

Engine/APU Halon Replacement Industry Consortium – Halon Alternatives for Aircraft Propulsion Systems (HAAPS) - Update

May 14, 2019

INTERNATIONAL AIRCRAFT SYSTEMS FIRE PROTECTION FORUM MEETING
Cologne, Germany

By

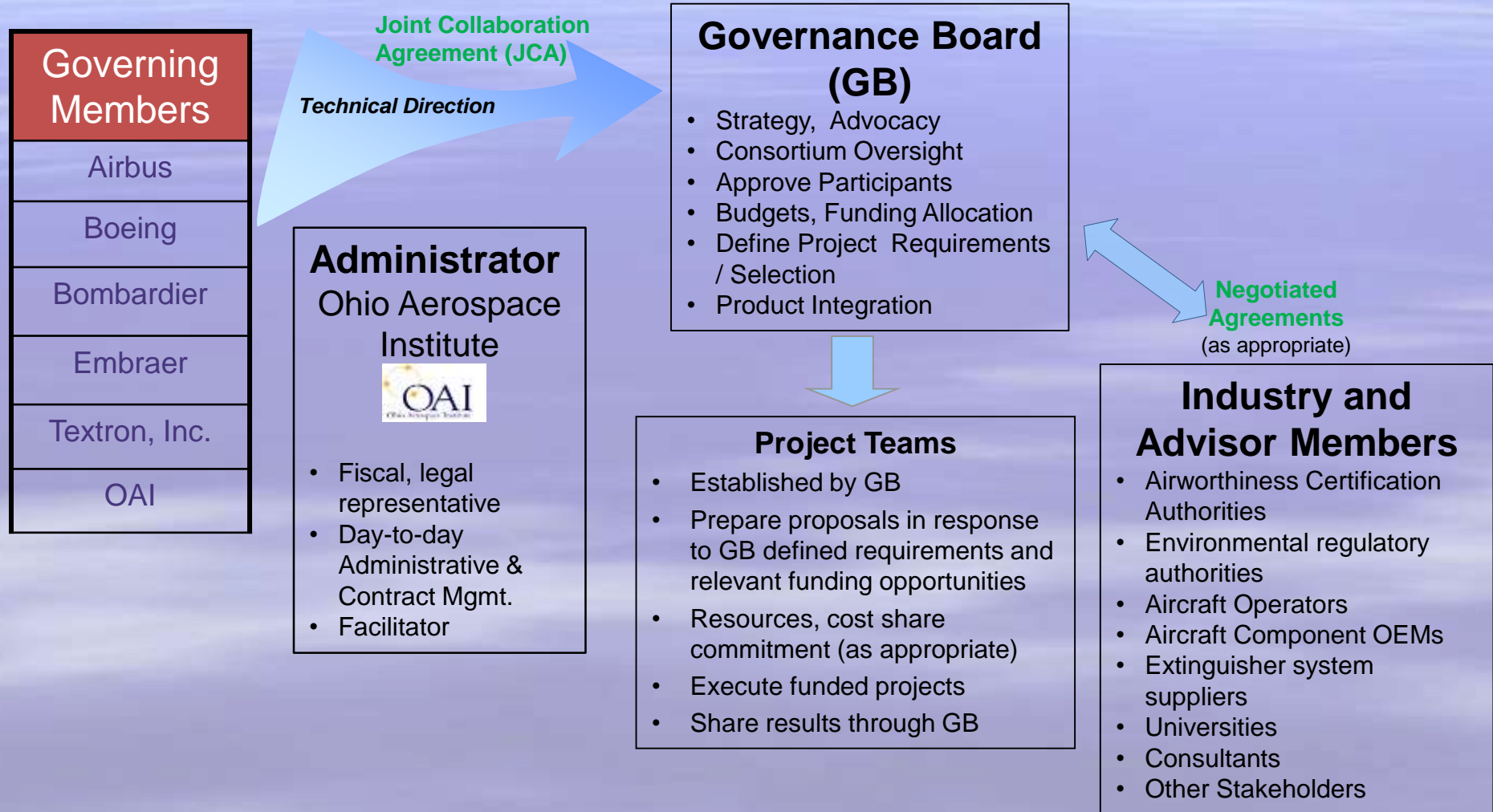
Stephane Pugliese – Airbus SAS

HAAPS Charter and Statement of Work

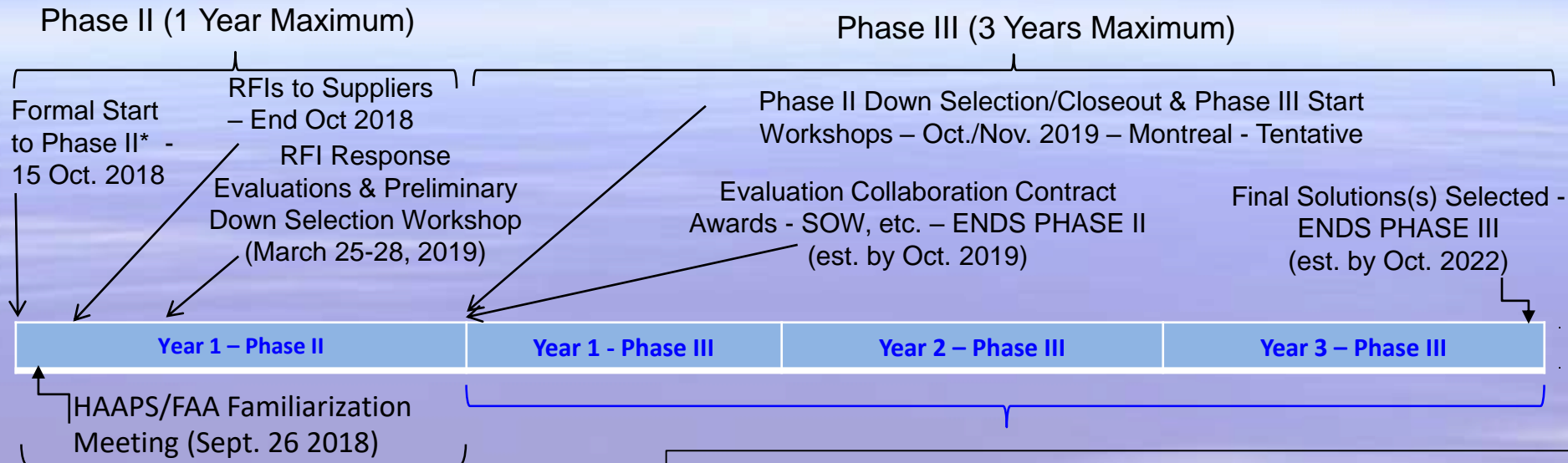
- Define common non-halon fire extinguishing solution(s) for use in engine/APU fire zones that...
 - is compliant to basic industry and regulatory requirements
 - meets multiple OEM (airframe, engine, APU, nacelle, etc.) requirements
 - meets multiple governmental agency regulatory requirements;
 - provides a viable business solution for Consortium partners; and
 - is production-ready
- Engage...
 - Primary Stakeholders = Airframer OEMs
 - Firex Agents/System Suppliers, Airlines, engine companies, nacelle suppliers, airworthiness authorities, etc.
 - A focal point, facilitator & fiscal/contracting “Managing Entity” (ME)

HAAPS Organization

Halon Alternatives for Aircraft Propulsion Systems (HAAPS)



HAAPS Critical Milestones



- Certification Path Proposals Development
- High Level Request For Information RFI
- 1st Down Selection (“Step 1” RFI)
- Solutions(s) Requirements Definition
- Detailed RFI (“Step 2” RFI)
- Down Select Finalists for In-Depth Evaluation in Phase III
- Phase III Statement of Work Definition
- Technical Readiness Level (TRL) Defined
- Agreements with Supplier(s)

- In-Depth Evaluations of Down Selected Candidates
 - Extinguishing performance, qualification requirements, weight/volume impact, Material compatibility, certification path refinement, certification documentation development, environmental & health acceptability, new/restarted testing, etc.

Post-HAAPS – Solution(s) Incorporation (TRL 9) →

- Air framer member’s independent certification activities
- Utilize HAAPS Certification Path, MOCs agreements, test and qualification data, etc. and other to support airplane integration

HAAPS Charter and Statement of Work

- Phase I – Joint Collaboration Agreement (JCA)
 - Primary working together agreement signed June 2018
 - Airbus, Boeing, Bombardier, Embraer, Textron, and Ohio Aerospace Institute
- Phase II – Development of Technical Statement of Work & Industry Engagement
- Phase III – execute activities required to produce the solution(s)
 - Solicitation of supplier proposals
 - Proposal evaluation and down selection
 - MOC/MeOC agreement
 - Testing & analyses
 - Selected solution(s) agreement

COMPLETED

IN PROGRESS

Formal
Start 2019

HAAPS Charter and Statement of Work

- Phase II – Development of Technical Statement of Work & Industry Engagement

COMPLETE

- Design Requirements Document – Initial Issue
 - General & gaseous agent requirements
- Initial FAA Engagement
- Phase II supplier engagement documentation

IN DEVELOPMENT

- High level solution(s) strategy
- Design Requirements Document – Future Reissue
- Other agent types
- Performance validation, down selection criteria
- Compile Regulatory Requirements & Develop Certification Path Proposals
- Follow-up FAA engagement – Summer 2019
- Phase III supplier engagement documentation

HAAPS Charter and Statement of Work

- Phase II – Development of Technical Statement of Work & Industry Engagement
 - RFIs to Suppliers – “Step 1” **COMPLETE**
 - Requested high level information on Solution(s) candidates
 - Numerous RFIs transmitted
 - Firex system suppliers, firex agent suppliers, firex distributors, chemical companies
 - Down selected to approximately 10-12 solutions proposals
 - RFIs to Suppliers – “Step 2” **IN PROGRESS**
 - Evaluates down selected solutions from “Step 1” in greater detail
 - Conformance to HAAPS Design Requirements Document
 - Down Selection of “Step 2” Solutions Proposals **IN PROGRESS**
 - Successful proposals move into Phase III evaluations
 - Business agreements, statement of work definition, deliverables responsibilities, schedules

Contacts, Announcements & History

- Ohio Aerospace Institute (OAI) <http://www.oai.org/>
 - Don Bailey, HAAPS Project Manager DonBailey@oai.org, Phone: 440- 962-3050
- OAI's HAAPS Press Release – Phase I
 - <http://web1.oai.org/oaiweb.nsf/wnews/B16B96B2AFB1763D85257DD9004F0B28?OpenDocument&sc=2>
- OAI's HAAPS Press Release – Phase II
 - https://www.prnewswire.com/news-releases/haaps-consortium-seeks-replacement-for-halon-1301-300817203.html?tc=eml_cleartime
- ICCAIA Support of HAAPS Consortium
 - <http://www.aia-aerospace.org/news/iccaia-supports-international-consortium-seeking-alternatives-to-halon-fire-suppressant/>
- IASFPWG Meeting, Cologne, Germany, May 22-23, 2013 – Consortium Proposal
 - <https://www.fire.tc.faa.gov/pdf/systems/May13Meeting/BennettMacias-0513-ICInterestEnginAPU.pdf>
- Halon Alternatives Research Corporation (HARC) sponsored Aviation Stakeholder's Meeting Chicago, Illinois, U.S.A., 11 June, 2013 – Consortium Proposal
- 2013 ICAO Assembly recognized consortium commitment , Resolution 31/1: Halon replacement ([link](#))

Thank you!