10th Safety Symposium
"Enhancing Safety Through Aircraft Dispatchers"
Airline Dispatchers Federation (ADF)

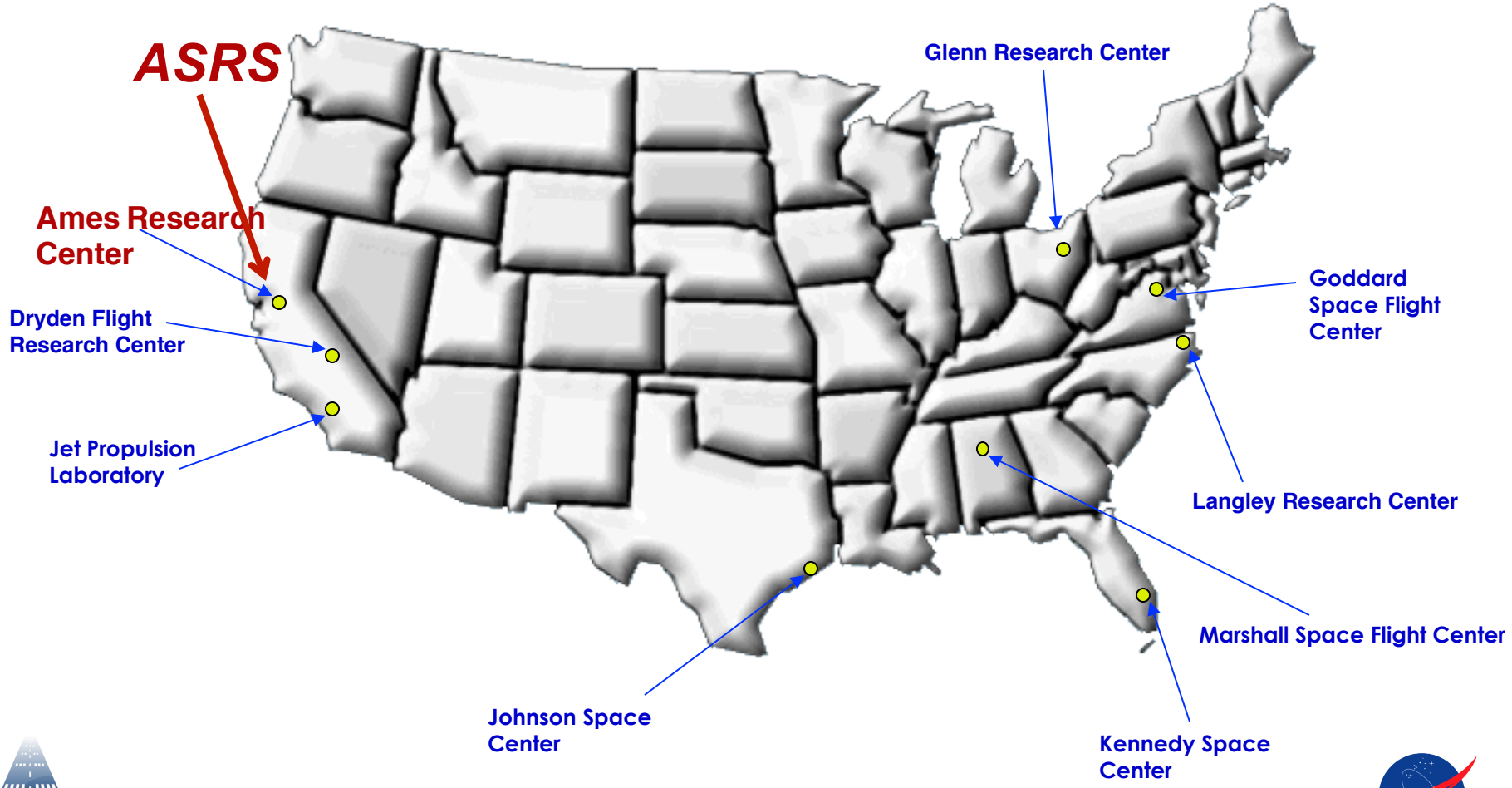
Linda Connell
Program Director, NASA ASRS

Dennis Doyle
Project Manager, ASRS (BAH)

October 2013

AVIATION SAFETY REPORTING SYSTEM

NASA Aviation Safety Reporting System




Moffett Field - Hangar One
1932

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 Management & Support**
- **NASA provides funding for Director Program Management**
- **The Aviation Community provides support through advocacy for reporting, feedback, and communications**

ASRS Reporting 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

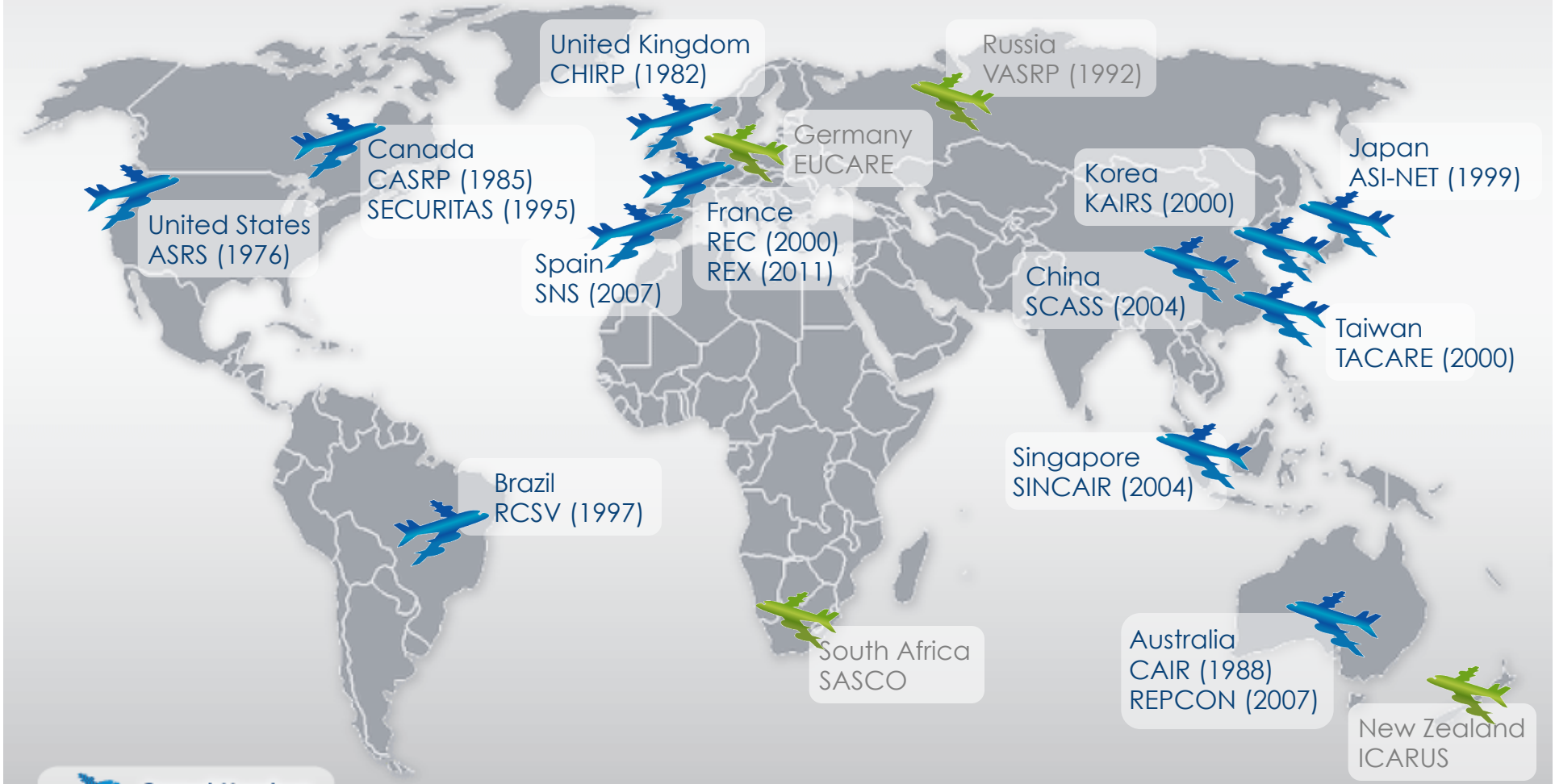
NON-PUNITIVE

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

INDEPENDENT

Necessary for trust building and unbiased dissemination of safety information

ASRS Model Applied to International Aviation Community



International Confidential Aviation Safety Systems (ICASS)

ASRS Model Applied to Other Industries

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

- Fire Fighters Near Miss Reporting System
  - Launched August, 2005 was modeled after ASRS
  - Development Task Force included FAA and NASA ASRS

NASA ASRS Model Applied to Railroad Confidential Close Call Reporting System (C^3RS)

Lessons LEARNED, Lessons SHARED:

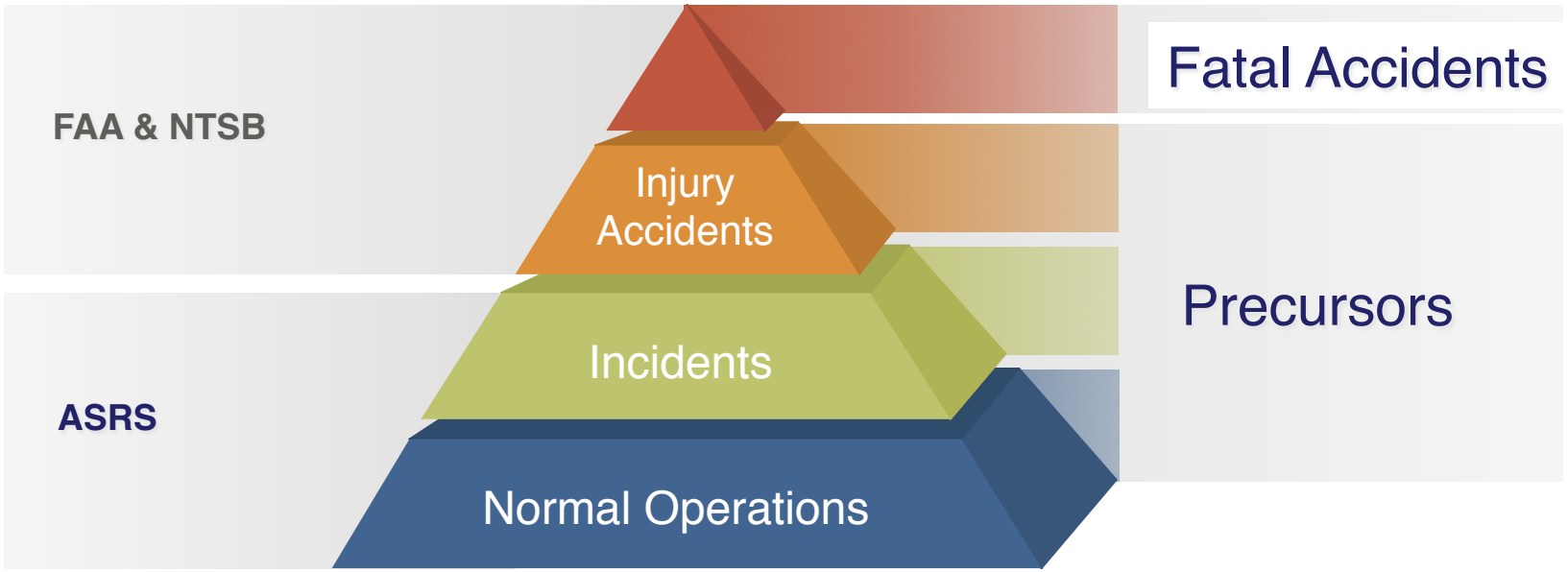
Near-miss reporting, one year later

An exclusive supplement to FireRescue Magazine

FIRERESCUE

System-Wide Event Occurrences

- **ASRS is complementary to other systems of reporting and focuses on precursors to the most severe events**



ASRS Purpose and Mission

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

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

U.S. Aviation Statistics *

- **FAA Aviation Personnel ***
  - Pilots 618,707
  - Air Traffic Controllers 14,305
  - Dispatchers 21,664
  - Mechanics 314,931
  - Flight Attendants 170,155

- **Active Aviation Labor Force ****
  - Pilots - Commercial/ATP 99,980
  - Aircraft Mechanics 35,070
  - Flight Attendants 87,190

Potential Aviation Reporters

TOTAL (Est.) 1,139,795

Flight Volume ***

62,000 Flights/Day (Air Carrier, Cargo, Military)

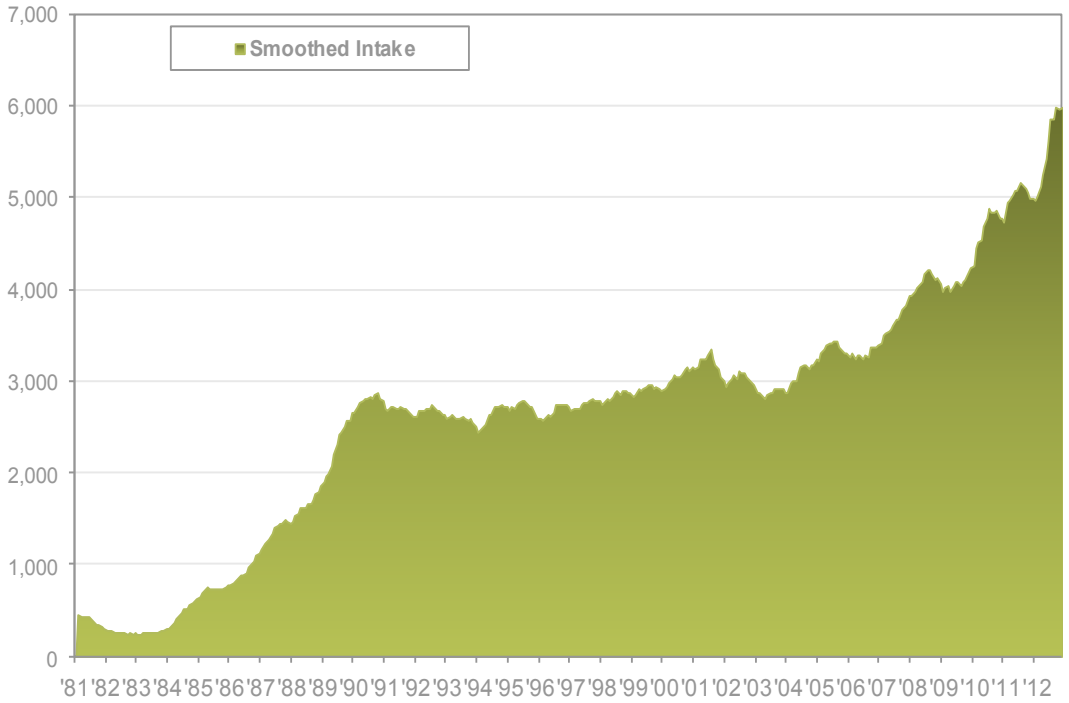
27,178 Flights/Day (General Aviation)

*July 2012 FAA Certification Database
** 2011 Bureau of Labor Statistics
*** RITA Statistics

ASRS Report Volume Profile

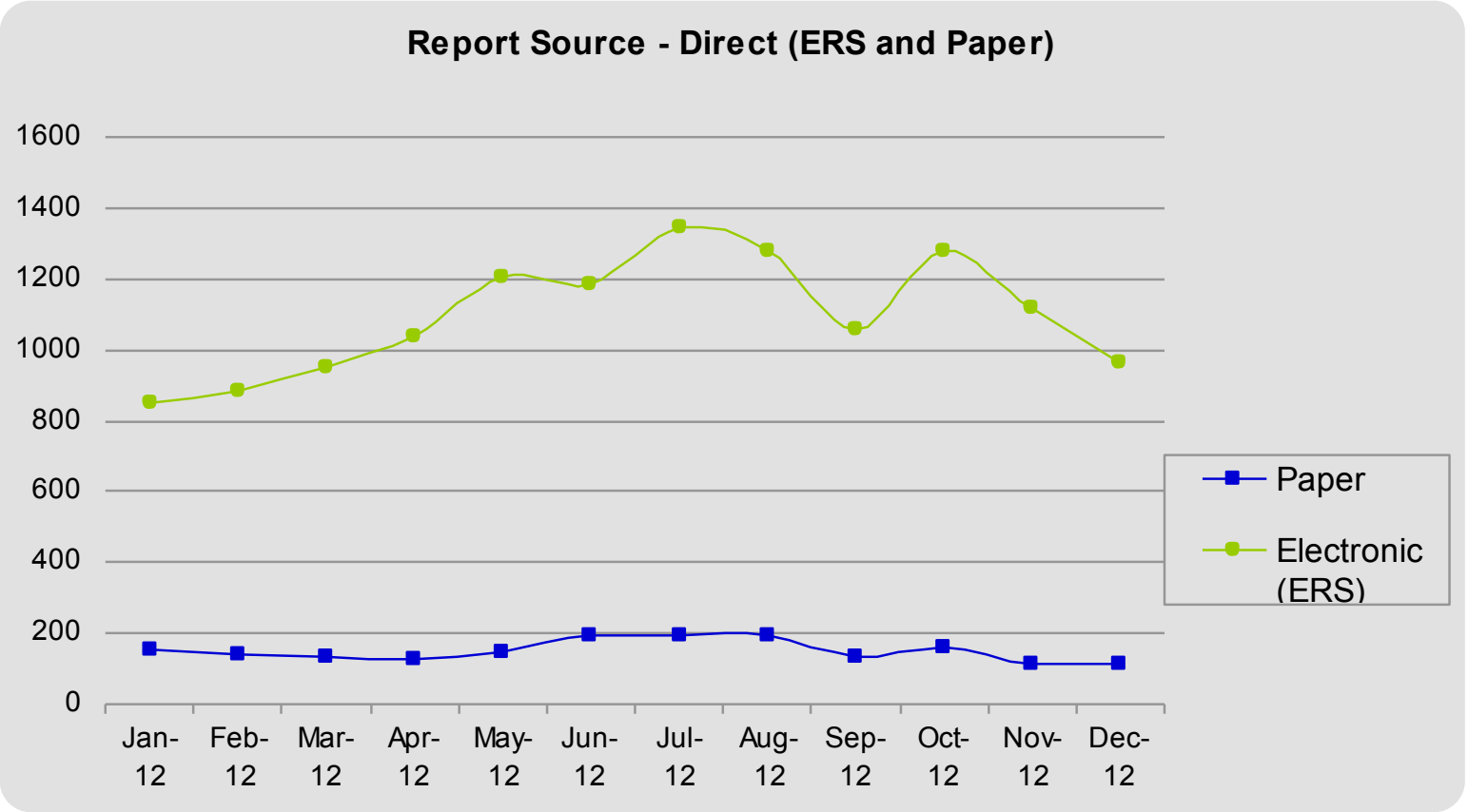
- 37 years of confidential safety reporting
- Over 1,000,000 reports received
- Over 5,550 alert messages issued
- Over 6,000 reports per month, or 300 per working day
- Total report intake for 2012 was 71,540
- Current rate estimate for 2013 is over 80,000

Monthly Intake
January 1981 – December 2012

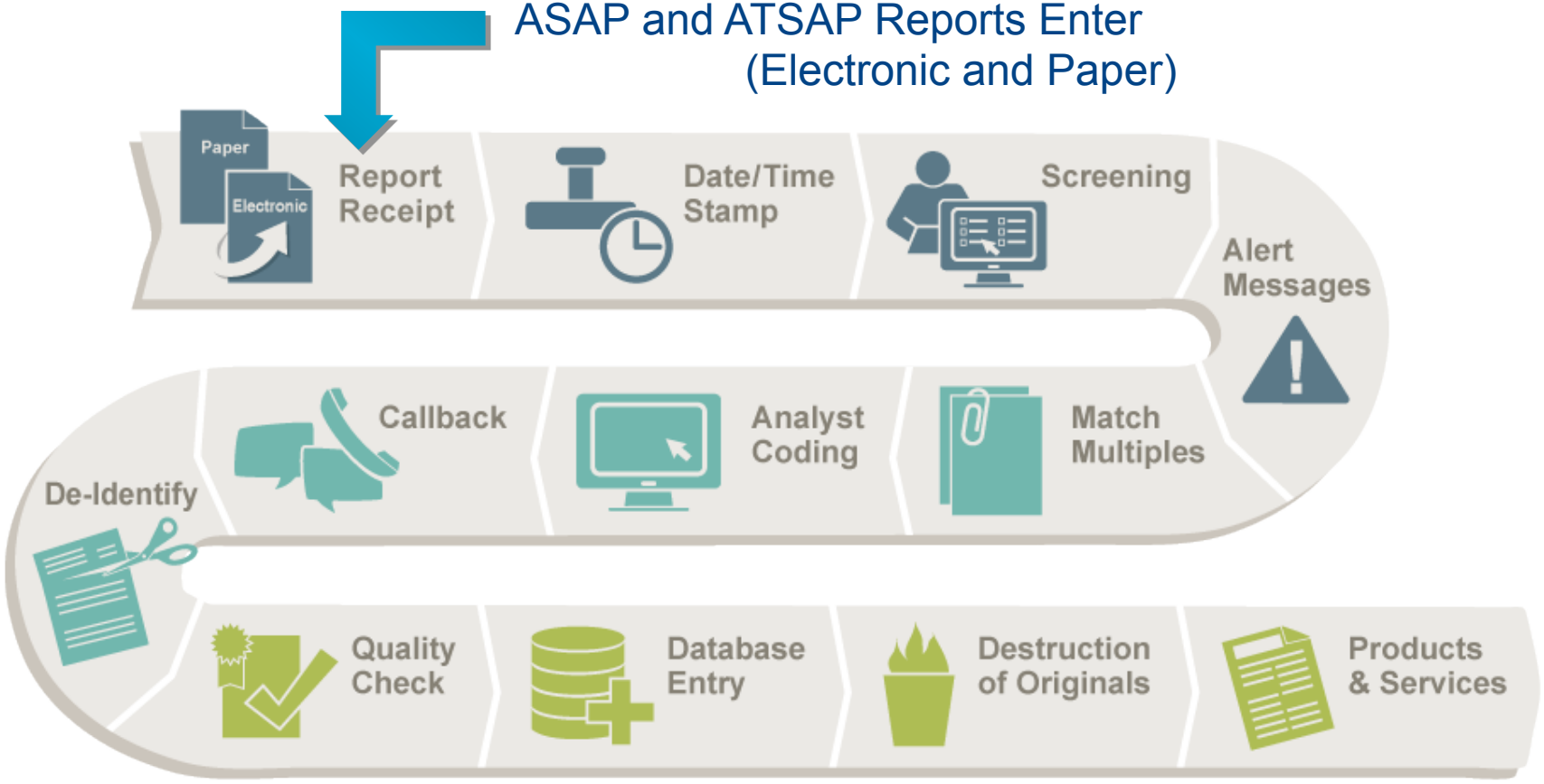


Secure Electronic and Paper Report Submission

- Paper is still an important means to identify anomalies from participants



Report Processing Flow



ASRS and ASAP/ATSAP Collaboration

ASAP Reporting to ASRS

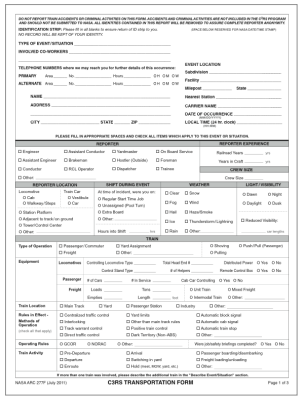
- **Overall ASAP Intake**
  - 176 Total Programs
  - 75 Air Carriers
- **Reporting Groups**
  - 73 Pilot
  - 43 Mechanic
  - 38 Dispatch
  - 18 Flight Attendant
  - 4 Ground Crew
- **Secure Electronic Data connection protocols between airline and ASRS**
  - 176 Programs
  - 75 Airlines

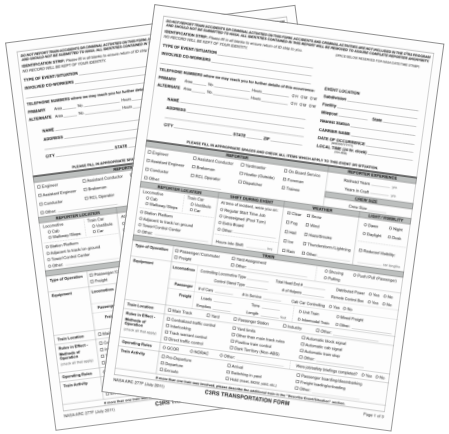
ASRS Electronic Transmission Methodology compatible with numerous software platforms

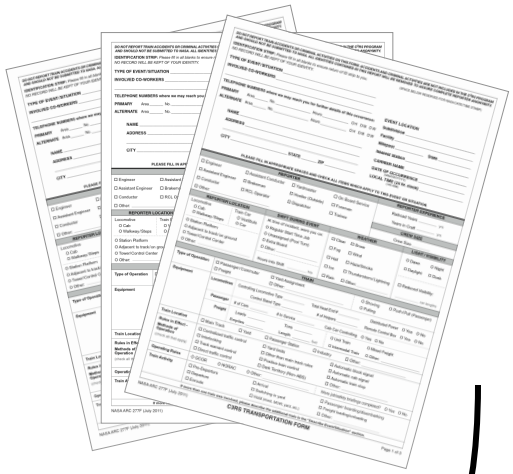
More airline programs being added continuously

20% of all reports are matched to unique

Incidence of ASRS Multiple Reports







20%

Provides information from each person's perspective on event

100%

ASRS Products

- **These products and services fulfill the program's mission to disseminate safety data**

Alert Messages

Safety information issued to organizations in positions of authority for evaluation and possible corrective actions.

CALLBACK

Monthly newsletter with a lessons learned format, available via website and email.

Quick Responses

Rapid data analysis by ASRS staff on safety issues with immediate operational importance generally limited to government agencies.

ASRS Directline

Safety topic summaries based on ASRS reports published to meet the needs of operators and flight crews.

ASRS Database

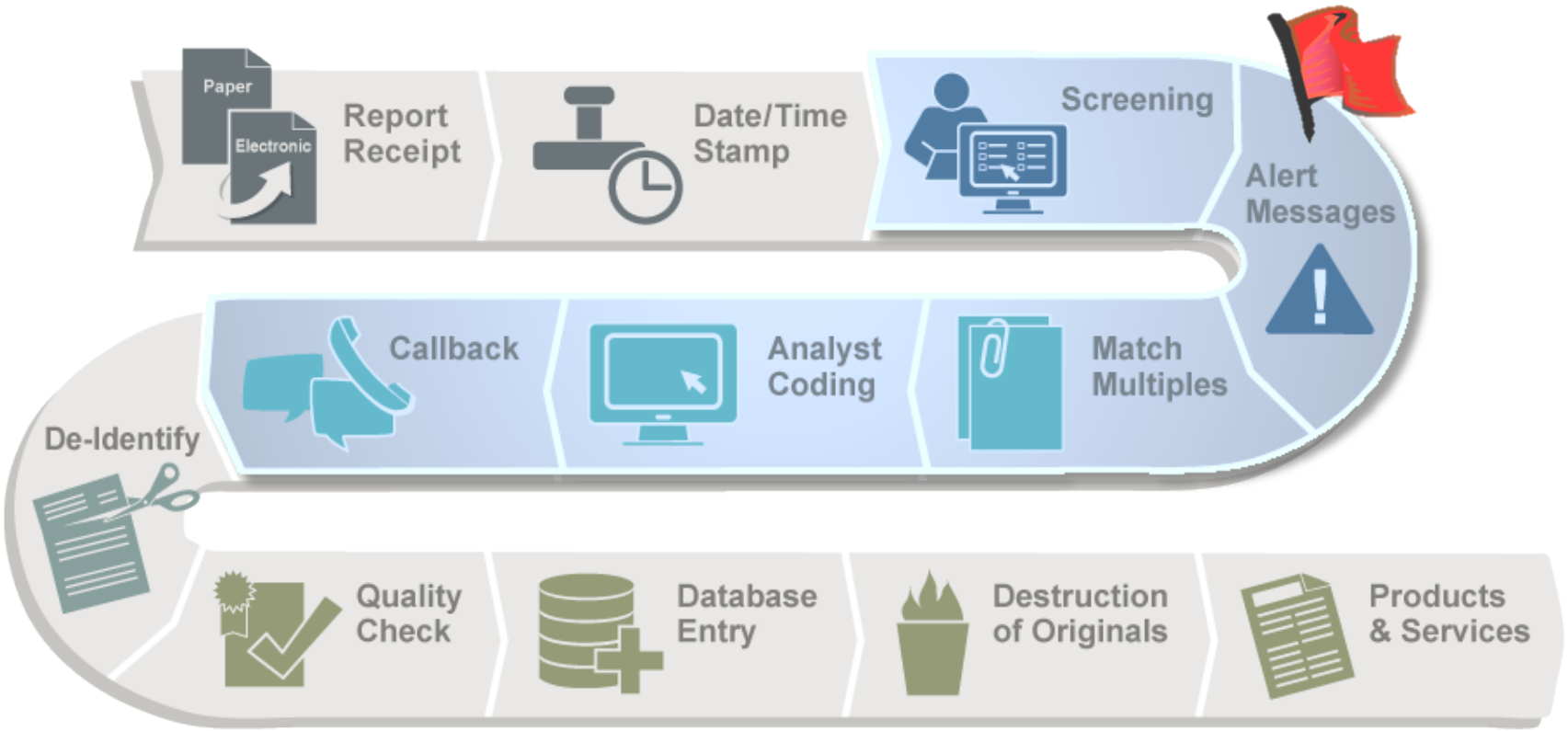
The public ASRS Database Online and data available in Database Report Sets or Search Requests fullfilled by ASRS staff.

Focused Studies/Research

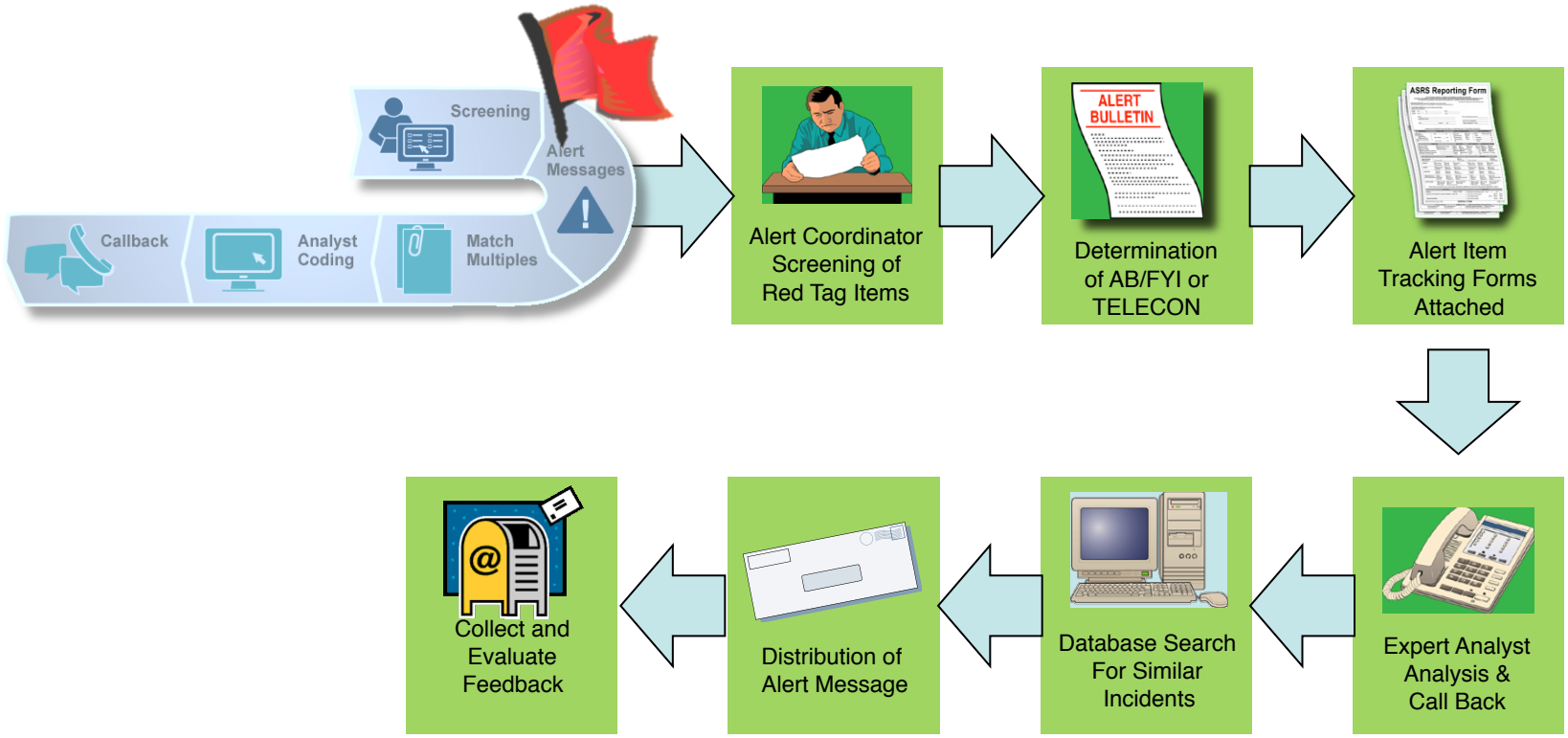
Studies/Research conducted on safety topics of interest in cooperation with aviation organizations.

Report Processing Flow

- **Alerts are identified at any point - Screening to Callback**



How Potential Alerts Are Processed



Various Levels of Alerts

- Alerts are developed according to the level of safety importance of the anomaly that is identified

ASRS has no direct authority to directly correct safety issues.
It acts through and with the cooperation of others.

Alert Responses

1999 – 2012

Response	Percentage
Action taken as a result of the AB/FYI	27%
Action initiated before AB/FYI received	11%
Action initiated in response to AB/FYI but not completed	11%
Issue raised by AB/FYI under investigation	6%
Addressee agrees with AB/FYI but sees no problem	6%
Addressee in factual agreement but is unable to resolve	3%
Addressee disputes factual accuracy of AB/FYI	19%
Information in AB/FYI insufficient for action	10%
For information only, no response expected	4%
Action not within addressee's jurisdiction	3%

64%

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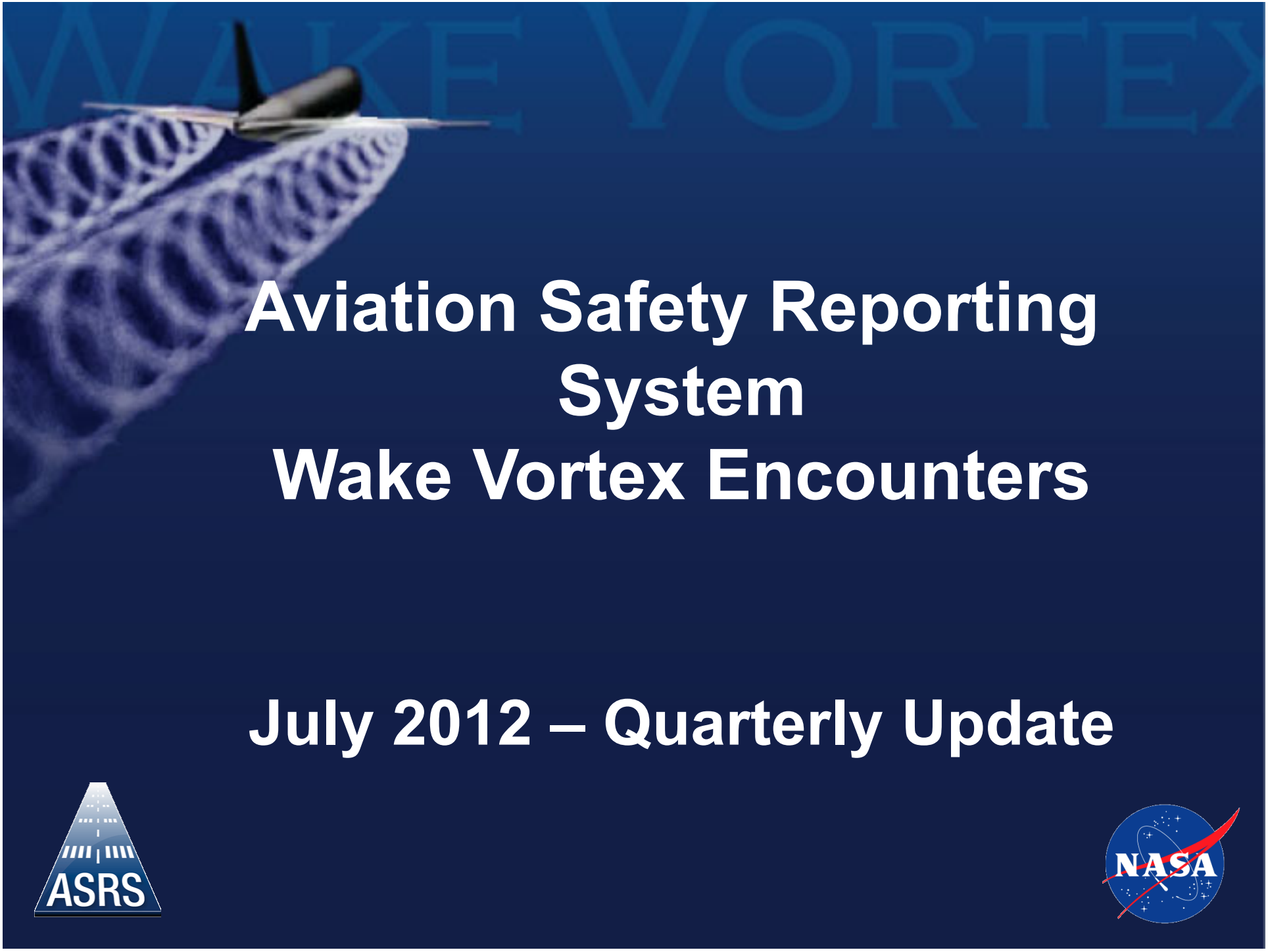


Aviation Safety Reporting System
Wake Vortex Encounters

July 2012 – Quarterly Update

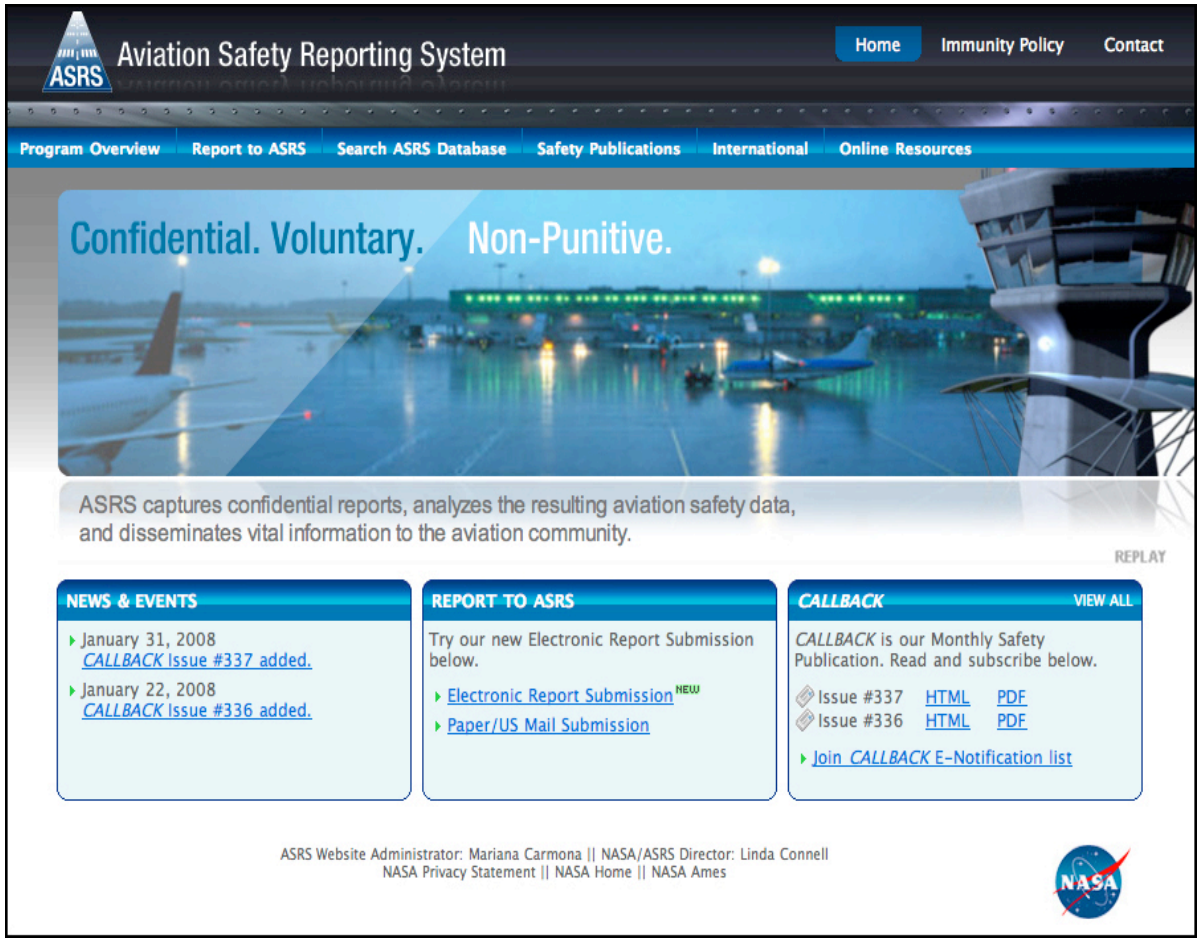
NASA Aviation Safety Reporting System
Weather Data Link & Applications Study
Interim Supplemental Question Set Responses

ASRS

NASA

Tuesday, November 27, 2012

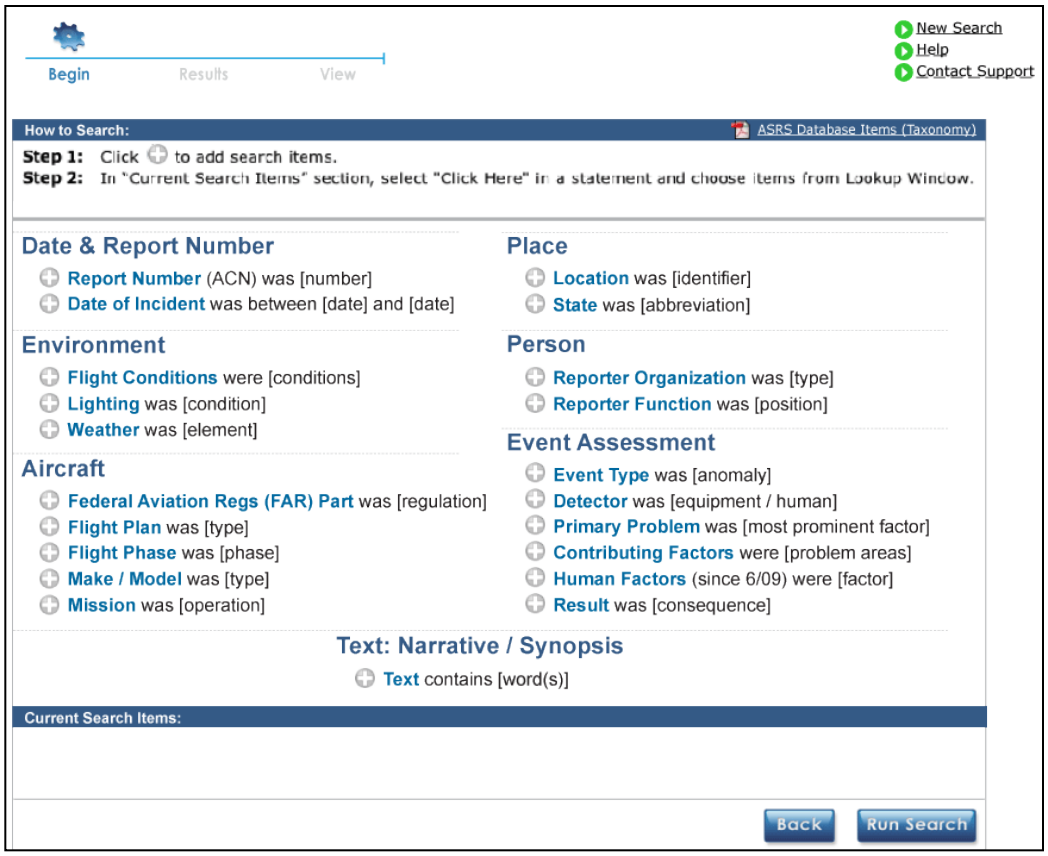
ASRS Web Site



- 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)

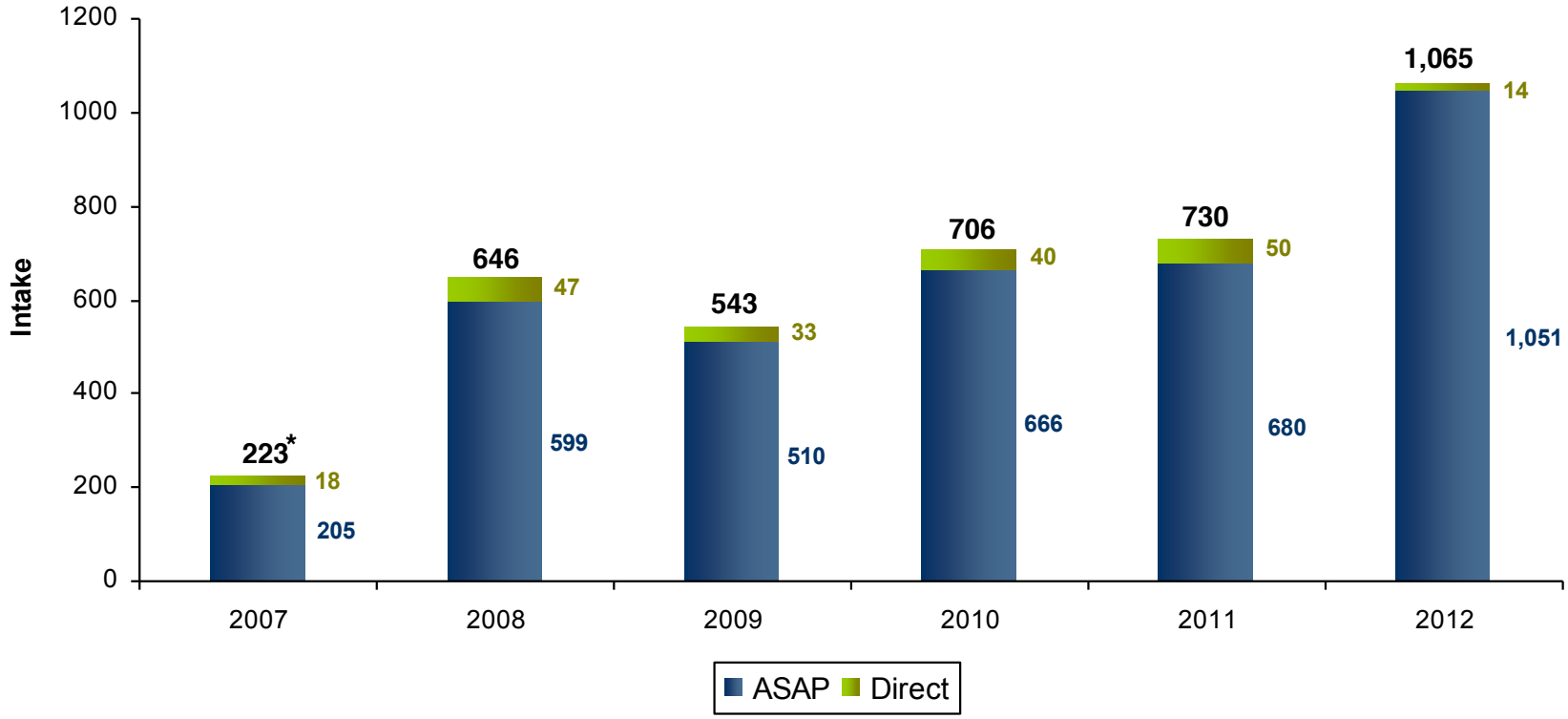


- DBOL launched August 23, 2006
  - Over 70,000 total online queries completed to date
  - Over 20,966 queries completed in 2009
- Fixed field and text search capability
- Data formats (export)
  - MS Word, Excel, CSV HTML
- Experts version (DBOL II) being proposed

http://asrs.arc.nasa.gov

Dispatcher Reports to ASRS

Dispatcher Reporting to ASRS 2007 - 2012



* Dispatch affiliation was added to ASRS Taxonomy in June 2007.

Dispatcher Reports – Top 10 Reported Events

January – December 2012

Screening Data Set (100% of Reports Received)

Event	Count
Published Material / Policy Issue	575
FAR Issue	154
MEL Issue	53
Aircraft Equipment Problem Less Severe	50
Maintenance Issue	37
Weight and Balance	37
Inflight Weather / Turbulence Encounter	36
Fuel Issue	23
ATC Issue	15
Illness Issue	13

*Categories not mutually exclusive.

n = 1,065

Dispatch Related Alerts

- HDN VOR DME-B Approach
- Dash 8-400 Performance Data Availability
- Company Fuel Policies Affecting Flight Safety
- SJU Runway 26 Displacement
- SMF Transponder "Dead Zone" on Taxiway A10
- PDC Anomaly for SLC WEVIC One RNAV SID

Dispatch Related Alerts – Responses

- SJU Runway 26 Displacement
  - ASRS received a call from the San Juan Airport Office, stating *"…they have taken care of the confusion regarding the NOTAM for Runway 8. The 10,000 foot runway has been reduced by 220 feet, leaving 9,780 feet of useable runway. The 220 feet is the new displaced threshold. They also relocated the Runway 8 ILS. It was indicated that all these changes have been covered by a new NOTAM. We were also informed that the Runway 26 VASI is OTS UFN."*
- SMF Transponder "Dead Zone" on Taxiway A10
  - ASRS received a call from the SMF Airport Operations Officer stating *"…a NOTAM was issued to address this issue."*

Dispatcher Reports Overview – Primary Analysis

100 Recent Records

Aviation Safety Reporting System

Dispatcher Reported Events

Event	Count
Published Material / Policy Issue	52
FAR Issue	29
Critical Aircraft Equipment Problem	25
Fuel Issue	10
Inflight Weather / Turbulence Encounter	10
Aircraft Equipment Problem Less Severe	9
ATC Issue	4
Weight and Balance	3
Maintenance Issue	2
Ground Conflict Less Severe	1
Procedural Clearance Issue	1
MEL Issue	1
Security Issue	1
Aircraft Smoke, Fire, Fumes or Odor Event	1
Runway Incursion	1

Top 5 Results

Maintenance Action	13
Declared Emergency	9

A ‘Fuel Issue’ and ‘Weather Encounter’ Occurred Concurrently in Six Events

*Categories not mutually exclusive.

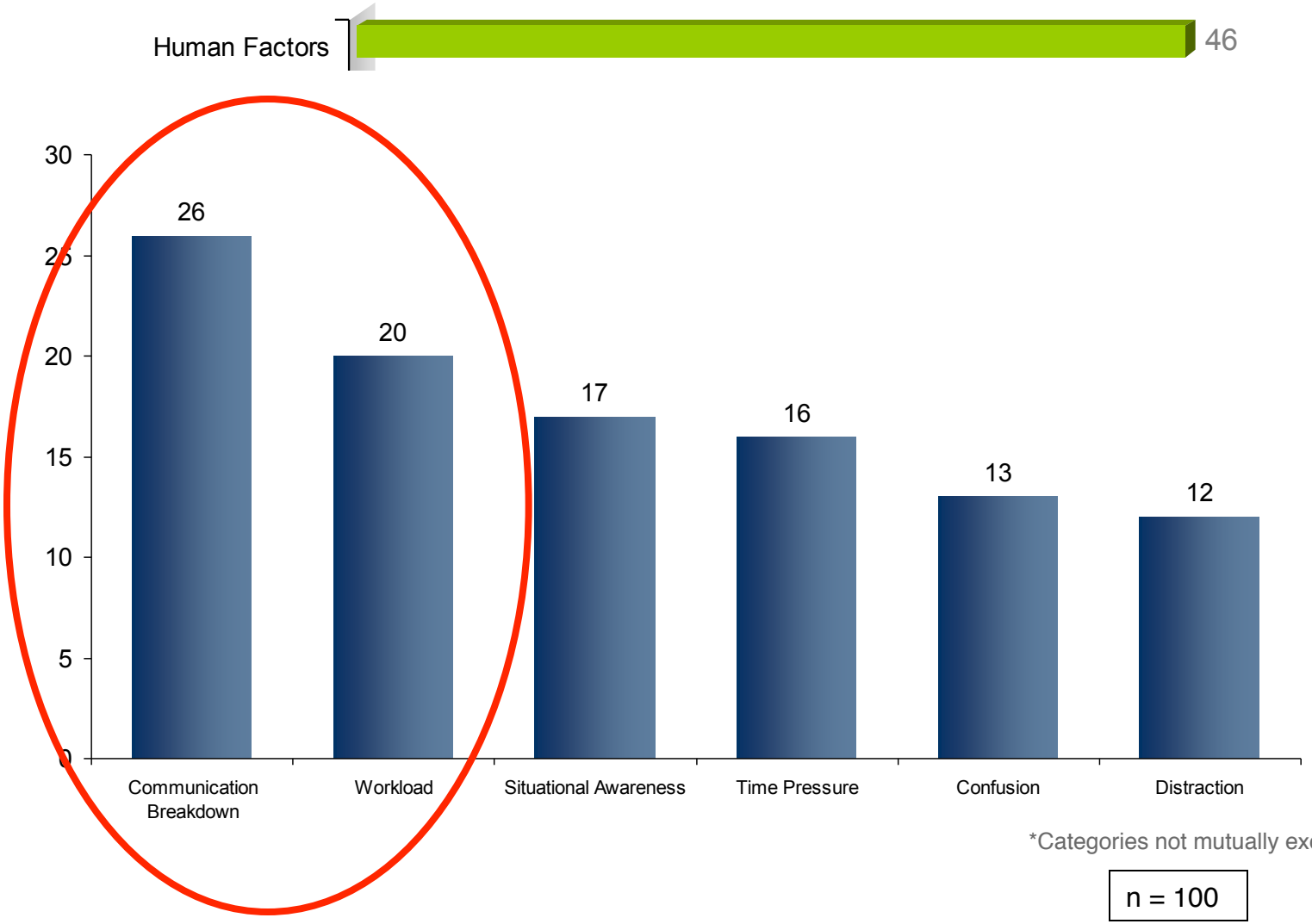
n = 100

Dispatcher Event Results

Event Result*	Count
Maintenance Action	17
Flight Crew Diverted	13
Declared Emergency	11
Returned To Departure Airport	8
Flight Crew Became Reoriented	6
Landed in Emergency Condition	6
Flight Crew Overcame Equipment Problem	4
Flight Crew Took Evasive Action	4
Flight Cancelled / Delayed	4
ATC Issued New Clearance	3
ATC Equipment Problem Dissipated	3
Landed as Precaution	3
Work Refused	3

*Categories not mutually exclusive.

Contributing Factors*



*Categories not mutually exclusive.

n = 100

Communication & Operational Control

- Summary of Issues
  - Dispatchers continue to report issues affecting critical operations
  - Challenges with Communication and Data systems
  - Workload and Task Saturation
  - Maintaining operational control of flights

Communication and Operational Control
Communication - Voice

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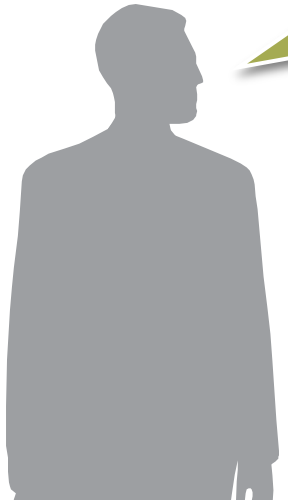
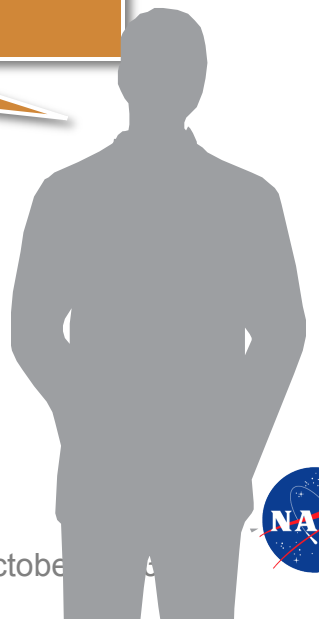
"…I attempted to call the number in the new digital phone system and the patch would not connect. The phone rang like nobody was home. I disconnected and tried again with the same result. I tried 3 times without success…." *(ACN 1044758 Excerpt)*



Communication and Operational Control

Communication - Voice

"…My initial radio contact with the flight was very weak but readable so I completed the patch with Maintenance. After Maintenance Control came on line, however, the whole patch failed…." *(ACN 1037005 Excerpt)*



Communication and Operational Control
Communication - Voice

- A Dispatcher reported phone problems preventing ph

> *"Crew could not understand what I was saying due to the phone system. Had several phone patches over the shift. All crews could not understand what I was saying…. This is a serious issue that must be addressed."* *(ACN 1023679 Excerpt)*

Communication and Operational Control

Communication - Voice

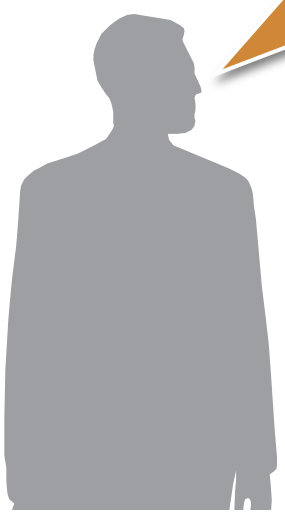
"…I experienced numerous delays/lock ups by [our new communications system]. If this situation had been time critical, these breakdowns would have presented a significant hindrance in my ability to transmit and receive critical information to/from the flight crew in a timely manner. This tool represents a significant safety issue…." *(ACN 1027133 Excerpt)*

ht

Communication and Operational Control
Communication – Data Link

- A Dispatcher related concern regarding routine and frequ… to co… resp…

"…I got a message about a takeoff delay, [but] I received it after the aircraft was already in the gate at its destination…." *(ACN 1037080 Excerpt)*



Communication and Operational Control

Communication – Data Link

"…I noticed that one of my flights appeared to have either accepted or requested a direct routing outside of 50 NM from the shoreline so I attempted to contact unsuccessfully on ACARS. When I did re-establish communications,… they replied that they had complied with a previous message…. I finally found the [automated] message in the server [recommending a Direct course]. I explained to the crew that this message was not generated by me…. They responded: "THE ONLY INFO COMING INTO MY PLANE SHOULD BE FROM MY DISPATCHER NOT JUNK MAIL." *(ACN 991036 Excerpt)*

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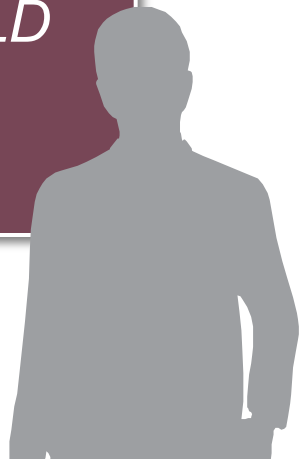

Communication and Operational Control
Flight Planning and Weather Information Tools

"[Some Flight Planning] products lack the SIGMET identification numbers …issued by the controlling authority…. It makes it hard to coordinate SIGMET and Hazardous Weather information when crews refer to a SIGMET by a number given to them by ATC." *(ACN 1028566 Excerpt)*

Communication and Operational Control
Flight Planning and Weather Information Tools

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"National Weather Service (NWS) SIGMETs for severe turbulence in the continental USA are not going into pilot weather packages. We came on shift today with widespread moderate turbulence. NWS SIGMETs Whiskey and X-ray …, which were the result of actual severe reports….They should always be included in pilot weather packages to supplement our providers. To fail to provide these is a violation of the FAR which requires we provide all current forecasts and reports…." *(ACN 979146 Excerpt)*

Communication and Operational Control
Workload and Task Saturation

- Dispatcher reported a serious concern regarding
n

> *"... [some] sectors continuously have 22-23 flights in the air for the first 4-5 hours.... This is not a complaint of working too hard, but a serious concern with maintaining operational control."* *(ACN 1028089 Excerpt)*

Communication and Operational Control
Workload and Task Saturation

- A Dispa
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"Prior to pushback the pilot of one of my flights requested a takeoff alternate via ACARS. I was pressed by other simultaneous tasks and executed a rapid scan of possible alternates. ...I amended the release ... provided the current METAR and TAF. After the flight took off and I completed all the other pressing tasks that required my action I reviewed the weather information and realized that the alternate did not have legal alternate minimums.... The major threat element I can identify for this incident was the extremely high workload. ..."
(ACN 998849 Excerpt)

Communication and Operational Control
Workload and Task Saturation

- Dispatcher voiced concern regarding the multiple number of flights assigned for the shift.

"Upon arrival for my 10 hour shift I was assigned 88 flights to plan, dispatch, and flight follow. This is totally unrealistic and extremely unsafe! …" *(ACN 985528 Excerpt)*

System Driven Workarounds

- Same Flight Numbers
  - Multiple airborne aircraft with same flight numbers
  - Uncoordinated modifications of flight numbers
    - Adding same suffix
  - Lack of safeguards
    - Having to remember altered flight numbers before release

Same Flight Number Workarounds

"… radio number was required to be added to my LAX-ZZZ flight to avoid a conflict with the late arriving inbound flight of the same number. I complied with this by adding a suffix [X] to the call sign...what I was not aware of was that my counterpart on the sector next to me had also added the same radio number suffix [X] to his flight with the same flight number. I was not advised in any messaging alert that this radio number was already in use…we ended up having two flights with the same radio number active at the same time on LAX ATC frequencies…." *(ACN 1084047 Excerpt)*

Same Flight Number Workarounds

"The Operational Control Center had a total computer failure. After the systems were back up we found out that there were two flights on the ground at [the same airport], at the same time with the same flight number. One was taxiing in, and the flight number under my control was taxiing out. We did not receive a warning about the flight number conflict." *(ACN 922401 Excerpt)*

Opportunities to Use ASRS Safety Data

- ASAP Review Committees could include an ASRS Database Online (DBOL) search of other events from a larger sample of similar events with ASRS Analysts providing preliminary analysis coding on numerous variables (contributing factors, human factors, etc)
- As SMS procedures are implemented, an ASRS search could assist in efforts to discover information from additional data sources
- Topics for safety training can be enhanced with use of actual narratives describing events
- Newsletter and publication content can be expanded using illustrations of ASRS events

Unique Aspects of ASRS Confidential Reporting

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

- ASRS has been catalyst for numerous FAA safety issue focuses

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 aviation experience (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 (text mining, special studies, focused analytic techniques, etc)

Unique Aspects of ASRS Confidential Reporting

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, industry organizations, etc.)

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

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ASRS Website:

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Questions?