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ANALYSIS RESULTS - ENGINE S/N: 1000156

QUEST AVIATION INC
ATTN: MARK LEHRKAMP
4440 E HWY 12
ABERDEEN SD 57401

Print Date: 1/8/2019
Engine Model: CONT 360
Aircraft Type: CIRRUS SR20
Aircraft S/N: 1258
Tail No.: N777ND-FRT

Values in parentheses below your results are average values from all our analysis data for the same engine model with similar engine hours and tail hours. See www.avlab.com explain for detailed explanation of the statistical analysis used with your laboratory results.

**** CURRENT** SAMPLE APPEARS NORMAL. Send next sample at normal interval. A L A R M. Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
44 (40.9)	2.6 (3.7)	7.2 (6.0)	6.5 (5.2)	N/A	N/A	2.3 (5.2)	3184 (3,495)	1.9 (5.3)	N/A	0.2 (0.5)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.		
Amount:												
Type:												
Form:												

Comments: ALL OIL VALUES SEEM FINE. WE WILL CONTINUE TO MONITOR THIS ENGINE WITH YOUR NEXT SAMPLE.

**** PREVIOUS 1** SAMPLE APPEARS NORMAL. Send next sample at normal interval. A L A R M. Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
48.2 (47.4)	2.7 (3.7)	7.4 (5.8)	5.9 (5.2)	N/A	N/A	4.1 (4.8)	3251 (3,606)	2.2 (5.4)	N/A	< 0.1 (0.5)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.		
Amount:												
Type:												
Form:												

Comments: ALL OIL VALUES SEEM FINE. WE WILL CONTINUE TO MONITOR THIS ENGINE WITH YOUR NEXT SAMPLE.

**** PREVIOUS 2** SAMPLE APPEARS NORMAL. Send next sample at normal interval. A L A R M. Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
73.1 (46.7)	2.1 (3.6)	5.1 (6.0)	6.7 (5.5)	N/A	N/A	8.8 (4.7)	4202 (3,452)	4.9 (5.4)	N/A	< 0.1 (0.5)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.		
Amount:												
Type:												
Form:												

Comments: ALL OIL VALUES SEEM FINE. WE WILL CONTINUE TO MONITOR THIS ENGINE WITH YOUR NEXT SAMPLE.

**** PREVIOUS 3** SAMPLE APPEARS NORMAL. Send next sample at normal interval. A.L.A.R.M. Meter: Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
64.2 (37.5)	3.9 (3.5)	7.3 (4.3)	8.5 (4.9)	N/A	N/A	10.4 (4.8)	4002 (3,187)	5.8 (5.5)	N/A	< 0.1 (0.4)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.		
Amount:												
Type:												
Form:												

Comments: ALL OIL VALUES SEEM FINE. WE WILL CONTINUE TO MONITOR THIS ENGINE WITH YOUR NEXT SAMPLE.

**** PREVIOUS 4** SAMPLE APPEARS NORMAL. Send next sample at normal interval. A.L.A.R.M. Meter: Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
31.6 (39.3)	1.4 (3.4)	2.2 (4.7)	4.2 (5.0)	N/A	N/A	3.6 (4.3)	2200 (3,446)	3.3 (5.3)	N/A	0.3 (0.4)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.		
Amount:												
Type:												
Form:												

Comments:

**** PREVIOUS 5** SAMPLE APPEARS NORMAL. Send next sample at normal interval. A.L.A.R.M. Meter: Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
67.3 (47.6)	1.6 (3.9)	10.1 (7.1)	9.8 (5.9)	N/A	N/A	4.3 (3.6)	5554 (4,764)	5.8 (5.4)	N/A	1.1 (0.5)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.		
Amount:												
Type:												
Form:												

Comments:

**** PREVIOUS 6** SAMPLE APPEARS NORMAL. Send next sample at normal interval. A.L.A.R.M. Meter: Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
31.3 (46.1)	0.9 (4.2)	2.7 (7.6)	2.9 (6.4)	N/A	N/A	2.6 (3.7)	3821 (4,961)	5.3 (5.8)	N/A	< 0.1 (0.5)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.		
Amount:												

Comments:

Type:												
Form:												

Comments:

** PREVIOUS 7 SAMPLE APPEARS NORMAL Send next sample at normal interval A L A R M Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
38.5 (39.1)	2.6 (3.5)	3.2 (4.4)	5.3 (4.8)	N/A	N/A	5.1 (3.4)	3164 (3,454)	8.2 (5.6)	N/A	< 0.1 (0.5)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grft	Misc.		
Amount:												
Type:												
Form:												

Comments:

** PREVIOUS 8 SAMPLE APPEARS NORMAL Send next sample at normal interval A L A R M Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
42.5 (42.5)	1.7 (3.5)	2.7 (4.2)	2.5 (5.6)	N/A	N/A	6.9 (4.5)	3652 (3,744)	4.2 (5.6)	N/A	< 0.1 (0.5)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grft	Misc.		
Amount:												
Type:												
Form:												

Comments:

** PREVIOUS 9 SAMPLE APPEARS NORMAL Send next sample at normal interval A L A R M Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
35.6 (35.7)	2.9 (3.1)	2.9 (3.2)	7 (5.1)	N/A	N/A	8.9 (4.5)	4330 (3,491)	3.3 (5.5)	N/A	< 0.1 (0.5)	N/A	
*** FILTER ANALYSIS RESULTS ***												
Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grft	Misc.		
Amount:												
Type:												
Form:												

Comments:

** PREVIOUS 10 SAMPLE APPEARS NORMAL Send next sample at normal interval A L A R M Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***												
Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.	
37.3 (40.9)	2 (3.4)	1.9 (3.0)	3.6 (3.7)	N/A	N/A	5.7 (3.7)	3972 (3,318)	3.7 (5.1)	N/A	< 0.1 (0.5)	N/A	
*** FILTER ANALYSIS RESULTS ***												

Flashpoint(deg. F): H2O (ppm): Total Acid No.:	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.
	Amount:										
	Type:										
	Form:										

Comments:

** PREVIOUS 11 SAMPLE APPEARS NORMAL. Send next sample at normal interval. A L A R M Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***

Sample Date: 6/17/2013 Analysis Date: 6/18/2013 Sample Number: P68 Cylinder Type: STEEL TSN/TSO: 445 8 Oil Hours: 36 5 Filter Hours: 36 5 Oil Added: 2 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	41.9 (36.6)	2.4 (3.7)	7.3 (5.4)	6.3 (4.9)	N/A	N/A	4.6 (3.3)	5693 (4.054)	3.7 (5.5)	N/A	< 0.1 (0.5)	N/A

*** FILTER ANALYSIS RESULTS ***

	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.
	Amount:										
	Type:										
	Form:										

Comments:

** PREVIOUS 12 SAMPLE APPEARS NORMAL. Send next sample at normal interval. A L A R M Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***

Sample Date: 1/11/2013 Analysis Date: 3/22/2013 Sample Number: P45 Cylinder Type: STEEL TSN/TSO: 1148 4 Oil Hours: 36 3 Filter Hours: 36 3 Oil Added: 2 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	40.4 (43.6)	1.1 (3.4)	2.5 (5.7)	5.2 (4.7)	N/A	N/A	3.7 (4.3)	6983 (3.462)	5 (4.3)	N/A	< 0.1 (0.4)	N/A

*** FILTER ANALYSIS RESULTS ***

	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.
	Amount:										
	Type:										
	Form:										

Comments:

** PREVIOUS 13 SAMPLE APPEARS NORMAL. Send next sample at normal interval. A L A R M Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***

Sample Date: 8/28/2012 Analysis Date: 9/6/2012 Sample Number: P88 Cylinder Type: STEEL TSN/TSO: 1112 1 Oil Hours: 34 9 Filter Hours: 34 9 Oil Added: 2 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	43.8 (44.5)	2.7 (3.7)	2.5 (5.9)	4.2 (5.5)	N/A	N/A	5.2 (4.4)	4540 (3.274)	3.2 (4.4)	N/A	< 0.1 (0.5)	N/A

*** FILTER ANALYSIS RESULTS ***

	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.
	Amount:										
	Type:										
	Form:										

Comments:

** PREVIOUS 14 SAMPLE APPEARS NORMAL. Send next sample at normal interval. A L A R M Meter Normal Elevated High

*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***

Sample Date: 11/1/2011 Analysis Date: 12/21/2011 Sample Number: P246 Cylinder Type: STEEL	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
					N/A	N/A				N/A		N/A

TSN/TSO: 267.8 Oil Hours: 30 Filter Hours: 30 Oil Added: 2 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	44.2 (36.0)	4.6 (5.3)	1.3 (3.6)	5.9 (5.7)		4.4 (3.9)	4036 (3,218)	6.9 (5.4)	< 0.1 (0.6)		
	*** FILTER ANALYSIS RESULTS ***										
	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.
	Amount:										
	Type:										
Form:											

Comments:

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**** PREVIOUS 15** SAMPLE APPEARS NORMAL Send next sample at normal interval. A.L.A.R.M. Meter: Normal Elevated High

Sample Date: 8/30/2011 Analysis Date: 9/20/2011 Sample Number: P63 Cylinder Type: STEEL TSN/TSO: 236.8 Oil Hours: 33.7 Filter Hours: 33.7 Oil Added: 2 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***											
	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	57.2 (38.3)	4.8 (6.6)	2.1 (4.4)	6.9 (7.3)	N/A	N/A	7.5 (3.9)	4914 (3,590)	7 (6.1)	N/A	< 0.1 (0.6)	N/A
	*** FILTER ANALYSIS RESULTS ***											
	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.	
Amount:												
Type:												
Form:												

Comments:

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**** PREVIOUS 16** SAMPLE APPEARS NORMAL Send next sample at normal interval. A.L.A.R.M. Meter: Normal Elevated High

Sample Date: 7/7/2011 Analysis Date: 7/25/2011 Sample Number: P16 Cylinder Type: STEEL TSN/TSO: 203.1 Oil Hours: 37.3 Filter Hours: 37.7 Oil Added: 3 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***											
	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	29.2 (37.6)	5.2 (8.0)	1.4 (3.7)	5.8 (7.6)	N/A	N/A	5.1 (4.1)	3940 (4,347)	7.3 (6.7)	N/A	< 0.1 (0.8)	N/A
	*** FILTER ANALYSIS RESULTS ***											
	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.	
Amount:												
Type:												
Form:												

Comments:

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**** PREVIOUS 17** SAMPLE APPEARS NORMAL Send next sample at normal interval. A.L.A.R.M. Meter: Normal Elevated High

Sample Date: 3/15/2011 Analysis Date: 3/24/2011 Sample Number: P25 Cylinder Type: STEEL TSN/TSO: 165.4 Oil Hours: 33.5 Filter Hours: 33.5 Oil Added: 3 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***											
	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	40.9 (37.6)	7.2 (8.3)	3.1 (3.4)	5.6 (7.7)	N/A	N/A	4.9 (4.6)	4714 (3,723)	9.7 (7.6)	N/A	< 0.1 (0.9)	N/A
	*** FILTER ANALYSIS RESULTS ***											
	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.	
Amount:												
Type:												
Form:												

Comments: NOTE NICE SILICON DECREASE.

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**** PREVIOUS 18** ** SEE LAB COMMENTS ** A.L.A.R.M. Meter: Normal Elevated High

Sample Date: 9/23/2010 Analysis Date: 10/8/2010 Sample Number: P09 Cylinder Type: STEEL TSN/TSO: 131.9 Oil Hours: 35 Filter Hours: 35 Oil Added: 1 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***											
	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	46 (37.5)	11 (11.4)	2 (2.8)	8 (7.7)	N/A	N/A	7 (4.8)	4790 (3,708)	23 (8.5)	N/A	< 0.1 (1.0)	N/A
	*** FILTER ANALYSIS RESULTS ***											
	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.	

Comments: NOTE A LITTLE DECREASE IN SILICON. WE WILL CONTINUE TO MONITOR WEAR METAL TREND ON YOUR NEXT SAMPLE

** PREVIOUS 19 ** SEE LAB COMMENTS ** A L A R M Meter Normal Elevated High

Sample Date: 7/30/2010 Analysis Date: 8/18/2010 Sample Number: P50 Cylinder Type: STEEL TSN/TSO: 106.4 Oil Hours: 34.2 Filter Hours: 34.2 Oil Added: 3 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***											
	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	46.1 (38.6)	11.6 (14.3)	< 0.1 (2.8)	9 (8.2)	N/A	N/A	5.4 (5.1)	4242 (3,499)	27.7 (11.2)	N/A	< 0.1 (1.3)	N/A
	*** FILTER ANALYSIS RESULTS ***											
	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.	

Comments: NOTE INCREASE IN SILICON. SILICON IS DIRT CONTAMINATION. THIS MAY BE CAUSED BY A DIRTY AIR FILTER, VACUUM LEAK, FLYING CONDITIONS, THE SAMPLING PROCESS, ETC. WE WILL CONTINUE TO MONITOR WEAR METAL TREND ON YOUR NEXT SAMPLE.

** PREVIOUS 20 ** SAMPLE APPEARS NORMAL. Send next sample at normal interval A L A R M Meter Normal Elevated High

Sample Date: 1/12/2010 Analysis Date: 1/21/2010 Sample Number: P25 Cylinder Type: STEEL TSN/TSO: Unknown Oil Hours: 24.6 Filter Hours: 24.6 Oil Added: 2 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***											
	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	36.6 (N/A)	12.9 (N/A)	2.3 (N/A)	9.2 (N/A)	N/A	N/A	5.6 (N/A)	3391 (N/A)	12.1 (N/A)	N/A	0.7 (N/A)	N/A
	*** FILTER ANALYSIS RESULTS ***											
	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.	

Comments: NOTE: STARTER ADAPTER REPLACED 15 HOURS AGO.

** PREVIOUS 21 ** WE WILL MONITOR WEAR METAL TREND. A L A R M Meter Normal Elevated High

Sample Date: 9/4/2009 Analysis Date: 9/21/2009 Sample Number: P27 Cylinder Type: STEEL TSN/TSO: 47.6 Oil Hours: 20 Filter Hours: 20 Oil Added: 1 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:	*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***											
	Iron	Copper	Nickel	Chromium	Silver	Magn.	Alum.	Lead	Silicon	Titanium	Tin	Moly.
	23.8 (34.4)	14.8 (17.0)	0.7 (1.9)	3.1 (6.4)	N/A	N/A	1.4 (4.2)	1889 (2,449)	8.3 (11.2)	N/A	0.4 (1.3)	N/A
	*** FILTER ANALYSIS RESULTS ***											
	Material:	Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.	

Comments: NOTE FIRST SAMPLE SEEN. ALL OIL WEAR METAL VALUES SEEM FINE. WE WILL MONITOR YOUR NEXT SAMPLE TO ESTABLISH A BASELINE FOR WEAR METAL TREND.