

Test Project

*Module E Airframe Powerplant Component
Inspection Rectification*

Aircraft Maintenance

Independent Test Project Designer: Gregory Divet, Safran Helicopter Engines
Independent Test Project Validator: Christophe Broudin, Safran

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Introduction to Test Project

An aviation engine technician performs maintenance, replace worn, defective, or damaged engine parts. They also test engine components and systems to ensure that they are functioning correctly and use test equipment to diagnose and identify engine problems. All work is done by following technical manuals instructions. An aviation engine technician should have the ability to understand complex engine specifications and equipment, as well as possess strong mechanical skills.

Marking Scheme

MODULE E – AIRFRAME POWERPLANT COMPONENT INSPECTION RECTIFICATION
E1: "ENG CHIP" MESSAGE
E2: FUEL SYSTEM - FUEL FILTER PRE-BLOCKAGE PRESSURE SWITCH - TESTS (ELECTRICAL)
E3: BORESCOPIC INSPECTION OF THE HP TURBINE REAR ZONE
E4: Sustainability/Housekeeping
E5: Organization/Safety
E6: Maintenance Practices

Reference documentation:

ARRIUS 2F MAINTENANCE MANUAL No. X 319 L6 301 2

(https://tools.safran-helicopter-engines.com/pg/en/my_portal)

Instructions to the Competitor

NAME	(FIRST)	(LAST)
COUNTRY		
START TIME		
Objective	To test the Competitor's ability to interpret technical instructions, perform inspections, use special inspection equipment, diagnosing damages, replacing parts, and ensuring the safe and efficient operation of aircraft powerplant in accordance with the manuals and safety regulations.	
Time allotted	Total time: 3 hours 15mins There are three sub-tasks: Each sub-task is allocated 1hr 5mins.	
Process:		
1	Each contestant will receive the following: <ul style="list-style-type: none">• ARRIUS 2F engine.• ARRIUS 2F Maintenance Manual and Troubleshooting Manual• Manufacturer's Notes• Technical documentation	
2	Task E1: The pilot reported "ENG CHIP" message. You are to perform troubleshooting as per ARRIUS 2F MM, for "ENG CHIP" message. Report findings and "decision" in the task card.	
3	Task E2: As part of the ARRIUS 2F engine 600 hours periodical inspection, you are to perform FUEL FILTER PRE BLOCKAGE PRESSURE SWITCH TESTS (ELECTRICAL).	
4	Task E3: As part of the ARRIUS 2F engine 600 Hrs Periodical inspection, you are to perform BORESCOPIC INSPECTION OF THE HP TURBINE REAR ZONE.	
5	Restore engine after each sub-task and complete all required documentation.	

NOTES TO COMPETITORS – From Manufacturer

E1: “ENG CHIP”

1. Inspections of the front and rear electrical magnetic heads must be performed. Any particle found must be collected. You are allowed to re-use the O-ring (packing).

E2: FUEL FILTER PRE BLOCKAGE PRESSURE SWITCH TESTS (ELECTRICAL)

Prior to commencing the task, the engine/workshop will be pre-set with the following configuration:

1. Hydraulic pressure generator on the table:
 - (a) The thumb wheel (3) fully in.
 - (b) The vent (1) closed.
 - (c) The plug (2) is closed (Note: Error in figure, erroneously labelled as “12”).
 - (d) The oil reservoir contains sufficient oil quantity.
 - (e) The selector (5) in position “A”.
 - (f) The pressure sensor (7) is already in position on the hydraulic pressure generator.
 - (g) The outlet plug (6) is removed and the adaptation union already installed on the outlet.
2. Pocket manometer and its shielded connection harness (4) put away in their case.
3. Mutimeter (combined with insulation tester) with electrical probes and pins available on the table.
4. Harness tool available on the table.
5. The results of the tests must be recorded in the task cards.
6. During the functional test:
 - (a) Observe the methodology used by the Competitor: setting a progressive pressure increase and then a decrease, carefully recording the triggering values (pressure increasing and decreasing), and counter-checking the values with the criteria. What is important is the Competitor’s methodology.
 - (b) The actual results of the switch can have a certain variation range, depending on the atmospheric pressure, the temperature, the thoroughness of the air purge. Therefore, the same switch can sometimes be found “good”, “bad”, or “borderline”.
 - (c) When reinstalling the pre-blockage pressure switch on the engine, it is acceptable to keep the same o-rings that were used to install on the adaptation union.
7. REMOVE HYDRAULIC CONTROL KIT (73-31-00-750-801-A01 para 3F)
 - (a) Remove only the switch.
 - (b) Switch off multimeter and manometer.


E3: PERFORM A BORESCOPE INSPECTION OF HP GAS-GENERATOR TURBINE REAR ZONE AS PER SAFRAN 71-02-30-280-804

1. The starter and blank have been removed.

TASK CARD		ENGINE S/N	PAGE:
"ENG CHIP" message		Engine model	Reported by
		Date	
S/N	MAINTENANCE REQUIRED/DEFECT DESCRIPTION	RESOLUTION	RESOLVED BY/DATE
Certifies that the work specified except as otherwise specified was carried out in accordance with the requirement of the Air Navigation Act and in respect to that work the aircraft/engine/aircraft component is considered ready for release to service		Certified by (Signature & ACA) Date	

TASK CARD		ENGINE S/N	PAGE:	
600 hours inspection. FUEL FILTER PRE BLOCKAGE PRESSURE SWITCH TESTS		Engine model		Reported by
		Date		
S/N	MAINTENANCE REQUIRED / DEFECT DESCRIPTION	RESOLUTION		RESOLVED BY / DATE
Certifies that the work specified except as otherwise specified was carried out in accordance with the requirement of the Air Navigation Act and in respect to that work the aircraft/engine/aircraft component is considered ready for release to service		Certified by (Signature & ACA) Date		

TASK CARD		FROM TECHNICAL LOG		PAGE:
600 Hours inspection. BORESCOPIC INSPECTION OF THE HP TURBINE REAR ZONE		Aircraft Regn		Reported by
		Date		
S/N	MAINTENANCE REQUIRED/DEFECT DESCRIPTION	RESOLUTION	RESOLVED BY / DATE	
Certifies that the work specified except as otherwise specified was carried out in accordance with the requirement of the Air Navigation Act and in respect to that work the aircraft/engine/aircraft component is considered ready for rese to service		Certified by (Signature & ACA) Date		

		AIRCRAFT TECHNICAL LOG			REGISTRATION #	CAPTAIN	Samson	PAGE SEQUENCE
					F-WSC	SIGNATURE	Samson	123456
FLIGHT DETAILS	LEG	DATE	TIME UP (UTC)	TIME DOWN (UTC)	AIRTIME	FROM	TO	
	1	10/Sep/2024	13:00	14:00	01:00	STN 1	STN 2	
	2	10/Sep/2024	15:30	16:45	01:15	STN 2	STN 3	
TIME	TOTAL TIME B/F FLIGHT		12:00	TOTAL AIRTIME	02:15	TOTAL TIME	14:15	
DEFECT/ MAINT	"ENG CHIP" message						REPORTED BY	
							Capt Samson	
	WORK ORDER SUMMARY	if applicable					DATE: 10/Sep/2024	
RESOLUTION							RESOLVED BY	
							(signature & ACA)	
							DATE: dd/mmm/yyyy	
	P/N		DEFERRAL #		£ Function Check	Independent Check accomplished before Maintenance Release by	Certifies that the work specified except as otherwise specified was carried out in accordance with the requirement of the Air Navigation Act and in respect to that work the aircraft/engine/aircraft component is considered ready for release to service	
	S/N ON		MEL		£ Leak Check			
	S/N OFF		CAT	A / B / C / D / P	£ Independent Check	signature Date		(signature & ACA) date
BATCH #				£ Others				