

Tactical Scenario PA1
(Scenario IOS file name: APR39WarmUp)

Mission: Provide crawl to walk stage ASE training that utilizes newly installed SAF and ASE capabilities of the 2B31 simulator.

Scenario: Four threat weapons platoons are placed on familiar terrain west of MUI to allow aviators to operate ASE and observe APR-39 display with minimal attention to navigation and flight management. As proficiency is gained, the scenario can also support terrain flight tasks training in proximity to threat weapons.

For aviators with low proficiency using ASE, it is useful to conduct an introductory flight as follows:

- At the crawl stage, IO should:
 - Set the SAF Supplies Editor to *Infinite Vehicle Supply—ON* for all threat weapons. This will allow unlimited repetitions of weapons engagements against the ownship so that the ASE action can be observed repeatedly without interruptions caused by threat ammunition depletion.
 - Select simulator Kill Override ON to prevent training interruptions due to weapons hits.
- Complete before takeoff checks to include loading of 30 flares in the M-130 dispenser and test and configuration of ASE.
- Depart MUI southeast bound and climb to 1000' agl. Turn west and follow I-81 at 70—90 kts.
- Engage HEADING SELECT and BARO ALT hold to allow crew to devote attention to the ASE and visual system display of threat weapons.
- As each threat weapons location is approached, observe APR-39 indications (if any) and action of AN/ALQ-56 in triggering M-130 flare dispenser.

Scenario Initialization: Initialize the simulator in the **FT INDIANTOWN GAP PA** database, **IC #1—INDIANTOWN, GND, ON**. Load SAF scenario **APR39WarmUp**. In the SAF scenario all units have been given the mission **HALT**. Rules of engagement have been set to **WEAPONS FREE**. The **HALT** mission is **ON ORDER** and may be activated (**AUTHORIZE ALL**) if desired. However, the threat weapons will engage the ownship even if the **ON ORDER** missions are not authorized.

Aircraft: CH-47D w/T-55-GA-714A engines
 AN/APR-39(V)1 Radar Detecting Set
 M-130 Flare Dispenser
 AN/ALQ-156 Countermeasures Set

Threat Weapons Data:

Threat Weapon	Weapon Range	Acquisition/Track /Warhead Seeker	MGRS Grid	Location
ZSU 23-4 Platoon	Max 25000m	Radar	UK6442 7505	SW corner of Memorial Lake
SA-9 Gaskin Platoon	.6m—8000m	IR seeker	UK5447 6909	I-81 abeam Manada Gap SW of Penn National race track
SA-13 Gopher Platoon	7000m	Range-only radar and cooled dual frequency IR seeker	UK4816 6582	Linglestown
2S6 Tunguska Platoon	SA-19 Grissom missile min. 2500m--max 12,000	Direct-view optics and Hot Shot target tracking and acquisition radars. IR missile seeker.	UK3613 6392	West shore of Susquehanna River, south of I-81 bridge
	30mm quad gun; 4000m	Radar		

Notes:

1. Observe that the SA-13 system range-only radar is reported by the APR-39 as “radar searching” regardless of range. The ownship can be well within engagement range and the crew will have no warning of imminent engagement.
2. The simulator M-130 flare dispenser is programmed to release only a single flare each time it is triggered by the crew or AN/ALQ-156.

CH-47 Operator's Manual Excerpts

Radar Signal Detecting, AN/APR-39(V)1.

CAUTION

To prevent damage to the antenna detectors (when operating) never operate the AN/APR-39A(V)1 within 60 yards of ground based radars or within six yards of airborne radar antennas. Operating the system closer than these limits may damage the antenna detectors. Allow an extra margin for new, unusual, or high-powered radar transmitters.

CAUTION

Excessive indicator display brightness may damage the CRT. Set indicator BRIL control for readable display.

Starting.

(1) PWR switch — ON. Allow 1 minute for warm-up— Check for synthetic voice message “APR-39 POWER UP”.

(2) BRIL control — adjust display of (+) symbol

(3) MODE switch — Select MODE 1 (up) for normal messages. Select MODE 2 (down) for terse (abbreviated) messages.

b. *Self-test check.*

NOTE

SYSTEM SELF-TEST provides a four step test of system functions. A complete system self-test is initiated any time the test button is pressed. The complete system self test runs in less than 30 seconds. The following is a description of the system functions.

(1) TEST - As follows:

(a) MODE switch — Set position 1 (up)

(b) TEST switch — Press.

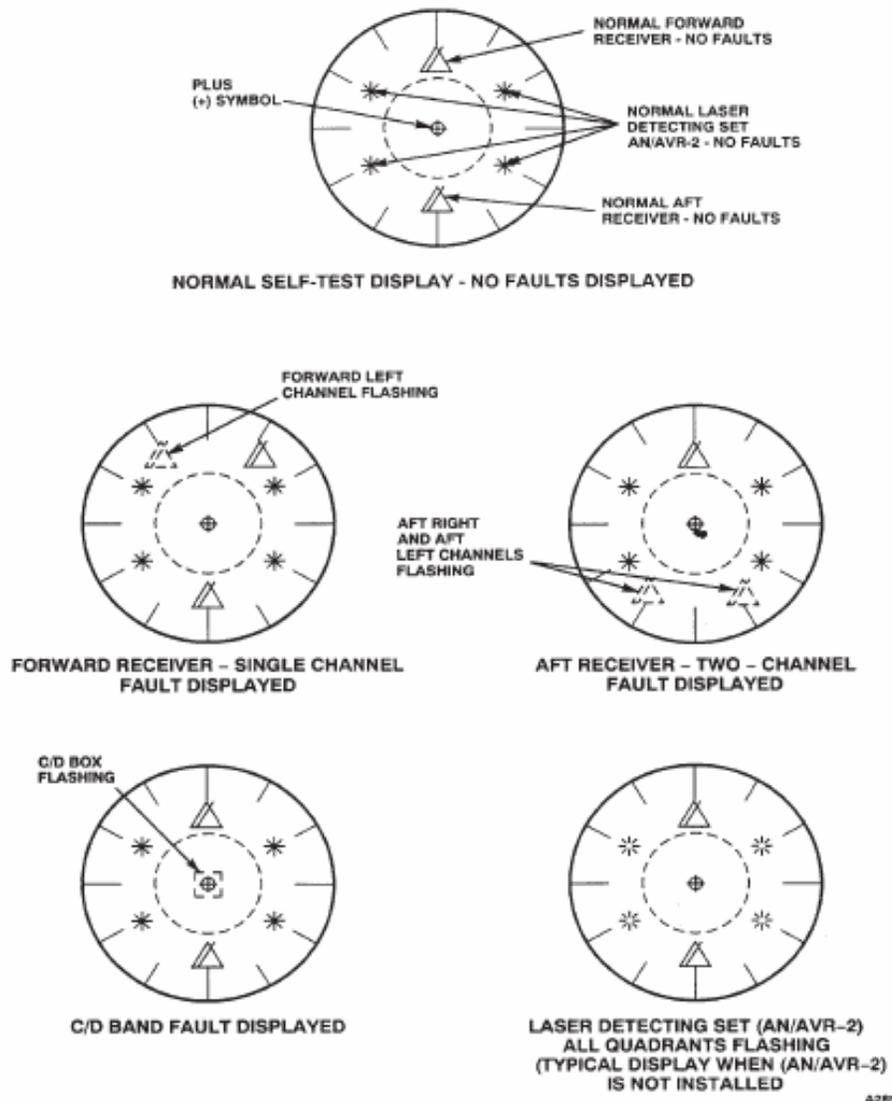
A synthetic voice long count is performed. The audio message “SELF-TEST, SET VOLUME 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12” will be heard on the ICS.

A display of two numbers which represent the installed software revision on the indicator; one number (OFP-Operational Flight Program) at the top and one number (EID-Emitter Identification Data) at the bottom. Check OFP and EID numbers are correct for theater or mission. Performs the Receiver and AN/AVR-2 status display. See figure 4-1-4 for normal indicator displays, and faulty indicator displays. Performs a test on the synthetic voice status messages. A no fault detected during test will end with message "APR-39 OPERATIONAL" any fault detected will end with message "APR-39 FAILURE", which will be heard over the ICS. Performs the plus (+) symbol display status. The plus (+) symbol will be displayed, centered within the small circle on the indicator, anytime the symbol is operational.

(c) MODE switch — MODE 2 (down),

(d) TEST switch — Press.

Performs the synthetic voice short count. Listen to synthetic voice message and adjust volume. Mode 2 short count is: "SELF-TEST SET VOLUME 5, 4, 3, 2, 1".



(2) The following fault display conditions are on the result of a bad self test and will result in an audio message "APR-39 FAILURE" over the ICS.

(a) If a receiver fault is noted, faulty receiver is shown as two triangles, (fig. 4-1-4) representing right and left video channel (s) will be flashing.

(b) A faulty C/D band amplifier in a processor is shown as a flashing square centered on indicator display (fig. 4-1-4).

(c) The Laser Detecting Set (LDS)N AVR-2) status is displayed along with the receiver status. A faulty LDS quadrant is shown as a flashing asterisk. LDS faults do not cause an audio message "APR-39 FAILURE", heard over the ICS.

(d) If LDS is not installed, all four quadrants (asterisks) will flash.

(3) Operating In A Dense Signal Environment.

(a) When a dense signal environment is detected, the plus (+) symbol on the Radar Signal Detecting Set (RSDS) indicator will flash, and the voice message "THREAT DETECTION DEGRADED" will be announced over the ICS.

(b) Position mode switch to mode 2 (terse mode). When the plus(+) symbol stops flashing, the voice message "THREAT DETECTION RESTORED" will be announced over the ICS.

Countermeasure Set (AN/ALQ-156)

WARNING

An accidental flare launch can occur when Flare Dispenser System is armed (control switch at ARM) and the Countermeasure Set is operating (CM caution and indicating lights off). A flare launch will also occur is the FLARE TEST switch on the countermeasures control panel is operated. Arm these systems only in cases where a launched flare will not cause injury or property damage.

WARNING

During operation, the AN/ALQ-156 antennas radiate radio-frequency energy. This

energy may cause burns to personnel near the antennas. Be sure ground personnel are at least 6 feet from the antennas when the control switch is at ON.

WARNING

The system requires a 10-minute warm-up prior to operation. To ensure automatic system operation when required, be sure the set is operational and all caution and indicator lights are out prior to entering hostile areas.

WARNING

If countermeasures set has been off for less than 5 minutes and further operation is required, the warm-up indicator light may go out immediately (or within some interval less than the normal 10 minute warmup period) after the power switch is set to on. If this occurs, it is mandatory that the system be operated in STBY for at least 1 minute. Failure to observe this requirement can result in a false alarm (launch) and/or transmitting frequency instability resulting in interference with other countermeasures sets.

Starting.

(1) MSL DET SYS circuit breakers on No. 2 PDP — Check in.

(2) POWER control switch – ON

(3) Warm-up light – ON, allow 10 minutes for warm-up. At the end of warm-up period, the warm-up light will be shut off.

b. ECM operation.

(1) Status switch — Push for standby operation or release to commence automatic protection.

(2) CM JAM caution light — Check OUT.

(3) CM INOP caution light — Check OUT. If caution light is on, the set has malfunctioned and the helicopter is without countermeasure protection.

(4) STATUS switch – Push for standby operation when countermeasures protection temporarily is not required and/or accidental flare launch is a danger (LZ/PZ operations).

(5) POWER switch – OFF when countermeasures protection is no longer required (EOM).

M-130 Flare Dispenser

In-Flight Operation.

1. After liftoff, LDG GR SW STATUS advisory light on remote test panel — Check on.
2. ARM/SAFE switch — ARM. Check ARM warning light on.
3. READY-TO-FIRE light on dispenser status panel — Check on.
4. ECM set — ON. Allow 10 minutes for warmup. The ECM set will monitor the area around the helicopter for missiles and automatically fire flares when missiles are detected.

NOTE

The flare dispenser can be safely observed from the cabin through the filtered glass window on the left side of the helicopter above the ramp at sta. 575.

5. If the ECM set is inoperative, proceed as follows:

NOTE

The crewmember observing a missile launch is responsible for firing the flares.

- a. Missile threat — Actuate the dispensing switch on the cyclic grip to fire flares or chaff or press one of the four firing switches in the cabin to fire flares. Fire a total of **three flares** or hold button down and timer will automatically space firing interval.

NOTE

The flare dispensers will fire one flare each time a button is pressed following the **2.5** second time delay or at **2.5** second intervals if the flare dispense button is held down. If the flare fails to ignite, a second flare will automatically fire within **75** milliseconds. If burning is still not detected, a third flare will be fired. If all three flares fail to ignite, automatic operation will stop until one of the fire switches is again pressed.

b. Announce over interphone that a missile launch was detected and flares have been fired.

c. If more than one missile launch is observed, continue firing flares at **3-second** intervals until the helicopter is clear of the threat.

4-1-15. Before Landing Check.

1. ARM-SAFE switch — Set to SAFE.
2. Indicator lights — Check that READY-TO-FIRE and ARM lights are out.

4-1-16. After Landing Check.

1. Check that the LDG GR SW Status light goes out.
2. Install the ground safety pin in the dispenser electric module.
3. Remove and stow the crew firing switches.

LANDING GEAR BYPASS STATUS PANEL

