

Equipment: 001013681513
 Make-Model: CATERPILLAR 966F
 Type: WHEEL LDR
 Loader
 Serial Number:

Unit Number: 1513E
 Customer No.: 0001001368
 ENGINE (SOOT)
 SAE Grade: 15W40
 Fuel: DI
 Sales Rep:

Sample Information						Physical Data				Wear Metal Concentrations in Parts Per Million (ppm) by Weight								
Test Date	Sample Date	Sample Num	Total Hours / Miles	Hours / Miles This Sample	C / S	Viscosity	Glycol	Fuel	Water	Lead	Iron	Silica	Chromium	Tin	Aluminum	Copper	Sodium	Potassium
6/16/2017	6/7/2017	061617102	17683		0 Chng	13.3	NEG	NEG	NEG	2A	8A	2A	0A	1A	3A	1A	13	1
12/9/2016	11/28/2016	120916085	17448		0 Chng	13.0	NEG	NEG	NEG	0A	10A	1A	0A	0A	2A	1A	13	1
8/26/2016	8/22/2016	082616087	17224		0 Chng	14.3	NEG	NEG	NEG	1A	22A	2A	1A	0A	2A	2A	4	0
7/8/2016	7/5/2016	070816079	16994		0 Chng	13.8	NEG	NEG	NEG	0A	21A	2A	1A	0A	2A	1A	14	0
4/26/2016	4/19/2016	042616095	16688		0 Chng	14.0	NEG	NEG	NEG	0A	12A	3A	0A	0A	5A	1A	21	0

Sample Information			Chemical Data			Additive Metals in ppm				Particle Counts Per Particle Size								ISO Code
Test Date	Sample Date	Sample Num	TBN	Soot	Ox	Ca	P	Zn	Mq	4Um	5Um	10Um	14Um	21Um	25Um	50Um	70Um	
6/16/2017	6/7/2017	061617102		0.20														
12/9/2016	11/28/2016	120916085		0.60														
8/26/2016	8/22/2016	082616087		0.50														
7/8/2016	7/5/2016	070816079		0.50														
4/26/2016	4/19/2016	042616095		0.20														

Sample Num	RECOMMENDATIONS	Rating
061617102	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	A No action Required
120916085	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	C Review complete analysis, monitor engine or component parameters
082616087	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	X Review complete analysis, examine engine or component parameters, Resample immediately
070816079	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	
042616095	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	

A-NORMAL C-WARNING X-CRITICAL NEG-NEGATIVE TR-TRACE POS-POSITIVE

Equipment: 001013681513
 Make-Model: CATERPILLAR 966F
 WHEEL LDR
 Type: LOADER
 Serial Number:

Unit Number: 1513T
 Customer No.: 0001001368
 TRANS (LPD)
 SAE Grade:
 Fuel: DI
 Sales Rep:

Sample Information						Physical Data				Wear Metal Concentrations in Parts Per Million (ppm) by Weight									
Test Date	Sample Date	Sample Num	Total Hours / Miles	Hours / Miles This Sample	C / S	Viscosity	Glycol	Fuel	Water	Lead	Iron	Silica	Chromium	Tin	Aluminum	Copper	Sodium	Potassium	
12/9/2016	12/5/2016	120916222	17451	0	Chng	NEG	NEG	NEG		1A	6A	4A	0A	0A	2A	16A	1	1	
2/8/2016	2/3/2016	020816317	16498	0	Chng	NEG	NEG	NEG		0A	8A	8A	0A	0A	1A	21A	1	1	
6/14/2011	6/3/2011	061311007	14221	1156	Chng	NEG	NEG	NEG		2A	5A	4A	0A	0A	0A	18A	6	2	
11/16/2010	11/9/2010	111510035	13736	671	Samp	NEG	NEG	NEG		1A	5A	3A	0A	0A	1A	13A	13	1	
4/16/2010	3/28/2010	041510030	13065	1500	Chng	NEG	NEG	NEG		1A	8A	3A	0A	1A	1A	23A	6	0	

Sample Information			Chemical Data			Additive Metals in ppm				Particle Counts Per Particle Size								ISO Code
Test Date	Sample Date	Sample Num	TBN	Soot	Ox	Ca	P	Zn	Mq	4Um	6Um	10Um	14Um	21Um	25Um	50Um	70Um	
12/9/2016	12/5/2016	120916222								25312	1237	96	33	15	19	7		4 22/18/19
2/8/2016	2/3/2016	020816317								26045	6970	455	70	4	1	0		1 22/20/19
6/14/2011	6/3/2011	061311007																
11/16/2010	11/9/2010	111510035																
4/16/2010	3/28/2010	041510030																

Sample Num	RECOMMENDATIONS	Rating
120916222	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	A No action Required
020816317	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	C Review complete analysis, monitor engine or component parameters
061311007	ALL TESTS APPEAR NORMAL FOR THIS DRAIN INTERVAL. 0 0 0 ISO 14/6	X Review complete analysis, examine engine or component parameters, Resample immediately
111510035	ALL TESTS APPEAR NORMAL FOR THIS DRAIN INTERVAL.	
041510030	19 18 4 ISO 20/15 ALL TESTS APPEAR NORMAL FOR THIS DRAIN INTERVAL.	

A-NORMAL C-WARNING X-CRITICAL NEG-NEGATIVE TR-TRACE POS-POSITIVE

Equipment: 001013681513
 Make-Model: CATERPILLAR 966F
 Type: WHEEL LDR
 Loader
 Serial Number:

Unit Number: 1513HS
 Customer No.: 0001001368
 HYD SYST (LPD)
 SAE Grade:
 Fuel: DI
 Sales Rep:

Sample Information						Physical Data				Wear Metal Concentrations in Parts Per Million (ppm) by Weight										
Test Date	Sample Date	Sample Num	Total Hours / Miles	Hours / Miles This Sample	C/S	Viscosity	Glycol	Fuel	Water	Lead	Iron	Silica	Chromium	Tin	Aluminum	Copper	Sodium	Potassium		
12/9/2016	12/5/2016	120916188	17451	0	Chng	NEG	NEG	NEG		0A	2A	6A	0A	0A	2A	3A		2	1	
2/8/2016	2/3/2016	020816273	16498	0	Chng	NEG	NEG	NEG		0A	2A	12A	0A	0A	2A	5A		3	0	
6/14/2011	6/3/2011	061311006	14221	1156	Chng	NEG	NEG	NEG		0A	3A	9A	0A	0A	1A	14A		7	1	
11/16/2010	11/9/2010	111510029	13736	671	Samp	NEG	NEG	NEG		1A	3A	10A	0A	0A	2A	14A		12	1	
3/26/2010	3/19/2010	032510024	13065	1500	Chng	NEG	NEG	NEG		1A	4A	9A	0A	0A	2A	22A		9	0	

Sample Information			Chemical Data			Additive Metals in ppm				Particle Counts Per Particle Size								ISO Code
Test Date	Sample Date	Sample Num	TBN	Soot	Ox	Ca	P	Zn	Mq	4Um	6Um	10Um	14Um	21Um	25Um	50Um	70Um	
12/9/2016	12/5/2016	120916188								30519	4872	617	188	32	15	7	22	22/20/16
2/8/2016	2/3/2016	020816273								18152	3232	248	45	2	2	0	6	21/19/13
6/14/2011	6/3/2011	061311006																
11/16/2010	11/9/2010	111510029																
3/26/2010	3/19/2010	032510024																

Sample Num	RECOMMENDATIONS	Rating
120916188	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	A No action Required
020816273	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	C Review complete analysis, monitor engine or component parameters
061311006	ALL TESTS APPEAR NORMAL FOR THIS DRAIN INTERVAL. 4 4 0 ISO 17/13	X Review complete analysis, examine engine or component parameters, Resample immediately
111510029	ALL TESTS APPEAR NORMAL FOR THIS DRAIN INTERVAL.	
032510024	32 22 1 ISO 20/16 ALL TESTS APPEAR NORMAL FOR THIS DRAIN INTERVAL.	

A-NORMAL C-WARNING X-CRITICAL NEG-NEGATIVE TR-TRACE POS-POSITIVE

Equipment: 001013681513
 Make-Model: CATERPILLAR 966F
 WHEEL LDR
 Type: LOADER
 Serial Number:

Unit Number: 1513FA
 Customer No.: 0001001368
 FRONT AXLE (LPD)
 SAE Grade:
 Fuel: DI
 Sales Rep:

Sample Information						Physical Data				Wear Metal Concentrations in Parts Per Million (ppm) by Weight									
Test Date	Sample Date	Sample Num	Total Hours / Miles	Hours / Miles This Sample	C / S	Viscosity	Glycol	Fuel	Water	Lead	Iron	Silica	Chromium	Tin	Aluminum	Copper	Sodium	Potassium	
12/12/2016	12/5/2016	121216250	17451		0 Chng	NEG	NEG	NEG		2A	10A	11A	0A	0A	2A	2A	0	2	
2/9/2016	2/3/2016	020916353	16498		0 Chng	NEG	NEG	NEG		1A	34A	23A	0A	0A	2A	3A	6	0	
6/14/2011	6/3/2011	061311008	14221	1156 Chng		NEG	NEG	NEG		2A	51A	17A	0A	0A	1A	10A	4	2	
11/16/2010	11/9/2010	111510045	13736	671 Samp		NEG	NEG	NEG		1A	29A	13A	0A	0A	1A	6A	15	1	
4/16/2010	3/23/2010	041510036	13065	2000 Chng		NEG	NEG	POS		1A	143A	20A	1A	0A	4A	41A	11	0	

Sample Information			Chemical Data			Additive Metals in ppm				Particle Counts Per Particle Size								ISO Code
Test Date	Sample Date	Sample Num	TBN	Soot	Ox	Ca	P	Zn	Mq	4Um	6Um	10Um	14Um	21Um	25Um	50Um	70Um	
12/12/2016	12/5/2016	121216250								39776	4608	320	48	7	2	0	0	23/19/13
2/9/2016	2/3/2016	020916353								33150	1622	1509	220	9	4	0	0	23/21/16
6/14/2011	6/3/2011	061311008																
11/16/2010	11/9/2010	111510045																
4/16/2010	3/23/2010	041510036																

Sample Num	RECOMMENDATIONS	Rating
121216250	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	A No action Required
020916353	ALL TESTS APPEAR NORMAL FOR THIS SAMPLE.	C Review complete analysis, monitor engine or component parameters
061311008	ALL TESTS APPEAR NORMAL FOR THIS DRAIN INTERVAL. 5 0 0 ISO 21/15	X Review complete analysis, examine engine or component parameters, Resample immediately
111510045	ALL TESTS APPEAR NORMAL FOR THIS DRAIN INTERVAL.	
041510036	NOTIFIED OF WATER PRESENT. SAMPLE AT NEXT SERVICE INTERVAL TO MONITOR WATER ENTRY AND WEAR TREND.	

A-NORMAL C-WARNING X-CRITICAL NEG-NEGATIVE TR-TRACE POS-POSITIVE

Equipment: 001013681513
 Make-Model: CATERPILLAR 966F
 Type: WHEEL LDR
 Serial Number: LOADER

Unit Number: 1513RA
 Customer No.: 0001001368
 REAR AXLE (LPD)
 SAE Grade:
 Fuel: DI
 Sales Rep:

Sample Information						Physical Data				Wear Metal Concentrations in Parts Per Million (ppm) by Weight										
Test Date	Sample Date	Sample Num	Total Hours / Miles	Hours / Miles This Sample	C/S	Viscosity	Glycol	Fuel	Water	Lead	Iron	Silica	Chromium	Ti	Aluminum	Copper	Sodium	Potassium		
12/12/2018	12/5/2018	121216247	17451	0	Chng	NEG	NEG	NEG	NEG	0A	32A	15A	0A	0A	4A	30A	2	1		
2/8/2018	2/3/2018	020816392	16498	0	Chng	NEG	NEG	NEG	NEG	2A	51A	26A	0A	0A	13C	162C	2	1		
6/14/2011	6/3/2011	061311009	14221	1156	Chng	NEG	NEG	NEG	NEG	1A	58A	21A	0A	0A	8A	116A	7	2		
11/16/2010	11/9/2010	111510043	13736	671	Samp	NEG	NEG	NEG	NEG	0A	32A	16A	0A	0A	4A	40A	14	1		
4/16/2010	3/23/2010	041510042	13065	2000	Chng	NEG	NEG	NEG	NEG	2A	142A	27A	1A	0A	11C	150A	10	0		

Sample Information			Chemical Data			Additive Metals in ppm				Particle Counts Per Particle Size								ISO Code
Test Date	Sample Date	Sample Num	TBN	Soot	Ox	Ca	P	Zn	Mq	4Um	6Um	10Um	14Um	21Um	25Um	50Um	70Um	
12/12/2018	12/5/2018	121216247				41670	3488	2952	319	36	9	1	4	23/22/18				
2/8/2018	2/3/2018	020816392																
6/14/2011	6/3/2011	061311009																
11/16/2010	11/9/2010	111510043																
4/16/2010	3/23/2010	041510042																

Sample Num	RECOMMENDATIONS	Rating
121216247	PARTICLE COUNT IS ELEVATED. CONTINUE TO SAMPLE TO MONITOR FLUID CLEANLINESS AND WEAR TREND.	A No action Required
020816392	ALUMINUM AND COPPER ARE HIGH. POSSIBLE BUSHING/THRUST WASHER WEAR. FLUID IS TOO DARK OR HAS EXCEEDED DETECTION LIMITS FOR PARTICLE COUNT DETERMINATION. CONTINUE TO SAMPLE TO MONITOR FLUID CLEANLINESS AND WEAR TREND.	C Review complete analysis, monitor engine or component parameters
061311009	WEAR ELEMENTS ARE NORMAL FOR THIS SAMPLE. PARTICLE COUNT HAS ELEVATED. CONTINUE TO SAMPLE TO MONITOR FLUID CLEANLINESS AND WEAR TREND. 458 18 0 ISO 23/21	X Review complete analysis, examine engine or component parameters, Resample immediately
111510043	ALL TESTS APPEAR NORMAL FOR THIS DRAIN INTERVAL.	
041510042	1798 97 3 ISO 23/22 ALUMINUM IS HIGH, PARTICLE COUNT HAS ELEVATED. CONTINUE TO SAMPLE TO MONITOR FLUID CLEANLINESS AND WEAR TREND.	

A-NORMAL

C-WARNING

X-CRITICAL

NEG-NEGATIVE

TR-TRACE

POS-POSITIVE