X-Sender: prichard@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Thu, 20 Feb 2003 07:09:09 -0500
To: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
From: Pamela Richardson <prichard@hq.nasa.gov>
Subject: Re: Fwd: IRIS Information for Columbia Investigation Board

John --

Do we have an action to provide this information to the CAIB? If so, can you forward details or an e-mail requesting it so I can write it up as an action?

Thanks, Pam

At 04:33 PM 2/19/2003 -0500, you wrote:
John, this represents the first KSC data cut from their records. Regards, Jon
From: "Barker-1, Charles" <David.Barker-1@nasa.gov>
To: "'stacey.t.nakamura@nasa.gov'" <stacey.t.nakamura@nasa.gov>,
"'jmullin@hq.nasa.gov'" <jmullin@hq.nasa.gov>
Cc: "Brisbin-1, Steven" <Steven.Brisbin-1@nasa.gov>
Subject: IRIS Information for Columbia Investigation Board
Date: Wed, 19 Feb 2003 15:17:09 -0500
X-Mailer: Internet Mail Service (5.5.2656.59)

Stacey,

Attached is an EXCEL spreadsheet containing information on shuttle related damage mishaps from IRIS going back to 1988. This information was requested by Mark Green and Sharla Ostrowski of USA in support of Bill Harris. Jon Mullin requested that instead of sending it directly to them, I send it to you and you can provide it to the appropriate people through the appropriate channels. This is the first of three spreadsheets that I plan to send. Tomorrow I will send one on shuttle processing related injuries and hopefully one on the mishaps that were entered into the old KSC SEACATS system that never got converted to IRIS. I appreciate your assistance in this matter. If you have any questions, please feel free to call me at 321-867-6351.

Dave Barker
NASA KSC Institutional Safety and Quality Branch
<<Shuttle Processing Damage.xls>>

Jonathan B. Mullin
Manager Operational Safety
Emergency Preparedness Coordinator
Headquarters National Aeronautics and Space Administration
Phone (202) 358-0589
FAX (202) 358-3104
"Mission Success Starts with Safety"

Pamela F. Richardson
Aerospace Technology Mission Assurance Manager
Enterprise Safety and Mission Assurance Division, Code QE
Office of Safety and Mission Assurance, NASA Headquarters
300 E. Street, S. W., Washington, DC 20546
phone: 202-358-4631, fax: 202-358-2778

"The meek can *have* the Earth. The rest of us are going to the stars." --- Robert Heinlein
"We have to learn to manage information and its flow. If we don't, it will all end up in turbulence." --- RADM Grace Hopper

X-Sender: prichard@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Thu, 20 Feb 2003 08:31:43 -0500
To: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
From: Pamela Richardson <prichard@hq.nasa.gov>
Subject: Re: Fwd: Space Shuttle Mishap Information Request

Thanks!

Pam

At 08:23 AM 2/20/2003 -0500, you wrote:
Pam, this is the plan. It goes to JSC with a copy to Code Q. Stacey Nakamura is the integrator of the data. Regards, Jon
Date: Wed, 19 Feb 2003 09:24:11 -0500
To: stacey-nakamura
From: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
Subject: Space Shuttle Mishap Information Request
Cc: lemke-john,Lloyd_James,tom-whitmeyer,
Bcc: Brookover_Sylvia,Richardson_Pamela,Mullin_Jonathan

Stacey, reference your earlier undefined request for IRIS Data.

First, I understand the that **all of the CAIB requests need to be managed through a single point, The Task Group , Mr. Buzzard.**

Secondly, In order to respond, please state the request specifically "by the numbers." Responses must be standardized from the agency to the CAIB. ILL defined requests will get you mixed data.

Thirdly, all mishap data that the CAIB may be seeking, may not have have been put into IRIS.
Consider all of the "floor paper" where less than a $1,000 damage may have occurred.
Consider, PRACA, MRB actions, open paper anomalies, etc. that are part of Quality Paper documentation.
Another feature to be reviewed would be the records of the contractor, such as the Incident Error Review Board (IERB) which has been extensively exercised at the Kennedy Space Center.

Fourth, consider what reports may have been made to the NASA Contracting Officer with respect to damage during this period of time.

With the potential sensitivity of this data, who is (are) the government official (s) assuring the process?

For my information, please copy me on the defined request.

Regards, Jon

Jonathan B. Mullin
Manager Operational Safety
Emergency Preparedness Coordinator
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From: "NAKAMURA, STACEY T. (JSC-NS) (NASA)" <stacey.t.nakamura@nasa.gov>
To: "'Barker-1, Charles'" <David.Barker-1@nasa.gov>;
"'jmullin@hq.nasa.gov'" <jmullin@hq.nasa.gov>
Subject: RE: IRIS Shuttle Damage Data
Date: Thu, 20 Feb 2003 12:21:02 -0600
X-Mailer: Internet Mail Service (5.5.2653.19)

Received,

thanks,
Stacey

Stacey T. Nakamura
Phone: (281) 483-4345
Fax: (281) 483-6275

-----Original Message-----
From: Barker-1, Charles [mailto:David.Barker-1@nasa.gov]
Sent: Thursday, February 20, 2003 12:14 PM
To: NAKAMURA, STACEY T. (JSC-NS) (NASA); 'jmullin@hq.nasa.gov'
Subject: IRIS Shuttle Damage Data

Stacey,

Since I have determined, and had confirmed by the HQ IRIS folks, that when I down load the results of my ACCESS query of IRIS into EXCEL, some of the data get truncated, I am sending a WORD table of the same incidents I sent yesterday. This table should not have any truncated data. I talked to Sharla this morning and she is aware of what I am doing. The reason for the truncation is unknown at this time but it is a known problem. I will try to send the injury data tomorrow.

Dave Barker

X-Sender: mvohs@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Thu, 20 Feb 2003 15:14:11 -0500
To: jmullin@hq.nasa.gov
From: Mark Vohs <mvohs@hq.nasa.gov>
Subject: Columbia search

Jon,

The query is currently running. The number of records will be around 1600. This includes duplicates records. The number of unique case records is about 950. I didn't want to hold you up anymore by trying to remove the duplicate records and just wanted to get the data to you ASAP. If you would like me to continue refining the query to remove duplicates please let me know. Again once the query has complete I will send the results.

Thanks

Mark Vohs
Lead
ISEM Software Development
Work:703-676-0281

X-Authentication-Warning: spinoza.public.hq.nasa.gov: majordom set sender to owner-code-q using -f
X-Sender: mkowales@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Thu, 13 Feb 2003 08:21:51 -0500
To: code-q@lists.hq.nasa.gov
From: Mark Kowaleski <mkowales@hq.nasa.gov>
Subject: Fwd: FW: Animated Oribter Wheel Well Viewer
Sender: owner-code-q@lists.hq.nasa.gov

From: "ERMINGER, MARK D. (JSC-NC) (NASA)" <mark.d.erminger@nasa.gov>
To: "JOHNSON, M. S. (SCOTT) (JSC-NC) (NASA)" <m.s.johnson@nasa.gov>
Cc: "MARSHALL, YOLANDA Y. (JSC-NA) (NASA)" <yolanda.y.marshall@nasa.gov>,
"JOHNSON, GARY W. (JSC-NA) (NASA)" <gary.w.johnson@nasa.gov>,
"HOLSOMBACK, JERRY B. (JSC-OE) (NASA)" <jerry.b.holsomback@nasa.gov>,
"H - Kowaleski Mark (E-mail)" <mkowales@mail.hq.nasa.gov>,
"H - Bihner Bill (E-mail)" <wbihner@mail.hq.nasa.gov>
Subject: FW: Animated Oribter Wheel Well Viewer
Date: Wed, 12 Feb 2003 14:37:15 -0600
X-Mailer: Internet Mail Service (5.5.2653.19)

KSC put this together

-----Original Message-----
From: GLANVILLE, ROY W. (JSC-NC) (NASA)
Sent: Wednesday, February 12, 2003 2:34 PM
To: ERMINGER, MARK D. (JSC-NC) (NASA); BROWNE, DAVID M. (JSC-NC) (NASA); DYER, KEITH W. (JSC-NC) (SAIC)
Subject: Animated Oribter Wheel Well Viewer

http://www-launchops.ksc.nasa.gov/etd/Investigation/IPIX/files/OV103LHWheelWell1.htm
<<iPIX Java Viewer v3.22.url>>


iPIX Java Viewer v3.22.url

X-Sender: prichard@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Wed, 19 Feb 2003 12:28:29 -0500
To: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
From: Pamela Richardson <prichard@hq.nasa.gov>
Subject: Re: Fwd: Fw: Columbia follow-up

Jon --

At this point, I am not leaning toward putting this person and Michelle in our "offers of assistance," since as you say this is from 2/2 and may be fairly stale. If you have had further correspondence with either of them, an e-mail address with a name would be required to put it in our database.

Thanks, Pam

At 04:14 PM 2/18/2003 -0500, you wrote:
Jim, thought you might pass this note on. It comes from Mike McCombs at Vandenberg. I am sure that the board is considering all of the possibilities. This note is a bit stale as it was sent to my home computer, and Barb is using it most of the time. Regards, Jon

Sent: Sunday, February 02, 2003 9:36 AM
Subject: Columbia follow-up

Jon,

I've heard word of debris striking wing on ascent. If they are not already lending some focus to that, consider the "build-paper trail" for that particular ET and go for the foam mixing ratios, mix times and cure times, etc. If you recall the Delta failure in 98 at the Cape, the investigation got to the build-paper for the GEM cases at their manufacturing point; records showed the resins had been cured within spec, but at the upper/lower end of the spec, and coupled with other specs in the mixing, temperature, set-time, etc., the result was a cured product that was more brittle than expected. When the GEM ignited, and "perhaps - not proven, I recall - due to a small flaw in the fibers, the GEM ruptured lengthwise.

It could be a similar situation in that at that point where a shift-change occurred and mix working time was shakey, but someone thought the foam was still workable and application continued, resulting in a less-than-adequate bond and hence a large piece could have been easily dislodged. This would require investigation to see if somehow, somewhere, sometime, an individual made a decision to cut-a-corner to save time or $, instead of meeting the requirement.

Note I am not saying this is the smoking gun, but this concept is what the Fault Tree Analysis would prove or de-bunk.

Michelle Laufer (working in SES since the late 80s and with Rockwell before that) called me yesterday morning "offering" to support any investigation that might be initiated. I think that goes for all of us.

Bye for now, and good sailing. Try to keep those folks on-track.

Mike

Jonathan B. Mullin
Manager Operational Safety
Emergency Preparedness Coordinator
Headquarters National Aeronautics and Space Administration
Phone (202) 358-0589
FAX (202) 358-3104
"Mission Success Starts with Safety"

Pamela F. Richardson
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Enterprise Safety and Mission Assurance Division, Code QE
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300 E. Street, S. W., Washington, DC 20546
phone: 202-358-4631, fax: 202-358-2778

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X-Sender: jhanbury@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Wed, 19 Feb 2003 11:54:53 -0500
To: jonathan.mullin@hq.nasa.gov
From: Joe Hanbury <jhanbury@hq.nasa.gov>
Subject: Status of IRIS LT Summary Report

Jon,

We have completed the modification of the software code that is used for the LT Summary Report. We have tested the report on the development server and we are confident that it is now returning the proper results. We would like to give you the opportunity to view the output and give your concurrence to proceed with our deployment plan, so we can then close the SR.

Please let me know when we can meet and discuss the report results. Or, if you prefer, you can reply to this email, giving your blanket concurrence, and we will proceed with deployment.

Thanks,

- Joe

X-Authentication-Warning: spinoza.public.hq.nasa.gov: majordom set sender to owner-code-q using -f
X-Sender: mkowales@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Fri, 14 Feb 2003 14:50:34 -0500
To: code-q@lists.hq.nasa.gov
From: Mark Kowaleski <mkowales@hq.nasa.gov>
Subject: Fwd: USA Today Depiction of Columbia Data
Sender: owner-code-q@lists.hq.nasa.gov

From: "ERMINGER, MARK D. (JSC-NC) (NASA)" <mark.d.erminger@nasa.gov>
To: "H - Kowaleski Mark (E-mail)" <mkowales@mail.hq.nasa.gov>,
"H - Bihner Bill (E-mail)" <wbihner@mail.hq.nasa.gov>,
"H - Hill Bill (E-mail)" <william.hill@hq.nasa.gov>
Subject: USA Today Depiction of Columbia Data
Date: Fri, 14 Feb 2003 13:19:58 -0600
X-Mailer: Internet Mail Service (5.5.2653.19)

> This is incredible
>
> http://www.usatoday.com/graphics/news/gra/gshuttle_disaster/flash.htm

From: "Camomilli-1, Guy" <Guy.S.Camomilli@nasa.gov>
To: "Keprta, Sean" <sean.r.keprta1@jsc.nasa.gov>,
"Angotti, Cathy" <cangotti@hq.nasa.gov>,
"Mullin, Jonathan" <jmullin@mail.hq.nasa.gov>,
"Barry-1, William" <William.S.Barry@nasa.gov>,
"Gettleman-1, Alan" <Alan.G.Gettleman@nasa.gov>
Cc: "Roberts-1, Donald" <Donald.Roberts-1@ksc.nasa.gov>
Subject: FW: DOT Requirements
Date: Tue, 18 Feb 2003 10:13:57 -0500
Importance: high
X-Mailer: Internet Mail Service (5.5.2656.59)

FYI

I asked Don Roberts to coordinate directly with Don Paniale on these requirements directly. Here's the information.

Guy Camomilli, MPH, CSP
Senior Environmental Health Officer,
OCHMO Tenant Office
guy.camomilli-1@ksc.nasa.gov
Voice (321) 867-1417
Fax (321) 867-8870

-----Original Message-----
From: Roberts-1, Donald
Sent: Monday, February 17, 2003 3:19 PM
To: Camomilli-1, Guy; Paniale, Donald A
Cc: Cardinale-1, Michael; Creech-1, Joanne; Ouellette-2, Robert (SGS)
Subject: DOT Requirements

Guy/Don

Based on our conversations concerning the suspected infectious substances at Barksdale AFB and using a conservative approach on the hazard classification of the material, I have outlined the general DOT requirements for transportion by public highway below.

1. The material is classified as a DOT hazardous material, hazard class 6, division 6.2 infectious substance
2. Shipping papers must include

* The DOT shipping description "Infectious substances, affecting humans (in the parentheses you must identify the name(s) of the infectious substance(s). If there are more than (1) you must list at least (2)), 6.2, UN2814" (29 CFR 172.101, 172.202)

* Total quantity of hazardous material including unit of measure (49 CFR 172.202)

* Signed shippers certification that states that the material is offered for transportation in accorance with the regulations. The regulations require a specific certification that is generally pre-printed on documents used for shipping hazardous materials. (49 CFR 172.204)

* Emergency response telephone number. The number must be monitored at all times the material in transport and must be manned by a person knowledgeable of the hazardous material being shipped (49 CFR 172.604)

* Emergency response information. The easiest way to comply with this requirement is to reference the guide number in the "Emergency Response Guidebook" and ensure that the driver carries the guidebook with the shipment or a copy of the specific guide is attached to the paperwork. The guide number is "158" for the haz material ID# UN2814. If you feel that additional emergency response information is needed include this in addition to the above information. (49 CFR 172.602)

3. Packaging must be comprised of a watertight primary receptacle (glass metal or plastic with a positive means of ensuring a leakproof seal such as heal seals or adhesive tape on screw caps.), a watertight secondary package, and an outer package that is capable of passing the tests specified in 49 CFR 173.609. I have never checked with container suppliers to see if they carry drums or boxes that meet this criteria but I am sure that they do.

4. An itemized list of the contents of the package must be enclosed between the secondary packaging and the outer packaging. (49 CFR 173.196)

5. Each outer packaging must be marked with the "Infectious Substance" label. (40 CFR 173.432)

6. Driver must have the appropriate hazardous materials training (49 CFR 172.700)

7. There is no DOT requirement for placarding the vehicle.

I'm sorry if this seems confusing but there are special requirements for infectious substances as well as the general requirements. I tried to provide only the information pertinent to your situation as I understand it. Please let me know if I can provide any additional support.

Don Roberts, CHMM
Lead Engineer, Evaluation and Planning
SGS Waste Management
Phone: (321) 867-8642
Fax: (321) 867-9390

McCombs Mike L GS-14 30SW/SES, 04:39 PM 2/10/2003 +0000, FW: AF Photos on loss of shuttle

From: McCombs Mike L GS-14 30SW/SES <Mike.McCombs@vandenberg.af.mil>
To: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
Subject: FW: AF Photos on loss of shuttle
Date: Mon, 10 Feb 2003 16:39:03 -0000
X-MS-TNEF-Correlator:
<9D7029507E44D311AE99009027887D76032996B9@fsxumu07.vandenberg.af.mil>
X-Mailer: Internet Mail Service (5.5.2653.19)

FYI

I saw video taken by an amateur astronomer in Nevada (on the news) - showed single point of light moving across sky, a small "burst" of light, then back to the normal sigle point of light that continued on the path initially on the video. The "burst" of light was very short lived; may be grounds for analysis of space debris.

Other rumors that similar telescope/radar imaging showed damage a day or two after launch.

Mike
-----Original Message-----
From:
Sent: Friday, February 07, 2003 12:39 PM
To: "Ol" George' 'Meyer (E-mail); Lacombe, George A; Mike McCombs (E-mail); Bircher, Steven J; 'Michael. Pulgine (E-mail); Patzman, Laurence S
Subject: FW: AF Photos on loss of shuttle

-----Original Message

Air Force imagery confirms Columbia wing damaged
BY CRAIG COVAULT
AVIATION WEEK & SPACE TECHNOLOGY/aviationnow.com
PUBLISHED HERE WITH PERMISSION
Posted: February 7, 2003

High-resolution images taken from a ground-based Air Force tracking camera in southwestern U.S. show serious structural damage to the inboard leading edge of Columbia's left wing, as the crippled orbiter flew overhead about 60 sec. before the vehicle broke up over Texas killing the seven astronauts on board Feb. 1.

According to sources close to the investigation, the images, under analysis at the Johnson Space Center in Houston, show a jagged edge on the left inboard wing structure near where the wing begins to intersect the fuselage.

They also show the orbiter's right aft yaw thrusters firing, trying to correct the vehicle's attitude that was being adversely affected by the left wing damage. Columbia's fuselage and right wing appear normal. Unlike the damaged and jagged left wing section, the right wing appears smooth along its entire length. The imagery is consistent with telemetry.

The ragged edge on the left leading edge, indicates that either a small structural breach -- such as a crack -- occurred, allowing the 2,500F reentry heating to erode additional structure there, or that a small portion of the leading edge fell off at that location.

Either way, the damage affected the vehicle's flying qualities as well as allowed hot gases to flow into critical wing structure -- a fatal combination.

It is possible, but yet not confirmed, that the impact of foam debris from the shuttle's external tank during launch could have played a role in damage to the wing leading edge, where the deformity appears in USAF imagery.

If that is confirmed by the independent investigation team, it would mean that, contrary to initial shuttle program analysis, the tank debris event at launch played a key role in the root cause of the accident.

Another key factor is that the leading edge of the shuttle wing where the jagged shape was photographed transitions from black thermal protection tiles to a much different mechanical system made of reinforced carbon-carbon material that is bolted on, rather than glued on as the tiles are.

This means that in addition to the possible failure of black tile at the point where the wing joins the fuselage, a failure involving the attachment mechanisms for the leading edge sections could also be a factor, either related or not to the debris impact. The actual front structure of a shuttle wing is flat. To provide aerodynamic shape and heat protection, each wing is fitted with 22 U-shaped reinforced carbon-carbon (RCC) leading-edge structures. The carbon material in the leading edge, as well as the orbiter nose cap, is designed to protect the shuttle from temperatures above 2,300F during reentry. Any breach of this leading-edge material would have catastrophic consequences.

The U-shaped RCC sections are attached to the wing "with a series of floating joints to reduce loading on the panels due to wing deflections," according to Boeing data on the attachment mechanism.

"The [critical heat protection] seal between each wing leading-edge panel is referred to as a 'tee' seal," according to Boeing, and are also made of a carbon material.

The tee seals allow lateral motion and thermal expansion differences between

the carbon sections and sections of the orbiter wing that remain much cooler during reentry.

In addition to debris impact issues, investigators will likely examine whether any structural bending between the cooler wing structure and the more-than-2,000F leading edge sections could have played a role in the accident. There is insulation packed between the cooler wing structure and the bowl-shaped cavity formed by the carbon leading-edge sections.

The RCC leading-edge structures are bolted to the wing using Inconel fittings that attach to aluminum flanges on the front of the wing.

The initial NASA Mission Management Team (MMT) assessment of the debris impact made Jan. 18, two days after launch, noted "The strike appears to have occurred on or relatively close to the "wing glove" near the orbiter fuselage.

The term "wing glove" generally refers to the area where the RCC bolt-on material is closest to the fuselage. This is also the general area where USAF imagery shows structural damage.

The second MMT summary analyzing the debris hit was made on Jan. 20 and had no mention of the leading-edge wing glove area. That report was more focused on orbiter black tiles on the vehicle's belly. The third and final summary issued on Jan. 27 discusses the black tiles again, but also specifically says "Damage to the RCC [wing leading edge] should be limited to [its] coating only and have no mission impact." Investigators in Houston are trying to match the location of the debris impact with the jagged edge shown in the Air Force imagery.

Columbia reentry accident investigators are also trying to determine if, as in the case of the case of Challenger's accident 17 years ago, an undesirable materials characteristic noted on previous flights -- in this case the STS-112 separation of external tank insulation foam debris -- was misjudged by engineers as to its potential for harm, possibly by using analytical tools and information inadequate to truly identify and quantify the threat to the shuttle. As of late last week, NASA strongly asserted this was not the case, but intense analysis on that possibility continues.

The shuttle is now grounded indefinitely and the impact on major crew resupply and assembly flights to the International Space Station remain under intense review.

Killed in the accident were STS-107 Mission Commander USAF Col. Rick Husband; copilot Navy Cdr. William McCool; flight engineer, Kalpana Chawla; payload commander, USAF Lt. Col. Michael Anderson; mission specialist physician astronauts Navy Capt. Laurel Clark and Navy Capt. David Brown and Israeli Air Force Col. Ilan Ramon.

"We continue to recover crew remains and we are handling that process with the utmost care, the utmost respect and dignity," said Ronald Dittemore, shuttle program manager.

No matter what the investigations show, there are no apparent credible crew survival options for the failure Columbia experienced. With the ISS out of reach in a far different orbit, there were no credible rescue options if even if wing damage had been apparent before reentry -- which it was not.

If, in the midst of its 16-day flight, wing damage had been found to be dire, the only potential -- but still unlikely -- option would have been the formulation over several days by Mission Control of a profile that could have, perhaps, reduced heating on the damaged wing at the expense of the other wing for an unguided reentry, with scant hope the vehicle would remain controllable to about 40,000 ft., allowing for crew bailout over an ocean.

Reentry is a starkly unforgiving environment where three out of the four fatal manned space flight accidents over the last 35 years have occurred.

These include the Soyuz 1 reentry accident that killed cosmonaut Vladimir Komarov in 1967 and the 1971 Soyuz 11 reentry accident that killed three cosmonauts returning after the first long-duration stay on the Salyut 1 space station.

The only fatal launch accident has been Challenger in 1986, although Apollo astronauts Gus Grissom, Ed White and Roger Chaffee were killed when fire developed in their spacecraft during a launch pad test not involving launch.

No other accident in aviation history has been seen by so many eyewitnesses than the loss of Columbia -- visible in five states.

Telemetry and photographic analysis indicate the breakup of the historic orbiter took place as she slowed from Mach 20-to-18 across California, Nevada, Arizona and New Mexico with the loss of structural integrity 205,000 ft. over north central Texas where most of the debris fell.

The science-driven STS-107 crew was completing 16 days of complex work in their Spacehab Research Double module and were 16 min. from landing at Kennedy when lost. Landing was scheduled for 8:16 a.m. CST.

Abnormal telemetry events in the reentry began at 7:52 a.m. CST as the vehicle was crossing the coast north of San Francisco at 43 mi. alt., about Mach 20.

The orbiter at this time was in a 43-deg. right bank completing its initial bank maneuver to the south for initial energy dissipation and ranging toward

From: "Kee-1, Wayne" <Wayne.M.Kee@nasa.gov>
To: "'Jonathan B. Mullin '" <jmullin@hq.nasa.gov>
Subject: RE: Any Requirements?
Date: Tue, 4 Feb 2003 09:00:04 -0500
X-Mailer: Internet Mail Service (5.5.2653.19)

Jon, I have received many calls from our NASA family offering assistance with in regards to PPE requirements. Many feel we should be in full level A PPE.....not gonna happen. Teams have been briefed on PPE, and monitoring/reading before touching. With 10's of thousands of pieces, full level A approach is impossible. As far as a cost center, yes.

Wayne

-----Original Message-----
From: Jonathan B. Mullin
To: Wayne Kee
Cc: Michael.B.Stevens@nasa.gov
Sent: 2/4/2003 8:17 AM
Subject: Any Requirements?

Wayne, let me know if you have any thing that we can help with from the NASA EPP perspective. I am sure that FEMA is providing a great deal of data
and services, but let me know if there is something that I can do.
Are all of the "Responders" aware of the hazards and PPE needs? I know the
AF is pretty well covered.
On a note of finance. Have they set up a financial cost center?
Regards, Jon

Jonathan B. Mullin
Manager Operational Safety
Emergency Preparedness Coordinator
Headquarters National Aeronautics and Space Administration
Phone (202) 358-0589
FAX (202) 358-3104
"Mission Success Starts with Safety"

X-Authentication-Warning: spinoza.public.hq.nasa.gov: majordom set sender to owner-code-q using -f
X-Sender: jlloyd@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Fri, 07 Feb 2003 08:18:10 -0500
To: code-q@lists.hq.nasa.gov, smadir@hq.nasa.gov
From: James Lloyd <jlloyd@hq.nasa.gov>
Subject: Fwd: Re: Questions
Sender: owner-code-q@lists.hq.nasa.gov

Dear All,

I started to write a note to tell you that Bryan is proud of the SMA team and its selfless effort to support the Agency but I thought it better to let Bryan's words speak for him. I add my thanks to your untiring efforts... too bad it had to snow 7 inches here in Washington last evening (I bet it snowed in Cleveland also!), it has complicated an already complex operation. Continue to keep your minds open to all possibilities as causes for this catastrophic loss of crew and vehicle.

Keep your chins high and once in a while pause and take a deep breath to collect your perspective. We've got many days of tough work ahead so meter yourself accordingly. No one person is going to solve this accident in the first week as much as we would like to all do that.

Regards,

X-Sender: boconnor@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Fri, 07 Feb 2003 08:05:37 -0500
To: James Lloyd <jlloyd@hq.nasa.gov>
From: boconnor <boconnor@hq.nasa.gov>
Subject: Re: Questions

Jim,
Good show...pass my thanks on to the team.
We were in the debris field 2 days ago.....I'm getting choked up just trying to type this.....the people all over the area are stopping their cars and getting out and putting flowers and small American flags all around pieces of tile and metal and other debris. And the volunteers and police and forest service and FEMA and national guard troops who have all been quickly trained and deputized to record and recover the debris are taking their pictures without removing the flowers and flags out of respect...we had to tell them it was OK!
Again, tell the gang I'm proud of them.
Best,

At 05:46 PM 2/6/2003 -0500, you wrote:
Bryan,

We have decided to provide you the entire list of questions in order to establish a new

baseline. Please discard previous list as this contains all up to 2 PM on Thursday (I hope it doesn't upset any system you have set up). We can assemble a package that has paper copies of everything (questions, offer of assistance, and Q internal actions) through the end of the week if you think you may stop by the office over the week end. Let me know.

Things are progressing well under the circumstances; we are preparing a Q&A batch of topics for Sean O'Keefe for review on the week-end. We have a 9 PM deadline on Friday so people have been assigned chunks of this to work. Paul Pastorak is pulling all the inputs together for the global effort of which we are a part. Michael seems very satisfied with how we have set this process up to assure that we cover the entire spectrum of topical areas for safety and mission success activity for NASA.

Regards,
Jim

O'C

Bryan O'Connor
Associate Administrator
Office of Safety and Mission Assurance

Jim

X-Sender: jmullin@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Sat, 01 Feb 2003 18:11:37 -0500
To: robert.t.gaffney1@jsc.nasa.gov
From: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
Subject: Fwd: Debris Sighting
Cc: boconnor@hq.nasa.gov, jlloyd@hq.nasa.gov, rwillia3@mail.hq.nasa.gov, snakamur@ems.jsc.nasa.gov, elmer.r.johnson1@jsc.nasa.gov, jlemke@hq.nasa.gov, Pete Rutledge <prutledg@hq.nasa.gov>

Communications update, this is a Fire Captain, not a NAVAL Officer or Naval Installation as was reported. Keep close hold. Regards, Jon

From: EST-OPS <EST-OPS@fema.gov>
To: '"jmullin@hq.nasa.gov"' <jmullin@hq.nasa.gov>
Subject: Debris Sighting
Date: Sat, 1 Feb 2003 17:28:58 -0500
Importance: high
X-Mailer: Internet Mail Service (5.5.2656.59)

Jonathan:

I received a call from our FEMA Region VI ROC regarding a large piece of debris found in the vicinity of Burleson and Joshua, TX. The POC is Captain Guess (Fire and Emergency Services Dept.) at the Joint Reserve Base in Forth Worth, TX at (817) 782-6330. He was contacted by local law enforcement in Joshua, TX. His forces have been directed to mobilize to the site to secure and protect the debris until NASA resources provide further direction.

David Duffer
FEMA HQ EST
(202) 646-3532

Jonathan B. Mullin
Manager Operational Safety
Emergency Preparedness Coordinator
Headquarters National Aeronautics and Space Administration
Phone (202) 358-0589
FAX (202) 358-3104
"Mission Success Starts with Safety"

From: "GAFFNEY, ROBERT T. (JSC-JA171) (NASA)" <robert.t.gaffney@nasa.gov>
To: "'Jonathan B. Mullin'" <jmullin@hq.nasa.gov>
Subject: RE: Debris Sighting
Date: Sat, 1 Feb 2003 19:08:13 -0600
X-Mailer: Internet Mail Service (5.5.2653.19)

We already have this report and have spoken with Captain Guess this afternoon. He is faxing his information to D. Whittle per instructions.

Bob Gaffney
JSC Emergency Preparedness Manager
(281) 483-4249

-----Original Message-----
From: Jonathan B. Mullin [mailto:jmullin@hq.nasa.gov]
Sent: Saturday, February 01, 2003 5:12 PM
To: GAFFNEY, ROBERT T. (JSC-JA171) (NASA)
Cc: boconnor@hq.nasa.gov; jlloyd@hq.nasa.gov; rwillia3@mail.hq.nasa.gov; NAKAMURA, STACEY T. (JSC-NS) (NASA); JOHNSON, ELMER R. (JSC-NS) (NASA); jlemke@hq.nasa.gov; Pete Rutledge
Subject: Fwd: Debris Sighting
Importance: High

Communications update, this is a Fire Captain, not a NAVAL Officer or Naval Installation as was reported. Keep close hold. Regards, Jon
>From: EST-OPS <EST-OPS@fema.gov>
>To: "'jmullin@hq.nasa.gov'" <jmullin@hq.nasa.gov>
>Subject: Debris Sighting
>Date: Sat, 1 Feb 2003 17:28:58 -0500
>Importance: high
>X-Mailer: Internet Mail Service (5.5.2656.59)
>
> Jonathan:
>
> I received a call from our FEMA Region VI ROC regarding a large
>piece of debris found in the vicinity of Burleson and Joshua, TX. The POC
>is Captain Guess (Fire and Emergency Services Dept.) at the Joint Reserve
>Base in Forth Worth, TX at (817) 782-6330. He was contacted by local law
>enforcement in Joshua, TX. His forces have been directed to mobilize to
the
>site to secure and protect the debris until NASA resources provide further
>direction.
>
> David Duffer
> FEMA HQ EST

> (202) 646-3532
Jonathan B. Mullin
Manager Operational Safety
Emergency Preparedness Coordinator
Headquarters National Aeronautics and Space Administration
Phone (202) 358-0589
FAX (202) 358-3104
"Mission Success Starts with Safety"

X-Sender: jlloyd@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Sat, 01 Feb 2003 14:38:10 -0500
To: Frank Mortelliti <Frank.P.Mortelliti@jpl.nasa.gov>
From: James Lloyd <jlloyd@hq.nasa.gov>
Subject: Re: Any assistance needed
Cc: jlemke <jlemke@hq.nasa.gov>, wfrazier@hq.nasa.gov, jmullin@hq.nasa.gov

Thanks Frank. We'll be in touch if need arises. You've received word that Safety Directors' meeting at Cocoa Beach is canceled?

Plan accordingly.

At 10:51 AM 2/1/2003 -0800, Frank Mortelliti wrote:
Jim, needless to say, any help you feel JPL can offer, let us know-- Frank

Jim

Reply-To: jlloyd@mail.hq.nasa.gov
X-Originating-IP: 68.100.166.170
X-URL: http://mail2web.com/
From: "jlloyd@mail.hq.nasa.gov" <jlloyd@mail.hq.nasa.gov>
To: dsaleeba@hq.nasa.gov, jpiaseck@hq.nasa.gov
Cc: , jmullin@mail.hq.nasa.gov,
frank.a.chavez@dfrc.nasa.gov, vincent.kinsey@dfrc.nasa.gov,
lawrence.davis@dfrc.nasa.gov, gwen.young@dfrc.nasa.gov,
jlloyd@mail.hq.nasa.gov
Subject: RE: Status request: Sat Phone Deployement
Date: Sun, 2 Feb 2003 02:46:56 -0500
X-OriginalArrivalTime: 02 Feb 2003 07:46:56.0607 (UTC) FILETIME=[429636F0:01C2CA8F]

Dave,
I am forwarding this request on to you in the interest of accelerating a response.

Please advise as to priority of the need for satellite phone and web/eoc from DFRC for use in support of recovery operations. There is concern that hardware without training or without an operator is of little use or utility. Is priority high enough to justify dispatch of equipment and operator to operating location? Please reply all.

Jim Lloyd
202-358-0557

Original Message:

From: Tom and Susan Ambrose tsambrose@dslextreme.com
Date: Sat, 1 Feb 2003 23:17:29 -0600
To: jmullin@mail.hq.nasa.gov, frank.a.chavez@dfrc.nasa.gov, vincent.kinsey@dfrc.nasa.gov, lawrence.davis@dfrc.nasa.gov, gwen.young@dfrc.nasa.gov, jlloyd@mail.hq.nasa.gov
Subject: Status request: Sat Phone Deployement

Jon Mullin, Code Q HQ Chief,
Operational Safety, Agency Emergency Preparedness Coordinator.

Per our conversation of this day and your request for follow up report- the following is the status/apprx.times of actions of the day regarding of the test and evaluation assets purchased under HQ Code Q emergency preparedness study development funds for phase 1, phase 2 WebEOC project.
a.: Early AM, upon ID of Columbia mishap, cancelled travel enroute to Safety Mgrs. mtg. Cocoa Beach, returned home.
b.: Mid-Late AM received first call from Frank Chavez, NASA DFRC Chief of Security stating that NASA HQ Security Mr. Saleeba (sp?) AA for Security.

had passed request/direction that Sat Phone assets under my control be transferred to Mr. Chavez for a shuttle mishap related contingency(at this point I was unclear where and for what-I believed it was for EdwardsAFB). Our assets were deployed remote from DFRC for test and evaluation of WebEOC test plan as of 1-31-03. Informed Mr. Chavez I would track down and advise.After several attempts to contact the person conducting WebEOC test points (Vincent.Kinsey, Platinum Int., IT/Programmer technical expert in my office support contract, conducting the test), I was able to establish contact with Mr. Kinsey and direct/authorize him(as COTR of the contract and in Consultation with his site manager, Mr. Bill Smith) to DFRCand direct contact with Mr. Chavez with the Satellite Phone Assets (and additional GPS and laser range finder assets). It was determined in phone conversation with Mr. Chavez and Mr. Kinsey that the resources would be without merit without some instruction. Written procedures not adequate with equipment, Mr. Kinsey volunteered to develop this on site with Mr. Chavez so that this would accompany deployment. Mr. Kinsey would develop written procedure as well as conduct on site tutorials in usage.

c.. In follow up conv/w/Mr.Chavez it was clarified that the phone/equip deployment was for contingency at the Columbia debris field in the Texas area, my phone conv/w/you at mid day was in confirmation of this. Additionally Mr. Chavez conveyed to me that Mr. Saleeba's request was in concert with FEMA request, which I conveyed during our conv.. Per our discussion, and in concert with all actions of the day, I attempted to facilitate requests to the limits of my authority(and with coordination and approval of L.Davis, DFRC Director S&MA).

d.. A significant amount of time for Mr. Kinsey on site was spent configuring for readiness, a back up sat phone and charging all equipment for readiness. Mr. Kinsey, coordinated with the satellite service provider with account required information and has arrange password operations for equipment so that it will be ready to operate in the field.

a.. During the day, in concert with your input, I had discussions and concurrence with Mr. Chavez and Mr. Kinsey regarding the need for hand receipts and chain of custody for the equipment purchased under your study money which was proposed for operational deployment.

e.. At last conversation with Mr. Kinsey at apprx. 9:45 PM Pacific., he informed me that most of the technical tasks had been performed and that he had follow up training to do with Mr. Chavez's personnel tomorrow.

f.. One significant item which Mr. Kinsey brought up, was discussion with Mr. Chavez on the availability of Mr. Kinsey to deploy if necessary in order to instruct on operation of this equipment. My response was that our use of the equipment had been for study to this point. My assumption, it that NASA/FEMA expertise exists in the field use of this equipment. If it does not, I am unsure of the benefit of deploying my IT resource to the debris field for undetermined objective or timeframe. I understand that this may be a required alternative. My request is that this decision be discussed between Mr. Saleeba's office and yourself/Code Q as required. This is a national issue and if necessary would appreciate a coordinated priority from your office.. In the mean time, we are supporting to the

limits of our ability.

If you have any questions you have my l
and my email as reply to above.

Tom

From: "Miller, Cathy" <Catherine.M.Miller@nasa.gov>
To: "'jmullin@hq.nasa.gov'" <jmullin@hq.nasa.gov>
Subject: Initial status report from Marshall Space Flight Center (all times CST)
Date: Sat, 1 Feb 2003 13:07:55 -0600
X-Mailer: Internet Mail Service (5.5.2653.19)


Initial status report from Marshall Space Flight Center.doc

Initial status report from Marshall Space Flight Center (all times CST)
Reference: 2/1/2003 Shuttle incident

0840 Agency Deputy CIO for NISSU Operations, Rick Helmick, called EMD, Jim Carter, regarding incident and conferenced appropriate personal, including Sheila Cloud, Center Operations Director. Rick Helmick reported that data associated with STS-107 was being locked down and secured. Security reported that 3 key facilities (4207, 4663, and 4629) containing that data were locked down and guards posted.

0930 EMD arrived onsite: HQ Code X, Dave Saleeba, asked for several of our security team members to travel to Texas, along with Dave King, our Deputy Center Director. Logistical efforts were implemented to use NASA3 for their air travel, and to secure appropriate rental cars from CI Travel.

0940 EMD requested lockdown of the photo analysis area in Building 4203 with guards posted. EMD requested Cathy Miller, EPO, to report to EOC.

0950 Redstone Arsenal Garrison Commander, Col Bob Devlin, called to offer whatever assistance we needed from the Army at Redstone Arsenal.

1000 EPO reported for duty. A review of the Space Shuttle Contingency Plan was accomplished and appropriate action taken.

1000 Center Director led a meeting with his direct reports.

1030 EOC was activated. Continuation of logistical efforts for NASA3 to depart at noon for Texas with appropriate personnel.

1100 EMD reported to EOC.

1115 EOC called Jon Mullins (HQ) at home to advise of activation. His wife replied that he was at work. EOC left voice mail on HQ EOC work phone and email message.

1135 EOC contacted Ernie Graham at MAF (and verified that he is on call at home).

X-Sender: cx67115@pop3.citynet.net
X-Mailer: QUALCOMM Windows Eudora Version 5.1
Date: Sat, 01 Feb 2003 12:00:12 -0500
To: helpdesk.msfc@msfc.nasa.gov
From: Jerry Johnson <oldhouse@citynet.net>
Subject: NASA Aircraft Utilization
Cc: Jabbed@hq.nasa.gov, kurt.blankenship@grc.nasa.gov, g.e.brown@larc.nasa.gov, larry.fine@msfc.nasa.gov, david.h.finney1@jsc.nasa.gov, ehurley@hq.nasa.gov, gjohnso1@hq.nasa.gov, al.manson1@jsc.nasa.gov, robert.j.naughton1@jsc.nasa.gov, george.phillips-2@ksc.nasa.gov, george.w.postell.1@gsfc.nasa.gov, wreaddy@hq.nasa.gov, rieke@grc.nasa.gov, richard.c.rogers.1@gsfc.nasa.gov, robert.w.schutte@grc.nasa.gov, richard.smith@msfc.nasa.gov, jsutton@hq.nasa.gov, Albert.taff-1@ksc.nasa.gov, gtiffany@arc.nasa.gov, t.l.trexler@larc.nasa.gov, katie.wallace@ssc.nasa.gov, Jwatts@hq.nasa.gov, murramc@kscgws00.ksc.nasa.gov, ed.lewis@dfrc.nasa.gov, Carol.W.Barrineau.1@gsfc.nasa.gov, ann.papendorf1@jsc.nasa.gov, h.a.verstynen@larc.nasa.gov, geraldine.m.ziemba@grc.nasa.gov, john.d.breitenbach1@jsc.nasa.gov, cyuhas@hq.nasa.gov, skilrain@hq.nasa.gov, david.lengyel@hq.nasa.gov, susan.burch@hq.nasa.gov, gary.krier@dfrc.nasa.gov, gordon.fullerton@dfrc.nasa.gov, mstites@hq.nasa.gov, Jlwhite.1@gsfc.nasa.gov, joseph.walker@hq.nasa.gov, rdilustr@hq.nasa.gov, brian.oconnor@hq.nasa.gov, thomas.marple@osha.gov, mgaier@hq.nasa.gov, jmullin@hq.nasa.gov, regina.smith@msfc.nasa.gov, jay.henn@hq.nasa.gov, whall@arc.nasa.gov, brian.oconnor@hq.nasa.gov, john.stumpf@hq.nasa.gov, john.stumpf@hq.nasa.gov, Debbie.Bowerman@msfc.nasa.gov, brock.r.stone1@jsc.nasa.gov, stephanie.a.wells1@jsc.nasa.gov, terry.b.pappas1@jsc.nasa.gov, gcreedon@hq.nasa.gov

For MSFC Communications Center:

This message is forwarded at the request of Mr. Jeffrey Sutton, NASA HQ/Assistant Administrator for Management Systems concerning the use of NASA aircraft in light of the current circumstances surrounding the Columbia disaster. It should be forwarded directly (not e-mailed) and immediately to NASA Center Directors.

The policy restriction on the use of NASA Program Support aircraft for Mission Management (administrative) purposes is lifted until further notice in order to make full use of aviation resources available to Center Directors to assist in emergency response and investigation. In addition, Flexjet is available for use upon request to Wallops Flight Facility.

If there are questions, please contact HQ/Mr. Joe Walker at 202-358-4637 (wk) ‹ or HQ/Mr. Gerald Johnson at 202-359-2326 (wk) ‹ POC for Flexjet is WFF/Janie Penn 757-824-1374 ‹

Thanks.
Jerry

Gerald E. Johnson
Lt.Col. USMCR (Ret.)
Mgr., Mission Management Aircraft
NASA Headquarters, Code JP
Aircraft Management Office
Washington, DC 20546
202-358-2326
Fax 202-358-3235
gjohnso1@hq.nasa.gov

X-Sender:
X-Mailer: QUALCOMM Windows Eudora Version 5.1
Date: Sat, 01 Feb 2003 12:00:12 -0500
To: helpdesk.msfc@msfc.nasa.gov
From:
Subject: NASA Aircraft Utilization
Cc: Jabbed@hq.nasa.gov, kurt.blankenship@grc.nasa.gov, g.e.brown@larc.nasa.gov, larry.fine@msfc.nasa.gov, david.h.finney1@jsc.nasa.gov, ehurley@hq.nasa.gov, gjohnso1@hq.nasa.gov, al.manson1@jsc.nasa.gov, robert.j.naughton1@jsc.nasa.gov, george.phillips-2@ksc.nasa.gov, george.w.postell.1@gsfc.nasa.gov, wreaddy@hq.nasa.gov, rieke@grc.nasa.gov, richard.c.rogers.1@gsfc.nasa.gov, robert.w.schutte@grc.nasa.gov, richard.smith@msfc.nasa.gov, jsutton@hq.nasa.gov, Albert.taff-1@ksc.nasa.gov, gtiffany@arc.nasa.gov, t.l.trexler@larc.nasa.gov, katie.wallace@ssc.nasa.gov, Jwatts@hq.nasa.gov, murramc@kscgws00.ksc.nasa.gov, ed.lewis@dfrc.nasa.gov, Carol.W.Barrineau.1@gsfc.nasa.gov, ann.papendorf1@jsc.nasa.gov, h.a.verstynen@larc.nasa.gov, geraldine.m.ziemba@grc.nasa.gov, john.d.breitenbach1@jsc.nasa.gov, cyuhas@hq.nasa.gov, skilrain@hq.nasa.gov, david.lengyel@hq.nasa.gov, susan.burch@hq.nasa.gov, gary.krier@dfrc.nasa.gov, gordon.fullerton@dfrc.nasa.gov, mstites@hq.nasa.gov, Jlwhite.1@gsfc.nasa.gov, joseph.walker@hq.nasa.gov, rdilustr@hq.nasa.gov, brian.oconnor@hq.nasa.gov, thomas.marple@osha.gov, mgaier@hq.nasa.gov, jmullin@hq.nasa.gov, regina.smith@msfc.nasa.gov, jay.henn@hq.nasa.gov, whall@arc.nasa.gov, brian.oconnor@hq.nasa.gov, john.stumpf@hq.nasa.gov, john.stumpf@hq.nasa.gov, Debbie.Bowerman@msfc.nasa.gov, brock.r.stone1@jsc.nasa.gov, stephanie.a.wells1@jsc.nasa.gov, terry.b.pappas1@jsc.nasa.gov, gcreedon@hq.nasa.gov

For MSFC Communications Center:

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If there are questions, please contact HQ/Mr. Joe Walker at 202-358-4637 (wk)
HQ/Mr. Gerald Johnson at 202-359-2326 (wk) . POC for Flexjet is WFF/Janie Penn 757-824-1374 .

From: Wayne Kee <Wayne.Kee-1@ksc.nasa.gov>
To: <jmullin@hq.nasa.gov>
X-your-intranet: http://107team.intranets.com
X-Intranets-helpdesk: mailto:help@intranets.com
Date: Sun, 02 Feb 2003 17:19:19 GMT
X-mailer: AspMail 4.0 4.03 (SMT412E7EF)
Subject: On Site at BAFB
X-OriginalArrivalTime: 02 Feb 2003 17:19:20.0023 (UTC) FILETIME=[38DB9E70:01C2CADF]

NASA KSC Emergency Preparedness and Security Team set up at Barksdale AFB, LA.

Thanks.
Jerry

Gerald E. Johnson
Lt.Col. USMCR (Ret.)
Mgr., Mission Management Aircraft
NASA Headquarters, Code JP
Aircraft Management Office
Washington, DC 20546
202-358-2326
Fax 202-358-3235
gjohnso1@hq.nasa.gov

X-Sender: jlemke@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Sun, 02 Feb 2003 14:52:40 -0500
To: jmullin@mail.hq.nasa.gov
From: jlemke <jlemke@hq.nasa.gov>
Subject: Fwd: FW: FW: New Website for JSC Employees: Shuttle Columbia Tragedy

From: "NAKAMURA, STACEY T. (JSC-NS) (NASA)" <stacey.t.nakamura@nasa.gov>
To: "'jlemke@hq.nasa.gov'" <jlemke@hq.nasa.gov>,
"'jmullin@hq.nasa.gov'"
<jmullin@hq.nasa.gov>
Subject: FW: FW: New Website for JSC Employees: Shuttle Columbia Tragedy
Date: Sun, 2 Feb 2003 13:50:04 -0600
X-Mailer: Internet Mail Service (5.5.2653.19)

Stacey T. Nakamura
Phone: (281) 483-4345
Fax: (281) 483-6275

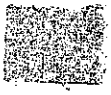
-----Original Message-----
From: James Lloyd [mailto:jlloyd@hq.nasa.gov]
Sent: Sunday, February 02, 2003 12:00 PM
To: smadir@hq.nasa.gov
Cc: NAKAMURA, STACEY T. (JSC-NS) (NASA)
Subject: Fwd: FW: New Website for JSC Employees: Shuttle Columbia Tragedy

Dear SMA Director,

Stacey has passed this information along for insight into information about STS107.

>From: "NAKAMURA, STACEY T. (JSC-NS) (NASA)" <stacey.t.nakamura@nasa.gov>
>To: "'Jonathan B. Mullin'" <jmullin@hq.nasa.gov>, jlloyd@hq.nasa.gov
>Subject: FW: New Website for JSC Employees: Shuttle Columbia Tragedy
>Date: Sun, 2 Feb 2003 10:07:57 -0600
>X-Mailer: Internet Mail Service (5.5.2653.19)
>
>FYI...very helpful information. Mike Stewart is the IT guru at JSC Human
>Resources. The websites he creates are often cloned for other Centers, so

>he may have already set up similar website for the Agency. But, just in
>case, here is the weblink. You may want to reforward to the S&MA email
>distribution.
>
>Regards,
>Stacey
>
>-
>Stacey T. Nakamura
>Phone: (281) 483-4345
>Fax: (281) 483-6275
>
> > -----Original Message-----
> > From: HR-E-Mail Notification System
> > Sent: Saturday, February 01, 2003 6:17 PM
> > To: DL JSC Civil Servants; DL JSC Contractors
> > Subject: New Website for JSC Employees: Shuttle Columbia Tragedy
> >
> > We've activated a new webpage to assist you and your co-workers within
> the
> > JSC workforce as we deal with the Shuttle Columbia Tragedy. You may
> search
> > this page for the latest information on the Center's workforce
> activities,
> > services, and resources related to this tragedy.
> >
> > http://jscpeople.jsc.nasa.gov/columbia/
> >
> >



****

James D. Lloyd (Jim)

Acting Deputy Associate Administrator
Office of Safety and Mission Assurance
Headquarters Room 5U11
desk phone 202-358-0557

fax 202-358-3104

"Mission success stands on the foundation of our unwavering commitment to safety"
Administrator Sean O'Keefe January 2003

John Lemke
Manager, System Safety Engineering

NASA HQ, Code QS
202-358-0567 FAX 358-3104
jlemke@hq.nasa.gov
"Mission success stands on the foundation of our unwavering commitment to safety"
Administrator Sean O'Keefe January 2003

To: EPP TEAM
From: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
Subject: Fwd: STATEMENT BY THE COLUMBIA ACCIDENT INVESTIGATION BOARD (Feb. 13, 2003)
Cc:
Bcc: susan-kilrain
Attached:

Columbia information. Regards, Jon
Mailing-List: contact ksc-news_release-help@kscnews.ksc.nasa.gov; run by ezmlm
X-No-Archive: yes
list-help: <mailto:ksc-news_release-help@kscnews.ksc.nasa.gov>
list-unsubscribe: <mailto:ksc-news_release-unsubscribe@kscnews.ksc.nasa.gov>
list-post: <mailto:ksc-news_release@kscnews.ksc.nasa.gov>
Delivered-To: mailing list ksc-news_release@kscnews.ksc.nasa.gov
Delivered-To: moderator for ksc-news_release@kscnews.ksc.nasa.gov
From: "Buckingham-1, Bruce" <Bruce.Buckingham-1@nasa.gov>
To: "1 'ksc-news_release@kscnews. ksc. nasa. gov' (E-mail)" <ksc-news_release@kscnews.ksc.nasa.gov>
Subject: STATEMENT BY THE COLUMBIA ACCIDENT INVESTIGATION BOARD (Feb. 13, 2003)
Date: Thu, 13 Feb 2003 17:19:04 -0500
X-Mailer: Internet Mail Service (5.5.2656.59)

Steve Nesbitt
Columbia Accident Investigation Board Feb. 13, 2003

RELEASE: 03-072

STATEMENT BY THE COLUMBIA ACCIDENT INVESTIGATION BOARD (Feb. 13, 2003)

Note: The CAIB has asked NASA for administrative support to release information to the public and the media. The following statement was provided by the CAIB for release.

Thermal Analysis Shows Hot Plasma Possible in Columbia Left Wheel Well Area

Preliminary analysis by a NASA working group this week indicates that the temperature indications seen in Columbia's left wheel well during entry would require the presence of plasma (super heated gas surrounding the orbiter during re-entry).

Heat transfer through the structure as from a missing tile would not be sufficient to cause the temperature indications seen in the last minutes of flight.

Additional analysis is underway, looking at various scenarios in which a breach of some type, allowing plasma into the wheel well area or elsewhere in the wing, could occur.

Other flight data including gear position indicators and drag information does not support the scenario of an early deployment of the left gear.

The search continues for possible debris from Columbia in the western U.S., but as of early Thursday, no debris further west than Ft. Worth, Texas has been confirmed as Shuttle-related.

Jonathan B. Mullin
Manager Operational Safety
Emergency Preparedness Coordinator
Headquarters National Aeronautics and Space Administration
Phone (202) 358-0589
FAX (202) 358-3104
"Mission Success Starts with Safety"

To: EPP-107
From: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
Subject: Fwd: NASA SEEKS HELP FROM SKY WATCHERS
Cc:
Bcc:
Attached:

The enclosed request for **Sky Watcher** data may be redundant, if is not, please distribute to your center and appropriate authorities. Regards, Jon

Mailing-List: contact ksc-news_release-help@kscnews.ksc.nasa.gov; run by ezmlm
X-No-Archive: yes
list-help: <mailto:ksc-news_release-help@kscnews.ksc.nasa.gov>
list-unsubscribe: <mailto:ksc-news_release-unsubscribe@kscnews.ksc.nasa.gov>
list-post: <mailto:ksc-news_release@kscnews.ksc.nasa.gov>
Delivered-To: mailing list ksc-news_release@kscnews.ksc.nasa.gov
Delivered-To: moderator for ksc-news_release@kscnews.ksc.nasa.gov
From: "Buckingham-1, Bruce" <Bruce.Buckingham-1@nasa.gov>
To: "1 'ksc-news_release@kscnews. ksc. nasa. gov' (E-mail)" <ksc-news_release@kscnews.ksc.nasa.gov>
Subject: NASA SEEKS HELP FROM SKY WATCHERS
Date: Fri, 14 Feb 2003 09:51:10 -0500
X-Mailer: Internet Mail Service (5.5.2653.19)

Allard Beutel
Headquarters, Washington Feb. 13, 2003
(Phone: 202/358-0951)

Kylie Moritz
Johnson Space Center, Houston
(Phone: 281/483-5111)

NOTE TO EDITORS: n03-017

NASA SEEKS HELP FROM SKY WATCHERS

NASA is still seeking help from the American public to supply video and still images of the Space Shuttle Columbia on its return flight to Earth. There has been a great public response, but more material will help the investigation of the Columbia accident.

Columbia glided across the western U.S. just before sunrise Saturday, February 1. The Shuttle flew just north of San Francisco around 6:50 a.m. PST and broke up over eastern Texas around 8:00 a.m. CST. Any imagery, especially video, of the Shuttle's path might aid the Columbia Accident Investigation Board in determining the cause of the accident.

Media and private citizens who have video or still images of Columbia's entry path are encouraged to send it to investigators. Videotapes and photos will not be returned. For more information call:

Johnson Space Center Emergency Operations Center
(Phone: 281/483-3388)

Mail videotapes to:

NASA Johnson Space Center
Mail Code JA17
2101 NASA Road 1
Houston, Texas 77058

Email digital images to: columbiaimages@nasa.gov

-end-

* * *

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To: Tom Ambrose <Tom.Ambrose@dfrc.nasa.gov>
From: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
Subject: Fwd: COLUMBIA ASTRONAUT REMAINS IDENTIFIED
Cc:
Bcc: susan-kilrain
Attached:

Tom for your information. Jon
Mailing-List: contact ksc-news_release-help@kscnews.ksc.nasa.gov; run by ezmlm
X-No-Archive: yes
list-help: <mailto:ksc-news_release-help@kscnews.ksc.nasa.gov>
list-unsubscribe: <mailto:ksc-news_release-unsubscribe@kscnews.ksc.nasa.gov>
list-post: <mailto:ksc-news_release@kscnews.ksc.nasa.gov>
Delivered-To: mailing list ksc-news_release@kscnews.ksc.nasa.gov
Delivered-To: moderator for ksc-news_release@kscnews.ksc.nasa.gov
From: "Buckingham-1, Bruce" <Bruce.Buckingham-1@nasa.gov>
To: "'1 'ksc-news_release@kscnews. ksc. nasa. gov' (E-mail)" <ksc-news_release@kscnews.ksc.nasa.gov>
Subject: COLUMBIA ASTRONAUT REMAINS IDENTIFIED
Date: Thu, 13 Feb 2003 14:51:26 -0500
X-Mailer: Internet Mail Service (5.5.2656.59)

Glenn Mahone/Bob Jacobs
Headquarters, Washington Feb. 13, 2003
(Phone: 202/358-1600)

Eileen M. Hawley
Johnson Space Center, Houston
(Phone: 281/483-5111)

RELEASE: 03-070

COLUMBIA ASTRONAUT REMAINS IDENTIFIED

The remains of all seven members of Space Shuttle Columbia's crew have been positively identified at Dover Air Force Base, Del.

"We are comforted by the knowledge we have brought our seven friends home," said Bob Cabana, Director of Flight Crew Operations at the Johnson Space Center. "We are deeply indebted to the communities and volunteers who made this homecoming possible, and brought peace of mind to the crew's families, and the entire NASA family," he said.

The seven astronauts, Rick Husband (Colonel, USAF), Willie McCool (Commander, USN), Michael Anderson (Lieutenant

Colonel, USAF), David Brown (Captain, USN), Kalpana Chawla, Laurel Clark (Commander, USN), and Ilan Ramon (Colonel, Israel Air Force), died Saturday, Feb. 1, 2003, when the Space Shuttle Columbia broke up over the southwest United States.

Private memorial services for the crewmembers will take place within the next few weeks. Burial services for Ilan Ramon took place February 11 in Israel.

-end-

* * *

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Jonathan B. Mullin

Manager Operational Safety
Emergency Preparedness Coordinator
Headquarters National Aeronautics and Space Administration
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"Mission Success Starts with Safety"

From: "Camomilli-1, Guy" <Guy.S.Camomilli@nasa.gov>
To: "'Jonathan B. Mullin'" <jmullin@hq.nasa.gov>
Cc: "Angotti, Cathy" <cangotti@hq.nasa.gov>
Subject: RE: airborne sensor to detect/map Colombia debris
Date: Mon, 3 Feb 2003 10:31:32 -0500
X-Mailer: Internet Mail Service (5.5.2656.59)

Jon,

This isn't what I originally thought it was. It may be a good tool. More information is needed.

Guy Camomilli, MPH, CSP
Senior Environmental Health Officer,
OCHMO Tenant Office
guy.camomilli-1@ksc.nasa.gov
Voice (321) 867-1417
Fax (321) 867-8870

-----Original Message-----
From: Jonathan B. Mullin [mailto:jmullin@hq.nasa.gov]
Sent: Monday, February 03, 2003 10:18 AM
To: Guy.S.Camomilli@nasa.gov
Subject: Fwd: airborne sensor to detect/map Colombia debris

>X-Sender: jlloyd@mail.hq.nasa.gov
>X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
>Date: Sun, 02 Feb 2003 18:37:34 -0500
>To: hcat@hq.nasa.gov
>From: James Lloyd <jlloyd@hq.nasa.gov>
>Subject: Fwd: airborne sensor to detect/map Colombia debris
>Cc: prutledg@hq.nasa.gov, jmullin@mail.hq.nasa.gov
>
>Bill Hill and/or Bihner,
>
>Can this offer of assistance be relayed to whomever needs to rule on
>whether it is something desired.
>I would suggest Dave Whittle's operation is the direct beneficiary.
>
>>From:
>>To: "'boconnor@mail.hq.nasa.gov'" <boconnor@mail.hq.nasa.gov>
>>Cc: "'jlloyd@mail.hq.nasa.gov'" <jlloyd@mail.hq.nasa.gov>
>>Subject: airborne sensor to detect/map Colombia debris
>>Date: Sun, 2 Feb 2003 17:20:00 -0600
>>X-Mailer: Internet Mail Service (5.5.2653.19)
>>

the Kennedy runway still nearly 3,000 mi. away.

That initial bank had been as steep as about 80 deg. between Hawaii and the California coast, a normal flight path angle for the early part of the reentry. The abnormal events seen on orbiter telemetry in Houston indicate a slow penetration of reentry heat into the orbiter and damage on the wing, overpowering the flight control system. Key events were:

* 7:52 a.m. CST: Three left main landing gear brakeline temperatures show an unusual rise. "This was the first occurrence of a significant thermal event in the left wheel well," Dittemore said. Engineers do not believe the left wheel well was breached, but rather that hot gasses were somehow finding a flow path within the wing to reach the wheel well.

* 7:53 a.m. CST: A fourth left brakeline strut temperature measurement rose significantly -- about 30-40 deg. in 5 min.

* 7:54 a.m. CST: With the orbiter over eastern California and western Nevada, the mid-fuselage mold line where the left wing meets the fuselage showed an unusual temperature rise. The 60F rise over 5 min. was not dramatic, but showed that something was heating the wing fuselage interface area at this time. Wing leading edge and belly temperatures were over 2,000F. While the outside fuselage wall was heating, the inside wall remained cool as normal.

* 7:55 a.m. CST: A fifth left main gear temperature sensor showed an unusual rise.

* 7:57 a.m. CST: As Columbia was passing over Arizona and New Mexico, the orbiter's upper and lower left wing temperature sensors failed, probably indicating their lines had been cut. The orbiter was also rolling back to the left into about a 75-deg. left bank angle, again to dissipate energy and for navigation and guidance toward Runway 33 at Kennedy, then about 1,800 mi. away.

* 7:58 a.m. CST: Still over New Mexico, the elevons began to move to adjust orbiter roll axis trim, indicating an increase in drag on the left side of the vehicle. That could be indicative of "rough tile or missing tile but we are not sure," Dittemore said. At the same time, the elevons were reacting to increased drag on the left side of the vehicle, the left main landing gear tire pressures and wheel temperature measurements failed. This was indicative of a loss of the sensor, not the explosion or failure of the left main gear tires, Dittemore believes. The sensors were lost in a staggered fashion.

* 7:59 a.m. CST: Additional elevon motion is commanded by the flight control system to counteract right side drag. The drag was trying to roll the vehicle to the left, while the flight control system was commanding the

elevons to roll it back to the right.

But the rate of left roll was beginning to overpower the elevons, so the control system fired two 870-lb. thrust right yaw thrusters to help maintain the proper flight path angle. The firing lasted 1.5 sec. and, along with the tire pressure data and elevon data, would have been noted by the pilots.

At about this time, the pilots made a short transmission that was clipped and essentially unintelligible

In Mission Control, astronaut Marine Lt. Col. Charles Hobaugh, the spacecraft communicator on reentry flight director Leroy Cain's team, radioed "Columbia we see your tire pressure [telemetry[messages and we did not copy your last transmission."

One of the pilots then radioed "Roger," but appeared to be cut off in mid transmission by static. For a moment there was additional static and sounds similar to an open microphone on Columbia but no transmissions from the crew.

All data from the orbiter then stopped and the position plot display in Mission Control froze over Texas, although an additional 30 sec. of poor data may have been captured.

Controllers in Mission Control thought they were experiencing an unusual but non-critical data drop out. But they had also taken notice of the unusual buildup of sensor telemetry in the preceding few minutes.

About 3 min. after all data flow stopped, Hobaugh in mission control began transmitting in the blind to Columbia on the UHF backup radio system. "Columbia, Houston, UHF comm. check" he repeated every 15-30 sec., but to no avail. In central Texas, thousands of people at that moment were observing the orbiter break up at Mach 18.3 and 207,000 ft.

Milt Heflin, Chief of the Flight Director's office said he looked at the frozen data plots. "I and others stared at that for a long time because the tracking ended over Texas. It just stopped. It was was then that I reflected back on what I saw [in Mission Control] with Challenger."

The loss of Challenger occurred 17 years and four days before the loss of Columbia.

"Our landscape has changed," Heflin said. "The space flight business today is going to be much different than yesterday.

"It was different after the Apollo fire, it was different after Challenger."

Columbia, the first winged reusable manned spacecraft first launched in April 1981, was lost on her 28th mission on the 113th shuttle flight.

FW AF Photos on loss of shuttl1

X-Info: ODIN / NASA Glenn Research Center
X-Sender: rqremp@popserve.grc.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 5.1.1
Date: Mon, 10 Feb 2003 11:28:07 -0500
To: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
From: Kerry L Remp <Kerry.L.Remp@nasa.gov>
Subject: Re: Fwd:

Thanks, Jon - I left a phone message for Mike - we'll talk sometime this week.
Kerry

At 11:16 AM 2/10/2003 -0500, you wrote:
Kerry, can you help Mike Rewis with his question? Regards, Jon
From: "Rewis, Mike J" <Mike.J.Rewis@nasa.gov>
To: "'Jonathan B. Mullin'" <jmullin@hq.nasa.gov>
Subject:
Date: Thu, 6 Feb 2003 09:17:04 -0600
X-Mailer: Internet Mail Service (5.5.2653.19)

I know this is a bad time (for all of us). We are all greatly distressed by the events of last weekend. We have just gotten done with an SSC tribute to STS-107 with many visiting dignitaries. However, I am being asked about the latest plans for the IRIS system follow-on. We (our FOSC) are getting ready to launch a new mishap tracking program which, if presentations are any indication, has promise. The question existing in the office is the interface between this program and any New HQ system. I noticed that Kerry Remp was slated for a presentation at the manager's meeting. Would it be possible for us to get a copy of that - assuming it will help. Thank you.
Jonathan B. Mullin
Manager Operational Safety
Emergency Preparedness Coordinator
Headquarters National Aeronautics and Space Administration
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"Mission Success Starts with Safety"

Kerry L. Remp, Deputy Program Manager
NASA Assurance Technology Center
22800 Cedar Point Road
Cleveland, Ohio 44142
http://atc.nasa.gov
(440) 962-3188

Have You Made a Difference Today?

Jonathan B. Mullin, 08:46 AM 2/3/2003 -0500, Barksdale EOC Operations /Lufkin Communications

X-Sender: jmullin@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Mon, 03 Feb 2003 08:46:11 -0500
To: jlloyd@hq.nasa.gov, whill@hq.nasa.gov
From: "Jonathan B. Mullin" <jmullin@hq.nasa.gov>
Subject: Barksdale EOC Operations /Lufkin Communications Numbers
Cc: boconnor@hq.nasa.gov, Wayne Kee <Wayne.Kee-1@ksc.nasa.gov>,
jpiaseck@hq.nasa.gov, michael.stevens-2@ksc.nasa.gov,
robert.t.gaffney1@jsc.nasa.gov, prutledg@hq.nasa.gov,
jlemke@hq.nasa.gov

Mr. Wayne Kee Emergency Preparedness Coordinator for the Kennedy Space Center is in place and operational at Barksdale Air Force Base. The Emergency Operations Center (EOC) work area to which he is assigned is Security and Emergency Services.

Barksdale EOC Numbers are (318) 456-7261/7259.
Mr. Wayne Kee

Lufkin Communications Center (this center is NASA operated) with the following numbers: **(936) 699-1017 or 1014/1015/1019.** NASA Code X informs Code Q that any NASA person deployed in that area can be contacted by calling the aforementioned numbers.

Regards, Jon

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