

**NASA**

**SECTION 15**

**Michele Lewis**

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**From:** Madera, Pamela L [pam.l.madera@usahq.unitedspacealliance.com]  
**Sent:** Monday, January 20, 2003 6:47 PM  
**To:** CURRY, DONALD M. (JSC-ES3) (NASA); ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); KOWAL, T. J. (JOHN) (JSC-ES3) (NASA); DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA)  
**Cc:** 'Scott Christensen V (E-mail)'; 'Norman Ignacio (Nacho) (E-mail)'; CHAO, DENNIS; Stoner-1, Michael D; 'Carlos Ortiz (E-mail)'; 'Michael J Dunham (E-mail)'; Sebesta, Stephen P; CORONADO, DIANA; 'Craig Madden' (E-mail); Bell, Dan R.; Gordon, Michael P.; Paul A Parker (E-mail)  
**Subject:** STS-107 Debris Analysis Team Plans

The Boeing/USA team would like to meet with you Tuesday at 2:00 on meet-me-line number to discuss analysis plans for assessing the STS-107 Debris Impact.

*Pam Madera*

Vehicle and Systems Analysis Subsystem Area Manager  
Phone: 281-282-4453

**Michele Lewis**

**From:** Madera, Pamela L [pam.l.madera@usahq.unitedspacealliance.com]  
**Sent:** Wednesday, January 22, 2003 12:22 PM  
**To:** CURRY, DONALD M. (JSC-ES3) (NASA); ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); KOWAL, T. J. (JOHN) (JSC-ES3) (NASA); DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); Nagle, Scott M; Carlos Ortiz (E-mail); GOMEZ, REYNALDO J. (RAY) (JSC-EG3) (NASA); DISLER, JONATHAN M. (JON) (JSC-SX) (LM); Jacobs, William A  
**Cc:** 'Scott Christensen V (E-mail)'; 'Norman Ignacio (Nacho) (E-mail)'; CHAO, DENNIS; Stoner-1, Michael D; 'Carlos Ortiz (E-mail)'; 'Michael J Dunham (E-mail)'; Sebesta, Stephen P; CORONADO, DIANA; 'Craig Madden' (E-mail); Bell, Dan R.; Gordon, Michael P.; 'Paul A Parker (E-mail)'; ISHMAEL, MOHAMED I. (GEORGE) (JSC-NC) (SAIC); ALEXANDER, ED  
**Subject:** STS-107 Debris Analysis Team Meeting

Rodney Rocha has conference room 221 in JSC Building 13 available for today's 1:00 PM telecon. Located on second floor. The dial in number is the same as below. I propose the following agenda:

Review of transport analysis (Carlos Ortiz - charts attached)  
 Discussion of appropriate Particle Size (Ortiz, Disler, all)  
 Review of Flight Design Plans for Assessing Options (Bill Jacobs)  
 Status of Impact Damage Assessment (P. Parker)  
 Status of Thermal Analysis (Norm Ignacio/Dennis Chao)  
 Approach for stress assessment (Dunham)  
 Discussion on Need/Rationale for Mandatory Viewing of damage site (All)

<<STS-107 Preliminary Debris Assessment - rev2.ppt>>

*Pam Madera*

Vehicle and Systems Analysis Subsystem Area Manager  
 Phone: 281-282-4453

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

**From:** Madera, Pamela L  
**Sent:** Monday, January 20, 2003 5:47 PM  
**To:** CURRY, DONALD M; ROCHA, ALAN RODNEY; LEVY, VINCENT M; KOWAL, T JOHN; DERRY, STEPHEN M  
**Cc:** 'Scott Christensen V (E-mail)'; 'Norman Ignacio (Nacho) (E-mail)'; CHAO, DENNIS; Stoner-1, Michael D; 'Carlos Ortiz (E-mail)'; 'Michael J Dunham (E-mail)'; Sebesta, Stephen P; CORONADO, DIANA; 'Craig Madden' (E-mail); Bell, Dan R.; Gordon, Michael P.; Paul A Parker (E-mail)  
**Subject:** STS-107 Debris Analysis Team Plans

The Boeing/USA team would like to meet with you Tuesday at 2:00 on meet-me-line number [redacted] to discuss analysis plans for assessing the STS-107 Debris Impact.

*Pam Madera*

Vehicle and Systems Analysis Subsystem Area Manager  
 Phone: 281-282-4453



## Michele Lewis

---

**From:** Coronado, Diana [diana.coronado@boeing.com]  
**Sent:** Friday, January 17, 2003 4:44 PM  
**To:** Chao, Dennis C; Madden, Craig  
**Cc:** Alexander, Ed C; Moon, Darwin G; Norman, Ignacio; Carvajal, Olman; Dunham, Michael J; EXT-Madera, Pamela L; Gordon, Michael P; DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); CURRY, DONALD M. (JSC-ES3) (NASA); Kinder, Gerald R; Barnwell, Maria M; Rafla, Farid K; Wang, Kuo  
**Subject:** RE: STS-107 Ascent Damage to TPS/RCC

Dennis and Craig,  
I checked with the MER Manager (Ken Brown). The video was too grainy to get a determination on the debris impact to the Orbiter left wing. We need to wait for the movies to review this further. These may be available this weekend but Monday may be likely.

Diana.

> -----Original Message-----

> From: Chao, Dennis C  
> Sent: Friday, January 17, 2003 2:39 PM  
> To: Madden, Craig  
> Cc: Coronado, Diana; Alexander, Ed C; Moon, Darwin G; Norman, Ignacio; Carvajal, Olman; Dunham, Michael J; EXT-Madera, Pamela L; Gordon, Michael P; EXT-Derry, Stephen M; EXT-Levy, Vincent M; Curry Donald M. (E-mail); Kinder, Gerald R; Barnwell, Maria M; Rafla, Farid K; Wang, Kuo  
> Subject: RE: STS-107 Ascent Damage to TPS/RCC

Craig:

>  
> I got your web info through Jerry and was reviewing those pictures. From those pictures, it is very hard to tell how bad it is.  
> A minute ago I also received a call from Carlos at KSC. They are reviewing the video tape one more time to decide whether they should turn on action. I am waiting for his call for action.

> Dennis

> <<http://photo4.msfc.nasa.gov/STS/sts107/>>

> -----Original Message-----

> From: Madden, Craig  
> Sent: Friday, January 17, 2003 1:09 PM  
> To: Chao, Dennis C; Norman, Ignacio  
> Subject: STS-107 Ascent Damage to TPS/RCC

> Dennis/Nacho,

> What have you guys heard about foam/ice impacting the WLE and TPS?

> cm

## Michele Lewis

---

**om:** Chao, Dennis C [dennis.c.chao@boeing.com]  
**sent:** Friday, January 17, 2003 3:39 PM  
**To:** Madden, Craig  
**Cc:** Coronado, Diana; Alexander, Ed C; Moon, Darwin G; Norman, Ignacio; Carvajal, Olman; Dunham, Michael J; EXT-Madera, Pamela L; Gordon, Michael P; DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); CURRY, DONALD M. (JSC-ES3) (NASA); Kinder, Gerald R; Barnwell, Maria M; Rafla, Farid K; Wang, Kuo  
**Subject:** RE: STS-107 Ascent Damage to TPS/RCC

Craig:

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Dennis

<http://photo4.msfc.nasa.gov/STS/sts107/>  
<<http://photo4.msfc.nasa.gov/STS/sts107/>>

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

**From:** Madden, Craig  
**Sent:** Friday, January 17, 2003 1:09 PM  
**To:** Chao, Dennis C; Norman, Ignacio  
**Subject:** STS-107 Ascent Damage to TPS/RCC

Dennis/Nacho,

What have you guys heard about foam/ice impacting the

WLE and TPS?

cm

**Michele Lewis**

---

**From:** ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA)  
**Sent:** Wednesday, January 22, 2003 12:19 PM  
**To:** WALLACE, RODNEY O. (ROD) (JSC-MS2) (NASA)  
**Cc:** DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); KOWAL, T. J. (JOHN) (JSC-ES3) (NASA); JACOBS, JEREMY B. (JSC-ES4) (NASA); CURRY, DONALD M. (JSC-ES3) (NASA); RICKMAN, STEVEN L. (JSC-ES3) (NASA); RICHART, JENE A. (JSC-MS2) (NASA); ESS, ROBERT H. (BOB) (JSC-MS2) (NASA)  
**Subject:** RE: ET Foam Loss

Rod,

I am sure the others on distribution answered too. I am on the team (NASA JSC, USA, Boeing) studying and assessing this issue and the team answer is NO. There are good scenarios (acceptable and minimal damage) to horrible ones, depending on the extent of the damage incurred by the wing and location. The most critical locations seem to be the 1191 wing spar region, the main landing gear door seal, and the RCC panels. We do not know yet the exact extent or nature of the damage without being provided better images, and without such all the high powered analyses and assessments in work will retain significant uncertainties.

**Rodney Rocha**

**Structural Engineering Division (ES-SED)**

- ES Div. Chief Engineer (Space Shuttle DCE)
- Chair, Space Shuttle Loads & Dynamics Panel

**Mail Code ES2 Phone 281-483-8889**

**Michele Lewis**

---

**From:** Dunham, Michael J [Michael.J.Dunham@boeing.com]  
**Sent:** Thursday, January 23, 2003 3:02 PM  
**To:** EXT-Madera, Pamela L; CURRY, DONALD M. (JSC-ES3) (NASA); ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); KOWAL, T. J. (JOHN) (JSC-ES3) (NASA); DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA)  
**Cc:** Christensen, Scott V; Norman, Ignacio; Chao, Dennis C; Stoner-1, Michael D; Ortiz, Carlos; Sebesta, Stephen P; Coronado, Diana; "Craig Madden' (E-mail)"; Bell, Dan R; Gordon, Michael P; Parker, Paul A  
**Subject:** RE: STS-107 Debris Analysis Team Plans

Michael J. Dunham  
Boeing/Orbiter SSM - Stress, Loads and Dynamics  
(281)-853-1697  
(281)-853-1525 (Fax)

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

**From:** EXT-Madera, Pamela L  
**Sent:** Monday, January 20, 2003 5:47 PM  
**To:** CURRY, DONALD M; EXT-Rocha, Alan RODNEY; EXT-Levy, Vincent M; EXT-Kowal, T JOHN; EXT-Derry, Stephen M  
**Cc:** Christensen, Scott V; Norman, Ignacio; Chao, Dennis C; Stoner-1, Michael D; Ortiz, Carlos; Dunham, Michael J; Sebesta, Stephen P; Coronado, Diana; "Craig Madden' (E-mail)"; Bell, Dan R; Gordon, Michael P; Parker, Paul A  
**Subject:** STS-107 Debris Analysis Team Plans

The Boeing/USA team would like to meet with you Tuesday at 2:00 on meet-me-line number  
to discuss analysis plans for assessing the STS-107 Debris Impact.

*Pam Madera*

Vehicle and Systems Analysis Subsystem Area Manager  
Phone: 281-282-4453



**Subject:** FW: STS-107 Debris Briefing for MMT

**Date:** Wednesday, January 29, 2003 2:41 PM

**From:** CAMPBELL, CARLISLE C., JR (JSC-ES2) (NASA)  
<carlisle.c.campbell@nasa.gov>

**To:** "LAW, HOWARD G. (JSC-EG) (NASA)" <howard.g.law@nasa.gov>,  
"jeff.homan@arc.nasa.gov" <jeff.homan@arc.nasa.gov>

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

**From:** ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA)  
**Sent:** Friday, January 24, 2003 10:32 AM  
**To:** CAMPBELL, CARLISLE C., JR (JSC-ES2) (NASA); RICHART, JENE A.  
(JSC-MS2) (NASA)  
**Cc:** MADDEN, CHRISTOPHER B. (CHRIS) (JSC-ES3) (NASA)  
**Subject:** FW: STS-107 Debris Briefing for MMT

Here is the Orbiter thermal/stress assessment. I do not have the system integration (Carlos Ortiz/Boeing) debris trajectory analysis charts yet. Both were presented to MER team and MMT this morning. There is good potential for tile replacement and maybe local overheating of structure, but no burn-through. Though the assessment states, so far, that no safety of flight issues exist, there is open work on one more case, the MLG Door tiles. The MER team understood this open work, but in my opinion the MMT with Linda Ham did not get the full message of open work remaining.

Rodney Rocha  
Structural Engineering Division (ES-SED)

- \* ES Div. Chief Engineer (Space Shuttle DCE)
- \* Chair, Space Shuttle Loads & Dynamics Panel

Mail Code ES2 Phone 281-483-8889

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

**From:** White, Doug [mailto: Doug.White@USAHQ.UnitedSpaceAlliance.com]  
**Sent:** Thursday, January 23, 2003 10:23 PM  
**To:** Wilder, James; Reeves, William D; CURRY, DONALD M. (JSC-ES3) (NASA);  
SCHOMBURG, CALVIN (JSC-EA) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA);  
ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA)  
**Subject:** FW: STS-107 Debris Briefing for MMT

Potential tile damage charts for the MMT tomorrow morning. Mike Dunham will pitch these.

Doug White  
Director, Operations Requirements  
281 282-2879 office  
281 282-4438 fax

600 Gemini  
Houston, TX 77058

"Never let the fear of striking out get in your way." -Babe Ruth

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

**From:** Dunham, Michael J [mailto: Michael.J.Dunham@boeing.com  
<mailto: Michael.J.Dunham@boeing.com> ]  
**Sent:** Thursday, January 23, 2003 8:36 PM  
**To:** EXT-Madera, Pamela L; EXT-White, Doug; Alvin Beckner-Jr (E-mail); Bo

Bejmuk (E-mail); David Camp (E-mail); Douglas Cline (E-mail); Ed Alexander (E-mail); Frances Ferris (E-mail); Garland Parlier (E-mail); John Mulholland (E-mail); Mark Pickens (E-mail); Michael Burghardt (E-mail); Mike Fuller (E-mail); Norm Beougher (E-mail); Scott Christensen V (E-mail); Steve Harrison (E-mail)  
Subject: STS-107 Debris Briefing for MMT

<<Debris.ppt>>

Michael J. Dunham  
Boeing/Orbiter SSM - Stress, Loads and Dynamics  
(281)-853-1697  
(281)-853-1525 (Fax)

**Michele Lewis**

---

From: DISLER, JONATHAN M. (JON) (JSC-SX) (LM)  
Sent: Monday, January 27, 2003 9:44 AM  
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: CAD Showing Debris Strike to STS-107 Wing

> A CAD drawing of the Orbiter showing the position of the landing gear door  
> that is overlaid to the STS-107 ET208 image of the debris strike to the  
> Orbiter left wing can be seen at the following address:  
>  
>  
[http://sn-isag.jsc.nasa.gov/shuttleweb/mission\\_support/sts-107/index107.shtml](http://sn-isag.jsc.nasa.gov/shuttleweb/mission_support/sts-107/index107.shtml)

**Michele Lewis**

---

**From:** Barnwell, Maria M [Maria.M.Barnwell@boeing.com]  
**Sent:** Friday, December 13, 2002 6:47 PM  
**To:** DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA)  
**Cc:** Chao, Dennis C  
**Subject:** wing trailing edge



all HW48FW57-heating.pdf  
WING-BPTs.pdf

Enclosed are the heating plots for our hottest certification case HV48FW57 (248K, 57°, fwd xcg). The body points you want to look at (and we have enclosed in the attachment) are in the wing lower surface:  
2960 & 2967 in the 90% span,  
2867 & 2871 in the 80% and  
2770 & 2773 in the 70%

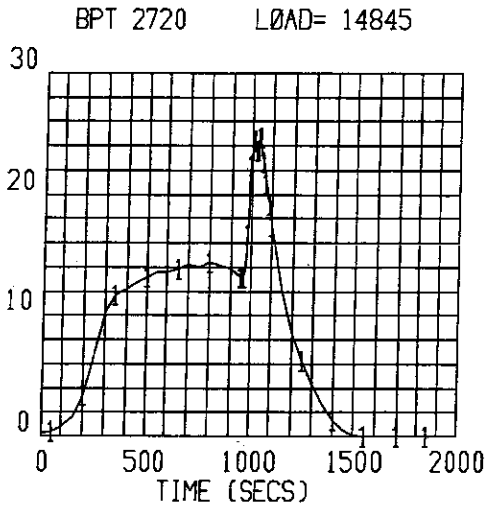
<<all WING-BPTs.pdf>> <<HW48FW57-heating.pdf>>  
I didn't extract the specific plots, I'm sending you the whole page.  
The other file is to help with the location of the points.

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

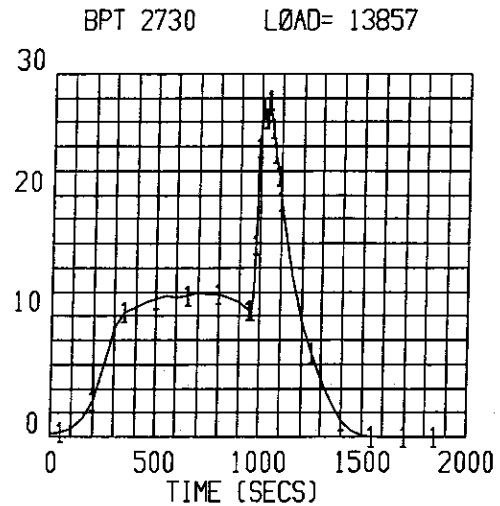
RADIATION EQUILIBRIUM HEATING RATE HISTORY  
1-OTT192.C95.HV48FW57.F130W155.DATA

FIG. 141

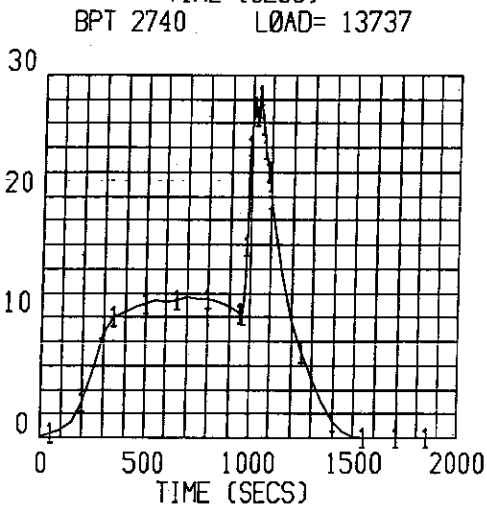
R.E. HTG RATE(BTU/FT2-S)



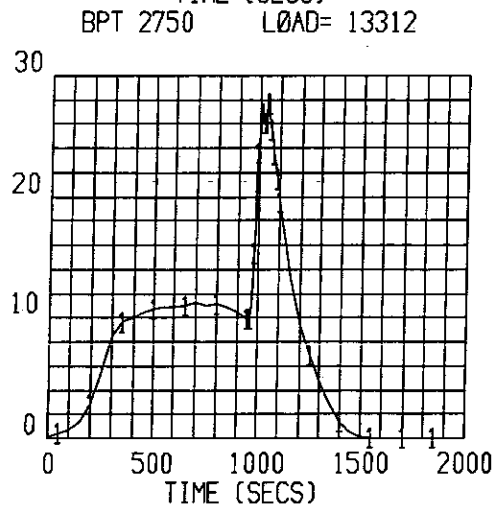
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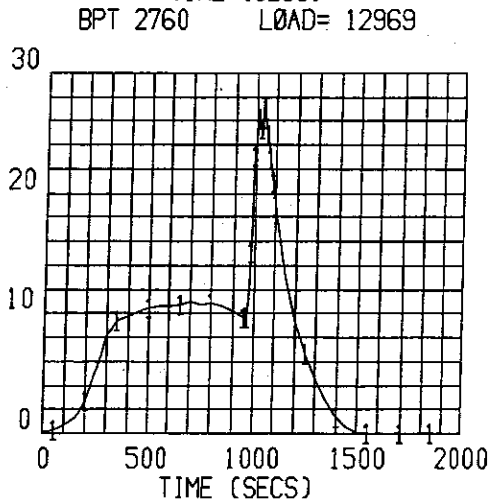
R.E. HTG RATE(BTU/FT2-S)



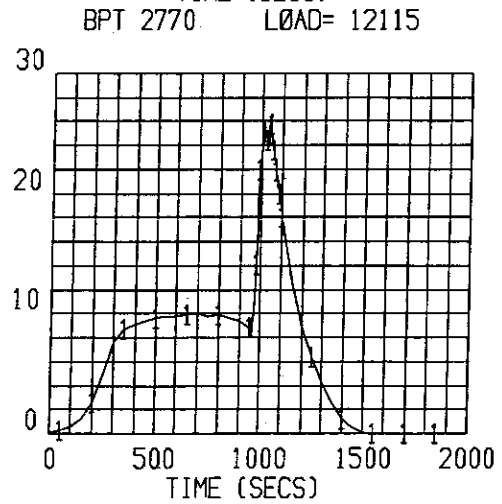
R.E. HTG RATE(BTU/FT2-S)



R.E. HTG RATE(BTU/FT2-S)

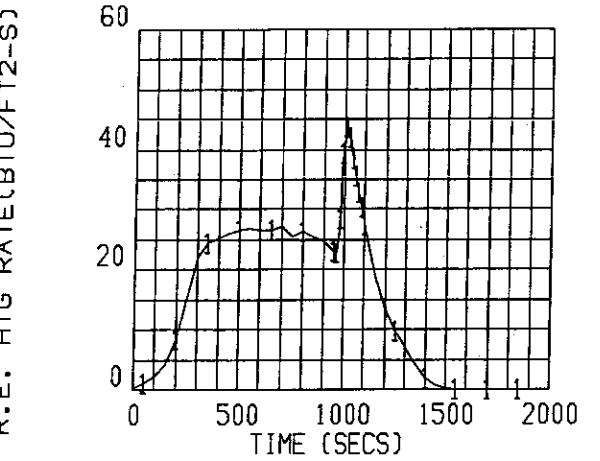
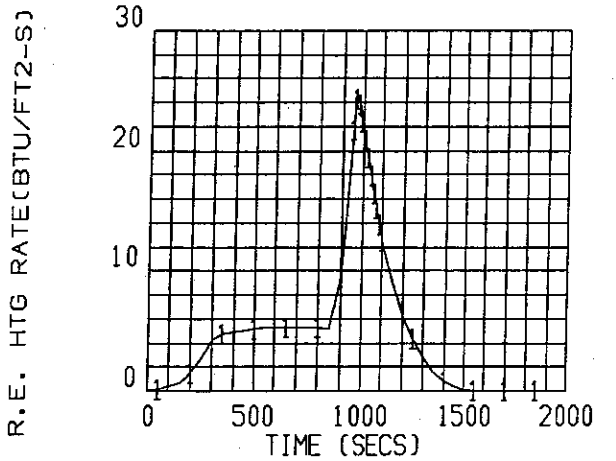
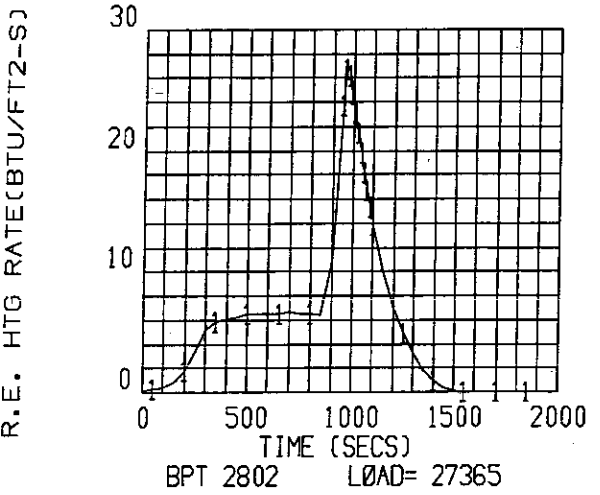
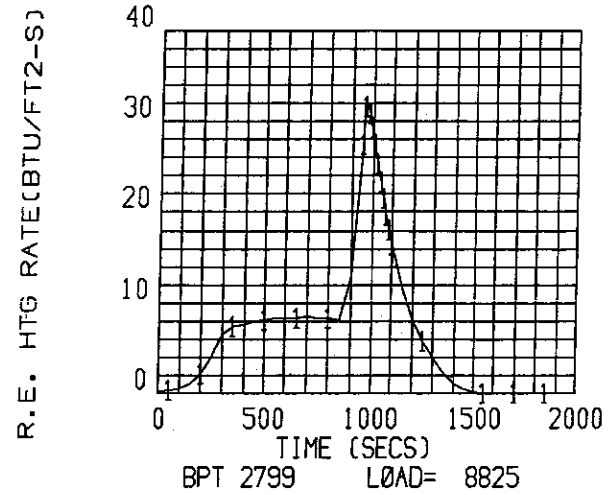
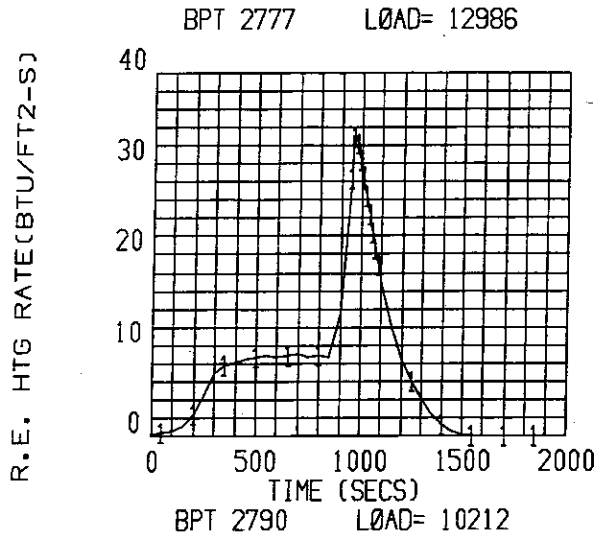
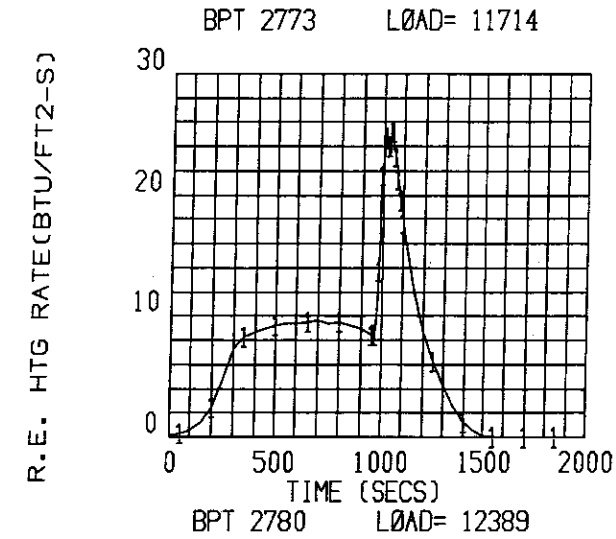


R.E. HTG RATE(BTU/FT2-S)



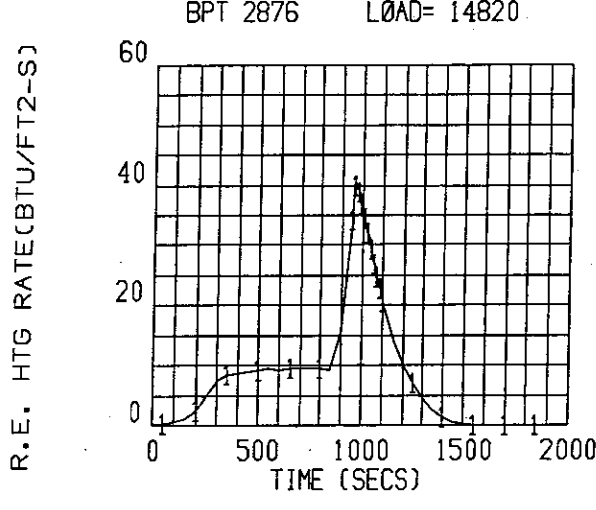
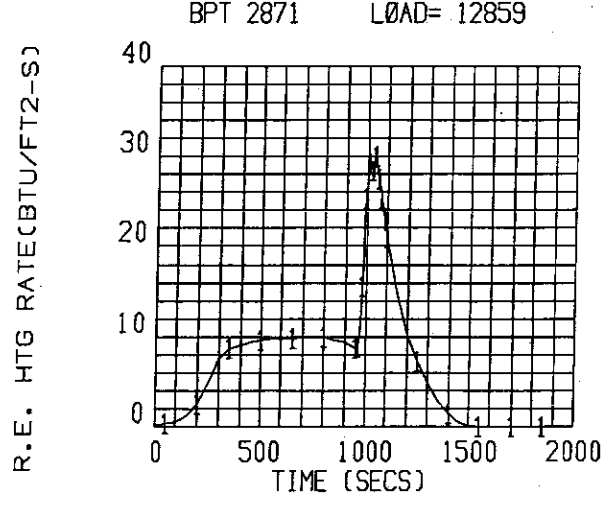
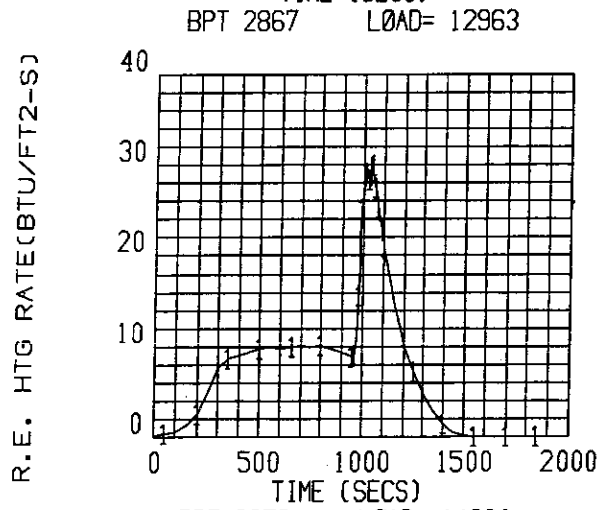
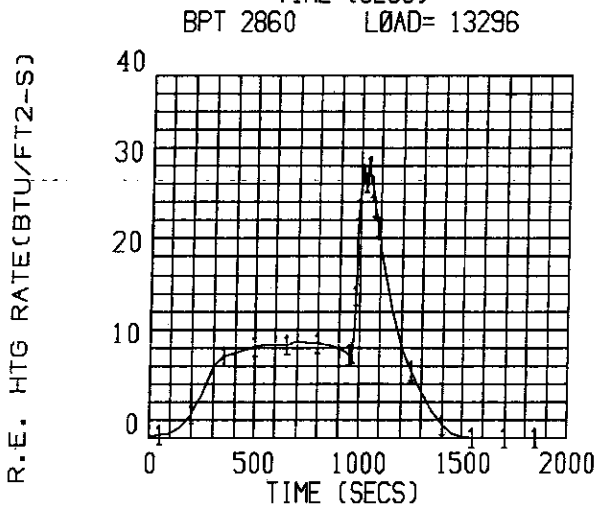
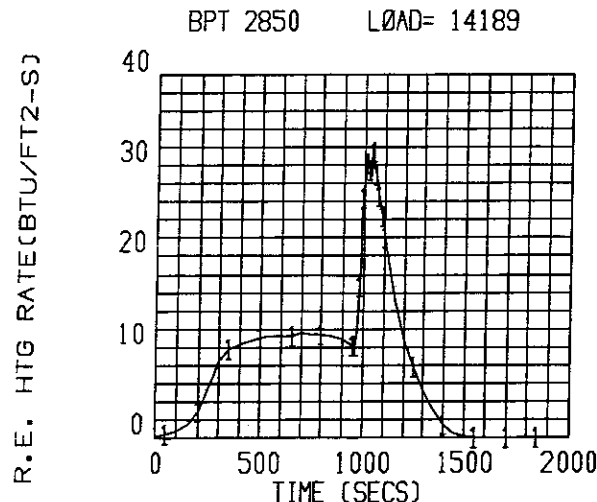
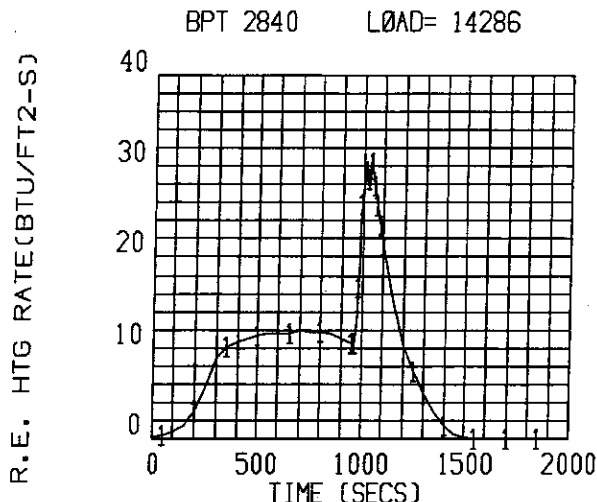
RADIATION EQUILIBRIUM HEATING RATE HISTORY  
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FIG. 142



RADIATION EQUILIBRIUM HEATING RATE HISTORY  
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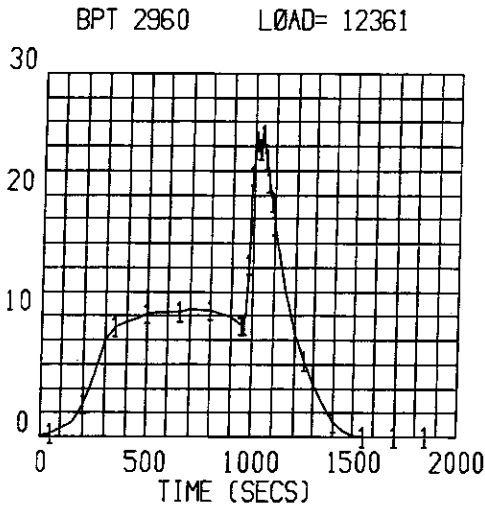
FIG. 144



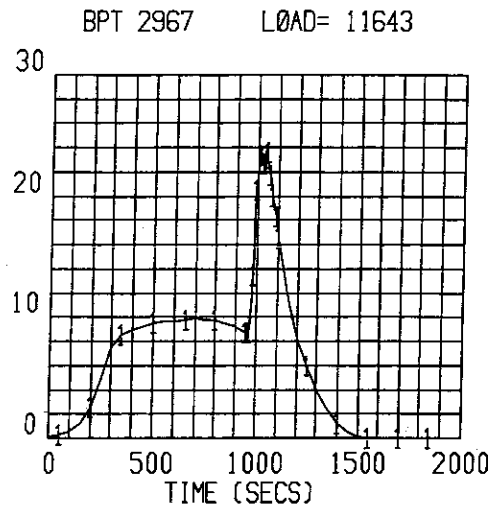
RADIATION EQUILIBRIUM HEATING RATE HISTORY  
 1-DTT192.C95.HV48FW57.F130W155.DATA

FIG. 147

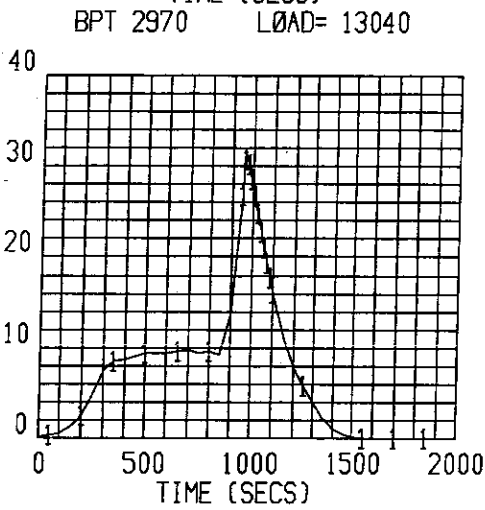
R.E. HTG RATE(BTU/FT2-S)



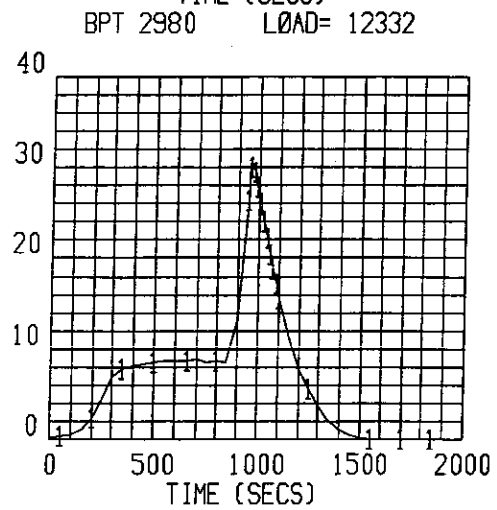
R.E. HTG RATE(BTU/FT2-S)



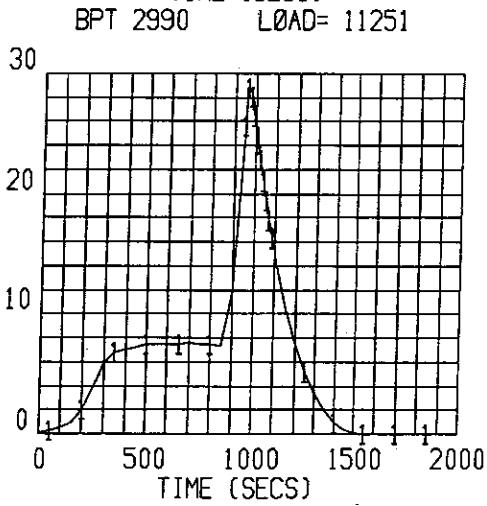
R.E. HTG RATE(BTU/FT2-S)



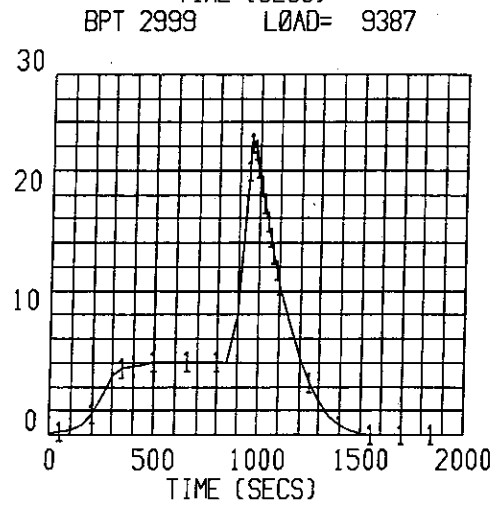
R.E. HTG RATE(BTU/FT2-S)



R.E. HTG RATE(BTU/FT2-S)



R.E. HTG RATE(BTU/FT2-S)







**Michele Lewis**

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**From:** HAMMERSCHMIDT, MARK M. (JSC-EG4) (NASA)  
**Sent:** Thursday, December 12, 2002 12:16 PM  
**To:** Pam Madera; Jim Harder; Kevin Blankinship; Thomas Tanita; Milt Reed; SILVESTRI, RAYMOND T. (RAY) (JSC-DM4) (NASA); DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA); KRAMER, JULIE A. (JSC-EA4) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); Bob Reitz; Brian Bihari; Don Gavert; MAY, DARRYL W. (JSC-MV2) (NASA); HERNANDEZ, FRANCISCO J. (JSC-EP) (NASA); SARAFIN, MICHAEL L. (JSC-DF6) (NASA); RUPPERT, JOHN P. (JSC-EG) (NASA); GRUBER, DAVID J. (JSC-DF611) (NASA); SCHOENBERG, RICHARD J. (JSC-EP4) (NASA)  
**Cc:** Lincoln J. Salvador  
**Subject:** Splinter Entry GNC Panel

This is a reminder that we will have a one hour splinter Entry GNC Panel this afternoon to get a quick assessment of potential impacts to flight dynamics if a bodyflap becomes stuck.

Since all of our main conference rooms will be tied-up for the annual Christmas lunches, we will be meeting in a smaller (about 20 people) conference room located on the second floor in building 16A. The room doesn't have a projector so if you have anything to present, please bring sufficient copies. Don, I will call you

Date : Thursday, December 12  
Time : 2:00 PM to 3:00 PM  
Place : Bldg 16A, Rm 2124

**Discussion Items:**

- Stuck bodyflap scenarios
  - Range of onorbit checkout sweep
  - Range of nominal trajectory dispersions
  - Worst Case
    - Forward CG: Bodyflap stuck full down
    - Aft CG: Bodyflap stuck full up
- Configurations
  - Nominal
  - Dispersions (aero, CG)
  - CG shifts due to propellant dumps
- Trajectories
  - NEOM
  - Intact aborts (RTLS, TAL, AOA)
  - Contingency aborts

- Effects of elevator trim change
  - Stability
  - Hinge moments
  - Thermal
  - Loads
  
- Tailscrape
  
- Preliminary SES / SDAP results
  
- What about the Rudder / Speedbrake?

Note: if you're having trouble finding the meeting room and all of the rooms around you have only 3 digit room numbers, you're still in building 16, not 16A.

--  
Mark Hammerschmidt  
EG4/Branch Chief  
(281) 483-8302

**Michele Lewis**

---

**From:** HAMMERSCHMIDT, MARK M. (JSC-EG4) (NASA)

**Sent:** Thursday, December 12, 2002 12:30 PM

**To:** Pam Madera; Jim Harder; Kevin Blankinship; Thomas Tanita; Milt Reed; SILVESTRI, RAYMOND T. (RAY) (JSC-DM4) (NASA); DERRY, STEPHEN M. (STEVE) (JSC-EG3) (NASA); ROCHA, ALAN R. (RODNEY) (JSC-ES2) (NASA); KRAMER, JULIE A. (JSC-EA4) (NASA); LEVY, VINCENT M. (JSC-EG) (NASA); Bob Reitz; Brian Bihari; Don Gavert; MAY, DARRYL W. (JSC-MV2) (NASA); HERNANDEZ, FRANCISCO J. (JSC-EP) (NASA); SARAFIN, MICHAEL L. (JSC-DF6) (NASA); RUPPERT, JOHN P. (JSC-EG) (NASA); GRUBER, DAVID J. (JSC-DF611) (NASA); SCHOENBERG, RICHARD J. (JSC-EP4) (NASA)

**Cc:** Lincoln J. Salvador

**Subject:** Splinter Entry GNC Panel - Bodyflap Pictures

FYI. Here's some of the pictures of the bodyflap corrosion.

mark