Overview

• FY 2005 Accomplished Aviation Weather Activities

• FY 2006 – Planned Aviation Weather Activities
AFS Accomplished Activities FY05

• HBAT 05-01 - Use of Aviation Weather Products by Air Carriers, Air Operators, and Fractional Ownership Program Managers (03/05)
  – Defines Primary and Supplementary Weather Products
  – Content of HBAT 05-01 incorporated into the AIM Chapter 7-1-3

• FIS (Flight Information Service) updates to the AIM Chapter 7-1-11 and other relevant ADS-B, TIS-B, FIS-B chapters.
AFS Accomplished Activities FY05

• CIP (Current Icing Potential)/FIP (Forecast Icing Potential) Hazlog

• Worked with the Icing Product Development Team to ensure that the new CIP Severity/Probability will pass the FAA Safety Assessment (05/05 meeting)

• Introduced and assisted AWTT in implementing Safety Management System into the R&D cycle; D2, D3, and D4 stages
Safety Management System (SMS)

- **Describe System**
  - Define scope and objectives
  - Define stakeholders
  - Identify criteria and plan for risk management effort
  - Describe system (use, environment, and intended function, including planned future configuration)

- **Identify Hazards**
  - Identify hazards (what can go wrong?) that exist in the context
    - Use structured approach
    - Be comprehensive (and do not dismiss hazards prematurely)
    - Use lessons learned and experience supplemented by checklists

- **Analyze Risk**
  - Analyze risk for each hazard
    - Identify existing controls
    - Determine risk (severity and likelihood) of outcome
      - Describe qualitatively or quantitatively

- **Assess Risk**
  - Rank hazards according to the severity and likelihood of their risk
  - Select hazards for detailed risk treatment (based on risk)

- **Treat Risk**
  - Identify feasible mitigation options
  - Select best balanced response
  - Develop risk treatment plans
  - Verify and implement
  - Monitor effectiveness
CIP/FIP HAZLOG

• Hazard Inventory Analysis – initiated Nov. 04
• Evaluated by the Weather Flight Standards Operational Review Team (WX-FORT)
  – Approx 10 experience aviators
  – Analyzed CIP/FIP – different interpretations of CIP/FIP information
  – Addressed comments in HAZLOG
• HAZLOG distributed for comments
• Additional comments solicited from industry/users (SAMA, AOPA, NCAR, FAA)
• HAZLOG completed Feb 05
• AFS-400 approved HAZLOG and presented to ASG/AWTT Apr 05.
AFS Planned Activities for FY06

• **Incorporate FAA Safety Management System into the AWTT process**
  – FAA Safety Assessment includes ATO and AVS
  – Should be initiated at the research level
  – Iterative process accomplished at D2, D3, and D4 R&D stages
  – Government and industry comments will be included prior to final draft
  – CIP/FIP product has been a learning curve but this should ensure that products meet operational guidelines for use when they are released.
Flight Standards acceptance of industry weather products

- Initiated effort to accept industry weather products and vendors
- Commercial weather vendors would become qualified sources of aviation weather in accordance with FAA guidance material.
- WX-FORT will be the evaluation team for products and vendors
- Flight Standards met with Jeppesen to initiate this effort on accepting industry weather products
- Flight Standards will meet with other vendors in the near future to develop requirements and policy
Jeppesen Icing Forecast Map

- Would be evaluated as a supplemental product
- Developed from NCAR/RAP and Stovepipe algorithms.
- Algorithms adjusted by Weather Decision Technologies (WDT)
- AIRMET/SIGMET depiction
- Freezing Level
- PIREPs depicted
- Icing severity
- Situational Awareness
Jeppesen Icing Forecast Map

- Developed from user input prior to design
- Sold to users for over 1 year
- Intuitive – ease of use, large customer base, situational awareness
- Verification – lack of PIREPS, access to MDCRS data
- Validation – lack of user complaints and after the fact analysis.
QUESTIONS?

• Contact info – AFS Weather Program

• Les Smith (Leslie.Smith@faa.gov)
• Dave Metzbower (David.Metzbower@faa.gov)
• Robert Ruiz (Robert.M-CTR.Ruiz@faa.gov)
• Additional slides for reference.
### CIP/FIP Hazlog; Term - “potential”

#### HAZARD INVENTORY LOG CIP/FIP

<table>
<thead>
<tr>
<th>Item #</th>
<th>Person / Area of Responsibility</th>
<th>Deficiency</th>
<th>Corrective Action</th>
<th>Remarks</th>
<th>Risk Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-04</td>
<td>AFS/ATO-P</td>
<td>What does the term &quot;potential&quot; mean in an operational context?</td>
<td>Change/eliminate term &quot;potential&quot; Alternatives: e.g., Current Conditions Conducive to Icing (CCCI) and Forecast Condition Conducive to Icing (FCCI).</td>
<td>The term potential is nebulous and open to interpretation. However the hazard is mid-level.</td>
<td>Probable Marginal Yellow</td>
</tr>
<tr>
<td>02-04</td>
<td>HF-Adams</td>
<td>Potential and how it affects decision making; When potential is used with the colors gradations, this may influence decision making.</td>
<td>Change/eliminate term &quot;potential&quot; Alternatives: e.g., Current Conditions Conducive to Icing and FCCI.</td>
<td></td>
<td>Remote Negligible Green</td>
</tr>
<tr>
<td>03-04</td>
<td>AFS/ATO-P</td>
<td>Potential vs. Severity (intensity); Potential does not reflect a level of icing severity or intensity of accumulation rate.</td>
<td>Change/eliminate term &quot;potential&quot; Alternatives: e.g., Current Conditions Conducive to Icing and FCCI.</td>
<td></td>
<td>Remote Negligible Green</td>
</tr>
<tr>
<td>04-04</td>
<td>AFS/ATO-P</td>
<td>Potential may be confused with probability. This is reinforced by the color gradations in the display.</td>
<td>Relate product to conducive conditions to icing or establish a probabilistic component.</td>
<td>Misinterpretation of potential since a notion of probability is reinforced by colors.</td>
<td>Remote Negligible Green</td>
</tr>
</tbody>
</table>

**Legend:**
- High Risk
- Medium Risk
- Low Risk
## CIP/FIP Hazlog; Color

<table>
<thead>
<tr>
<th>Date</th>
<th>AFS/ATO-P</th>
<th>Description</th>
<th>Action</th>
<th>FAA Icing effects team is removing type of ice from PIREPS. Will lead to type of ice being removed from forecasts.</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-04</td>
<td>Colors display the likelihood of conditions for icing, not actual icing conditions, the probability or intensity of icing, or type of ice.</td>
<td>Remove color scaling, go to one color</td>
<td>The FAA Icing effects team is removing type of ice from PIREPS. Will lead to type of ice being removed from forecasts.</td>
<td>Probable Critical - Red</td>
<td></td>
</tr>
<tr>
<td>07-04</td>
<td>Colors may provide hazardously misleading information (Green does not mean OK). Green may mean a small potential for severe ice vs. Red may mean a large potential for light ice.</td>
<td>Remove color scaling, go to one color</td>
<td>Probable Critical - Red</td>
<td></td>
<td></td>
</tr>
<tr>
<td>09-04</td>
<td>Does no color indicate conditions for &quot;no ice&quot;</td>
<td>Yes, product is very good at predicting areas of no ice.</td>
<td>Remote Negligible Green</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-04</td>
<td>Numerical scale with color bands leads to assumption of probability (legend at bottom of display). Not sure what the color scale means. Not a linear scale; &quot;30&quot; is not half as bad as &quot;60&quot;.</td>
<td>misleading, remove the scale until it is clarified</td>
<td>Frequent Critical - Red</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-04</td>
<td>Yes/No without color - loss of information (designers).</td>
<td>Information presented as one color provides less opportunity for confusion.</td>
<td>Red</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COLOR**

- **High Risk**
- **Medium Risk**
- **Low Risk**

FAA Flight Standards Review and Outlook for FY05/06
11 Nov. 2005
<table>
<thead>
<tr>
<th>Date</th>
<th>AFS/ATO-P</th>
<th>Issue Description</th>
<th>Recommendation</th>
<th>Probable Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-04</td>
<td>Is the information provided appropriate for its intended use — strategic plan, decision making, safety</td>
<td>No, the information may be misinterpreted and could be hazardously misleading, especially if used to plan flights in icing conditions</td>
<td>If a pilot plans a flight to stay out of the icing areas (VFR or light GA IFR), then the information may provide a benefit.</td>
<td>Critical - Red</td>
</tr>
<tr>
<td>12-04</td>
<td>Not intuitively clear to pilots for decision making</td>
<td>Eliminate color, numerical scale, name change</td>
<td></td>
<td>Critical - Red</td>
</tr>
<tr>
<td>13-04</td>
<td>Training issues; inexperienced pilot vs. experienced pilot, dispatchers, meteorologists. No standardization in display formats.</td>
<td>Requires training for advanced product, less sophisticated product (single color) will be more intuitive. FITS program, Airmet Testing (AFS-600)</td>
<td>A less sophisticated product may be less effective for Part 121 and Part 135 operators.</td>
<td>Critical - Red</td>
</tr>
<tr>
<td>14-04</td>
<td>No formal testing that'll prove and confirm that CIP/FIP are ready for operational use by pilots</td>
<td>Operation testing to confirm suitability.</td>
<td></td>
<td>Critical - Red</td>
</tr>
<tr>
<td>Date</td>
<td>Agency</td>
<td>Description</td>
<td>Risk</td>
<td>Risk Status</td>
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<tr>
<td>16-04</td>
<td>AFS/ATO-P</td>
<td>Regulatory Implications (Enforcement actions) – is this forecast or known icing? The nature of a probabilistic forecast and its interpretation in enforcement actions.</td>
<td>Unknown</td>
<td>Remote Negligible Green</td>
</tr>
<tr>
<td>17-04</td>
<td>AFS/ATO-P</td>
<td>CIP/FIP may not correlate with the primary AIRMET; may exceed the boundaries of the AIRMET.</td>
<td>CIP/FIP will remain supplementary until the time the AIRMET/SIGMET are replaced.</td>
<td>May pose an enforcement issue, since one product may contradict the other.</td>
</tr>
<tr>
<td>19-04</td>
<td>AFS/ATO-P</td>
<td>CIP/FIP uses one numerical model, RUC, while AIRMET uses several models.</td>
<td>Supplementary until CIP/FIP demonstrate equivalent level of safety to AIRMET.</td>
<td>CIP does use one numerical model (RUC), but information from the RUC is combined with observations from satellite, radar, surface stations, pilot reports and lightning mosaics to correct for model shortcomings.</td>
</tr>
<tr>
<td>20-04</td>
<td>AFS/ATO-P</td>
<td>Guidance only in AIM re: supplementary and not training programs</td>
<td>See AIM Guidance and HBAT regarding weather product classifications.</td>
<td>Remote Negligible Green</td>
</tr>
</tbody>
</table>
CIP/FIP Hazlog; GENERAL

<table>
<thead>
<tr>
<th>INDUSTRY COMMENTS (12/02 MEETING)</th>
</tr>
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<tbody>
<tr>
<td>21-04</td>
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<td>22-04</td>
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<td>27-04</td>
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<td>28-04</td>
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Conclusion

• Flight Standards’ decision is to maintain the operational restrictions and labeling (only approved for use by dispatchers and meteorologists) until the identified hazards are suitably mitigated.
Future Decision

• CIP/FIP with severity and probability should mitigate many of the identified hazards.

• However, a new safety assessment will have to be performed to determine if any operational mitigations are needed.
The CIP is an automatically-generated product that supplements AIRMETs and SIGMETs by identifying areas of current icing potential, but it does NOT substitute for the intensity and forecast information contained in AIRMETs and SIGMETs. It is intended for operational use by meteorologists and dispatchers.

**Maximum Icing potential (FL010-FL300)**

Analysis valid 1800 UTC Mon 15 Mar 2004

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Icing PIREP Symbols:
- Negative
- Trace
- Light
- Moderate
- Severe