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December 17, 2024

Terry Glover USG Greenville, MS

Terry,

The following is a summary report from the November 2024 4th quarter oil analysis at your facility. Please let us know if there are any questions or comments. As always, it has been a pleasure to serve USG-Greenville, MS. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

Kevin W. Marcuell

Senior Reliability Specialist ISO/ANSI Certified Vibration Analyst, Category III



QualiTest Diagnostics Cell: 901-486-4565 Email: kwilliam@gohispeed.com

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Komatsu Press Clutch and Brake

This sample looks a bit better than the last in terms of steel wear (iron). Insolubles are at limits, though, so we recommend changing this oil to help clear out some of the solids. That should help bring iron down a bit, too. Check back next service for an update. Everything else looks good. **CHANGE OIL SOON**

MI/HR on Oil								
MI/HR on Unit		UNIT /						UNIVERSAL
Sample Date	11/20/2024	LOCATION AVERAGES	8/1/2024	9/11/2023	5/6/2023	8/8/2022	3/11/2022	AVERAGES
Make Up Oil Added		AVENAGES						
ALUMINUM	1	0	1	2	1	0	0	1
CHROMIUM	0	0	0	0	1	1	0	0
ALUMINUM CHROMIUM IRON	170	52	201	111	136	249	234	71
COPPER	3	3	3	5	11	3	7	22
	0	0	0	0	0	1	0	1
TIN	0	0	0	0	2	0	0	2
2 MOLYBDENUM	0	0	0	0	0	0	0	0
MOLYBDENUM NICKEL MANGANESE	0	0	0	0	0	0	0	0
MANGANESE	1	0	2	1	1	2	2	0
SILVER	0	0	0	0	0	0	0	0
TITANIUM	0	0	0	0	0	0	0	0
POTASSIUM	0	1	1	0	0	0	0	0
BORON	0	1	1	1	4	0	1	1
POTASSIUM BORON SILICON SODIUM	3	1	3	15	15	2	2	4
SODIUM	1	2	1	2	3	2	2	2
CALCIUM	87	107	86	85	108	115	115	109
MAGNESIUM	0	0	0	0	0	0	0	2
PHOSPHORUS	110	431	99	126	363	468	457	422
ZINC	4	5	6	9	15	4	4	246
BARIUM	0	0	0	0	0	0	0	0
		Values Should Be*						
SUS Viscosity @ 210°F	40.6		41.4	42.9	39.8	39.8	39.2	
cSt Viscosity @ 100°C	4.34		4.60	5.06	4.09	4.12	3.91	
Plashpoint in °F	335		355	345	380	350	400	
Fuel %	-		-	-	-	-	-	
Antifreeze %	-		-	-	-	-	-	
Water %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flashpoint in °F Fuel % Antifreeze % Water % Insolubles % TBN	0.1	<0.1	TR	0.5	TR	<mark>0.1</mark>	0.1	
TBN								
TAN							0.2	
ISO Code							23/20/17	

<u>#3 Board Line Drive Gearbox</u>

Iron looks a lot better this time, and the other wear metals are low, if they showed up at all. No water was present in this sample, and insolubles tested at 0.1%, so the oil hadn't become too oxidized while it was in use. **OIL IS OK FOR USE**

	MI/HR on Oil								
	MI/HR on Unit		UNIT /						UNIVERSAL
	Sample Date	11/20/2024	LOCATION	8/1/2024	9/11/2023	5/6/2023	8/8/2022	3/11/2022	AVERAGES
	Make Up Oil Added	THEOLECET	AVERAGES	0/112021	0/11/2020	0/0/2020	0/0/2022	OF THEOLE	
N	ALUMINUM	0	1	0	0	0	0	1	1
	CHROMIUM	0	1	3	1	5	3	2	0
	IRON	60	58	484	189	738	452	296	64
	COPPER	1	5	1	1	2	1	2	2
PER	LEAD	0	0	0	0	1	1	0	0
đ	TIN	0	0	0	0	0	0	0	0
S	MOLYBDENUM	0	0	1	1	3	1	1	21
PARTS	NICKEL	0	0	2	1	5	3	2	0
PA	MANGANESE	1	1	5	3	7	5	3	1
Z	SILVER	0	0	0	0	0	0	0	0
	TITANIUM	0	0	0	0	0	0	0	0
E E	POTASSIUM	0	1	1	0	0	0	0	1
Ш	BORON	8	12	14	8	15	10	17	26
ELEMENTS	SILICON	6	5	4	5	6	5	5	10
	SODIUM	1	8	3	4	10	8	8	5
	CALCIUM	1	7	3	7	5	5	6	12
	MAGNESIUM	0	1	1	1	0	0	1	1
	PHOSPHORUS	276	309	266	351	341	343	338	425
	ZINC	10	30	16	68	28	32	32	22
	BARIUM	0	0	0	0	0	0	0	0
	Values								
			Should Be*					-	1
	SUS Viscosity @ 210°F	92.0		91.5	87.2	90.0	91.0	90.9	
	cSt Viscosity @ 100°C	18.45		18.33	17.31	17.98	18.21	18.19	
S	Flashpoint in °F	475		455	450	460	450	490	
Ē	Fuel %	-		-	-	-	-	-	
PROPERTI	Antifreeze %	-		-	-	-	-	-	
P	Water %	0.0	0.0	0.2	0.0	0.0	0.0	0.0	
R	Insolubles %	0.1	<0.6	0.4	0.2	0.3	0.2	0.3	
٩.	TBN								
	TAN							0.4	
	ISO Code							24/23/17	

Hydropulper Gearbox

This sample looks okay on the spectral level, with just a bit more copper than last time. This 6-ppm reading doesn't look unusual for this unit, or for your Falk units in general (see unit/location averages). There was water in this sample, though, which caused the oil to boil when heated. Change this oil to get rid of water and check for places where moisture could be entering the oilways. **CHANGE OIL SOON**

	MI/HR on Oil								
	MI/HR on Unit		UNIT /						UNIVERSAL
	Sample Date	11/20/2024	LOCATION	8/1/2024	9/12/2023	5/6/2023	8/8/2022	3/11/2022	
	Make Up Oil Added	11/20/2024	AVERAGES	0/1/2024	5/12/2025	5/0/2025	0/0/2022	5/11/2022	
	make op on Added								
Z	ALUMINUM	1	1	1	0	0	1	1	1
MILLION	CHROMIUM	1	1	3	1	2	1	1	0
	IRON	21	58	22	11	37	14	21	64
Μ	COPPER	6	5	3	3	8	5	6	2
ER	LEAD	0	0	0	0	0	0	0	0
đ	TIN	0	0	0	0	0	0	0	0
S	MOLYBDENUM	0	0	0	0	0	0	0	21
PARTS	NICKEL	0	0	0	0	0	0	0	0
PA	MANGANESE	0	1	0	0	1	0	0	1
N	SILVER	0	0	0	0	0	0	0	0
	TITANIUM	0	0	0	0	0	0	0	0
ELEMENTS	POTASSIUM	0	1	1	0	1	0	1	1
Ш	BORON	22	12	15	16	17	16	16	26
M	SILICON	6	5	6	4	6	3	4	10
H	SODIUM	3	8	2	6	5	1	2	5
	CALCIUM	2	7	6	7	7	3	5	12
	MAGNESIUM	1	1	1	1	2	1	2	1
	PHOSPHORUS	258	309	262	324	329	340	333	425
	ZINC	44	30	18	23	52	23	47	22
	BARIUM	1	0	0	0	0	0	0	0
			Values Should Be*						
	SUS Viscosity @ 210°F	88.0		93.0	91.2	92.4	94.0	89.8	
	cSt Viscosity @ 100°C	17.50		18.71	18.27	18.55	18.95	17.94	
S	Flashpoint in °F	BOIL		465	455	480	465	480	1
ΠE	Fuel %	-		-	-	-	-	-	
Ľ.	Antifreeze %	-		-	-	-	-	-	
PROPERTI	Water %	POS	0.0	0.0	0.0	0.0	0.0	0.0	
ð	Insolubles %	0.0	<0.6	TR	0.2	0.4	0.1	TR	
đ	TBN								
	TAN							1.1	
	ISO Code							24/22/18	

Hi-Pressure Hydraulic Pump (Water Jet System)

This sample looks fine on the spectral level, but there was a small amount of visible debris present in the sample container. This may be from the are being very dirty while obtaining the oil sample. All else looks fine. **OIL IS OK FOR USE**

Mi/HR on Unit UNIT/ AVERAGES UNIVERAL Sample Date 11/20/2024 0/2/2023 5/6/2023 8/8/2022 3/11/2022 Make Up Oil Added 0 0 0 0 0 0 0 ALUMINUM 0 0 0 0 0 0 0 0 IRON 1 2 1 1 1 2 3 IRON 1 2 1 1 1 2 3 COPPER 3 4 2 3 5 4 5 COPPER 3 4 2 3 5 4 5 TIN 0 0 0 0 0 0 0 0 MAISANESE 0 0 0 0 0 0 0 0 0 SULVER 0 0 0 0 0 0 0 0 0 0 0 0		MI/HR on Oil								
Sample Date 11/20/2024 OCATION AVERAGES 8/1/2022 5/6/2023 8/8/2022 3/11/2022 AVERAGES Make Up Oil Added 0 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
Make Up Oil Added AVERACES OVERACES OVERACES OVERACES OVERACES ALUMINUM 0			11/20/2024		8/1/2024	0/12/2023	5/6/2023	8/8/2022	3/11/2022	
ALUMINUM 0<			11/20/2024	AVERAGES	0/1/2024	3/12/2023	5/0/2025	0/0/2022	5/11/2022	ATCINGES
COPPER 3 4 2 3 3 5 4 5 LEAD 0 1 0 0 0 0 0 0 1 TIN 0 <th< td=""><td></td><td>Make op on Added</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>		Make op on Added								
COPPER 3 4 2 3 3 5 4 5 LEAD 0 1 0 0 0 0 0 0 1 TIN 0 <th< td=""><td>N</td><td>ALUMINUM</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></th<>	N	ALUMINUM	0	0	0	0	0	0	0	0
COPPER 3 4 2 3 3 5 4 5 LEAD 0 1 0 0 0 0 0 0 1 TIN 0 <th< td=""><td>2</td><td>CHROMIUM</td><td>3</td><td>1</td><td>3</td><td>5</td><td>3</td><td>1</td><td>1</td><td>0</td></th<>	2	CHROMIUM	3	1	3	5	3	1	1	0
COPPER 3 4 2 3 3 5 4 5 LEAD 0 1 0 0 0 0 0 0 1 TIN 0 <th< td=""><td></td><td>IRON</td><td>1</td><td>2</td><td>1</td><td>1</td><td>1</td><td>1</td><td>2</td><td>3</td></th<>		IRON	1	2	1	1	1	1	2	3
LEAD 0 1 0 0 0 0 0 1 TIN 0 <td></td> <td>COPPER</td> <td>3</td> <td>4</td> <td>2</td> <td>3</td> <td>3</td> <td>5</td> <td>4</td> <td></td>		COPPER	3	4	2	3	3	5	4	
A TIN 0	R.	LEAD	0	1	0	0	0	0	0	
NICKEL 0 <td>d</td> <td>TIN</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	d	TIN	0	0	0	0	0	0	0	0
SILVER 0 <td>S</td> <td>MOLYBDENUM</td> <td>0</td> <td>0</td> <td>0</td> <td>2</td> <td>2</td> <td>4</td> <td>5</td> <td></td>	S	MOLYBDENUM	0	0	0	2	2	4	5	
SILVER 0 <td>R</td> <td>NICKEL</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td>	R	NICKEL	0	0	0	0	0	0	0	
TITANIUM 0<	PA	MANGANESE	0	0	0	0	0	0	0	
TITANIUM 0<	Z	SILVER	0	0	0	0	0	0	0	
CALCIUM 12 41 21 43 60 72 69 82 MAGNESIUM 55 14 61 48 40 51 65 6 PHOSPHORUS 254 285 244 311 308 314 308 1912 ZINC 270 306 295 312 319 342 349 411 BARIUM 0		TITANIUM	0	0	0	0	0	0	0	0
CALCIUM 12 41 21 43 60 72 69 82 MAGNESIUM 55 14 61 48 40 51 65 66 PHOSPHORUS 254 285 244 311 308 314 308 1912 ZINC 270 306 295 312 319 342 349 411 BARIUM 0 <td>Ĕ</td> <td>POTASSIUM</td> <td>0</td> <td>0</td> <td>2</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td>	Ĕ	POTASSIUM	0	0	2	0	0	0	0	
CALCIUM 12 41 21 43 60 72 69 82 MAGNESIUM 55 14 61 48 40 51 65 66 PHOSPHORUS 254 285 244 311 308 314 308 1912 ZINC 270 306 295 312 319 342 349 411 BARIUM 0 <td>Ш</td> <td>BORON</td> <td>1</td> <td>1</td> <td>1</td> <td>3</td> <td>3</td> <td>3</td> <td>4</td> <td>2</td>	Ш	BORON	1	1	1	3	3	3	4	2
CALCIUM 12 41 21 43 60 72 69 82 MAGNESIUM 55 14 61 48 40 51 65 6 PHOSPHORUS 254 285 244 311 308 314 308 1912 ZINC 270 306 295 312 319 342 349 411 BARIUM 0	M	SILICON	3		4	70	104	49	3	2
CALCIUM 12 41 21 43 60 72 69 82 MAGNESIUM 55 14 61 48 40 51 65 66 PHOSPHORUS 254 285 244 311 308 314 308 1912 ZINC 270 306 295 312 319 342 349 411 BARIUM 0 <td></td> <td>SODIUM</td> <td>3</td> <td>2</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>2</td> <td></td>		SODIUM	3	2	4	3	3	3	2	
PHOSPHORUS 254 285 244 311 308 314 308 1912 ZINC 270 306 295 312 319 342 349 411 BARIUM 0 <		CALCIUM	12	41	21	43	60	72	69	82
ZINC 270 306 295 312 319 342 349 411 BARIUM 0 <td></td> <td>MAGNESIUM</td> <td></td> <td>14</td> <td>61</td> <td>48</td> <td>40</td> <td>51</td> <td>65</td> <td></td>		MAGNESIUM		14	61	48	40	51	65	
BARIUM 0 <td></td> <td>PHOSPHORUS</td> <td>254</td> <td>285</td> <td>244</td> <td>311</td> <td>308</td> <td>314</td> <td>308</td> <td>1912</td>		PHOSPHORUS	254	285	244	311	308	314	308	1912
Values Should Be* SUS Viscosity @ 210°F 49.2 47.1 47.3 48.6 49.8 47.5 cSt Viscosity @ 100°C 7.03 6.39 6.43 6.84 7.20 6.50		ZINC	270	306	295	312	319	342	349	411
Should Be* SUS Viscosity @ 210°F 49.2 47.1 47.3 48.6 49.8 47.5 cSt Viscosity @ 100°C 7.03 6.39 6.43 6.84 7.20 6.50		BARIUM	0	0	0	0	0	0	0	0
SUS Viscosity @ 210°F 49.2 47.1 47.3 48.6 49.8 47.5 cSt Viscosity @ 100°C 7.03 6.39 6.43 6.84 7.20 6.50										
cSt Viscosity @ 100°C 7.03 6.39 6.43 6.84 7.20 6.50		SLIS Viscosity @ 210°F	40.2	Should Be	17.1	17.3	18.6	10.8	17.5	1
Fusition (III I 473 433 430 403 400 440 Fuel % - - - - - - Matrix 0.0 0.0 0.0 0.0 0.0										
Antifreeze %	Ш		475		400	430	400	400	440	
	ZTI				-	-			-	
	Ξ	Water %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Viticitia 0.0 0	B									
	R			-0.1		0.0	0.0	0.2	0.0	
TAN 0.4									0.4	
ISO Code 21/19/16										