CONFIDENTIAL

WS 107A-2
RADIO-INERTIAL GUIDANCE SYSTEM

MANUSCRIPT EDITION

TITAN I
INTEGRATED TARGETING
AND
SIMULATION PROGRAM DOCUMENT

VOLUME 3. MAINTENANCE
(TITLE UNCLASSIFIED)

PART 1. SECTIONS I AND II

Contract No. AF 04(645)-5

Prepared for
Ballistic Systems Division
Air Force Systems Command
United States Air Force
Inglewood, California

Prepared by Bell Telephone Laboratories, Incorporated
On behalf of Western Electric Company, Incorporated
222 Broadway, New York 38, N. Y.

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CHANGE NOTICE

LATEST CHANGED PAGES SUPERSEDE
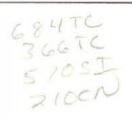### THE SAME PAGES OF PREVIOUS DATE

Insert changed pages into basic
publication. Destroy superseded pages.

Contract No. AF 04(647)-325
Contract No. AF 04(645)-5

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Air Force Systems Command
United States Air Force
Inglewood, California

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DOD DIR 5200.10

15 MARCH 1962
CHANGED 31 OCTOBER 1962

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LIST OF EFFECTIVE PAGES

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 984 CONSISTING OF THE FOLLOWING:

Page No.	Issue	Page No.	Issue
*Title	31 Oct 62	*2-87	31 Oct 62
*A to E	31 Oct 62	2-88 Blank	Orig
vii to viii	31 May 62	2-89	Orig
*ix	31 Oct 62	2-90 Blank	Orig
x Blank	Orig	2-91	31 May 62
1-1 to 1-5	31 May 62	2-92 to 2-93	Orig
1-6 Blank	Orig	2-94	31 May 62
2-1 to 2-6	Orig	2-95	Orig
2-7 to 2-7L	31 May 62	2-96 Blank	Orig
2-7M to 2-7N Blank	31 May 62	2-97 to 2-98	Orig
2-8	31 May 62	*2-99 to 2-100 deleted	31 Oct 62
2-9 to 2-31	Orig	2-101	Orig
2-32 Blank	Orig	2-102 Blank	Orig
2-33 to 2-39	Orig	2-103	Orig
2-40 Blank	Orig	2-104 Blank	Orig
2-41 to 2-43	Orig	*2-105 to 2-106	31 Oct 62
2-44 Blank	Orig	2-107 to 2-110	Orig
2-45 to 2-55	Orig	2-111	31 May 62
2-56 Blank	Orig	2-112 Blank	Orig
2-57	31 May 62	2-113 to 2-114	Orig
2-58	Orig	*2-115 to 2-117	31 Oct 62
2-59 to 2-60	31 May 62	2-118 Blank	Orig
*2-61 to 2-62	31 Oct 62	2-119 to 2-125	Orig
2-63 to 2-67	Orig	2-126 Blank	Orig
2-68 Blank	Orig	2-127	Orig
2-69 to 2-71	Orig	2-128 Blank	Orig
2-72 Blank	Orig	2-129 to 2-131	Orig
2-73	Orig	2-132 Blank	Orig
2-74 Blank	Orig	2-133	15 July 62
2-75 to 2-77	Orig	2-134	31 May 62
2-78 Blank	Orig	2-135	15 July 62
2-79 to 2-81	31 May 62	2-136 Blank	Orig
2-82 Blank	Orig	2-137	Orig
2-83	Orig	2-138 Blank	Orig
2-84 Blank	Orig	2-139	Orig
2-85	31 May 62	2-140 Blank	Orig
2-86	Orig	2-141 to 2-154	Orig

*The asterisk indicates pages changed, added, or deleted by the current change.

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(continued)

Page No.	Issue	Page No.	Issue
2-155 to 2-157 . . .	31 May 62	2-284 to 2-285 . .	Orig
2-158 Blank	Orig	2-286 Blank . . .	Orig
2-159	Orig	2-287 to 2-290 . .	31 May 62
2-160 Blank	Orig	2-291 to 2-292 . .	31 May 62
2-161 to 2-162 . . .	Orig	2-293	15 July62
*2-163	31 Oct 62	2-294 to 2-295 . .	31 May 62
*2-164 Blank	31 Oct 62	2-296 Blank . . .	31 May 62
2-165 to 2-175 . . .	Orig	2-297 to 2-303 . .	Orig
2-176 Blank	Orig	2-304 Blank . . .	Orig
*2-177 to 2-179 . . .	31 Oct 62	2-305 to 2-309 . .	Orig
*2-180 Blank	31 Oct 62	2-310 Blank . . .	Orig
2-181	31 May 62	2-311 to 2-314 . .	15 July62
2-182 to 2-184 . . .	Orig	2-315 to 2-317 . .	Orig
2-185	31 May 62	2-318 Blank . . .	Orig
2-186	Orig	2-319	31 May 62
2-187 to 2-189 . . .	31 May 62	2-320 to 2-321 . .	Orig
2-190	Orig	2-322 Blank . . .	Orig
*2-191 to 2-192 . . .	31 Oct 62	2-323 to 2-325 . .	Orig
2-193 to 2-202 . . .	31 May 62	2-326 Blank . . .	Orig
2-203 to 2-205 . . .	Orig	2-327 to 2-328 . .	Orig
2-206 Blank	Orig	*2-329 to 2-337 . .	31 Oct 62
*2-207 to 2-210 . . .	31 Oct 62	*2-338 Blank . . .	31 Oct 62
2-211 to 2-216 . . .	15 July62	*2-339 to 2-340 deleted 31 Oct 62	
2-217 to 2-227 . . .	Orig	2-341 to 2-342 . .	31 May 62
2-228 Blank	Orig	2-343 to 2-346 . .	Orig
2-229	15 July62	2-347	15 July62
2-230 to 2-232 . . .	31 May 62	2-348	Orig
2-233	15 July62	2-349	31 May 62
2-234	31 May 62	2-350	15 July62
2-235 to 2-240 . . .	Orig	2-351 to 2-357 . .	Orig
*2-241 to 2-245 . . .	31 Oct 62	2-358 Blank . . .	Orig
2-246 Blank	Orig	2-359	15 July62
2-247	Orig	2-360	Orig
2-248 Blank	Orig	2-361 to 2-366 . .	15 July62
*2-249 to 2-252 . . .	31 Oct 62	2-367 to 2-370 . .	31 May 62
2-253 to 2-254 deleted 31 May 62		*2-371 to 2-374 . .	31 Oct 62
2-255 to 2-267 . . .	Orig	2-375 to 2-376 deleted 31 May62	
2-268 Blank	Orig	2-377	31 May 62
2-269 to 2-282 . . .	Orig	2-378 to 2-379 . .	Orig
2-283	31 May 62	2-380 to 2-381 . .	31 May 62

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LIST OF EFFECTIVE PAGES

(continued)

Page No.	Issue	Page No.	Issue
2-382 Blank	Orig	2-470 Blank . . .	Orig
2-383	Orig	2-471	Orig
2-384 Blank	Orig	2-472 Blank . . .	Orig
2-385 to 2-387 . .	Orig	2-473 to 2-476B .	31 May 62
2-388 Blank	Orig	2-477 to 2-484 .	Orig
2-389 to 2-390 . .	Orig	*2-485 to 2-496 .	31 Oct 62
2-391	15 July 62	2-497	Orig
2-392 to 2-394 . .	Orig	2-498 Blank . . .	Orig
*2-395 to 2-406 . .	31 Oct 62	*2-499 to 2-504 .	31 Oct 62
2-407 to 2-410 deleted	15 July 62	*2-505 to 2-514 deleted	31 Oct 62
2-411	15 July 62	2-515	31 May 62
2-412	15 July 62	2-516	31 May 62
2-413	Orig	*2-517 to 2-522 .	31 Oct 62
2-414	31 May 62	*2-523 to 2-530 deleted	31 Oct 62
*2-415 to 2-419 .	31 Oct 62	2-531	Orig
*2-420 Blank . . .	31 Oct 62	2-532 Blank . . .	Orig
2-421	Orig	*2-533 to 2-544 deleted	31 Oct 62
2-422 Blank	Orig	2-545 to 2-563 .	Orig
2-423	15 July 62	*2-564 to 2-567 .	31 Oct 62
2-424 to 2-426 . .	31 May 62	*2-568 Blank . . .	31 Oct 62
2-427	15 July 62	*2-569 to 2-576 deleted	31 Oct 62
2-428 to 2-429 . .	31 May 62	2-577 to 2-583 .	Orig
2-430 Blank	Orig	2-584 Blank . . .	Orig
2-431 to 2-439 . .	Orig	2-585 to 2-589 .	Orig
2-440 Blank	Orig	2-590 Blank . . .	Orig
2-441	15 July 62	2-591	Orig
2-442	Orig	2-592 Blank . . .	Orig
2-443 to 2-445 . .	31 May 62	2-593	Orig
2-446 Blank	Orig	2-594 Blank . . .	Orig
2-447 to 2-448 . .	Orig	2-595 to 2-603 .	Orig
2-449	15 July 62	2-604 Blank . . .	Orig
2-450 to 2-452 . .	Orig	2-605 to 2-607 .	Orig
2-453 to 2-455 . .	31 May 62	2-608 Blank . . .	Orig
2-456 Blank	Orig	2-609 to 2-611 .	Orig
2-457 to 2-459 . .	Orig	2-612 Blank . . .	Orig
2-460	Orig	2-613 to 2-615 .	Orig
2-461	31 May 62	2-616 Blank . . .	Orig
2-462 to 2-464 . .	Orig	2-617 to 2-623 .	Orig
2-465 to 2-468 . .	31 May 62	2-624 Blank . . .	Orig
2-469	Orig	2-625 to 2-627 .	Orig

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LIST OF EFFECTIVE PAGES

(continued)

Page No.	Issue	Page No.	Issue
2-628 Blank . . .	Orig	*2-785 to 2-786 deleted	31 Oct 62
2-629	15 July 62	2-787	Orig
2-630 to 2-635 .	Orig	2-788 Blank	Orig
2-636 Blank . . .	Orig	2-789 to 2-795 . .	Orig
2-637	Orig	2-796 Blank	Orig
2-638 Blank . . .	Orig	*2-797 to 2-798 deleted	31 Oct 62
2-639 to 2-640 .	15 July 62	*2-799 to 2-802 . .	31 Oct 62
*2-641 to 2-645 .	31 Oct 62	2-803 to 2-810 . .	Orig
*2-646 Blank . . .	31 Oct 62	2-811 to 2-812 . .	15 July 62
2-647 to 2-649 .	Orig	2-813	Orig
2-650 Blank . . .	Orig	2-814 Blank	Orig
*2-651 to 2-656 .	31 Oct 62	2-815 to 2-819 . .	Orig
*2-657 to 2-658 deleted	31 Oct 62	2-820 Blank	Orig
2-659	Orig	2-821 to 2-822 . .	Orig
2-660 Blank . . .	Orig	*2-823	31 Oct 62
2-661 to 2-662 .	Orig	*2-824 Blank	31 Oct 62
*2-663 to 2-667 .	31 Oct 62	2-825 to 2-827 . .	Orig
*2-668 Blank . . .	31 Oct 62	2-828 Blank	Orig
2-669	15 July 62	2-829 to 2-835 . .	Orig
2-670 to 2-673 .	31 May 62	2-836 Blank	Orig
2-674 to 2-675 .	15 July 62	*2-837 to 2-849 . .	31 Oct 62
2-676 Blank . . .	31 May 62	2-850 Blank	Orig
2-677 to 2-680 deleted	31 May 62	*2-851 to 2-852 deleted	31 Oct 62
*2-681 to 2-686 .	31 Oct 62	2-853 to 2-855 . .	Orig
*2-687 to 2-688 deleted	31 Oct 62	2-856 Blank	Orig
2-689 to 2-691 .	15 July 62	2-857 to 2-859 . .	Orig
2-692 Blank . . .	Orig	2-860 Blank	Orig
*2-693	31 Oct 62	*2-861 to 2-864 . .	31 Oct 62
*2-694 Blank . . .	31 Oct 62	2-865 to 2-868 . .	Orig
*2-695 to 2-714 .	31 Oct 62	*2-869 to 2-871 . .	31 Oct 62
*2-715 to 2-718 deleted	31 Oct 62	*2-872 Blank	31 Oct 62
*2-719 to 2-732 .	31 Oct 62	*2-873 to 2-874 deleted	31 Oct 62
*2-733 to 2-746 deleted	31 Oct 62	*2-875 to 2-876 . .	31 Oct 62
2-747 to 2-750 .	Orig	2-877 to 2-879 . .	Orig
*2-751 to 2-759 .	31 Oct 62	2-880 Blank	Orig
*2-760 Blank . . .	31 Oct 62	2-881	Orig
2-761 to 2-773 .	Orig	2-882 Blank	Orig
2-774 Blank . . .	Orig	2-883 to 2-888 . .	Orig
2-775	31 May 62	2-889	31 May 62
2-776 to 2-784 .	Orig	2-890	Orig

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LIST OF EFFECTIVE PAGES (continued)

Page No.	Issue	Page No.	Issue
2-891 to 2-899	Orig		
2-900 Blank	Orig		
2-901 to 2-902	15 July 62		
2-903	Orig		
2-904 Blank . . .	Orig		
2-905	Orig		
2-906 Blank . . .	Orig		
2-907 to 2-909 . .	Orig		
2-910 Blank . . .	Orig		
2-911 to 2-913 . .	15 July 62		
2-914	Orig		
2-915	15 July 62		
2-916 Blank . . .	Orig		
*2-917 to 2-918 . .	31 Oct 62		
2-919 to 2-920 . .	Orig		
2-921	31 May 62		
2-922 Blank . . .	Orig		
2-923	Orig		
2-924 Blank . . .	Orig		
2-925 to 2-927 . .	Orig		
2-928 Blank . . .	Orig		
2-929 to 2-931 . .	Orig		
2-932 Blank . . .	Orig		
2-933 to 2-937 . .	31 May 62		
2-938 to 2-939 . .	Orig		
2-940 Blank . . .	Orig		
2-941	15 July 62		
2-942	Orig		
2-943	15 July 62		
2-944 Blank . . .	Orig		
2-945	Orig		
2-946 Blank . . .	Orig		
1-1	Orig		
*1-2 to 1-7	31 Oct 62		
1-8 Blank	Orig		

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Manuscript Edition

TITAN I - Integrated Targeting and Simulation Program Document
Volume 3. Maintenance Part 1 - 15 March 1962

Instruction Sheet   Changed 31 October 1962

In addition to inserting revised pages and destroying super-
seded pages, make pen and ink changes as indicated below, and
write "Changed 31 October 1962" at bottom of page flush with
the outside margin on each affected page. A Mod number is
added to the first page of the subprogram when the subprogram
reflects a listing subsequent to January 1962, or when an
error correction was made as part of this revision.

1. **Title Page:**   Delete title page and insert new
                          title page.

2. **Page A.B,C,D E:**   Delete pages A, B, C, D, E and
                          insert new pages A, B, C, D, E.

3. **Page ix:**   Delete page ix and insert new page ix.

4. **Page 1-1:**   In paragraph 1-3, fourth line, change
                          to read "a listing subsequent to that
                          date, or when an error correction was
                          made as part of this revision, the
                          Mod number appears".

5. **Page 2-2:**   In last line on page, delete last
                          word "Volume".

6. **Page 2-3:**   In first line on page, change to
                          read "the Theory volume. The actual
                          determination of the"; in second line,
                          delete fourth word "determination".

7. **Page 2-7E   Delete references to subprograms
    through 2-7H:**   RØLL, FILTER, and SHIFT.

8. **Page 2-7J   Delete references to subprograms
    through 2-7L:**   RØLL, FILTER, SHIFT, RSDB, RSDBTL,
                          RSDC, RSDPIG, RSDADJ, and RSDD.

9. **Page 2-37:**   In paragraph 2-66 (3), third line,
                          change "step 18" to "step 19";
                          last line, change "step 12" to
                          "step 13".

10. **Page 2-38:**   In third line on page, change "step
                          12" to "step 13"; last line in para-
                          graph, change "step 18" to "step 19".

11. Page 2-49:   In paragraph (12), first line, change
                             "switch" to "light".

12. Page 2-50:   In paragraph (20), last two lines,
                            change to read "The subprogram checks
                            for an error in U08 (step 14). If
                            none occurred, SW(120) is set ØFF
                            and the subprogram continues at step
                            15".

13. Page 2-52:   In paragraph (26), last line, change
                            "step 94" to "step 99".

14. Page 2-54:   In paragraphs (35), (36), and (37),
                            change statement letters from "h" to
                            "k", "i" to "l", and "l" to "m",
                            respectively.

15. Page 2-61,2-62:   Delete pages 2-61, 2-62, and insert
                            new ages 2-61, 2-62.

16. Page 2-75:   In paragraph 2-77, item 1, delete
                            subprogram "DLTLAT D06".

17. Page 2-87:   Delete page 2-87 and insert new
                            page 2-87.

18. Page 2-98:   Insert "(2-99 and 2-100 deleted)"
                            in lower left hand corner under
                            page number.

19. Page 2-99,2-100:   Delete pages 2-99, 2-100.

20. Page 2-105:   Delete page 2-105 and insert new
                            pages 2-105, 2-106.

21. Page 2-110:   In paragraph (2), second line,
                            change "0" to "Ø".

22. Page 2-115   Delete pages 2-115 through 2-117 and
     through 2-117:   insert new pages 2-115 through 2-117.

23. Page 2-163,2-164:   Delete pages 2-163, 2-164, and insert
                            new page 2-163.

24. Page 2-177   Delete pages 2-177 through 2-180 and
     through 2-180:   insert new pages 2-177 through 2-179.

25. Page 2-185:   Insert "Mod F3" in upper right-hand
                            corner.

26. **Page 2-191,2-192:** Delete pages 2-191, 2-192, and insert new pages 2-191, 2-192.

27. **Page 2-207 through 2-210:** Delete pages 2-207 through 2-210 and insert new pages 2-207 through 2-210.

28. **Page 2-211:** Insert "Mod F3" in upper right-hand corner.

29. **Page 2-235:** Insert "Mod G1" in upper right-hand corner.

30. **Page 2-236:** In first line on page, delete input "VGYD".

31. **Page 2-241 through 2-245:** Delete pages 2-241 through 2-245 and insert new pages 2-241 through 2-245.

32. **Page 2-249 through 2-252:** Delete pages 2-249 through 2-252 and insert new pages 2-249 through 2-252.

33. **Page 2-287:** In paragraph 2-141a., third line, change to read "of columns to be interpreted, and the following registers:".

34. **Page 2-290:** Insert "(2-291 and 2-292 deleted)" in lower left-hand corner under page number.

35. **Page 2-327:** In paragraph 2-154a., under COLUMNS, insert "21-24"; under CONTENTS for 21-24, insert "If present, non-standard transfer point; otherwise blank".

36. **Page 2-329 through 2-340:** Delete pages 2-329 through 2-340 and insert new pages 2-329 through 2-337.

37. **Page 2-345:** In paragraph 2-158, item h, change description to read "Read Target Tape".

38. **Page 2-371 through 2-374:** Delete pages 2-371 through 2-374 and insert new pages 2-371 through 2-374.

39. **Page 2-380:** In paragraph (8), second line, change second and third words to read "legality or".

40. Page 2-391:   Insert "Mod G1" in upper right-hand
                        corner.

41. Page 2-395   Delete pages 2-395 through 2-406 and
     through 2-406:   insert new pages 2-395 through 2-406.

42. Page 2-411:   Insert "Mod F4" in upper right-hand
                        corner.

43. Page 2-415   Delete pages 2-415 through 2-418
     through 2-418:   and insert new pages 2-415 through
                        2-419.

44. Page 2-421:   In paragraph 2-173, item g, change
                        description to read "Generate
                        Magnetic Target Tape".

45. Page 2-427:   Insert "Mod F4" in upper right-hand
                        corner.

46. Page 2-461:   Insert "Mod G1" in upper right-hand
                        corner.

47. Page 2-485   Delete pages 2-485 through 2-496
     through 2-496:   and insert new pages 2-485 through
                        2-496.

48. Page 2-499   Delete pages 2-499 through 2-514
     through 2-514:   and insert new pages 2-499 through
                        2-504.

49. Page 2-515:   Insert "Mod F2" in upper right-hand
                        corner.

50. Page 2-517   Delete pages 2-517 through 2-530
     through 2-530:   and insert new pages 2-517 through
                        2-522.

51. Page 2-531:   Insert "(2-533 through 2-544 deleted)"
                        in lower right-hand corner under
                        page number.

52. Page 2-533   Delete pages 2-533 through 2-544.
     through 2-544:

53. Page 2-547:   Insert "Mod F1" in upper right-hand
                        corner.

54. Page 2-557:   In paragraph (13), fifth line, the sentence starting with "If LSEQ" is changed to read "If LSEQ is not 4, 7, or 9, BSTØP is compared with time of flight since liftoff t_f, and if greater, is set equal to t_f".

55. Page 2-559:   Insert "Mod F1" in upper right-hand corner.

56. Page 2-564 through 2-575:   Delete pages 2-564 through 2-575 and insert new pages 2-564 through 2-567.

57. Page 2-637:   In paragraph 2-228, second line, change first word to read "launcher"

58. Page 2-639:   Insert "Mod F2" in upper right-hand corner.

59. Page 2-641 through 2-646:   Delete pages 2-641 through 2-646 and insert new pages 2-641 through 2-645.

60. Page 2-651 through 2-657:   Delete pages 2-651 through 2-657 and insert new pages 2-651 through 2-656.

61. Page 2-663 through 2-668:   Delete pages 2-663 through 2-668 and insert new pages 2-663 through 2-667.

62. Page 2-669:   In paragraph 2-237a., under COMMON TAG, delete the parenthesis around each "9" in the four items of DIMENSION 10.

63. Page 2-675:   Insert "(2-677 through 2-680 deleted)" in lower right-hand corner under page number.

64. Page 2-681 through 2-687:   Delete pages 2-681 through 2-687 and insert new pages 2-681 through 2-686.

65. Page 2-689:   Insert "Mod F2" in upper right-hand corner.

66. Page 2-693 through 2-718:   Delete pages 2-693 through 2-718 and insert new pages 2-693 through 2-714.

67. Page 2-719 through 2-746:   Delete pages 2-719 through 2-746 and insert new pages 2-719 through 2-732.

68. Page 2-747:   Insert "Mod G1" in upper right-hand corner.

69. Page 2-749:   In paragraph (2), second line, place a period after "precision" and delete "and CUTIE is stepped by one".

70. Page 2-750:   In paragraph (4), sixth line, delete sentence "ROLL updates the output interpolation table".

71. Page 2-751 through 2-760:   Delete pages 2-751 through 2-760 and insert new pages 2-751 through 2-759.

72. Page 2-771:   Insert "Mod G1" in upper right-hand corner.

73. Page 2-772:   In paragraph (2), fourth line, change last sentence to read "Control is returned to the user subprogram".

74. Page 2-781:   Insert "Mod G1" in upper right-hand corner.

75. Page 2-783:   In paragraph (2), delete last sentence; in paragraph (3), third line, complete first sentence to read "ABCHEK determines values of the position and velocity vector magnitudes".

76. Page 2-784:   Insert "(2-785/2-786 deleted)" in lower left-hand corner under page number.

77. Page 2-785:   Delete page 2-785.

78. Page 2-789:   Insert "Mod G1" in upper right-hand corner.

79. Page 2-791:   At top of page, change outputs from "FXI(1)", to "FSXI(1)", "FXI(3)" to "FSXI(2)", and "FXI(5)" to "FSXI(3)", respectively.

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80. Page 2-795:   Insert "(2-797 and 2-798 deleted)" in lower right-hand corner under page number.

81. Page 2-797 through 2-802:   Delete pages 2-797 through 2-802 and insert new pages 2-799 through 2-802.

82. Page 2-803:   In paragraph 2-251, item 1, delete subprogram "LABEL G40".

83. Page 2-823, 2-824:   Delete pages 2-823, 2-824, and insert new page 2-823.

84. Page 2-825:   Insert "Mod G1" in upper right-hand corner.

85. Page 2-826:   In paragraph (1), fifth line, change remainder of sentence to read "obtained from expressions (1), (2), (3), CØSINE, and SINE"; in last line of paragraph, the expressions are changed to read "(4), (5), and (6)"; in paragraph (2), heading, change to read "Steps 3-9"; in seventh line of paragraph, change last sentence to read "Control is returned to the user subprogram".

86. Page 2-837 through 2-852:   Delete pages 2-837 through 2-852 and insert new pages 2-837 through 2-849.

87. Page 2-861 through 2-864:   Delete pages 2-861 through 2-864 and insert new pages 2-861 through 2-864.

88. Page 2-869 through 2-876:   Delete pages 2-869 through 2-876 and insert new pages 2-869 through 2-876.

89. Page 2-902:   In sixth, seventh, and eighth lines, under SYMBOL, change "$\dot{\psi}^{k-1}$" to "$\dot{\psi}_0 k-1$", "$\dot{\psi} k-2$" to "$\dot{\psi}_0 k-2$", and "$\dot{\psi} k-3$" to "$\dot{\psi} k-3$", respectively.

90. Page 2-917, 2-918:   Delete pages 2-917, 2-918, and insert new pages 2-917, 2-918.

91. Page 2-937:   Insert "Mod F2" in upper right-hand corner.

92. Page 2-941:   Insert "Mod G1" in upper right-hand corner.

93. Page 1-1 through 1-7:   Delete pages 1-1 through 1-7 and insert new pages 1-1 through 1-7.

94. Insert this instruction sheet between cover and new title page.

Manuscript Edition

TITAN I - Integrated Targeting and Simulation Program Document
Volume 3. Maintenance Part 1 - 15 March 1962

Instruction Sheet   Changed 15 July 1962

In addition to inserting revised pages and destroying super-
seded pages, make pen and ink changes as indicated below, and
write "Changed 15 July 1962" at bottom of page flush with the
outside margin on each affected page. A Mod number is added
to the first page of the subprogram only when the subprogram
reflects a listing subsequent to January 1962.

1. Title Page: Delete title page and insert new title
                           page.

2. Page A,B,C,D,E: Delete pages A, B, C, D, E and insert
                           new pages A. B, C. D. E.

3. Page 2-133:   Insert "Mod F2" in upper right hand
                           corner.

4. Page 2-135:   Delete page 2-135 and insert new page
                           2-135.

5. Page 2-207,2-208:   Delete pages 2-207, 2-208, and insert
                           new pages 2-207, 2-208.

6. Page 2-211   Delete pages 2-211 through 2-215 and
    through 2-215:   insert new pages 2-211 through 2-216.

7. Page 2-229:   Insert "Mod F1" in upper right hand
                           corner.

8. Page 2-233:   Delete page 2-233 and insert new
                           page 2-233.

9. Page 2-249   Delete pages 2-249 through 2-252 and
    through 2-252:   insert new pages 2-249 through 2-252.

10. Page 2-293:   Insert "Mod F1" in upper right hand
                           corner.

11. Page 2-311   Delete pages 2-311 through 2-314 and
    through 2-314:   insert new pages 2-311 through 2-314.

12. Page 2-347:   Insert "Mod F2" in upper right hand
                           corner.

                           In paragraph 2-159a delete all infor-
                           mation for PRWLN and insert "PLLØN 2
                           geographic latitude of this launcher
                           λ_L' degrees".

13.   Page 2-350:   In paragraph 2-159d, expression (7), delete "λ_R" and insert "λ_L'"

14.   Page 2-359:   Insert "Mod F3" in upper right hand corner.

15.   Page 2-361 through 2-366:   Delete pages 2-361 through 2-366 and insert new pages 2-361 through 2-366.

16.   Page 2-371 through 2-374:   Delete pages 2-371 through 2-374 and insert new pages 2-371 through 2-374.

17.   Page 2-391:   Insert "Mod F3" in upper right hand corner.

18.   Page 2-395 through 2-409:   Delete pages 2-395 through 2-409 and insert new pages 2-395 through 2-405.

19.   Page 2-411:   Insert "Mod F3" in upper right hand corner.

20.   Page 2-412:   In paragraph 2-170b, insert "GLAZM(I) 2   Launch azimuth A_L degrees".

21.   Page 2-417 through 2-419:   Delete page 2-417 through 2-419 and insert new pages 2-417, 2-418.

22.   Page 2-423:   Insert "Mod F2" in upper right hand corner.

23.   Page 2-427:   Insert "Mod F3" in upper right hand corner.

24.   Page 2-441:   Insert "Mod F2" in upper right hand corner.

25.   Page 2-449:   Insert "Mod F2" in upper right hand corner.

26.   Page 2-629:   Insert "Mod F1" in upper right hand corner.

27.   Page 2-639 through 2-645:   Delete pages 2-639 through 2-645 and insert new pages 2-639 through 2-646.

28.   Page 2-651:   Insert "Mod F2" in upper right hand corner.

29.   Page 2-653 through 2-657:   Delete pages 2-653 through 2-657 and insert new pages 2-653 through 2-657.

30. Page 2-669:   Change the date in lower left hand
                           corner from "31 May 1962" to
                           "15 July 1962".

31. Page 2-674, 2-675:   Delete pages 2-674, 2-675 and insert
                           new pages 2-674, 2-675.

32. Page 2-689   Delete pages 2-689 through 2-691 and
     through 2-691:   insert new pages 2-689 through 2-691.

33. Page 2-739:   Insert "Mod F1" in upper right hand
                           corner.

34. Page 2-740:   In paragraph 2-244C (1), change first
                           sentence to read as follows:
                           "If SW(58) is ØN, the unity autopilot
                           is set for open loop simulation."

35. Page 2-811, 2-812:   Delete pages 2-811, 2-812 and insert
                           new pages 2-811, 2-812.

36. Page 2-901, 2-902:   Delete pages 2-901, 2-902 and insert
                           new pages 2-901, 2-902.

37. Page 2-911   Delete pages 2-911 through 2-915 and
     through 2-915:   insert new pages 2-911 through 2-915.

38. Page 2-941:   Insert "Mod F4" in upper right hand
                           corner.

39. Page 2-943:   Insert "Mod F2" in upper right hand
                           corner.

40. Insert this instruction sheet between cover and new title
     page.

Manuscript Edition

TITAN I - Integrated Targeting and Simulation Program Document
Volume 3. Maintenance Part 1 - 15 March 1962

Instruction Sheet   Changed 31 May 1962

In addition to inserting revised pages and destroying super-
seded pages, make pen and ink changes as indicated below and
write "Changed 31 May 1962" at bottom of page flush with the
outside margin on each affected page. A Mod number is added
to the first page of the subprogram only when the subprogram
reflects a listing subsequent to January 1962.

1. <u>Title Page</u>:   Delete title page and insert new
                                title page.

2. <u>Page A, B, C, D,</u>   Delete pages A, B, C, D, vii through
   <u>vii through ix:</u>   ix and insert new pages A, B, C, D,
                                vii through ix.

3. <u>Page 1-1</u>   Delete pages 1-1 through 1-5 and
   <u>through 1-5:</u>   insert new pages 1-1 through 1-5.

4. Page 2-7, 2-8:   Delete pages 2-7, 2-8, and insert new
                                pages 2-7, 2-7A through 2-7N/2-8.

5. <u>Page 2-57</u>:   Insert "Mod F1" in upper right hand
                                corner.

6. <u>Page 2-59, 2-60</u>:   Delete pages 2-59, 2-60 and insert
                                new pages 2-59, 2-60.

7. <u>Page 2-79</u>   Delete pages 2-79 through 2-81 and
   <u>through 2-81:</u>   insert new pages 2-79 through 2-81.

8. <u>Page 2-85</u>:   Insert "Mod F1" in upper right hand
                                corner.

                                In paragraph 2-80C (1), third line,
                                change "$|X|>1.000000044$" to
                                "$|X|>1.000000939$".

                                In second line of the table, under
                                TEST, change "$1.0 < |X| \leq 1 + 4.4 \times 10^{-8}$"
                                to "$1.0 < |X| \leq 1 + 9.39 \times 10^{-9}$".

9. <u>Page 2-91</u>:   Insert "Mod F1" in upper right hand
                                corner.

10. Page 2-94:   In paragraph 2-83C (12), insert as first sentence "Tape A1 is rewound."

11. Page 2-111:   Delete page 2-111 and insert new page 2-111.

12. Page 2-133   Delete pages 2-133 through 2-135 and insert new pages 2-133 through 2-135.
     through 2-135:

13. Page 2-155   Delete pages 2-155 through 2-157 and insert new pages 2-155 through 2-157.
     through 2-157:

14. Page 2-181:   In paragraph 2-117b, under SWITCH, change "SW(117)" to "SW(115)".

15. Page 2-185:   Insert "Mod F1" in upper right hand corner.

16. Page 2-187   Delete pages 2-187 through 2-202 and insert new pages 2-187 through 2-202.
     through 2-202:

17. Page 2-229   Delete pages 2-229 through 2-234 and insert new pages 2-229 through 2-234.
     through 2-234:

18. Page 2-249   Delete pages 2-249 through 2-254 and insert new pages 2-249 through 2-252.
     through 2-254:

19. Page 2-283:   Insert "Mod F1" in upper right hand corner.

20. Page 2-287   Delete pages 2-287 through 2-292 and insert new pages 2-287 through 2-290.
     through 2-292:

21. Page 2-293   Delete pages 2-293 through 2-296 and insert new pages 2-293 through 2-296.
     through 2-296:

22. Page 2-311   Delete pages 2-311 through 2-314 and insert new pages 2-311 through 2-314.
     through 2-314:

23. Page 2-319:   In paragraph 2-151C (1), second line, delete "SW(9)" and insert "SW(172)".

24. Page 2-341,   Change figure number from "2-1" to "2-1G".
     2-342:

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25.	Page 2-347 through 2-350:	Delete pages 2-347 through 2-350 and insert new pages 2-347 through 2-350.
26.	Page 2-359:	Insert "Mod P1" in upper right hand corner
27.	Page 2-362 through 2-376:	Delete pages 2-362 through 2-376 and insert new pages 2-362 through 2-374.
28.	Page 2-377:	Insert "Mod P1" in upper right hand corner.
29.	Page 2-380 2-381:	Delete pages 2-380, 2-381, and insert new pages 2-380, 2-381.
30.	Page 2-391:	Insert "Mod P2" in upper right hand corner.
31.	Page 2-395 through 2-409:	Delete pages 2-395 through 2-409 and insert new pages 2-395 through 2-409.
32.	Page 2-411:	Insert "Mod P1" in upper right hand corner.
33.	Page 2-414:	In paragraph 2-170C, first line, change "FD D42" to FD P42".
34.	Page 2-423 through 2-426:	Delete pages 2-423 through 2-426 and insert new pages 2-423 through 2-426.
35.	Page 2-427 through 2-429:	Delete pages 2-427 through 2-429 and insert new pages 2-427 through 2-429.
36.	Page 2-441:	Insert "Mod P1" in upper right hand corner.
37.	Page 2-443 through 2-445:	Delete pages 2-443 through 2-445 and insert new pages 2-443 through 2-445.
38.	Page 2-449:	Insert "Mod P2" in upper right hand corner.
39.	Pages 2-453 through 2-455:	Delete pages 2-453 through 2-455 and insert new pages 2-453 through 2-455.
40.	Page 2-461:	Insert "Mod P2" in upper right hand corner.

41. Page 2-465 through 2-468:

Delete pages 2-465 through 2-468 and insert new pages 2-465 through 2-468.

42. Page 2-473 through 2-476:

Delete pages 2-473 through 2-476 and insert new pages 2-473 through 2-476, 2-476A, 2-476B.

43. Page 2-487:

In paragraph 2-192C (2), change first word of fourth line from "write" to "read".

44. Page 2-489:

In paragraph 2-192C (15), change beginning of second line from "step 134" to "step 1 6".

45. Page 2-491:

In paragraph 2-192C (28), change beginning of seventh line from "transferred to step 70" to "transferred to step 68".

46. Page 2-496:

In paragraph 2-192C (51), change beginning of second line from "step 98" to "step 99".

47. Page 2-515:

Insert "Mod F1" in upper right hand corner.

In paragraph 2-198a, between SW(14) and XDEW(109), insert "SW(82) Test for printing option".

48. Page 2-520 through 2-522:

Delete pages 2-520 through 2-522 and insert new pages 2-520 through 2-522.

49. Page 2-642:

In paragraph 2-230C (6), in first line, change "SW(74)" to "SW(72)".

50. Page 2-643 2-644:

Delete pages 2-643, 2-644, and insert new pages 2-643, 2-644.

51. Page 2-651 through 2-657:

Delete pages 2-651 through 2-657 and insert new pages 2-651 through 2-657.

52. Page 2-663 through 2-680:

Delete pages 2-663 through 2-680 and insert new pages 2-663 through 2-675.

53. **Page 2-681 through 2-691:**   Delete pages 2-681 through 2-691 and insert new pages 2-681 through 2-691.

54. **Page 2-695:**   Insert "Mod F2" in upper right hand corner.

55. **Page 2-710:**   In paragraph 2-242C (17), change "Steps 103-105" to "Steps 103-106".

In eighth line, change "re-entry stage" to "booster stage".

In paragraph 2-242C (18), change "Steps 106-115" to "Steps 107-115".

56. **Page 2-719:**   Insert "Mod F1" in upper right hand corner.

57. **Page 2-729:**   In paragraph 2-243f (1), the last sentence should read as follows: "Otherwise GGDSIM performs setup phase computations of guidance simulator." The remainder of the paragraph is deleted.

58. **Page 2-735:**   Delete page 2-735 and insert new page 2-735.

59. **Page 2-775:**   Insert "Mod F1" in upper right hand corner.

60. **Page 2-797:**   Delete page 2-797 and insert new pages 2-797, 2-798

61. **Page 2-837:**   Insert "Mod F1" in upper right hand corner.

62. **Page 2-839:**   In paragraph 2-259c (1), in table under ACTION for P = 40, change "The program stops" to "Exit to ILLCMD to print error statement".

63. **Page 2-846:**   In paragraph 2-259c (18), in first line, change "altitude" to "attitude".

64. **Page 2-861 through 2-864:**   Delete pages 2-861 through 2-864 and insert new pages 2-861 through 2-864.

65. Page 2-889:   In paragraph 2-270a, in second line change "XGI(1-16)" to "XGI(1-32)".

66. Page 2-921:   In paragraph 2-278c (3), in second line delete the following: "ARROR checks the status of indicators and".

67. Page 2-933 through 2-936:   Delete pages 2-933 through 2-936 and insert new pages 2-933 through 2-936.

68. Page 2-937:   Insert "Mod P1" in upper right hand corner.

69. Page 2-941:   Insert "Mod P1" in upper right hand corner.

70. Page 2-943:   Insert "Mod P1" in upper right hand corner.

71. Insert this instruction sheet between cover and new title page.