
October 31, 2018
INTERNATIONAL AIRCRAFT SYSTEMS FIRE PROTECTION FORUM MEETING
Atlantic City, New Jersey, USA

By
Daniel Escamilla – Bombardier

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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 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
  • Define high level solution(s) strategy, design requirements, performance validation, down selection criteria, *compile regulatory requirements*, *certification path proposals, initial engagement with airworthiness authorities*, etc.
  • Mature drafts for technical requirements document and RFI – COMPLETE
  • Includes Non-Technical Task Team to develop supplier engagement documentation
  • Initial FAA Engagement – COMPLETE

• 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

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HAAPS Organization
Halon Alternatives for Aircraft Propulsion Systems (HAAPS)

Governing Members
- Airbus
- Boeing
- Bombardier
- Embraer
- Textron, Inc.
- OAI

 Administrator
 Ohio Aerospace Institute

- Fiscal, legal representative
- Day-to-day Administrative & Contract Mgmt.
- Facilitator

Joint Collaboration Agreement (JCA)

Technical Direction

Governance Board (GB)
- Strategy, Advocacy
- Consortium Oversight
- Approve Participants
- Budgets, Funding Allocation
- Define Project Requirements / Selection
- Product Integration

Project Teams
- Established by GB
- Prepare proposals in response to GB defined requirements and relevant funding opportunities
- Resources, cost share commitment (as appropriate)
- Execute funded projects
- Share results through GB

Industry and Advisor Members
- Airworthiness Certification Authorities
- Environmental regulatory authorities
- Aircraft Operators
- Aircraft Component OEMs
- Extinguisher system suppliers
- Universities
- Consultants
- Other Stakeholders

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Prioritization of Potential Halon 1301 Replacement(s) Evaluations

- Preliminary Evaluations Underway by HAAPS
  - Multi-Faceted Trade Studies
    - How Similar to Halon 1301?
    - Development & Certification Risks
    - Anticipated Relative Costs
    - Zero to Minimal Impact on Airplane Weight
    - Availability Schedule
    - Commonality of OEM Installations
    - Relative Environmental Friendliness
    - Environmental Authority Approvals
HAAPS Critical Milestones

Phase II (1 Year Maximum)

- Formal Start to Phase II* - 09 Oct. 2018
- RFIs to Suppliers - Nov 2018
- RFI Response Evaluations & Candidates Down Select – March 2019
- HAAPS/FAA Familiarization Meeting (Sept. 26 2018)

- Certification Path Proposals Development
- Solutions(s) Requirements Definition
- Requests for Information
- 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) * Advance technical work started in 2017

Phase III (est. 2-3 Years)

- Year 1 - Phase III
  - Evaluation Collaboration Contract Awards - SOW, etc. – ENDS PHASE II (est. by Oct. 2019)

- Year 2 – Phase III
- Year 3 – Phase III

- Final Solutions(s) Selected - ENDS PHASE III (est. by Oct. 2022)

- 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

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Contacts, Announcements & History

- Ohio Aerospace Institute (OAI) [http://www.oai.org/](http://www.oai.org/)
  - Ann Heyward, HAAPS Project Manager [AnnHeyward@oai.org](mailto:AnnHeyward@oai.org), Phone: 440-962-3030

- OAI’s HAAPS Press Release

- ICCAIA Support of HAAPS Consortium

- IASFPWG Meeting, Cologne, Germany, May 22-23, 2013 – Consortium Proposal
  - [https://www.fire.tc.faa.gov/pdf/systems/May13Meeting/BennettMacias-0513-ICInterestEgineAPU.pdf](https://www.fire.tc.faa.gov/pdf/systems/May13Meeting/BennettMacias-0513-ICInterestEgineAPU.pdf)


- 2013 ICAO Assembly recognized consortium commitment, Resolution 31/1: Halon replacement ([link](#))
Thank you!