



Introducing New Aviation Life Support Equipment – Risk in Flight Testing

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Outline



- Aim
- Aviation Life Support Equipment (ALSE) Failures
- Incompatibilities
 - Other ALSE
 - Cockpit/Cabin
- Training Requirements
- Hazardous Flight Test – ALSE Requirements
- Conclusion



Aim



- To present some of the unique hazards and risk mitigation associated with testing ALSE.



Sources of Risk



- ALSE Failures
- Incompatibilities
- Training Requirements
- Using ALSE on an airframe it is not designed for, in order to mitigate other test flight risks



ALSE Failures



- When introducing prototype ALSE equipment failures must be expected and mitigated
 - Helmet Comm Failures
 - O2 Concerns
 - Inadvertent Ejection





ALSE Failures



- **O2 Concerns**





ALSE Failures



- **O2 Concerns**





ALSE Failures





Mitigation



- [9935bc8.avi](#)



Incompatibility



- Functional and serviceable ALSE may still create hazardous conditions if it is not compatible with the aircraft or in service ALSE
- Although a build up approach is important, ground testing may not always reveal an incompatibility or its extent



Incompatibility



- **Inadvertent Ejection**





Incompatibility

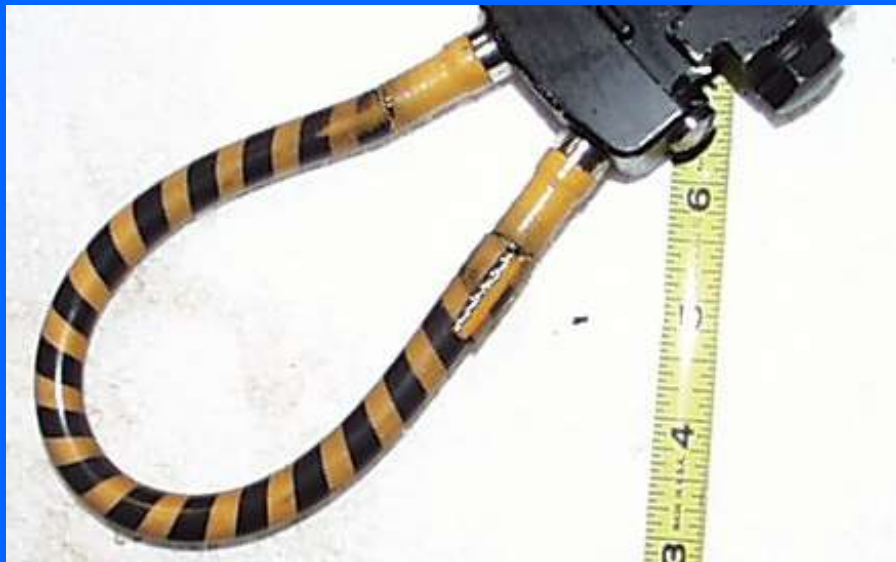
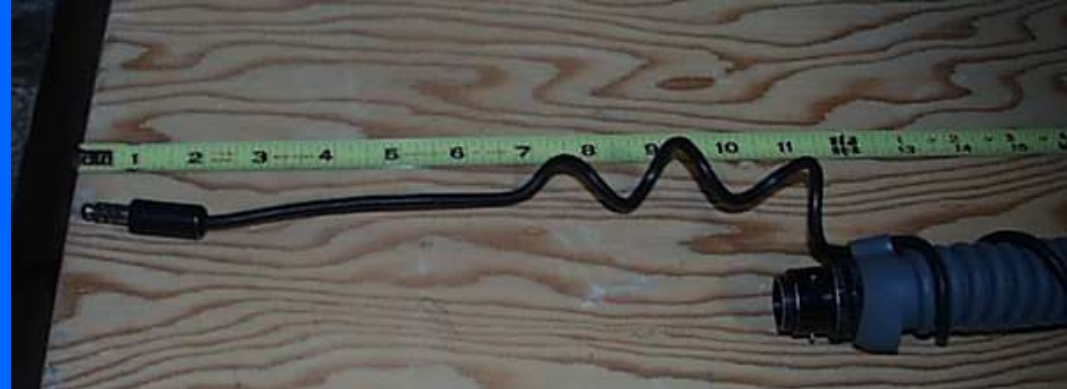


- **Inadvertent Ejection**





Incompatibility





Incompatibility





Incompatibility





Incompatibility





Incompatibility





Training



- Aircrew receive intense and recurring training in the use of ALSE
- This training leads to habits and muscle memory that can be difficult to overcome when introducing prototype ALSE



Training





Training





Training



- [SCF Egress.mpg](#)
- [External View Dunker.AVI](#)



Hazardous Flight Test – ALSE Requirements



- Some test flights require ALSE to mitigate high risks
- Integrating ALSE not common to the airframe requires evaluation to ensure risks are at an acceptable level





Hazardous Flight Test – ALSE Requirements



- In-flight ejection testing with a seat that has it's certification pulled.
- [9935bc5.avi](#)



Hazardous Flight Test – ALSE Requirements



- Hawk One
- Desk Top Analysis combined with limited T & E





Conclusion



- Introducing prototype ALSE presents a myriad of hazards that must be identified and mitigated to ensure safety during flight testing.



Questions

Experto Crede

“Believe Those Who Know”