



CRITICAL ITEMS LIST (CIL)

No. 10-01-02-03R/02

SYSTEM:	Space Shuttle RSRM 10	CRITICALITY CATEGORY:	1
SUBSYSTEM:	Case Subsystem 10-01	PART NAME:	Insulation (1)
ASSEMBLY:	Propellant, Liner, Insulation, Inhibitor 10-01-02	PART NO.:	(See Section 6.0)
FMEA ITEM NO.:	10-01-02-03R Rev M	PHASE(S):	Boost (BT)
CIL REV NO.:	M	QUANTITY:	(See Section 6.0)
DATE:	17 Jun 2002	EFFECTIVITY:	(See Table 101-6)
SUPERSEDES PAGE:	215-1ff.	HAZARD REF.:	BC-10
DATED:	31 Jul 2000		
CIL ANALYST:	S. E. Rodgers		
APPROVED BY:		DATE:	
RELIABILITY ENGINEERING:	<u>K. G. Sanofsky</u>		<u>17 Jun 2002</u>
ENGINEERING:	<u>P. M. McCluskey</u>		<u>17 Jun 2002</u>

- 1.0 FAILURE CONDITION: Failure during operation (D)
- 2.0 FAILURE MODE: 2.0 Structural failure of insulator
- 3.0 FAILURE EFFECTS: Structural failure of NBR or carbon-fiber-filled EPDM rubber due to stress fatigue could cause cracking of insulation allowing a hot gas path and burn through causing loss of the RSRM and SRB. Loss of TVC, detonation of the LSC or loss of other SRB functions would result in loss of crew and vehicle.

4.0 FAILURE CAUSES (FC):

FC NO.	DESCRIPTION	FAILURE CAUSE KEY
2.1	Structural failure of the insulator including relief flap hinge failure	
2.1.1	Nonconforming material properties	A
2.1.2	Improper processing	B
2.1.3	Improper assembly	C
2.1.4	Transportation and handling damage	D
2.1.5	Age degradation	E
2.1.6	Voids or inclusions	F
2.1.7	Thin spot or insufficient material thickness	G
2.2	Bondline failure of the insulation-to-case bond/ply or extrusion bond including circumferential flow baffle at the nozzle-to-case joint	
2.2.1	Contamination of bonding enhancement material	H
2.2.2	Bonding surfaces not adequately cleaned	I
2.2.3	Bonding enhancement material not properly applied	J
2.2.4	Vacuum bag leaks	K

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5.0 REDUNDANCY SCREENS:

SCREEN A: N/A
 SCREEN B: N/A
 SCREEN C: N/A

6.0 ITEM DESCRIPTION:

1. Insulation (NBR and EPDM) for Internal and External Insulated Segments is shown in (Figures 1, 2, and 3). Materials are listed in Table 1.

TABLE 1. MATERIALS

Drawing No.	Name	Material	Specification	Quantity
	Insulation	Acrylonitrile Butadiene Rubber (NBR)	STW4-2621	17,000 lb/Motor
	Forward Segment	Filler Extrusion (NBR)	STW4-2621 TP I (ALTERNATE)	7 lb/Motor
	Insulation	NBR Extrusion	STW4-2621 TP VI (ALTERNATE)	14 lb/Motor
	Insulation	NBR Extrusion	STW4-2531 (ALTERNATE)	14 lb/Motor
	Insulation	NBR Extrusion	STW4-2621 TP II (ALTERNATE)	14 lb/Motor
	Insulation	NBR Extrusion	STW4-3443 (ALTERNATE)	21 lb/Motor
	Insulation	NBR Extrusion	STW4-3442 (ALTERNATE)	21 lb/Motor
	Insulation	Carbon Fiber-Filled Ethylene Propylene Diene Monomer (EPDM)	STW4-2621 TP IV (ALTERNATE)	98 lb/Motor
	Insulation	Extrusion (NBR)	STW4-2868	2 lb/Motor
	Adhesive	Tackifier	STW4-2545 (ALTERNATE)	9 qt/Motor
	Bonding agent	(Chemlok 236A)	STW5-3248	11 qt/Motor
	Bonding Agent	(Chemlok 233)	STW5-2798	12 gl/Motor
	Primer	(Chemlok 205)	STW5-2712	8 gal/Motor
	Tape	Teflon	STW5-2664	MIL-I-23594 (Type I)
	FEP	Plastic Film	(Type II, CL I)	8 rl/Motor ASTM D 3368-81
1U77502	Barrel Assy, Coated			23 lb/Motor
1U76673	Aft Dome, Insulated			1 ea/Motor

6.1 CHARACTERISTICS:

1. Primary case insulation is composed of acrylonitrile butadiene rubber (NBR) impregnated with asbestos and silicon dioxide fillers. Another insulating compound used in lesser quantities is carbon fiber-filled ethylene propylene diene monomer (EPDM). NBR material must meet engineering requirements, standards, and specifications. EPDM adhesives, primers, vacuum putty, and similar materials are per engineering.
2. The main function of internal insulation is to protect the RSRM case from high-temperature gases and erosion created by burning propellant. Calendered raw material is available in several thicknesses. This material is supplied on rolls so it can be applied in layers to a specified depth on the inside of the case and around joint areas. This material requires vulcanization prior to propellant casting.
3. The integrity of internal insulation was demonstrated by Evaluation Test Motor ETM-1A and Development Motors DM-6 and DM-7. Insulation qualification was demonstrated by Qualification Motors QM-4 and QM-6, and flights SRM-8 through SRM-24.



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7.0 FAILURE HISTORY/RELATED EXPERIENCE:

1. Current data on test failures, flight failures, unexplained failures, and other failures during RSRM ground processing can be found in the PRACA Database.

8.0 OPERATIONAL USE: N/A

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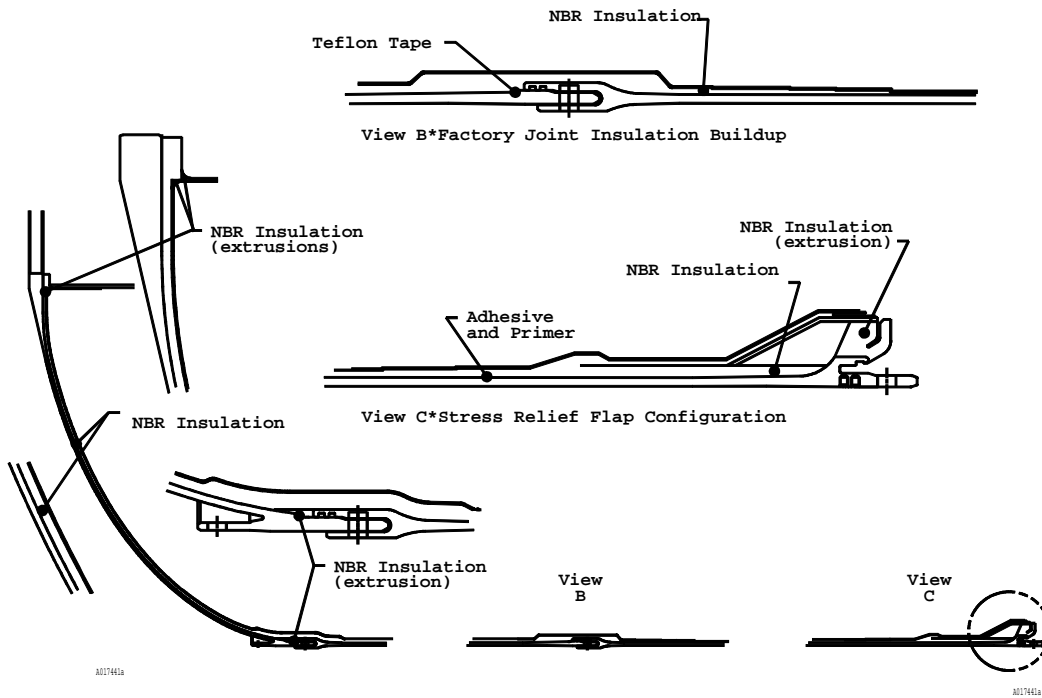


Figure 1. Forward Segment Insulation Configuration

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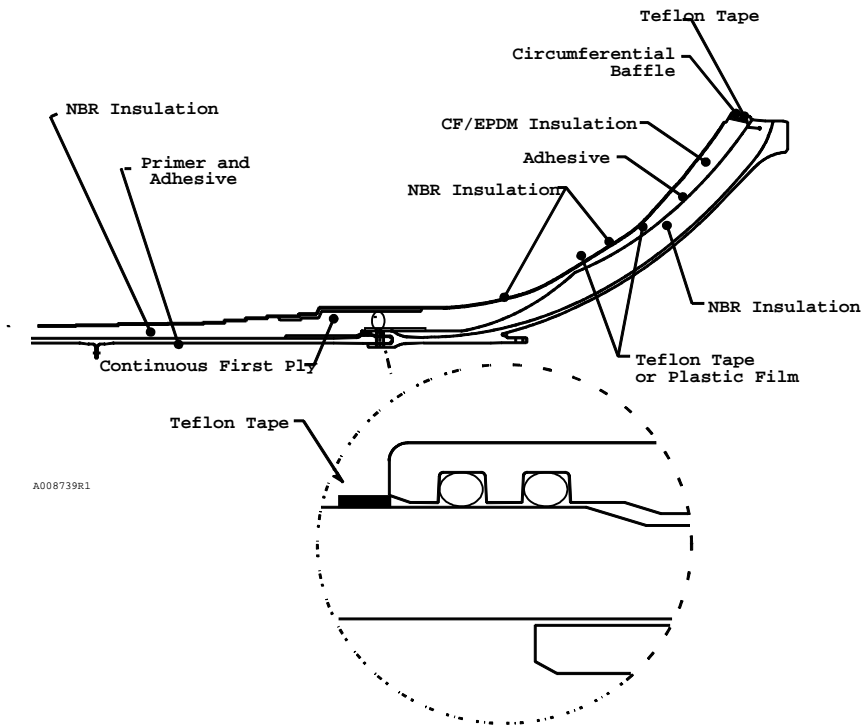


Figure 2. Aft End Insulation in Aft Segment

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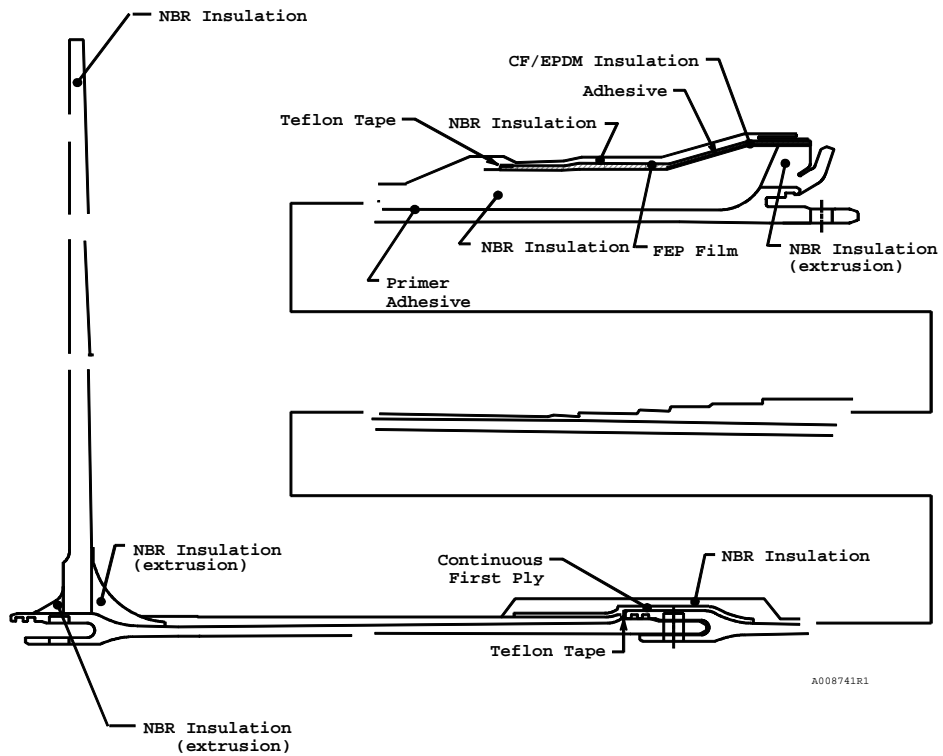


Figure 3. Center Segment Insulation

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9.0 RATIONALE FOR RETENTION:

9.1 DESIGN:

DCN FAILURE CAUSES

- | | | |
|---------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A | 1. | Cured NBR properties are per engineering. Margins of safety limits for erosion are per engineering drawings for the case and nozzle, and TWR-12969 and TWR-16742 for the Igniter. |
| A | 2. | Insulation material (EPDM) properties are per engineering drawings. |
| A,H,I | 3. | Insulation adhesive primer and bonding agent material properties are per engineering. |
| 585 A | 4. | Approved solvent conforms to engineering requirements. |
| A | 5. | Teflon tape conforms to engineering requirements. |
| A | 6. | Plastic film conforms to engineering requirements. |
| A | 7. | DM-8, DM-9, QM-6, and QM-7 were static test fired to evaluate the performance of accepted insulation. These tests are documented in TWR-18764-06. |
| A,B,C,H,I,J | 8. | Witness panels are cured in the autoclave with the insulated segments during the cure cycle. These panels are then tested to assure bondline integrity for primer, adhesive, insulation, liner, and propellant properties were achieved at the end of the cure cycle per engineering, TWR-17123, TWR-64433, and TWR-64923. |
| B,C | 9. | Insulation materials are subject to handling, storage, and use per engineering. |
| B,C,G | 10. | Application of the following insulating-material-to-case segments is designated a "critical process" per shop planning. This provides for stricter controls during fabrication and inspection: <ul style="list-style-type: none"> a. Internal case segment and aft dome insulation, including application, thickness, and number of plies is per engineering drawings. b. The insulated aft dome engineering drawing controls insulation configuration and specifies the dimensional requirements for the Aft Dome side of the interface which also includes the stress-relief flap and baffle. |
| B,C | 11. | Thermocouples are imbedded in the NBR insulation in each segment at the time of lay up to control and verify proper cure temperature and time per engineering drawings. |
| B,C,F,G | 12. | Lay up, number of plies, and correct dimensions of the insulation application are per engineering drawings. |
| B,C | 13. | Primer and adhesive application is per shop planning. |
| B,C,G,H,I,J,K | 14. | Contamination control requirements and procedures are per TWR-16564. |
| B,C | 15. | Teflon tape is used for stress relief per TWR-17103. |
| 585 B,C | 16. | Approved solvent is used on the insulation as a tackifier per engineering drawings. |
| B,C | 17. | Plastic film is used during insulation lay up to help create a stress-relief flap per engineering drawings. |

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- D,E 18. Unvulcanized insulation material storage life and temperature limits, prior to lay up on the component, are per engineering. Storage life may be extended if, after retest, the material is per engineering.
- D,E 19. The RSRM and its components are protected by passive means against natural environments during transportation and handling per engineering drawings.
- D,E 20. Railcar transportation shock and vibration levels for the segments are monitored per engineering with loads derived by analysis. Monitoring records are evaluated by Thiokol to verify that shock and vibration levels per MSFC Specifications were not exceeded.
- D,E 21. Requirements for handling RSRM components during assembly, storage, and transportation are similar to those for previous and other current programs at Thiokol. These requirements dictate that RSRM and case segments must be handled by or near a joint to avoid damage. All lifting hooks and slings are fitted with safety hooks. Proof testing is required for all lifting and handling equipment per TWR-13880.
- D,E 22. Cradling or support devices and tie downs that conform to the shape, size, weight, and contour of the component to be transported are used for supporting RSRM segments and other components. Shock mounting and other protective devices are used on trucks and dollies for moving sensitive loads per TWR-13880.
- D,E 23. Support equipment used to test, handle, transport, assemble, or disassemble the RSRM is certified and verified per Thiokol IHM 29.
- D,E 24. To assure that no damage occurs to flight hardware during transportation to the launch site, specially designed 200-ton railroad flatcars are used per TWR-13880.
- D,E 25. Preservation and packaging of thermal insulation is to prevent exposure to direct sunlight, ultraviolet radiation, or ozone per engineering drawings.
- D,E 26. Thermal analyses were performed for RSRM components during in-plant transportation and storage to determine acceptable temperature and ambient environment exposure limits per TWR-50083. Component temperatures and exposure to ambient environment during in-plant transportation or storage are controlled per engineering.
- D,E 27. Evaluation of TEM-09 insulation performance and post-fire bondline integrity demonstrated that thermal safety factors and material decomposition met the requirements of HPM CEI specifications. Structural testing indicated that post-fired TEM-09 internal insulation was comparable to recently fired RSRM materials per TWR-63479.
- D,E 28. Testing of real time aged propellant/liner/insulation (PLI) samples indicated that TP-H1148 propellant and PLI bond properties were not affected by aging for up to five years per TWR-63837.
- F,G 29. Internal case segment and aft dome insulation, including application, thickness, and number of plies, is per engineering drawings.
- F 30. NBR insulation material specifications specify the tests to certify the quality of material procured and qualification tested for use on both case wall and forward inhibitor as documented in TWR-12646.

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- F 31. Tests to certify material quality for bonding agents and adhesive primers are per engineering.
- F 32. Acceptance criteria for insulation voids, inclusions, ply separations, and pin holes are per engineering drawings.
- G 33. To enhance insulation effectiveness, number of plies and insulation thickness were increased to meet a minimum safety factor of 2.0 per TWR-16623.
- H,I 34. Storage and retest requirements of adhesive primers and bonding agents are per engineering.
- H,I 35. NBR insulation is cleaned using solvent and methyl ethyl ketone (MEK) per shop planning.
- H,I 36. To control contamination of bonding materials or bonding surfaces, primer and adhesive are stored in sealed containers. MEK is used to clean insulation and metal bonding surfaces. Clean felt is placed over metal bonding surfaces. NBR is covered with black polyethylene during process delays. Components are handled with clean, lint-free gloves. These procedures are per shop planning.
- J 37. Adhesive primers and bonding agents are mixed and applied to metal surfaces for corrosion protection and insulation bonding per engineering and shop planning.
- J 38. Adhesive primer and bonding agent application is per shop planning.
- K 39. Vacuum bagging is per shop planning.
- K 40. Allowable vacuum leaks are per shop planning.
- B 41. A Spray-in-Air cleaning system is used to clean metal components as part of the bonding surface preparation processing sequence.
- D,G,H,I,J 42. The grain (propellant, liner, castable inhibitor and internal insulation) of the RSRM was evaluated for the Performance Enhancement (PE) Program. The grain evaluation (PLI) shows that all areas still meet required safety factors. The PLI was conservatively re-evaluated using an increased liftoff acceleration load (not part of the Performance Enhancement Program). It was concluded that structural certification was not affected per TWR-17057.
- B 43. All new RSRM case segments are hydroproof tested three times followed by magnetic particle inspection per engineering. The final hydroproof and magnetic particle inspection ensure a four mission capability. Each refurbished RSRM case segment is hydroproofed one time to ensure a four-mission capability. The use of new tooling spools simulates joint hoop loads and therefore produces joint deflections similar to flight conditions. TWR-66845 reported test results and comparisons of measured strains to analytically predicted strains, thus verifying the analytical models. TWR-64835 analytically determined the joint stress ratios between proof test and flight meet or exceed the 1.05 proof factor requirement. TWR-16873 verifies that safe life requirements are met. For all joint locations it was shown that safe life is met by proof test, magnetic particle, and eddy current inspections.

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9.2 TEST AND INSPECTION:

FAILURE CAUSES and				
<u>DCN</u>	<u>TESTS</u>	<u>(T)</u>		<u>CIL CODE</u>
			1. For New NBR verify:	
A	(T)	a.	Mooney viscosity	ALH041,ALH046
A	(T)	b.	Elongation	ALH062,ALH065
A	(T)	c.	Scorch characteristics	ALH081,ALH086
A	(T)	d.	Shore A hardness	ALH098,ALH109
A	(T)	e.	Specific gravity	ALH121,ALH126
A	(T)	f.	Tensile strength	ALH149,ALH154
			2. For Retest NBR, verify:	
D,E	(T)	a.	Mooney viscosity	ALH049
D,E	(T)	b.	Scorch characteristics	ALH087
			3. For New EPDM, Carbon Fiber-Filled, verify:	
A	(T)	a.	Elongation	ALV001,AKZ019C,AKZ022C
A		b.	Shipping time and environment	ALV005
A	(T)	c.	Fiber content	ALV007
A		d.	Roll weight	ALV009
A	(T)	e.	Shore A hardness	ALV011,AKZ040C,AKZ045C
A	(T)	f.	Specific gravity	ALV014,AKZ046C,AKZ050C
A	(T)	g.	Tensile strength	ALV021,AKZ055C,AKZ059C
A	(T)	h.	Scorch characteristics	MKL024
A	(T)	i.	Mooney viscosity	MKL025
A	(T)	j.	Filler content	ALV028
A	(T)	k.	Volatile content	ALV031
A	(T)	l.	Weight per square foot	ALV033
A		m.	Width of uncured stock	ALV038
			4. For New Adhesive Primer, verify:	
A,H,I	(T)	a.	Density	AMR006,AMR012
A,H,I	(T)	b.	Peel adhesion	AMR022,AMR026
A,H,I		c.	Workmanship	AMR041
A,H,I	(T)	d.	Solids content	AMR059,AMR067
A,H,I	(T)	e.	Viscosity	AMR083,AMR092
			5. For New Bonding Agent, Rubber-to-Metal verify:	
A,H,I	(T)	a.	Peel adhesion strength	AMX006,AMX010
A,H,I	(T)	b.	Solids content	AMX021,AMX023
A,H,I	(T)	c.	Specific gravity	AMX027,AMX029
A,H,I	(T)	d.	Viscosity	AMX039,AMX040
			6. For New Adhesive, Rubber-to-Metal verify:	
A,H,I	(T)	a.	Peel strength, rubber-to-steel	AND014,AND009
A,H,I	(T)	b.	Solids content	AND028,AND026
A,H,I	(T)	c.	Specific gravity	AND033,AND036
A,H,I		d.	Workmanship	FAA842
A,H,I	(T)	e.	Viscosity	AND046,AND044

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585	7.	For New Approved Solvent, verify:	
A,B,C,H,I	a.	Certificate of Conformance is complete and acceptable	AJJ007A
	8.	For New Teflon Tape, verify:	
A,B,C,H,I	a.	Certificate of Conformance is complete and acceptable	AJC001
	9.	For New Plastic Film, verify:	
B,C	a.	Cementability	AIN000
H,I	b.	Certificate of Conformance is complete and acceptable	AIN001
A,B,C (T)	c.	Dielectric strength	AIN002
B,C	d.	Lengthwise change in dimensions	AIN006
A,B,C (T)	e.	Tear strength	AIN007
A,B,C (T)	f.	Tensile resistance	AIN011
B,C	g.	Thickness	AIN015
	10.	For New Insulated Segment Assembly (Forward) verify:	
A,B,C,H,I,J(T)	a.	Results of Chemlok-to-Forward Dome Insulation bondline integrity tests with witness panels per engineering	AOX029
	11.	For New Insulated Segment Assembly (Forward, Center, Aft) verify:	
B,C,F	a.	5U NBR insulation lay up is complete	AHP000,AHQ001,AFK145B
F	b.	All tools and in-process materials are accounted for after insulation lay up	AFG006,AFI114,AFK206
H,I	c.	Environmental history for insulation	AKZ006C,AKZ006D,AKZ006E,ALH022B,ALH022C,ALH022D,ALH022E,ALH022F,AFK068A,AFK086,AFK086A,AFK086B
B,C	d.	MEK tackifier is applied in the stress-relief flap area	AFG014,AFI015,AFK015
A,B,C,H,I,J(T)	e.	Results of Chemlok-to-Case Insulation bondline integrity tests with witness panels per engineering	AOX014,AOX015,AOX016
B,C	f.	Flap-gap terminus dimension	AFG015,AFI016,AFK016
D,E	g.	Bonding agent is used	AMX016,AMX016D,AFE082N
D,E	h.	Stock number is recorded for insulation	AMX017C,AMX017D,AKZ025B,AKZ025C,AKZ025D,ALH068AH,ALH068B,ALH068C,ALH068D,ALH068E,ALH068F,ALH068G
B,C,J	i.	Full coverage of adhesive primer, internal	AFI018,AFK022,AFG075
D,E,H,I	j.	Storage life is acceptable for bonding agent	AMX018,AFI162,AFE082S
D,E	k.	Component temperatures and exposure to ambient environments during in-plant transportation or storage are acceptable	BAA018,BAA019,BAA020
D,E,H,I	l.	Storage life is acceptable for adhesive primer	AMX019,AMR048D,AFK185B
B,C,J	m.	Full coverage of bonding agent	AFI024,AFI024A,AFK024
B,C,J	n.	Full coverage of rubber-to-metal adhesive	AFI024B
D,E	o.	Rubber-to-metal adhesive is used	AKZ024A
B,C,H,I,J	p.	Black light inspection is performed to verify all contamination which fluoresces is removed	AFK033,AFG034,AFI036
G,H,I	q.	Primed surfaces meet requirements	AFG038,AFI110C,AFK120F
G,H,I	r.	Adhesive surfaces meet requirements	AFG038A,AFI110A,AFK120E
D,E,H,I	s.	Storage life is acceptable for insulation	AKZ038C,AKZ038D,AKZ038E,ALH097C,AFI118,AFI118A,AFI118B,AFI118C,AFI118D,AFG135H,AFK185,AFK185A
D,E	t.	Adhesive primer is used	AMR045,AMR045D,AMR045E

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B,C,F,H,I	u.	Contamination is removed from case prior to insulation lay up	AFG051,AFI057,AFK061B
B,C,F,H,I	v.	Insulation is uniform in appearance and free of surface contamination per specifications	AFG052,AFI084,AFK062
B,C	w.	Air dry of adhesive primer	AFG057,AFI063,AFI063A
B,C	x.	Air dry of bonding agent	AFG058,AFI067,AFI067B
F	y.	No unacceptable surface defects in cured NBR	AFG067,AFK078,AFI211
B,C	z.	Air dry of rubber-to-metal adhesive	AFI067A
D,E	aa.	Lot number is recorded for insulation	ALH067A,ALH067B,ALH067C,ALH067D,ALH067E,ALH067F,ALH067G,ALH067AB,ALH067AC,ALH067AD,AFE082NA,AFE082NB
D,E,H,I	ab.	Storage life is acceptable for rubber-to-metal adhesive	AFE082U
B,C	ac.	Insulation cure cycle is complete and acceptable	AFG086,AFI099,AFK110
B,C	ad.	Proper application of Teflon tape	AFG144,AFI173,AFK194
B,C,K	ae.	Solid core thermocouple leads are installed through the putty	AFG147,AFI178,AFK199
B,C,K	af.	Thermocouple leads are working throughout the cure cycle	AFG149,AFI180,AFK201
B,C,G,H,I (T)	ag.	Insulation thickness by ultrasonics	AFG171,AFI186,AFK214
K	ah.	Vacuum bags evacuated and checked for leaks	AFG177,AFI160,AFK181
D,E,H,I	ai.	Adhesive primer is properly mixed and acceptable for application	AFK185FA,AFK185FD,AFK185FG
D,E,H,I	aj.	Bonding agent is properly mixed and acceptable for application	AFK185FB,AFK185FE,AFK185FI
D,E,H,I	ak.	Rubber-to-metal adhesive is properly mixed and acceptable for application	AFK185FF

12. For New Insulated Aft Dome verify:

A,B,C,H,I,J(T)	a.	Results of Chemlok-to-Case Insulation bondline integrity tests with witness panels per engineering	AOX017
D,E,H,I	b.	Environmental history for insulation	AMX019B,AMX019D
D,E	c.	Stock number is recorded for insulation	AMX019AC,AMX019AE
D,E	d.	Adhesive primer is used	AMX019AF
D,E	e.	Bonding agent is used	AMX019AG
D,E	f.	Rubber-to-metal adhesive is used	AMX019AI
D,E	g.	Lot number is recorded for insulation	AMX019AH,AMX019AJ
D,E,H,I	h.	Storage life is acceptable for adhesive primer	AMX019AK
D,E,H,I	i.	Storage life is acceptable for bonding agent	AMX019AL
D,E,H,I	j.	Storage life is acceptable for insulation	AMX019AM,AMX019AP
D,E,H,I	k.	Storage life is acceptable for rubber-to-metal adhesive	AMX019AN
B,C,J	l.	Full coverage of adhesive primer	AFK022B
B,C	m.	Air dry of adhesive primer	AFK022C
B,C,J	n.	Full coverage of bonding agent	AFK024B
B,C,J	o.	Full coverage of rubber-to-metal adhesive	AFK024C
B,C	p.	Air dry of bonding agent	AFK024D
B,C	q.	Air dry of rubber-to-metal adhesive	AFK024E
A,B,C,H,I,J(T)	r.	Results of NBR insulation-to-EPDM insulation bondline integrity tests with witness panels for the Aft Dome per engineering	AOX027
A,B,C,H,I,J(T)	s.	Results of insulation-to-insulation bondline integrity tests with witness panels for the Aft Dome per engineering	AOX028
B,C,H,I,J	t.	Black light inspection is performed to verify all contamination that fluoresces is removed	AFK033A
B,C,F	u.	Contamination is removed from dome prior to insulation lay up	AFK061A
B,C,F	v.	Insulation is uniform in appearance and free of surface contamination per specifications	AFK062A
F (T)	w.	No unacceptable surface defects in cured NBR	AFK078C

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B,C,F	x.	5U NBR insulation lay up is complete and acceptable	AFK145C
K	y.	Vacuum bags evacuated and checked for leaks	AFK181A
D,E,H,I	z.	Adhesive primer is properly mixed and acceptable for application	AFK185FJ
D,E,H,I	aa.	Bonding agent is properly mixed and acceptable for application	AFK185FK
D,E,H,I	ab.	Rubber-to-metal adhesive is properly mixed and acceptable for application	AFK185FL
B,C	ac.	Proper application of Teflon tape	AFK194A
B,C,K	ad.	Solid core thermocouple leads are installed through the putty	AFK199A
B,C,K	ae.	Thermocouple leads are working throughout the cure cycle	AFK201A
B,C	af.	Cure is complete	AFK201E
F	ag.	All tools and in-process materials are accounted for after insulation lay up	AFK206A
G	ah.	Insulation thickness using template	AFK214AB
G,H,I	ai.	Primed surfaces meet requirements	MAA220
G,H,I	aj.	Adhesive surfaces meet requirements	MAA221

13. For New Barrel Assembly, Coated verify:

D,E	a.	Bonding agent is used	AMX016E
B,C,J	b.	Full coverage of adhesive primer	AFK022A
B,C,J	c.	Full coverage of bonding agent	AFK024A
B,C,H,I,J	d.	Black light inspection to verify all contamination which fluoresces is removed	AFK033B
D,E	e.	Adhesive primer is used	AMR045F
D,E,H,I	f.	Storage life is acceptable for adhesive primer	AMR048
B,C	g.	Air dry of adhesive primer	AFK068
B,C	h.	Air dry of bonding agent	AFK072A
G,H,I	i.	Primed surfaces meet requirements	AFK120
G,H,I	j.	Adhesive surfaces meet requirements	AFK120A
D,E,H,I	k.	Storage life is acceptable for bonding agent	AFK185F
D,E,H,I	l.	Adhesive primer is properly mixed and acceptable for application	AFK185FM
D,E,H,I	m.	Bonding agent is properly mixed and acceptable for application	AFK185FH

14. For New Case Assembly, Painted Forward Segment, verify:

D,E,H,I	a.	Storage life is acceptable for adhesive primer	RAA214
D,E,H,I	b.	Storage life is acceptable for bonding agent	RAA215
D,E,H,I	c.	Adhesive primer is properly mixed and acceptable for application	RAA216
D,E,H,I	d.	Bonding agent is properly mixed and acceptable for application	RAA217
D,E	e.	Adhesive primer is used	RAA218
D,E	f.	Bonding agent is used	RAA219
B,C	g.	Air dry of adhesive primer	RAA220
B,C	h.	Air dry of bonding agent	RAA221
B,C,H,I,J	i.	Black light inspection is performed to verify all contamination that fluoresces is removed	RAA222
G,H,I,J	j.	Primed surfaces are per engineering	RAA223
G,H,I,J	k.	Adhesive surfaces are per engineering	RAA224
B,C	l.	Full coverage of adhesive primer	RAA225
B,C	m.	Full coverage of bonding agent	RAA226

15. For New Loaded Segment Assembly (Forward, Center, Aft) verify:

D,E	a.	Component temperatures and exposure to ambient environments during in-plant transportation or storage are acceptable	BAA008,BAA009,BAA010
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