

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

ALSTOM R086

Component Gearbox Fluid TOTAL CARTER SH 220 (3 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

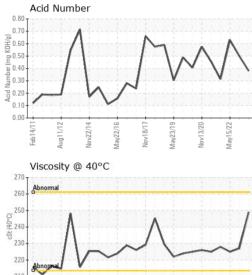
		sb2011 Aug2l	012 Nov2014 May2016	Nov2017 May2019 Nov2020	May2022	
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0798859	WC0667753	WC0649684
Sample Date		Client Info		10 Nov 2023	13 Nov 2022	15 May 2022
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	SEVERE	ABNORMAL
CONTAMINATION	J	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	160	458	4 242
Chromium	ppm	ASTM D5185m	>10	1	3	<1
Nickel	ppm	ASTM D5185m	>10	0	0	0
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m		0	2	0
Aluminum	ppm	ASTM D5185m	>25	3	9	6
Lead	ppm	ASTM D5185m	>50	2	6	6
Copper	ppm	ASTM D5185m	>200	44	93	69
Tin	ppm	ASTM D5185m	>10	<1	<1	<1
Antimony	ppm	ASTM D5185m	>5			
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		0	3	2
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		0	<1	0
Manganese	ppm	ASTM D5185m		3	6	4
Magnesium	ppm	ASTM D5185m		0	4	2
Calcium	ppm	ASTM D5185m		0	8	5
Phosphorus	ppm	ASTM D5185m		344	395	419
Zinc	ppm	ASTM D5185m		92	197	202
Sulfur	ppm	ASTM D5185m		3729	3397	2627
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	20	9 8	a 82
Sodium	ppm	ASTM D5185m		16	19	21
Potassium	ppm	ASTM D5185m	>20	1	4	3
FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.38	0.50	0.63



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Feb14/11

OIL ANALYSIS REPORT



Nov22/14

Aug11/

Velk Prec Silt Deb San App Odo Emu Free FL Visc	bris Ind/Dirt Ipearance Ior Inulsified Water Ee Water FLUID PROPER Sc @ 40°C	scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NONE NORML NORML >0.2	NONE NONE NONE NONE NONE NORML NORML	NONE NONE NONE NONE NONE NORMI NORMI		NOI NOI NOI NOI NOI NOI NOI	NE NE NE RML
Prec Silt Deb Sam App Odc Emu Free FL Visc	ecipitate t sbris und/Dirt pearance dor nulsified Water ee Water FLUID PROPER ac @ 40°C	scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NORML NORML	NONE NONE NONE NORML NORML NEG	NONE NONE NONE NORMI NORMI NEG			NE NE NE RML RML
OZELVAN VISC	t bbris und/Dirt pearance dor hulsified Water ee Water FLUID PROPER sc @ 40°C	scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NORML NORML	NONE NONE NORML NORML NEG	NONE NONE NORMI NORMI NEG		NOI NOI NOI NOI	NE NE NE RML RML
Deb San App Odo Emu Free FL	bris Ind/Dirt Ipearance Ior Inulsified Water Ee Water FLUID PROPER Sc @ 40°C	scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual	NONE NONE NORML NORML	NONE NONE NORML NORML NEG	NONE NONE NORMI NORMI		NOI NOI NOI	NE NE RML RML
San App Odo Emu Free Visc	nd/Dirt pearance dor nulsified Water ee Water FLUID PROPER sc @ 40°C	scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual	NONE NORML NORML	NONE NORML NORML NEG	NONE NORMI NORMI NEG		NOI NOI NOI	NE RML RML
ZZISINEW App Odo Emu Free FL	pearance dor nulsified Water ee Water FLUID PROPER sc @ 40°C	scalar scalar scalar scalar	*Visual *Visual *Visual	NORML NORML	NORML NORML NEG	NORMI NORMI NEG		NO NO	RML RML
Emu Free FL Visc	hor hulsified Water ee Water FLUID PROPER sc @ 40°C	scalar scalar scalar	*Visual *Visual	NORML	NORML NEG	NORMI NEG		NO	RML
Emu Free FL Visc	nulsified Water ee Water FLUID PROPER sc @ 40°C	scalar scalar	*Visual		NEG	NEG	-		
Free FL / Visc	ee Water FLUID PROPER sc @ 40°C	scalar		>0.2				NEC	3
FL / Visc	LUID PROPER ac @ 40°C	_	*Visual						
Visc	sc @ 40°C	TIES			NEG	NEG		NEC	G
	-		method	limit/base	current	histor	y1	his	story2
J SA		cSt	ASTM D445		249	227		225	
	SAMPLE IMAGE	S	method	limit/base	current	histor	y1	his	story2
Colc	lor				no image	no imag	e	no ii	mage
Bott	ttom			Ļ	no image	no imag	e	no ii	mage
	Aluminum (ppm)	Nov18/17	May23/19	May 15/22		17			
			Ma No	May	Chrominm (u Nov22/14	(mu Nov18/17	May23/19	Nov13/20 -	May15/22
	Severe		No.	30	Chromium (p	-	May23/19	Nov13/20 -	May15/22
5. 50 -			No No	30 E 20 10	Chromium (p	-	May23/19	Nov13/20	May15/22
	Severe Abnormal				Chromium (p	pm)			
5. 50 -	Severe Abnormal			30 E 20 10	Chromium (p	-	May23/19	Nov13/20	May15/22 / May15/22
udd 50-	Severe Abnormal			30 Ed 10 0 0	Chromium (p Severe Abnormal 21/11/Bmy Silicon (ppm)	pm)			
udd 50 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	Abnormal Abnormal FL/ZZ/GN Copper (ppm) Severe				Chromium (p Severe Abnormal 2//11/bmy Silicon (ppm)	pm)			
udd 50 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	Abnormal Copper (ppm)			30 20 4 20 20 20 20 20 20 20 20 20 20	Chromium (p Severe Abnormal 21/11/Bmy Silicon (ppm)	pm)			
	Abnormal Copper (ppm) Severe Abnormal	LIVB IVON	May23/19	30 20 4 27/3 20 20 20 20 20 20 20 20 20 20	Chromium (p Severe Abnormal 2//11/bmy Silicon (ppm) Severe Abnormal	May22/16 (ud 1 Nov18/17	May23/19	Nov13/20	May15/22
	Abnormal Copper (ppm) Severe Abnormal	LIVB IVON	May23/19	30 20 4 27/51/VeW 150 100 100 0 100 0	Chromium (provide the second s	pm)			~
	Abnormal Copper (ppm) Severe Abnormal	LIVB IVON	May23/19	30 20 4 27/51/VeW 150 100 100 0 100 0	Chromium (provide the second s	May22/16 (ud 1 Nov18/17	May23/19	Nov13/20	May15/22
	Aproximation 2007 2000 2000 2000 2000 2000 2000 200	LIVB IVON	May23/19	30 20 4 27/51/VeW 150 100 100 0 100 0	Chromium (provide the second s	May22/16 (ud 1 Nov18/17	May23/19	Nov13/20	May15/22
ud 50 UVF (a) 0 0 0 0 0 0 0 0 0 0 0 0 0	Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Apnormal Approximation (Comparison (Com	LIVB IVON	May23/19	30 20 4 27/51/VeW 150 100 100 0 100 0	Chromium (provide the second s	May22/16 (ud 1 Nov18/17	May23/19	Nov13/20	May15/22
ud 50 UP (reg 0 UP (reg 0 0 UP (reg 0 0 0 0 0 0 0 0 0 0 0 0 0	Abnormal Severe Abnormal Severe Abnormal Severe Severe Abnormal Severe Abnormal Severe Abnormal Severe Abnormal		+ (30 20 4 27/3 20 20 20 20 20 20 20 20 20 20	Chromium (provide the second s	May22/16 (ud 1 Nov18/17	May23/19	Nov13/20	May15/22

Contact/Location: MICHAEL PORTER - AMTRAK