

# Intermittent Fault Detector™ (IFD™)

**[REDACTED] V2500 Engine**

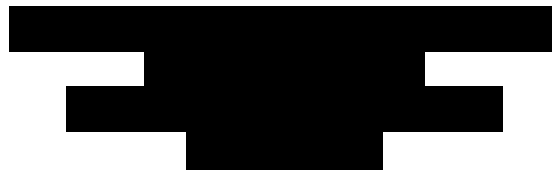
## **VIFD Test Findings Summary**



**Prepared and Submitted by:**

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**and**



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## V2500-A5 Training Engine S/N: V10045

### Introduction:

The subject engine was tested by Universal Synaptics, [REDACTED], and [REDACTED] technicians and personnel on 19-20 February 2019 using the portable Voyager Intermittent Fault Detector™ (VIFD™). The Interface Test Adaptor (ITA) was designed and manufactured by [REDACTED] for this collaborative Technology Demonstration Project (TDP). This ITA connected to an estimated 75% of the engine harness connectors.

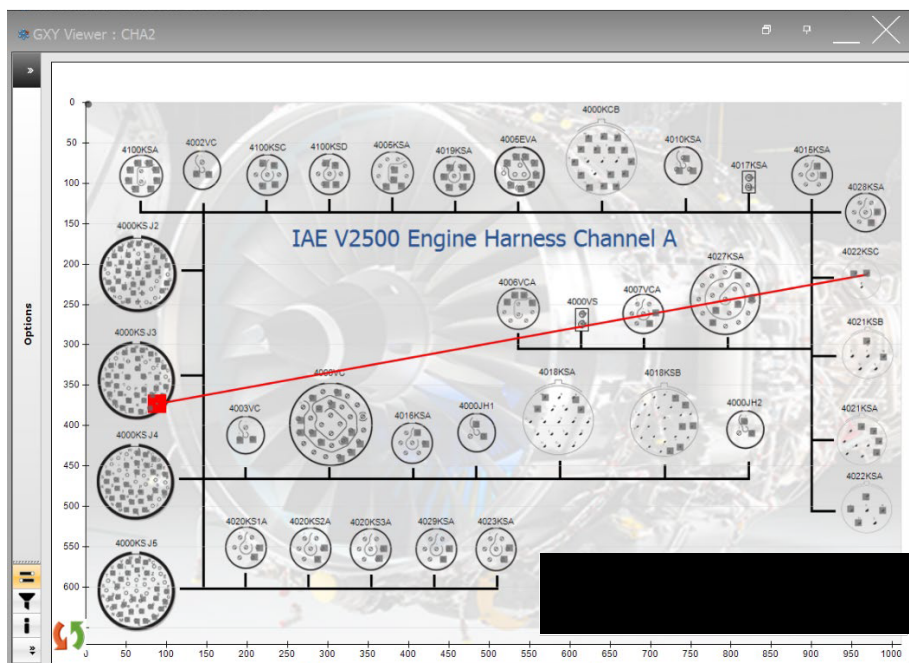
### Test Procedures:

- Attachment A - V2500 Testing Process Outline

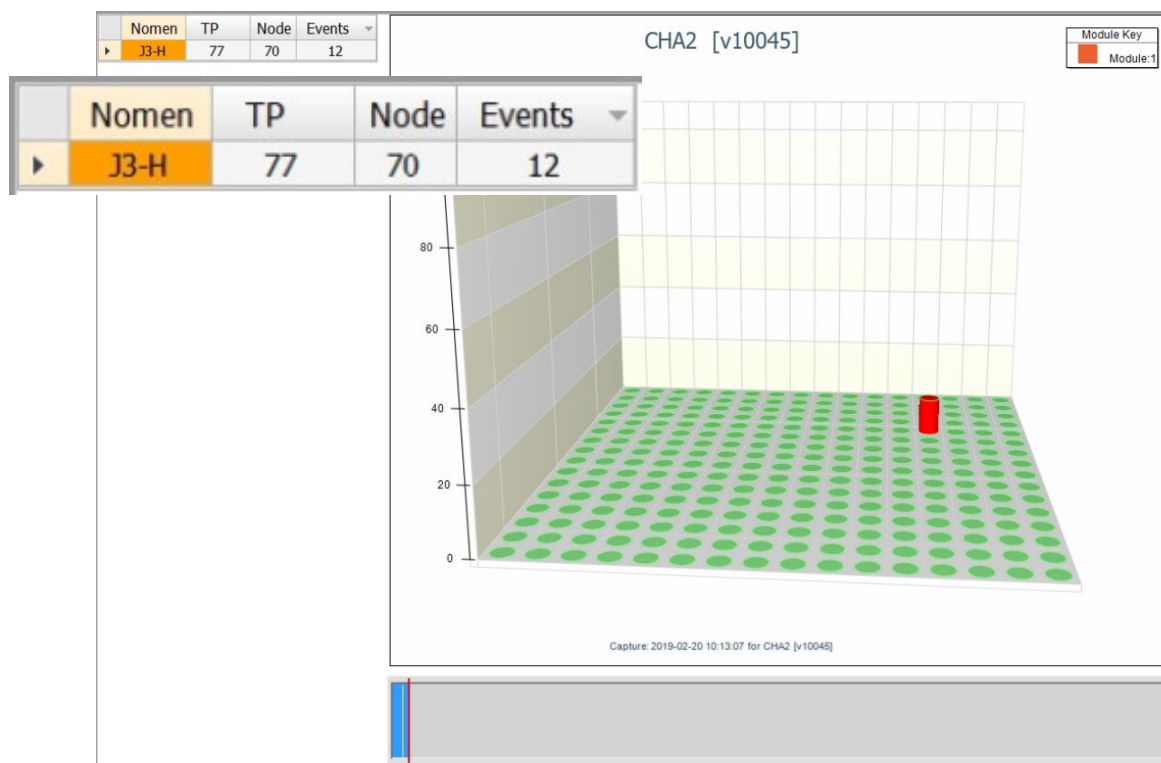
### Results:

#### Channel A:

- Voyager continuity testing was conducted, and no open circuits were found in the engine.
- Voyager shorts testing was conducted, and no shorted circuits were found in the engine.
- Intermittence testing was conducted, and one circuit experienced 12 intermittent events on Channel A.
  - Location: Connector 4000KS, J3-H, Wire 77, Connected to Node 70 (Graphic 1 and Graphic 2)



Graphic 1 - Fault Isolation Graphic - S/N: V10045 Engine Harness Channel A



Graphic 2 – GXY (Graphical X/Y Coordinate) View - S/N: V10045 Engine Harness Channel A

- b. Root Cause Analysis: [REDACTED] engineer was able to diagnose the intermittent fault to root cause base on the Fault Isolation Graphic (Image 1 & 2)

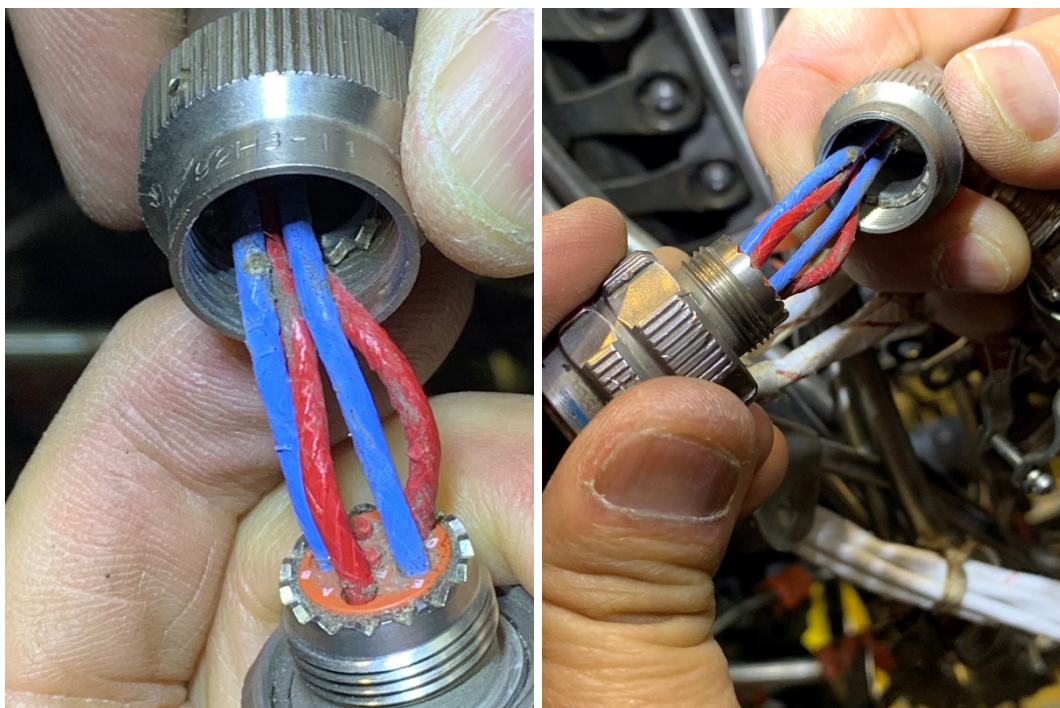
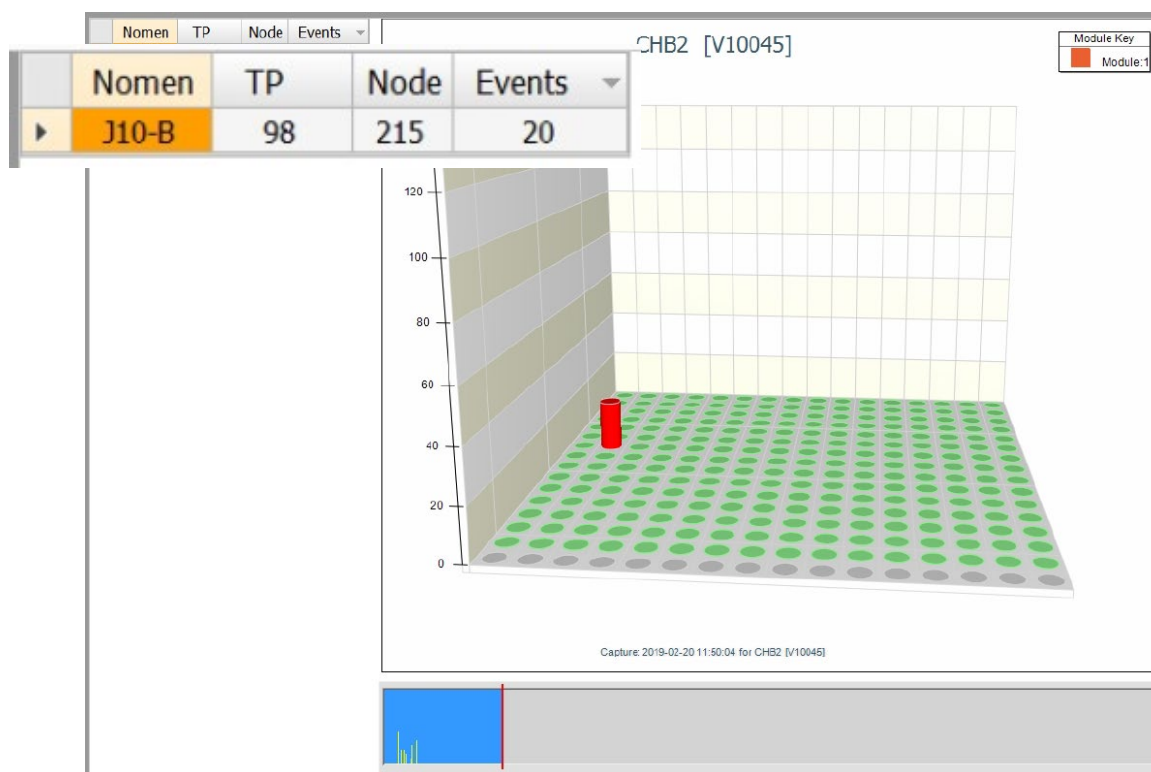


Image 1 & 2 – J3-H, Wire 77 Chaffing, exposed wire causing intermittent connectivity

## Channel B:

1. Voyager continuity testing was conducted, and no open circuits were found in the engine.
2. Voyager shorts testing was conducted, and no shorted circuits were found in the engine.
3. Intermittence testing was conducted, and one circuit experienced 50+ intermittent events on Channel B.
  - a. Location: J10-B, Wire 98, Connected to Node 215 (Graphic 3, screenshot taken at 20 events)



Graphic 3 – GXY (Graphical X/Y Coordinate) View - S/N: V10045 Engine Harness Channel B



- b. Intermittence Log File (Report 1): Indicates Intermittence Test start time, location of fault (TP#), and time when intermittent fault occurred during test (Adv-Time). Report shows how the maintainer used the Voyager to reconfirm faults. Event or glitch limit was reached at user-selected 50 intermittent events or faults. Data indicates that the user cleared test results several times to reconfirm the trouble area on the harness through manual manipulation confirming intermittent fault on J10-B.

AdvINTERMITTENT LOG FILE 2019-02-20 11:02:15 CHB2 V10045						
TP#	DRIVE%	SENS%	SByte	QIndex	Adv-Time	
J10-B	100.00	95.07	15	0.00	12.617188	Event
Event Note: 02-20-2019 @ 11:02:28 FIFO Limit of 50 reached - test pause until clear						
J10-B	100.00	95.07	13	0.00	12.640625	Event
J10-B	100.00	95.07	15	0.00	12.65625	Event
Event Note: 02-20-2019 @ 11:02:28 Test Resumed						
J10-B	100.00	95.07	13	0.00	13.40625	Event
J10-B	100.00	95.07	15	0.00	13.414062	Event
J10-B	100.00	95.07	73	0.00	13.421875	Event
J10-B	100.00	95.07	13	0.00	13.445312	Event
J10-B	100.00	95.07	15	0.00	13.453125	Event
J10-B	100.00	95.07	15	0.00	13.460938	Event
J10-B	100.00	95.07	15	0.00	13.484375	Event
Event Note: 02-20-2019 @ 11:02:28 FIFO Limit of 50 reached - test pause until clear						
J10-B	100.00	95.07	15	0.00	13.492188	Event
J10-B	100.00	95.07	15	0.00	13.5	Event
J10-B	100.00	95.07	13	0.00	13.507812	Event
J10-B	100.00	95.07	13	0.00	13.515625	Event
Event Note: 02-20-2019 @ 11:02:29 Test Resumed						
J10-B	100.00	95.07	13	0.00	14.117188	Event
J10-B	100.00	95.07	15	0.00	14.125	Event
J10-B	100.00	95.07	13	0.00	14.132812	Event
J10-B	100.00	95.07	13	0.00	14.140625	Event
Event Note: 02-20-2019 @ 11:02:29 FIFO Limit of 50 reached - test pause until clear						

Report 1 – Intermittence Log File - S/N: V10045 Engine Harness Channel B

- c. Root Cause Analysis: [REDACTED] engineer was able to diagnose the intermittent fault to root cause based on the Fault Isolation Graphic (Image 3)



Image 3 – J10-B, Wire 98 Chaffing, exposed wire causing intermittent connectivity

**V2500 Engine**  
**S/N: V10024**

**Introduction:**

The subject engine was tested by Universal Synaptics, [REDACTED], and [REDACTED] technicians and personnel on 20 February 2019 using the portable Voyager Intermittent Fault Detector™ (VIFD™). The Interface Test Adaptor (ITA) was designed and manufactured by [REDACTED] for this collaborative Technology Demonstration Project (TDP). This ITA connected to an estimated 75% of the engine harness connectors.

**Test Procedures:**

- Attachment A - V2500 Testing Process Outline

**Results:**

**Channel A:**

1. Voyager continuity testing was conducted, and no open circuits were found in the engine.
2. Voyager shorts testing was conducted, and no shorted circuits were found in the engine.
3. Intermittence testing was conducted, and Channel A is \*certified intermittent free.

**Channel B:**

1. Voyager continuity testing was conducted, and no open circuits were found in the engine.
2. Voyager shorts testing was conducted, and no shorted circuits were found in the engine.
3. Intermittence testing was conducted, and Channel B is \*certified intermittent free.

\*ITA connected to estimated 75% of engine harness connectors