

U.S. AIR FORCE/USACE FRANGIBILITY UPDATE

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Robert Dinan
US Air Force
AF Civil Engineer Center

U.S. AIR FORCE AND USACE FRANGIBILITY UPDATE

- ✗ Approving Officials at AF/USACE often asked to approve designs or provide prescriptive details for airfield structures to meet frangibility requirements.
- ✗ DoD Unified Facilities Criteria reference FAA Advisory Circulars reference or reference/adopt ICAO frangibility criteria (ICAO Annex 14 part 6)
- ✗ Manufacturers have difficult time understanding which frangibility requirements apply to which airfield devices.
 - + Are frangible couplings sufficient for some devices?
 - + Design for impact from landing gear, fuselage, or wing?
 - + How to measure force, derive energy
 - + Is testing required
 - + Are finite element calculations sufficient?
- ✗ Approving Officials have difficult time answering the questions because of gaps in criteria
- ✗ Joint Airfield Frangibility Study Group (JAFSG) formed to bring international stakeholders together to revisit and close gaps in existing criteria.

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- ✖ US Air Force Towers Program Office
 - + Frangible Glide Slope Tower Development
 - + Includes Frangibility Criteria Revision Research
- ✖ US Air Force Civil Engineer Center/USACE
 - + Revise Current Airfield Frangibility Requirements
 - + Align with FAA criteria wherever possible
 - + Attempt to Influence ICAO criteria where possible
- ✖ Collaboration with ongoing FAA projects
- ✖ Formation and Participation in Joint Airfield Frangibility Study Group (JAFSG)

MOTIVATION FOR JAFSG

- ✗ Better Understand Existing Criteria
- ✗ Fill Criteria Gaps for common Airfield Structures
 - + ILS Localizer Arrays and Supporting Platforms
 - + ILS Glide Slope Tower
 - + Fences in Zone of Frangibility
 - + Other sign posts, runway marker signs
- ✗ What Needs to be Provided in Approval submittal?
- ✗ Testing Procedures? Rigid vs. Soft Wing Impactor
 - + Instrumentation Requirements? Standard Methods
 - + Procedure to Derive Energy from Measurements
- ✗ Numerical Analysis?
 - + What type of finite analysis to verify frangibility and reduce testing requirements

MOTIVATION FOR JAFSG

- × Revisit Frangibility Criteria Limits?
 - + Not intent to increase frangibility requirements
 - + Better quantify the frangibility of existing devices
 - + Revise criteria to include broader classes of structures
 - × i.e Allow higher forces for impacts with very low energy transfer to aircraft?
- × More clearly define which structures or frangible devices can be approved using static tests
 - + frangible links
- × Provide prescriptive designs where possible

FRANGIBILITY “EVENTS” THIS WEEK

- × This Weeks Frangibility “Events”:
 - + Tuesday: “Airfield Frangibility Criteria: Questions with Current Standards”
 - × Mr. Clint Rooks, Select Engineering Services, Projects with FAA and Air Force Towers Program Office
 - × Dr. Dan Duke, TriDynamic Solutions, Projects with USAF Civil Engineer Center (AFCEC) and USACE
 - + Thursday: “Airfield Frangibility Standard Development: Historical to Future”
 - × Dr. Jaap Wigenraad, formerly with Netherlands Aerospace Laboratory
 - × Dr. Dan Duke, TriDynamic Solutions, Projects with (AFCEC) and USACE
 - + Friday: “Joint Airfield Frangibility Study Group (JAFSG) 2nd Biannual meeting: Technical Meeting”
 - × Participation and Presentations from Distinguished Members who assisted with developing existing criteria
 - × Technical Presentations and Discussions on Ongoing Research
 - × Opportunity To get input from community

PARTICIPATION IN JAFSG ENCOURAGED

- ✗ Input from ALL stakeholders is critical. Participation is Encouraged and Appreciated
- ✗ Topics of Interest
 - + How Stakeholders are designing and getting approval under current criteria
 - + What obstacles are currently faced?
 - + Identify Gaps being encountered
 - + Request for historical reports, analysis
 - ✗ Added to fragility repository
 - ✗ Requests for Intellectual Property Protection will be honored, reports will not be further disseminated unless specifically approved by your organization
- ✗ Ongoing effort over next 1+ years.
 - + Hope to meet informally every 6 months at other venues where critical mass of stakeholders are already gathered, i.e SWIFT, IES/ALC

QUESTIONS/COMMENTS?

CONTACT INFO:

Robert Dinan, PhD, PE AFCEC Tyndall AFB, FL
(850)283-6209 (Robert.Dinan@tyndall.af.mil)

John Gregory, PE USACE Omaha, NE
(402)995-2403 (John.B.Gregory@usace.army.mil)



