Photo 1

Renovating the ABS/ASF A36

Part 10: Details, Notes, and Paperwork

By Dennis and Cynthia Wolter, Air Mod

For any complex project to have a good outcome, it must get off to a good start, be well-managed as it progresses, and be thoroughly inspected before it is considered to be complete. Factor in the intricacies of Federal regulations and, as you might imagine, a complex aircraft renovation job generates *a lot* of paperwork.

All of this documentation benefits everyone involved. First and foremost, the owner is informed throughout the course of the project, from an initial phone call to us to the day the finished airplane is delivered back to them. Second, the owner's maintenance team can verify through these records that all of the processes, materials, and components used in the project conform to current FAA regulations. Remember that at annual time, the first task an IA must do is determine that the aircraft conforms to the original Type Certificate and all current FAA regulations. Third, having complete logbook entries and supporting documents greatly enhances the ease of maintaining the renovated aircraft in the future, as anyone working on the airplane is able to source materials and technical information needed to implement a repair.

Last, but certainly not least, is safety. By thoroughly documenting every detail involved in a project, we confirm that all work performed adheres to approved methods, assuring all parties involved that original engineering design specifications are maintained. Adhering to functional and structural standards

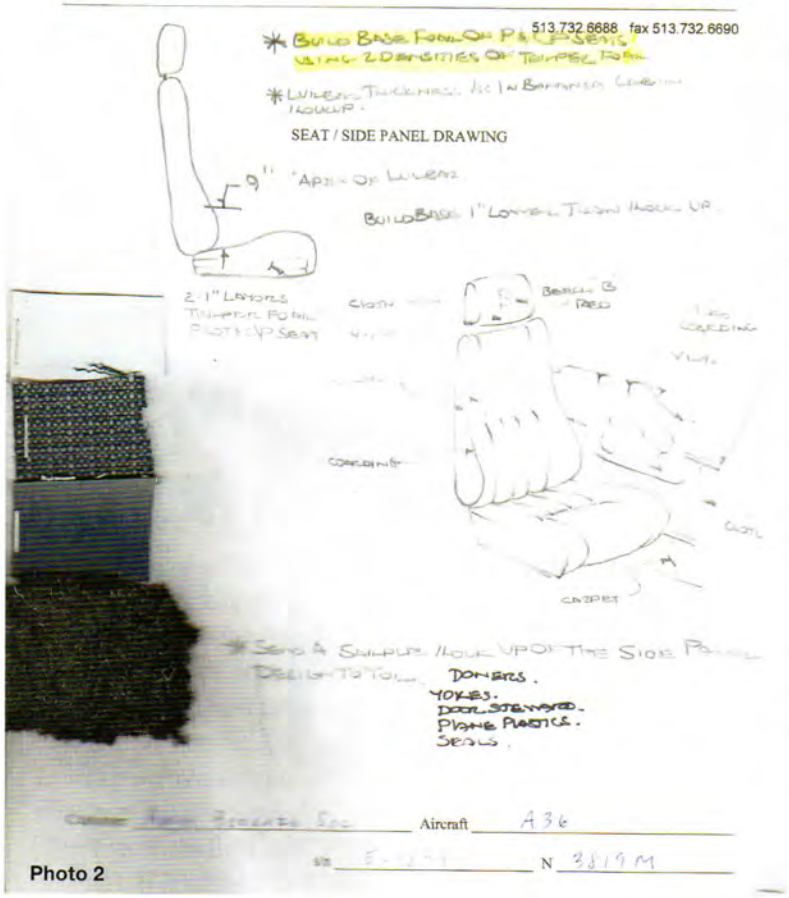

Photo 2

protects the airplane's occupants. For example, installing an incorrect bolt on a seat belt or leaving off a spacer on an attachment can result in a seatbelt failure at a critical time.

Things usually get started with an incoming phone call or meeting a potential customer at a convention. Either way, we provide them with a standard quotation for doing a complete interior renovation. After additional conversations, the customer arrives at Air Mod to finalize the design, materials, and specific details and ergonomics of the new interior. With the help of our extensive photographic library of designs, and by sketching some ideas, the customer chooses the aesthetics of the new interior - the materials and seat and side panel design that will meet the customer's every expectation in design and function (**Photo 1**). Next, we custom-fit the pilot and other frequent users in the seat to ensure long-term comfort, a process we detailed in an earlier article. We used a Bonanza fuselage mock-up in our office to fit Tom to the pilot's seat in this ABS/ASF Bonanza. The drawings and notes from this fitting are recorded in a document that enables our seat builder Don to build the new multi-density base and back cushions **(photo 2)**.

Next, Tom and I sat in the airplane to review details, as our goal in the new interior is to take care of everything that he and the Air Safety Foundation are expecting to be

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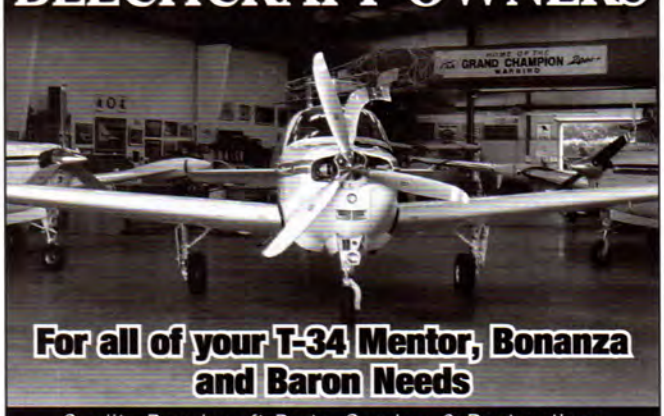

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Photo 3

incorporated in this custom renovation. The result is a detailed list that addresses all aspects of the project. Going over details on drop-off day usually takes about three to four hours.

The actual job begins with a complete avionics check that is performed for us by Cincinnati Avionics. This way, we know what systems are functioning (or not) at start-up; any discrepancies are emailed to the customer by Cincinnati Avionics. When we're finished installing the new interior, the avionics shop performs

Photo 4

AIR MOD

2025 Sporty's Drive Batavia, Ohio 45103

513.732.6688 fax 513.732.6690

American Bonanza Society, N3819M
ESTIMATES ON ADDITIONAL ITEMS
April 17, 2017

LABOR	MATL	TOTAL	
80.00	10.00	90.00	1 Forward section of pilots main side panel is badly damaged. Re-form damaged section, bond on double sided aluminum doubler; 1.0 hr. *pic 219*
520.00	20.00	540.00	2 Seven places on composite side panels and one on edge of upper bulkhead are damaged. Re-form and reinforce with .020' aluminum; 6.5 hrs. *pic 218*
400.00	8.00	408.00	3 Eight places on upper pilot and co-pilot side panels are crack or are missing corners. Repair and reinforce with fiberglass clo and polyfix adhesive; 5.0 hrs. *pics 231, 239*
64.00	14.00	78.00	4 Upper aft bulkhead panel is badly damaged. Fabricate new .025" aluminum panel; .8 hr. *pic 168*
120.00	28.00	148.00	5 Forward co-pilot kick panel is torn in four places. Fabricate new .032" aluminum kick panel; 1.5 hrs. *pics 170, 172*
72.00	3.00	75.00	6 Both aft cabin kick panels are damaged at the top and botton edges. Straighten all edges and repair torn corners in three plac .9 hr. *pics 175, 177*
520.00	10.00	530.00	7 Aft spar cover is damaged in seven places. Re-form, repair, reinforce and cosmetically finish all places; 6.5 hrs. *pics 180,*
960.00	30.00	990.00	8 Front spar cover is badly warped and damaged in five places heat outlet flange is shot, as is the air conditioning grill. Re-forn repair, reinforce and cosmetically finish all places; repair heat outlet, re-form and reinforce warped areas with .020" aluminun 12.0 hrs. *pics 186, 187, 189*
160.00	30.00	190.00	9 Insulation on back surfaces of spar covers is deteriorated. Install Skandia 1/2" flame retardant foam; 2.0 hrs. *pic 191*
400.00	40.00	440.00	10 Six window frame trim strips are warped and cracked. Fabricate new .050" aluminum pieces; 5.0 hrs.

a post-check of all systems to ensure that we do not return an airplane to an owner with an avionics or autopilot problem.

With the aircraft back in our hangar, we begin the disassembly and inspection process. A technician will photograph existing conditions and any unexpected issues that we discover during disassembly **(photo 3)**. We then prepare a detailed cost estimate of items that need attention **(photo 4)** (yes, more paperwork!) and send it to the customer with pictures of issues that must be corrected. How did we get by without digital photography? Once the emailed report is received by the customer, we have a phone conversation to discuss the processes required to fix all the squawks. Additional progress photos are sent to the customer as the renovation progresses. An informed customer is a happy customer.

Now, time for the final paperwork! When the job is completed, we generate a detailed logbook entry, an updated weight and balance/equipment list change, FAA 337 forms for major alterations or repairs, and an invoice.

The logbook entry **(photo 5)** begins with a description of the new interior and a complete list of materials used that includes supplier name, product description, or product number, and FAR flammability compliance information. The next items include corrosion cleanup, chromating of cabin skins, cabin trim painting, new insulation, repair or replacement of existing plastic components, and other cabin preparation details. A description comes next of systems repairs, installation of new

Photo 5 BEECH A36 N3819M s/n E-1849 1482.2 hrs tach 06/05/17

Fabricate and install a new interior using the following approved materials. Fabric on seats and side panels: Douglass DEF-8136/76 chelen steel, passes FAR 25.853a. Vinyl on seats and side panels: G Baker Steeves eclipse zodiac grey, passes FAR 25.853a. Carpet: Aircraft Interior Products design accent onyx, passes FAR 25.853a. Headliner vinyl: Tapis ultraleather silver pearl, passes FAR 25.853a. Clean inner cabin skins and structure in preparation for touching up zinc chromate; insulate cabin skins with Astraperf and NexGen fiberglass that pass FAR 25.853a per Skandia work order 313127-16. Remove dirt and degraded tar from belly, clean belly and aft fuselage as required. Apply Skandia SK-8240PSA skin damping material, that passes FAR 25.853a, to bare areas of clean belly skins. Clean and lubricate all cables, landing gear transmission linkage and control components below floors. Replace all seat and side panel foam with Skandia flame retardant urethane foam that passes FAR 25.853a. Install ConforFoam CF451AC on pilot and co-pilot seat bases, passes FAR 25.853a. Install and adjust 24 #11864 seat rollers. Remove yokes, ship to Advance Paint Technology for powdercoating, reinstall; yoke wiring to be reconnected and tested by Cincinnati Avionics. Repair and reinforce existing cabin trim components as required. Install the following new Plane Plastics trim components: K106-530085-6 P2 armrest, K106-53085-5 CP2 armrest, K106-530042-1 overhead console, K106-530079-6 P1 armrest, K106-530079-5 CP1 armrest, K106-530083-6 P armrest, K106-530083-5 CP armrest, UK106-530075-3 upper mid-door and K106-530093-3 cup. Refinish cabin trim with Dietzler acrylic lacquer and placard as original. Fabricate and install six new .050" 2024T-3 aluminum trim strips under windows. Repair and reinforce damaged headliner as required. Repair fresh air vent system ducting; repair one fresh air Wemac nozzle using parts from a used nozzle. Remove headliner vent nozzle mounting rings, remove old RTV, secure mounting rings with cyanoacrylate adhesive and AN 8-32 machine screws. Re-form, repair, reinforce and cosmetically finish aft spar cover. Re-form, repair, reinforce and cosmetically finish front spar cover; repair heat outlet, re-form and reinforce warped areas with .020" aluminum. Fabricate new .090" 2024T-3 aluminum frame for air conditioning return grill. Re-form and repair air conditioning duct coupling. Supply two new louvers for air conditioning outlet. Install Skandia 1/2" flame retardant foam insulation on back surfaces of spar covers, material passes FAR 25.853a. Re-form damaged forward section of pilot main side panel, bond on double sided .016" 2024T-3 aluminum doubler. Re-form numerous places on composite side panels and one area of edge of upper bulkhead, reinforce with .020" 2024T-3 aluminum. Repair and reinforce eight places on upper pilot and co-pilot side panels with fiberglass cloth and polyfix adhesive. Install molded fiberglass corners on upper plastic pilot and co-pilot side panels; all materials pass FAR 25.853a. Fabricate new .025" 2024T-3 aluminum upper aft bulkhead panel. Fabricate new .032" 2024T-3 aluminum forward co-pilot kick panel. Straighten edges and repair torn corners on both aft kick panels. Remove existing pilot and co-pilot shoulder harness assemblies and related components; install BAS Inc PMA-TSO inertia reel shoulder harness/lap belt assemblies for pilot and co-pilot seats, serial numbers 497 & 498, see 337 dated 04/20/17. Install C&M Marine CMM7-T800L0LZN-AXSSP three-point harness assemblies for center seats and CMM7-T800M0MZN-AXSSP three-point harness assemblies for aft seats, C&M work order #S2834. Disassemble glareshield, repair cracks, reinforce aft lip with .050" 2024T-3 aluminum; pad with Skandia urethane foam and upholster with US Spirit black vinyl, all materials pass FAR 25.853a. Remove old seal and glue from cabin door, install new #115155-12000 Beech seal. Remove old seals and glue from center opening windows, install Gee-Bee #AMS3301 seals and adjust windows; install new Gee-Bee #AMS3195 storm seals. Remove old seals and glue from cargo doors, install Gee-Bee 36-58 silicon door seal kit, per Beech kit 36-4015-1, drawing #36-4015-1. Test all windows and doors for function with no discrepancy noted; continuing airworthiness for these seals is covered by the Beech maintenance manual. Re-bond forward cargo door frame at damaged area and install a .050" 2024T-3 aluminum doubler. Install Mountain View Aviation door steward kit #B40C10 on cabin door, STC SA01120SE, see 337 this date. Install original accessory plug in P1 armrest. Install mic & phone jacks in three aft seat armrestss. Revise weight & balance as follows:

New empty weight	2573.59 lbs
New useful load	1126.41 lbs
New EWCG	79.68 ins
New moment	205076.27 in lbs

Dennis Wolter, [redacted] 06\05\17
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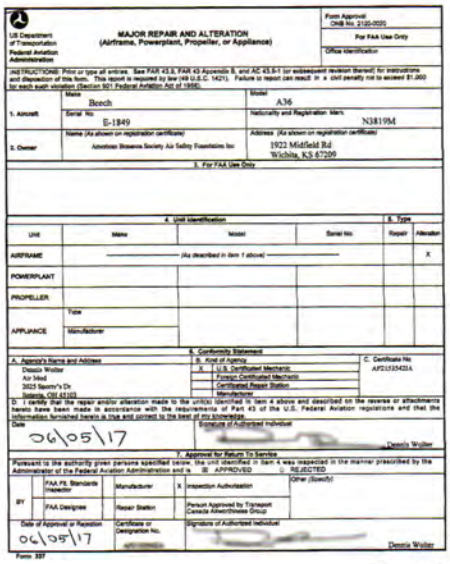

US Department of Transportation Federal Aviation Administration

MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)

Form Approved OMB No. 2120-0020 — For FAA Use Only — Office Identification

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed $1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft — Make: Beech — Model: A36 — Serial No.: E-1849 — Nationality and Registration Mark: N3819M

2. Owner — Name (As shown on registration certificate): American Bonanza Society Air Safety Foundation Inc — Address (As shown on registration certificate): 1922 Midfield Rd, Wichita, KS 67209

3. For FAA Use Only

4. Unit Identification — 5. Type

Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	(As described in item 1 above)				X
POWERPLANT					
PROPELLER					
APPLIANCE	Time / Manufacturer				

6. Conformity Statement

A. Agency's Name and Address: Dennis Wolter, Air Mod, 3025 Sperry's Dr, Sidney, OH 45365

B. Kind of Agency: X U.S. Certificated Mechanic; Foreign Certificated Mechanic; Certificated Repair Station; Manufacturer

C. Certificate No. AP2123543A

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date: 06\05\17 — Signature of Authorized Individual: Dennis Wolter

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is ☒ APPROVED ☐ REJECTED

BY: FAA Pt. Standards Inspector — Manufacturer — X Inspection Authorization — Other (Specify)
FAA Designee — Repair Station — Person Approved by Transport Canada Airworthiness Group

Date of Approval or Rejection: 06\05\17 — Certificate or Designation No. — Signature of Authorized Individual: Dennis Wolter

Form 337

Photo 6

door seals, window seals, and other new parts or equipment. Required approvals and documentations are listed, including references to FAA 337s **(photo 6)** for STC'd or field-approval installations, as well as conformity to AC 43.13-1B for certain fabrications and repairs. The last item on the logbook entry is the recalculated weight and balance data.

As the interior is removed from the airplane, every item (existing components, old insulation, old wiring, etc) is weighed on a calibrated digital scale and entered on a teardown-weight form. As the renovated components are reinstalled, they are again weighed and entered in an assembly weight form. The weights of these components and their respective positions in the airplane are then used to calculate a revised empty weight and balance/equipment list that is also added to the Pilot's Operating Handbook. The reason we also include the revised weight and balance data at the end of a logbook entry is that a POH is stored in the airplane and can get lost. Having a current weight and balance entry in the logbook can eliminate the need to have the aircraft weighed should the flight manual get lost.

Before we leave the weight and balance topic, it's important to point out that, as a licensed maintenance technician, it is my responsibility to verify that the existing weight and balance data are accurate. If researching the weight and balance records produces unresolvable discrepancies or the aircraft has not been weighed for 20 years, I will recommend to the customer that we have the aircraft weighed on our field by Cincinnati Avionics (approximately $400).

Then it's on to the final invoice. As the project progressed through our shop, time spent working on the airplane is logged on either a bid work log (items on the original quote), or on a time and materials log (additional items requested by the customer beyond the scope of a basic interior, or items that have required repair or replacement). Each line item on the document describes exactly what was done, what materials were used, and the time it took to complete that specific task. Most of what is on the invoice has been identified during the disassembly stage, included in the teardown report sent to the customer, or discussed on the phone throughout the job.

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Key to a good outcome is keeping a customer informed throughout the project. Renovating a 30- to 50-year-old airplane can be unpredictable, and the individual doing the work needs to maintain good communication with the owner.

We are down to a last and important document. The airplane is ground-run, taxied over to Cincinnati Avionics for a pre-delivery radio check. We then thoroughly inspect the aircraft and complete our own 30-item delivery checklist filled out by a licensed inspector **(photo 7)**. The idea here is to ensure a smooth delivery and a squawk free airplane. Weeks of hard work and abundant paperwork create a job well done! The ABS Air Safety Foundation A36's interior has come a long way from "before" to "after".

We were honored to have been chosen to participate in the renovation of the Air Safety Foundation's A36. Everyone at Air Mod is proud to have been part of this exciting project!

– Dennis Wolter

Air Mod completed its outstanding interior renovation at a substantial discount to support the not-for-profit educational efforts of the ABS Air Safety Foundation. We thank Dennis, Cynthia, and the entire staff of Air Mod for their expertise and their generosity. The ABS/ASF A36 was next flown to Biggs Aircraft in Oklahoma for its new paint...and to take care of a few surprises found there as well.

Photo 7

DELIVERY CHECK

Customer ABS Aircraft A36 N 3819L

inspected by	checked by		
	MDK	1	Check below floors and behind panels for foreign objects
	MDK	2	Check flight controls for function
	MDK	3	Test all electrical components for function
	CA	4	Test all radios for function (Cinti Avionics / Air Mod)
		5	Check fuel valve for proper indexing, placarding, hardware & function
	MDK	6	Check stall warning
	MDK	7	Check fuel system for function
	NA	8	Check heating, ventilation and oxygen system for function
	MDK	9	Check seats and latches for function
	MDK	10	Check seatbelts for function and correct attachment
		11	Check doors and windows for seal, latch function and locking (check with key)
		12	Inspect upholstery for bad seams or flawed materials
	MDK	13	Check ELT for installation and function
	MDK	14	Inspect for missing hardware
		15	Plastic crack check
		16	Clean and scotchguard all upholstery
		17	Check to insure mic bracket is in proper place
		18	Clean instrument panel and polish yokes
		19	Charge battery
		20	Call Cincinnati Avionics regarding radio status, paperwork, and delivery
		21	Check air pressure in tires
		22	Check landing gear strut inflation
		23	Check battery terminals and secure battery
		24	Behind the panel:
			a) check control travel
			b) check all hoses and ducts for condition, security and leaks
			c) check all wiring for security and routing
			d) check bus bar for foreign objects or shorting possibility
			e) check all instrument connections for proper hook-up
			f) check radio racks for security
		25	Vacuum carpet, clean plexiglass and wash aircraft
	MDK	26	Package surplus materials and touch-up paint for customer
		27	Confirm status of outside work and related paperwork
		28	Check paperwork and install proper aircraft documents
		29	Final check for hardware in parts bins, roll-around, shelves, work tables, etc
	N/A	30	Pitot/static leak check by Cincinnati Avionics if panel work was performed

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