

NASA

SECTION 13



STS-111 Nozzle Ablative

Debonding During Launch Ascent

- **Background (cont'd)**
 - Ablative has flown on a total of 19 flights (including STS-111)
 - Partial loss of ablative has occurred on all flights
 - Aft manifold is inspected post-flight at areas of missing ablative for evidence of bluing
 - Hardness check required by specification to verify material integrity if bluing noted
 - No evidence of bluing on the aft manifold closure within this period
 - Also no cases of charring on the torn ablative surfaces
 - OMRSD procedures require removal of all ablative post-flight and reinstallation of new ablative prior to subsequent flight
 - Prior to ablative there were 19 cases (15 flights) of aft manifold closure bluing
 - None of these cases resulted in any hardware deterioration or damage (based on material hardness checks)



STS-111 Nozzle Ablative

Debonding During Launch Ascent

- **Background (cont'd)**
 - Debonding or loss of ablative is not a flight safety issue
 - Ablative protects the aft manifold closure from overheating and annealing during reentry (reuse issue only)
 - An orbiter integration IFA was written against ablative found in the body flap after STS-88
 - Orbiter group determined that this was not a concern
 - Only potential concern is ablative impacting the orbiter or solid rocket boosters during launch
 - In the process of determining whether or not they have any concerns
- UCR A034479 written to document and address the issue



STS-111 Nozzle Ablative

Debonding During Launch Ascent

- **Background (cont'd)**
 - Space Station is not concerned about the potential for ablative debonding while in close proximity to the station
 - STS-107 is also not a space station mission
 - Detailed inspections of the STS-111 aft manifold ablative will be completed post-flight to aid in the investigation

Rocketdyne

4.3.5
ISSUES/2108
Export Controlled

 **BOEING**



STS-111 Nozzle Ablative

Debonding During Launch Ascent

- **Rationale for Flight**
- Debonding or loss of ablative during launch and reentry does not pose a safety of flight concern
 - In the process of verifying that the orbiter and solid rocket booster groups have no safety concerns during launch
 - No concerns for the orbiter during reentry
- Mandatory post-flight inspections of the nozzle aft manifold verify structural integrity and acceptability for reuse

Rocketdyne

4.3.6
OVER 12 PM
Export Controlled



Michele Lewis

From: Richmond, Frank D [Frank.D.Richmond@USAHQ.UnitedSpaceAlliance.com]
Sent: Friday, January 24, 2003 3:51 PM
To: ESS, ROBERT H. (BOB) (JSC-MS2) (NASA); 'Taylor, Robin'; DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); Jones, Raymond A; Purtle, Lawrence V; Gafford, Jack C; Eck, David L
Cc: Nagle, Scott M
Subject: RE: STS-107 SSME Nozzle Assessment

Agree Bob. Since it is not a safety of flight item--a couple hundred pounds are in the noise.

FDR

-----Original Message-----

From: ESS, ROBERT H. (BOB) (JSC-MS2) (NASA) [mailto:robert.h.ess@nasa.gov]
Sent: Friday, January 24, 2003 2:36 PM
To: 'Taylor, Robin'; EXT-Richmond, Frank D; DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); Jones, Raymond A; Purtle, Lawrence V; Gafford, Jack C; Eck, David L
Cc: EXT-Nagle, Scott M
Subject: RE: STS-107 SSME Nozzle Assessment

Don Noah said he wants the answer right now, so I would think that COB is getting a bit late. What you have so far is only ~200 lb from the max so please go with that asap and let us know what you find out.

thanks
Bob

-----Original Message-----

From: Taylor, Robin [mailto:Robin.Taylor@boeing.com]
Sent: Friday, January 24, 2003 2:34 PM
To: EXT-Richmond, Frank D; DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); Jones, Raymond A; Purtle, Lawrence V; Gafford, Jack C; Eck, David L; ESS, ROBERT H. (BOB) (JSC-MS2) (NASA)
Cc: EXT-Nagle, Scott M
Subject: RE: STS-107 SSME Nozzle Assessment

Frank,

The 248K is for aborts. As far as a schedule, I put a call in to the customer support room to find out the need date, however I should be done by COB. Maybe someone already has insight on the need date.

Robin

-----Original Message-----

From: EXT-Richmond, Frank D
Sent: Friday, January 24, 2003 2:22 PM
To: Taylor, Robin; Derry, Stephen; Jones, Raymond A; Purtle, Lawrence V; Gafford, Jack C; Eck, David L; EXT-Ess, Robert H
Cc: EXT-Nagle, Scott M
Subject: RE: STS-107 SSME Nozzle Assessment

Sounds good. Earlier I said I thought we certified > 233K but I think we just analyzed a 248K case. If we could find the data! But, if you can get the trajectories I suspect it is no big deal to run a case closer to what we expect for 107. Remember this is not a safety of flight issue.

What is your schedule on this?

FDR

-----Original Message-----

From: Taylor, Robin [<mailto:Robin.Taylor@boeing.com>]

Sent: Friday, January 24, 2003 2:01 PM

To: Derry, Stephen; Jones, Raymond A; Purtle, Lawrence V; Gafford, Jack
C; Eck, David L; EXT-Richmond, Frank D; EXT-Ess, Robert H

Subject: STS-107 SSME Nozzle Assessment

I just received some BET entry trajectories for STS-107 for various cross ranges that were designed with an entry weight of 233700 lbs and xcg of 1078.9. I'm told that the worst case may be around 233918 lbs, xcg of 1079.1. The worst case has not been generated yet, however I will start with the cases I've received so far. I believe they will give a good indication of what to expect.

Robin Taylor
Boeing - NASA Systems
2100 Space Park Dr.
Mail-code - HS4-30
phone: 281-226-5779
Fax: 281-226-5560

Michele Lewis

From: DISLER, JONATHAN M. (JON) (JSC-SX) (LM)
Sent: Wednesday, January 22, 2003 2:03 PM
To: Armando Oliu (E-mail); BAHR, PATRICIA A. (PAT) (JSC-SJ) (NASA); CONTE, BARBARA A. (JSC-DM) (NASA); Bill Lamkin; SWAN, BOBBIE G. (JSC-CA) (NASA); ELIASON, BRENDA J. (JSC-EA6) (NASA); BALU, BRIAN K. (JSC-NC) (SAIC); ORTIZ-LONGO, CARLOS R., PHD (JSC-EA4) (NASA); CLOUDT, CHRIS R. (JSC-SX) (HEI); HADFIELD, CHRIS (JSC-CB) (CSA); Chris Lessmann; BOYKIN, CHRISTINE M. (JSC-MS2) (NASA); LARSEN, CURTIS E. (JSC-MS2) (NASA); CLEMENTS, DANIEL L. (JSC-NC) (GHG); BROWN, DAVID M. (JSC-CB) (NASA); MOYER, DAVID S. (JSC-MV5) (NASA); BRETZ, DAVID R. (JSC-SX) (HEI); David Rigby / MPS SSM (E-mail); HAYNES, DENA S. (JSC-EV) (NASA); PREVETT, DONALD E. (DON) (JSC-EP) (NASA); MCCORMACK, DONALD L. (DON) (JSC-MV6) (NASA); Doug White; Douglas Powell (MAF); MAYER, FRED F. (JSC-NC) (SAIC); Gail Hargrove Boeing-Houston Imagery Scrn.; Greg Katnik; GALBREATH, GREGORY F. (GREG) (JSC-ES2) (NASA); BYRNE, GREGORY J., PHD (JSC-SX) (NASA); WALTERS, JAMES B. (BRITT) (JSC-SM) (NASA); 'James Feeley' (E-mail); WALTERS, JAMES B. (BRITT) (JSC-SM) (NASA); JIMENEZ, JAVIER J. (JSC-EB) (LM); Jeff Goodmark (E-mail); RICHART, JENE A. (JSC-MS2) (NASA); LIN, JILL D. (JSC-MV5) (NASA); Jim Harder; 'John McKee' (E-mail); John Ventimiglia; DISLER, JONATHAN M. (JON) (JSC-SX) (LM); Jorge Rivera; KRAMER, JULIE A. (JSC-EA4) (NASA); Karen Alfaro (E-mail); BROWN, KENNETH L. (JSC-MV6) (NASA); CROSBY, KEVIN L. (JSC-SX) (LM); 'L Lohrli' (E-mail); Malcolm Glenn; ERMINGER, MARK D. (JSC-NC) (NASA); ERMINGER, MARK D. (JSC-NC) (NASA); HOLDERMAN, MARK L. (JSC-MS3) (NASA); IVINS, MARSHA S. (JSC-CB) (NASA); MARTINEZ, HUGO E. (JSC-NC) (GHG); ANDERSON, MICHAEL P. (JSC-CB) (NASA); SNYDER, MICHAEL W. (JSC-SX) (LM); Mike Cagle / Boeing Film Screen; Mike O'farrell; BERTSCH, P. J. (JEFF) (JSC-DM2) (NASA); Pam Madera (E-mail); DYE, PAUL F. (JSC-DA8) (NASA); PAYNE, ROBERT W. (JSC-SA13) (LM); 'Philip Kopfinger' (E-mail); Philip Peterson / Boeing Film Screen (E-mail); Philip Reid / Boeing Film Screen; SAGANTI, PREMKUMAR, PHD (JSC-SF) (LM); ADAMS, RANDALL W. (JSC-MA2) (NASA); Raymond Jones / Manager Boeing Flt. Syst. Analysis; SILVESTRI, RAYMOND T. (RAY) (JSC-DM4) (NASA); HUSBAND, RICK D. (JSC-CB) (NASA); Robbie Robinson; Robert Page; SCHARF, ROBERT (JSC-SX) (LM); Robert Speece; FRICKE, ROBERT W., JR (JSC-MV) (LM); ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA); WALLACE, RODNEY O. (ROD) (JSC-MS2) (NASA); Rohit Dhawan; CLAYTON, RONALD G. (RONNIE) (JSC-MS2) (NASA); GLANVILLE, ROY W. (JSC-NC) (NASA); Rudy Ramon; SA REP; Sara Brandenburg; Scott Otto; FRICK, STEPHEN N., CDR. (JSC-CB) (NASA); DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); Tom Rieckhoff; Tom Wilson; 'Treith' (E-mail)
Subject: STS-107 Debris Strike and Previous Mission Information - Preliminary

For those that are outside of JSC, the following link should be used to access the information on the STS-107 debris strike:

http://sn-isag.jsc.nasa.gov/shuttleweb/mission_support/sts-107/debris_report/107_debris_report.shtml

Thank you-

> Preliminary - Information, including views on the STS-107 debris strike to
> the left wing can be found at the following web site:

>
>
> http://sn-isag/shuttleweb/mission_support/sts-107/debris_report/107_debris_report.shtml

> STS-112 and STS-50 both had debris damage caused by missing TPS from

> ET forward bipod ramp.

> Measurement of the debris size on STS-107 and the debris size seen on

> STS-112 are shown.

>

> Information from previous missions STS-112 and STS-50 are included.

> Jon Disler / SX3 - LM

>

>

Michele Lewis

From: Barnwell, Maria M [Maria.M.Barnwell@boeing.com]
Sent: Wednesday, December 18, 2002 2:53 PM
To: Camp, David W
Cc: Alexander, Ed; Barnwell, Maria; Blake, John; Chao, Dennis; Coronado, Diana; DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); EXT-Madera, Pamela L; Grant, Gary; Kinder, Gerald; Madden, Craig; Norman, Ignacio; Rafla, Farid; Sharifzadeh, Habib; Wang, Kuo
Subject: STS-107 Pre-Flight Aeroheating Report



ATA-TM-02-00
09.pdf

The attached file, STS-107 Pre-Flight Aeroheating Report, has been sent to you at the request of Dennis Chao.
<<ATA-TM-02-0009.pdf>>

Maria M Barnwell
Phone (281) 853-1785
Fax (281) 853-1610
Email: maria.m.barnwell@boeing.com

Signature on file

D. C. Chao
Orbiter Entry Aeroheating Analysis SSM

Prepared by: M. M. Barnwell *Signature on file*

Reviewed by: K. C. Wang *Signature on file*

Concurrence: Mgr., D. Coronado *Signature on file*

Internal Distribution:

Boeing/Houston

E.C. Alexander HZ1-10
I. Norman HZ1-10
J. Blake HZ1-10

Boeing/Other

H. Sharifzadeh H017-D816
G. R. Kinder H017-D816
C. Madden 721Z-K085
G. Grant 721Z-K085

External Distribution:

JSC/Houston

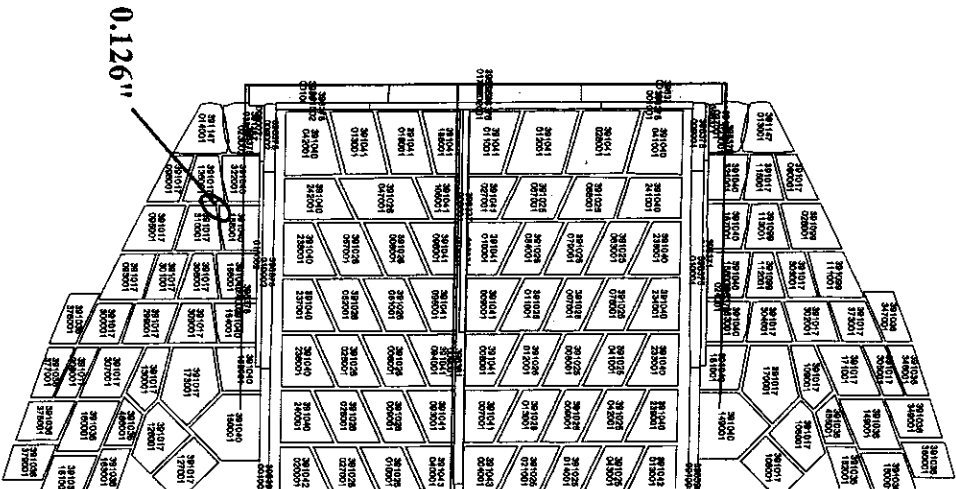
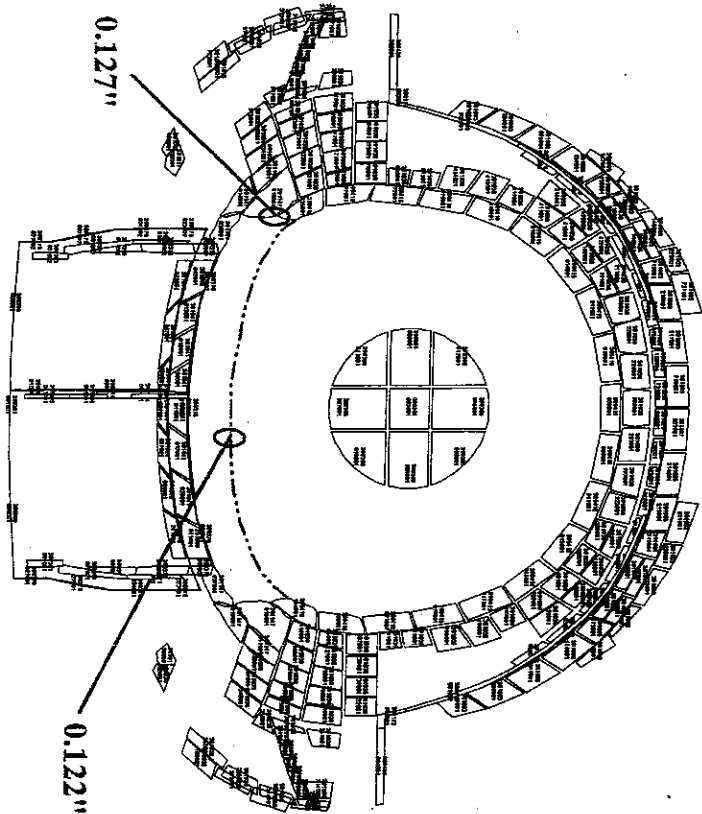
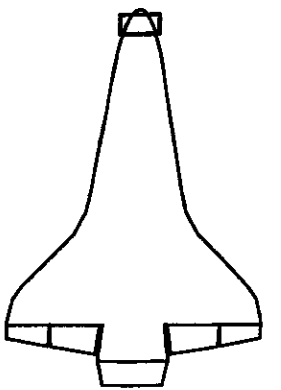
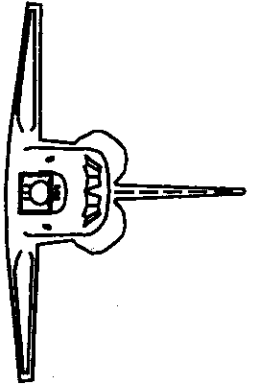
S. M. Derry EG3
V. M. Levy EG2

USA/Houston

P. L. Madera USH-601M

TABLE 1. OV-102 Lower Surface Normalized Roughness, STS-107 Preflight Data

ROUGHNESS RANGE	CHIN PANEL	FUSELAGE TILES	RIGHT HAND WING TILES	LEFT HAND WING TILES	TOTAL
0.121 - 0.130	2	1	0	0	3
0.131 - 0.146	0	0	0	0	0
0.147 - 0.186	0	0	0	0	0
> 0.186	0	0	0	0	0
TOTAL	2	1	0	0	3



Note: Only locations with $K_{eq} > 0.120$ are shown.

FIGURE 1. OV-102 STS-107 Pre-flight Lower Surface Normalized Roughness



Technical Memorandum

Date: December 18, 2002 No.: ATA -TM -02-0009

To: D. W. Camp From: D. C. Chao
Boeing NASA Systems - Houston Boeing NASA Systems - Houston
D/T386, HZ1-10 D/T354, HZ1-10
281-853-1560 281-853-1644

Subject: STS -107 Pre-Flight Aeroheating Report

Purchase Order: 1970483303
PDRD No.: FE061
WBS No.: 1.4.1.1.5

Reference: Rockwell Internal Letter SAS-AA-JTH-90-007, "Changes to Equivalent Roughness Discrepancy Acceptance Criteria For Operational Vehicles," September 11, 1990, J. T. Hughes.

Lower surface roughness MR exceedances on OV-102 prior to the STS-107 mission have been mapped for the chin panel, fuselage, and wings. The exceedances are locations where the calculated Keq (equivalent roughness) is greater than the MR limit defined in the reference. The Keq value is based on mid point and corner point step and gap measurements.

There are no roughness violations to the USA (United Space Alliance) CTF mission design limits. Table 1 presents the summary for the lower surface tile roughnesses (only $Keq > 0.120$ inch are reported). Figure 1 shows an overall mapping of OV-102 including wing leading edge roughnesses (only $Keq > 0.120$ inch are mapped).

Roughness exceedance measurements, associated tiles and the mapping information of these data are available in the Orbiter Aerothermal Analysis Group for inspection and review. The roughness portion of this report is based on and summarizes USA inspection data received from Boeing/KSC on December 18, 2002.

The STS-107 USA product dsct29, "Commit to Flight Assessment," Version 01, dated January 11, 2002, has been reviewed and the predicted thermal environments are acceptable for flight. Nominal EOM, AOA, ATO and TAL entry assessments were performed by USA. USA identified minor violations in the TSEP RCC thermal limits for the ATO, AOA and TAL abort cases which were subsequently cleared by stress analysis.

Signature on file

D. C. Chao
Orbiter Entry Aeroheating Analysis SSM

Prepared by: M. M. Barnwell *Signature on file*

Reviewed by: K. C. Wang *Signature on file*

Concurrence: Mgr., D. Coronado *Signature on file*

Internal Distribution:

Boeing/Houston

E.C. Alexander HZ1-10
I. Norman HZ1-10
J. Blake HZ1-10

Boeing/Other

H. Sharifzadeh H017-D816
G. R. Kinder H017-D816
C. Madden 721Z-K085
G. Grant 721Z-K085

External Distribution:

JSC/Houston

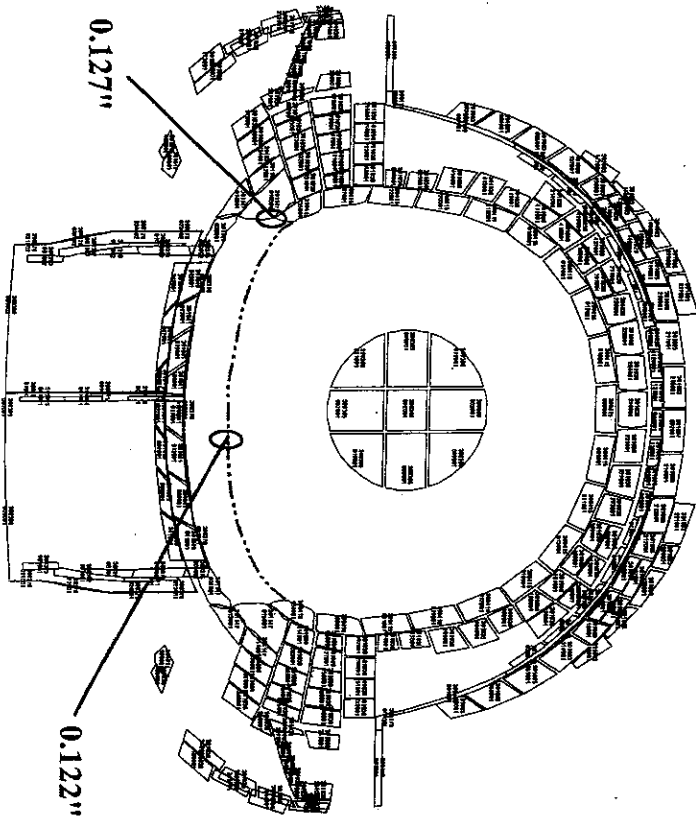
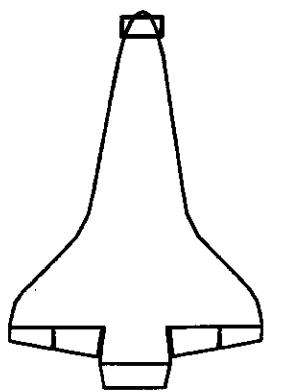
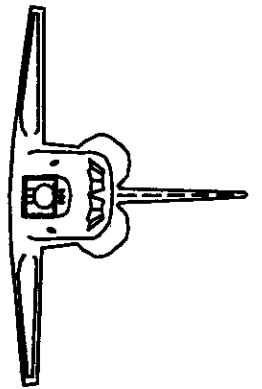
S. M. Derry EG3
V. M. Levy EG2

USA/Houston

P. L. Madera USH-601M

TABLE 1. OV-102 Lower Surface Normalized Roughness, STS-107 Preflight Data

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0.131 - 0.146	0	0	0	0	0
0.147 - 0.186	0	0	0	0	0
> 0.186	0	0	0	0	0
TOTAL	2	1	0	0	3



Note: Only locations with $K_{eq} > 0.120$ " are shown.

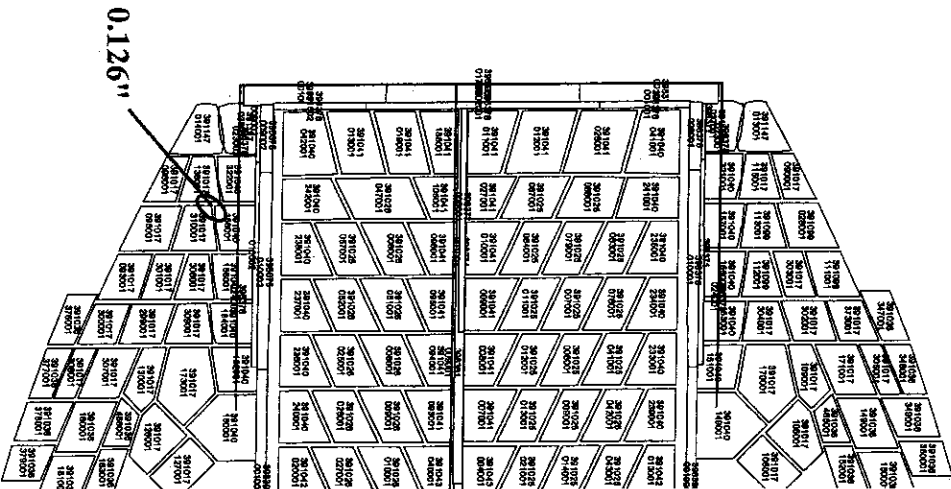


FIGURE 1. OV-102 STS-107 Pre-flight Lower Surface Normalized Roughness

Michele Lewis

From: PREVETT, DONALD E. (DON) (JSC-EP) (NASA)
Sent: Friday, June 14, 2002 3:19 PM
To: SHAM, CATHERINE C. (CATHY) (JSC-EV) (NASA); GOMEZ, REYNALDO J. (RAY) (JSC-EG3) (NASA); CRAFT, JOHN W., JR (X500); DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA); FOGT, VINCENT A. (JSC-ES2) (NASA); 'Sanchez, Jose (MSFC E3)'
Cc: VANTINO, MARY C. (JSC-EA) (NASA); SERIALE-GRUSH, JOYCE M. (JSC-EA) (NASA); SHACK, PAUL E. (JSC-EA42) (NASA); WALLACE, RODNEY O. (ROD) (JSC-MS2) (NASA); ESS, ROBERT H. (BOB) (JSC-MS2) (NASA); LARSEN, CURTIS E. (JSC-MS2) (NASA); RICHART, JENE A. (JSC-MS2) (NASA); CLAYTON, RONALD G. (RONNIE) (JSC-MS2) (NASA); GRUSH, GENE R. (JSC-EP111) (NASA); WAGNER, HOWARD A., PHD (JSC-EP) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); DUNN, KEVIN W. (JSC-EV) (NASA); ROMERO, DENISE M. (JSC-EV) (NASA); THIBODEAU, JOSEPH R. (JOE) (JSC-EG) (NASA); LABBE, STEVEN G. (STEVE) (JSC-EG3) (NASA); ROTTER, HENRY A. (HANK) (JSC-EC) (NASA); 'Brewer, John (USA)'; 'Nagle, Scott'; WILSON, SUE U. (JSC-EA) (NASA)
Subject: STS-107 Tech Panel CoFR Signatures

Follow Up Flag: Follow up
Due By: Thursday, June 20, 2002 8:00 PM
Flag Status: Completed



EG Aero Fit EG GN&C Fit EG Thermal Fit EP Prop & EP SSEIG Fit ES Loads Fit EV Comm & MSFC SSP E3
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The STS-107 tech panel readiness statement signing ceremony is scheduled for Monday June 24 at 2 pm CT in JSC Bldg 1 room 220 (the normal SSEIG conference room). I request that all signatories attend this meeting (Jose, please supply an MSFC telecon phone number) prepared to turn in their signed forms and discuss any exceptions. The signature forms (same as were signed for STS-111, except revised to read "STS-107") are attached to this message.

In the event that a SSEIG telecon is required for June 24, the signing ceremony will be held immediately following completion of the SSEIG.

Thanks for your support,

Donald E. Prevett
JSC/EP4 Propulsion and Fluids Systems Branch
office voice phone 281-483-9036
office fax 281-483-3704

**STS-107
READINESS STATEMENT**

AEROSCIENCES

The Space Shuttle Technical Integration Manager for Aerosciences (as defined in NSTS 07700, Volume II, Book 2, Directive 23C) and the Aeroscience and Flight Mechanics Division Chief Engineer have assessed the readiness of the Aeroscience Technical Area as of the date indicated below. Based upon applicable Space Shuttle Program requirements and their verification, with the exception of the open items or issues noted below, we have determined that there are no "out-of-family" or certification issues that would prevent an acceptable condition for flight readiness.

Aerosciences Technical Integration Manager

EG Division Chief Engineer

Date: _____

Date: _____

Exceptions: None

**STS-111
READINESS STATEMENT**

INTEGRATED GN&C

The Space Shuttle Technical Integration Manager for Integrated GN&C (as defined in NSTS 07700, Volume II, Book 2, Directive 39C) and the Aerospace and Flight Mechanics Division Chief Engineer have assessed the readiness of the Integrated GN&C Technical Area as of the date indicated below. Based upon applicable Space Shuttle Program requirements and their verification, and upon reviews conducted in accordance with the procedure for certification of flight readiness, and with the exception of the open items or issues noted below, we have determined this area to be in an acceptable condition for flight readiness.

IGN&C Technical Integration Manager

EG Division Chief Engineer

Date: _____

Date: _____

Exceptions:

**STS-107
READINESS STATEMENT**

THERMAL ENVIRONMENTS

The Space Shuttle Technical Integration Manager for Thermal Environments (as defined in NSTS 07700, Volume II, Book 2, Directive 46B) and the Aeroscience and Flight Mechanics Division Chief Engineer have assessed the readiness of the Thermal Environments Technical Area as of the date indicated below. Based upon applicable Space Shuttle Program requirements and their verification, and upon reviews conducted in accordance with the procedure for certification of flight readiness, and with the exception of the open items or issues noted below, we have determined this area to be in an acceptable condition for flight readiness.

Thermal Environments
Technical Integration Manager

EG Division Chief Engineer

Date: _____

Date: _____

Exceptions:

**STS-107
READINESS STATEMENT**

PROPULSION AND POWER

The Space Shuttle Integrated Propulsion and Fluids Technical Management Area (as defined in NSTS 07700, Volume II, Book 2, Directive 24D) and the Energy Systems Division Chief Engineer have assessed the readiness of the Propulsion and Power Technical Area as of the date indicated below. Based upon applicable Space Shuttle Program requirements and their verification, and upon reviews conducted in accordance with the procedure for certification of flight readiness, and with the exception of the open items or issues noted below, we have determined this area to be in an acceptable condition for flight readiness.

Propulsion and Fluids
Technical Integration Manager

EP Division Chief Engineer

Date: _____

Date: _____

Exceptions:

**STS-107
READINESS STATEMENT**

SPACE SHUTTLE ENGINEERING INTEGRATION

The Chair of the Space Shuttle Engineering Integration Group (SSEIG), as defined in NSTS 07700, Volume II, Book 2, Directive 142, and the Manager of the Shuttle Engineering Office have assessed the readiness of the SSEIG Technical Area as of the date indicated below. Based upon applicable Space Shuttle Program requirements and their verification, and upon reviews conducted in accordance with the procedure for certification of flight readiness, and with the exception of the open items or issues noted below, we have determined this area to be in an acceptable condition for flight readiness.

Chair, Space Shuttle Engineering
Integration Group

Manager, Shuttle Engineering Office

Date: _____

Date: _____

Exceptions:

**STS-107
READINESS STATEMENT**

LOADS AND STRUCTURAL DYNAMICS

The Space Shuttle Technical Integration Manager for Loads and Structural Dynamics (as defined in NSTS 07700, Volume II, Book 2, Directive 25D) and the Structural Engineering Division Chief Engineer have assessed the readiness of the Loads and Structural Dynamics Technical Management Area as of the date indicated below. The Technical Manager of the Space Shuttle Loads and Dynamics Panel has also coordinated with the Chair of the Structures Working Group (Directive 149) for technical issues affecting Orbiter/cargo-element interface loads and structural clearances, and their proper resolution. Based upon applicable Space Shuttle Program requirements and their verification, and upon reviews conducted in accordance with the procedure for certification of flight readiness, and with the exception of the open items or issues noted below, we have determined this area to be in an acceptable condition for flight readiness.

Loads Technical Integration Manager

ES Division Chief Engineer

Date: _____

Date: _____

Exceptions:

**STS-107
READINESS STATEMENT**

COMMUNICATION AND TRACKING

The Space Shuttle Technical Integration Manager for Communication and Tracking (as defined in NSTS 07700, Volume II, Book 2, Directive 88C) and the Avionic Systems Division Chief Engineer have assessed the readiness of the Communications and Tracking Technical Area as of the date indicated below. Based upon applicable Space Shuttle Program requirements and their verification, and upon reviews conducted in accordance with the procedure for certification of flight readiness, and with the exception of the open items or issues noted below, we have determined this area to be in an acceptable condition for flight readiness.

C&T Technical Integration Manager

EV Division Chief Engineer

Date: _____

Date: _____

Exceptions:

**STS-107
READINESS STATEMENT**

ELECTROMAGNETIC ENVIRONMENT EFFECTS

The Space Shuttle Electromagnetic Environment Effects (E³) Manager (as defined in NSTS 07700, Volume II, Book 2, Directive 22E) has assessed the readiness of the Electromagnetic Compatibility, Lightning, Electrostatic Discharge, and Plasma Area as of the date indicated below. Based upon applicable Space Shuttle Program requirements and their verification, and upon reviews conducted in accordance with the procedure for certification of flight readiness, and with the exception of the open items or issues noted below, we have determined this area to be in an acceptable condition for flight readiness.

Space Shuttle E³ Manager

Manager, Shuttle Integration Office

Date: _____

Date: _____

Exceptions:

Michele Lewis

From: McCorvey, Donald L [donald.l.mccorvey@boeing.com]
Sent: Tuesday, January 21, 2003 12:17 PM
To: Bill McDermott; Charles Pond; Charles Stafford; David Camp; David Heidmann; Donald Gavert; Ed Alexander; Howard Damoff; John Mulholland; Loc Lam; Mark Fugitt; Michael Burghardt; Norm Beougher; Olman Carvajal; Paul Krause; Phillip Perkins; R Friend; Randy Moore; Richard Spalding; Wilson, Robert J. (Bob); BARRINGTON, RAY D. (JSC-EG) (DLI); HALL, ROBERT A. (X500); JACKSON, MARK C. (X500); Cooper, Curt W; BARTON, RICHARD L. (RICK) (JSC-EG3) (NASA); BROWN, KENNETH L. (JSC-MV6) (NASA); EXT-Craft, John W; DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); ELIASON, BRENDA J. (JSC-EA6) (NASA); HAMMERSCHMIDT, MARK M. (JSC-EG4) (NASA); EXT-Hillier, Glen A; LAW, HOWARD G. (JSC-EG) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); LINDSAY, KENNETH L. (KEN) (JSC-EG) (NASA); LOFFI, RICHARD W. (RICK) (JSC-EG) (NASA); EXT-Madera, Pamela L; MCCORMACK, DONALD L. (DON) (JSC-MV6) (NASA); MONTEZ, MOISES N. (JSC-EG) (NASA); RUPPERT, JOHN P. (JSC-EG) (NASA); SHACK, PAUL E. (JSC-EA42) (NASA); EXT-Strahan, Alan L; TAMBLYN, WILLIAM S. (SCOTT) (JSC-EG) (NASA); THIBODEAU, JOSEPH R. (JOE) (JSC-EG) (NASA); WAGSTER, LARRY R (JSC-REMOTE); EXT-White, Doug; WOESTE, TIMOTHY (TIM) (JSC-EG) (NASA); john.p.cipolletti@usago.ksc.nasa.gov; Knight, Dennis M; Beatty, Chuck; Charles Williams-Jr; WILLIAMS, CHARLES, JR (JSC-EV) (BOE); GENTZ, STANLEY C. (CHRIS) (JSC-EV) (BOE); Chuck EXT-Beatty; Don Peck; Hiep Bui; James Cooley; Lynna Wood; Mike Reves; Richard Kagawa; WINKLER, ROBERT L. (JSC-EV) (BOE); Stephen Jayne; Terry Clark; Vester EXT-Purkey; Vester Purkey; Vinh Nguyen
Subject: STS-107 EG Mission Support Plan



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The Flight Controls/GN&C mission support plan for STS-107 is attached. Please contact me if you find any omissions, errors, or out-of-date information so they can be corrected for the next mission.

Don McCorvey

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