



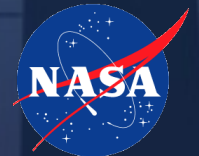
# Aviation Safety Reporting System (ASRS)



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**AVIATION SAFETY  
REPORTING SYSTEM**



# Aviation Safety Reporting System (ASRS)

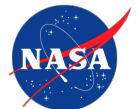
- NASA ASRS is a **confidential, voluntary, non-punitive** reporting system that receives safety reports from Pilots, Air Traffic Controllers, Dispatchers, Cabin Crew, Ground Ops, Maintenance Technicians, and UAS Operators.
- ASRS welcomes reports describing close-calls, hazards, violations, and safety-related incidents.

## Sample Report Topics:

- **Airspace violations**
  - **Aircraft / equipment issues**
  - **Airport markings and signage**
  - **ATC procedures**
  - **Charting/navigation issues**
  - **Environmental hazards**
  - **Human error/slips/lapses**
  - **Miscommunication/misunderstandings**
  - **Near-mid air collisions**
  - **Runway/taxiway/ramp Incursions**
- With over 45 years of confidential safety reporting, ASRS has received more than 1.8 million reports so far (~100,000 reports received annually).
  - Reports are triaged based on safety content. De-identified reports are entered into the public online database



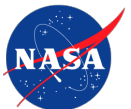
<http://asrs.arc.nasa.gov>



# ASRS Genesis

- In December 1974, TWA Flight 514 crashed into Mt. Weather on approach to Dulles airport, killing all 92 souls on board, after Flight crew misunderstood an ATC clearance and descended prematurely below the minimum safe altitude for the area.
- Just 6 weeks prior, a United Airlines crew had experienced an identical misunderstanding and narrowly missed the same mountain.
- The pilots reported to their company, but there was no mechanism to share that safety information with other airlines
- In April 1976, NASA and FAA implemented the Aviation Safety Reporting System (ASRS)

'TWA 514 was the catalyst for linking a voluntary, confidential, aviation incident reporting program (ASRS) with the NASA Ames Human Factors research program, which leveraged the reporting data for research in areas such as Crew Resource Management, Automation Integration, Fatigue, and Concurrent Task Management' (CALLBACK, 2011)



# ASRS Principles

## 1. VOLUNTARY

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

## 2. CONFIDENTIAL

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



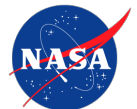
## 3. NON-PUNITIVE

*FAA will not use, nor will NASA provide, any qualifying report submitted to ASRS (or information derived therein) for use in disciplinary or other adverse action.*

*(14 CFR 91.25 & AC 00-46F)*

## 4. INDEPENDENT

*NASA serves as the independent honest-broker; separate from employer / certificate holder / regulator*



# Safety Reporting

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



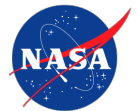
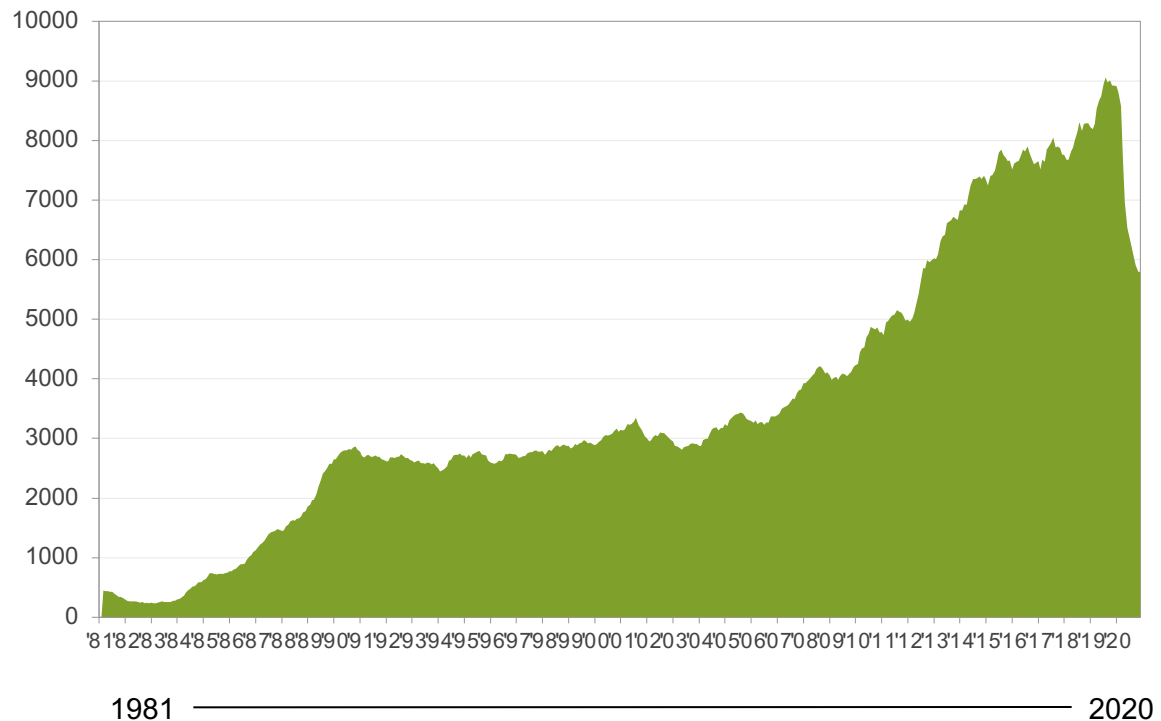
- Identify deficiencies and discrepancies in the National Airspace System
- Provide data for planning and improvements to the future NAS



# ASRS Report Volume Profile

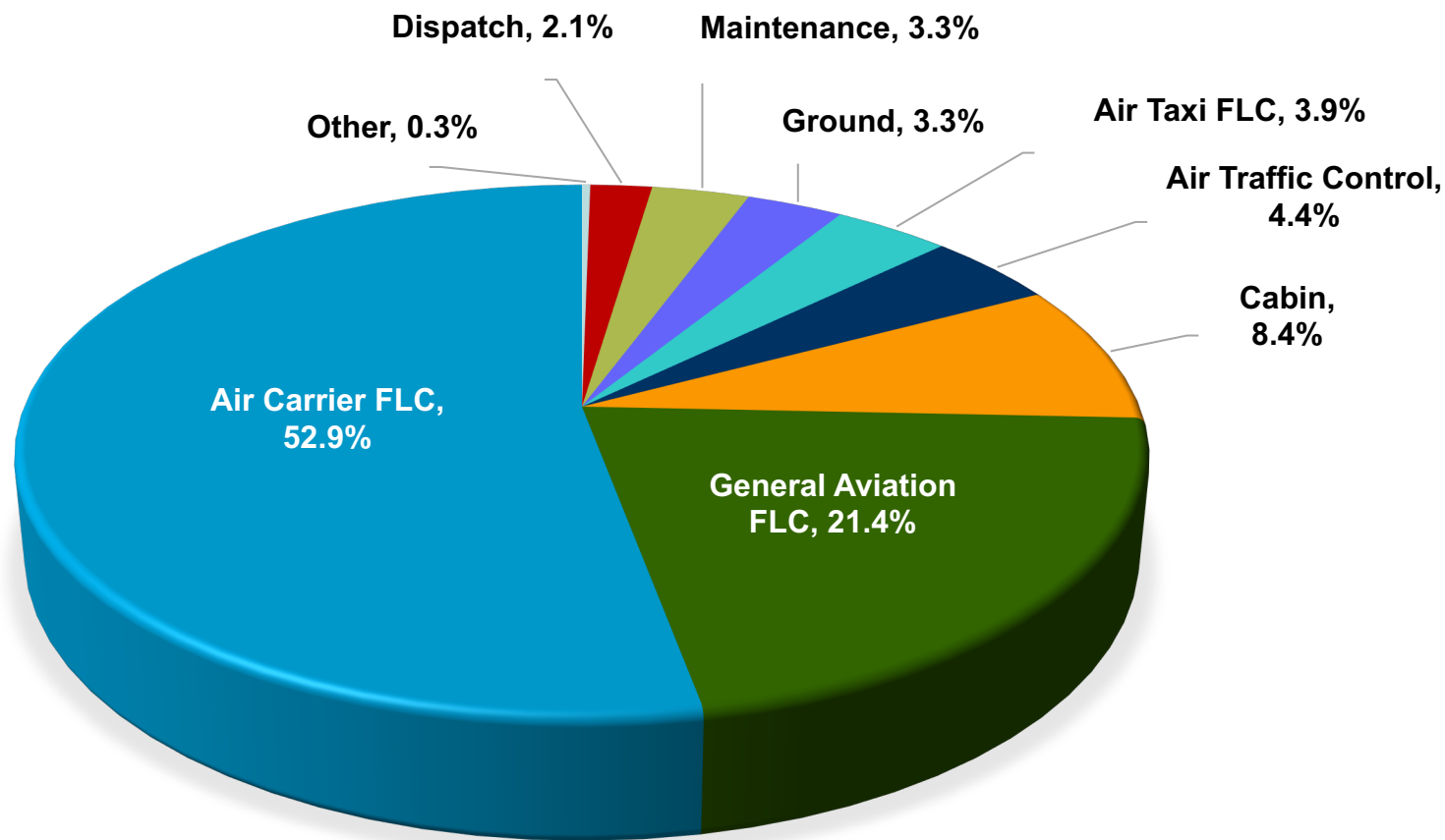
## Report Intake January 1981 – December 2020

- Over 45 years of confidential safety reporting
- Total intake for 2019 was 107,879
- Total intake for 2020 was 65,656
  - Reflects reduction in flight operations due to COVID

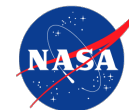


# Incident Reporter Distribution

January 2020 – December 2020



n = 65,656 Reports



# ASRS Report Processing

## Report Submission:

Flight Crew – Airline, Corporate, General Aviation, Rotorcraft, UAS  
ATC, Dispatch, Maintenance, Ground Ops,

## Screen and Triage

Two Expert Analysts read every report within 3-5 days for rapid identification of safety concerns

## Match

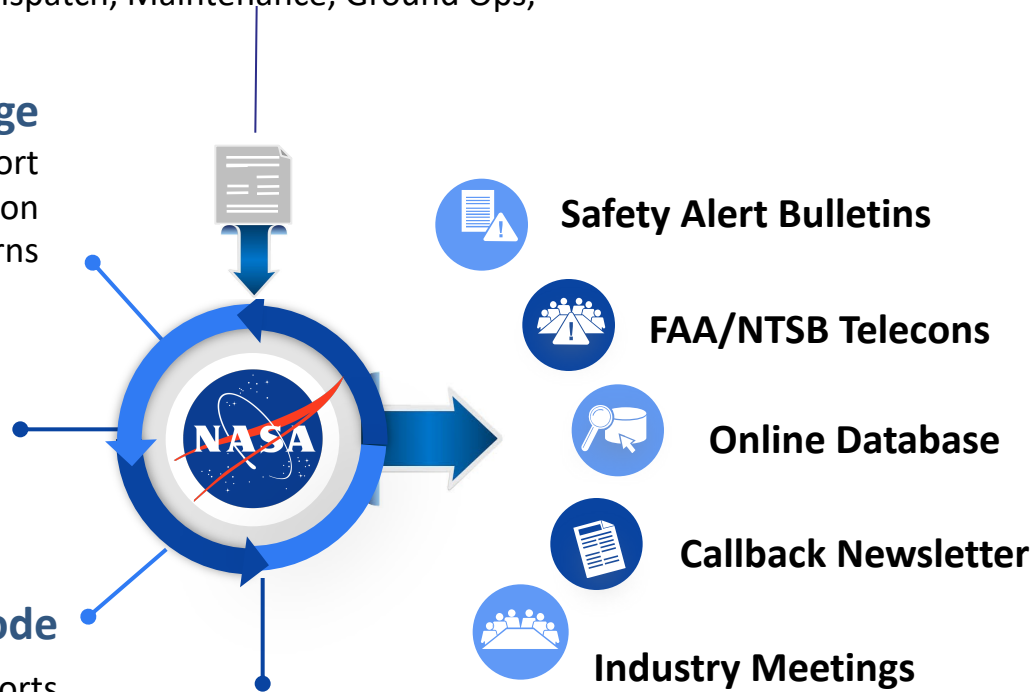
Multiple reports from different reporters involved in same event are combined to provide a richer understanding of the event

## Code

Expert Analysts code reports for ease of data extraction  
(All ASRS Expert Analysts have at least 10 years of domain experience as Flight Crew, ATC, Dispatch, and Maintenance)

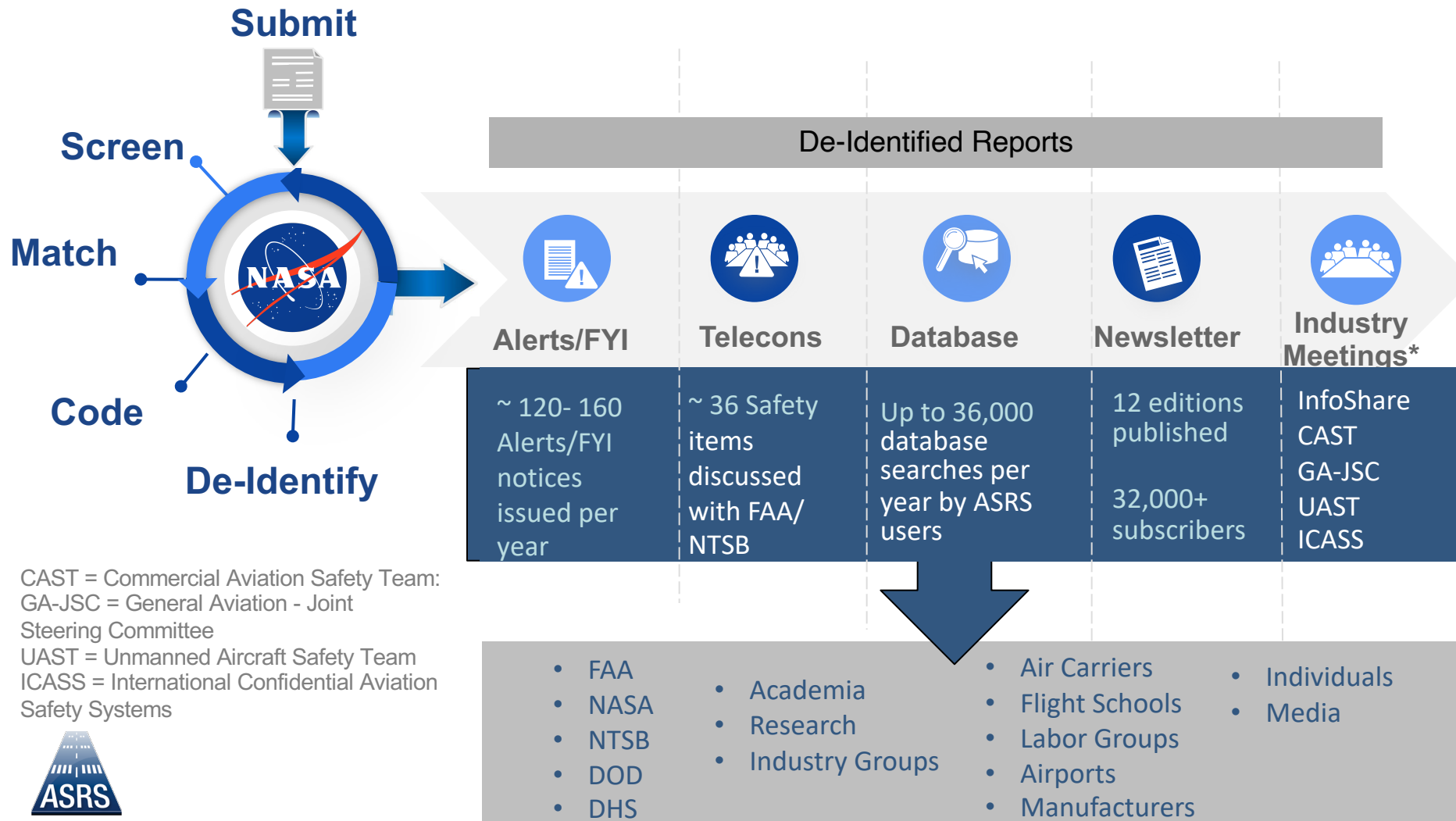
## De-Identify

Case-by-case de-id process requires operational expertise to protect reporter and third-parties while preserving safety content.





# ASRS Safety Products



CAST = Commercial Aviation Safety Team:  
 GA-JSC = General Aviation - Joint  
 Steering Committee  
 UAST = Unmanned Aircraft Safety Team  
 ICASS = International Confidential Aviation  
 Safety Systems



# Safety Products: ASRS Database

Direct access to search de-identified reports in the ASRS database is available through **ASRS Database Online (DBOL)**

<https://asrs.arc.nasa.gov/>

**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:**

Back Run Search

## Special Report Sets

- Collections of records on specific safety topics
- Contain at least 50 records each
- 30 sets available

Contact us for help in  
Searching the Database



# Safety Products: Alert/FYI Notices, Telecons

Category	# issued in 2020	Examples
Aircraft Systems	18	Brakes Locked on Takeoff, Flight Control Anomalies,
Navigation	11	Database Errors, Similar Sounding Fix Names
Airports Facility Status and Mx	46	Runway, Taxiway, Ramp signage and markings, and charting
ATC Procedures	16	SID, STAR, RNAV Procedures
Hazards to Flight	12	Obstacles on or near approach path, Solar panel glare
Airport Lighting Approach Aids	5	Unlighted Tower, PAPI Lights
Aircraft Avionics	5	FMS / Database Anomalies, Navigation Software
ATC Operations	8	Non-standard Taxi Phraseology, staffing
ATC Equipment	10	Glideslope Unreliable, Radio Coverage
Other	29	Hazardous Material (HazMat), Maintenance On-time Departure Pressure, COVID

160 Alert Bulletins and FYI notices issued in 2020

# Examples of Safety Alerting Success

- **Arrival Charting:** Altitude noted on chart was 2000 ft when it should have been 3000 ft. Flight Crew confirmed error and re-programmed FMC which was “not ideal when descending into an unfamiliar airport”

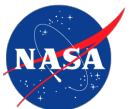
**Chart Publisher** "...we revised the ZZZ Arrivals Chart ... we missed updating that specific altitude . The two Charts will be revised in the next two weeks... A Chart Change Notice has already been issued."

- **Runway Light Intensity:** In-pavement Runway LED lights were too bright, negatively affecting pilots' night vision at flare. Blooming around LED lighting was a source of distraction.

**Airport Operations:** “In coordination with ATC, the airport tested various in-pavement light settings. Pilots were made aware of the settings check and were asked to comment upon rollout. Consensus was reached on a preferred setting. Default in-pavement lighting settings have been changed to the lower, preferred step.”

- **Aircraft Wing Oscillations:** Pilot reported wing oscillations after experiencing light chop/turbulence at FL400 in aircraft equipped with after-market winglets.

**FAA:** ...”We found 40 some similar incidents... The prevalence of incidence of aircraft with winglets has dramatically affected these events. The pursuit of subject incidents has resulted in data and risk analysis that has resulted in Aircraft Certification (AIR) initiating their Continued Operational Safety programs using the Corrective Action Review Board process to consider mitigating response to these events...”



# Safety Products: CALLBACK Newsletter

Issue	Month (2020)	Issue Title / Topic
480	January	The “Whether” of Winter Weather
481	February	What Would You Have Done?
482	March	Adventures in Ground Operations
483	April	RNAV (RNP) Approaches
484	May	A Day in the Life of a Maintainer
485	June	The COVID-19 Confrontation
486	July	The Old Threat From a New Enemy
487	August	What Would You Have Done?
488	September	MEL Missteps
489	October	Late Clearance Changes
490	November	Airmanship and Automation
491	December	VFR Flight into IMC

Over 32,000 Subscribers

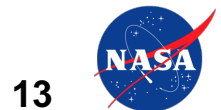


## User Feedback, October 2021

*“CALLBACK 501 looks at reported ETOPS incidents that reveal a spectrum of ETOPS. Thank you for highlighting this subject, especially the article "Fuel, Pumps, and ETOPS", which brings up several issues. As an **ex-Airline Pilot, and FAA Inspector** who was involved in multiple Part 121 **ETOPS Certifications and operations, this is a topic which should receive much more attention.**”*



<https://asrs.arc.nasa.gov/publications/callback.html>  
Aviation Safety Reporting System



# Special Studies and Focus Areas

ASRS Watch List: 737 Max, UAS, Cabin Fumes, GPS Interference

(as of October 2021)

## Wake Vortex (FAA AJP)

- Weekly summaries of Wake Incidents at RECAT airports
- Supplemental Question Set (SQS)
- Quarterly data summaries prepared for FAA

## HazMat (FAA AXH-1)

- 100% FullForm Processing
- Secondary Coding to understand incident types, contributing factors
- Outreach to Ground Ops Personnel to build safety culture

## NextGen/HF (FAA ANG-C1)

- Screening and FullForm Processing
  - RNAV/RNP Approaches
  - Metroplex Procedure Complexity
  - Arrival/Approach Transition
- Secondary Analysis shared with FAA/Industry Groups

## General Aviation (FAA AVP)

- De-identification of 100% of GA reports
- Over 40,000 reports available for analysis by FAA, GA JSC, industry

## UAS (FAA AUS-430)

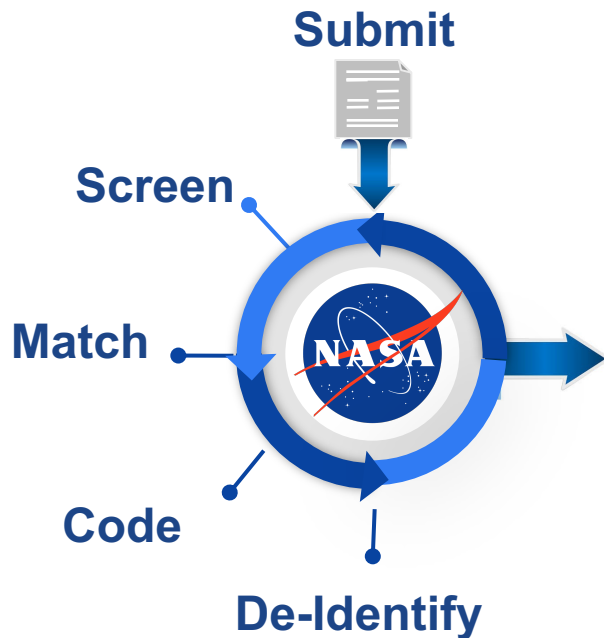
- Launched UAS Reporting form in April 2020
- 100% FullForm Processing
- Outreach, Education and Safety Culture

## COVID (FAA AVP)

- 100% Fullform Processing
- Weekly reporting to FAA Aviation Safety Management
- Alerts/FYI notices, Telecons
- Newsletters








# COVID-Related Safety Products



## ASRS COVID-Related Safety Products

56 Weekly updates to FAA Aviation Safety Management Team

 Alerts	 Telecons	 Database	 Newsletter	 Industry Meetings
10 COVID-related Alert Bulletins	6 COVID-related FAA/NTSB telecons	2,270 COVID reports processed	3 editions related to COVID: June, July, August	ICASS ASRS TSG InfoShare

# CALLBACK

From NASA's Aviation Safety Reporting System

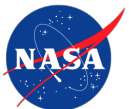


Issue 485

June 2020

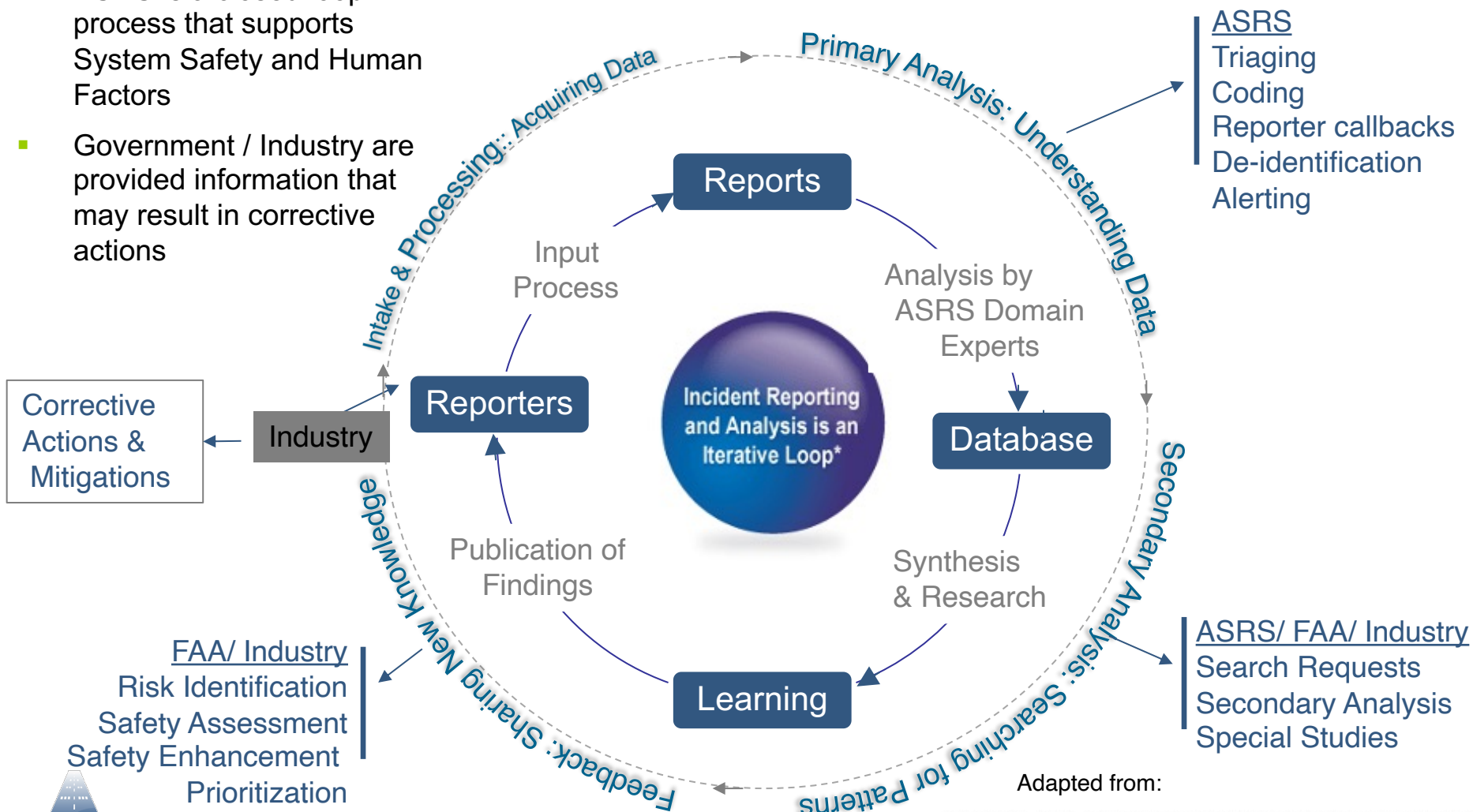
The COVID-19  
CONFRONTATION

<https://asrs.arc.nasa.gov>



# 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



Adapted from:

\*Billings, C.E., (1999). "The NASA Aviation Safety Reporting System: Lessons Learned from Voluntary Incident Reporting." In *Proceedings from National Patient Safety Foundation Conference Enhancing Patient Safety and Reducing Errors in Health Care*.





# Important Characteristics of ASRS

- Voluntary reporting
- Confidential - Secure data confidentiality protections
- Independent / trusted third party
- Non-Punitive - Strong immunity and legal provisions
- Reports screened and coded by aviation domain experts
- Emphasis on incident/accident precursors and human factors
- Rapid system-wide alerting and data sharing
- National publicly available repository of safety reports allows for further analysis, research and learning

“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.”

*Dr. Charlie Billings. Co-Developer of the ASRS Model*



<https://asrs.arc.nasa.gov/>

ASRS captures confidential reports, analyzes the resulting aviation safety data, and disseminates vital information to the aviation community.

### CALLBACK

Receive FREE monthly newsletter by email! [\(Please Read\)](#)

[Subscribe to CALLBACK](#)

### NOTAM Issues

July 2015, Issue 426

[HTML](#) | [PDF](#)

### Select a Form To Submit a Report

- ▶ [General](#) - Pilots, Dispatchers, Others
- ▶ [Air Traffic Control](#) - Air Traffic Controllers
- ▶ [Maintenance](#) - Mechanics
- ▶ [Cabin](#) - Cabin Crew

### How to Report Online ▶

Review proper browser settings, security tips, and provisions.

- ▶ [FAQ for Electronic Report Submission](#)
- ▶ [Online Security Tips](#)
- ▶ [Immunity Policy](#)

### View Program Briefing ▶

Learn more about ASRS such as report processing and reporting metrics.



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