

# LIEBHERR LTR1100 liebherr ltr1100 #33 (S/N 074946)

# Hydraulic System

{not provided} (--- GAL)

#### RECOMMENDATION

We recommend you service the filters on this component. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

WEAR	

All component wear rates are normal.

### CONTAMINATION

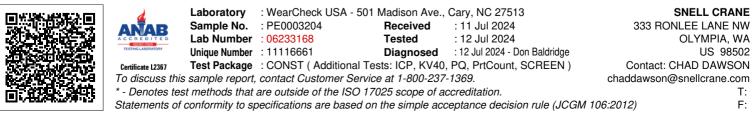
There is a high amount of particulates present in the oil.

## FLUID CONDITION

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

Test     UOM     Method     Limit/An     Current     History1     History2       Sample Number     Client Info     09 Jul 2024         Machine Age     hrs     Client Info     5000         Oil Age     hrs     Client Info     500         Oil Age     hrs     Client Info     N/A         Sample Status     Client Info     N/A         Sample Status     Client Info     N/A         Sample Status     Sample Status          PQ     ASTM D8185m<>-10     2         Sample Dation     O          Silker     ppm     ASTM D8185m<>-10     0         Silker     ppm     ASTM D8185m     -22     0         Silker     ppm     ASTM D5185m     >4     0         <					~~~~~		
Sample Date     Client Info     09 Jul 2024         Machine Age     hrs     Client Info     16453         Oil Age     hrs     Client Info     5000         Oil Changed     Client Info     N/A         Filter Age     Irs     Client Info     N/A         Sample Status     ASTM D5185m     >30     4         Sample Status     ASTM D5185m     >10     0         Nickel     ppm     ASTM D5185m     >10     0         Silver     ppm     ASTM D5185m     0     0         Silver     ppm     ASTM D5185m     >22     0         Silver     ppm     ASTM D5185m     >4     0         Aluminum     ppm     ASTM D5185m     >4     0         Yanadium     ppm     ASTM D5185m<	Test	UOM	Method	Limit/Abn	Current	History1	History2
Machine Age     hrs     Client Info     16453         Filter Age     hrs     Client Info     5000         Gil Age     hrs     Client Info     N/A         Filter Changed     Client Info     N/A         Sample Status     ABNORMAL         PQ     ASTM D5185     >30     4        Iron     ppm     ASTM D5185     >10     2        Nickel     ppm     ASTM D5185     >10     0         Nickel     ppm     ASTM D5185     0     0         Silver     ppm     ASTM D5185     22     0         Lead     ppm     ASTM D5185     >4     0         Vanadium     ppm     ASTM D5185     5     1         Vanadium     ppm     ASTM D5185     20     0	Sample Number		Client Info		PE0003204		
Machine Age     hrs     Client Info     16453         Filter Age     hrs     Client Info     5000         Filter Age     hrs     Client Info     N/A         Sample Status     Client Info     N/A         PQ     ASTM D8184     20         PQ     ASTM D5185m     >30     4         Nickel     ppm     ASTM D5185m     >10     0         Nickel     ppm     ASTM D5185m     0          Nickel     ppm     ASTM D5185m     >10     0         Aluminum     ppm     ASTM D5185m     >40     0         Lead     ppm     ASTM D5185m     >40     0         Vanadium     ppm     ASTM D5185m     >15     3         Vanadium     ppm     ASTM D5185m<>15 <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>09 Jul 2024</th> <th></th> <th></th>	Sample Date		Client Info		09 Jul 2024		
Oil Age     hrs     Client Info     5000         Filter Age     hrs     Client Info     N/A         Oil Changed     Client Info     N/A         Sample Status     ABNORMAL         PQ     ASTM D5185m     >30     4        Nickel     ppm     ASTM D5185m     >10     2        Nickel     ppm     ASTM D5185m     10     0        Titanium     ppm     ASTM D5185m     0         Sliver     ppm     ASTM D5185m     0         Copper     ppm     ASTM D5185m     >4     0         Vanadium ppm     ASTM D5185m     >4     0          Vanadium ppm     ASTM D5185m     >5     3          Vanadium ppm     ASTM D5185m     >20     0 <t< th=""><th></th><th>hrs</th><th>Client Info</th><th></th><th>16453</th><th></th><th></th></t<>		hrs	Client Info		16453		
Filter Age Oil Changed     hrs     Client Info     500         Filter Changed     Client Info     N/A         Sample Status     Client Info     N/A         PQ     ASTM D5185m     >30     4         Iron     ppm     ASTM D5185m     >10     2         Nickel     ppm     ASTM D5185m     >10     0         Silver     ppm     ASTM D5185m     0     0         Aluminum     ppm     ASTM D5185m     0          Aluminum     ppm     ASTM D5185m     >4     0         Vanadium     ppm     ASTM D5185m     >4     0         Valadium     ppm     ASTM D5185m     >20     0         Valadium     ppm     ASTM D5185m     >20     0         Veltow Meta	J	hrs	Client Info		5000		
Oil Changed     Client Info     N/A         Filter Changed     Client Info     N/A         Sample Status     ASTM D8184     20         PQ     ASTM D8185m     >30     4         PQ     ASTM D8185m     >10     2         Chromium     ppm     ASTM D5185m     >10     0         Nickel     ppm     ASTM D5185m     >10     0         Silver     ppm     ASTM D5185m     >4     0         Lead     ppm     ASTM D5185m     >22     0         Vanadium ppm     ASTM D5185m     >44     0          Vanadium ppm     ASTM D5185m     >35     1          Yellow Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar	J		Client Info				
Filter Changed Sample Status     Client Info     N/A         PQ     ASTM D8184     20         PQ     ASTM D8186     >30     4         Iron     ppm     ASTM D5185m     >10     2         Nickel     ppm     ASTM D5185m     >10     0         Silver     ppm     ASTM D5185m     0     0         Silver     ppm     ASTM D5185m     0          Copper     ppm     ASTM D5185m     >4     0         Vanadium     ppm     ASTM D5185m     >35     1         Yellow Metal     scalar     *Visual     NONE         Yellow Metal     scalar     *Visual     NONE         Yellow Metal     scalar     *Visual     NONE         Yellow Metal     scalar	Ū						
Sample Status     ABNORMAL         PQ     ASTM D8184     20         Iron     ppm     ASTM D8185     >30     4        Nickel     ppm     ASTM D5185m     >10     0         Nickel     ppm     ASTM D5185m     >10     0         Aluminum     ppm     ASTM D5185m     >4     0         Aluminum     ppm     ASTM D5185m     >4     0         Aluminum     ppm     ASTM D5185m     >22     0         Vanadium     ppm     ASTM D5185m     >35     1         Yellow Metal     scalar     *Visual     NONE          Silicon     ppm     ASTM D5185m     >1     3         Yellow Metal     scalar     *Visual     NONE         Particles >4µm     ASTM D764	•						
PQ     ASTM D8184     20         Iron     ppm     ASTM D5185m     >30     4         Chromium     ppm     ASTM D5185m     >10     0         Nickel     ppm     ASTM D5185m     0     0         Silver     ppm     ASTM D5185m     0         Lead     ppm     ASTM D5185m     >22     0         Lead     ppm     ASTM D5185m     >4     0         Vanadium     ppm     ASTM D5185m     >35     1         Vanadium     ppm     ASTM D5185m     3     0         Vanadium     ppm     ASTM D5185m     >15     3         Vanadium     ppm     ASTM D5185m     >15     3         Yellow Metal     scalar     *Visual     NONE     NONE	J						
Iron     ppm     ASTM D5185m     >30     4         Nickel     ppm     ASTM D5185m     10     2         Nickel     ppm     ASTM D5185m     10     0         Titanium     ppm     ASTM D5185m     0         Aluminum     ppm     ASTM D5185m     22     0         Lead     ppm     ASTM D5185m     22     0         Vanadium     ppm     ASTM D5185m     0          Vanadium     ppm     ASTM D5185m     0          Valadum     ppm     ASTM D5185m     0          Valow Metal     scalar     *Visual     NONE          Yellow Metal     scalar     *Visual     NONE          Paticles >4µm     ASTM D7647     >40     19							
Chromium     ppm     ASTM D5185m     >10     2         Nickel     ppm     ASTM D5185m     0         Silver     ppm     ASTM D5185m     0         Aluminum     ppm     ASTM D5185m     22     0         Lead     ppm     ASTM D5185m     >22     0         Copper     ppm     ASTM D5185m     >22     0         Vanadium     ppm     ASTM D5185m     >4     0         White Metal     scalar     *Visual     NONE     NONE         Vanadium     ppm     ASTM D5185m     >15     3         Valuet     scalar     *Visual     NONE     NONE         Vellow Hetal     scalar     *Visual     NONE          Particles >4µm     ASTM D7647<>400     19 <th>PQ</th> <th></th> <th>ASTM D8184</th> <th></th> <th>20</th> <th></th> <th></th>	PQ		ASTM D8184		20		
Nickel     ppm     ASTM D5185m     O     O         Titanium     ppm     ASTM D5185m     O         Silver     ppm     ASTM D5185m     O         Aluminum     ppm     ASTM D5185m     >22     O         Lead     ppm     ASTM D5185m     >22     O         Copper     ppm     ASTM D5185m     >4     O         Vanadium     ppm     ASTM D5185m     >4     O         Vanadium     ppm     ASTM D5185m     >15     3         Vanadium     ppm     ASTM D5185m<>15     3         Silicon     ppm     ASTM D5185m<>15     3         Paticles >4µm     ASTM D7647     >20000     ▲ 132821         Particles >4µm     ASTM D7647     >10     0         Particles >1	Iron	ppm	ASTM D5185m	>30	4		
Titanium     ppm     ASTM D5185m     0         Silver     ppm     ASTM D5185m     >4     0         Aluminum     ppm     ASTM D5185m     >22     0         Lead     ppm     ASTM D5185m     >22     0         Copper     ppm     ASTM D5185m     >22     0         Copper     ppm     ASTM D5185m     >22     0         Vanadium     ppm     ASTM D5185m     >35     1         Vanadium     ppm     ASTM D5185m     >4     0         Vanadium     ppm     ASTM D5185m     >15     3         Yellow Metal     scalar     Yusual     NONE     NONE         Silicon     ppm     ASTM D7647     >2000     -     132821         Particles >4µm     ASTM D7647	Chromium	ppm	ASTM D5185m	>10	2		
Silver     ppm     ASTM D5185m     0         Aluminum     ppm     ASTM D5185m     >4     0         Lead     ppm     ASTM D5185m     >22     0         Copper     ppm     ASTM D5185m     >35     1         Vanadium     ppm     ASTM D5185m     >4     0         White Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar     *Visual     NONE     NORE         Particles >4µm     ASTM D7647     >60     2758         Particles >21µm     ASTM D7647     >10 <th>Nickel</th> <th>ppm</th> <th>ASTM D5185m</th> <th>&gt;10</th> <th>0</th> <th></th> <th></th>	Nickel	ppm	ASTM D5185m	>10	0		
Aluminum     ppm     ASTM D5185m     >4     0         Lead     ppm     ASTM D5185m     >22     0         Copper     ppm     ASTM D5185m     >35     1         Vanadium     ppm     ASTM D5185m     >4     0         White Metal     scalar     *Visual     NONE     0         Vanadium     ppm     ASTM D5185m     >15     3         White Metal     scalar     *Visual     NONE     NONE         Silicon     ppm     ASTM D5185m<>20     0          Patsicles >4µm     ASTM D7647     >20000     132821         Particles >4µm     ASTM D7647     >640     2758         Particles >5µm     ASTM D7647     >10     0         Particles >71µm     ASTM D7647     >10     0<	Titanium	ppm	ASTM D5185m		0		
Lead     ppm     ASTM D5185m     >22     0         Copper     ppm     ASTM D5185m<>35     1         Tin     ppm     ASTM D5185m     >4     0         Vanadium     ppm     ASTM D5185m     >4     0         White Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar     *Visual     NONE     NONE         Silicon     ppm     ASTM D5185m<>15     3          Water     WC Method     >0.1     NEG          Particles >4µm     ASTM D7647     >2000     4     132821         Particles >14µm     ASTM D7647     >100     24/23/19         Particles >21µm     ASTM D7647     >40     19         OI Cleanliness     ISO 4406 (c)     2/19/16	Silver	ppm	ASTM D5185m		0		
Lead     ppm     ASTM D5185m     >22     0         Copper     ppm     ASTM D5185m     >35     1         Tin     ppm     ASTM D5185m     >4     0         White Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar     *Visual     NONE     NONE         Silicon     ppm     ASTM D5185m     >15     3         Yellow Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar     *Visual     NONE     NORE         Particles >4µm     ASTM D7647     >640     2758         Particles >14µm     ASTM D7647     >10     0         Particles >21µm     ASTM D7647 <t< th=""><th>Aluminum</th><th></th><th>ASTM D5185m</th><th>&gt;4</th><th>0</th><th></th><th></th></t<>	Aluminum		ASTM D5185m	>4	0		
Copper     ppm     ASTM D5185m     >35     1         Tin     ppm     ASTM D5185m     0         Vanadium     ppm     ASTM D5185m     0         White Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar     *Visual     NONE     NONE         Silicon     ppm     ASTM D5185m<>15     3         Potassium     ppm     ASTM D5185m<>20     0         Water     WC Method     >0.1     NEG         Particles >4µm     ASTM D7647     >20000 <b>4</b> 132821         Particles >21µm     ASTM D7647     >600 <b>4</b> 417         Particles >21µm     ASTM D7647     >10     0         Oil Cleanliness     ISO 4406 (c)     >2119/16 <b>4</b> 4/23/19         Sand/Dirt	Lead		ASTM D5185m	>22	0		
Tin     ppm     ASTM D5185m     >4     0         Vanadium     ppm     ASTM D5185m     0          White Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar     *Visual     NONE     NONE         Silicon     ppm     ASTM D5185m     >15     3         Potassium     ppm     ASTM D5185m     >20     0         Water     WC Method     >0.1     NEG          Particles >4µm     ASTM D7647     >2000 <b>4</b> 132821         Particles >1µm     ASTM D7647     >100 <b>4</b> 17         Particles >38µm     ASTM D7647     >10     0         Silt     scalar     *Visual     NONE     LIGHT         Silt     scalar     *Visual     NONE     NORE <th>Copper</th> <th></th> <th>ASTM D5185m</th> <th>&gt;35</th> <th>1</th> <th></th> <th></th>	Copper		ASTM D5185m	>35	1		
Vanadium     ppm     ASTM D5185m     0         White Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar     *Visual     NONE     NONE         Silicon     ppm     ASTM D5185m     >15     3         Potassium     ppm     ASTM D5185m     >20     0         Patticles >4µm     ASTM D7647     >20000     A 132821         Particles >6µm     ASTM D7647     >20000     A 54499         Particles >14µm     ASTM D7647     >640     A 2758         Particles >38µm     ASTM D7647     >10     0         Particles >71µm     ASTM D7647     >10     0         Silt     scalar     *Visual     NONE     LIGHT         Debris     scalar     *Visual     NORL     NORE					0		
White Metal     scalar     *Visual     NONE     NONE         Yellow Metal     scalar     *Visual     NONE     NONE         Silicon     ppm     ASTM D5185m     >15     3         Potassium     ppm     ASTM D5185m     >20     0         Particles >4µm     ASTM D7647     >20000     ▲ 132821         Particles >6µm     ASTM D7647     >640     ▲ 2758         Particles >21µm     ASTM D7647     >640     ▲ 2758         Particles >21µm     ASTM D7647     >40     19         Particles >21µm     ASTM D7647     >10     0         Particles >21µm     ASTM D7647     >10     0         Oil Cleanliness     ISO 4406 (c)     >21/19/16     ▲ 24/23/19         Silt     scalar     *Visual     NONE     IGO	Vanadium				0		
Silicon     ppm     ASTM D5185m     >15     3         Potassium     ppm     ASTM D5185m     >20     0         Water     WC Method     >0.1     NEG         Particles >4µm     ASTM D7647     >20000     A 132821         Particles >6µm     ASTM D7647     >5000     A 54499         Particles >14µm     ASTM D7647     >640     A 2758         Particles >38µm     ASTM D7647     >40     19         Particles >71µm     ASTM D7647     >10     0         Oil Cleanliness     ISO 4406 (c)     >2/19/16     24/23/19         Sand/Dirt     scalar     *Visual     NONE     IIGHT         Sand/Dirt     scalar     *Visual     NORML     NORML         Appearance     scalar     *Visual     NORML     NORML	White Metal		*Visual	NONE	NONE		
Potassium     ppm     ASTM D5185m     >20     0         Water     WC Method     >0.1     NEG         Particles >4µm     ASTM D7647     >20000     ▲ 132821         Particles >6µm     ASTM D7647     >5000     ▲ 54499         Particles >14µm     ASTM D7647     >640     ▲ 2758         Particles >21µm     ASTM D7647     >100          Particles >38µm     ASTM D7647     >40     19         Particles >71µm     ASTM D7647     >10     0         Oil Cleanliness     ISO 4406 (c)     >21/19/16     ▲ 24/23/19         Silt     scalar     *Visual     NONE          Sand/Dirt     scalar     *Visual     NORML     NORML         Appearance     scalar     *Visual     NORML <th>Yellow Metal</th> <th></th> <th>*Visual</th> <th>NONE</th> <th>-</th> <th></th> <th></th>	Yellow Metal		*Visual	NONE	-		
Potassium     ppm     ASTM D5185m     >20     0         Water     WC Method     >0.1     NEG         Particles >4µm     ASTM D7647     >20000     ▲ 132821         Particles >6µm     ASTM D7647     >5000     ▲ 54499         Particles >14µm     ASTM D7647     >640     ▲ 2758         Particles >21µm     ASTM D7647     >100          Particles >38µm     ASTM D7647     >40     19         Particles >71µm     ASTM D7647     >10     0         Oil Cleanliness     ISO 4406 (c)     >21/19/16     ▲ 24/23/19         Silt     scalar     *Visual     NONE          Sand/Dirt     scalar     *Visual     NORML     NORML         Appearance     scalar     *Visual     NORML <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>							
Water     WC Method     >0.1     NEG        Particles >4µm     ASTM D7647     >20000     ▲ 132821         Particles >6µm     ASTM D7647     >5000     ▲ 54499         Particles >14µm     ASTM D7647     >640     ▲ 2758         Particles >21µm     ASTM D7647     >100          Particles >38µm     ASTM D7647     >40     19         Particles >71µm     ASTM D7647     >10     0         Oil Cleanliness     ISO 4406 (c)     >21/19/16     ▲ 24/23/19         Silt     scalar     *Visual     NONE     LIGHT         Sand/Dirt     scalar     *Visual     NORM     NORML         Appearance     scalar     *Visual     NORM     NORML         Appearance     scalar     *Visual     NORM     NORML	Silicon	ppm	ASTM D5185m	>15	3		
Particles >4µm     ASTM D7647     >20000     ▲ 132821         Particles >6µm     ASTM D7647     >5000     ▲ 54499         Particles >14µm     ASTM D7647     >640     ▲ 2758         Particles >21µm     ASTM D7647     >160     ▲ 117         Particles >71µm     ASTM D7647     >10     0         Particles >71µm     ASTM D7647     >10     0         Oil Cleanliness     ISO 4406 (c)     >21/19/16     ▲ 24/23/19         Silt     scalar     *Visual     NONE     ILIGHT         Sand/Dirt     scalar     *Visual     NORK     NORML         Appearance     scalar     *Visual     NORML     NORML         Gor     scalar     *Visual     NORML     NORML         Boron     ppm     ASTM D5185m     0	Potassium	ppm	ASTM D5185m	>20	0		
Particles >6µm   ASTM D7647   >5000   ▲ 54499       Particles >14µm   ASTM D7647   >640   ▲ 2758       Particles >21µm   ASTM D7647   >160   ▲ 417       Particles >38µm   ASTM D7647   >10   0       Particles >71µm   ASTM D7647   >10   0       Oil Cleanliness   ISO 4406 (c)   >21/19/16   ▲ 24/23/19       Silt   scalar   *Visual   NONE   LIGHT       Sand/Dirt   scalar   *Visual   NONE   NONE       Appearance   scalar   *Visual   NORML   NORML       Gdor   scalar   *Visual   NORML   NORML       Sodium   ppm   ASTM D5185m   3       Boron   ppm   ASTM D5185m   0       Maganese   ppm   ASTM D5185m   0    -	Water		WC Method	>0.1	NEG		
Particles >14µm     ASTM D7647     >640     2758        Particles >21µm     ASTM D7647     >160     417        Particles >38µm     ASTM D7647     >100     19        Particles >71µm     ASTM D7647     >10     0        Oil Cleanliness     ISO 4406 (c) >21/19/16     24/23/19         Silt     scalar     *Visual     NONE     LIGHT        Debris     scalar     *Visual     NONE     NONE        Sand/Dirt     scalar     *Visual     NONE     NONE        Appearance     scalar     *Visual     NORML     NORML        Appearance     scalar     *Visual     NORML     NORML        Godor     scalar     *Visual     NORML     NORML        Boron     ppm     ASTM D5185m     3         Malybdenum     ppm     ASTM D5185m     0         Marg	Particles >4µm		ASTM D7647	>20000	<b>A</b> 132821		
Particles >21µm   ASTM D7647   >160   417       Particles >38µm   ASTM D7647   >40   19       Particles >71µm   ASTM D7647   >10   0       Oil Cleanliness   ISO 4406 (c)   >21/19/16   24/23/19       Silt   scalar   *Visual   NONE   LIGHT       Debris   scalar   *Visual   NONE   NONE       Sand/Dirt   scalar   *Visual   NONE   NONE       Appearance   scalar   *Visual   NORM   NORML       Odor   scalar   *Visual   NORM   NORML       Gor   scalar   *Visual   NORM   NORML       Sodium   ppm   ASTM D5185m   3       Boron   ppm   ASTM D5185m   0       Malganese   ppm   ASTM D5185m   0 </th <th>Particles &gt;6µm</th> <th></th> <th>ASTM D7647</th> <th>&gt;5000</th> <th>🔺 54499</th> <th></th> <th></th>	Particles >6µm		ASTM D7647	>5000	🔺 54499		
Particles >38µm     ASTM D7647     >40     19         Particles >71µm     ASTM D7647     >10     0         Oil Cleanliness     ISO 4406 (c) >21/19/16     24/23/19         Silt     scalar     *Visual     NONE     LIGHT        Debris     scalar     *Visual     NONE     NONE        Sand/Dirt     scalar     *Visual     NONE     NONE        Appearance     scalar     *Visual     NORH     NORML         Odor     scalar     *Visual     NORH     NORML         Odor     scalar     *Visual     NORH     NORML         Odor     scalar     *Visual     NORH     NORML         Sodium     ppm     ASTM D5185m     3         Boron     ppm     ASTM D5185m     0         Molybdenum	Particles >14µm		ASTM D7647	>640	<b>A</b> 2758		
Particles >71µm     ASTM D7647     >10     0         Oil Cleanliness     ISO 4406 (c)     >21/19/16     ▲ 24/23/19         Silt     scalar     *Visual     NONE     LIGHT         Debris     scalar     *Visual     NONE     NONE         Sand/Dirt     scalar     *Visual     NONE     NONE         Appearance     scalar     *Visual     NORM     NORML         Odor     scalar     *Visual     NORM     NORML         Odor     scalar     *Visual     NORM     NORML         Odor     scalar     *Visual     >0.1     NEG         Sodium     ppm     ASTM D5185m     3          Boron     ppm     ASTM D5185m     0          Molybdenum     ppm     ASTM D5185m	Particles >21µm		ASTM D7647	>160	🔺 417		
Oil CleanlinessISO 4406 (c)>21/19/1624/23/19Siltscalar*VisualNONELIGHTDebrisscalar*VisualNONENONESand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGSodiumppmASTM D5185m3BoronppmASTM D5185m0BariumppmASTM D5185m0MolybdenumppmASTM D5185m0MagnesiumppmASTM D5185m2MagnesiumppmASTM D5185m280ZincppmASTM D5185m280SulfurppmASTM D5185m280Acid Number (AN)mg KOHgASTM D50450.21	Particles >38µm		ASTM D7647	>40	19		
Siltscalar*VisualNONELIGHTDebrisscalar*VisualNONENONESand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMNORMLOdorscalar*VisualNORMNORMLOdorscalar*VisualNORMNORMLEmulsified Waterscalar*Visual>0.1NEGSodiumppmASTM D5185m3BoronppmASTM D5185m0BariumppmASTM D5185m0MolybdenumppmASTM D5185m0MagnesiumppmASTM D5185m2MagnesiumppmASTM D5185m280PhosphorusppmASTM D5185m280SulfurppmASTM D5185m280SulfurppmASTM D5185m0.21	Particles >71µm		ASTM D7647	>10	0		
Debrisscalar*VisualNONENONESand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGSodiumppmASTM D5185m3BoronppmASTM D5185m19BariumppmASTM D5185m0MolybdenumppmASTM D5185m0MaganeseppmASTM D5185m2MagnesiumppmASTM D5185m285PhosphorusppmASTM D5185m280ZincppmASTM D5185m280SulfurppmASTM D5185m0.21	Oil Cleanliness		ISO 4406 (c)	>21/19/16	<b>A</b> 24/23/19		
Sand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGSodiumppmASTM D5185m3BoronppmASTM D5185m19BariumppmASTM D5185m0MolybdenumppmASTM D5185m0MaganeseppmASTM D5185m2MagnesiumppmASTM D5185m2PhosphorusppmASTM D5185m280ZincppmASTM D5185m280SulfurppmASTM D5185m0.21	Silt	scalar	*Visual	NONE	LIGHT		
Appearance     scalar     *Visual     NORML     NORML        Odor     scalar     *Visual     NORML     NORML         Emulsified Water     scalar     *Visual     >0.1     NEG         Sodium     ppm     ASTM D5185m     3         Boron     ppm     ASTM D5185m     19         Barium     ppm     ASTM D5185m     0         Molybdenum     ppm     ASTM D5185m     0         Magnesium     ppm     ASTM D5185m     0         Magnesium     ppm     ASTM D5185m     2         Phosphorus     ppm     ASTM D5185m     85         Zinc     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m	Debris	scalar	*Visual	NONE	NONE		
Odor     scalar     *Visual     NORML         Emulsified Water     scalar     *Visual     >0.1     NORML         Sodium     ppm     ASTM D5185m     3         Boron     ppm     ASTM D5185m     19         Barium     ppm     ASTM D5185m     0         Molybdenum     ppm     ASTM D5185m     0         Magnesium     ppm     ASTM D5185m     0         Magnesium     ppm     ASTM D5185m     2         Phosphorus     ppm     ASTM D5185m     85         Zinc     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m     280         Kid Number (AN)     mg KOH/g     ASTM D5185m     0.21	Sand/Dirt	scalar	*Visual	NONE	NONE		
Emulsified Water     scalar     *Visual     >0.1     NEG         Sodium     ppm     ASTM D5185m     3         Boron     ppm     ASTM D5185m     19         Barium     ppm     ASTM D5185m     0         Molybdenum     ppm     ASTM D5185m     0         Manganese     ppm     ASTM D5185m     0         Magnesium     ppm     ASTM D5185m     0         Calcium     ppm     ASTM D5185m     2         Phosphorus     ppm     ASTM D5185m     85         Zinc     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m     1059         Acid Number (AN)     mg KOH/g     ASTM D8045     0.21	Appearance	scalar	*Visual	NORML	NORML		
Sodium     ppm     ASTM D5185m     3        Boron     ppm     ASTM D5185m     19        Barium     ppm     ASTM D5185m     0        Molybdenum     ppm     ASTM D5185m     0        Manganese     ppm     ASTM D5185m     0        Magnesium     ppm     ASTM D5185m     0        Calcium     ppm     ASTM D5185m     2        Phosphorus     ppm     ASTM D5185m     85        Zinc     ppm     ASTM D5185m     280        Sulfur     ppm     ASTM D5185m     1059        Acid Number (AN)     mg KOH/g     ASTM D8045     0.21	Odor	scalar	*Visual	NORML	NORML		
Boron     ppm     ASTM D5185m     19         Barium     ppm     ASTM D5185m     0         Molybdenum     ppm     ASTM D5185m     0         Manganese     ppm     ASTM D5185m     0         Magnesium     ppm     ASTM D5185m     0         Calcium     ppm     ASTM D5185m     2         Phosphorus     ppm     ASTM D5185m     85         Zinc     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m     1059         Acid Number (AN)     mg KOH/g     ASTM D8045     0.21	Emulsified Water	scalar	*Visual	>0.1	NEG		
Boron     ppm     ASTM D5185m     19         Barium     ppm     ASTM D5185m     0         Molybdenum     ppm     ASTM D5185m     0         Manganese     ppm     ASTM D5185m     0         Magnesium     ppm     ASTM D5185m     0         Calcium     ppm     ASTM D5185m     2         Phosphorus     ppm     ASTM D5185m     85         Zinc     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m     1059         Acid Number (AN)     mg KOH/g     ASTM D8045     0.21							
Barium     ppm     ASTM D5185m     0        Molybdenum     ppm     ASTM D5185m     0        Manganese     ppm     ASTM D5185m     0        Magnesium     ppm     ASTM D5185m     0        Calcium     ppm     ASTM D5185m     2        Phosphorus     ppm     ASTM D5185m     85        Zinc     ppm     ASTM D5185m     280        Sulfur     ppm     ASTM D5185m     1059        Acid Number (AN)     mg KOH/g     ASTM D8045     0.21		ppm			3		
Molybdenum     ppm     ASTM D5185m     0        Manganese     ppm     ASTM D5185m     0        Magnesium     ppm     ASTM D5185m     2        Magnesium     ppm     ASTM D5185m     25        Calcium     ppm     ASTM D5185m     85        Phosphorus     ppm     ASTM D5185m     280        Zinc     ppm     ASTM D5185m     280        Sulfur     ppm     ASTM D5185m     1059        Acid Number (AN)     mg KOH/g     ASTM D8045     0.21		ppm	ASTM D5185m		19		
Manganese     ppm     ASTM D5185m     0        Magnesium     ppm     ASTM D5185m     2        Calcium     ppm     ASTM D5185m     85        Phosphorus     ppm     ASTM D5185m     276        Zinc     ppm     ASTM D5185m     280        Sulfur     ppm     ASTM D5185m     1059        Acid Number (AN)     mg KOH/g     ASTM D8045     0.21		ppm	ASTM D5185m		0		
Magnesium     ppm     ASTM D5185m     2        Calcium     ppm     ASTM D5185m     85         Phosphorus     ppm     ASTM D5185m     276         Zinc     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m     1059         Acid Number (AN)     mg KOH/g     ASTM D8045     0.21		ppm					
Calcium     ppm     ASTM D5185m     85         Phosphorus     ppm     ASTM D5185m     276         Zinc     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m     1059         Acid Number (AN)     mg KOH/g     ASTM D8045     0.21		ppm					
Phosphorus     ppm     ASTM D5185m     276         Zinc     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m     1059         Acid Number (AN)     mg KOH/g     ASTM D8045     0.21	J J	ppm			2		
Zinc     ppm     ASTM D5185m     280         Sulfur     ppm     ASTM D5185m     1059         Acid Number (AN)     mg KOH/g     ASTM D8045     0.21		ppm					
Sulfur     ppm     ASTM D5185m     1059         Acid Number (AN)     mg KOH/g     ASTM D8045     0.21	Phosphorus	ppm	ASTM D5185m		276		
Acid Number (AN) mg KOH/g ASTM D8045 0.21					280		
		ppm	ASTM D5185m		1059		
Visc @ 40°C cSt ASTM D445 32.0	. ,	mg KOH/g					
	Visc @ 40°C	cSt	ASTM D445		32.0		





Submitted By: Sean McNealley Page 2 of 2