



U.S. AIR FORCE



AFLCMC... Providing the Warfighter's Edge

Footwear R&D



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SBIR CW Aviation Boot FY19 New Start



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Heated Extreme Cold Weather Flyer Boots – AF approved 3 Oct 18

Challenge/Barriers:

- Ground CW boots grow in bulk/volume with traditional insulation materials

PH 1: Design concepts, fabricate, lab test samples of warmer boots

- Achieve gap between (T) -20F to (O) -49F for 6 hrs requirement
- Must maintain low bulk FR boot profile for tight space aircraft spaces
- Incorporate advanced insulation technology into CW boots, liners, foot beds, and/or components (synergistic technology insertion)

PH II: Build test prototypes integrating advanced heating mechanisms

- Batteries must not be fire hazard, be reliable in extreme CW
- Lab Tests and Limited User Evals (if Interim Safe To Fly approved)

Program Interest Sponsors

- AF Research Lab and ALCMC/ PEO ACS/ Human Systems (WNU) PMO
- NAVAIR PM

Funded by

- AF SBIR Office

Contracting Org

- NAVAIR Contracting Office





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Mukluks from 1970's

Pros: Low Bulk, breathable, wool felt liners are warm even when wet

Con: duck cloth outer is not FR, & not -49F boot



Vapor Barrier Rubber Boots

**Pros: Meets -60F for protection
Durable service & shelf life**

**Con: Unacceptable for flight use
No Berry compliant
source Sweaty feet**



More Recent CW designs

**Pros: Use newer materials
Improve warmth**

**Con: not ECW Boots
Don't meet (-20F- to -49F)**



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- Research, explore, test, create footwear system concepts and prototypes
- Combine novel materials and heating concepts into a reliable solution to reach -49F
- Considerations:
 - ejection scenario, EMI/heat sig, storage and flight at altitude even at acceleration/deceleration, extreme temperatures and pressure
 - power sources, connection types, solar power in canopy /night ops
 - space bulk restrictions, snag hazards,
 - flash flame protection and hazard to aircraft/crew
 - Comply with Berry Amendment

Watch for FY19 SBIR Solicitation announcements for proposals



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