What is ASRS Safety Reporting?
ASRS is complementary to other systems of reporting and focuses on precursors to the most severe events.
ASRS Gov’t/Industry Stakeholders

- FAA provides reimbursable funding to NASA for ASRS Management & Expertise
- NASA provides Aviation Safety Program funding for direction & management of ASRS
- The Aviation Community provides support through advocacy for reporting, feedback, and communications
AVIATION SAFETY REPORTING SYSTEM

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 (14CFR91.25 & AC 00-46E).

INDEPENDENT
Necessary for trust building and unbiased dissemination of safety information.
Linking Risk Assessment with Risk Management Leading to Safety Intelligence
Confidential Reporting Model Has Specific Contributions to: Risk Assessment

1) System Characteristics
2) Threat Identification
3) Vulnerability Identification
4) Control Analysis
5) Probability Determination
6) Impact Analysis
7) Risk Determination
8) Control Recommendations
9) Results Documentation

NASA NPG 2810.1
Data Characteristics of Voluntary and Confidential Reporting
ASRS Report Volume Profile

- 38 years of confidential safety reporting
- Over 1,200,000 reports received
- Over 5,900 alert messages issued
- Over 7,542 reports per month, or 359 per working day
- Total report intake for 2013 was 80,840
- Current rate estimate for 2014 is over 90,500
Report Processing Flow

Direct to ASRS - ERS & Paper

ASAP/A TSAP

Database

Alerts

Aviation Safety Reporting System
Collecting Data is not the Final Goal

Data => Analysis => Information => Intelligent Decisions

ASRS Aviation Expert Analysts provide initial review of 100% of reports and produce insights and categorization of data using mature taxonomy.

Not all data are created equal. The nature of the data characteristics determines analyses:

Quantitative (e.g., Flight Recorder Data, Aircraft Systems)

Qualitative (e.g., Voluntary, Subjective Reporting)
Data Typology

Qualitative
- Describes the “why” of events
- Takes advantage of diverse responses
- Uses narratives and storytelling
- Categorizes patterns, observations, environmental context, etc.
- Holistic and contextual
- Exploratory (i.e., hypothesis generation)

Quantitative
- Describes the “what” of events
- Rigid categorization for measurement
- Reductionist and isolationist
- Hypotheses driven
- Focused measurement tools and applied inferential mathematics

Voluntary data are most appropriate for qualitative analyses.
Population

For Example: Census
Random Sampling of Population

For Example: Survey
Implicit Biases of Subjective Reporting

For Example: Safety Reporting
Incident Reporting Model

- ASRS is a closed loop process that supports System Safety and Human Factors
- Government / Industry are provided information that may result in corrective actions

Dr Charles Billings quotes:

- “It has become [clear] that getting data is not the primary objective of this effort; using those data to synthesize new knowledge is the principal objective, and this requires human intelligence and expertise.”
- “These counts are too often used to infer the magnitude of system problems. But voluntary reporting of incidents involves the assumption that they are a representative sample of the population of such events, and this assumption is rarely tested and is usually not tenable.”
- “The population from which the sample of incidents comes is rarely known or quantified.”
- “The usefulness of incident reporting lies in the insights that can be gained from careful study of the narratives submitted, in all their contextual richness, not in quantitative knowledge one can gain from counting adverse events.”
THE HUMAN FACE OF BIG DATA

CREATED BY RICK SMOLAN AND JENNIFER ERWITT
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 received a report from the Captain of an EMS helicopter expressing concerns regarding the utilization of Night Vision Goggles (NVGs) for night time operations. The reporter indicated that many hospital helipads use green perimeter lights which become invisible because of the NVG green visual environment. The Captain indicated that more and more EMS operations and aircraft are using NVG operations and that helipad perimeter lighting needs to be changed to another color. The reporter also suggested changes be made to the FAA Safety Alert for Operations that addresses these types of operations.
The most troubling aspect of LED lighting concerns is that they are often being discovered through voluntary disclosure programs such as the Aviation Safety Reporting System (ASRS). This strongly suggests that not all of the unintended consequences of LED lighting implementation have been discovered. This conclusion alone should encourage the FAA to take a more measured approach to LED lighting implementation.

Recommendation: Given the operational impacts outlined above, I intend to establish a task force with representation from the FAA lines of business. The task force will conduct a complete Operations Safety Assessment (OSA) of proposed LED lighting technology and address the impact of LED lighting on pilots and day/low visibility operations, takeoffs, aircraft straight-in and circling instrument approaches, low altitude approaches, visual approaches, ground operations, EFVS and NVG operations, night Visual Flight Rules (VFR) flight, and non-federally funded airports and obstruction lighting. This OSA should include a survey of the current implementation status of LED lighting used for these purposes.

Further, the FAA should initiate activities to determine the extent to which LED lighting has already been adopted.
This Alert highlighted a critical flight safety anomaly

This anomaly had gone unnoticed during design, certification, manufacture, oversight, and operations in service

No SDR was issued since no event had yet occurred

An AD note was issued for a sister fleet but not for this, newer fleet type that had the same design configuration

ASRS was able to detect this anomaly though a single report with no operational incident (weak signal)
Abnormal Configuration

Engine 1 & 2 Fire

Extinguishing System

This graphic is for illustrative purposes only and not to be used for any other purpose.
Solar Array Inflight Visibility Glare

This graphic is for illustrative purposes only and not to be used for any other purpose.
Examples of Safety Alerting Success

- **Similar Sounding Fix Names DEWAY - DEJAY in close proximity (FYI 2013-32)**
  The Southern California TRACON office reviewed the alert and stated they agreed "...the location and spelling of the two waypoints/fixes, DEWAY and DEJAY creates confusion and the possibility of aircraft entering the wrong fix into a FMS. Attached is a memo whereby we have requested to change the name of "DEJAY" waypoint, to eliminate this problem."

- **SAV Runway Lighting Procedures (FYI 2013-40)**
  An FAA Southern Region, Lead Airport Certification Safety Inspector investigated the issue with SAV airport and stated "SAV airport reports that they are in the process acquiring cost estimates to reconfigure the airfield lighting circuit to operate both runway via radio controlled lighting when the Air Traffic Control Tower (ATCT) is not in operation. In the meantime, the ATCT is publishing a comment on ATIS regarding which runway is lighted at night, prior to their closure. I just completed the inspection and wrote a recommendation that they reconfigure the lighting system to operate that way. The pilot's complaint in this report was valid."

- **FWA RNAV 23 Chart Confusion (FYI 2013-94)**
  A Jeppesen Sr. Manager of Aviation and Marine Safety responded stating "I have reviewed this and can see where the confusion may be coming into play. I have referred this to Jeppesen corporate technical standards for action."
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