ACC PROJECT 01-139A

AIR COMBAT COMMAND

Air Warfare Center

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RQ-1 Predator

Operational Test and Evaluation (OT&E)

TEST SUPPORT PLAN

October 2000

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Abbreviations and Acronyms

ABCCC	Airborne command and control center
AFOTEC	Air Force Operational Test and Evaluation Center
AOC	air operations center
ATO	Air Tasking Order
BDA	bomb damage assessment
CSAR	combat search and rescue
FAC	forward air controller
GCS	ground control station
MAE UAV	medium altitude endurance unmanned air vehicle
MTT	Mobile Target Tracking
OOTW	Operations Other Than War
OT&E	Operational Test and Evaluation
PO	Project Order
RSTA	Reconnaissance, Surveillance, and Target Acquisition
SS	Strike Support
TACP	tactical air control party
TOSS	television ordnance scoring system
TRP	Test Resource Plan
UHF	Ultrahigh frequency
WP	white phosphorous

Section 1 General

1.1. **Scope:** This document provides the information necessary to support lead-in sorties for the Air Force Operational Test and Evaluation Center (AFOTEC), Operational Test and Evaluation (OT&E) for the medium altitude endurance unmanned air vehicle (MAE UAV) Predator on 16-18 October 2000.

1.2. **Overview:** The lead-in missions are divided into three parts, CSAR, strike support and artillery spotter. They will require two predator sorties and eight A-10/F-16 sorties, flown on two consecutive days.

1.3. **Mission Objectives** (From AFOTEC OT&E Test Plan TP – 00-001 dated June 2000):

1.3.1 To determine whether Predator can function as an airborne forward air controller (FAC) and "talk" the fighter onto a target and then give corrections on the bomb drops.

1.3.2 To determine whether Predator can locate and monitor a downed aircrew member during combat search and rescue (CSAR) and what level of cueing is required to accomplish this task.

1.3.3 To determine whether Predator can operate as an artillery observer by "talking" mortar rounds onto a target.

1.4. **Mission Matrix.**

Sorties	Date	Aircraft	Mission	Ordnance (each AC)	Airspace	Target
1		RQ-1	ISR	None		
2-3	16 Oct	F-16	AI	6 x Mk82	R4806	Range 62 or 64
4-5	16 Oct	A-10	AI	6 x Mk82, Guns	R4806	Range 62 or 64
--	16 Oct	Mortar	Simulate Artillery	20 x Mortar 3 White Phosphorous	R4806	Range 63
6	17 Oct	RQ-1	AI		R4806	Range 62 or 64
7-8	17 Oct	F-16	AI	6 x Mk82	R4806	Range 62 or 64
9-10	17 Oct	A-10	AI/ Sandy	6 x Mk82, Guns	R4806	Range 65
	18 Oct		Backup			

1.5. **Munitions Allocation:** AFOTEC will supply 57 LG with a munitions allocation IAW the Test Resource Plan (TRP) /ST 699003 dated 12 July 2000.

Section 2 Mission Procedures

2.1. **Call Signs:**

A-10 — *Boar*
F-16--*Viper*
Predator GCS--*Remote*
ABCCC (AOC)--*Bookshelf*

2.2. **Communication Frequencies:**

2.2.1 **ABCCC**: 361.6 MHz UHF (Fatness 63)

2.2.2 **AOC-GCS**: 15 RS discrete or Telephone.

2.2.3 **Strike Common**: Tactical UHF range frequency IAW Nellis "In flight Guide"

2.2.4 **Fighter Interplane**: 422 TES discrete

2.2.5 **Predator**: Communicate with the fighters using the ARC-210 radio aboard the air vehicle. If the ARC-210 is not useable, the Predator may use the GCS radio but inform the AFOTEC test director in the AOC of the change.

2.3. **Altitude blocks:**

	MSL
Predator	15-25K
Fighters Day 1	SFC –14K
Fighters Day 2	26-30K

2.4. **Participants.**

2.4.1 **Air operations center (AOC)**: Located at Nellis, the AOC will control Predator's mission; and will receive and analyze ISR data as it is collected.

2.4.2 **Airborne command and control center (ABCCC)**: Battle management trained personnel (AFOTEC) will man the AOC. Co-located with the AOC, the simulated ABCCC will serve the command and control function and assign fighters to the target area.

2.4.3 **Predator**: Predator will be assigned to a search area by the air tasking order (ATO) for each day's mission. The search area will be a target complex within R-4806 (Alamo 60's). A FAC-A qualified pilot, positioned in the GCS, will assist the Predator crew.

2.4.4 **Strike aircraft**: Two flights of two A-10 and F-16 will be assigned to a kill box at one to two hour intervals. The kill box will be a scheduled 60 series range.

2.5. **Scheduling.** The 15 RS will schedule airspace (Alamo 60s) and bombable ranges (range 62 or 64) for the lead in sorties. If possible, the targets chosen will be television ordnance scoring system (TOSS) capable. The Silver Flag will schedule the appropriate range for the Mortar exercise.

2.6. **Strike Scenario.** The ATO will assign Predator to a search area and the fighters to a kill box. Those areas will be ranges within R4806. Predator will locate targets in the search area and transmit the

imagery to the AOC. The AOC will prioritize targets and pass them to the ABCCC to direct fighters to the kill box. Assisted by the FAC-A in the GCS, Predator will control fighters in the kill box and clear aircraft to strike targets. Between runs, Predator will assess the target damage and miss azimuth/distance and pass corrections to the fighters and AOC. Because specific tactics have not been established for Predator in the scenarios, threats will not be considered.

2.6.1 **Strike Day 1:** Fighters will fly a low altitude profile below the Predator orbit. This will allow the Predator to observe the strike from the optimal vantage point.

2.6.2 **Strike Day 2**: Fighters will fly medium to high altitude profile above the Predator orbit. This will complicate the Predator solution by restricting the observation vantage.

2.7. **CSAR Scenario.** After the Strike portion of the Predator sortie is complete, a simulated downed aircrew will be inserted into the search area. The AOC will give Predator a general location of the aircrew.

2.7.1 **CSAR day 1**. The survivor will use various signaling devices normally available to a downed crewmember to cue Predator.

2.7.2 **CSAR day 2**. The AOC will re-task Predator and the A-10 to the search area to locate the evader. Whichever aircraft locates the evader, will talk the other to the evader's location. Once both aircraft locate the evader, the Sandy will depart the scene and predator will continue to monitor for hostile activity until a rescue is made (simulated).

2.8. **Artillery Support Scenario.** A mortar crew from the 99th Ground Combat Training Flight (Silver Flag) will simulate an artillery position on Range 63 and Predator will function as the artillery spotter. A TACP, collocated with the mortar crew, will relay communications between Predator and the Mortar crew. Predator will be given the target and artillery position. After identifying the target, Predator, with assistance from a trained artillery spotter (Silver Flag) in the GCS, will call artillery onto the target providing miss azimuth and distance to the mortar crew through the TACP. Predator will provide BDA to the AOC after the strike.

2.9. **Instrumentation Requirements:** Predator imagery of the strikes will be recorded at the GCS and the AOC. Both Pilot/Sensor Operator (PSO) stations will record the respective heads-up- display.

2.10. **Predator deconfliction.** Except during weapon deliveries above the predator altitude, manned aircraft will not fly within 500 feet of the Predator altitude. If required to transit the Predator altitude within the same range, the manned aircraft will acquire Predator visually OR contact Nellis control for safe separation.

2.10.1 When operating above the fighter run-in altitude, Predator will maneuver for optimal coverage of the target area maintaining assigned altitude block. Manned aircraft will not transit Predator altitude.

2.10.2 When the fighters must transit Predator altitude from a high level release profile, Predator will deconflict from aircraft and weapon flight path geographically. If possible, Predator will locate, and transmit to the fighters, a visually significant deconfliction reference. E.g. "Predator will remain north of the dry lake bed". The fighter will adjust the attack routing accordingly. If there are no visually significant features near the required predator orbit, Predator will orbit no closer than a one NM (ground range) parallel to the fighters' attack axis (Figure 1).

2.10.3 Before clearing the fighters onto the target, Predator will pass its orbit location relative to the target (distance/bearing), and fighter lead will confirm its attack axis over strike common. The fighters will egress to the direction opposite the predator orbit and immediately resume briefed altitude. In all cases, the fighters will visually clear the weapon flight path prior to release.

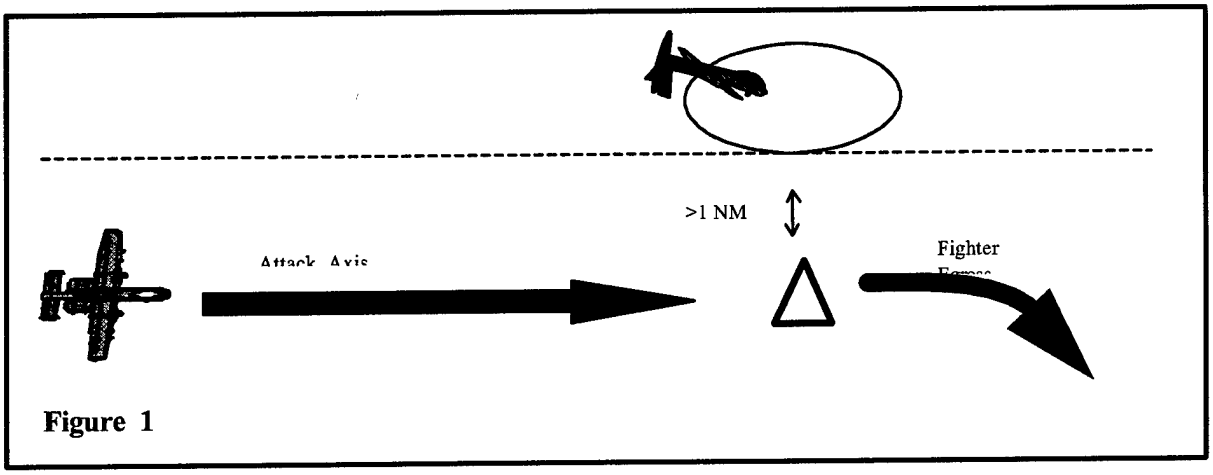

Figure 1

2.11. **Bombing Procedures:** In accordance with AFI 13-212, Vol2/NAFB 1.

2.12. **Target Identification**. The AOC, GCS and fighters will have target coordinates, descriptions and diagrams of the scheduled range areas available during the mission. AOC or the GCS personnel must identify the target Predator is observing before assigning the target. Fighter flight lead will confirm the target is bombable with live ordnance before release.

2.13. **Predator Procedures**. After arriving on station, Predator will search the assigned area to locate and identify bombable targets passing imagery to the AOC. The AOC will choose bombable targets from AFI 13-212, Vol2/NAFB 1 and pass a nine-line target description through *Bookshelf* to task the fighters. Predator, with the assistance of a FAC-A trained pilot in the GCS, will coordinate the strike axis and deconfliction on strike common frequency. Before clearing the fighters to strike, Predator will assume an orbit for optimal sensor coverage IAW the de-confliction criteria above and confirm the fighter attack axis. Once established on station, the Predator will pass its altitude and position before clearing the fighters to strike. Between target runs, Predator will accomplish BDA and make applicable corrections to the fighters over strike common frequency. Predator will initially monitor the target from 30,000-foot slant range and move closer as required to provide optimal coverage.

2.14. **Strike Aircraft Procedures**. Fighters will enter the range IAW AFI 13-212, Vol2/NAFB 1 procedures and marshal in R-4806 IAW the ATO. The ABCCC will assign a kill box (Range 62 or 64); pass a nine-line description of the target and hand off control to the Predator FAC. Predator will talk the pilot onto the identified target. Once the fighter locates the target, flight lead will check in with Fatness/Blackjack for clearance to release and confirm the target is cleared for live ordnance. The fighters will pass Predator the attack axis for both aircraft over strike common frequency to allow Predator to de-conflict. Predator will clear the fighters for each run on the assigned target. Fighters will not transit Predator altitude during the bomb run approach or egress and will visually clear the bomb path to the target when Predator is below the release altitude. Between releases, the fighters will orbit as directed until cleared.

2.15. **CSAR Procedures.** The downed aircrew will use various means to cue Predator to his position. Predator will observe each of the following cues:

- No Cueing. The evader will attempt to hide himself and his equipment to avoid aerial detection

- Survival Radio: The evader will attempt to direct the Predator to his location via the PRC- 90/HOOK-112 survival radio.

- Survival Mirror: The evader will attempt to cue Predator using the survival mirror.

- Smoke: As the Predator approaches, the survivor will pop the day light end of the flare.

- Ground signals: The evader will make ground signals using the colored panels of a parachute canopy.

2.15.1 **CSAR day 1.** The survivor will use various signaling devices normally available to a downed crewmember to cue Predator.

2.15.2 **CSAR day 2.** The AOC will re-task Predator and the A-10 to the search area to locate the evader. Whichever aircraft locates the evader, will talk the other to the evader's location. Once both aircraft locate the evader, the Sandy will depart the scene and predator will continue to monitor for hostile activity until a rescue is made (simulated).

2.16. **Artillery Support Procedures.** Predator will enter Range 63 and receive mortar position and target coordinates/description from the AOC. Predator will locate the target and confirm through the AOC. Predator will operate above 10,000 MSL and to the side of the target-gun line. The artillery spotter will call for a signal round of white phosphorous (WP) through the TACP co-located at the mortar position. After impact the Predator will make corrections to the gun crew using cardinal directions or UTM coordinates. The first three rounds will be WP. After walking the round to the target, Predator will direct the gun crew to fire 5 rounds at will, making corrections between volleys. Predator will monitor the impacts and provide BDA to the AOC. Predator will initially monitor the target from 30,000-foot slant range and move closer as required to provide optimal coverage.

2.17. **Emergency Procedures.** In the event of an aircraft mishap, follow the procedures directed by, AFI 91-204, Safety Investigation and Reports. For lesser emergencies, aircrew will follow guidance in the Nellis AFB In Flight Guide and AFI 13-212 volumes 1 and 2/Nellis sup 1.

2.18. **Predator Lost Link Procedures.** If Predator goes lost link, the GCS will immediately notify ABCCC to relay a KNOCK IT OFF to participating aircraft. Depending on the fighter profile (high or low) the fighter will climb or descend to maintain at least 1000-foot altitude separation from Predator' s briefed lost link altitude. Aircraft will remain on range maintaining altitude separation from the Predator's planned lost link profile, until reaching BINGO fuel. If the GCS is able the re-acquire link, the mission will continue as planned.