FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
For
Learjet Models 35A & 36A
REDUCED VERTICAL SEPARATION MINIMUM (RVSM) CAPABILITY
With
IS&S AIR DATA SYSTEM
And
ROSE_MOUNT PITOT STATIC PROBES

Serial No._________ Reg. No._________
Installation Configuration No._________

This Supplement must be attached to the FAA Approved Airplane Flight Manual when
the airplane is modified for Reduced Vertical Separation Minimum (RVSM) Operational
Capability in accordance with technical data approved by STC ST02016CH

For Limitations, Procedures, and Performance information not contained in this
Supplement, consult the basic Airplane Flight Manual.

FAA APPROVED

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FAA Approved
Date:  JUN 30 2010
## LOG OF REVISIONS

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<td>2</td>
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<td>Added reference to IS&amp;S 9D-80170-3 ADDU &amp; 9B-06017-12 Config Module and identified 2 installation configurations</td>
<td>E. Michael Ward for Charles L. Smalley ACE-117C</td>
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<td>3</td>
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<td>Added reference to IS&amp;S 9D-80170-3 ADDU with 9B-06017-41 Config Module, Identified Additional Installation configuration.</td>
<td>[Signature] for CLS ACE-117C</td>
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SECTION 0 GENERAL

This Flight Manual Supplement for flight in Reduced Vertical Separation Minimum (RVSM) airspace is applicable to Learjet model 35A and 36A airplanes having an existing FC-200 (J.E.T.) Autopilot and the production “Century III” wings which may also include “Softflite” changes, which are also installed in production or retrofitted by means of a Learjet Aircraft Modification Kit (AMK).

The prerequisite STC, ST01904CH, installs the Innovative Solutions & Support (IS&S) Air Data System and Rosemount Pitot-Static Probes in Learjet 24/25/28/35/36 series airplanes. The IS&S Air Data System consists of 2 ea. self-sensing, RVSM capable altimeters referred to as digital Air Data Display Units (ADDUs) with selectable altitude alerting function. Each ADDU also has a configuration module attached that contains the static source error correction data. The Analog Interface Unit (AIU) receives digital information from the ADDU selected as master and converts it to an analog signal compatible with the J.E.T. FC-200 autopilot for altitude hold capability. The Raisbeck ZR Lite drag reduction modification STC ST01468SE has been found compatible with Royal Air STC ST02016. The ZR Lite modification includes a 14 degree flap setting in lieu of the 20 degree setting depicted on performance charts herein therefore, the Raisbeck ZR Lite AFMS must be referred to for possibly more restrictive limitations.

There are 3 approved configurations as follows:

CONFIGURATION 1: Applicable to All model 35As and 36As that have the JET FC-200 Autopilot.
Configuration 1 uses:
2 ea. 9D-80130-15 IS&S Air Data Display Units (ADDU)
2 ea. 9B-03508-114 IS&S Configuration Modules.
1 ca. 9B-81040-30 IS&S Analog Interface Unit (AIU)
1 ca. RACB-72539-4-01 Wiring Harness
1 ca. RACB-72539-4-03 Wiring Harness
1 ca. RACB-72539-6 Accessory Circuit Breaker (ACB) Panel

CONFIGURATION 2: Applicable to All model 35As and 36As that have the JET FC-200 Autopilot.
Configuration 2 uses:
2 ea. 9D-80170-3 IS&S Air Data Display Units (ADDU)
2 ea. 9B-06017-12 IS&S Configuration Modules.
1 ca. 9B-81040-30 IS&S Analog Interface Unit (AIU)
1 ca. RACB-72539-4-01 Wiring Harness
1 ca. RACB-72539-4-03 Wiring Harness
1 ca. RACB-72539-6 Accessory Circuit Breaker (ACB) Panel
CONFIGURATION 4: Applicable to All model 35As and 36As that have the JET FC-200 Autopilot.

Configuration 4 uses:
2 ea. 9D-80170-3 IS&S Air Data Display Units (ADDU)
2 ea. 9B-06017-41 IS&S Configuration Modules.
1 ea. RACB-72539-4-02 Wiring Harness
1 ea. RACB-72539-4-02-1 Valid Signal Inverter
1 ea. RACB-72539-4-03 Wiring Harness
1 ea. RACB-72539-6 Accessory Circuit Breaker (ACB) Panel

Note 1. Configuration 5 does NOT require the IS&S Analog Interface Unit (AIU). In this case the Pilot's ADDU has built in Analog Interfacing capabilities which will supply the autopilot altitude hold analog error signal to the FC-200 autopilot that is proportional to the ALT HOLD errors related to ascending and descending.

SECTION 1 - LIMITATIONS

1. This aircraft has been evaluated in accordance with 14 CFR Part 91, Appendix G, “Operations in Reduced Vertical Separation Minimum (RVSM) Airspace”, and FAA Memorandum 91-RVSM, Change 2, dated February 10, 2004, “Guidance Material on the Approval of Operators/Aircraft for RVSM Operations” and is qualified for operations as an approved aircraft in RVSM airspace. This finding does not constitute approval to conduct Reduced Vertical Separation Minimum operations.
SECTION II - NORMAL PROCEDURES

1. EXTERIOR INSPECTION

POWER OFF CHECKS

A. Left Pitot Static Probe – COVER REMOVED, CLEAR OF OBSTRUCTIONS

B. Visually inspect Left Pitot Static Probe for Damage and fuselage skin for damage within a 3 foot diameter surrounding the Pitot-Static Probe. Support structure, alignment, and/or skin contour may have been altered which may cause Static Source Errors affection flight into RVSM airspace.

C. Right Pitot Static Probe – COVER REMOVED, CLEAR OF OBSTRUCTIONS

D. Visually inspect Right Pitot Static Probe for Damage and fuselage skin for damage within a 3 foot diameter surrounding the Pitot-Static Probe. Support structure, alignment, and/or skin contour may have been altered which may cause Static Source Errors affection flight into RVSM airspace.

2. BEFORE STARTING ENGINES

POWER OFF CHECKS

A. ACB Panel

1. ADDU MASTER switch – AS REQUIRED

2. ADDU DAY/NIGHT TEST switch – AS REQUIRED

3. Circuit Breakers – CHECKED

POWER ON CHECKS

A. Pilot Altimeter self test – COMPLETE

B. Copilot Altimeter self test – COMPLETE
SECTION II - NORMAL PROCEDURES

NOTES

The test sequence is performed automatically at power up and may be repeated by actuating the spring loaded test switch on the ACB Panel at any time the aircraft is under 40 knots. Actuating the test switch also illuminate each ADDU ALT light and the AIU FAIL light. Do NOT attempt to press the small test switch on the ADDU bezel.

The test sequence first activates all segments of the LCD, displays fault history (if any) and fault codes (if any), then the installation configuration is displayed. The large letters in the center of the ADDU will display “24.25”. The lower right will display “1 yes” on the pilot’s side and “2 yes” on the copilot’s side. The lower left of the 9D-80130-15 ADDU (configuration 1) will display “A 105”. The 9D-80170-3 ADDU (configurations 2 & 4) will not display the "A 105".

It is recommended that the flight crew monitor the test sequence of each ADDU prior to flight. The failure of any LCD segment, the presence of fault history or fault codes, or incorrect configuration display, requires corrective action by qualified maintenance personnel.

SYSTEM DESCRIPTION

A. Air Data Display Unit (ADDU)

The integrally-lighted ADDU incorporates an electro-mechanical pointer/LCD digital display of baro/SSEC-corrected altitude (if equipped), baro-correction display, and a selected altitude display and amber altitude alert (ALT) light. The barometric altitude display range is from -1,000 to 53,000 ft. (-300 to 16,154 meters).

Barometric pressure is set manually with the BARO knob and is displayed in inches of Mercury (inHg) or hectoPascals (hPa) on the baro-correction displays. Momentarily pressing the BARO knob selects standard barometric pressure (29.92 inHg/1013 hPa) at transition altitudes. (Note that 1 hectoPascal (hPa)=1 millibar (mbar)

Units of measure for the altitude readout (M/ft) are manually changed by pressing and holding the BARO knob for more than 8 seconds.

Units of measure for the barometric readout (inHg/hPa) are manually changed by pressing and holding the BARO knob for more than 4 seconds but less than 8 seconds.

The Selected Altitude function uses the ALT SEL knob for setting the alert altitude and for canceling altitude alert notifications: rotate to set, or push to cancel. On approach to the ‘selected altitude’, audio and visual alerts are issued

FAA Approved
Date: 03/06/2010
SECTION II - NORMAL PROCEDURES

SYSTEM DESCRIPTION (cont.)

at 1000 feet. The visual alert can be cancelled by pressing the ALT SEL knob or by selecting a new ‘selected altitude’, or it will extinguish automatically 200 feet from the ‘selected altitude’. On departure from the ‘selected altitude’ audio and visual alerts are issued at 200 feet and must be manually cancelled by pressing the ALT SEL knob, or by selecting a new ‘selected altitude’. Either ADDU may be used to select the alert altitude. The other ADDU will repeat the selected alert altitude.

The ACB Panel contains an ADDU MASTER select switch which selects which ADDU (#1 pilot’s or #2 copilot’s) will be the master. Each ADDU, when selected, will operate in master status for the function of Altitude Alerting, Altitude Encoding for the transponder, and Altitude Information sent to the AIU for the autopilot altitude hold function. An “A” icon in the center of the ADDU identifies it as the master.

B. Configuration Module

Each ADDU has a Configuration Module connected to it. The configuration module contains the airplane specific installation configuration and Static Source Error Correction (SSEC) data.

C. Analog Interface Unit (AIU)

The AIU receives digital information from the ADDU selected as master and converts it to an analog signal compatible with the J.E.T. FC-200 autopilot for altitude hold capability.

An AIU FAIL indicator, a yellow lamp located near the Standby Barometric Altimeter, will illuminate if the AIU Valid Signal is not present or the 26VAC reference signal from the autopilot is not present.

D. Accessory/Circuit Breaker Panel (ACB)

The ACB Panel is located in the center console. It contains the 7 circuit breakers necessary for the Air Data System. It also contains the Sonalert for altitude alerting, an ADDU MASTER select switch, a DAY/NIGHT TEST switch for dimming the ALT and AIU FAIL lights and for preflight testing of the Air Data System.
SECTION II - NORMAL PROCEDURES

SYSTEM DESCRIPTION (cont.)

E. Rosemount Pitot/Static Probes

There are 2ea. 856NA Rosemount Pitot/Static Probes installed, one on each side of the aircraft between frames 4 and 5. The Total pressure (pitot) portion of the Rosemount probes replaces the original pitot tubes. The Static pressure portion of the Rosemount probes are connected only to the IS&S Air Data Computers (ADDUs). The original flush static ports are retained for use with the standby altimeter, pilot/copilot airspeed indicators, vertical speed indicators, Mach switch, and EPR system as shown.

Note: The Pitot Tube, being the lowest point in the Pitot system, may not have a drain.
SECTION II - NORMAL PROCEDURES

SYSTEM DESCRIPTION (cont.)

F. Circuit Breakers

The following circuit breakers are associated with the IS&S ADDU systems:

<table>
<thead>
<tr>
<th>CB NAME</th>
<th>AMPS</th>
<th>LOCATION</th>
<th>BUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALT PRI</td>
<td>5A</td>
<td>Copilot CB Panel</td>
<td>R ESS A BUS (see note 1)</td>
</tr>
<tr>
<td>#1 ADDU</td>
<td>1A</td>
<td>ACB Panel</td>
<td>PRI DC BUS</td>
</tr>
<tr>
<td>#2 ADDU</td>
<td>1A</td>
<td>ACB Panel</td>
<td>PRI DC BUS</td>
</tr>
<tr>
<td>AIU</td>
<td>1A</td>
<td>ACB Panel</td>
<td>PRI DC BUS</td>
</tr>
<tr>
<td>ALT SEC</td>
<td>5A</td>
<td>Copilot CB Panel</td>
<td>R ESS A BUS</td>
</tr>
<tr>
<td>#1 ADDU</td>
<td>1A</td>
<td>ACB Panel</td>
<td>SEC DC BUS</td>
</tr>
<tr>
<td>#2 ADDU</td>
<td>1A</td>
<td>ACB Panel</td>
<td>SEC DC BUS</td>
</tr>
<tr>
<td>AIU</td>
<td>1A</td>
<td>ACB Panel</td>
<td>SEC DC BUS</td>
</tr>
<tr>
<td>AIU</td>
<td>1A</td>
<td>ACB Panel</td>
<td>26 VAC (ref from autopilot computer)</td>
</tr>
</tbody>
</table>

ACB Panel (pedestal mounted Accessory / CB Panel)

**Note 1:** The ALT PRI circuit breaker is actually powered from the DC Left Essential A Bus (same side as the Pilot's ADDU) but is installed on the row labeled R ESS A BUS on the Copilot's Circuit Breaker Panel.
SECTION III - EMERGENCY / ABNORMAL PROCEDURES

EMERGENCY PROCEDURES

No changes to basic AFM Procedures

ABNORMAL PROCEDURES

FAILURE OF BOTH ADDUs  BLANK or UNUSABLE DISPLAYS

A. Maintain aircraft control using the standby displays for attitude and altitude. Use the pneumatic Mach-airspeed indicators for airspeed.

B. ACB Panel circuit breakers – CHECKED

C. If in RVSM airspace, notify ATC of loss of all primary altimetry systems and altitude reporting capability.

D. Land as soon as possible

MASTER ADDU FAILURE  BLANK or OFF or UNUSABLE DISPLAY

A. Maintain aircraft control using the standby or cross-side ADDU display for altitude.

B. ACB Panel circuit breakers – CHECKED

C. ADDU MASTER switch – SELECT OPERATIONAL ADDU AS MASTER, verify that the selected ADDU’s Active Master “A” is illuminated.

D. If in RVSM airspace, notify ATC of loss of redundancy of primary altimetry systems.

SLAVE ADDU FAILURE  BLANK or OFF or UNUSABLE DISPLAY

A. Maintain aircraft control using the standby or cross-side ADDU display for altitude.

B. ACB Panel circuit breakers – CHECKED

C. If in RVSM airspace, notify ATC of loss of redundancy of primary altimetry systems.
### MINOR ADDU FAILURES

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Indication</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot’s Altimeter</td>
<td>PWR flag</td>
<td>ADDU operating on its cross side DC power input. ADDU operates normally</td>
</tr>
<tr>
<td></td>
<td>STBY flag</td>
<td>Loss of SSEC. Select #2 ADDU as Master. Refer to charts 4-14 &amp; 4-14A.</td>
</tr>
<tr>
<td></td>
<td>COM flag</td>
<td>Loss of received communication from the cross-side ADDU.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If COM (yellow) is displayed on the SLAVE ADDU, the Selected Altitude Display (counter) of the unit will blank.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If COM (yellow) is displayed on the MASTER ADDU, the SLAVE unit can no longer control the Selected Altitude Display (counter)</td>
</tr>
<tr>
<td>Copilot’s Altimeter</td>
<td>PWR flag</td>
<td>ADDU is operating on its cross side DC power input. ADDU operates normally</td>
</tr>
<tr>
<td></td>
<td>STBY flag</td>
<td>Loss of SSEC. Select #1 ADDU as Master. Refer to charts 4-14 &amp; 4-14A.</td>
</tr>
<tr>
<td></td>
<td>COM flag</td>
<td>Loss of received communication from the cross-side ADDU.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If COM (yellow) is displayed on the SLAVE ADDU, the Selected Altitude Display (counter) of the unit will blank.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If COM (yellow) is displayed on the MASTER ADDU, the SLAVE unit can no longer control the Selected Altitude Display (counter)</td>
</tr>
</tbody>
</table>
SECTION III - EMERGENCY / ABNORMAL PROCEDURES

ABNORMAL PROCEDURES (cont.)

AIU FAILURE

**AIU FAIL (YELLOW) LIGHT ILLUMINATED**

*Autopilot altitude function is inoperative*

A. Altitude hold – OFF

B. Maintain altitude manually with the autopilot pitch wheel. Closely monitor altitude.

C. ADDU MASTER switch – SELECT OTHER OPERATIONAL ADDU AS MASTER, verify that the selected ADDU’s Active Master “A” is illuminated.

D. **IF THE AIU FAIL annunciator remains illuminated** after switching ADDUs:
   a. Verify Autopilot Altitude Hold is disengaged.
   b. If aircraft is in RVSM airspace, notify ATC of loss of Altitude Hold capability.

E. **If the AIU FAIL annunciator extinguishes after switching ADDUs:**
   a. Re-Engage Autopilot Altitude Hold.
   b. Monitor and maintain aircraft altitude using the operating ADDU.
   c. Cross-check aircraft altitude using the operating ADDU and the standby altimeter. Closely monitor altitude.
   d. If aircraft is in RVSM airspace, Notify ATC of loss of redundancy of primary altimetry systems.

DIVERGANCE OF ADDUs By More Than 200 FT.

A. Ensure both baros are set the same

B. If both baro’s are set the same:
   a. Attempt to identify the defective altimetry system by cross-checking the pilot and copilot ADDUs with the Standby Altimeter.
SECTION III - EMERGENCY / ABNORMAL PROCEDURES

ABNORMAL PROCEDURES (cont.)

C. If unable to determine the accuracy of either altimetry system:
   a. Disengage Autopilot Altitude Hold.
   b. Monitor and maintain assigned altitude using Standby Altimeter.
   c. If aircraft is in RVSM airspace, notify ATC of loss of all primary
      altimetry systems and altitude reporting capability.

D. If able to identify defective altimetry system as the MASTER ADDU:
   a. Disengage Autopilot Altitude Hold.
   b. SELECT OTHER OPERATIONAL ADDU AS MASTER, verify that the
      selected ADDU’s Active Master “A” is illuminated.
   c. Re-engage Autopilot Altitude Hold.
   d. Monitor and maintain aircraft altitude using operating ADDU.
   e. Cross-check aircraft altitude using the operating ADDU and the Standby
      Altimeter. Closely monitor altitude.
   f. If aircraft is in RVSM airspace, notify ATC of loss of redundancy of
      primary altimetry systems.

E. If able to identify defective altimetry as the Slave ADDU:
   a. Monitor and maintain aircraft altitude using operating ADDU.
   b. Cross-check aircraft altitude using the operating ADDU and the Standby
      Altimeter. Closely monitor altitude.
   c. If aircraft is in RVSM airspace, notify ATC of loss of redundancy of
      primary altimetry systems.

PITOT HEAT FAILURE    PITOT (AMBER) ANNUNCIATOR ILLUMINATED

A. Maintain aircraft control using the standby altimeter

B. Alternate Static Source – SELECTED

If the autopilot is engaged:

C. Altitude hold – OFF

D. Maintain altitude manually with the autopilot pitch wheel. Closely monitor
   altitude.
SECTION IV - PERFORMANCE

INTRODUCTION

New charts included in this AFM Supplement were derived from test data obtained by flight testing the new Rosemount pitot-static probe installation on an instrumented aircraft. The chart numbering system in this AFM Supplement matches the basic aircraft AFM to the maximum extent possible.

The pilot and copilot altimeters are identical, electrically-powered IS&S Air Data Display Units. The new Rosemount pitot-static probe installation has reduced static source position error values over that of the aircraft’s original flush static ports. The new Rosemount probe’s pitot and static lines are connected directly to the ADDUs (see system description and diagram on page 9). The pneumatic standby altimeter is connected to the original flush static ports.

The pilot and copilot airspeed indicators receive total pressure from the pitot portion of the Rosemount pitot-static probe and static pressure from the aircraft’s flush static ports. Therefore, the airspeed indicator’s position error is mostly a function of the flush static ports and remains essentially unchanged from that of the aircraft’s original values. There are no new or modified Airspeed related charts required for this installation.

Charts 4-14 and 4-14A present position error values associated with the Rosemount pitot-static system installation for the Pilot and Copilot ADDUs (altimeters). The Configuration Module, connected to each ADDU, mathematically corrects for the known static source error. Thus the altitude displayed on each ADDU is a corrected or actual altitude requiring no further correction by the crew using any chart information. However, should a malfunction occur in either of the air data display units the ADDU will illuminate the “STBY” flag which indicates that the ADDU is not applying the configuration module static source error correction (SSEC). In this case the displayed altitude is no longer a corrected altitude and the crew should refer to charts 4-14 and 4-14A “with Zero SSEC Curve” and manually apply the appropriate altitude correction.

Charts 4-15 and 4-15A represent the existing flush static port position error for the pneumatic standby altimeter. The altitude displayed on the standby altimeter always contains an error equal to the value shown on charts 4-15 and 4-15A. The crew should manually apply the chart’s position correction value to determine the corrected or actual altitude for the aircraft when using the standby altimeter.
Figure 4-14
Pilot and CoPilot Altitude Position Error
Rosemount Pitot Static Probe

ALTITUDE POSITION CORRECTION
ADDU WITH ZERO SSEC CURVE
FLAPS UP GEAR UP

EXAMPLE:
ALTITUDE 30000 FT
AIRSPEED 315 KIAS
POSITION CORRECTION PLUS 20 FT
ACTUAL ALTITUDE 30020 FT

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Figure 4-14A

Pilot and CoPilot Altitude Position Error

Rosemount Pitot Static Probe

ALTITUDE POSITION CORRECTION
ADDU WITH ZERO SSEC CURVE
FLAPS - TO 8°, 10°, 20° OR 40° GEAR UP OR DOWN

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Figure 4-15

Flush Static Ports

ALTITUDE POSITION CORRECTION
STANDBY ALTIMETER

EXAMPLE:
FLAPS UP
GEAR UP

ALTIMETER
AIRSPEED
POSITION CORRECTION
ACTUAL ALTITUDE

20000 FT
255 KIAS
MINUS 200 FT
19800 FT

ALTIMETER

INDICATED AIRSPEED - KNOTS

ZERO
-600
-500
-400
-300
-200
-100
0
100
200
300
400

ALTIMETER

ALTITUDE POSITION CORRECTION - FEET

100
200
300
400

100
150
200
250
300
350
400

SEA LEVEL
10000 FT
20000 FT
30000 FT
40000 FT
45000 FT

FAA Approved
Date: JUN 30 2010

Document No. RACB-D009 Rev. 3

STC ST02016CH

AFM Supplement to
Learjet Model 35A/36A
Airplane Flight Manual
Figure 4-15A

Flush Static Ports

ALTITUDE POSITION CORRECTION
STANDBY ALTIMETER
FLAPS -TO 8°, 10°, 20° OR 40° GEAR UP OR DOWN

Example:
FLAPS 20, GEAR UP/DOWN
Airspeed 194 KIAS
Position Error -120 FT