



ATTACHMENT 4

AIRWORTHINESS GROUP FACTUAL REPORT

NTSB No. ERA21FA130

**N13AT Engine Inspection Checklist (undated)
(9 pages)**

M250-C20 SERIES OPERATION AND MAINTENANCE

PARA 1. (contd)

B. Scheduled Inspections

Scheduled inspections are made at periodic intervals in an effort to prevent engine malfunction and serve in the role of preventative maintenance for the engine. The component to be inspected, the nature of the inspection, and the elapsed time after which the inspection is to be performed are given in the Inspection Checksheet, Table 602. The inspection times are hours of engine operation.

Table 602
Scheduled Inspections

Inspection Checksheet

Owner CARIBBEAN BUZZ Helicopters Date _____

A/C Make/Model Bell 206 S/N 3267 Reg. No. N134T TSN _____

Engine S/N _____ TSN _____ TSO _____

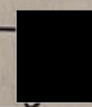
This inspection checksheet is to be used when performing scheduled inspections. This form can be locally reproduced and/or expanded to reflect the aircraft operating environment. Keep the completed sheets as a permanent part of the aircraft engine records. Detailed information regarding each inspection item is contained in the referenced Operation and Maintenance Manual paragraphs.

CAUTION: BEFORE UNDERTAKING ANY INSPECTION OR MAINTENANCE ACTION, CONSULT THE REFERENCED PARAGRAPHS OF THE OPERATION AND MAINTENANCE MANUAL. FAILURE TO FOLLOW THE RECOMMENDED INSTRUCTIONS IN THE MANUAL COULD RESULT IN EQUIPMENT DAMAGE OR DESTRUCTION, POSSIBLY RESULTING IN PERSONNEL DEATH OR INJURY.

Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>100 Hour Inspection</u>			
1	Inspect the entire engine for loose or missing bolts, broken or loose connections, security of mounting accessory and broken or missing lockwire. Check accessible areas for obvious damage and evidence of fuel or oil leakage.	N/A		
2	Inspect all "B" nuts for application and alignment of torque paint. If missing, loosen "B" nut, retighten, and apply torque paint.	PARA 9.B., 72-00-00, Engine-Servicing		
3	Check mounting and support bolts to be sure they are tight, lockwired and in good condition. Check security of screws and rivets. Remove all foreign material which might be drawn into the compressor inlet.	N/A		
4	Check accessible fuel system components, lines, and connections for security, damage or leakage. Accomplish with the boost pump on, if available. Remove, visually inspect and clean if visual condition dictates.	PARA 2., 73-00-00		

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Table 602 (cont)
Scheduled Inspections

Item	Inspection/Maintenance Action	REF PARA	✓	Initial
<u>100 Hour Inspection (cont)</u>				
5	Inspect P _c filter for proper clamping.	73-20-06		
6	Until CEB-A-1233 is complied with, inspect P _c filter assembly as follows: Without disassembly or removal of the P _c filter assembly from the mounting bracket, inspect using a 10x magnification glass and a bright light to detect any signs of cracks, paying particular attention to both of the end fittings at their junction with the end walls. If cracks are detected, remove assembly and comply with CEB-A-1233.	N/A		
7	Remove the Scroll-to-P _c Filter Tube Assembly at both ends and inspect for cracks using 10x power glass. Pay particular attention to the flared ends of the tube for cracks, and to the areas beneath the floating ferrules for fretting damage. Tubes found to contain cracks and/or excessive fretting damage are to be replaced by new parts of the same part number as removed.	N/A		
NOTE: Excessive fretting is present when the ferrule has chafed the tube sufficiently to wear a step in the tube that can be felt with a thumbnail or other inspection aid.				
8	With the Scroll-to-P _c Tube Assembly still removed and using a 10x power glass, inspect the elbow in the compressor scroll for distress/cracks/proper alignment. No cracks are permissible.	N/A		
9	Check fuel control and power turbine governor linkage for freedom of operation, full travel and proper rigging. Check security of linkage for loose or worn linkage and linkage bolts.	PARA 3.C., 73-20-02, 3.B., 73-20-03, 3.C., 73-20-04 and PARA 2.C., 73-20-01		
10	Inspect compressor inlet guide vanes and visible blades and vanes for foreign object damage.	N/A		
11	Clean compressor with chemical wash solution as required if operating in a smoggy area, conditions with airborne pollutants or with water alcohol.	PARA 6., 72-30-00		
12	Visually inspect the water-alcohol nozzles for build-up of contaminants which could restrict flow or alter the spray pattern. Ultrasonic clean nozzles if equipment is available.	N/A		
13	Clean the 200 mesh screen (if equipped with water-alcohol injection kit).	N/A		

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Table 602 (cont)
Scheduled Inspections

Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>100 Hour Inspection (cont)</u>			
14	Inspect the compressor scroll for cracks or breaks at the anti-ice air valve and customer bleed port. If cracks or breaks are detected, check engine for possible vibration causes.	PARA 1.D.(2), this section		
15	Inspect for discharge air tube inserts that are cocked or backing out of the scroll. If cocked or loose inserts are detected, check engine for possible vibration causes.	PARA 1 D. (2), this Section.		
16	Visually inspect compressor discharge tubes for cracks, damage, deterioration or corrosion using a bright light and mirror as necessary. The compressor discharge tubes do not have to be removed. Perform a Leak Tec check for an installed compressor discharge tubes and FPI removed tubes.	PARA 4.A., 72-40-00		
17	Check anti-ice valve for security, worn parts and proper operation. Valve need not be removed or disassembled unless a problem is detected.	PARA 4., 75-10-01		
18	Inspect compressor mount inserts, bolts and nuts for looseness, fretting or oil leakage. Replace or retighten as required. Check engine for possible vibration causes.	PARA 4.D., 72-60-00 and PARA 1.D.(2), this section		
19	Inspect the turbine support assemblies and engine exhaust ducts for condition of welded joints, for cracks and buckling. Check exhaust duct clamps for proper installation, condition and torque.	PARA 8.A., 72-50-00		
20	Wet spline starter-generator gearshafts, new production or those replaced in accordance with the Rolls-Royce Commercial Engine Bulletin M250-C20 CEB-1082, do not need periodic inspection and lubrication. Clean and inspect any other starter-generator gearshaft. Clean the female splines of the starter-generator gearshafts and the male splines of the starter-generator with mineral spirits and a soft brush. Inspect splines. Refer to Starter-generator Gearshaft Female Spline Inspection paragraph.	PARA 4.B., 72-60-00		
	Inspect the starter-generator brushes for wear in accordance with the Aircraft Manual at the same time the spline inspection is made.	N/A		
	Lubricate acceptable splines with grease, Aeroshell No. 22, or equivalent. Before reinstallation of the starter-generator, make sure torsional damper members of the starter-generator driveshaft are in hard contact with each other.	N/A		

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Table 602 (cont)
Scheduled Inspections

Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>100 Hour Inspection (cont)</u>			
21*	Drain the oil system and refill (See Figure 601). Oil changed at: 100 hours: _____ 200 hours: _____ 300 hours: _____ 600 hours: _____ The maximum oil change interval with a dry spline starter generator is 100 hours or 6 months, whichever occurs first. This limit can be extended if a wet spline starter generator is installed in accordance with the Rolls-Royce Commercial Engine Bulletin M250-C20 CEB-1082, and the following conditions are met. A. If an external scavenge oil filter system is installed the oil change interval can be increased to 200 hours or 6 months, whichever occurs first. B. With an approved HTS (Third Generation Oil), but no external scavenge oil filter system; the oil change interval can be increased to 300 hours or 12 months, whichever occurs first. C. With an approved HTS (Third Generation Oil), and an external scavenge oil filter system is installed, the oil change interval can be increased to 600 hours or 12 months, whichever occurs first. CAUTION: SOME OPERATORS EXPERIENCE AND/OR HARSH ENVIRONMENTS CAN DICTATE OIL CHANGES AT MORE FREQUENT INTERVALS. NOTE: External scavenge oil filter systems must have a valid STC (Supplemental Type Certificate).	PARA 11.C., 72-00-00, Engine Servicing		
21A	Remove, inspect, and clean the oil filter. Note any accumulation of metal chips, debris, or carbon particles. Conduct further inspection of the lube system and/or engine gear train/bearings if metal chips or debris are found. See Items 21, 21D, 38, 39, and 40 below if carbon particles are found.	PARA 1.C., 72-60-00		
	NOTE: Follow the Supplemental Type Certificate (STC) manufacturer's recommendations regarding the replacement/cleaning of the external oil filter elements. Inspect the removed elements for any accumulations of metal chips, debris, or carbon particles. It can prove helpful to cut apart disposable (paper) filter elements to facilitate this inspection. If chips, debris, or carbon particles are found, proceed with an additional inspection/maintenance as outlined in item 21A. above.			

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Table 602 (cont)
Scheduled Inspections

Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>100 Hour Inspection (cont)</u>			
21B*	Inspect and clean the turbine pressure oil check valve.	PARA 7.L., 72-50-00		
	NOTE: Check Valve P/N 23074872 and subsequent part numbers are not applicable to this inspection (these valves are considered "ON CONDITION").			
21C*	Turbine pressure oil tube screen assembly. Detach the clamp; then disconnect the power turbine pressure oil tube at the connector (tee). Loosen the tube coupling nut at the fireshield elbow only to allow sufficient movement of the tube to enable removal of the screen. At assembly, tighten the connector coupling nut to 200-250 lb in. (23-28 N·m). Tighten the fireshield elbow coupling nut to 80-120 lb in. (9-14 N·m). Tighten the clamp nut to 35-40 lb in. (3.9-4.5 N·m).	N/A		
21D*	Measure the oil flow from the scavenge passage or external sump of the power turbine support. It is recommended the external sump is not removed for this check.	PARA 7.E., 72-50-00		
	NOTE: This step must be performed before draining the oil or after the oil system has been refilled.			
	NOTE: Items designated with an asterisk (*) are to be accomplished on the same intervals as item 21* (Oil Change).			
21E	Inspect magnetic chip detector plugs.	PARA 11.G., 72-00-00, Engine-Servicing		
21F	Inspect quick disconnect magnetic chip detector plugs and flanged inserts for wear, if installed.	PARA 11.G., 72-00-00, Engine-Servicing		
21G	Remove, inspect and clean the fuel nozzle. If no air-frame mounted fuel filter is installed, inspect the fuel nozzle filter.	73-10-03		
	NOTE: Operators can find it necessary to inspect and clean the fuel nozzle more often depending on past experience or operating conditions.			
22	If installed, inspect the start counter for proper operation, increase in count, and for loose, chafed, frayed, or broken wires, and loose connectors.	PARA 1., 74-20-03		
23	Check the condition of the bleed valve gasket, without removing bleed valve. Replace gasket if air leaks (blowouts) can be detected.	N/A		
24	Visually inspect the outer combustion case (sheet metal and weld seams) for cracks. Pay particular attention to the weld seams in the area of the igniter plugs, dummy plug, drain valves, fuel nozzle bosses, armpit braze patch and adjacent areas. Use a bright light and mirror as necessary. The OCC does not have to be removed. Perform a Leak Tec check for installed OCC's and an FPI for removed OCC's.	PARA 2.B.(1), (2), (3) and (4), 72-40-00		
25	Clean the burner drain valve.	PARA 3., 72-40-00		

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Table 602 (cont)
Scheduled Inspections

Item	Inspection/Maintenance Action	REF PARA	✓	Initial
26	Inspect the ignition lead for burning, chafing, or cracking of conduit and loose connectors and broken lockwire.	PARA 2., 74-20-02		
27	On engines with CECO fuel system, clean or replace the high pressure fuel filter.	PARA 2., 73-10-05		
28	On engines with CECO fuel systems, visually inspect the bleed hole at the low point in the scroll-to-governor P _c tube for any obstruction. If the hole is not completely open, remove any contamination which could obstruct drainage of moisture from the tube using a piece of lockwire.	N/A		
29	Review engine records for compliance with all mandatory bulletins, inspections and airworthiness directives.	N/A		
30	Review engine records for time limited parts components, accessory or modules.	N/A		
31	Enter component changes, inspection compliance, etc., in log book as required.	N/A		
31A	If optional CEB 1165, (removal of spare gearbox accessory drive gear), has been accomplished without removal of bearing cage, then inspect bearing cage retention for looseness.	CEB 1165 Revision 5 (or later revision) Paragraph 2. B. (2)		
	<u>200 Hour Inspection</u>			
	In addition to the 100 hour inspection items, perform the following:			
	WARNING: MANDATORY COMPLIANCE DATE FOR ROLLS-ROYCE COMMERCIAL ENGINE BULLETIN M250-C20 CEB-1051 WAS AUGUST 30, 1980.			
32	Perform fuel pump backlash inspection on Sundstrand dual element pump P/N 6854292, 6857548, 6877719, 6856250, 6876803.	M250-CSL-1007		

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Table 602 (cont)
Scheduled Inspections

Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>300 Hour Inspection</u>		✓	
	In addition to the 100 hour and applicable 200 hour inspection items, do the following:			
	CAUTION: INSPECTION FREQUENCY MUST BE BASED ON THE NATURE OF THE EROSION AND/OR CORROSIVE ENVIRONMENT. THE OPERATING ENVIRONMENT CAN DICTATE A MORE FREQUENT INSPECTION INTERVAL. WHEN OPERATING IN A CORROSIVE AND/OR EROSION ENVIRONMENT FOR NON-COATED COMPRESSOR WHEELS, THE INSPECTION MUST NOT EXCEED 300 HOURS OR 6 MONTHS. FOR COATED COMPRESSOR WHEELS, INSPECTION MUST NOT EXCEED 300 HOURS OR 12 MONTHS. FOR COMPRESSOR BLISKS, INSPECTION MUST NOT EXCEED 300 HOURS OR 12 MONTHS. IF ANY WHEEL EXHIBITS CORROSION AND/OR EROSION, THE INSPECTION REQUIREMENT MUST REVERT BACK TO 300 HOURS OR 6 MONTHS.			
33	Inspect the compressor case, blades, and vanes when operating in an erosive and/or corrosive environment. 10X power magnification is recommended for corrosion pit inspection.	PARA 1.D.(9), this section and PARA 5.C, 72-30-00		
	CAUTION: AIRCRAFT INSTALLED-ENGINE FUEL-PUMP FILTER DIFFERENTIAL PRESSURE WARNING SYSTEMS AND/OR OPERATING EXPERIENCE CAN DICTATE REPLACEMENT AT A LESSER TIME INTERVAL. IN NO INSTANCE CAN THE 300 HR REPLACEMENT INTERVAL BE EXCEEDED.			
34	Replace the fuel filter element. This filter is a throw-away item. It is not cleanable. Before discarding filter, inspect for signs of contaminants. If any are found, inspect the entire fuel system and clean if necessary.	PARA 2.C., 73-10-01		
	CAUTION: WHEN THERE IS EVIDENCE THAT THE FUEL PUMP FILTER HAS BEEN BYPASSED, THE GAS PRODUCER FUEL CONTROL INLET FILTER, THE FUEL NOZZLE FILTER, THE GOVERNOR FILTER AND THE HIGH PRESSURE FUEL FILTER, IF APPLICABLE, MUST BE CLEANED. (REFER TO SPECIAL INSPECTIONS, 72-00-00, TABLE 604) IF ANY CONTAMINATION IS FOUND IN THE FUEL NOZZLE FILTER, THIS WILL REQUIRE THAT THE FUEL CONTROL BE SENT TO AN AUTHORIZED REPAIR FACILITY FOR INTERNAL CLEANING. REFERENCE MUST ALSO BE MADE TO THE AIRFRAME MAINTENANCE MANUAL FOR FUEL SYSTEM MAINTENANCE FOLLOWING FUEL CONTAMINATION.			
	CAUTION: PURGE AIR FROM THE FUEL SYSTEM.			
35	Do a fuel pump bypass valve operation check when a fuel filter is replaced. NOTE: Applicable to Sundstrand/Pesco and Argo-Tech/TRW manufactured pumps only.	PARA 3.A., 73-10-01		
36	Remove, clean and inspect engine P _c filter every 300 hours or earlier as engine performance dictates.	PARA 3., 73-20-06		
37	Inspect and clean the No. 1 bearing oil pressure reducer.	PARA 3., 72-30-00		

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Table 602 (cont)
Scheduled Inspections

Item	Inspection/Maintenance Action	REF PARA	✓	Initial
<u>300 Hour Inspection (cont)</u>				
38	Visually inspect external sump. Clean internal carbonous deposits and build up from sump or replace if necessary.	PARA 7.F., 72-50-00		
39	Inspect scavenge oil strut in the power turbine support. Clean carbonous deposits from strut.	PARA 7.F., 72-50-00		
40	Inspect No. 6 and 7 bearing pressure oil nozzle. Clean internal carbonous deposits from nozzle.	PARA 7.H., 72-50-00		
41	Inspect the thermocouple assembly.	PARA 2.B., 77-20-01		
41A	Remove and disassemble fuel nozzle. Clean and inspect fuel nozzle filter assembly. Assemble and install fuel nozzle.	73-10-03		
<u>500 Hour/1 Year Inspection</u>				
42	Inspect all uncoated and coated P/N 6846278 and 6871338 power turbine outer couplings nuts for corrosion.	M250-C20 CSL-1060		
NOTE: Compliance with Rolls-Royce Commercial Engine Bulletin M250-C20 CEB-1120 and/or M250-C20 CEB-1158 removes this inspection requirement.				
<u>600 Hour Inspection</u>				
43	Check the fuel pump driveshaft on the Sundstrand single-element pumps for spline wear.	Para 3.C., 73-10-01		
NOTE: This inspection is not required for Agro-Tech (TRW) fuel pumps or Sundstrand fuel pumps P/N 23003114 and subsequent.				
44	Do the scavenge oil filter impending bypass functional test per Facet Service Bulletin No. 090589 (Ref. Rolls-Royce M250 CSL 1164) for aircraft equipped with this type of external scavenge filter system. Follow the Facet instructions and time intervals, or follow this recommended inspection interval each 600 hours.	N/A		
45	Replace the fuel control filter assembly. Bendix fuel controls P/N 2524552-4 or 2524552-6 (less-5) and prior unless M250-C20 CEB-1089 has been accomplished.	PARA 4.A., 73-20-02, 4.A., 73-20-03		
<u>1000 Hour Inspection</u>				
46	Inspect Py port on Bendix power turbine governor per M250 CEB-A-1281. The governor must be removed from the engine to perform this inspection.	N/A		
NOTE: If CEB-A-1289 or CEB 1330 have been accomplished, this inspection is not required.				

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Table 602 (cont)
Scheduled Inspections

Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>1500 Hour Inspection</u>			N/A
47	Replace the fuel control filter assembly.	PARA 4.A., 73-20-02		N/A
	NOTE: If applicable, the fuel control strainer assembly must be replaced on all fuel control units that have not had CEB-1089 accomplished.			
48	Deleted			—
	<u>1750 Hour Inspection</u>			—
49	Inspect the compressor case, blades, and vanes. Inspection frequency must be made as necessary by operating environment and condition of the compressor at the last inspection. In erosive and/or corrosive environment, inspect case at least every 300 hours. In any environment do not exceed 1750 hours without case inspection. 10X power magnification is recommended for corrosion pit inspection.	PARA 1.D.(9), this section and PARA 5.C, 72-30-00		N/A
50	Heavy Maintenance Inspection (HMI). Heavy maintenance inspection must consist of gas producer turbine wheels replacement and inspection of assembled components per Rolls-Royce published documents. It is the responsibility of the operator to assure that the total time and cycle life limits of specific parts listed in Section 05-10-00, Airworthiness Limitations, are not exceeded.	N/A		N/A
	<u>As Required Inspection</u>			—
51	Clean the bleed valve after each 10 hr of water-alcohol augmentation operation or after consumption of each 750 gallons (2840 liters) of water-alcohol mixture.	PARA 2.C., 75-10-02		N/A

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