National Transportation Safety Board

The NTSB's Approach to Accident Investigation

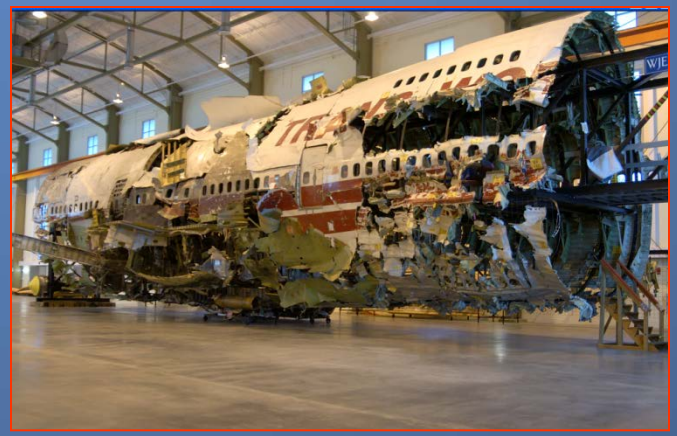
Robert L. Sumwalt, III

- NTSB is an independent federal agency
  - investigate transportation accidents
  - determine probable cause
  - issue safety recommendations

NTSB

Facilities

- Headquartered in Washington, DC
- 4 Regional Offices
- NTSB Training Center



NTSB Aviation Accident Involvement: 2013

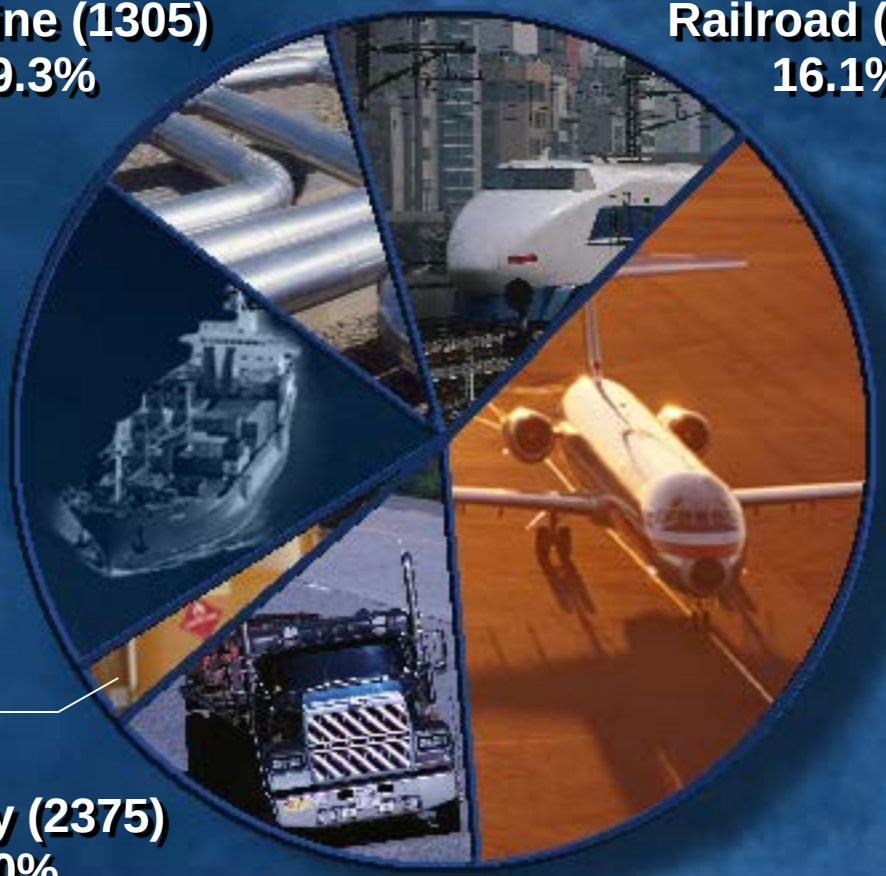
Domestic

- 1313 accidents
  - 224 fatal accidents
  - 396 fatalities

Foreign

- 203 (Annex 13 Accredited Representatives)

14,001 Safety Recommendations issued since 1967



Rev: June 18, 2014

Our greatest virtues:

Independence

Credibility

The Board

Earl Weener

Robert Sumwalt

Chris Hart

Mark Rosekind

The Staff

The Anatomy of an NTSB Accident Investigation

Breaking News: A plane has crashed.

NTSB Response Operations Center

Different Types of NTSB Investigations

Regional Investigation

Limited Investigation

Go-Team Investigation

Anatomy of an accident investigation

NOTIFICATION + 2 HOURS

The Launch

EXIT
NTSB
NTSB
NTSB

NTSB
NATIONAL TRANSPORTATION SAFETY BOARD
DURABLE

Arrival on Scene

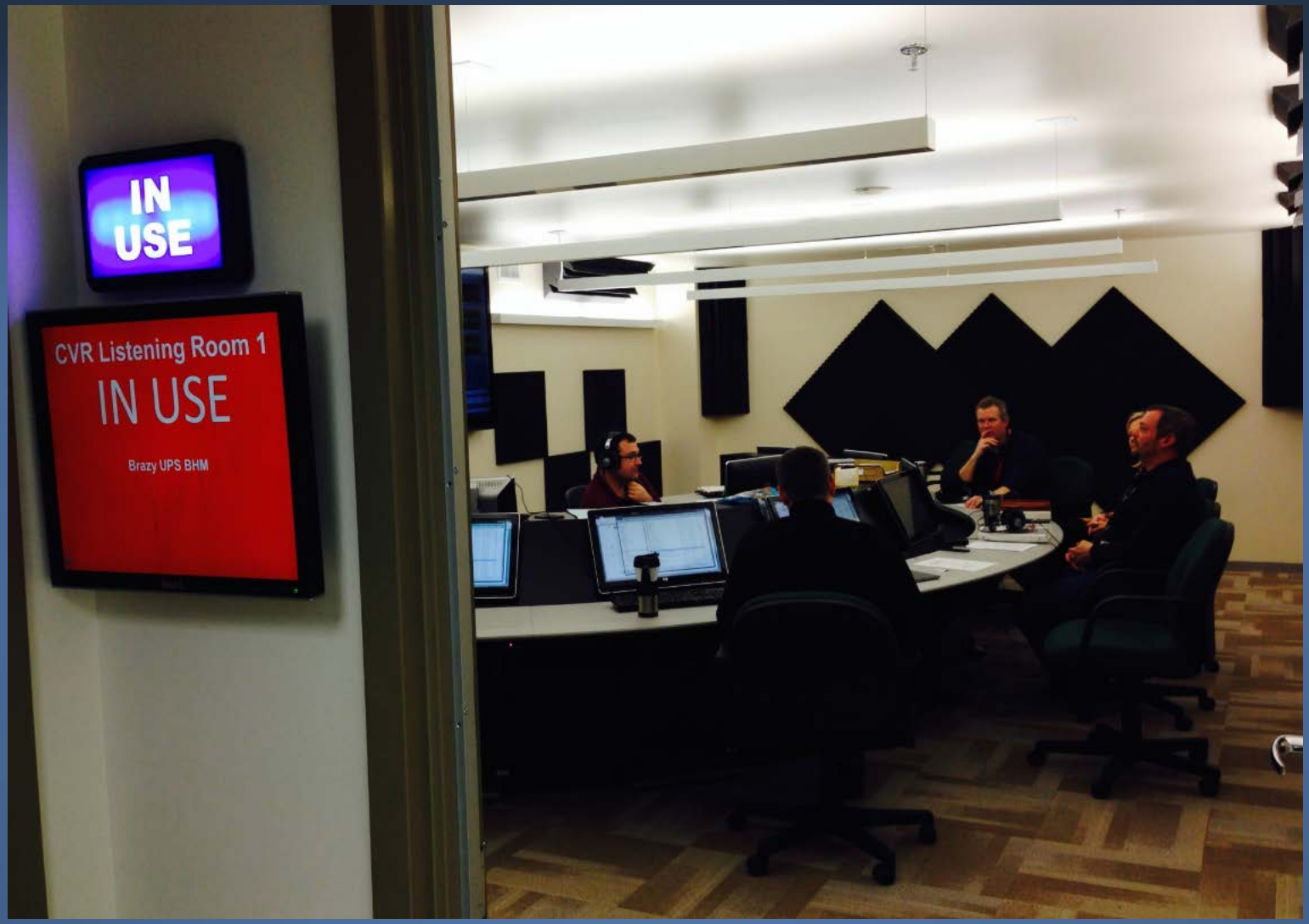
Boots on the Ground

NTSB

The Hunt for …

The “Black Boxes”

IN USE
NTSB
NTSB
NTSB


IN USE
CVR Listening Room 1
IN USE
Brazy UPS BHM

Media Briefings

Meeting with Elected Officials

The Party Process

- The NTSB designates parties to the investigation to those organizations that can provide technical expertise.
- Typically parties may include:
  - FAA (by law)
  - Operator
  - Airframe and engine manufacturers
  - Major component manufacturers
  - Pilot, ATC, maintenance, and flight attendant union representatives
  - Airport authorities
  - First responders

Value of the Party System

- Parties provide technical expertise
- Parties provide checks and balances to the process of accident investigation
- Transparency
- Immediate corrective actions

Nightly Progress Meetings

Anatomy of an accident investigation

MONTH 3 - 4

NTSB

Investigative Hearing

NTSB

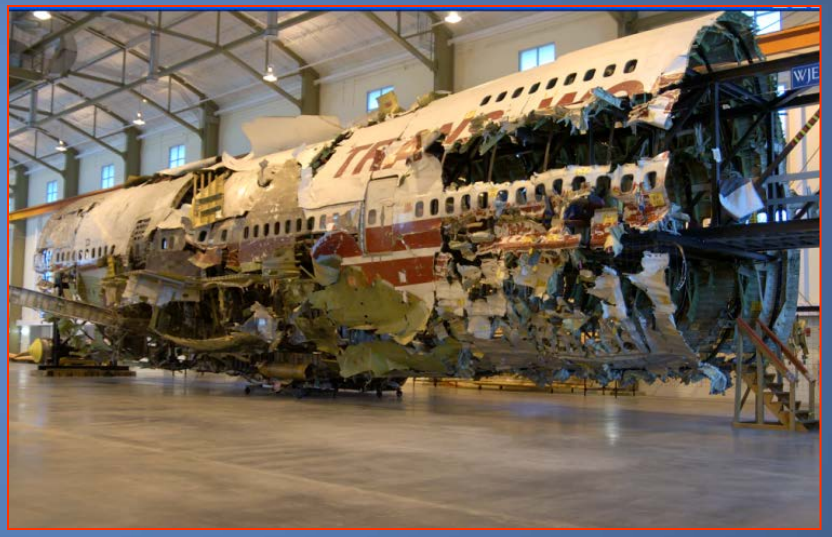
Anatomy of an accident investigation

MONTH 12

Board Meeting

Petitions for Reconsideration

- Discovery of new evidence
- Showing that the Board's findings are erroneous



Colgan Air, February 2009

NTSB

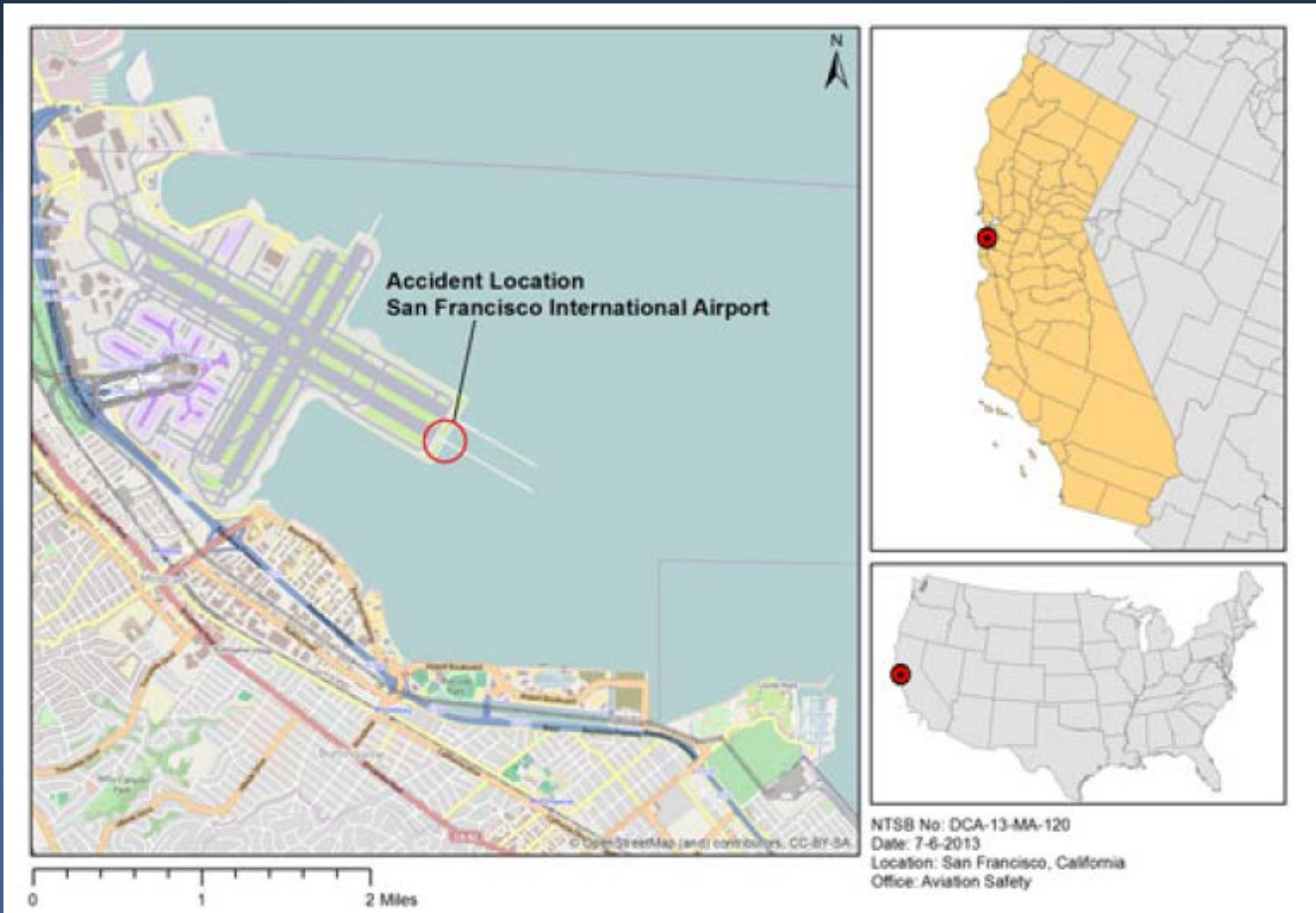
June 24 Board Meeting

Asiana flight 214

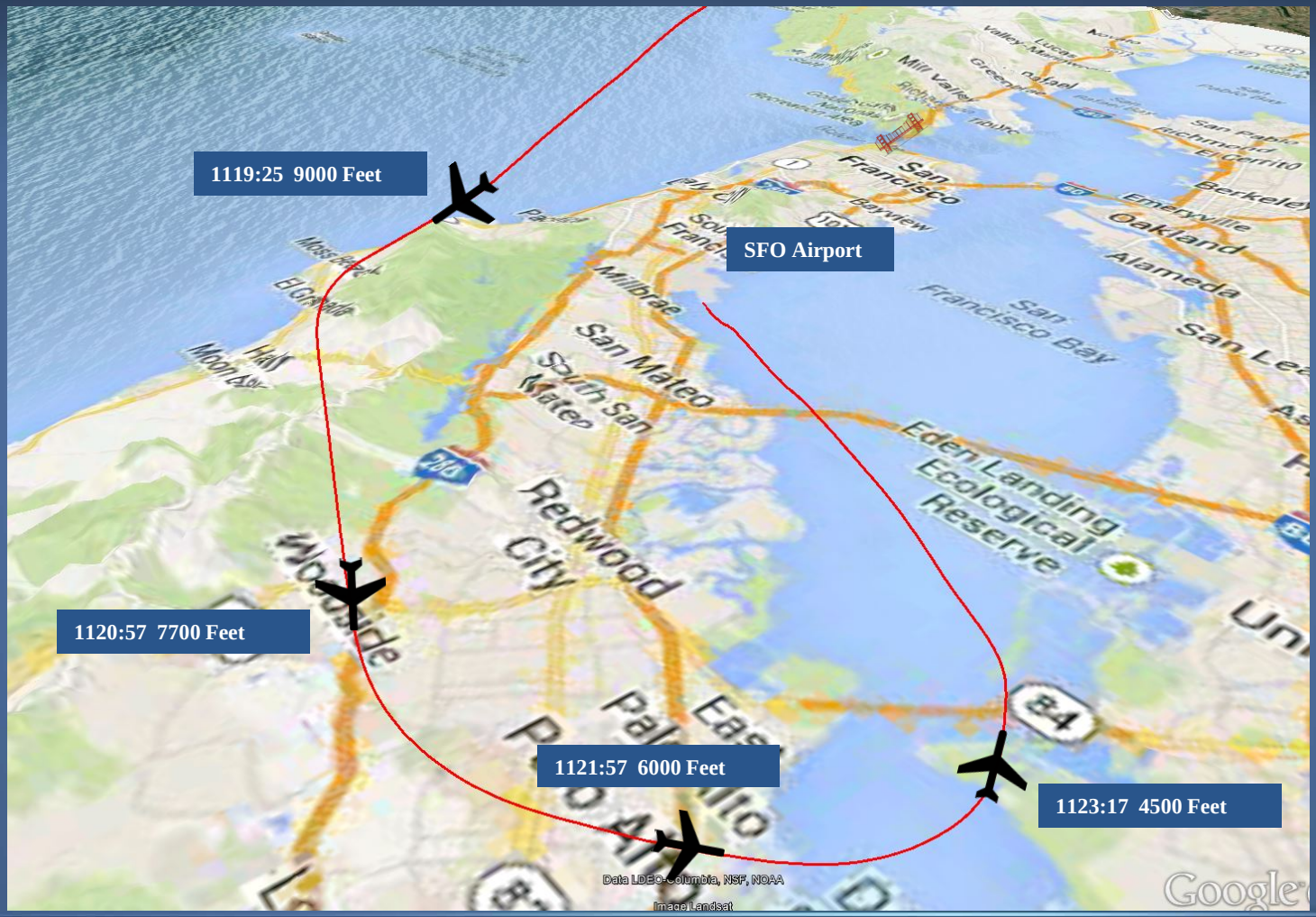
- July 6, 2013
- San Francisco, California
- 3 Fatalities

General Details

- 10 ½ hour flight from Korea
- Clear skies, light winds
- About 1128 am local time
- Visual approach
- Glideslope out of service
- 3 Fatal injuries
- 49 serious injuries
- 138 minor injuries
- 117 no injuries


N
Accident Location
San Francisco International Airport
0
1
2 Miles
NTSB No: DCA-13-MA-120
Date: 7-6-2013
Location: San Francisco, California
Office: Aviation Safety

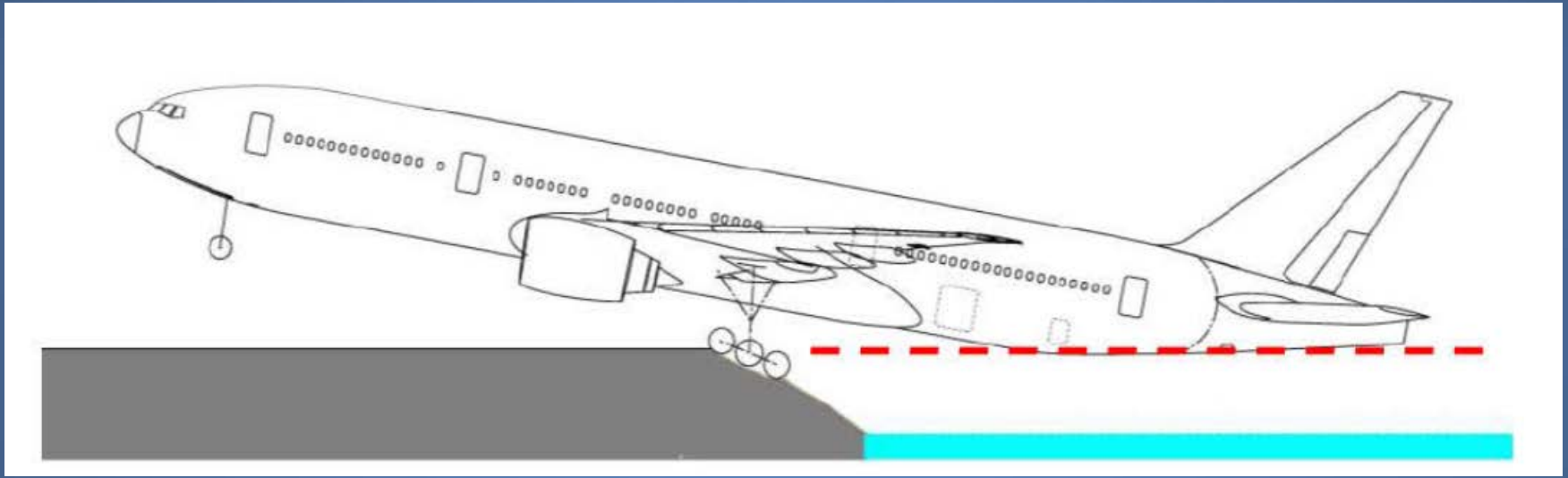
Arrival Information



NTSB

Pilot Roles and Experience

- LEFT SEAT: Pilot Flying
  - 9,700 hours total
  - 45 hours in B777
- RIGHT SEAT: Instructor Pilot
  - 12,000 hours total
  - 3,200 hours in B777
  - New B777 instructor, first trip as instructor
- JUMPSEAT: Relief Pilot (First Officer)



Estimated aircraft position at impact with seawall

NTSB

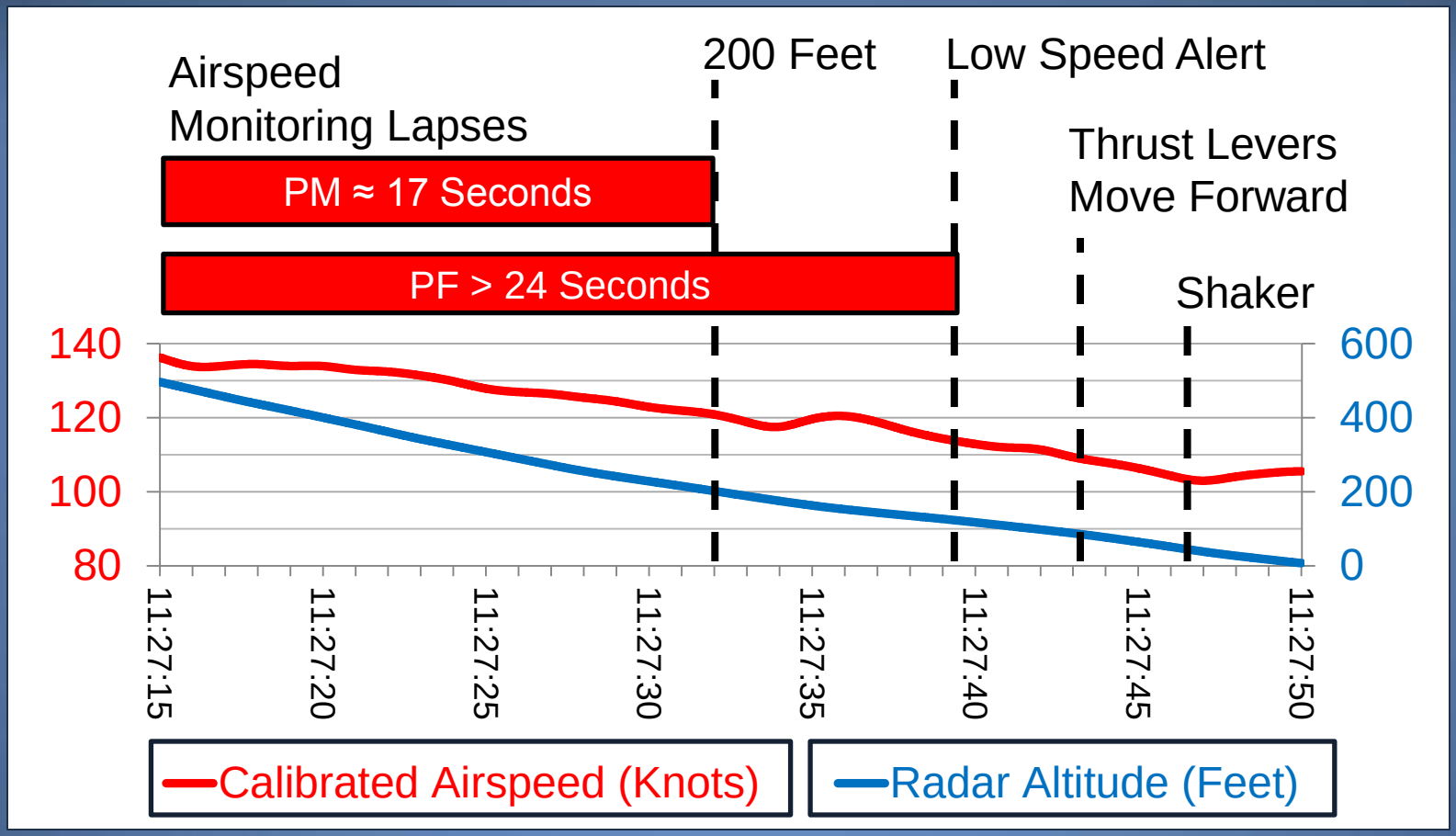
NTSB

ASIANA AIRLINES

HOLD
LOC
FLCH SPD
152
3000
ISFO /281°
DME ---
FLT DIR
220
200
180
161
140
120
REF
30/132
1420
1800
1600
1440
1200
550
BARO
460
L 29.92 IN
GS133
281H
MAG

NTSB

Monitoring



NTSB

National Transportation Safety Board

Descent Below Visual Glidepath and Impact with Seawall

Asiana Airlines Flight 214
Boeing 777-200ER, HL7742
San Francisco, California
July 6, 2013
DCA13MA120

National Transportation Safety Board

Descent Below Visual Glidepath and Impact with Seawall

Asiana Airlines Flight 214
Boeing 777-200ER, HL7742
San Francisco, California
July 6, 2013
DCA13MA120

Probable Cause

- The flight crew's mismanagement of the airplane's descent during the visual approach
- The pilot flying's unintended deactivation of automatic airspeed control
- The flight crew's inadequate monitoring of airspeed
- The flight crew's delayed execution of a go-around after they became aware that the airplane was below acceptable glidepath and airspeed tolerances.

Contributing to the accident were

(1) the complexities of the autothrottle and autopilot flight director systems that were inadequately described in Boeing's documentation and Asiana's pilot training, which increased the likelihood of mode error

(2) the flight crew's nonstandard communication and coordination regarding the use of the autothrottle and autopilot flight director systems

(3) the pilot flying's inadequate training on the planning and executing of visual approaches

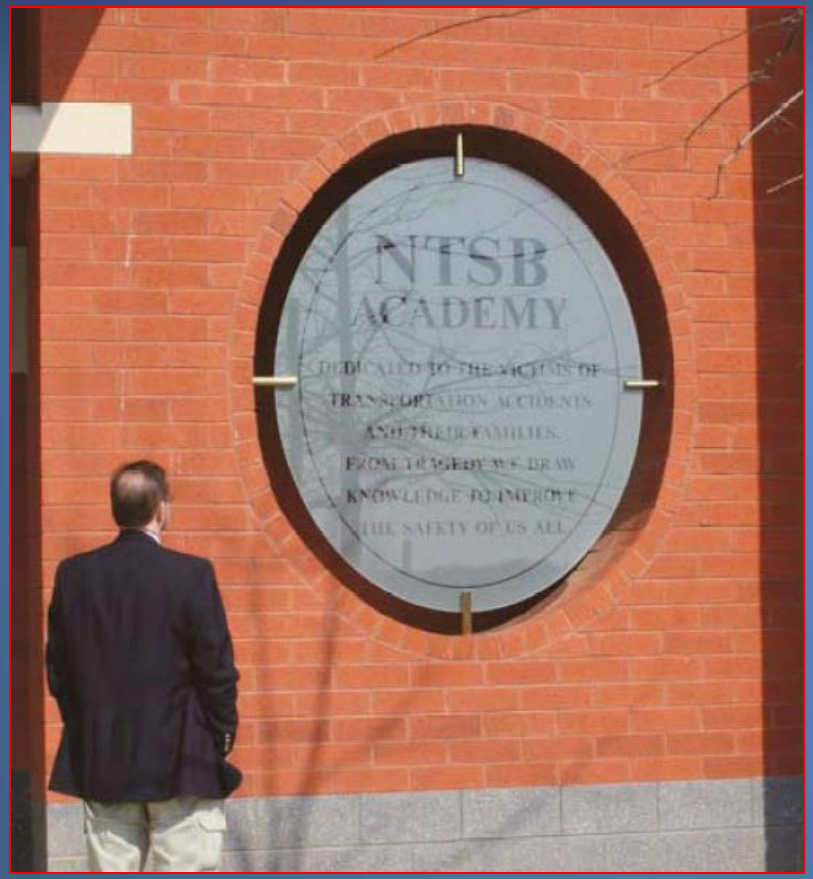
(4) the pilot monitoring/instructor pilot's inadequate supervision of the pilot flying

(5) flight crew fatigue which likely degraded their performance.

27 Recommendations

- FAA (15)
- Asiana Airlines (4)
- Boeing (2)
- ARFF Working Group (4)
- City of San Francisco (2)

Accredited Representative



"From tragedy we draw knowledge to improve the safety of us all."

National Transportation Safety Board