WRECKAGE EXAMINATION OF A MODEL 206L-3 HELICOPTER THAT CRASHED ON APRIL 18, 2000 AT THE GRAND CANYON NATIONAL PARK AIRPORT, TUSAYAN, ARIZONA
REPORT NOTICE

The information compiled within this report is based upon factual data that was collected during the initial stages of the wreckage examination. This data may change as more factual information concerning this accident becomes available to Bell Helicopter Textron Inc. (BHTI). This report will not become final until the applicable government investigative authority has issued its official final report. The information contained in the BHTI final report may not agree with the investigative authorities final report. Data may be included in this report that was produced by an organization other then Bell Helicopter.
TECHNICAL DATA

MODEL: 206L-3
NO. OF PAGES: -107-

REPORT NO: 20000418-206L3-51021-AZ-ST
DATE: 5-15-2000

TITLE: WRECKAGE EXAMINATION OF MODEL 206L-3
HELICOPTER THAT CRASHED ON APRIL 18, 2000 AT
THE GRAND CANYON NATIONAL PARK AIRPORT,
TUSAYAN, ARIZONA

PREPARED BY: DALLES ST JOHN
DATE: 5-15-2000

REVIEWED BY: NA
DATE: ____________________
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HISTORY AND RELATED DATA

AIRCRAFT DATA

Owner .................................................... Keani Air Hawaii, Inc. P.O. Box 1153, Chino Valley, AZ 86323
Operator ........................................................ Keani Air Grand Canyon, AZ
Model ............................................................ 206L3
Serial Number ............................................... 51021
Registration Number.. .................................... N2276N
Configuration At Time Of Mishap ................... VFR
Kits Installed.................................................. Dual controls; Flight steps; Baggage extender; Tape deck
Supp. Type Cert's Applied (STC) ................... -
Field Modifications (337) ................................ -
Date Manufactured ..................... 5/27/82
Date Of Initial Delivery ................................... 12/23/82
Previous Mishaps .......................................... Skid failure, Hawaii, 6/19/92
Total Time Airframe....................................... 14,599 hours
Time And Type Of Last Inspection ................. 100/300 hour
Manufacture's Data Plate Number ................. 0004254
Cockpit Voice Recorder Data......................... -
Flight Data Recorder Data ............................. -
Flight And Maintenance Logs Books .............. Yes - In posession of FAA
Registration And Airworthiness Certificates.... Yes - In posession of FAA

FLIGHT DATA

Type Of Operation......................................... Air taxi
Purpose Of Flight .......................................... Sight-seeing
Departure Point ............................................. Keani take-off helipad, Grand Canyon Airport
Departure Time ............................................. 0904
Destination .................................................... Grand Canyon gourge
Duration Time Of Flight............................... 30-40 seconds
Time OF CRASH ........................................... 0905
Applicable Operating Regulations .................. Part 135 Air Taxi
Flight Plan Type ............................................ Flight following
Fuel Type ...................................................... Jet A
Fuel Quantity At Take Off .............................. 300 lbs. est
Fuel Quantity At Accident Scene ................... 267 lbs. est
Weather Sky Condition & Visibility ................ 2300 scattered; 3000 broken; 10 miles (GCN)
Temperature & Dew Point .......................... 03C/01C
Wind Direction & Speed ................... 230/20G24knots
Type Participation ...................................... None ** Snowed earlier in morning
Sea State.................................................... -

ACCIDENT DATA

Date Of Accident ........................................... 4/18/2000
Time Of Accident ....................................... 0905
Wreckage Location Date And Time.............. 0906 / 4/18/2000
Wreckage Located By................................. Grand Canyon Airport rescue and fire services
Illumination ................................................ Day
Accident Location ........................................ Grand Canyon Airport aircraft parking ramp
Accident Site Terrain ................................. Flat asphalt
Accident Site Elevation ............................. 6601'
Emergency Locator Transmitter .................. Destroyed on impact
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinger</td>
<td>-</td>
</tr>
<tr>
<td>Fire</td>
<td>None</td>
</tr>
<tr>
<td>Damage Classification</td>
<td>Destroyed</td>
</tr>
<tr>
<td>Ground Property Damage</td>
<td>None</td>
</tr>
<tr>
<td>Number Of Persons Onboard</td>
<td>Seven</td>
</tr>
<tr>
<td>Injuries To Occupant(s)</td>
<td>Yes; extent unknown at this time</td>
</tr>
<tr>
<td>Injuries To Ground Person(s)</td>
<td>No</td>
</tr>
</tbody>
</table>
INTRODUCTION

On April 18th, 2000, Bell Helicopter was requested to provide an accident investigator to assist the National Transportation Safety Board (NTSB) in the investigation of a Keani Air Grand Canyon 206L-3 helicopter accident that occurred on April 18th, 2000, near Tusayan, Arizona. An examination of the wreckage was conducted at the accident site. The following is a summary of the undersigned investigator's examination of the helicopter serial number 51021 wreckage.

GENERAL

On April 18, 2000, this Bell 206L3 helicopter, owned and operated by Keani Helicopters, crashed shortly after takeoff from the Keani Helicopter company helipad at the Grand Canyon Airport, Tusayan, Arizona. The helicopter was being operated VFR under an FAA Part 135 Air Taxi operating certificate. The helicopter was being used to provide sight-seeing tours in the Grand Canyon area at the time of the crash. This was the first flight of the day, approximately 0900AM. It had snowed early in the morning and the pilot had to remove snow and ice from the helicopter prior to flight operation. After the snow and ice was reportedly removed an uneventful start and run-up was completed. At this time, six German tourists were loaded into the helicopter. It was reported the pilot hovered out to the take-off pad and proceeded to execute a normal take-off to the southwest over the airport fixed wing parking ramp and runway. Approximately 30-40 seconds after take-off, at an estimated 120' altitude, and 40 knots of airspeed, the helicopter experienced a loss of engine power. The pilot stated that as he entered autorotation and descended toward the airport ramp he saw a wire in his descent path and pulled collective gaining altitude to pass over the wire. This bled off his main rotor RPM and after he cleared the wire the helicopter rapidly descended to impact. The impact was quite hard impacting the ramp in a tail low, wings level attitude. The helicopter hit once sliding to the right, bounced back into the air one time, hit the ramp again sliding sideways before coming to a complete stop. There was no fire.

FACTUAL EVALUATION STATEMENT

A through examination of the airframe wreckage was conducted at the recovery site. Each of the flight control systems was examined. It was determined that the flight controls were functioning properly at the time of impact. Continuity was established throughout the control system in that no controls hardware was improperly installed or missing. All of the brakes and fractures in the flight controls systems were
impact related. The fuel system was also examined in the field. There was no evidence of a fuel system failure prior to ground impact as the fuel was found to be uncontaminated and fuel was found in the engine fuel lines. The hydraulic system was also examined. It was determined the hydraulic system was also functioning properly on impact. Electrical battery power was applied to the airframe and all of the electrical systems that could be checked functioned properly. No pre-crash airframe failures were found in this helicopter.

AIRFRAME EXAMINATION DISCUSSION

FORWARD FUSELAGE STRUCTURE

Nose Area ........................................
The airframe nose sustained upward crushing damage from ground impact (Approximately three inches)
Wire Strike Protection System ..........
Not installed
Windows ........................................
All of the windows were broken out. The center window support was torn out
Crew Doors .....................................
The doors remained attached to the airframe but were bent from being forced into the door frames on impact
Cockpit Area.....................................
The instrument panel was torn from the center mounting counsel and fell to the right side. It did not suffer any further damage
Cockpit Roof....................................
The roof frame was torn out with the center support and right door support being broken in several places from crushing impact
Cockpit Floor Area.............................
The floor was pushed up into the cockpit approximately one inch on impact
Crew Restraint System ......................
No visible damage was found to the restraint system
Crew Seat mooring.............................
The seat attachment fittings remained inplace and did not appear to be damaged. The seat frames were bent downward from the "g" force body weight on impact
Crew Seat Structure..........................
Both the right and left seat support frames (crush frames) were crushed downward approximately four inches with most of the damage to the rear of the seat box. The back seat support bulkhead was wrinkled from the uneven buckeling of the bulkhead on ground impact

INSTRUMENTS INDICATIONS

RIGHT SIDE INSTRUMENT PANEL

Air Speed Indicator ......................... Zero
Altimeter ........................................ 6570'
Attitude Indicator ............................... Level with a 35° right bank indicated
Bank Indicator Position ...................... Right bank
Clock ............................................. Running
Course Indicator (HSI,RMI,VOR) .......... None
Dual Tachometer NR/N2 .................... Both zero
Fuel Quantity .................................. Zero
Fuel Valve ...................................... Off
Heading Indicator ............................ 240°
Vertical Speed Indicator .................... None
Kolz Setting .................................... 29.97°
Radar Altimeter ............................... None

CENTER INSTRUMENT PANEL

Caution Lights Condition .................... When electrical power was applied all the caution lights illuminated except for two spares and the overspeed trip light (System not installed)
Engine Auto-Re-Light ...................... Not installed
Exhaust Gas Temperature(s) ............ Zero

Fuel Pressure(s) ............................... Zero
Gas Producer(s) (N1) ....................... Zero
Transmission Oil Pressure ................. Zero
Transmission Oil Temperature .......... Zero

LOWER PEDESTAL

GPS Radio .................................... Not installed
HF Radio ...................................... Not installed
TACAN / DME ................................ Not installed
Transponder .................................. Not installed
UHF Radio .................................... Not installed
VHF Radio .................................... Functioned properly when power applied

POSITION OF COCKPIT SWITCHES

Anti-Ice ........................................ Off
Battery(s) ..................................... Off
Fuel Boost Pump(s) ......................... Off
Fuel Valve(s) .................................. Off
Generator(s) .................................. On
Heater .............................................. Off
Hydraulic(s) ...................................... On
Inverter(s) ........................................ On
Light (Landing / Search) ................. Off
Lights (Position-Anti-Coll-Cabin) .......... Off
Pitot Heater ..................................... NA
Start Fuel Valve ................................ Off
Starter ............................................. Off
Collective(s) Position ...................... Full up
Cyclic Position(s) ......................... Full back
Pedals Position ............................... Full left pedal
Throttle(s) Position ....................... Twist grip full open

POSITION OF CIRCUIT BREAKERS

Popped CB'S ................................... None
Tied CB'S ....................................... None

MID-FUSELAGE STRUCTURE

Cabin Roof ...................................... The cabin roof split apart at fuselage stations 61 and 146 on impact. The roof did not break around the transmission mounts. The left rear cabin roof entered the cabin area to a depth of approximately 18 inches below the roof line at station 146.

Cabin Floor ..................................... The floor was wrinkled from impact and also split open / torn at stations 61, 122, and 142.

Cowling / Fairing.............................. The hydraulic and transmission cowlings were dented and cut in several places
Passenger Doors .............................. The passenger doors remained attached to the airframe. Both doors were bent and twisted from crushing impact of the fuselage
Roof Main Beam ............................. The roof beam was severed at stations 61 and 146 from excessive "g" force fuselage loading on impact
Seat Belts / Shoulder Harnesses ...... No shoulder harnesses were installed. None of the lap belts were damaged. There was evidence that shoulder harnesses were previously installed and removed
Seat Mooring ................................. The left mid-seat back top left attachment fitting was broken in bending overload
Seat Structure ............................... The five rear seat support structure was relatively undamaged
Windows ..........................................
The left and right large door windows were broken out

CENTER LOWER FRAME ENCASEMENT

Ballast (Nose / Under Seat) .............. Remained in place
Battery Support .............................. No visible damage was noted
Landing Gear ................................. Both the forward and aft cross tubes were broken in several places from ground impact. The right forward cross tube attachment fitting was pushed up into the fuselage. The rear cross tube was also pushed up into the fuselage approximately ten inches on impact. Both skids had holes in the bottom toe of the skids caused from sliding across the concrete ramp during the impact sequence.

Collective Control System ............... The top of the control tube running through the vertical tunnel was creased at the roof entry point from contact with the tunnel wall during impact. Continuity was established to and from all breaks in the system. No hardware was found missing or improperly installed

Cyclic Control System ....................

Tail Rotor Control System ............... The top of the control tube running through the vertical tunnel was creased at the roof entry point from contact with the tunnel wall during impact. Continuity was established to and from all breaks in the system. No hardware was found missing or improperly installed

Throttle(s) Control System .............. No visible damage was noted

CENTER PYLON STRUCTURE

Transmission Pylon Mounts .............. No visible damage was noted
Transmission Transverse Mounts ....... No visible damage was noted
Transmission Support Assembly ...... No visible damage was noted
Restraint Assembly ...................... The restraints evidenced over travel contact with the stop pins
Stop Pin(s) Fitting(s) ..................... The stop pins were gouged from over travel contact with the restraint assemblies

AFT FUSELAGE STRUCTURE
Baggage Compartment

The lower aft fuselage was pushed up into the baggage compartment on ground impact. This split the airframe open at station 180.

Oil Filter(s)

The engine oil filter was not damaged. It was full of oil and was clean. The drain hose had a hole rubbed into it from contact with the oil filter case.

Oil Cooler(s)

The fan made contact with the oil cooler housing and cut grooves into the case.

T/R Drive Shaft Fairing

No visible damage was noted.

Tailboom Attachment Fittings

The fittings were tight and had no evidence of moving.

ENGINE(S) COMPARTMENT

Aft Bulkhead Firewall

The fire wall was dented from the engine combustion section being pushed into it on impact.

Air Intake Fairing(s)

No visible damage was noted.

Air Intake(s)

No visible damage was noted.

Droop Compensator

The droop compensator was not damaged.

Engine Deck

No visible damage was noted.

Engine Mounts

The left rear and right forward mounts were broken. The other mounts were bent.

Engine(s)

No visible damage was noted to the engine.

FCU Control Arm Position

Zero.

Forward Bulkhead Firewall

The forward fire wall was damaged from over travel of the main drive shaft on impact.

Free Wheeling Unit

No visible damage was noted.

Governor Control Arm Position

100%

Linear Actuator

100% position. The actuator functioned properly when power was applied.

Particle Separator System

None installed.

TAILBOOM EXTENSION

90 Degree Case Attach Fitting

The support assembly was cracked at the boom attachment line of rivets from impact overloading. The support casting was also cracked in several places.

Boom Attachment Fittings

No visible damage was noted.

Boom Extension

The tail boom was broken at tailboom station 60 from bending overload and cut in-two by the main rotor blade at station 96. Both were done on ground impact. Approximately
### Drive Shaft Covers
- 14 rivets on the top left side of the boom near the 90 case (station 167) were lose and evidenced chafing

### Drive Shaft Hanger Supports
- The cover suffered the same damage as above

### Elevator / Stabilizer (Slats)
- All of the hanger supports were bent rearward from bending of the tailboom during impact. The number three was broken off of the boom
- Both slats were torn off the stabilizer

### Elevator Control Tubes
- The tube was severed at station 60 when the boom was bent
- The tops of both end plates were hit by the main rotor blades and bent to the right. The top two to three inches of each plate was cut off

### End Plates
- The control tube was cut in-half at station 90 by the main rotor blades
- No visible damage was noted
- The tail skid was bent to the right and jammed up into the vertical fin

### Tail Rotor Control Tubes
- No visible damage was noted
- The tube was severed at station 60 when the boom was bent

### Tail Rotor Gear Case Fairing
- The number three shaft aft end coupling was broken apart
- The forward oil cooler bearing was partially pulled from its support. The number three was pulled apart

### Tail Skid
- The tail skid was bent to the right and jammed up into the vertical fin

### Vertical Fin
- The vertical fin remained attached to the tailboom. The lower six inches of the fin was crushed upward and bent to the right when the fin impacted the ground

## AIRFRAME SUB-SYSTEMS

### AIRFRAME OIL SYSTEMS
- The engine oil by-pass indicator was not popped out
- The cooling fan was damaged when the fan shaft was flexed beyond limits on impact
- The filter was clean
- No visible damage was noted
- No leaks were noted
- No damage was noted and the reservoir was full of oil

### DRIVE SYSTEMS
- No visible damage was noted. The gears turned freely
- Clean
- All of the disk packs were spread and bent from overloading on ground impact
- The number three shaft aft end coupling was broken apart
- The forward oil cooler bearing was partially pulled from its support. The number three was pulled apart
Main Drive Shaft
Oil Cooler Blower and Shaft
Oil Levels
Spline Couplings

- The drive shaft was scorred from contact with the fire wall housing on ground impact
- The oil cooler shaft was scorred from contact with the oil cooler case
- Full
- No visible damage was noted

Tail Rotor Shaft Segments

- The number two segment was severed. The number four segment was severed by the main rotor. The numbers five and six segments had deep corrosion pitting that the operator had tried to repair

---

ELECTRICAL SYSTEMS

Battery and Charging System
Caution Lights System
Controls, Hydraulic Control Sys
Engine(s) Exhaust Gas System
Engine(s) Ignition System
Engine(s) Starting System
Fuel System
Generator System
Oil Pressure Indicating Systems
Oil Temperature Indicating Sys
Radio Antennas
Radios, Communications

- Destroyed on impact
- Functioned properly
- The on-off solenoid function properly when power was applied
- No visible damage was noted
- No visible damage was noted
- Destroyed
- Both boost pumps ran when power was applied
- Destroyed
- No visible damage was noted
- No visible damage was noted
- Destroyed
- No visible damage was noted

FLIGHT CONTROL SYSTEMS

NON-ROTATING FLIGHT CONTROLS

Collective Levers
Collective Sleeve Assembly
Collective Stops
Lower Swashplate / Inner Ring
Swashplate Support Assembly

- No visible damage was noted
- Operated properly. No visible damage was noted
- No visible damage was noted
- No visible damage was noted
- No visible damage was noted

ROTATING FLIGHT CONTROLS

Upper Swashplate / Outer Ring
Scissors Assembly

- Operated properly. No visible damage was noted
- No visible damage was noted
No visible damage was noted. Full of fuel
Both pumps ran when power was applied
No damage was noted to the two forward cells. The rear cell was punctured by the upper quantity sensor when the fuel cell was crushed up into the tube

The bottom of the tube was bent where it exits the airframe on the bottom of the fuselage

No visible damage was noted
Full
No visible damage was noted
The right cyclic extension was bent in compression
None found
All three moved freely
The by-pass indicators were still seated. The filters were clean
Full
No visible damage was noted and no line breaks were found
No visible damage was noted
No visible damage was noted

Both blades were severely coned upward indicating low rotor
rpm and high pitch application. The red blade tip hit the ground and was bent down approximately 14 inches. The blade was rolled upside down by the TT strap when the control tube became separated from the pitch horn. The bend started 38 inches from the tip. The leading edge was deeply scarred from cutting into the concrete on impact. The blade was also dented from hitting the end plates. The white blade had three feet of the tip end after body torn off. Another two foot section of the after body was torn off outboard of the root end trim tab. The tip end of the leading edge was split open from contact with the ramp.

<table>
<thead>
<tr>
<th>Component</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade Bolts</td>
<td>No visible damage noted</td>
</tr>
<tr>
<td>Blade Grip Assembly</td>
<td>Both blade grips evidenced upward yielding</td>
</tr>
<tr>
<td>Balance Weights</td>
<td>Remained attached</td>
</tr>
<tr>
<td>Oil / Lubrication Supply</td>
<td>Good</td>
</tr>
<tr>
<td>Pillow Blocks</td>
<td>The pillow block attachment bolts were damaged from contact with the pitch change horns</td>
</tr>
<tr>
<td>Pitch Horns</td>
<td>Both pitch change horns rotated and dug into the pillow block attachment bolts. They also contacted the flapping stop assembly attachment support</td>
</tr>
<tr>
<td>Static Stops</td>
<td>The yoke static stop plates were crushed from heavy yoke flapping contact</td>
</tr>
<tr>
<td>T/T Straps</td>
<td>No visible damage was noted</td>
</tr>
<tr>
<td>Tabs</td>
<td>No visible damage was noted</td>
</tr>
<tr>
<td>Trunnion</td>
<td>No visible damage was noted</td>
</tr>
<tr>
<td>Yoke Assembly</td>
<td>The yoke suffered from sudden stoppage and &quot;g&quot; force ground impact overloading</td>
</tr>
</tbody>
</table>

**TAIL ROTOR SYSTEM**

<table>
<thead>
<tr>
<th>Component</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blades</td>
<td>One blade was severed 12 inches from the yoke. The second blade was bent 30(^\circ); five inches from the tip from ground contact on impact. Both blades remained attached to the hub assembly</td>
</tr>
<tr>
<td>Blade Bolts</td>
<td>No visible damage was noted</td>
</tr>
<tr>
<td>Blade Grip Assembly</td>
<td>No visible damage was noted</td>
</tr>
<tr>
<td>Balance Weights</td>
<td>No visible damage was notes</td>
</tr>
<tr>
<td>Control Tubes</td>
<td>The control tube was severed at tailboom station 90 by the main rotor</td>
</tr>
<tr>
<td>Counter Weight Bell Crank</td>
<td>No visible damage was noted</td>
</tr>
<tr>
<td>Counter Weight Links</td>
<td>No visible damage was noted</td>
</tr>
<tr>
<td>Cross Head Assembly</td>
<td>No visible damage was noted to the cross head. (The cross</td>
</tr>
</tbody>
</table>
Feather Bearings ................................
Flapping Stop Assembly ...................

head is a suspect part)
The four bearings were partially dislodged from the blades
The stop suffered minor damage

Hub Balance Weights ......................
Pass Through Control Tube ..............
Pitch Horn Assembly ......................
Pitch Links / Bearings ....................
Trunnion ....................................
Yield Indicators ...........................
Yoke Assembly .............................

No visible damage was noted
No visible damage was noted and functioned properly
No visible damage was noted and functioned properly
No visible damage was noted
The yield indicator was bent from overtravel of the yoke
The yoke was scarred and gouged from ground contact

TRANSMISSION ASSEMBLY

Top Case ....................................
Main Case ....................................

Chip Detector(s) ...........................

No visible damage was noted
No visible damage was noted. (The transmission is suspect. The data plate appears to be from a B-47 model transmission)
Both chip detectors were clean

Hydraulic Pump Quill(s) .................
Main Power Input Quill ..................
Oil Filter(s) ...............................
Oil Level ...................................
Oil Pump ...................................
Transmission Internal Gearing ........
Lateral Stop Pin(s) .......................  

No visible damage was noted
No visible damage was noted
The oil filter was clean and undamaged
Full
No visible damage was noted
No visible damage was noted
The stop pins made contact with their respective restraint assemblies from transmission overtravel on ground impact
The mast was bent approximately 30°; six inches below the

Mast Bent / Broken ........................

No visible damage was noted
<table>
<thead>
<tr>
<th>Component</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mast Rotation</td>
<td>head assembly</td>
</tr>
<tr>
<td>Yoke Retention Nut</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No visible damage was noted</td>
</tr>
</tbody>
</table>

**SECONDARY SUB-SYSTEMS**

<table>
<thead>
<tr>
<th>System</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitot Static System</td>
<td>Destroyed</td>
</tr>
<tr>
<td>Particle Separator System</td>
<td>None installed</td>
</tr>
<tr>
<td>Snow Baffle System</td>
<td>None installed</td>
</tr>
</tbody>
</table>

=END=
APPENDIX

A. ACCIDENT SITE MAPS
Keani Helicopters
SN 51021 Grand Canyon, AZ
DOA. 4/18/00

KEANI HELICOPTERS

CRASH SITE
250 / .22 MILES
N35°57'49" W112°08'33" 660'
B. COMPONENT DAMAGE DRAWINGS

B1. FUSELAGE STATION DIAGRAM
FORWARD BALLAST STATION

13.0 (330)

19.00 (483)

FUSELAGE STATION 1.0 (25)

61.0 (1549)

FWD BALLAST STATION 18.6 (472)

36.2 (920)

73.0 (1854)

377.0 (9576)

121.4 (3084)

99.2 (2520)

230.7 (5860)

192.0 (4877)

150.0 (3810)

204.9 (5205)

AFT BALLAST STATION 282.2 (7168)

55.1 (1400)

LEVEL PLATES

117.7 (2990)

231.4 (5878)

AFT JACKING POINT

155.2 (3942)

204.9 (5205)

NOTE

Reference datum line, (Fuselage Station 0), is located 55.1 inches (1400 mm) forward of the forward jack point center line.

Stations Diagram
Figure 53-11. Shell installation, cabin roof, upper (Sheet 2)
Figure 53-13. Bulkhead, cover and seat installations
Figure 53-18. Bulkhead installation, sta. 73.04 (S/N 45601 thru SUB, 51001 thru SUB, 52001 thru SUB)

FOR BEST VALUE, BUY GENUINE BELL PARTS
Figure 53-19. Center post installation
Figure 53-31. Fuselage installation, aft
1. Apply one thickness of vinyl tape (C-410) to mounting surface.

Tail Rotor Gearbox Mounting

Notes
Main Rotor — Removal and Installation
Main Driveshaft Disassembly and Lubrication

1. Main Driveshaft
2. Nut
3. Seal
4. Washer — Thin Steel
5. Bolt
6. Retainer
7. Packing
8. Plate
9. Spring
10. Coupling — Outer
11. Coupling — Inner
12. Packing
13. Retainer

Handpack outer coupling (10) with lubricant (item 411, Table C-1) over top of internal spline teeth 0.20 to 0.30 in. depth, full length of teeth.

See Detail A
1. Nut
2. Transmission top case
3. Seal bearing plate

Main Rotor Mast
Freewheeling Assembly/Installation
Figure 53-46. Tailboom installation (Sheet 1 of 2)
Tail Rotor Installation

1. Gearbox Output Shaft
2. Pin
3. Control Tube
4. Spacer
5. Tail Rotor
6. Pitch Horn
7. Shim
8. Bumper
9. Static Stop
10. Washer, Lock
11. Nut
12. Liner
13. Pitch Link
14. Bolt
15. Washer
16. Cupped Washer
17. Nut
18. Washer
19. Nut
20. Nut
21. Washer
22. Pin
23. Crosshead
24. Knurled Nut
25. Brass Block
26. Balance Wheel
27. Shims
FLIGHT CONTROLS
Cyclic Control System

Adjustable Control Tubes

Looking Aft
Collective Pitch Control System

Adjustable Control Tubes
Anti-Torque Control System
1. Fuel Shutoff Valve
2. Vent Hose
3. Fuel Supply Hose
4. Upper Fuel Quantity Transmitter
5. Fuel Quantity Probe Harness
6. Fuel Boost Pump Assembly
7. Aft Fuel Quantity Probe
8. Interconnect Tube
9. Ejector Pump Tube
10. Forward Fuel Quantity Transmitter
1. Fuel shutoff valve inlet tube
2. Fuel shutoff valve
3. Vent hose
4. Fuel supply hose
5. Clamp and clip
6. Fuel quantity transmitter
7. Fuel quantity probe harness
8. Fuel boost pump assembly
9. Aft fuel quantity probe
10. Interconnect tube
11. Screw
12. Washer
13. Screw
14. Ejector pump tube
15. Clamps
CAUTION

TEST

Instrument Panel

Notes
Figure 71-5. Cowling installation, engine, transmission induction, fairing, fwd and aft (S/N 45004 thru 45153, 46601 thru SUB)
Figure 71-10. Cowling installation, engine, transmission induction, fairing, fwd and aft (S/N 45004 thru 45153, 46601 thru SUB)
Figure 71-22. Mount installation, engine (S/N 45154 thru SUB, 51001 thru SUB, 52001 thru SUB)
C. SEATING CHART

SEATING CHART 206L-3

NAME OF SEAT OCCUPANT

1. PILOT - GRIFFIN, R.
2. RUSKE, B.
3. SIEMUND, R.
4. KIEHN, S.
5. SIEMUND, H.
6. KULLING, I.
7. KULLING, H.

BAGGAGE
D. ENGINE DATA

Airframe Installed Position .................. Single
Manufacturer .................................. Rolls-Royce Allison
Model ........................................ 250-C30S
Serial Number ................................ CAE 0890093
Total Time Since New (TTSN) ............ 6341.9
Total Time Since Overhaul (TSOH) ...... -
Event Counter ................................ 2243
Auto Re-light Installed .................... No
Over Speed Control Installed ............ No
Fuel Control Unit / Governor Type ....... Bendix
Engine Modifications ....................... -
Last Overhaul Facility ....................... -

Exterior Examination (Recovery Site)

Air Inlet Section ............................ Minor airframe inlet damage
Compressor Wash System .................... No visible damage noted
Compressor Section .......................... Rotated freely. No visible damage noted
Diffuser / Air Transfer Section .......... Minor dents
Gas Producer Turbine Section (N1) ...... Rotated freely. No visible damage noted
Power Turbine Section (N2) ................ Rotated freely. No visible damage noted
Combustion Section .......................... Several heat cracks found on external case
Exhaust Gas Section ......................... No visible damage noted
Gear Case Section ............................ Recently overhauled. No visible damage noted
Accessories Components .................. Starter / generator lower wire attachment block broken off from contact with the engine deck. The fuel start enrichment valve found set to full rich position with safety wire cut

Chip Detector(s) ......................... Clean
Oil Filter(s) .................................. Clean and full of oil
Fuel Filter(s) ............................... Clean and full of fuel
Fuel Nozzle .................................. Found less than finger tight with no safety wire installed
Fuel Control Lever Setting ............... 100%
Igniter(s) System ......................... No visible damage noted
Governor Control Lever Setting .......... Full
Anti-Ice Valve Position ..................... Open

Condition Of Air And Fuel Lines .......... No fuel leaks were noted with the fuel lines
E. EXTERNAL LOAD DATA

Line Length ............................................. NA
Load Description ....................................
Load Weight ..........................................
Lower Hook Equipped ................................
Location Of Lower Hook Release ..............
Load Released Prior To Impact ............... Line Or Load Impact Aircraft In-Flight......
Load Measuring Device ...........................
Hoist Operations .................................