NASA Centers

ASRS

Ames Research Center

Dryden Flight Research Center

Jet Propulsion Laboratory

Goddard Space Flight Center

Langley Research Center

Marshall Space Flight Center

Johnson Space Center

Kennedy Space Center
Stakeholders
Governed Documents

- Federal Register Notices 1975 & 1976
- Federal Aviation Regulation - 14 CFR 91.25
- FAA Advisory Circular (00-46A, B, C, & D)
  - Defines immunity provisions for pilots and others
- FAA Facility Operation and Administration Handbook, 7210.3 (Air Traffic Controllers)
  - Formerly defined immunity provision for Air Traffic Controllers
- FAA Order 8020.10: Aviation Safety Reporting Program
  - Establishes program responsibilities & ASRP Study Group
- Interagency Agreement (signed in 1999 and renewed in 2004 for an additional 5 years)
  - IA details such factors as duration, products, expected funding level, termination clause, points of contact, etc.
The filing of a report with NASA concerning an incident or occurrence involving a violation of 49 U.S.C. Subtitle IV, or the FAR, is considered by FAA to be indicative of a constructive attitude. Such an attitude will tend to prevent future violations. Accordingly, although a finding of a violation may be made, neither a civil penalty nor certificate suspension will be imposed if:

(1) The violation was inadvertent and not deliberate;

(2) The violation did not involve a criminal offense, or accident, or action under 49U.S.C. Section 44709 which discloses a lack of qualification or competency, which are wholly excluded from this policy:

(3) The person has not been found in any prior FAA enforcement action to have committed a violation of 49 U.S. C. Subtitle VIII, or any regulation promulgated there for a period of 5 years prior to the date of the occurrence; and

(4) The person proves that, within 10 days after the violation, he or she completed and delivered or mailed a written report of the incident or occurrence to NASA under ASRS. See paragraphs 5c and 7b.

NOTE: Paragraph 9 does not apply to air traffic controllers. Provisions concerning air traffic controllers involved in incidents reported under ASRS are addressed in Order 7210.3.
Predominant Statements Contained in the Governing Documents

- ASRS is voluntary, confidential, and non-punitive safety reporting system with NASA as honest broker; funded by FAA
- Reports will not be used by or made available to the FAA for disciplinary or enforcement purposes
- Limited immunity provisions present from first release of the Advisory Circular AC 00-46A
- Accidents by NTSB criteria and DOJ criminal offenses wholly excluded
- Time-critical information alerted to FAA and others
- Advisory Committee appointed from all elements involved in the operational aspects of the National Aviation System
- Reporting of findings to the public, aviation community, and the FAA
Reporting to ASRS

Aviation Safety Reporting System
Aviation safety reports from:

- Pilots
  - Airline
  - General Aviation
  - Corporate
  - Government
  - Military
- ATC Controllers
- Mechanics
- Flight Attendants
- Airline Dispatchers
- Ground Crew
- Others...
Filling Out the ASRS Form

Identification Strip

General Information (Accession Number Added)

Event Narrative
Electronic Report Submission (ERS)

Access through ASRS Web Site

- System initiated October 16, 2007
  - Over 13,300 online report submissions completed to date
- About 50% of direct submissions
  - Replacing paper forms
- Roughly 20% of total intake

http://asrs.arc.nasa.gov
Monthly Report Intake

- Averaging 3,800 reports per month, 190 per working day

- Total Report intake for 2007 was **45,603** (up 5,909 from 2006)
Decreases evident following September 11, 2001 are showing return to pre-9/11 levels.
ASRS Report Processing

Aviation Safety Reporting System
Aviation Operational Expert Analysts perform initial screening, identification of alerts, initial analyses, database coding, and special studies (e.g., structured callback interviews and consultation on special safety topics).

Expert Analysts are retired air carrier pilots (Part 121 and 135), retired air traffic controllers, retired maintenance technicians, general aviation pilots, and flight attendants.* A minimum of 10 years aviation experience required.

Years of aviation experience of the current analyst staff totals to approx. 390 yrs. An average of 35.5 yrs experience in aviation.

*full complement diminished in FY 01
ASRS Process Flow

ASRS Incident Report Matching, Threat Identification, and Coding
[Screening, multiple report matching, coding, and report de-identification]

ASRS Database
• ASRS Analyst-coded and De-identified Records
• ASRS Direct, and ASRS ASAP Electronic and Paper Reports

Data Aggregation, Integration and Supplemental Analysis
[Produces Wide Variety of Generated Products for Government and Industry]

ASRS Products
- Safety Alert Program
- Database Online (DBOL)
- Focused Response & Search
- Research Projects
- Publications & Education

ASRS and ASRS-ASAP Reporting – Electronic and Paper
- Pilot & Other
- ATC
- Mechanic
- Cabin Crew
- Dispatch
- Ground Crew

Report Submission

ASRS Analyst Workbench

Database

Supplemental Analysis & Product Generation
Report Processing Flowchart

Incident Occurrence
- Safety Incident Occurs
- Reporter Files Incident Report

Initial Incident Report Handling
- Mail Pickup
- Transport
- Open / Sort / Date & Time Stamp / Attach Data Sheets / Organize

Report Screening
- Preliminary Screening
- Initial Screening (Classification)
- Secondary Screening
- Mix and Match

Report Coding
- Callback (as appropriate)
- Coding
- Synopsis / Diagnosis / Keywords
- Post Coding
- De-identification

Alerting Functions
- Assign Report
- Assessment
- Alert Issuance

Quality Assurance
- Final Checking (90%)
- Quality Assurance Check (10%, includes Final Check)

Data Entry
- Key Fixed Fields
- Key Text Fields
- Proofread
- Load Data into Oracle Database

Final Disposition
- Process and Return ID Strips
- Package and Burn Original Reports
Incident Occurrence through Screening

Incident Occurrence
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### Coding & Quality Assurance

<table>
<thead>
<tr>
<th>Report Coding</th>
<th>Alerting Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Callback (as appropriate)</td>
<td>• Assign Report</td>
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<td></td>
</tr>
<tr>
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</tr>
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Data Entry

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Final Disposition

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ASRS Data Utilization
ASRS Products and Services

- Safety Alerting Messages
  - Alert Bulletins (AB)
  - For Your Information (FYI) Notices
- Safety Telecons
  - FAA, government, industry
- Search Requests
  - Direct data requests for ASRS
- ASRS Database Online (DBOL)

- Quick Response Efforts (government)
  - Congress, FAA, NTSB, etc.
- Research Projects
- Publications and Education
  - CALLBACK
  - Directline
ASRS Alert Message Recipients - 2007

- FAA: 35%
- Airports: 30%
- Manufacturers: 35%

FAA Voluntary Safety Programs Branch (AFS-230) Receives every Safety Alert
TO: FAA (AFS-200)
INFO: FAA (AFS-230, AFS-300, AFS-900, SEA-AEG, ANM-100), AASC, AIA, ALPA, AMFA, APA, ASAP, ATA, CAPA, IATA, IAM, ICASS, IFALPA, IPA, NATA, NTSB, PAMA, RAA, TWU
FROM: Linda J Connell, Director
NASA Aviation Safety Reporting System
SUBJ: PARTS FALLING OFF AIRCRAFT

We recently received an ASRS report describing a safety concern which may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the following:

ASRS has received several reports from flight crews and technicians describing the loss of aircraft parts:

(ACN 729015) Cl65 First Officer reported that during taxi in ground control informed them that a large section of the left engine cowling was missing.

(ACN 707468) Two technicians reported that a B737-300 had a pylon access panel depart the aircraft during its first flight after a heavy maintenance check.

(ACN 685935) A PA32 single pilot stated that while at cruise FL550, the engine cowling detached the aircraft in two separate pieces.

(ACN 680038) A technician reported that a B737 had a right hand wing slat access panel depart the aircraft.

(ACN 679443) A technician reported that a B737-300 had the left outboard main landing tire and wheel assembly depart the aircraft.

Recently, ASRS completed an internal study “An Analysis of Aircraft Part Separation,” in which expert ASRS analyst’s evaluated a group of 168 reports where a part of some type was reported to have departed the aircraft. Enclosed are charts derived from the results of the study.

(Keywords: In-flight separation)

To properly assess the usefulness of our FYI service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Harvey Hartmann or Gary Brauch at (408) 541-2800 or email at hhartmann@mail.arc.nasa.gov, gbrauch@mail.arc.nasa.gov.
11/7/2007

FOR YOUR INFORMATION

To: Airport Manager, Philadelphia International Airport (PHL), Philadelphia, PA

Info: FAA (AFS-230, AFS-200, ATM PHL, ATCT, AAS-1), AASC, ALPA, IFALPA, APA, ASAP, ATA, IATA, CAPA, IPA, NTSB, RAA

From: Linda J. Connell, Director
NASA Aviation Safety Reporting System

Re: PHL TAXIWAY N CONDITION

We recently received an ASRS report describing a safety concern which may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the enclosed deidentified report.

To properly assess the usefulness of our FYI service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Gary Brauch at (408) 541-2800 or email at gbrauch@mail.arc.nasa.gov.

Address:

ACN: 756075

Date Of Day: 1201 To 1800

Reference Airport: PHL Airport

FAC: PA

Facility: Tower

Activity: VMC

Radio: PHL Tower

Tower: 4320

Crew: PIC

Flight Crew: Captain

Port: 756075

Initiator: Other Flight Crew

Action: None Taken

Unable

WHEEL RUTS IN THE ASPHALT ON TXWY N NORTH OF RWY 27R. THEY DID NOT EXCEEDLY DEEP FROM THE COCKPIT. WE WERE DIRECTED TO HOLD SHORT OF RWY 27R. MAIN WHEELS SETTLED INTO RUTS AND COULD NOT MOVE AHEAD USING SAFE THRUST. CALLED COMPANY MECHANIC TO COME OUT AND TOWED US OUT OF RUT. REQUIRED 2 ATTEMPTS, AS THE FIRST TUG WAS TOO SMALL, AND THE TOW BAR終於 EXCESSED THE SHEAR KE. MECH DETERMINED THAT NO DAMAGE TO AIRCRAFT OCCURRED, AND WE DEPARTED

FULLY. WE HAD BEEN TOLD THAT THIS HAPPENED TO ANOTHER COMPANY AIRCRAFT THE DAY AT THE SAME LOCATION. BUT WE COULD NOT SEE ANY HOLES THAT LOOKED ENOUGH TO BE A THREAT. THERE WAS NOTHING NOTED ON THE RELEASE OR IN THE LOGS ABOUT THIS. HOWEVER, GND CTL SEEMED AWARE THAT THE RUTS EXISTED AND STATED THAT THE COMPANY SHOULD HAVE CLOSED THE TXWY AND REPAIRED THE RUTS. ESPECIALLY, THE PREVIOUS AIRCRAFT GOT STUCK 1) ARPT SHOULD KEEP SURFACES IN GOOD REPAIR 2) CLOSE TXWY 3) IN ABSENCE OF (1) AND/OR (2) DISSEMINATE RUT RATING NOTAMS 4) WHEN A COMPANY ACFT HAD THIS OCCUR THE PREVIOUS DAY, WE HAD SOME RELIABLE INFO ABOUT THE HAZARD FROM THE COMPANY.

GOT STUCK IN A PAVEMENT RUT ON PHL TXWY N AT THE RWY 27R HOLD SHORT LINE. DISTANCE REQUIRED.
Alert Examples (Pilot Reported)

- Airbus A320 Brake Steering Control Unit Failure
- B737-800 Flight Crew Oxygen
- MD-80 Un-commanded Roll Following FMA Failure
- B767-300 Passenger Seat Control
- Passenger Electronic Device (PED) Interference

2007
Alert Examples (Controller Reported)

- Pittsburgh 8 Departure Issue
- Aircraft Data Block Anomaly
- Flight Service Operations
- ZMA Radar Equipment Anomalies
- Ocean 21 Operational Issue

2007
Maintenance Related Alert Examples

- CRJ200 Cargo Fire Bottle Thermal Discharge Anomaly
- B737-800 FMS Anomaly
- SAAB 340B Engine Intake Heater Mat
- EMB 145 Elevator Trim
- CL65 Trust Reverser Unlock Warning

2007
### Alerting Responses

**January 1999 – December 2007**

<table>
<thead>
<tr>
<th>Response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action taken as a result of the AB/FYI</td>
<td>250</td>
</tr>
<tr>
<td>Addressee disputes factual accuracy of AB/FYI</td>
<td>140</td>
</tr>
<tr>
<td>Action initiated in response to AB/FYI but not completed</td>
<td>101</td>
</tr>
<tr>
<td>Action initiated before AB/FYI was received</td>
<td>89</td>
</tr>
<tr>
<td>Issue raised by AB/FYI under investigation</td>
<td>60</td>
</tr>
<tr>
<td>Information in AB/FYI insufficient for action</td>
<td>51</td>
</tr>
<tr>
<td>Addressee in factual agreement but sees no problem</td>
<td>51</td>
</tr>
<tr>
<td>For information only, no response expected</td>
<td>42</td>
</tr>
<tr>
<td>Action not within addressee's jurisdiction</td>
<td>30</td>
</tr>
<tr>
<td>Addressee agrees with AB/FYI but is unable to resolve</td>
<td>28</td>
</tr>
</tbody>
</table>
ASRS/FAA and Industry Telecons

- “Webcon” provides graphical supplement to telephone conference.
- ASRS/FAA Safety Telecons occur monthly.
- Supplemental telecons with government and industry occur on “as needed” basis.
Quick Response

Airport Surface Movement Transgressions

- Request of FAA Office of Runway Safety (ATO-S)
- 75 U.S. Air Carrier Airports
- Analysts coded 1,184 ASME incidents
  - 42% of ASRS ASME incidents in database (2,772)
General Aviation Weather Encounters

- Request by FAA’s Flight Standards Office (AFS-230)
- July – December 2005
- Prompted by the high accident rate resulting from adverse weather encounters experienced by GA pilots
- Structured Callback
  - Mailed questionnaire
- 100 completed supplemental questionnaires
Publications

CALLBACK
- Short format
- All segments of the aviation community
- 334 Issues
- Many awards

Directline
- Longer format
- Intended for operators of transport category aircraft
- 10 issues
- FSF Award

Over the past year, ASRS has received many reports of damage to aircraft and occasional injury to ramp personnel during airport ramp operations. Whether a ramp incident occurs during tax-in to the gate (this month’s front page), or during pushback (see our back page), ASRS reporting reveals that several human factors repeatedly recur—failure to follow procedures, communications breakdowns, and lack of training. It is evident that safe ramp operations are a shared responsibility among flight crews, ramp personnel, and airlines.

This month’s selection of incident excerpts provides a review of some of the factors that can contribute to ramp incidents—and to the “saves” as well.

“Stop the Show”
A B747-400 flight crew found it necessary to instruct ground supervisors about proper aircraft arrival procedures.

...Passengers were still deplaning (while) we were preparing to secure the aircraft, and I released the brakes and sensed the aircraft moving. I stopped the aircraft with light brakes and stopped the deplaning. Maintenance technicians checked the aircraft and repositioned with a tug 2-3 feet back to the “400” spot. Jetbridge was reinstalled and deplaning continued. No injuries or damage. I held a stall alert with contract and customer ramp managers.

In another incident, an alert ramp agent moved a B737 flight crew from a malfunctioning automated parking system.

NMAC (Near Miss Abeam Catering)
A flight crew discovered that their aircraft was missing a turn.

During tax-in to gate, our ground crew began to give me hand signals with lighted wands to proceed to the lead-in line. This required a 90-degree turn to the right. During the turn, I stopped the aircraft, so there were two catering trucks off to the left side and I was not sure that I would clear them with the left wing. I passed all of my landing and tax lights at the guide men, who apparently did not think there was any problem and continued to give me the same forward signal. I refused to move and flashed the lights at him again. A second guide man came out and told me the other man had been a mistake.
ASRS Database Online (DBOL)

Access through ASRS Web Site

- System initiated August 23, 2006
  - Over 29,500 total online queries completed
  - Over 17,000 queries completed in 2007
- Fixed field and text search capability
- Data formats (export)
  - MS Word, Excel, CSV HTML
- Narrative & Synopsis

AVIATION SAFETY REPORTING SYSTEM

The ASRS Database is Now Searchable Online!

We are pleased to announce that the ASRS database search capability is now available on the ASRS website. Researchers, pilots, controllers, dispatchers, cabin crew, mechanics, government agencies, and others who want to access data from the world's leading repository of aviation safety information now have an invaluable resource.

The ASRS database search is accessible through the ASRS web site at http://asrs.arc.nasa.gov. Users logging on to the ASRS web site should click on the ASRS Database Online link. Users can download the de-identified incident reports in a MS word format.

The "engine" for the ASRS Online Database is a browser-based, cross-platform "Web Query" enhancement developed by ASRS. Users retrieve reports by searching on specified fields including incident date (month/year), environmental conditions, aircraft operator and type, incident location, reporter affiliation, event assessments, and text fields. ASRS's database includes the de-identified narratives submitted by reporters.

The ASRS Online Database makes it easier than ever for users to independently explore ASRS data for themes, patterns, and issues of interest. We would appreciate any feedback about this new tool. Planned future enhancements include the ability to download the data in other useful formats.

Database Online is available at: http://asrs.arc.nasa.gov/search.htm

http://asrs.arc.nasa.gov
ASRS Web Site

Updated Fall 2007
- Over 7 million hits in 2007

File an ASRS Report
- Electronic
- Print and Mail

Database Online

ASRS Publications

Program Information

Immunity Policies

http://asrs.arc.nasa.gov
National and International Reputation

ASRS Recognized Model for Proactive Contribution to Safety & Risk Management Process

Int’l Confidential Aviation Safety Systems (ICASS)
  • Includes 12 countries modeled after ASRS

Firefighters Near Miss Reporting System
  • Launched August, 2005 was modeled after ASRS
  • Development Task Force includes FAA and NASA ASRS

Confidential Close Call Reporting System (C3RS)
  • Railroad Safety Reporting System was modeled after ASRS
  • Under development through collaboration with Federal Rail Administration, Volpe National Transportation System Center, and Railroad Industry

Patient Safety Reporting System (PSRS)
  • Collaboration between NASA ASRS and Dept of VA, National Center for Patient Safety
Confidential Reporting in the U.S Railroad Industry
Your Voice Counts!

Patient Safety Reporting System


VOLUNTARY • CONFIDENTIAL • NON-PUNITIVE

PSRS is a cooperative program between VA and NASA.
Unique Aspects of ASRS
Confidential Reporting Model

**System-Wide Perspective** - capability to identify hazards identified by aviation personnel and match reports from all segments of aviation community

- ASRS was catalyst for recent FAA focus on Teterboro Departures

**System-Wide Alerting** - both national and international capability to provide ASRS Alert Messages to industry and government

**Data Processing through Aviation Expert Analysts**

- ASRS Office staff include Aviation Expert Analysts with a combined total of 380 years of experience in aviation (air carrier pilots, corporate pilots, general aviation pilots, air traffic control, and maintenance)

- Experts read and review 100% of reports and reliably code information to databases

**Comprehensive and Time Tested Coding Taxonomy**

- Fixed Field Codes combined with Narrative Text yields qualitative data for further secondary analysis techniques (Perilog, special studies, focused analytic techniques, etc)
Unique Aspects of ASRS
Confidential Reporting Model

Strong Immunity and Legal Provisions

- Federal Law specifically addressing ASRS (14 CFR 91.25)
- FAA Advisory Circular 00-46D
- ASRS Mandated by Congress in 1980’s

Information Sharing

- Database Search Requests, Database Access Online, Topical Studies, Structured Telephone Callback Studies, Collaborations with Industry and Gov’t (FAA, NTSB, NASA, TSA, etc.)
- Largest source of airline ASAP data collected in central location

National and International Reputation

- ASRS Recognized Model for Proactive Contribution to Safety Process
- ASRS Model Being Utilized by Other Domains for Safety Improvements
WHY CONFIDENTIAL REPORTING WORKS

• When organizations want to learn more about the occurrence of events, the best approach is simply to ask those involved.

• People are generally willing to share their knowledge if they are assured:
  • Their identities will remain protected
  • There is no disciplinary or legal consequences

• A properly constructed confidential, voluntary, non-punitive reporting system can be used by any person to safely share information
Confidential reporting systems have the means to answer the question *why*
"I'm serious! Watch! I hit the left arrow, the plane banks left, hit the right arrow and ..."
Contact Information:

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(408) 541-2827  
linda.j.connell@nasa.gov

Website:  
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