

NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

September 22, 2021

Attachment 8 –No. 2 Engine (P36235C) SOAP Report

POWERPLANTS

CEN20LA215



General Business - Export Restricted

CMR Number	1132499	Submission Date	03/30/2021
Status	Released	Desired Completion Date	04/08/2021
Requester Priority	Normal	Commit Date	04/08/2021
Released By	[REDACTED]	Completion Date	03/31/2021
Disposition Statement	The data was processed in accordance with the Detailed Instructions.		
Requester	[REDACTED]	Requesting Site	Phoenix
Labor Charge Number	7027414568-0010		
SAP Project	EI-000682	SAP Work Center	EEMTCTKF
Program Keycode	21224	Program Name	Aero Product Integrity Accident Investigation (All Aero Sites)
Has HMR Milestones?	No	Is Flawless Launch?	No
Engineering Commitment	01-EXECUTE DEVELOPMENT	Engineering Priority	99 - UNASSIGNED
HMR Milestone Index			
		Engine Serial #	P36235C
Detailed Instructions	NTSB Sioux Falls SD P39235C Sample 1. Oil filter Housing 2. Gearbox housing 3. Wreckage Review (tank)		

Results

Specimen: Sample #1 Oil Filter Housing							Date: 03/31/2021
Property	Result	Units	LL	T	UL	SOP	Analyst
Test: SOAP							
Ag	< 1	ppm				WI1437	[REDACTED]
Al	< 1	ppm				WI1437	[REDACTED]
Cr	< 1	ppm				WI1437	[REDACTED]
Cu	0.4	ppm				WI1437	[REDACTED]
Fe	0.1	ppm				WI1437	[REDACTED]
Mg	0.1	ppm				WI1437	[REDACTED]
Ni	< 1	ppm				WI1437	[REDACTED]
Pb	< 1	ppm				WI1437	[REDACTED]
Si	17	ppm				WI1437	[REDACTED]

Specimen: Sample #2 Gearbox Housing							Date: 03/31/2021
Property	Result	Units	LL	T	UL	SOP	Analyst
Test: SOAP							
Ag	< 1	ppm				WI1437	[REDACTED]
Al	< 1	ppm				WI1437	[REDACTED]
Cr	< 1	ppm				WI1437	[REDACTED]
Cu	0.6	ppm				WI1437	[REDACTED]
Fe	0.7	ppm				WI1437	[REDACTED]
Mg	0.7	ppm				WI1437	[REDACTED]
Ni	< 1	ppm				WI1437	[REDACTED]
Pb	< 1	ppm				WI1437	[REDACTED]
Si	24	ppm				WI1437	[REDACTED]

Specimen: Sample #3 Wreckage Review							Date: 03/31/2021
Property	Result	Units	LL	T	UL	SOP	Analyst



Test: SOAP							
Ag	< 1	ppm				WI1437	
Al	< 1	ppm				WI1437	
Cr	< 1	ppm				WI1437	
Cu	0.7	ppm				WI1437	
Fe	1.1	ppm				WI1437	
Mg	0.4	ppm				WI1437	
Ni	< 1	ppm				WI1437	
Pb	< 1	ppm				WI1437	
Si	22	ppm				WI1437	



SERVICE INFORMATION LETTER

Table 7. TPE331 Oil Analysis -1, -2 Engines (Cont)

Element	Sampling Interval	Normal PPM	Call Phoenix SOAP Lab ⁴	
	100 HR	0.01 - 0.04	0.05 - 0.09	≥ 0.1
	>100 HR	0.01 - 0.04	0.05 - 0.09	≥ 0.1

NOTES:

1. BASED ON ATOMIC ABSORPTION METHOD
2. ALL VALUES ARE GIVEN IN PARTS PER MILLION PER HOURS OF OPERATION ON OIL
3. NEW ENGINES, RECENTLY OVERHAULED, CAMEd, OR REPAIRED ENGINES SHOULD BE RESAMPLED WITHIN 25 HOURS TO ESTABLISH BASELINE AND TRENDS
4. IF THE FILTER WAS NOT SUBMITTED, RESAMPLE IN 25 HOURS AND SUBMIT OIL FILTER FOR ANALYSIS AT THAT TIME.

Table 8. TPE331 Oil Analysis -3, -5, -6, -8, -10, -11, -12, -14A/B/F, and -15AW Engines

Element	Sampling Interval	Normal PPM	Call Phoenix SOAP Lab ⁴
Iron	15 - 25 HR	0 - 7.0	≥ 7.1
	50 HR	0 - 8.0	≥ 8.1
	100 HR	0 - 10.0	≥ 10.1
	>100 HR	0 - 12.0	≥ 12.1
Copper	15 - 25 HR	0 - 7.0	≥ 7.1
	50 HR	0 - 8.0	≥ 8.1
	100 HR	0 - 10.0	≥ 10.1
	>100 HR	0 - 12.0	≥ 12.1
Nickel	15 - 25 HR	0 - 3.0	≥ 3.1
	50 HR	0 - 3.0	≥ 3.1
	100 HR	0 - 3.0	≥ 3.1
	>100 HR	0 - 4.0	≥ 4.1
Chrome	15 - 25 HR	0 - 3.0	≥ 3.1
	50 HR	0 - 3.0	≥ 3.1
	100 HR	0 - 3.0	≥ 3.1
	>100 HR	0 - 4.0	≥ 4.1
Silver	15 - 25 HR	0 - 3.0	≥ 3.1
	50 HR	0 - 3.0	≥ 3.1
	100 HR	0 - 3.0	≥ 3.1
	>100 HR	0 - 4.0	≥ 4.1



SERVICE INFORMATION LETTER

Table 8. TPE331 Oil Analysis -3, -5, -6, -8, -10, -11, -12, -14A/B/F, and -15AW Engines (Cont)

Element	Sampling Interval	Normal PPM	Call Phoenix SOAP Lab ⁴	
Magnesium	15 - 25 HR	0 - 5.0	≥ 5.1	
	50 HR	0 - 7.0	≥ 7.1	
	100 HR	0 - 8.0	≥ 8.1	
	>100 HR	0 - 9.0	≥ 9.1	
Aluminum	15 - 25 HR	0 - 4.0	≥ 4.1	
	50 HR	0 - 5.0	≥ 5.1	
	100 HR	0 - 7.0	≥ 7.1	
	>100 HR	0 - 8.0	≥ 8.1	
Lead	15 - 25 HR	0 - 5.0	≥ 5.1	
	50 HR	0 - 7.0	≥ 7.1	
	100 HR	0 - 8.0	≥ 8.1	
	>100 HR	0 - 9.0	≥ 9.1	
	SAMPLING INTERVAL	NORMAL PPM	RESAMPLE PPM	INSP PPM
Beryllium	15 - 25 HR	0.01 - 0.04	0.05 - 0.09	≥ 0.1
	50 HR	0.01 - 0.04	0.05 - 0.09	≥ 0.1
	100 HR	0.01 - 0.04	0.05 - 0.09	≥ 0.1
	>100 HR	0.01 - 0.04	0.05 - 0.09	≥ 0.1

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