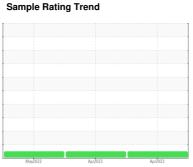


## **OIL ANALYSIS REPORT**



**NORMAL** 



# {UNASSIGNED} 001-ITS-DXN490

Component **Diesel Engine** 

Diesel Engine Oil (2 GAL)

D	IA	G۱	ИC	S	IS	

#### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Taro 20 dp )

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the

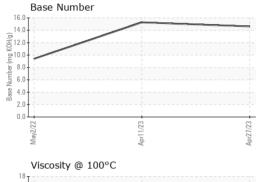
#### **Fluid Condition**

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Machine Age         kms         Client Info         67190         67190         142694           Oil Age         kms         Client Info         1652         1652         4482           Oil Changed         Client Info         Not Changd         N/A         Not Changd           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         11         13         16           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >4         52         56         1           Titanium         ppm         ASTM D5185m         >3         0         0         1           Silver         ppm         ASTM D5185m <th></th> <th></th> <th>Ma</th> <th>y2022</th> <th>Apr2023 Apr20</th> <th>123</th> <th></th>			Ma	y2022	Apr2023 Apr20	123	
Sample Date   Citient Info   27 Apr 2023   11 Apr 2023   02 May 2022   Machine Age   kms   Citient Info   67190   67190   142694   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   4482   1652   1652   1652   1652   1482   1652   1652   1482   1652   1652   1482   1652   1652   1482   1652   1652   1482   1652   1652   1482   1652   1652   1482   1652   16	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age         kms         Client Info         67190         67190         142694           Oil Age         kms         Client Info         1652         1652         4482           Oil Changed         Client Info         Not Changd         N/A         Not Changd           Sample Status         NoRMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limil/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limil/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         11         13         16           Chromium         ppm         ASTM D5185m         >100         11         13         16           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>RP0035211</th> <th>RP0034882</th> <th>RP0026230</th>	Sample Number		Client Info		RP0035211	RP0034882	RP0026230
Oil Age         kms         Client Info         1652         1482         4482           Oil Changed Sample Status         Client Info         Not Changd         N/A         Not Changd           Sample Status         NoRMAL         10         41.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0 </th <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>27 Apr 2023</th> <th>11 Apr 2023</th> <th>02 May 2022</th>	Sample Date		Client Info		27 Apr 2023	11 Apr 2023	02 May 2022
Oil Age         kms         Client Info         1652         1482         4482           Oil Changed Sample Status         Client Info         Not Changd         N/A         Not Changd           Sample Status         NoRMAL         10         41.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0 </th <th>Machine Age</th> <th>kms</th> <th>Client Info</th> <th></th> <th>67190</th> <th>67190</th> <th>142694</th>	Machine Age	kms	Client Info		67190	67190	142694
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2	-	kms	Client Info		1652	1652	4482
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         NEG	Oil Changed		Client Info		Not Changd	N/A	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS	CONTAMINATION	V	method	limit/base	current	history1	history2
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         11         13         16           Chromium         ppm         ASTM D5185m         >20         -1         <1         <1           Nickel         ppm         ASTM D5185m         >4         52         56         1           Titanium         ppm         ASTM D5185m         >3         0         0         1           Silver         ppm         ASTM D5185m         >3         0         0         1           Aluminum         ppm         ASTM D5185m         >20         0         2         6           Lead         ppm         ASTM D5185m         >40         <1         0         <1           Lead         ppm         ASTM D5185m         >330         2         <1         1           Tin         ppm         ASTM D5185m         >330         2         <1         1           Vanadium         ppm         ASTM D5185m         268         270         0           Cadmium         ppm         ASTM D5185m         2         1         38	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	11	13	16
Titanium         ppm         ASTM D5185m         <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver         ppm         ASTM D5185m         >3         0         0         1           Aluminum         ppm         ASTM D5185m         >20         0         2         6           Lead         ppm         ASTM D5185m         >40         <1	Nickel	ppm	ASTM D5185m	>4	-	56	1
Aluminum         ppm         ASTM D5185m         >20         0         2         6           Lead         ppm         ASTM D5185m         >40         <1	Titanium	ppm	ASTM D5185m		<1	<1	<1
Lead         ppm         ASTM D5185m         >40         <1	Silver	ppm			0	0	1
Copper         ppm         ASTM D5185m         >330         2         <1	Aluminum	ppm	ASTM D5185m	>20	0	2	6
Tin         ppm         ASTM D5185m         >15         <1	Lead	ppm	ASTM D5185m	>40	<1	0	
Vanadium         ppm         ASTM D5185m         268         270         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         <1	Copper	ppm	ASTM D5185m	>330	2	<1	1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         <1         38           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         2         1         70           Manganese         ppm         ASTM D5185m         1         2         <1           Magnesium         ppm         ASTM D5185m         38         25         953           Calcium         ppm         ASTM D5185m         6983         6919         1320           Phosphorus         ppm         ASTM D5185m         368         349         1194           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         9         8           Sodium         ppm         ASTM D5185m         >20         1         0         2           INFRA-RED         method         limit/base         current </th <th>Tin</th> <th>ppm</th> <th>ASTM D5185m</th> <th>&gt;15</th> <th>&lt;1</th> <th>0</th> <th></th>	Tin	ppm	ASTM D5185m	>15	<1	0	
ADDITIVES	Vanadium	ppm	ASTM D5185m		268	270	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         2         1         70           Manganese         ppm         ASTM D5185m         1         2         <1           Magnesium         ppm         ASTM D5185m         38         25         953           Calcium         ppm         ASTM D5185m         6983         6919         1320           Phosphorus         ppm         ASTM D5185m         310         322         1040           Zinc         ppm         ASTM D5185m         368         349         1194           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         9         8           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D7844         >3         0.4         0.4         0.3           INFRA-RED         method         limit/base         current </th <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         2         1         70           Manganese         ppm         ASTM D5185m         1         2         <1	Boron	ppm	ASTM D5185m		2	<1	38
Manganese         ppm         ASTM D5185m         1         2         <1	Barium	ppm	ASTM D5185m		0	0	0
Magnesium         ppm         ASTM D5185m         38         25         953           Calcium         ppm         ASTM D5185m         6983         6919         1320           Phosphorus         ppm         ASTM D5185m         310         322         1040           Zinc         ppm         ASTM D5185m         368         349         1194           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         9         8           Sodium         ppm         ASTM D5185m         >20         1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         <	Molybdenum	ppm	ASTM D5185m		2	1	70
Calcium         ppm         ASTM D5185m         6983         6919         1320           Phosphorus         ppm         ASTM D5185m         310         322         1040           Zinc         ppm         ASTM D5185m         368         349         1194           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         9         8           Sodium         ppm         ASTM D5185m         >20         1         0         2           Potassium         ppm         ASTM D5185m         >20         1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >3         0.4         0.4         0.3           Nitration         Abs/cm         "ASTM D7624         >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         "ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1	Manganese	ppm	ASTM D5185m		1	2	<1
Phosphorus         ppm         ASTM D5185m         310         322         1040           Zinc         ppm         ASTM D5185m         368         349         1194           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         9         8           Sodium         ppm         ASTM D5185m         >20         1         0         2           Potassium         ppm         ASTM D5185m         >20         1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >	Magnesium	ppm	ASTM D5185m		38	25	953
Zinc         ppm         ASTM D5185m         368         349         1194           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         9         8           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         9.0         9.1         18.1		ppm	ASTM D5185m			6919	1320
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         9         8           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         9.0         9.1         18.1	Phosphorus	ppm					1040
Silicon         ppm         ASTM D5185m         >25         8         9         8           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         9.0         9.1         18.1	-		ASTM D5185m		368	349	1194
Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         9.0         9.1         18.1	CONTAMINANTS	;	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         9.0         9.1         18.1	Silicon	ppm	ASTM D5185m	>25	8	9	8
INFRA-RED	Sodium	ppm	ASTM D5185m		3	4	2
Soot %         %         *ASTM D7844 >3         0.4         0.4         0.3           Nitration         Abs/cm         *ASTM D7624 >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         *ASTM D7415 >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         9.0         9.1         18.1	Potassium	ppm	ASTM D5185m	>20	1	0	2
Nitration         Abs/cm         *ASTM D7624         >20         12.5         12.5         8.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         9.0         9.1         18.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         24.6         24.7         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         9.0         9.1         18.1	Soot %	%	*ASTM D7844	>3	0.4	0.4	0.3
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 9.0 9.1 18.1	Nitration	Abs/cm	*ASTM D7624	>20	12.5	12.5	8.7
Oxidation Abs/.1mm *ASTM D7414 >25 <b>9.0</b> 9.1 18.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	24.6	24.7	21.6
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 14.62 15.28 9.40	Oxidation	Abs/.1mm	*ASTM D7414	>25	9.0	9.1	18.1
	Base Number (BN)	mg KOH/g	ASTM D2896		14.62	15.28	9.40



## **OIL ANALYSIS REPORT**



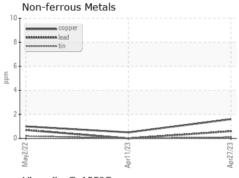
0.0	· · · · · · · · · · · · · · · · · · ·	<del>-</del>	-
5	77	/23	/23
M~.200	740	Apr11/23	Apr27/23
2	E	Al	A
'	/iscosity @ 100°C		
18 T			
17-			
16 -			
	Abnormal		1
(2015-1 (2001) 14-1 13-1			
Ē14			
% 13 -			
12 -			
11+	Abnormal		
10			
	77	223	
500 C	17	hr11/	
-	<u> </u>	<u>n</u> .	

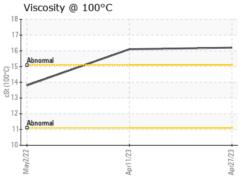
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

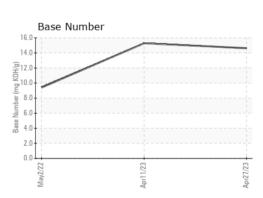
FLUID PROPER	THES	method	iimii/base		nistory i	nistoryz
Visc @ 100°C	cSt	ASTM D445		16.2	16.1	13.8

#### **GRAPHS**

# Ferrous Alloys Ë 30











Laboratory Sample No. Lab Number

Unique Number : 10453531

: RP0035211 : 05834728

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received :01 May 2023 Diagnosed

: 04 May 2023 Diagnostician : Jonathan Hester

**Test Package**: IND 2 (Additional Tests: FT-IR, KV100, TBN) To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) **TEAM SUR S.A.S.** 

BOGOTA. CO Contact: Team Sur jconde@teamsur.com T: (300)740-0654

Submitted By: Team Sur