Aviation Safety Information Analysis and Sharing

ASIAS Public Databases

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System Access

ASIAS data sources and tools may be accessed via:

- **The ASIAS Public Portal** – www.asias.faa.gov
  - Available to all users

NTSB Accident/Incident Data System (NTSB)

- Official source of aviation accident/incident data and causal factors identified during NTSB investigations.
- Accidents are an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked and in which:
  - any person suffers death or serious injury
  - the aircraft receives substantial damage
- **A separate report is issued for each aircraft involved in an aviation accident or incident.**

NTSB Accident/Incident Data System (NTSB)

- Includes preliminary, factual, and final reports.
- Used to:
  - browse NTSB's aviation accident and incident information
  - count aircraft involved in aviation accidents and incidents
  - read NTSB's determination of probable causes, when available
- Date range: 1982 to current
- Data updated monthly

NTSB Docket Management System (NTSB)

- Includes publically releasable information gathered during the investigation.
- Can include:
  - CVR and ATC transcripts
  - Logbook entries (pilot and maintenance), other maintenance material and component teardown reports
  - On scene photos
  - Witness interviews
  - Reports of investigative group activity
  - Medical and toxicology reports

Data Sharing Between NTSB and FAA

- NTSB and FAA participation in accident investigations is mandated by US law
- NTSB has the lead on accident investigations
  - Will sometimes ask the FAA to lead some field investigations
  - NTSB maintains authority over the investigation
- FAA
  - Provides information and data to support an investigation
  - The FAA will staff an investigation and any groups that are formed (structures, FDR, CVR, powerplant, performance, ATC, human factors, etc.)

NTSB Accident/Incident Data System (NTSB)

Major Caveats/Cautions:

- A separate report is issued for each aircraft involved, therefore, counts may be generated by count of aircraft, or count of events. A count of unique event IDs will yield a unique event count, while a count of report numbers will provide an aircraft count.
- Causal Factor coding changed in FY2008. Pre-FY2008 uses Occurrences and Sequence of Event; Post-FY2008 uses Occurrence Sequence and Findings.
- CICTT Occurrences incorporated into Post-FY2008 data as the defining event. Pre-FY2008 uses the CICTT code defined in the Event Detail Table.
- Since 2008 is a transition year, some reports may have both occurrence/causal structures populated.
- Incident data should only be used for exploration purposes and not as a count for number of incidents. Refer to AIDS for incident data.

FAA Accident/Incident Database System (AIDS)

- Contains accident and incident data for general aviation and commercial air carrier operations.
- **ASIAS Portal contains incident data only. Refer to the NTSB as the primary source of accident information.**
- An incident refers to an aircraft occurrence, other than an accident, that affects or could affect the safety of operations.
- Incidents are events that do not meet the aircraft damage or personal injury thresholds contained in the NTSB definition of an accident.

FAA Accident/Incident Database System (AIDS)

- Used to:
  - Browse AIDS accident and incident information
  - Count aircraft involved in aviation accidents and incidents
  - Identify precursors to accidents
- Date range: 1978 to current
- Data updated monthly

FAA Accident/Incident Database System (AIDS)

Major Caveats/Cautions:

- Definition of an incident is vague, therefore several types of reports are included in, or excluded from, the database.
- Separate report issued for each aircraft involved in an incident.
- Report narratives truncated prior to 1995.
- Causal information not reliable and may differ from the NTSB casual information, where applicable.

Aviation Safety Reporting System (ASRS)

- A voluntary, confidential, and anonymous incident reporting system
- Funded by the FAA and administered by NASA
- Pilots, air traffic controllers, flight attendants, mechanics, ground personnel, and others involved in aviation operations can submit reports to the ASRS when they are involved in, or observe, an incident or situation in which they believe aviation safety was compromised.
- FAA provides limited immunity from enforcement action to reporters that file a report within 10 days.

Aviation Safety Reporting System (ASRS)

- Reports are de-identified
  - aircraft make and model were removed until 1995
- Data include the reporter's narrative, in own words
- Date range: 1988 to current
- Data updated quarterly

Aviation Safety Reporting System (ASRS)

- Used to:
  - Understand the nature of hazards and human factors
  - Identify Hazards for further analysis
  - Identify Accident Precursors for further analysis
  - Identify Safety Issues for further analysis

Aviation Safety Reporting System (ASRS)

Major Caveats/Cautions:

- Less than twenty percent of submitted reports are entered into the ASRS database.
- ASRS Reports are not investigated, and therefore the accuracy of the reported information is not verified.
- Under-reporting - for every reported event, could be many unreported
- ASRS information should not generally be used to determine distributions or trends.

World Aircraft Accident System (WAAS)

- Contains summary information of all known major operational accidents involving jet aircraft, turboprops, helicopters, and large piston-engine aircraft occurring worldwide.
- A product of FlightGlobal and produced for the British Civil Aviation Authority.
- Updated quarterly
- WAAS Subset accessible via Public Portal
  - Contains data and descriptive information about all known fatal airline accidents with passenger fatalities for the last ten years.
  - May not be produced, stored in a retrieval system or transmitted without prior permission.

World Aircraft Accident System (WAAS)

- Used to:
  - Obtain data on accidents involving foreign airlines.
  - Obtain accident data by airline

World Aircraft Accident System (WAAS)

Major Caveats/Cautions:

- Accident data is drawn from many sources, both official and unofficial. Therefore, they may be incomplete or otherwise incorrect.
- Conversion of accident descriptions from hard-copy to electronic format often requires that narrative information be condensed, which can result in unintentional shifts in emphasis.
- Generally follows ICAO Annex 13 Accident definition, but excludes non-operational accidents such as hangar fires, damage contained entirely within an engine, and deaths and injuries caused by slips and falls, food poisoning, onboard machinery, etc.
- Accident counts, by themselves, cannot be used to compare the safety performance of airlines/operators, aircraft types, or segments of the aviation industry. Calculating accident rates in terms of aviation activity is commonly used.

Runway Incursions (RWS)

- Contains records of events involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft (ICAO definition).
- RI events are reported by the respective air traffic control facility and reported via CEDAR.
- Reports are assessed and maintained by the Office of Runway Safety.
- Date range: 2005 to current, but ICAO definition adopted FY2008.
- Updated monthly

Runway Incursions (RWS)

Runway incursions are assessed by the Office of Runway Safety and classified by the severity of the event.

- **Accident**. An incursion that results in a collision. For the purposes of tracking incursion performance, an accident will be treated as a Category A runway incursion.
- **Category A**. A serious incident in which a collision was narrowly avoided.
- **Category B**. An incident in which separation decreases and there is a significant potential for collision, which may result in a time critical corrective/evasive response to avoid a collision.
- **Category C**. An incident characterized by ample time and/or distance to avoid a collision.
- **Category D**. An incident that meets the definition of a runway incursion such as incorrect presence of a single vehicle, person, or aircraft on the protected area of a surface designated for the landing and take-off of aircraft but with no immediate safety consequences.
- **Category E**. An incident in which insufficient or conflicting evidence of the event precludes assigning another category.

Factors affecting the severity include: proximity of the aircraft and/or vehicle; geometry of the encounter; evasive or corrective action; available reaction time; environmental conditions; and factors that affect system performance.

Runway Incursions (RWS)

- Used to:
  - Obtain data on incursions by:
    - Type of Incursion (Pilot Deviation, Vehicle/Pedestrian Deviation, or Operational Error/Deviation/Incident)
    - Airport or State
    - Severity (A, B, C, etc.)
    - Targeted Search (e.g., those involving “snow” or “ARFF”)

Runway Incursions (RWS)

Major Caveats/Cautions:

- Does not include incursions that occur at non-towered airports.
- Does include incursions on taxiways – these have an RI Category Rank of N/A
- Reports don’t always include information on the factors leading to the incursion

Near Mid Air Collisions (NMAC)

- An incident where two aircraft have closed to an unsafe distance and avoided an actual collision
- Separation of less than 500 feet was observed while in flight.
- Flight crewmember states a collision hazard existed and a mid air collision could have occurred.
- Purpose of the NMAC database is to enhance the safety and efficiency of the National Airspace System.
- Data are used to develop programs, policies, and procedures aimed at the reduction of NMAC occurrences.

Near Mid Air Collisions (NMAC)

- Reports are categorized according to the event's Degree of Hazard
  - Critical: Collision avoidance due to chance rather than a pilot's act. Less than 100 feet of aircraft separation.
  - Potential: Probable collision if no action taken by either pilot. Less than 500 feet of aircraft separation.
  - No Hazard: Direction and altitude would have made a collision improbable regardless of evasive actions.
- Data obtained by the following sources:
  - FAA Form 8020-21, Preliminary Near Mid Air Collision Report. Processed by the air traffic facility that received the report from a crewmember.
  - FAA Form 8020-15, Investigation of Near Mid Air Collision Report. Processed by Flight Standards.
- Date range: 1987 to current
- Data updated monthly

Near Mid Air Collisions (NMAC)

- Used to:
  - Obtain data on NMACs by:
    - Severity (Critical, No Hazard, Potential)
    - Airport or State
    - Type of Operation
    - Operator Name
    - Aircraft Make/Model/Series
    - Targeted Search

Near Mid Air Collisions (NMAC)

Major Caveats/Cautions:

- Voluntary reporting system – no legal or regulatory requirement to report.
- Depends upon individual perception of the situation.
- Report does not necessarily involve the violation of regulations or an error by air traffic controllers.
- Report does not necessarily represent an unsafe condition.
- Geographic location is reported in terms of nautical miles and degrees magnetic from the nearest air navigation facility, airport or airway fix. Oceanic events are reported by lat/long.

FAA Preliminary UAS Accidents and Incidents

- Newest addition to ASIAS (104 Records)
- Contains data from 2010 to 2014
- No Search capabilities yet
- Fields Available:
  - Sponsor Category (Law Enforcement, Academia, DOC, etc.)
  - Sponsor
  - Event Date
  - Event Location
  - Event Type (Incident or Accident)
  - Aircraft Type
  - Initial Report Description

FAA Preliminary UAS Accidents and Incidents

- Used to:
  - Obtain preliminary information on UAS accidents and Incidents

FAA Preliminary UAS Accidents and Incidents

Major Caveats/Cautions:

- Precision of event location varies
- As developing database, changes to database structure are possible
- Information is “Preliminary”

Other Misc. Databases

- Aircraft Registry – Records and tracks civil aircraft registered in the U.S. Database is updated in real time in OK City. Link to the registry via the ASIAS portal.
- Bureau of Transportation Statistics (BTS)
  - Form 41 / Traffic Schedule T1 – contains monthly totals of capacity and traffic data for large air carriers.
  - Form 41 / Traffic Schedule T2 – contains quarterly summaries by carrier, date, and aircraft type.
  - Form 41 / Traffic Schedule T3 – contains quarterly summaries for airports by departures and passenger/cargo emplaned.
  - Form 41 / 298C (A1) – contains financial data for air carriers and overall system operations.
- NTSB Safety Recommendations to the FAA with FAA Responses – contains NTSB recommendations to the FAA from 1963 to current.