



NTSB National Transportation Safety Board

Office of Aviation Safety

Mishap Investigation

Joe Sedor

Major Investigations Division

National Transportation Safety Board

- Independent agency
- Not part of DOT or the FAA
- Composed of:
 - 5 Board Members
 - ≈ 390 FTE staff
 - < 60 air carrier investigators
 - HQ in DC; regional offices

NTSB Mission

- Investigate to determine the facts, conditions, and circumstances of the accident/incident/mishap
- Determine the probable cause
- Make recommendations to prevent similar mishaps



01.17.2009 11:12





Memorandum of Agreement

NTSB

FAA

USAF

1989-Present

...only 2 part-time
space investigators

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
NATIONAL TRANSPORTATION SAFETY BOARD
DEPARTMENT OF THE AIR FORCE
AND FEDERAL AVIATION ADMINISTRATION
REGARDING SPACE LAUNCH ACCIDENTS

BACKGROUND AND PURPOSE

Commonality of launch vehicles, launch vehicle systems, components, and launch range safety systems exists for launches conducted under launch licenses issued by the Federal Aviation Administration ("FAA") and launches conducted by and for the United States Air Force ("USAF"). The FAA and the USAF therefore require timely knowledge of the facts and circumstances of commercial space launch accidents. In accordance with the attached agreement between the National Transportation Safety Board ("NTSB") and the Federal Aviation Administration Associate Administrator for Commercial Space Transportation ("AST"), the NTSB may lead investigations of certain commercial space launch accidents. This MOU and the attached NTSB-AST agreement establish the relationship between the NTSB, USAF and FAA ("the parties") during space launch accidents, and guide the parties' exchange of accident information and participation in an accident investigation.

INVESTIGATIONS

The parties agree that either AST or NTSB will lead investigations of commercial space launch accidents, pursuant to the terms of the NTSB-AST agreement, and that the USAF will lead investigations of accidents involving USAF certified launches.

In the event NTSB leads an investigation of a commercial space launch accident in accordance with the NTSB-AST agreement, NTSB will permit, upon request of the USAF, appropriate USAF personnel to participate as official observers to the NTSB investigation. USAF may also be offered "party status" to an NTSB investigation, in accordance with the provisions of 49 C.F.R. Part 831, in appropriate circumstances.

Personnel observing or participating in an investigation will be under the control and direction of the lead agency's chief investigator (e.g., NTSB "Investigator-In-Charge," FAA "Investigator-in-Charge," or USAF "Safety Investigation Board President"). All such personnel will follow the lead agency's rules regarding the handling or release of information or other evidence collected during an investigation.

CONFIDENTIAL NATURE OF NTSB ACCIDENT INVESTIGATIONS

All NTSB investigation data, information, documents or other material obtained by USAF or USAF personnel in the course of an accident investigation led by NTSB shall be treated as confidential (not in the classified sense, but, rather, in the sense that it is subject to claim of governmental and/or other privilege) and not disclosed in any manner without the written consent of the NTSB Investigator-in-Charge. This restriction also applies to all accident

NTSB Space Activities



**Challenger
1986**



**Columbia
2003**



**Titan II Launch
Anomaly – 1988**



**Pegasus Launch
Anomaly – 1993**

The Basics

- **GO TEAM**
 - IIC
 - Group Chairmen (specialists)
 - Prepared to travel within 2 hours notice
- **Command Center**
 - Hotel or Conference Room
 - Operations/Communications hub

CHAOS MANAGEMENT

Party System and Group Breakdown

- Parties to the Investigation
 - FAA, USAF, manufacturers, range operators, labor organizations, local authorities, etc.
- Party Coordinator
- Group Members
 - Fulltime employees
 - Technical expertise



First Meeting--Organizational

- After all investigative teams arrive
- Parties designated
- Investigative groups named
- Party group members assigned
- Rules governing the investigation
- Safety Briefing

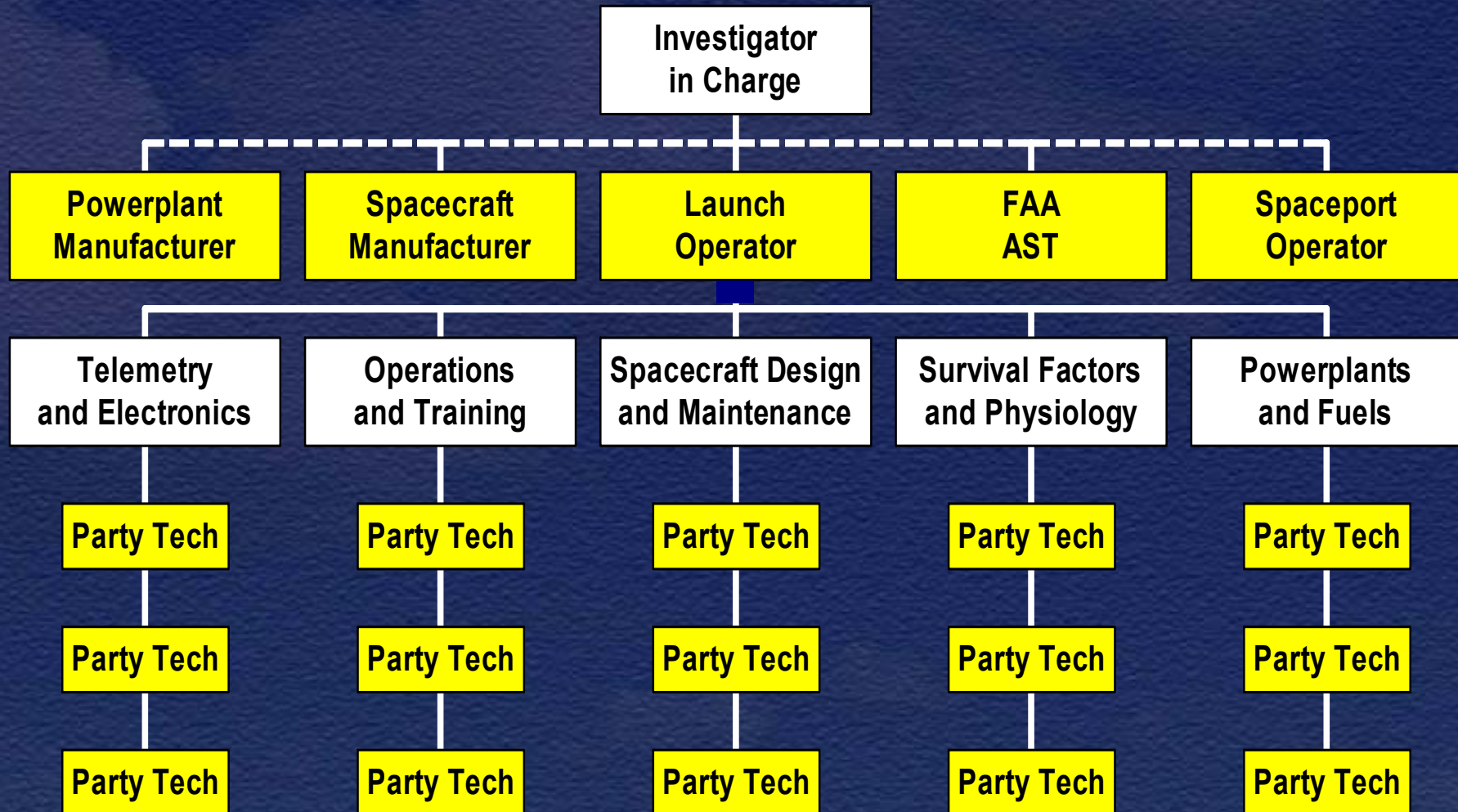


The Investigative Groups

- Operations
- Human Performance
- Design Adequacy
- Survival Factors
- Materials Laboratory
- Recorders/Telemetry
- Vehicle Performance
- Systems
- Powerplants
- Weather
- Structures
- Video Analysis



On Scene Organization Chart



Progress Meetings

- **Conducted daily**
- **All participants in the investigation**
- **Only GCs and Coordinators speak**
- **Group Chairman Summary**
 - Days findings
 - Next day's activities
- **No analytical discussion**

Communications within Investigation

- Do communicate with home office
 - avoid speculation
- Do complain when necessary
 - use chain of command
- Don't withhold information
 - ...we'll find out later anyhow.

Press Relations

- **The NTSB is a public agency**
 - public has right to know
- **Board Member and IIC**
 - only people authorized
- **Press Conferences**
 - One or more a day
- **If families are involved**
 - Briefed before press



Parties and the Press

- Provide only basic company information
- Don't discuss the investigation
- We don't want to learn anything new!
- Do let us know if you have concerns about something we say (or may say) about your company



On-Scene Wrap Up

Field Notes

- What are they
- Signatures

National Transportation Safety Board
Office of Aviation Safety
Washington, DC 20594

August 30, 2006

AIR TRAFFIC CONTROL GROUP FIELD NOTES

DCA06MA064

A. AIRCRAFT ACCIDENT

Location: Lexington-Blue Grass Airport (LEX), Lexington, Kentucky
Operator: Comair flight 5191 (COM5191)¹
Date: August 27, 2006
Time: 0607 Eastern Daylight Time (1007 UTC)²
Aircraft: N431CA, CRJ-100

B. ATC GROUP

Chairman: Hilton Hall, NTSB
Washington, DC

Sandra L. Rowlett, NTSB
Washington, DC

Joe Mantello, Federal Aviation Administration (FAA)
Washington, DC

Ken McConahay, National Air Traffic Controller's Association (NATCA)

Post On-Scene Process

- **Follow-up Testing**
 - Examinations, Simulations, etc.
- **GC Factual Reports**
- **Public Hearing**
- **Technical Review**
- **Party Submissions**
- **Analysis Reports (NTSB only)**
- **Final Report (NTSB only)**
- **“Sunshine” Meeting**

Conclusion

- **Be Prepared!**
 - A safe space transportation system cannot be achieved by any one party
 - Cooperation between all players is vital





NTSB