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)

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

Joint Collaboration Agreement (JCA)

Technical Direction

Governor Members
- Airbus
- Boeing
- Bombardier
- Embraer
- Textron, Inc.
- OAI*

Administrator
Ohio Aerospace Institute
- Fiscal, legal representative
- Day-to-day Administrative & Contract Mgmt.
- Facilitator

Industry and Advisor Members
- Airworthiness Certification Authorities
- Environmental Regulatory Authorities
- Aircraft Operators
- Aircraft Component OEMs
- Extinguisher System Suppliers
- Universities
- Consultants
- Other Stakeholders

Negotiated Agreements (as appropriate)

*non-voting
HAAPS Critical Milestones

**Phase II (1 Year Maximum)**
- Formal Start to Phase II* - 15 Oct. 2018
- RFI to Suppliers – End Oct 2018
- RFI Response Evaluations & Preliminary Down Selection Workshop (March 25-28, 2019)
- HAAPS/FAA Familiarization Meeting (Sept. 26 2018)

**Phase III (3 Years Maximum)**
- Workshop at Montreal – Completed in Oct. 2019
- Phase II Down Selection completed end of 2019
- Contractual work to be finalized by Sept 2020
- Final Solutions(s) Developed - END PHASE III (2 to 3 year after phase III beginning)
- Formal Phase III est. Start by Sept 2020

**Year 1 – Phase II COMPLETE**
- Preliminary 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) - planning

**Year 1 - Phase III**
- In-Depth Evaluations of Down Selected Candidates
- Agreements with Supplier(s)

**Year 2 – Phase III**
- 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

**Year 3 – Phase III**
Phase II Solutions Down-Selection - Completed

- More than 40 potential suppliers identified globally;
  - From chemical companies to aerospace suppliers;

- Majority were contacted which demonstrated interest
  - subset received an initial RFI with the HAAPS requirements document;

- After several GBM reviews and potential supplier telecons, approximately 10 suppliers signed PIAs and were evaluated in depth by GBM based on second RFI submittal which provided more details

- Down Selection Results Summary
  - Two primary solutions candidates selected to be evaluated
    - Phase III – Projects #1 and #2

  - One standby primary solution backup candidate selected for Phase III

  - Three potentially promising solution candidates identified
    - development being monitored for possible future Phase III entry
Phase III Statement of Work

- Phase III – execute activities required to produce the solution(s)
  - Formal start pending signature of working agreement by all parties
    - Selected Phase III activities underway
  - Detail evaluation of selected supplier(s) final proposals (system and agent)
    - Extinguishing performance, qualification, weight/volume impact, material compatibility, environmental & health acceptability, new/restarted testing (e.g. MPSHRe, possible gnd and/or flt aircraft tests), MPSHRe open issues, project risks, concentration measuring equipment, etc.
  - Compile Regulatory Requirements & Develop Certification Path Proposals
    - Follow-up certification authorities engagements
      - Discussions with certification authorities in regards to final solution MOC/MeOC agreement
    - Issue Paper and CRI requirements
  - Phase III schedule/TASK preparation
  - Final down selection(s)
Contacts, Announcements & History

- Ohio Aerospace Institute (OAI) [http://www.oai.org/](http://www.oai.org/)
  - Don Bailey, HAAPS Project Manager [DonBailey@oai.org](mailto:DonBailey@oai.org), Phone: 440-962-3050

- OAI’s HAAPS Press Release – Phase I

- OAI’s HAAPS Press Release – Phase II

- 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)

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Thank you!