



# Dangers on the Ramp

InfoShare – Ground Operations

Seattle, WA

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Program Director, NASA ASRS

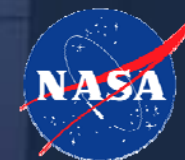
Dennis Doyle

Project Manager, Booz Allen Hamilton

March 2014

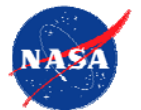
Seattle, WA

**AVIATION SAFETY  
REPORTING SYSTEM**



# Topics of Discussion

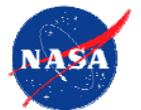
- ASRS Reporting
  - General and Ground Operations Intake
  - Ground Personnel Related Events - General Overview
- Dangers on the Ramp: A NASA ASRS Analysis



# ASRS Reporting



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# Report Processing Flow

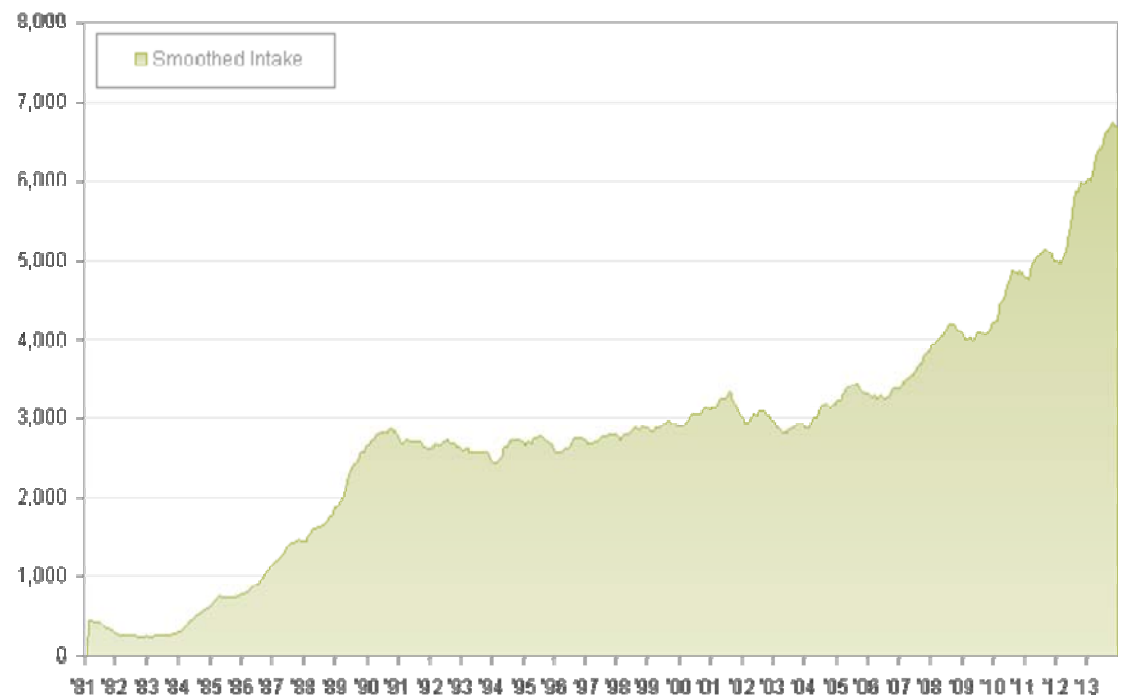


**All reports are routed through a differential processing analysis flow**

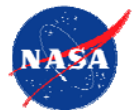
# ASRS Report Volume Profile

- 37 years of confidential safety reporting
- Over 1,150,000 reports received
- Over 5,800 alert messages issued
- Over 6,700 reports per month, or 323 per working day
- Total intake for 2013 was 80,840 reports
- Current estimate for 2014 is over 90,000

Monthly Intake  
January 1981 – December 2013



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# ASAP Reporting to ASRS

- **Overall ASAP Intake**

- 181 Total Programs
- 76 Air Carriers

ASRS Electronic Transmission  
Methodology compatible with  
numerous software platforms

- **Reporting Groups**

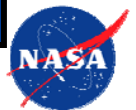
- 74 Pilot
- 44 Mechanic
- 39 Dispatch
- 19 Flight Attendant
- 5 Ground Crew

More airline programs being  
added continuously

- **Secure Electronic Data connection protocols between airline and ASRS**

- 179 Programs
- 75 Airlines

**26% of all reports are matched to unique events in 2013**



# 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 fulfilled by ASRS staff.



## Focused Studies/Research

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



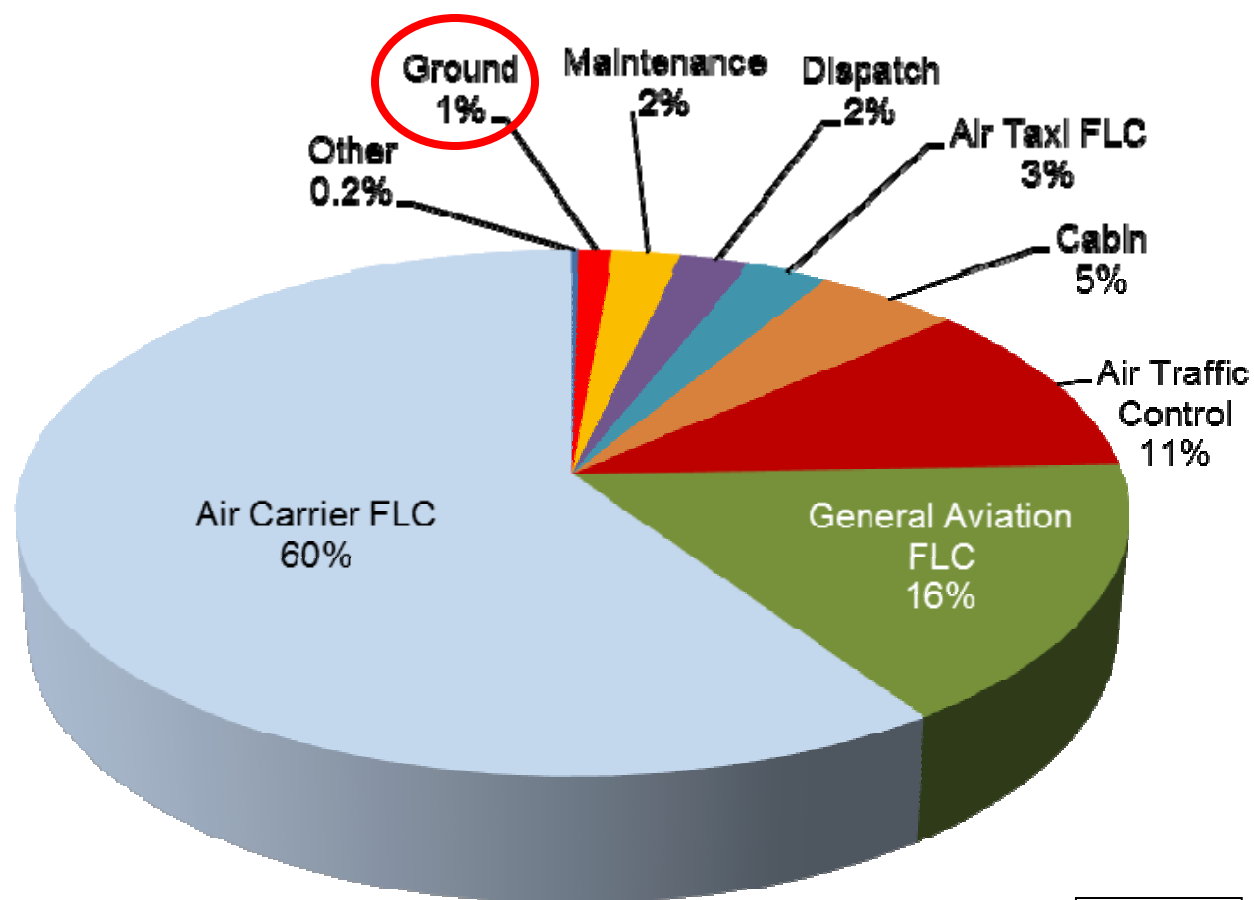
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# Incident Reporter Distribution

January – December 2013



n = 80,840



Source: 100% ASRS Report Data

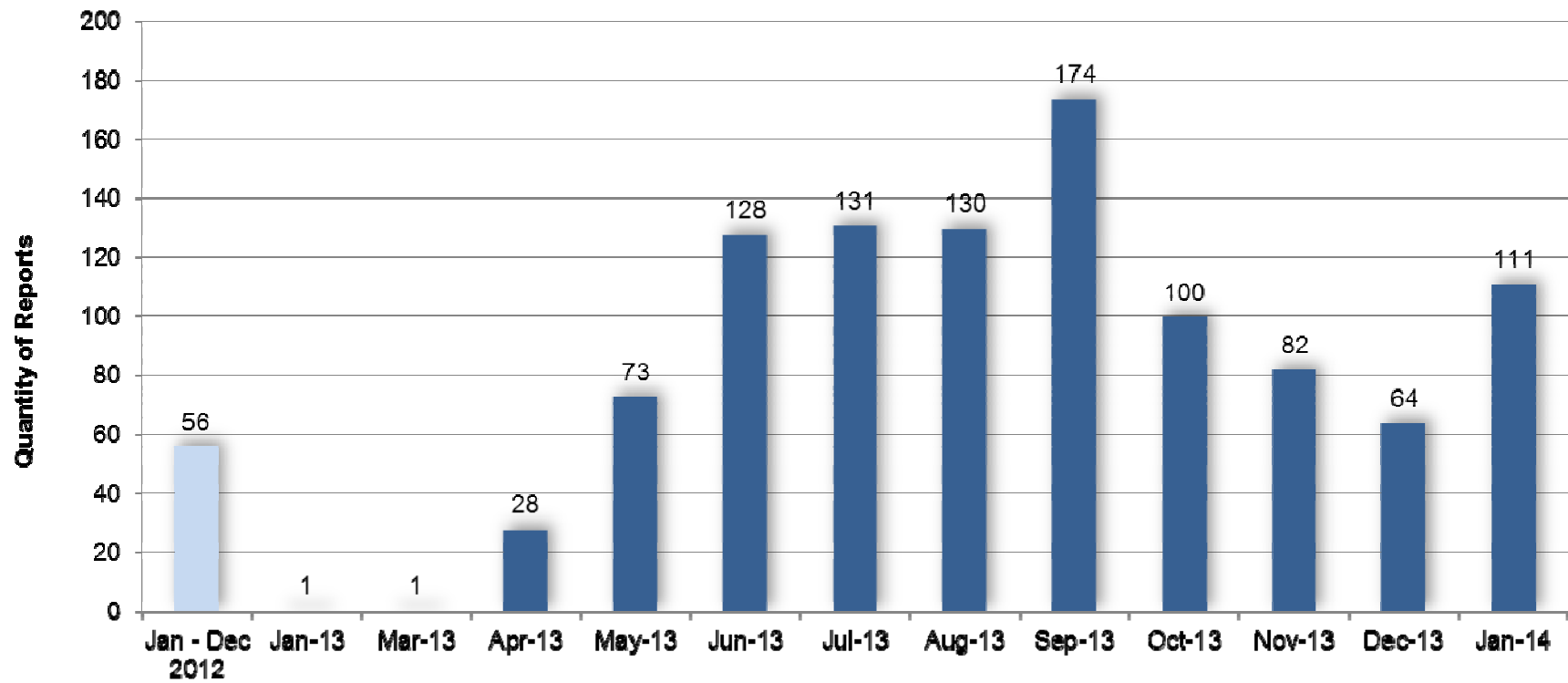
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# Ground Personnel Report Intake

January 2012 – January 2014

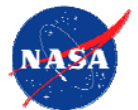


n = 1,044



Source: 100% ASRS Report Data

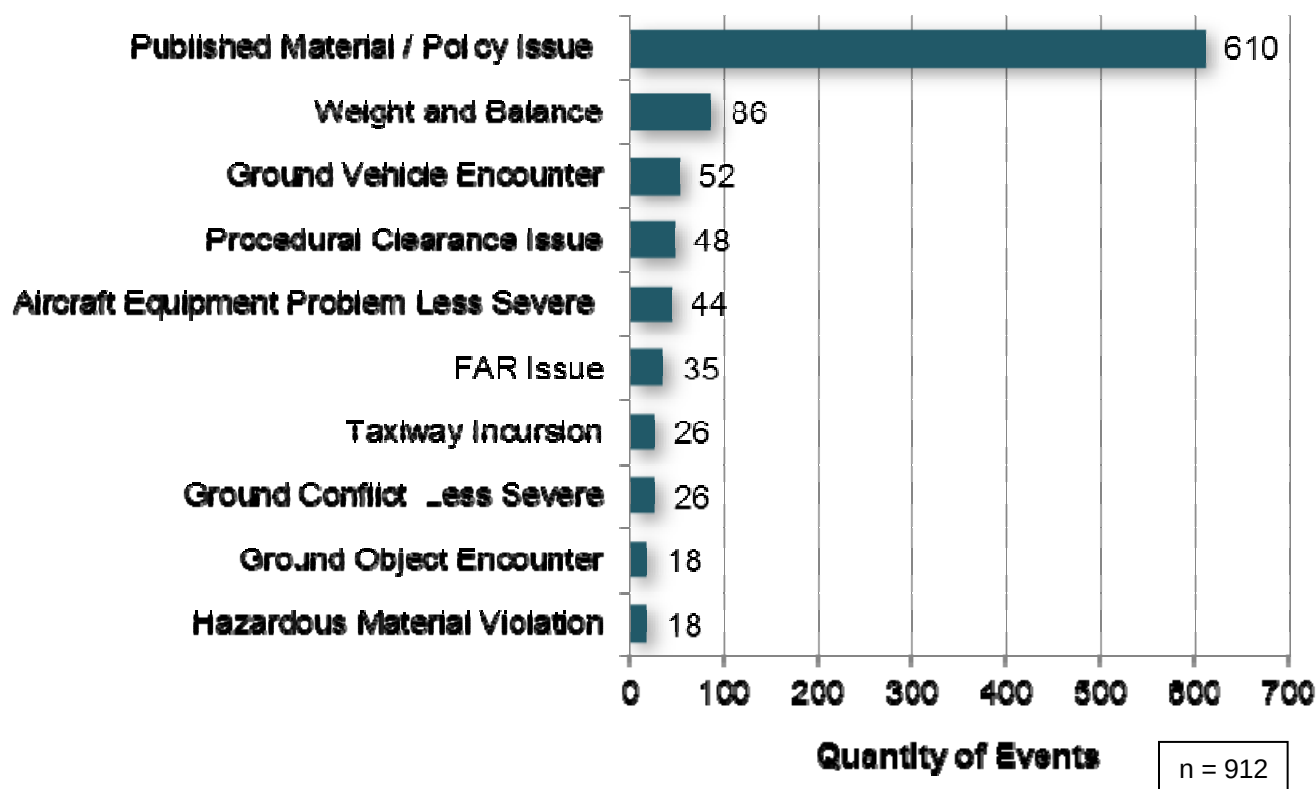
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# Ground Personnel Report Intake – Top Ten Anomalies

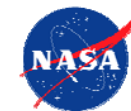
## January – December 2013

- The ASRS received 912 reports from Ground Personnel in 2013



Categories are not mutually exclusive, therefore, a single incident may be coded by ASRS analysts as involving more than one anomaly.  
Source: 100% ASRS Report Data

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# Ground Safety Alert

## **Narrative 1**

This jet bridge will not stop right away it continues to move even if you are not touching the controller. The jet bridge operator hit the aircraft with the jetbridge causing damage to the door of the aircraft.

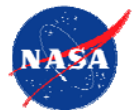
## **Callback 1**

The reporter stated that she did not personally see the event occur but knows that jet bridge had been a problem in the past with CRJ and ERJ type aircraft. Pictures were take of the aircraft door damage.

A previous jet bridge related event at a different gate was complex and related to a combination of rain, the jet bridge canopy and the jet bridge extension used to couple with regional jet type aircraft. In that event the canopy did not completely cover the jet bridge extension between the jet bridge and regional jet. Because it was raining, a passenger slipped after she encountered a slight hump at the extension's center and fell into the aircraft hitting her head on the Flight Attendant jumpseat. The passenger was not seriously injured, but the reporter highlighted that the jet bridge extension solution to boarding smaller aircraft has pitfalls associated with their use.

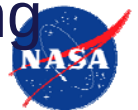
## **Synopsis**

A jet bridge hit a regional jet aircraft causing door damage when it did not stop after operator inputs ceased.



# Ground Operations Safety Telecon

- ASRS has received additional reports which describe ramp events involving aircraft damage and other significant safety hazards.
- The Captain reports the aircraft tow crew pulled the aircraft into a fuel truck, requiring evacuation of the aircraft (ACN 670690)
- The First Officer alleges the refueling personnel failed to ground the aircraft because the grounding clip was broken (ACN 670836)
- The Maintenance Technician indicated a catering truck struck a B737 aircraft and sustained damage exceeding manufacturer's limits (ACN 672831)



March 2014

# Ground Personnel Telecon Sample

Continued...

- The Captain reported a catering truck that ran into an EMB145 as the aircraft was pushed back from the gate for departure (ACN 670563)
- The First Officer described an event involving a catering crew that opened a door of an A319 before the crew disarmed the door. (ACN 668609)
- The Captain alleges the ramp crew failed to remove the steering bypass pin on a B737 prior to taxi, then removed the hydraulic bypass pin with no notification to the flight crew. (ACN 692645)



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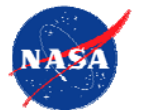


# **ASRS Ground Personnel Related Events**

## ***General Overview of Primary Analysis Records***

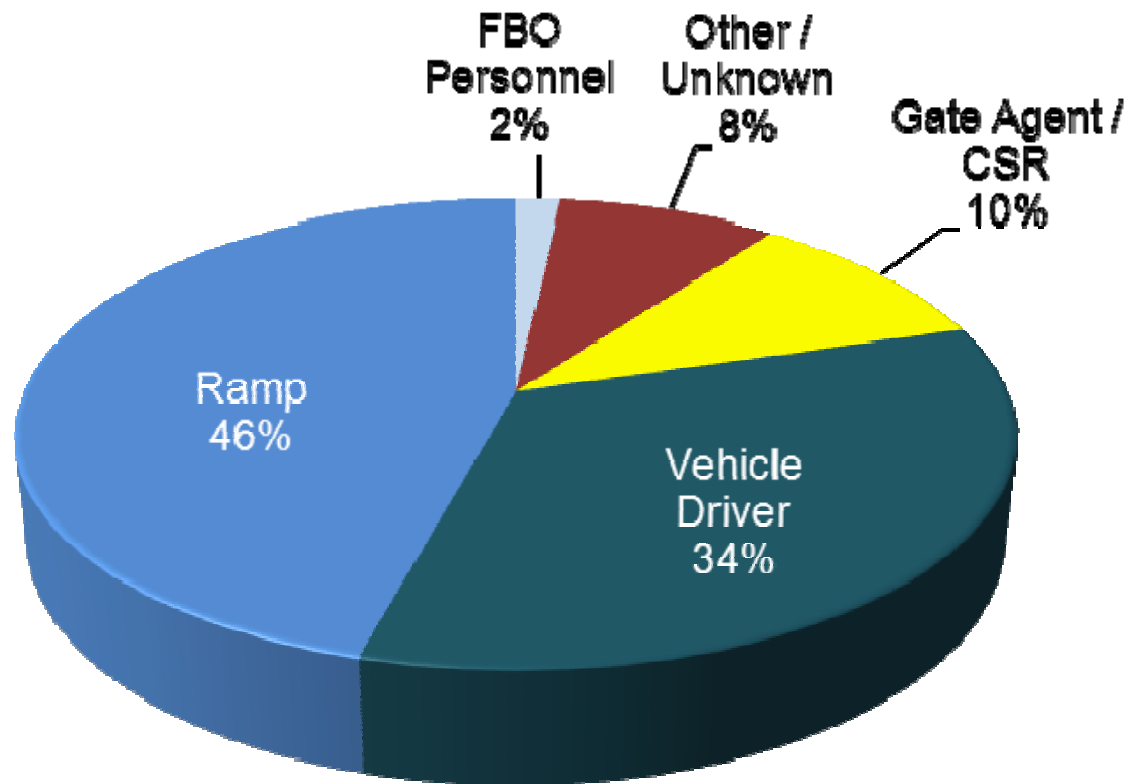


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# Ground Personnel Related Events

## *Reporter Function*

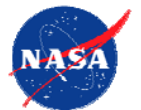


n = 59



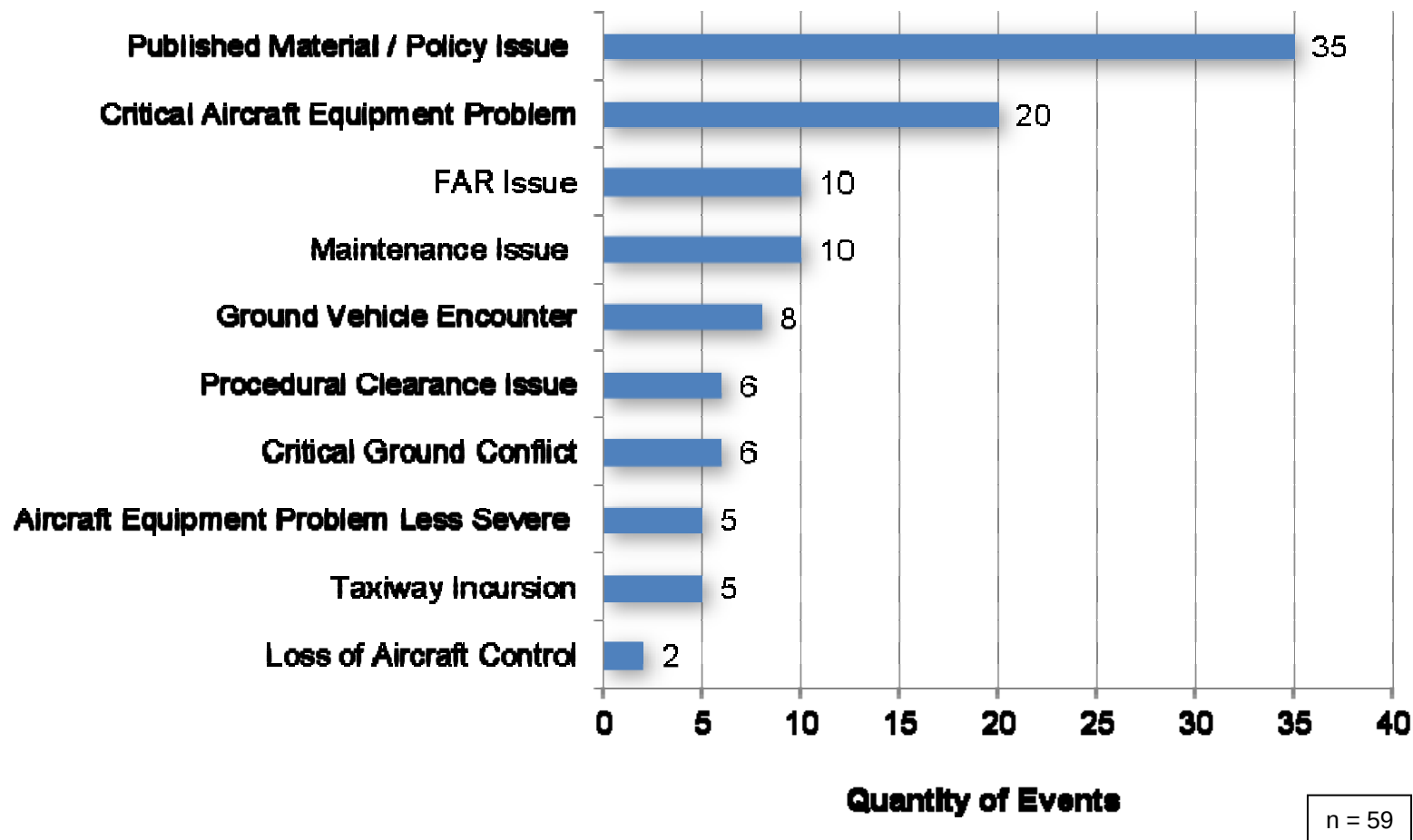
Source: NASA ASRS Database

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# Ground Personnel Related Events

## *Top Ten Anomalies*



Categories are not mutually exclusive. Therefore, a single incident may be coded by ASRS analysts as involving more than one anomaly.  
Source: NASA ASRS Database

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# Ground Personnel Related Events

## *Additional Analysis of Report Narratives*

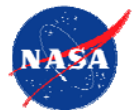
| Additional Analysis                        | Number of Incidents |
|--------------------------------------------|---------------------|
| Aircraft Parking or Safety Zone Issue      | 14                  |
| Tug/Tractor/Vehicle Handling Issues        | 14                  |
| Improper Pushback or Tow Procedures        | 12                  |
| Training Issues                            | 12                  |
| Communication Issues                       | 8                   |
| Jet Bridge Issues, Mechanical or Equipment | 6                   |
| Work Environment                           | 6                   |
| Tug/Tractor/Vehicle Mechanical Issues      | 1                   |
| Cargo Loading/Unloading Issues             | 1                   |
| Inadequate Ground Crew Staffing            | 1                   |

n = 59



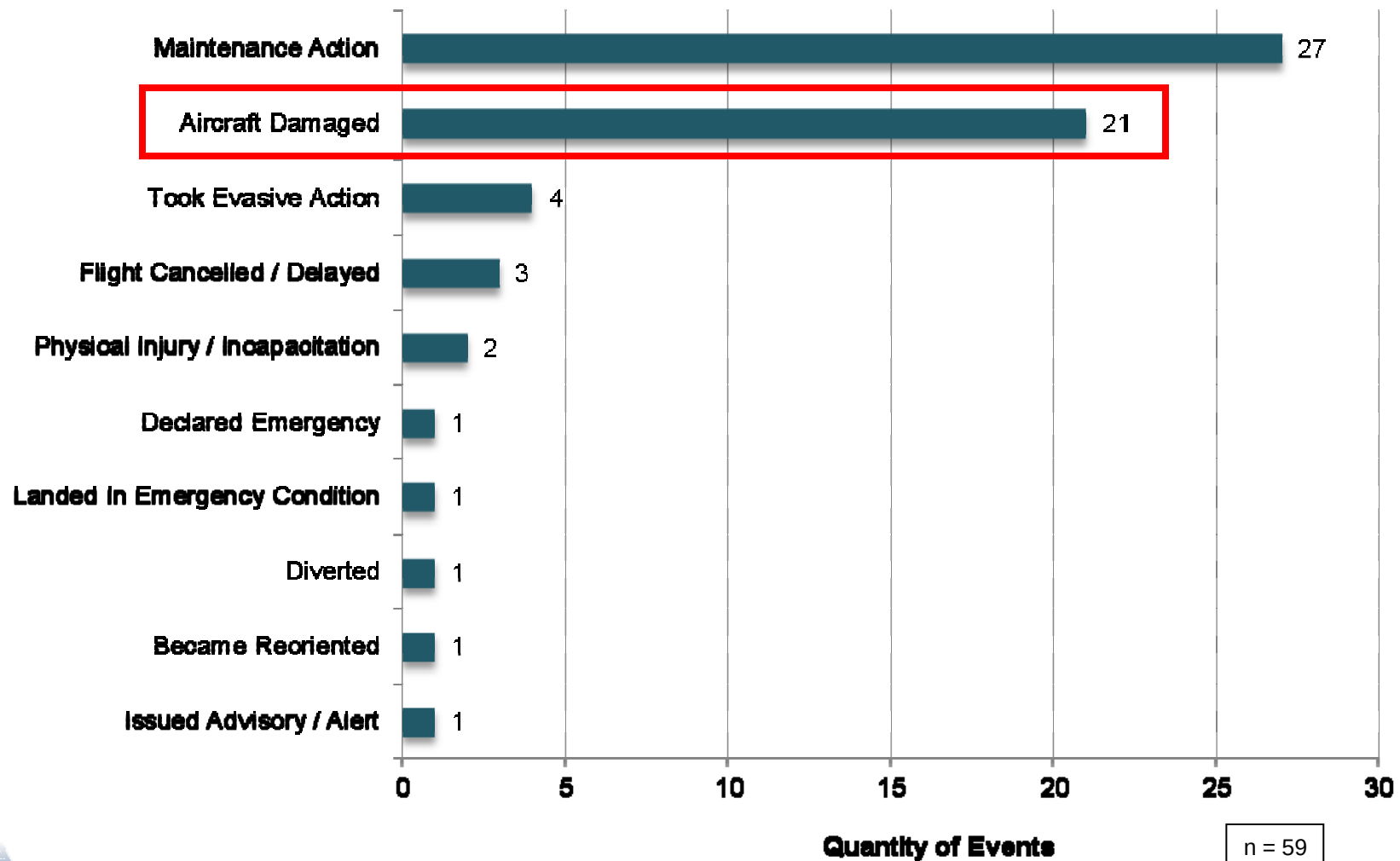
Categories are not mutually exclusive. Therefore, a single incident may be coded by ASRS analysts as involving more than one category.  
Source: NASA ASRS Database

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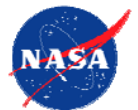
# Ground Personnel Related Events

## Event Result



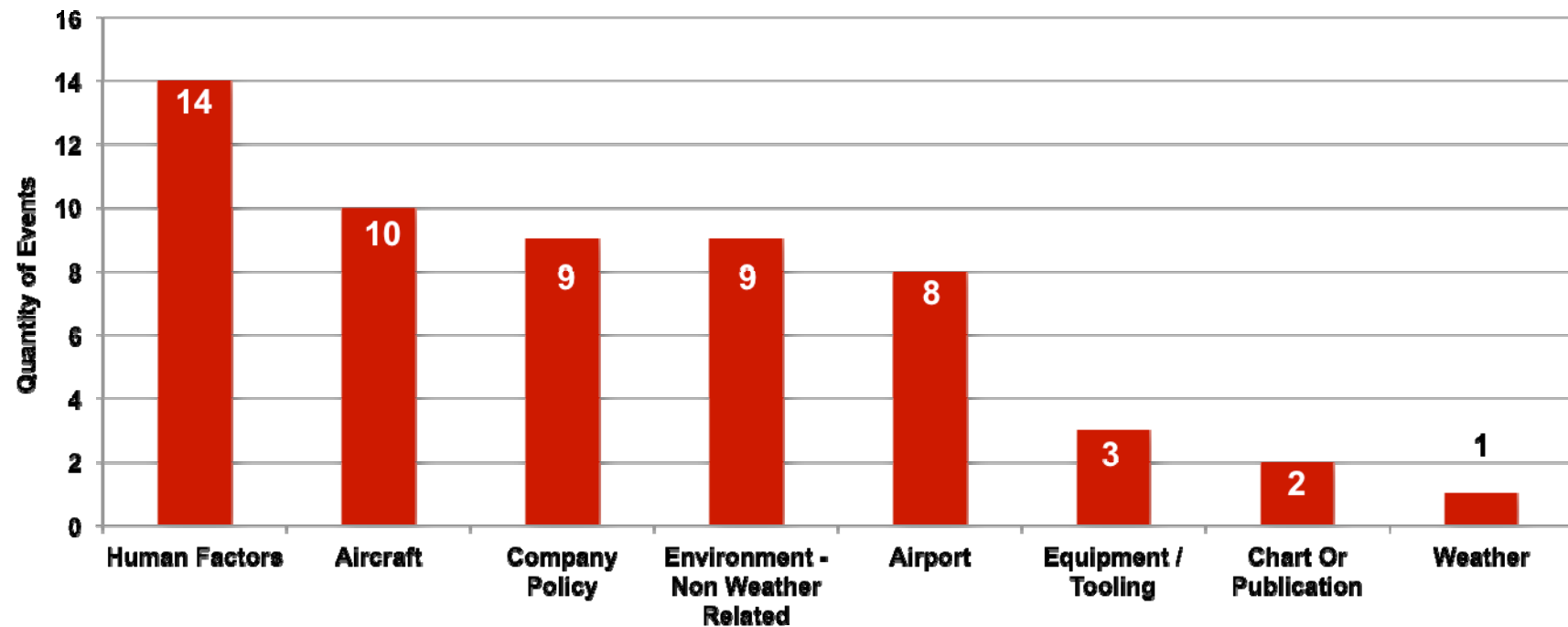
Categories are not mutually exclusive. Therefore, a single incident may be coded by ASRS analysts as involving more than one result.  
Source: NASA ASRS Database

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# Ground Personnel Related Events

## *Aircraft Damage – Contributing Factors*

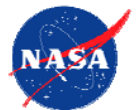


n = 21 of 59



Categories are not mutually exclusive. Therefore, a single incident may be coded by ASRS analysts as involving more than one factor.  
Source: NASA ASRS Database

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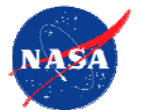
# Ground Personnel Related Events

## *Aircraft Damage – Human Factors Involved*

- Situational Awareness

*“I just came off another flight and was assigned to load this flight. Belt loader was staged in forward pit and was chocked with bumper outside aircraft. I pulled a string of 3 foreman carts. After the first cart I pulled forward to the second cart. The sharp turn caused the second **cart to turn sharply and hit the back end of the belt loader** causing the bumper guard to push forward and upward making a small rip in the threshold. There **were no guide men** except for the ramper inside the pit. As soon as I heard the loud crashing noise I immediately stopped and checked for any aircraft damage.*

(ACN 1091154)

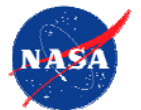


# Ground Personnel Related Events

## *Aircraft Damage – Human Factors Involved*

- Training

*“I was working my gate and I started to do my walk around of the airplane. I opened up the back bin, put chocks on the tires, [and] then I walked to the front of the aircraft and put the stairs on the front of the plane. I left, then came back to load the plane everything looked good. When it was time to take the stairs they would not come off. I then called my Supervisor and he then tried to pull them off but they still would not come off. Finally they turned the wheel and pushed it off of the plane then there was a hole in the plane.” (ACN 1119036)*

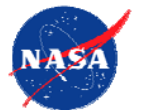


# Ground Personnel Related Events

## *Aircraft Damage – Human Factors Involved*

- Time Pressure

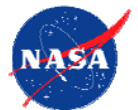
*“I drove the vehicle around hangar to the north side and parked it parallel to hangar door. I set gear to park and got off the vehicle to go inside the hangar for a few minutes (1 or 2). When I went back to drive off, the van was not where I parked it. I scanned around and saw the vehicle beside an aircraft.” (ACN 631586)*



# Dangers on the Ramp: A NASA ASRS Analysis

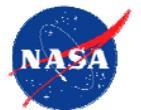


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# Dangers on the Ramp

- Reported dangers on the ramp (any reporter type):
  - Performing Tasks with Engines Running
  - Boarding Jet Bridge Safety Concerns
  - Other Ground Equipment Operation





# Performing Tasks with Engines Running

“While being marshalled into the gate, the Ramper with the ground power service cord was standing under the jetway. When I was almost even with the engine runup markings, he walked in front of the aircraft in order to stand on the other side of the Safety Zone so that he could plug in the ground power service cord. I had to stop the taxi and wait until he cleared the Safety Zone.”

*(ACN 1119973 Excerpt)*

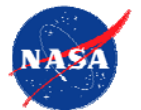


# Performing Tasks with Engines Running

“After the passenger agent receiving our express commuter flight stopped the aircraft I chalked the nose gear and then was waiting for the main cabin door to open. As the door opened and the jetbridge was pulling up I noticed this agent was doing a walk around with engine two NOT shut down.” *(ACN 1091138 Excerpt)*

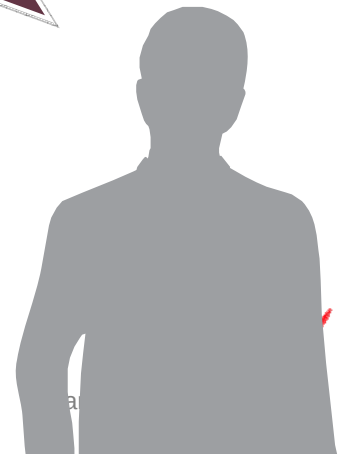


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# Boarding Bridge Safety Concerns

“...jet bridge will not stop right away it continues to move even if you are not touching the controller. The jet bridge operator hit the aircraft with the jetbridge causing damage to the door of the aircraft.” *(ACN 1117676 Excerpt)*



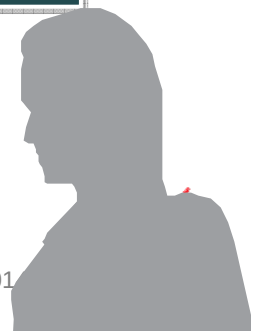
# Boarding Bridge Safety Concerns

“Aircraft was marshaled to lead line A and this brought engine directly under jet bridge. I had to raise bridge. **If bridge had been any lower this would have been a very bad incident and myself and vendor would have been injured.** I was unable to safely pull forward; I turned wheels to left limit to attempt to pull away from engine. I stopped and went down bridge to view engine/bridge proximity. I was now going to turn wheels to right limit to attempt to pull sideways along the fuselage to get to the door. **The ramp agents realized they had parked on the wrong stop and they stopped me as they were going to push the aircraft back to the correct stop.**”

(ACN 1096079 Excerpt)



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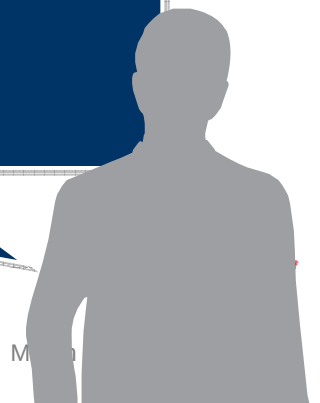
# Ground Equipment Operation

“While making the turn to exit the claim area, **I felt the tractor surge forward.** The sudden burst in acceleration was unexpected and caught me completely by surprise. I was applying minimal pressure to the accelerator pedal. **The surge caused me to over steer the turn and the tractor and I collided into the wall.** I immediately took my right foot off of the gas pedal, **applied the brake and attempted to correct the course my vehicle by steering to the right;** however, there was a lot of play in the steering and the tractor did not begin changing direction immediately following my turn. I would estimate that the **tractor did not begin changing direction until the steering wheel was turned approximately 45 degrees.”**

(ACN 1102647 Excerpt)



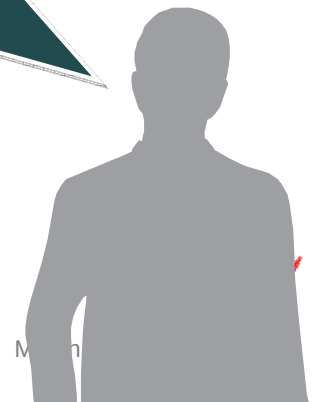
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# Ground Equipment Operation

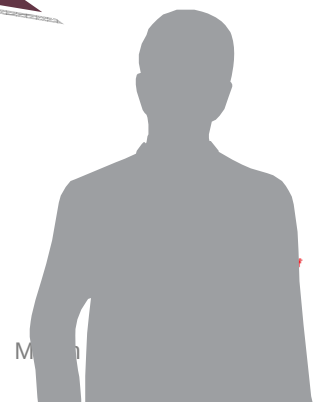
“I brought plane into gate and chocked front gear while others chocked the two main gears. After putting on towbar [I] proceeded to hook up push tug to aircraft. Tested brakes at 8-10 FT out; when within about 5-6 inches **the brakes on the tug failed and I proceeded to push the towbar into the aircraft.** No visible damage to aircraft. Towbar head totaled.”

(ACN 1092693 Excerpt)



# Other Ground Issues

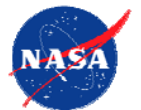
**“While closing the rear pit of the aircraft** in preparation for departure, the **crew released the aircraft’s brakes.** **There was no** one on the headset yet and no **communication** had occurred **between the ramp employees and the cockpit.** The aircraft lurched backwards because of the pressure of the wheels against the chocks. The side of the pit opening pushed me off balance and **I nearly fell off of the end of the beltloader.”** (ACN 1142133 Excerpt)



# QUESTIONS?



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# CONTACT INFO

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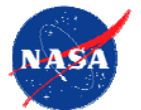
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