



F/A-18 & EA-18G Program

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Automatic Wire Test Set (AWTS) Brief
Presented to: FST – FRCSW North Island

Date: 14 July 2026
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Agenda



1. AWTTS Overview
2. AWTTS TPS Development/ Release
3. F/A-18 Utilization
4. Maintenance Awareness Visits
5. PMI Implementation
6. Open Discussion: AWTTS Platform Integration
7. Point of Contacts



AWTS Overview



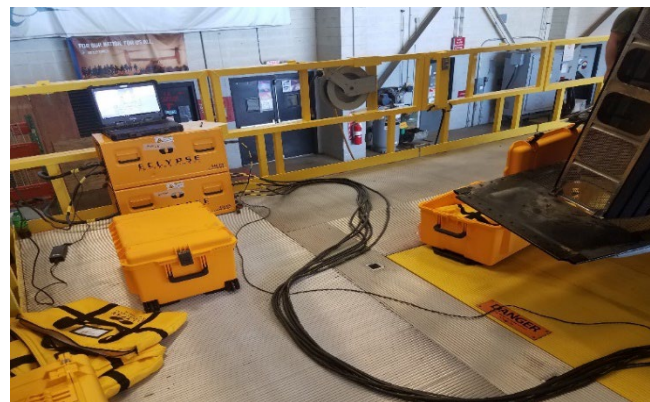
AWTS capabilities:

- Uses resistance measurements, capacitance measurements, and AC/DC voltage measurements to perform continuity, insulation and isolation testing.
- Insulation (megger) testing: **Our current TPSs do not require to test for insulation of aircraft wiring due to high voltage application and risk of inducing additional problems.**
- Passive Component Testing such as Capacitor, Inductor, Transformer Coupling, Coupling buses (1553 and MUX).
- Active Component Testing such as Relays, Lights, Power Contactors, etc..



AWTS Overview

- Eclipse Automatic Test Set
 - Test Control Unit (TCU)
 - Switch Module (SM)
 - Laptop Computer
 - Test Program Software
- Alignment Tools
- Power cable, serial cable for computer
- Probe Cable
- Test Adapter Cables (TACs)





AWTS TPS Development/Release



Batch #1

#	TPS Name
1	PDP No.1
2	PDP No.4
3	PDP No. 5
4	PDP No. 10
5	PDP No. 12
6	AC/DC Electrical Power Feeder System

Batch #2

#	TPS Name
7	Fire Protection & Detection System
8	Landing Gear System
9	ECS/Bleed-Air Leak Detection System
10	Flight Control System

Batch #3

#	TPS Name
11	Fuel System
12	Engine System
13	APG-73
14	APG-79





F/A-18 Utilization



- Used by O-Level and is checked out from I-Level for troubleshooting.
- NATEC is available to support and train maintainers on how to operate F/A-18 AWTs TPSs.
- Lakehurst Support Equipment is responsible for distributing the updated software to the fleet and updating the TPSs on NDDS.
- Personnel from AIMD/avionic shop is responsible for updating the distributed software to the AWTs CPU due to new AFC and configuration change.
- TPS instructions available in IETM for Test & Troubleshooting aircraft wiring.
- The TPIs are available on the NATEC website.
- The following sites have an AWTs and TPSs: Oceana, Lemoore, Whidbey, Iwakuni, Beaufort, Miramar, and Fort Worth.
- TBD for scheduled/conditional maintenance (800FH, PMI, SLM, Pre/Post Carrier).



F/A-18 Utilization





Maintenance Awareness Visits

- 2020 thru 2024, F/A-18 & EA-18G EPDS FST conducted **15** Grooming events on suspected **27** Bad Actor aircraft for GCUs.
 - Bad Actors were aircraft where failure data shows less than 50 FH of GCU MTBF.
 - Grooming events consisted of visual inspections of EWIS, utilization of AWTs to find wiring discrepancies on aircraft, and provide fleet maintainers AWTs OJT.
 - We also provided recommendations to correct the discrepancies (ex. recessed pin, corrosive wire, sticky contactors).

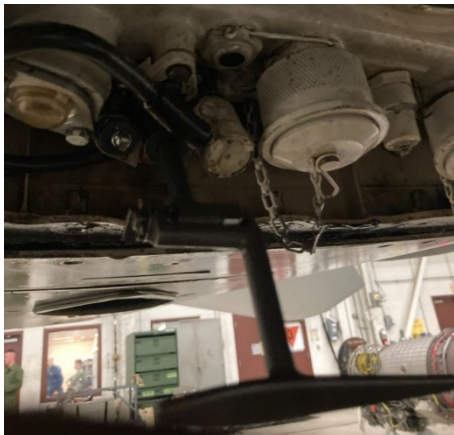
Discrepancy Category	Count	Percentage of Total	Common Examples
Relay & Contactor Failures	18	26.5%	Failed opening/closing time, stuck terminals, weak energization, corrosion.
Continuity Failures (Open Circuits)	13	19.1%	Open paths in flight control, fuel, and GCU reset circuits.
Isolation Failures (Short Circuits)	11	16.2%	Shorted wires and low resistance between pins.
Component & Resistance Failures	8	11.8%	Degraded resistors (RMAs), failed circuit breakers, high resistance paths.
Connector & Pin Defects	7	10.3%	Recessed, bent, or broken contacts and loose connectors.
Incorrect Wiring / Components	5	7.3%	Swapped phase wires, incorrect PDP PNs installed, post-mod wiring errors.
Switch Failures	4	5.9%	Stuck or degraded switches for AMAD, flaps, and fuel systems.
Shielding & Grounding Issues	2	2.9%	Broken or missing shield to backshells on connectors.
Total	68	100%	



Maint. Awareness Visits Cont.



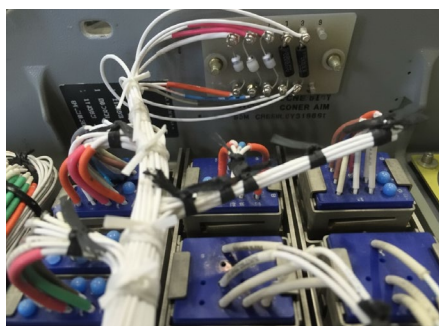
Degraded Left Engine Decoupled Position Switch



Right Main Line Power Contactor 1K-D008 Damaged



Mislabeled No.1 PDP



Failed Continuity Path of ECS Temperature/Flow Controller to

L Primary Bleed Air Pressure Regulating & Shutoff Valve





PMI Incorporation



- Proposed AWTs Integration: Actively evaluating the addition of AWTs testing to the final phase of the F/A-18 PMI cycle.
- Schedule Extension: Transitioning the PMI maintenance interval from a 6-year to a 4-year cycle.
- Designated Execution Sites:
 - Whidbey | Oceana | Lemoore | North Island | Iwakuni (Japan)
- Targeted Test Program Sets (TPS) for PMI:
 - AC/DC Electrical Wiring System
 - No. 1 Power Distribution
 - No. 5 Power Distribution
 - No. 10 Power Distribution
 - Landing Gear Wiring System
 - Fire Protection & Detection Wiring System



Open Discussion: AWTs Platform Integration



We'd like to hear from other teams about their experiences with AWTs.

Implementation Strategy

How did your team successfully integrate AWTs into your specific aircraft platform's maintenance cycle?

Hurdles & Lessons Learned

Were there any logistical, technical, or manpower challenges you faced during the rollout?



POCs



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Function of TPS (Backup)

1. Electrical System Wiring TPS Test

- Electrical Power Feeder Wiring
- Associated Components (Relay, Relay Module Assembly Current Transformer, Switches, Power Contactors, etc...)

2. Power Distribution Panel (PDP No. 1) TPS Test

- Circuit breakers, relays, diodes, resistors, wiring and connectors

3. Power Distribution Panel (PDP No. 4) TPS Test

- Circuit breakers, relays, diodes, resistors, wiring and connectors

4. Power Distribution Panel (PDP No. 5) TPS Test

- Circuit breakers, relays, diodes, resistors, wiring and connectors

5. Power Distribution Panel (PDP No. 10) TPS Test

- Relays, diodes, resistors, wiring and connectors

6. Power Distribution Panel (PDP No. 12) TPS Test

- Relays, diodes, resistors, wiring and connectors

7. ECS/Bleed Air Leak Detection (BALD) System Wiring TPS test

- BALD System Wiring
- Associated Components (RMAs, Sensor Elements, switches)

8. Fire Detection and Protection System (FDET) Wiring TPS test

- FDT System wiring
- Associated Components (RMA, fire element sensor, switches, etc...)



Function of TPS (Backup)

9. Flight Control System (FCS) Wiring TPS test

- Flight Control Wiring to L/R tails and L/R wings
- Associated Components (RMA, AOA probe, switches)

10. Landing Gear (LDG) System Wiring TPS Test

- Nose Landing Gear Wiring
- L/R Main Landing Gear Wiring
- Associated Components (RMAs and cockpit SW and LDG proximity SW, etc...)

11. Fuel System Wiring TPS test

- Aircraft Wirings to fuel tank sensor
- Associated Components (RMA, Ex Tank, refuel, vent tank, inter wing, probe extend, dump, switches, etc..)

12. Engine System Wiring TPS Test

- Aircraft Wiring to FADECs
- Associated Component (Switches, RMAs)

13. RADAR (APG-73) Wiring TPS test

- Aircraft Wiring to RADAR
- Associated Components RMAs, sensor controls stick and switches

14. RADAR (APG-79) System Wiring TPS test

- Aircraft Wiring to RADAR
- Associated Components RMAs, sensor controls stick and switches