



National Transportation Safety Board

Using small aircraft investigative
methods on transport category
aircraft investigations



National Transportation Safety Board



National Airlines
Boeing 747-400 BCF
Bagram, Afghanistan
April 29, 2013

Tim LeBaron,
Investigator-in-Charge

Accident Flight

- April 29, 2013, 1527 local time
- Boeing 747-400 BCF
- Operated by National Air Cargo, Inc., dba National Airlines
- Bagram, Afghanistan
- 7 crewmembers - fatal

Five MRAPs (Special Cargo Load)



Two 12-ton M-ATVs

Three 18-ton Cougars

Crew Observations in Bagram

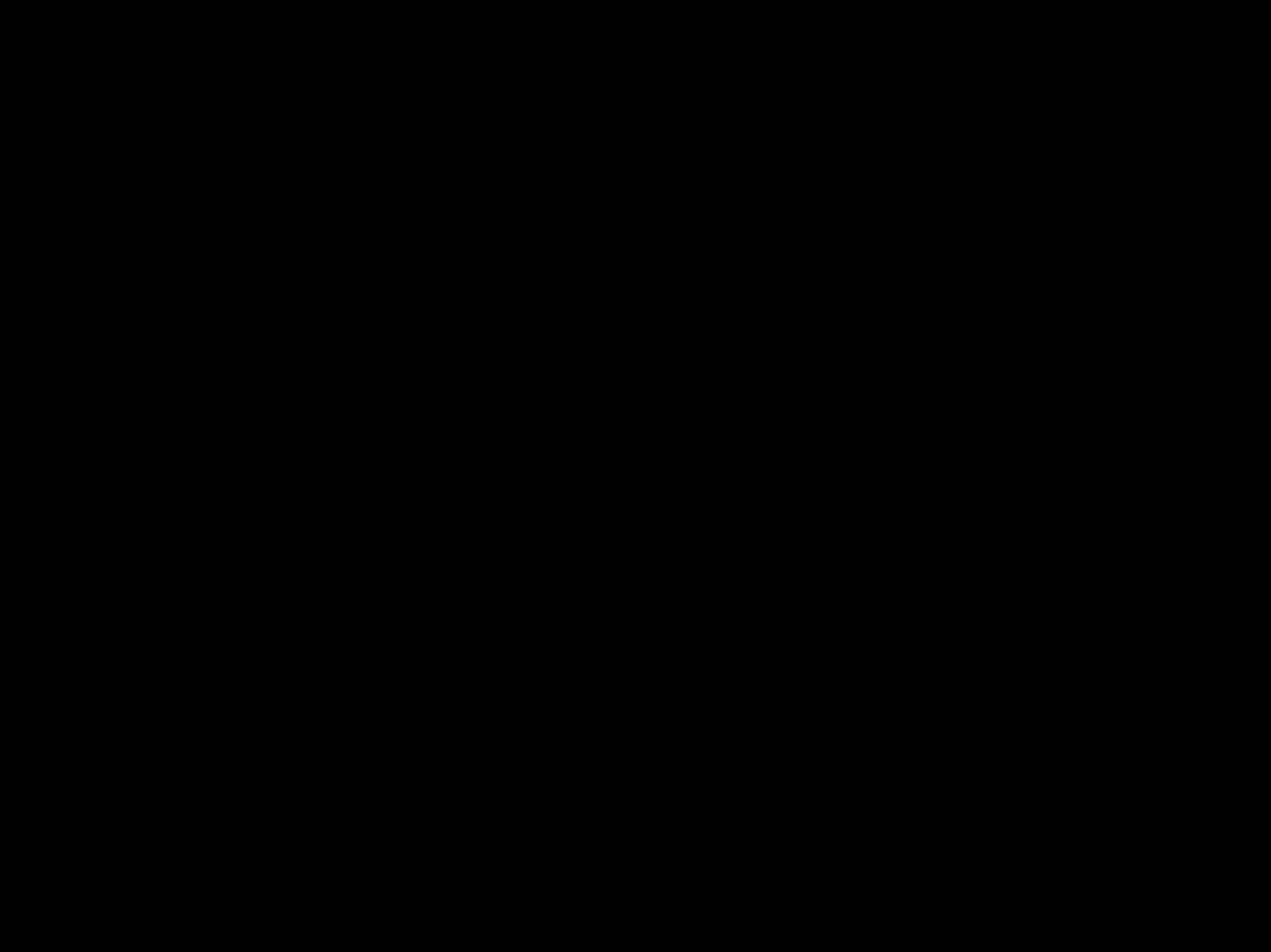
- Cargo had moved “a couple inches”
- Straps keeping load from moving backward were loose
- One strap had broken
- Straps were being “cinched down”

Accident Takeoff

- Cleared for takeoff about 1526
- “Gear up” call, then CVR and FDR stopped recording
- Airplane impacted ground about 30 seconds after CVR/FDR ceased

Dashboard Camera Video

- Airplane entered steep climb with high pitch attitude
- At peak altitude rolled right
- Rapid decent
- Impacted nose down nearly wings level



Responding Group

- 4 from the NTSB
- 1 from the FAA
- 1 from Boeing
- 4 from the operator
- 1 military observer







Investigation Groups

- Aircraft Performance
- FDR/CFR
- Operations
- Structures
- Systems



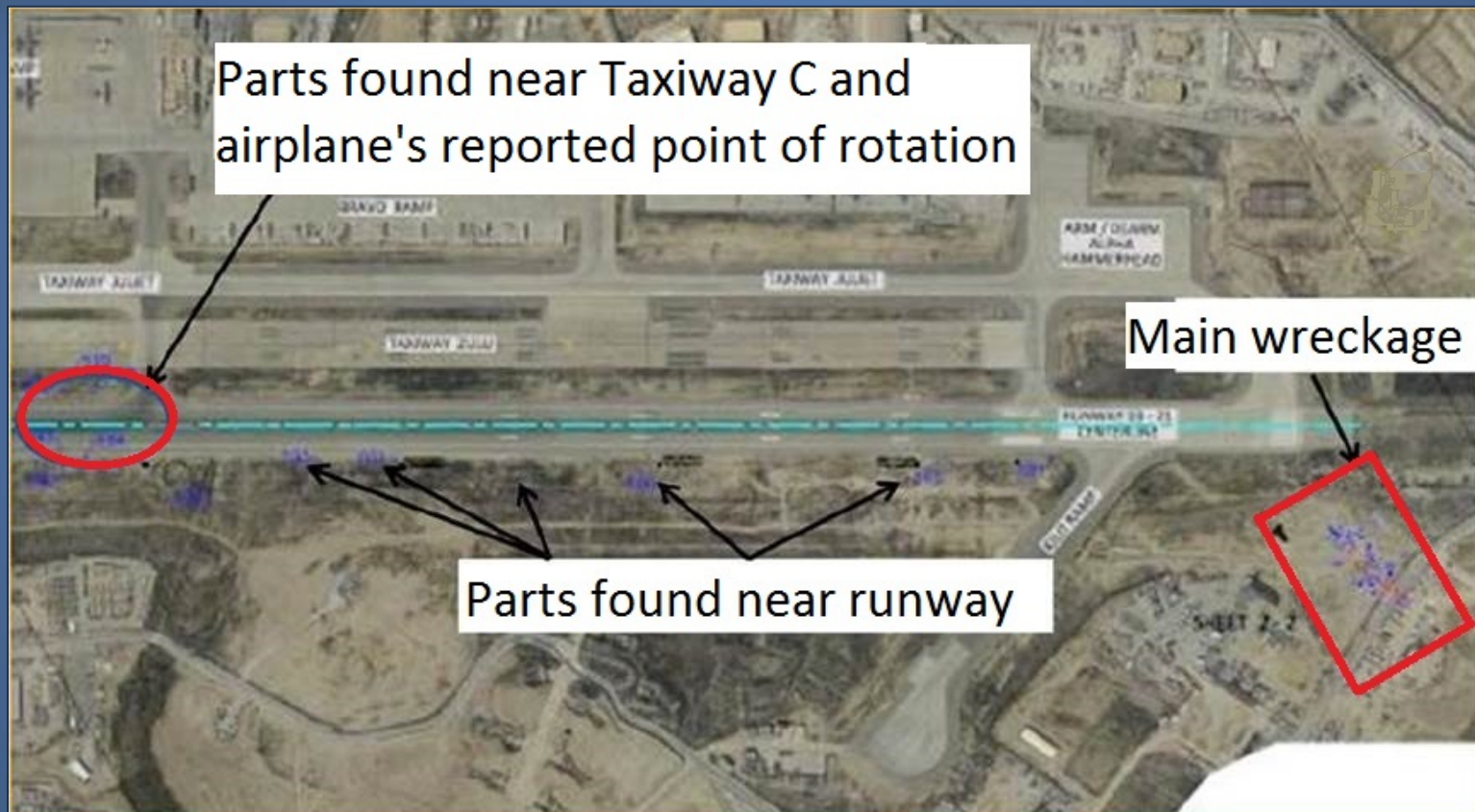




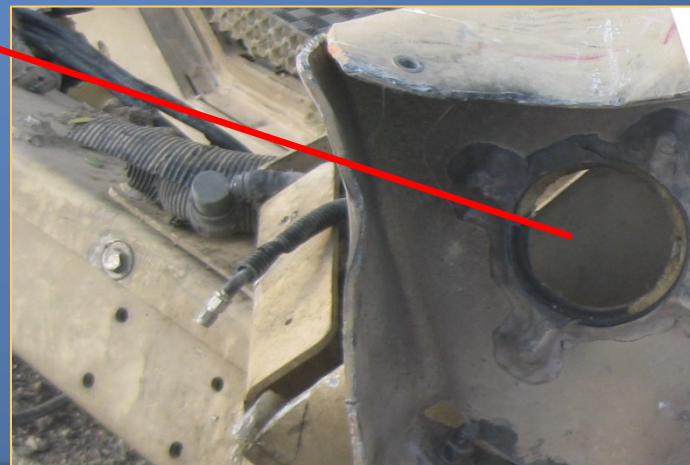
NTSB



Airplane Debris on Runway



M-ATV Debris on Runway



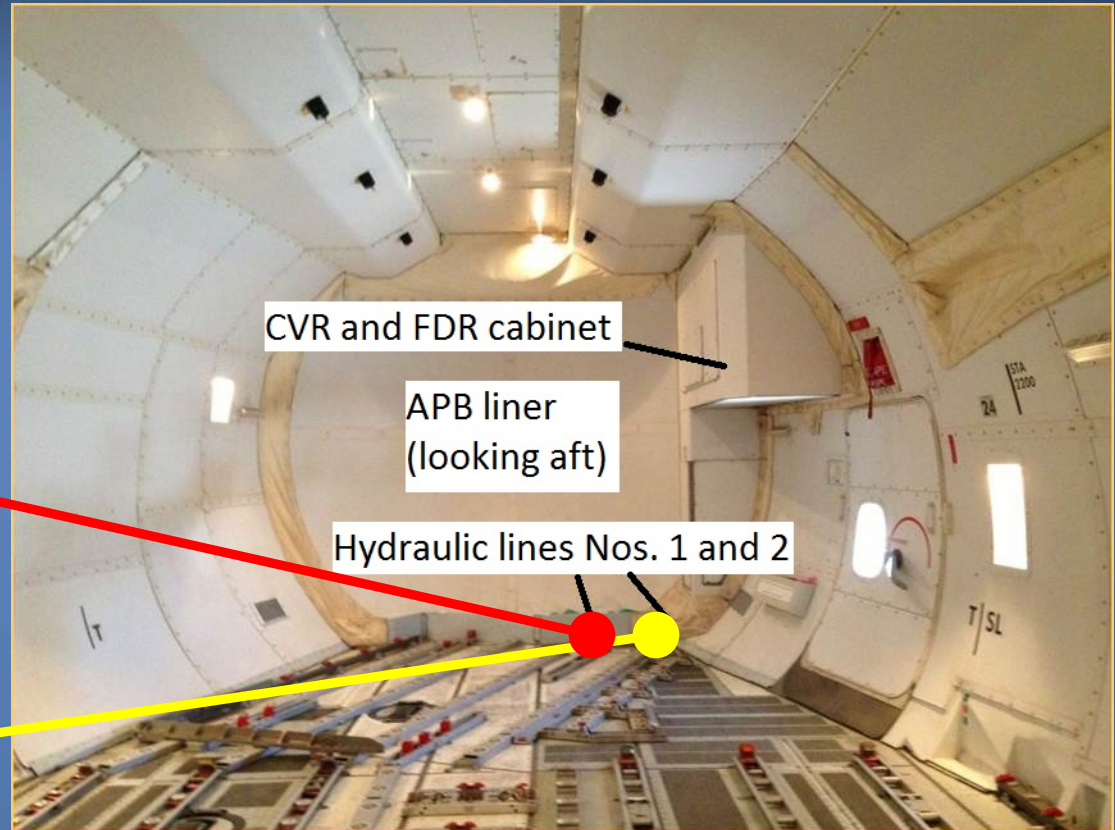
M-ATV, FDR, and CVR Damage



APB and Tire Witness Marks



Hydraulic System Failures



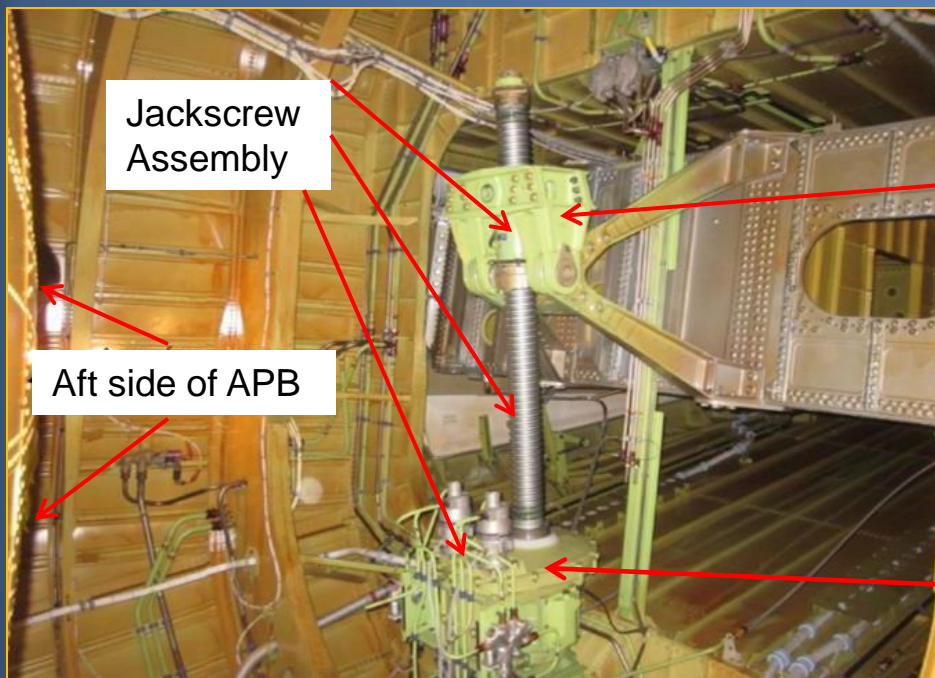
Airplane Performance Study

- Evidence: Rear M-ATV moved aft
- Performance simulation
 - Available FDR data
 - Aerodynamic modeling
- Simulation matched rotation, initial climb data with one M-ATV shifted aft

Airplane Performance Study

- Scenario: Hydraulic Nos. 1 & 2 failed
 - Uncontrollable if 4 or 5 vehicles moved aft
 - No direct evidence more than one moved aft
 - Uncontrollable if horizontal stabilizer displaced at least 5 degrees from damage from M-ATV

Horizontal Stabilizer Jackscrew



No Explosive Device

- Video Study
- Eyewitness accounts
- Joint Combat Assessment Team:
No physical evidence
- Chemical analysis: No explosive
residue

Parties to the Investigation

- Federal Aviation Administration
- Boeing
- National Airlines
- Telair International



National Transportation Safety Board



Aircraft Structures

MRAPs (Special Cargo Load)



12-ton M-ATV



18-ton Cougar

Special Cargo Loads

- Nonstandard, odd-sized cargo
- No unit load devices (ULD) used
- Free-floating pallets loaded along centerline of cargo deck
- Pallets did not lock into cargo handling system restraint devices

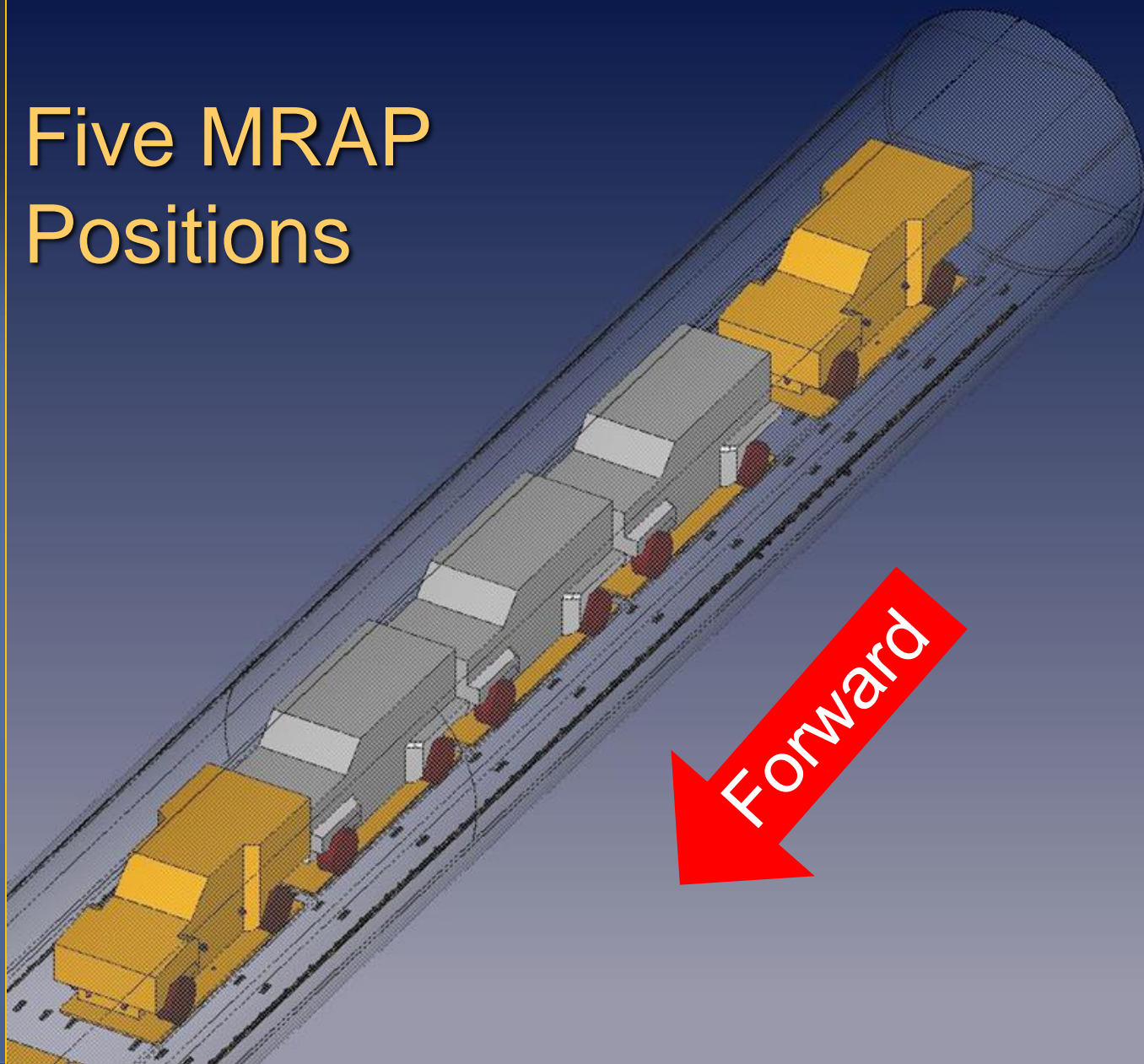
Typical ULD Loading



Example Strapping



Five MRAP Positions



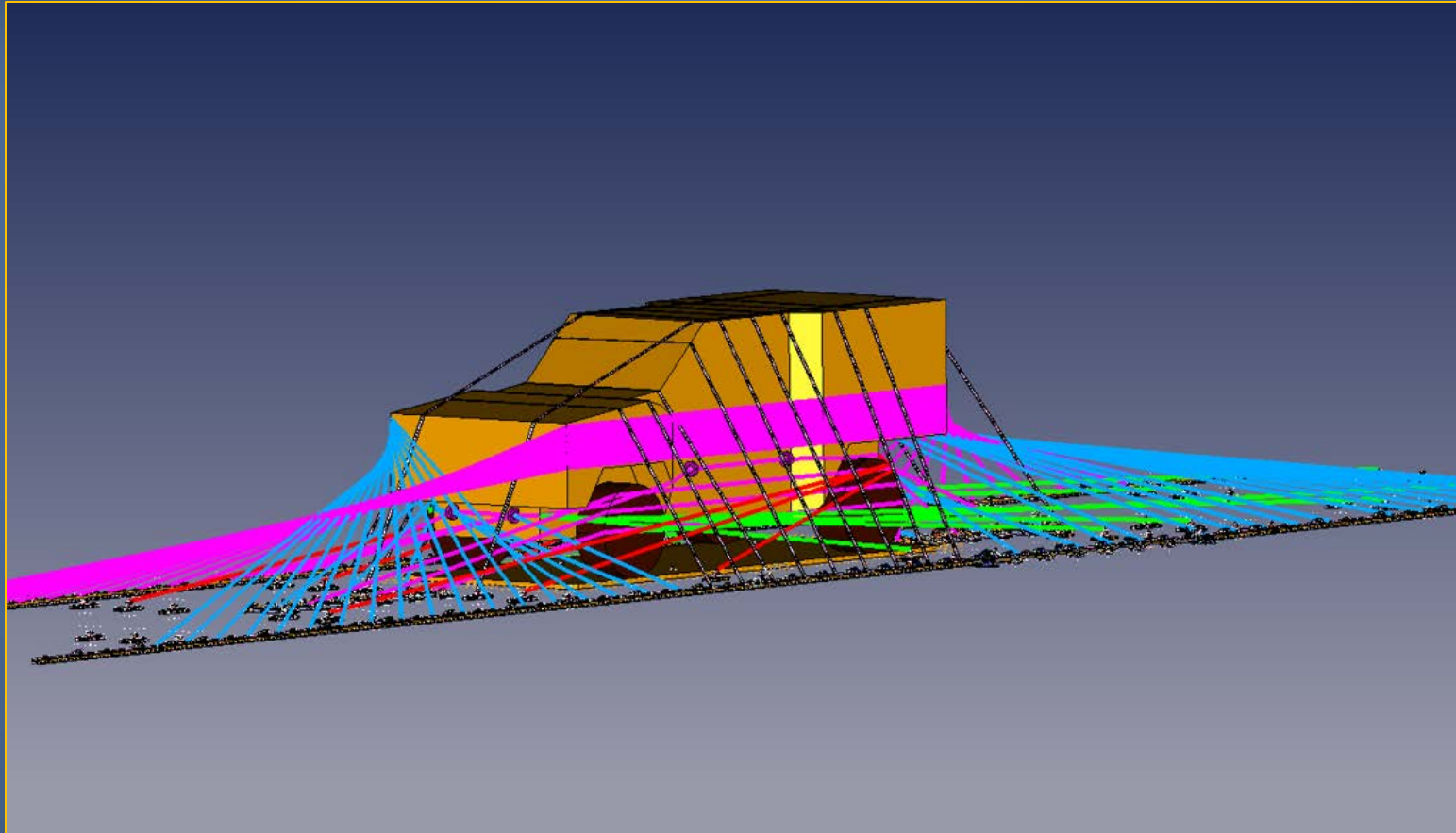
Strap Calculations

	M-ATV	Cougar
Accident	24	26
NAL	32	44/46
Boeing	60	*
Telair	**	**

*Boeing: Due to TRC requirements, one M-ATV (and no Cougars) could be transported

**Telair: Due to TRC requirements, no MRAPs could be transported

M-ATV Tie-Down Scheme



Safety Issues

- Deficient procedures for securing special cargo loads
- Inadequate guidance regarding use of FAA-approved data
- Lack of certification for cargo handling personnel

Safety Issues

- Special Cargo Loads
 - Inadequate FAA oversight of cargo operator manuals
 - Unclear FAA inspector responsibilities
 - Inadequate FAA inspector training
- Unlimited deferral of surveillance



**National
Transportation
Safety Board**

Questions?



National Transportation Safety Board



**National
Transportation
Safety Board**

Corendon Airlines 737 October 14, 2012 Antalya, Turkey

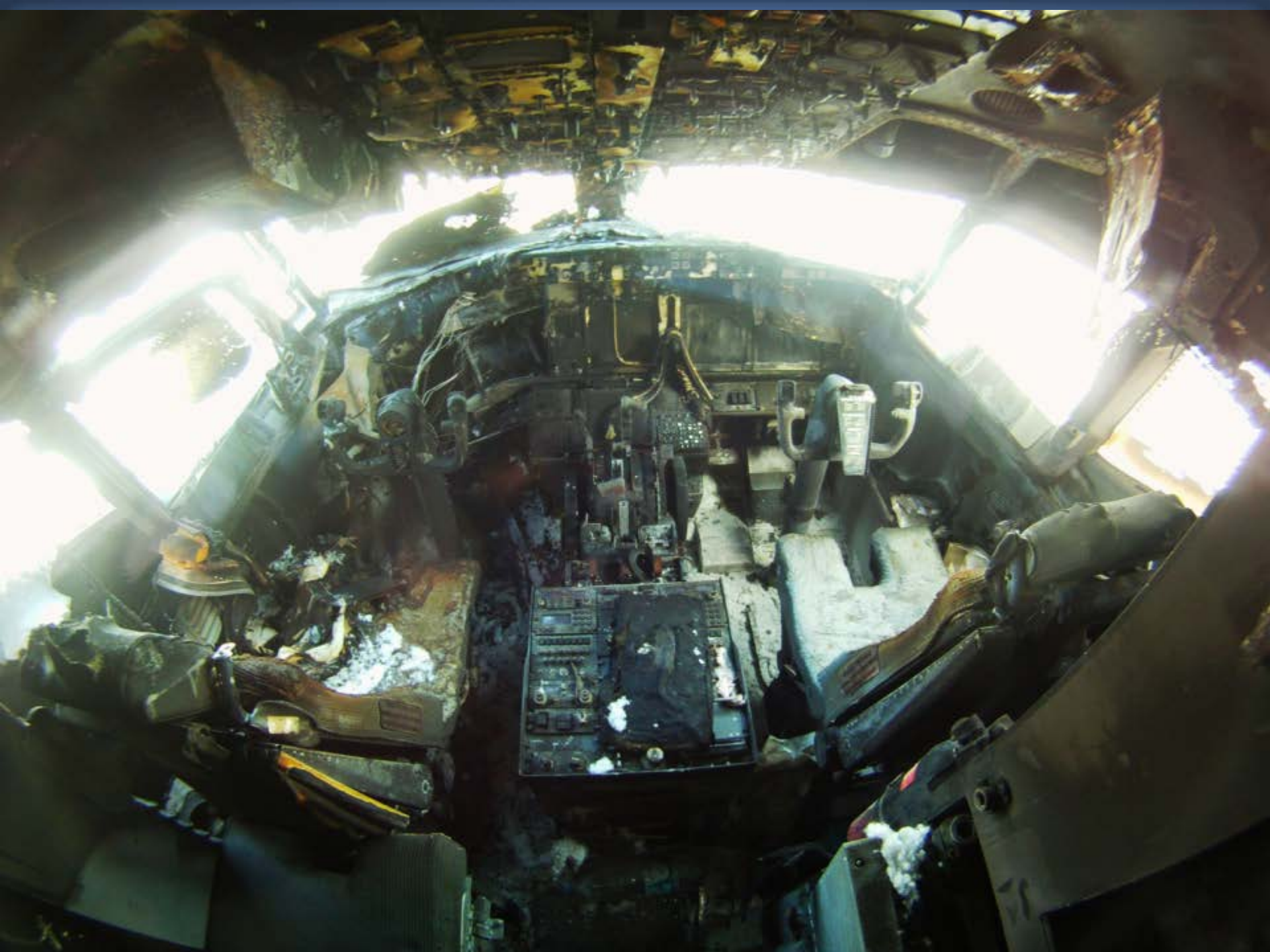
Tim LeBaron

Accident Summary

- October 14, 2012 at 0400
- Corendon Airlines flight 773
- Boeing 737-800
- 189 passengers and 7 crewmembers
- 27 hospitalized, 2 serious injuries
- Airplane sustained substantial damage
- U.S. team
 - 4 NTSB, 1 FAA, 4 Boeing









Investigation Groups

- Survival Factors
- Systems
- Fire
- FDR/CVR





FORBIDDEN TO ENTER



BY
FERIDUN SEREN
HEAD OF ACC. INVESTIGATIONS

SAKIN
AGMA

AN F UYKAL
000201010

Small yellow label on the left side of the door.

Small yellow label on the left side of the door.

Small yellow label on the left side of the door.







**National
Transportation
Safety Board**

Questions?