Project Summary/Abstract

Aviation Safety Research Impact on the Aviation Industry. Moving Research to Reality. Aviation Industries' NextGen "Threshold Deicing", A Game Changing Development.

Aviation Safety Research, a 501(c)(3) nonprofit organization immediate project is to research, develop, and engineer an innovative and comprehensive winter operations FAA Airport Improvement Program, Snow and Ice Control Plan Part 135 and 212 Certificate Holders Deicing Program for improved deicing efficiency and public safety for all cold climate Commercial Airports, Commercial/Military Airports of the United States.

ASR independent investigation and research exposes' idiosyncrasy characteristics of the aviation industry, and government agencies, resulting in inconsistent compliance with federal safety regulations. An understandable dilemma of a bureaucratic industry to collate, to note points of agreement and disagreement. Extensive observation of the current method and practices of aircraft ground deicing efforts employed by airports and deicing contractors currently throughout the aviation industry revealed innumerable public safety and operational deficiencies.

The known issues, concerns and complaints have been examined, argued, weighed and well documented, consisting of over 6,000 pages within the past 9 years, authorship of which being Government Agencies, Congress, The Aviation Industry and Airport Associations, Airline Pilots Associations, US Air Carriers, Aircraft Manufacturers, Environmental Associations, National and State Media Publications.

A public outcry in this country is "We need an investigation to be conducted by the legislature to determine why these problems have been allowed to exist without a solution for so many years".

Published Government Agencies Fact Reports sources:
The Federal Aviation Administration, Airport Cooperative Research Program, NASA/Langley Aviation Safety Program, Environmental Protection Agency, Occupational Safety and Health Administration, Air Transportation Safety Board, Government Accountability Office, National Defense Council, United States Geological Survey, National Institute of Occupational Safety and Health, The Boeing Company, United States Congress and State Air Transportation Authorities.

Published Aviation Industry Association sources:
Airports Council International-North America, American Association of Airport Executives, National Business Aviation Association, National Association of State Aviation Officials, Aviation Safety Network-Flight Safety Foundation, Coalition of Airline Pilots Association, Association of Professional Flight Attendants. Society of Automotive Engineers-International, Bureau of Oceans and International Environmental and Scientific Affairs, Academy of Sciences' Research Council, ACI/AAAE Airports United.

Published Environment Activists Groups sources:
Alliance of Residents Concerning O'Hare, National Resource Defense Council, Big Green Radicals, US-Citizens Aviation Watch Association, Environmental Working Group-Activists.

NextGen is the FAA-led modernization of our nation's air transportation system. Its goal is to increase the safety, efficiency, capability, predictability, and resiliency of American aviation. This Modernization System is one of the most ambitious infrastructure projects in US history.

As of 2016, the FAA and its partners have spent $7.4 billion implementing NextGen improvements, which has delivered $2.7 billion in benefits.

Washington, DC – New DOT Inspector General Review Raises More Doubts about FAA's NextGen.

According to the IG's review, "The FAA has painted a rosy but unrealistic picture of NextGen implementation when it claims the frequently delay modernization efforts will provide $161 billion in benefits by 2030. The IG determined that the FAA's benefits estimate is overly optimistic given experience with introducing new capabilities and the use of out-of- date schedules for some key projects for NextGen implementation."

"The Inspector General's review reinforces what has become more and more obvious every new study and report that comes out - the government's continued promises and claims about NextGen benefits are not based in reality, but on a lot of smoke and mirrors," said Chairman Shuster.
"The IG reaffirms what many of us already know: the FAA has been unable to deliver on the promises made with NextGen implementation, costing taxpayers billions of dollars in cost overruns. With the impact on our economy and jobs our aviation system supports, we can no longer accept marginal improvements in modernization for the system that yield few benefits to traveling Americans," said Chairman LoBiondo.
Shuster continued, "The majority of the aviation system is just as antiquated as it has been for years. And it will only get worse, we cannot and should not continue pursuing a costly modernization program based on widely optimistic, overly aggressive, and in some cases just plain misleading assumptions. The time to streamline the delivery of services and technology modernization is now." "Congress needs to pass the bipartisan 21st century AIRR Act (H.R. 2997) in September, an end to decades of wasteful spending, saving billions of dollars for the taxpayers."

The FAA indicated to the Government Accountability Office, that developing an integrated approach to effectively manage winter operations is among its top challenges related to aviation icing. FAA and NASA databases contain information on over 600 icing-related incidents involving large commercial airplanes. GAO identified challenges: (1) ensuring the availability of adequate resources for icing-related research and development. (2) developing a more integrated approach to effectively manage winter operations.
NTSB's chairman commented: *"How do safety improvements end up taking 10 years to deliver? They get delayed one day at a time… and every one of those days may be the day when a preventable accident occurs."*

An FAA-sponsored study found that flight delays cost the U.S. economy nearly $38 billion annually, with passengers absorbing $1.9 billion in lost time, missed connections, and unexpected food and lodging expenses. They also cost airlines $9.3 billion in additional labor, fuel and maintenance. Additionally, people who avoid air travel because of delays cost the economy nearly $4.5 billion. Aviation accounts for more than 5 percent of the U.S. Gross Domestic Product, contributes $1.6 trillion in total economic activity.

The most recent FAA Advisory Circular 150/5300-14c, dated: 8/7/2013 standards and recommendations for the design of aircraft deicing facilities states: *"In general, use of this AC is not mandatory. The standards and recommendations contained in this AC may be used by certificated airports to satisfy specific requirements of title 14 CFR part 139 subparagraphs C and D, use of this AC is mandatory for all projects funded with federal grant monies through the Airport Improvement Program."*

The FAA 2013 AC as well as the 2009 Airport Cooperative Research Program, Report 14-Fact Sheet 21, Centralized Deicing Facility recommended standards and design, are seemingly thorough and comprehensive, as they appear to have been at the time of publication, but design deficiencies and oversights along with updated FAA regulations, specification and requirements since their initial conception, and advanced 21st century technologies available, have rendered these program design guidelines and recommendations obsolete, unqualified for approval and therefore unfeasible to suggest mandatory compliance. Prior to DOT/FAA mandatory implementation considerations, an applicability assessment must be research, design and developed integrated with other practices, incorporating virtually all prequalified Snow and Ice Control Plans and Airport Winter Operations aircraft ground Deicing Programs segments complying with current and any future proposed Code of Federal Regulations requirements for examination and approval by the FAA.

The method and practices of deicing aircraft continues today as Business as Usual, employing antiquated 1954 disorganized, inadequate chemical technologies. It is beyond doubt that the aviation industry, particularly airport FBO deicing contractors and deicing equipment manufacturers, apparently are not being influenced by the available recommended and approved alternative economically efficient, comprehensive, eco-friendly non-chemical methods proposed by the FAA, ARCP and EPA. Airport deicing management decision-makers are seemingly unable to ascertain an efficient and comprehensive aircraft ground deicing program to effectively manage winter operations. The disincentive dilemma airport deicing management is faced with, is the overwhelming multitude of the various newly contrived complexing industry proposed method and practices to evaluate and consider, all proving to be decisively inefficient, cost prohibiting and subsequently being rejected. Without the collaboration and guidance of professional aviation safety consultants with the expertise to research and develop an economic, comprehensive program for deicing aircraft the current inefficient, hazardous, flight delay causing method and practices fiasco continues today as 'Business as Usual'.
The critical path for the implementation, and adaptation by Airport Management of an upgraded deicing program of this magnitude feasibility requirements must include: extensive guidance, planning and design considerations for a fundamentally simplified, remote centralized deicing facility modernization. The following factors should be weighed in planning and design: An Airport Layout Plan (ALP) depicting the configuration of deicing pads with a schematic civil engineering construction plan. The design and development of a remote Ground Traffic Control tower, an FAA integrated requirement for an approved remote deicing facility, with advanced communication and monitoring capability separated from that of the Main Control Tower. The design and development of upgraded deicing apparatuses with the elements required to support the operational functionality of the Deicing Program.

Aviation Safety Research innovative certificate holders deicing program development of a specifically designed unilateral system for airports winter operations method and practices of aircraft ground deicing efforts objective is to propose to the aviation industry an economically efficient airport business method plan for the restructuring and revitalization of America's Airports as proposed and supported by the Airport Improvement Program that will: 1. Virtually eliminate all flight cancellations and delays while maintaining regular flight departure intervals up to the point when weather conditions merit shutting down the airport. 2. Provide for a technologically advanced FAA recommended Remote Ground Ice Detection System (ROGIDS), Field studies as far back as the 1990s, concluded further development of ice detection sensors is necessary for satisfactory operations. ACPR report 45/50 contains a list of considerations that must be addressed. 3. Fulfillment now, of the FAA long-range plan to employ an Aircraft Communication Addressing and Reporting System (ACARS) adopted by this program for deicing facility ground traffic control and ground operations communication. The ROGIDS utilizing state-of-the-art optical and infrared camera technology with electronic monitoring and recording deicing operations combined with the ACARS will significantly modernize the collaboration, without speculation, between the Pilots, Deicing Operators and Remote Ground Traffic Control Tower Personnel of the aircrafts airworthiness. By adopting the discipline of these failsafe safety protocols, it will no longer be possible for an aircraft to takeoff without the certification of the aircraft airworthiness, making air catastrophe due to disturbed airfoil of the wings caused by ice contamination a thing of the past. **4**. Eliminating entirely the general public, flight crews, passengers, and ground operations personnel documented health risk associated with glycol based chemical deicing fluids, and subsequently eliminating one element from the cabin air quality contamination equation. And the escalating public environmental concerns of millions of gallons of stock chemical being introduced to our environment annually. A nonchemical Threshold Deicing approved program economic consideration is the prohibiting expense of the EPA requirements for hazardous chemical collection, recycling/recovery, and treatment technologies systems, the capital expenditure of which is seemingly unfeasible for a considerable number of small to medium-size airports of the United States.

Secondary projects: 1. A non-hazardous, non-destructive chemical innovative Runway Ice and Snow Control Plan.
2. An in-flight nonchemical Wing Icing Protection innovation, surpassing NASA’s proposed chemical method.

The public safety, environmental and economic benefits of our proposed research program minimal funding relative to the available budget would undoubtedly appease the disenchantment of the DOT IG, NTSB and GAO cited.