

ASRS Program Briefing



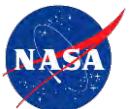
Aviation Safety
Reporting System



Last Updated: July 2023

ASRS Program Briefing Index

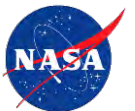
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ASRS Program Overview



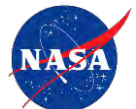
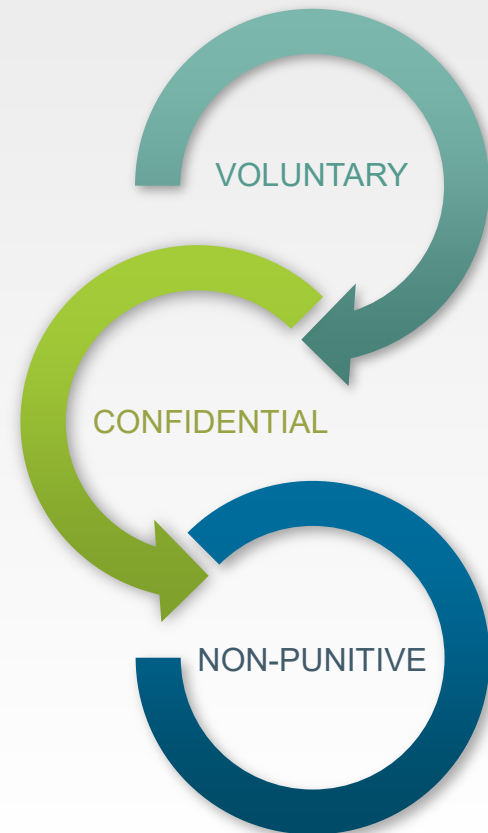
Aviation Safety Reporting System



Concept & Mission

The Aviation Safety Reporting System (ASRS) receives, processes and analyzes voluntarily submitted incident reports from pilots, air traffic controllers, dispatchers, cabin crew, maintenance technicians, UAS crew and others. Reports submitted to ASRS may describe both unsafe occurrences and hazardous situations. Information is gathered from these reports and disseminated to stakeholders. ASRS's particular concern is the quality of human performance in the National Airspace System.

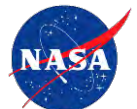
Reporting Incentives



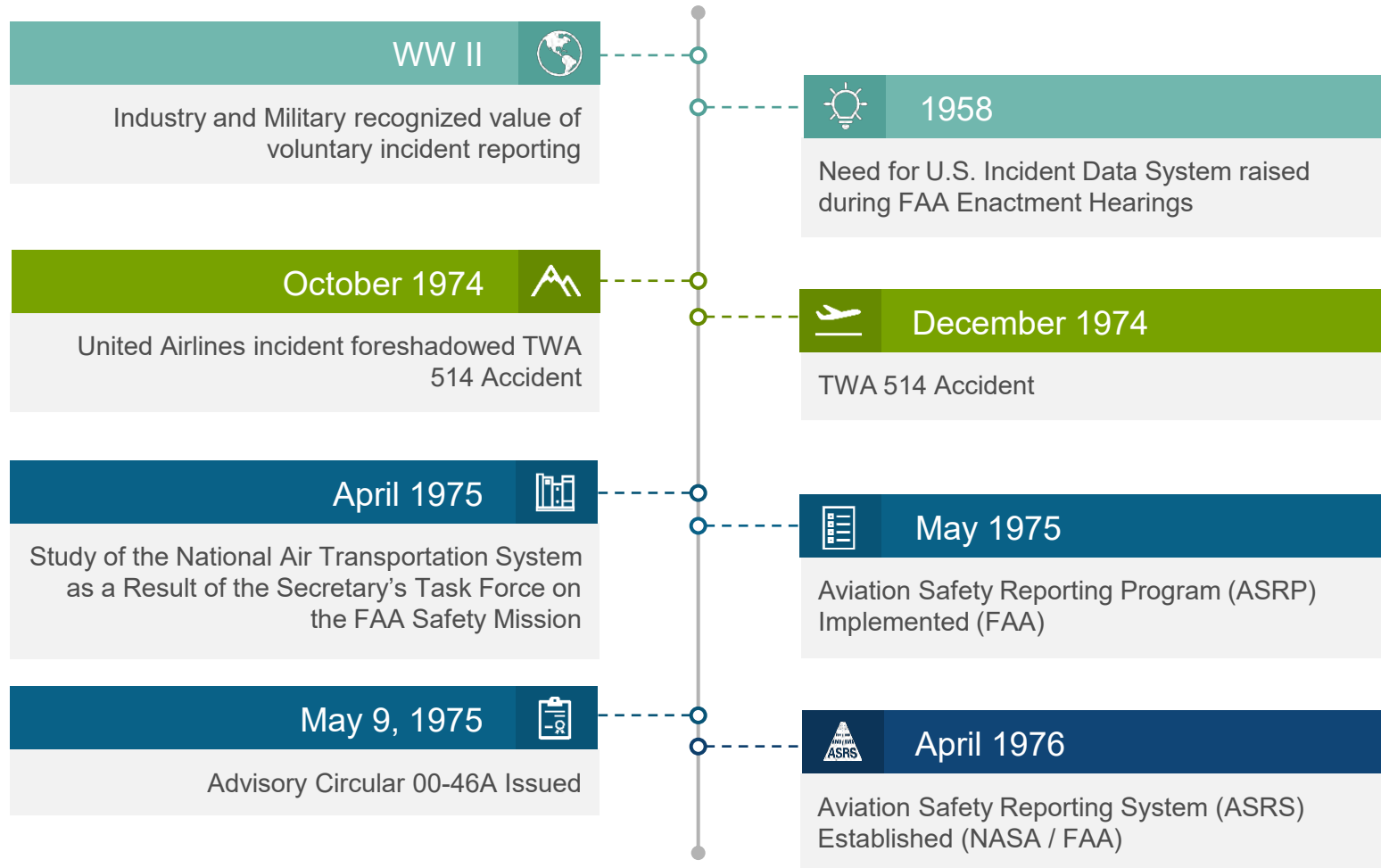
Purpose

- **Identify deficiencies and discrepancies in the National Airspace System**
 - Objective: Improve the current aviation system

- **Provide data for planning and improvements to the future National Airspace System**
 - Objective: Enhance the basis for human factors research and recommendations for future aviation procedures, operations, facilities, and equipment



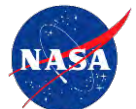
ASRS Background



ASRS Staff

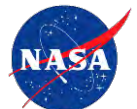
The ASRS Staff is composed of highly experienced pilots, air traffic controllers and mechanics, as well as a management team that possess aviation and human factors experience. ASRS Analysts' experience is comprised of over 600 cumulative years of aviation expertise covering the full spectrum of aviation activity: air carrier, corporate, military, UAS (Unmanned Aircraft Systems) and general aviation; Air Traffic Control in Towers, TRACONs, Centers, and Military Facilities. Analyst cumulative flight time exceeds 175,000 hours in over 90 different aircraft.

In addition, the ASRS Staff has human factors and psychology research experience in areas such as training, fatigue, crew resource management, user interface design, usability evaluations, and research methodology.



Documents Governing ASRS Immunity & Confidentiality

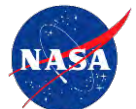
- Federal Register Notice, 1975 & 1976
- Federal Aviation Regulations Part 91.25 (14 CFR 91.25)
- FAA Advisory Circular 00-46F
- FAA policy concerning Air Traffic Controllers regarding ASRS reporting, FAA Order JO 7200.20A



The Immunity Concept

Paragraph 9. c. FAA Advisory Circular No. 00-46F

- c. **Waiver of Imposition of Sanction.** 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.



ASRS Stakeholders



Report Processing



Report Intake Overview

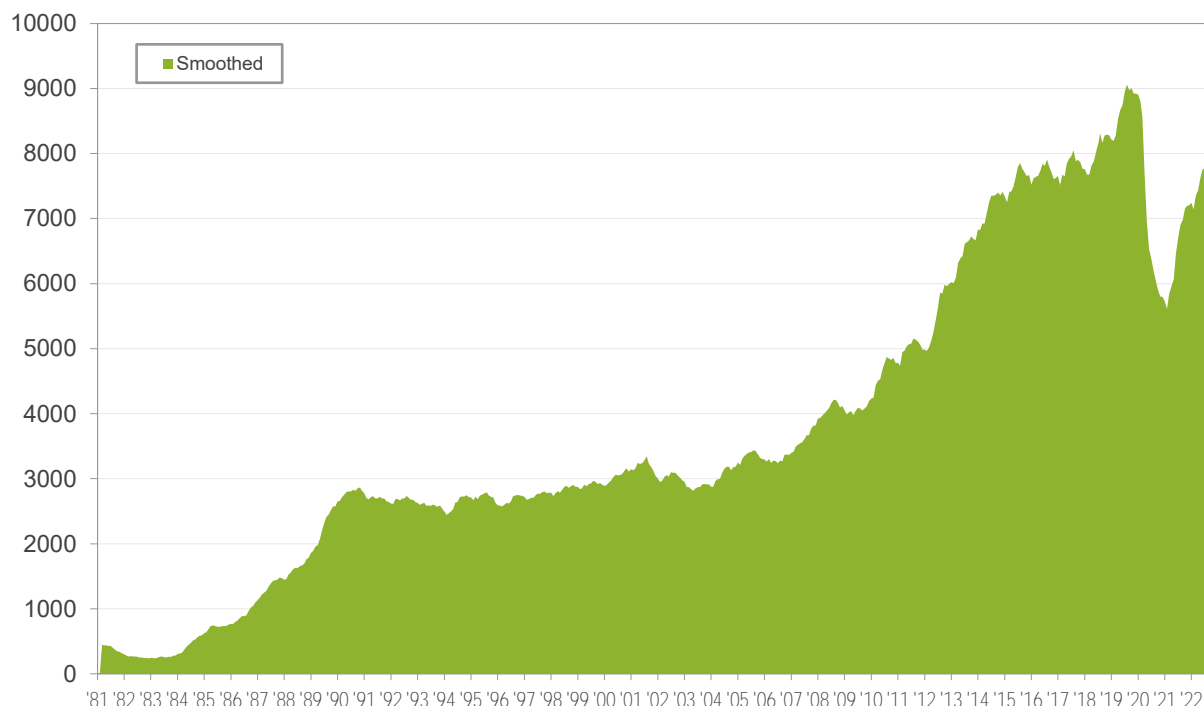
ASRS receives reports from pilots, air traffic controllers, cabin crew, dispatchers, maintenance technicians, ground personnel, UAS crews, and others involved in aviation operations.

ASRS's report intake has been robust from the first days of the program, in which it averaged approximately 400 reports per month. In recent years, report intake has grown at an enormous rate. Intake in 2022 averaged about **1,837** reports per week or **7,959** reports per month.



Report Intake Metrics

Monthly Report Intake (January 1981 – December 2022)

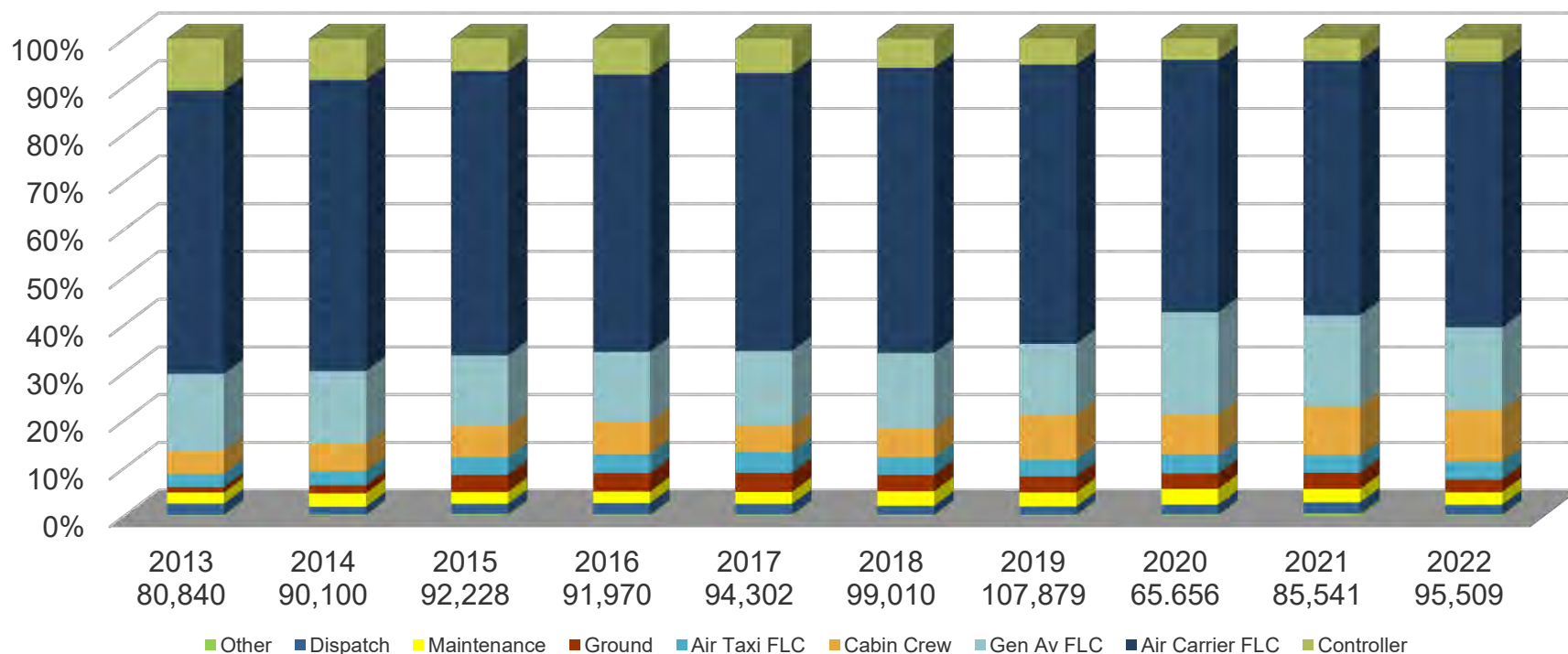


- Total Program Report Intake = **1,962,697**
- Total Report Intake for 2022 = **95,509**
- Averaging **7,959** reports per month, **387** per working day



Incident Reporter Distribution

January 2011– December 2022



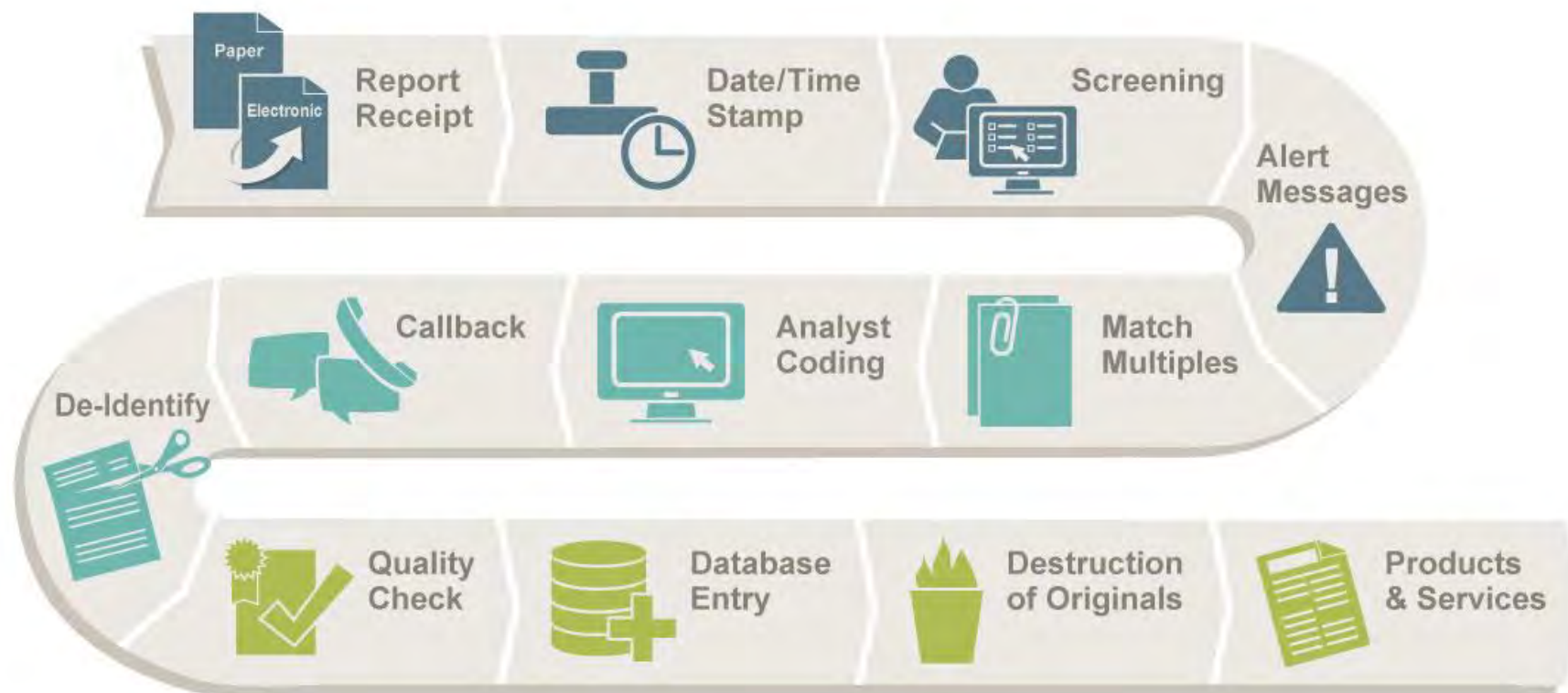
Report Processing Overview

ASRS has securely processed over **1.9 million** reports in its **47 year history**. The process contains critical elements that ensure each report is handled in a manner that maintains reporter confidentiality while maximizing the ability to accurately assess the safety value of each report. ASRS report processing begins with the receipt of reports through electronic submission or from the post office and ends with the final coded report entering the ASRS Database.

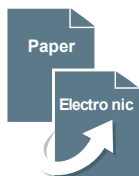
Reports sent to the ASRS are widely regarded as one of the world's largest sources of information on aviation safety and human factors.



Report Processing Flow



Report Processing Flow



ASRS paper reports are picked-up daily from the Moffett Field Post Office or are received electronically via website Electronic Report Submission (ERS) or ASAP data transmissions.



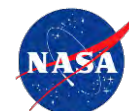
Every report is date and time stamped based on the date of receipt.



Two ASRS Analysts “screen” each report within five working days to provide initial categorization and to determine the triage of processing.



ASRS Analysts may identify hazardous situations from reports and issue an Alert Message. De-identified information is provided to organizations in positions of authority for further evaluation and potential corrective actions.



Report Processing Flow



ASRS retains high-level categorization of 100% of reports received. Based on initial categorization, multiple reports on the same event are brought together to form one database “record”.



ASRS Analysts identify reports that require further analysis and entry into the public ASRS database. During the detailed Report Analysis process, reports are codified using the ASRS taxonomy.



An ASRS Analyst may choose to call a reporter on the telephone to clarify any information the reporter provided. This information is added to the analysis and final record.



To ensure confidentiality all identifying data is removed. After analysis, the Identification (ID) Strip, the top portion of the report, is returned to the reporter. This ID Strip acts as the reporter’s proof of submittal. All physical and electronic ID Strip data with the reporter’s name, address, date and time stamp is removed.



Report Processing Flow



All reports that receive further analysis go through a Final Check to assure coding accuracy. Quality Assurance checks are also performed for coding quality.



Final coded reports enter the ASRS Database. These de-identified records are then available in the ASRS Database Online, which is available through the ASRS website.



Original reports, both physical and electronic data, are destroyed to completely ensure confidentiality.



ASRS uses the information it receives to promote aviation safety through a number of products and services, such as Alert Messages, Search Requests, a monthly newsletter, focused studies and more.

ASRS Products & Services



ALERT MESSAGES

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



QUICK RESPONSES

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



ASRS DATABASE

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



CALLBACK NEWSLETTER

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



FOCUSED STUDIES

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

ASRS Products & Services Metrics



1,962,697

Incident
Reports
Received



7,623

Search
Requests

7,190

Safety Alert
Messages



CALLBACK
Issues

515



145

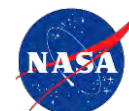
Quick Responses



Focused
Studies

64

(April 1976 – December 2022)





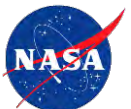
Alert Messages

Alert Message Overview

When ASRS receives a report describing a hazardous situation, for example, a defective navigation aid, an aircraft system anomaly, a confusing procedure, or any other circumstance which might compromise safe flight – an alerting message is issued using de-identified information provided in the reports.

Alerting messages have a single purpose: to relay safety information to organizations in positions of authority so that they can evaluate the information and take possible corrective actions.

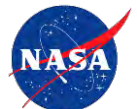
Alert messages are classified as **Alert Bulletins** or **For Your Information Notices**, and may be included in monthly **ASRS Safety Teleconferences**.



ASRS Alerting Pyramid



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



Alerting Subjects

January 2013 – December 2022

Subject	Total
Airports Facility Status and Maintenance	341
Aircraft Systems	340
Other	179
ATC Procedures	134
Hazards to Flight	101
Navigation	94
ATC Equipment	79
Airport Lighting and Approach Aids	77
ATC Operations	77
Aircraft Avionics	45
Aircraft Power Plants	17



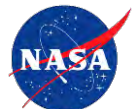
Examples of Safety Alerting Success

- **JAN Ramp Lighting (FYI 2022-22)**

An FAA (ASW-620) representative responded and stated "...The airport has completed an inspection of their ramp lighting system. As a result, they have implemented immediate temporary measure to correct the identified issue. These measures include the use of light towers and remarking lead in lines. They will remain in place until the airport can procure the materials required to repair and re-lamp any insufficient lighting on the apron."

- **SAT Ground Obstacle Charting (FYI 2022-39)**

A Boeing Digital Solutions/Jeppesen representative responded and stated "The depiction of the 1448' obstacle that is located northeast of KSAT has been improved on the Jeppesen Airway Manual chart image for the RNAV (RNP) Z Rwy 22 approach procedure. Flight tracks have been modified so that they retain an accurate position, but do not clutter the obstacle depiction as much as the previous chart."

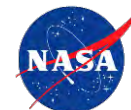




Quick Responses

Quick Response Overview

Quick Responses are rapid turnaround data analysis that are typically accomplished within two to ten business days of the request. They are a high value service directed towards safety issues with immediate operational importance. Quick Responses are generally limited to government agencies such as FAA, DOT, NTSB, NASA, and U.S. Congress.



Quick Response Applications

AN ANALYSIS OF:



Notice to Air Missions
(NOTAM) Related Incidents



Unmanned Aerial Vehicle
(UAV) Related Incidents



Flight Service Station
Related Incidents



General Aviation ADS-B
Related Incidents



Part 121 Similar Call Sign
Related Incidents



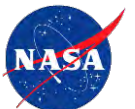
ASRS Database



Search Requests

Information in the ASRS Database is available publicly. The ASRS will provide **Search Requests** to members of the aviation community. ASRS will search its database, download relevant reports, and send to requestor.

Since the inception of ASRS, over **7,623** Search Requests (SRs) have been directly provided by ASRS Research Staff to various aviation organizations and agencies, as well as individuals through December 2022.



Search Requestors by Organization

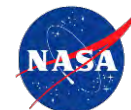
January 2013 – December 2022

Organization	Total
FAA	67
Air Carriers	60
NASA	53
NTSB	35
Media	16
Alphabet Groups	15
Foreign	8
Miscellaneous Government	8
Miscellaneous Safety Organizations	8

Organization	Total
Individuals	6
Other	4
Research Organizations	3
Educational Institutes	2
Aircraft Manufacturers	1
DHS	1
Military	1
NAA	1
Student	1

Recent Search Request Samples

- **Air Traffic Controller Situational Awareness Related Incidents (SR 7328)**
 - Completed for the FAA
- **Cabin Fumes Related Incidents (SR 7329)**
 - Completed for the FAA Accident Prevention Office (AVP)
- **GPS Interference Related Incidents (SR 7332)**
 - Completed for the Government Accountability Office (GAO)
- **Turbojet Inadvertent Engine Shutdown Incidents (SR 7335)**
 - Completed for the NTSB



ASRS Database Online

Direct access to search de-identified reports in the ASRS database is available through **ASRS Database Online (DBOL)** at <https://asrs.arc.nasa.gov/search/database.html>.

How To Search:

Step 1: Click to add search items. Note: Make sure your Pop-up Blocker is off.

Step 2: In "Current Search Items" section, select "Click Here" in a statement and choose items from lookup window.

Date & Report Number

- Report Number (ACN) was [number]
- Date of Incident was between [date] and [date]

Environment

- Flight Conditions were [conditions]
- Lighting was [conditions]
- Weather was [element]

Aircraft

- Federal Aviation Regs (FAR) Part was [regulation]
- Flight Plan was [type]
- Flight Phase was [phase]
- Make/Model was [aircraft type]
- Mission was [operation]

Place

- Location was [identifier]
- State was [abbreviation]

Person

- Reporter Organization was [type]
- Reporter Function was [position]

Event Assessment

- Event Type was [anomaly]
- Detector was [equipment/human]
- Primary Problem was [most prominent factor]
- Contributing Factors were [problem areas]
- Human Factors (since 6/09) were [factor]
- Result was [consequence]

Text: Narrative / Synopsis

- Text contains [words]

Current Search Items:

Search is empty.

[Back](#) [Run Search](#)



1,756+

Queries completed each month



322,205+

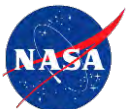
Queries completed since DBOL launch in July 2006



ASRS Database Report Sets

For your convenience, selected relevant reports on several safety topics are available on the website called **ASRS Database Report Sets**. Each report set consists of 50 ASRS Database records, all pre-screened to assure their relevance to the pre-selected topic and are available at <https://asrs.arc.nasa.gov/search/reportsets.html>.

From the ASRS website, ASRS Database Report Sets are downloaded on average over **1,937** times a month. Report Sets were first posted in January 2000.



ASRS Database Report Sets

2022 Top Ten Report Sets

Report Set Topic	Total Downloads
Unmanned Aerial Vehicle (UAV) Reports	2,192
Passenger Electronic Devices	1,440
Runway Incursions	1,438
Maintenance Reports	1,276
Flight Attendant Reports	1,263
Air Carrier (FAR 121) Flight Crew Fatigue Reports	1,064
Wake Turbulence Encounters	1,045
Cabin Smoke, Fire, Fumes, or Odor Incidents	899
CRM Issues	877
Altitude Deviations	862



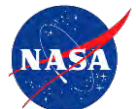


CALLBACK

CALLBACK Overview

CALLBACK, the award winning ASRS monthly safety newsletter, has been published since 1979 in a popular “lessons learned” format. *CALLBACK* presents ASRS report excerpts that are significant, educational, and timely. Occasionally features ASRS program developments and research. Over **515** issues have been published and distributed throughout the U.S. and to the international aviation community. All issues since December 1994 are available for download at the ASRS website at:

<https://asrs.arc.nasa.gov/publications/callback.html>



CALLBACK Distribution and Subscription

- In addition to being published online, **CALLBACK** is distributed by email. Subscription is free and available via the ASRS website.



34,700+

Total number of email subscribers for 2022



457,670+

CALLBACK views for 2022 (HTML and PDF)



CALLBACK Topics

2022 *CALLBACK* Topics Covered

- Altitude Deviations and Misperceptions
- AMT Tools of the Trade
- Controller Training
- Hot Weather Hazards
- Human Machine Interface
- Inflight Medical Emergencies
- Interactive Situational Resolutions
- Parachutes, Paragliders and Power
- Pushback Communications
- Risk Management and Mitigation
- Wake Turbulence




The Human-Machine Interface

Issue 505, February



Tools of the Trade

Issue 508, May



Perils in Pushback Communications

Issue 515, December

UAS Safety In Sight Distribution and Subscription

- In addition to *CALLBACK*, a UAS specific publication is distributed by email. Subscription to ***UAS Safety In Sight*** is free and available via the ASRS website.



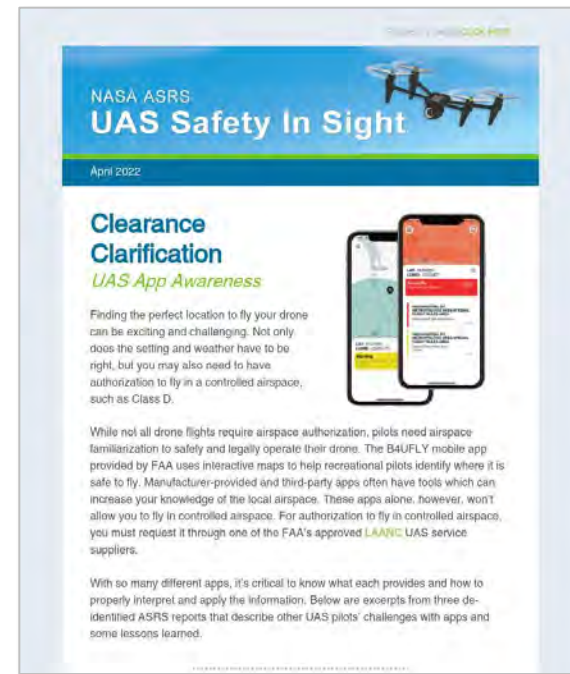
155+

Total number of email subscribers for 2022



6 Issues



Published to date





Focused Studies/Research

Focused Studies and Topic Areas

COVID (FAA AVP)	General Aviation (FAA AVP)	UAS (FAA AVP)
 <p>COVID-Related ASRS Reports</p>	 <p>Driving Down GA Accident Rate FAA, Aviation Safety 2020</p>	 <p>NASA ASRS UAS Safety Reporting</p>
Wake Vortex (FAA AJP)	HazMat (FAA AXH-1)	5G Watchlist
 <p>WAKE VORTEX ENCOUNTER STUDY</p>	 <p>NASA ASRS HAZMAT Safety Reporting</p>	 <p>5G Related ASRS Reports</p>

Focused Study – Wake Vortex

Wake Vortex Encounter Study

In cooperation with the FAA, ASRS is currently examining Wake Vortex Encounter incidents reported to ASRS. ASRS began this study in 2007. At present the Wake Vortex Encounter Study includes all airspace within the United States, enroute and terminal. In quarterly reports, the ASRS documents event dynamics and contributing factors underlying unique wake vortex encounter incidents.

A sampling of the factors to be analyzed includes reporters' assessed magnitude of wake encounter, aircraft spacing, aircraft type, runway configuration, and consequences from the encounter.

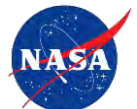


Focused Study – HAZMAT

HAZMAT Study

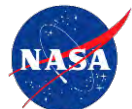
In cooperation with the FAA, ASRS is conducting a special study of Hazardous Materials (HAZMAT) incidents reported to ASRS. Begun in 2018, the study focuses on all aspects of the transport and handling of HAZMAT in the aviation industry. ASRS provides monthly and bi-annual reports to the FAA, summarizing report data such as reporter function, type of FAR operation, anomalies reported, and event results. An additional analysis of reports is done annually to examine in more detail additional factors, such as the type and location of HAZMAT involved, contributing factors, and event outcome.

HAZMAT-related reports are available in the ASRS Online Database.



ASRS Research Archives

- 64 Research Studies and Special Papers Published
 - **Operations:** Deviations, De-Icing/Anti-Icing, Rejected Takeoffs, Clearances, Weather Encounters, Landing Incidents, Runway Transgressions, TCAS II, Crossing Restrictions, etc.
 - **Human Factors:** Communication, Memory, Confusion, Time Pressure, Judgment, Training, Crew Performance, Flight Crew Monitoring, etc.
 - **Confidential Reporting:** ASRS Reporting Model, Case for Confidential Reporting, Development of ASRS, Cross Industry Applications, etc.
- Research agendas are developed in collaboration with government and industry safety organizations
- There are over 30 ASRS Research Papers available to download on the ASRS website



ASRS Model Applied



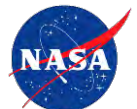
Aviation Safety Reporting System



ASRS Model Applied

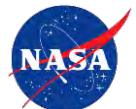
The ASRS model is utilized internationally in the aviation community. The International Confidential Aviation Safety Systems (ICASS) Group promotes confidential reporting systems as an effective method of enhancing flight safety in commercial air transport and general aviation operations.

International Civil Aviation Organization (ICAO) has revised Annex 13 – Accident Prevention and created Annex 19, Chapter 5, which addresses member states establishing a voluntary incident reporting system.



ASRS Model Applied to International Aviation Community

- **UNITED STATES:** Aviation Safety Reporting System (ASRS) [1976]
- **UNITED KINGDOM:** Confidential Human Incident Reporting Program (CHIRP) [1982]
- **CANADA:** Confidential Aviation Safety Reporting Program (CASRP) [1985], SECURITAS [1995]
- **BRAZIL:** Confidential Flight Safety Report (RCSV) [1997]
- **JAPAN:** Aviation Safety Information Network (ASI-NET) [1999], VOICES Reporting System [2014]
- **FRANCE:** Confidential Events Reporting System (REC) [2000], REX [2011]
- **TAIWAN:** Taiwan Confidential Aviation Safety Reporting System (TACARE) [2000]
- **SOUTH KOREA:** Korea Aviation hindrance Reporting System (KAIRS) [2000]
- **CHINA:** Sino Confidential Aviation Safety System (SCASS) [2004]
- **SINGAPORE:** Tell Sarah, formerly SINCLAIR [2004]
- **AUSTRALIA:** CAIR [1988], Report Confidentially (REPCON) [2007]
- **SPAIN:** Safety Occurrence Reporting System (SNS) [2007]
Safety Reporting System – SEPLA (SRS) [2007]
- **SOUTH AFRICA:** Civil Aviation Hazard Reporting System (CAHRS) [2013]
- **EUROPE:** European Union Aviation Safety Agency Safety Reporting (EASA) [2015]



ASRS Model Applications

Because of the success of ASRS, the ASRS reporting model is also being applied to other disciplines such as railroad, medicine, security, firefighting, maritime, law enforcement, and others.



RAIL



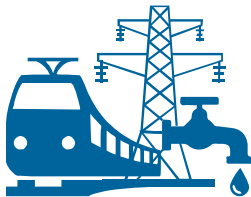
MEDICINE



SECURITY



FIREFIGHTING



PUBLIC UTILITIES



MARITIME

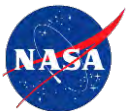


STRUCTURAL
ENGINEERING

ASRS Summary



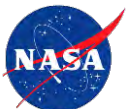
Aviation Safety Reporting System



ASRS Summary

ASRS is a highly successful and trusted program that has served the needs of the aviation community for over 47 years. It is available to all participants in the National Airspace System who wish to report safety incidents and situations.

The ASRS identifies system deficiencies, and issues alerting messages to persons in a position to correct them. It educates through its newsletter *CALLBACK*, participation in government and industry meetings, and through its research studies. Its database is a public repository which serves the needs of the FAA and NASA, and those of other organizations world-wide which are engaged in research and the promotion of safe flight.



Advantages of the ASRS Model



System-Wide Perspective



Strong Immunity and Legal Provisions



System-Wide Alerting



Information Sharing on Aviation Safety



Data Processing through Expert Analysts



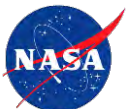
National and International Reputation



Comprehensive and Time-Tested Coding Taxonomy

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 are 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* - why a system failed, why a human erred
- Incident/event data are complementary to the data gathered by other monitoring systems



Thank You



Contact the NASA ASRS Director

Becky L. Hooey– Becky.L.Hooey@nasa.gov

Additional Information & Resources

- ✓ Confidentiality & Incentives to Report
<https://asrs.arc.nasa.gov/overview/confidentiality.html>
- ✓ Immunity Policies
<https://asrs.arc.nasa.gov/overview/immunity.html>
- ✓ Requesting ASRS Data
<https://asrs.arc.nasa.gov/search/requesting.html>

