



EMPIRE MACHINERY - ARIZONA LAB - 1725 S. Country Club Drive Mesa, AZ 85210 USA

PHONE: 866-224-3087

Web: <https://empire.cat.com> Email: fluidslab@empire-cat.com

ENGINE

EQUIP NUM: 3117019

SERIAL NUMBER: HPD10148

H177-55020-0296
LABEL#: 250882146

SAMPLE SHIP TIME (days) : 5
AMES CONSTRUCTION INC
LOCATION: Graham County,
Arizona 85546, United States
RECEIVED DATE: 20-Jan-25

CAT 349F

No Action Required

Interp By: Larry Byington
Interpreted On: 21-Jan-25

NO PROBLEMS PRESENTLY ASSOCIATED WITH THIS SAMPLE. CONTINUE SAMPLING AT THE NORMAL INTERVAL.

SAMPLE INFORMATION

Sampled Date	15-Jan-25	07-Nov-24	06-Sep-24	12-Dec-23
Sample Id	H177-55020-0296	H177-54316-0487	H177-54250-0756	H430-54004-0816
Lab Date	20-Jan-25	11-Nov-24	06-Sep-24	04-Jan-24
Meter [Hr]	11359.7	11163	0	10040
Comp Meter [Hr]			0	10040
Meter On Fluid	11359.7	11163	0	222
Fluid Brand		NULL	CHEVRON	CHEVRON
Fluid Weight	15W-40	15W-40	15W-40	15W-40
Fluid Type		DELO	DELO	DELO
Fluid Change	Y	N	U	Y
Filter Change	Y	N	U	Y
Kidney Loop				U
Total Fluid Added	0	0	0	0

PREVIOUS SAMPLE

NO	PROBLEMS	PRESENTLY	ASSOCIATED	WITH	THIS	SAMPLE	CONTINUE
SAMPLING AT THE NORMAL INTERVAL							

For additional sample history, go to:

S.O.S WEB

CONDITION / CONTAMINATION

	15-Jan-25	07-Nov-24	06-Sep-24	12-Dec-23
VISCOSITY (CENTISTOKES) ASTM D445				
V100	Viscosity at 100 C	13.50	13.50	13.70

INFRARED (UFM) ASTM E2412

ST	Soot	12	5	27	7
OXI	Oxidation	18	16	17	18
SUL	Sulfur Products	22	21	25	22
NIT	Nitration	11	9	11	10

WEAR LEVELS / ADDITIVES

ELEMENTAL ANALYSIS (PPM) ASTM D6185 [OIL] / ASTM D6180 [COOLANT]				
	15-Jan-25	07-Nov-24	06-Sep-24	12-Dec-23
Cu	5	5	5	3
Fe	10	10	12	18
Cr	0	1	0	0
Al	1	1	3	1
Pb	0	0	2	1
Sn	1	0	2	0
Si	6	10	7	5
Na	10	13	6	7
K	5	12	2	3
Mo	98	102	86	8
Ni	0	0	0	0
Ag	0	0	0	0
Ti	0	0	2	78
V	0	0	0	0
Mn	0	0	0	0
Ca	2533	2649	2170	1852
P	1075	1206	1103	1124
Zn	1350	1444	1269	1251
Mg	40	36	124	578
Ba	0	0	0	0
B	49	62	34	64
Sb				0

WATER

W	Water	N	N	N	N
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ANTIFREEZE

A	Antifreeze	N	N	N	N
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FUEL

F	Fuel	N	N	N	N
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FUEL CONTENT (%) ASTM D3624

PFc	Percent Fuel				2.82
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Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or component thereof.

ENGINE

SERIAL NUMBER: HPD10148

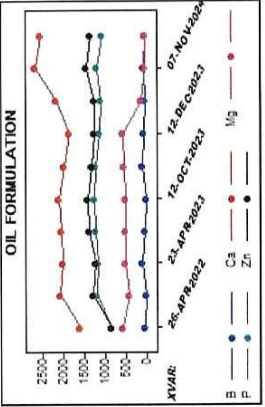
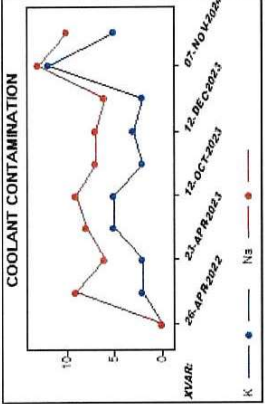
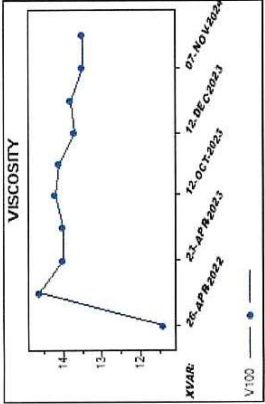
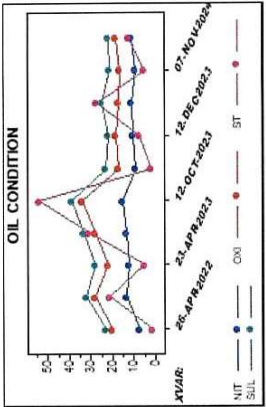
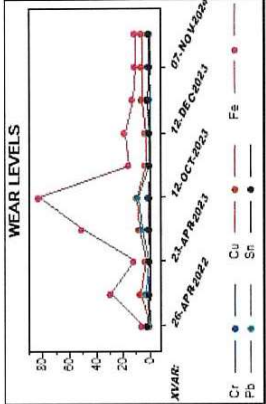
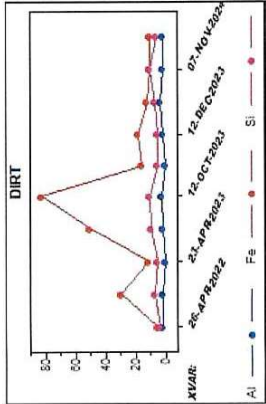
EQUIP NUM: 3117019

CAT 349F

H117-55020-0286



No Action Required



Report Comment

Our sample report has been updated! For more information on the new report, go to - <https://www.youtube.com/watch?v=4H8bREJVUrs>

HYDRAULIC SYSTEM

EQUIP NUM: 3117019

SERIAL NUMBER: HPD10148

H177-55020-0287
LABEL#: 250881934

SAMPLE SHIP TIME (days) : 5
AMES CONSTRUCTION INC
LOCATION: Graham County,
Arizona 85546, United States
RECEIVED DATE: 20-Jan-25

Action Required



SILICON / ALUMINUM ARE ELEVATED. INSPECT FOR DIRT ENTRY / REPAIR AS NECESSARY. IRON IS ELEVATED. COPPER IS ELEVATED. POSSIBLE PUMP WEAR. ACTION REQUIRED.

Interp By: Larry Byington
Interpreted On: 20-Jan-25

SAMPLE INFORMATION

	15-Jan-25	06-Sep-24	29-Mar-23	10-Oct-22
Sampled Date	15-Jan-25	06-Sep-24	29-Mar-23	10-Oct-22
Sample Id	H177-55020-0297	H177-54250-0757	H430-53094-0704	H430-52342-0613
Lab Date	20-Jan-25	06-Sep-24	04-Apr-23	08-Dec-22
Meter [Hr]	11359.7	10888.0	8740	8403
Comp Meter [Hr]		0	8740	8403
Meter On Fluid	11359.7	4618.0	2470.0	2133.0
Fluid Brand	MOBIL	MOBIL	MOBIL	MOBIL
Fluid Weight	10W	10W	10W	10W
Fluid Type	HYDRAULIC	HYDRAULIC	HYDRAULIC	HYDRAULIC
Fluid Change	N	U	N	N
Filter Change	N	U	Y	Y
Kidney Loop		U	U	U
Total Fluid Added	0	0	0	0

WEAR LEVELS / ADDITIVES

	15-Jan-25	06-Sep-24	29-Mar-23	10-Oct-22
ELEMENTAL ANALYSIS (PPM) ASTM D5185 (OIL) / ASTM D6150 (COOLANT)				

Cu	26	26	23	23
Fe	44	46	41	38
Cr	1	2	1	1
Al	7	8	6	8
Pb	1	1	1	1
Sn	0	1	0	0
Si	30	32	33	36
Na	13	8	19	7
K	8	4	2	2
Mo	7	7	6	5
Ni	0	0	0	0
Ag	0	0	0	0
Ti	3	3	3	1
V	0	0	0	0
Mn	1	1		
Ca	753	646	610	588
P	920	985	1042	1015
Zn	1200	1178	1131	1113
Mg	475	482	489	492
Ba	0	1	0	0
B	14	15	14	10
Sb			0	0

PREVIOUS SAMPLE

* HOUR	CORRECTION*	SILICON	ALUMINUM	ARE	ELEVATED.	INSPECT	FOR
DIRT	ENTRY / REPAIR	AS NECESSARY.	INSPECT	CYLINDER	WIPER	SEALS	/
BREATHERS.	IRON IS ELEVATED.	COPPER IS ELEVATED.	POSSIBLE	PUMP			
WEAR.	INSPECT. ACTION REQUIRED.						

For additional sample history, go to:

S.O.S WEB

CONDITION / CONTAMINATION

	15-Jan-25	06-Sep-24	29-Mar-23	10-Oct-22
VISCOSITY (CENTISTOKES) / ASTM D445				
V100	6.600	6.600	6.500	6.500
Viscosity at 100 C				

INFRARED (UFM) ASTM E2412

ST	Soot	0	0	0	0
OXI	Oxidation	7	7	6	7
SUL	Sulfur Products	17	20	15	18
NIT	Nitration	5	6	4	5

WATER

W	Water	N	N	N	N
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ANTIFREEZE

A	Antifreeze	N	N	N	N
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CLEANLINESS

	15-Jan-25	06-Sep-24	29-Mar-23	10-Oct-22
PARTICLE COUNT - ISO 11171:1989 reported per ISO 4406				

ISO	ISO Code Rating	21/17/13	18/15/11	22/18/12	22/19/15
4µ	4µ	11682	1684	26710	24110
6µ	6µ	676	194	1700	3370
10µ	10µ	111	38	240	710
14µ	14µ	41	16	30	245
18µ	18µ			5	120
21µ	21µ	14	7	0	95
38µ	38µ	1	0	0	0
50µ	50µ			0	0

PARTCL VOL INDICATOR

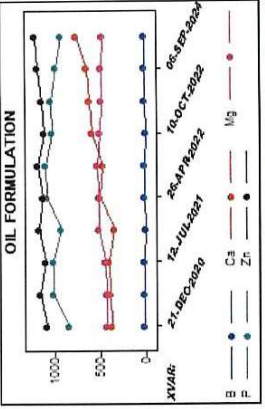
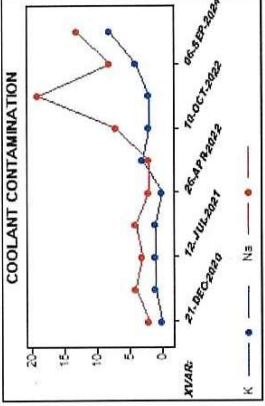
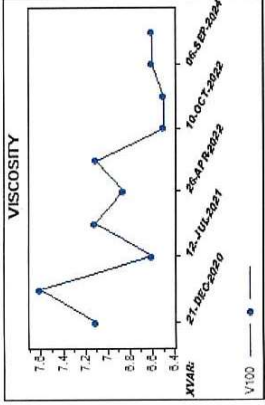
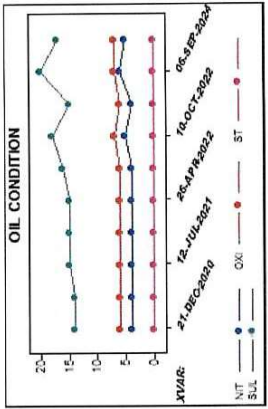
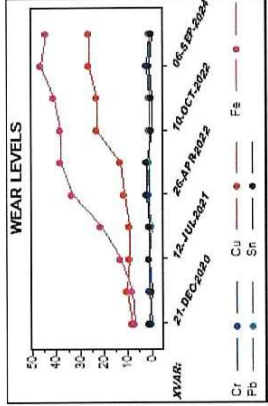
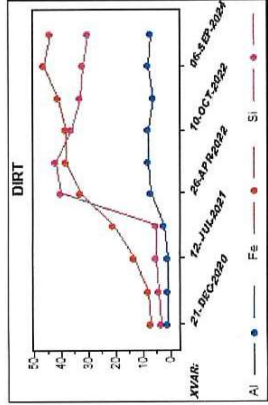
PVI	PVI	0.54	0.11		
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HYDRAULIC SYSTEM
SERIAL NUMBER: HPD10148
EQUIP NUM: 3117019
CAT 349F

H177-55020-0297



Action Required



Report Comment

Our sample report has been updated! For more information on the new report, go to - <https://www.youtube.com/watch?v=4t8bREJVVrs>



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FINAL DRIVE REAR LEFT

EQUIP NUM: 3117019

SERIAL NUMBER: HPD10148

CAT 349F

H177-55020-0288

LABEL#: 250882049

SAMPLE SHIP TIME (days) : 5

AMES CONSTRUCTION INC

LOCATION: Graham County,

Arizona 85546, United States

RECEIVED DATE: 20-Jan-25

No Action Required



Interp By: Lary Byington
Interpreted On: 20-Jan-25

NO PROBLEMS PRESENTLY ASSOCIATED WITH THIS SAMPLE. CONTINUE SAMPLING AT THE NORMAL INTERVAL.

SAMPLE INFORMATION

Sampled Date	15-Jan-25	14-Jan-22	20-Sep-21	30-Jun-21
Sample Id	H177-55020-0238	E480-52018-3015	E480-51264-5008	E480-51183-3043
Lab Date	20-Jan-25	18-Jan-22	21-Sep-21	02-Jul-21
Meter [Hr]	11359.7	7140.0	8834.0	6601.0
Meter On Fluid	4219.7	539.0	2235.0	451.0
Fluid Brand	MOBIL	MOBIL	MOBIL	MOBIL
Fluid Weight	50	50	50	50
Fluid Type	TRANS 50	TRANS 50	TRANS 50	trans 50
Fluid Change	Y	Y	N	Y
Filter Change	N	N	N	N
Kidney Loop	N	N	N	N
PM Level	0	500	250	500
Total Fluid Added	0	0	0	0

WEAR LEVELS / ADDITIVES

ELEMENTAL ANALYSIS (PPM) ASTM D5185 (OIL) / ASTM D6130 (COOLANT)				
	15-Jan-25	14-Jan-22	20-Sep-21	30-Jun-21
Cu	1	0	0	0
Fe	108	92	47	136
Cr	0	0	0	0
Al	2	2	1	3
Pb	0	0	0	0
Sn	0	0	0	0
Si	32	10	6	18
Na	8	3	1	3
K	5	0	0	2
Mo	45	0	1	0
Ni	0	0	0	0
Ag	0	0	0	0
Ti	0	0	0	0
V	0	0	0	0
Mn	1	1	0	1
Cd				0
Ca	3028	2805	2696	2838
P	1019	981	967	1022
Zn	1286	1221	1109	1120
Mg	109	15	11	10
Ba	0	0	0	0
B	26	8	4	4

PREVIOUS SAMPLE

NORMAL	WEAR	METAL	READINGS	NO PROBLEMS	PRESENTLY	ASSOCIATED
WITH THIS SAMPLE. CONTINUE SAMPLING AT THE NORMAL INTERVAL.						

For additional sample history, go to:

S.O.S WEB

CONDITION / CONTAMINATION

VISCOSITY (CENTISTOKES) ASTM D445				
	15-Jan-25	14-Jan-22	20-Sep-21	30-Jun-21
V100	17.10	16.7	17.0	17.1
Viscosity at 100 C				

INFRARED (UFM) ASTM E2412

ST	Soot	0	0	0	0
OXI	Oxidation	5	5	5	4
SUL	Sulfur Products	14	19	18	18
NIT	Nitration	5	4	4	4

WATER

W	Water	N	N	N	N
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CLEANLINESS

PARTICLE COUNT - ISO 11171:1998 reported per ISO 4406				
	15-Jan-25	14-Jan-22	20-Sep-21	30-Jun-21

ISO ISO Code Rating 23/23/19

4µ	4µ	78028
6µ	6µ	56195
10µ	10µ	18135
14µ	14µ	3650
18µ	18µ	1046
21µ	21µ	467
38µ	38µ	8

PARTIC VOL INDICATOR

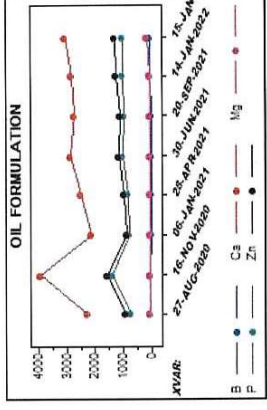
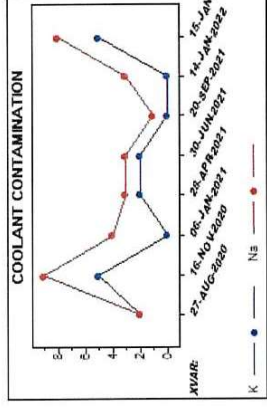
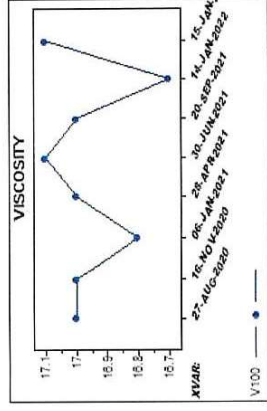
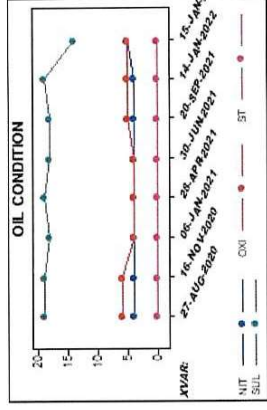
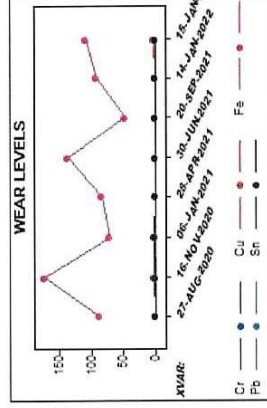
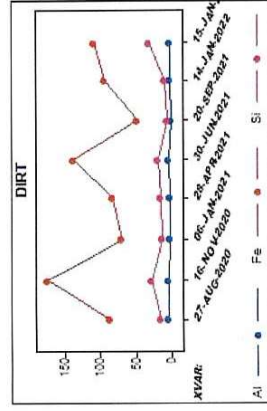
PVI	PVI	19.80
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FINAL DRIVE REAR LEFT
SERIAL NUMBER: HPD10148
EQUIP NUM: 3117019
CAT 349F

H177-55020-0288



No Action Required



Report Comment

Our sample report has been updated! For more information on the new report, go to - <https://www.youtube.com/watch?v=4H8bREJUV/s>



EMPIRE MACHINERY - ARIZONA LAB - 1725 S. Country Club Drive Mesa, AZ 85210 USA

PHONE: 866-224-3087

Web: <https://empire-cat.com> Email: fluidslab@empire-cat.com

FINAL DRIVE REAR

EQUIP NUM: 3117019

RIGHT

CAT 349F

H177-55020-0298

LABEL#: 2500881881

SAMPLE SHIP TIME (days) : 5

AMES CONSTRUCTION INC

LOCATION: Graham County,

Arizona 85546, United States

RECEIVED DATE: 20-Jan-25

No Action Required

Interp By: Larry Byington
Interpreted On: 20-Jan-25

SERIAL NUMBER: HPD10148

NO PROBLEMS PRESENTLY ASSOCIATED WITH THIS SAMPLE. CONTINUE SAMPLING AT THE NORMAL INTERVAL.

SAMPLE INFORMATION

Sampled Date	15-Jan-25	14-Jan-22	20-Sep-21	30-Jun-21
Sample Id	H177-55020-0299	E480-52018-3022	E480-51264-5002	E480-51183-4021
Lab Date	20-Jan-25	18-Jan-22	21-Sep-21	02-Jul-21
Meter [Hr]	11359.7	7140.0	8834.0	6601.0
Meter On Fluid	4219.7	539.0	2233.0	451.0
Fluid Brand	MOBIL	MOBIL	MOBIL	MOBIL
Fluid Weight	50	50	50	50
Fluid Type	TRANS 50	TRANS 50	TRANS 50	trans 50
Fluid Change	Y	Y	N	Y
Filter Change	N	N	N	N
Kidney Loop				
PM Level		500	250	500
Total Fluid Added	0	0	0	0

PREVIOUS SAMPLE

NORMAL	WEAR	METAL	READINGS	NO PROBLEMS WITH THIS SAMPLE.	CONTINUE SAMPLING AT THE NORMAL INTERVAL.	PRESENTLY ASSOCIATED
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For additional sample history, go to:

S.O.S WEB

CONDITION / CONTAMINATION

	15-Jan-25	14-Jan-22	20-Sep-21	30-Jun-21
VISCOSITY (CENTISTOKES) ASTM D445				
V100	Viscosity at 100 C	16.70	16.6	16.8
				16.3

INFRARED (UFM) ASTM E2412

ST	Soot	0	0	0	0
OXI	Oxidation	5	4	4	4
SUL	Sulfur Products	15	18	18	18
NIT	Nitration	5	4	4	4

WEAR LEVELS / ADDITIVES

	15-Jan-25	14-Jan-22	20-Sep-21	30-Jun-21
ELEMENTAL ANALYSIS (PPM) ASTM D6186 (OIL) / ASTM D6130 (COOLANT)				

Cu	Copper	0	0	0	0
Fe	Iron	164	109	38	80
Cr	Chromium	1	0	0	0
Al	Aluminum	1	5	1	1
Pb	Lead	0	0	0	0
Sn	Tin	1	0	0	0
Si	Silicon	29	25	4	6
Na	Sodium	8	5	1	4
K	Potassium	5	1	0	1
Mo	Molybdenum	85	0	1	1
Ni	Nickel	0	0	0	0
Ag	Silver	0	0	0	0
Ti	Titanium	0	0	0	0
V	Vanadium	0	0	0	0
Mn	Manganese	1	1	0	1
Cd	Cadmium				
Ca	Calcium	3095	3068	2610	2750
P	Phosphorus	1000	1048	917	920
Zn	Zinc	1256	1303	1060	1129
Mg	Magnesium	160	21	13	15
Ba	Barium	0	0	0	0
B	Boron	41	8	4	2

CLEANLINESS

	15-Jan-25	14-Jan-22	20-Sep-21	30-Jun-21
PARTICLE COUNT - ISO 11171:1999 reported per ISO 4406				
ISO	ISO Code Rating	23/23/19		
4µ	4µ	78825		
6µ	6µ	59118		
10µ	10µ	22136		
14µ	14µ	4765		
18µ	18µ	1261		
21µ	21µ	500		
38µ	38µ	6		

PARTCL VOL INDICATOR

PVI	PVI	22.93
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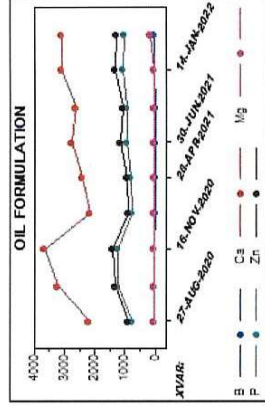
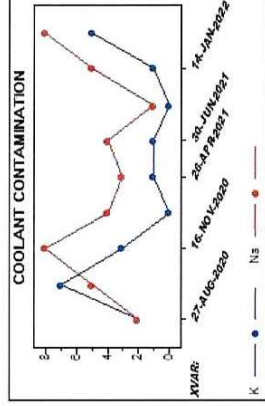
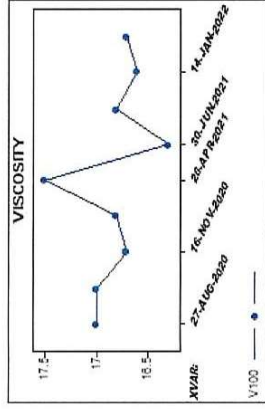
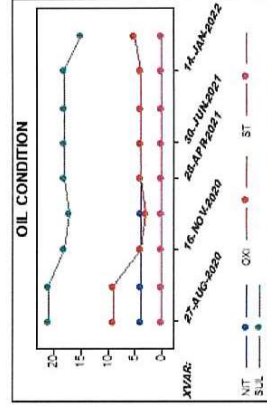
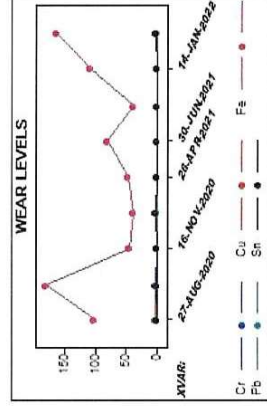
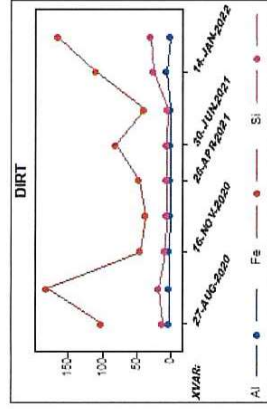
Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or component thereof.

FINAL DRIVE REAR RIGHT
SERIAL NUMBER: HPD10148
EQUIP NUM: 3117019
CAT 349F

H177-55020-0269



No Action Required



Report Comment

Our sample report has been updated! For more information on the new report, go to - <https://www.youtube.com/watch?v=4h8bREJVUrs>