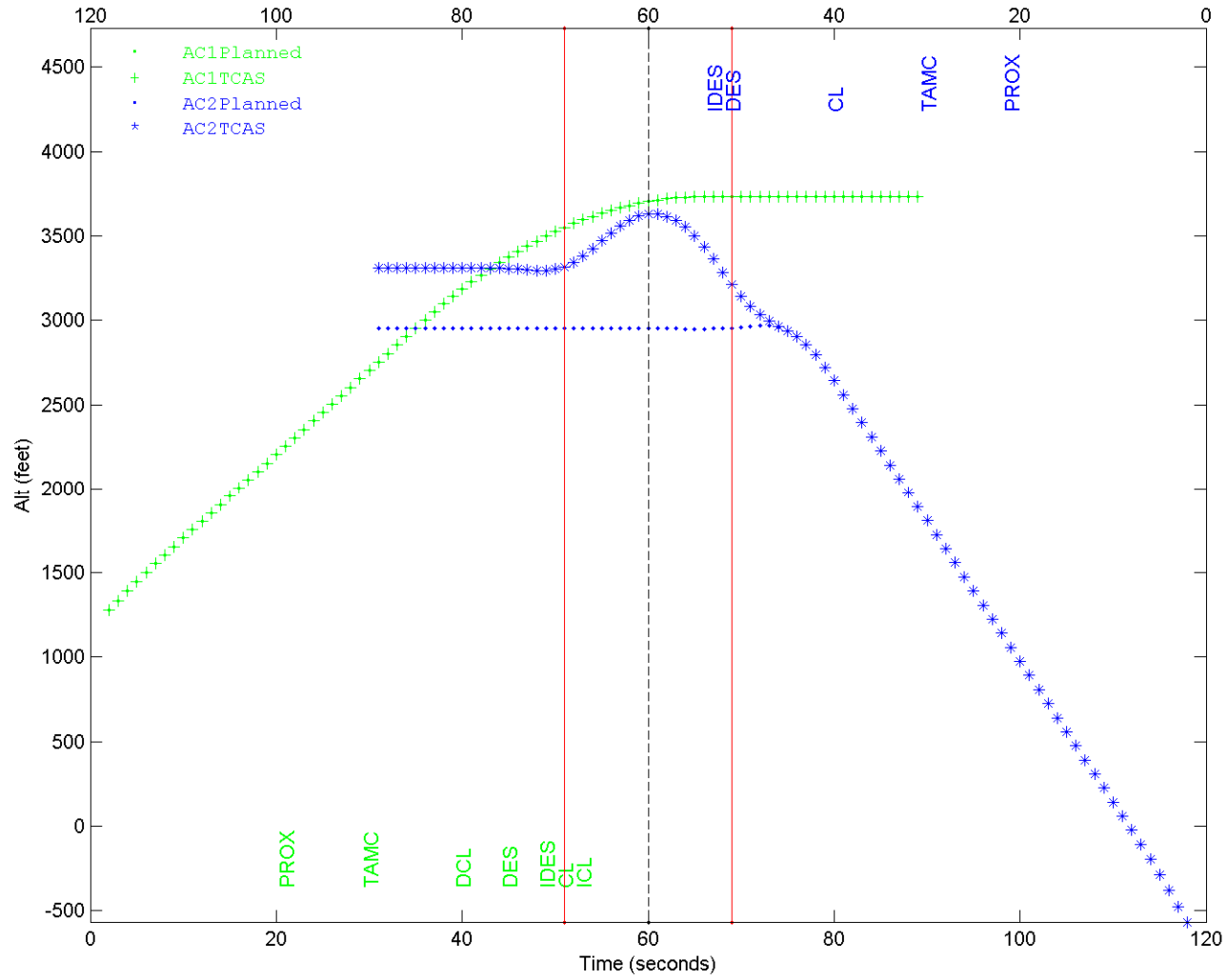


reit: 1289 cata: 919 simmode: 4175053 V7-25 Vs V7-25 L191289B



reit: 1289 cata: 919 simmode: 8175053 CP112EV1.2-25 Vs CP112EV1.2-25 L191289C





Appendix P V7.1 REPRESENTATIVE SAVES (TCAS vs. unequipped intruder)

Change 7.1 TCAS vs. Unequipped Representative Save 01

Encounter Class: 2

Reit Number : 531

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 18 | |
| AC1 TCAS equipped | no | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | -500, -750 | ft |
| AC1 rates: | 0, +/- 400 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.05 | g |
| AC2 acceleration time: | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA.
New reversal allowed by CP112E resolved NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I2531
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(400.0, 400.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.05g @ CPA -30 AC1 CPA ALT 3680

531 V7 100 FT VS UNEQUIPPED 2 -74.90 CROSSING_ENC

1 TCAS AC 3171031 TA :30 |TAUR| CL @40 [NX]| ICL @47

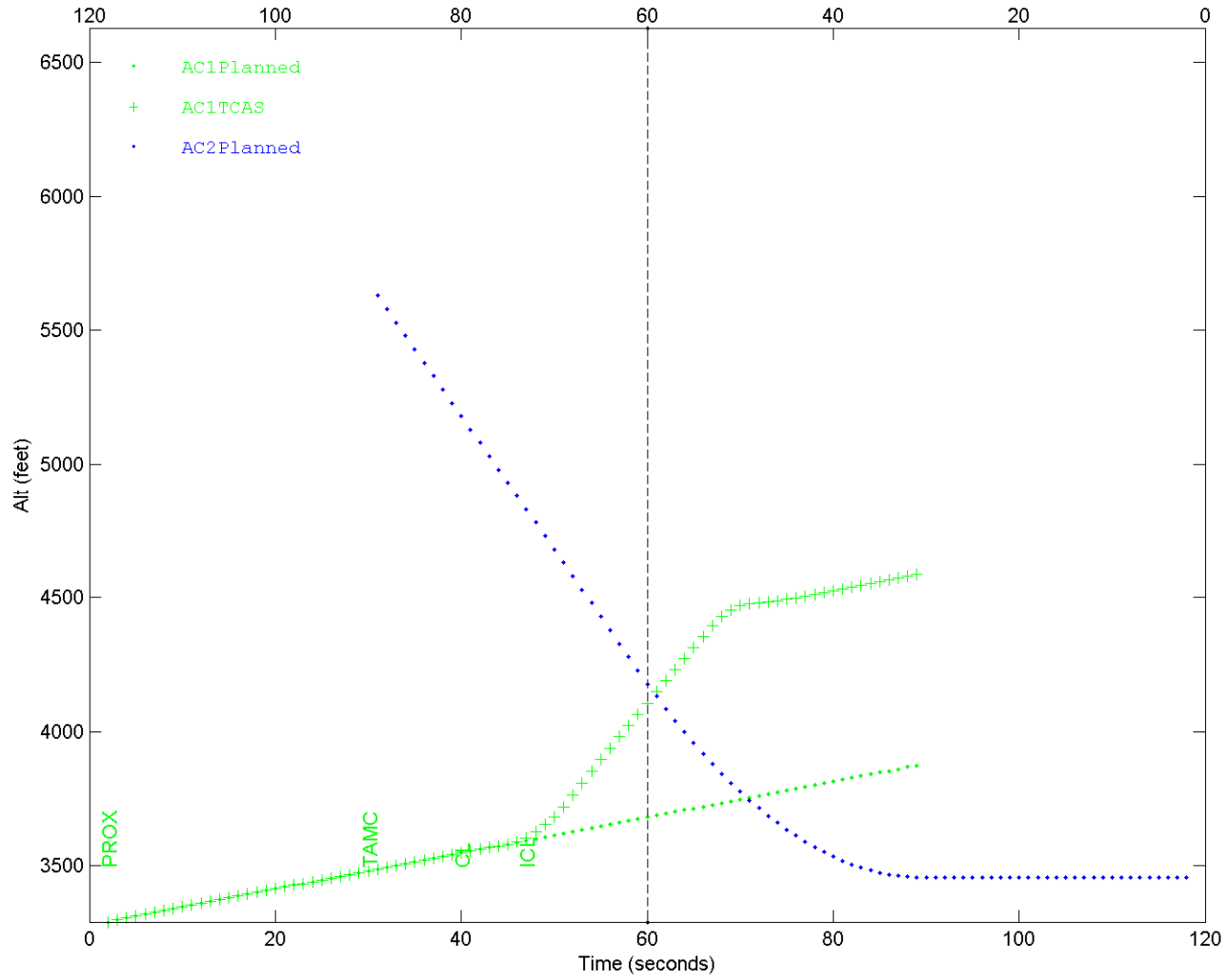
531 CP112EV1.2 100 FT VS UNEQUIPPED 2 -344.21 CROSSING_ENC

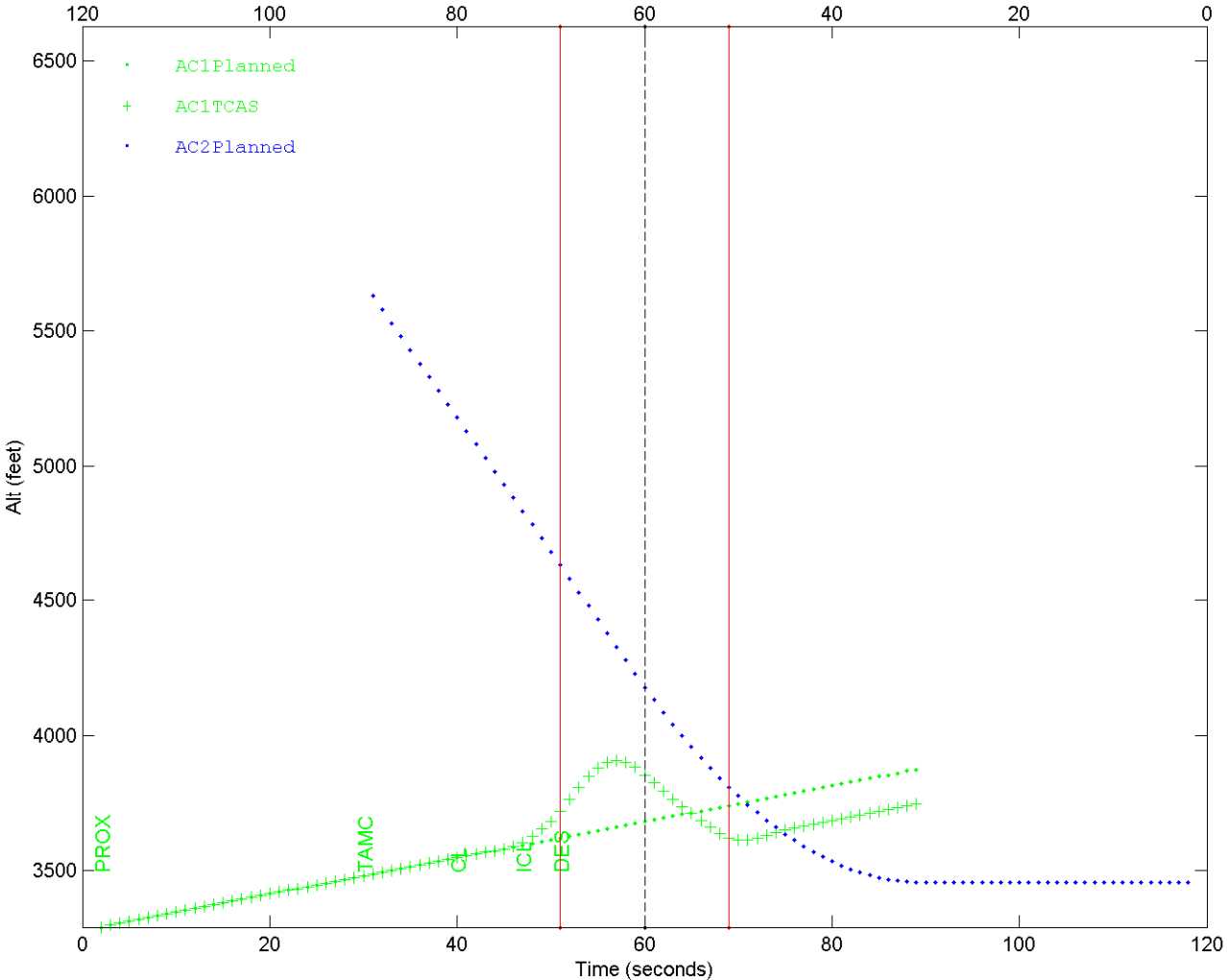
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 7.29 REV_AVOID 02 TIME_REV_AVOID 0.0

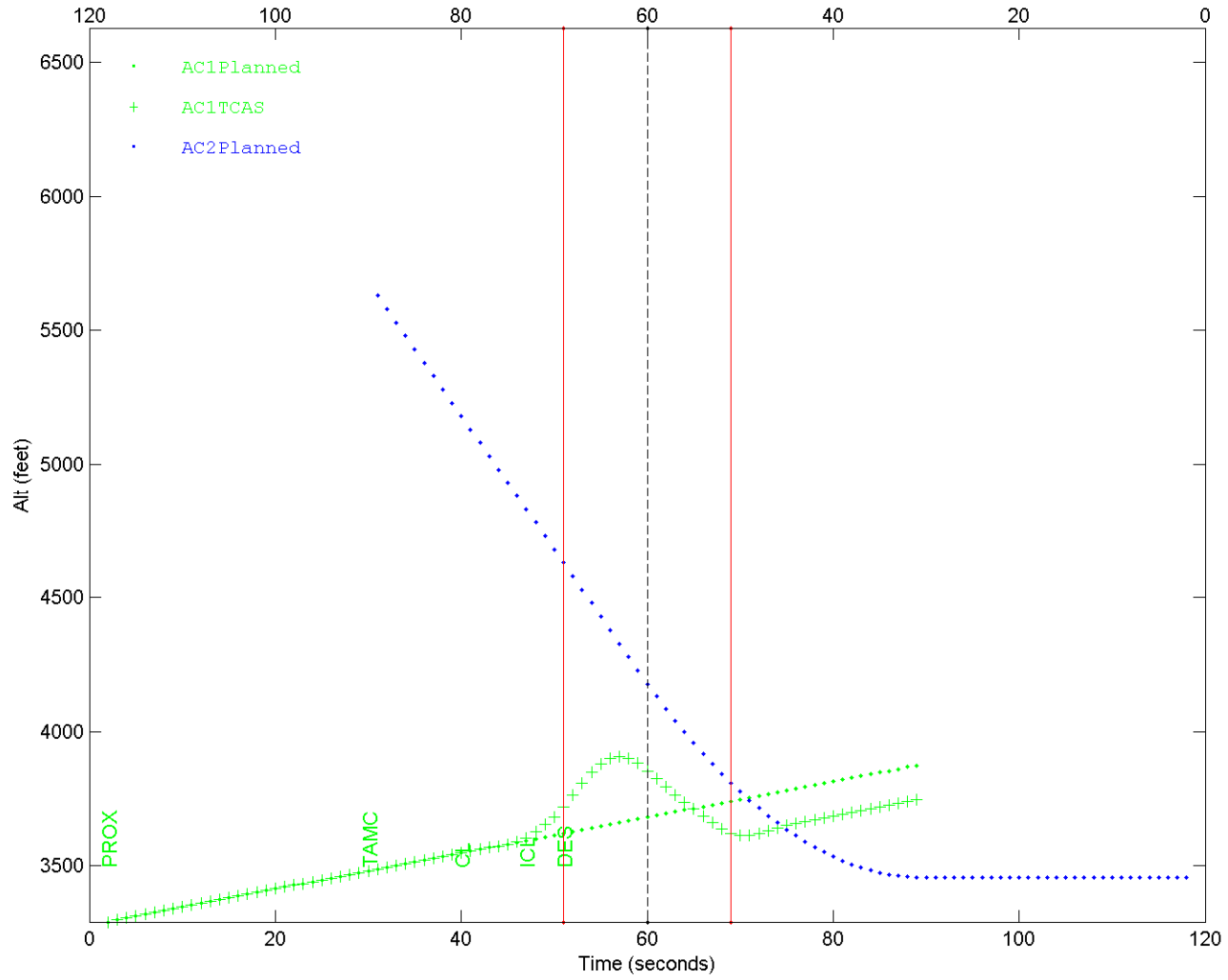
1 TCAS AC*REV*7171031 TA :30 |TAUR| CL @40 [NX]| ICL @47 | DES @51

531 V7.1 100 FT VS UNEQUIPPED 2 -344.21 CROSSING_ENC

1 TCAS AC*REV*7171031 TA :30 |TAUR| CL @40 [NX]| ICL @47 | DES @51







Change 7.1 TCAS vs Unequipped Representative Save 02

Encounter Class: 5

Reit Number : 2184

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 7 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | -500, -750 | ft |
| AC1 rates: | +/- 1000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.25 | g |
| AC2 acceleration time: | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA and planned maneuver.
New reversal or earlier reversal allowed by CP112E resolved NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I52184
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-1000.0,-1000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -20 AC1 CPA ALT 3720

2184 V7 100 FT VS UNEQUIPPED 5 -74.38 CROSSING_ENC

1 TCAS AC 3171031 TA :30 |TAUR| DDES @40 [NX]| CL @43 | ICL @47

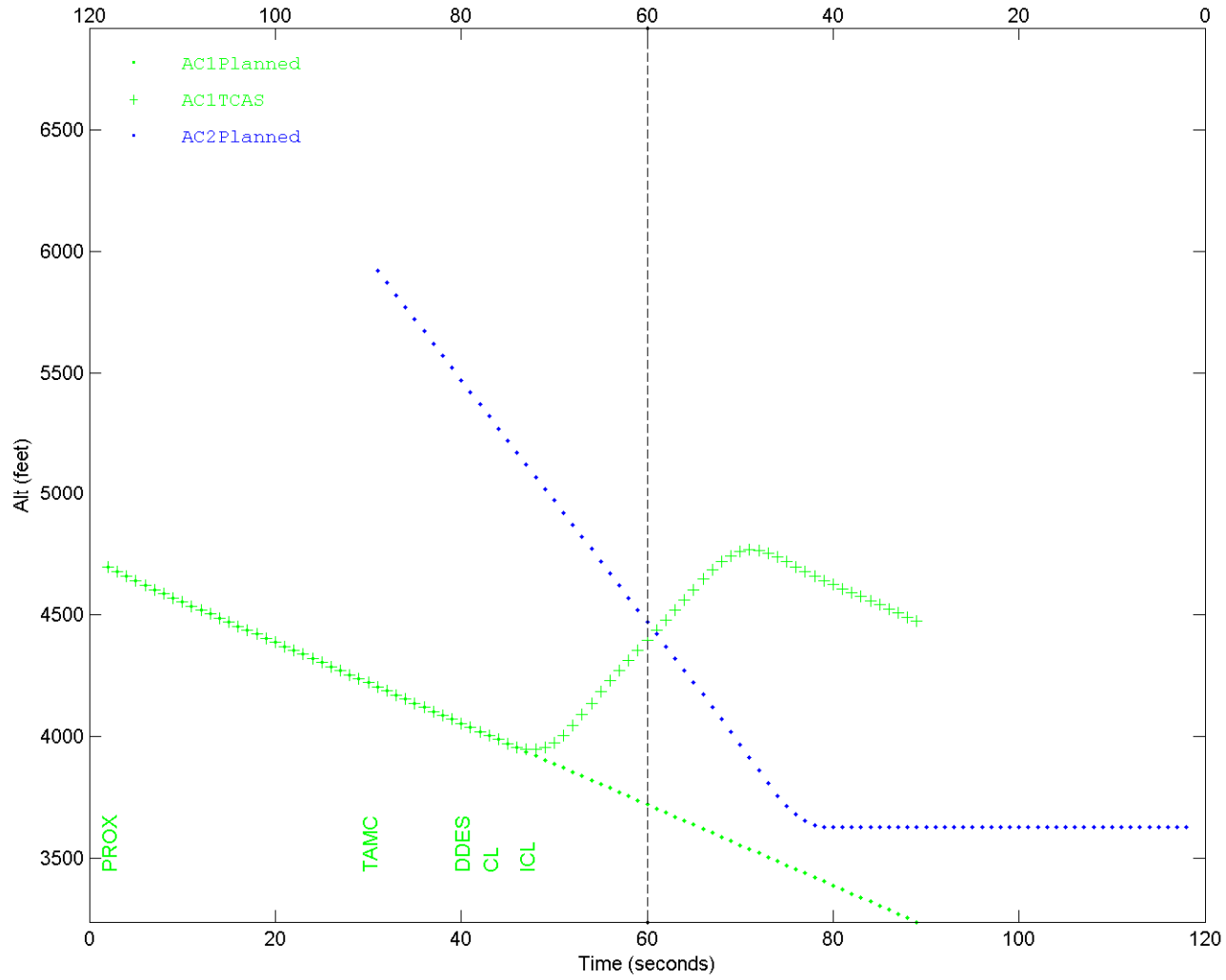
2184 CP112EV1.2 100 FT VS UNEQUIPPED 5 -215.13 CROSSING_ENC

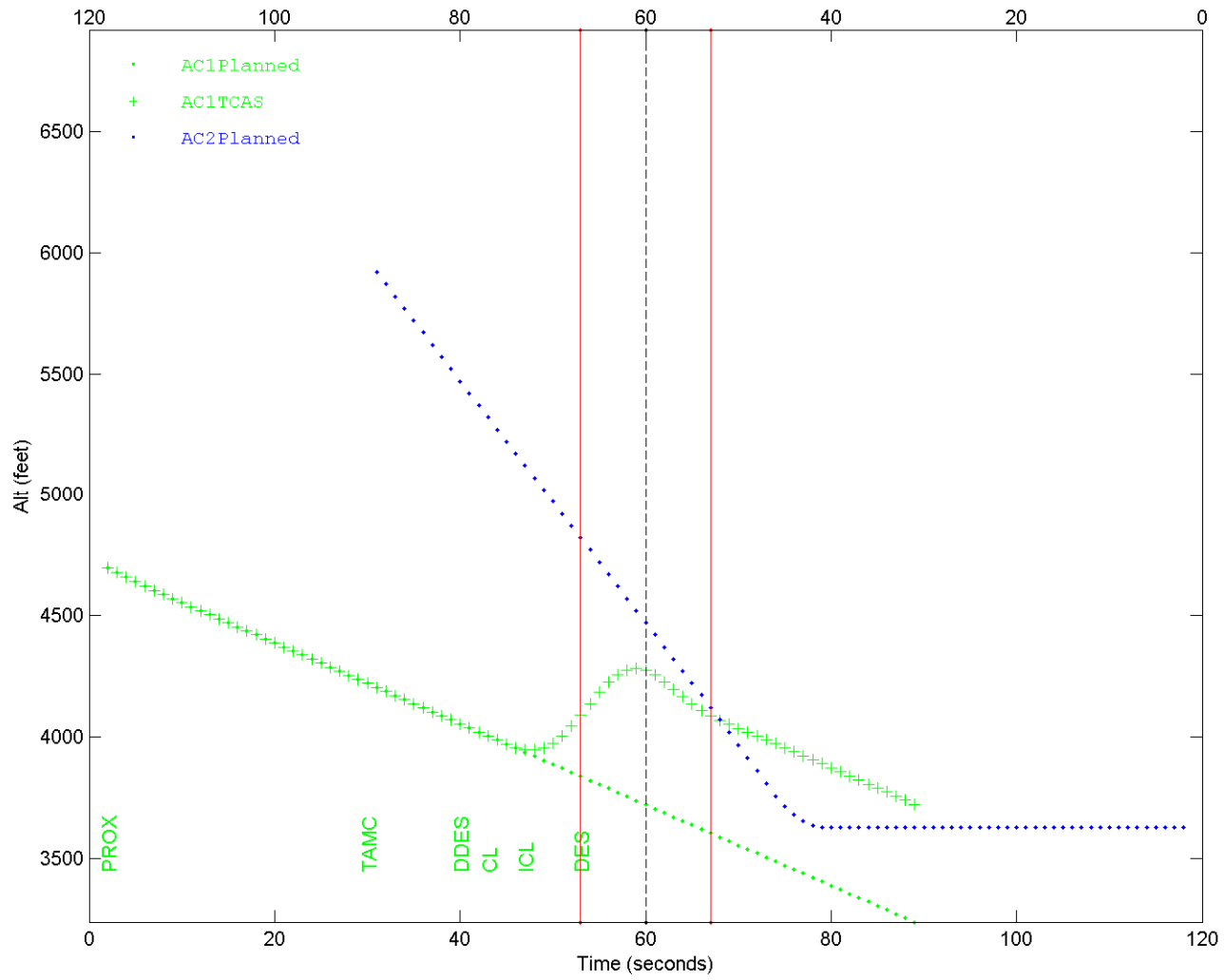
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 10.21 REV_AVOID 02 TIME_REV_AVOID 0.0

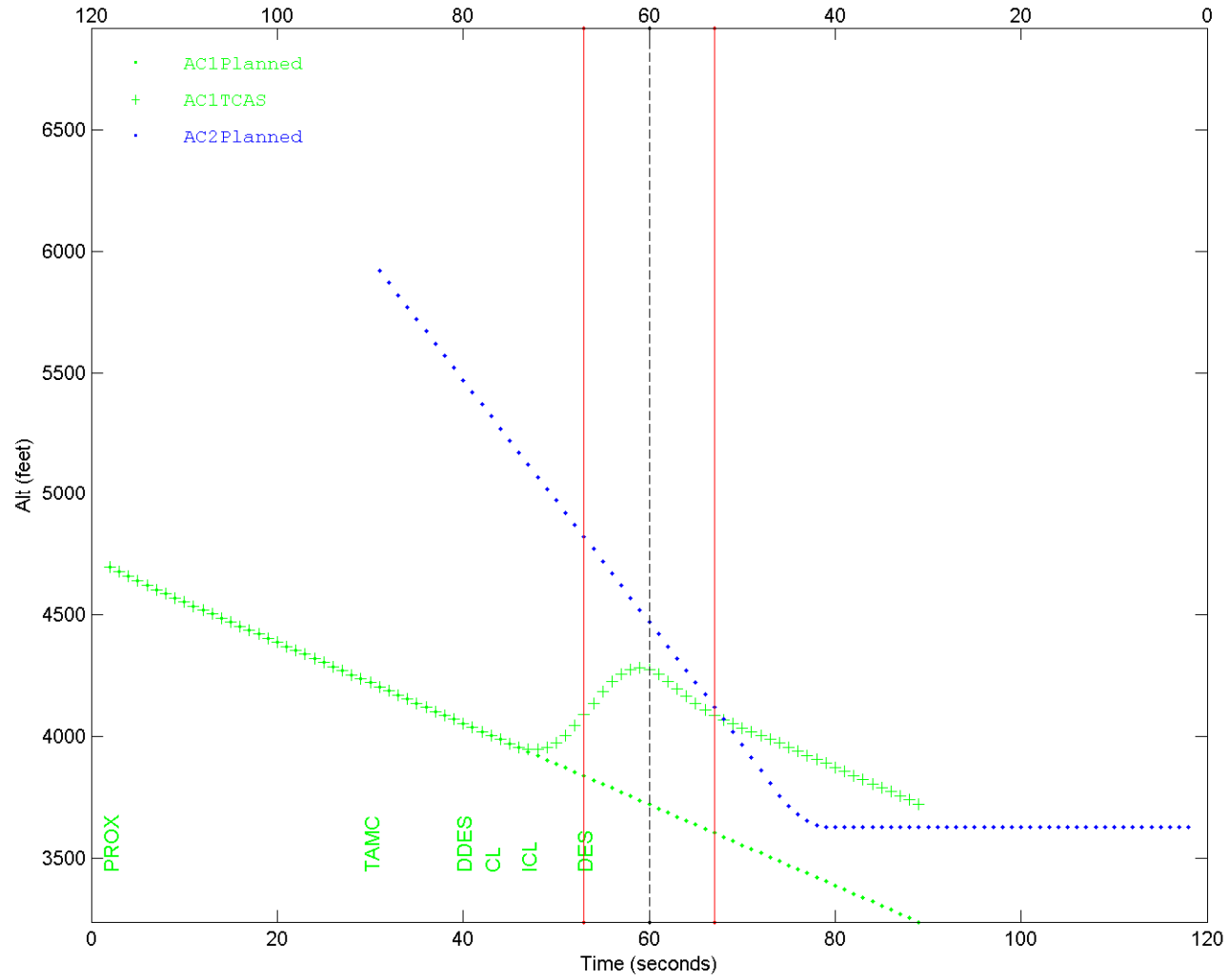
1 TCAS AC*REV*7171031 TA :30 |TAUR| DDES @40 [NX]| CL @43 | ICL @47 | DES @53

2184 V7.1 100 FT VS UNEQUIPPED 5 -215.13 CROSSING_ENC

1 TCAS AC*REV*7171031 TA :30 |TAUR| DDES @40 [NX]| CL @43 | ICL @47 | DES @53







Change 7.1 TCAS vs Unequipped Representative Save 03

Encounter Class: 5

Reit Number : 1033

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 14 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.05 | g |
| AC2 acceleration time: | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

| | |
|---------------------------|--------|
| Logic change solving NMAC | CP112E |
|---------------------------|--------|

Comments

Climbing vertical chase caused by planned maneuvers.
New reversal allowed by CP112E resolved NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER O51033
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.05g @ CPA -30 AC1 CPA ALT 3680

1033 V7 25 FT VS UNEQUIPPED 5 0.00 CROSSING_ENC

1 TCAS AC 3175041 TA :35 |TAUR| CL @40 [X]

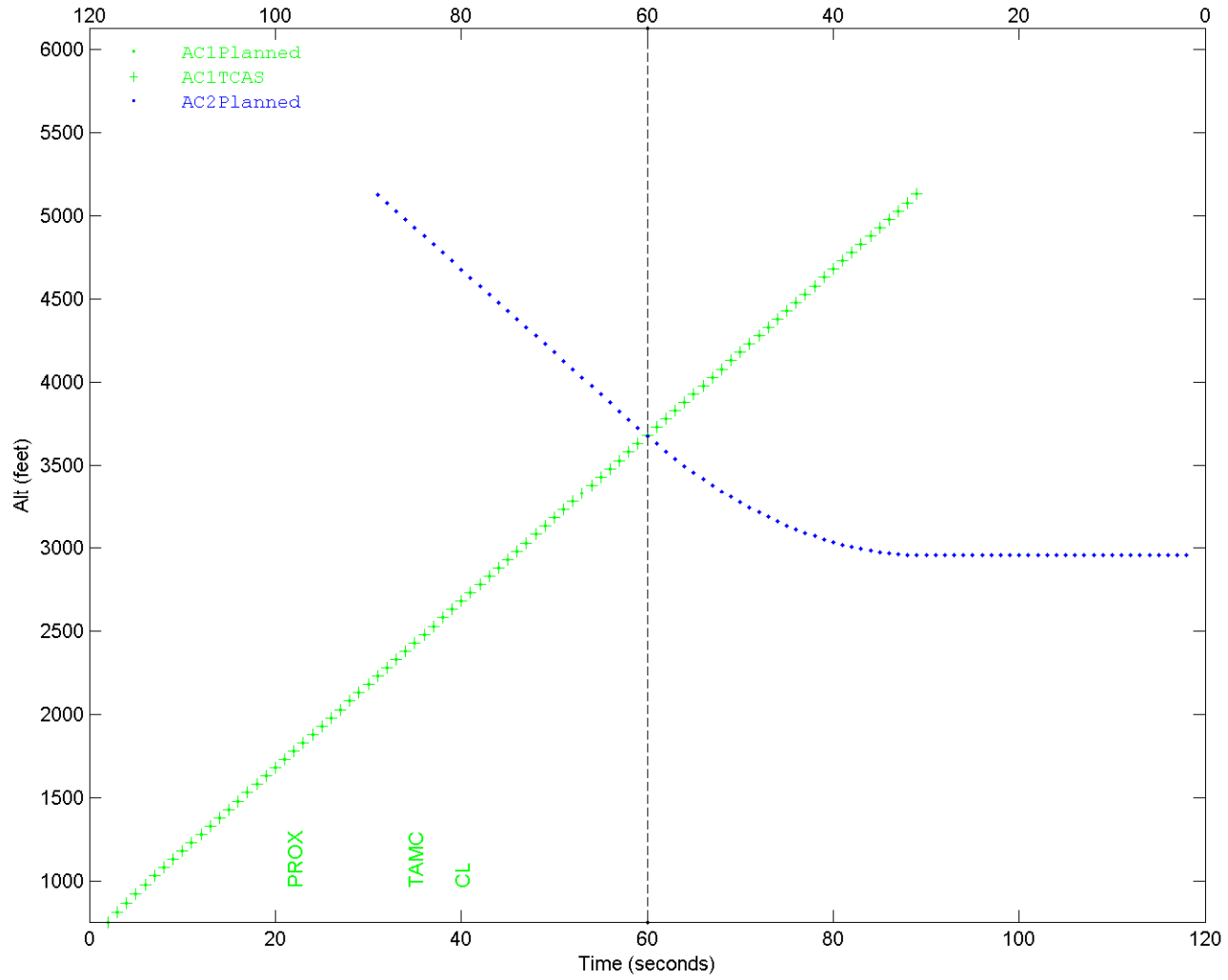
1033 CP112EV1.2 25 FT VS UNEQUIPPED 5 -275.23 NON_CROSSING_ENC

CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 5.00 REV_AVOID 02 TIME_REV_AVOID 0.0

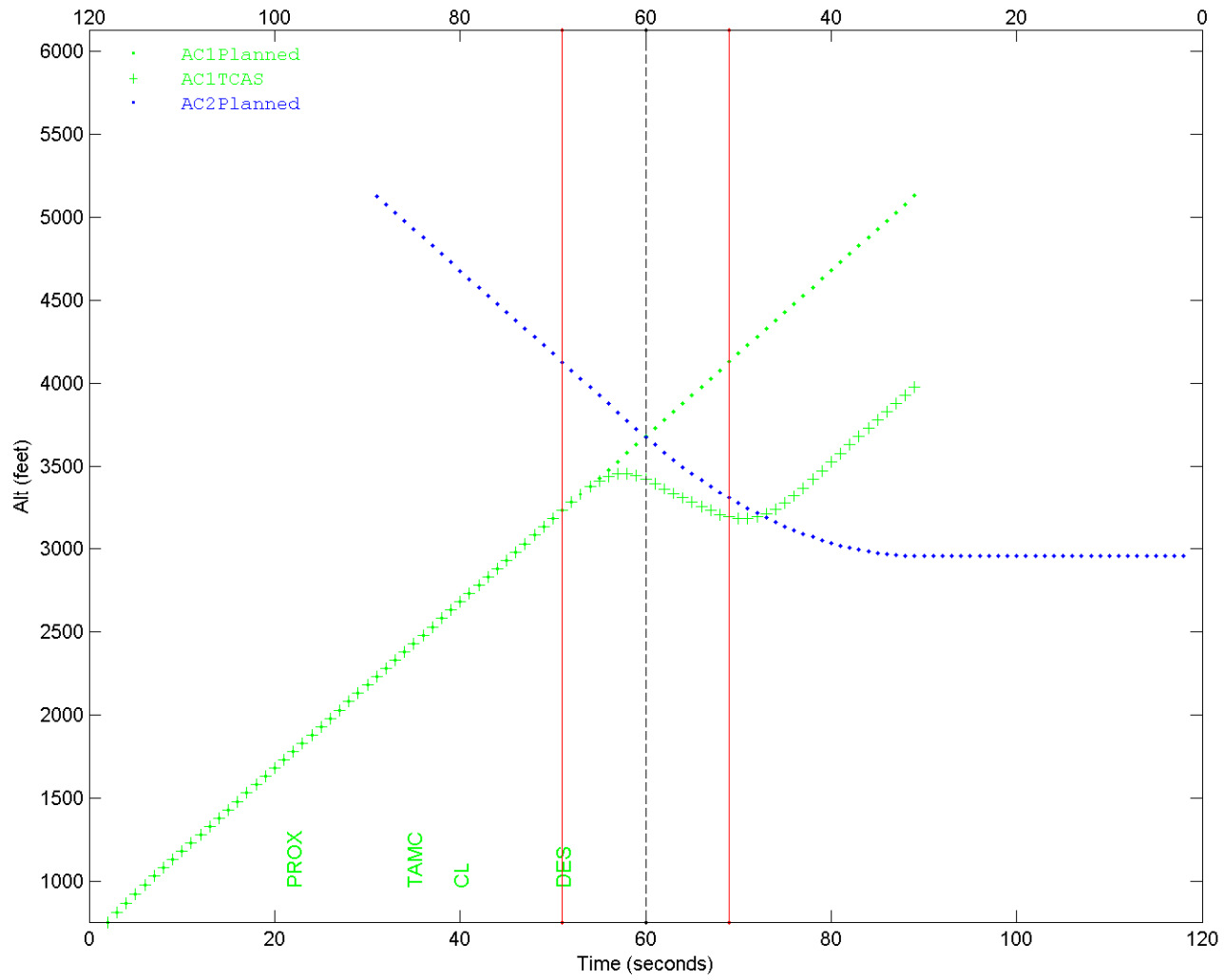
1 TCAS AC*REV*7175041 TA :35 |TAUR| CL @40 [X] | DES @51

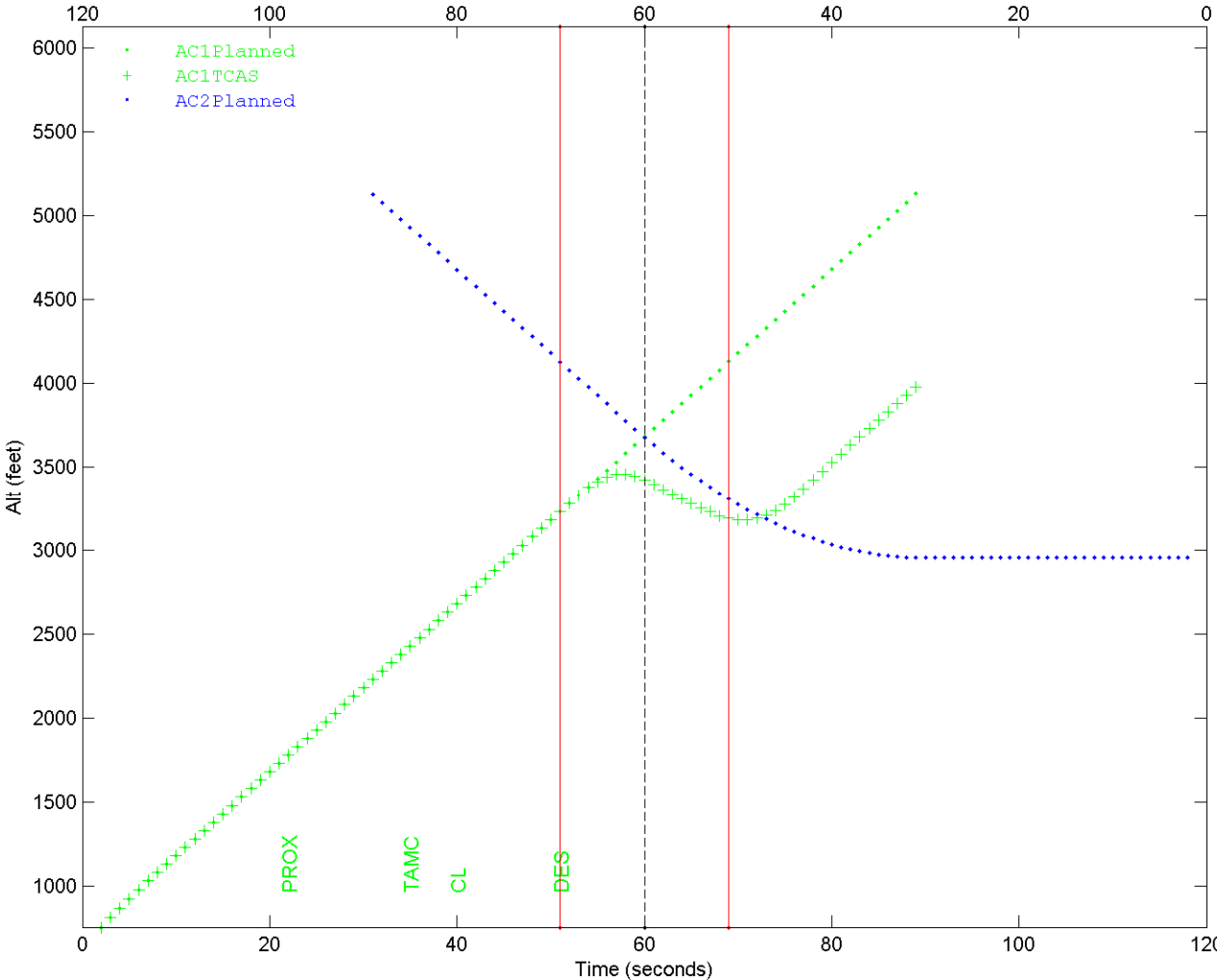
1033 V7.1 25 FT VS UNEQUIPPED 5 -275.23 NON_CROSSING_ENC

1 TCAS AC*REV*7175041 TA :35 |TAUR| CL @40 [X] | DES @51



reit: 1033 cata: 515 simmode: 7175041 CP112EV1.2-25 Vs Unequipped O51033B





Change 7.1 TCAS vs Unequipped Representative Save 04

Encounter Class: 5

Reit Number : 125

Encounter Characterization

| | | |
|-------------------------------|---------------------|-----|
| Number of encounters in group | 6 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 0, -250, -500, -750 | ft |
| AC1 rates: | -1000, -3000, -5000 | fpm |
| AC2 rates: | 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.15 | g |
| AC2 acceleration time: | CPA – 20 | sec |
| Encounters with reversed RAs | 0 | % |
| Vertical chase | no | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Version 7 and Version 7 + CP112E have post-CPA reversals.

CP115 avoids late, ineffective reversals. LOLO instead of AVSA allows CL to be more effective.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I5125
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(-5000.0,-5000.0) AC2 RATES(0.0,5000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.15g @ CPA -20 AC1 CPA ALT 3680

125 V7 100 FT VS UNEQUIPPED 5 80.78 CROSSING_ENC

1 TCAS AC*REV*3171031 TA :26 |TAUV| LD2 @41 [NX]| LD5 @55 | CL @56 | DES @61

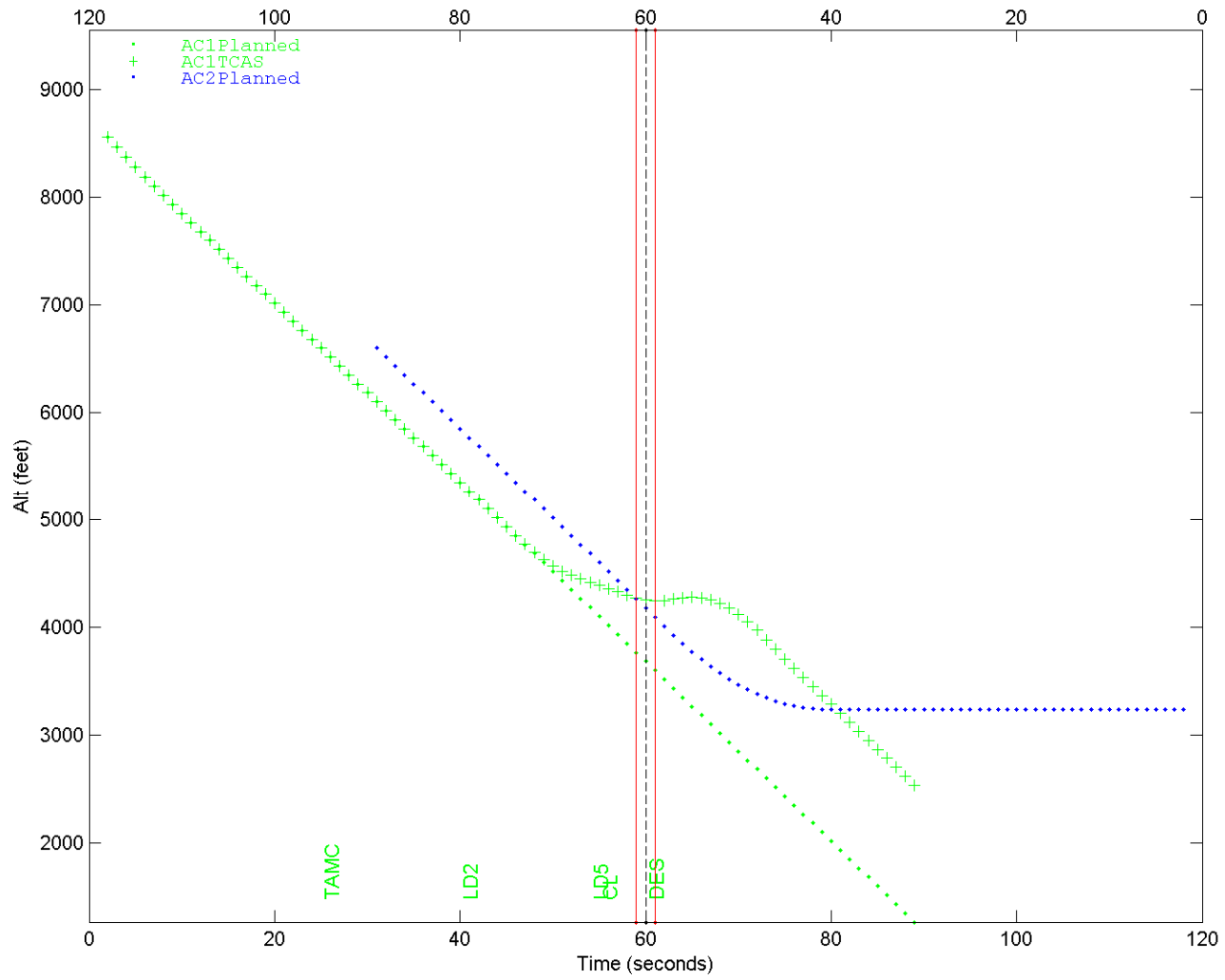
125 CP112EV1.2 100 FT VS UNEQUIPPED 5 80.78 CROSSING_ENC

CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 15.42 REV_AVOID 02 TIME_REV_AVOID 0.0

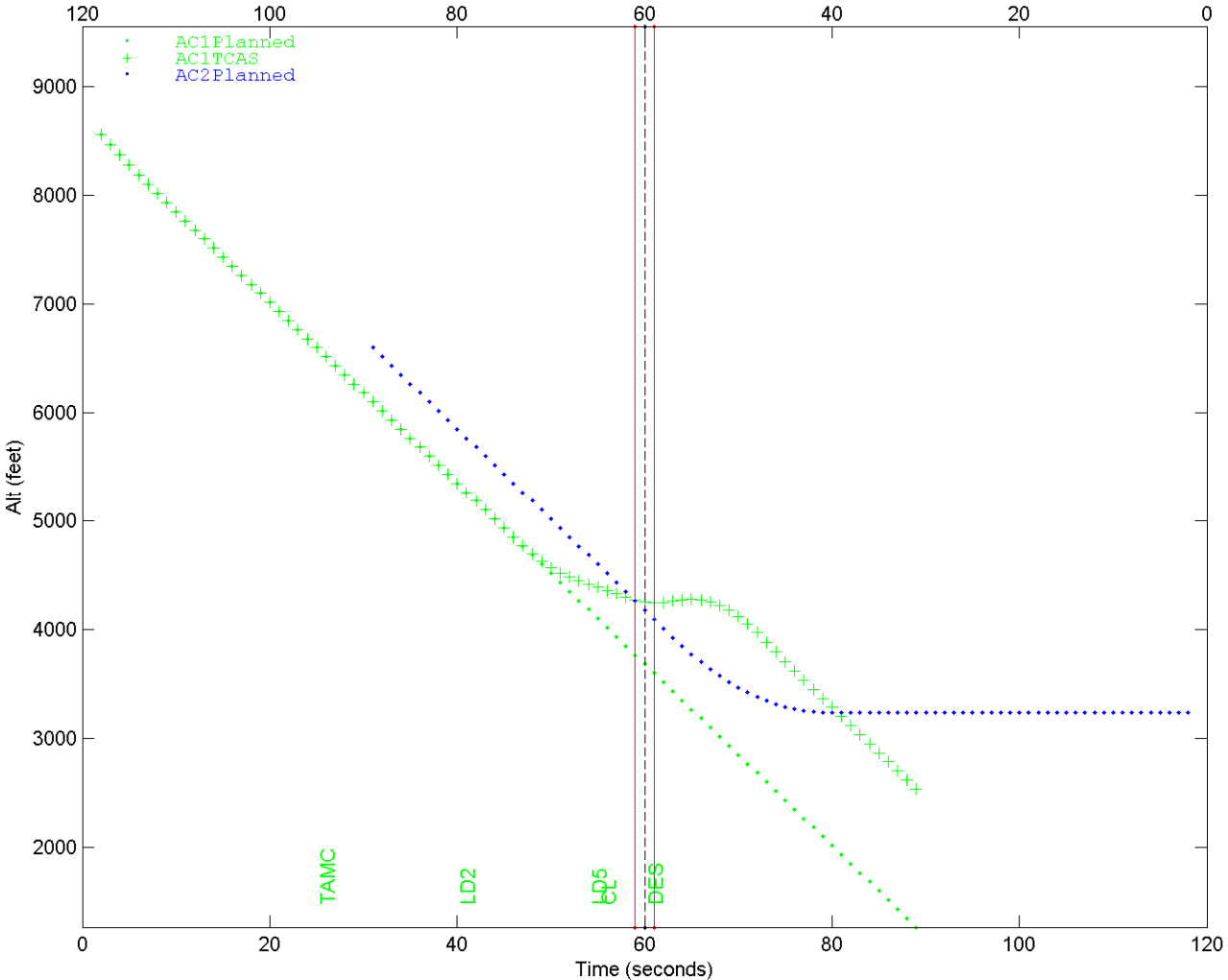
1 TCAS AC*REV*7171031 TA :26 |TAUV| LD2 @41 [NX]| LD5 @55 | CL @56 | DES @61

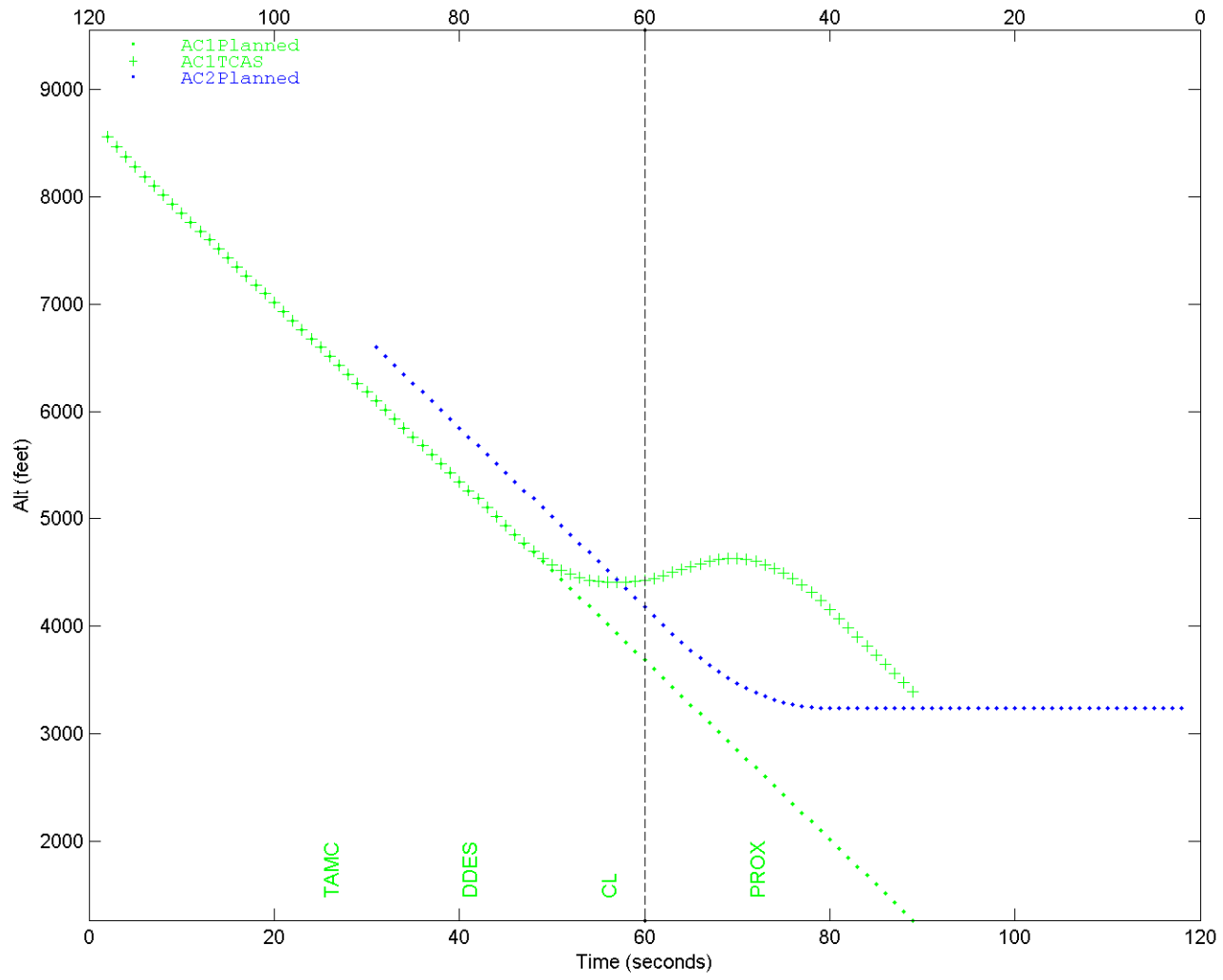
125 V7.1 100 FT VS UNEQUIPPED 5 251.05 CROSSING_ENC

1 TCAS AC 7171031 TA :26 |TAUV| DDES @41 [NX]| CL @56



reit: 125 cata: 515 simmode: 7171031 CP112EV1.2-100 Vs Unequipped I5125B





Change 7.1 TCAS vs Unequipped Representative Save 05

Encounter Class: 7

Reit Number : 7032

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 24 | |
| AC1 TCAS equipped | 5 | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000, 5000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | 0.15 | g |
| AC2 acceleration: | 0.35 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned maneuvers.
Early reversal with CP112E solves NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER Z77032
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(0.0,3000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.15g @ CPA -25 AC2 ACCEL 0.35g @ CPA -20 AC1 CPA ALT 7500

7032 UNEQUIPPED VS V7 25 FT 7 5.60 NON_CROSSING_ENC

2 TCAS AC 3275014 TA :19 |TAUR| CL @34 [NX]

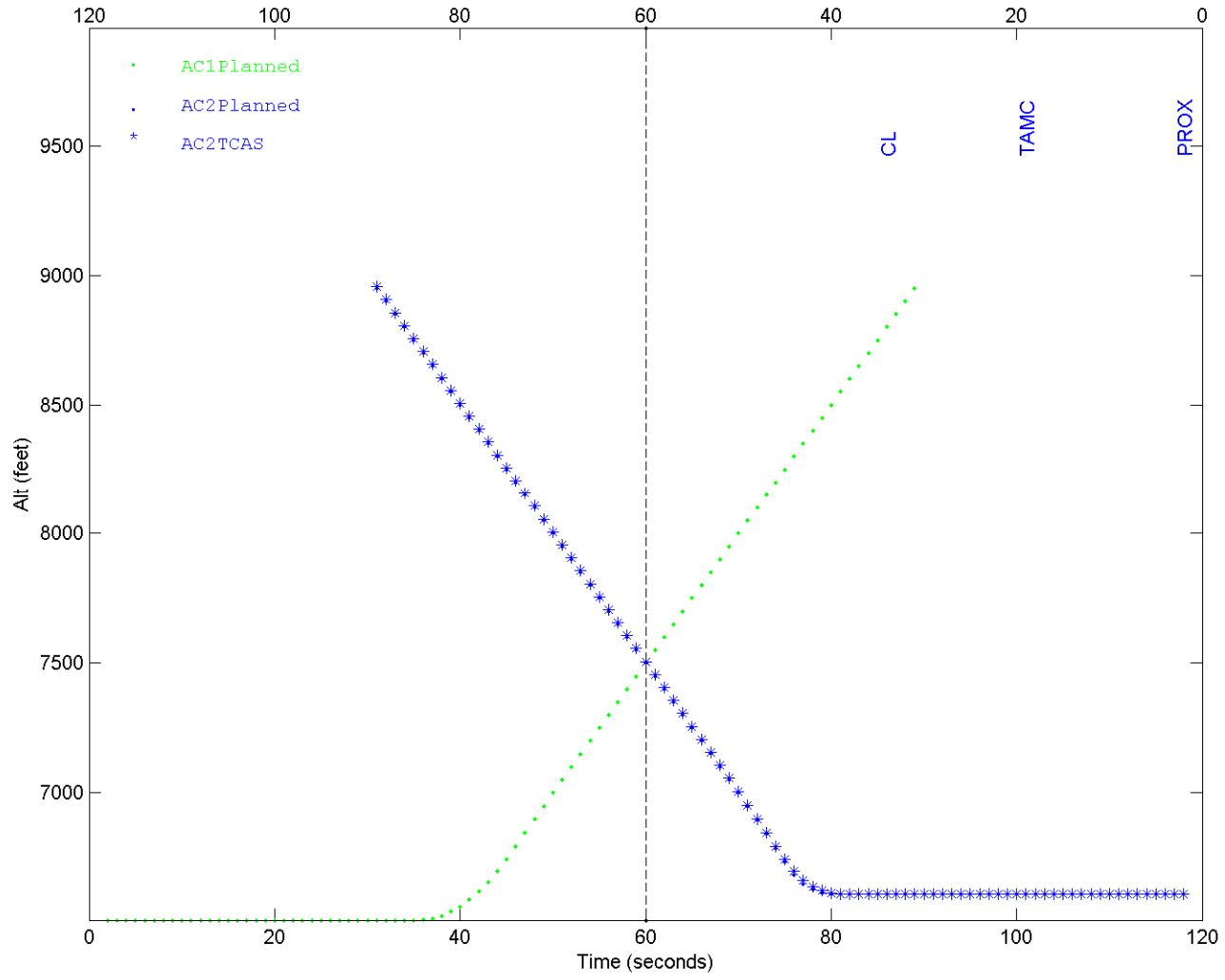
7032 UNEQUIPPED VS CP112EV1.2 25 FT 7 -715.61 CROSSING_ENC

CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 8.13 REV_AVOID 02 TIME_REV_AVOID 0.0

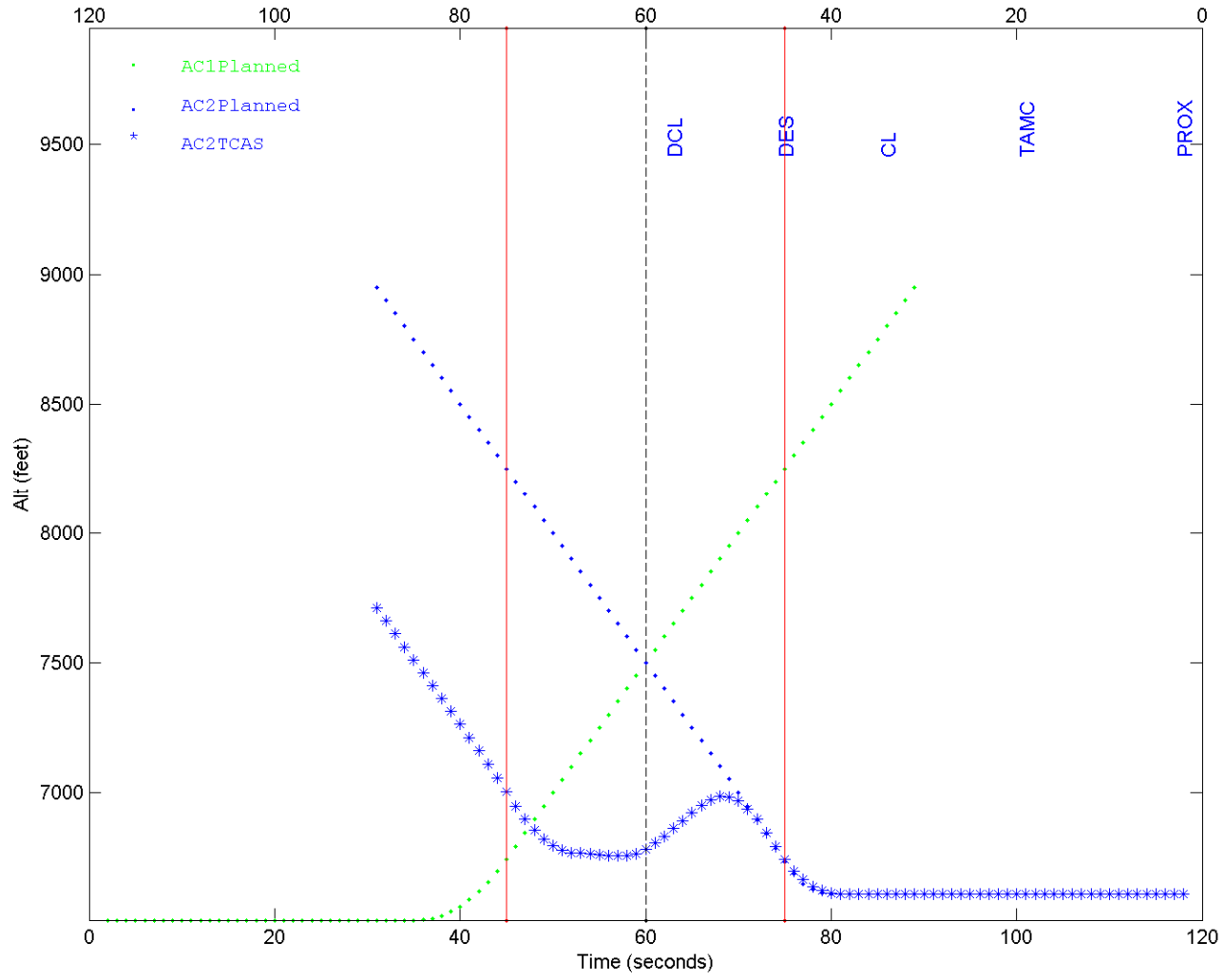
2 TCAS AC*REV*7275014 TA :19 |TAUR| CL @34 [NX]| DES @45 | DCL @57

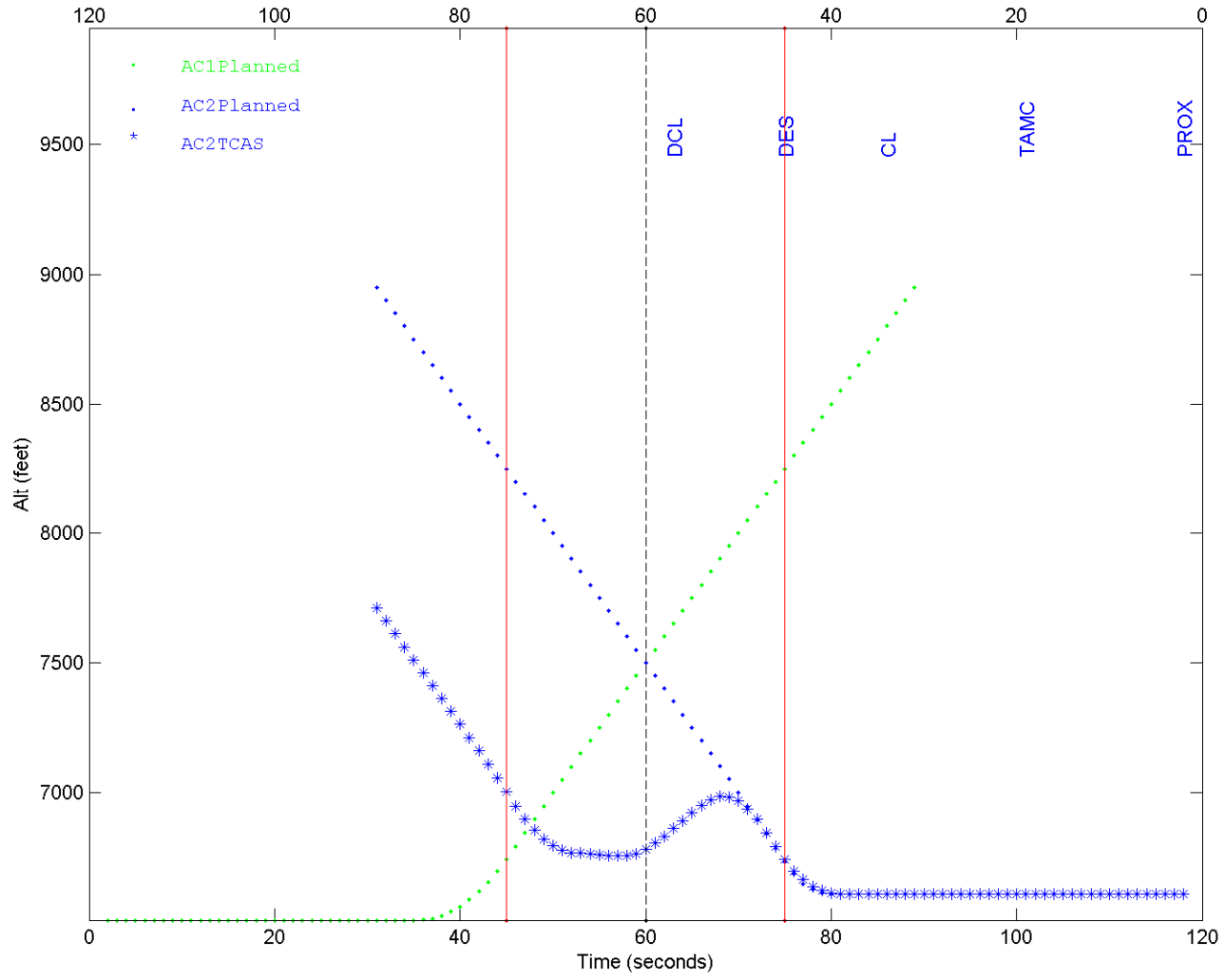
7032 UNEQUIPPED VS V7.1 25 FT 7 -715.61 CROSSING_ENC

2 TCAS AC*REV*7275014 TA :19 |TAUR| CL @34 [NX]| DES @45 | DCL @57



reit: 7032 cata: 717 simmode: 7275014 Unequipped Vs CP112EV1.2-100 Z77032B





Change 7.1 TCAS vs Unequipped Representative Save 06

Encounter Class: 7

Reit Number : 5915

Encounter Characterization

| | | |
|-------------------------------|------------------|-----|
| Number of encounters in group | 20 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | -250, -500, -750 | ft |
| AC1 rates: | 1000, 3000, 5000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | 0.05 | g |
| AC2 acceleration: | 0.25 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned maneuver and response to initial RA.
Reversal with CP112E solves NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER 075915
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(0.0,5000.0) AC2 RATES(0.0,5000.0)
AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL 0.25g @ CPA -25 AC1 CPA ALT 7500

5915 V7 25 FT VS UNEQUIPPED 7 22.10 NON_CROSSING_ENC

1 TCAS AC 3175041 TA :19 |TAUR| DDES @34 [NX]| CL @39

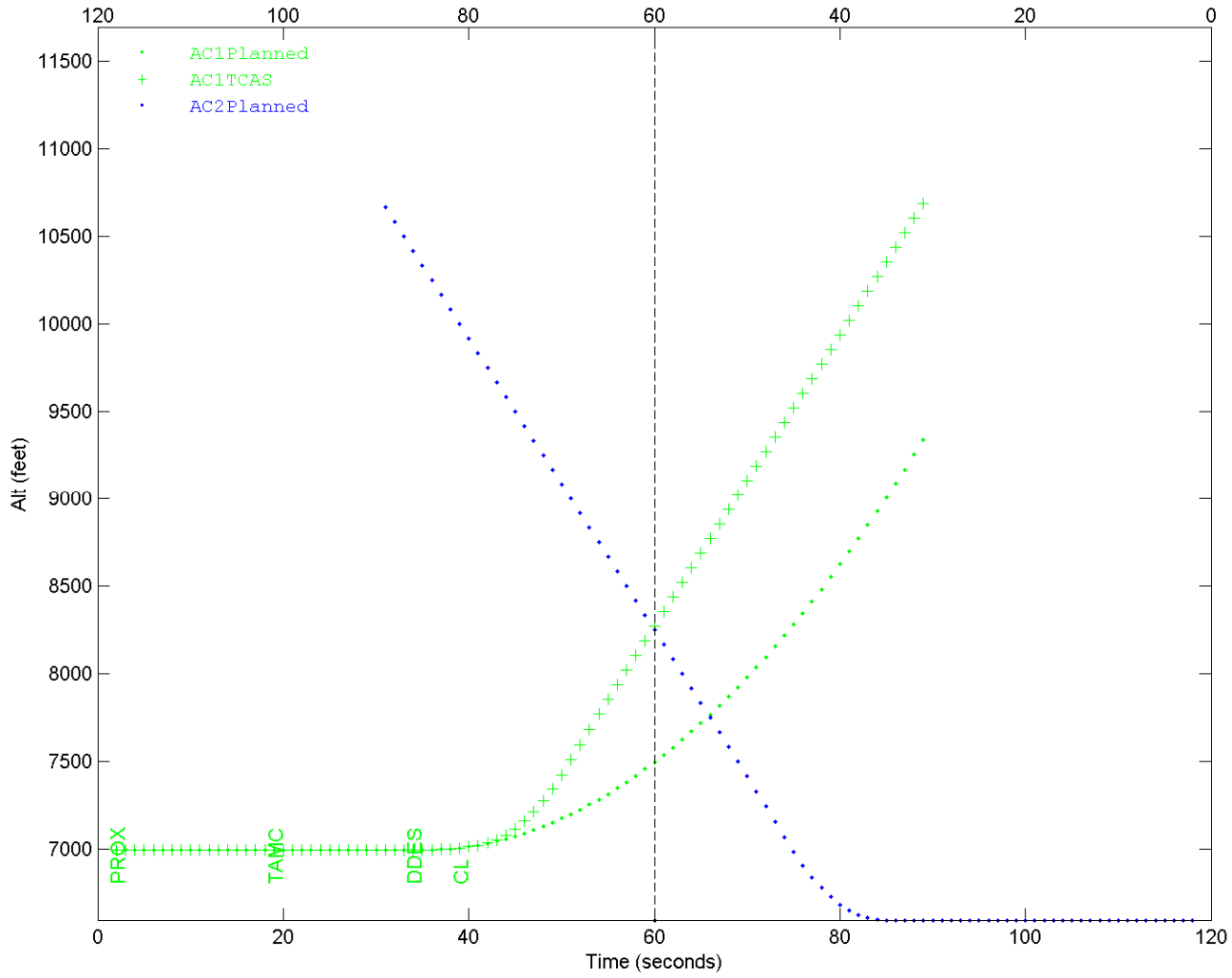
5915 CP112EV1.2 25 FT VS UNEQUIPPED 7 -728.98 CROSSING_ENC

CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 5.41 REV_AVOID 02 TIME_REV_AVOID 0.0

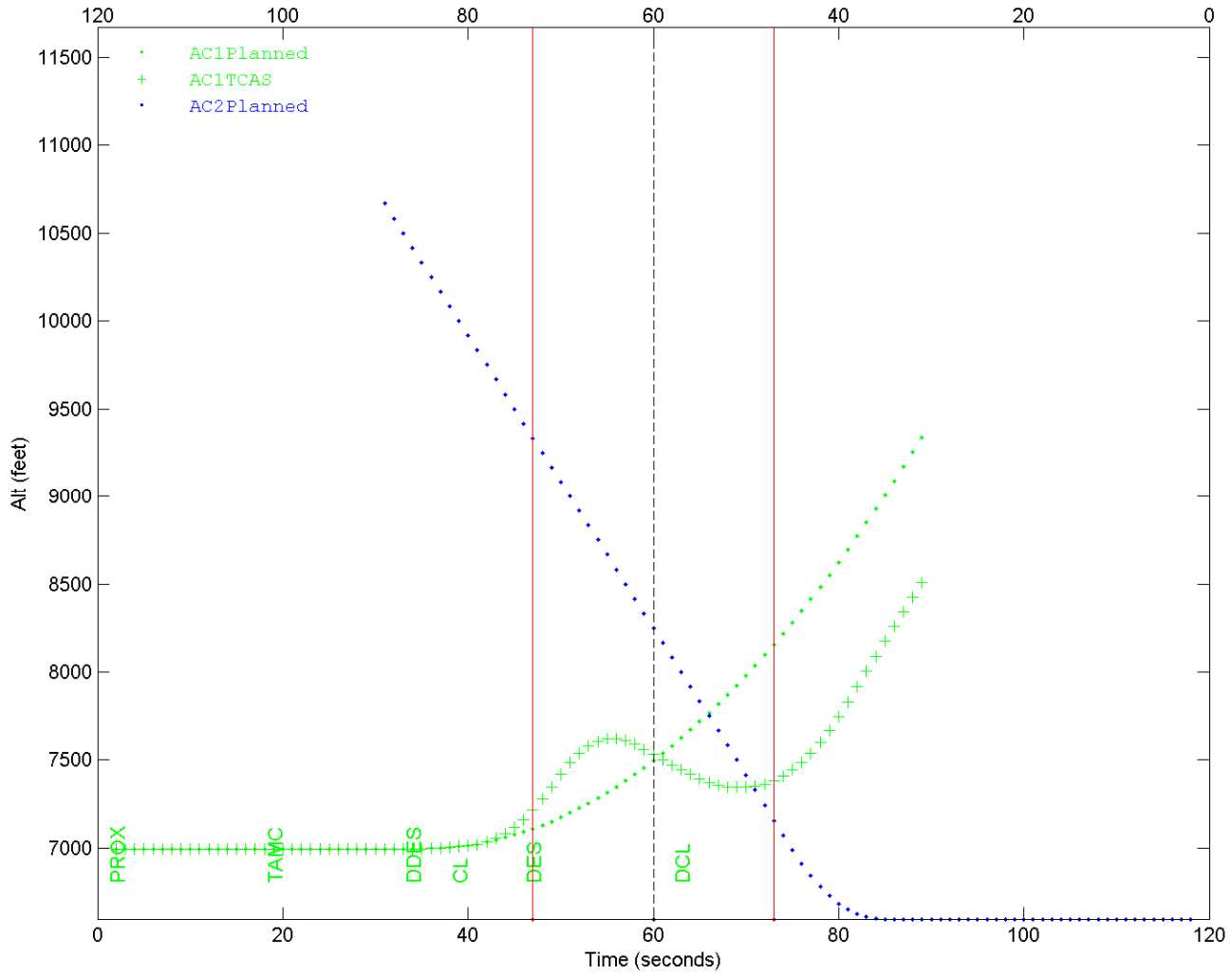
1 TCAS AC*REV*7175041 TA :19 |TAUR| DDES @34 [NX]| CL @39 | DES @47 | DCL @63

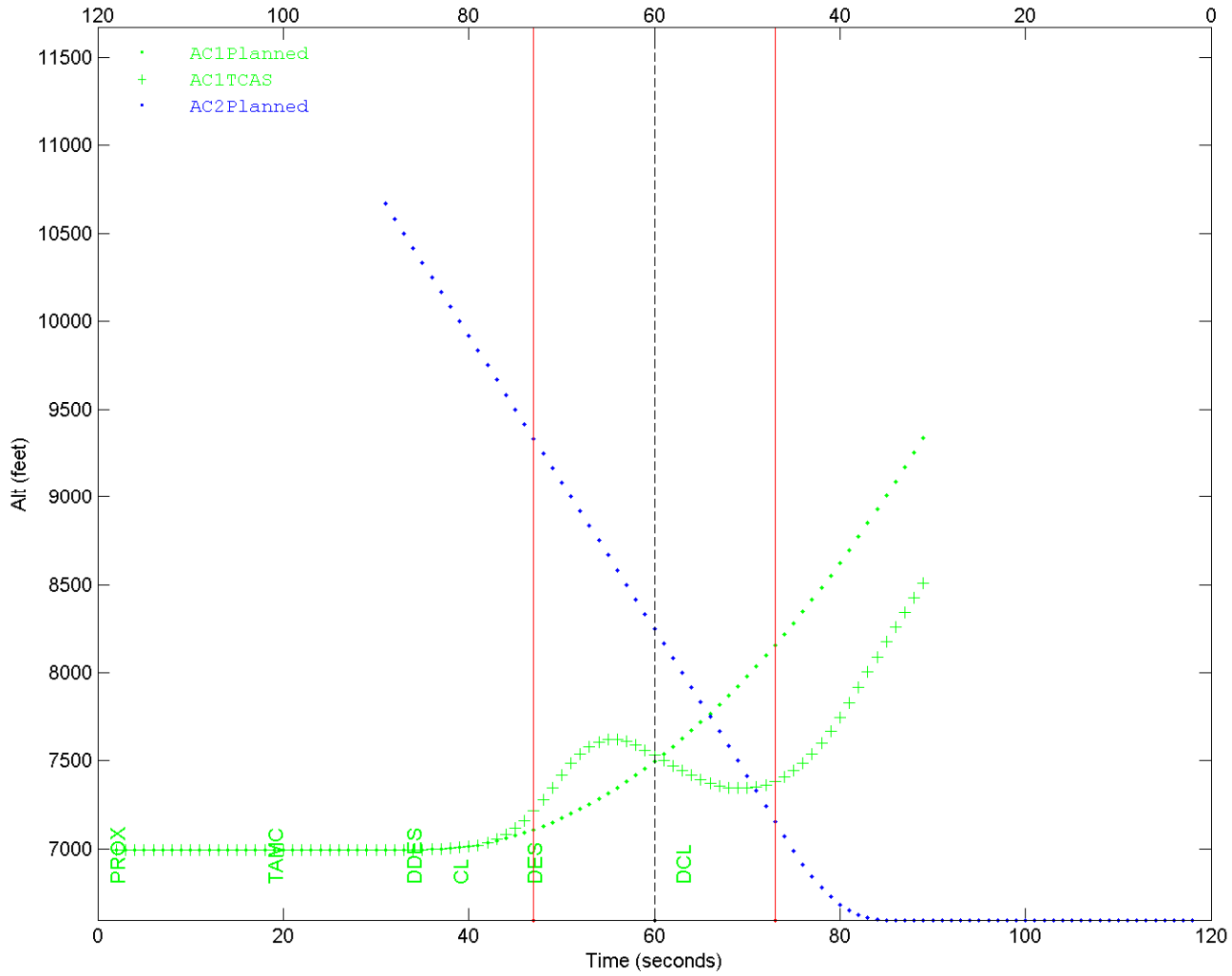
5915 V7.1 25 FT VS UNEQUIPPED 7 -728.98 CROSSING_ENC

1 TCAS AC*REV*7175041 TA :19 |TAUR| DDES @34 [NX]| CL @39 | DES @47 | DCL @63



reit: 5915 cata: 717 simmode: 7175041 CP112EV1.2-25 Vs Unequipped O75915B





Change 7.1 TCAS vs Unequipped Representative Save 07

Encounter Class: 7

Reit Number : 1044

Encounter Characterization

| | | |
|-------------------------------|------------------|-----|
| Number of encounters in group | 15 | |
| AC1 TCAS equipped | 9 | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 750 | ft |
| AC1 rates: | 1000, 3000, 5000 | fpm |
| AC2 rates: | -3000, -5000 | fpm |
| AC1 acceleration: | 0.05 | g |
| AC2 acceleration: | -0.05 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned maneuver and response to initial RA.
Reversal with CP112E solves NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER J71044
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 750.0 AC1 RATES(0.0,5000.0) AC2 RATES(0.0,-3000.0)
AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.05g @ CPA -20 AC1 CPA ALT 3700

1044 UNEQUIPPED VS V7 100 FT 7 -20.26 CROSSING_ENC

2 TCAS AC 3271013 TA :30 |TAUR| CL @40 [NX]| ICL @50

1044 UNEQUIPPED VS CP112EV1.2 100 FT 7 -222.94 CROSSING_ENC

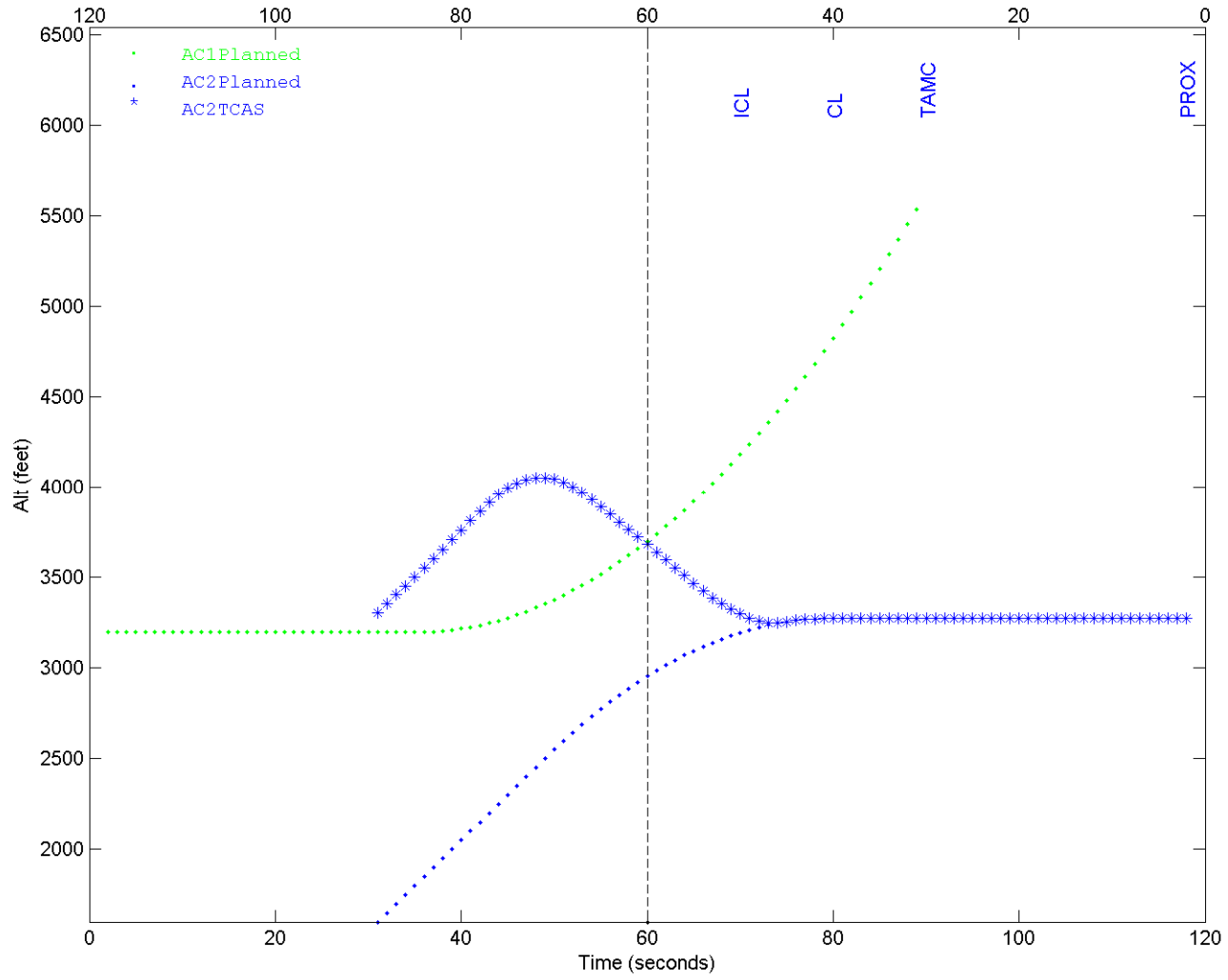
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 8.73 REV_AVOID 02 TIME_REV_AVOID 0.0

2 TCAS AC*REV*7271013 TA :30 |TAUR| CL @40 [NX]| ICL @50 | DES @52 | IDES @54

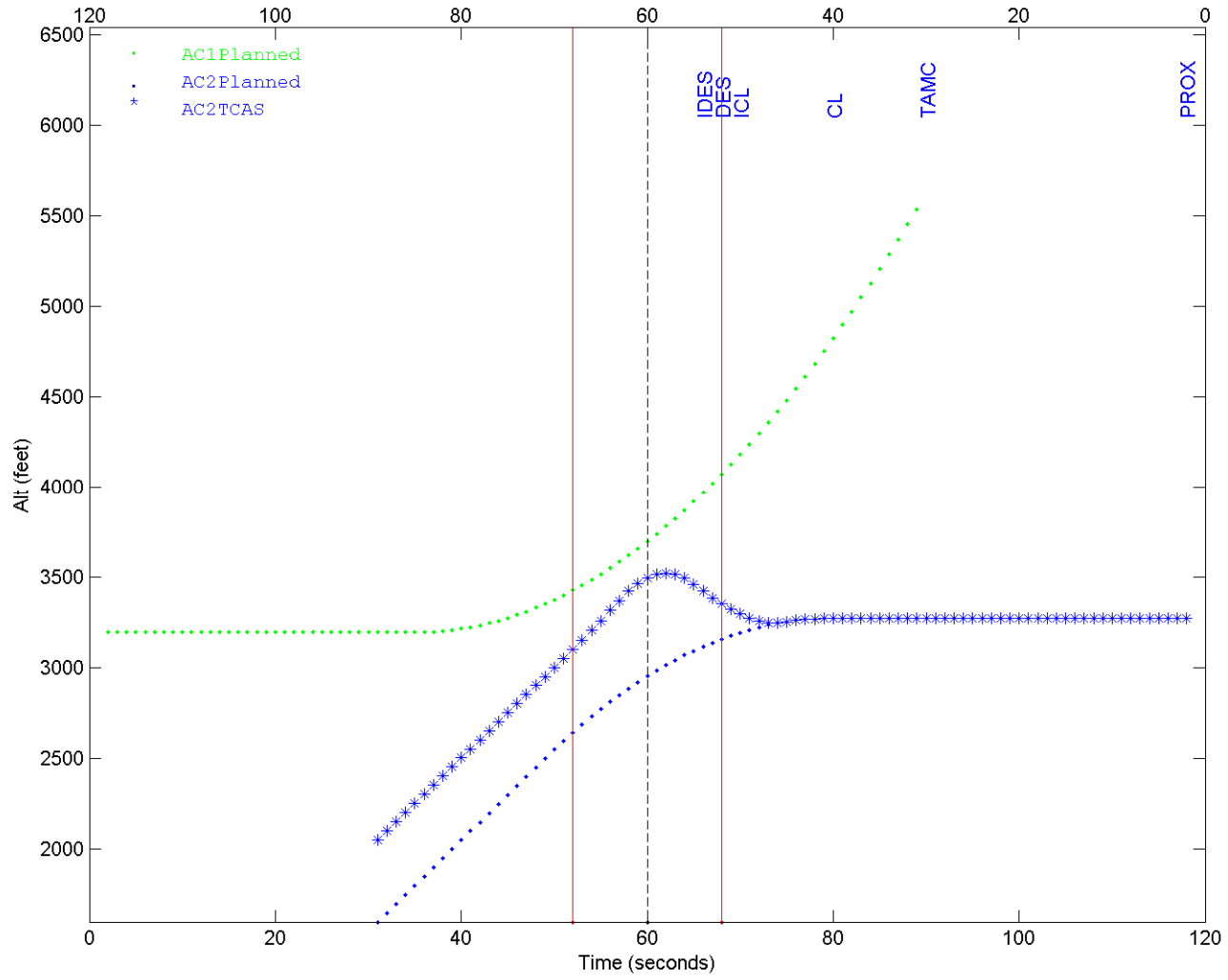
1044 UNEQUIPPED VS V7.1 100 FT 7 -222.94 CROSSING_ENC

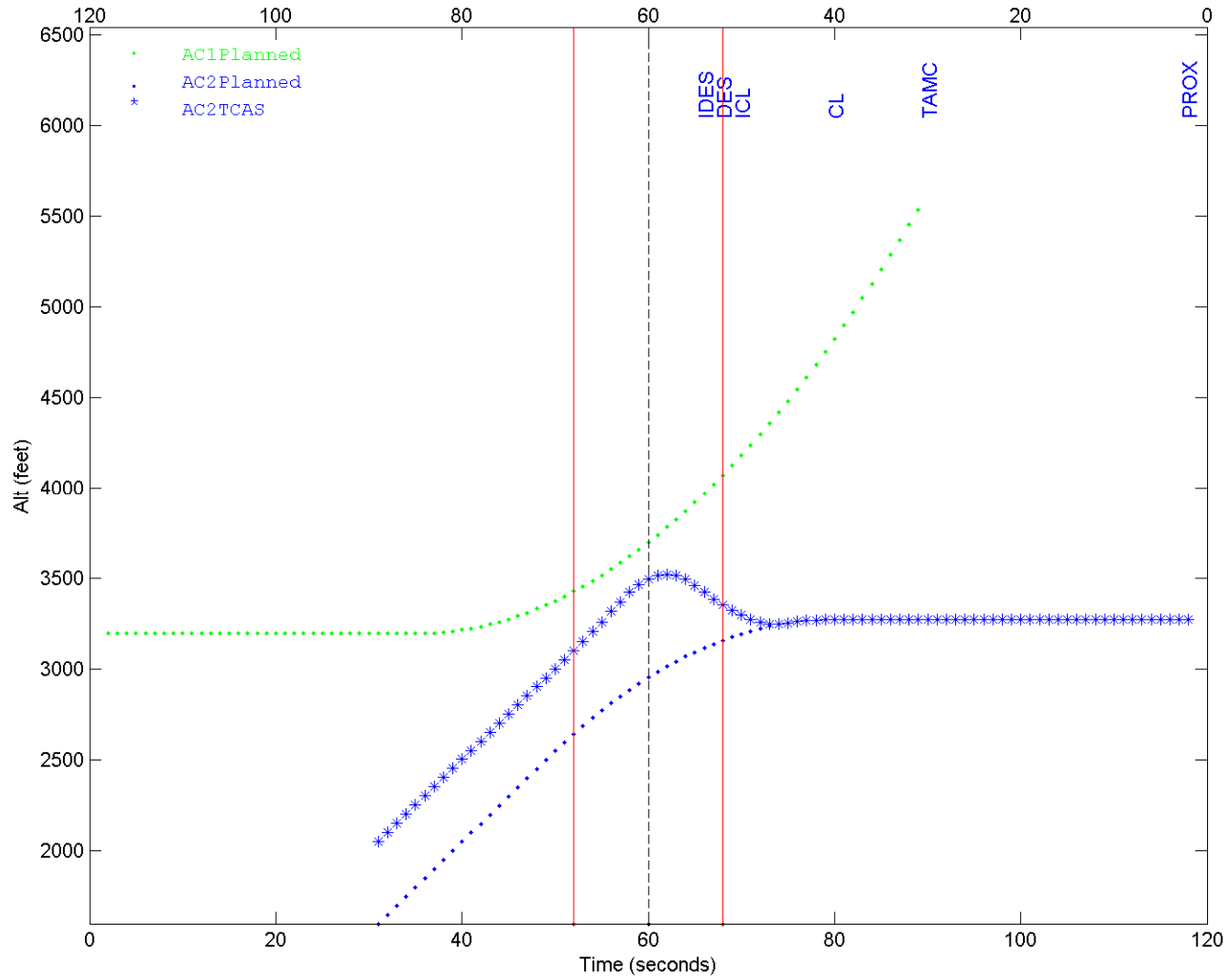
2 TCAS AC*REV*7271013 TA :30 |TAUR| CL @40 [NX]| ICL @50 | DES @52 | IDES @54

reit: 1044 cata: 717 simmode: 3271013 Unequipped Vs Version 7-100 J71044A



reit: 1044 cata: 717 simmode: 7271013 Unequipped Vs CP112EV1.2-100 J71044B





Change 7.1 TCAS vs Unequipped Representative Save 08

Encounter Class: 7

Reit Number : 8809

Encounter Characterization

| | | |
|-------------------------------|------------------|-----|
| Number of encounters in group | 17 | |
| AC1 TCAS equipped | no | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 250, 500, 750 | ft |
| AC1 rates: | 3000, 5000 | fpm |
| AC2 rates: | 1000, 3000, 5000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | 0.15 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned aircraft maneuvers.
Reversal with CP112E solves NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER J78809
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 250.0 AC1 RATES(0.0,5000.0) AC2 RATES(0.0,5000.0)
AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL 0.15g @ CPA -25 AC1 CPA ALT 7500

8809 UNEQUIPPED VS V7 100 FT 7 -80.09 CROSSING_ENC

2 TCAS AC 3271013 TA :19 |TAUR| CL @34 [NX]| ICL @42

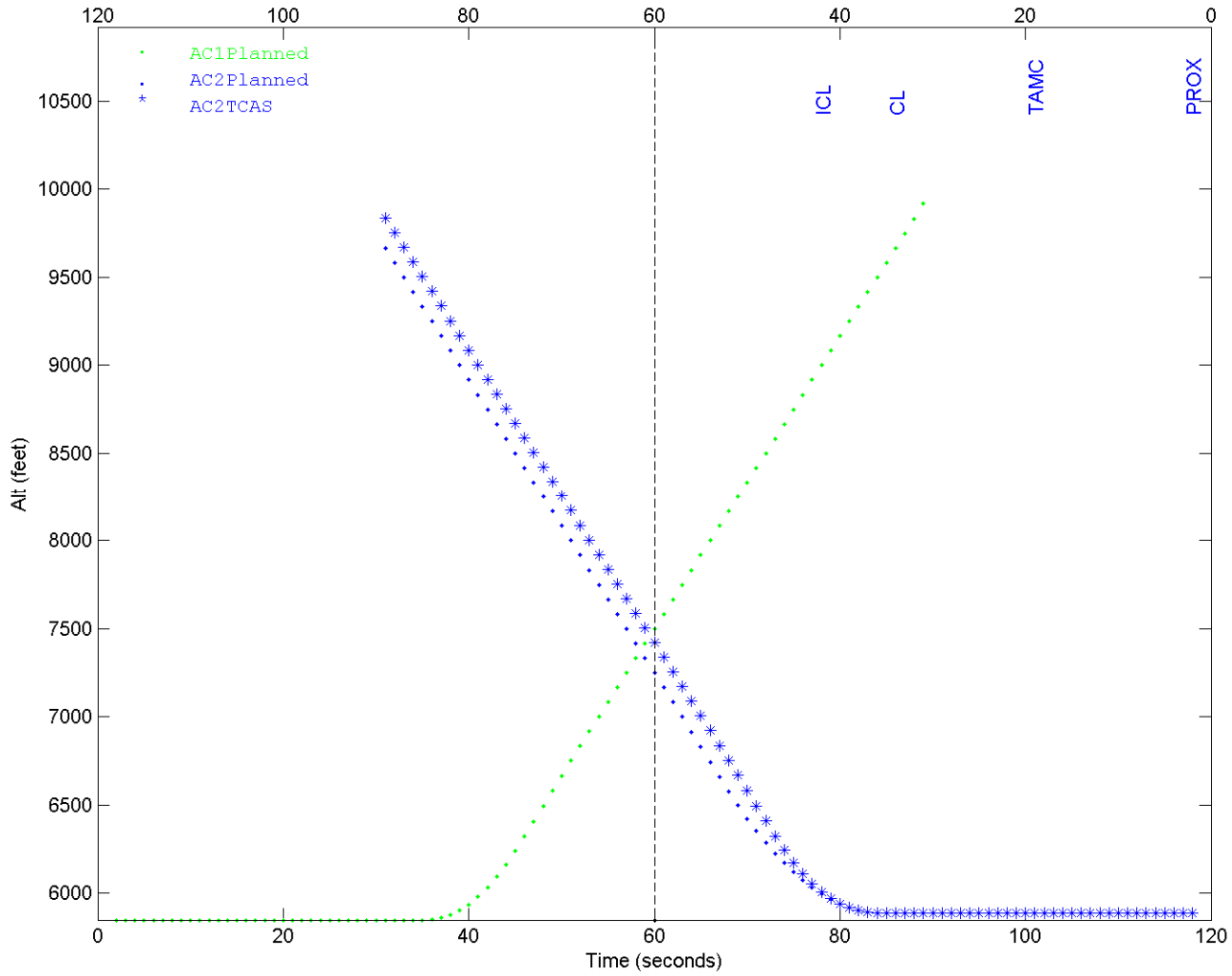
8809 UNEQUIPPED VS CP112EV1.2 100 FT 7 -931.11 CROSSING_ENC

CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 6.89 REV_AVOID 02 TIME_REV_AVOID 0.0

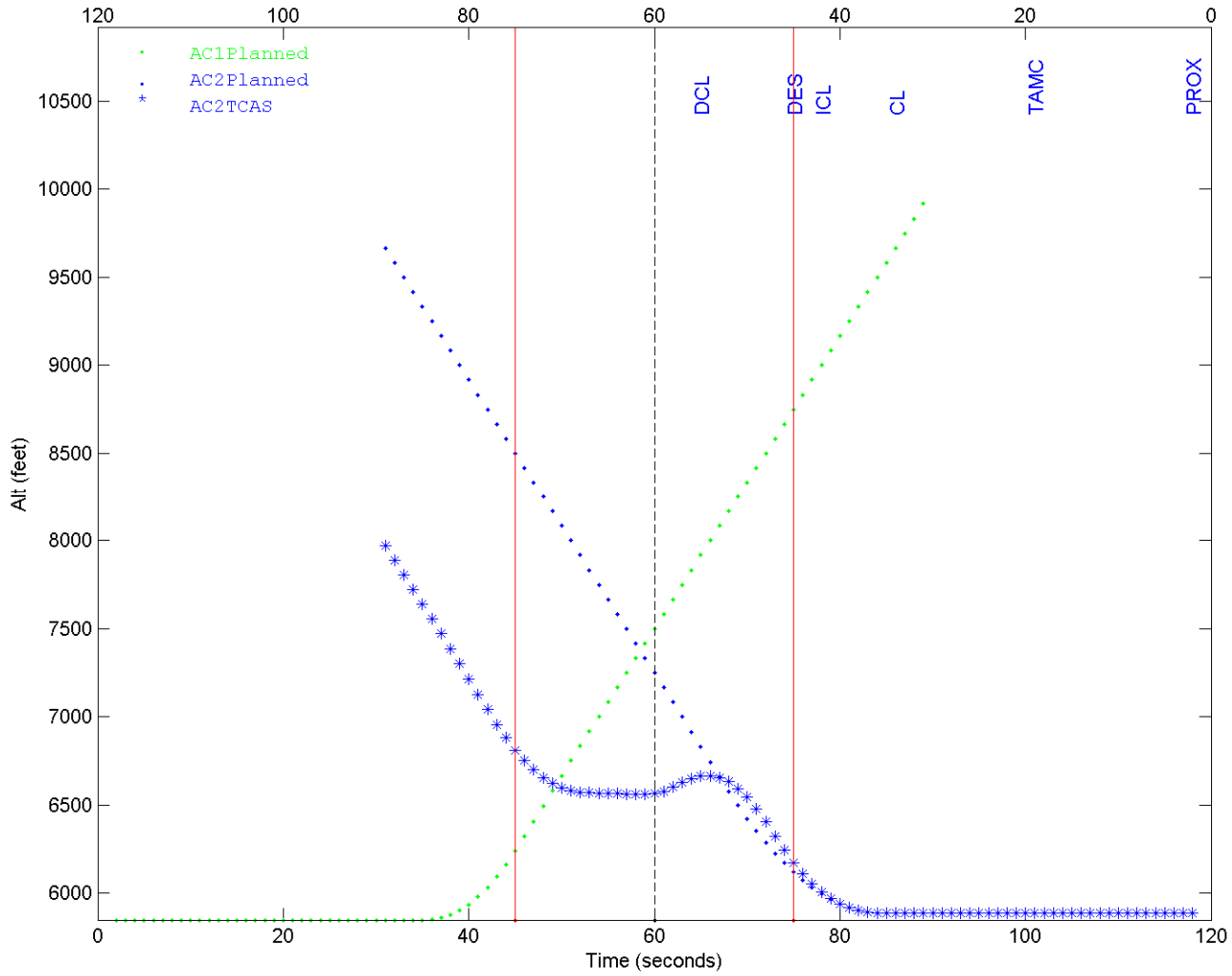
2 TCAS AC*REV*7271013 TA :19 |TAUR| CL @34 [NX]| ICL @42 | DES @45 | DCL @55

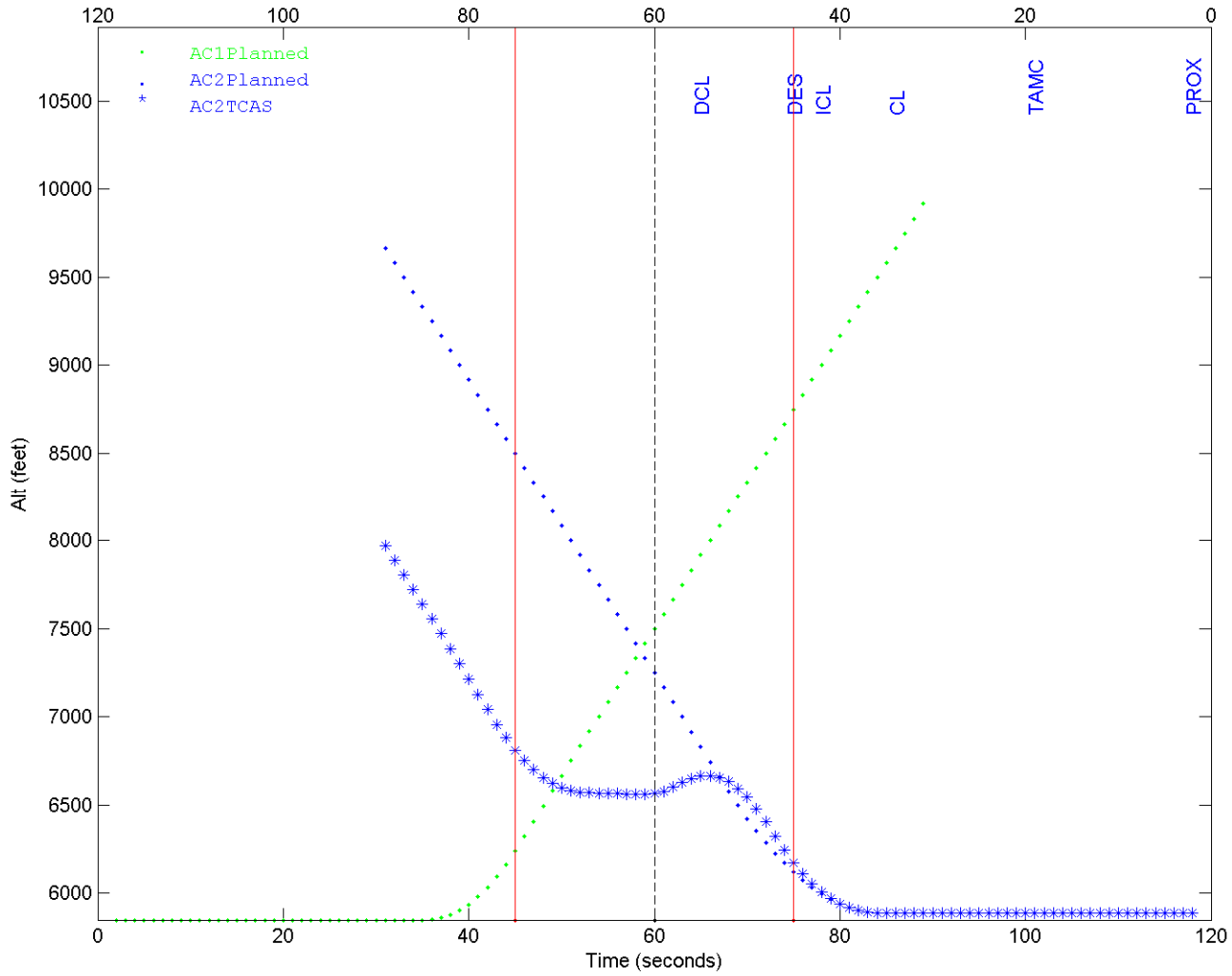
8809 UNEQUIPPED VS V7.1 100 FT 7 -931.11 CROSSING_ENC

2 TCAS AC*REV*7271013 TA :19 |TAUR| CL @34 [NX]| ICL @42 | DES @45 | DCL @55



reit: 8809 cata: 717 simmode: 7271013 Unequipped Vs CP112EV1.2-100 J78809B





Change 7.1 TCAS vs Unequipped Representative Save 09

Encounter Class: 7

Reit Number : 8968

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 2 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 100 | ft |
| Planned separation | 750 | ft |
| AC1 rates: | 5000 | fpm |
| AC2 rates: | -3000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | 0.15 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | no | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

CP115 changed timing to allow effective reversal.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I78968
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 750.0 AC1 RATES(0.0,5000.0) AC2 RATES(0.0,-3000.0)
AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL -0.35g @ CPA -30 AC1 CPA ALT 7500

8968 V7 100 FT VS UNEQUIPPED 7 -77.84 CROSSING_ENC

1 TCAS AC 3171031 TA:39 |TAUV| LC1 @41 [NX]| LC5 @43 | DES @44 | IDES @53

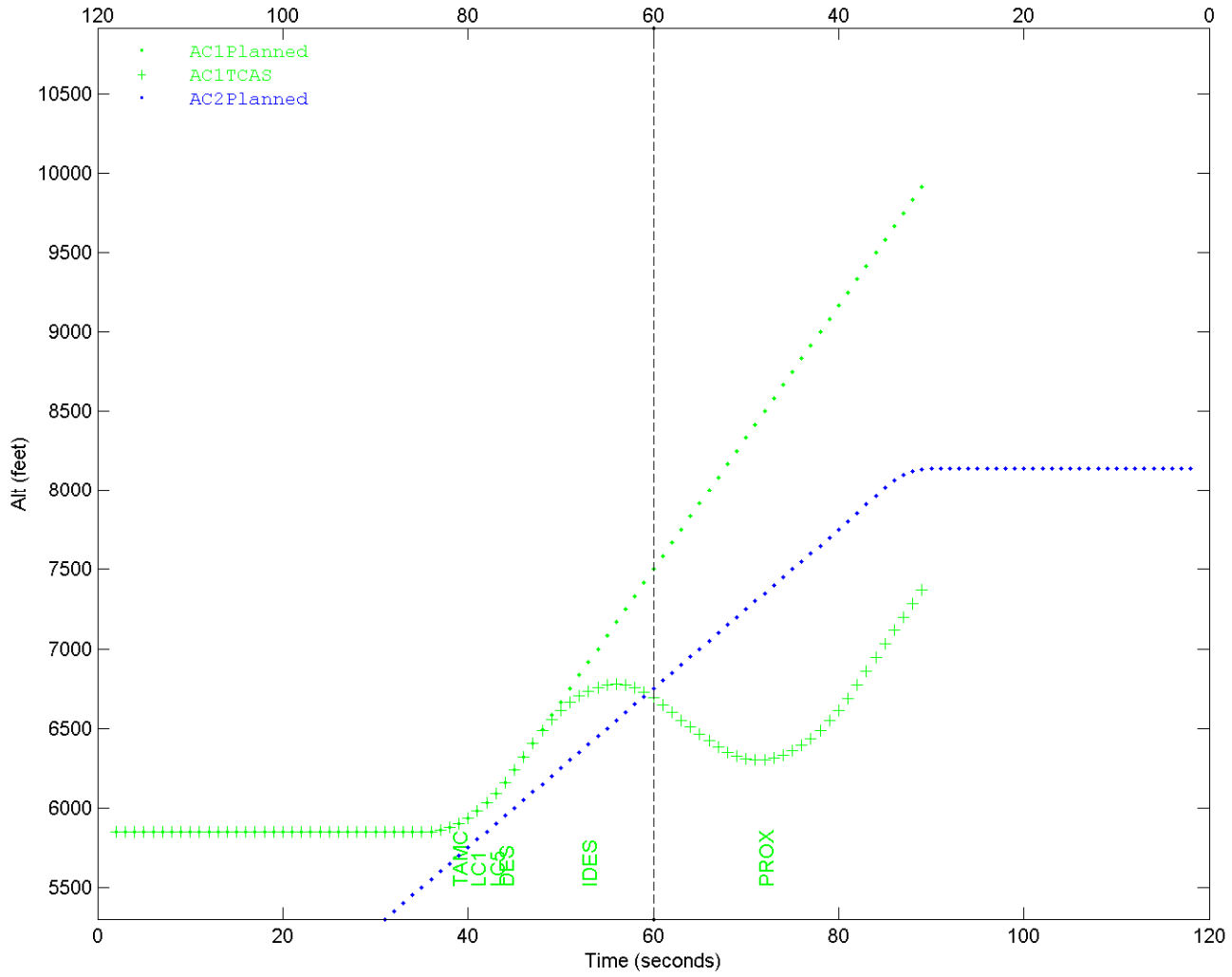
8968 CP112EV1.2 100 FT VS UNEQUIPPED 7 -77.84 CROSSING_ENC

CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 17.31 REV_AVOID 02 TIME_REV_AVOID 0.0

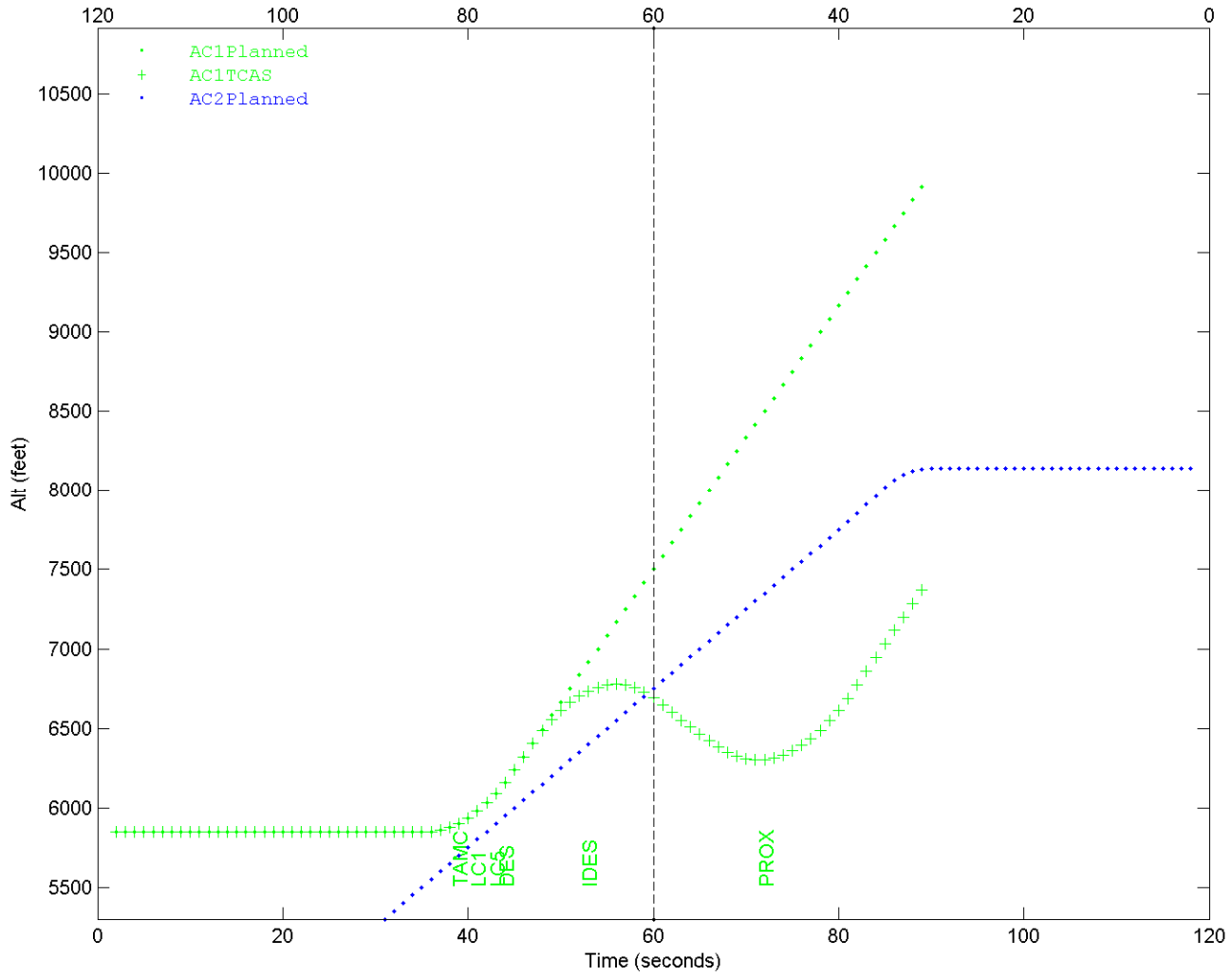
1 TCAS AC 7171031 TA:39 |TAUV| LC1 @41 [NX]| LC5 @43 | DES @44 | IDES @53

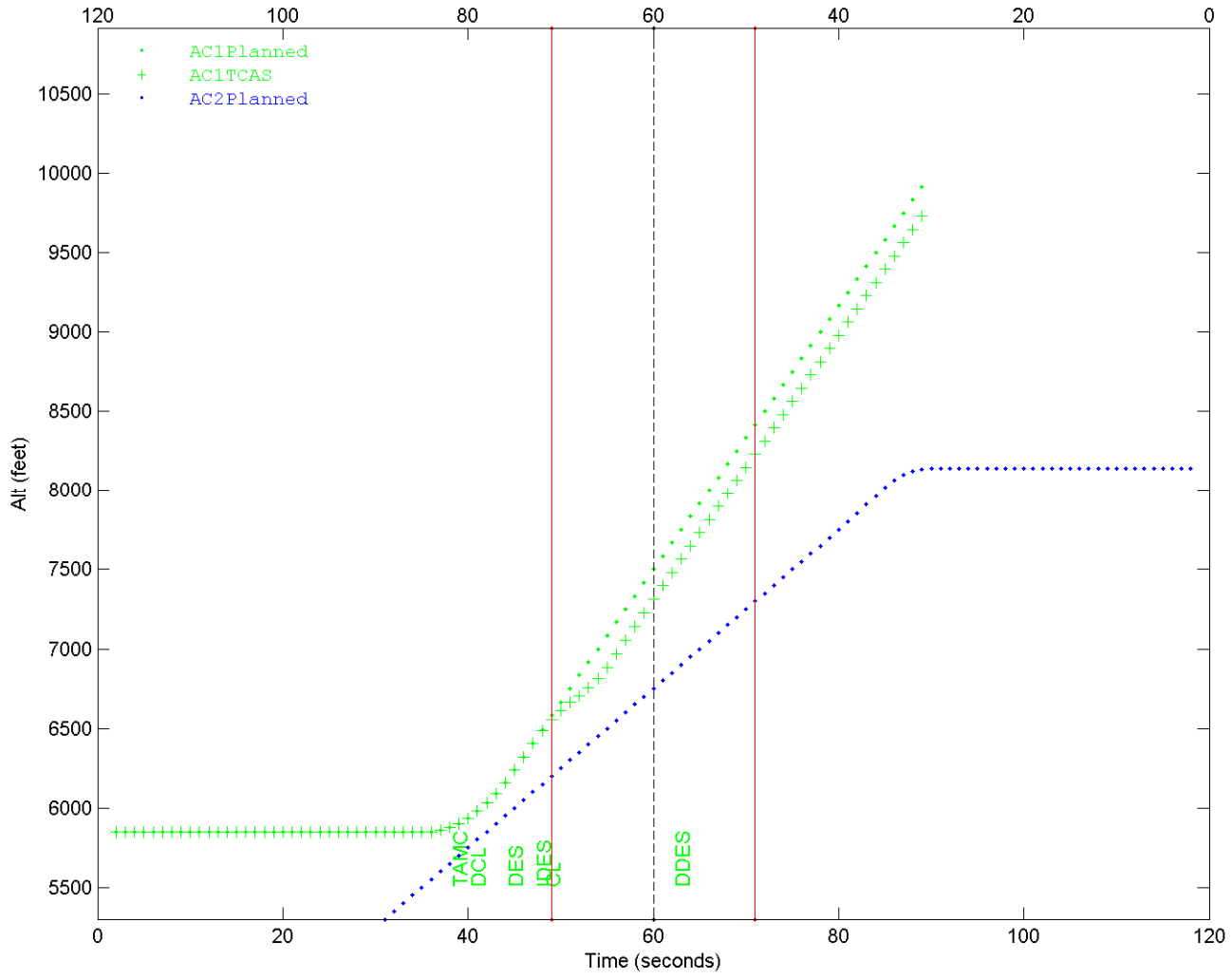
8968 V7.1 100 FT VS UNEQUIPPED 7 564.09 CROSSING_ENC

1 TCAS AC*REV*7171031 TA:39 |TAUV| DCL @41[NX]| DES @45| IDES @48| CL @49|
DDES @63



reit: 8968 cata: 717 simmode: 7171031 CP112EV1.2-100 Vs Unequipped I78968B





Change 7.1 TCAS vs Unequipped Representative Save 10

Encounter Class: 8

Reit Number : 3817

Encounter Characterization

| | | |
|-------------------------------|--------------|-----|
| Number of encounters in group | 17 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 500, 750 | ft |
| AC1 rates: | -3000, -5000 | fpm |
| AC2 rates: | -3000, -5000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | -0.25 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 20 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Descending vertical chase caused by response to initial RA.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER O83817
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(-3000.0,0.0) AC2 RATES(0.0,-3000.0)
AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL -0.25g @ CPA -20 AC1 CPA ALT 3700

3817 V7 25 FT VS UNEQUIPPED 8 76.19 CROSSING_ENC

1 TCAS AC 3175041 TA :30 |PVMD| DES @42 [NX]| IDES @49

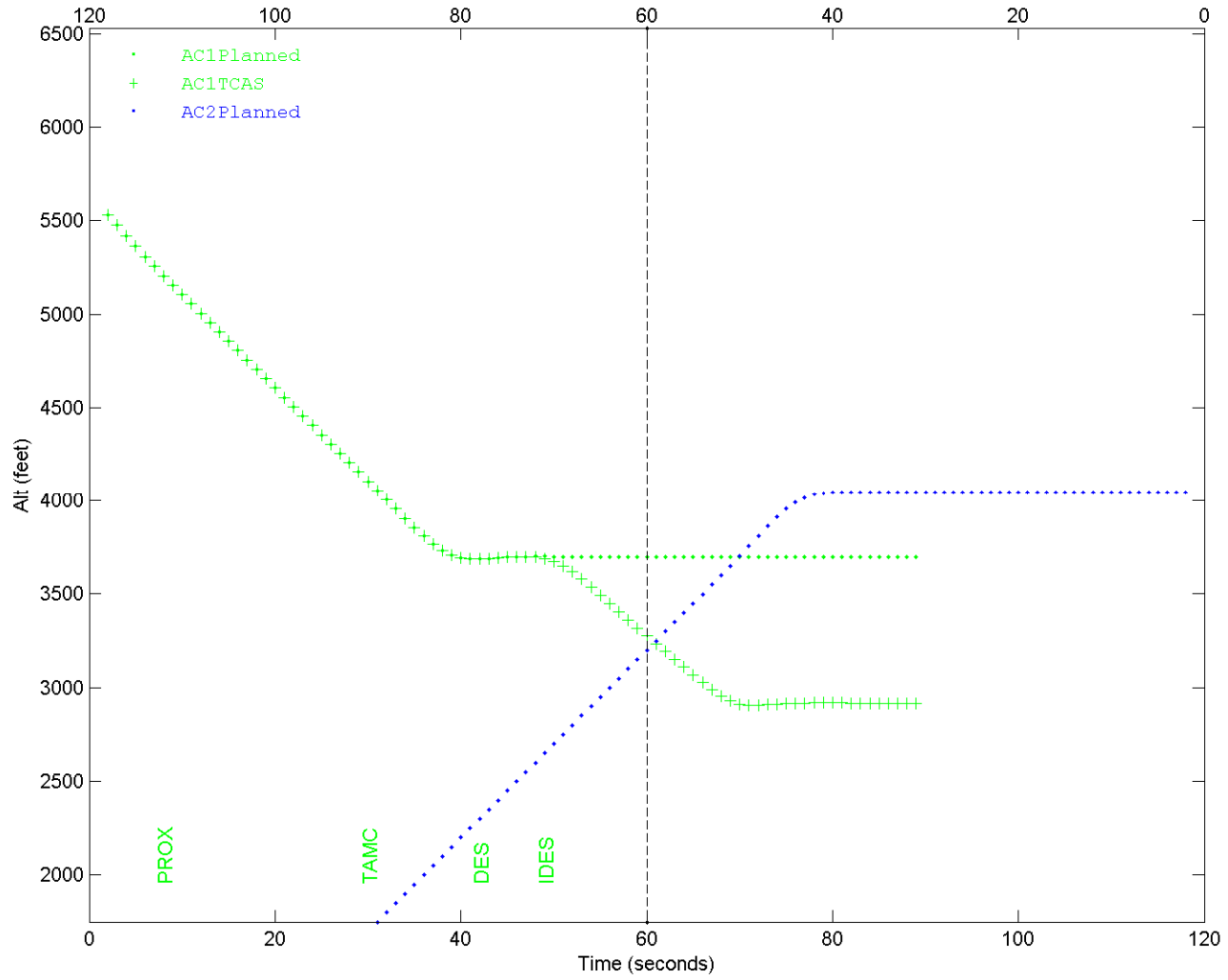
3817 CP112EV1.2 25 FT VS UNEQUIPPED 8 216.94 CROSSING_ENC

CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 8.28 REV_AVOID 02 TIME_REV_AVOID 0.0

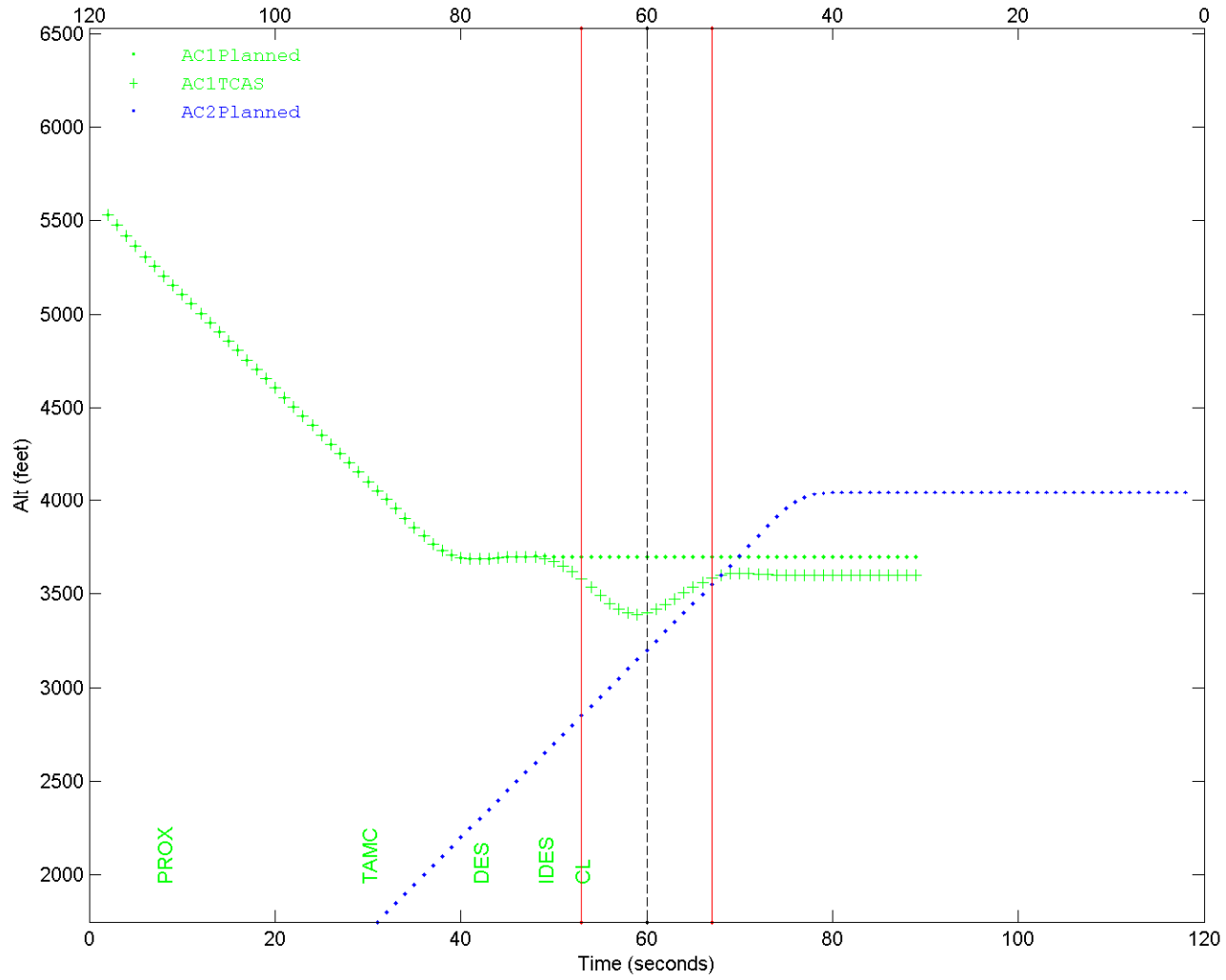
1 TCAS AC*REV*7175041 TA :30 |PVMD| DES @42 [NX]| IDES @49 | CL @53

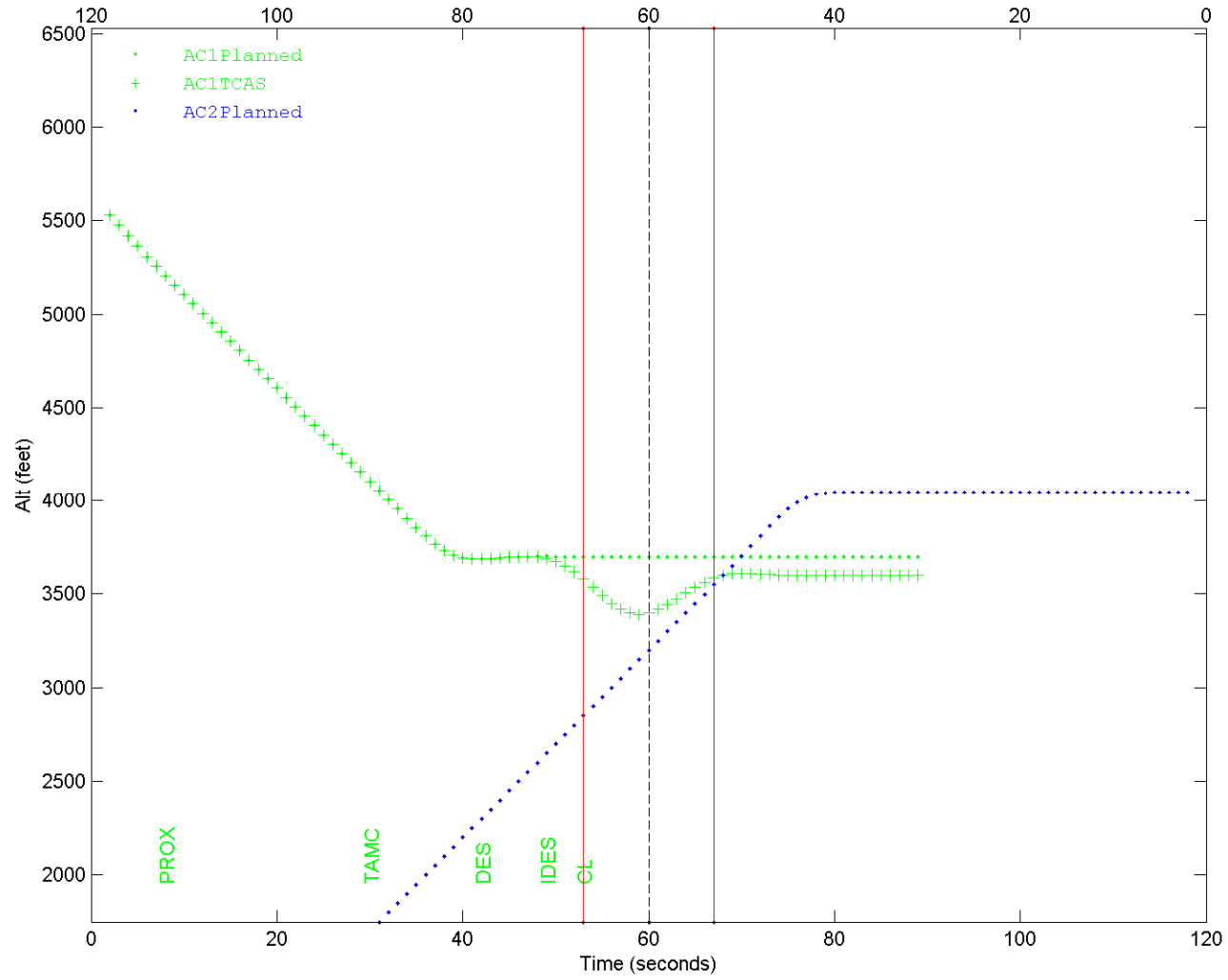
3817 V7.1 25 FT VS UNEQUIPPED 8 216.94 CROSSING_ENC

1 TCAS AC*REV*7175041 TA :30 |PVMD| DES @42 [NX]| IDES @49 | CL @53



reit: 3817 cata: 818 simmode: 7175041 CP112EV1.2-25 Vs Unequipped O83817B





Change 7.1 TCAS vs Unequipped Representative Save 11

Encounter Class: 8

Reit Number : 8792

Encounter Characterization

| | | |
|-------------------------------|--------------|-----|
| Number of encounters in group | 20 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | -500, -750 | ft |
| AC1 rates: | -1000, -3000 | fpm |
| AC2 rates: | 3000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | 0.15 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by response to initial RA.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I88792
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-1000.0,0.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL 0.15g @ CPA -25 AC1 CPA ALT 7500

8792 V7 100 FT VS UNEQUIPPED 8 -92.86 CROSSING_ENC

1 TCAS AC*REV*3171031 TA :19 |TAUR| CL @34 [NX]| ICL @47 | DES @58

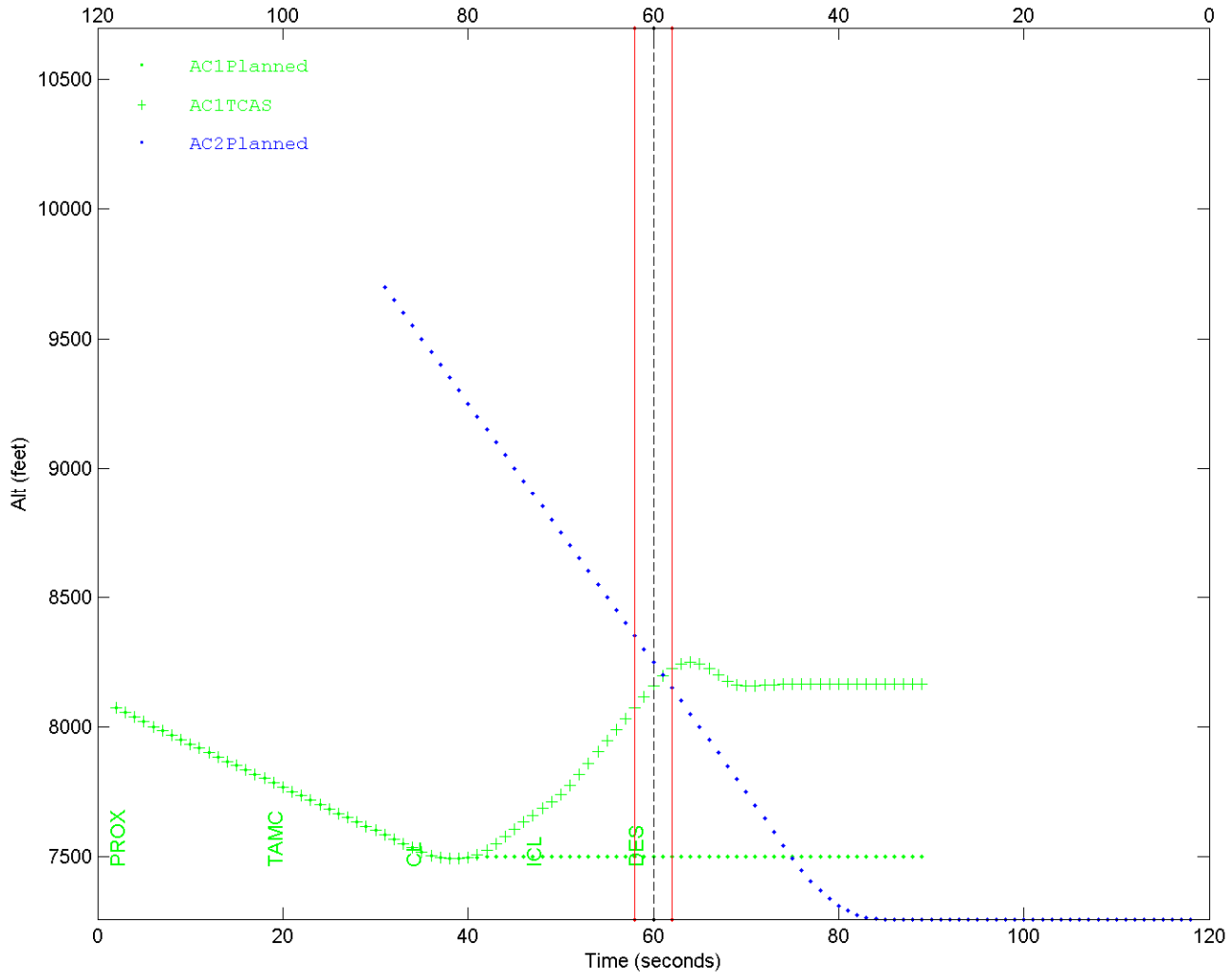
8792 CP112EV1.2 100 FT VS UNEQUIPPED 8 -736.76 CROSSING_ENC

CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 8.64 REV_AVOID 02 TIME_REV_AVOID 0.0

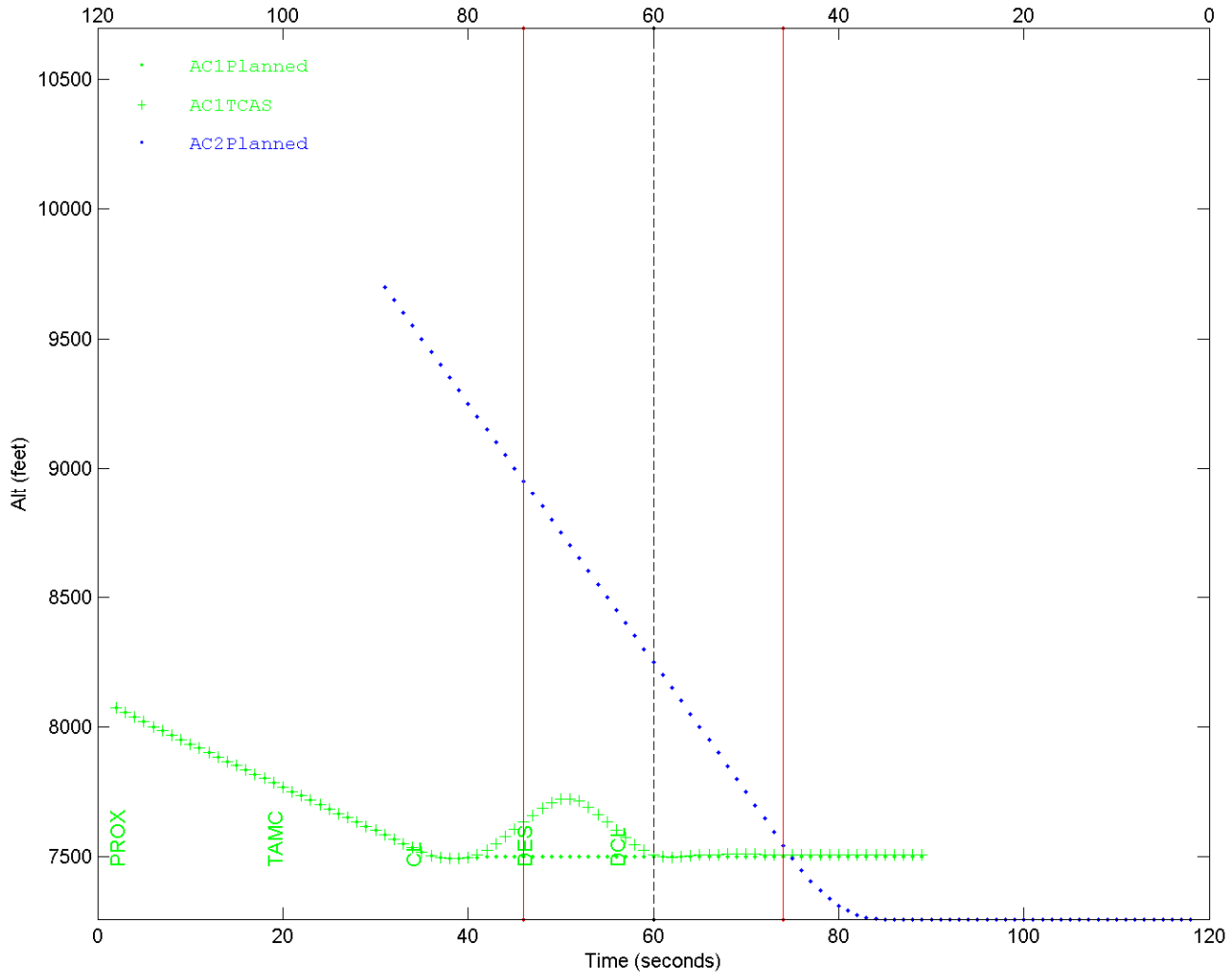
1 TCAS AC*REV*7171031 TA :19 |TAUR| CL @34 [NX]| DES @46 | DCL @56

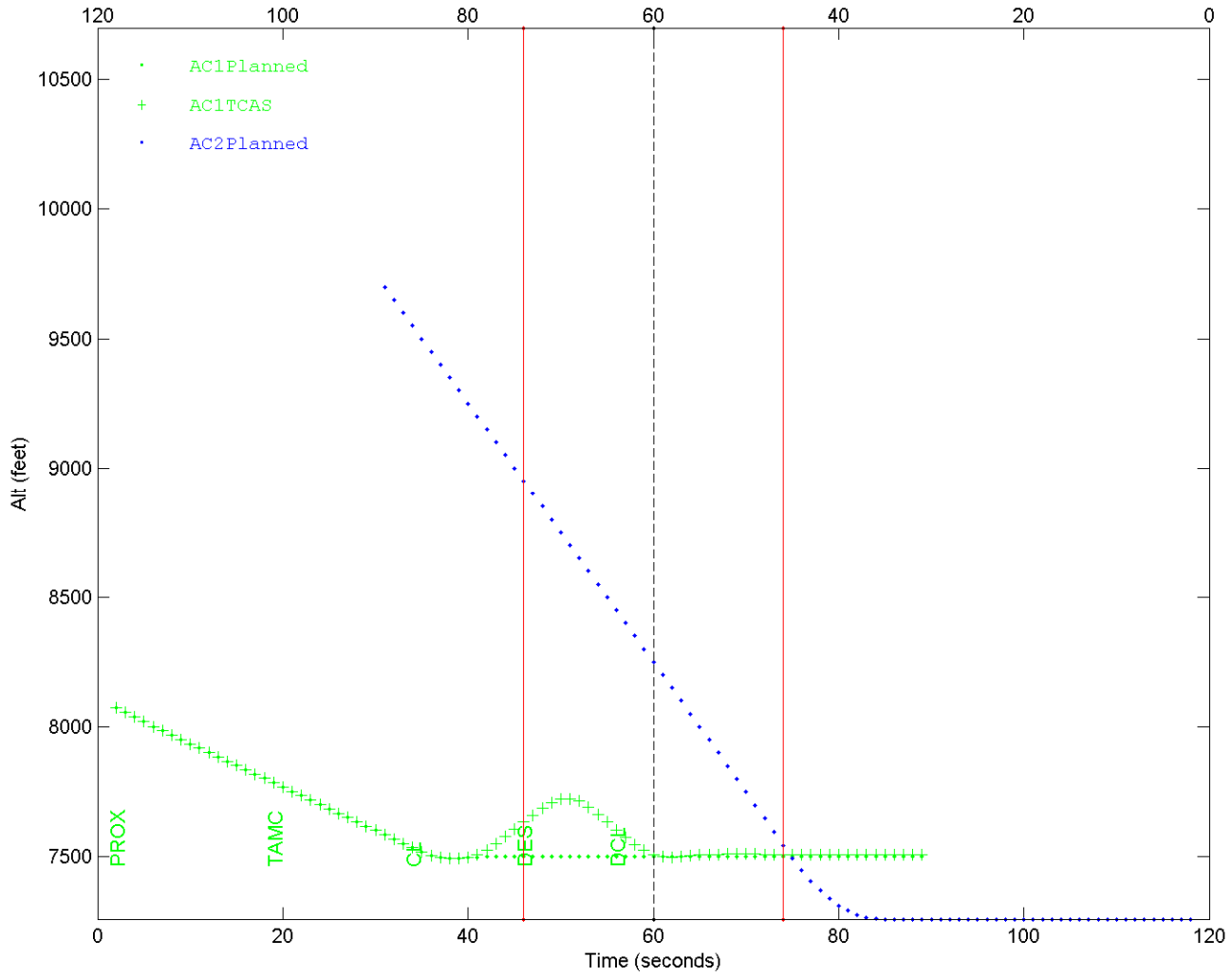
8792 V7.1 100 FT VS UNEQUIPPED 8 -736.76 CROSSING_ENC

1 TCAS AC*REV*7171031 TA :19 |TAUR| CL @34 [NX]| DES @46 | DCL @56



reit: 8792 cata: 818 simmode: 7171031 CP112EV1.2-100 Vs Unequipped I88792B





Change 7.1 TCAS vs Unequipped Representative Save 12

Encounter Class: 8

Reit Number : 1794

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 2 | |
| AC1 TCAS equipped | no | |
| Vertical tracker | 25 | ft |
| Planned separation | 500 | ft |
| AC1 rates: | -5000 | fpm |
| AC2 rates: | -3000 | fpm |
| AC1 acceleration: | 0.15 | g |
| AC2 acceleration: | -0.25 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Descending vertical chase caused by planned maneuver. CP112E reversal did not solve NMAC.

After addition of CP115 TCAS aircraft gets LOLO. DES RA comes 2 seconds later, so reversal to DES succeeds.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER Z81794
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(-5000.0,0.0) AC2 RATES(0.0,-3000.0)
AC1 ACCEL 0.15g @ CPA -25 AC2 ACCEL -0.25g @ CPA -25 AC1 CPA ALT 3700

1794 UNEQUIPPED VS V7 25 FT 8 -95.32 CROSSING_ENC

2 TCAS AC*REV*3275014 TA :30 |PVMD| LD2 @42 [NX]| LD1 @44 | CL @46 | ICL @49
| DES @52 | IDES @54

1794 UNEQUIPPED VS CP112EV1.2 25 FT 8 -95.32 CROSSING_ENC

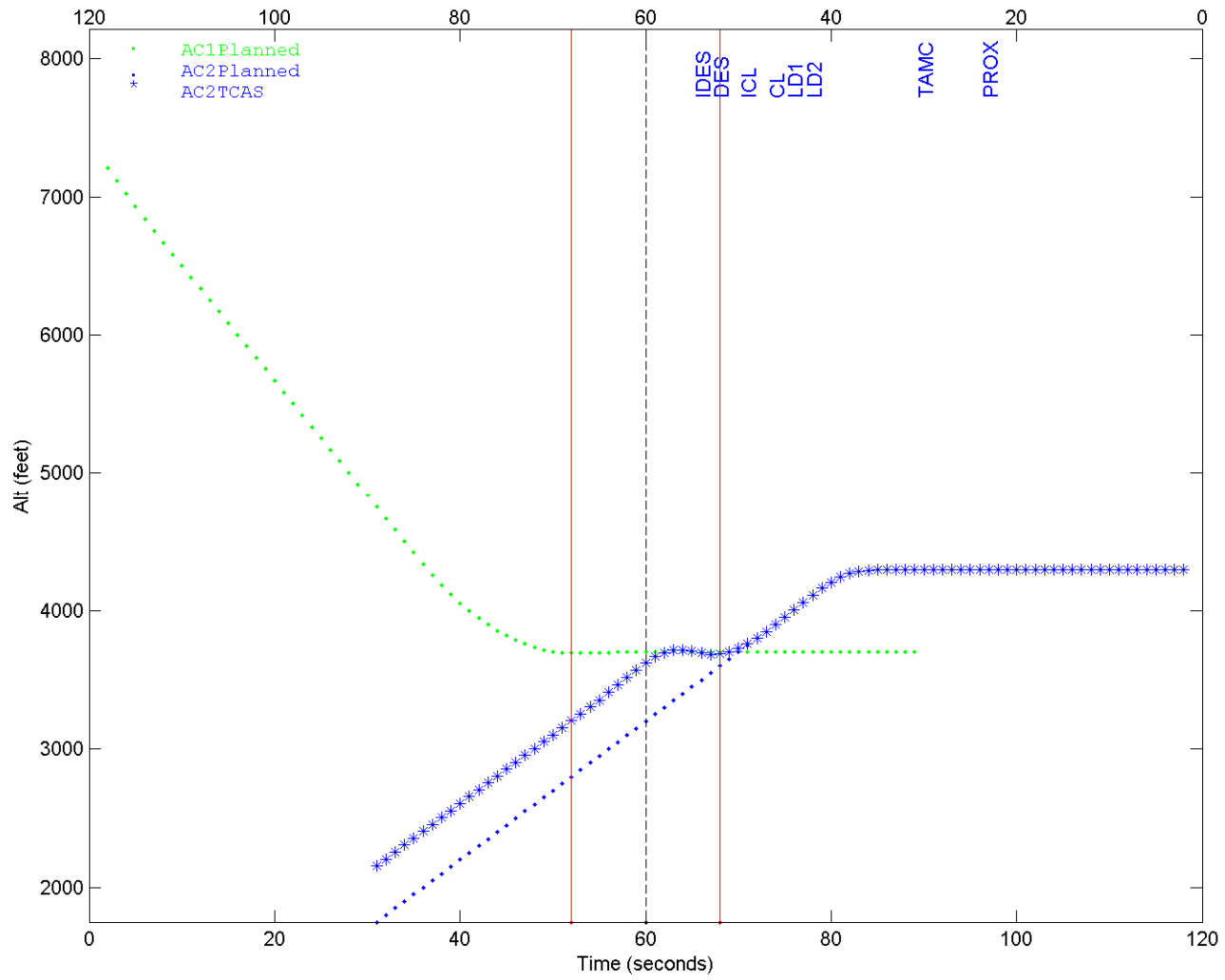
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 14.53 REV_AVOID 02 TIME_REV_AVOID 0.0

2 TCAS AC*REV*7275014 TA :30 |PVMD| LD2 @42 [NX]| LD1 @44 | CL @46 | ICL @49
| DES @52 | IDES @54

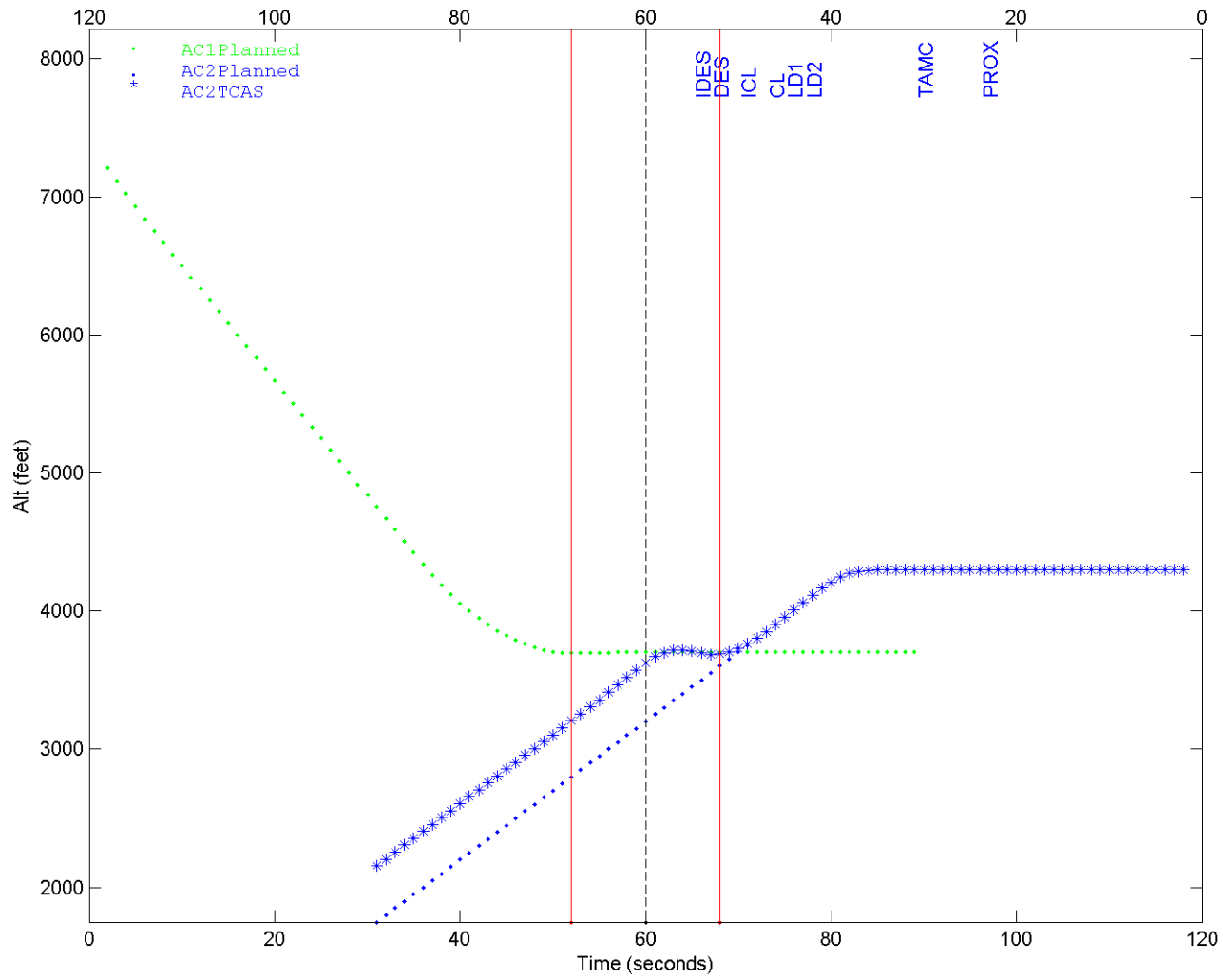
1794 UNEQUIPPED VS V7.1 25 FT 8 -162.19 CROSSING_ENC

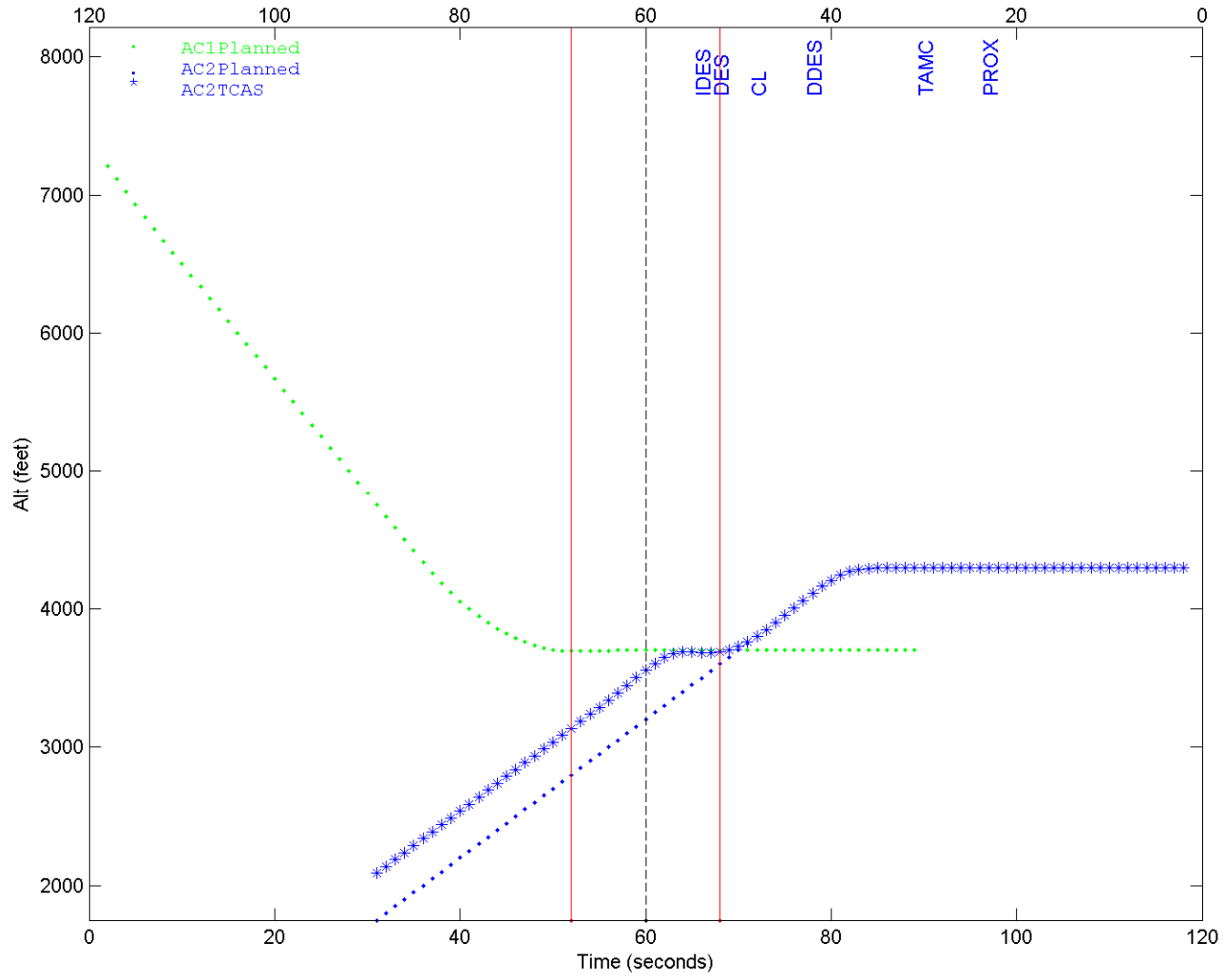
2 TCAS AC*REV*7275014 TA :30 |PVMD| DDES @42 [NX]| CL @48 | DES @52 | IDES @54

reit: 1794 cata: 818 simmode: 3275014 Unequipped Vs Version 7-100 Z81794A



reit: 1794 cata: 818 simmode: 7275014 Unequipped Vs CP112EV1.2-100 Z81794B





Change 7.1 TCAS vs Unequipped Representative Save 13

Encounter Class: 8

Reit Number : 7930

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 1 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 100 | ft |
| Planned separation | -500 | ft |
| AC1 rates: | -5000 | fpm |
| AC2 rates: | 5000 | fpm |
| AC1 acceleration: | 0.25 | g |
| AC2 acceleration: | 0.25 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Climbing vertical chase caused by response to initial RA and planned maneuver by intruder.
LOLO instead of AVSA caused TCAS aircraft to descend less before the CL reversal.
Version 7 and Version 7 + CP112E had reversals after CPA.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I87930
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -500.0 AC1 RATES(-5000.0,0.0) AC2 RATES(0.0,5000.0)
AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL 0.25g @ CPA -25 AC1 CPA ALT 7500

7930 V7 100 FT VS UNEQUIPPED 8 -35.21 CROSSING_ENC

1 TCAS AC*REV*3171031 TA :19 |TAUR| LD2 @34 [NX]| LD1 @41 | DDES @42 | CL @43
| ICL @49 | DES @62

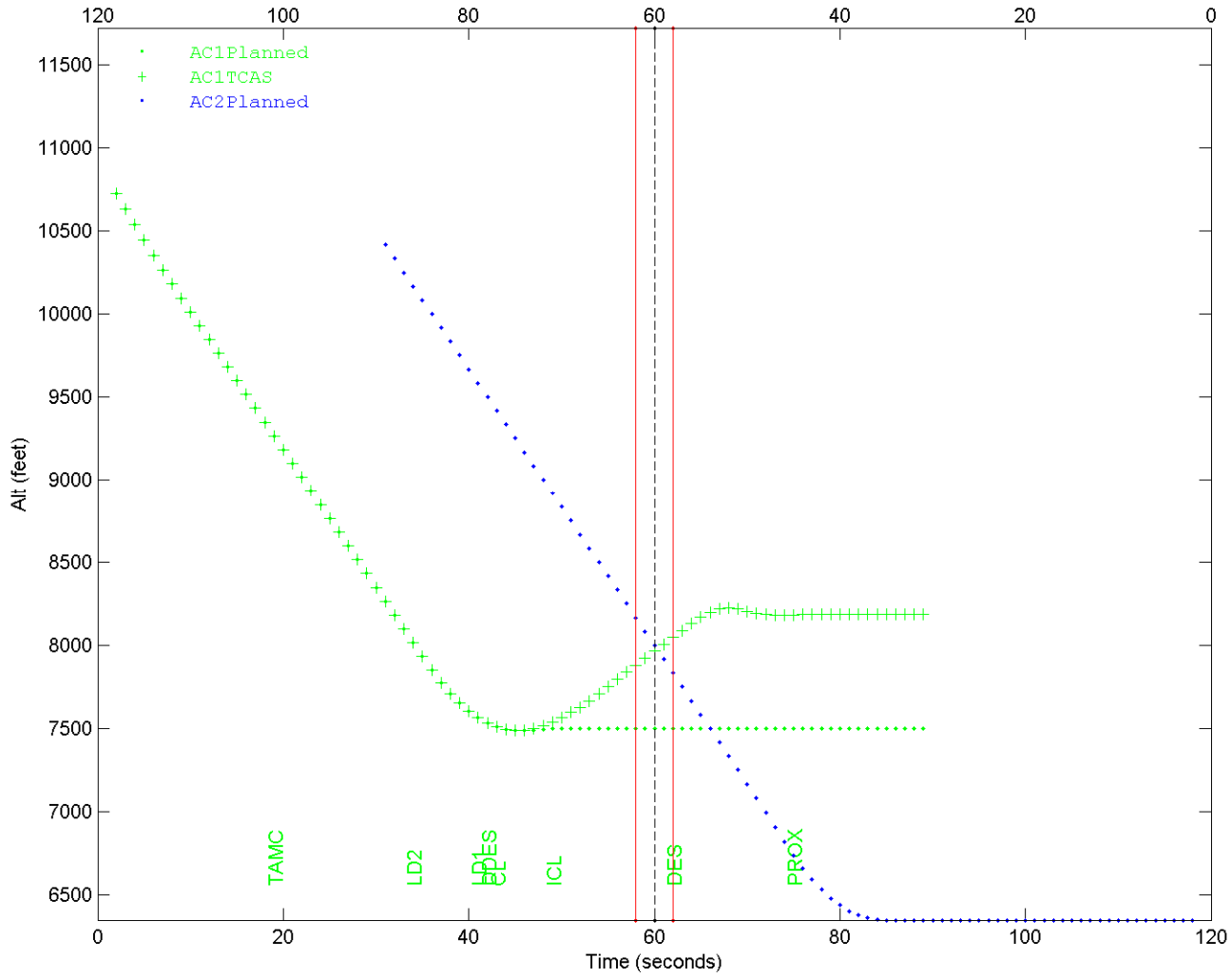
7930 CP112EV1.2 100 FT VS UNEQUIPPED 8 -35.21 CROSSING_ENC

CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 13.37 REV_AVOID 02 TIME_REV_AVOID 0.0

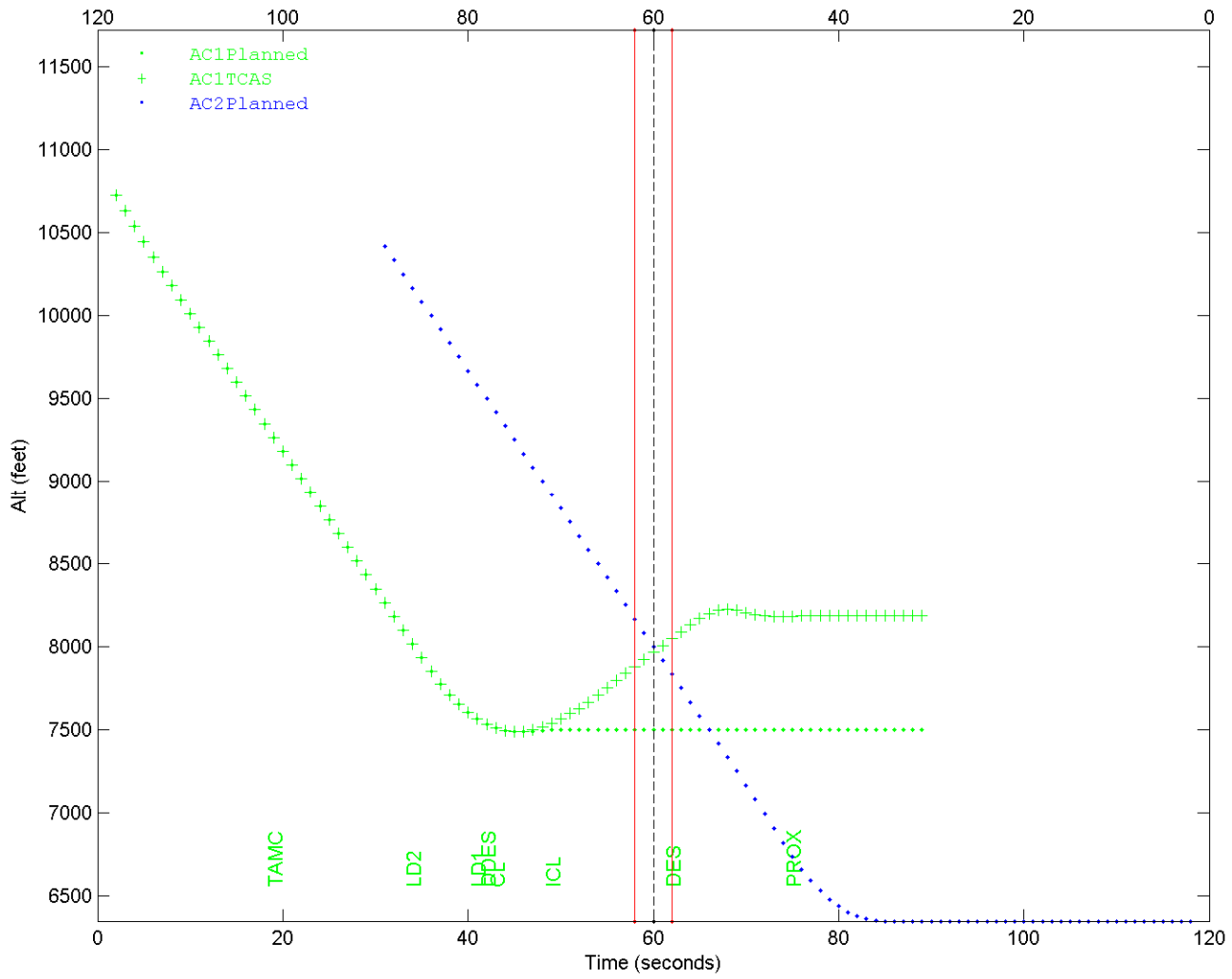
1 TCAS AC*REV*7171031 TA :19 |TAUR| LD2 @34 [NX]| LD1 @41 | DDES @42 | CL @43
| ICL @49 | DES @62

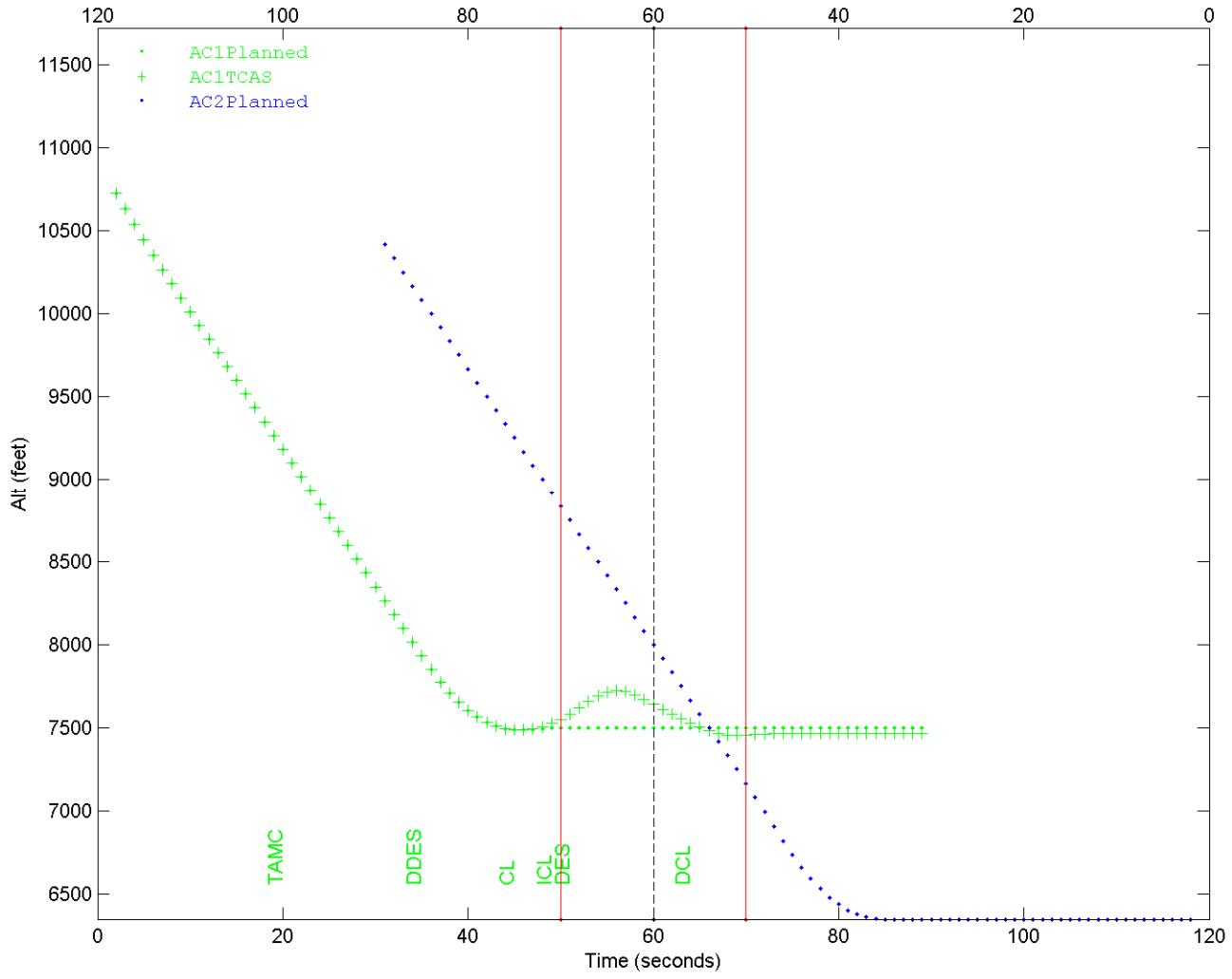
7930 V7.1 100 FT VS UNEQUIPPED 8 -370.51 CROSSING_ENC

1 TCAS AC*REV*7171031 TA :19 |TAUR| DDES @34 [NX]| CL @44 | ICL @48 | DES @50
| DCL @63



reit: 7930 cata: 818 simmode: 7171031 CP112EV1.2-100 Vs Unequipped I87930B





Change 7.1 TCAS vs Unequipped Representative Save 14

Encounter Class: 9

Reit Number : 1605

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 1 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25 | ft |
| Planned separation | 500 | ft |
| AC1 rates: | 5000 | fpm |
| AC2 rates: | 5000 | fpm |
| AC1 acceleration: | -0.05 | g |
| AC2 acceleration: | -0.15 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Pre-existing climbing vertical chase.

Addition of CP115 caused LOLO instead of AVSA.

Later initial positive command (3 second delay) leads to more separation from the reversal.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER 091605
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(5000.0,0.0) AC2 RATES(5000.0,0.0)
AC1 ACCEL -0.05g @ CPA -25 AC2 ACCEL -0.15g @ CPA -25 AC1 CPA ALT 3700

1605 V7 25 FT VS UNEQUIPPED 9 86.66 CROSSING_ENC

1 TCAS AC*REV*3175041 TA :35 |SL| LC2 @41[NX]| LC1 @44| DES @45| IDES @48| CL @52

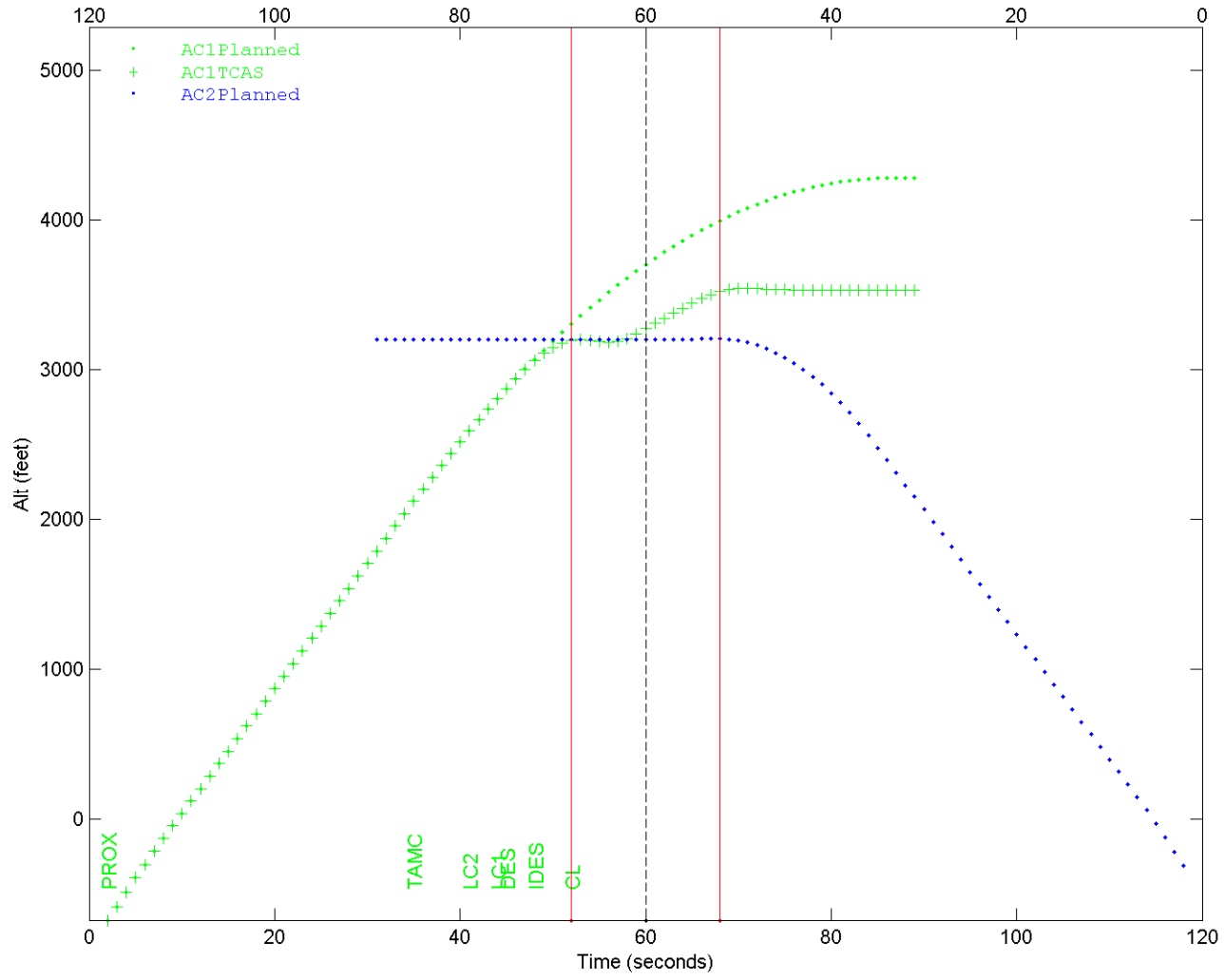
1605 CP112EV1.2 25 FT VS UNEQUIPPED 9 86.66 CROSSING_ENC

CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 16.69 REV_AVOID 02 TIME_REV_AVOID 0.0

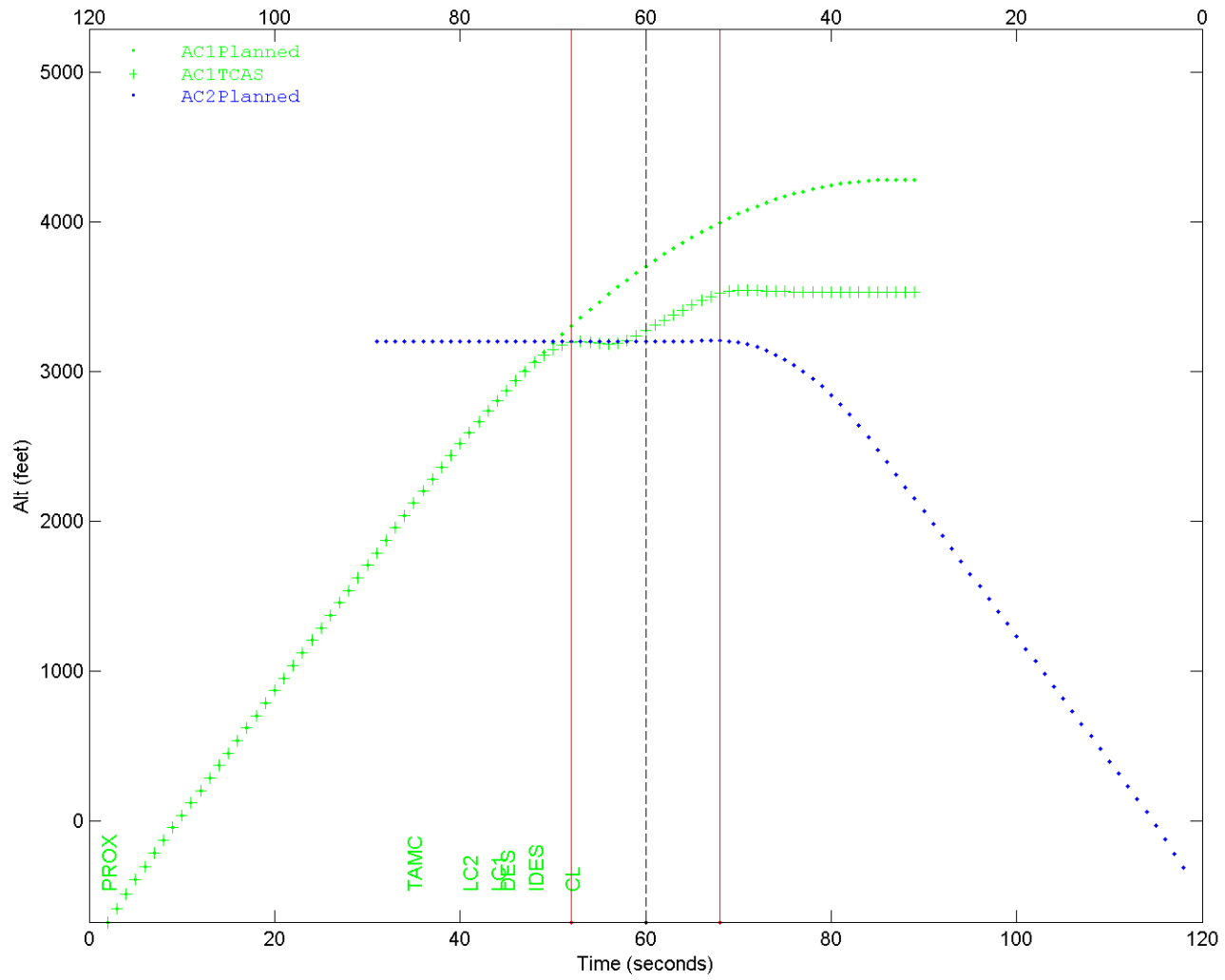
1 TCAS AC*REV*7175041 TA :35 |SL| LC2 @41[NX]| LC1 @44| DES @45| IDES @48| CL @52

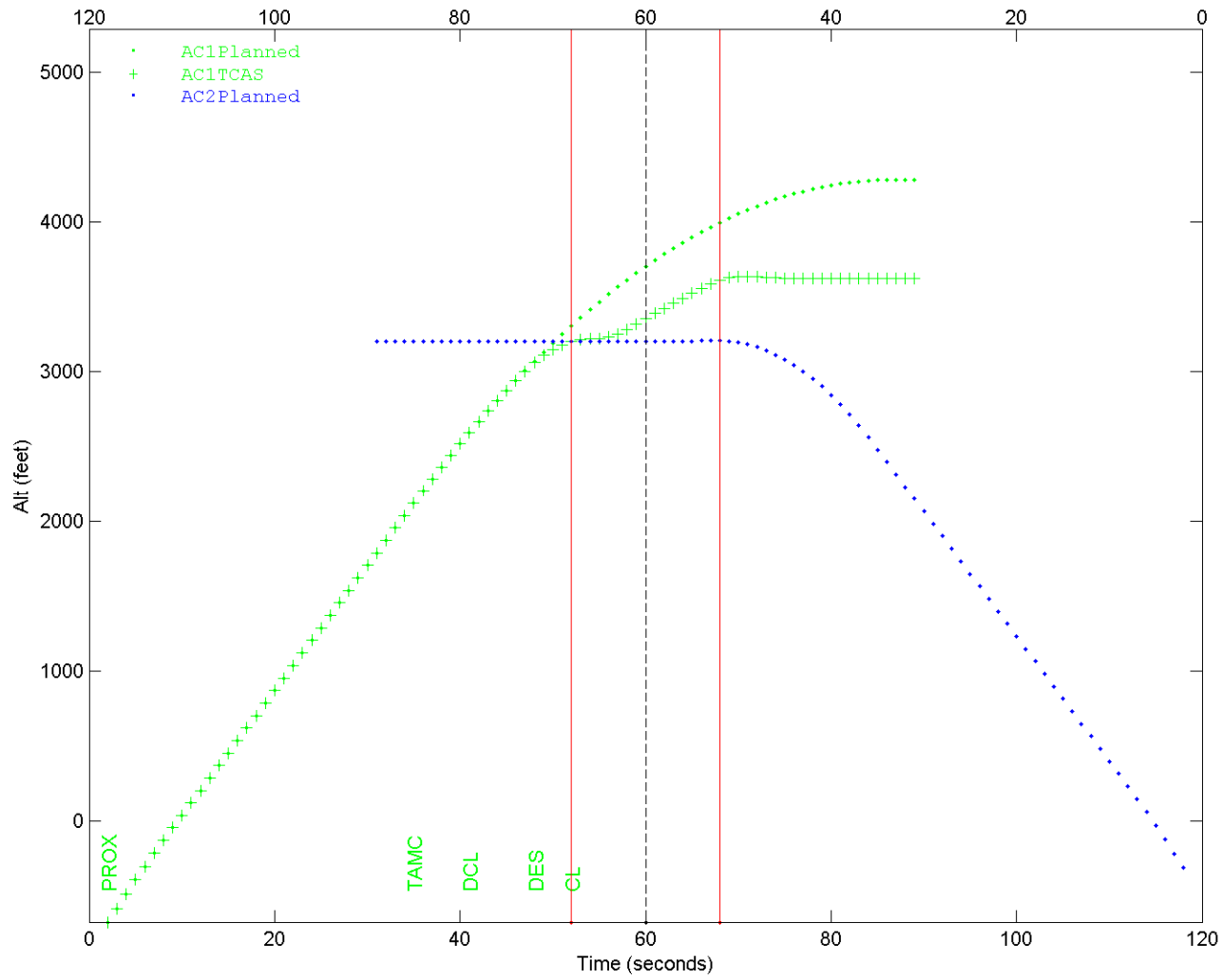
1605 V7.1 25 FT VS UNEQUIPPED 9 159.42 CROSSING_ENC

1 TCAS AC*REV*7175041 TA :35 |SL | DCL @41 [NX]| DES @48 | CL @52



reit: 1605 cata: 919 simmode: 7175041 CP112EV1.2-25 Vs Unequipped O91605B





Change 7.1 TCAS vs Unequipped Representative Save 15

Encounter Class: 15

Reit Number : 5632

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 4 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000, 5000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.15 | g |
| AC2 acceleration time: | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned maneuver by intruder.
Addition of CP112E allowed sense reversal that solved the NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER O5632
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(3000.0,3000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.15g @ CPA -30 AC1 CPA ALT 7520

5632 V7 25 FT VS UNEQUIPPED 15 0.00 NON_CROSSING_ENC

1 TCAS AC 3175041 TA :20 |PVMD| CL @37 [NX]

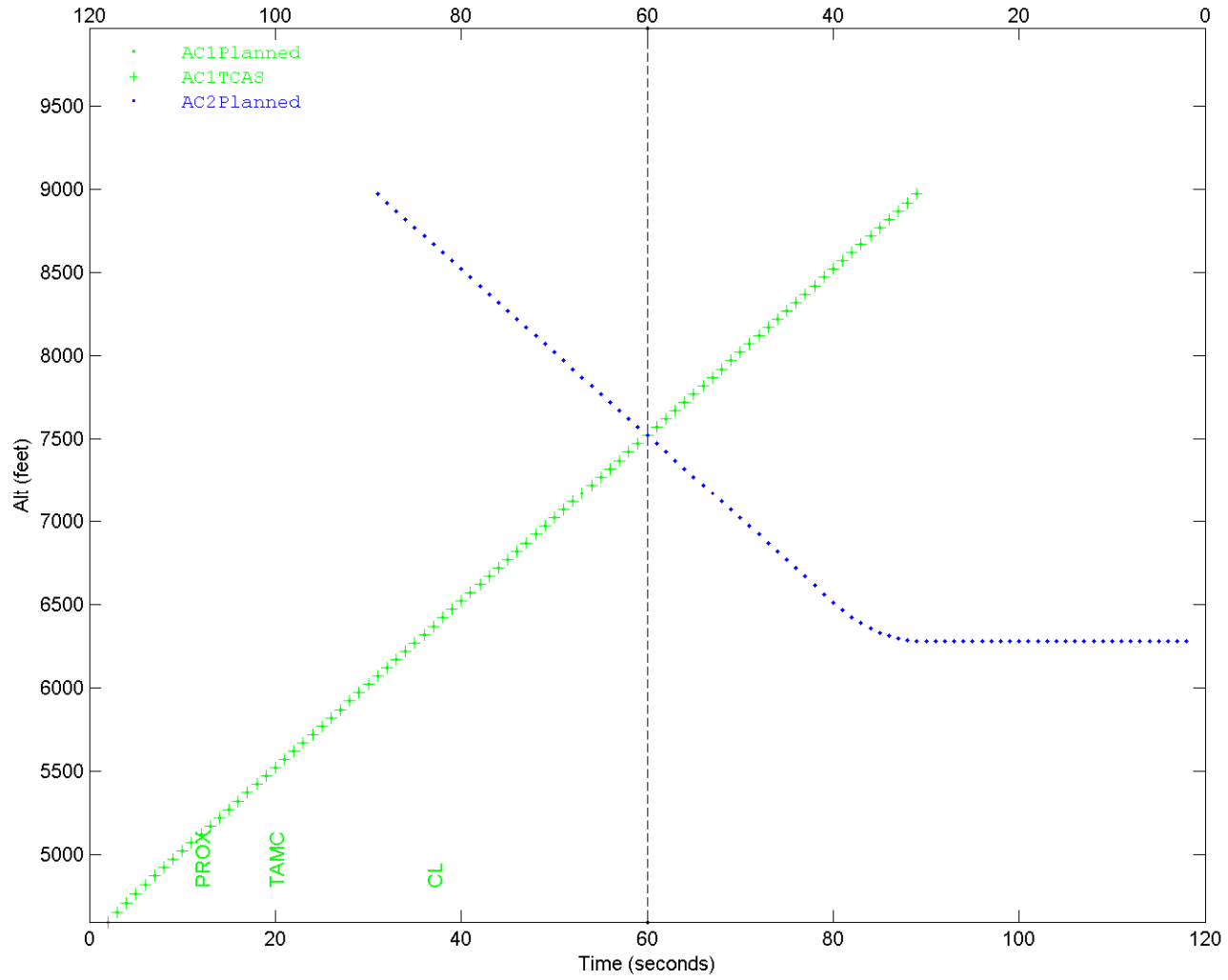
5632 CP112EV1.2 25 FT VS UNEQUIPPED 15 -543.55 NON_CROSSING_ENC

CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 5.00 REV_AVOID 02 TIME_REV_AVOID 0.0

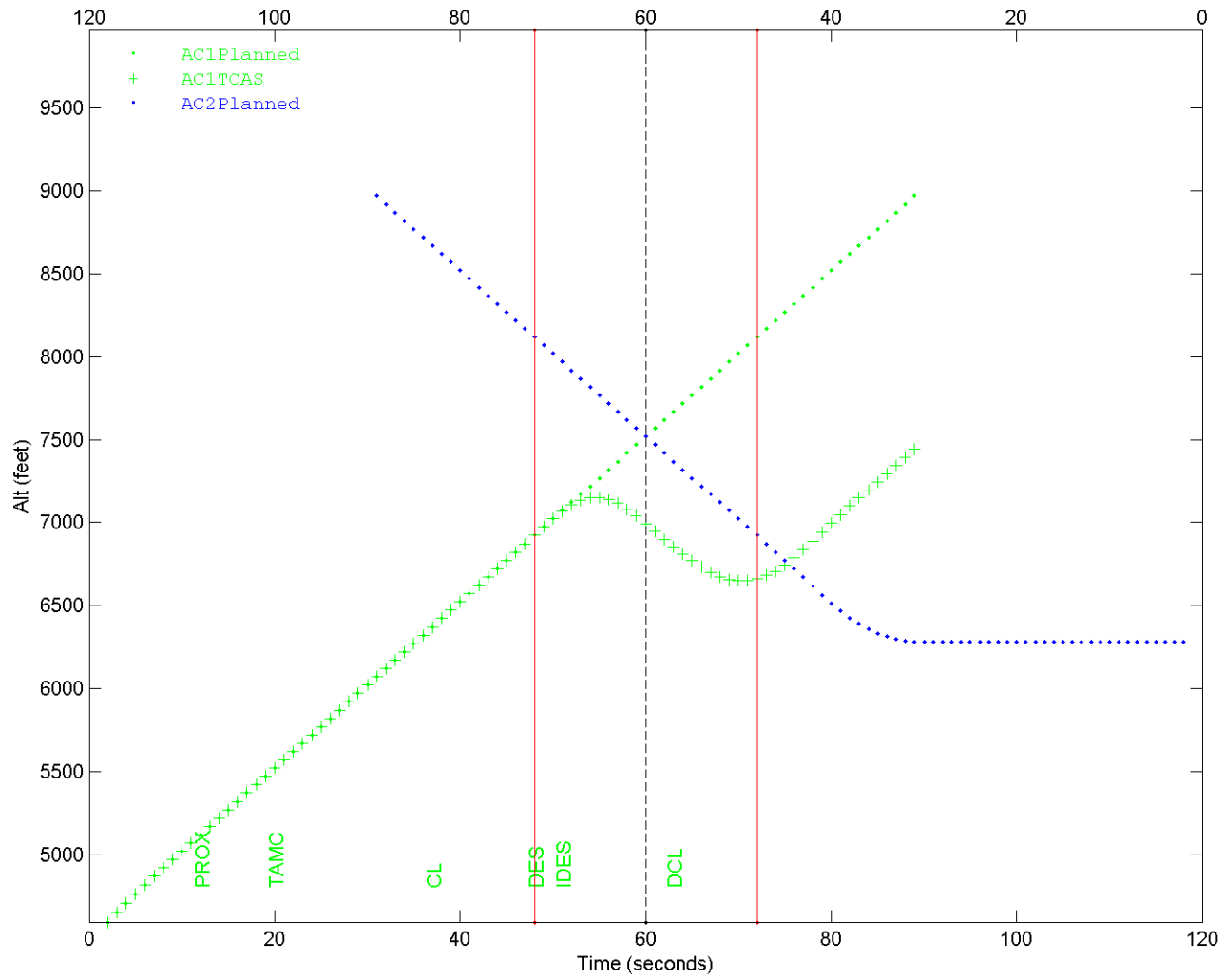
1 TCAS AC*REV*7175041 TA :20 |PVMD| CL @37 [NX]| DES @48 | IDES @51 | DCL @63

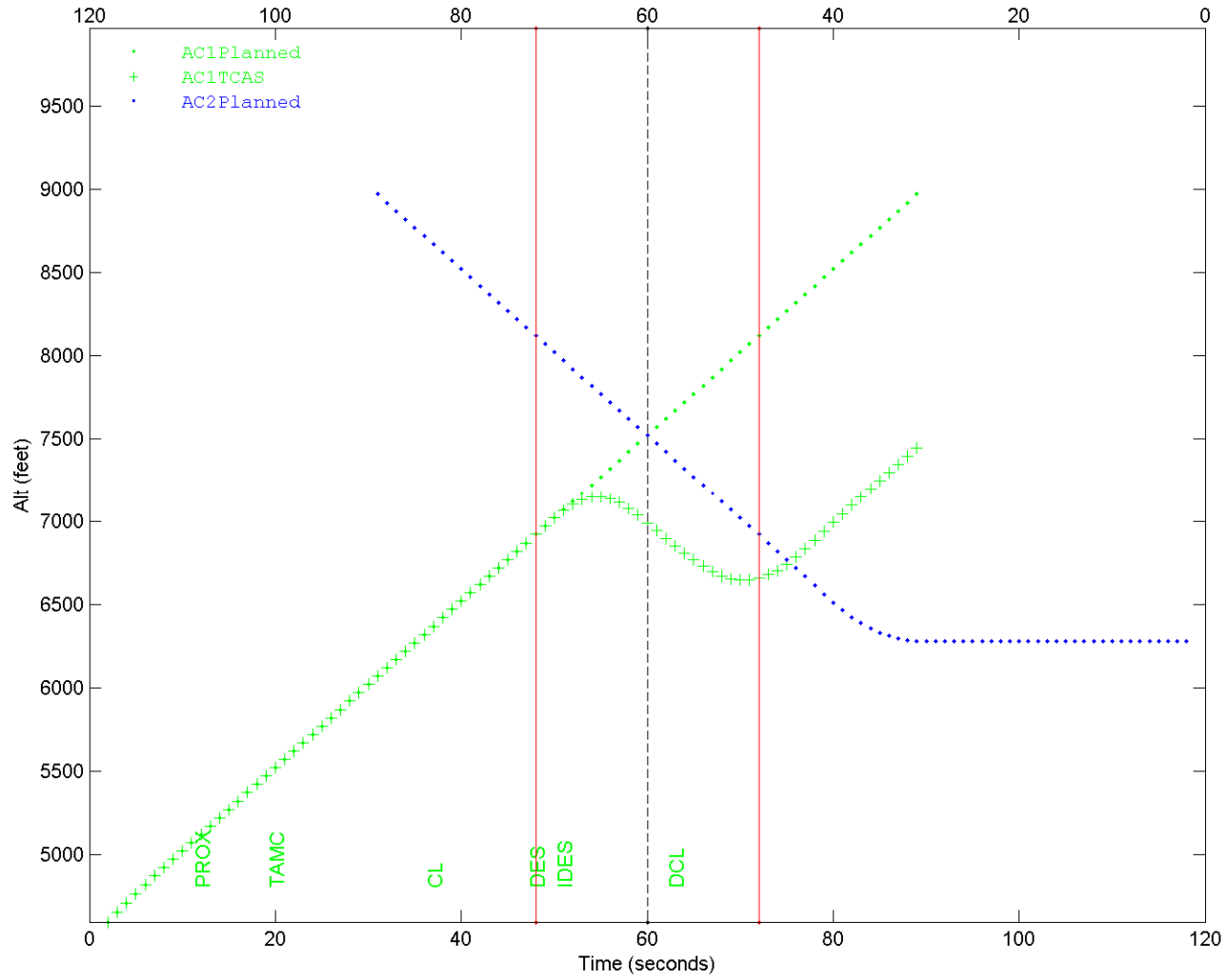
5632 V7.1 25 FT VS UNEQUIPPED 15 -543.55 NON_CROSSING_ENC

1 TCAS AC*REV*7175041 TA :20 |PVMD| CL @37 [NX]| DES @48 | IDES @51 | DCL @63



reit: 5632 cata: 515 simmode: 7175041 CP112EV1.2-25 Vs Unequipped O55632B





Change 7.1 TCAS vs Unequipped Representative Save 16

Encounter Class: 16

Reit Number : 4935

Encounter Characterization

| | | |
|-------------------------------|--------------|-----|
| Number of encounters in group | 7 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | -250, -750 | ft |
| AC1 rates: | -1000, -3000 | fpm |
| AC2 rates: | -5000 | fpm |
| AC1 acceleration: | none | |
| AC2 acceleration: | 0.25 | g |
| AC2 acceleration time: | CPA – 20 | sec |
| Encounters with reversed RAs | 0 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Initial descending vertical chase causes LD2 RA. Level-off maneuver by intruder defeats LD2. Addition of CP115 changes LD2 to DDES, CL which resolves the encounter without a reversal.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I64935
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-3000.0,-3000.0) AC2 RATES(-5000.0,0.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -20 AC1 CPA ALT 7520

4935 V7 100 FT VS UNEQUIPPED 16 12.85 CROSSING_ENC

1 TCAS AC 3171031 TA :19 |TAUR| LD2 @34 [X] | LD1 @47 | CL @48

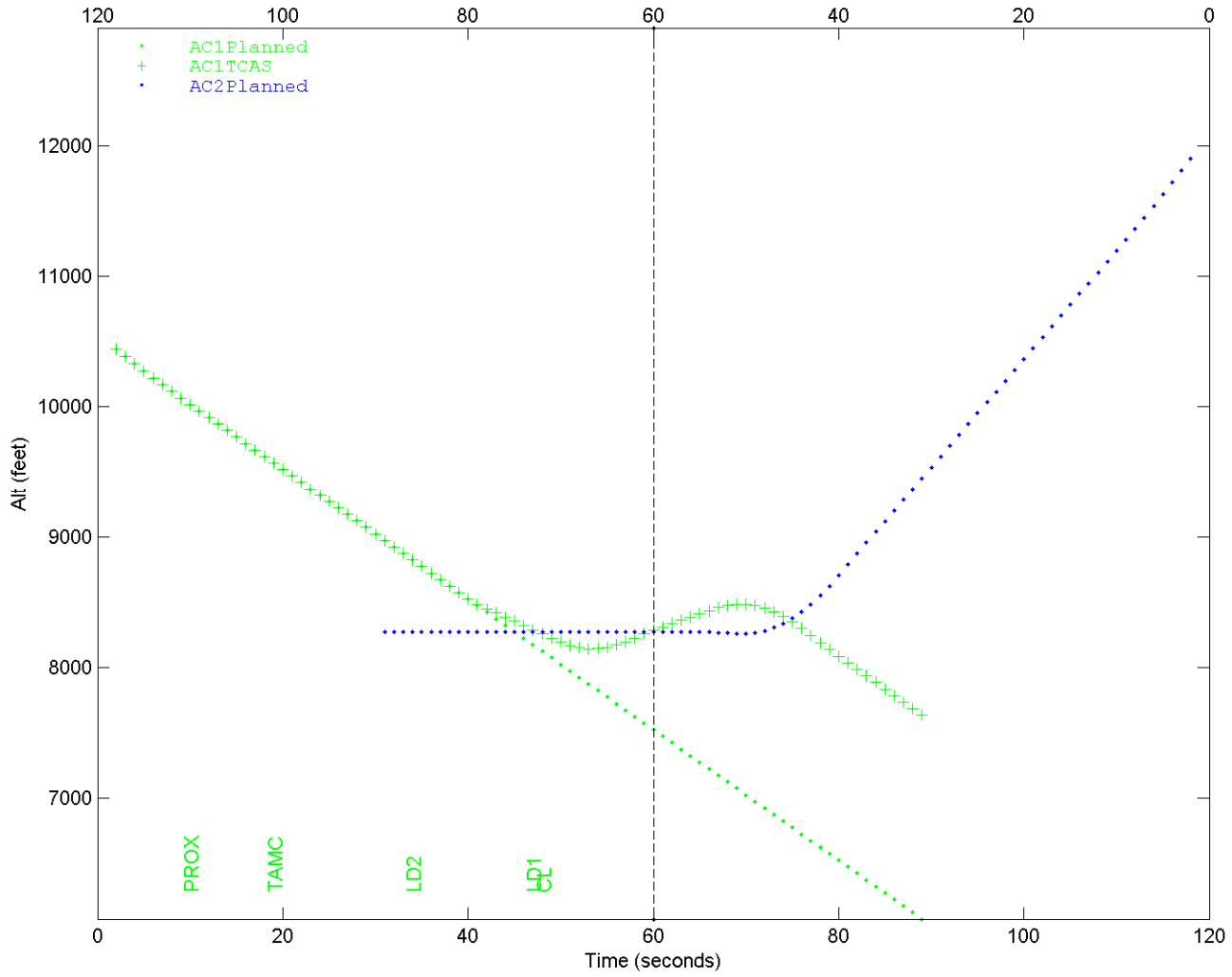
4935 CP112EV1.2 100 FT VS UNEQUIPPED 16 12.85 CROSSING_ENC

CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 11.25 REV_AVOID 02 TIME_REV_AVOID 0.0

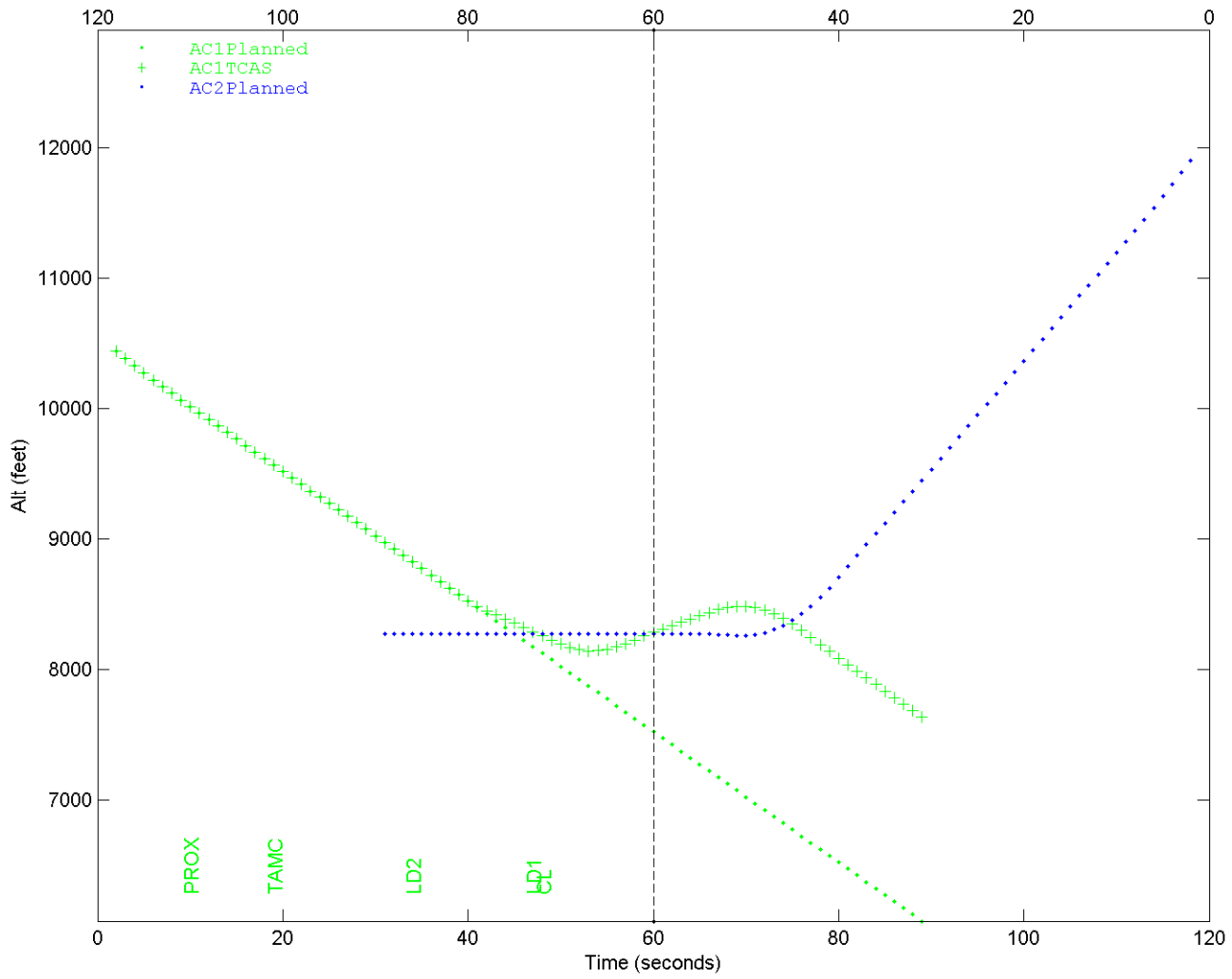
1 TCAS AC 7171031 TA :19 |TAUR| LD2 @34 [X] | LD1 @47 | CL @48

4935 V7.1 100 FT VS UNEQUIPPED 16 417.11 CROSSING_ENC

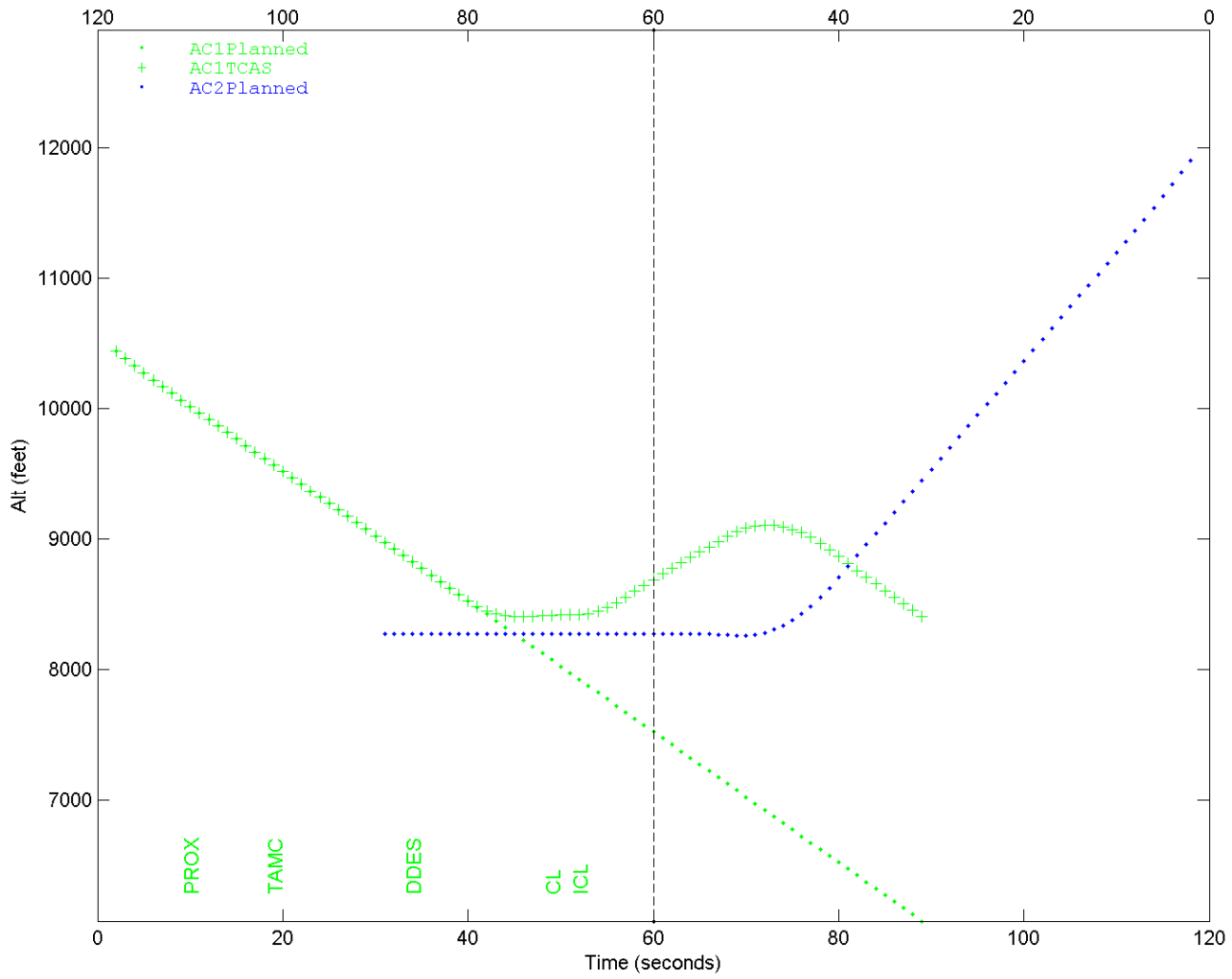
1 TCAS AC 7171031 TA :19 |TAUR| DDES @34 [X] | DDES @46 | CL @49 | ICL @52



reit: 4935 cata: 616 simmode: 7171031 CP112EV1.2-100 Vs Unequipped I64935B



reit: 4935 cata: 616 simmode: 7171031 Version7.1-100 Vs Unequipped I64935C



P-80

Change 7.1 TCAS vs Unequipped Representative Save 17

Encounter Class: 17

Reit Number : 6773

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 23 | |
| AC1 TCAS equipped | 14 | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 0 | ft |
| AC1 rates: | 3000, 5000 | fpm |
| AC2 rates: | 3000, 5000 | fpm |
| AC1 acceleration: | 0.15 | g |
| AC2 acceleration: | 0.15 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned maneuvers.
Addition of CP112E allowed sense reversal to solve NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER Z76773
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 0.0 AC1 RATES(0.0,3000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.15g @ CPA -25 AC2 ACCEL 0.15g @ CPA -25 AC1 CPA ALT 7500

6773 UNEQUIPPED VS V7 25 FT 17 39.05 NON_CROSSING_ENC

2 TCAS AC 3275014 TA :19 |TAUR| CL @34 [NX]

6773 UNEQUIPPED VS CP112EV1.2 25 FT 17 -775.48 NON_CROSSING_ENC

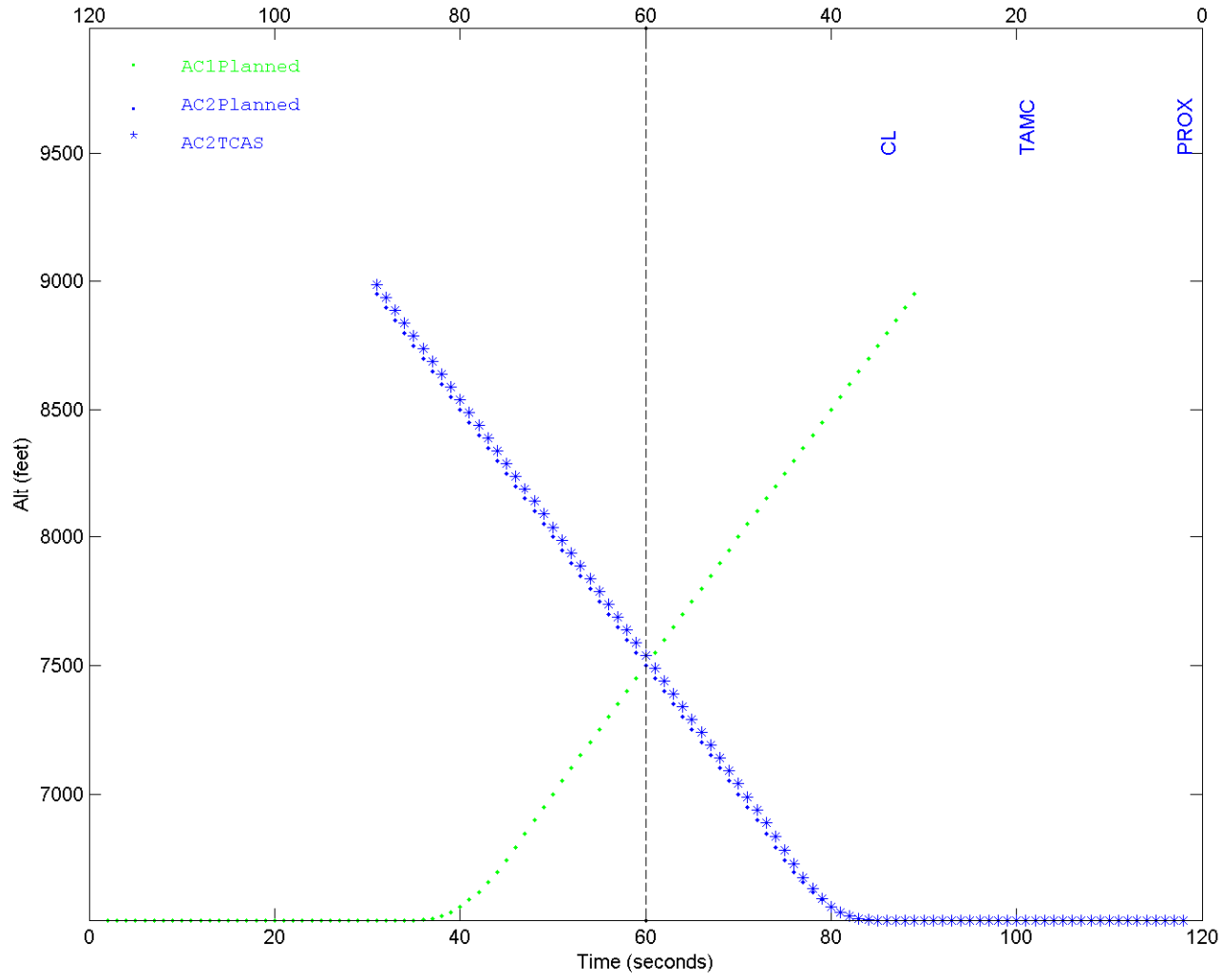
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 6.89 REV_AVOID 02 TIME_REV_AVOID 0.0

2 TCAS AC*REV*7275014 TA :19 |TAUR| CL @34 [NX]| DES @45 | IDES @48 | DCL @57

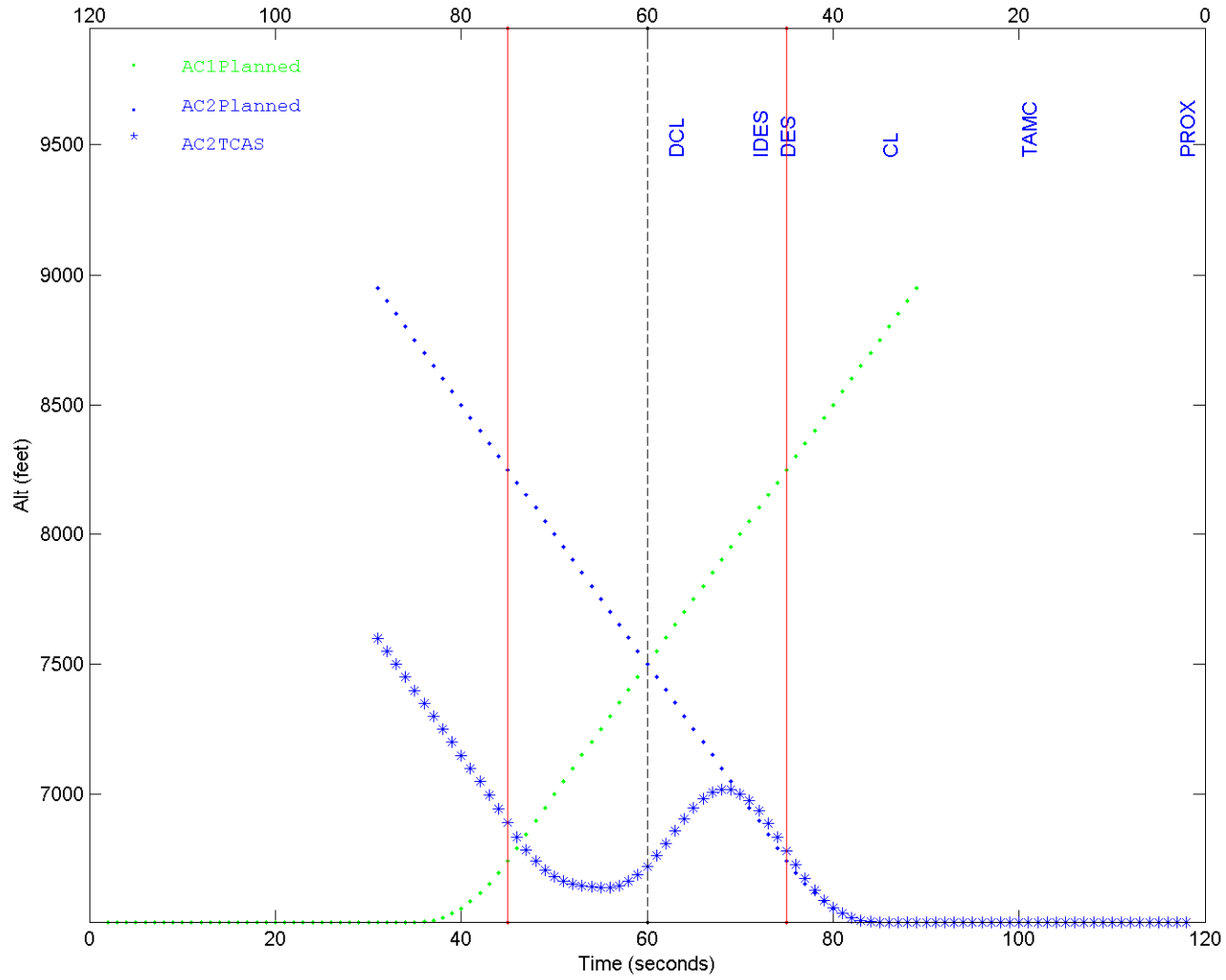
6773 UNEQUIPPED VS V7.1 25 FT 17 -775.48 NON_CROSSING_ENC

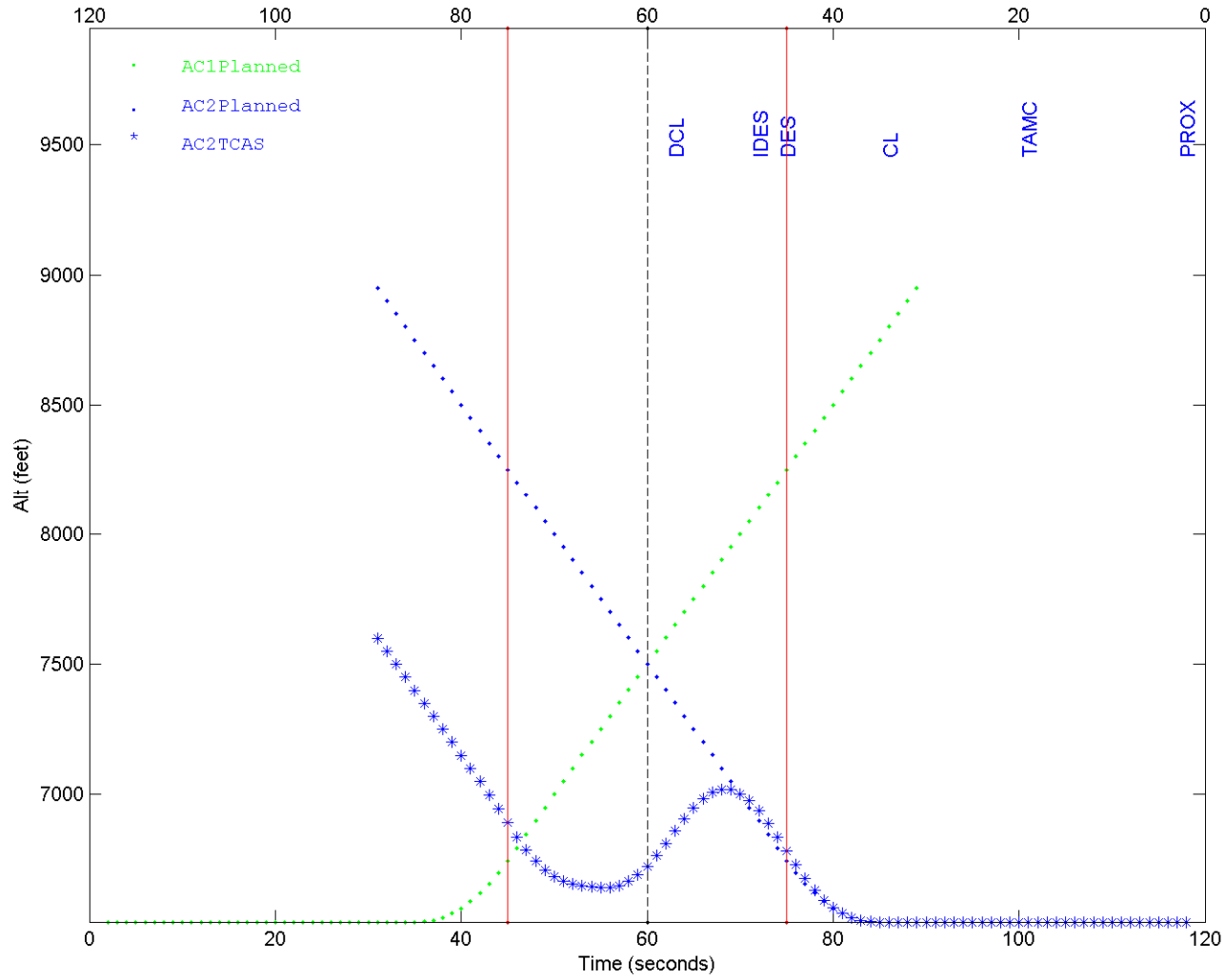
2 TCAS AC*REV*7275014 TA :19 |TAUR| CL @34 [NX]| DES @45 | IDES @48 | DCL @57

reit: 6773 cata: 717 simmode: 3275014 Unequipped Vs Version 7-100 Z76773A



reit: 6773 cata: 717 simmode: 7275014 Unequipped Vs CP112EV1.2-100 Z76773B





Change 7.1 TCAS vs Unequipped Representative Save 18

Encounter Class: 17

Reit Number : 570

Encounter Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 15 | |
| AC1 TCAS equipped | 1 | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 250, -500 | ft |
| AC1 rates: | 3000, 5000 | fpm |
| AC2 rates: | 1000, 5000 | fpm |
| AC1 acceleration: | 0.15 | g |
| AC2 acceleration: | 0.15 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Climbing vertical chase caused by planned maneuvers.
Addition of CP112E allowed sense reversal to solve NMAC.

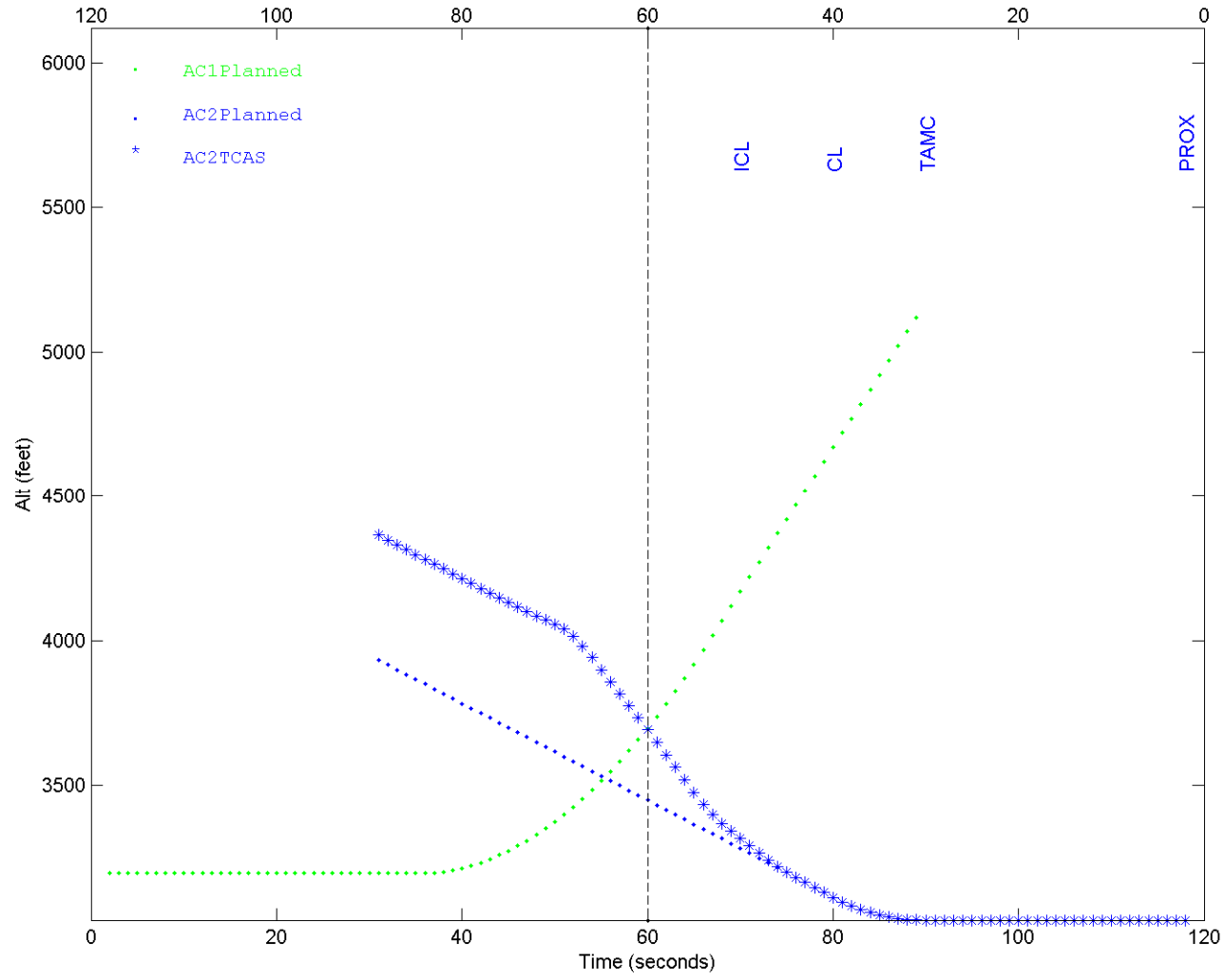
SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER J7570
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 250.0 AC1 RATES(0.0,3000.0) AC2 RATES(0.0,1000.0)
AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL 0.05g @ CPA -30 AC1 CPA ALT 3700

570 UNEQUIPPED VS V7 100 FT 17 -8.32 NON_CROSSING_ENC
2 TCAS AC 3271013 TA :30 |TAUR| CL @40 [NX]| ICL @50

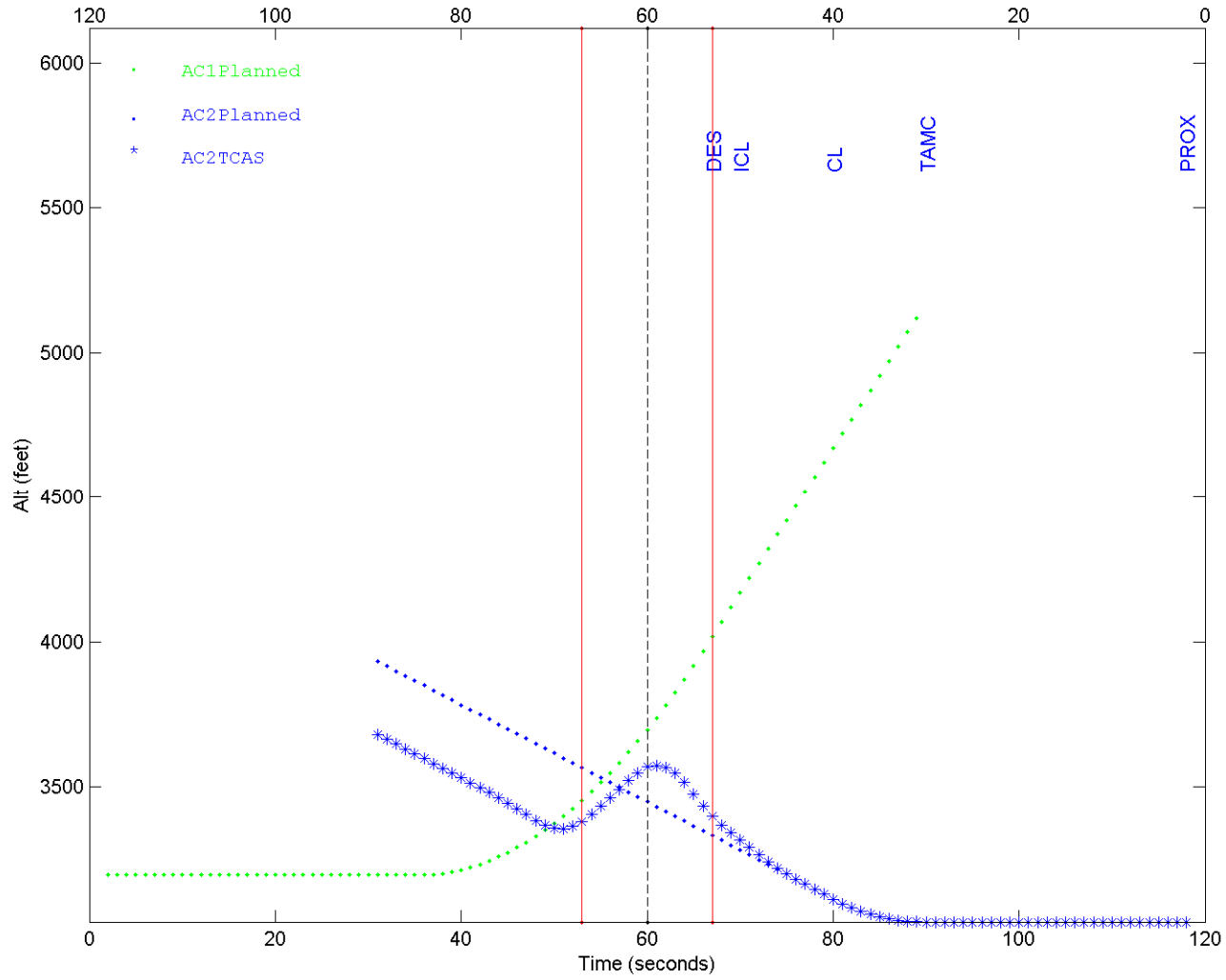
570 UNEQUIPPED VS CP112EV1.2 100 FT 17 -149.07 NON_CROSSING_ENC
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 6.01 REV_AVOID 02 TIME_REV_AVOID 0.0
2 TCAS AC*REV*7271013 TA :30 |TAUR| CL @40 [NX]| ICL @50 | DES @53

570 UNEQUIPPED VS V7.1 100 FT 17 -149.07 NON_CROSSING_ENC
2 TCAS AC*REV*7271013 TA :30 |TAUR| CL @40 [NX]| ICL @50 | DES @53

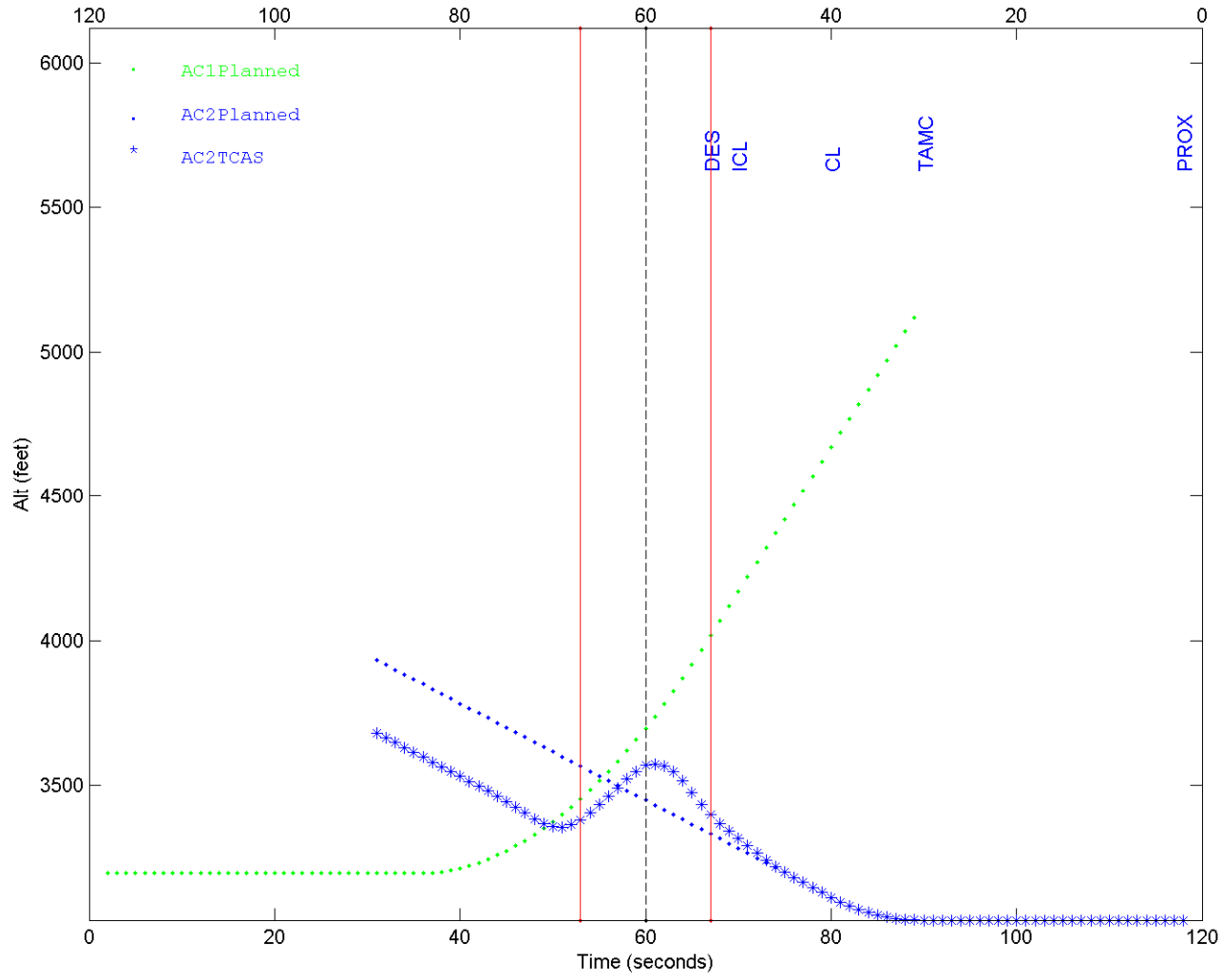
reit: 570 cata: 717 simmode: 3271013 Unequipped Vs Version 7-100 J7570A



reit: 570 cata: 717 simmode: 7271013 Unequipped Vs CP112EV1.2-100 J7570B



reit: 570 cata: 717 simmode: 7271013 Unequipped Vs Version7.1-100 J7570C



Change 7.1 TCAS vs Unequipped Representative Save 19

Encounter Class: 18

Reit Number :5189

Encounter Characterization

| | | |
|-------------------------------|--------------------|-----|
| Number of encounters in group | 9 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | 500, 750 | ft |
| AC1 rates: | -1000, -3000,-5000 | fpm |
| AC2 rates: | -3000, -5000 | fpm |
| AC1 acceleration: | 0.05 | g |
| AC2 acceleration: | -0.15 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 30 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP112E

Comments

Descending vertical chase caused by response to initial RA.
Addition of CP112E allowed sense reversal to solve NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER O85189
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(-3000.0,0.0) AC2 RATES(0.0,-3000.0)
AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.15g @ CPA -30 AC1 CPA ALT 7500

5189 V7 25 FT VS UNEQUIPPED 18 58.57 NON_CROSSING_ENC

1 TCAS AC 3175041 TA :19 |PVMD| DES @37 [NX]

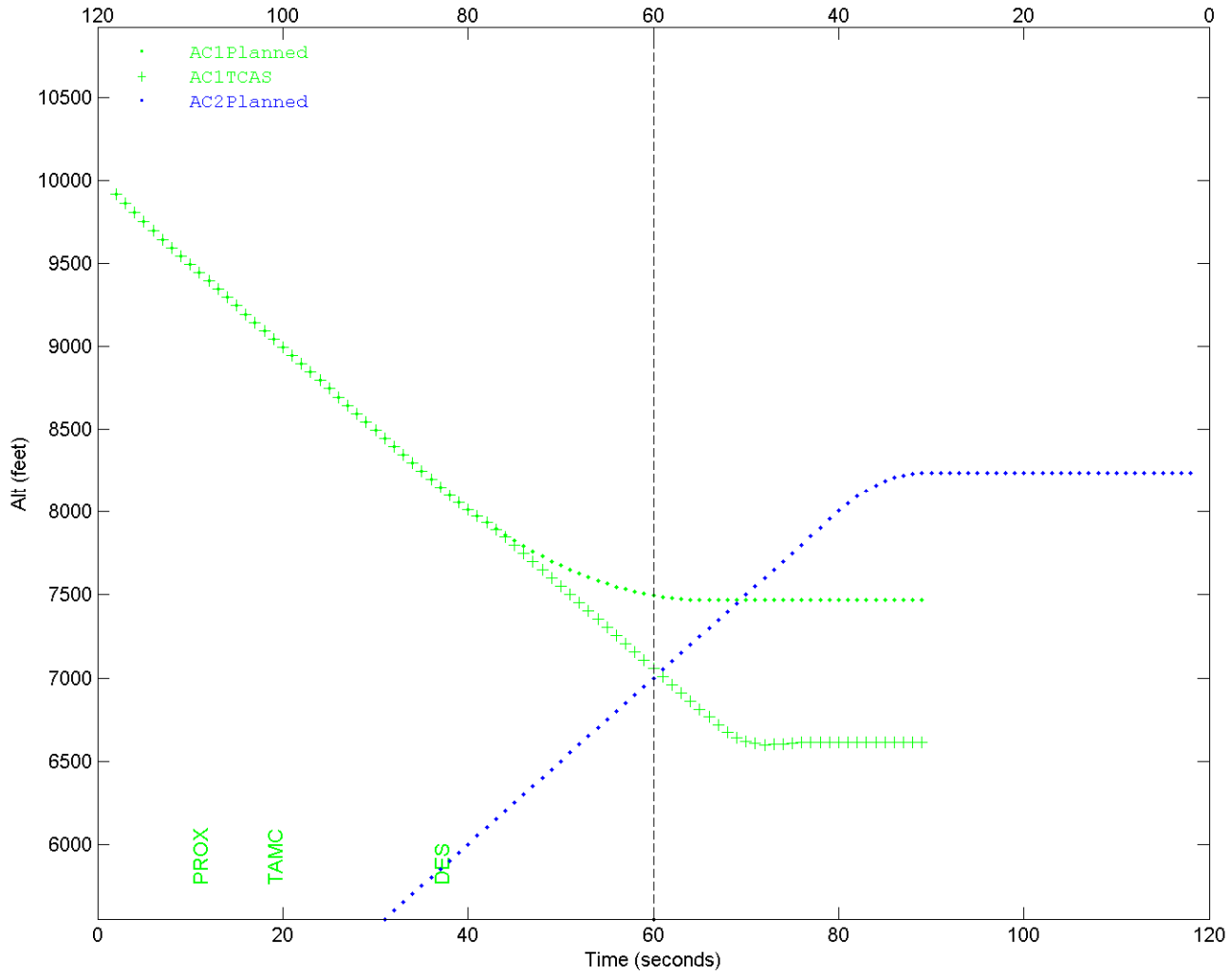
5189 CP112EV1.2 25 FT VS UNEQUIPPED 18 600.53 NON_CROSSING_ENC

CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 5.92 REV_AVOID 02 TIME_REV_AVOID 0.0

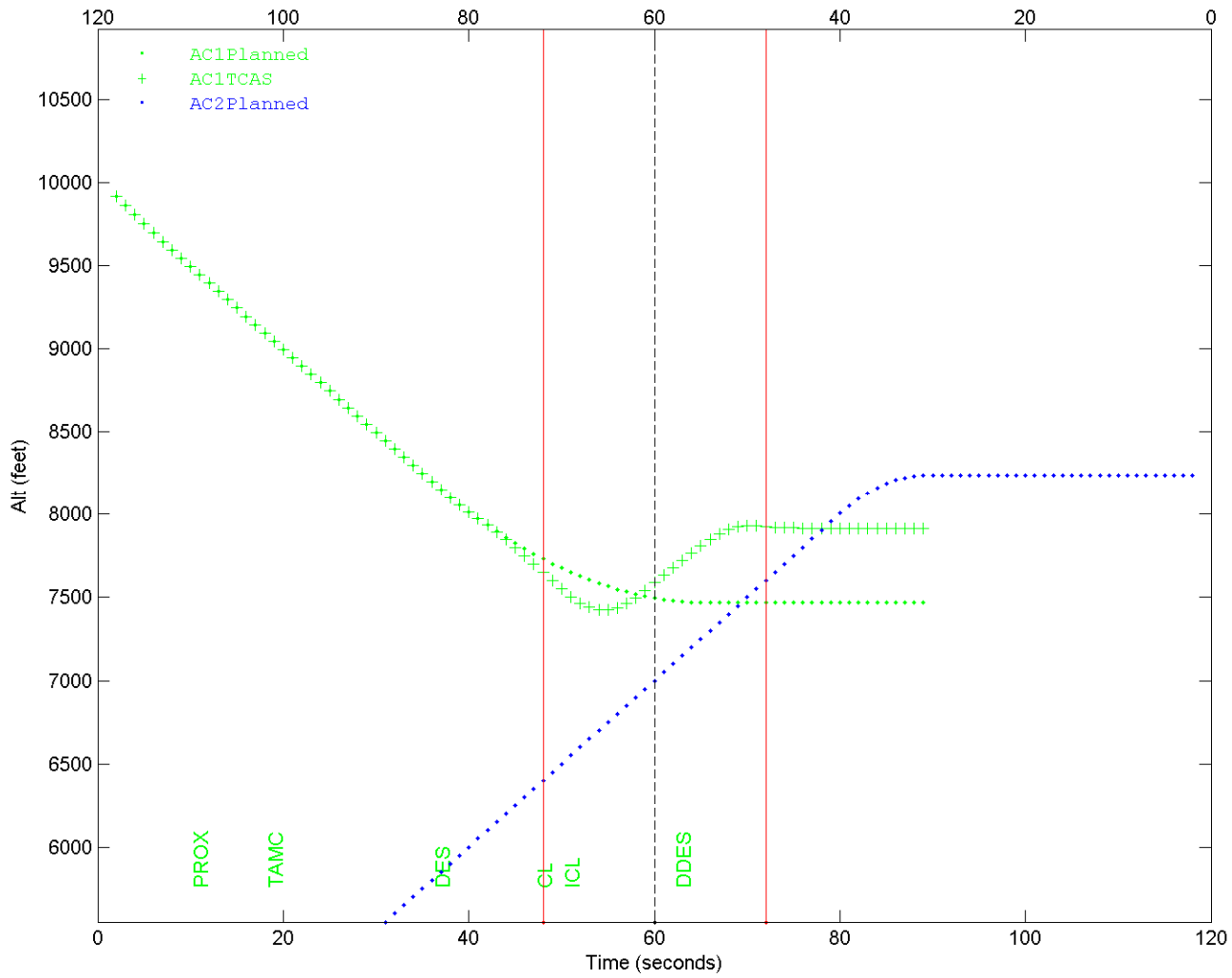
1 TCAS AC*REV*7175041 TA :19 |PVMD| DES @37 [NX]| CL @48 | ICL @51 | DDES @63

5189 V7.1 25 FT VS UNEQUIPPED 18 600.53 NON_CROSSING_ENC

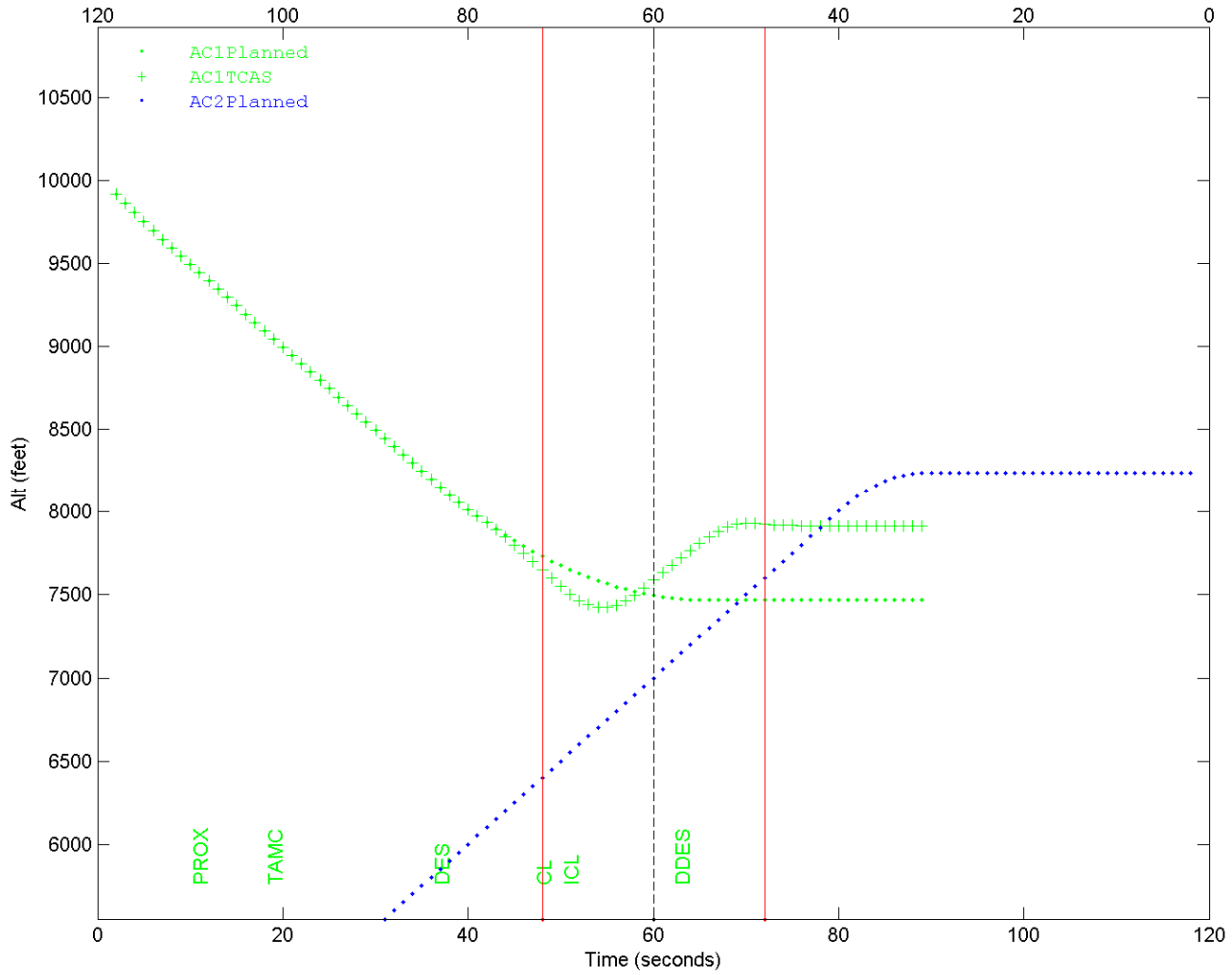
1 TCAS AC*REV*7175041 TA :19 |PVMD| DES @37 [NX]| CL @48 | ICL @51 | DDES @63



reit: 5189 cata: 818 simmode: 7175041 CP112EV1.2-25 Vs Unequipped O85189B



reit: 5189 cata: 818 simmode: 7175041 Version7.1-25 Vs Unequipped O85189C



Change 7.1 TCAS vs Unequipped Representative Save 20

Encounter Class: 18

Reit Number : 6455

Encounter Characterization

| | | |
|-------------------------------|----------|-----|
| Number of encounters in group | 1 | |
| AC1 TCAS equipped | no | |
| Vertical tracker | 100 | ft |
| Planned separation | 750 | ft |
| AC1 rates: | -5000 | fpm |
| AC2 rates: | -3000 | fpm |
| AC1 acceleration: | 0.15 | g |
| AC2 acceleration: | -0.35 | g |
| AC1 acceleration time: | CPA – 25 | sec |
| AC2 acceleration time: | CPA – 25 | sec |
| Encounters with reversed RAs | 100 | % |
| Vertical chase | yes | |

Save Mechanism

Logic change solving NMAC

CP115

Comments

Brief descending vertical chase caused by planned maneuver of intruder.
Addition of CP115 delayed first positive RA allowing a more appropriate advisory.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER J86455
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 750.0 AC1 RATES(-5000.0,0.0) AC2 RATES(0.0,-3000.0)
AC1 ACCEL 0.15g @ CPA -25 AC2 ACCEL -0.35g @ CPA -25 AC1 CPA ALT 7500

6455 UNEQUIPPED VS V7 100 FT 18 33.19 CROSSING_ENC

2 TCAS AC 3271013 TA :19 |PVMD| LD2 @41[NX]| LD1 @42| DDES @44| CL @45| ICL @51

6455 UNEQUIPPED VS CP112EV1.2 100 FT 18 33.19 CROSSING_ENC

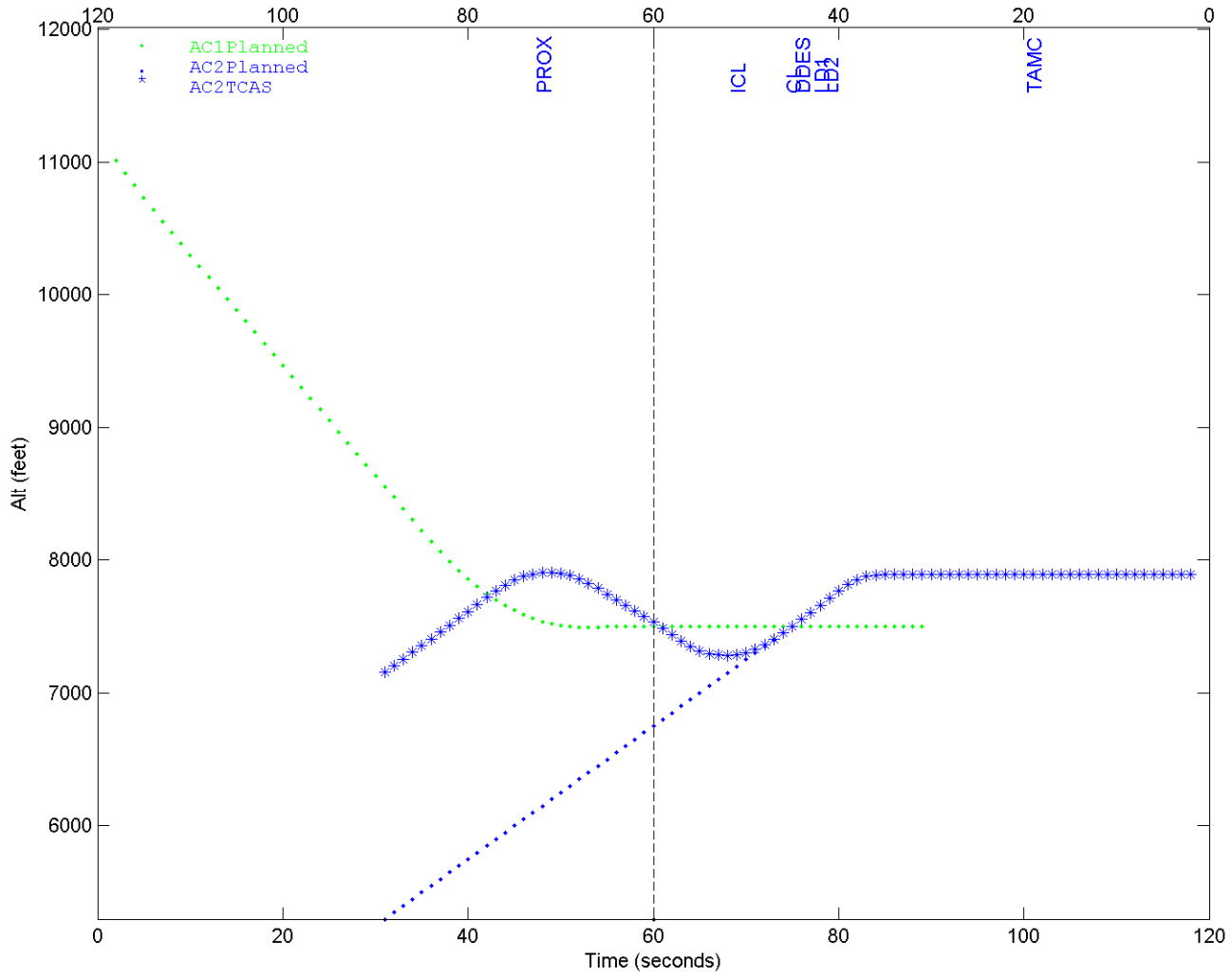
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 14.54 REV_AVOID 02 TIME_REV_AVOID 0.0

2 TCAS AC 7271013 TA :19 |PVMD| LD2 @41[NX]| LD1 @42| DDES @44| CL @45| ICL @51

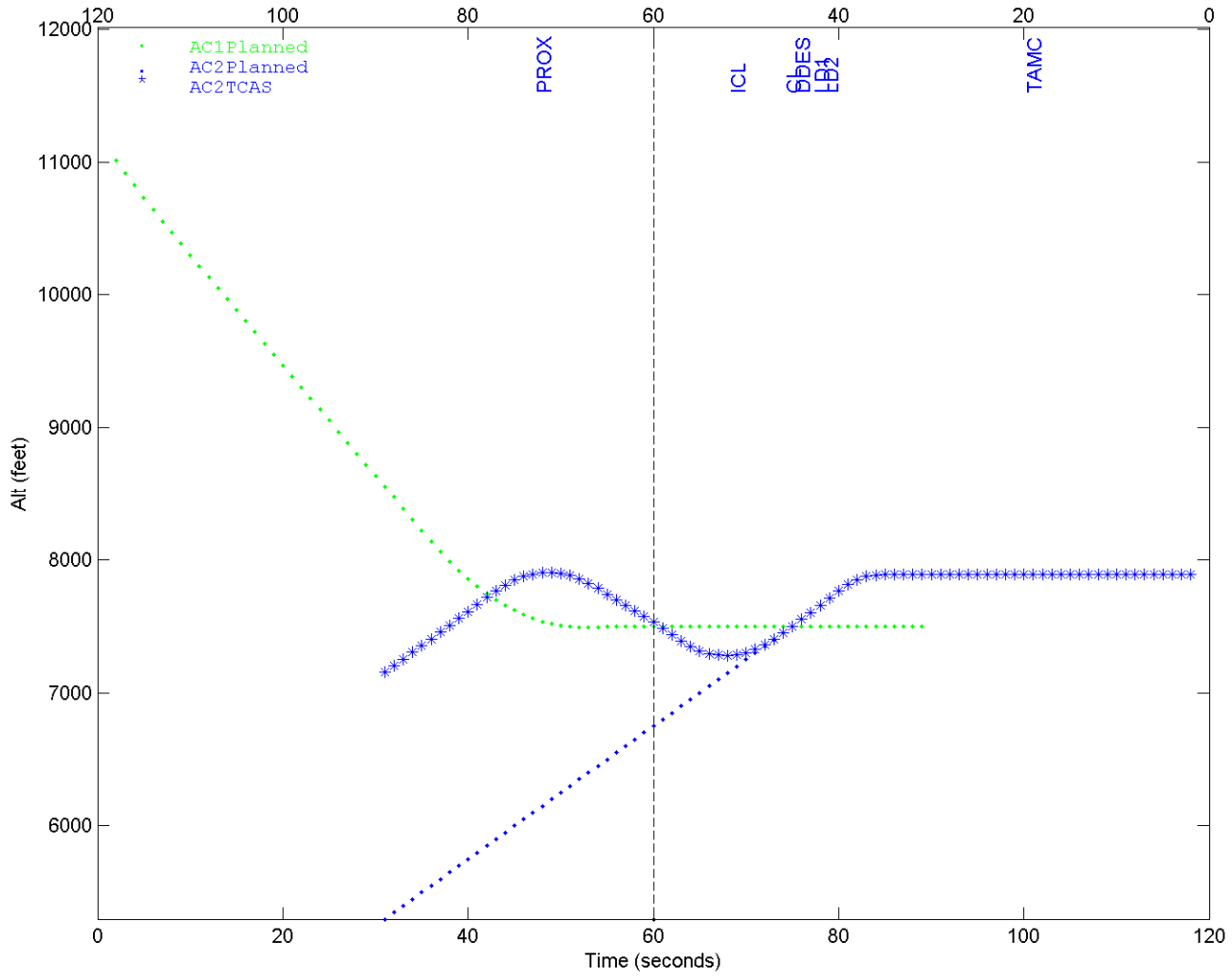
6455 UNEQUIPPED VS V7.1 100 FT 18 -733.55 NON_CROSSING_ENC

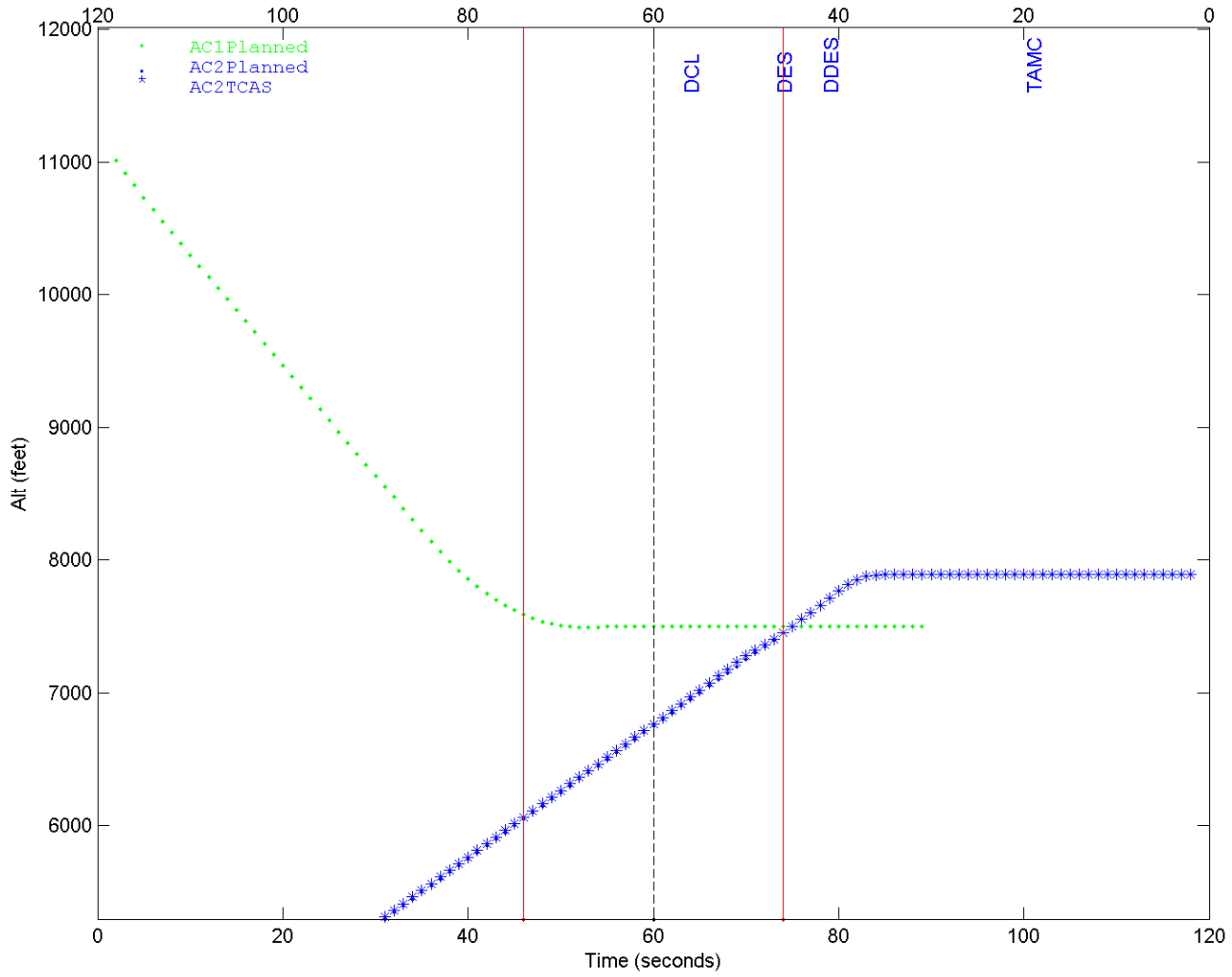
2 TCAS AC*REV*7271013 TA :19 |PVMD| DDES @41 [NX]| DES @46 | DCL @56

reit: 6455 cata: 818 simmode: 3271013 Unequipped Vs Version 7-100 J86455A



reit: 6455 cata: 818 simmode: 7271013 Unequipped Vs CP112EV1.2-100 J86455B





Appendix Q V7.1 REPRESENTATIVE NMACs (TCAS vs. unequipped intruder)

Change 7.1 TCAS vs Unequipped Representative NMAC 01

Encounter Class : 5

Reit Number : 189

NMAC Characterization

| | |
|-------------------------------|-------------------------|
| Number of encounters in group | 5 |
| AC1 TCAS equipped | yes |
| Vertical tracker | 100 |
| Planned separation | 0, -250, -500, -750 ft |
| AC1 rates : | -1000, -3000, -5000 fpm |
| AC2 rates : | 3000, 5000 fpm |
| AC1 acceleration : | none |
| AC2 acceleration : | 0.25 g |
| AC2 acceleration time : | CPA – 20 sec |
| Encounters with reversed RAs | 0 % |
| Vertical chase | no |

Comments

NMAC caused by CP115.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I5189
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -750.0 AC1 RATES(-5000.0,-5000.0) AC2 RATES(0.0,5000.0)
AC1 ACCEL 0.00g @ CPA 0 AC2 ACCEL 0.25g @ CPA -20 AC1 CPA ALT 3680

189 V7 100 FT VS UNEQUIPPED 5 112.50 CROSSING_ENC

1 TCAS AC 3171031 TA :26 |TAUV| LD2 @41 [NX]| LD5 @4 | CL @49 | ICL @51

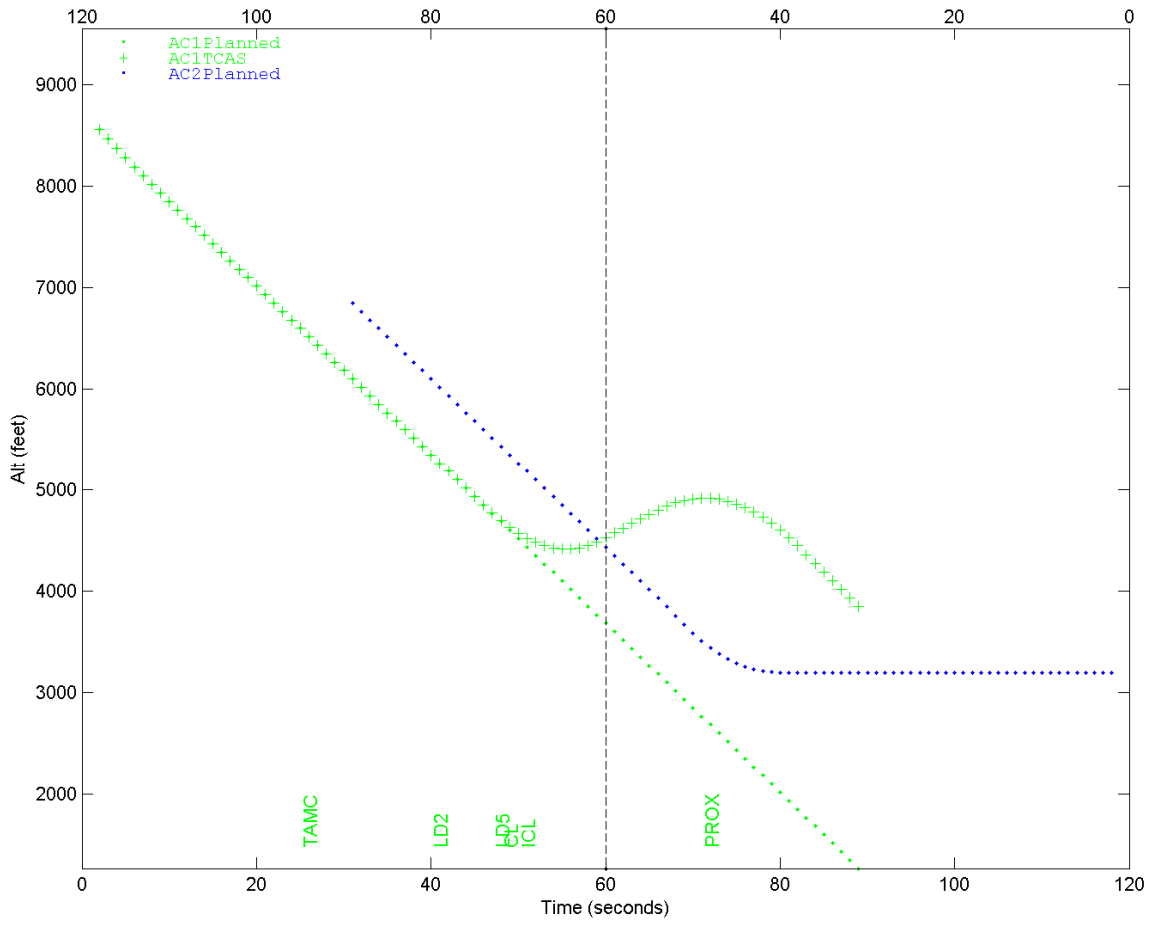
189 CP112EV1.2 100 FT VS UNEQUIPPED 5 112.50 CROSSING_ENC

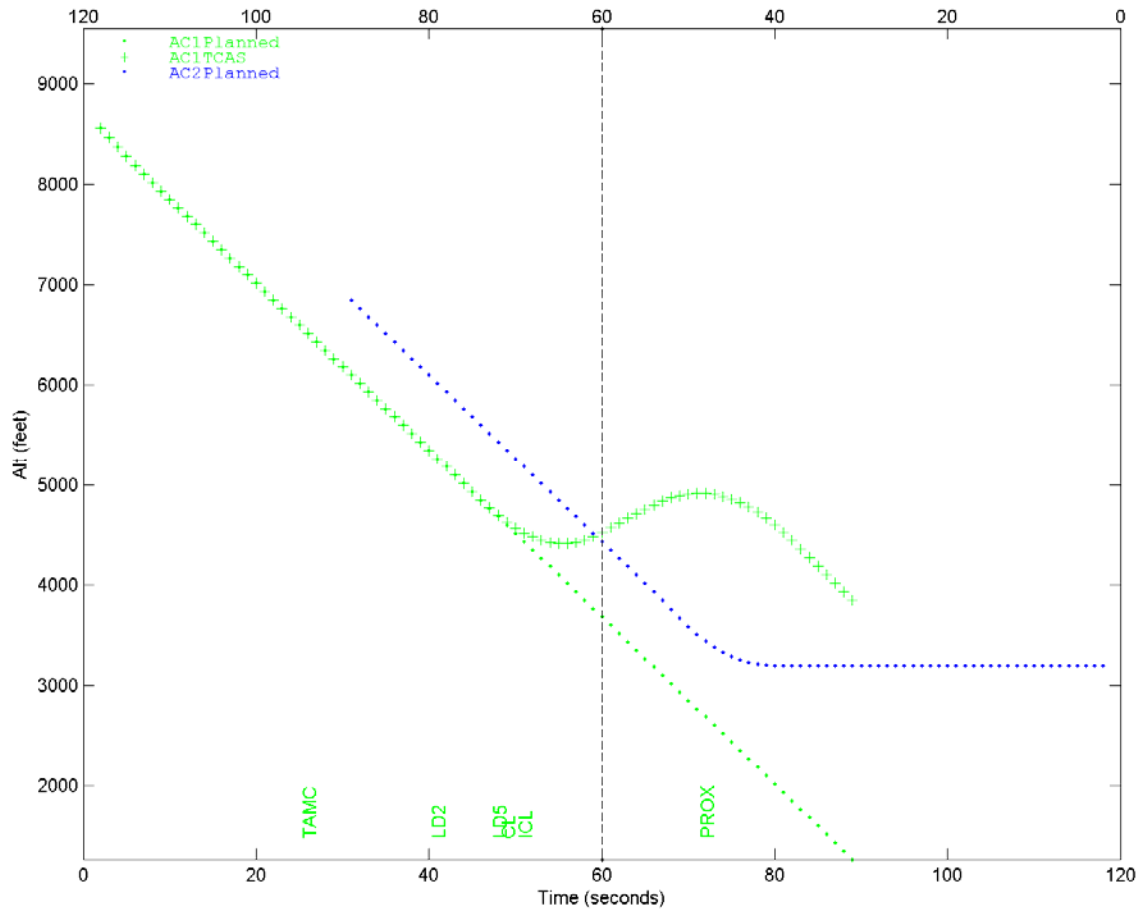
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 15.42 REV_AVOID 02 TIME_REV_AVOID 0.0

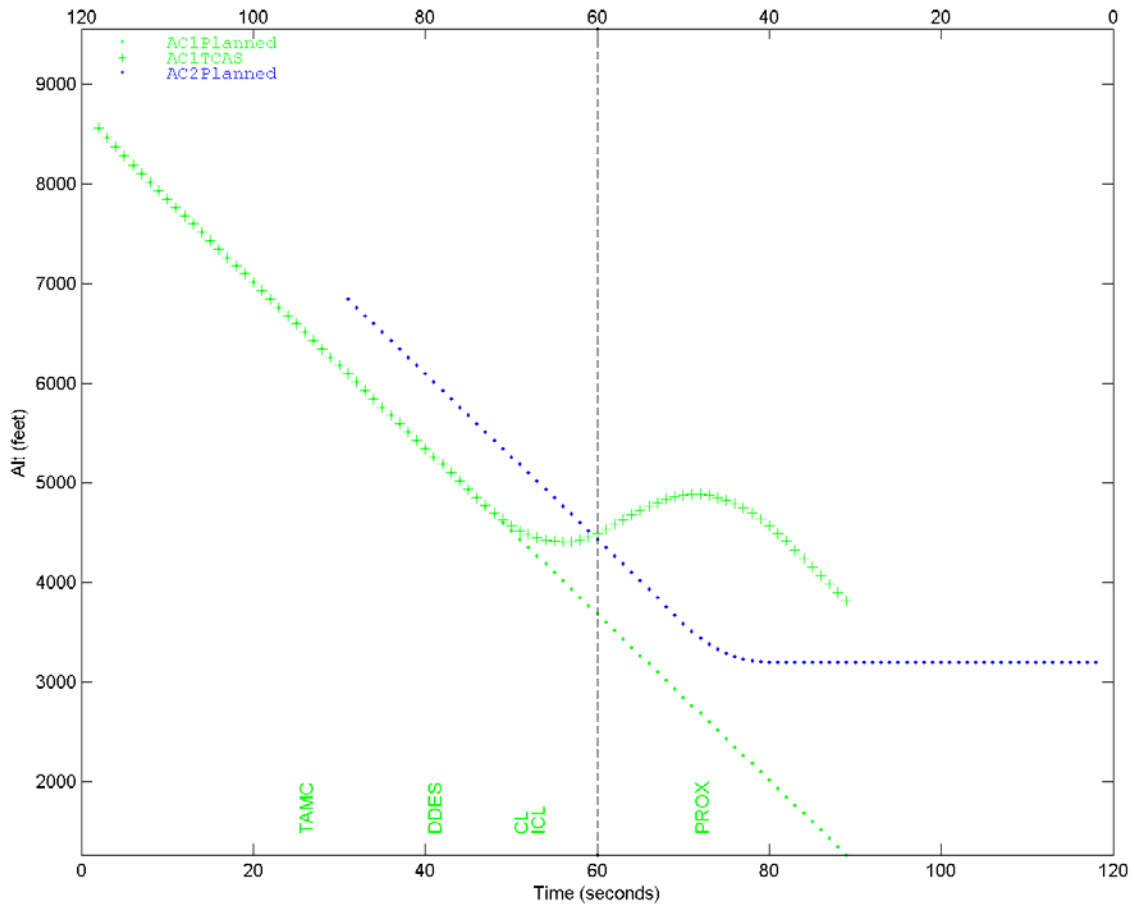
1 TCAS AC 7171031 TA :26 |TAUV| LD2 @41 [NX]| LD5 @48 | CL @49 | ICL @51

189 V7.1 100 FT VS UNEQUIPPED 5 77.84 CROSSING_ENC

1 TCAS AC 7171031 TA :26 |TAUV| DDES @41 [NX]| CL @51 | ICL @53







Change 7.1 TCAS vs Unequipped Representative NMAC 02

Encounter Class : 7

Reit Number : 1363

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 1 |
| AC1 TCAS equipped | yes |
| Vertical tracker | 100 |
| Planned separation | -250 ft |
| AC1 rates : | 5000 fpm |
| AC2 rates : | 3000 fpm |
| AC1 acceleration : | 0.05 g |
| AC2 acceleration : | 0.25 g |
| AC1 acceleration time : | CPA – 25 sec |
| AC2 acceleration time : | CPA – 20 sec |
| Encounters with reversed RAs | 100 % |
| Vertical chase | yes |

Comments

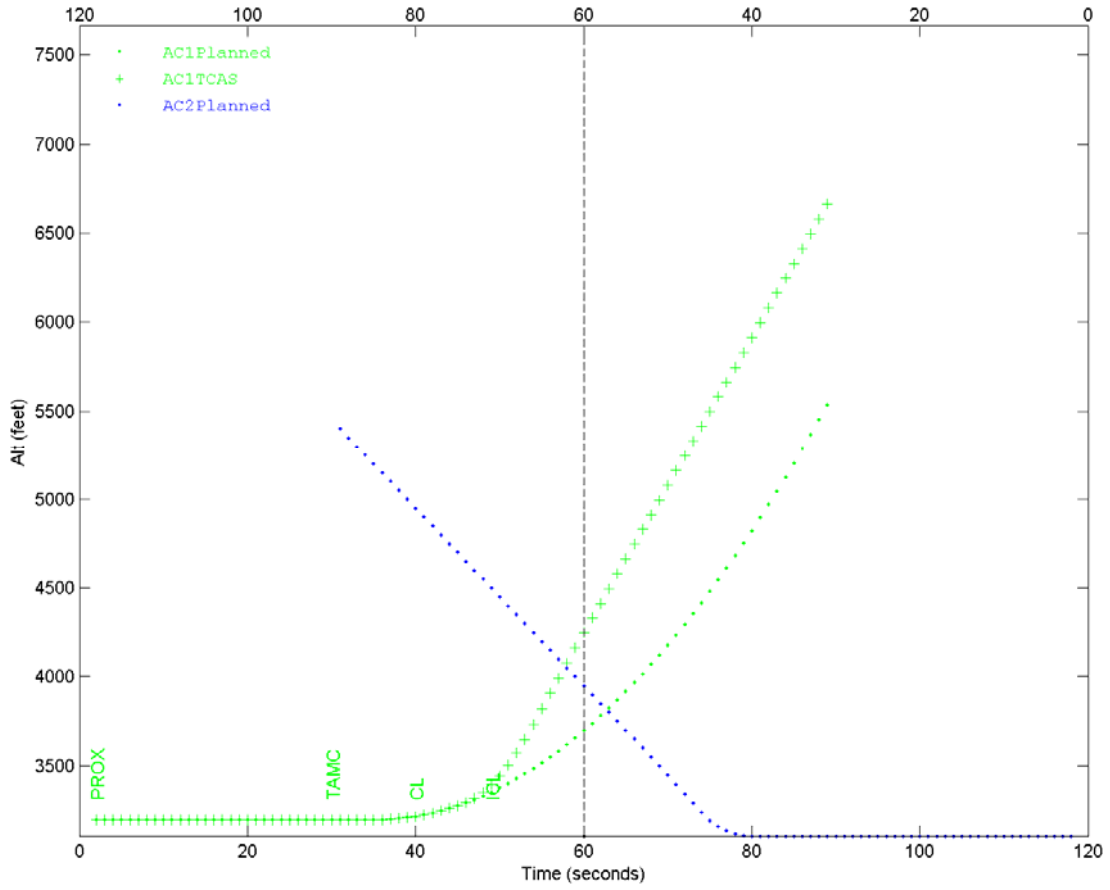
Climbing vertical chase caused by planned maneuvers, made worse by response to initial RA.
NMAC caused by CP112E.

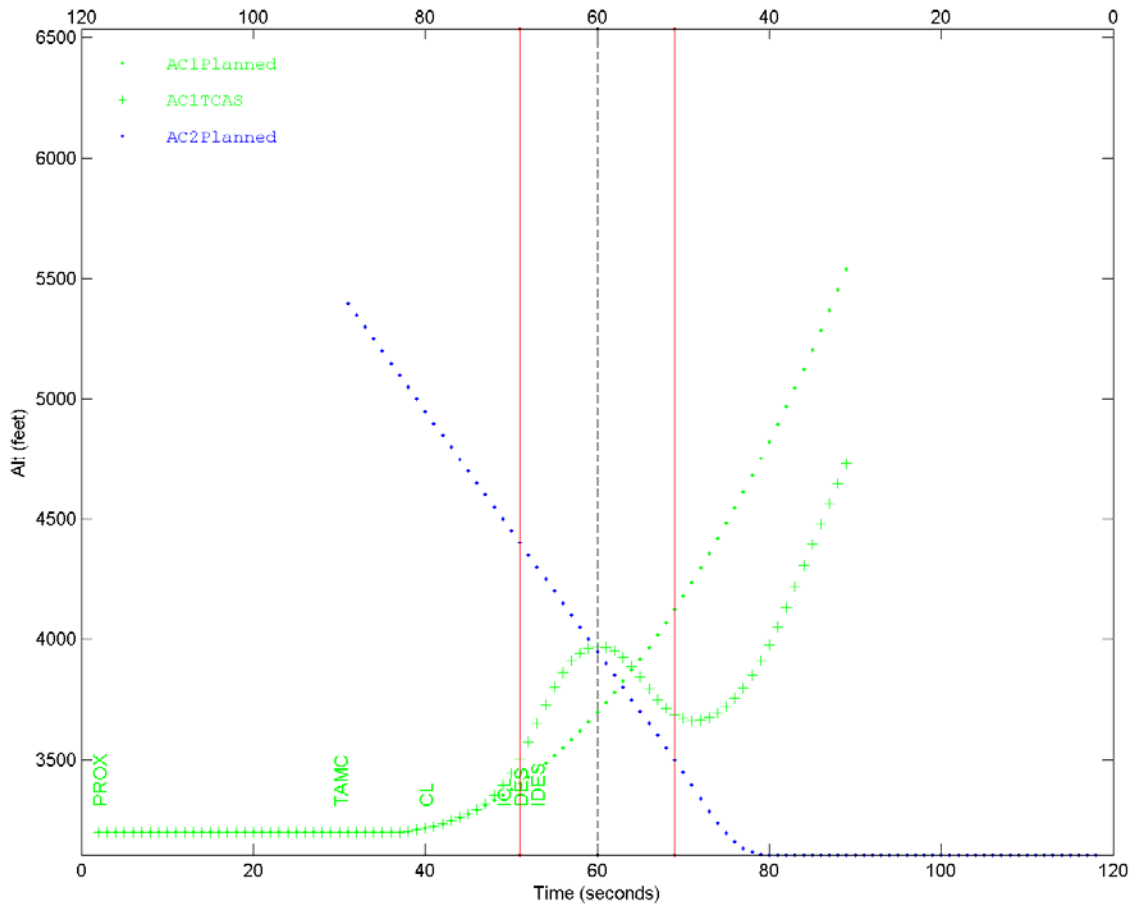
SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I71363
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = -250.0 AC1 RATES(0.0,5000.0) AC2 RATES(0.0,3000.0)
AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL 0.25g @ CPA -20 AC1 CPA ALT 3700

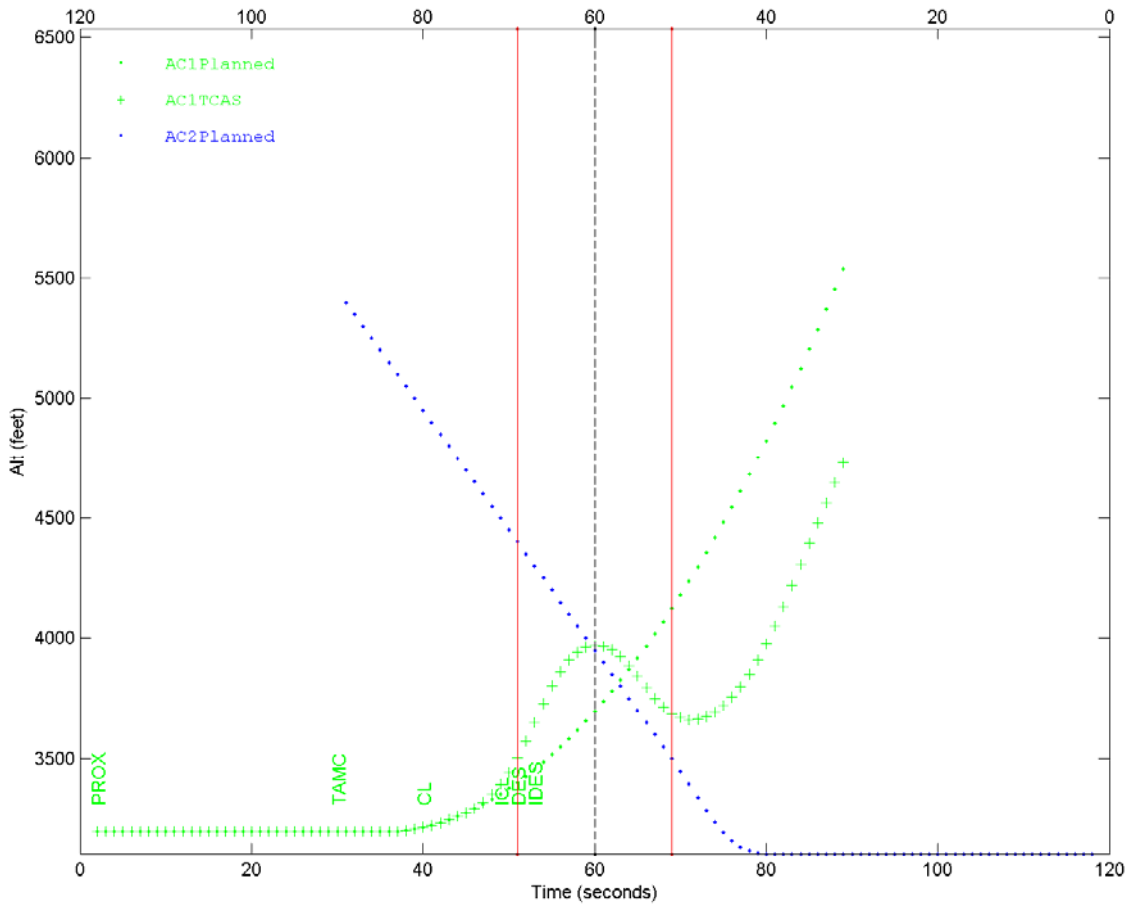
1363 V7 100 FT VS UNEQUIPPED 7 296.62 NON_CROSSING_ENC
1 TCAS AC 3171031 TA :30 |TAUR| CL @40 [NX]| ICL @49

1363 CP112EV1.2 100 FT VS UNEQUIPPED 7 0.95 CROSSING_ENC
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 6.48 REV_AVOID 02 TIME_REV_AVOID 0.0
1 TCAS AC*REV*7171031 TA :30 |TAUR| CL @40 [NX]| ICL @49 | DES @51 | IDES @53

1363 V7.1 100 FT VS UNEQUIPPED 7 0.95 CROSSING_ENC
1 TCAS AC*REV*7171031 TA :30 |TAUR| CL @40 [NX]| ICL @49 | DES @51 | IDES @53







Change 7.1 TCAS vs Unequipped Representative NMAC 03

Encounter Class : 7

Reit Number : 1422

NMAC Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 4 | |
| AC1 TCAS equipped | yes | |
| Vertical tracker | 100 | |
| Planned separation | 750 | ft |
| AC1 rates : | 3000, 5000 | fpm |
| AC2 rates : | -3000 | fpm |
| AC1 acceleration : | 0.05 | g |
| AC2 acceleration : | -0.35 | g |
| AC1 acceleration time : | CPA – 25 | sec |
| AC2 acceleration time : | CPA – 20 | sec |
| Encounters with reversed RAs | 0 | % |
| Vertical chase | yes | |

Comments

NMAC caused by CP115.
CP112E-only had reversal that resolved NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I71422
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 750.0 AC1 RATES(0.0,5000.0) AC2 RATES(0.0,-3000.0)
AC1 ACCEL 0.05g @ CPA -25 AC2 ACCEL -0.35g @ CPA -20 AC1 CPA ALT 3700

1422 V7 100 FT VS UNEQUIPPED 7 123.90 CROSSING_ENC

1 TCAS AC*REV*3171031 TA :30 |TAUR| LC5 @40 [NX]| LC5 @43 | DCL @44 | DES @45
| IDES @49 | CL @52

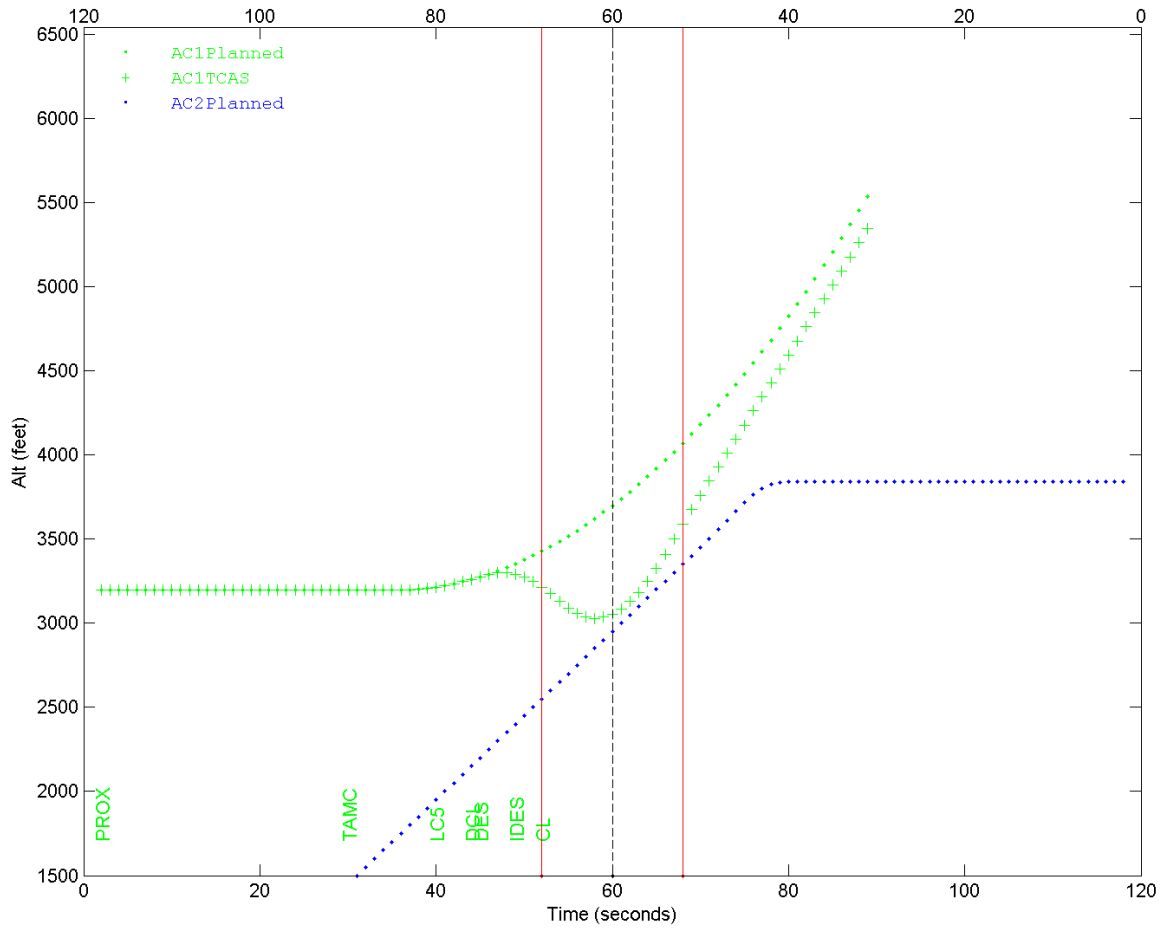
1422 CP112EV1.2 100 FT VS UNEQUIPPED 7 123.90 CROSSING_ENC

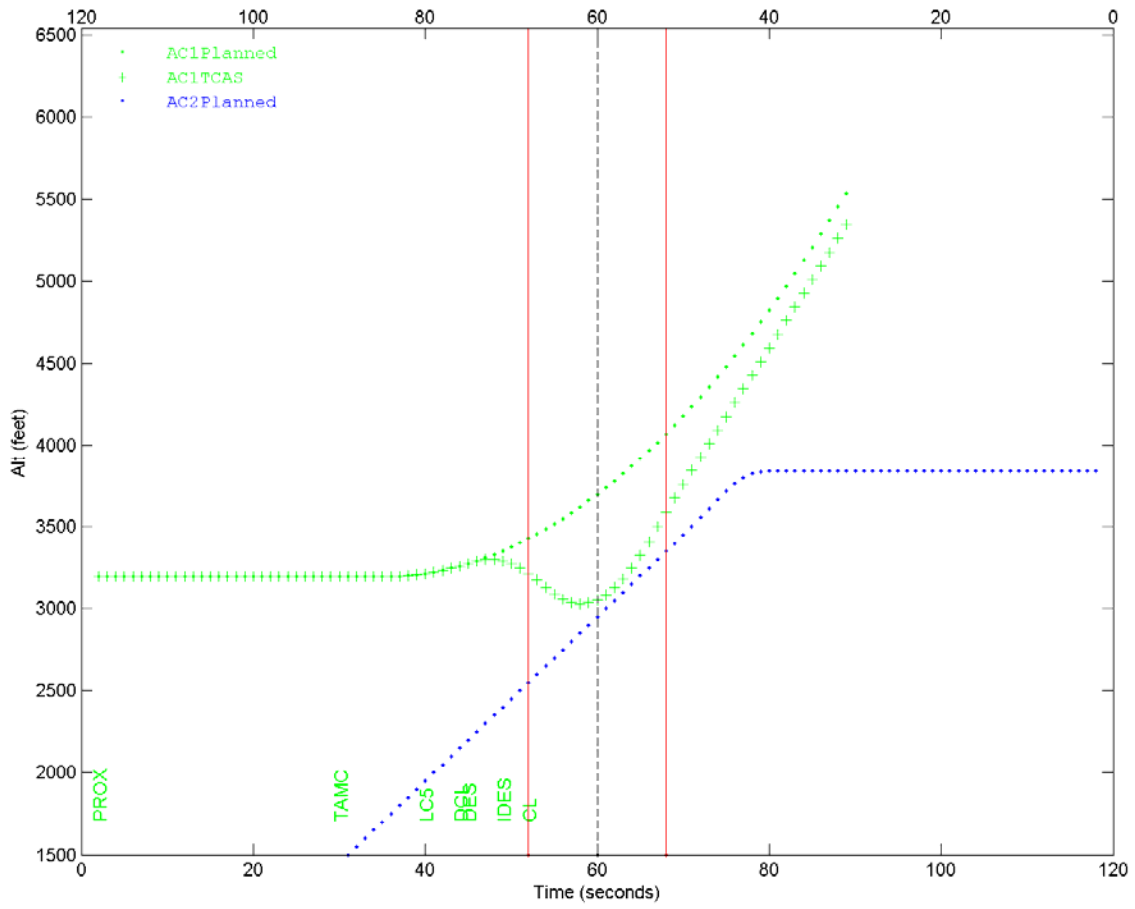
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 6.64 REV_AVOID 02 TIME_REV_AVOID 0.0

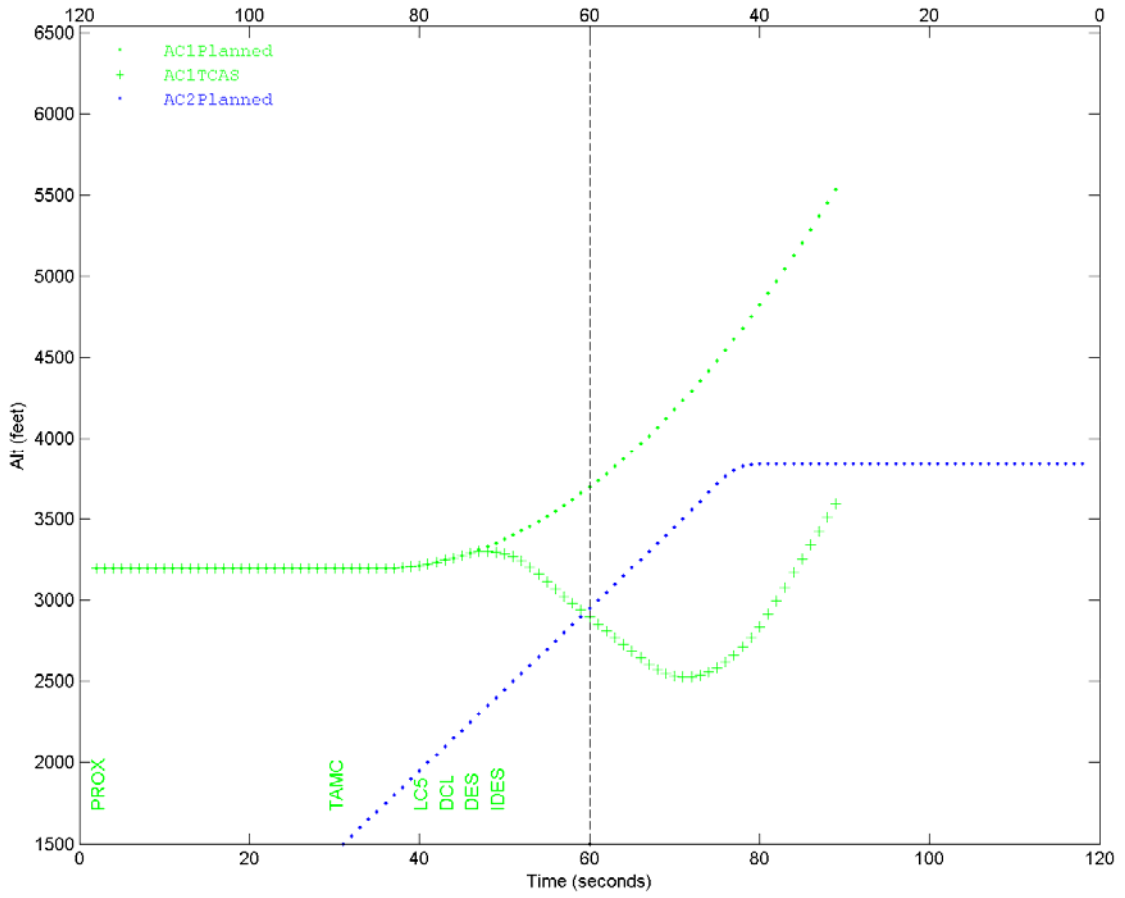
1 TCAS AC*REV*7171031 TA :30 |TAUR| LC5 @40 [NX]| LC5 @43 | DCL @44 | DES @45
| IDES @49 | CL @52

1422 V7.1 100 FT VS UNEQUIPPED 7 -53.72 CROSSING_ENC

1 TCAS AC 7171031 TA :30 |TAUR| LC5 @40 [NX]| DCL @43 | DES @46 | IDES @49







Change 7.1 TCAS vs Unequipped Representative NMAC 04

Encounter Class : 8

Reit Number : 2327

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 3 |
| AC1 TCAS equipped | yes |
| Vertical tracker | 25 |
| Planned separation | 250 ft |
| AC1 rates : | -3000 fpm |
| AC2 rates : | -1000 fpm |
| AC1 acceleration : | 0.15 g |
| AC2 acceleration : | -0.25 g |
| AC1 acceleration time : | CPA – 25 sec |
| AC2 acceleration time : | CPA – 20 sec |
| Encounters with reversed RAs | 100 % |
| Vertical chase | yes |

Comments

Descending vertical chase caused by response to initial RA.
NMAC caused by CP112E.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER 082327
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = 250.0 AC1 RATES(-3000.0,0.0) AC2 RATES(0.0,-1000.0)
AC1 ACCEL 0.15g @ CPA -25 AC2 ACCEL -0.25g @ CPA -20 AC1 CPA ALT 3700

2327 V7 25 FT VS UNEQUIPPED 8 -202.89 CROSSING_ENC

1 TCAS AC 3175041 TA :30 |PVMD| DES @41 [NX]| IDES @50

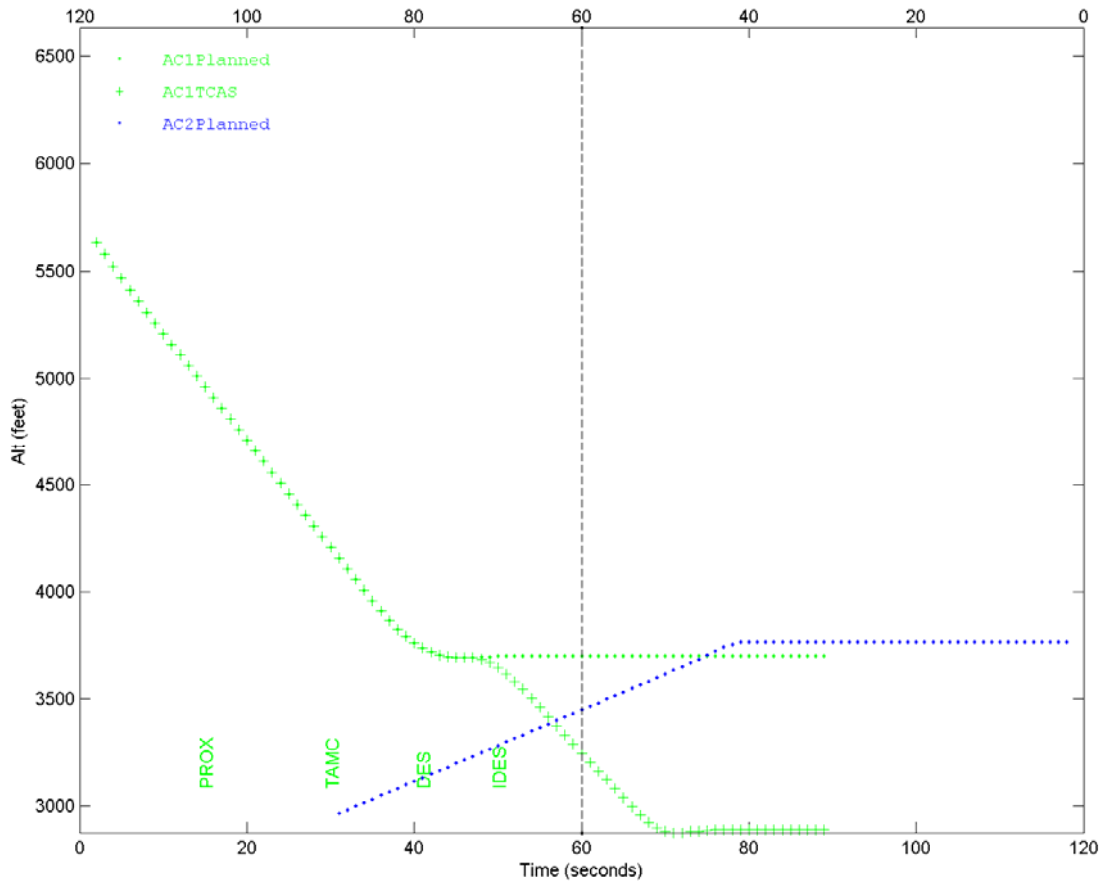
2327 CP112EV1.2 25 FT VS UNEQUIPPED 8 -0.21 CROSSING_ENC

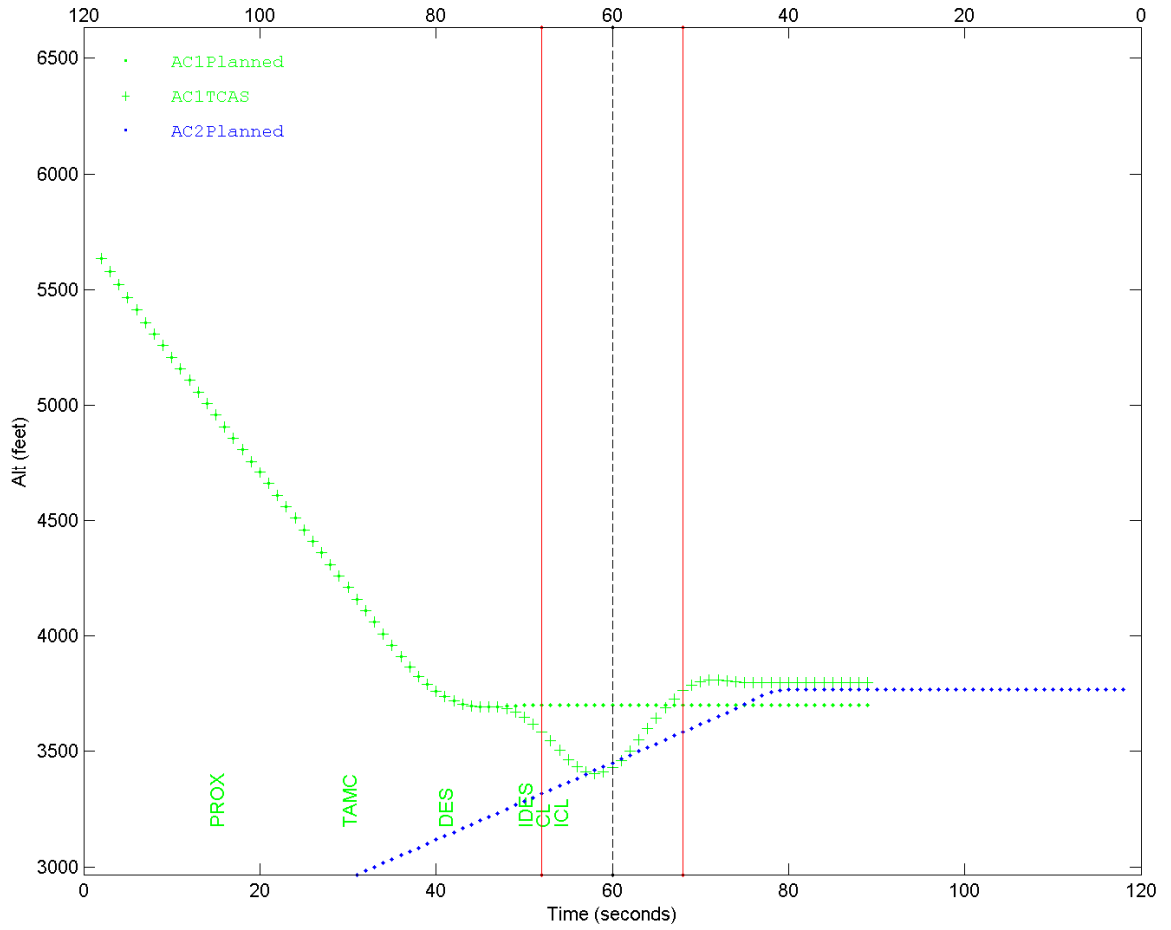
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 8.07 REV_AVOID 02 TIME_REV_AVOID 0.0

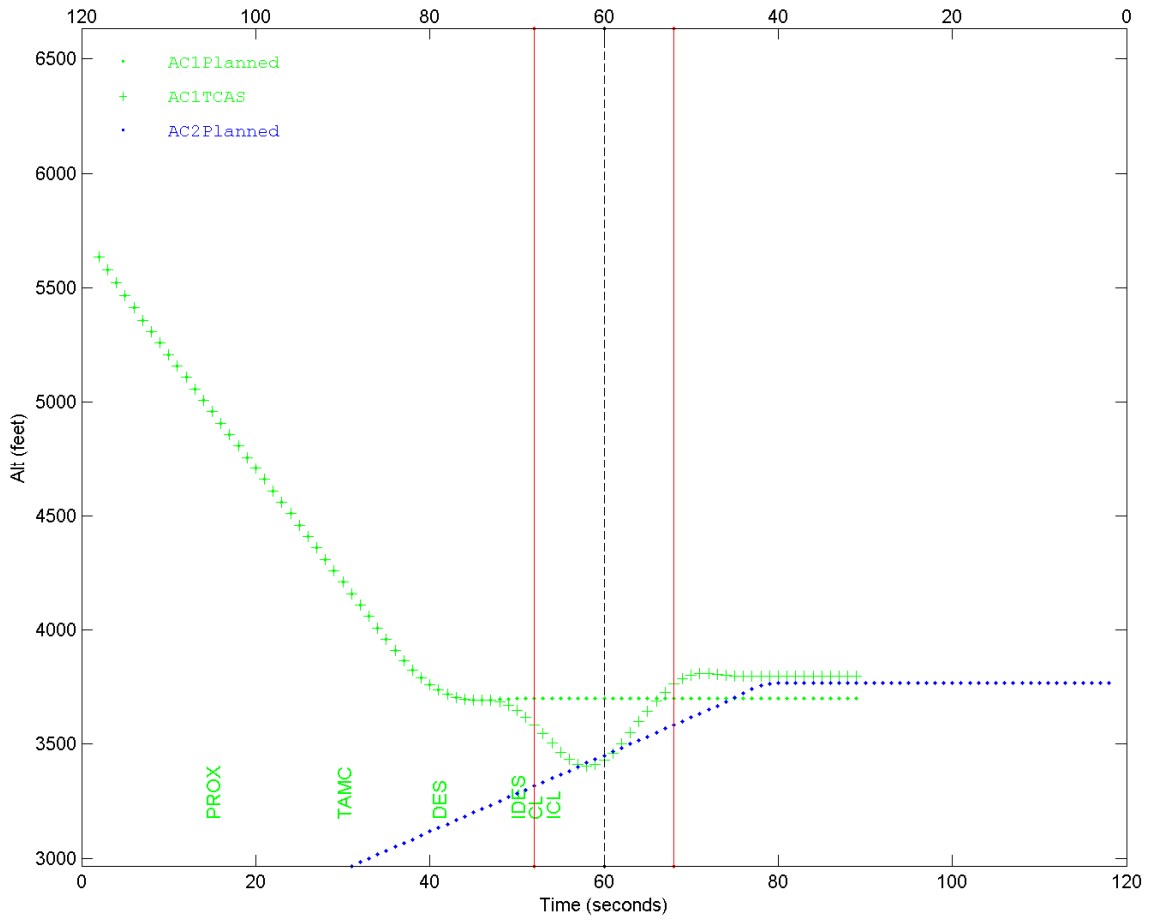
1 TCAS AC*REV*7175041 TA :30 |PVMD| DES @41 [NX]| IDES @50 | CL @52 | ICL @54

2327 V7.1 25 FT VS UNEQUIPPED 8 -0.21 CROSSING_ENC

1 TCAS AC*REV*7175041 TA :30 |PVMD| DES @41 [NX]| IDES @50 | CL @52 | ICL @54







Change 7.1 TCAS vs Unequipped Representative NMAC 05

Encounter Class : 8

Reit Number : 7803

NMAC Characterization

| | |
|-------------------------------|--------------|
| Number of encounters in group | 1 |
| AC1 TCAS equipped | yes |
| Vertical tracker | 100 |
| Planned separation | -250 ft |
| AC1 rates : | -5000 fpm |
| AC2 rates : | 5000 fpm |
| AC1 acceleration : | 0.25 g |
| AC2 acceleration : | 0.15 g |
| AC1 acceleration time : | CPA – 25 sec |
| AC2 acceleration time : | CPA – 25 sec |
| Encounters with reversed RAs | 0 % |
| Vertical chase | yes |

Comments

Climbing vertical chase caused by response to RA. Marginal NMAC caused by CP115. CP112E-only had reversal that barely resolved NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER I87803
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = -250.0 AC1 RATES(-5000.0,0.0) AC2 RATES(0.0,5000.0)
AC1 ACCEL 0.25g @ CPA -25 AC2 ACCEL 0.15g @ CPA -25 AC1 CPA ALT 7500

7803 V7 100 FT VS UNEQUIPPED 8 107.14 CROSSING_ENC

1 TCAS AC 3171031 TA :19 |TAUR| LD1 @34 [NX]| DDES @44 | CL @45 | ICL @53

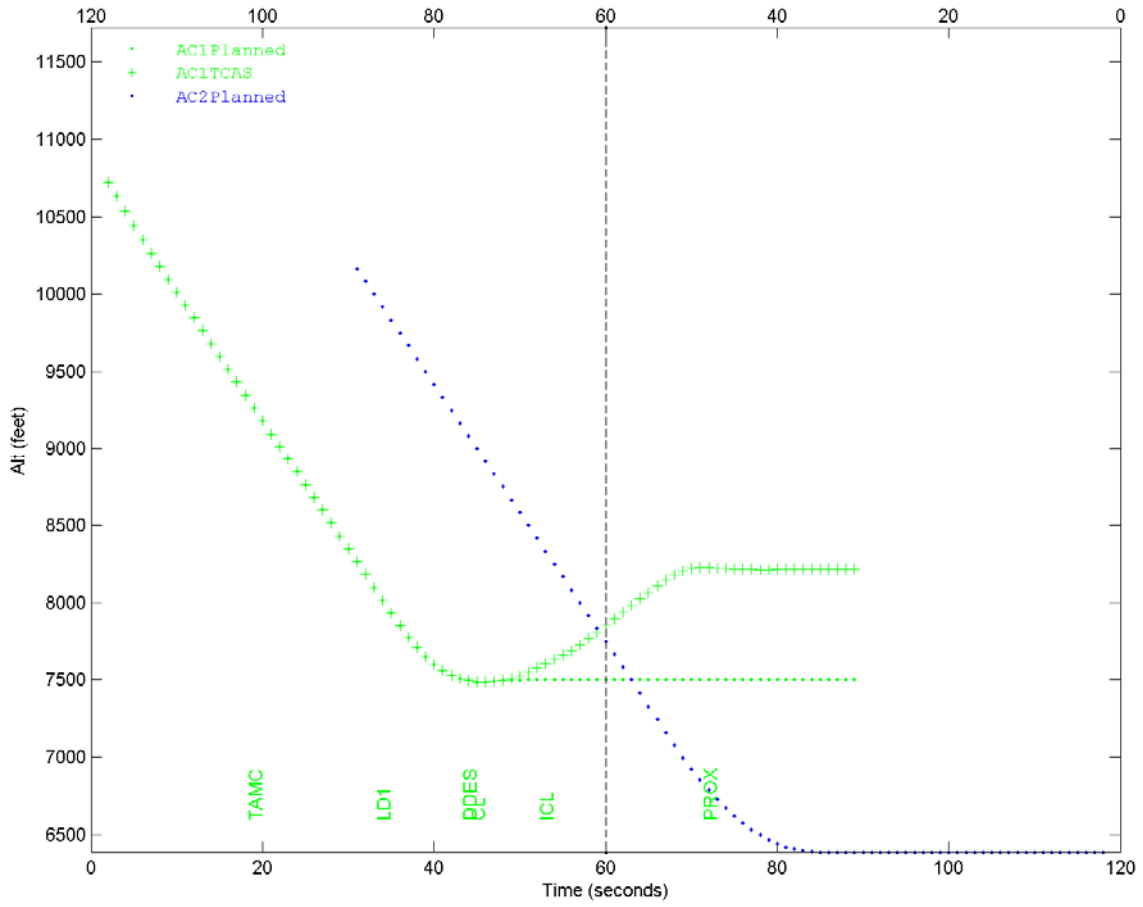
7803 CP112EV1.2 100 FT VS UNEQUIPPED 8 107.14 CROSSING_ENC

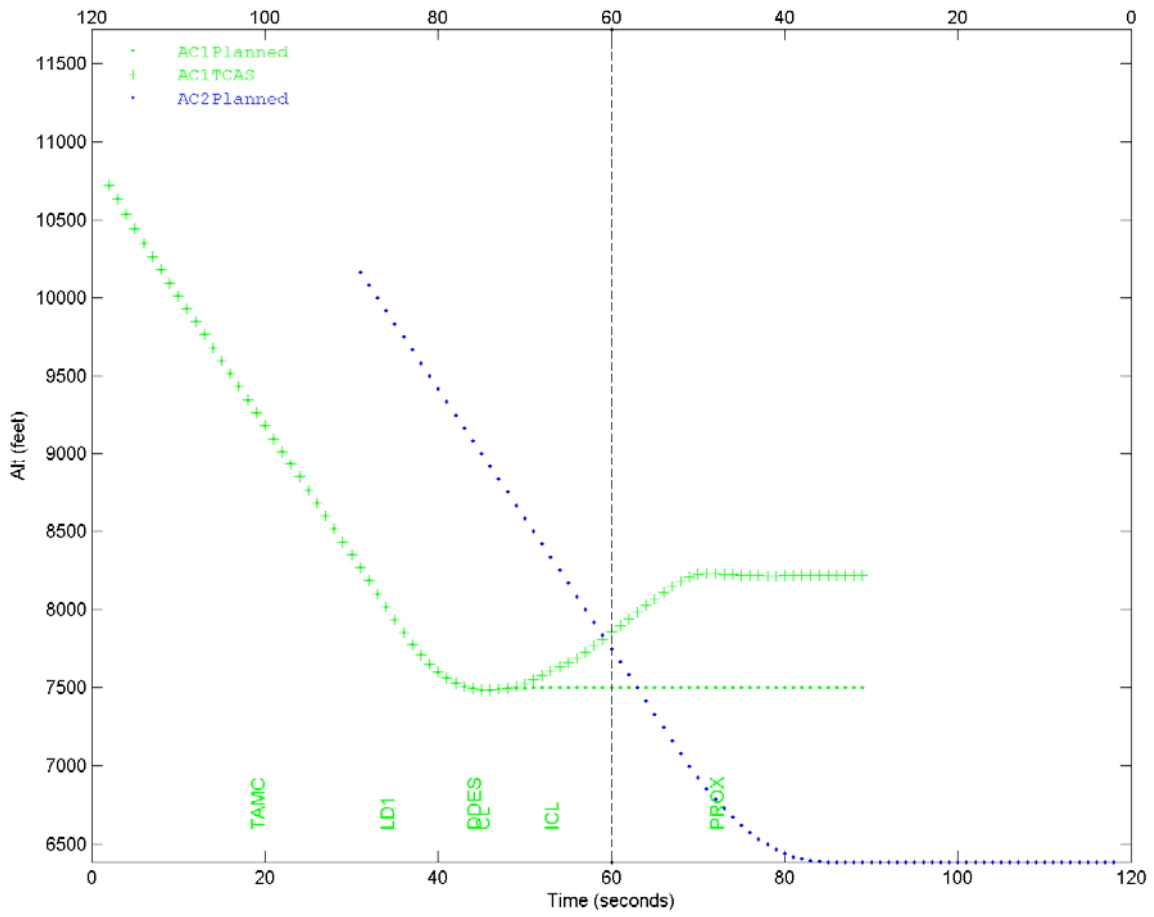
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 13.37 REV_AVOID 02 TIME_REV_AVOID 0.0

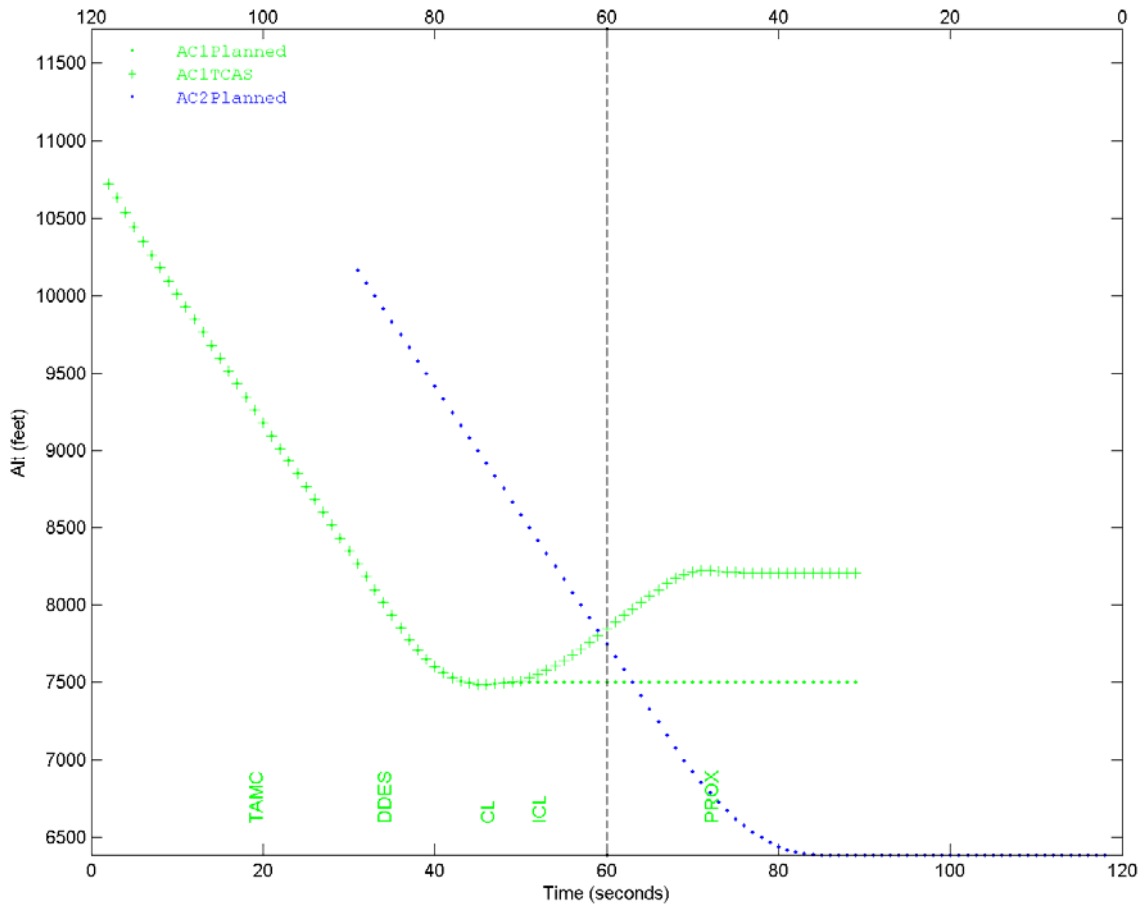
1 TCAS AC 7171031 TA :19 |TAUR| LD1 @34 [NX]| DDES @44 | CL @45 | ICL @53

7803 V7.1 100 FT VS UNEQUIPPED 8 98.81 CROSSING_ENC

1 TCAS AC 7171031 TA :19 |TAUR| DDES @34 [NX]| CL @46 | ICL @52







Change 7.1 TCAS vs Unequipped Representative NMAC 06

Encounter Class : 9

Reit Number : 4998

NMAC Characterization

| | | | |
|-------------------------------|----------|-------|-----|
| Number of encounters in group | 1 | | |
| AC1 TCAS equipped | | no | |
| Vertical tracker | 100 | | |
| Planned separation | | 500 | ft |
| AC1 rates : | | 3000 | fpm |
| AC2 rates : | | 5000 | fpm |
| AC1 acceleration : | | -0.05 | g |
| AC2 acceleration : | | -0.25 | g |
| AC1 acceleration time : | CPA – 25 | sec | |
| AC2 acceleration time : | CPA – 30 | sec | |
| Encounters with reversed RAs | 100 | % | |
| Vertical chase | | yes | |

Comments

Pre-existing climbing vertical chase.
CP112E reversal caused NMAC.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER J94998
LOGIC THRESHOLDS SL = 5 ZTHR = 600 TAUR = 25 TAUUV = 25 ALIM = 350
PLANNED ENCOUNTER. SEP = 500.0 AC1 RATES(3000.0,0.0) AC2 RATES(5000.0,0.0)
AC1 ACCEL -0.05g @ CPA -25 AC2 ACCEL -0.25g @ CPA -30 AC1 CPA ALT 7500

4998 UNEQUIPPED VS V7 100 FT 9 699.22 CROSSING_ENC

2 TCAS AC 3271013 TA :19 |TAUR| CL @34 [NX]| DDES @57

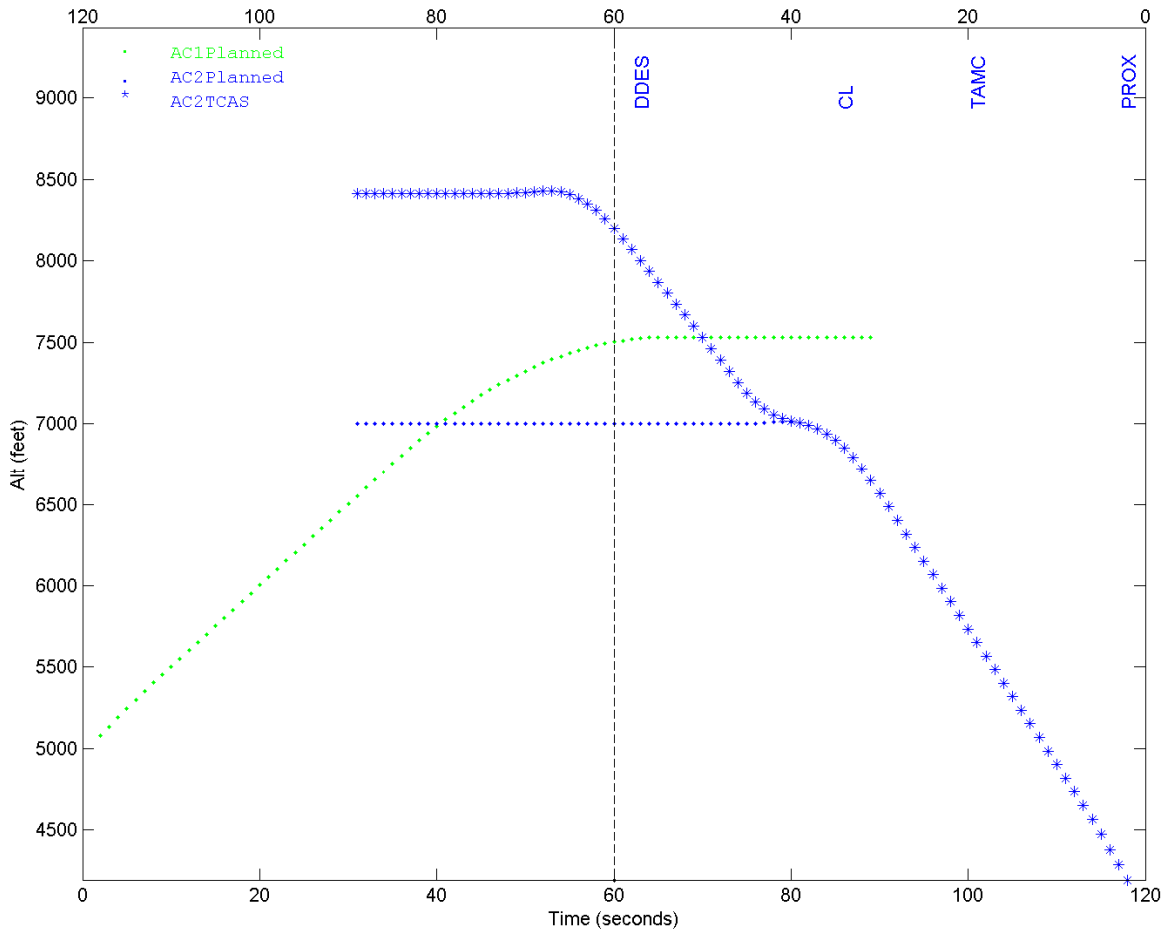
4998 UNEQUIPPED VS CP112EV1.2 100 FT 9 -24.66 CROSSING_ENC

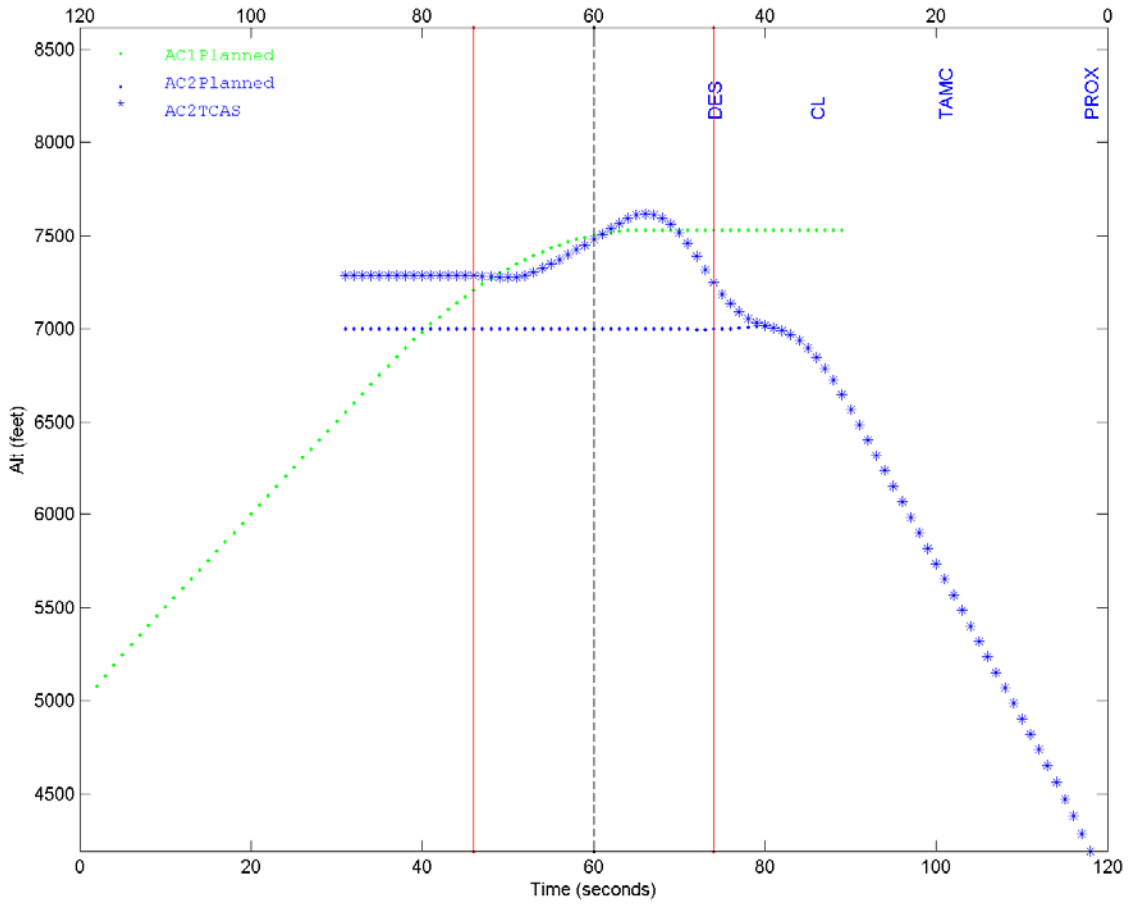
CPT_REV 1 OWN_FOLLOW TRUE TTOFOLLOW 10.15 REV_AVOID 02 TIME_REV_AVOID 0.0

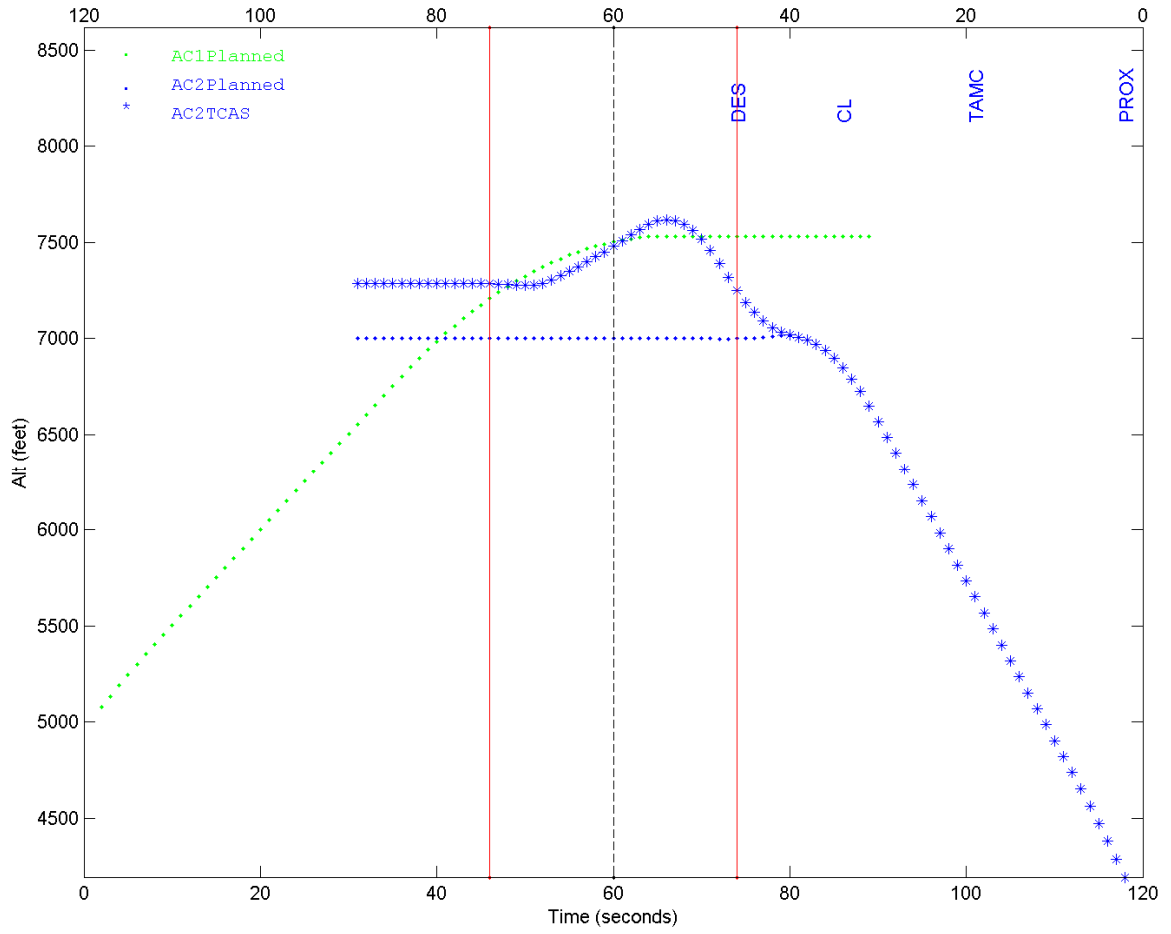
2 TCAS AC*REV*7271013 TA :19 |TAUR| CL @34 [NX]| DES @46

4998 UNEQUIPPED VS V7.1 100 FT 9 -24.66 CROSSING_ENC

2 TCAS AC*REV*7271013 TA :19 |TAUR| CL @34 [NX]| DES @46







Change 7.1 TCAS vs Unequipped Representative NMAC 07

Encounter Class : 19

Reit Number : 3345

NMAC Characterization

| | | |
|-------------------------------|------------|-----|
| Number of encounters in group | 3 | |
| AC1 TCAS equipped | no | |
| Vertical tracker | 25, 100 | ft |
| Planned separation | -250, -500 | ft |
| AC1 rates : | 5000 | fpm |
| AC2 rates : | 1000, 3000 | fpm |
| AC1 acceleration : | -0.15 | g |
| AC2 acceleration : | -0.05 | g |
| AC1 acceleration time : | CPA – 25 | sec |
| AC2 acceleration time : | CPA – 20 | sec |
| Encounters with reversed RAs | 0 | % |
| Vertical chase | no | |

Comments

CP115 caused NMAC.

CP112E had IDES which solved NMAC, CP115 did not have IDES.

SIMULATION RESULTS FOR V7, V7 + CP112EV1.2, and V7.1 ENCOUNTER Z93345
LOGIC THRESHOLDS SL = 4 ZTHR = 600 TAUR = 20 TAUUV = 20 ALIM = 300
PLANNED ENCOUNTER. SEP = -250.0 AC1 RATES(5000.0,0.0) AC2 RATES(1000.0,0.0)
AC1 ACCEL -0.15g @ CPA -25 AC2 ACCEL -0.05g @ CPA -20 AC1 CPA ALT 3700

3345 UNEQUIPPED VS V7 25 FT 19 -182.16 CROSSING_ENC

2 TCAS AC 3275014 TA :30 |TAUR| LC1 @40 [X] | LC5 @43 | DES @44 | IDES @51

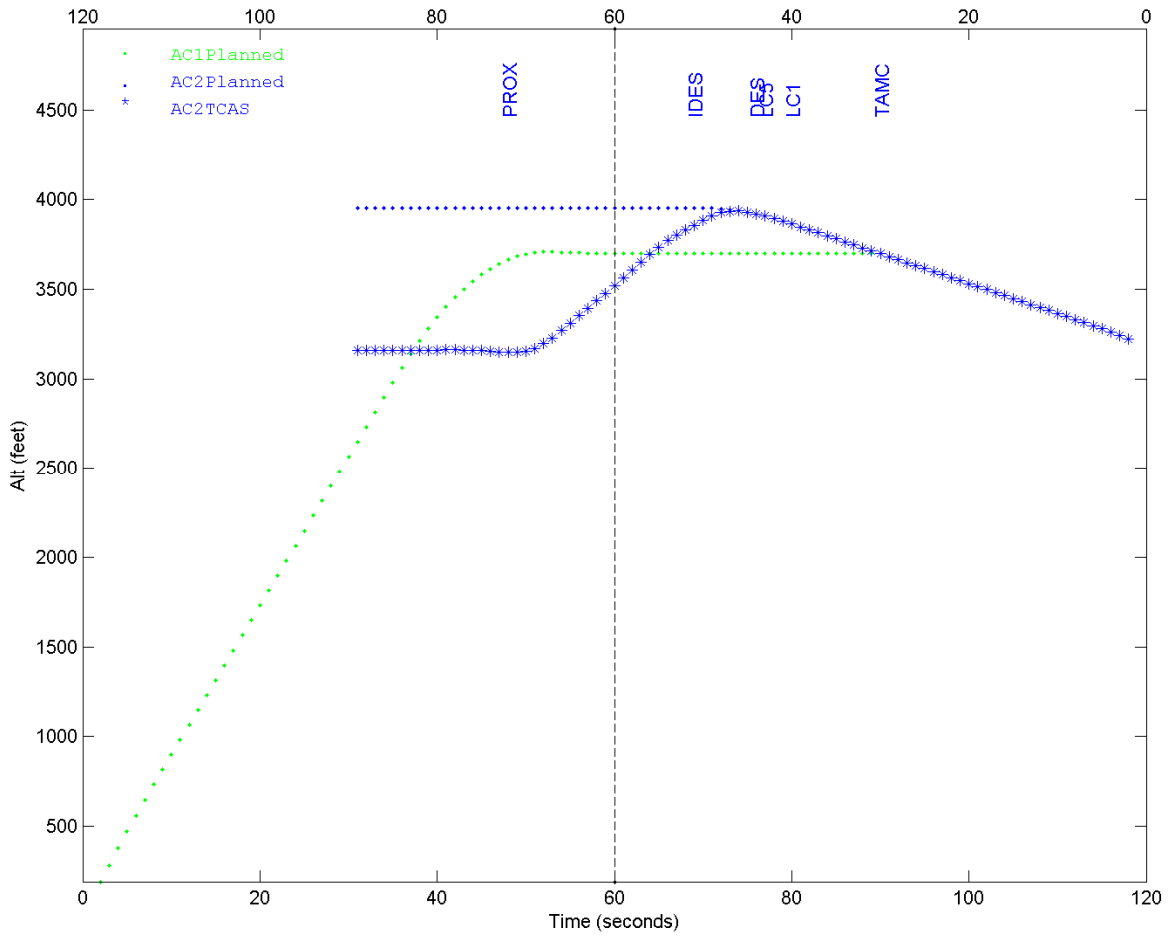
3345 UNEQUIPPED VS CP112EV1.2 25 FT 19 -182.16 CROSSING_ENC

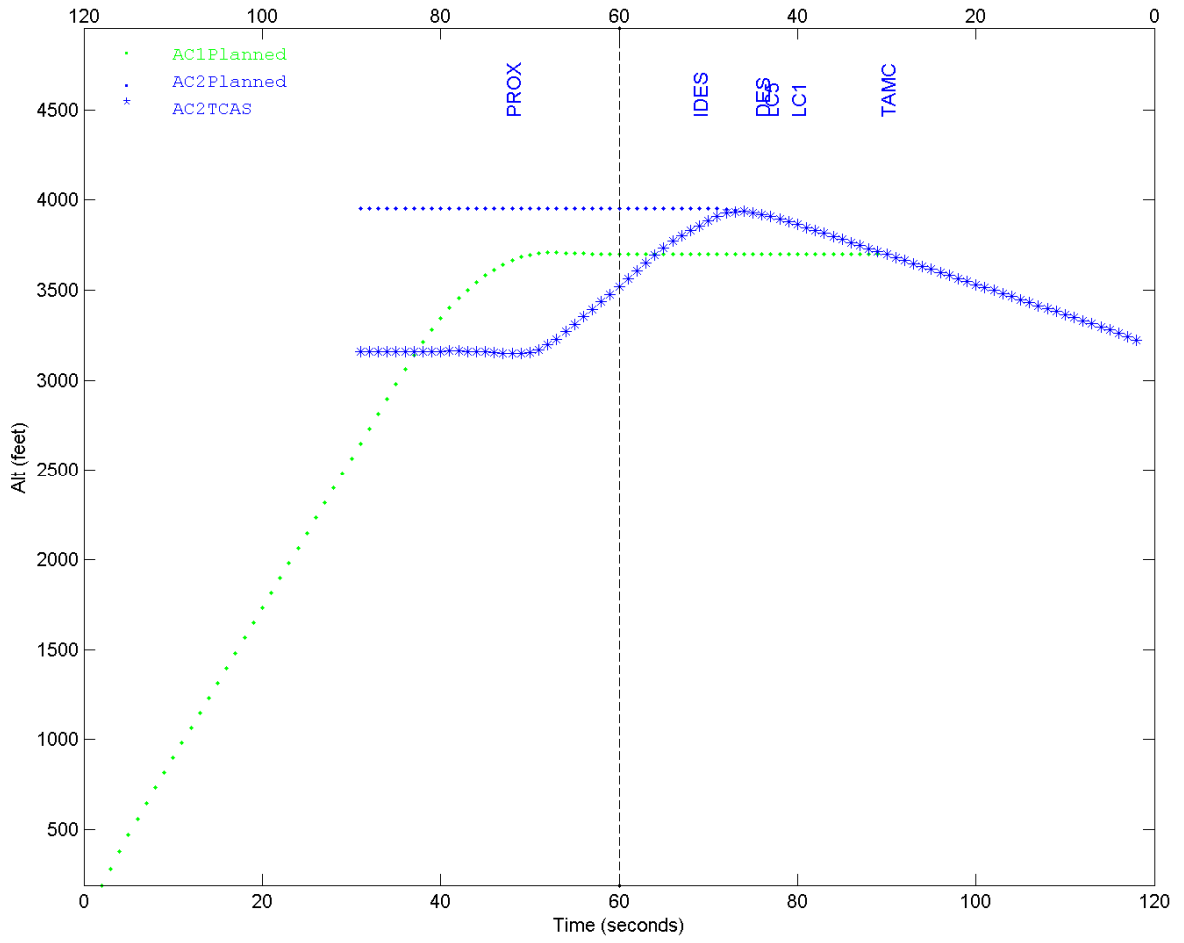
CPT_REV 0 OWN_FOLLOW TRUE TTOFOLLOW 9.60 REV_AVOID 02 TIME_REV_AVOID 0.0

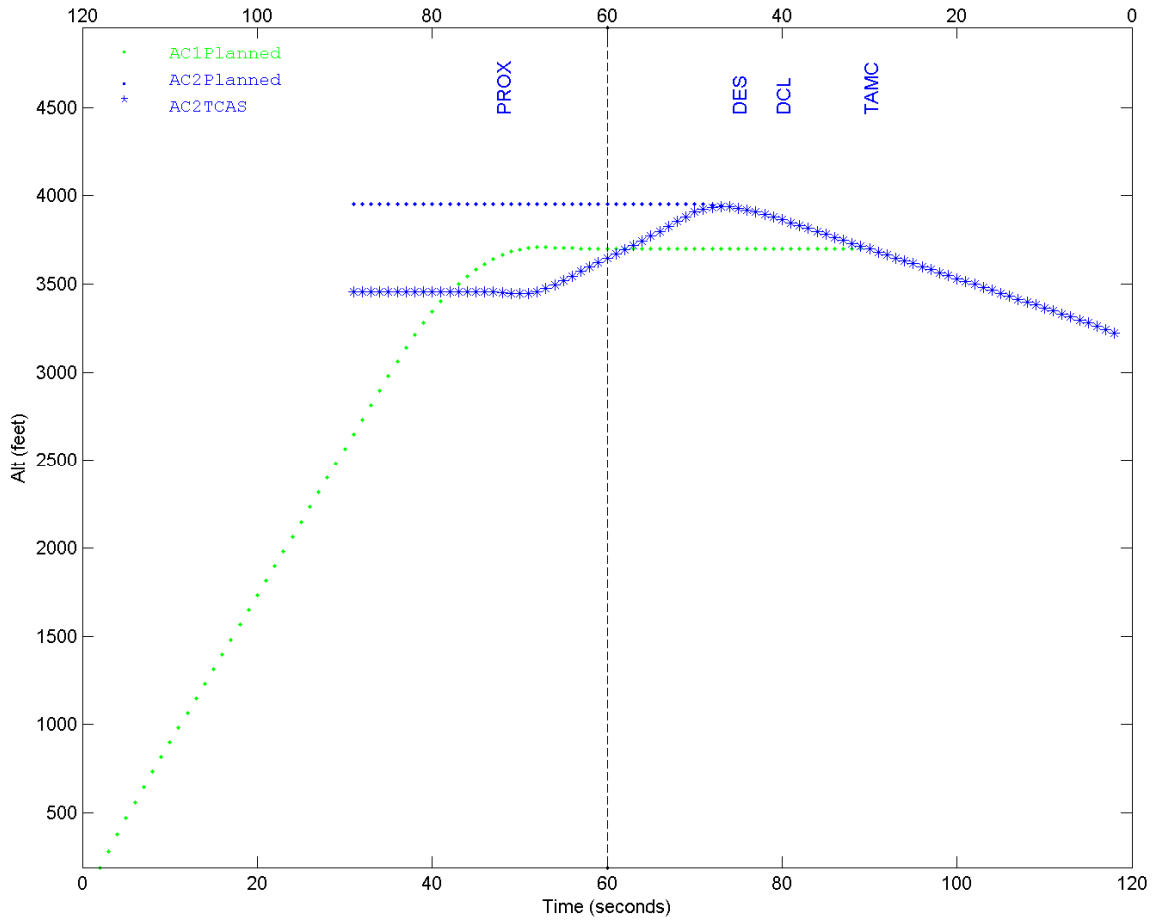
2 TCAS AC 7275014 TA :30 |TAUR| LC1 @40 [X] | LC5 @43 | DES @44 | IDES @51

3345 UNEQUIPPED VS V7.1 25 FT 19 -54.64 CROSSING_ENC

2 TCAS AC 7275014 TA :30 |TAUR| DCL @40 [X] | DES @45







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