

Extended Diversion Time Operations Workshop



Alternate

Destination

ETP1

ETP2

Departure

Module 6 *Practical Exercise*



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EDTO Maintenance dispatch at **EDT** Airways

Your team is part of the Engineering and Maintenance organization of **EDT**  Airways

- **EDTO Airways** is an experienced EDTO airline, operating multiple EDTO fleets of **WonderPlanes** aeroplanes on various EDTO routes worldwide.
- For this exercise you will be focusing on the **WP-911 / WP-911Super+ operations** at EDTO Airways, and in particular the EDTO route between **New York** (JFK) and **Paris** (CDG).
- Recall : EDTO Airways holds a 240 minute operational approval for their WP-911 / WP-911Super+ operations, however this authorization is limited to 180 min maximum diversion time for EDTO operations across the Atlantic Ocean (**see Figure 1**).
- The approved adequate aerodromes, non-EDTO and great circle tracks for the **NYC-CDG route** are depicted in **Figure 2 and 3**.

Module 6 - Practical Exercise

EDTO Maintenance dispatch at **EDT Airways**

OPERATIONS SPECIFICATIONS (subject to the approved conditions in the operations manual)	
ISSUING AUTHORITY CONTACT DETAILS ¹	
Telephone: <u>+00-11-2222</u>	Fax: <u>+00-22-1111</u> E-mail: <u>xxx@caa.gov</u>
AOC# ² : <u>000-111</u> Operator name ³ : <u>EDTO-Airways</u> Date ⁴ : _____ Signature: _____	
Dba trading name: _____	
Aircraft model ⁵ : WonderPlanes WP-911 and WP-911SP+ series	
Types of operation: Commercial air transportation <input checked="" type="checkbox"/> Passengers <input type="checkbox"/> Cargo <input type="checkbox"/> Other ⁶ : _____	
Area(s) of operation ⁷ : Worldwide	
Special limitations ⁸ : _____	

SPECIAL AUTHORIZATIONS	YES	NO	SPECIFIC APPROVALS ⁹	REMARKS
Dangerous goods	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Low visibility operations				
Approach and landing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	CAT ¹⁰ : _____ RVR: _____ m DH: _____ ft	
Take-off	<input checked="" type="checkbox"/>	<input type="checkbox"/>	RVR ¹¹ : _____ m	
RVSM ¹² <input type="checkbox"/> N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
EDTO ¹³ <input type="checkbox"/> N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Threshold time ¹⁴ : 60 minutes Maximum diversion time ¹⁴ : 240 minutes	Authorization for 240 min is only for Pacific area Authorization is limited to 180 min for other areas.
Navigation specifications for PBN operations ¹⁵	<input checked="" type="checkbox"/>	<input type="checkbox"/>		¹⁶
Continuing airworthiness	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	¹⁷	
Other ¹⁸	<input type="checkbox"/>	<input type="checkbox"/>		

Figure 1 – Operations Specification for **EDT Airways** fleet of WP-911 and WP-911SP+

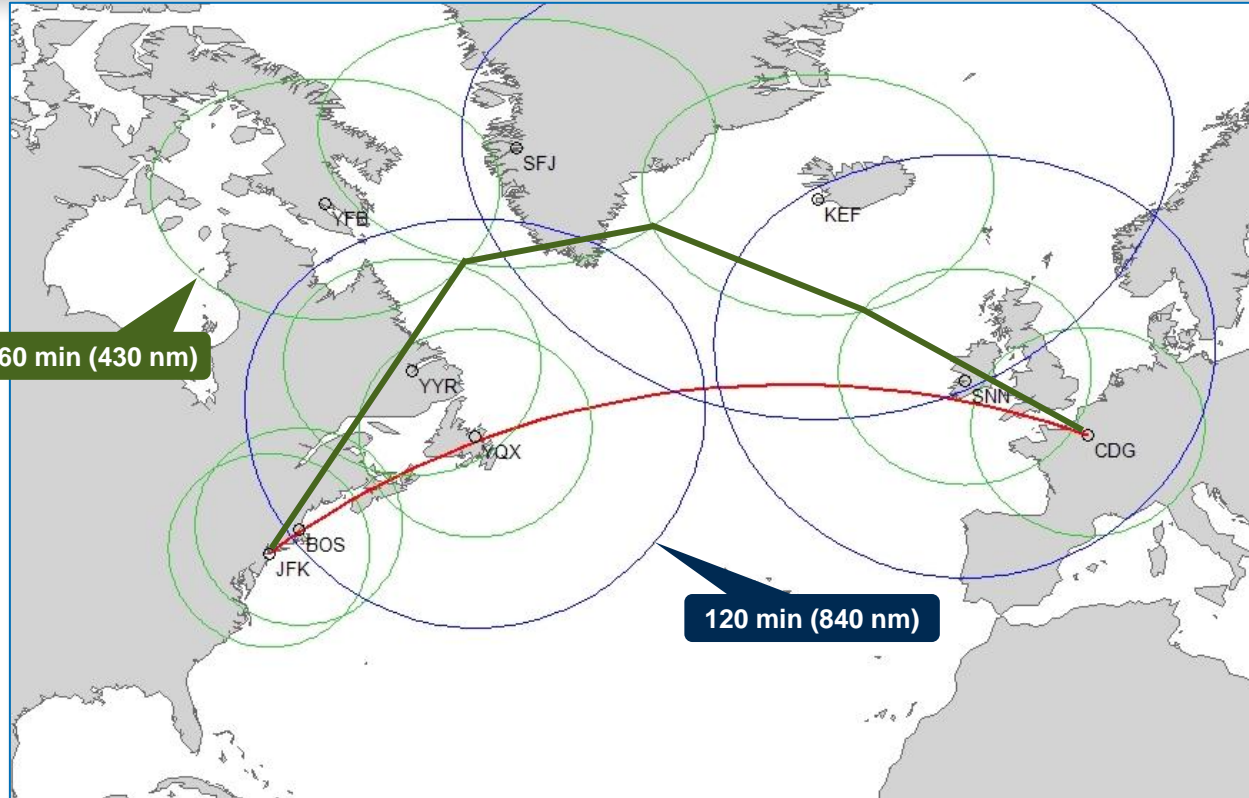
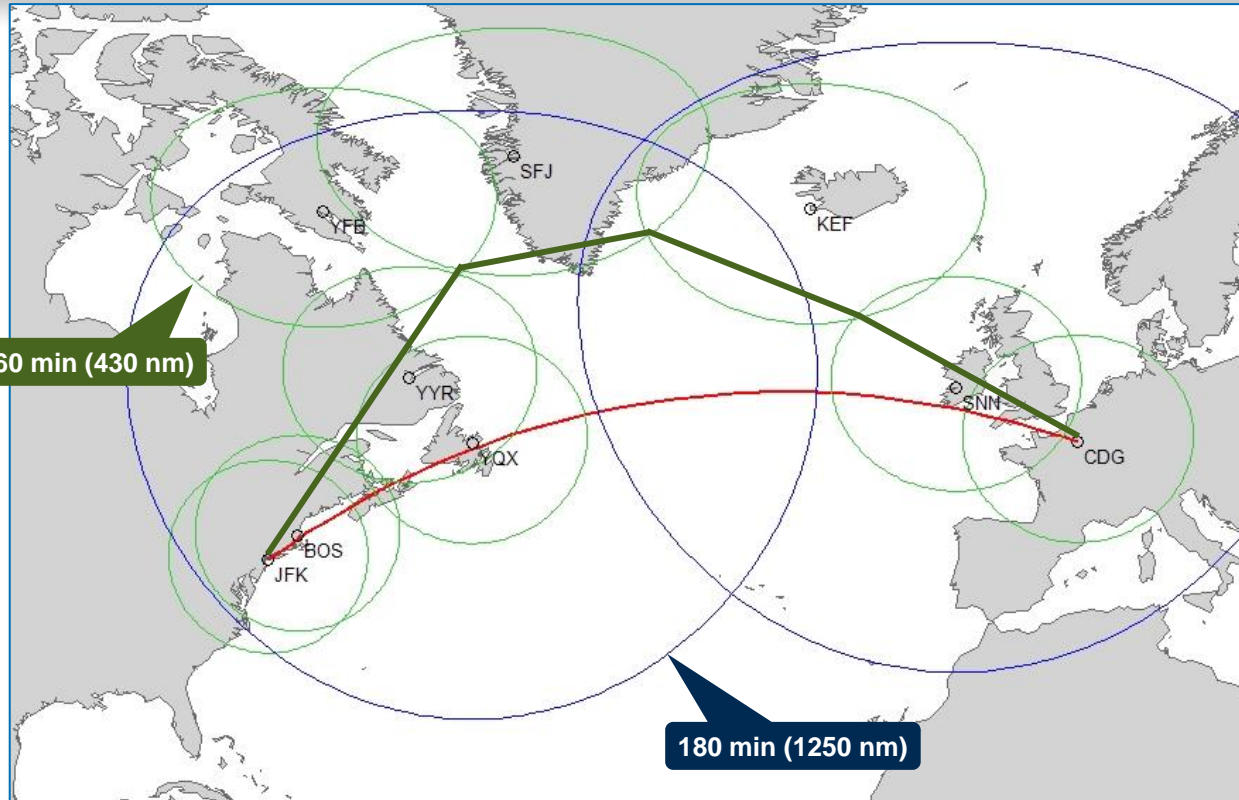


Figure 2
CDG-JFK route
Non-EDTO track
and **EDTO 120 min** track

**Figure 3**

CDG-JFK route
Non-EDTO track
and **EDTO 180 min** track



The story : an EDTO Airways WP911SP+ (registration EDTO-SP3) has just arrived from JFK, and is about to be dispatched on the flight back to JFK.

- The incoming flight was initially dispatched and conducted under **EDTO 180 min** authority : see the info on upper right corner of the Technical Logbook (**Figure 4** on next page).
- During this flight, **3 discrepancies** have been logged by the Flight Crew on the Technical Logbook (See items 1, 2 and 3 of the Technical Logbook):
 - Item #1 : the discrepancy is related to APU
 - Item #2 : the discrepancy is related to the IDG
 - Item #3 : the discrepancy finding is related to Brakes
- The aircraft must now be dispatched back to JFK.
- There are **3 possible routings** are possible for this flight (see **Figure 2** and **Figure 3** on previous pages):
 1. non-EDTO (60 min)
 2. EDTO 120 min
 3. EDTO 180 min





EDTO Airways				A/C TYPE	A/C REG	DD/MM/YYYY	Incoming EDTO Status (minutes)		
				WP-911	EDTO-SP3	23/05/2019	<input checked="" type="checkbox"/> 180	<input type="checkbox"/> 120	<input type="checkbox"/> 60
EDTO Status	Diversion Time (minutes)								
	<input type="checkbox"/> 180	<input type="checkbox"/> 120	<input type="checkbox"/> 60						
Verification flight required (Y/N):									
AIRCRAFT MAINTENANCE RELEASE									
A signature for certifying for the completion of maintenance shall constitute a certification required by regulation.						Name & Authorization No.		Signature / Stamp	
Station	CDG	Date	23-May	Time (UTC)	05:00				
ITEM	DISCREPANCIES MALFUNCTIONS	SIGN / STAMP	CORRECTIVE ACTIONS	RELEASED	SIGN / STAMP		QUALITY CHECK		
1	APU no start during descent (one attempt)		Surge Control valve replaced with P/N 3290476-3	✓					
2	IDG 1 fault before top of descent		IDG replaced with P/N 7521680	✓					
3	Left main landing gear Brakes hot temp at arrival		2 brake fans changed on left main landing gear	✓					

EDTO status from previous flight

Aeroplane identification

Discrepancies logged by the Flight Crew and corrective actions taken by Maintenance

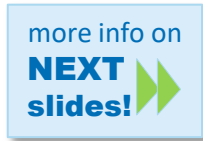
Figure 4
Technical Logbook of EDTO Airways WP-911SP+ registered **EDTO-SP 3**

Assignment – Team Breakouts

You will have to proceed with the maintenance release of this WP911SP+ aircraft for its next EDTO flight from CDG to JFK.

- Please assess and confirm the EDTO Status of the aeroplane for the following 4 scenarios:
 - **Scenario A** : Maintenance confirmed that there is no fault on the APU, and the faulty IDG is not replaced
 - **Scenario B, C & D** : A new Surge Control Valve (SCV) is installed on the APU, and the faulty IDG is replaced with a new P/N (different for each scenario)

- You will have to fill in the EDTO Status check box (cells highlighted in yellow – see **Figure 5** on next page) on the enclosed Technical Logbook sheets – one for each scenario as follows :
 - **Techlog Sheet A** for Scenario A (Flight ED-5A)
 - **Techlog Sheet B** for Scenario B (Flight ED-5B)
 - **Techlog Sheet C** for Scenario C (Flight ED-5C)
 - **Techlog Sheet D** for Scenario D (Flight ED-5D)



Module 6 - Practical Exercise

EDTO Maintenance dispatch at EDT Airways

EDT Airways				A/C TYPE	A/C REG	DD/MM/YYYY	Incoming EDTO Status (minutes)				
FLYING	EDTO	EDTO	EDTO	WP-911	EDTO-SP3	23/05/2019	<input checked="" type="checkbox"/> 180	<input type="checkbox"/> 120	<input type="checkbox"/> 60		
FLYING	EDTO	EDTO	EDTO	FLIGHT CREW INFO.							
FLYING	EDTO	EDTO	EDTO	CPT NAME	LICENSE NBR	1st OFFICER NAME	LICENSE NBR	DEP. FUEL (KG)	TOTAL FUEL (KG)	ARR. FUEL (KG)	
FLYING	ED-5A	JFK	CDG	07:32	Mike	#12345	Eric	#96543	46000	46800	5800
MAX START EGT (°C)	ENG 1 - 325	ENG 2 - 323									
MAX T.OFF EGT (°C)	ENG 1 - 358	ENG 2 - 351									
APU OIL	OK	UPLIFT Y/N	N								
IDG OIL	OK	UPLIFT Y/N	N								
EDTO Status	<input type="checkbox"/> 180 <input type="checkbox"/> 120 <input type="checkbox"/> 60			Verification flight required (Y/N):							
AIRCRAFT MAINTENANCE RELEASE											
A signature for certifying for the completion of maintenance shall constitute a certification required by regulation						Name & Authorization No.		Signature / Stamp			
Station	CDG	Date	23-MAY	Time (LTO)	05:00						
ITEM	DISCREPANCIES / MALFUNCTIONS	SIGN / STAMP	CORRECTIVE ACTIONS	RELEASED	SIGN / STAMP		QUALITY CHECK				
1	APU no start during descent (one attempt)		APU started on ground. No fault found.	✓							
2	IDG 1 fault before top of descent		IDG disconnected. MMEEL 24-22-01A applied	✓							
3	Left main landing gear Brakes hot temp at arrival		2 brake fans changed on left main landing gear	✓							

Scenario identifier (Flight number)

EDTO dispatch status check box

List of discrepancies specific to each scenario

Engine oil uplifts and consumption rates

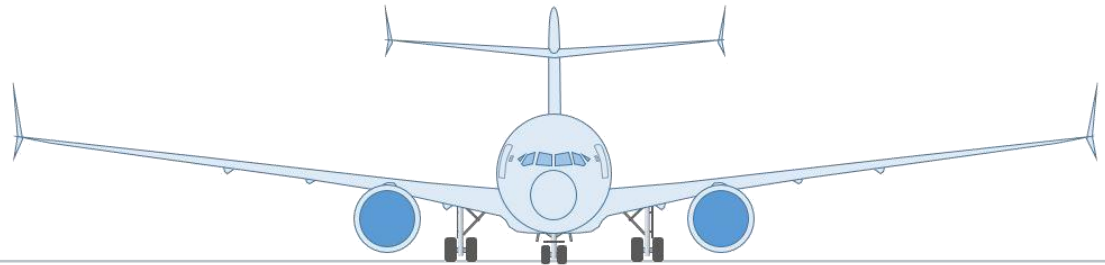
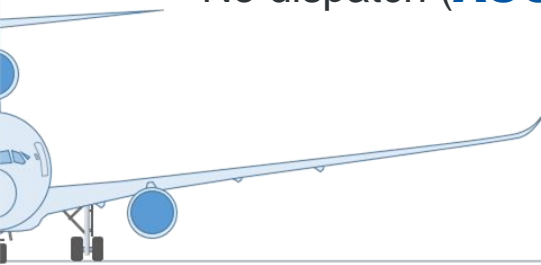
Figure 5
Information on Technical Logbook



EDTO Maintenance dispatch at **EDT** *Airways*

Please justify for each scenario the rationale for the decision taken, which may be:

- Dispatch under **EDTO** : specify max diversion time (**120 min** or **180 min**)
- Dispatch under **non-EDTO** (max diversion time : **60 min**)
- Request for **verification flight**
- No dispatch (**AOG**)



EDTO Maintenance dispatch at EDT Airways

For this exercise, you will be using the following **enclosed documentation** :

- EDTO maps for the route JFK-CDG : see **Figure 1** and **Figure 2**
- WP911 AMM Section 71, Task 71-00-00-710-805-A : see **Doc 01**
 - Note: 1 US gallon = 4 Quarts
- WP-911 MMEL 24-22-01A and 49-10-01 : see **Doc 02**
- WP-911 EDTO Parts List (ATA 24 and ATA 49 extracts) : see **Doc 03**
 - Note: the “changeover P/N” (noted OK in the EDTO Parts List) is the minimum standard of P/N approved for EDTO. It means that P/Ns above this standard are also approved for EDTO
- WP-911 IPC (ATA 24 and ATA 49 extracts) : see **Doc 04**
- WP-911 EDTO CMP Document (Cover Page and Table of content) : see **Doc 05**
- WP-911 EDTO Significant Systems List : see **Doc 06**

Assignment – Team Breakouts

Please split up into your individual teams to begin the exercise.

You will have **30 to 45 minutes** (TBC) to review the information, assess and confirm the EDTO Status of the aeroplane and fill-in the EDTO Status check box for the **4 scenarios** discussed on **Slide 8**, and select a team spokesperson(s).

We will conduct a role playing session with each team following the breakouts. Your team spokesperson(s) will play the role of the **certifying staff from EDTO Airways maintenance organization**, who will be explaining the **EDTO Status** to a team of inspectors from the Civil Aviation Authority (Ian, Mike and Eric).





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Module 6 - Practical Exercise

Team Breakouts

EDTO Maintenance dispatch at **EDT** *Airways*



Team Breakouts (30 to 45 Minutes)



EDTO Workshop

Module 6 – Practical Exercise



EDTO Maintenance dispatch at EDT  *Airways*

Conclusions, Solutions, Answers... and food for thoughts!

- Before assessing the rectification actions, let's review the engine oil consumption vs AMM recommendations:

DATE	FLIGHT SEGMENT	OIL QUANTITY (QTS)		DIFF.	BLOCK TIME	CONSUMPTION (QTS/HOUR)
		BEFORE	AFTER			
22/05	PREVIOUS	ENG 1 - 19	ENG 1 - 18	1	08:01	0.12
		ENG 2 - 19	ENG 2 - 17	2	08:03	0.25
23/05	LAST	ENG 1 - 18	ENG 1 - 17	1	07:30	0.13
		ENG 2 - 17	ENG 2 - 11,5	5.5	07:32	0.73

Average oil consumption should be calculated using data from the last 10 flight cycles. For reference, the usual average oil consumption is between 0.14 l (0.0370 USgal) and 0.19 l (0.0502 USgal) per hour. The

0.15 QTS/H 0.20 QTS/H

0.56 QTS/H

Average oil consumption or a single oil consumption data point above 0.53 l (0.1400 USgal) per hour and up to 0.82 l (0.2166 USgal) per hour, aircraft operation is approved if engine oil consumption permits the flight to be completed. Engine oil consumption must be closely monitored and the flight crew must be given the data. No specific inspection is required under 0.82 l (0.2166 USgal) per hour.

0.87 QTS/H

- Single consumption data point is still within limits
 - 0.73QTS/H vs 0.87 QTS/H
- Average consumption over last 10 sectors is not known but average over last two sectors remains acceptable:
 - 0.48 QTS/H (7,5 QTS over 15.58FH)
- However single point data is in the « unusual oil consumption » range:
 - It is confirmed that this oil consumption permits the next flight to JFK (enough oil if top-up is performed)
 - This single point shows a sudden increase and an adverse trend
 - Aeroplane may be dispatched but the flight should be notified
 - Note that next stop will be in outstation. May be advisable to perform trouble shooting before this dispatch.

Conclusions, Solutions, Answers... and food for thoughts!

Assessment of Scenario A

- The finding related to brakes has no impact on EDTO capability
 - No EDTO restrictions on brakes, as it is not an EDTO significant system.
 - Furthermore there is no ATA 32 items in the EDTO CMP document
- Dispatch with IDG inoperative is authorized for EDTO up to 180 min per MMEL, so the EDTO Status should be updated as follows:

EDTO Status	Diversion Time (minutes)		
	<input checked="" type="checkbox"/> 180 <input type="checkbox"/> 120 <input type="checkbox"/> 60	Verification flight required (Y/N) : N	



- Verification flight could potentially be required depending on outcome from oil consumption review
- Previous occurrence of APU no-start in flight could also justify the need for a verification in-flight (APU high altitude start test), in particular if there were other previous events; but it is not applicable to this flight:
 - Dispatch with IDG inop requires APU running during the flight



Conclusions, Solutions, Answers... and food for thoughts!

Assessment of Scenario B

❑ Installed SCV P/N 3290476-5 is approved for EDTO :

CMP item	Subject	Aircraft applicability	Solutions (Mod, SB, VSB, ...)	P/N	Pre Mod P/N	Post Mod P/N	EDTO up to 180min	EDTO beyond 180min	Notes
49-1-2003-016	Surge Control Valve (SCV)	All	Mod 45953	3290476-3	X		NAFE	NAFE	
			ABCD SB 123-49-7369 or Alien Signal Aerospace SB 3290476-49-7018	3290476-4		X	OK	OK	
				3290476-5		X	OK	OK	

... however :

❑ Installed IDG P/N 752168 is NOT Approved for EDTO :

24-1-0000-005	IDG	WP911-301	Mod 43286 WP911-24-3008	752168	X		NAFE	NAFE	
			Suntan SB 115EGS011-24-1	752168A		X	OK	OK	

more on **NEXT slide!**

Conclusions, Solutions, Answers... and food for thoughts!

... furthermore :

❑ This IDG P/N 752168 cannot be installed as spare on this WP-911-821SP of EDTO Airways (FSN 253):

MSN	Version	Rank	Model	Registration	Engine	Operator	Customization and Fleet Serial Number		STD	A/C Range
0030	EDTO01	1	WP911-301	EDTO-01	RG3350-89	EDTO Airways	EDT	1	ST3	001-050
0037	EDTO01	2	WP911-301	EDTO-02	RG3350-89	EDTO Airways	EDT	2	ST3	001-050
2019	EDTO02	1	WP911-821SP	EDTO-SP1	RG3350-SP	EDTO Airways	EDT	251	ST8	251-300
2020	EDTO02	2	WP911-821SP	EDTO-SP2	RG3350-SP	EDTO Airways	EDT	252	ST8	251-300
2021	EDTO02	3	WP911-821SP	EDTO-SP3	RG3350-SP	EDTO Airways	EDT	253	ST8	251-300
2100	EDTO03	1	WP911-823SP	EDTO-SP4	RG3350-SP ²	EDTO Airways	EDT	254	ST8	251-300

**** ON A/C FSN 251-350**

<u>010B</u>	<u>752168B</u>	.IDG-INTEGRATED DRIVE GENERATOR <u>SEE 24-21-51-21 001B FOR DET</u>	<u>4000XU</u>	002
		Following part number can be installed as spare:		
	<u>752168C</u>	.IDG-INTEGRATED DRIVE GENERATOR		

So the status is... **AOG!**

EDTO Status	Diversions time (minutes)		
	<input type="checkbox"/> 10	<input type="checkbox"/> 20	<input type="checkbox"/> 60
Verification might required (Y/N) :			

Conclusions, Solutions, Answers... and food for thoughts!

Assessment of Scenario C

❑ This time the installed IDG P/N 752168C is approved for EDTO and can be installed as spare :

➤ No EDTO tag in the IPC normally means that the part is approved for EDTO

**** ON A/C FSN 251-350**

010B	752168B	.IDG-INTEGRATED DRIVE GENERATOR SEE 24-21-51-21 001B FOR DET	4000XU	002
Following part number can be installed as spare:				
	752168C	.IDG-INTEGRATED DRIVE GENERATOR		

... however :

❑ Installed SCV P/N 3290476-3 is NOT Approved for EDTO :

CMP item	Subject	Aircraft applicability	Solutions (Mod, SB, VSB, ...)	P/N	Pre Mod P/N	Post Mod P/N	EDTO up to 180min	EDTO beyond 180min	Notes
49-1-2003-016	Surge Control Valve (SCV)	All	Mod 45953 ABCD SB 123-49-7369 or Allen Signal Aerospace SB 3290476-49-7018	3290476-3	X		NAFE	NAFE	
				3290476-4		X	OK	OK	
				3290476-5		X	OK	OK	

more on **NEXT** slide! ➤

Conclusions, Solutions, Answers... and food for thoughts!

... therefore the status of the aeroplane is downgraded to non-EDTO ::

EDTO Status	Diversion Time (minutes)		
	<input type="checkbox"/> 180	<input type="checkbox"/> 120	<input checked="" type="checkbox"/> 60
	Verification flight required (Y/N) : N		

Other options could be :

Declare APU as INOP, and dispatch under MMEL (180 min allowed in this example) →

EDTO Status	Diversion Time (minutes)		
	<input checked="" type="checkbox"/> 180	<input type="checkbox"/> 120	<input type="checkbox"/> 60
	Verification flight required (Y/N) : N		

Ask for a temporary deviation vs the CMP requirement
 ➤ If accepted, the dispatch status could be 120min or 180 min (depending on the conclusions of the assessment) →

EDTO Status	Diversion Time (minutes)		
	<input checked="" type="checkbox"/> 180	<input checked="" type="checkbox"/> 120	<input type="checkbox"/> 60
	Verification flight required (Y/N) : N		

Conclusions, Solutions, Answers... and food for thoughts!

Assessment of Scenario D

☐ Now both the IDG P/N 752168C and the SCV P/N 3290476-5 are valid spares and approved for EDTO !

**** ON A/C FSN 251-350**

010B	752168B	.IDG-INTEGRATED DRIVE GENERATOR SEE 24-21-51-21 001B FOR DET	4000XU	002
Following part number can be installed as spare:				
	752168C	.IDG-INTEGRATED DRIVE GENERATOR		

CMP Item	Subject	Aircraft applicability	Solutions (Mod, SB, VSB, ...)	P/N	Pre Mod P/N	Post Mod P/N	EDTO up to 180min	EDTO beyond 180min	Notes
49-1-2003-016	Surge Control Valve (SCV)	All	Mod 45953	3290476-3	X		NAFE	NAFE	
			ABCD SB 123-49-7369 or Allen Signal Aerospace SB 3290476-49-7018	3290476-4		X	OK	OK	
				3290476-5		X	OK	OK	



No statement "Not approved for EDTO" ⚡ P/N is approved for EDTO

010	752168	.IDG-INTEGRATED DRIVE GENERATOR NOT APPROVED FOR ETOPS. EMB SB 24-3008 (ON A/C 001-003) SEE 24-21-51-21 001 FOR DET	4000XU	002
Following part number can be installed as spare:				
	752168A	.IDG-INTEGRATED DRIVE GENERATOR SEE 24-21-51-21 001A FOR DET		
Following part number can be installed as spare:				
	752168B	.IDG-INTEGRATED DRIVE GENERATOR SEE 24-21-51-21 001B FOR DET		
Following part number can be installed as spare:				
	752168C	.IDG-INTEGRATED DRIVE GENERATOR SEE 24-21-51-21 001C FOR DET		

See Doc 04
WP-911 IPC extracts – Page 2/4

more on
NEXT 
slide !

Conclusions, Solutions, Answers... and food for thoughts!

... So the EDTO status is EDTO 180 min :

	Diversion Time (minutes)		
EDTO Status	<input checked="" type="checkbox"/> 180	<input type="checkbox"/> 120	<input type="checkbox"/> 60
	Verification flight required (Y/N) :		Y

In addition :

- The rectification action on the APU (removal and installation of SCV) may have impacted the in-flight start capability of the APU
- Therefore a request for in-flight verification should be raised to the Flight Crew:



Thank You and Well Done!!

