TVM Arising Management – Detected fault

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Table 1 References

Data module	Title
39-A-00-20-00-00A-120A-A	Helicopter safety – Pre-operation (make helicopter safe for maintenance)
39-A-00-50-00-06D-074A-D	Cleaner (C583) – Data sheet for dangerous consumables and materials
39-A-20-50-02-00A-251A-A	Electrical connectors – Clean with chemical agent
39-A-31-30-00-00A-042A-A	Monitoring and Diagnostic System (MDS) – Description of function

Data module	Title
39-A-31-30-00-00A-412A-A	FM Arising Management – Detected fault
39-A-31-31-00-00A-422A-A	ACQ 001 - Modulations and Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422B-A	ACQ 004 / (ACQ 007 AGB) - Modulations and Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422C-A	ACQ 002 - Impulsiveness – Fault isolation procedure
39-A-31-31-00-00A-422D-A	ACQ 005 / (ACQ 008 AGB) - Impulsiveness – Fault isolation procedure
39-A-31-31-00-00A-422E-A	ACQ 042 - Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422F-A	ACQ 045 / (ACQ 048 AGB) - Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422G-A	ACQ 055 - Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422H-A	ACQ 056 - Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422J-A	ACQ 058 / (ACQ 051 AGB) - Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422K-A	ACQ034 - Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422L-A	ACQ 060 - Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422M-A	ACQ 012 - Main Rotor 2/rev ACQ 013 - Main Rotor 2/rev ACQ 014 - Main Rotor 2/rev – Fault isolation procedure
39-A-31-31-00-00A-422N-A	ACQ 035 - (Standard Tail Line) Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422P-A	ACQ 035 - (Lightened Tail Line) Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422Q-A	ACQ 036 - Modulations and Unbalance/Misalignment – Fault isolation procedure

Data module	Title
39-A-31-31-00-00A-422R-A	ACQ 038 - Modulations and Unbalance/Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422S-A	ACQ 039 - Misalignment – Fault isolation procedure
39-A-31-31-00-00A-422T-A	ACQ 079 - (Standard Tail Line) Rising energies – Fault isolation procedure
39-A-31-31-00-00A-422U-A	ACQ 079 - (Lightened Tail Line) Rising energies – Fault isolation procedure
39-A-60-80-00-03A-028A-D	Chip detectors - Metal particles – General

Preliminary requirements

Required conditions

Table 2 Required conditions

Required condition	Data module
The helicopter must be safe for maintenance	39-A-00-20-00-00A-120A-A

Support equipment

Table 3 Support equipment

Nomenclature	Identification No.	Qty
Extractor pin P/N 10AT031-000		1 EA

Supplies

Table 4 Supplies

Nomenclature	Identification No.	Qty
Cleaner	C583	AR

Spares

Table 5 Spares

Nomenclature	Identification No.	Qty
None		

Safety conditions

WARNING

The Cleaner (C583) is a dangerous material. Before you do this procedure, make sure that you know all the safety precautions and first aid instructions for the cleaner.

Procedure

1 A TVM Arising is present. Refer to Fig 1.

Note
In case of Steady Red Th Arising the data analysis must be performed before the next flight.

1.1 Determine the Arising Reason.

Is it a Steady Red or Amber Th Arising?

- YES. Go to Step 1.10
- NO:

  - If a Steady Blue Th Arising is present Continue with Step 1.2, or
  - If a Missing Data Arising is present Continue with Step 1.3, or
  - If an Expired CM Arising is present Continue with Step 1.4, or
  - If a Far/Close Trend Arising is present continue with Step 1.5.

1.2 A Steady Blue Th Arising is present. Refer to Fig 3.

1.2.1 Check the applicable accelerometer installation and harness. Refer to Step 2.

1.2.2 Keep the component under close monitoring for the subsequent 10FH.

At the end of the close monitoring, is there any arising?

- YES. Go to Step 1.2.3.
- NO. Go to Step 1.2.4.

1.2.3 **Final step of isolation procedure**

Raise a DARF reporting the current STEP number of the isolation procedure.

1.2.4 **Final step of isolation procedure**

The system is serviceable.

1.3 A Missing Data Arising is present. Refer to Fig 4.

1.3.1 Check if any FM Arising linked to the VM system is present:

- YES. Go to Step 1.3.2.
- NO. Go to Step 1.3.3.

1.3.2 **Final step of isolation procedure**

Follow the related FM troubleshooting procedure. Refer to 39-A-31-30-00-00A-412A-A.

1.3.3 **Final step of isolation procedure**

Raise a DARF reporting the current STEP number of the isolation procedure.

1.4 An Expired CM Arising is present. Go back to the STEP which prompted for CM. Continue the troubleshooting from it (do not go to Step 1.5).

1.5 A Far/Close Trend Arising is present.

Switch the view from the dB deviation Chart to the Health Index Chart.

Is the HI below the amber threshold?

- NO. Go to Step 1.10.
- YES, a steep rising trend is present with a Far Trend Arising. Go to Step 1.6.
- YES, a step change is present with a Close Trend Arising. Go to Step 1.7.
- YES, no concerning trends are in view. Go to Step 1.9.

1.6 A steep rising trend is present. Continue with the analysis of the HI. Go to Step 1.10.

1.7 A step change is present.

Was maintenance recently performed around the involved area?

- YES. Go to Step 1.8.
- No. **End of isolation procedure.** The system is serviceable.

1.8 **Final step of isolation procedure**

Raise a TQ reporting the H/C S/N and the maintenance performed if a rebaseline / threshold adjustment is needed.

1.9 **Final step of isolation procedure**

The system is serviceable.

Raise a TCR in case of repeated Far Trend Arising.

1.10 Perform the Arising validation. Refer to Fig 2.

1.10.1 **Data cross check**

1.10.1.1 Is the HI which caused the Arising present in Table 6, column “Acquisition / HI”?

- YES. Go to Step 1.10.1.2.
- NO. Go to Step 1.10.2.

1.10.1.2 Is the drive system fault reported in column “On-board alarm” of Table 6 present on-board?

- YES. Go to Step 1.10.8.
- NO. Go to Step 1.10.2.

Table 6 Data cross check

Acquisition / HI	On-board alarm (or relevant maintenances)	Notes
Any MGB acquisition / any HI	MGB CHIP MAST caution, or MGB CHIP SUMP caution, or MGB OIL FILTER caution	MGB components are defined in 39-A-31-30-00-00A-042A-A (components with location MGB)
Any IGB acquisition / any HI	IGB CHIP caution, or IGB OIL TEMP caution	IGB components are defined in 39-A-31-30-00-00A-042A-A(components with location IGB)
Any TGB acquisition / any HI	TGB CHIP caution, or TGB OIL TEMP caution	TGB components are defined in 39-A-31-30-00-00A-042A-A(components with location TGB)
1st Stage Pin LH Brgs / any HI	1 BRG TEMP caution	
1st Stage Pin LH Duplex Brg / any HI		
1st Stage Pin RH Brgs / any HI	2 BRG TEMP caution	
1st Stage Pin RH Duplex Brg / any HI		
Oil Cooler Gear / any HI	MGB OIL TEMP warning	Assumes total loss of function: transmission does no longer drive the oil cooler.
Hyd Pump Gear 1 / any HI	1 HYD PUMP caution	Assumes total loss of function: transmission does no longer drive the hydraulic pump.
Hyd Pump Gear 2 / any HI	2 HYD PUMP caution	Assumes total loss of function: transmission does no longer drive the hydraulic pump.
Hyd Pump Gear 4 / any HI	4 HYD PUMP caution	Assumes total loss of function: transmission does no longer drive the hydraulic pump.
Alternator Gear 1 / any HI	1-2 DC GEN warning, or 1 DC GEN caution	Assumes total loss of function: transmission does no longer drive the generator.
Alternator Gear 2 / any HI	1-2 DC GEN warning, or 2 DC GEN caution	Assumes total loss of function: transmission does no longer drive the generator.

1.10.2 **Acquisition validation**

Are there FM Arising related to the VM instrumentation?

- YES. Go to Step 1.10.9.

- NO. Go to Step 1.10.3.

1.10.3 **Acquisition cross check**

1.10.3.1 Is the acquisition of the HI which caused the Arising present in Table 7, column "Acquisition group"?.

- YES. Go to Step 1.10.3.3.
- NO. Go to Step 1.10.4.

1.10.3.2 Is the HI which caused the Arising present in Table 7, column "HI"?

- YES. Go to Step 1.10.3.3.
- NO. Go to Step 1.10.4.

1.10.3.3 Is there a sufficient number of data for at least one of the other acquisitions belonging to the group indicated in Table 7, column “Acquisition group” during the same operation interval?

- YES. Go to Step 1.10.3.4.
- NO. Go to Step 1.10.4.

1.10.3.4 Is at least one of the other acquisitions showing a similar degradation trend considering the same operation interval?

- YES. Go to Step 1.10.4.
- NO. Go to Step 1.10.10.

Table 7 Acquisition cross check

Acquisition group	HI	Notes
010 - Collector Gear (A10)	Any computed HI	Gear/shaft acquisition
011 - Collector Gear (A11)		
015 - Sun Gear (A03)	Any computed HI	Gear/shaft acquisition
016 - Sun Gear (A04)		
017 - Sun Gear (A05)		
070 - Collector Gear Brgs (A10)	Any computed HI	Bearing monitoring acquisition
071 - Collector Gear Brgs (A11)		
125 - Collector Gear SKF Ball Brg (Acc.10)	Any computed HI	Bearing monitoring acquisition
129 - Collector Gear SKF Ball Brg (Acc.11)		
127 - Collector Gear SKF Roller Brg (Acc.10)	Any computed HI	Bearing monitoring acquisition
131 - Collector Gear SKF Roller Brg (Acc.11)		

126 - Collector Gear SNFA Ball Brg (Acc.10) 130 - Collector Gear SNFA Ball Brg (Acc.11)	Any computed HI	Bearing monitoring acquisition
128 - Collector Gear SNFA Roller Brg (Acc.10) 132 - Collector Gear SNFA Roller Brg (Acc.11)	Any computed HI	Bearing monitoring acquisition
075 - M/R Mast Brgs (A03) 076 - M/R Mast Brgs (A04) 077 - M/R Mast Brgs (A05)	Any computed HI	Bearing monitoring acquisition
138 - M/R Mast Roller Brg (A03) 141 - M/R Mast Roller Brg (A04) 144 - M/R Mast Roller Brg (A05)	Any computed HI	Bearing monitoring acquisition
136 - M/R Mast SKF Ball Brg (A03) 139 - M/R Mast SKF Ball Brg (A04) 142 - M/R Mast SKF Ball Brg (A05)	Any computed HI	Bearing monitoring acquisition
137 - M/R Mast SNFA Ball Brg (A03) 140 - M/R Mast SNFA Ball Brg (A04) 143 - M/R Mast SNFA Ball Brg (A05)	Any computed HI	Bearing monitoring acquisition
133 - Planet Gear Brgs (A03) 134 - Planet Gear Brgs (A04) 135 - Planet Gear Brgs (A05)	Any computed HI	Bearing monitoring acquisition
012 - Annulus Gear (A03) 013 - Annulus Gear (A04) 014 - Annulus Gear (A05) Main Rotor RTB	SO01, SO02, 1/Rev, 2/Rev	Main rotor balance acquisition
039 - TGB Gear (A09) Tail Rotor RTB	SO01, SO02, 1/Rev, 2/Rev	Tail rotor balance acquisition

1.10.4 **HI cross check**

1.10.4.1 Is the HI which caused the Arising in the Table 8, column “HI”?

- YES. Go to Step 1.10.4.2.
- NO. Go to Step 1.10.5.

Note

In case the Arising persists in the following downloads together with the HI Arising refusal indication, raise a DARF reporting the current STEP number of the isolation procedure.

1.10.4.2 Check the corresponding HI(s) as indicated in the Table 8, column “Validation Criteria”. Is the Arising refused?

- YES. Go to Step 1.10.12.
- NO. Go to Step 1.10.5.

Table 8 HI cross check criteria

HI	Validation Criteria	Notes
FSA_GE1, FSA_GE2	Check FSA_VIS HI values for the Component generating the arising; FSA_VIS values below 0.5 indicate poor visibility of the meshing tone and relevant harmonics. This may cause the computation of high, unstable and unreliable GE1 and GE2 indicators. GE1 and GE2 arising shall be discarded if the FSA_VIS or FSA_MS are lower than the minimum values reported in Table 9.	Low VIS values can also be caused by the failure effects: some faults can reduce the meshing tone amplitude (thus causing the reduction of the VIS HI). Consequently, it is important to assess the VIS value in the acquisition result preceding the Arising generation.
ESA_WEA	Check VIS HI values for the Component / HI generating the arising; VIS values below 0.5 indicate poor visibility of the meshing tone and relevant harmonics. This may cause high and not sensitive WEA indicators. WEA Arising shall be discarded if the FSA_VIS or FSA_MS are lower than the minimum values reported in Table 9.	Low VIS values can also be caused by the failure effects: some faults can reduce the meshing tone amplitude (thus causing the reduction of the VIS HI). Consequently, it is important to assess the VIS value in the acquisition result preceding the Arising generation.

Table 9 VIS, MS limits for gear/shaft components

Component	Sensor	MS Min	Vis Min
1stg Pin LH ACQ 001	A01	NA	0,50
1st Stg Gear LH ACQ 002	A01	NA	0,50
2nd Stg Pin LH ACQ 003	A10	0,50	0,50
Coll Gear ACQ 010	A10	0,50	0,50
Alt Gear 1 LH ACQ 042	A10	0,50	0,50

Component	Sensor	MS Min	Vis Min
Lub Pump 1 LH ACQ 055	A10	0,40	0,50
Hyd Pump Gear 4 ACQ 057	A10	NA	NA
Hyd Pump/Alt 1 ACQ 040	A10	NA	NA
Hyd Pump Gear 1 ACQ 041	A10	1,00	0,50
1st Stg Pin RH ACQ 004-007	A02	NA	0,50
1st Stg Gear RH ACQ 005-008	A02	NA	0,50
2nd Stg Pin RH ACQ 006-009	A11	2,00	0,50
Coll Gear ACQ 011	A11	1,00	0,50
Alt Gear 2 RH ACQ 045 - 048	A11	NA	NA
Lub Pump 1 RH ACQ 055	A11	0,40	0,50
Hyd Pump/Alt 2 ACQ 043	A11	NA	NA
Hyd Pump Gear 2 ACQ 044 - 050	A11	0,40	0,50
ECS Spare Gear ACQ 058	A03	4,00	0,50
Coll Gear BK ACQ 033	A06	NA	0,50
TTO Pin ACQ 034	A06	NA	0,50
Oil Cooler Pin ACQ 059	A06	2,00	0,50
Oil cooler Gear ACQ 060	A06	3,00	0,50
IGB pin ACQ 036	A08	0,40	0,50
IGB Gear ACQ 037	A08	10,00	0,50
TGB pin ACQ 038	A09	4,00	0,50
TGB Gear ACQ 039	A09	4,00	0,50

1.10.5 **Maintenance check**

1.10.5.1 Identify the component monitored by the HI which caused the Arising in Table 10, column “Affected Component”.

1.10.5.2 Has any maintenance action indicated in the corresponding column “Maintenance action” of Table 10 been performed in the past 5 FH?

- YES. Go to Step 1.10.5.3.
- NO. Go to Step 1.10.6.

Note

In case the anomaly persists in the following downloads, without the possibility to clearly identify the origin, raise a DARF reporting the current STEP number of the isolation procedure.

1.10.5.3 Is the HI which caused the Arising showing a visible change in its behavior after the date and time of the previously identified maintenance task performed?

- YES. Go to Step 1.10.11.
- NO. Go to Step 1.10.6.

Table 10 Maintenance effects on components

Affected Component	Maintenance action
All	Replacement / re-installation of the VM sensor related to the Acquisition / HI which caused the Arising
MGB: - Internal gearbox components - MGB input & output shafts	Gearbox replacement
Accessories	Component replacement / re-installation
MGB:	Shaft replacement / re-installation
- MGB input & output shafts	Shaft re-indexing
MGB:	Main Rotor RTB activity
- MR Mast - Swashplate - Planet Carrier	Main Rotor components replacement
Tail Rotor Drive Line	Shaft replacement / re-installation
	Shaft re-indexing
	Bearing support replacement / re-installation
IGB: - Internal gearbox components - IGB input & output shafts	Gearbox replacement
IGB:	Shaft replacement / re-installation
- IGB input & output shafts	Shaft re-indexing

Affected Component	Maintenance action
TGB: - Internal gearbox components - TGB input & output shafts	Gearbox replacement
TGB:	Shaft replacement / re-installation
- TGB input & output shafts	Shaft re-indexing
TGB:	Tail Rotor RTB activity
- TGB gear & output shafts	Tail Rotor components replacement

1.10.6 **HI trend check**

Note

In case the anomaly persist in the following downloads without the possibility to clearly identify the origin, raise a DARF reporting the current STEP number of the isolation procedure.

1.10.6.1 Is the HI which caused the Arising present in the column “HI” of Table 11 or Table 12?

- YES. Go to Step 1.10.6.2.
- NO. Go to Step 1.10.7.

1.10.6.2 Check the HI(s) behavior as indicated in the column “Criteria” of the table identified at Step 1.10.6.1. Is the criteria met by the available data?

- YES.
  - If the criteria is described in Table 11. Continue with Step 1.10.12, or
  - If the criteria is described in Table 12. Continue with Step 1.10.7.
- NO. Go to Step 1.10.7.

Table 11 HI trend check refusal criteria

HI	Criteria	Notes
All HI	Data spikes: usually not related to a fault (especially if HI mean values remain stable); the Arising caused by data spikes are normally rejected by the on-board filtering. Data distribution characteristics: typically, these isolated spikes are represented by one or a few HI values well above the typical HI distribution; the data isolation shall	

HI	Criteria	Notes
	be assessed also taking into account the natural scattering which affects the TVM results. Isolated spikes are also characterized by the fact that HI values before and after the spikes are consistent and stable, usually below the threshold value.	
All HI	High and scattered HI values, with constant mean values: usually not related to a transmission component fault (especially if HI mean value remains stable). It may also be caused by improper/loose accelerometer installation or by the instability/low amplitude of the meshing tone and relevant harmonics for Type 2 gears. More probable for meshing amplitude dependent HI (FSA_GE1, FSA_GE2, ESA_WEA) computed on Type 2 gears and some bearing level indicators (e.g., ETE_M6). Data distribution characteristics: typically, these high and scattered data are characterized by very variable HI values, above or spread across the threshold value, but with nearly constant average value (in order to highlight any tendency of HI value increase, the operator can assess the trend of the HI moving average line).	
All HI, apart from FSA_SO1, FSA_SO2, ESA_IMP and ESA_M6	High HI values, above the threshold, with constant mean values: usually not related to a transmission component fault (especially if HI mean value remains stable). It may be associated to the characteristic vibration pattern of each specific transmission which, in some cases, causes the computation of HI values higher than the typical ones. The Arising relevant to these constantly high values shall be discarded until the typical HI values do not increase. It is accepted that in some cases the manufacturer support is requested to confirm that the Arising is not an indication of failure. Data distribution characteristics: typically, these high data are characterized by HI values above the threshold value, but with nearly constant average value (in order to highlight any tendency of HI value increase, the operator can assess the trend of the HI moving average line).	This criterion does not apply to FSA_SO1, FSA_SO2, ESA_IMP, and ESA_M6 where hard limits for Arising confirmation apply.
All HI, apart from FSA_SO1, FSA_SO2, ESA_IMP and ESA_M6	High and slowly increasing HI values: slow modification of the vibration signal, it may also be the result of long term wear of the component or by "bedding in" after initial installation. Usually this trend does not suggest an impending mechanical failure (unless the growth rate increases), therefore the Arising can be discarded.	This criterion does not apply to FSA_SO1, FSA_SO2, ESA_IMP, and ESA_M6 where hard limits for Arising confirmation apply.

HI	Criteria	Notes
	Data distribution characteristics: typically, this condition is characterized by a slow and continuous variation of the HI values which affects both minimum and maximum values. In case of HI increase due to component failure, the growth rate may increase with the progressive deterioration of the component conditions.	

Table 12 HI trend check validation criteria

HI	Criteria	Notes
All HI	High and fast increasing HI values: possible indication of an impending mechanical failure, especially if the HI results are consistent (i.e., with low scattering and the concurrent increase of the mean and minimum HI values). Data distribution characteristics: typically, this condition is characterized by a continuous and rapid increase of the HI values which affects both minimum and maximum values. In some cases, the rapid increase may slow down after the initial rising phase and some HI (e.g., ESA_IMP and ESA_M6) may also decrease after reaching a peak value.	
FSA_SO1, FSA_SO2, ESA_IMP and ESA_M6	High HI values, above the threshold, with slowly increasing or constant mean values: these HI types, if frequently exceeding the relevant threshold values, shall be at least initially investigated for confirmation or rejection (these HI types are characterized by typical values for fault free components which are not dependent from the specific S/N, deviation from the typical fault free values is usually a reliable indication of signal distortion and potential component anomaly). It is accepted that in some cases the manufacturer support is requested to confirm that the Arising is not an indication of failure. Data distribution characteristics: typically, these high data are characterized by HI values above the threshold value, but with nearly constant average value (in order to highlight any tendency of HI value increase, the operator can assess the trend of the HI moving average line).	At the end of a negative Arising assessment (i.e., Arising management resulting in a No Fault Found), the operator can directly reject the following Arising on the same Component /HI until they show a further significant HI increase.
Concurrent assessment of	Initial increase of impulsiveness indicators above thresholds, with following decrease and	ESA_IMP and ESA_M6 reduction is caused by the

HI	Criteria	Notes
ESA_IMP, ESA_M6, FSA_GE1, FSA_GE2 and ESA_WEA	simultaneous raise of modulation and energy distribution indicators: this HI behaviour is typical of tooth fatigue cracks propagating into the gear web or shaft. When this trend is detected, it is recommended to immediately contact the Manufacturer. Data distribution characteristics: typically, the initial increase of ESA_IMP and ESA_M6 above thresholds is followed by a decrease and a simultaneous and gradual rise of FSA_GE1, FSA_GE2 and ESA_WEA.	increase of length of the impulsive feature in the enhanced signal. This can also be verified though the signal analysis.

1.10.7 The Arising is validated. Go to Step 1.12.

1.10.8 Perform the maintenance related to the drive system fault reported in column “On-board alarm” of Table 6. Go to Step 1.10.12.

1.10.9 Perform the troubleshooting related to the FM Arising. Go to Step 1.10.12.

1.10.10 Raise a TCR reporting the current STEP number of the isolation procedure if a re-baseline / threshold adjustment is needed. Go to Step 1.10.12.

1.10.11 Raise a TQ reporting the current STEP number of the isolation procedure and the maintenance performed if a thresholds reset is needed. Go to Step 1.10.12.

1.10.12 The Arising is refused. Go to Step 1.11.

1.11 **Final step of isolation procedure**

The system is serviceable.

1.12 Is the HI which caused the Arising inside Table 13 or Table 14, column “HI” along with the corresponding acquisition indicated in the column “Acquisition”?

- YES. Go to Step 1.13.
- NO. Go to Step 1.14.

Table 13 Specific inspections for TVM Arising on gear/shaft acquisitions

Acquisition	HI	Data Module
001 - 1st Stg Pin LH (A01) SYNC	FSA_GE1FSA_GE2	39-A-31-31-00-00A-422A-A
	FSA_SO01	
	FSA_SO02	
004 / 007 - 1st Stg Pin RH (A02) SYNC	FSA_GE1	39-A-31-31-00-00A-422B-A
	FSA_GE2	
	FSA_SO01	

Acquisition	HI	Data Module
	FSA_SO02	
002 - 1st Stg Gear LH (A01) SYNC	ESA_M6	39-A-31-31-00-00A-422C-A
	ESA_IMP	
	PSA_EIIV	
	PSA_EIIE	
005 / 008 - 1st Stg Gear RH (A02) SYNC	ESA_M6	39-A-31-31-00-00A-422D-A
	ESA_IMP	
	PSA_EIIV	
	PSA_EIIE	
042 - Alternator Gear 1 (A10) SYNC	FSA_SO01	39-A-31-31-00-00A-422E-A
	FSA_SO02	
	SIG_STD	
045 / 048 - Alternator Gear 2 (A11) SYNC	FSA_GE1	39-A-31-31-00-00A-422F-A
	FSA_GE2	
	FSA_SO01	
	FSA_SO02	
	SIG_STD	
055 - Lub Pump Gear 1 (A10) SYNC	FSA_GE1	39-A-31-31-00-00A-422G-A
	FSA_GE2	
	FSA_SO01	
	FSA_SO02	
056 - Lub Pump Gear 2 (A11) SYNC	FSA_GE1	39-A-31-31-00-00A-422H-A
	FSA_GE2	
	FSA_SO01	
	FSA_SO02	
051 - E.C.S. Spare Gear (A11) SYNC	FSA_SO01	39-A-31-31-00-00A-422J-A
058 - E.C.S. Drive Gear (A03) SYNC	FSA_SO02	
034 - TTO Pinion (A06) SYNC	FSA_SO01	

Acquisition	HI	Data Module
	FSA_SO02	39-A-31-31-00-00A-422K-A
060 - Oil Cooler Gear (A06) SYNC	FSA_GE1	39-A-31-31-00-00A-422L-A
	FSA_GE2	
	FSA_SO01	
	FSA_SO02	
012 - Annulus Gear (A03) SYNC013 - Annulus Gear (A04) SYNC	FSA_SO01	39-A-31-31-00-00A-422M-A
	FSA_SO02	
014 - Annulus Gear (A05) SYNC		
035 - TRDS (A07) SYNC – Standard Tail Line	FSA_SO01	39-A-31-31-00-00A-422N-A
	FSA_SO02	
035 - TRDS (A07) SYNC – Light Tail Line	FSA_SO01	39-A-31-31-00-00A-422P-A
	FSA_SO02	
036 - IGB Pin (A08) SYNC	FSA_GE1	39-A-31-31-00-00A-422Q-A
	FSA_GE2	
	FSA_SO01	
	FSA_SO02	
038 - TGB Pin (A09) SYNC	FSA_GE1	39-A-31-31-00-00A-422R-A
	FSA_GE2	
	FSA_SO01	
	FSA_SO02	
039 - TGB Gear (A09) SYNC	FSA_SO02	39-A-31-31-00-00A-422S-A

Table 14 Specific inspections for TVM Arising on bearing acquisitions

Acquisition	HI	Data Module
079 - Hangar Ball brg (A07) THIST - Standard Tail Line	FTE_EB	39-A-31-31-00-00A-422T-A
	FTE_TON	
	FTE_WHT	
079 - Hangar Ball brg (A07)THIST- Light Tail Line	FTE_EB	39-A-31-31-00-00A-422U-A

Acquisition	HI	Data Module
	FTE_TON	
	FTE_WHT	

1.13 **Final step of isolation procedure**

Perform the troubleshooting procedure indicated in the Table 13 or Table 14, column “Data Module”.

1.14 Check the applicable accelerometer installation and harness. Refer to Step 2.

1.15 Keep the component under close monitoring for the subsequent 10 FH.

At the end of the close monitoring, is there any arising?

- YES. Go to Step 1.16.
- NO. End of the isolation procedure. The system is serviceable.

1.16 Is the Arising a Steady Red Th one?

- YES. Go to Step 1.17.
- NO. Go to Step 1.19.

Note

This STEP is only applicable to acquisitions monitoring transmission components within a gearbox. Otherwise, go to Step 1.19.

1.17 Check the chip detector plugs on the involved gearbox.

Are the chip detector plugs clean?

- YES. Go to Step 1.19.
- NO. Go to Step 1.18.

1.18 **Final step of isolation procedure**

Follow the related chip detector troubleshooting procedure. Refer to the 39-A-60-80-00-03A-028A-D.

1.19 Check the HI behavior and determine the trend type:

- Stable data. Go to Step 1.25, or
- Rising trend. Go to Step 1.24, or
- Step change. Go to Step 1.20, or
- Stable data with isolated spikes. Go to Step 1.26, or
- Scattered data. Go to Step 1.23.

1.20 A step change is present.

Was maintenance recently performed around the area?

- YES. Go to Step 1.21.

- NO. Go to Step 1.22.

1.21 **Final step of isolation procedure**

The system is serviceable.

Raise a TQ if a thresholds reset is needed.

1.22 **Final step of isolation procedure**

Raise a DARF reporting the current STEP number of the isolation procedure.

1.23 **Final step of isolation procedure**

The system is serviceable.

Raise a DARF reporting the current STEP number of the isolation procedure.

1.24 **Final step of isolation procedure**

Raise a DARF reporting the current STEP number of the isolation procedure.

1.25 **Final step of isolation procedure**

The system is serviceable.

Raise a TCR if a threshold adjustment is needed.

1.26 **Final step of isolation procedure**

The system is serviceable.

Raise a DARF reporting the current STEP number of the isolation procedure in case of repeated Arising.

2 Check the applicable sensor installation and harness as follows:

2.1 Remove the sensor.

2.2 Visually examine the sensor connector for integrity of the backshell and possible internal pin plays.

2.3 Clean the surface of the connector, refer to the applicable steps of data module 39-A-20-50-02-00A-251A-A. Then apply Cleaner (C583).

2.4 Examine the wiring cable portion (from the sensor connector up to the upper deck main connector). Make sure that there are no signs of hard folding or crush.

2.5 Examine the cleanliness of surface where the sensor is installed.

2.6 Install the sensor.

Requirements after job completion

1 Remove all the tools and the other items from the work area. Make sure that the work area is clean.