

## **OIL ANALYSIS REPORT**

### Area **Nickelson** Sany SY365 SY036MCB00618

**Diesel Engine** CITGO 15W40 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

#### 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.

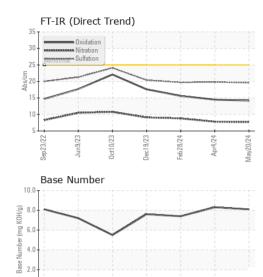
Sample Number     Client Info     PCA0115565     PCA0115501     LW0000       Sample Date     Ner     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     N112     2845     2576       Oil Changed     Client Info     N01 Changd     Not Ch	SIS REPU	RI					
SAMPLE INFORMATION     Include     Institute     Current     Instory     Instory       Sample Date     Client Info     PCA0115565     PCA0115501     LW0002       Sample Date     Client Info     3112     2845     2576       Machine Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     3112     2845     2576       Oil Changed     Client Info     3112     2845     2576       Oil Changed     Client Info     NORMAL     NORMAL     NORMAL     NORMAL       VORDATAMINATION     method     imit/base     current     historyt     Inst       Fuel     WC Method     >5     <1.0     <1.0     <1.0     <1.0       Vater     WC Method     >0     2     NEG     NEG     NEG       Fuel     WC Method     >0     2     1     1     0       Vater     WC Method     >0     2     1     1     0       Situer     ppm     ASTM							
SAMPLE INFORMATION     method     imit/base     current     history1     hist       Sample Number     Client Info     PCA0115565     PCA0115501     LW0002       Sample Date     Client Info     20 May 2024     04 Apr 2024     28 Feb       Machine Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     3112     2845     2576       Oil Changed     Client Info     3112     2845     2576       Oil Changed     Client Info     NORMAL     NORMAL     NORMAL       VEX     Method     >5     <1.0     <1.0     <1.0       Sample Status     WC Method     >0.2     NEG     NEG     NEG       Fuel     WC Method     >0.2     NEG     NEG     NEG       Giycol     WC Method     >0.2     1     1     0       Silver     ppm     ASTM 05165m     >1.00     5     4     5       Chromium     ppm     ASTM 05165m     >3     1     0							
SAMPLE INFORMATION     India     India <thindi< th="">     India     India</thindi<>		I					
SAMPLE INFORMATION     method     limit/base     current     Pistory1     history1     history1       Sample Number     Client Info     20 May 2024     04 Apr 2024     28 Feb       Machine Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     Not Changd     Not Changd     Not Changd       Sample Status     Imit/base     current     history1     history1       CONTAMINATION     method     imit/base     current     history1     history1       Fuel     WC Method     >0.2     NEG     NEG     NEG       Wear     WC Method     >0.2     NEG     NEG     NEG       Wear     WC Method     >0.2     1     <1	518 NICKE	son					
SAMPLE INFORMATION     method     limit/base     current     Pistory1     history1     history1       Sample Number     Client Info     20 May 2024     04 Apr 2024     28 Feb       Machine Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     Not Changd     Not Changd     Not Changd       Sample Status     NORMAL     NORMAL     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     imit/base     current     history1     history1       Keiner     WC Method     >0.2     NEG     NEG     NEG       Wear     WC Method     >0.2     NEG     NEG     NEG       Vickel     ppm     ASTM 05165m<>10.0     5     4     5       Chromium     ppm     ASTM 05165m<>20     2     2     1     1       Keide     ppm     ASTM 05165m<>33.0     2     2     1     1							
Sample Number     Client Info     PCA0115565     PCA0115501     LW0000       Sample Date     Client Info     20 May 2024     04 Apr 2024     28 Feb       Machine Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     3112     2845     2576       Oil Changed     Client Info     Not Changd     Not Changd     Not Changd     Not Changd       Sample Status     Client Info     Not Changd     Not Changd     Not Changd     Not Changd       Glyool     method     Imit/base     current     history1     history1     history1       WCM Method     >0.2     NEG     NEG     NEG     NEG       Machine Age     ppm     ASTM D5185m     >100     5     4     5       Glycol     WC Method     >0     <11			Sep2022	Jun2023 0ct2023	Dec2023 Feb2024 Apr/2024	May2024	
Sample Number     Client Info     PCA0115565     PCA0115501     LW0000       Sample Date     Client Info     20 May 2024     04 Apr 2024     28 Feb       Machine Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     3112     2845     2576       Oil Changed     Client Info     Not Changd     Not Changd     Not Changd     Not Changd       Sample Status     Client Info     Not Changd     Not Changd     Not Changd     Not Changd       Glyool     method     limit/base     current     history1     history1     history1       Water     WC Method     >0.2     NEG     NEG     NEG       Myter     WC Method     >0.2     NEG     NEG     NEG       Mickel     ppm     ASTM D5185m     >100     5     4     5       Chromium     ppm     ASTM D5185m     >40     <1							
Sample Date     Client Info     20 May 2024     04 Apr 2024     28 Feb       Machine Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     Not Changd     Not Changd     Not Changd       Sample Status     Not Method     >5     <1.0	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age     hrs     Client Info     3112     2845     2576       Oil Age     hrs     Client Info     3112     2845     2576       Oil Changed     Client Info     Not Changd     Not Changd     Not Changd     Not Changd       Sample Status     Client Info     Not Changd     Not Changd     Not Changd     Not Changd       CONTAMINATION     method     imit/base     current     history1     history1       Fuel     WC Method     >5     <1.0	Sample Number		Client Info		PCA0115565	PCA0115501	LW0008310
Oil Age     Ins     Client Info     3112     2845     2576       Oil Changed     Client Info     Not Changd     Not Changd     Not Changd     Not Changd       Sample Status     Imit Info     NORMAL     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     limit/base     current     history1     hist       Fuel     WC Method     >5     <1.0	Sample Date		Client Info		20 May 2024	04 Apr 2024	28 Feb 2024
Oil Changed Sample Status     Client Info     Not Changd NORMAL     Not Changd NeG       Water     WC Method     >0.2     NEG     NeG	•	hrs			-		
Sample Status     NORMAL     NORMAL     NORMAL     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     limit/base     current     history1     history1       Fuel     WC Method     >5     <1.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG     NEG       Older     WC Method     NO     Sample     current     history1     history1       Wear     WC Method     S0.2     Current     history1     history1       Wear     ppm     ASTM D5185m     >20     <1     <1     0       Nickel     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >30     21     2     2     1       Lead     ppm     ASTM D5185m     >30     2     2     2     1       Lead     ppm     ASTM D5185m     <40     <1     <1     0       Cadmium     ppm     ASTM D	-	hrs			-		
CONTAMINATION     method     limit/base     current     history1     hist       Fuel     WC Method     >5     <1.0	-		Client Info		-	Ŭ	Not Changd
Fuel     WC Method     >5     <1.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >100     5     4     5       Chromium     ppm     ASTM D5185m     >20     <1	-				NORMAL	NORMAL	NORMAL
Water     WC Method     >0.2     NEG     NEG     NEG     NEG       Glycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     hist       Iron     ppm     ASTM D5185m     >100     5     4     5       Chromium     ppm     ASTM D5185m     >20     <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     hist       Iron     ppm     ASTM D5185m     >100     5     4     5       Chromium     ppm     ASTM D5185m     >20     <1							
WEAR METALS     method     limit/base     current     history1     hist       Iron     ppm     ASTM D5185m     >100     5     4     5       Chromium     ppm     ASTM D5185m     >20     <1				>0.2	-		
Iron     ppm     ASTM D5185m     >100     5     4     5       Chromium     ppm     ASTM D5185m     >20     <1	-		WC Method		NEG	NEG	NEG
Chromium     ppm     ASTM D5185m     >20     <1     <1     <1       Nickel     ppm     ASTM D5185m     >4     0     <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >4     0     <1     0       Titanium     ppm     ASTM D5185m     <3	ron	ppm	ASTM D5185m	>100	5	4	5
Titanium     ppm     ASTM D5185m     <1     1     0       Silver     ppm     ASTM D5185m     >3     <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver     ppm     ASTM D5185m     >3     <1     0     0       Aluminum     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >40     <1     <1     3       Copper     ppm     ASTM D5185m     >40     <1     <1     0       Vanadium     ppm     ASTM D5185m     >330     2     2     2     2       Tin     ppm     ASTM D5185m     >330     2     2     2     2       Vanadium     ppm     ASTM D5185m     >15     <1     1     0       Vanadium     ppm     ASTM D5185m     0     <1     0     <1     0       Cademium     ppm     ASTM D5185m     0     <1     0     <1     0       ADDITIVES     method     limit/base     current     history1     hist       Boron     ppm     ASTM D5185m     28     32     39       Garium     ppm     ASTM D5185m <th< td=""><td>Nickel</td><td>ppm</td><td>ASTM D5185m</td><td>&gt;4</td><td>-</td><td></td><td></td></th<>	Nickel	ppm	ASTM D5185m	>4	-		
Aluminum     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >40     <1				-			
Lead     ppm     ASTM D5185m     >40     <1     <1     3       Copper     ppm     ASTM D5185m     >330     2     2     2       Tin     ppm     ASTM D5185m     >15     <1							
Copper     ppm     ASTM D5185m     >330     2     2     2       Tin     ppm     ASTM D5185m     >15     <1					_		
Tin     ppm     ASTM D5185m     >15     <1     1     0       Vanadium     ppm     ASTM D5185m     <1							
Vanadium     ppm     ASTM D5185m     <1     <1     0       Cadmium     ppm     ASTM D5185m     0     <1					_		
Cadmium     ppm     ASTM D5185m     0     <1     0       ADDITIVES     method     limit/base     current     history1     hist       Boron     ppm     ASTM D5185m     68     63     50       Barium     ppm     ASTM D5185m     0     <1	Vanadium					<1	0
Boron     ppm     ASTM D5185m     68     63     50       Barium     ppm     ASTM D5185m     0     <1	Cadmium	ppm	ASTM D5185m		0	<1	0
Boron     ppm     ASTM D5185m     68     63     50       Barium     ppm     ASTM D5185m     0     <1	ADDITIVES		method	limit/base	current	history1	history2
Barium     ppm     ASTM D5185m     O     <1     O       Molybdenum     ppm     ASTM D5185m     28     32     39       Manganese     ppm     ASTM D5185m     28     32     39       Magnesium     ppm     ASTM D5185m     <1	Boron	maa	ASTM D5185m			63	50
Manganese     ppm     ASTM D5185m     <1     <1     0       Magnesium     ppm     ASTM D5185m     621     595     597       Calcium     ppm     ASTM D5185m     621     595     597       Calcium     ppm     ASTM D5185m     1432     1377     1542       Phosphorus     ppm     ASTM D5185m     996     1009     1060       Zinc     ppm     ASTM D5185m     1200     1155     1225       Sulfur     ppm     ASTM D5185m     3718     3641     3654       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >20     4     4     3       Potassium     ppm     ASTM D5185m     >20     4     4     1       INFRA-RED     method     limit/base     current     history1     hist       Soot %     %     *ASTM D78	Barium		ASTM D5185m		0	<1	0
Magnesium     ppm     ASTM D5185m     621     595     597       Calcium     ppm     ASTM D5185m     1432     1377     1542       Phosphorus     ppm     ASTM D5185m     996     1009     1060       Zinc     ppm     ASTM D5185m     996     1009     1060       Zinc     ppm     ASTM D5185m     1200     1155     1225       Sulfur     ppm     ASTM D5185m     3718     3641     3654       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >20     4     4     3       Potassium     ppm     ASTM D5185m     >20     4     4     <1	Volybdenum	ppm	ASTM D5185m		28	32	39
Calcium     ppm     ASTM D5185m     1432     1377     1542       Phosphorus     ppm     ASTM D5185m     996     1009     1060       Zinc     ppm     ASTM D5185m     1200     1155     1225       Sulfur     ppm     ASTM D5185m     3718     3641     3654       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >25     5     5     4       INFRA-RED     method     limit/base     current     history1     hist       Soot %     %     *ASTM D7844     >3     0.1     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.7     7.8     8.8	Vanganese	ppm	ASTM D5185m		<1	<1	0
Phosphorus     ppm     ASTM D5185m     996     1009     1060       Zinc     ppm     ASTM D5185m     1200     1155     1225       Sulfur     ppm     ASTM D5185m     3718     3641     3654       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >20     4     4     3       Potassium     ppm     ASTM D5185m     >20     4     4     1       INFRA-RED     method     limit/base     current     history1     hist       Soot %     %     *ASTM D7844     >3     0.1     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.7     7.8     8.8	v						
Zinc     ppm     ASTM D5185m     1200     1155     1225       Sulfur     ppm     ASTM D5185m     3718     3641     3654       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >20     4     4     3       Potassium     ppm     ASTM D5185m     >20     4     4     <1							
Sulfur     ppm     ASTM D5185m     3718     3641     3654       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m<>25     5     5     4       Sodium     ppm     ASTM D5185m     >25     5     5     4       Potassium     ppm     ASTM D5185m     >20     4     4     <1							
CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m<>25     5     5     4       Sodium     ppm     ASTM D5185m     >25     5     5     4       Potassium     ppm     ASTM D5185m     >20     4     4     <1							
Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     3     4     3       Potassium     ppm     ASTM D5185m     >20     4     4     <1       INFRA-RED     method     limit/base     current     history1     hist       Soot %     %     *ASTM D7844     >3     0.1     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.7     7.8     8.8							
Sodium     ppm     ASTM D5185m     3     4     3       Potassium     ppm     ASTM D5185m     >20     4     4     <1		15					history2
Potassium     ppm     ASTM D5185m     >20     4     4     <1       INFRA-RED     method     limit/base     current     history1     hist       Soot %     %     *ASTM D7844     >3     0.1     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.7     7.8     8.8				>25			
INFRA-RED     method     limit/base     current     history1     hist       Soot %     %     *ASTM D7844     >3     0.1     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.7     7.8     8.8				> 20			
Soot %     %     *ASTM D7844     >3     0.1     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.7     7.8     8.8		ppm					
Nitration     Abs/cm     *ASTM D7624     >20     7.7     7.8     8.8	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	*ASTM D7844	>3	0.1	0.1	0.1
Sulfation Abs/.1mm *ASTM D7415 >30 <b>19.6</b> 19.8 19.7							
	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.6	19.8	19.7
FLUID DEGRADATION method limit/base current history1 hist	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Oxidation Abs/.1mm *ASTM D7414 >25 14.2 14.5 15.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.2	14.5	15.6
Base Number (BN)     mg KOH/g     ASTM D2896     8.1     8.3     7.4	Base Number (BN)	mg KOH/g	ASTM D2896		8.1	8.3	7.4

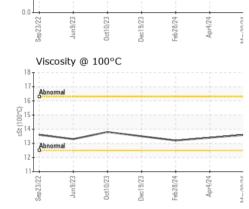
Sample Rating Trend

NORMAI



# **OIL ANALYSIS REPORT**





	VISUAL		method	limit/base	current	history1	history2						
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE						
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE						
honor	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						
)/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML						
May20/24	Odor	scalar	*Visual	NORML	NORML	NORML	NORML						
-	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG						
	Free Water	scalar	*Visual	20.L	NEG	NEG	NEG						
	FLUID PROPE	RTIES	method	limit/base	current	history1	history2						
	Visc @ 100°C	cSt	ASTM D445		13.6	13.4	13.2						
	GRAPHS												
	Iron (ppm)			100	Lead (ppm)								
10	250 200 Severe	1	1 1	80	Severe								
VG/UC-W	150												
W	Abnormal			4(	Abaranal	1 1							
	50 -			20	,								
		_											
	Sep 23/22 Jun9/23 Oct10/23	Dec19/23	Feb28/24 Apr4/24		Sep23/22 Jun9/23	0ct10/23 Dec19/23	Feb28/24 Apr4/24						
	Sep2 Jun Oct1	Dec1	Feb2 Apr	May20/24	Sep2 Jun	Oct1 Dec1	Feb28/24 Apr4/24						
	Aluminum (ppm)	Chromium (p	opm)										
				50	1								
	40 - Severe			40	) - Severe								
	a 20 - Abnormal			E 30	)								
VG/UC	abnormal			<sup>2</sup> 20	Abnormal								
2 10· 2 0·	10			10	)								
			4 4				4 4 4						
	Sep 23/22 Jun9/23 Oct10/23	Dec19/23	Feb28/24 Apr4/24	May20/24	Sep 23/22 Jun 9/23	0ct10/23 Dec19/23	Feb28/24 Apr4/24						
		De	Fe /	Ma			Fe /						
	Copper (ppm)			Silicon (ppm)	)								
300- 토 200- 0- 18- 18- 18-	Abitoimat					1 I 1 I							
				60									
	Ē200			튭.40	Abnormal								
	100												
	0												
	Sep 23/22 - Jun 9/23 - Oct1 0/23 -	Dec19/23 -	Feb28/24 - Apr4/24 -		Sep23/22 - Jun9/23 -	0ct10/23 . Dec19/23 .	Feb28/24 - Apr4/24 -						
	Sep2 Jun Oct1	Dec1	Feb2 Apr	May20/24	Sep2	0ct1 Dec1	Febź Api						
	Viscosity @ 100°C												
	18 Abnormal			(B)HO3 8.0 (B)HO3 8.0									
	10+			j 8.0 B									
	් 00 14- ද්ය Abnormal			ے 6.0 تو									
	경 12 Abnormal			4.0									
				88 2.0 89									
		/23 -	/24 -			123	124 -						
	Sep23/22 Jun9/23 Oct10/23	Dec19/23	Feb28/24 Apr4/24	May20/24	Sep 23/22 Jun 9/23	0ct10/23 Dec19/23	Feb28/24 Apr4/24						
				2	.,								
ratory	: WearCheck USA - 501	Madiso	n Ave., Cary	, NC 27513		CHICAGO M	IACHINERY INC						
ole No.	: PCA0115565		3142	EAST LINCOL									
	: 06188762	Teste		4 May 2024			LYNWOOD, I						
Number	: 11045514	Diagn	nosed · 24	May 2024 - W	les Davis		US 60411-772						



Test Package : MOB 1 (Additional Tests: TBN) Certificate L2367 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)

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Report Id: THOLYN [WUSCAR] 06188762 (Generated: 05/24/2024 14:17:53) Rev: 1

Submitted By: Mike Korbelik

Contact: Mike Korbelik

Page 2 of 2