**Test report** Ref: 5-23311-2016-1070944-0 1/3



## **CUSTOMER**

W.F. VOSKERO Aggeliki Kritikou

## **SAMPLE DATA**

Ref: VEST00649-0005-S50.1 Descrip.: Gearbox - Gearbox

Tmk: Model: V-52 Serial N.: 18511

Sample Ref.: 17/06/2016-1070944 Oil label:

Date sampled: 05/03/2016 Oil type: CASTROL OPTIGEAR SYNTHETIC X 320 S/Ref.: Lab. date: 10/06/2016

Machine serv.: Capac.(I): Oil serv.: Adds (I):

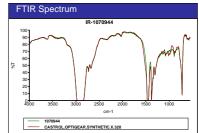
## LAST SAMPLE CONCLUSIONS

**RESULTS** 

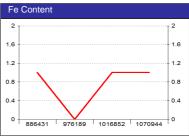
The oil is fit for further use. There are no symptoms of contamination or abnormal wear.

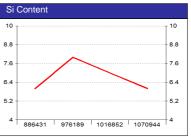


Date sampled:   05/03/2016   04/08/2015   30/04/2015   13/05/2014			KE	OULIS	
Sample Ref.:         1070944         1016852         976189         886431           Machine serv.:         Oil serv.:         886431           Report date:         20/06/2016         23/11/2015         22/06/2015         02/07/2014           Status           Oxidation (A/cm)          1         <1         <1           Oxidation (A/cm)          1         <1         <1           Appearance (Adim)         Dark transp.         Bright Transp.         Dark transp.					
Machine serv.:         Oil serv.:           Report date:         20/06/2016         23/11/2015         22/06/2015         02/07/2014           Status         Oxidation (A/cm)   <	Date sampled:	05/03/2016	04/08/2015	30/04/2015	13/05/2014
Coll serv.:         Report date:         20/06/2016         23/11/2015         22/06/2015         02/07/2014           Status         Coxidation (A/cm)         1         1              1	Sample Ref.:	1070944	1016852	976189	886431
Report date: 20/06/2016 23/11/2015 22/06/2015 02/07/2014 Status  Oxidation (A/cm)	Machine serv.:				
Status         Oxidation (A/cm)         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 </td <td>Oil serv.:</td> <td></td> <td></td> <td></td> <td></td>	Oil serv.:				
Status         Oxidation (A/cm)         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 </td <td></td> <td></td> <td></td> <td></td> <td></td>					
Oxidation (A/cm)         <1         <1         <1           Oxidation (A/cm)         <1	Report date:	20/06/2016	23/11/2015	22/06/2015	02/07/2014
Oxidation (A/cm)         <1	Status				
Appearance (Adim)         Dark transp.         Dark transp.         Bright Transp.         Dark transp.           Water content (mg/kg)         554         293         484         175           TAN (mgr KOH/gr)         0.99         0.94         1.45         1.28           Visc. Index (Adim)         149         154         152         150           Viscosity 100°C (cst)         33.76         34.85         34.35         34.26           Viscosity 40°C (cst)         319.1         317.1         323.17           Viscosity 40°C (cst)         318.7         7         7           Particles count         180.406/99 (Adim)         20/18/13         15/14/9         22/20/15         16/14/10           Part > 4 microns (100ml)         571578         25805         2855070         58381           Part > 6 microns (100ml)         7843         343         23238         822           Additives         8         2505         552419         9736           Part > 14 microns (100ml)         7843         343         23238         822           Additives         8         552419         9736         9736         9736         9736         9736         9736         9736         9736         9736 <td>Oxidation (A/cm)</td> <td></td> <td>&lt;1</td> <td>&lt;1</td> <td></td>	Oxidation (A/cm)		<1	<1	
Water content (mg/kg)         554         293         484         175           TAN (mgr KOH/gr)         0.9         0.94         1.45         1.28           Visc. Index (Adim)         149         154         152         150           Viscosity 100°C (cst)         34.85         34.35         34.26           Viscosity 40°C (cst)         33.76         319.1         317.1         323.17           Viscosity 40°C (cst)         318.7         319.1         317.1         323.17           Viscosity 40°C (cst)         318.7         319.1         317.1         323.17           Particles count           ISO 4406/99 (Adim)         20/18/13         15/14/9         22/20/15         16/14/10           Part > 4 microns (100ml)         571578         25805         2855070         58381           Part > 6 microns (100ml)         7843         343         23238         822           Additives         3         343         2338         822           Additives         3         45         0         0         -5         0           B Content (ppm)         430         -5         0         0         -5         0         0           Ba Content (ppm) </td <td>Oxidation (A/cm)</td> <td>&lt;1</td> <td></td> <td></td> <td>&lt; 1</td>	Oxidation (A/cm)	<1			< 1
TAN (mgr KOH/gr)         0.9         0.94         1.45         1.28           Visc. Index (Adim)         149         154         152         150           Viscosity 100°C (cst)         33.85         34.35         34.26           Viscosity 100°C (cst)         33.76	Appearance (Adim)	Dark transp.	Dark transp.	Bright Transp.	Dark transp.
Visc. Index (Adim)         149         154         152         150           Viscosity 100°C (cst)         34.85         34.35         34.26           Viscosity 100°C (cst)         33.76         319.1         317.1         323.17           Viscosity 40°C (cst)         318.7         319.1         317.1         323.17           Particles count           ISO 4406/99 (Adim)         20/18/13         15/14/9         22/20/15         16/14/10           Part > 4 microns (100ml)         571578         25805         2855070         58381           Part > 6 microns (100ml)         7843         343         23238         822           Additives         8         2         2         4         4         6         6         9         7         6         6         9         7         6         7         8         8         2         2         8         2         2         2         2         16/14/10         9         7         9         7         6         7         6         7         6         7         6         7         6         7         6         7         6         7         6         9         6         5         0 </td <td>Water content (mg/kg)</td> <td>554</td> <td>293</td> <td>484</td> <td>175</td>	Water content (mg/kg)	554	293	484	175
Viscosity 100°C (cst)         34.85         34.35         34.26           Viscosity 100°C (cst)         33.76         319.1         317.1         323.17           Viscosity 40°C (cst)         318.7         318.7         7           Particles count         150 4406/99 (Adim)         20/18/13         15/14/9         22/20/15         16/14/10           Part > 4 microns (100ml)         571578         25805         2855070         58381           Part > 6 microns (100ml)         192767         9155         552419         9736           Part > 14 microns (100ml)         7843         343         23238         822           Additives         8         8         8         8         8         8         8         8         8         8         8         8         8         8         8         8         2         8         8         8         2         8         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         2         8         3         8         2         2         4         0         6         0         2         4         <	TAN (mgr KOH/gr)	0.9	0.94	1.45	1.28
Viscosity 100°C (cst)         33.76           Viscosity 40°C (cst)         319.1         317.1         323.17           Viscosity 40°C (cst)         318.7         318.7           Particles count         ISO 4406/99 (Adim)         20/18/13         15/14/9         22/20/15         16/14/10           Part > 4 microns (100ml)         571578         25805         2855070         58381           Part > 6 microns (100ml)         192767         9155         552419         9736           Part > 14 microns (100ml)         7843         343         23238         822           Additives         8         8         8         8         8         8         8         8         8         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         8         2         8         2         8         2         8         0         0	Visc. Index (Adim)	149	154	152	150
Viscosity 40°C (cst)         319.1         317.1         323.17           Viscosity 40°C (cst)         318.7         Farticles count         318.7           ISO 4406/99 (Adim)         20/18/13         15/14/9         22/20/15         16/14/10           Part > 4 microns (100ml)         571578         25805         2855070         58381           Part > 6 microns (100ml)         192767         9155         552419         9736           Part > 14 microns (100ml)         7843         343         23238         822           Additives         8         8         2           B Content (ppm)         <30	Viscosity 100°C (cst)		34.85	34.35	34.26
Viscosity 40°C (cst)         318.7         Particles count         ISO 4406/99 (Adim)       20/18/13       15/14/9       22/20/15       16/14/10         Part > 4 microns (100ml)       571578       25805       2855070       58381         Part > 6 microns (100ml)       192767       9155       552419       9736         Part > 14 microns (100ml)       7843       343       23238       822         Additives         B Content (ppm)       30       <5	Viscosity 100°C (cst)	33.76			
Particles count         20/18/13         15/14/9         22/20/15         16/14/10           Part > 4 microns (100ml)         571578         25805         2855070         58381           Part > 6 microns (100ml)         192767         9155         552419         9736           Part > 14 microns (100ml)         7843         343         23238         822           Additives         *** Additives***           B Content (ppm)         0         0         <5	Viscosity 40°C (cst)		319.1	317.1	323.17
ISO 4406/99 (Adim)   20/18/13   15/14/9   22/20/15   16/14/10     Part > 4 microns (100ml)   571578   25805   2855070   58381     Part > 6 microns (100ml)   192767   9155   552419   9736     Part > 14 microns (100ml)   7843   343   23238   822     Additives   Sacrotard (ppm)   30   50   50     Ba Content (ppm)   1416   1415   1622   1308     Mg Content (ppm)   55   5   5   4     P Content (ppm)   33   1   55   1     Contamination and wear metals   31   55   1     Content (ppm)   0   0   0   55   0     Cr Content (ppm)   0   0   55   0     Cr Content (ppm)   1   0   55   0     Cr Content (ppm)   1   0   55   0     Cr Content (ppm)   1   1   55   1     K Content (ppm)   1   0   55   0     Mo Content (ppm)   709   713   834   676     Na Content (ppm)   0   0   55   0     Content (ppm)   0   0   55   0     Carrell (ppm)   0   0   0   55   0     Carrell (ppm)   0   0   0   0   0   0     Carrell (ppm)	Viscosity 40°C (cst)	318.7			
Part > 4 microns (100ml)         571578         25805         2855070         58381           Part > 6 microns (100ml)         192767         9155         552419         9736           Part > 14 microns (100ml)         7843         343         23238         822           Additives           B Content (ppm)         <30	Particles count				
Part > 6 microns (100ml)         192767         9155         552419         9736           Part > 14 microns (100ml)         7843         343         23238         822           Additives         B Content (ppm)         <30         <5         0           Ba Content (ppm)         0         0         <5	ISO 4406/99 (Adim)	20/18/13	15/14/9	22/20/15	16/14/10
Part > 14 microns (100ml)       7843       343       23238       822         Additives       B Content (ppm)       <30       <5       0         Ba Content (ppm)       0       0       <5	Part > 4 microns (100ml)	571578	25805	2855070	58381
Additives         B Content (ppm)       <30	Part > 6 microns (100ml)	192767	9155	552419	9736
B Content (ppm)	Part > 14 microns (100ml)	7843	343	23238	822
Ba Content (ppm)       0       5       0         Ca Content (ppm)       1416       1415       1622       1308         Mg Content (ppm)       5       5       5       4         P Content (ppm)       293       289       338       267         Zn Content (ppm)       3       1       <5	Additives				
Ca Content (ppm)       1416       1415       1622       1308         Mg Content (ppm)       5       5       5       4         P Content (ppm)       293       289       338       267         Zn Content (ppm)       3       1       <5	B Content (ppm)	<30		<5	0
Mg Content (ppm)         5         5         5         4           P Content (ppm)         293         289         338         267           Zn Content (ppm)         3         1         <5	Ba Content (ppm)	0	0	<5	0
P Content (ppm)         293         289         338         267           Zn Content (ppm)         3         1         <5	Ca Content (ppm)	1416	1415	1622	1308
Zn Content (ppm)       3       1       <5	Mg Content (ppm)	5	5	5	4
Contamination and wear metals           Al Content (ppm)         0         2         <5	P Content (ppm)	293	289	338	267
Al Content (ppm)       0       2       <5	Zn Content (ppm)	3	1	<5	1
Cr Content (ppm)         0         0         <5         0           Cu Content (ppm)         1         0         <5	Contamination and wear metals				
Cu Content (ppm)       1       0       <5	Al Content (ppm)	0	2	<5	0
Fe Content (ppm) 1 1 1 <5 1 1 K Content (ppm) 1 0 <5 0 Mo Content (ppm) 709 713 834 676 Na Content (ppm) 0 0 <5 1 Ni Content (ppm) 0 0 <5 0	Cr Content (ppm)	0	0	<5	0
K Content (ppm)       1       0       <5	Cu Content (ppm)	1	0	<5	0
Mo Content (ppm)         709         713         834         676           Na Content (ppm)         0         0         <5	Fe Content (ppm)	1	1	<5	1
Na Content (ppm)       0       0       <5	K Content (ppm)	1	0	<5	0
Ni Content (ppm) 0 0 <5 0	Mo Content (ppm)	709	713	834	676
	Na Content (ppm)	0	0	<5	1
Pb Content (ppm) 0 0 <5 0	Ni Content (ppm)	0	0	<5	0
	Pb Content (ppm)	0	0	<5	0









Performed by: Manuel Bilbao



Status: Normal Caution Alarm Tests done from 09/06/2016 to 20/06/2016











lests done from 09/06/2016 to 20/06/2016

NOTE: The obtained results only correspond to the tested samples. This report can not be reproduced neither partially not totally without the express writen permission of the laboratory that emits it. Sample will be destroyed 15 DAYS after the emission of this report. The uncertainties of the tests are calculated and available to customers

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**Test report** Ref: 5-23311-2016-1070944-0



## **CUSTOMER**

W.F. VOSKERO Aggeliki Kritikou

## **SAMPLE DATA**

Ref: VEST00649-0005-S50.1 Descrip.: Gearbox - Gearbox

Tmk: Model: V-52 Serial N.: 18511

Sample Ref.: 17/06/2016-1070944 Oil label: Date sampled: 05/03/2016 Oil type: CASTROL OPTIGEAR SYNTHETIC X 320 S/Ref.: Lab. date: 10/06/2016

Machine serv.: Capac.(I): Oil serv.: Adds (I):

## LAST SAMPLE CONCLUSIONS

The oil is fit for further use. There are no symptoms of contamination or abnormal wear.



		RES	ULTS		
		— RES	OL I O		
Date sampled:	05/03/2016	04/08/2015	30/04/2015	13/05/2014	
Sample Ref.:	1070944	1016852	976189	886431	
Machine serv.:					
Oil serv.:					
Report date:	20/06/2016	23/11/2015	22/06/2015	02/07/2014	
Contamination and wear metals					
Si Content (ppm)	6	7	8	6	
Sn Content (ppm)	1	2	<5	0	
Particles					
PQ Index (Adim)	5	8	5	2	
. ,					
	/	/		/	
Status: Normal Caution Alarm Tests done from 09/06/2016 to 20/06/2016	<b>V</b>	<b>~</b>	Δ	<b>V</b>	
TE: The obtained results only correspond to the tested samples hout the express writen permission of the laboratory that emits it	. This report can not be	reproduced neither p	partially not totally		

NOTE: The obtained results only correspond to the tested samples. This report can not be reproduced neither partially not totally without the express writen permission of the laboratory that emits it. Sample will be destroyed 15 DAYS after the emission of this report. The uncertainties of the tests are calculated and available to customers IK4 - TEKNIKER does not provide any warranty expressed or implied is made against failure of this equipment. The reported recommendations are based on interpretations of the generated test results, equipment historical data and the information supplied by the customer. This service is to aid preventive/predictive maintenance actions only. FUNDACION TEKNIKER-ci/flaki Genegag, 5-20600-EIBAR-Gipúzcoa-(SPAIN)-Tel.: +34943206744-CIF:ESG20545729 www.tekniker.es www.lubrication-management.com

Ref: 5-23311-2016-1070944-0 **Test report** 3/3



# CUSTOMER

## W.F. VOSKERO Aggeliki Kritikou

	Test methods				
Status					
Oxidation (A/cm)	(ASTM E2412-10) Differential Trending				
Oxidation (A/cm)	(ASTM D7414-09) Differential Trending				
Appearance (Adim)	(PE-TA.096)				
Water content (mg/kg)	(PE-TA.084)				
TAN (mgr KOH/gr)	(PE-TA.043_5.3 termométrico)				
Visc. Index (Adim)	(ASTM D2270-10)				
Viscosity 100°C (cst)	(PE-TA.054)				
Viscosity 100°C (cst)	(ASTM D7279-14a)				
Viscosity 40°C (cst)	(PE-TA.054)				
Viscosity 40°C (cst)	(ASTM D7279-14a)				
Particles count	(NOTHEDIZIS 14a)				
ISO 4406/99 (Adim)	(ASTM D7647-10)				
Additives	(A31W D7041-10)				
	/DE TA 007\				
B Content (ppm)	(PE-TA.007)				
Ba Content (ppm)	(PE-TA.007)				
Ca Content (ppm)	(PE-TA.007)				
Mg Content (ppm)	(PE-TA.007)				
P Content (ppm)	(PE-TA.007)				
Zn Content (ppm)	(PE-TA.007)				
Contamination and wear metals					
Al Content (ppm)	(PE-TA.007)				
Cr Content (ppm)	(PE-TA.007)				
Cu Content (ppm)	(PE-TA.007)				
Fe Content (ppm)	(PE-TA.007)				
K Content (ppm)	(PE-TA.007)				
Mo Content (ppm)	(PE-TA.007)				
Na Content (ppm)	(PE-TA.007)				
Ni Content (ppm)	(PE-TA.007)				
Pb Content (ppm)	(PE-TA.007)				
Si Content (ppm)	(PE-TA.007)				
Sn Content (ppm)	(PE-TA.007)				
Particles					
PQ Index (Adim)	(PE-TA.024)				