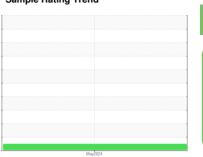


# **OIL ANALYSIS REPORT**

Sample Rating Trend



**NORMAL** 



Machine Id

83E-44A2

Gearbox

**ROYAL PURPLE SYNERGY 90/150 (--- GAL)** 

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#### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

## **Fluid Condition**

The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

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SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		HPL0004880		
Sample Date		Client Info		15 May 2024		
Machine Age	hrs	Client Info		0		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		N/A		
Sample Status				NORMAL		
CONTAMINATIO	N	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG		
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	20		
Chromium	ppm	ASTM D5185m	>15	<1		
Nickel	ppm	ASTM D5185m	>15	0		
Titanium	ppm	ASTM D5185m		<1		
Silver	ppm	ASTM D5185m		<1		
Aluminum	ppm	ASTM D5185m	>25	1		
Lead	ppm	ASTM D5185m	>100	<1		
Copper	ppm	ASTM D5185m	>200	2		
Tin	ppm	ASTM D5185m	>25	<1		
Vanadium	ppm	ASTM D5185m		<1		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		0		
Barium	ppm	ASTM D5185m		0		
Molybdenum	ppm	ASTM D5185m		0		
Manganese	ppm	ASTM D5185m		0		
Magnesium	ppm	ASTM D5185m		<1		
Calcium	ppm	ASTM D5185m		4		
Phosphorus	ppm	ASTM D5185m	200	83		
Zinc	ppm	ASTM D5185m		<1		
Sulfur	ppm	ASTM D5185m		14776		
CONTAMINANTS	3	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	9		
Sodium	ppm	ASTM D5185m		0		
Potassium	ppm	ASTM D5185m	>20	2		
FLUID DEGRADA	NOITA	method	limit/base	current	history1	history2
		4.0T1.4.D.00.:-				

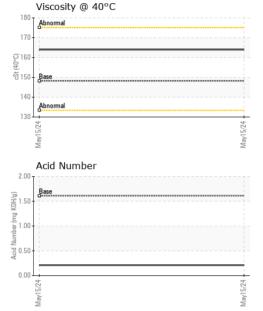
0.21

Acid Number (AN)

mg KOH/g ASTM D8045 1.61



## **OIL ANALYSIS REPORT**



VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE		
Yellow Metal	scalar	*Visual	NONE	NONE		
Precipitate	scalar	*Visual	NONE	NONE		
Silt	scalar	*Visual	NONE	NONE		
Debris	scalar	*Visual	NONE	NONE		
Sand/Dirt	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
Odor	scalar	*Visual	NORML	NORML		
Emulsified Water	scalar	*Visual	>0.2	NEG		
Free Water	scalar	*Visual		NEG		
FLUID PROPERT	TES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	148.2	164		
SAMPLE IMAGES	5	method	limit/base	current	history1	history2
Color				no image	no image	no image
Bottom				no image	no image	no image
GRAPHS						
Iron (ppm)			300	Lead (ppm)		
0				Covere		
Abnormal			₹ 200 100	Abnormal		
Abnormal			100			
						* E L
May15/24				May15/24		0 0 0
Aluminum (ppm)			May15/24	Chromium (p	om)	C C V
Aluminum (ppm)			May15/24	Chromium (p	om)	
Aluminum (ppm)			May15/24	Chromium (p)	pm)	
Aluminum (ppm) Severe			66 E d. 20	Chromium (p)	pm)	
Aluminum (ppm) Severe			66 E d. 20	Chromium (p)	om)	
Aluminum (ppm)  Severe Abnormal			60 may 12/24	Chromium (p)	om)	
Aluminum (ppm)  Severe Abnormal  P7751/keW  Copper (ppm)			May15/24 May15/24	Chromium (pp	om)	
Aluminum (ppm)  Severe Abnormal  Copper (ppm)			47/51/eM 66/ 44/ 67/ 67/ 67/ 67/ 67/ 67/ 67/ 67/ 67/ 67	Chromium (p) Severe Abnormal F7251/keW Silicon (ppm)	pm)	
Aluminum (ppm)  Severe Abnormal  Copper (ppm)			60 440 470 12/05 1/4eW	Chromium (p) Severe Abnormal P7751/keW Silicon (ppm)	pm)	
Aluminum (ppm) Severe Abnormal Copper (ppm) Severe Abnormal			400 May 15/24	Chromium (p) Severe  Abnormal  F7/51/APW  Silicon (ppm)	pm)	70
Aluminum (ppm) Severe Abnormal Copper (ppm) Severe Abnormal			400 May 15/24	Chromium (p)  Severe  Abnormal  Silicon (ppm)  Severe  Abnormal	pm)	
Aluminum (ppm)  Severe  Abnormal  Copper (ppm)  Severe  Abnormal			44 44 44 44 44 44 44 44 44 44 44 44 44	Chromium (p)  Severe  Abnormal  FZ/S1/keW  Silicon (ppm)  Severe  Abnormal	pm)	
Aluminum (ppm)  Severe  Abnormal  Copper (ppm)  Severe  Abnormal  Viscosity @ 40°C			44 44 44 44 44 44 44 44 44 44 44 44 44	Chromium (p)  Severe  Abnormal  FZ/S1/keW  Silicon (ppm)  Severe  Abnormal	pm)	
Aluminum (ppm)  Severe  Abnormal  Copper (ppm)  Severe  Abnormal  Viscosity @ 40°C  Abnormal			44 44 44 44 44 44 44 44 44 44 44 44 44	Chromium (p)  Severe  Abnormal  FZ/S1/keW  Silicon (ppm)  Severe  Abnormal	pm)	
Aluminum (ppm)  Severe  Abnormal  Copper (ppm)  Severe  Abnormal  Viscosity @ 40°C  Abnormal			44 44 44 44 44 44 44 44 44 44 44 44 44	Chromium (p)  Severe  Abnormal  FZ/S1/keW  Silicon (ppm)  Severe  Abnormal	pm)	
Aluminum (ppm)  Severe Abnormal  Copper (ppm)  Severe Abnormal  Viscosity @ 40°C Abnormal  Base Abnormal			44 44 44 44 44 44 44 44 44 44 44 44 44	Chromium (p)  Severe  Abnormal  Silicon (ppm)  Severe  Abnormal  Abnormal  Abnormal	pm)	
Aluminum (ppm)  Severe  Abnormal  Copper (ppm)  Severe Abnormal  Viscosity @ 40°C  Abnormal  Base Abnormal			400 May 15/24	Chromium (p)  Severe  Abnormal  FZ/S1/keW  Silicon (ppm)  Severe  Abnormal	pm)	70





Certificate 12367

Laboratory

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : HPL0004880 Lab Number : 06185196

Test Package : MOB 2

Unique Number : 11036522

Received **Tested** Diagnosed

: 21 May 2024 : 22 May 2024 - Sean Felton

: 20 May 2024

IL. REFININF DIVISION, 400 S MARATHON AVE ROBINSON, IL

MARATHON PETROLEUM CO.

US 62454 Contact: M.S. MANHART

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)

mmanhart@marathonpetroleum.com T: (618)544-2121

Report Id: MARROB [WUSCAR] 06185196 (Generated: 05/29/2024 14:08:41) Rev: 1

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