ASRS Program Briefing

Aviation Safety
Reporting System

ASRS

NASA

Data Through: December 2023

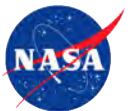# ASRS Program Briefing Index

ASRS Program Overview
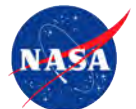
Concept & Mission

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

VOLUNTARY

CONFIDENTIAL
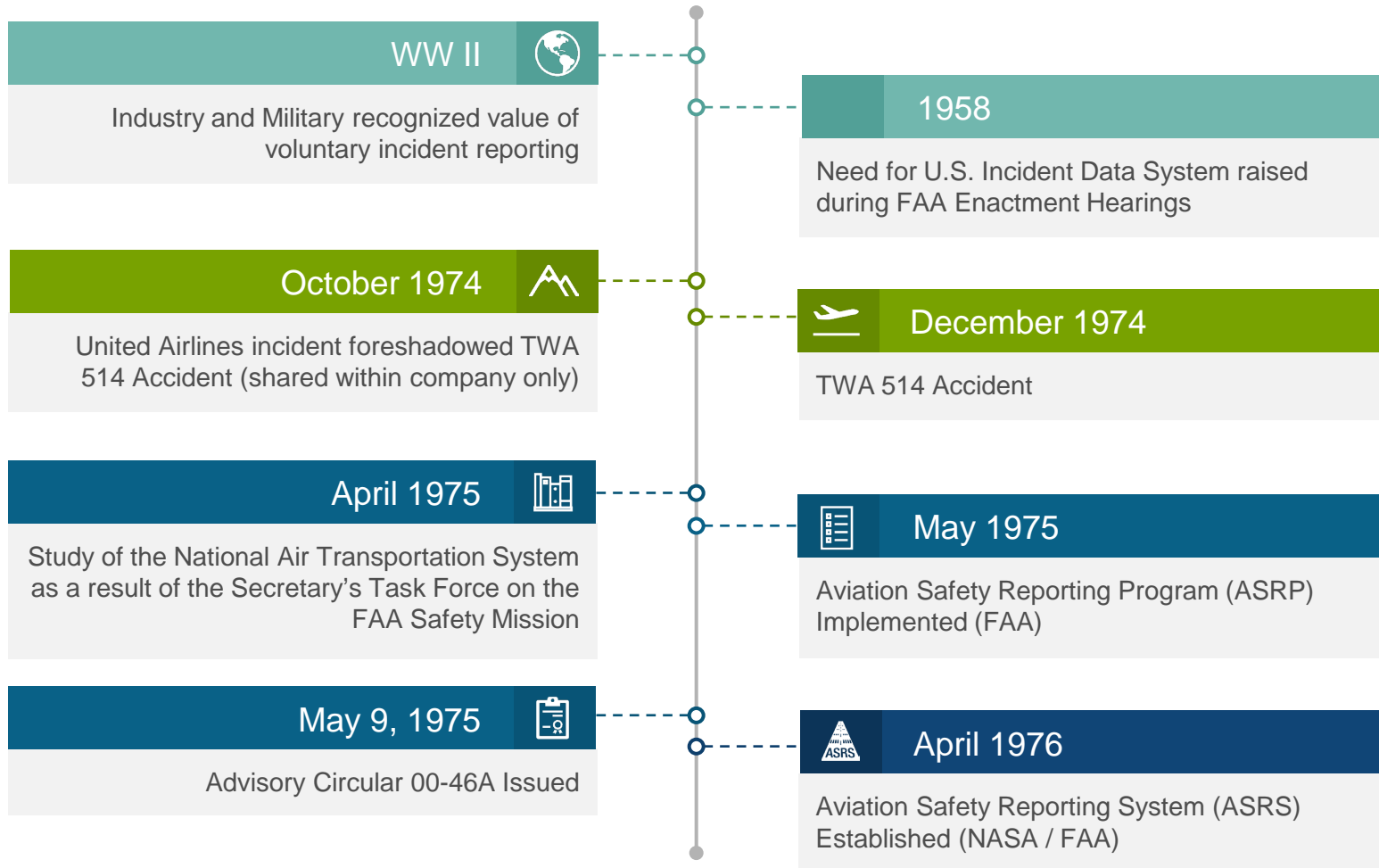
NON-PUNITIVE
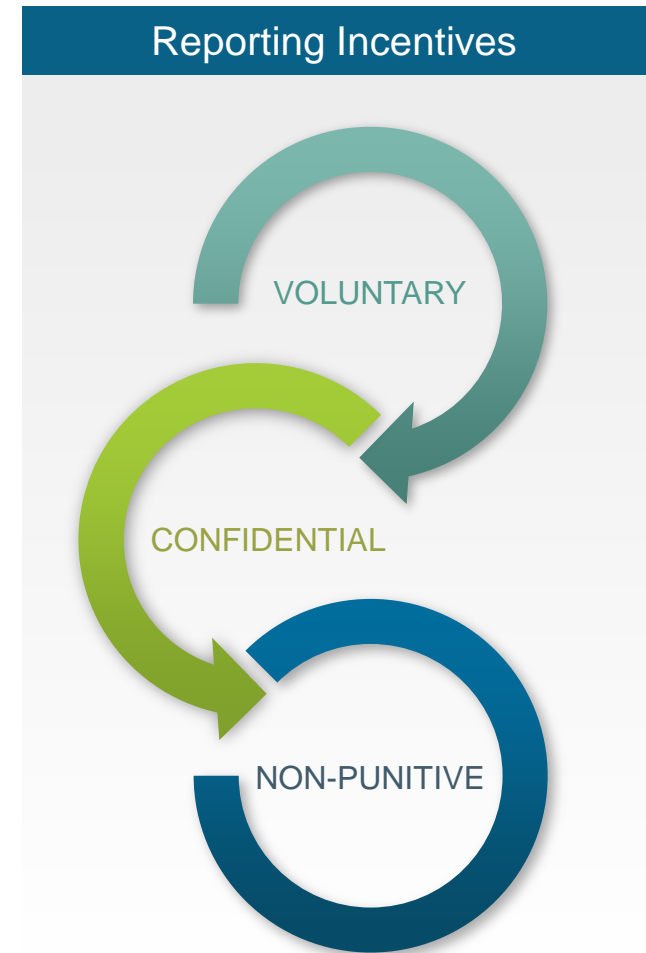
Purpose

- **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

WW II
Industry and Military recognized value of voluntary incident reporting

1958
Need for U.S. Incident Data System raised during FAA Enactment Hearings

October 1974
United Airlines incident foreshadowed TWA 514 Accident (shared within company only)

December 1974
TWA 514 Accident

April 1975
Study of the National Air Transportation System as a result of the Secretary's Task Force on the FAA Safety Mission

May 1975
Aviation Safety Reporting Program (ASRP) Implemented (FAA)

May 9, 1975
Advisory Circular 00-46A Issued

April 1976
Aviation Safety Reporting System (ASRS) Established (NASA / FAA)

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

Aviation Community – How to Report

- **Electronic Report Submission (ERS):**
  Reporting online is a quick, easy and secure way to submit your safety report. NASA encourages members of the aviation community to take advantage of this reporting option. Visit the ASRS website at https://asrs.arc.nasa.gov (or scan the QR code) to fill out and securely submit your ASRS report.

- **Download and Print:**
  A report form may be downloaded from the ASRS website, filled out on your computer and printed (or printed and filled out by hand). Place the form in an envelope, affix proper postage, and mail to:

  > NASA Aviation Safety Reporting System
  > P.O. Box 189
  > Moffett Field, CA 94035-0189

- **Official Paper Copies:**
  Paper copies of the ASRS report form may be found in locations such as crew rooms. Official legal-size copies of the ASRS form are postage free and pre-addressed. Just fold, tape and mail it.

SUBMIT A REPORT
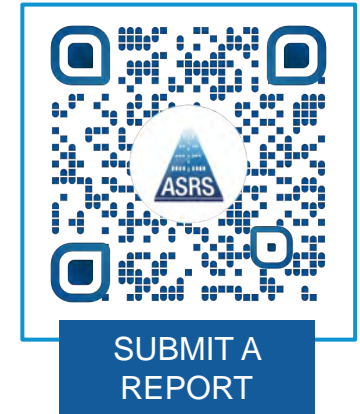
Report Processing
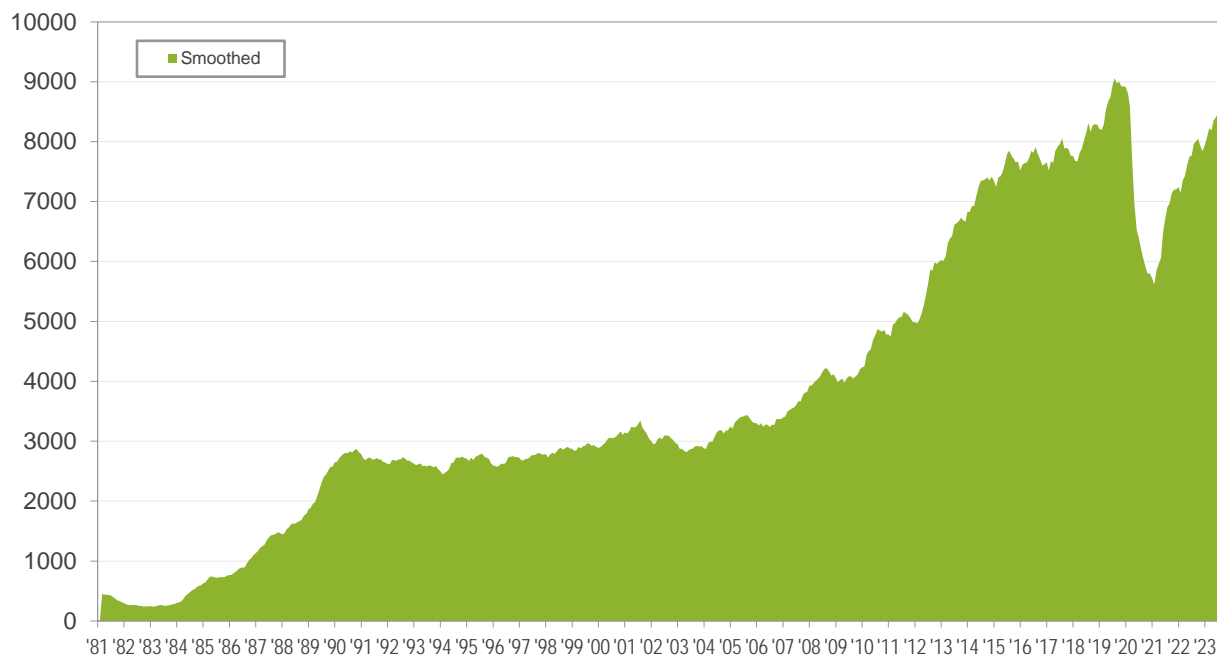
Report Intake Overview

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 2023 averaged about **2,040** reports per week or **8,841** reports per month.
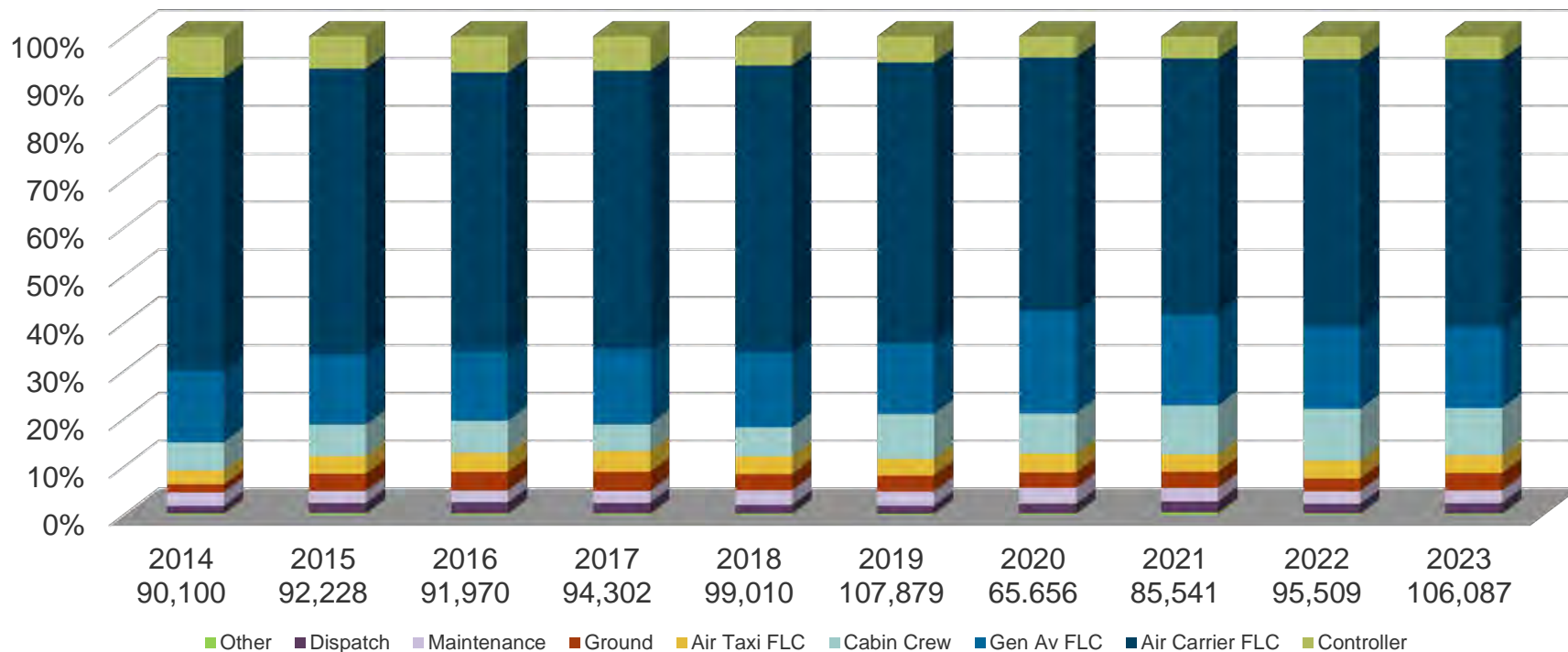
Report Intake Metrics

Monthly Report Intake

(January 1981 – December 2023)

- Total Program Report Intake = **2,068,784**

- Total Report Intake for 2023 = **106,087**

- Averaging **8,841** reports per month, **408** per working day

Incident Reporter Distribution

January 2014– December 2023

Legend: Other | Dispatch | Maintenance | Ground | Air Taxi FLC | Cabin Crew | Gen Av FLC | Air Carrier FLC | Controller

| Year	Total
2014	90,100
2015	92,228
2016	91,970
2017	94,302
2018	99,010
2019	107,879
2020	65.656
2021	85,541
2022	95,509
2023	106,087

Report Processing Overview

ASRS has securely processed over **2 million** reports in its **48 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
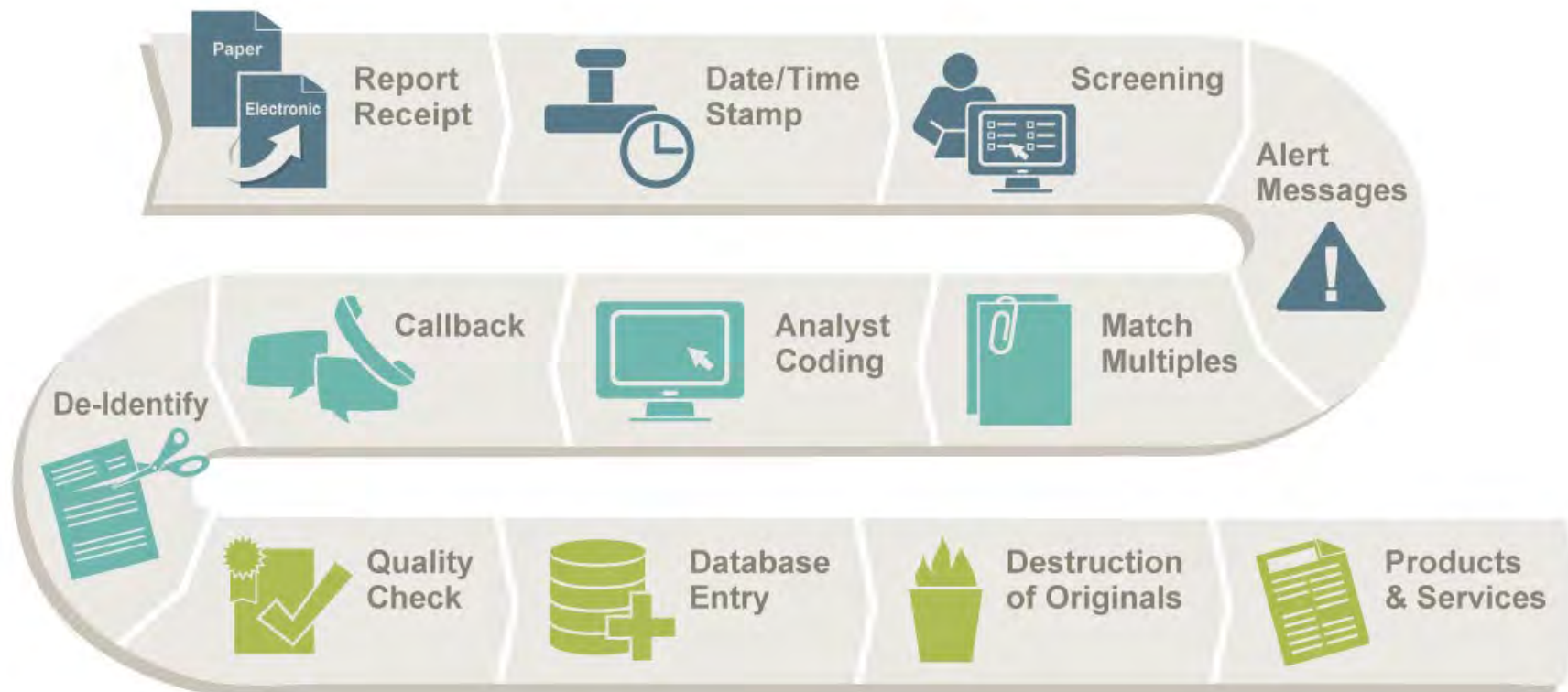
Report Processing Flow

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.

NEWSLETTERS

CALLBACK monthly newsletter with a lessons learned format, available via website and email. UAS safety publication via email.

FOCUSED STUDIES

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

ASRS Products & Services Metrics

2,068,784 Incident Reports Received

7,632 Search Requests

7,436 Safety Alert Messages ⚠

CALLBACK Issues **527**

145 Quick Responses

Focused Studies **64**

(April 1976 – December 2023)

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

Alert Bulletins	⚠	Time critical safety information issued to organizations in positions of authority for evaluation and possible corrective actions.
For Your Information Notices	🔖	Less urgent safety information is issued in For Your Information (FYI) Notices.
ASRS Safety Teleconferences & Other Safety Communication	🖥	Alert Bulletins & FYI Notices determined appropriate for in-depth discussion are included in a monthly teleconference with the FAA and others.

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

Alerting Subjects

January 2014 – December 2023

Subject	Total
Airports Facility Status and Maintenance	389
Aircraft Systems	295
Other	214
ATC Procedures	130
Navigation	120
Hazards to Flight	118
ATC Operations	85
ATC Equipment	81
Airport Lighting and Approach Aids	62
Aircraft Avionics	44
Aircraft Power Plants	18

Examples of Safety Alerting Success

- **LAX Airport Taxiway Markings, Signage, and Charting (FYI 2023-8)**
An LAX airport representative responded and stated "...While this area meets standards, we understanding that in inclement weather markings may be difficult to identify. For this reason, we will be refreshing and enlarging the painted "X" on this pavement. We will also be relocating it closer to the runway edge to ensure that it is not mistaken for an active movement area in the future."

- **GIJ VORTAC Holding Pattern Charting (FYI 2023-112)**
An FAA (AJV-A) office representative responded and stated "There was a discrepancy between the HP direction at GIPPER (GIJ) VORTAC between the H-5 Enroute chart and our CONTROLLER chart. We are advising ZAU (Chicago ARTCC) of the situation and should have the charts corrected by 10-05-2023."

- **CLT Ramp Procedures (FYI 2023-166)**
An FAA Southwest Region (ASO-620) office representative responded and stated "The airport was aware of this and after they reviewed it, they found that this was miscommunication by the ramp controller, who issued the flight crew incorrect instructions to Spot XXX. The airport is working with ramp controllers to ensure they issue correct and accurate taxi instructions to flight crews."

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.
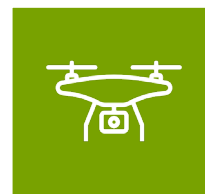
Quick Response Applications

AN ANALYSIS OF:

Notice to Air Missions (NOTAM) Related Incidents

Unmanned Aircraft Systems (UAS) 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 **7,632** Search Requests (SRs) have been directly provided by ASRS Research Staff to various aviation organizations and agencies, as well as individuals through December 2023.
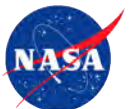
Search Requestors by Organization

January 2014 – December 2023

Organization	Total
FAA	58
Air Carriers	43
NTSB	34
NASA	31
Media	12
Miscellaneous Safety Organizations	9
Alphabet Groups	8
Miscellaneous Government	8
ASRS	6

| Organization	Total
Foreign	6
Individuals	5
Other	3
Educational Institutes	2
Aircraft Manufacturers	1
DHS	1
Military	1
Research Organizations	1
Student	1
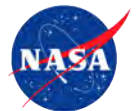
Recent Search Request Samples

- **JFK Airport Surface Movement Related Incidents (SR 7339)**
  - Completed for the NTSB

- **Hazardous Materials Related Incidents (SR 7341)**
  - Completed for CBS News and Stations

- **Ramp Lighting Related Issues at U.S. Airports (SR 7342)**
  - Completed for the FAA

- **B737 AUTO SLAT and/or SPD LIM Fail Related Incidents (SR 7343)**
  - Completed for the FAA
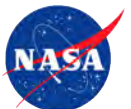
ASRS Database Online

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.

2,117+
Queries completed each month

332,205+
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 **3,270** times a month. Report Sets were first posted in January 2000.

ASRS Database Report Sets

2023 Top Ten Report Sets

Report Set Topic	Total Downloads
Checklists Incidents	3,105
Unmanned Aircraft Systems (UAS) Reports	2,843
Air Carrier (FAR 121) Flight Crew Fatigue Reports	2,359
Runway Incursions	1,802
Cabin Smoke, Fire, Fumes, or Odor Incidents	1,742
CRM Issues	1,693
Near Midair Collision Incidents	1,643
Maintenance Reports	1,586
Passenger Electronic Devices	1,538
Flight Attendant Reports	1,531

Newsletters

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 **527** 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.

SUBSCRIBE

33,200+

Total number of email subscribers for 2023

741,800+

CALLBACK views for 2023 (HTML and PDF)

CALLBACK Topics

2023 *CALLBACK* Topics Covered

- Fifth Generation (5G) C-Band Co-Operations
- Helicopter Operations
- Icing Conditions
- Interactive Situational Resolutions
- Maintenance Training
- Preflight Walkaround Inspections
- Runway Excursions
- Time Pressure
- Unusual Attitudes and Aircraft Upsets
- Visual Approaches

Fifth Generation (5G) C-Band Co-Operations
Issue 517, February

Walkaround Wisdom and Preflight Gems
Issue 508, June

A CASUAL LOOK AT HELICOPTER OPERATIONS
Issue 523, August
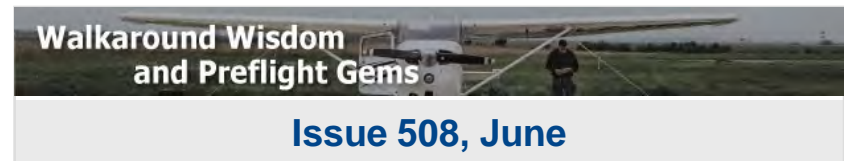
UAS Safety In Sight
Distribution and Subscription

SUBSCRIBE

- 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.
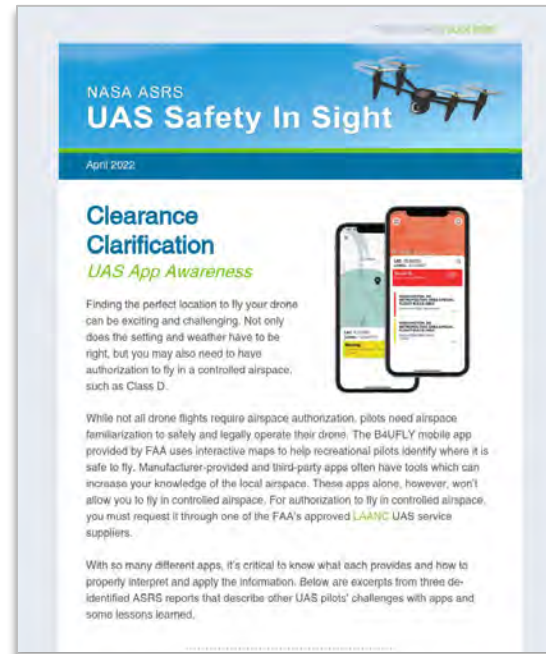
685+

Total number of email subscribers for 2023

7 Issues

Published to date

NASA ASRS
UAS Safety In Sight

April 2022

Clearance Clarification
UAS App Awareness

Finding the perfect location to fly your drone can be exciting and challenging. Not only does the setting and weather have to be right, but you may also need to have authorization to fly in a controlled airspace, such as Class D.

While not all drone flights require airspace authorization, pilots need airspace familiarization to safely and legally operate their drone. The B4UFLY mobile app provided by FAA uses interactive maps to help recreational pilots identify where it is safe to fly. Manufacturer-provided and third-party apps often have tools which can increase your knowledge of the local airspace. These apps alone, however, won't allow you to fly in controlled airspace. For authorization to fly in controlled airspace, you must request it through one of the FAA's approved LAANC UAS service suppliers.

With so many different apps, it's critical to know what each provides and how to properly interpret and apply the information. Below are excerpts from three de-identified ASRS reports that describe other UAS pilots' challenges with apps and some lessons learned.

Focused Studies/Research

Focused Studies and Topic Areas

General Aviation (FAA AVP)	UAS (FAA AVP)

Wake Vortex (FAA AJP)	HazMat (FAA AXH-1)	5G Watchlist

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.
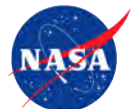
ASRS Research Archives

- 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
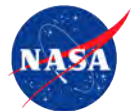
ASRS Model Applied

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:** Confidential Aviation Hazard Reporting System (CAHRS) [2013]

- **EUROPE:** European Union Aviation Safety Agency Safety Reporting (EASA) [2015]

ASRS Model Applications

Due to 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.
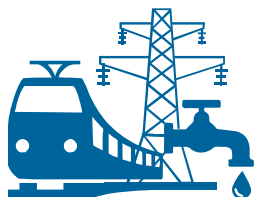

RAIL

MEDICINE
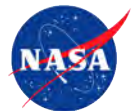
SECURITY

FIREFIGHTING

PUBLIC UTILITIES

MARITIME

STRUCTURAL ENGINEERING

ASRS Summary

ASRS Summary

ASRS is a highly successful and trusted program that has served the needs of the aviation community for over 48 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