

**TECHNICAL SPECIFICATION  
FOR INTERIOR ENHANCEMENT**

**FEDERAL AVIATION ADMINISTRATION  
AVIATION SYSTEMS STANDARDS (AVN)**

**HAWKER BEECHCRAFT  
300 SUPER KING AIR AIRCRAFT**

April 14, 2009

# **HAWKER BEECHCRAFT 300 SUPER KING AIR AIRCRAFT** **INTERIOR ENHANCEMENT**

## **1.0 Interior Enhancement Project Requirements**

### **1.0.1 Configuration**

Pilot, Co-Pilot, and three (3) Passenger Cabin (Mission Specialist, Mission Observer and Lavatory seat). Upon delivery for Interior Enhancement, the aircraft will not meet Type Design due to removal of the currently certificated Interior Configuration.

### **1.0.2 Colors and Materials**

The Federal Aviation Administration (FAA) will select all colors. Unless otherwise specified, the Contractor shall propose and FAA will select all materials. All materials used in the cockpit and cabin shall be durable, easy to maintain (easy to clean, remove/install, repair, etc), and shall meet FAR 23.853 and 25.853 for flammability. Interior furnishing/hardware plating shall be Satin Nickel or equivalent. (Documentation in accordance with CDRL A001)

### **1.0.3 Inspection**

All components/parts that are removed for recovering/refurbishment shall be inspected for serviceability. The attach points shall be inspected for serviceability and if required, repaired in accordance with the manufacturer's maintenance manual prior to reinstalling the components/parts. Hardware that is worn or has degraded plating shall be replaced with new hardware. All items shall be inventoried and stored in a secure location.

### **1.0.4 Design Review/Acceptance and Modification Approval**

The Contractor shall propose changes to design configuration and installation for FAA review and acceptance. Contractor is responsible for obtaining modification/alteration approval from the appropriate FAA authority. (Documentation in accordance with CDRL A002)

### **1.0.5 Certification and Data**

The Contractor is responsible for complying with all FAR requirements and developing a complete Data Package for the certification and approval of this Interior Enhancement. The Data Package shall only be for FAA aircraft serial numbers. Upon prototype aircraft completion, the Contractor shall deliver to the FAA electronic (both pdf and editable (documents in MS Word and drawings in AutoCad or SolidWorks formats)) and paper copies of the complete Data Package. The complete Data Package shall at a minimum include: a complete Master Data List, a configuration control method, modification engineering drawings (to include part specific drawings for new items), engineering

reports, Instructions for Continued Airworthiness, Supplemental Aircraft Maintenance Manual pages, Supplemental Illustrated Parts Catalog pages, and any Supplemental Aircraft Flight Manual pages. Should changes/updates to the Data Package be required after prototype aircraft, the Contractor shall deliver to the FAA an updated Data Package to support the fleet configuration.

Should the Contractor choose to execute this modification/alteration per approval by Supplemental Type Certificate (STC), the STC shall only be for FAA aircraft serial numbers. Upon contract completion, at the choice of the FAA, the Contractor shall transfer STC ownership to the FAA with a complete Data Package as describe above.

In addition to aircraft type certificated requirements, the aircraft shall be certified to meet all FAR Part 135 Operating Requirements. Upon completion, Contractor shall properly execute FAA Form 337 return-to-service for each aircraft. (Documentation in accordance with CDRL A003)

#### **1.0.6 Placards**

Placards required per FAR Part 23, FAR Part 135 and the Type Certificate Data Sheet (TCDS) shall be replaced, or if not available, refurbished to like new condition.

#### **1.0.7 Miscellaneous Equipment Installation**

The following is a list of Miscellaneous Equipment the Contractor shall install (mount, store, etc.) within the Interior to complement the Interior design. FAA will furnish the Miscellaneous Equipment items for each aircraft and these items will be listed in the contract as Government Furnished Property (GFP). FAA will also provide crew access and general location requirements of certain items required for use during an operational mission. FAA review and acceptance of the proposed design and installation, to include location of each piece of equipment, is required. (Documentation in accordance with CDRL A004)

Fire Extinguishers, 2 each (one shall be accessible to the pilot while seated)  
Flash Lights, 2 each (one shall be accessible to the pilot while seated)  
Life Preservers, 5 each (one per seat)  
Crash Axe, 1 each  
Smoke Goggles for EROS Oxygen Masks, 3 each (one each accessible to pilot, co-pilot, and Mission Specialist while seated)  
Personal Breathing Equipment (PBE), 1 each  
First Aid Kit, 1 each  
Toilet Paper Roll, 1 each  
Sanitary Hand Wipes, 10 each  
Tech Wipes, 1 Box  
Air Sickness Bags, 10 each  
Luggage Cargo Straps  
Cleaning Cloth and Solvent, 1 set

## Cockpit and Mission Specialist Display Cleaning Supplies

To minimize confusion, the following is a list of GFP to be installed per other paragraphs of this specification:

- Cabin Seats, 2 each, per 1.3.4
- Headphone Jack, 1 each, per 1.3.11
- Microphone Jack, 1 each, per 1.3.11
- Escutcheon, Mic and Headphone Jack, 1 each, per 1.3.11

### **1.1 Soundproofing**

#### **1.1.1 Acoustic Engineering Analysis**

This is an Engineering Design task (Prototype Aircraft only) used to develop a standard Acoustic/Thermal Insulation Kit for fleet installation and to document crew acoustical levels. The contractor shall provide instrumentation and personnel to conduct in-flight Acoustic Engineering Analysis meeting OSHA standards. This Analysis shall document the acoustic frequency profile before and after Interior Enhancement (with soundproofing), and shall be used to tailor design the acoustic attenuating insulation. The in-flight Acoustic Engineering Analysis shall be conducted in accordance with a test plan developed by the Contractor with input from the Contractor's Acoustical Engineers and coordination/concurrence with FAA AVN Pilot(s). Test flights shall be flown by FAA AVN Pilot(s). This shall include in-flight frequency analysis for a minimum of four (4) different aircraft flights described as follows:

- (1) Present Operational Fleet Aircraft with,
  - (a) Flight Inspection equipment turned off (this is the Acoustic Engineering Analysis baseline for the Acoustical/Thermal Insulation Kit design per 1.1.2)
  - (b) Flight Inspection equipment turned on (for OSHA crew noise exposure level documentation)
- (2) Operational Fleet Aircraft with Frake's Aviation Exhaust Stacks installed by FAA (to determine if the noise level is affected)
- (3) Aircraft after Interior Enhancement and Soundproofing without Flight Inspection equipment installed (for comparison to baseline established in flight (1).(a). above to document Acoustical/Thermal Insulation Kit improvement per 1.1.2)
- (4) Aircraft after Interior Enhancement and Soundproofing with all FAA installed Flight Inspection equipment operational. The purpose of this test is to provide a true OSHA crew noise comparison against the present configuration and to establish an accurate baseline for the new operational configuration and/or to identify equipment induced acoustic problems to be reviewed by FAA AVN for possible mitigation.

The prototype aircraft will be delivered to the Contractor for Interior Enhancement with Frake's Aviation Exhaust Stacks installed. Additional in-flight frequency analysis flights may be conducted, as needed, to tailor design the acoustic attenuating insulation. (Documentation in accordance with CDRL A005)

### **1.1.2 Acoustic/Thermal Insulation Kit**

A prefabricated acoustic/thermal insulation kit shall be tailor designed for the entire cockpit and main cabin, including the forward/aft bulkheads, door, emergency exits, window frames, sidewalls, ceiling and under floor to replace the existing thermal insulation. This inter-structure sealed bag insulation shall fit snugly between the structure and have thermal insulating characteristics equal to or better than the original insulation. Thermal/Acoustic Insulation materials shall meet FAR 25.856 requirements unless shown to be excessively expensive and FAA accepts the proposed alternatives. The acoustic/thermal insulation kit shall reduce the Acoustic Engineering Analysis baseline (Operational Fleet Aircraft) by a minimum of 6 dBA and 6 dBSIL with a design goal of 10 dBA and 10 dBSIL or better. Noise level in the cockpit and cabin interior shall not exceed levels that interfere with essential communications. In no case, under any flight condition, shall the cockpit and cabin noise level exceed an ambient noise level of 85 dBA; which is approximately the current aircraft configuration maximum noise level. Installed weight shall not exceed 160 lbs. Kit documentation shall include a simple to use installation manual, a complete technical file including all necessary material lot and batch tracking data, weight and balance information, maintenance information and continued airworthiness instructions, and certification proving compliance to the applicable FAR's. (Documentation in accordance with CDRL A006)

### **1.1.3 Weight and Balance Trade-Off**

Design goal is to add soundproofing without adding overall aircraft weight. The Acoustic/Thermal Insulation Kit is expected to weigh more than the insulation being removed. The remaining weight (and balance) gained shall be offset through redesign of interior components (cabin headliner, cabin lower side panels, etc) weighing less than the originals. (Reference paragraph 1.0.4)

FAA will provide weight and balance documentation for each delivered aircraft. Contractor shall weigh each aircraft after modification.

## **1.2 Cockpit**

### **1.2.1 Cockpit Headliner**

The cockpit headliner (including gasper air outlets, hand assist strap, etc) shall be removed, inspected for damage, restored (repaired/replasticized or replaced if significant damage or age deterioration is noted), and colored (inked, painted, etc.) to like new condition with FAR compliant material. The headliner attach points shall be inspected for serviceability and repaired in accordance with manufacturer's maintenance manual prior to headliner re-installation. (Optional: redesign the attach method using new hardware subject to acceptance by FAA for enhanced service and maintainability.) Existing EROS oxygen boxes shall be reinstalled. New LED lighting shall be installed in headliner. (Reference paragraphs 1.0.2 and 1.0.4)

## **1.2.2 Glareshield**

The glareshield is new; no work will be required.

## **1.2.3 Pedestal**

The pedestal is new; no work will be required.

## **1.2.4 Cockpit Mid Sidewall, Lower Sidewall, and Floor Panels**

The cockpit mid sidewall, lower sidewall, and floor panels shall be stripped of current material and recovered with selected material. New foam shall be installed as needed to meet soundproofing/thermal requirements. An alternate option is to develop a new design providing better access for maintenance and reducing weight, such as a design similar to the new Cabin Lower Side Panels (reference paragraph 1.3.2). The panel components shall be removed, cleaned, inspected, repaired or replaced if damaged, and installed in serviceable condition. FAA review and acceptance of the proposed design and installation changes is required. (Reference paragraphs 1.0.2 and 1.0.4)

## **1.2.5 Cockpit Window Interior Trim Panels and Center Pillar Cover**

The cockpit window interior trim panels and center pillar cover shall be removed, inspected for damage, restored (repaired/replasticized or replaced if significant damage or age deterioration is noted), and colored (inked, painted, etc.) to like new condition with FAR compliant material. (Reference paragraph 1.0.2)

## **1.2.6 Cockpit Seating**

The cockpit seats shall be removed, stripped of their current material and foam padding, and inspected for damage. All mechanical functions shall be operationally checked and if found defective, repaired. Mechanical adjustments shall be made to ensure proper operation. Any parts found defective shall be repaired or replaced. Painted areas of the frame shall be sanded, cleaned, primed and repainted. The FAA selected color will compliment the new seat covering material color. Seat belts and shoulder harnesses shall be re-webbed, retaining the existing hardware. The new FAA selected webbing color will complement the new seat covering material color. Foam in the seats shall be replaced with high-grade foam (Skandia DAX Firehard Foam, or equivalent) potentially using a multiple density design as proposed by the Vendor and subject to acceptance by FAA to improve seating quality and ensure longevity. Seat contact surfaces shall be covered with "New Zealand Sheepskin" from Douglas Interior Products ([www.DIPI.com](http://www.DIPI.com)) or sheepskin of equal or better grade as determined by FAA. Seat non-contact surfaces shall be covered with "Muirhead Fine Scottish Leather™" from Douglas Interior Products ([www.DIPI.com](http://www.DIPI.com)) or material of equal or better grade as determined by FAA. The color and type of material used on the cockpit seats must match the cabin seats. FAA review and acceptance is required for the proposed seat upholstery design to

include "sit test" acceptance of the prototype aircraft finished product. (Reference paragraph 1.0.2) (Documentation in accordance with CDRL A007)

### **1.2.7 Cockpit Curtain**

The Contractor shall design, fabricate and install a Cockpit Curtain to block light between the cockpit and cabin to meet night mission requirements. Cockpit Curtain shall be capable of being operated full travel (open and closeable) from either the Pilot or Co-Pilot Seat while seated. FAA review and acceptance of the proposed design and installation is required. (Reference paragraph 1.0.2) (Documentation in accordance with CDRL A008)

### **1.2.8 Pilot/Co-Pilot Cooling Fans**

Contractor shall design, fabricate, and install a method to provide ambient airflow to the Pilot and Co-Pilot. Task is to move cabin ambient air prior to aircraft engine start and without use of aircraft or ground support air conditioning. A method shall be provided to individually control and shut off airflow to both the Pilot and Co-Pilot seat while seated and shall be independently directed on both pilots simultaneously for convective and evaporative cooling. Cooling fans shall be operable without the battery bus energized. FAA will provide/identify a circuit breaker location. FAA review and acceptance of the proposed design and installation is required. (Documentation in accordance with CDRL A009)

### **1.2.9 Cockpit Floor Covering**

The carpet shall be removed and replaced with a FAR compliant tightly woven high quality carpet that eliminates or minimizes lint and is easy to remove and replace. The carpeted kick panels currently installed in the center aisle shall be removed and replaced with like carpet. FAA will select from Contractor's proposed options and pricing. (Reference paragraphs 1.0.2 and 1.0.4)

## **1.3 Cabin**

### **1.3.1 Cabin Headliner**

A new three-piece cabin headliner shall be designed, fabricated, and installed. The headliner sections shall be sectioned in such a manner that they will be easy to remove individually without disturbing the other sections. The new design shall provide improved access for maintenance, reduce weight, complement soundproofing, be durable, and complement the interior. New foam shall be installed as needed to meet soundproofing/thermal requirements. The new headliner shall be covered with selected fabric meeting requirements and specifications in accordance with paragraph 1.0.2 above. The headliner attach points shall be inspected for serviceability and repaired in accordance with the manufacturer's maintenance manual prior to installation of the new headliner. (Optional: redesign the attach method using new hardware subject to

acceptance by FAA for enhanced service and maintainability.) The First Aid Oxygen Mask and Container assembly shall be reinstalled and Oxygen Mask Dispensing Units, as outlined in paragraph 1.3.6, shall also be installed in the new headliner. Air outlets shall be installed to provide most efficient cabin cooling for seats and equipment. All lighting shall be replaced with new LED lighting running the entire length of the headliner as outlined in paragraph 1.3.5. FAA review and acceptance of the proposed design and installation is required. (Reference paragraph 1.0.2) (Documentation in accordance with CDRL A010)

### **1.3.2 Cabin Lower Side Panels**

The cabin lower sidewall panels shall be removed and new panels designed, fabricated, and installed. The new design shall provide improved access for maintenance, reduce weight, integrate soundproofing, be durable (able to withstand daily use for long term), and complement the interior (to include aesthetics). Design may vary depending on location and adjacent cabin furnishing such as behind equipment racks versus along the side of seats and kick panels. Options such as double layer Naugahyde Vinyl blanket, a high quality quilted blanket, a quilted blanket with interior fabric cover, a light backboard with foam and interior fabric cover, among other ideas need to be considered to best meet design goals. If required for use, the lower panel components shall be cleaned, retained, and installed in serviceable condition. FAA review and acceptance of the proposed design and installation is required. (Reference paragraph 1.0.2) (Documentation in accordance with CDRL A011)

### **1.3.3 Cabin Window Surround Panels and Upper Sidewall Panels**

The cabin window surround panels shall be removed, inspected for damage, restored (repaired/replasticized or replaced if significant damage or age deterioration is noted), and colored (inked, painted, etc.) to like new condition with FAR compliant material. The cabin upper sidewall panels shall be sectioned into two (2) or three (3) sections to facilitate maintenance access. Trim strips used to secure sections will be acceptable provided the trim pieces meet the overall cabin color scheme. The upper sidewall panels shall be cleaned and recovered using selected material. FAA review and acceptance is required for proposed design and installation of sectioned cabin upper sidewall panels. (Reference paragraph 1.0.2) (Documentation in accordance with CDRL A012)

### **1.3.4 Cabin Seating – Mission Specialist and Observer**

New un-upholstered seats for the Mission Specialist and Mission Observer will be procured by the FAA. Contractor shall remove (if installed), upholster, and install these seats at seat track locations designated by the FAA. Contractor shall upholster seats using high-grade foam (Skandia DAX Firehard Foam, or equivalent) potentially using a multiple density design as proposed by the Vendor and subject to approval by FAA to improve seating quality and ensure longevity. Seat contact surfaces shall be covered with "New Zealand Sheepskin" from Douglas Interior Products ([www.DIPI.com](http://www.DIPI.com)) or

sheepskin of equal or better grade as determined by FAA. Seat non-contact surfaces shall be covered with "Muirhead Fine Scottish Leather™" from Douglas Interior Products ([www.DIPI.com](http://www.DIPI.com)) or material of equal or better grade as determined by FAA. The color and type of material used on the cabin seats must match the cockpit seats. FAA review and acceptance is required for the proposed seat upholstery design to include "sit test" acceptance of the prototype aircraft finished product. (Reference paragraph 1.0.2) (Documentation in accordance with CDRL A013)

A five (5) point restraint system shall be provided for the Mission Specialist and Observer Seat meeting all FAR requirements including but not limited to FAR 23.562, 23.785 and Part 135 Operational requirements. (Reference paragraphs 1.0.2 and 1.0.4)

### **1.3.5 Lighting**

All Emergency Exit Sign Installations and other cabin lighted sign installations shall be inspected, and if required refurbished to like new condition or replaced, and reinstalled in the Interior Enhancement Design. FAA review and acceptance of the proposed design and installation is required. (Documentation in accordance with CDRL A014)

#### **1.3.5.1 Reading Lights**

The cabin reading lights shall be LED and dimmable at each designated station.

#### **1.3.5.2 Cabin Lights**

The cabin lighting shall be LED and run the length of the cabin headliner.

#### **1.3.5.3 Aisle Lights**

None Required.

### **1.3.6 Oxygen Mask Dispensing Units**

Oxygen Mask Dispensing Units shall be installed at the Mission Observer and Lavatory Seat locations to integrate with the new headliners since the currently installed Oxygen Mask Dispensing Units are being removed with the current headliner. Simplest design would most likely be to utilize the existing Cabin Passenger Oxygen Supply distribution system and install similar Oxygen Mask Dispensing Units at these two locations. Contractor shall be responsible for all design, certification, documentation, and installation details of the modification to the current configuration. All FAR requirements shall be met to include aircraft type certificated and FAR Part 135 Operational requirements. The Flight Crew will continue to use the original diluter-demand masks and AVN design has provided a diluter-demand mask at the Mission Specialist station. FAA review and acceptance of the proposed design and installation is required. (Documentation in accordance with CDRL A015)

Oxygen Generator Option. Oxygen Mask Generator Dispensing Units shall be installed at the Mission Observer and Lavatory Seat locations to integrate with the new headliners since the currently installed Oxygen Mask Dispensing Units are being removed with the current headliner. The entire Cabin Passenger Oxygen Supply (barometric automatic deployment) system shall be removed (cap Cabin Oxygen Supply Tee, Chapter/Section 35-00-05, Item 37, P/N AN824-6D and remove all items downstream starting with Cabin Oxygen Supply Tube Assy, Item 38, P/N 101-560205-1). Contractor shall be responsible for all design, certification, documentation, and installation details of the modification to the current configuration. All FAR requirements shall be met to include aircraft type certificated and FAR Part 135 Operational requirements. The Flight Crew will continue to use the original diluter-demand masks and AVN design has provided a diluter-demand mask at the Mission Specialist station. FAA review and acceptance of the proposed design and installation is required. (Documentation in accordance with CDRL A015)

### **1.3.7 Lavatory Area**

Standard. Refurbish the existing lavatory. The lavatory seat hinged lid and backrest covering and foam padding shall be removed. Contractor shall upholster hinged lid and backrest using high-grade foam and cover material most likely matching the other seats "Muirhead Fine Scottish Leather™" from Douglas Interior Products ([www.DIPI.com](http://www.DIPI.com)) or material of equal or better grade as selected by FAA. The bottom shroud shall be cleaned, inspected, repaired if necessary, and reinstalled in serviceable, like new condition.

Enhanced Standard Option. After reviewing the current lavatory (which is a Beechcraft forward facing electric toilet installation upgrade detailed in the FAA Illustrated Parts Catalog Supplemental), the Contractor shall, if deemed improvable, design and propose to the FAA a cost estimate for installing a new enhanced lavatory to better accommodate female crewmembers and reduce/eliminate the odor and mess associated with the existing lavatory. This proposal shall be provided with the initial Technical and Cost Proposal Package. The Contractor shall upholster as outlined in Standard Lavatory above. FAA review and acceptance of the proposed design and installation is required.

A new curtain shall be made and installed to complement the interior. All materials shall match the overall interior color scheme. (Reference paragraphs 1.0.2 and 1.0.4)

#### **1.3.7.1 Lavatory Area Headliner**

A new one-piece headliner shall be fabricated and installed to match cabin headliner design. The new headliner shall be covered with selected fabric meeting specifications contained in paragraph 1.0.2. New foam shall be installed as needed to meet soundproofing requirements. The headliner attach points shall be inspected for serviceability and repaired in accordance with manufacturer's maintenance manual prior

to installation of the new headliner. Contractor may use current headliner attachment points or may redesign the attach method using new hardware subject to approval by FAA for enhanced service and maintainability. The Oxygen Mask Dispensing Unit, as outlined in paragraph 1.3.6, shall also be installed in the new headliner. Air outlets shall be installed to provide most efficient cooling at the seat. All lighting shall be replaced with new LED lighting as outlined in paragraph 1.3.5. FAA review and acceptance of the proposed design and installation is required. (Reference paragraphs 1.0.2 and 1.0.4)

### **1.3.8 Aft Baggage Panels (Upper Side, Lower Side, Aft Bulkhead, and Window Reveals)**

Aft most egg shaped windows have been removed and fuselage structurally restored. Upper Side Panels shall be modified to fill/cover the window reveal. All Aft Baggage Panels shall be stripped of the current covering materials and foam padding. Contractor shall install new foam as needed to meet soundproofing requirements and recover panels with selected material. An alternate option is to develop a new design providing better access for maintenance and reducing weight, such as a design similar to the new Cabin Lower Side Panels (reference paragraph 1.3.2). The panel components shall be removed, cleaned, inspected, repaired or replaced if damaged, and installed in serviceable condition. The compartment bulkhead has been retained but redesigned by AVN to incorporate Flight Inspection Rack aft venting. FAA review and acceptance of the proposed design and installation is required. (Reference paragraphs 1.0.2 and 1.0.4)

### **1.3.9 Entry Door**

The entry doorsteps and back panels shall be stripped of the current covering, inspected for serviceability and recovered with selected materials. All mechanical door functions shall be operationally checked and if found defective, repaired. Mechanical adjustments shall be made to ensure proper operation. Any parts found defective shall be repaired or replaced. The step side rail panels shall be fabricated using the same materials used on the cabinetry or covered in FAA specified material. (Reference paragraph 1.0.2)

### **1.3.10 Cabin Floor Covering**

The carpet shall be removed and replaced with a FAR compliant tightly woven high quality carpet that eliminates or minimizes lint and is easy to remove and replace. FAA will select from Contractor's proposed options and pricing. (Reference paragraph 1.0.2)

### **1.3.11 Mission Observer Mic and Phone Jack Installation**

A Mic and Phone Jack Assembly shall be installed at the Mission Observer location. FAA will provide a microphone jack, headphone jack, and Escutcheon (mic & phone jack). If required, the Escutcheon shall be colored (inked, painted, etc.) to match the

interior. The Mission Observer's audio panel has been installed across the aisle in an avionics rack via AVN STC. Authority to install jacks and hook up wiring will also be via AVN STC. Wires to this Jack Installation are coiled & stowed in the wall (LH) beside the Mission Observer Seat location. Lengths shall be trimmed to fit and appropriately terminated as part of the AVN STC installation. FAA review and acceptance of the proposed installation is required. (Reference paragraphs 1.0.2 and 1.0.4)

### **1.3.12 Flight Inspection Rack Frame Cover Strip and Seal**

AVN STC design installs multiple Flight Inspection racks side-by-side which are cooled by a freon evaporator-blower pulling ambient cabin air through the racks. Gaps between the rack frames create air disruption and pose a finger pinch hazard. The Contractor shall design/identify and deliver material for a transition cover strip and seal to eliminate the pinch hazard and seal the gaps. FAA review and acceptance of the proposed installation is required. (Reference paragraphs 1.0.2 and 1.0.4).