

From: BOConnor@hq.nasa.gov
Subject: Fw: Air Force photos
Date: Fri, 28 Feb 2003 07:13:17 -0500
To: mcard@hq.nasa.gov
X-MIMETrack: Serialize by Router on bes1/HQ/NASA(Release 5.0.11 |July 24, 2002) at
02/28/2003
07:13:18 AM

From: Bryan O'Connor
Sent: 02/28/2003 07:09 AM
To: SOKeefe@hq.nasa.gov
Subject: Air Force photos

Sean,

I had no idea the Congress would be so interested in the decision to turn on or off the Air Force photography during 107.

I personally heard about it through my safety guy Mike Card. He told me somewhere around the middle of the mission that the Air Force was standing by to support if needed. I told him that the folks in Mission Control would make the call if they needed help. That was the last I heard of it. I did not even call JSC about it because I thought they were simply working a relatively minor issue (no flight safety implications).

Hope this helps in the category of who knew what when.

Best,
O'C

X-Sender: jlloyd@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Tue, 04 Feb 2003 11:12:31 -0500
To: jlemke@hq.nasa.gov
From: James Lloyd <jlloyd@hq.nasa.gov>
Subject: PRP
Cc: prutledg@hq.nasa.gov, prichard@hq.nasa.gov, mcard@hq.nasa.gov

Can you frame a question for the CAIB set that doesn't mention PRP but does ask how NASA assures that people having access to the hardware and software have only the most honorable intentions?

Pass to me and we'll put on the CAIB list that Pam is building.

Jim

X-Authentication-Warning: spinoza.public.hq.nasa.gov: majordom set sender to owner-code-q using -f
X-Sender: prutledg@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Tue, 04 Feb 2003 12:20:54 -0500
To: jlloyd@hq.nasa.gov
From: Pete Rutledge <prutledg@hq.nasa.gov>
Subject: Fwd: Questions/issues for Bryan's use
Cc: code-q@lists.hq.nasa.gov
Sender: owner-code-q@lists.hq.nasa.gov

Jim,

Attached is first batch of questions/issues for Bryan's use on the Columbia Accident Investigation Board. These are a combination of inputs from SMA Directors and from OSMA staff members; Pam Richardson is pulling them together and maintaining the list. We would propose that you send to Bryan daily--only the new questions/issues (to minimize e-mail download time on Bryan's end). They are numbered sequentially and in chronological order, so it will be easy to send just the new ones. By means of this e-mail, I'm sending the list of questions/issues to all OSMA staff members. As Ron Moyer suggested, seeing these questions/issues may prompt thoughts of new ones.

Suggest sending this batch to Bryan ASAP.

Thanks,

Pete

X-Sender: prichard@mail.hq.nasa.gov
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2
Date: Tue, 04 Feb 2003 11:19:40 -0500
To: Pete.Rutledge@hq.nasa.gov
From: Pamela Richardson <prichard@hq.nasa.gov>
Subject:

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
~~~~~



questionsforbryan.doc

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Peter J. Rutledge, Ph.D.  
Director, Enterprise Safety and Mission Assurance Division  
Acting Director, Review and Assessment Division  
Office of Safety and Mission Assurance  
NASA Headquarters, Code QE, Washington, DC 20546

ph: 202-358-0579  
FAX:202-358-2778  
e-mail: [pete.rutledge@hq.nasa.gov](mailto:pete.rutledge@hq.nasa.gov)

Mission Success Starts with Safety!

X-Sender: mkowales@mail.hq.nasa.gov  
X-Mailer: QUALCOMM Windows Eudora Version 4.3.2  
Date: Fri, 28 Feb 2003 15:46:35 -0500  
To: "JOHNSON, GARY W. (JSC-NA) (NASA)" <gary.w.johnson@nasa.gov>,  
"Mark Kowaleski" <mkowales@hq.nasa.gov>,  
"ERMINGER, MARK D. (JSC-NC) (NASA)" <mark.d.erminger@nasa.gov>,  
"MARSHALL, YOLANDA Y. (JSC-NA) (NASA)" <yolanda.y.marshall@nasa.gov>,  
jilloyd@mail.hq.nasa.gov, "CARD, MIKE (JSC-REMOTE)" <mcard@hq.nasa.gov>,  
prutledg@mail.hq.nasa.gov  
From: Mark Kowaleski <mkowales@hq.nasa.gov>  
Subject: RE: RTQs to address role of SMA in decision to image Columbia  
Cc: "CAZES, DAVID (JSC-NA) (SAIC)" <david.cazes1@jsc.nasa.gov>

Gary, unfortunately I won't be able to stay late because I'm heading out of town at 4:00 and I'm on another telecon right now. I don't think that there is any urgency that can't wait until Monday. I can rearrange my schedule anytime on Monday, if that works for you.

And I'd like to at least attempt to have Michael Card/Q participate in the discussion, since he is a principal with regard to interfacing with DOD.

Also, is it possible for JSC SR&QA to confirm with the Shuttle folks some of the assumptions (I talked to Mark about these).

Mark

At 01:30 PM 2/28/2003 -0600, JOHNSON, GARY W. (JSC-NA) (NASA) wrote:  
Mark Kowaleski we will call you at 4 PM HQ time/3 PM JSC to discuss the writeup. I plan to have Mark Erminger & David Cazes on the telecon. We will call your number 202-358-0751.

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

From: Mark Kowaleski [mailto:mkowales@hq.nasa.gov]  
Sent: Friday, February 28, 2003 11:29 AM  
To: JOHNSON, GARY W. (JSC-NA) (NASA); ERMINGER, MARK D. (JSC-NC) (NASA); MARSHALL, YOLANDA Y. (JSC-NA) (NASA); jilloyd@mail.hq.nasa.gov; CARD, MIKE (JSC-REMOTE); prutledg@mail.hq.nasa.gov  
Subject: RTQs to address role of SMA in decision to image Columbia

Here is a draft.

Thanks everyone for your inputs.

I'm fuzzy on a few details, but I think it is a good start.

Maybe we could have a brief telecon to discuss?

Thanks,

Mark

**HILL, PAUL S. (JSC-DA8) (NASA), 10:00 AM 2/13/2003, ESAT MRT status charts - 2-13**

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From: "HILL, PAUL S. (JSC-DA8) (NASA)" <paul.s.hill@nasa.gov>

To: MG Coordinators <mgcoor@ems.jsc.nasa.gov>,  
DL ESAT

<DL-ESAT@ems.jsc.nasa.gov>,  
"MCCORMACK, DONALD L. (DON) (JSC-MV6) (NASA)"

<donald.l.mccormack@nasa.gov>,  
"HARPOLD, JON C. (JSC-DA) (NASA)"

<jon.c.harpold@nasa.gov>,  
"EPPS, RONALD C. (RON) (JSC-DM) (NASA)"

<ronald.c.epps@nasa.gov>,  
"COLLINS, MICHAEL F. (MIKE) (JSC-DM) (NASA)"

<michael.f.collins@nasa.gov>,  
"SHANNON, JOHN P. (JSC-DA8) (NASA)"

<john.p.shannon@nasa.gov>,  
"BRISCOE, ALAN L. (LEE) (JSC-DA) (NASA)"

<alan.l.briscoe@nasa.gov>

Subject: ESAT MRT status charts - 2-13

Date: Thu, 13 Feb 2003 08:00:47 -0600

X-Mailer: Internet Mail Service (5.5.2653.19)



MRT - ESAT 2-13.ppt

# Early Sightings

- **Las Vegas-NV 250X telescope video:**
  - Decoded and ready for review, visual tracking very poor.
- **Debris shedding event times:**
  - Work continues.
- **Relative motion and ballistics:**
  - In work for the earliest “significant” event seen in video
  - Priority for this analysis will be on the debris which appears larger and/or more dense than tile, since these are expected to have a greater chance of showing up in radar – expect several of these.
- **Radar data searches:**
  - Per the SMG:
    - » Weather radar shows only 2 low confidence hits west of Texas
    - » 1402Z at 37.26N 114.89W and 37.28N 114.52W in Nevada.
  - FAA radar searches
    - » Still waiting for ballistics on first significant event
    - » Will search the Nevada wx radar hits
    - » Will search Albuquerque, NM area based on a call that someone heard large debris.
- **Misc sensor work:**
  - Next update expected next week: NOAA and Los Alamos National Lab infrasonic data.
  - No update: USGS seismic sensors.





# DOD Data

- **Object correlated to Columbia 17 Jan ~1559Z:**
  - JSC provided materials and densities of various external components (tile, RCC, etc) for better radar data interpretation.
  - ES3/Steve Rickman will talk directly with DOD at Peterson regarding reflectivity data and details on frizzie blankets, beta cloth and other thermal blankets.
  - USAF still analyzing radar data: object still appears assymmetric, relatively light (e.g. not a metal tool) with a wide range of possible sep velocities (unofficial and preliminary analogy: object looks like a “quartz pillow”).
- **AMOS telescope video:**
  - Received a second CD of unclassified video from Maui
  - All orbit ops with payload bay towards camera, upper surfaces and leading edges are visible.
  - Some from 17 Jan, but quick scan did not show any from ~1600Z.
  - Building 8 is processing the files for Photo Assessment Team review.
- **NAVSPASUR and Beale AFS radar data during entry**
  - No update.
- **Kirtland entry photo:**
  - No update.
- **Other DOD remote sensors:**
  - No update.



To: hcat@hq.nasa.gov, boconnor@hq.nasa.gov, jlloyd@hq.nasa.gov  
From: Michael Card <mcard@hq.nasa.gov>  
Subject: Columbia launch video may show FCC tile  
Cc:  
Bcc:  
Attached:

At Jim Lloyd's direction this memo is being forwarded to propose a discussion on this video after the telecon.

This morning I received a phone call from Ivar Svendsen who previously worked at NASA, worked on Columbia in the OPF, and also supported the video interpretation of the Challenger accident working for NPIC. Ivar has spent several hours looking at the launch video as shown on "Florida Today" web site. With proper use of the Flash Media controls on a computer, the launch video can be viewed frame by frame. Ivar has shown personnel in OSMA where it appears a FCC tile can be observed within the "cloud" of debris underneath the orbiter wing. We would like to set up a telecon with Ivar and demonstrate his findings to you. My telephone is 358-4481, Mike Card

From: "HILL, PAUL S. (JSC-DA8) (NASA)" <paul.s.hill@nasa.gov>

To: MG Coordinators <mgcoor@ems.jsc.nasa.gov>,  
DL ESAT

<DL-ESAT@ems.jsc.nasa.gov>,

"MCCORMACK, DONALD L. (DON) (JSC-MV6) (NASA)"

<donald.l.mccormack@nasa.gov>,

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<jon.c.harbold@nasa.gov>,

"EPPS, RONALD C. (RON) (JSC-DM) (NASA)"

<ronald.c.epps@nasa.gov>,

"COLLINS, MICHAEL F. (MIKE) (JSC-DM) (NASA)"

<michael.f.collins@nasa.gov>,

"SHANNON, JOHN P. (JSC-DA8) (NASA)"

<john.p.shannon@nasa.gov>,

"BRISCOE, ALAN L. (LEE) (JSC-DA) (NASA)"

<alan.l.briscoe@nasa.gov>

Subject: ESAT status charts - 2-18

Date: Tue, 18 Feb 2003 07:34:08 -0600

X-Mailer: Internet Mail Service (5.5.2653.19)

<<MRT - ESAT 2-18.ppt>> <<STS-107 Early Debris Footprints Search  
Zoning.ppt>>



MRT - ESAT 2-18.ppt



STS-107 Early Debris Footprints Search Zoning.ppt

# Early Sightings

- Debris shedding event times:
  - On going – Remaining string of events through AZ / NM
- **Relative motion and ballistics:**
  - Recent accomplishments:
    - » Completed relative motion and ballistics for debris shed at 13:54:33.
    - » Ballistic number ~7.5 for this event.
    - » Distributed 80k', 35k' and ground impact foot prints.
  - On going:
    - » Comparing ballistics solutions with Aerospace.
    - » Serial work on next events is in work.
- **Radar data searches:**
  - Recent accomplishments – Began radar search for debris shed at 13:54:33.
  - On going – Serial work on next events as ballistic analysis progresses.
- **Additional detailed imagery analysis:**
  - On going:
    - » Luminescence and spectral analysis with ARC and Aerospace.
    - » Backup ballistics support from Aerospace.
  - Issues, Concerns – Will identify 5-15 public camcorders needed for calibration.
- **Misc sensor work:**
  - Recent accomplishments – NOAA and LANL compared infrasonic data in Boulder, CO.
  - On going:
    - » NOAA and Los Alamos National Lab integration and correlation of infrasonic data to the timeline.
    - » Integration and review of USGS seismic sensors.



# DOD Data

- **Imagery:**
  - Recent accomplishments:
    - » Confirmed all AMOS imagery is on CD EOC 2-4-0124 and orbit ops only.
    - » DOD package received Saturday with all data from Kirtland regarding the photo.
  - On going - Requested AMOS thermal mapping for upper surface and leading edge damage assessment, and missing thermal protection.
- Object correlated to Columbia 17 Jan ~1559Z:
  - No new DOD data.
  - On going - Engineering telecons with DOD regarding materials, dimensions and RF properties of various thermal protection components.
- NAVSPASUR and Beale AFS radar data during entry
  - No new DOD data.
- **Other DOD remote sensors:**
  - Recent accomplishments:
    - » Specified 4 discrete, possible shedding events, including one event off shore.
  - On going:
    - » Clarify the confidence and significance of 4 possible shedding events and add to the timeline.



From: "HILL, PAUL S. (JSC-DA8) (NASA)" <paul.s.hill@nasa.gov>  
To: "HILL, PAUL S. (JSC-DA8) (NASA)" <paul.s.hill@nasa.gov>,  
MG Coordinators <mgcoor@ems.jsc.nasa.gov>,  
DL ESAT  
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<donald.l.mccormack@nasa.gov>,  
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"EPPS, RONALD C. (RON) (JSC-DM) (NASA)"  
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"COLLINS, MICHAEL F. (MIKE) (JSC-DM) (NASA)"  
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"SHANNON, JOHN P. (JSC-DA8) (NASA)"  
<john.p.shannon@nasa.gov>,  
"BRISCOE, ALAN L. (LEE) (JSC-DA) (NASA)"  
<alan.l.briscoe@nasa.gov>

Subject: RE: ESAT MRT status charts - 2-15

Date: Sat, 15 Feb 2003 08:33:34 -0600

Importance: high

X-Mailer: Internet Mail Service (5.5.2653.19)



MRT - ESAT 2-15.ppt

# Early Sightings

- **Debris shedding event times:**
  - No update
  - On going -- Remaining string of events through AZ / NM
- **Relative motion and ballistics:**
  - Recent accomplishments: Completed relative motion and ballistics on first significant event yesterday.
  - On going -
    - » Updated ground foot print for first significant event.
    - » Serial work on next events is in work.
- **Additional detailed imagery analysis:**
  - Recent accomplishments – Established working group with Aerospace and ARC and set up data distribution.
  - On going – Luminosity and spectral analysis with Aerospace and ARC.
- **Radar data searches:**
  - Recent accomplishments – Search in work for first significant shedding event.
  - On going – Serial work on next events as ballistic analysis progresses.
- **Misc sensor work:**
  - On going –
    - » NOAA and Los Alamos National Lab integration and review of infrasonic data.
    - » Integration and review of USGS seismic sensors.



# DOD Data

- **Object correlated to Columbia 17 Jan ~1559Z:**
  - No new DOD data.
- **AMOS telescope video:**
  - DOD has the ability to enhance IR views in orbit video.
  - We specifically requested an assessment of:
    - Upper surface and leading edge damage
    - Missing thermal protection on the upper surfaces and in the payload bay.
    - Missing SHAB longeron thermal cover
- NAVSPASUR and Beale AFS radar data during entry
  - No update.
- **Kirtland entry photo:**
  - DOD FedExed a package with additional data yesterday.
- **Other DOD remote sensors:**
  - Specified 4 discrete shedding events with projected ground impacts.
    - » Data includes one event off shore.
    - » We are correlating the data to the timeline and to other data indicating shedding events.





From: "HILL, PAUL S. (JSC-DA8) (NASA)" <paul.s.hill@nasa.gov>

To: MG Coordinators <mgcoor@ems.jsc.nasa.gov>,  
DL ESAT

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<DL-ESAT@ems.jsc.nasa.gov>,  
"MCCORMACK, DONALD L. (DON) (JSC-MV6) (NASA)"

<donald.l.mccormack@nasa.gov>,  
"HARPOLD, JON C. (JSC-DA) (NASA)"

<jon.c.harpold@nasa.gov>,  
"EPPS, RONALD C. (RON) (JSC-DM) (NASA)"

<ronald.c.epps@nasa.gov>,  
"COLLINS, MICHAEL F. (MIKE) (JSC-DM) (NASA)"

<michael.f.collins@nasa.gov>,  
"SHANNON, JOHN P. (JSC-DA8) (NASA)"

<john.p.shannon@nasa.gov>,  
"BRISCOE, ALAN L. (LEE) (JSC-DA) (NASA)"

<alan.l.briscoe@nasa.gov>

Subject: RE: ESAT MRT status charts - 2-14

Date: Fri, 14 Feb 2003 07:56:13 -0600

X-Mailer: Internet Mail Service (5.5.2653.19)



MRT - ESAT 2-14.ppt

# Early Sightings

- **Debris shedding event times:**
  - No update.
- **Relative motion and ballistics:**
  - Expect 80k' foot print for the most significant event today
    - » Will send ground impact foot print to Barksdale when we have it.
    - » It will be very large.
  - All of the subsequent events will be much more difficult due to the position and pointing references.
- **Additional detailed imagery analysis:**
  - Working group established with Aerospace and ARC.
    - » Luminosity and spectral analysis for size, mass and constituent estimation -- if possible.
    - » Aerospace also duplicating ballistic analysis.
    - » Also coordinating on methods to measure relative motion in the more challenging videos.
  - The Photo Assessment Team will select 2-3 of the next significant shedding events for Lockheed to attempt enhancement for relative motion analysis.
- **Radar data searches:**
  - Expect database search to start today for this first 80k' foot print.
- **Misc sensor work:**
  - Next update expected next week: NOAA and Los Alamos National Lab infrasonic data.
  - No update: USGS seismic sensors.



# DOD Data

- **Object correlated to Columbia 17 Jan ~1559Z:**
  - No new DOD data.
  - Engineering telecon with USAF yesterday to discuss details of various thermal protection, which is expected to result in radar reflectivity tests for more precise radar data interpretation.
- **AMOS telescope video:**
  - Exploring options today to enhance and analyze AMOS video of upper surface and leading edges during orbit ops.
- NAVSPASUR and Beale AFS radar data during entry
  - No update.
- Kirtland entry photo:
  - No update.
- Other DOD remote sensors:
  - No update.



HILL, PAUL S. (JSC-DA8) (NASA), 10:06 AM 2/12/2003, ESAT MRT status - 2/12

---

From: "HILL, PAUL S. (JSC-DA8) (NASA)" <paul.s.hill@nasa.gov>

To: MG Coordinators <mgcoor@ems.jsc.nasa.gov>,  
DL ESAT

<DL-ESAT@ems.jsc.nasa.gov>,  
"MCCORMACK, DONALD L. (DON) (JSC-MV6) (NASA)"

<donald.l.mccormack@nasa.gov>

Subject: ESAT MRT status - 2/12

Date: Wed, 12 Feb 2003 08:06:16 -0600

Importance: high

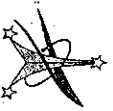
X-Mailer: Internet Mail Service (5.5.2653.19)



MRT - ESAT 2-12.ppt

# Early Sightings

- 19 on video hot list:
  - Las Vegas-NV video through 250X telescope was delivered to Building 8 yesterday and should be reviewed by the Photo Assessment Team today.
  - Debris shedding event times:
    - » The first group over California were considered final yesterday.
    - » Relative motion analysis to support ballistics for the most significant of these is in work.
    - » 80k foot prints based on all of these will be generated as they event times and relative motion analyses are complete.
      - These foot prints will be used to search archived radar data.
      - These foot prints will also be sent directly to Barksdale for consideration in airborne radar searches, although the foot prints are expected to still be very large.
  - Also reviewing radar data after the break up with a goal to define reduced foot prints for larger debris and/or dense fields in Texas.
- Misc sensor work:
  - NOAA and Los Alamos National Lab infrasonic data
    - » Scientists convene in Boulder this week to compare data.
    - » Preliminary review shows off-nominal data correlated back to Orbiter, including somewhere around the west coast.
  - No update: USGS seismic sensors.



# DOD Data

- NAVSPASUR and Beale AFS radar data
  - No update.
- Object correlated to Columbia 17 Jan 1559Z:
  - No update.
- DOD will provide Kirtland camera location and pointing information for image comparison in support of the OVE WG.



From: "HILL, PAUL S. (JSC-DA8) (NASA)" <paul.s.hill@nasa.gov>  
To: "OLIVER, GREGORY T. (GREG) (JSC-DM4) (NASA)"  
<gregory.t.oliver@nasa.gov>,  
"COLLINS, MICHAEL F. (MIKE) (JSC-DM) (NASA)" <michael.f.collins@nasa.gov>,  
"EPPS, RONALD C. (RON) (JSC-DM) (NASA)" <ronald.c.epps@nasa.gov>  
Cc: DL ESAT <DL-ESAT@ems.jsc.nasa.gov>  
Subject: FW: Official "Timeline"  
Date: Fri, 7 Feb 2003 20:08:42 -0600  
X-Mailer: Internet Mail Service (5.5.2653.19)

Please forward as required. At least my name wasn't actually used in step 1 of the e-mail.

PSH

> -----Original Message-----  
> From: HAM, LINDA J. (JSC-MA2) (NASA)  
> Sent: Friday, February 07, 2003 4:01 PM  
> To: CSRDESK  
> Cc: ROE, RALPH R. (JSC-MV) (NASA); HEFLIN, JAMES M., JR (MILT) (JSC-DA8)  
> (NASA); HILL, PAUL S. (JSC-DA8) (NASA)  
> Subject: Official "Timeline"  
> Importance: High  
>  
> CSR - Please distribute to the MRT. This is of high importance.  
>  
> There has been much confusion over the various 'timelines' generated over  
> the past several days. The "timeline" process will be as follows:  
>  
> 1). Inputs from the various groups including the Debris Sightings Team and  
> all others will be sent to the Orbiter Timeline WG.  
> 2). The Orbiter Timeline WG will use the existing SSVEO forums and  
> processes for gaining approval of this timeline by Ralph Roe.  
> 3). After SSVEO/Ralph Roe's approval, the timeline will be presented to  
> the MRT for approval.  
> 4). After MRT approval, the timeline will be official and can be  
> distributed.  
>  
> After the final MRT approval, modifications may be required. These  
> modifications will go through the same approval process before considered  
> official. The official timelines should be made with revision number so  
> that we can track.  
>  
> No timeline information should be distributed by any group, other than the  
> official timeline generated by the SSVEO Timeline WG.  
>  
> This policy is to avoid future confusion over various timelines.  
>

>



# Early Sightings

- 16 on hot list:

- Video in house on all but 6.
- Detailed analysis of video from Sparks-NV, Springville-CA and Ivins-UT proved more valuable than originally reported.
  - » Ballistic analysis for these is still in work and will be handed over to NTSB for radar searches when ready.
  - » Each of these also clearly captures debris shedding.
  - » The Ivins-UT segment includes a near-overhead shot showing a "shower of debris" separating from the vehicle.
- Two more are in house and expected to significantly improve the data from CA to NV when processed.
- Two key videos are expected in any day:
  - » Lick Observatory on Mt. Hamilton-CA is the westernmost sighting, was taken by an astronomer and shows shedding.
  - » Las Vegas-NV taken through a 250X telescope at a range similar to the Sparks-NV video.
- With these and one more already in work, Greg Byrne's imagery team will have near continuous coverage from CA through mid-AZ, including many shedding events.



# Early Sightings, continued

- **Hot list continued:**
  - For all of these, our approach is to:
    - » Establish where the video fits in the timeline and ground track.
    - » Determine ballistic properties.
    - » Propagate the debris down to a smaller foot print for NTSB radar search.
    - » Focus detailed image analysis on the point of debris separation and the specific debris.
- **Misc sensor work:**
  - Preliminary assessment of weather radar analysis across the CONUS ground track shows no more hits similar to the Lubbock data.
  - USGS seismic sensor and NOAA infrasonic data are in house and we are working to time correlate the data back to the trajectory.
  - The USGS and NOAA data is expected to support existing data, but not offer new clues.



Some rain in northern CA and OR, fog and low ceilings. No thunderstorms.

Cold Front

Possible Thunderstorms

SCT-BKN  
Cirrus

13:45:48  
346kft

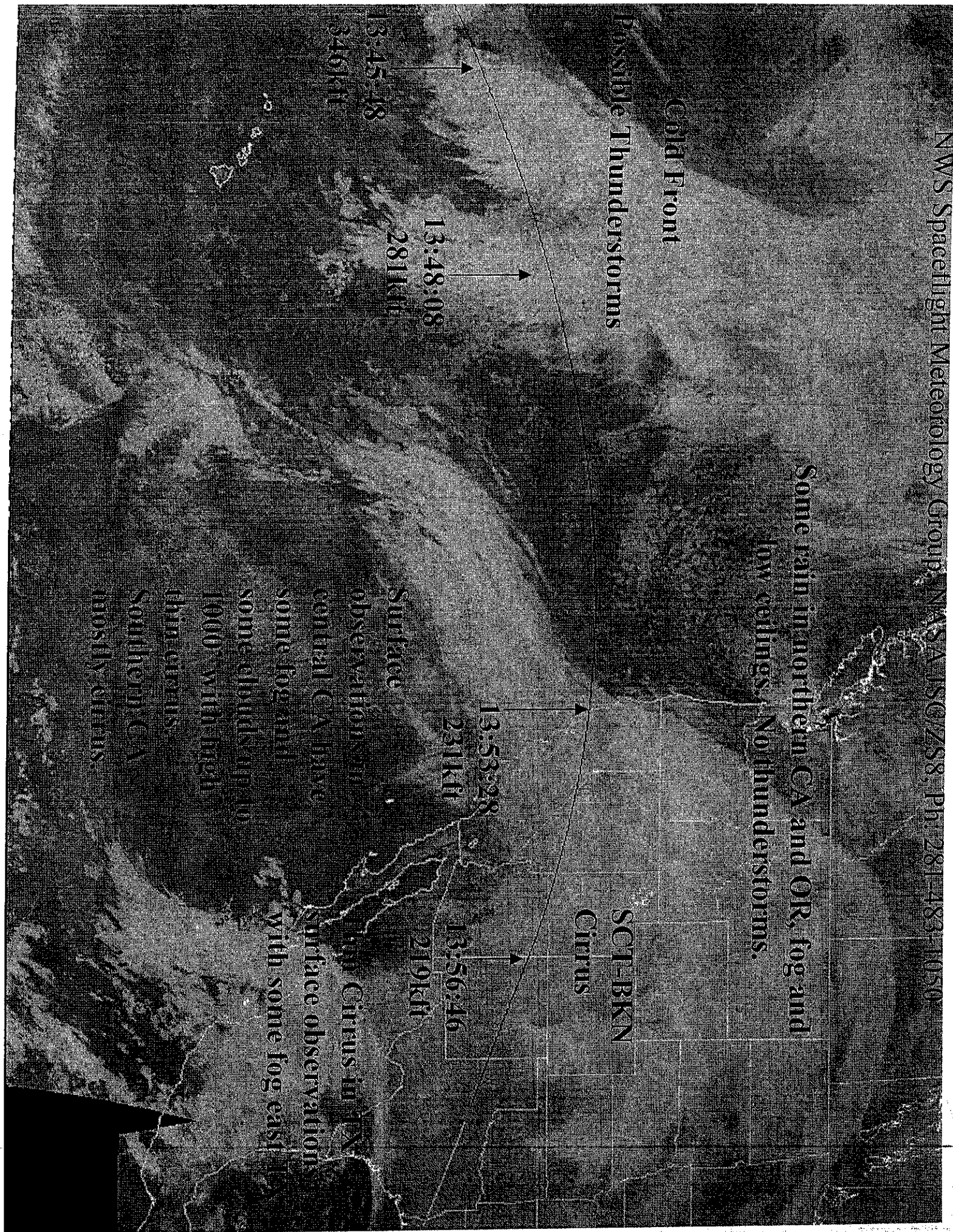
13:48:08  
281kft

13:53:28  
231kft

13:56:46  
219kft

Surface observations in central CA have some fog and some clouds up to 10000' with high thin cirrus. Southern CA mostly cirrus.

High Cirrus in TX surface observations with some fog east of TX.



# DOD Data

- **NAVSPASUR received a total of 7 radar hits.**
  - 5 at Elephant Butte-NM, 2 at Red River AZ.
  - Vector development is in work.
- **Preliminary assessment of early flight tracking:**
  - An object was tracked separating from the orbiter at 5 m/s, 17 Jan, 1600Z (STS-107 flight day 2).
  - MOD is pulling timeline data for water dumps, which may account for this.
  - Suggests we also should look closely at accelerometer data around this time in particular, but MOD plans to review data for the full mission as well.
  - SX/Nick Johnson is working the tracking.



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Subject: FW: STS-107 MIT EOC ONBOARD and Digital Video

Date: Sat, 8 Feb 2003 17:47:13 -0600

X-Mailer: Internet Mail Service (5.5.2653.19)

We processed a number of EOC requests overnight for delivery Saturday morning. The EOC tapes received during the day Saturday is imagery we've seen from other sources. I have MPEG-4 files from AMOS, I'll get input from SX on processing. We are receiving an increasing number of corrupt Movie

files. This list will not be updated until Monday. Everyone take care.

<<STS107GlobalTracking.doc>>

Updated lists:

<<STS107DIGITALLIST.doc>> <<STS107EOCHANDLIST.doc>> <<STS107MITLIST.doc>>

And a copy of our procedures if your new to the list:

<<MIT Video Processing.doc>>

Jason Fennelly  
Mission Video  
Voice: 281-483-0925



STS107GlobalTracking.doc



STS107DIGITALLIST1.doc



STS107EOCHANDLIST1.doc



STS107MITLIST1.doc



MIT Video Processing.doc

## STS-107 Investigation: Global Tracking List

**Tape** **Various** **Civil Service**  
**Format:** **Recipient:**

**Date** **IMPASS**  
**Received:** **Recipient:**

**Date**  
**Received:**

**Serial Numbers, Other Information:**

ISD Contacts: Ed Wilson 483-7736, Patrick Chimes 483-2397, Rick Slater 483-7723  
 Description of \* (asterisk) in Data Stamp column: F - Full Data Stamp, P - Partial Data Stamp, N - No Data Stamp, S - Data Stamp starts and stops

**Logging Team:** Opr. Team BT - Trainor CD - Dupla DD - Duling  
 Members: C - JC - Clemmons JW - Wheeler RG - Geeseman SZ - Zarella TS - Starks Y - MichYouis

**Logging/fining start datetime:**

**Processing start datetime:**

**Processing completion datetime:**

| Ref ID | Date Rcvd | Media Identification and attached materials                        | Received From:                      | Media Type          | Process                  | Media Destination Location                | EOC / MIT # Number | Release Authority | Op |
|--------|-----------|--------------------------------------------------------------------|-------------------------------------|---------------------|--------------------------|-------------------------------------------|--------------------|-------------------|----|
| 1      | 02/01/03  | Billjanes2.zip, full.avi                                           |                                     | Digital AVI Movie   | Digital Video Processing | Columbia Images Repository STS107CLIP0001 |                    | ISD TM            | JF |
| 2      | 02/01/03  | Fredhuenries_020103_1005pm.rm<br>Fredhuenries_020103_1005pm.txt    |                                     | Digital Real Media  | Digital Video Processing | Columbia Images Repository STS107CLIP0002 |                    | ISD TM            | JF |
| 3      | 02/01/03  | STS107.mpg                                                         |                                     | Digital MPEG        | Corrupt                  | Bldg. 8 Mission Video Corrupt folder      |                    | ISD TM            | JF |
| 4      | 02/01/03  | MOV004392.MPG                                                      |                                     | Digital MPEG        | Digital Video Processing | Columbia Images Repository STS107CLIP0003 |                    | ISD TM            | JF |
| 5      | 02/01/03  | thomasrussell_020103am.mpg<br>thomasrussell_020103am.txt           |                                     | Digital MPEG        | Digital Video Processing | Columbia Images Repository STS107CLIP0004 |                    | ISD TM            | JF |
| 6      | 02/02/03  | Im000110.avi, email.txt                                            |                                     | Digital AVI         | Digital Video Processing | Columbia Images Repository                |                    | ISD TM            | JF |
| 7      | 02/03/03  | Hxden_clips.wav, email.txt                                         |                                     | Digital WAV         |                          | Columbia Images Repository Audio Folder   |                    | ISD TM            | JF |
| 8      | 02/03/03  | Gates_witness030201.ram, email.txt                                 |                                     | Digital Real Media  | Digital Video Processing | Bldg. 8 Mission Video Corrupt folder      |                    | ISD TM            | JF |
| 9      | 02/03/03  | Columbia.rm, email.txt                                             |                                     | Digital Real Media  | Digital Video Processing | Columbia Images Repository STS107CLIP0005 |                    | ISD TM            | JF |
| 10     | 02/03/03  | Columbia_fullcomp_large02.wmv, email.txt                           |                                     | Digital Real Media  | Digital Video Processing | Columbia Images Repository STS107CLIP0006 |                    | ISD TM            | JF |
| 11     | 02/04/03  | 107film1.pdf; E212.mpg; email.txt                                  | David.p.tancredi@usago.ksc.nasa.gov | Digital MPEG        | Digital Video Processing | Columbia Images Repository STS107CLIP0007 |                    | ISD TM            | JF |
| 12     | 02/04/03  | 100_0360.mov, 100_0360.txt                                         |                                     | Digital MPEG        | Digital Video Processing | Columbia Images Repository STS107CLIP0009 |                    | ISD TM            | JF |
| 13     | 02/04/03  | STS-107MIT DVCCAM ID 1-6                                           | MIT/Barksdale/Elington              | Digital DVCCAM Tape | Digital Video Processing | Bldg. 8 Mission Video                     |                    | ISD TM            | JF |
| 14     | 02/04/03  | MarioValverde_020303_0730pm.avi<br>MarioValverde_020303_0730pm.txt |                                     | Digital AVI         | Digital Video Processing | Columbia Images Repository STS107CLIP0008 |                    | ISD TM            |    |
| 15     | 02/05/03  | Columbia 4 Seconds.MPG, email.txt                                  |                                     | Digital MPEG        | Digital Video Processing | Columbia Images Repository STS107CLIP0010 |                    | ISD TM            | TH |
| 16     | 02/05/03  | Space Shuttle.WMV, email.txt                                       |                                     | Digital WMV         | Digital Video Processing | Columbia Images Repository STS107CLIP0014 |                    | ISD TM            | TH |
| 17     | 02/05/03  | Space Shuttle.WMV, email.txt                                       |                                     | Digital WMV         |                          |                                           |                    |                   |    |
| 18     | 02/05/03  | columbianesquize2.avi, columbianesquize2.txt                       | FTP_columbianesquize2               | Digital AVI         | Digital Video Processing | Columbia Images Repository STS107CLIP0011 |                    | ISD TM            | TH |

# STS-107 Investigation: Global Tracking List

| Ref ID | Date Rcvd | Media Identification and attached materials | Received From   | Media Type         | Process                  | Media Destination Location                       | EOC / MIT # Number | Release Authority | Op |
|--------|-----------|---------------------------------------------|-----------------|--------------------|--------------------------|--------------------------------------------------|--------------------|-------------------|----|
| 19     | 02/05/03  | DanMcNew.mpg, DanMcNew.txi                  |                 | Digital MPEG       | Digital Video Processing | Columbia Images Repository STS107CLIP0013        |                    | ISD TM            | TH |
| 20     | 02/05/03  | P2010077.mov, email.txt                     |                 | Digital Quicktime  | Digital Video Processing | Columbia Images Repository STS107CLIP0012        |                    | ISD TM            | TH |
| 21     | 02/05/03  | STS-107MIT DVCAM ID 007                     | MIT / Ellington | MiniDV             | MIT DVCAM Process        | Bldg. 8 Mission Video                            |                    | ISD TM            |    |
| 22     | 02/06/03  | STS-107 H-8mm Onboard ID# 001 (Damaged)     |                 | H-8mm              |                          | JSC Bldg. 8 Mission Video                        | SK0205-008         | ISD TM            | SZ |
| 23     | 02/06/03  | EOC Delivery: EOC 2-4-001 - 0016            | EOC-Beck        | Various            | EOC Process              | JSC-Bldg.8 Mission Video EOC-2VHS Analysis- 1 D2 | 24-0001-24-0016    | ISD TM            | SZ |
| 24     | 02/06/03  | EOC Delivery: EOC 2-4-017 - 0031            | EOC-Beck        | Various            | EOC Process              | JSC-Bldg.8 Mission Video EOC-2VHS Analysis- 1 D2 | 24-0017-24-0031    | ISD TM            | SZ |
| 25     | 02/06/03  | EOC Delivery: EOC 2-4-032 - 0034            | EOC-Beck        | Various            | EOC Process              | JSC-Bldg.8 Mission Video EOC-2VHS Analysis- 1 D2 | 24-0032-24-0034    | ISD TM            | SZ |
| 26     | 2/07/03   | EOC Delivery: EOC 2-4-035 - 0037            | EOC-Beck        | Various            | EOC Process              | JSC-Bldg.8 Mission Video EOC-2VHS Analysis- 1 D2 | 24-0037            | ISD TM            |    |
| 27     | 2/07/03   | EOC Delivery: EOC 2-4-0041 - 0054           | EOC Beck        | Various            | EOC Process              | JSC-Bldg.8 Mission Video EOC-2VHS Analysis- 1 D2 | 24-0041-24-0054    | ISD TM            |    |
| 28     | 2/07/03   | STS-107 MIT DVCAM 008-012                   | MIT - Field     | Mini DV            | MIT Process              | JSC-Bldg 8 Mission Video                         |                    |                   |    |
| 29     | 2/07/03   | EOC Delivery: EOC 2-4-0055 - 0059           | EOC-Tony        | Various            | EOC Process              | JSC-Bldg.8 Mission Video EOC-2VHS Analysis- 1 D2 | 24-0055-24-0059    | ISD TM            |    |
| 30     | 2/08/03   | EOC Delivery: EOC 2-4-0060                  | EOC-Beck        | Beta SP            | EOC Process              | JSC-Bldg.8 Mission Video EOC-2VHS Analysis- 1 D2 | 24-0060            | ISD TM            |    |
| 31     | 2/08/08   | EOC Delivery: EOC 2-4-0061                  | EOC-Beck        | Beta SP            | EOC Process              | JSC-Bldg.8 Mission Video EOC-2VHS Analysis- 1 D2 | 24-0061            | ISD TM            |    |
| 32     | 2/08/03   | EOC Delivery: EOC 2-4-0062                  | EOC-Beck        | Beta SX            | EOC Process              | JSC-Bldg 8 Mission Video EOC-2VHS Analysis- 1 D2 | 24-0062            | ISD TM            |    |
| 33     | 2/08/03   | AnthonyRandall020503_1818.rm                |                 | Digital Real Media | Digital Video Process    | Columbia Images Repository STS107CLIP0020        |                    | ISD TM            |    |
| 34     |           |                                             |                 |                    |                          |                                                  |                    |                   |    |
| 35     |           |                                             |                 |                    |                          |                                                  |                    |                   |    |
| 36     |           |                                             |                 |                    |                          |                                                  |                    |                   |    |
| 37     |           |                                             |                 |                    |                          |                                                  |                    |                   |    |
| 38     |           |                                             |                 |                    |                          |                                                  |                    |                   |    |
| 39     |           |                                             |                 |                    |                          |                                                  |                    |                   |    |



# STS-107 Investigation: Digital Files

**Tape** Various

**Format:** Civil Service

**Recipient:** IMPASS

**Date**

**Received:**

**Serial Numbers, Other Information:**

Ed Wilson 483-7736, Patrick Chimes 483-2397, Rick Slater 483-7723

**Description of \* (asterisk) in Data Stamp column:** F - Full Data Stamp, P - Partial Data Stamp, N - No Data Stamp, S - Data Stamp starts and stops

**Logging Team:** BT - Trainor CD - Dupla JC - Clemens JW - Wheeler RG-Geeseaman SZ - Zarella TS - Starks Y-MitchYouts  
 Members: C - DD - Duling JF - Fennelly LS - Salazar SK - Knarr TH - Henson O-KirkOlson

**Logging/trimming start date/time:**

**Processing start date/time:**

**Processing completion date/time:**

| Ref ID | Date Recvd | Media File Name | Received From:                      | Media Type         | Content                               | Original File Name                       | Length  | Release Authority | Op |
|--------|------------|-----------------|-------------------------------------|--------------------|---------------------------------------|------------------------------------------|---------|-------------------|----|
| 1      | 02/01/03   | STS107CLIP0001  |                                     | Digital AVI Movie  | Columbia reentry, day                 | Billjanes2.zip, full avi,                | 0:01:44 | ISD TM            | JF |
| 2      | 02/01/03   | STS107CLIP0002  |                                     | Digital Real Media | Columbia reentry, night               | Fredruenjes_020103_1005pm.rm             | 0:0:13  | ISD TM            | JF |
| 3      | 02/01/03   | STS107CLIP0003  |                                     | Digital MPEG       | Columbia reentry, night               | Fredruenjes_020103_1005pm.txt            | 0:00:11 | ISD TM            | JF |
| 4      | 02/01/03   | STS107CLIP0004  |                                     | Digital MPEG       | Columbia reentry, day                 | MOV00439-2.MPG                           | 0:02:25 | ISD TM            | JF |
| 5      | 02/03/03   | STS107CLIP0005  |                                     | Digital Real Media | Columbia reentry, night               | thomastssell_020103am.mpg                | 0:00:32 | ISD TM            | JF |
| 6      | 02/03/03   | STS107CLIP0006  |                                     | Digital WMV        | Columbia reentry, day                 | Columbia_fm_email.txt                    | 0:01:26 | ISD TM            | JF |
| 7      | 02/04/03   | STS107CLIP0007  | David.p.fancraiff@usgo.ksc.nasa.gov | Digital MPEG       | KSC Ice and Debris team film analysis | 107film1.pdf, E212.mpg, email.txt        | 0:00:17 | ISD TM            | JF |
| 8      | 02/04/03   | STS107CLIP0008  |                                     | Digital AVI        | Columbia reentry, day                 | MarioValverde_020303_0730pm.avi          | 0:00:54 | ISD TM            | JF |
| 9      | 02/04/03   | STS107CLIP0009  |                                     | Digital Quicktime  | Columbia reentry, day                 | MarioValverde_020303_0730pm.txt          | 0:00:24 | ISD TM            | JF |
| 10     | 02/05/03   | STS107CLIP0010  |                                     | Digital MPEG       | Columbia reentry, day                 | Columbia 4 seconds.mpg, email.txt        |         | ISD TM            | TH |
| 11     | 02/05/03   | STS107CLIP0011  |                                     | Digital AVI        | Columbia Reentry, day                 | Columbiamesquite2.avi                    |         | ISD TM            | TH |
| 12     | 02/05/03   | STS107CLIP0012  |                                     | Digital Quicktime  | Columbia Reentry, night               | Columbiamesquite2.txt                    |         | ISD TM            | TH |
| 13     | 02/05/03   | STS107CLIP 0013 |                                     | Digital MPEG       | Columbia Reentry, day                 | P2010077.mov                             |         | ISD TM            | TH |
| 14     | 02/05/03   | STS107CLIP0014  |                                     | Digital WMV        | Columbia Reentry, day                 | Email.txt                                |         | ISD TM            | TH |
| 15     | 2/06/03    | ST107CLIP0015   | Ahutchison@mail.arc.nasa.gov        | Digital MPEG       | Santa Cruz Airplane?                  | DanMcNew.mpg, DanMcNew.txt               | 0:00:15 | ISD TM            | JF |
| 16     | 2/06/03    | ST107CLIP0016   |                                     | Digital MPEG       | Shuttle Launch                        | Shuttle.mpg                              | 0:00:06 | ISD TM            | JF |
| 17     | 2/06/03    | ST107CLIP0017   |                                     | Digital WMV        | Columbia entry, Lubbock               | columbia_clip.mpg                        | 0:00:47 | ISD TM            | JF |
| 18     | 2/06/03    | ST107CLIP0018   |                                     | Digital AVI        | Columbia Launch                       | Space Shuttle.wmv                        | 0:00:10 | ISD TM            | JF |
| 19     | 2/06/03    | ST107CLIP0019   |                                     | Digital MPEG       | Columbia Launch                       | Feb06_05.avi, Feb06_06.avi, Feb06_24.avi | 0:00:43 | ISD TM            | JF |

# STS-107 Investigation: Digital Files

| Ref ID | Date Rcvd | Media File Name | Received From | Media Type         | Content                                 | Original File Name          | Length  | Release Authority | Op |
|--------|-----------|-----------------|---------------|--------------------|-----------------------------------------|-----------------------------|---------|-------------------|----|
| 20     | 2/7/03    | ST107CLIP0020   |               | Digital Reel/Media | Reentry, night Duplicate of EOC Imagery | AnthonyRanda\020503_1818.rm | 0:46:00 | ISD T/M           |    |
| 21     |           |                 |               |                    |                                         |                             |         |                   |    |
| 22     |           |                 |               |                    |                                         |                             |         |                   |    |
| 23     |           |                 |               |                    |                                         |                             |         |                   |    |
| 24     |           |                 |               |                    |                                         |                             |         |                   |    |
| 25     |           |                 |               |                    |                                         |                             |         |                   |    |
| 26     |           |                 |               |                    |                                         |                             |         |                   |    |
| 27     |           |                 |               |                    |                                         |                             |         |                   |    |
| 28     |           |                 |               |                    |                                         |                             |         |                   |    |
| 29     |           |                 |               |                    |                                         |                             |         |                   |    |
| 30     |           |                 |               |                    |                                         |                             |         |                   |    |
| 31     |           |                 |               |                    |                                         |                             |         |                   |    |
| 32     |           |                 |               |                    |                                         |                             |         |                   |    |
| 33     |           |                 |               |                    |                                         |                             |         |                   |    |
| 34     |           |                 |               |                    |                                         |                             |         |                   |    |
| 35     |           |                 |               |                    |                                         |                             |         |                   |    |
| 36     |           |                 |               |                    |                                         |                             |         |                   |    |
| 37     |           |                 |               |                    |                                         |                             |         |                   |    |
| 38     |           |                 |               |                    |                                         |                             |         |                   |    |
| 39     |           |                 |               |                    |                                         |                             |         |                   |    |
| 40     |           |                 |               |                    |                                         |                             |         |                   |    |



# STS-107 EOC and Hand Delivered Tapes

| Ref ID | Date Rcvd | Title                                                                         | Received From | Cut # | Digibeta # | SMPT START | SMPT STOP | Length  | Tape Format  | Content                                                         | EOC#                 | Release Authority | Op |
|--------|-----------|-------------------------------------------------------------------------------|---------------|-------|------------|------------|-----------|---------|--------------|-----------------------------------------------------------------|----------------------|-------------------|----|
| 19     | 2/6/03    | Launch, Cocoa Beach Pier                                                      |               | 4     | 716091     | 01:08:00   | 01:10:45  | 0:02:45 | Dig-8        | Shuttle launches behind hotel, no detail.                       | 24-0019              | ISD TM            | SK |
| 20     | 2/6/03    | Landing, NE Fort Worth. VHS dub of camcorder                                  |               | 11    | 716117     | 20:56:00   | 20:57:40  | 0:01:40 | VHS          |                                                                 | 24-0020              | ISD TM            | JF |
| 21     | 2/6/03    | St. George, Utah                                                              |               | 12    | 716117     | 03:06:00   | 03:07:16  | 0:01:16 | VHS          |                                                                 | 24-0021              | ISD TM            | JF |
| 22     | 2/6/03    | KCEN-TV Shuttle Columbia Footage Eddy, Texas looking North                    |               | 6     | 716091     | 01:13:00   | 01:14:21  | 0:01:21 | DVCP Pro VHS |                                                                 | 24-0022a<br>24-0022b | ISD TM            | SK |
| 23     | 2/6/03    | Columbia, Feb. 1, 2003 8am CST Carrollton, TX                                 |               | 13    | 716117     | 03:19:00   | 03:20:13  | 0:01:13 | 8mm VHS      |                                                                 | 24-0023a             |                   |    |
| 24     | 2/6/03    | Columbia Reentry                                                              |               | 14    | 716117     | 03:26:00   | 03:27:05  | 0:01:05 | VHS          |                                                                 | 24-0023b             |                   |    |
| 25     | 2/6/03    | Columbia Shuttle Camp Swift Bastrop, TX                                       |               | 15    | 716117     | 03:53:00   | 03:58:39  | 0:05:39 | MiniDV CD    | Re-entry Blue Sky Full, 1/2 speed and 2X, DV CAM Clone provided | 24-0024a<br>24-0024b | ISD TM            | JF |
| 26     |           | Line Intentionally Left Blank                                                 |               | 21    | 716117     | 06:50:00   | 06:53:27  | 0:03:27 | VHS          | EP Mode. Can not dub at this time                               | 24-0025              | ISD TM            | JF |
| 27     |           | See Photo Log                                                                 |               |       |            |            |           |         |              |                                                                 |                      |                   | JF |
| 28     | 2/6/2003  | Columbia over St. George Utah, copyright VIP Media                            |               | 16    | 716117     | 04:33:00   | 04:37:56  | 0:04:56 | MiniDV CD    | Dark sky, Columbia overhead DV CAM clone provided               | 24-0028a<br>24-0028b | ISD TM            | JF |
| 29     | 2/6/03    | STS-107 Re-entry Cerillos, New Mexico                                         |               | 17    | 716117     | 04:47:00   | 04:48:42  | 0:01:42 | VHS          | Very detailed info attached.                                    | 24-0029              | ISD TM            | JF |
| 30     | 2/6/03    | Space Shuttle Columbia Re-entry Las Vegas, NV. West Northwest to East         |               | 5     | 716091     | 01:11:00   | 01:12:39  | 0:01:39 | Dig-8        |                                                                 | 24-0030              | ISD TM            | SK |
| 31     | 2/6/2003  | KTWK Video of Columbia 2/1/03                                                 |               | 7     | 716091     | 01:14:40   | 01:17:46  | 0:03:06 | Beta SX      | Looks like a dub from camcorder.                                | 24-0031              | ISD TM            | SK |
| 32     | 2/6/03    | Shuttle Columbia Disaster Video 7:59:20 Lafayette, LA 30d0930.2' 92d02' 05.2" |               | 18    | 716117     | 05:08:00   | 05:10:30  | 0:02:30 | VHS          | Chief Meteorologist Elevation 29 feet                           | 24-0032              | ISD TM            | JF |
| 33     | 2/6/03    | Space Shuttle exit 23 1-15 Southern Utah facing East. Prints to Photo         |               | 19    | 716117     | 05:16:00   | 05:21:24  | 0:05:24 | MiniDV       | Dark                                                            | 24-0033A             | ISD TM            | JF |
| 34     | 2/6/2003  | STS-107 Re-entry Bissenger/Reno, NV Shuttle Pass. Clock and Camera Photo      |               | 20    | 716117     | 05:35:00   | 05:50:32  | 0:07:32 | BetaSP       | Timing information listed on EOC attachment                     | 24-0034              | ISD TM            | JF |
| 35     |           | Photo                                                                         |               |       |            |            |           |         |              |                                                                 |                      |                   |    |
| 36     |           | Photo                                                                         |               |       |            |            |           |         |              |                                                                 |                      |                   |    |
| 37     | 2/6/2003  | KDFW/FOX Views from Corsicana                                                 |               | 8     | 716091     | 16:07:00   | 16:08:21  | 0:01:21 | Beta SP      | Some closeups, through trees                                    | 24-0037              | ISD TM            |    |
| 38     | 02/07/03  | KABC-TV Glendale, CA Mt. Santiago Facing 80 - 90 Degrees 9am-12noon           |               |       |            |            |           |         | Beta SP      | Maybe of debris falling from sky.                               |                      | ISD TM            |    |
| 39     | 02/07/03  | DAI Tape of Sonic Boom in Petaluma, CA IMPASS NOTE: GIVEN TO ACR FOR 1 VHS    |               |       |            |            |           |         | DAT Tape     | Sonic Boom                                                      |                      |                   |    |

STS-107 EOC and Hand Delivered Tapes

| Ref ID | Date Recvd | Title                                                                                | Received From | Cut # | Digibeta # | SMPTE START | SMPTE STOP | Length  | Tape Format | Content                                            | EOC#    | Release Authority | Op |
|--------|------------|--------------------------------------------------------------------------------------|---------------|-------|------------|-------------|------------|---------|-------------|----------------------------------------------------|---------|-------------------|----|
| 40     |            | Photo                                                                                |               |       |            |             |            |         |             |                                                    |         |                   |    |
| 41     |            | Photo                                                                                |               |       |            |             |            |         |             |                                                    |         |                   |    |
| 42     | 02/07/03   | Sighting: Groveton, TX                                                               |               | 14    | 716091     | 08:13:01    | 08:14:31   | 0:01:30 | VHS-C       | Good Video of Break-up                             | 24-0042 | ISD TM            | CD |
| 43     |            | Photo                                                                                |               |       |            |             |            |         |             |                                                    |         |                   |    |
| 44     | 02/07/03   | Sighting: south of Hanksville, Utah<br>GPS 110 degrees 43' 65"<br>38 Degrees 14' 20" |               | 9     | 716091     | 07:08:18    | 07:09:48   | 0:01:30 | VHS         |                                                    | 24-0044 | ISD TM            | CD |
| 45     |            | Photo                                                                                |               |       |            |             |            |         |             |                                                    |         |                   |    |
| 46     |            | Photo                                                                                |               |       |            |             |            |         |             |                                                    |         |                   |    |
| 47     | 02/07/03   | Video is of Fox News                                                                 |               |       |            |             |            |         | VHS         | Camera set up to record Fox News                   | 24-0047 | ISD TM            |    |
| 48     |            | Photo                                                                                |               |       |            |             |            |         |             |                                                    |         |                   |    |
| 49     | 02/07/03   | Sighting: Washington, Utah                                                           |               | 10    | 716091     | 07:16:30    | 07:17:50   | 0:01:20 | H-8mm       | Good View                                          | 24-0049 | ISD TM            | CD |
| 50     | 02/07/03   | Sighting: 06:56 am MST. St. George, Utah                                             |               | 11    | 716091     | 07:33:05    | 07:33:30   | 0:00:25 | Digi 8      | Good View                                          | 24-0050 | ISD TM            | CD |
| 51     | 02/07/03   | Sighting: Hallow City, TX. South of Dallas / Fort Worth                              |               | 15    | 716091     | 08:21:00    | 08:21:54   | 0:00:54 | VHS         | Good View                                          | 24-0051 | ISD TM            | CD |
| 52     |            |                                                                                      |               |       |            |             |            |         |             |                                                    |         |                   |    |
| 53     |            |                                                                                      |               |       |            |             |            |         |             |                                                    |         |                   |    |
| 54     |            |                                                                                      |               |       |            |             |            |         |             |                                                    |         |                   |    |
| 55     | 2/07/03    | STS-107 Re-entry Video over Sparks, NV                                               |               | 16    | 716091     | 08:26:00    | 08:27:35   | 0:01:35 | H-8mm       |                                                    | 24-0055 | ISD TM            | CD |
| 56     | 2/07/03    | Video from Lick Observatory<br>MT. Hamilton, CA                                      |               | 12    | 716091     | 07:56:34    | 07:58:21   | 0:01:47 | H-8mm       | This ID contains a mini DV copy of this H-8mm tape | 24-0056 | ISD TM            | CD |
| 57     | 2/07/03    | Video from Weather Camera in Los Angeles<br>On Santiago Peak                         |               | 17    | 716091     | 08:38:26    | 08:39:33   | 0:01:07 | Beta SP     | Time Lapse Video<br>1 frame every 10 seconds       | 24-0057 | ISD TM            | CD |
| 58     | 2/07/03    | Re-entry from Whitaker Park, CA                                                      |               | 13    | 716091     | 08:02:45    | 08:04:08   | 0:01:23 | Mini DV     |                                                    | 24-0058 | ISD TM            | CD |
| 59     | 2/07/03    | Sighting: Coarsegold, CA                                                             |               | 18    | 716091     | 08:46:32    | 08:47:51   | 0:01:19 | Mini DV     |                                                    | 24-0059 | ISD TM            | CD |
| 60     | 2/08/2003  | Sighting: Southern UTAH                                                              |               | 19    | 716091     | 20:56:00    | 20:58:18   | 0:02:18 | Beta SP     | Views of video that we have seen before.           | 24-0060 | ISD TM            | JF |

STS-107 EOC and Hand Delivered Tapes

| Ref ID | Date Rcvd | Title                                     | Received From | Cut # | Digibeta # | SMPTE START | SMPTE STOP | Length | Tape Format   | Content | EOC#    | Release Authority | Op |
|--------|-----------|-------------------------------------------|---------------|-------|------------|-------------|------------|--------|---------------|---------|---------|-------------------|----|
| 61     | 2/8/03    | Sighting: Over Arizona<br>DUPLICATE VIDEO |               |       |            |             |            |        | BetaSP<br>VHS |         | 24-0061 | ISD TM            | LM |
| 62     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 63     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 64     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 65     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 66     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 67     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 68     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 69     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 70     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 71     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 72     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 73     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 74     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 75     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 76     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 77     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 78     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 79     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 80     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 81     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |
| 82     |           |                                           |               |       |            |             |            |        |               |         |         |                   |    |

**STS-107 MIT Video Processing Procedures as of 2/5/03**  
Video received from MIT, NASA, Government and the Public

This procedure is generated in order to meet the requirements defined by ISD-GP. Television Operations will process all videotapes and other video media relating to the investigation of STS-107. NASA ISD and IMPASS Management will coordinate efforts to receive videotapes and related media destined for JSC to be checked in at JSC Television Operations, Bldg. 8. Upon receipt, Television Operations staff will:

- Sort materials into bags such as Film, CDs, Memory sticks, a delivery to appropriate organization that handles this data. Photos of bags will be taken. An IMPASS TV OPS transmittal form will be completed listing all items to be transferred. The individual accepting the materials needs to sign this form when receiving the materials. Return this form to the TV Ops Supervisor for record keeping purposes. Film can be delivered to Photographic Lab Supervisor and Bob Bode.
- Log all tapes and media received in the STS-107 Investigation: Global Tracking List (MIT video will be processed using the Mission Onboard Processing Procedure). The master list will identify: REF ID, Date received, Media Identification and attached materials, Received from, Media Type, Process, Media Destination Location, Total Time, Audio, and Op.
- Media will then be processed with established procedures.
- The Master List will be e-mailed daily to ISD Television Ops Technical Monitors (Ed Wilson, Pat Chimes), Television Engineering and Operations Manager and Office (Jeff Van Pelt, Janet Salazar), Television Operations Supervisor (David Tharp), Television Operations Leads (Rick Canter, Jason Fennelly, IMPASS IT Manager, Videotape Repository Supervisor (Silvia Stewart), CB Representative (Marsha Ivins, Sheri Locke, Stephen Frick), Engineering Analysis Management (Jon Disler, Greg Byrne), EOC Analysis (Don Liddle), EOC ISD (Jennifer Lestourgeon).

The videotapes or video media will be logged as follows:

- REF ID: a line item number to refer to media, not physically attached.
- Date received: date ISD received media.
- Media Identification and attached materials: a description of what the media is and a description of materials attached with media.
- Received from: the entity or individual ISD received the media from (MIT, SN Engineering, Jon Q. Public, etc...).
- Media Type: a designator of the type of media (DVCAM, Quicktime, WAV audio file, etc..)
- Process: a designator of the procedure used to process the media (MIT DVCAM, Public Digital, None, etc..).
- Media Destination Location: where the media resides after processing.
- EOC Number: references EOC tracking number if assigned
- Release Authority: Contact for dubs and distribution.
- Op: Initials of the TVOps operator that processed the media, Initials correspond to full name on Tape List.
- No Video Tape or Video Media will be made available on an insecure network or VAMS Scenelisting system without direction from the Release Authority

### **STS-107 MIT DVCAM Processing Procedures**

- Tapes received from the Mishap Investigation Team will be photographed in Bldg. 8.
- The group of tapes will be logged into the STS-107 Investigation: Global Tracking List
- A minimum of two people will be involved in the handling and processing of all returned 107 mishap tapes to assure consistent processing.
- Only those personnel required to process the videotapes will be involved in the processing
- Tape will be labeled with a DVCAM ID label.
- The tape will be logged by ID #, Date received, Tape label text, Cut#, Converted Digibeta#, Part#, Data Stamp Start and Stop (if present), SMPTE Start and Stop, Total Time, Audio, and Operator initials.
- Tape will be timed out for length.
- Shuttling FWD/REW of tapes will be limited to timing only.
- Random Viewing by other personnel is not allowed.
- Master Digibeta is numbered. One minute of Bars and Tone will be recorded.
- 10-15 seconds of slate identifying DVCAM ID# and Tape Label Text will be recorded.
- The transfer of DVCam tape will be handled in the Digital domain via VDRPS SDI paths.
- Operator will monitor video content and audio, identifying by time code on tape log of any video that contains human remains.
- All tapes will be labeled and identified as Restricted. Stickers will be applied to tape, tape case, and tape log.
- Additional DV tapes will be added as cuts to the Digibeta if enough remaining time exists.
- Copies of logs will be maintained with the Digibeta tape, and a master log held by Mission Video.
- Completed tapes will be sent to the library. Tapes will be secured at all times.
- Library staff will enter cataloging information into a Restricted classification in VRDS.
- DVCam and Digibeta tapes, will be secured and locked in cabinet during off shift hours, stored in a water resistant blue bin container. The cabinet is located in Bldg. 8 Mission Video until complete and delivered to Library. DVCam originals will be sent to the library with the master tape for secure storage.
- Dubs of MIT DVCam Digibeta Masters will be initiated by the ISD Television Operations Technical Monitor until Release Authority is identified. All dubs will be labeled and identified as restricted until that designation has been removed by the Mishap Investigation Team.



### **Digital Video Files Process**

Applies to video files received from Public

- Digital Video files received through HSF or ColumbiaImages e-mail will be placed on IMAGES1/sts-107/Video/\_incoming/XXXXXX(date) folder by Photography Lab Supervisor. TVOps will scan IMAGES1/sts-107/\_Incoming/from\_FTP/video1/.
- Mission Video moves the files to a STS107 share directory on Television Operations Videocap2 ITS in a folder designated by the date. Files are logged into the STS-107 Investigation: Global Tracking List.
- Files are burned to CD-ROM to be processed on Visual Production Laboratory ITS 1.
- Files are manipulated in Adobe Premiere, Quicktime and Cleaner 5 to produce standardized broadband Quicktime and Windows Media Video files. Clips are renamed as STS107CLIP00XX.mov and .wmv, then burned to CD-ROM.
- Created files are moved to Videocap2 ITS share directory in a folder with the same name as the STS107CLIP name.
- Original files are transferred to Videocap1 ITS station to be opened and catalogued by Scenelisting in Notepad. The description is referenced to counter time. The operator provides a text file. Clip Name, Original Media Name, and contact e-mail is added above the description. If the original media file can not be converted, a notation precedes the description. The text of the original e-mail, if present, is added after the description. The text file is moved to the STS107CLIP folder on the Videocap2 ITS.
- The original file and e-mail is added as a subfolder to the STS107CLIP folder.
- If the original Media file could not be standardized (such as RealMedia), the original is copied and renamed as STS107CLIP00XX in the main folder.
- Files are moved back to Videocap2 Share STS107CLIP folder designated for upload to IMAGES1.
- Mission Video uploads CLIP folders to a IMAGES1/sts-107/Video/ directory, the folder executes writing to the web page.
- Audio clips received are dropped into an Audio folder on the Videocap2 ITS share directory along with the original e-mail.
- Corrupted files are dropped into a Corruptedfiles folder on the Videocap2 ITS share directory along with the original e-mail.
- Files having no relevance to the investigation will be placed in a hoax folder.

### **Video tapes received from the Emergency Operations Center and hand delivered**

- Videotape will be logged in the STS-107 Investigation: Global Tracking List
- Videotape reviewed by EOC contact and TVOps Operator
- Specific pieces of video will be captured and uploaded to MIT secure Web Server
- Tape will be logged into EOC and hand delivered videotapes.
- Tapes will be secured in a locked cabinet in Bldg.8 Mission Video
- Library will secure tapes in Bldg. 12 vault after EOC determination

**MORELAND, DEAN (JSC-NC) (NASA), 06:07 PM 2/6/2003, STS107 DMS Data Link**

---

From: "MORELAND, DEAN (JSC-NC) (NASA)" <dean.moreland-1@nasa.gov>

To: "CARD, MIKE (JSC-REMOTE)" <mcard@hq.nasa.gov>

Cc: "MUDD, MELINDA L. (MINDI) (JSC-NC) (GHG)"

<melinda.l.mudd1@jsc.nasa.gov> ,

"CIANCONE, MICHAEL L. (JSC-NC) (NASA)"

<michael.l.ciancone@nasa.gov>

Subject: STS107 DMS Data Link

Date: Thu, 6 Feb 2003 16:07:53 -0600

X-Mailer: Internet Mail Service (5.5.2653.19)

<https://psrp.jsc.nasa.gov/default.asp>

Mike as we discussed this is the link for the DMS that will lead you to the STS107 data. After you log in click payloads, S , and the data is under STS107. The payload data is under the attachments with individual files for each experiment.

# Remote Sensor Inputs

- Remote sensors indicate 4 off-nominal, external events during entry, 2 of which are still under discussion.
- Events for timeline:
  - 13:52:30Z
    - » Event spans 13:51:29 – 13:52:39, +/-10 sec.
    - » Strong confidence that this is an off-nominal event.
    - » Quick look did not show a jet firing in ODRC at this time.
  - 13:55:30Z
    - » Preliminary match to debris shedding seen in video from Ivins, UT.
    - » Strong confidence that this is an off-nominal event.
    - » Quick look did not show a jet firing in ODRC at this time.
- Events still under discussion are coincident with the start/stop of the roll-reversal.
  - 13:56:28 and 13:56:53Z.
  - Before adding these to the timeline, we are trying to clarify whether these are normally observed during roll reversals.
  - Among other things, jets were firing.



**FENNELLY, JASON L. (JSC-GA) (IDI), 01:11 PM 2/19/2003, STS-107 MIT EOC ONBOARD and Digital**

From: "FENNELLY, JASON L. (JSC-GA) (IDI)" <jason.l.fennelly1@jsc.nasa.gov>

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Subject: STS-107 MIT EOC ONBOARD and Digital Video

Date: Wed, 19 Feb 2003 11:11:08 -0600

X-Mailer: Internet Mail Service (5.5.2653.19)

Footers have been included in lists to keep track of latest revisions.

<<STS107EOCHANDLIST.doc>>

<<STS107DVONBDLIST.doc>> <<STS107DIGITALLIST.doc>> <<STS107MITLIST.doc>>

Jason Fennelly  
Mission Video  
Voice: 281-244-2331

 STS107EOCHANDLIST6.doc

 STS107DVONBDLIST2.doc

 STS107DIGITALLIST4.doc

 STS107MITLIST4.doc



# STS-107 Investigation: Digital Files

**Tape** Various      **Civil Service**      **Date** IMPASS      **Date** \_\_\_\_\_  
**Format:** \_\_\_\_\_      **Recipient:** \_\_\_\_\_      **Received:** \_\_\_\_\_      **Recipient:** \_\_\_\_\_  
**Serial Numbers, Other Information:** \_\_\_\_\_      **Received:** \_\_\_\_\_      **Recipient:** \_\_\_\_\_

**ISD Contacts:** Ed Wilson 483-7736, Patrick Chimes 483-2397, Rick Slater 483-7723  
**Description of \* (asterisk) in Data Stamp column:** F - Full Data Stamp, P - Partial Data Stamp, N - No Data Stamp, S - Data Stamp starts and stops

**Logging Team:** BT - Trainor      CD - Dupla      JC - Clemons      JW - Wheeler      RG-Geseman      SZ - Zarella      TS - Starks      Y-MitchYouis  
**Members:** C - \_\_\_\_\_      DD - Duling      JF - Fennelly      LS - Salazar      SK - Knarr      TH - Henson      O-KirkOlson

**Logging/finishing start datetime:** \_\_\_\_\_      **Processing start datetime:** \_\_\_\_\_  
**Processing completion datetime:** \_\_\_\_\_

| Ref ID | Date Rcvd | Media File Name | Received From:                      | Media Type         | Content                               | Original File Name                                                 | Length  | Release Authority | Op |
|--------|-----------|-----------------|-------------------------------------|--------------------|---------------------------------------|--------------------------------------------------------------------|---------|-------------------|----|
| 1      | 02/01/03  | STS107CLIP0001  |                                     | Digital AVI Movie  | Columbia reentry, day                 | Billjanes2.zip, full.avi                                           | 0:01:44 | ISD TM            | JF |
| 2      | 02/01/03  | STS107CLIP0002  |                                     | Digital Real Media | Columbia reentry, night               | Fredbruenjes_020103_1005pm.rm<br>Fredbruenjes_020103_1005pm.txt    | 0:0:13  | ISD TM            | JF |
| 3      | 02/01/03  | STS107CLIP0003  |                                     | Digital MPEG       | Columbia reentry, night               | MOV004392.MPG                                                      | 0:00:11 | ISD TM            | JF |
| 4      | 02/01/03  | STS107CLIP0004  |                                     | Digital MPEG       | Columbia reentry, day                 | thomastressell_020103am.mpg<br>thomastressell_020103am.txt         | 0:02:25 | ISD TM            | JF |
| 5      | 02/03/03  | STS107CLIP0005  |                                     | Digital Real Media | Columbia reentry, night               | Columbia.rm, email.txt                                             | 0:00:32 | ISD TM            | JF |
| 6      | 02/03/03  | STS107CLIP0006  |                                     | Digital WMV        | Columbia reentry, day                 | Columbia_fullcomp_larged2.wmv,<br>email.txt                        | 0:01:26 | ISD TM            | JF |
| 7      | 02/04/03  | STS107CLIP0007  | David.p.fanucci@usesgo.hsc.nasa.gov | Digital MPEG       | KSC Ice and Debris team film analysis | 107film1.pdf, E212.mpg, email.txt<br>STS107CLIP0007                | 0:00:17 | ISD TM            | JF |
| 8      | 02/04/03  | STS107CLIP0008  |                                     | Digital AVI        | Columbia reentry, day                 | MarioValverde_020303_0730pm.avi<br>MarioValverde_020303_0730pm.txt | 0:00:54 | ISD TM            | JF |
| 9      | 02/04/03  | STS107CLIP0009  |                                     | Digital Quicktime  | Columbia reentry, day                 | 100_0360.mov, 100_0360.txt                                         | 0:00:24 | ISD TM            | JF |
| 10     | 02/05/03  | STS107CLIP0010  |                                     | Digital MPEG       | Columbia reentry, day                 | Columbia 4 seconds.mpg, email.txt                                  |         | ISD TM            | TH |
| 11     | 02/05/03  | STS107CLIP0011  |                                     | Digital AVI        | Columbia Reentry, day                 | Columbianesquize2.avi<br>Columbianesquize2.txt                     |         | ISD TM            | TH |
| 12     | 02/05/03  | STS107CLIP0012  |                                     | Digital Quicktime  | Columbia Reentry, night               | P2010077.mov<br>Email.txt                                          |         | ISD TM            | TH |
| 13     | 02/05/03  | STS107CLIP 0013 |                                     | Digital MPEG       | Columbia Reentry, day                 | DanMcklew.mpg, DanMcklew.txt                                       |         | ISD TM            | TH |
| 14     | 02/05/03  | STS107CLIP0014  |                                     | Digital WMV        | Columbia Reentry, day                 | Space Shuttle.wmv, email.txt                                       |         | ISD TM            | TH |
| 15     | 2/06/03   | ST107CLIP0015   | Ahutichison@gmail.atc.nasa.gov      | Digital MPEG       | Santa Cruz, Airplane?                 | Shuttle.mpg                                                        | 0:00:15 | ISD TM            | JF |
| 16     | 2/06/03   | ST107CLIP0016   |                                     | Digital MPEG       | Shuttle Launch                        | columbia_clip.mpg                                                  | 0:00:06 | ISD TM            | JF |
| 17     | 2/06/03   | ST107CLIP0017   |                                     | Digital WMV        | Columbia entry, Lubbock               | Space Shuttle.wmv                                                  | 0:00:47 | ISD TM            | JF |
| 18     | 2/06/03   | ST107CLIP0018   |                                     | Digital AVI        | Columbia Launch                       | Feb06_05.avi                                                       | 0:00:10 | ISD TM            | JF |

# STS-107 Investigation: Digital Files

| Ref ID | Date Rcvd | Media File Name | Received From             | Media Type            | Content                                 | Original File Name            | Length  | Release Authority | Op |
|--------|-----------|-----------------|---------------------------|-----------------------|-----------------------------------------|-------------------------------|---------|-------------------|----|
| 19     | 2/06/03   | ST107CLIP0019   |                           | Digital MPEG          | Columbia Launch                         | Columbia Launch.mpg           | 0:00:43 | ISD TM            | JF |
| 20     | 2/7/03    | ST107CLIP0020   |                           | Digital RealMedia     | Reentry, night Duplicate of EOC Imagery | AnthonyPanda\020503_1818.rm   | 0:46:00 | ISD TM            |    |
| 21     | 02/09/03  | ST107CLIP0021   |                           | Digital MPEG.MOV, WMV | Reentry, Day.                           | Mvc-175w.mpg, wmv, mov        | 0:00:05 | ISD TM            |    |
| 22     | 02/09/03  | ST107CLIP0022   |                           | Digital MPEG.MOV, WMV | Reentry, Day.                           | Mvc-535v.mpg, wmv, mov        | 0:00:05 | ISD TM            |    |
| 23     | 02/06/03  | ST107CLIP0023   |                           | Digital AVI           | Columbia Launch                         | Feb06_06.avi                  | 0:00:10 | ISD TM            | TH |
| 24     | 02/06/03  | ST107CLIP0024   |                           | Digital AVI           | Columbia Launch                         | Feb06_24.avi                  | 0:00:10 | ISD TM            | TH |
| 25     | 02/13/03  | STS107CLIP00    | Krighnmorram@JSC.NASA.GOV | Digital WMV           | Columbia Reentry Night                  | STS107.WMV                    | 0:00:50 | ISD TM            | Th |
| 26     | 02/13/03  | STS107CLIP00    |                           | Digital WMV           | Columbia Reentry Night                  | STS107.WMV                    | 0:00:50 | ISD TM            | Th |
| 27     | 02/13/03  | STS107CLIP00    |                           | Digital MPG           | Prelaunch Tile Footage                  | Bobblaser_10_07_02_0951am.mpg | 0:00:15 | ISD TM            | Th |
| 28     | 02/13/03  | STS107CLIP00    |                           | Digital MPG           | Prelaunch Tile Footage                  | Bobblaser_10_07_02_0957am.mpg | 0:00:14 | ISD TM            | Th |
| 29     | 02/13/03  | STS107CLIP00    |                           | Digital MPG           | Prelaunch Tile Footage                  | Bobblaser_100802_0612am.mpg   | 0:00:28 | ISD TM            | Th |
| 30     | 02/13/03  | STS107CLIP00    |                           | Digital MPG           | Prelaunch Tile Footage                  | Bobblaser_100802_0620am.mpg   | 0:00:15 | ISD TM            | Th |
| 31     | 02/13/03  | STS107CLIP00    |                           | Digital MPG           | Prelaunch Tile Footage                  | Bobblaser_100802_0622am.mpg   | 0:00:14 | ISD TM            | Th |
| 32     | 02/13/03  | STS107CLIP00    |                           | Digital MPG           | Prelaunch Tile Footage                  | Bobblaser_100802_0630am.mpg   | 0:00:09 | ISD TM            | Th |
| 33     |           |                 |                           |                       |                                         |                               |         |                   |    |
| 34     |           |                 |                           |                       |                                         |                               |         |                   |    |
| 35     |           |                 |                           |                       |                                         |                               |         |                   |    |
| 36     |           |                 |                           |                       |                                         |                               |         |                   |    |
| 37     |           |                 |                           |                       |                                         |                               |         |                   |    |
| 38     |           |                 |                           |                       |                                         |                               |         |                   |    |
| 39     |           |                 |                           |                       |                                         |                               |         |                   |    |
| 40     |           |                 |                           |                       |                                         |                               |         |                   |    |



## STS-107 MIT Video Tape List

**Tape DVCam** Civil Service Ed Wilson Date 02/04/03 IMPASS David Tharp Date 02/04/03  
 Format: Recipient: Patrick Chimes Received: Recipient: Patrick Chimes Received: Patrick Chimes  
 Serial Numbers, Other Information: Received: Recipient: David Tharp Date 02/04/03 Received: Recipient: David Tharp Date 02/04/03

ISD Contacts: Ed Wilson 483-7736, Patrick Chimes 483-2397, Rick Slater 483-7723  
 Description of \* (asterisk) in Data Stamp column: F - Full Data Stamp, P - Partial Data Stamp, N - No Data Stamp, S - Data Stamp starts and stops

**Logging**  
 Team: Opr. Team BT - Trainor CD - Dupla JC - Clemons JW - Wheeler RG - Geeseman SZ - Zarella TS - Starks Y - MitchYous  
 Members: C - DD - Duling JF - Fennelly LS - Salazar SK - Knarr TH - Hinson O - KirkOlson

Logging/firming start datetime: Processing start datetime:  
 Processing completion datetime:

| Tape ID | Date Rcvd | Tape Label Text                                             | CUT # | Conv. DigBeta# | PART # | * Start | Data Stamp Stop   | Start             | SMPTE Start | SMPTE Stop | Total Time | A | Op |    |
|---------|-----------|-------------------------------------------------------------|-------|----------------|--------|---------|-------------------|-------------------|-------------|------------|------------|---|----|----|
| 1       | 02/04/03  | OTHER - 1 Army Flir 2/1/03                                  | 1     | 716087         |        | N       |                   | 23:46:00          | 23:48:47    | 0:02:47    |            | Y | JF |    |
| 2       |           |                                                             |       |                |        |         |                   |                   |             |            |            |   |    |    |
| 3       | 02/04/03  | Team 1 Aerials: Bar - 2 2/2/03                              | 3     | 716087         |        | N       |                   | 16:43:00          | 16:57:47    | 0:14:47    |            | Y | SZ |    |
| 4       | 02/04/03  | Gregory Interview B-Roll Bar - 3 02/02/03                   | 4     | 716087         |        | N       |                   | 17:04:15          | 17:11:07    | 0:06:52    |            | Y | SZ |    |
| 5       | 02/04/03  | Team 4 T4-1 2/02/03                                         | 5     | 716087         |        | N       |                   | 17:16:30          | 17:27:03    | 0:10:33    |            | Y | SZ |    |
| 6       | 02/04/03  | 2/02/03 MIT MTG B-Roll                                      | 6     | 716087         |        | N       |                   | 17:39:30          | 17:52:36    | 0:13:06    |            | Y | SZ |    |
| 7       | 02/05/03  | Bar-4 Crew Transfer 2/05/03                                 | 7     | 716087         |        | S       | 02/05/03 09:13:17 | 02/05/03 10:21:05 | 14:26:30    | 14:52:06   | 0:25:36    |   | Y  | SZ |
| 8       | 02/06/03  | 2/2/03 1 MIT M for B-Roll                                   | 8     | 716087         |        | N       |                   | 10:52:00          | 11:05:26    | 0:13:26    |            | Y | SK |    |
| 9       | 02/07/03  | Bar - 5 02/05/03 debris                                     | 9     | 716087         |        | S       | 02/05/03 16:17:22 | 02/05/03 16:36:51 | 19:09:00    | 19:19:10   | 0:10:10    |   | Y  | SZ |
| 10      | 02/07/03  | Bar - 6 1st Big Debris Shipment 2/6/03                      | 1     | 716118         |        | S       | 02/06/03 18:39:58 | 02/06/03 20:14:19 | 19:32:00    | 19:43:44   | 0:11:44    |   | Y  | SZ |
| 11      | 02/07/03  | Bar - 7 Nose Cone Arrival at Barksdale Feb. 6, 2003         | 2     | 716118         |        | S       | 02/06/03 21:42:43 | 02/06/03 22:13:20 | 19:49:05    | 20:04:47   | 0:15:42    |   | Y  | SZ |
| 12      | 02/07/03  | Bar-8 PAO Debris 2/7/03                                     | 3     | 716118         |        | S       | 02/07/03 11:26:32 | 02/07/03 11:38:42 | 22:09:00    | 22:14:05   | 0:05:05    |   | Y  | JF |
| 13      | 02/12/03  | Bar-9 BAFB MEM SUS. 2/8/03 1 of 2                           | 4     | 716118         |        | N       |                   | 14:01:00          | 14:43:03    | 0:42:03    |            | Y | SK |    |
| 14      | 02/12/03  | BAR-10 BAFB Memorial Svc. 2/8/3 2 of 2                      | 5     | 716118         |        | N       |                   | 14:48:00          | 14:56:30    | 0:08:30    |            | Y | JB |    |
| 15      | 02/12/03  |                                                             |       |                |        |         |                   |                   |             |            |            |   |    |    |
| 16      | 02/12/03  | Debris Hangar (BAFB) Media Opportunity Feb. 10, 2003 BAR-12 | 7     | 716118         |        | S       | 02/10/03 08:30:20 | 02/10/03 12:10:42 | 15:19:01    | 15:31:02   | 0:12:01    |   | Y  | JB |
| 17      | 02/18/03  | Bar-13 02/11/03 First Debris to KSC                         |       |                |        | S       | 02/11/03 08:30:20 | 02/11/03 12:18:20 | 18:29:00    | 19:00:34   | 0:31:34    |   | Y  | SZ |

To: Mark Kowaleski <mkowales@hq.nasa.gov>  
From: Michael Card <mcard@hq.nasa.gov>  
Subject: Fwd: FW: Vehicle Mapping Charts  
Cc:  
Bcc:  
Attached: C:\Documents and Settings\mcard\My Documents\Data\attach\columbia sensor wire locations Rev 2.ppt;

per discussion, mike

From: "KOERNER, CATHERINE A. (CATHY) (JSC-DA8) (NASA)"  
<catherine.a.koerner@nasa.gov>  
To: DL ESAT <DL-ESAT@ems.jsc.nasa.gov>  
Subject: FW: Vehicle Mapping Charts  
Date: Wed, 12 Feb 2003 11:41:16 -0600  
X-Mailer: Internet Mail Service (5.5.2653.19)

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

> From: HIRSHORN, STEVEN R. (JSC-DF) (NASA)  
> Sent: Wednesday, February 12, 2003 11:11 AM  
> To: BARCKHOLTZ, RANDALL J. (RANDY) (JSC-CB) (USA); CHILDRESS, J. M.  
> (MARK) (JSC-DO121) (NASA); CURRIE, DAVID W. (JSC-CB) (USA); DL DA8 Flight  
> Directors; DL DF Shuttle Management; DL DF Station Management; DL MOD  
> OFC/DIV CHIEFS; FOSSUM, MICHAEL E. (JSC-CB) (NASA); JOHNSON, GREGORY H.,  
> LTCOL. (BOX) (JSC-CB) (NASA); Polly Schroeder; SERIALE-GRUSH, JOYCE M.  
> (JSC-EA) (NASA); SHACK, PAUL E. (JSC-EA42) (NASA); SMITH, JON M. (MIKE)  
> (JSC-TA) (NASA)  
> Subject: FW: Vehicle Mapping Charts

> In case anyone else is having problems, here's the charts themselves:

> <<columbia sensor wire locations Rev 2.ppt>>

> Steven R. Hirshorn  
> Technical Assistant for Shuttle Integration  
> Systems Division  
> NASA / JSC / MOD / DF  
> Phone: (281) 483-0652

> Fax: (281) 483-3997  
> e-mail: steven.r.hirshorn1@nasa.gov

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

> From: CASTLE, ROBERT E. (BOB) (JSC-DA8) (NASA)  
> Sent: Wednesday, February 12, 2003 9:28 AM  
> To: HIRSHORN, STEVEN R. (JSC-DF) (NASA)  
> Subject: RE: Vehicle Mapping Charts