



# Ground Ice Detection Sensors (GIDS) – The Future.

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## **PRESENT STATUS:**

### **Recent Development Focus:**

- **Remote On-Ground (ROGIDS) Technology**
- **Planned Application: Primary Device for Post De-Icing Use**
- **Background Human Factors, and Performance Tests done**
- **SAE Standard (AS5681) developed**
- **Regulatory Activity to Facilitate Use of ROGIDS in Progress**

### **Future Scenario:**

- **Remote Sensors (On-Ground or On-Board) with**
  - **Technical, Operational, and Economic Feasibility for**
  - **Pre-De-icing, Post De-Icing, and Pre-Takeoff inspection.**



## EARLY ACTIONS – POST DE-ICING USE

### Address Operational Issues (Not Regulatory Issues):

- Scanning concurrent with De-icing?
- Display in Ice-House, and Record of Aircraft Condition at Dispatch
- Display/Confirmation to Pilot
- Accumulate Field Experience, History of use in Service



## PRE DE-ICING

- **Need an Operational Forced Air Requirement to remove non-adhering contamination (snow) as part of Sensor use procedure**
- **Need Human Factors Data to quantify human frost detection capability**
- **Need sensor capability to identify frost condition (peak height and distribution) – no reliable method presently known.**



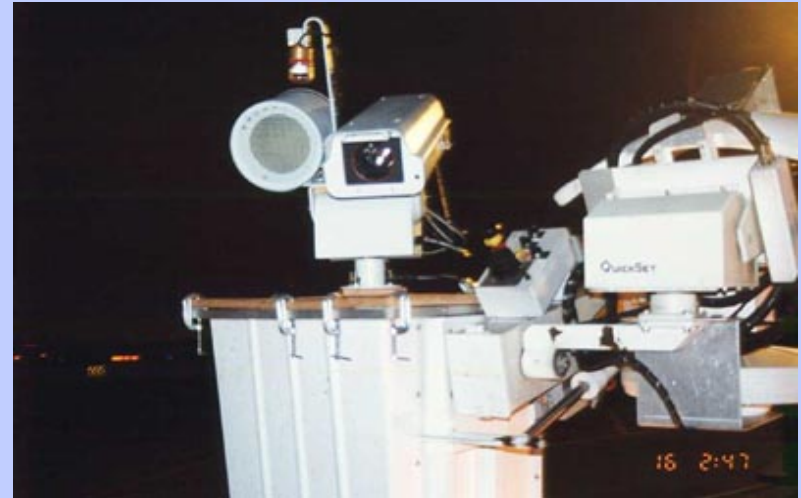
## PRE TAKE-OFF

### Sensor Threshold Requirements not defined:

- Only limited Human Factor Pre-Takeoff inspection capability data available for Reference. Need more.
- Regulations and HOT's in Conflict. Zero (adhering) Contamination Operational Requirement (If you can see it assume that it is adhering) not consistent with Accepted Contamination Levels at End of HOT's.
- Need to Determine Methods for GIDS Operation.



# END-OF-RUNWAY TESTS





## ON-GROUND or ON-BOARD?

### Principal Display:

- Pre De-Icing: On-Board to facilitate Pilot Decision
- Post De-Icing: On-Ground to facilitate de-icing operations
- Pre Takeoff: On-Ground or On-Board for Pilot Decision

### Economics/Availabilities:

- On-Board more expensive, but what about airports with no Sensor Facilities? Then what about aircraft not equipped with Sensors?
- On-Ground, with board Display for Pilots?



## WHAT NEXT ?

- **Is There a Role for Point Detection Sensors?**
  - They can determine fluid condition
  - They can sense wing surface temperature
- **Can Technology(ies) be developed to Detect Ice Adhesion?**

**Think Outside The Box!**  
**e.g. Fluid Condition?**