AD-A125 158 LASER VECTOR SCORING SYSTEM FEASIBILITY SUPPORT TEST (U) TACTICAL AIR COMMAND LANGLEY AFB VA 10 FEB 83 1/1

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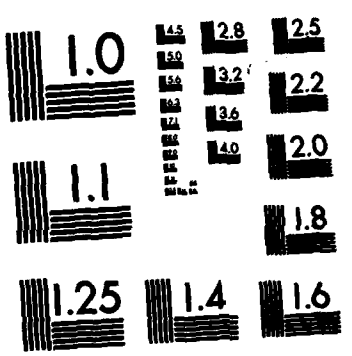

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS TACTICAL AIR COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA 23665

10 FEB 1983

TAC PROJECT ORDER: Laser Vector Scoring System Feasibility Support Test

PROJECT ORDER NUMBER: 83D-041A

TO: USAFADWC/CC

1. INTRODUCTION:

a. The Laser Vector Scoring System (LVSS) was developed by the Santa Barbara Research Center (SBRC) to fulfill a missile scoring requirement to recreate a missile's terminal trajectory with respect to the target. Development has been through joint sponsorship by both the Navy and the USAF; however, due to cost overruns and a reduced Navy requirement, the Air Force has assumed responsibility to complete development and test the LVSS for USAF operational use.

b. The LVSS will be installed on a QF-100D full-scale aerial target (FSAT). Interface design of the LVSS with the QF-100D will be accomplished by the USAFADWC full-scale operations and maintenance (O&M) contractor. The system will be interfaced with the standard telemetry receivers and transmitters currently in use in the QF-100D. LVSS commands and operational status will be via the DTCS data link. Scoring data will be transmitted through the existing scoring telemetry transmitter. Missiles to be launched against an LVSS-equipped aircraft will be optically enhanced with stainless steel reflective bands. The reflective kits will be designed for use on the AIM-7 series missiles, as well as the AMRAAM.

2. DESCRIPTION:

a. Test Item Description: The complete system consists of two airborne sensors externally mounted below the cockpit, a ground station consisting of an off-the-shelf digital display and printer, and various alignment equipment to ensure proper alignment of the laser field. Optically enhanced missiles passing through this field are detected as the reflected laser light illuminates the surface of the scoring system detector. Range and angle information are transmitted to the ground station which then computes the missile's trajectory. The LVSS employs pulsed laser diodes in the infrared wave length (.9um) to establish a low power, uniform laser pattern around the target. This pattern consists of a forward and an aft projecting conical fan along with a center disk.

b. Test Description:

(1) Three prototype LVSS units will be procured, two of which will be used for testing (one spare) and integration into a QF-100D aircraft. AD/YMA will serve as the program manager and will conduct ground accuracy tests at Eglin AFB, FL and flight tests at the

325 FWW, Tyndall AFB, FL. 475 TESTS and 82 TATS of the 325 FWW will provide flight test support to include assistance in scheduling, data reduction, and technical expertise. All test planning and conduct that involves the use of QF-100 aircraft will be coordinated through 82 TATS/TTF, 325 FWW, IAW the QF-100 Memorandum of Agreement for O&M.

(2) A number of high velocity aerial rockets (HVARS) will be fired past a ground mounted LVSS sensor to demonstrate system performance in a static environment. These static tests will be used to assess system accuracy, scoring envelope, adequacy of the ground receiving terminal, identification of deficiencies and safety hazards, and a compilation of reliability data.

(3) Two to five manned QF-100 DT&E sorties are planned. Two low probability kill nullo QF-100D mission profiles should be accomplished such that AIM-7E missiles can be fired until two successful missile scores are obtained. The AIM-7E missiles are necessary to provide secondary scoring capability. The flight profiles will be coordinated by the designated 325 FWW, 82 TATS/TTF liaison officer. The AIM-7E missions will be accomplished piggybacked on low-kill profile WSEP COMBAT PIKE F-4 missions.

(4) A manned low-altitude run at 200 feet MSL, as well as a formation flight with a manned QF-100 or a 475 TESTS F-106 chase aircraft, will be accomplished to assess TM noise data.

3. TEST OBJECTIVES:

a. Demonstrate the feasibility of using the LVSS when installed in a QF-100D aircraft.

(1) Evaluate the capability to score missiles.

(2) Assess the compatibility of the LVSS with related airborne telemetry, DTCS, and scoring equipment and the ground support equipment located at the Range Support Facility (Bldg 1801) at Tyndall AFB, FL.

(3) Assess the adequacy of the operational and maintenance (O&M) procedures for potential USAFADWC full-scale contractor O&M of the ground and airborne LVSS components.

(4) Identify deficiencies and safety hazards.

(5) Assess the adequacy of the ground station to process and display missile scores and missile trajectory data.

(6) Assess the mission reliability.

(7) Assess the low altitude characteristics of the LVSS.

(8) Assess the characteristics of the LVSS in a formation flying environment.

(9) Demonstrate the reliability of the airborne and ground LVSS components.

b. Test Purpose: The purpose of this LVSS feasibility test is to evaluate the performance and compatibility of the LVSS installed in a QF-100D aircraft. The desired end result is a functional LVSS capable of performing under realistic operating conditions of low altitude, electronic countermeasures, and formation flying.

c. Scope: Ground tests will be performed at Eglin AFB, FL. These will consist of firing HVARS past a ground mounted LVSS sensor. Flight tests will be accomplished at the 325 FWW, Tyndall AFB, FL, and will be using dedicated QF-100D test sorties and piggybacked in WSEP's COMBAT PIKE. Two-to-five manned sorties will be required to allow for functional check flights and readiness verification prior to missile firings. AIM-7E missile firings are planned, whereby two successful scores are obtained, to occur on WSEP COMBAT PIKE piggyback missions. AD/YMA will perform project management responsibilities and 325 FWW/TE will provide scheduling support and technical expertise as required. Ground tests are scheduled to begin in Mar 83 and flight tests will occur Mar through Oct 83. Encryption capability is not expected to be available until late FY 84.

4. FEASIBILITY TEST PLAN: The 3246 TW will prepare the feasibility test plan and final report.

5. RESPONSIBILITIES:

a. HQ TAC will: appoint a project officer (Maj Norm Schoening, DRAA, AV 432-5914) who will accomplish responsibilities IAW TACR 55-10.

b. ADTAC/DR will:

(1) Appoint a project monitor (LtCol John Carpenter, DRT, AV 432-6214) who will accomplish responsibilities IAW TACR 55-10.

(2) Coordinate on the project order and provide comments to HQ TAC/DR.

c. 325 FWW/TE will:

(1) Appoint a project officer (1st Lt Louis Szabo, TEO, AV 970-4661) who will accomplish duties IAW TACR 55-10, as supplemented.

(2) Manage 475 TESTS activity.

(3) Transmit messages indicating the start and conclusion of physical flight testing to HQ TAC/DRPM/DRAA and ADTAC/DRT.

(4) Provide QF-100D aircraft and Range Support Facility resources as required.

d. 475 TESTS will:

(1) Appoint a project manager (2d Lt Christopher Brechin, TEOT, AV 970-3201) to perform duties IAW TACR 55-10, as supplemented.

(2) Coordinate and provide technical expertise to include assistance in determining miss distance assessment approach and radar-time-space-position information.

(3) Provide scheduling assistance.

(4) Provide membership to LVSS Test Plan Working Group (TPWG) meetings.

(5) Assist in preparing, revising, and updating test plans.

(6) Provide inputs to the final report.

(7) Participate in the assessment and evaluation of all test objectives listed in this project order.

(8) Compile and store test objective data.

(9) Chair a system safety review prior to flight testing.

(10) Be fully responsible for overall system safety during the flight tests.

(11) Coordinate with 82 TATS/TTF on COMBAT PIKE low probability-of-kill missions.

e. 82 TATS will:

(1) Appoint a project officer (Capt Mike Wilson, TTF, AV 970-2989) to serve as a liaison officer between test team members and the QF-100 full-scale O&M contractor.

(2) Coordinate and provide technical expertise for the modification of the QF-100D aircraft and to assist in the accomplishment of test objectives, as required. Coordinate, IAW the QF-100D O&M Memorandum of Agreement, on all test planning and QF-100D/LVSS system design and integration.

(3) Coordinate all QF-100D mission profiles for dedicated and COMBAT PIKE piggyback sorties.

f. AD/YMA has agreed to and will:

(1) Appoint project officers to provide program management responsibility for the feasibility ground and flight tests.

(a) AD/YMTT: LtCol Michael J. Lipcsey, project manager, AV 872-4247.

(b) AD/YMAM: Mr. Tom Julian, Program Manager, AV 872-3418.

(c) AD/YMAE, 2d Lt Paul Dolson, Test Engineer, AV 872-3408.

(d) AD/YMAL, Anita Rowe, Logistics Specialist, AV 872-2300.

(2) Chair TPWG meetings.

(3) Program and budget funds for the test program's direct costs.

(4) Provide liaison duties between the test team members and the contractor at contractor facilities and government test locations.

(5) Provide a procedure for material deficiency reporting.

(6) Provide membership to the system safety review board, chaired by 475 TESTS, prior to flight testing.

(7) Prepare and seek approval for a modification package to install the LVSS in a QF-100D aircraft.

g. 3246 Test Wing has agreed to and will:

(1) Appoint project officers to perform duties as the responsible test organization (RTO):

(a) TZPM, Mr. Dave Litwack, Test Programmer, AV 872-4257.

(b) TZGA, 2d Lt Tom Stromback, Test Engineer, AV 872-5641.

(2) Provide membership to TPWG meetings.

(3) Coordinate and provide test assets.

(4) Provide budget estimates for test conduct and support.

(5) Prepare the test plans and final reports for ground and flight tests.

(6) Coordinate the test plan and final report for flight tests with 325 FWW/TE, 82 TATS/TTF, and 475 TESTS/TEOT.

(7) Provide membership to the system safety review board, chaired by 475 TESTS, prior to flight testing.

(8) Prepare and seek approval for a modification package to accomplish the necessary missile modifications.

h. Det 2/AFTEC will: Monitor the test project IAW AFM 55-43 and coordinate with AFTEC, Kirtland AFB, NM.

i. USAFTAWC has agreed to and will:

(1) Appoint a project officer: 4484 FWS/TG, Maj Dave Gillespie, AV 872-8575.

(2) Provide membership to TPWG meetings.

(3) Provide WSEP focal point for flight test missile firing requirements.

(4) Allow TAC resources to be used for flight tests if firing profiles are compatible with WSEP objectives.

(5) Provide membership to the system safety review board.

6. TARGET DATES:

a. Test Plan: Mar 83.

b. Ground Tests: Mar 83.

c. Flight Tests: Mar-Oct 83.

d. Final Report: Dec 83.

7. TEST REPORTS: A test plan and final report is not required. An end-of-test message will be transmitted. 475 TESTS will assist in the preparation of the feasibility test plan and end-of-test message.

8. PRIORITY:

a. USAF Precedence Rating: 2-7.

b. Force Activity Designator: II.

c. TAC Priority: 4.

9. AUTHORITY: PMD #R-P8051(3)/64211F, 3 Sep 80.

10. RESOURCES:

a. Aircraft (325 FWW/TE):

Type	Sorties
QF-100D	Five (5) manned (dedicated)/two (2) (approximate) nullo for missile firings.

b. AD/YMA will prepare and seek approval for a modification package to install an LVSS in a QF-100D. The 3246 TW will prepare and

seek approval for necessary AIM-7E missile modifications. Shooter aircraft will be F-4's from COMBAT PIKE deployed units.

c. Prototype LVSS units to be procured by AD/YMA.

d. Missiles:

Type	Number	Source
AIM-7E	2 to 4	WSEP-COMBAT PIKE

e. Funding: The Air Force will fund the Air Force contract, contractor test support, Air Force supporting agencies, and Air Force ground and flight tests. The LVSS statement of capability has been given by the 3246 Test Wing:

Test	FY 82	FY 83	TOTAL
Test Management	3.5K	6.2K	9.7K
Range Support		61.8K	61.8K
Engineering Support	15.0K	4.5K	19.5K
Photographic Support		2.3K	2.3K
TOTAL	18.5K	74.8K	93.3K

11. SAFETY: A detailed system safety review will be conducted prior to active testing and will become part of the permanent project file. Accident/incident reports will be submitted IAW AFR 127-4, as supplemented. The 475 TESTS will exercise overall system safety responsibility and at no time will personnel and/or equipment safety be compromised. If a potential hazard develops, all testing will cease until the problem is identified and corrected. Aircraft flight envelope restrictions will be established by the program manager.

12. INFORMATION: All news releases from Tyndall AFB, FL to the general public will be coordinated through the 475 TESTS project manager, 82 TATS/TTF, and the USAFADWC Public Affairs Office. Any release will only reflect the purpose of the test and will not state nor imply endorsement of the test hardware.

13. SECURITY: The test is not classified. The test team must ensure that no classified weapon scoring data will be produced. Any classified weapon scoring data generated from the AIM-7E doppler guidance system during dedicated QF-100 nullo sorties will be destroyed or classified by the 475 TESTS data analysis section IAW the appropriate classification guide. DOD 5200.1-R/AFR 205-1, as supplemented by HQ TAC, will be complied with.

14. ENVIRONMENTAL IMPACT: The conduct of this evaluation will not have adverse effects on the environment since no events are planned which differ from normal missions conducted at the 325 FWW. AFR 19-1, as supplemented, will be complied with.

15. STATEMENT OF INVESTIGATION: The specific objectives of this project do not duplicate previous or current projects accomplished and documented by this or other government agencies.

16. DISTRIBUTION: See attached list.

FOR THE COMMANDER

THOMAS L. CRAIG
Brigadier General, USAF
DCS, Requirements

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