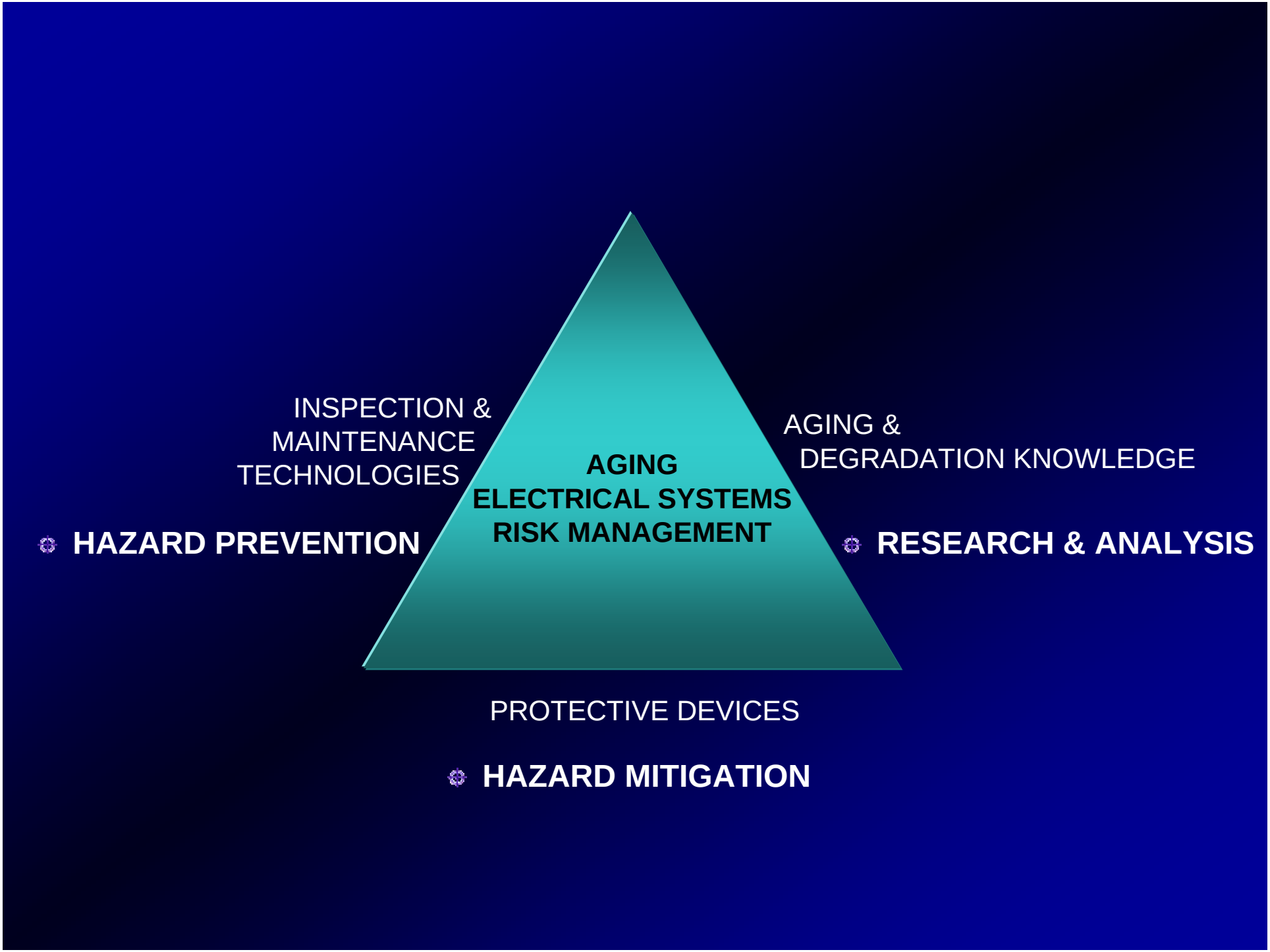
Electrical Wiring Interconnection Systems (EWIS)
Research and Development (R&D)
Technology Transfer HWG

Status Presentation to ATSRAC

7 July 2004

Kent V. Hollinger – US Co-chair
David Tudor – European Co-chair


INSPECTION &
MAINTENANCE
TECHNOLOGIES
AGING &
DEGRADATION KNOWLEDGE
AGING
ELECTRICAL SYSTEMS
RISK MANAGEMENT
HAZARD PREVENTION
RESEARCH & ANALYSIS
PROTECTIVE DEVICES
HAZARD MITIGATION

DATE: 07 July 2004

WORKING GROUP / TASK #: 12	**CO-CHAIRS:** Kent Hollinger Dave Tudor

MEMBERS:

NAME	ORGANIZATION	NAME	ORGANIZATION
Mike Walz	FAA	Petar Glamoclija	Bombardier
Galen Deeds	ABX Air	Luci Crittenden (secretary)	NASA
Jean-Luc Ballenghien	Airbus	Larry Stevick	Northwest Airlines
Patrick Gombert	Airbus	Nicholas Kirincich	Raytheon
Ken Elias	ALPA	Dave Allen / Phil LaCourt	SAE
Giday Girmay	Boeing	Jack Sutherland	Tensolite
Darrel Santala	Boeing	Jean Cartier	Transport Canada

	DATE	LOCATION
PAST MEETINGS:	16-18 September 2003	FAA AANC NDI Lab @ Albuquerque, NM
	December 2-4, 2003	Raytheon Technical Services @ Indianapolis, IN
	March 16-18, 2004	Airbus @ Toulouse, France
	June 20-22, 2004	Bombardier @ Montreal, QC
FUTURE MEETINGS:	September 14-16, 2004	Boeing @ Seattle, WA
	December 7-9, 2004	FAA Tech Center @ Atlantic City, NJ
	March 15-17, 2005	Tensolite @ St. Augustine, FL
	June 21-23, 2005	Civil Aviation Authority @ Gatwick House, UK
	September 20-22, 2005	TBD (DuPont?)
	December 6-8, 2005	TBD

OVERVIEW: Identify, review, screen, transfer and implement technologies and knowledge that enhance the safety and continued airworthiness of aircraft EWIS. The scope of this HWG includes procedures, equipment and systems to design, monitor, inspect, test and maintain EWIS.

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.1 Develop effective strategies to transfer and implement products (including knowledge) resulting from mature R&D efforts.	**A. Aging Circuit Breaker Report**		
	1. Review report DOT/FAA/AR-01/118 and its recommendations.	October 2003	**COMPLETE**
	2. Develop strategy for each appropriate recommendation.	January 2004	**COMPLETE (5 Recommendations, plus letter to SAE)**
	B. Single Phase Arc Fault Circuit Breaker		
	1. Develop strategy for forward fit.	January 2004	**COMPLETE**
	2. Develop strategy for retrofit.	~~July 2004~~ January 2005	**GREEN**
	3. Identify operational and maintenance considerations.	~~July 2004~~ October 2004	**GREEN / YELLOW**
	4. Specify advisory materials requiring revision.	~~July 2004~~ October 2004	**GREEN / YELLOW**
	5. Specify necessary operational and maintenance training areas.	~~July 2004~~ October 2004	**GREEN / YELLOW**
	6. Recommend education of regulators. (NEW)	October 2004	**GREEN / YELLOW**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.2 Review and screen on-going R&D efforts and devise strategies to further develop these products into commercially viable solutions, as appropriate.	**A. Material Characterization Report**		
	1. Review report.	~~October 2003~~ January 2004	**COMPLETE**
	2. Make recommendation for dissemination of information, if appropriate.	~~January 2004~~ April 2004	**COMPLETE (No Dissemination)**
	3. Make recommendation for dissemination of revised report (due to HWG#12 inputs), if appropriate. Suggested editorial clarifications.	July 2004	**COMPLETE (Make Report Public)**
	B. Excited Dielectric Test		
	1. Review status and the schedule that will be determined after Navy Critical Design Review (contract ends June 2004).	January 2004	**COMPLETE**
	2. Monitor progress.	July 2004	**COMPLETE**
	3. Possible field test with ABX.	January 2005	**GREEN**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.2 Review and screen on-going R&D efforts and devise strategies to further develop these products into commercially viable solutions, as appropriate.	**C. Fiber Optical Chafe Detection**		
	1. Review preliminary data.	April 2004	**COMPLETE**
	2. Make recommendation for dissemination of information, if appropriate. NOTE: The Navy is now in charge of program.	July 2004	**COMPLETE (FAA Tech Note has been issued. Report is not appropriate for dissemination.)**
	D. Wire Indenter		
	1. Review report.	October 2003	**COMPLETE**
	2. Develop recommendations for enhancements to improve utility for wire inspection. Include in Phase II research.	April 2004	**COMPLETE**
	3. Review Phase II results.	April 2005	**GREEN**
	E. Wire Performance Specification		
	1. Review report.	January 2004	**COMPLETE**
	2. Develop recommendations for consideration in the FAA wire performance project. Draft AC is in progress. Review AC when supplied.	~~July 2004~~ TBD	**YELLOW**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.2 Review and screen on-going R&D efforts and devise strategies to further develop these products into commercially viable solutions, as appropriate.	**F. Maintenance Effects on EWIS**		
	1. Review report.	April 2004	**COMPLETE**
	2. Develop recommendations for enhancements to improve EWIS maintenance practices and non-EWIS practices that impinge upon the EWIS.	January 2005	**GREEN**
	G. Effects of Mixed Wire Types in Aircraft EWIS		
	0. Review preliminary data.	October 2003	**COMPLETE**
	1. Review report.	April 2004	**COMPLETE**
	2. Develop recommendations regarding mixing of wire types in aircraft EWIS.	January 2005	**GREEN**
	H. Separation and Segregation in Aircraft EWIS		
	1. Review preliminary data and status.	January 2004	**COMPLETE**
	2. Review report.	October 2004	**GREEN**
	3. Develop recommendations regarding separation and segregation of wire and cables in aircraft EWIS.	July 2005	**GREEN**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.2 Review and screen on-going R&D efforts and devise strategies to further develop these products into commercially viable solutions, as appropriate.	**I. Broadband Impedance Measurement**		
	1. Review report.	October 2004	**GREEN**
	2. Make recommendation for dissemination of information, if appropriate.	January 2005	**GREEN**
	J. Pseudo Random Binary Reflectometry		
	1. Review preliminary data and status.	April 2004	**COMPLETE**
	2. Review report.	April 2005	**GREEN**
	3. Make recommendation for dissemination of information, if appropriate.	July 2005	**GREEN**
	K. Pulse Arrested Spark Discharge		
	1. Review preliminary data and status.	April 2004	**COMPLETE**
	2. Review report.	July 2005	**GREEN**
	3. Make recommendation for dissemination of information, if appropriate.	October 2005	**GREEN**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.2 Review and screen on-going R&D efforts and devise strategies to further develop these products into commercially viable solutions, as appropriate.	**L. Terahertz Reflectometry**		
	1. Review report.	October 2004	**GREEN**
	2. Make recommendation for dissemination of information, if appropriate.	January 2005	**GREEN**
	M. Wire Degradation Research		
	1. Review preliminary data and status.	April 2004	**COMPLETE**
	2. Review final report.	April 2005	**GREEN**
	3. Develop recommendations.	October 2005	**GREEN**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.3 Explore additional opportunities to promote cooperative efforts and partnerships valuable to achieving EWIS R&D objectives.	**A. Micro Energy High Voltage Wire Tester**		
	1. Identify maintenance personnel to participate in a blind test of the system.	September 2003	**COMPLETE**
	B. Advanced Risk Assessment Techniques for Aircraft EWIS		
	1. Review preliminary data and status.	January 2004	**COMPLETE**
	2. Identify organizations to participate in reviewing/testing potential techniques. (Cessna and ACO).	April 2004	**COMPLETE**
	3. Provide preliminary tester feedback to FAA. Project delayed 6 months. Beta testing starts in October 2004.	~~July 2004~~ April 2005	**YELLOW**
	C. NOVA Test System	**CANCELLED**	**COMPLETE (Made Recommendation)**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.3 Explore additional opportunities to promote cooperative efforts and partnerships valuable to achieving EWIS R&D objectives.	**D. 3-Phase and 28VDC AFCB**		
	1. Review preliminary data and status	December 2003	**COMPLETE**
	2. Review status and make plans.	October 2004	**GREEN**
	E. Identify other opportunities		
	1. Fiber Optical Chafe Detection (Navy and others).	On-going	**GREEN**
	2. NASA proof of concept wire repair.	On-going	**GREEN**
	3. Discussion of /16 wire suitability.	July 2004	**COMPLETE (See Recommendation)**

Recommendations to FAA

1. There is a need to inform ACOs how to include the results of ATSRAC findings in their evaluations. A checklist of encouraged practices is recommended.

2. Request wiring qualification organizations to investigate whether pigments and other additives can affect wiring mechanical, electrical and flammability properties.

Thank You