NASA Aviation Safety Reporting System

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
ASRS since 1976

40th AVIATION SAFETY REPORTING SYSTEM

Anniversary

1976-2016

Over 1.3 Million Reports
ASRS History

- After a fatal TWA crash in 1974, the investigation revealed that six weeks prior, a United Airlines crew had experienced an identical ATC misunderstanding and narrowly missed the same mountain.

- Although the information was shared with FAA at the time, there was no method of sharing the United pilot’s experience with TWA and other airline operators.

- This solidified the idea of a need for a national aviation reporting program that would enable collection and dissemination of safety information.

- In April 1976, NASA and FAA implemented the Aviation Safety Reporting System (ASRS).

NTSB Identification: DCA75AZ005
FAA and NASA Partnership

- MOA signed by Administrators for FAA and NASA

...To provide information to the FAA and the aviation community to assist them in reaching the goal of identifying and eliminating unsafe conditions to prevent accidents.
ASRS Gov’t/Industry Stakeholders

- FAA provides reimbursable funding to NASA for ASRS support through Interagency Agreement
- NASA provides funding for Director to provide overall management
  - Assures independence and confidentiality
  - Reinforces role of trust in success
- The Aviation Community provides support through aviation community advocacy for reporting, feedback, and communications
ASRS Principles

VOLUNTARY PARTICIPATION
Aviation personnel voluntarily submit reports concerning events related to safety for the purpose of system alerting, understanding and learning

CONFIDENTIALITY PROTECTION
Protection of identity is provided by NASA through de-identification of persons, companies, and any other information

NON-PUNITIVE
FAA will not use, nor will NASA provide, any report submitted for inclusion under ASRS guidelines or information derived therein for use in any disciplinary or other adverse action (14 CFR 91.25 & AC 00-46E)

INDEPENDENT
Necessary for trust building and unbiased dissemination of safety information
Prohibition Against Use of Report for Enforcement Purposes

“The Administrator of the FAA will not use reports submitted to the National Aeronautics and Space Administration under the Aviation Safety Reporting Program (or information derived therefrom) in any enforcement action, except information concerning accidents or criminal offenses which are wholly excluded from the Program.” (14 CFR 91.25)
c. Enforcement Restrictions. The FAA considers the filing of a report with NASA concerning an incident or occurrence involving a violation of 49 U.S.C. subtitle VII or the 14 CFR to be indicative of a constructive attitude. Such an attitude will tend to prevent future violations. Accordingly, although a finding of 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, accident, or action under 49 U.S.C. § 44709, which discloses a lack of qualification or competency, which is 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 VII, or any regulation promulgated there for a period of 5 years prior to the date of occurrence; and
(4) The person proves that, within 10 days after the violation, or date when the person became aware or should have been aware of the violation, he or she completed and delivered or mailed a written report of the incident or occurrence to NASA.
What is Safety Reporting?
System-Wide Event Occurrences

ASRS is Complementary to Other Systems of Reporting
- **40 years** of confidential safety reporting
- Over 1,369,649 reports received
- Over 6,200 alert messages issued
- Over 7,800 reports per month, or 378 per working day
- Total report intake for 2015 was 92,228
- Current rate estimate for 2016 is over 93,000
Incident Reporter Distribution
January 2015 – June 2016

REPORTER DISTRIBUTION

- Air Carrier FLC: 59%
- General Aviation FLC: 15%
- Air Traffic Control: 7%
- Cabin: 7%
- Ground: 4%
- Air Taxi FLC: 4%
- Maintenance: 2%
- Dispatch: 2%
- Other: 0.3%

Source: 100% ASRS Report Data

n = 139,047
Report Processing Flow

ASAP and ATSAP Reports Enter (Electronic and Paper)
ASRS is a closed loop process that supports System Safety and Human Factor insights.

Government / Industry are providing information that may result in corrective actions.

ASAP Reporting to ASRS

- ASAP Reporting
  - 254 Total Programs
  - 110 Air Carriers/Operators

- Reporting Groups
  - 104 Pilot
  - 70 Maintenance
  - 47 Dispatch
  - 27 Flight Attendant
  - 6 Other (Including Ground Crew, etc.)

- Majority are received through Secure Electronic Data Transmission protocols

- Paper form submissions continue to be received at ASRS

More programs being added continuously

ASRS Electronic Transmission Methodology compatible with numerous software platforms
Report Intake Source (ALL)

n = 139,047

- ASAP Electronic: 105,564 (76%)
- Direct Electronic: 22,703 (16%)
- ATSAP Electronic: 9,638 (7%)
- Direct Paper: 1,139 (1%)
- ASAP Paper: 3 (0.002%)
Report Intake Source Summary

Electronic Submissions

Paper Submissions

n = 139,047
ASRS Mission Mandate

**Identify** deficiencies and discrepancies in the National Airspace System

**Provide data** for planning and improvements to the future National Airspace System

Mandated scope in original Federal Register Notice, FAA Advisory Circulars, FAA/NASA MOA(s) and IAA(s). Largely determines program priorities.
Safety Alerts
Messages Issued 2004 – Present

n = 2,874

*2016 data is projected based on alerts issued and currently under process through July 12th.

July 2016
ASRS issued a total of 164 alert messages

- 59 Alert Bulletins
- 105 For Your Information Notices

### Air Carrier FLC

- ASAP/ATSAP: 65
- Direct Intake: 6

### All Reporters

- ASAP/ATSAP: 97
- Direct Intake: 67

### Reporting Types (All Reporters)

- Air Carrier FLC: 71, 43%
- General Aviation FLC: 59, 38%
- Other: 11, 7%
Alert Message Originated by Source

Alerts by Intake Source and Reporter Distribution

- Air Carrier FLC
- Air Traffic Control
- Air Taxi FLC
- Cabin
- General Aviation FLC
- Ground
- Maintenance
- Other

ASAP/ATSAP Intake Intake  Direct Intake

n = 164
ASRS issued 2,212 Alert Messages from Jan 1, 2006 to December 31, 2015

- Approximately One Alert Message per working day

A total of 939 responses were received

- 42% total response rate
- FAA responded to 325 alerts (35% of all responses)
Alerts generate responses from one or more of the recipients

Alerts often identify an anomaly that was not detected by other means

FAA AFS and AVP receive every Safety Alert

Alerts Issued
(January 2015 - June 2016)

- FAA 40%
- Manufacturer 34%
- Airport 26%

n = 164

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>T. Action taken as a result of the AB/FYI</td>
<td>21%</td>
</tr>
<tr>
<td>B. Action initiated before AB/FYI received</td>
<td>15%</td>
</tr>
<tr>
<td>I. Action initiated in response to AB/FYI but not completed</td>
<td>11%</td>
</tr>
<tr>
<td>N. Addressee agrees with AB/FYI but sees no problem</td>
<td>7%</td>
</tr>
<tr>
<td>U. Issue raised by AB/FYI under investigation</td>
<td>5%</td>
</tr>
<tr>
<td>H. Addressee in factual agreement but is unable to resolve</td>
<td>3%</td>
</tr>
<tr>
<td>W. Addressee disputes factual accuracy of AB/FYI</td>
<td>22%</td>
</tr>
<tr>
<td>Q. Information in AB/FYI insufficient for action</td>
<td>12%</td>
</tr>
<tr>
<td>C. Action not within addressee's jurisdiction</td>
<td>3%</td>
</tr>
<tr>
<td>F. For information only, no response expected</td>
<td>1%</td>
</tr>
</tbody>
</table>

n = 939
## Alert Response Metrics – Non-Manufacturer

January 2006 – December 2015

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alert Messages Issued</strong></td>
<td>75</td>
<td>63</td>
<td>40</td>
<td>30</td>
<td>43</td>
<td>50</td>
<td>40</td>
<td>44</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td><strong>FYI Notices Issued</strong></td>
<td>117</td>
<td>279</td>
<td>235</td>
<td>206</td>
<td>222</td>
<td>151</td>
<td>177</td>
<td>129</td>
<td>109</td>
<td>117</td>
</tr>
<tr>
<td><strong>Response Rate to AB/FYI</strong></td>
<td>35%</td>
<td>49%</td>
<td>46%</td>
<td>38%</td>
<td>34%</td>
<td>29%</td>
<td>27%</td>
<td>28%</td>
<td>48%</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Response Rate Non-Manufacturer</strong></td>
<td>55%</td>
<td>64%</td>
<td>55%</td>
<td>26%</td>
<td>36%</td>
<td>38%</td>
<td>25%</td>
<td>37%</td>
<td>59%</td>
<td>58%</td>
</tr>
</tbody>
</table>
There are currently 3 topics on the Yellow Tag Watch List: UAS, GPS, and Solar Tower Array Glare

<table>
<thead>
<tr>
<th>Topic</th>
<th>Count Q2 2016</th>
<th>Cumulative Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAS</td>
<td>33</td>
<td>265</td>
</tr>
<tr>
<td>GPS</td>
<td>13</td>
<td>121</td>
</tr>
<tr>
<td>Solar</td>
<td>1</td>
<td>12</td>
</tr>
</tbody>
</table>
Direct to ASRS for Database Analysis Requests
2006 – 2015

- FAA is the most frequent requestor of specific data searches
- All requests are completed within 14 calendar days

ASRS Database Online became available

n = 624

Search Requests by Organization

- FAA
- Air Carriers
- NASA
- Media
- NTSB
- Alphabet Groups
- Miscellaneous Safety Organizations
- Individuals
- Other
- Student
- Research Organizations
- Aircraft Manufacturers
- Foreign
- Miscellaneous Government
- Military
- Law Firms
- Educational Institutes
- DHS

July 2016
Sampling of Website Database Online Access (One Month Snapshot of Activity)

*A total of 20,514 User Types were Other/Individuals/Unknown.*
ASRS Web Site

- Launched October 2007
  - Over 10 million sessions in 2008
- File an ASRS Report
  - Electronic
  - Print and Mail
- Database Online
- ASRS Publications
- Program Information
- Immunity Policies

http://asrs.arc.nasa.gov
ASRS Database Online (DBOL)

- DBOL launched August 23, 2006
  - Over 70,000 total online queries completed to date
  - Over 20,966 queries completed in 2009
- Fixed field and text search capability
- Data formats (export)
  - MS Word, Excel, CSV HTML
- Experts version (DBOL II) being proposed

http://asrs.arc.nasa.gov
US News and World Report 2006 praises system

- FAA credited for a positive, proactive approach to safety

Proof that government agencies don’t have to act like big-footed oafs, the FAA (and NASA) has a system that allows pilots and air traffic controllers to report problems anonymously. It’s a “Let’s learn, let’s fix it” sort of culture. The goal is to find systemic problems and solve them rather than assign blame. Most errors and mistakes are caught early, and accidents are rare.
ASRS Model Applied to Aviation & Other Industries

August 9, 2016
August 9, 2016
22nd Annual ICASS Meeting
International Confidential Aviation Safety Systems
October 19 - 23, 2015
Hosted by EASA
Cologne GERMANY
NASA ASRS and Federal Railroad Administration Interagency Agreement signed on May 21, 2010

Confidential Close Call Reporting System in the U.S Railroad Industry
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 00-46E
- ASRS Addressed by Congress in 1980’s

**Information Sharing** - both nationally and internationally with industry and government

- Database Search Requests, Database Publically Available, 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
CONTACT INFO

Linda Connell, NASA
ASRS Program Director
Linda.J.Connell@nasa.gov
(408) 541-2827