



Second Generation Flight Risk Assessment Tools: Strengths, Weaknesses and Next Generation Opportunities

30 November 2012

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Flight Risk Assessment Tool

- **FRAT Overview**
- **VanAllen FRAT Study Summary**
- **FRAT Benefits**
- **FRAT Lessons Learned**
- **FRATs of the Future**
- **Q&A**

FRAT Overview

Risk

Probability

	1	2	3	4	5
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5

VanAllen FRAT Study Summary

- **Participants**

- **10 Major Part 91 Aviation Departments**

- **8 Companies (7 in the FORTUNE 200)**

- **2 Very High Net Worth Families**

- **FRATs used**

- **8 commercial FRATs from 5 different vendors**

- **2 internally developed**

VanAllen FRAT Study Summary

- **Participants**

- **Fleet: 18 jets (no turboprops or helicopters)**

- **2 light jets**

- **7 mid-sized jets**

- **3 super mid-sized jets**

- **3 large jets**

- **3 ultra long-range jets**

VanAllen FRAT Study Summary

- **Data Base**

- **6 months of operations (August '11 – January '12)**

- **2,861 legs scored**

- **About 146,000 FRAT data points**

- **2,692,000 nm flown**

- **Average leg distance = 818 nm**

VanAllen FRAT Study Summary

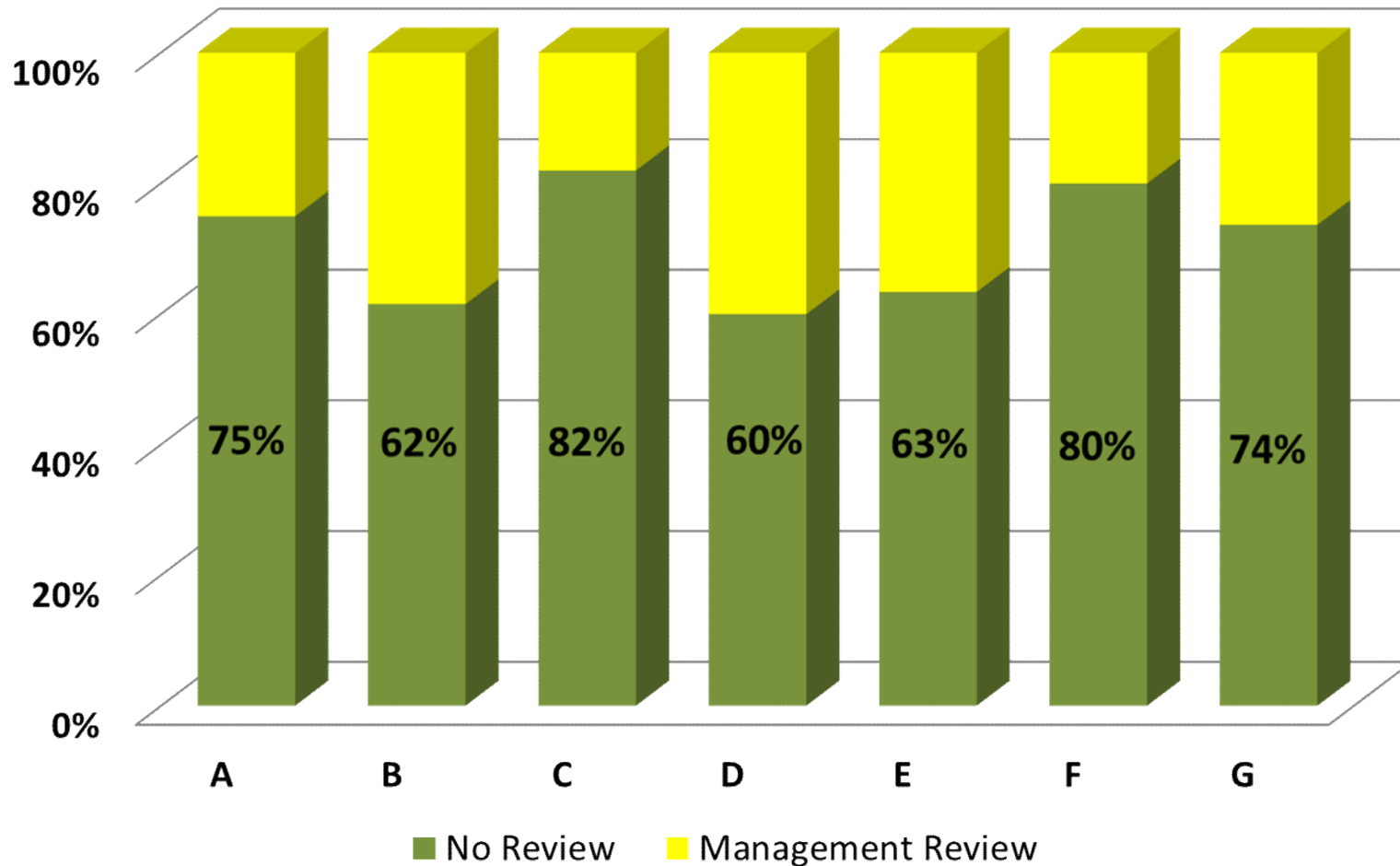
- **Study Protocol**
 - **Prior to Study most assessed “Pre-flight” scores only**
 - **We asked them to take 3 scores**
 - 1. Initial trip request score**
 - 2. Pre-flight score**
 - 3. Post-flight score**
 - **Study second half challenge: Lower their scores**

VanAllen FRAT Study Summary

- **Study Metrics**
 - **Data points varied**
 - **FRATs scored from 28 – 90 elements (average 51)**
 - **10% - 32% of scored elements were Human Factors**
 - **3 participants had no “No Go” score limit**
 - **All had “Management Review” limits**
 - **Ranged from 60% - 82% of “No Go”**

VanAllen FRAT Study Summary

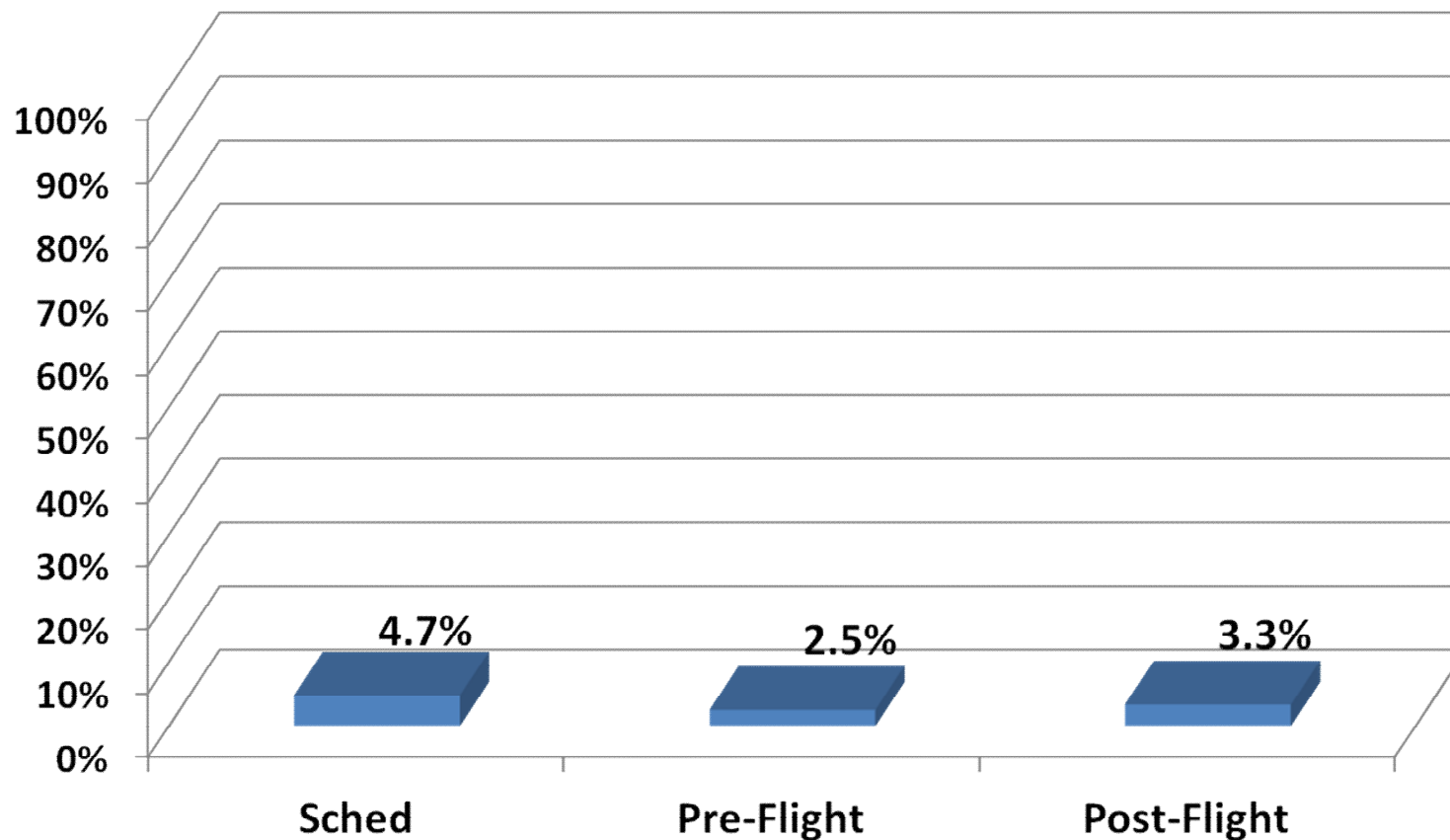
Percentage of "No Go" (%)





VanAllen FRAT Study Summary

Frequency of Legs Requiring Management Review



FRAT Benefits

- **FRAT use improves safety**
 - Hawthorne Effect
 - Highlights known risks & identifies unknown risks
 - Crews & managers focus on right mitigations
 - Leg briefing tool
 - Improved intra-departmental dialogue
 - Improved training based on FRAT data

Lessons Learned

- **Current FRATs are seen as**
 - **Critically beneficial to SMS**
 - **Moderately effective as management information tools**
 - **Not as easy to use as they need to be**
 - **Not automated enough**

Lessons Learned

- **FRAT scoring is not an exact science, yet**
 - **Not measuring enough important trip data points**
 - **Human Factors is very weak within most FRATs**
 - **Adapt scoring to your operations**
 - **Criticality**
 - **Risk compounding**
 - **Flex Review hurdle to operations & individuals**

Lessons Learned

- **Score all three critical trip points to get best benefit**
 - 1. Initial request**
 - 2. Pre-flight**
 - 3. Post-flight**
- **Capture “Notes & Comments”**
- **The “Process” is as important as the Tool**

Lessons Learned

- **“Management Review” is critical**
 - **Mature Operations vs. Immature Operations**
 - **Set Review to be triggered when it’s needed**
 - **3 training flights scores averaged 30% of Review**
 - **Medium jet delivery trip: No Review**
 - **Low time night landing on short strip: No Review**
 - **30% had No Management Reviews during Study**

FRATs of the Future

- **Next Gen FRATs**
 - **Automatic data population from various sources**
 - **Robust and effective human factors scoring**
 - **Integrated with other SMS tools**
 - **Real-time**
 - **Automatic management reports**



Flight Risk Assessment Tool Study

- **In Closing:**
 - **Current FRATs create substantial value**

 - **Future FRATS will be invaluable**

Some FRAT Vendors

- **360 Aviation**
- **Airinc**
- **ARG/US**
- **Baldwin**



Questions?

Thank you!