

CEN20FA009

NTSB Airframe and Engine Examination Report

Accident Site Documentation

The National Transportation Safety Board (NTSB) investigator-in-charge (IIC - Mike Hodges) and two aviation safety inspectors (George Castleberry and Don Williams) from the Federal Aviation Administration (FAA) responded to the accident site near White Plains, Alabama, on 10/22/2019. The investigative team members documented the accident site and the wreckage.

The airplane came to rest on a heading of 123°, at an elevation of about 1,700 ft above mean sea level, and on about a 50° incline in a heavily wooded area on private property near the Mountain Longleaf National Wildlife Refuge (U.S. Fish and Wildlife Service) on a north to south oriented mountain ridge. From the initial impact ground point to the final impact ground point, it was 14 ft on a heading of 123°. The debris field was about 30 ft wide.

From the initial tree (the tree was about 75 ft high) impact point to the initial ground impact point, various portions of the left and right wing were scattered up to the empennage. The empennage to the initial ground impact point was 34 ft. The initial tree impact point to the initial ground impact point was 193 ft.

All structural items were accounted for at the accident site. The accident site consisted of leaves, rocks, and tree branches.

First responders, the NTSB, and the FAA canvassed the surrounding wooded area for potential additional wreckage on 10/22/2019, and none were found.

There was no postimpact fire. No property damage to buildings occurred. No ground injuries occurred.

The wreckage was recovered on 10/21/2019 by Atlanta Air Recovery and moved to Griffin, Georgia, for an examination of the airframe and engine. The airframe was examined on 10/23/2019 and 10/24/2019 by the NTSB IIC and the engine was examined by the NTSB IIC and an air safety investigator from Lycoming Engines (Mike Childers) on 10/24/2019 at Atlanta Air Recovery.

Airframe (N249BW, Vans RV-8, Serial Number 82872)

The two-seat capacity experimental airplane was built from a kit by the pilot in 2010.

The airframe data plate was observed, and the airframe serial number was confirmed as 82872.

The pilot's operating handbook recovered from the airplane was listed for Vans RV-8 airframe serial number 80427 (Canadian registration, C-GNHK), by Kevin Horton, dated 03/20/2011.

All major structural components of the airframe were accounted for at the accident site. The airplane was destroyed from the impact forces.

Flight control continuity was established for the airframe.

The front and rear control sticks were intact (dual flight controls were installed). The left wing was separated from the fuselage. The right wing was separated about 5 ft from the wing root. The cockpit display panel was torn from the cockpit. The canopy was separated from the fuselage and the acrylic plastic was fractured into small pieces.

The push-pull tubes for the rudder were fractured where the tail of the fuselage connects to the empennage. The control cables for the elevators were fractured where the fuselage connects to the empennage.

The two seats had 4-point restraint systems installed. The front seat restraint system was separated from the floor due to the impact forces. The front restraint system straps were also cut by first responders to facilitate the removal of the pilot's body.

The flap switch was observed to be in the neutral (middle position).

The fuel tank selector handle was found by the right tank position but was not fully seat in the right tank position. The fuel tank selector handle moved freely with no binding or resistance when turned by hand.

The cockpit sustained impact damage. Several digital gauges were damaged and/or removed from the cockpit dashboard due to the impact. The two fuel tank indicators both showed 0 (zero) gallons (shown as the red zone) when observed.

The two wing fuel tanks were breached from the accident sequence and the onboard fuel level at the time of the impact was undetermined. The right fuel cap and refuel port were found and the cap was secured. The left fuel cap and refuel port was not accounted for with the wreckage.

The two wings both had the main spar pushed rearward about mid-span, consistent with impacting trees.

A small amount of fuel was obtained from the fuel line going to the fuel injector and was tested with water finding paste. No signs of water were observed in the two fuel samples.

The gascolator was removed and observed. No dirt and debris were observed in the gascolator.

Throttle position – about 1 inch forward from the rear of the control quadrant.

Propeller position – about 3 inches forward from the rear of the control quadrant.

Mixture position – about 3 inches forward from the rear of the control quadrant

ATL AIR position – ¼ inch pulled out from the base of the handle.

CABIN HEAT position – All the way into the base of the handle.

All cockpit side mounted circuit breakers were in and seated. All cockpit side switches were in the aft position, except the LIGHT switch, which was fractured.

The left wing pitot tube was full of dirt from the impact at the accident site.

Various onboard electronic displays (non-recording devices) from the cockpit were removed and retained at the recovery facility.

The landing gear was a tailwheel configuration.

The emergency locator transmitter (Ack Technologies, model E-01, TSO-C91A, serial number 062622) was found armed, secured, and was installed under the rear control column panels.

No signs of bird remains or a bird strike were observed in the wreckage.

No mechanical malfunctions or failures were observed with the airframe.

Engine (Lycoming Engines IO-360-A1B6, Serial Number L-34481-51E)

The engine data plate was observed. The engine serial number was confirmed as L-34481-51E.

All components of the engine and engine accessories were accounted for.

Engine control continuity was established.

The engine was found attached to the engine mount system. The engine was cut from the engine mount system for an examination.

The engine crankcase remained intact from the accident sequence. All 4 cylinders remained intact from the impact sequence.

No evidence of fire damage was observed on the engine crankcase or engine accessories.

The left and right magnetos remained attached to the engine. All ignition harnesses leads produced spark when rotated by hand.

The top (4) spark plugs and bottom (4) spark plugs were removed for examination. The top (4) spark plugs and the bottom (4) spark plugs appeared normally worn per the Champion Aviation Check-A-Plug Card, AV-27.

All 4 cylinders were borescoped and the intake valves, exhaust valves, and piston heads were examined via borescope.

The fuel injector was removed and examined. All passageways were clear. All diaphragms were removed, examined, and were found intact. No evidence of foreign object debris (FOD) was observed.

The flow divider was removed and examined. All passageways were clear. All diaphragms were removed, examined, and were found intact. No evidence of FOD was observed.

The fuel pump was removed and examined. All passageways were clear. All diaphragms were removed, examined, and were found intact. No evidence of FOD was observed.

The propeller governor was removed and moved freely when manipulated by hand. All hardware and safety wires were found installed.

The induction air filter was found full of dirt and debris from the impact.

The rear accessories were removed, and the internal components of the engine were observed to move freely when the propeller was rotated by hand.

The exhaust tubing on both sides of the engine sustained impact damage.

Thumb compression was performed on all four cylinders. The crankshaft was able to be moved freely by hand with no binding or resistance.

All rocker box covers were removed, and all the valves moved freely when the crankshaft was moved by hand.

All fuel lines going to the engine were moved and examined. No evidence of blockage was observed.

The oil filter was removed and cut open. No evidence of metal particles was observed in the filter assembly.

No mechanical malfunctions or failures were observed with the engine.

Propeller (Hartzell, Part Number HC-C2YR-1BFP, Serial Number F7497)

All components of the propeller assembly were accounted for, except for the spinner cover.

The two-blade metal propeller was found attached to the crankshaft. Both blades were attached.

The "A" blade's tip was found curled rearward. The "B" blade was found intact.

No mechanical malfunctions or failures were observed with the propeller.

Maintenance Records

A review of the airplane's maintenance records supplied by the pilot's family revealed no evidence of any uncorrected mechanical discrepancies with the airframe and engine.

2-4-14

195.3

Service Bulletin 14-01-31 (Cracking near the bend in horizontal stabilizer front spar) checked.
NO cracks

2-5-14

195.3

Service Bulletin 14-02-03 (Cracking in elevator spar web near elevator attach points). Inspected no cracks found

6-10-14 211.1 hours

- Oil and filter Changed
- Wheels removed, cleaned, lubed, PSI 38
- Brks checked
- Inst Panel, floor, rear stick, fuselage (batt) removed
- Removed and inspected
 - Vert stab fairing
 - SB 14-01-31 > completed
 - SB 14-02-03
 - Tailwheel lubed / inspected
 - L & R Wing panels
 - Wing root fairing
 - Gear panels
 - Plugs removed + cleaned
 - Fuel spider inspected
- PROP NOT lubed

1	78
2	75
3	75
4	75

6-10-14 211.1

* I certify that this aircraft has
has been inspected on 6-10-14 in
accordance with the scope and
detail appendix D to Part 43
and was found to be in a
condition for safe operation.

HTW

Repairman's Certificate

11-23-14 228.9

• Batt replaced Concorde, Spruce
\$249.70 RG-25XC

7-1-15 242.1

248.4
242.1
6.3

31.0
6.3
37.3

* I certify that this aircraft has been inspected on 7-1-15 in accordance with the scope and detail appendix D to Part 43 and found to be in a condition for safe operation

ZJTW

Repairman's Certificate

- oil + filter not changed (31.0 Hrs)
- Wheels removed, cleaned, lubed, 38 PSI
- Brakes changed, bearing packed.
- Inst panel, floor, rear stick, removed.
- Batt area checked 11-23-14
- Removed + inspected - vertical stab
- SB 14-01-31, and 14-03-03 inspected
- Tail wheel lubed + inspected
- L+R wing panels removed
- * Fuel spider inspected
- Prop lubed
- Plugs removed + cleaned

(OVER)

1 - 75
2 - 75
3 - 75
4 - 75

continued,

- Checked EXH, Intake, valve cover, belts
- Brakes bleed: OIL return
- Cleaned air filter
- ELT batts checked EXP MAR 2016 (8) DLIRACELL D
- Removed floor
- ☒ Check lites
- ☒ Update Data base EFIS
- ☐ Update Tepps
- ☒ Inspect wing root area
- ☒ Remove gear panels

3-20-16 261.2

- 8 QTS AEROSHIELD 100W/50WT
- Oil filter changed

8-1-16 271.6 7-1-16

* I certify that this aircraft has been inspected on 8-1-16 in accordance with the scope and detail appendix D to Part 43 and found to be in a condition for safe operation.

KTW

Repairman's Certificate

- Compression 1-74#, 2-74#, 3-78#, 4-77#
- Timing set to 20° BTDC, old RT 25°, LT 21°
- ELT Batts (6) replaced. Expire 12/26 EVEREADY
'D' 10YR
EXPIRE
- Oil/filter NOT changed.
- Wheels removed, inspected, cleaned, Packed, 38 PSI tires
- Tail panels removed + inspected
SB 14-01-3 + 14-02-03 inspected
- Wing panels removed, inspected
SB 16-03-28 inspected rivets (cracks)
- Inst. panel, floor, rear stick removed. ELT
- Batt area checked 11-23-14

- Tail wheel lubed + inspected
- Fuel spider inspected
- Plugs removed + cleaned
- Props NOT lubed.
- Cleaned air filter
- Lites checked
- Inspected wing root + gear panel areas.
- Checked EXH, Intake, valve cover, oil return bolts.
- Oiled starter gear shaft.

- ☐ Props lubed
- ☒ Update data base EFIS
- ☒ Update Teps

11-19-16 275.2

- Left MAG gasket replaced.
- Slick MAG tool purchased, spruce \$7
- Rt Mag set 20.5° ; Left Mag 21°
- To Re-install left MAG: set 20° on Prop/starter flywheel; Time slick MAG to "L" with Mag tool and install left MAG. Coupler will click $\approx$ TDC $\pm 0-3^\circ$
- To check timing (Magns already installed) let coupler release, then back to $\approx 30^\circ$ BTDC, then rotate prop toward 20° (to check required timing)
- * To reinstall a MAG set 20° BTDC and set MAG to CYL #1 (L with new tool), then install.

288.5	9-1-17
271.6	8-1-16
16.9	

9-2-17 288.5

* I certify that this aircraft has been inspected on 9-1-17 in accordance with the scope and detail appendix D to Part 43 and found to be in a condition for safe operation.

HJW

- compression 1-76[#], 2-74[#], 3-74[#] 4-70[#]

288.5	9-1-17
271.6	8-1-16
16.9	
- oil and filter not changed
- Wheels removed, inspected, cleaned, packed, 39 PSI tires.
- Tail panels removed and inspected
 SB 14-01-3³¹ and 14-02-3 inspected
- Wing panels (L+R) removed, inspected
 SB 16 03 28 inspected rivets (cracks)
- Inst panel, floor, rear stick area inspected
- Bath area checked 11-03-14
- Tail wheel lubed and inspected
- Fuel spider inspected
- Plugs removed and cleaned

- PROP NOT lubed
- Air Cleaner checked NOT cleaned
- Lites NOT checked
- Inspected wing root and gear panel area
- Oiled starter gear shaft
- Checked EXH, Intake, valve cover, oil return
- Canopy rails lubed Bolts

☐ Prop lube

☐ Lites check

☒ Air cleaner (not dirty)

☒ Update Tepps 3-1-17

☒ Update EFIS Data Base (MAR 2017)

• Check Flap elect motor Jam nut

• checked 4 engine mounts

10-3-18 310.9

*I certify that this aircraft has been inspected on 10-3-18 in accordance with the scope and detail appendix D to Part 43 and found to be in a condition for safe operation.

XTW

- Compression 1-78#, 2-76#, 3-78#, 4-77#
- Oil and filter changed 6 Qts Aeroshell
- Wheels removed, inspected, cleaned, packed, 39 PSI, Rt cyl O-ring replaced.
- Brake fluid topped, bleed. *Will need Pads next year.
- Tail panels removed & inspected. SB 14-01-3 and 14-02-3 inspected
- Wing panels L & R removed, inspected, SB 16-03-28 inspected rivets (cracks)
- Inst. Panel, floor, rear stick area inspected
- Batt area checked 11-23-14
- Tail wheel lubed & inspected
- Fuel spider inspected

- Plugs removed + cleaned
- Prop lubed w/ grease, 6 pumps
- Air Cleaner washed + oiled

☐ Lites checked

- Inspected wing root and gear panel area
- Gear bolts checked. Left large bolts torqued to 240 in/lbs
- Oiled starter shaft
- Checked EXH, Intake, valve cover, oil return bolts

☐ Canopy rails lubed

- Checked Flap elect motor Jam nut
- Checked engine mounts (4)

☐ Update Tepps

☐ Update EFIS

FAA FORM 8130-6, APPLICATION FOR U.S. AIRWORTHINESS CERTIFICATE

Form Approved O.M.B. No. 2120-0018

09/30/2007

I. AIRCRAFT DESIGNATION	1. REGISTRATION MARK N249BW		2. AIRCRAFT BUILDER'S NAME (Make) WALKER HARVELL J JR		3. AIRCRAFT MODEL DESIGNATION VANS RV-8		4. YR. MFR. 2010		FAA CODING	
	5. AIRCRAFT SERIAL NO. 82872		6. ENGINE BUILDER'S NAME (Make) Lycoming		7. ENGINE MODEL DESIGNATION Y10-360 A1B6					
	8. NUMBER OF ENGINES One		9. PROPELLER BUILDER'S NAME (Make) Hartzell		10. PROPELLER MODEL DESIGNATION HC-C2YR-1BFP/F7497		11. AIRCRAFT IS (Check if applicable) IMPORT			
II. CERTIFICATION REQUESTED	APPLICATION IS HEREBY MADE FOR: (Check applicable items)									
	A. 1. STANDARD AIRWORTHINESS CERTIFICATE (Indicate Category) ☐ NORMAL ☐ UTILITY ☐ AEROBATIC ☐ TRANSPORT ☐ COMMUTER ☐ BALLOON ☐ OTHER									
	B. ☒ SPECIAL AIRWORTHINESS CERTIFICATE (Check appropriate items)									
	7. PRIMARY									
	9. LIGHT-SPORT (Indicate Class) ☐ AIRPLANE ☐ POWER-PARACHUTE ☐ WEIGHT-SHIFT-CONTROL ☐ GLIDER ☐ LIGHTER THAN AIR									
	2. LIMITED									
	5. PROVISIONAL (Indicate Class) ☐ CLASS I ☐ CLASS II									
	3. RESTRICTED (Indicate operation(s) to be conducted)									
	1. AGRICULTURE AND PEST CONTROL ☐ 2. AERIAL SURVEY ☐ 3. AERIAL ADVERTISING ☐									
	4. FOREST (Wildlife Conservation) ☐ 5. PATROLLING ☐ 6. WEATHER CONTROL ☐									
	0. OTHER (Specify)									
	4. ☒ EXPERIMENTAL (Indicate operation(s) to be conducted)									
	1. RESEARCH AND DEVELOPMENT ☐ 2. ☒ AMATEUR BUILT ☐ 3. EXHIBITION ☐									
	4. AIR RACING ☐ 5. CREW TRAINING ☐ 6. MARKET SURVEY ☐									
	0. TO SHOW COMPLIANCE WITH THE CFR ☐ 7. OPERATING (Primary Category) KIT BUILT AIRCRAFT ☐									
8. OPERATING LIGHT-SPORT ☐										
8A. Existing Aircraft without an airworthiness certificate & do not meet § 103.1										
8B. Operating Light-Sport Kit-Built										
8C. Operating light-sport previously issued special light-sport category airworthiness certificate under § 21.190										
1. FERRY FLIGHT FOR REPAIRS, ALTERATIONS, MAINTENANCE, OR STORAGE										
2. EVACUATION FROM AREA OF IMPENDING DANGER										
3. OPERATION IN EXCESS OF MAXIMUM CERTIFICATED TAKE-OFF WEIGHT										
4. DELIVERING OR EXPORTING ☐ 5. PRODUCTION FLIGHT TESTING ☐										
6. CUSTOMER DEMONSTRATION FLIGHTS										
C. 6. MULTIPLE AIRWORTHINESS CERTIFICATE (check ABOVE "Restricted Operation" and "Standard" or "Limited" as applicable)										
III. OWNER'S CERTIFICATION	A. REGISTERED OWNER (As shown on certificate of aircraft registration) IF DEALER, CHECK HERE ☐									
	NAME Woodland Bend of the River Inc					ADDRESS Wilmington, Delaware 19810-4902				
	B. AIRCRAFT CERTIFICATION BASIS (Check applicable blocks and complete items as indicated)									
	AIRCRAFT SPECIFICATION OR TYPE CERTIFICATE DATA SHEET (Give No. and Revision No.) n/a					AIRWORTHINESS DIRECTIVES (Check if all applicable AD's are complied with and give the number of the last AD SUPPLEMENT available in the biweekly series as of the date of application) n/a				
	AIRCRAFT LISTING (Give page number(s)) n/a					SUPPLEMENTAL TYPE CERTIFICATE (List number of each STC incorporated) n/a				
C. AIRCRAFT OPERATION AND MAINTENANCE RECORDS										
CHECK IF RECORDS IN COMPLIANCE WITH 14 CFR Section 91.417 ☐										
TOTAL AIRFRAME HOURS 0.0										
3. EXPERIMENTAL ONLY (Enter hours flown since last certificate issued or renewed) 0										
D. CERTIFICATION - I hereby certify that I am the registered owner (or his agent) of the aircraft described above, that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 et seq. and applicable Federal Aviation Regulations, and that the aircraft has been inspected and is airworthy and eligible for the airworthiness certificate requested.										
DATE OF APPLICATION 03/04/2010										
NAME AND TITLE (Print or type) Harvell J Walker Jr (Builder)										
SIGNATURE [Signature]										
IV. INSPECTION AGENCY VERIFICATION	A. THE AIRCRAFT DESCRIBED ABOVE HAS BEEN INSPECTED AND FOUND AIRWORTHY BY: (Complete the section only if 14 CFR part 21.183(i) applies.)									
	2. 14 CFR part 121 CERTIFICATE HOLDER ☐ 3. CERTIFICATED MECHANIC (Give Certificate No.) ☐ 6. CERTIFICATED REPAIR STATION (Give Certificate No.) ☐									
	5. AIRCRAFT MANUFACTURER (Give name or firm) ☐									
DATE TITLE SIGNATURE										
V. FAA REPRESENTATIVE CERTIFICATION	(Check ALL applicable block items A and B)									
	A. I find that the aircraft described in Section I or VII meets requirements for ☒ THE CERTIFICATE REQUESTED ☐ AMENDMENT OR MODIFICATION OF CURRENT AIRWORTHINESS CERTIFICATE									
	B. Inspection for a special permit under Section VII was conducted by: ☐ FAA INSPECTOR ☒ FAA DESIGNEE									
	DATE DISTRICT OFFICE DESIGNATION FAA INSPECTOR'S SIGNATURE									

VI. PRODUCTION FLIGHT TESTING	A. MANUFACTURER							
	NAME		ADDRESS					
	B. PRODUCTION BASIS (Check applicable item)							
	☐ PRODUCTION CERTIFICATE (Give production certificate number) _____ ☐ TYPE CERTIFICATE ONLY ☐ APPROVED PRODUCTION INSPECTION SYSTEM							
	C. GIVE QUANTITY OF CERTIFICATES REQUIRED FOR OPERATING NEEDS							
DATE OF APPLICATION		NAME AND TITLE (Print or Type)		SIGNATURE				
VII. SPECIAL FLIGHT PERMIT PURPOSES OTHER THAN PRODUCTION FLIGHT TEST	A. DESCRIPTION OF AIRCRAFT							
	REGISTERED OWNER		ADDRESS					
	BUILDER (Make)		MODEL					
	SERIAL NUMBER		REGISTRATION MARK					
	B. DESCRIPTION OF FLIGHT							
	FROM		TO					
	VIA		DEPARTURE DATE	DURATION				
	C. CREW REQUIRED TO OPERATE THE AIRCRAFT AND ITS EQUIPMENT							
	☐	PILOT	☐	CO-PILOT	☐	FLIGHT ENGINEER	☐	OTHER (Specify)
	D. THE AIRCRAFT DOES NOT MEET THE APPLICABLE AIRWORTHINESS REQUIREMENTS AS FOLLOWS:							
	E. THE FOLLOWING RESTRICTIONS ARE CONSIDERED NECESSARY FOR SAFE OPERATION: (Use attachment if necessary)							
	F. CERTIFICATION - I hereby certify that I am the registered owner (or his agent) of the aircraft described above; that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 <u>et seq.</u> , and applicable Federal Aviation Regulations; and that the aircraft has been inspected and is safe for the flight described.							
	DATE		NAME AND TITLE (Print or Type)			SIGNATURE		
VIII. AIRWORTHINESS DOCUMENTATION (FAA DESIGNEE use only)	☒	A. Operating Limitations and Markings in Compliance with 14 CFR Section 91.9, as applicable.			G. Statement of Conformity, FAA Form 8130-8 (Attach when required)			
	☒	B. Current Operating Limitations Attached			H. Foreign Airworthiness Certification for Import Aircraft (Attach when required)			
	☒	C. Data, Drawings, Photographs, etc. (Attach when required)			I. Previous Airworthiness Certificate Issued in Accordance with 14 CFR Section _____ CAR _____ (Original Attached)			
	☒	D. Current Weight and Balance Information Available in Aircraft						
	☐	E. Major Repair and Alteration, FAA Form 337 (Attach when required)			J. Current Airworthiness Certificate Issued in Accordance with 14 CFR Section -21-191G (Copy Attached)			
	☒	F. This Inspection Recorded in Aircraft Records						
			K. Light-Sport Aircraft Statement of Compliance, FAA Form 8130-1 (Attach when required)					

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

SPECIAL AIRWORTHINESS CERTIFICATE

A	CATEGORY/DESIGNATION	Experimental	
	PURPOSE	Operating Amateur Built	
B	MANUFACTURER	NAME	N/A
		ADDRESS	N/A
C	FLIGHT	FROM	N/A
		TO	N/A
D	N-	249BW	SERIAL NO. 82872
	BUILDER	Walker Harvell J Jr	MODEL Vans RV-8
E	DATE OF ISSUANCE	03/04/2010	EXPIRY N/A
	OPERATING LIMITATIONS DATED	03/04/2010	ARE PART OF THIS CERTIFICATE
	SIGNATURE OF FAA REPRESENTATIVE	DESIGNATION OR OFFICE NO.	
	 VERNON O DARLEY II		

Any alteration, reproduction or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).



U.S. Department
of Transportation
Federal Aviation
Administration

FAA/ATL FSDO-11
ATL AVS
P.O.Box 20636
Atlanta, GA 30320

**EXPERIMENTAL OPERATING LIMITATIONS
OPERATING AMATEUR-BUILT AIRCRAFT
Phase I
Operations in the assigned Flight Test Area**

MODEL: Vans RV-8
MAKE: Walker Harvell J Jr
Date of Issuance: 03/04/2010

REGISTRATION NO N249BW
SERIAL NO 82872
Expiration Date: Unlimited

These Operating Limitations are part of FAA Form 8130-7, Dated : 03/04/2010

1. No person may operate this aircraft for other than the purpose of meeting the requirements of § 91.319(b) during phase I flight testing, and for recreation and education after meeting these requirements as stated in the program letter (required by § 21.193) for this aircraft. In addition, this aircraft must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(i). These operating limitations are a part of Form 8130-7, and are to be carried in the aircraft at all times and be available to the pilot in command of the aircraft.

2. During phase I flight testing to meet the requirements of § 91.319(b), all flights must be conducted within the geographical area bounded by the following :

Atlanta Sectional: 4A7-FFC-CCO-LGC-6A1-MLJ-4A7

3. This aircraft shall be operated for at least forty (40) hours in the assigned geographic area.

4. All test flights at a minimum, shall be conducted under VFR, day only. Guidance concerning the scope and detail of test flights can be found in AC 90-98. Following satisfactory completion of the required number of flight hours in the flight test area, the pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following or similarly worded statement: **"I certify that the prescribed flight test hours have been completed and this aircraft is controllable throughout its range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during flight-testing: speeds V_{so} _____, V_x _____, and V_y _____, and the weight _____ and CG location _____ at which they were obtained."**

5. Except for takeoffs and landings, this aircraft may not be operated over densely populated areas or in congested airways.

7. This aircraft is to be operated under VFR, day only.

8. After completion of phase I flight testing, unless appropriately equipped for night and/or instrument flight in accordance with § 91.205, this aircraft to be operated under VFR day only.

9. Aircraft instruments and equipment installed and used under § 91.205 must be inspected and maintained in accordance with the requirements of part 91. Any maintenance or inspection of this equipment must be recorded in the aircraft maintenance records.

10. During the flight-testing phase, no person may be carried in this aircraft during flight unless that person is essential to the purpose of the flight.

11. No person may operate this aircraft for carrying persons or property for compensation or hire.

12. The pilot in command of this aircraft must advise each passenger of the experimental nature of this aircraft, and explain that it does not meet the certification requirements of standard certificated aircraft.

13. This aircraft must contain the placards, markings, etc., required by CFR 91.9. In addition, the placards and markings must be inspected for legibility and clarity, and the associated systems inspected for easy access and operation, to ensure they function as intended by the builder/owner during each condition inspection.

14. This aircraft must display the word "EXPERIMENTAL" in accordance with § 45.23(b).

16. This aircraft may conduct aerobatic flight in accordance with the provisions of § 91.303. Aerobatics must not be attempted until sufficient flight experience has been gained to establish that the aircraft is satisfactorily controllable and in compliance with § 91.319(b). The aircraft may only conduct those aerobatic flight maneuvers that have been satisfactorily accomplished during flight testing and recorded in the aircraft logbook and maintenance records by use of the following, or a similarly worded, statement: "I certify that the following aerobatic maneuvers have been test flown and that the aircraft is controllable throughout the maneuvers' normal range of speeds, and is safe for operation. The flight-tested aerobatic maneuvers are _____, _____, and _____."

18. The pilot in command of this aircraft must hold a pilots certificate or an authorized instructor's logbook endorsement. The pilot in command also must meet the requirements of part 61.3 (e), (f), (g), (i), and (j), as appropriate.

19. After incorporating a major change as described in § 21.93, the aircraft owner is required to reestablish compliance with § 91.319(b) and notify the geographically responsible FSDO of the location of the proposed test area. The aircraft owner must obtain concurrence from the FSDO as to the suitability of the proposed test area. If the major change includes installing a different type of engine (reciprocating to turbine) or a change of a fixed-pitch from or to a controllable propeller, the aircraft owner must fill out a revised Form 8130-6 to update the aircraft's file in the FAA Aircraft Registry. All operations must be conducted under day VFR conditions in a sparsely populated area. The aircraft must remain in flight test for a minimum of five (5) hours. The FSDO may require additional time (more than 5 hours) depending on the extent of the

modification. Person's nonessential to the flight must not be carried. The aircraft owner must make a detailed logbook entry describing the change before the test flight. Following satisfactory completion of the required number of flight hours in the flight test area, the pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with 91.319 (b) must be recorded in the aircraft records with the following or similarly worded statement: "I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds V_{so}_____, V_x_____, and V_y_____, and the weight_____, and CG location_____ at which they were obtained".

20. This aircraft must not be used for glider towing, banner towing, or intentional parachute jumping.

21. This aircraft does not meet the requirements of the applicable, comprehensive, and detailed airworthiness code as provided by Annex 8 of the International Convention of Civil Aviation. The owner/operator of this aircraft must obtain written permission from another country's CAA prior to operating this aircraft in or over that country. That written permission must be carried aboard the aircraft together with the U.S. airworthiness certificate and, upon request, be made available to an ASI or the CAA in the country of operation.

22. No person must operate this aircraft unless within the preceding 12 calendar months it has had a condition inspection performed in accordance with the scope and detail of appendix D to part 43, or other FAA-approved programs, and was found to be in condition for safe operation. As part of the condition inspection, cockpit instruments must be appropriately marked and needed placards installed in accordance with §91.9. In addition, system-essential controls must be in good condition, securely mounted, clearly marked, and provide for ease of operation. This inspection will be recorded in the aircraft maintenance records.

23. Condition inspections must be recorded in the aircraft maintenance records showing the following or a similarly worded statement: "I certify that this aircraft has been inspected on (insert date), in accordance with the scope and detail appendix D to Part 43, and was found to be in a condition for safe operation. " The entry will include the aircraft's total time-in-service, and the name, signature, certificate number, and type of certificate held by the person performing the inspection.

26. An experimental aircraft builder certificated as a repairman for this aircraft under § 65.104 or an appropriately rated FAA-certificated mechanic may perform the condition inspection required by these operating limitations.

27. Application must be made to the geographically responsible FSDO or MIDO for any revision to these operating limitations.

28. The pilot in command of this aircraft must notify the air traffic control tower of the experimental nature of this aircraft when operating into or out of airports with operational control tower. When filing instrument flight rules (IFR), the experimental nature of this aircraft must be listed in the remarks section of the flight plan.

Phase II
Operations outside the Assigned Flight Test Area

1. No person may operate this aircraft for other than the purpose of meeting the requirements of § 91.319(b) during phase I flight testing, and for recreation and education after meeting these requirements as stated in the program letter (required by § 21.193) for this aircraft. In addition, this aircraft must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(i). These operating limitations are a part of Form 8130-7, and are to be carried in the aircraft at all times and be available to the pilot in command of the aircraft.

5. Except for takeoffs and landings, this aircraft may not be operated over densely populated areas or in congested airways.

6. This aircraft is prohibited from operating in congested airways or over densely populated areas unless directed by air traffic control, or unless sufficient altitude is maintained to effect a safe emergency landing in the event of a power unit failure, without hazard to persons or property on the ground.

8. After completion of phase I flight testing, unless appropriately equipped for night and/or instrument flight in accordance with § 91.205, this aircraft to be operated under VFR day only.

9. Aircraft instruments and equipment installed and used under § 91.205 must be inspected and maintained in accordance with the requirements of part 91. Any maintenance or inspection of this equipment must be recorded in the aircraft maintenance records.

11. No person may operate this aircraft for carrying persons or property for compensation or hire.

12. The pilot in command of this aircraft must advise each passenger of the experimental nature of this aircraft, and explain that it does not meet the certification requirements of standard certificated aircraft.

13. This aircraft must contain the placards, markings, etc., required by CFR 91.9. In addition, the placards and markings must be inspected for legibility and clarity, and the associated systems inspected for easy access and operation, to ensure they function as intended by the builder/owner during each condition inspection.

14. This aircraft must display the word "EXPERIMENTAL" in accordance with § 45.23(b).

16. This aircraft may conduct aerobatic flight in accordance with the provisions of § 91.303. Aerobatics must not be attempted until sufficient flight experience has been gained to establish that the aircraft is satisfactorily controllable and in compliance with § 91.319(b). The aircraft may only conduct those aerobatic flight maneuvers that have been satisfactorily accomplished during flight testing and recorded in the aircraft logbook and maintenance records by use of the

following, or a similarly worded, statement: "I certify that the following aerobatic maneuvers have been test flown and that the aircraft is controllable throughout the maneuvers' normal range of speeds, and is safe for operation. The flight-tested aerobatic maneuvers are _____, _____, and _____."

18. The pilot in command of this aircraft must hold a pilots certificate or an authorized instructor's logbook endorsement. The pilot in command also must meet the requirements of part 61.3 (e), (f), (g), (i), and (j), as appropriate.

19. After incorporating a major change as described in § 21.93, the aircraft owner is required to reestablish compliance with § 91.319(b) and notify the geographically responsible FSDO of the location of the proposed test area. The aircraft owner must obtain concurrence from the FSDO as to the suitability of the proposed test area. If the major change includes installing a different type of engine (reciprocating to turbine) or a change of a fixed-pitch from or to a controllable propeller, the aircraft owner must fill out a revised Form 8130-6 to update the aircraft's file in the FAA Aircraft Registry. All operations must be conducted under day VFR conditions in a sparsely populated area. The aircraft must remain in flight test for a minimum of five (5) hours. The FSDO may require additional time (more than 5 hours) depending on the extent of the modification. Person's nonessential to the flight must not be carried. The aircraft owner must make a detailed logbook entry describing the change before the test flight. Following satisfactory completion of the required number of flight hours in the flight test area, the pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with 91.319 (b) must be recorded in the aircraft records with the following or similarly worded statement: "I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds V_{so} _____, V_x _____, and V_y _____, and the weight _____, and CG location _____ at which they were obtained".

20. This aircraft must not be used for glider towing, banner towing, or intentional parachute jumping.

21. This aircraft does not meet the requirements of the applicable, comprehensive, and detailed airworthiness code as provided by Annex 8 of the International Convention of Civil Aviation. The owner/operator of this aircraft must obtain written permission from another country's CAA prior to operating this aircraft in or over that country. That written permission must be carried aboard the aircraft together with the U.S. airworthiness certificate and, upon request, be made available to an ASI or the CAA in the country of operation.

22. No person must operate this aircraft unless within the preceding 12 calendar months it has had a condition inspection performed in accordance with the scope and detail of appendix D to part 43, or other FAA-approved programs, and was found to be in condition for safe operation. As part of the condition inspection, cockpit instruments must be appropriately marked and needed placards installed in accordance with §91.9. In addition, system-essential controls must be in good condition, securely mounted, clearly marked, and provide for ease of operation. This inspection will be recorded in the aircraft maintenance records.

23. Condition inspections must be recorded in the aircraft maintenance records showing the following or a similarly worded statement: "I certify that this aircraft has been inspected on (insert date), in accordance with the scope and detail appendix D to Part 43, and was found to be in a condition for safe operation. " The entry will include the aircraft's total time-in-service, and the name, signature, certificate number, and type of certificate held by the person performing the inspection.

26. An experimental aircraft builder certificated as a repairman for this aircraft under § 65.104 or an appropriately rated FAA-certificated mechanic may perform the condition inspection required by these operating limitations.

27. Application must be made to the geographically responsible FSDO or MIDO for any revision to these operating limitations.

28. The pilot in command of this aircraft must notify the air traffic control tower of the experimental nature of this aircraft when operating into or out of airports with operational control tower. When filing instrument flight rules (IFR), the experimental nature of this aircraft must be listed in the remarks section of the flight plan.

Last Item

I have read, understand, and accept the above operating Limitations:


Vern Darley



Harvell J Walker Jr, Builder

Date Issued: Mar 4, 2010



ELIGIBILITY STATEMENT AMATEUR-BUILT AIRCRAFT

Instructions: Print or type all information except signature.
Submit original to an authorized FAA representative.
Applicant completes Section I thru III. Notary Public
Completes Section IV.

I. REGISTERED OWNER INFORMATION

Name(s) Woodland Bend Of The River, Inc
Address(es) [REDACTED] Wilmington Delaware 19810
No. & Street City State Zip
Telephone No.(s) [REDACTED] [REDACTED]
Residence Business

II. AIRCRAFT INFORMATION

Model Vans RV-8 Engine(s) Make Lycoming YIO-360-A1B6
Assigned Serial No. 82872 Engine(s) Serial No. L34481-51E
Registration No. N249BW Prop./Rotor(s) Make HARTZELL
Aircraft Fabricated: Plan ☐ Kit ☒ Prop./Rotor(s) Serial No.(s) CH 44424B

III. MAJOR PORTION ELIGIBILITY STATEMENT OF APPLICANT

I certify that the major portion of this aircraft (identified in Section II above) was fabricated and assembled by

HARVELL J. WALKER JR

Names of all builders (Please Print)

solely for my (our) education or recreation, in accordance with 14 CFR part 21, Certification Procedures for Products and Parts, § 21.191(g), Operating amateur-built aircraft. I have records to support this statement and will make them available to the FAA upon request.

During the fabrication and assembly of this project, I/we used the following commercial assistance (mark N/A if no commercial assistance was used):

N/A

Name of company or individual(s)

City & State

Phone

N/A

Name of company or individual(s)

City & State

Phone

-NOTICE-

Whoever in any matter within the jurisdiction of the executive, legislative, or judicial branch of the Government of the United States, knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or who makes any materially false, fictitious or fraudulent statement or representation, or makes or uses any false writing or document knowing the same to contain any materially false, fictitious or fraudulent statement or entry, shall be fined under this title, imprisoned not more than 5 years or, if the offense involves international or domestic terrorism, imprisoned not more than 8 years, or both.

(U.S. Code, Title 18, Sec. 1001)

APPLICANT'S DECLARATION

I hereby certify that all statements and answers provided by me in this statement form are complete and true to the best of my knowledge, and I agree that they are to be considered part of the basis for issuance of any FAA certificate to me. I have also read and understand the Privacy Act statement that accompanies this form.

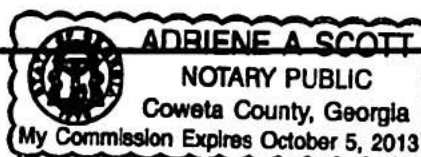
Signature of Applicant (In Ink)

Date

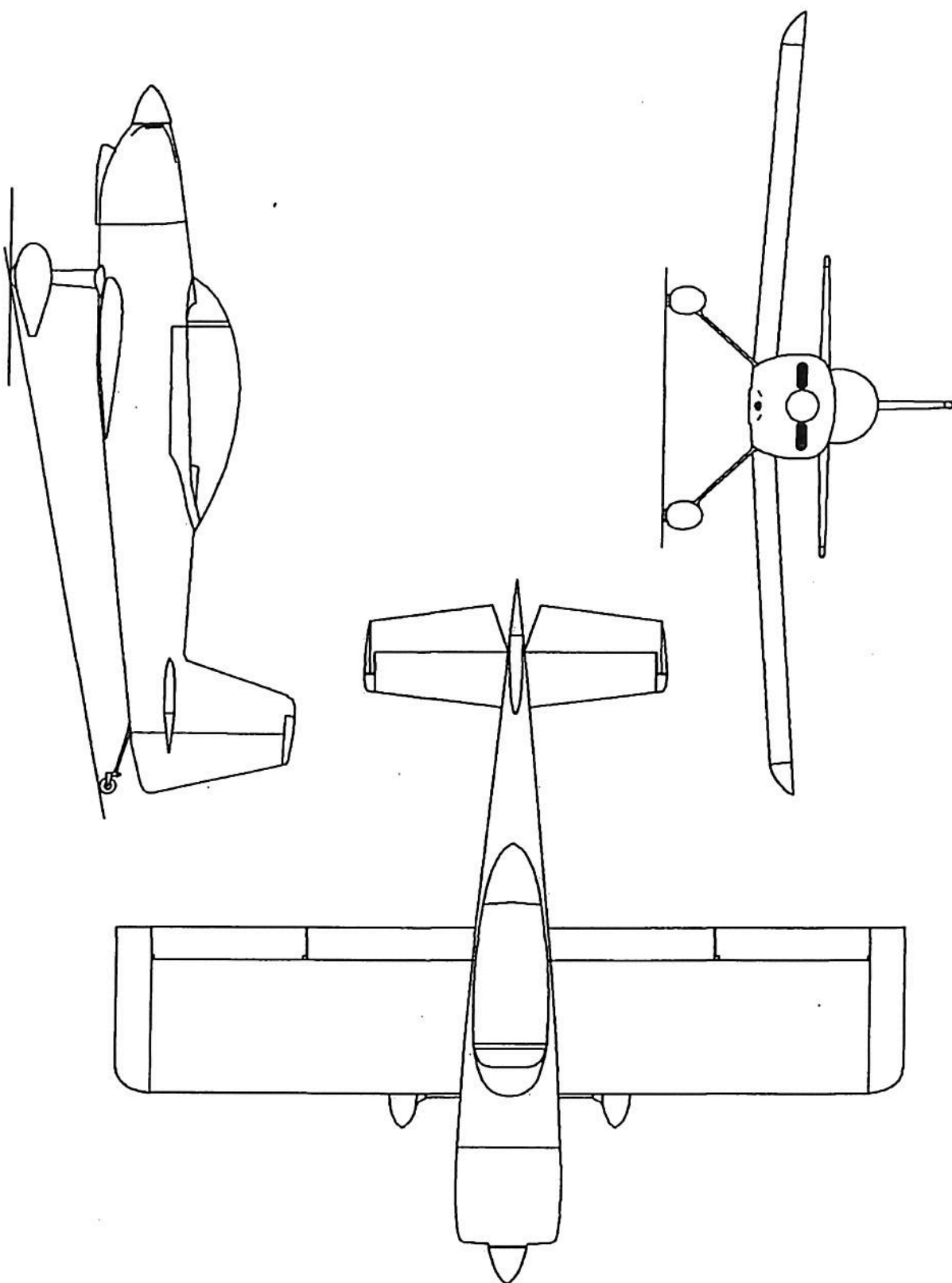
26 Feb 10

IV. NOTARIZATION STATEMENT

I, Adriene A. Scott notarized the signature
of Harrell J. Walker Jr. on 2-26-2010.



RV-8



N249BW-Weight & Balance

Weighed 2-18-2010

Empty Weight

		Weight	Arm	Moment
Right Main	559	555	68.76	38161.8
Left Main	549	552	68.76	37955.52
Tailwheel	52	53	251.06	13306.18
Total		1160	388.58	89423.5

CG= 77.08922414

CG=Moment/Weight

CG Range
Max WeightFwd=78.70 Aft=86.82
1800

Typical Loading

Empty Weight		1160	388.58	89423.5
Fwd Baggage (50 lbs. Max)		0	58.51	0
Fuel (42 Gal.)		252	80	20160
Pilot		180	91.78	16520.4
Pass		0	119.78	0
Aft Baggage Floor(50 lbs. Max)		0	138	0
Aft Baggage Shelf(25 lbs Max)		0	152.91	0
Total		1592		126103.9
CG= 79.21099246			(Fwd=78.70 (Aft=86.82))	

Reduced Fuel

Empty Weight		1160	388.58	89423.5
Fwd Baggage (50 lbs. Max)		0	58.51	0
Fuel (5 Gal.)		30	80	2400
Pilot		170	91.78	15602.6
Pass		170	119.78	20362.6
Aft Baggage Floor(50 lbs. Max)		0	138	0
Aft Baggage Shelf(25 lbs Max)		0	152.91	0
Total		1530		127788.7
CG= 83.52202614			(Fwd=78.70 (Aft=86.82))	

Trip Weight

Empty Weight		1160	388.58	89423.5
Fwd Baggage (50 lbs. Max)		35	58.51	2047.85
Fuel(42 gal.)		252	80	20160
Pilot		170	91.78	15602.6
Pass		110	119.78	13175.8
Aft Baggage Floor(50 lbs. Max)		50	138	6900
Aft Baggage Shelf(25 lbs Max)		23	152.91	3516.93
Total		1800		150826.68
CG 83.7926			(Fwd=78.70 (Aft=86.82))	

Real World

Empty Weight	1160	388.58	89423.5
Fwd Baggage (50 lbs. Max)	30	58.51	1755.3
Fuel (42 Gal.)	252	80	20160
Pilot	180	91.78	16520.4
Pass	130	119.78	15571.4
Aft Baggage Floor(50 lbs. Max)	35	138	4830
Aft Baggage Shelf(25 lbs Max)	13	152.91	1987.83
Total	1800		150248.43
CG=	83.47135	(Fwd=78.70(Aft=86.82))	

Real World (Reduced Fuel)

Empty Weight	1160	388.58	89423.5
Fwd Baggage (50 lbs. Max)	0	58.51	0
Fuel (21 Gal.)	126	80	10080
Pilot	180	91.78	16520.4
Pass	334	119.78	40006.52
Aft Baggage Floor(50 lbs. Max)	0	138	0
Aft Baggage Shelf(25 lbs Max)	0	152.91	0
Total	1800		156030.42
CG=	86.68356667	(Fwd=78.70(Aft=86.82))	

Big'n In Back

Empty Weight	1160	388.58	89423.5
Fwd Baggage (50 lbs. Max)	0	58.51	0
Fuel (21 Gal.)	126	80	10080
Pilot	180	91.78	16520.4
Pass	334	119.78	40006.52
Aft Baggage Floor(50 lbs. Max)	0	138	0
Aft Baggage Shelf(25 lbs Max)	0	152.91	0
Total	1800		156030.42
CG=	86.68356667	(Fwd=78.70(Aft=86.82))	

Heavy Pilot

Empty Weight	1160	388.58	89423.5
Fwd Baggage (50 lbs. Max)	0	58.51	0
Fuel (42 Gal.)	252	80	20160
Pilot	300	91.78	27534
Pass	0	119.78	0
Aft Baggage Floor(50 lbs. Max)	0	138	0
Aft Baggage Shelf(25 lbs Max)	0	152.91	0
Total	1712		137117.5
CG=	80.09199766	(Fwd=78.70(Aft=86.82))	

Phase One (Full Fuel)

Empty Weight	1160	388.58	89423.5
Fwd Baggage (50 lbs. Max)	0	58.51	0
Fuel (42 Gal.)	252	80	20160
Pilot	180	91.78	16520.4
Pass	0	119.78	0
Aft Baggage Floor(50 lbs. Max)	0	138	0
Aft Baggage Shelf(25 lbs Max)	0	152.91	0
Total	1592		126103.9
CG=	79.21099246	(Fwd=78.70(Aft=86.82)	

Phase One (Reduced Fuel)

Empty Weight	1160	388.58	89423.5
Fwd Baggage (50 lbs. Max)	0	58.51	0
Fuel (5 Gal.)	30	80	2400
Pilot	180	91.78	16520.4
Pass	0	119.78	0
Aft Baggage Floor(50 lbs. Max)	0	138	0
Aft Baggage Shelf(25 lbs Max)	0	152.91	0
Total	1370		108343.9
CG=	79.08313869	(Fwd=78.70(Aft=86.82)	