

TASK: P752967



WK PKG: PR ET-093-TS-0008  
ENG GRP: ETM  
TSK LDR:

FLOC: VAB  
MLOC: ET-93  
STS/FLT: 107 /001

TITLE: SUSPECTED AREAS (1 EACH +Y AND -Y) OF LOW FOAM AFT OF THE ET/SRB FITTI

OPERATIONS LIST

NUMBER TaskBarCode	TITLE	OperationBarCode	DEPT/SHOP
10	SUSPECTED AREAS (1 EACH +Y AND -Y) OF LOW FOAM AFT OF THE ET/SRB FITTI		
20	SUSPECTED AREAS (1 EACH +Y AND -Y) OF LOW FOAM AFT OF THE ET/SRB FITTI		53700 SCH

*Handwritten mark*

P752967

8-8-02

 National Aeronautics and Space Administration John F. Kennedy Space Center	 SPACE SHUTTLE	1. Report Number	PAGE 1 OF 16
		<input type="checkbox"/> INTERIM PROBLEM REPORT <input checked="" type="checkbox"/> PROBLEM REPORT <input type="checkbox"/> DISCREPANCY REPORT	

2. Detected During VISUAL	3. Work Area/Location/Zone D2 LEVEL HB1 VAB	4. End Item Control Number ET-093-TS-0008
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5. Part/Program Name AFT DOME FOAM SPRAY	6. Part/Program Number 80974048410-509	7. Serial/Rev No. N/A
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8. NHA Part Number 80904000000-020	9. STS/Eff 107 T 093	10. Reported by LYNN SEELOS AST ZQ6712 VAB OPS 1-1198	11. Date/Time 08/08/02 1900
---------------------------------------	-------------------------	--	--------------------------------

12. Item 1	13. Problem Description Suspected areas (1 each +Y and -Y) of low foam aft of the ET/SRB fitting closeout. Areas are approximately 1 inch wide by 26 inches long.
---------------	--

TPS/RSI Instl'd:  Yes  No C/P Instl'd:  Yes  No C/P Part Number:

14. Process Escape <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	15. Constraints AS214.002 Sep CRR <input type="checkbox"/> To: <del>T1297.002 RUN 3 &amp; 4</del>	16. Crit H/W F/M I 3	17. Eng Grp ETM	18. MR Reqd <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ITEMS: 1.0	19. Out of Family <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ITEMS: 1.0
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20. Item	21. Disposition/Cause/Corrective Action SEE UTOP FOR DISPO OF 188 JPC 8/23/02	22. Tech	Contr	Govt
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23. Data Code T 0 9 M 9 . . . 9 1 6	24. Final Acceptance Date 12-10-02	  
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25. RC Action Reqd <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ITEMS:	26. Related Reports UTOP CHANGE INDEX
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USA VM 032

USA VM 026



United Space Alliance

# Constraint Revision Record

Number <b>RET-93-TS-0008</b>	Original Constraint <b>A5214.002</b>
Rationale (If Constraint None)	

SIGNATURES	VERIFIED	DATE
New Constraint <b>A5214.001 40-9</b>		Tair Use

Rationale for Change  
**INCORRECT CONSTRAINT IDENTIFIED BY AST.**

SIGNATURES	VERIFIED	DATE
USA-ETM		11-12-02
New Constraint <b>50007YL2</b>		Tair Use

Rationale for Change  
**5 SUBSTANTIALLY COMPLETE**

SIGNATURES	VERIFIED	DATE
RICHARDS	WC 132 USA	DEC 5 '02
New Constraint		Tair Use

Rationale for Change

SIGNATURES	VERIFIED	DATE
New Constraint		Tair Use

Rationale for Change

SIGNATURES	VERIFIED	DATE
		12-10-02

WAD:  
P12-E7-093-T5-0008

TIME OF RELEASE	DATE	STAMP	REMARKS
8/19/02 12:24:42 PM	8-23-02	WIC 108 USA	OPERATION 20 ADDED
12/5/02 05:43:37 AM	12-6-02	WIC 081 USA	OPS 30 Added

12-10-02  
SPD  
105

12/5/02 05:43:37 PM

**Official**

PR ET-093-TS-0008

## **LOW FOAM ON AFT DOME**

Element/End Item: **ET-093**

Flow/Usage: **107**

Facility: **VAB**

Design Center Concurrence: **MSFC**

Category:

OPR: **ETM**

TTL ORG: **SE**

**This document does not contain  
hazardous operations.**

USA  
133C  
AUG 13 02

08-09-2002 16:54:24 Official APR-ET-093-TS-0008

### Approval Record

## LOW FOAM ON AFT DOME

Technical Contact: W. Richards Phone: 1-3420

Category II TOP Only

This Approval Record is for all Operation No(s) listed below:

Initial Released Operations: 10

Added Operations: \_\_\_\_\_

Deleted Operations: \_\_\_\_\_

Replaced Operations: \_\_\_\_\_

Change Index Added <sup>vsn</sup> <sub>331</sub> <sub>2M</sub> 8-23-02

Comments: \_\_\_\_\_

\_\_\_\_\_

Check Family Type: In Family[ ] Out of Family[ X ] NMA[ ]

Organization	Name (Printed)	Name (Signature)	Date
ETM	<i>W Richards</i>	<i>[Signature]</i>	<i>8-9-02</i>
SE Check	Mark Wallan <sup>ME</sup> <sub>10</sub>	<i>Mark Wallan</i>	<i>8/10/02</i>
NASA SE	Robert E. Spence	<i>Robert E. Spence</i>	<i>8-12-02</i>
LM ET LSS	SMART OTTO	<i>[Signature]</i>	<i>8-12-02</i>

12-10-02  
(8PG  
m2)

8-23-02  
450  
801  
2M

8/19/02 12:21:42 PM **Official** PR EP-093 TS-0008

### Approval Record

# LOW FOAM ON AFT DOME

Technical Contact: W. Richards Phone: 1-3420

Category II TOP Only

This Approval Record is for all Operation No(s) listed below:

Initial Released Operations: 10

Added Operations: 20

Deleted Operations: \_\_\_\_\_

Replaced Operations: \_\_\_\_\_

Change Index Added \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Check Family Type: In Family[ ] Out of Family[ X ] NMA[ ]

Organization	Name (Printed)	Name (Signature)	Date
ETM	W Richards	<i>W Richards</i>	8-19-02
SE Check	Tom Ford	<i>Tom Ford</i>	8-19-02
NASA SE	J. RIVEMA	<i>J. Rivema</i>	8-19-02
LM ET LSS	D.M. Power	<i>D.M. Power</i>	8-19-02

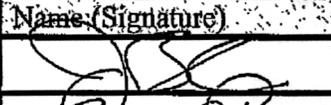
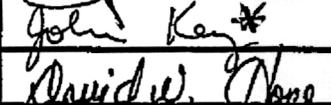
12-10-02  
SPC

8/19/02 12:21:42 PM

Official

PR-ET-093-TS-0008

The following signatures are for the MR disposition only.

Organization	Name (Printed)	Name (Signature)	Date
OPR-MR	John BWS		8-19-02
NASA-SE	J. RIVERA		8-19-02
ET-LSS	D.M. Power		8/19/02
MSFC-RO	John Key	John Key*	8/23/02
QE	DAVID W. HOPE	David W. Hope QE 188 JPC	8/23/02

\* FOR FRED KIENITZ

12-10-02  
SPQ

12-10-02 JWC  
2109  
9 USA

### Approval Record

## LOW FOAM ON AFT DOME

Technical Contact: W. Richards \_\_\_\_\_ Phone: 1-3420 \_\_\_\_\_

**Category II TOP Only**

This Approval Record is for all Operation No(s) listed below:

Initial Released Operations: 10, 29

Added Operations: 20, 30

Deleted Operations: \_\_\_\_\_

Replaced Operations: \_\_\_\_\_

Change Index Added \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Check Family Type: In Family  Out of Family  NMA

Organization	Name (Printed)	Name (Signature)	Date
ETM	W Richards	<i>W Richards</i>	12-5-02
SE Check	Tom Ford	<i>Tom Ford</i>	12-6-02

12-10-02  
678

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## 1.0 INFORMATION

### 1.3 Operations List

Operation		Shop/ Cntl Rm Console	OPR	Haz (Y/N)	Duration (Hrs)
No.	Title				
10	Defect mapping	ET/ NONE	ETM	N	1.0
20	MRB	ET/ NONE	ETM	N	1.0
30	Summary/ Closure	ET/ NONE	ETM	N	1.0

## 2.0 SAFETY INFORMATION

### 2.4 Reference Safety Documentation

Number	Rev	Title
KHB 1710.2	LI	KSC Safety Practices Handbook
GSOP 5400	LI	Ground Safety Operating Procedure

## 3.0 STAGING REQUIREMENTS

### 3.2 Parts, Materials, Equipment, and Special Tools

#### 3.2.5 Shop Support Materials

#### OPERATION 10

Part No./Find No.	Nomenclature	Qty	Unit
-------------------	--------------	-----	------

528-43030-1

lumocolor black pen

1

EA

**4.0 PLANNING REQUIREMENTS**

OIR Required Yes [ ], No [ X ]

Predecessors:

T1297.002 Op 30

Successors:

None

Configuration Required:

Aft Fairings mechanically installed

**5.0 CONFIGURATION ACCOUNTING AND VERIFICATION**

OPERATION 10 Defect mapping

Shop: ET  
Cntrl Rm Console: NONE  
OPR: ETM  
Zone: N/A  
Hazard (Y/N): N  
Duration (Hrs): 1.0

10-1 ① Ref PD 1. and Dwg 80971018423, Sht 9, + 809740789  
Map foam "trough" below the EB fitting by recording Width, Depth, and adjacent (using a Kamati calibrated per T3503.041) every 2 inches along the area from the +Z end. <sup>-500</sup> <sup>foam thickness</sup> <sup>is about 1/2" out</sup> <sup>(measured from get dome)</sup>

Record data for right hand side in table 10-1.  
Record data for left hand side in table 10-2.

~~Log~~

① Measure from defect ("trough") distance from EB fitting,

0306  
T: 721  
AUG 12 02

② John E Richards  
8-12-02

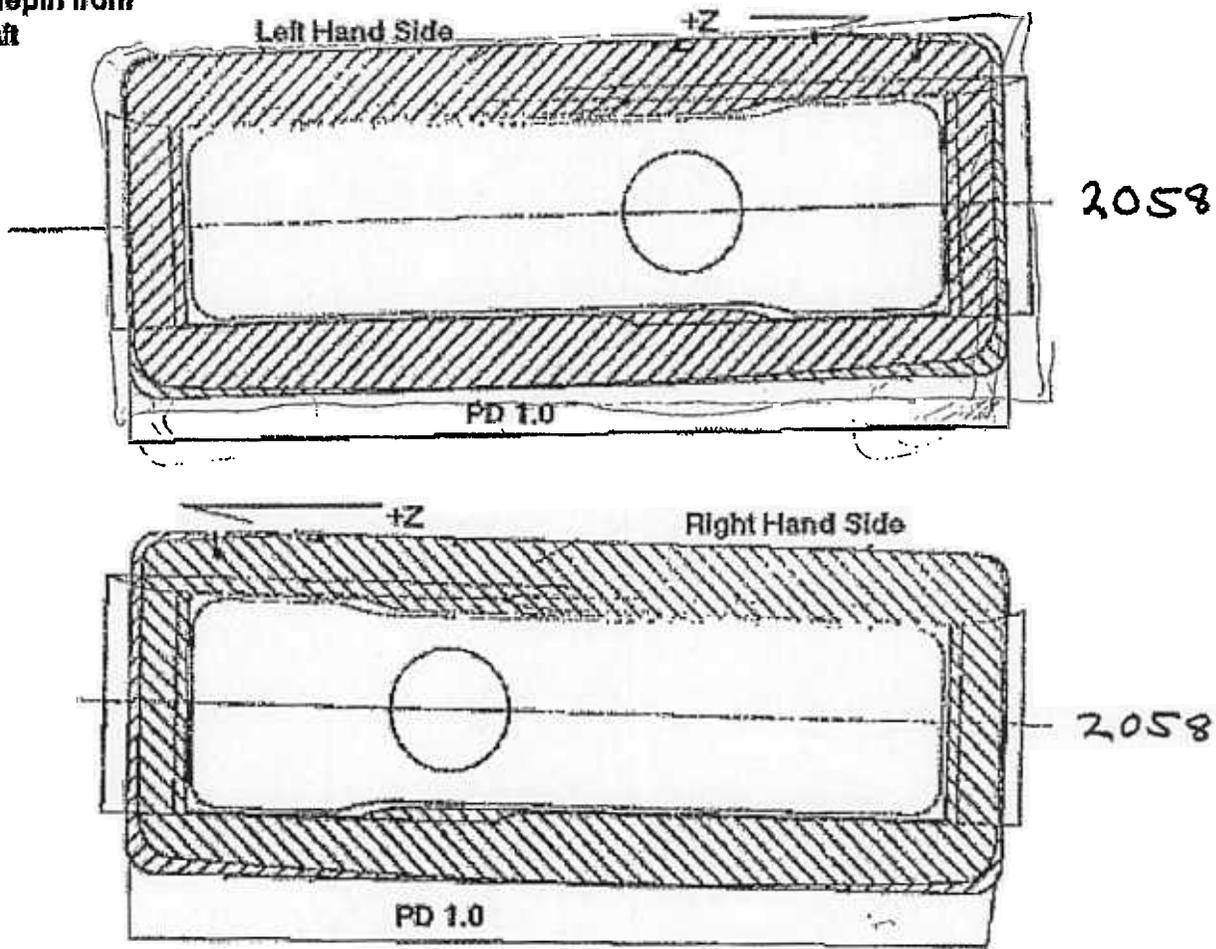
① Mark Weller  
ME 10 8/12/02

Robert Speed 8/12/02

12-10-02  
SPC 108

Figure 10-1

Measure  
depth from  
aft



\*\*\* End of Figure 10-1 \*\*\*



①

Station	Width(X direction)	Ø	Depth	Adjacent	Defect Distance
+Z	1.2	1.55	.3	1.58	6.85
2 in	1.3	1.55	.4	1.47	6.95
4 in	1.2	1.55	.3	1.47	6.85
6 in	1.1	1.53	.1	1.49	6.75
8 in	1.4	1.53	.3	1.54	7.05
10 in	1.7	1.53	.3	1.58	7.35
12 in	1.3	1.53	.35	1.53	6.95
14 in	1.4	1.1	.4	1.58	7.05
16 in	1.3		.45	1.56	6.95
18 in	1.3		.45	1.52	6.95
20 in	1.2		.5	1.53	6.85
22 in	1.2		.4	1.55	6.85
24 in	1.1		.3	1.55	6.75
26 in	1.1		.3	1.53	6.75
-Z end	1.1		.25	1.55	6.75

Station	Width(X direction)	Ø	Depth	Adjacent	Defect Dist. from FR ft
+Z	1.45	1.6	.407	1.54	7.0
2 in	1.50		.187	1.54	7.05
4 in	1.50		.250	1.55	7.05
6 in	1.30		.250	1.53	6.85
8 in	1.20		.325	1.51	6.75
10 in	1.10		.325	1.50	6.65
12 in	1.10		.250	1.47	6.65
14 in	1.20		.125	1.47	6.75
16 in	1.10		.250	1.49	6.65
18 in	1.00		.325	1	6.55
20 in	1.10		.325	1	6.65
22 in	1.00		.375	1	6.55
24 in	1.10		.450	1	6.65
26 in	1.20		.450	1.50	6.75
-Z end	1.20		.250	1.51	6.75

\*\*\* End of Operation 10 \*\*\*

① *Maddella*  
8/12/02

*Robert E. Speed III*  
8-12-02

② ERROR

1371  
5

**OPERATION 20 MRB**Shop: **ET**Cntrl Rm Console: **NONE**OPR: **ETM**Zone: **None**Hazard (Y/N): **N**Duration (Hrs): **1.0****Interim Summary**

Reference PD item 1.0, the defect was evaluated and the following data were obtained.

**+Y Side**

It should be noted that bolded areas are outside drawing allowances.

<b>Area</b>	<b>Min</b>	<b>Actual</b>	<b>Depth</b>	<b>Remaining</b>
+Z end	1.15	1.58	.3	1.28
<b>2 in</b>	<b>1.15</b>	<b>1.47</b>	<b>.4</b>	<b>1.07</b>
<b>4 in</b>	<b>1.15</b>	<b>1.47</b>	<b>.3</b>	<b>1.17</b>
<b>6 in</b>	<b>1.15</b>	<b>1.49</b>	<b>.1</b>	<b>1.39</b>
<b>8 in</b>	<b>1.17</b>	<b>1.54</b>	<b>.3</b>	<b>1.24</b>
<b>10 in</b>	<b>1.17</b>	<b>1.58</b>	<b>.3</b>	<b>1.28</b>
<b>12 in</b>	<b>1.15</b>	<b>1.53</b>	<b>.35</b>	<b>1.18</b>
<b>14 in</b>	<b>1.17</b>	<b>1.58</b>	<b>.4</b>	<b>1.18</b>
<b>16 in</b>	<b>1.15</b>	<b>1.56</b>	<b>.45</b>	<b>1.11</b>
<b>18 in</b>	<b>1.15</b>	<b>1.52</b>	<b>.45</b>	<b>1.07</b>
<b>20 in</b>	<b>1.15</b>	<b>1.53</b>	<b>.5</b>	<b>1.03</b>
<b>22 in</b>	<b>1.15</b>	<b>1.55</b>	<b>.4</b>	<b>1.15</b>
<b>24 in</b>	<b>1.15</b>	<b>1.55</b>	<b>.3</b>	<b>1.25</b>
<b>26 in</b>	<b>1.15</b>	<b>1.53</b>	<b>.3</b>	<b>1.23</b>
-Z end	1.15	1.55	.25	1.3

QE  
188  
JPC

8/23/02

#20-1

12-10-02  
SFD  
106

-Y Side

It should be noted that bolded areas are outside drawing allowances

Area	Min	Actual	Depth	Remaining
+Z end	1.17	<b>1.17</b>	.19	1.35
2 in	1.17	1.54	.19	1.35
4 in	1.17	1.55	.25	1.30
6 in	1.15	1.53	.25	1.28
8 in	1.15	1.51	.33	1.18
10 in	1.15	1.50	.33	1.17
12 in	1.15	1.47	.25	1.22
14 in	1.15	1.47	.13	1.34
16 in	1.15	1.49	.25	1.24
18 in	1.15	1.50	.33	1.17
20 in	1.15	1.45	.33	1.12
22 in	1.15	1.42	.38	1.04
24 in	1.15	1.51	.45	1.06
26 in	1.15	1.50	.45	1.05
-Z end	1.15	1.51	.25	1.26

It should be noted that the defects on the aft dome extend from the close-out boundary (aft periphery) in two planes (one into the tank and one along the tank surface). This would not allow for the application of 80901019010 in-process rework allowances for defects adjacent to a scheduled close-out.

The following items can be noted about the aft dome defects.

- Defects tend to be more toward the -Z of the fairing
- Defects do not extend much below the drawing minimums.

~~Based on the location of the defects and the limited extent the following disposition shall close-out the defects with the aft fairing close-out. This action (close-out) will require MR action to address the extension of the defect beyond 80901019010 allowances for defects adjacent to a scheduled close-out.~~

\*\*\* End of Interim Summary \*\*\*

*W. K. Richards*  
8-19-02

OE  
188  
JPC  
8/23/02  
f20-2

12-10-02  
9pc  
106

**MRB ACTION REQUESTED - UNRESTRICTED "USE AS IS"**

Ref. Item # \_1.0\_

The NCFI on the aft dome was trimmed beyond the drawing allowances. This was evaluated and was found to exceed the 80901019010 allowances for repair of an area adjacent to a scheduled close-out (.75 inch beyond boundary by 4 inches long).

MR action is requested to accept the close-out of the PD 1.0 NCFI over trims for use as is. Acceptance of this condition is based on the following rationale:

Rationale:

Sufficient NCFI remains to maintain temps within structural limits

Low areas are within the envelope of the fairing/closeout

Close-out application performed per the following details (OMI T1297.002) shall encapsulate the PD 1.0 low areas providing additional thermal protection.

- Construct molds per standard procedures (reference OMI T1297.002)
- Vent molds at the center.
- Inject 50cc of foam at the -Z end and at the +Z end.
- Allow excess foam to vent out the center.

This MR action does not invalidate the basis for certification.

This MR action does not impact the Critical Items List (CIL) retention rationale or hazard controls.

Safety, fit or function have not been compromised.

MR Part marking required. Yes [ ], No [ X ].

\*\*\* End of Operation 20 \*\*\*

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188  
JPC  
8/23/02  
220-3

12-10-02



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Official

PR EE-093-TS-0008

### OPERATION 30 Summary/ Closure

Shop: ET  
Cntrl Rm Console: NONE  
OPR: ETM  
Zone: None  
Hazard (Y/N): N  
Duration (Hrs): 1.0

### Summary/ Conclusion

Ref. Item 1.0, the NCFI on the aft dome was trimmed beyond the drawing allowances. This was evaluated and was found to exceed the 80901019010 allowances for repair of an area adjacent to a scheduled close-out (.75 inch beyond boundary by 4 inches long).

MR action to accept the close-out of the PD 1.0 NCFI over trims for use as is was processed with the following caveat to mitigate the net effect of the low foam.

Foam was applied to the scheduled periphery at either end of the close-out (where the cut-outs were the deepest) instead of in the center to provide for the most foam where needed. This afforded the greatest protection over the low foam areas.

No further rework required.

RC action is requested from ET/SRB ops to instruct technician when trimming around NCFI to not smooth or blend chip outs or irregularities. Further ops is to instruct technicians that NCFI (tank barrel foam) is a very fragile foam and can easily be chipped or torn. This instruction may be accomplished via tailgates. This must be completed by 01/07/03.

Cause: Though this was an unfamiliar task which has only been performed a handful of times in the life of the program, due caution was not exercised when performing the clean-up of the remaining PDL. This was workmanship.

\*\*\* End of Summary/ Conclusion \*\*\*

30-1 Close this PR.

SPG  
106  
QW: \_\_\_\_\_  
12-10-02

\*\*\* End of Operation 30 \*\*\*

30-1

12-10-02  
SPG  
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