INSTRUCTIONS FOR INITIAL AND CONTINUED AIRWORTHINESS FOR CESSNA MODEL 500/501 AND 550/551 SERIES AIRCRAFT QUALIFIED FOR OPERATIONS IN REDUCED VERTICAL SEPARATION MINIMUM (RVSM) AIRSPACE

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Revision L, 28 June 2006

Signature Page{tc \l1 "**Signature Page**}

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Approved By _____
Tim Winiesdorffer
Garrett Aviation Services

Accepted By _____
Federal Aviation Administration
Chicago Aircraft Certification Office

Log Of Revisions

{tc \l1 "Log Of Revisions}

Rev	Date	Affected Pages	Initial
	March 19, 02	Original Release	RTM
A	Apr 23, 02	Title page - vi, 1.1-1.2, 2.2-2.7, 3.1-3.2, 4.1-4.2 Inserted documentation to allow for dual AIU installation, TAT probe location definition, additional transponder requirements and other miscellaneous corrections.	RTM
B	May 22, 02	Title page - iv, vi, 1.2, 2.1 - 2.5, 2.7, 3.1 - 3.4 Made corrections based on AEG Review, Added note and correction to Tables 2.2 & 3.1. Included reference to equipment STC, TAT probe installation requirements and aircraft exterior modifications related to RVSM compliance. Modified Figure 3.1 and added Figure 3.2	RTM
C	June 10, 02	Title page - iv, 2.7 Corrected skin overlay change in thickness tolerances and allowance for skin overlay thickness minimums.	RTM
D	Oct. 1, 02	Title page - iv, 2.3 Included Honeywell/Sperry SP-200, P/N 4008519-811 & 4008519-911 to Table 2.1.	RTM
E	July 16, 03	- All Pages: Reformatted entire document to Garrett Aviation Services format including the removal of the Document Control Page (page ii). Removed "change bars" for all previous revisions. Changed "Cessna Citation" to "Cessna Model" in the entire document. - Pages iii, 1.1 – 1.3: Removed FAA signature blocks and outline of initial and continued air-worthiness tasks from section 1.2. - Pages iv – v: Updated Table of Contents and List of Tables. - Page 2.1: Changed "will be granted" to "may be granted". Added text to address airplanes equipped with Williams FJ44 engines. - Page 2.4: Updated component information. - Pages 2.5 & 2.6: Divided Section 2.4.1 into airworthiness and operational approval sections. Updated Revision level of Skin Mapping Document. - Page 2.7: Divided Section 2.4.2 into 12 and 24 month titled sections. All required tasks completely written out. - Page 2.8: Section 2.4.3 All required tasks completely written out. - Page 2.9: Updated Rev level for Skin Map document. - Page 3.1: Removed requirement to file copy of results with Garrett Aviation Services. - Page 3.5: Changed flight segment length from "1 hour" to "at least 30 minutes".	BW

Log Of Revisions

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Rev	Date	Affected Pages	Initial
F	8 Sept., 2003	- Page v, Table of Contents: Updated to reflect previous revisions to the document. - Page vi, List of Tables: Updated page numbers for Tables 2.1 and 2.2	BW
G	15 February 2005	Page 2.2 & 2.3 added additional temperature probe part numbers. Page 2.3 added the VN212 (-901) part number and SP-200 (-920) part number to table 2.1.	TW
H	27 July 2005	Add use of STC SA02076CH-D using the Collins IDS-3000 in the 501 aircraft only.	TW
J	17 March 2006	Revised table 2.1a on page 6 to add the ADDU and config module, added note 6 on page 6 to include the ADDU and configuration module when the aircraft only has 1 AFD-3010 Display.	TW
K	14 April 2006	Revised Note 1 on page 5. The note defines the # of AIU's required when you have dual flight directors in the aircraft.	TW
L	28 June 2006	Removed previous revision dates from page i and ii. Revised table 2.1a on page 6 to include the -002 DIU.	TW

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1.0 Airworthiness Limitations{tc \l1 "1.0 Airworthiness Limitations}

1.1 General Requirements{tc \l2 "1.1 General Requirements}

The Cessna Model 500, 501, 550 and 551 aircraft have been shown to qualify for operation in Reduced Vertical Separation Minimum (RVSM) airspace as group airplanes in accordance with Title 14 of the Code of Federal Regulations (14CFR), Part 91, Appendix G, "Operation in Reduced Vertical Separation Minimum (RVSM) Airspace", and FAA Memorandum 91-RVSM, Change 1, dated 30 June 1999, "Interim Guidance for Approval of Aircraft for Reduced Vertical Separation Minimum (RVSM) Flight". This qualification is based on analysis of the configuration and performance of the air data, automatic altitude control, altitude alerting, and altitude reporting systems. These systems must be maintained in accordance with the inspections and tests specified in this document and other current maintenance practices, to guarantee initial and continued compliance to RVSM specifications.

The owner/operator of the airplane seeking approval for operations in RVSM airspace must add the initial and continued airworthiness inspection and test instructions contained in this document to their existing maintenance and flight operations programs for the airplane to conduct operations in RVSM airspace. Any deviation from these procedures must be coordinated through Garrett Aviation Services and the responsible airworthiness authority prior to operation in RVSM airspace.

The information presented in this document supplements or supersedes the existing maintenance requirements only in those areas specified. Refer to the manufacturer's requirements and procedures for maintenance procedures pertaining to the airplane's systems and specific avionics equipment not covered in these instructions.

1.2 Initial and Continued Airworthiness Requirements{tc \l2 "1.2 Initial and Continued Airworthiness Requirements}

The Airworthiness Limitations section is FAA-approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations, unless an alternative program has been FAA approved. Both the Pilot's and Copilot's altimetry systems must be inspected and verified to the tolerances presented in this document. It is noted that there are no Airworthiness Limitations associated with the RVSM airworthiness compliance of the Cessna Model 500, 501, 550 or 551 aircraft.

2.0 Airplane Maintenance{tc \l1 "2.0 Airplane Maintenance}

2.1 Introduction{tc \l2 "2.1 Introduction}

The Cessna Model 500, 501, 550 and 551 aircraft have been shown to qualify for operation in RVSM airspace as group airplanes based on analysis of the configuration and performance of the air data, automatic altitude control, altitude alerting, and altitude reporting systems. These systems must be maintained in accordance with this document and other current maintenance practices, to guarantee initial and continued compliance to RVSM specifications. Revisions/changes to the Instructions for Continued Airworthiness will be distributed in accordance with Garrett Aviation Services Policies & Procedures System (GAPPS) procedure number QP 04-007, "Customer and Regulatory Notification Process for Garrett Products".

Prior to applying for RVSM operational approval, the operator of each Cessna Model 500, 501, 550 or 551 aircraft must first conduct the inspections, tests, and all other requirements for initial airworthiness compliance as presented in Section 2.4.1 of this document. The operator should coordinate with the appropriate FAA Flight Standards District Office (FSDO) to determine what documentation must be provided to prove compliance with the requirements for initial airworthiness. When compliance with the initial airworthiness tasks has been demonstrated, RVSM operational approval may be granted by the FSDO. After initial airworthiness has been granted, the airplane must be maintained in accordance with the continued airworthiness requirements presented in Section 2.4.2 of this document.

2.2 Aircraft Configuration{tc \l2 "2.2 Aircraft Configuration}

The Cessna Model 500, 501, 550 and 551 aircraft are equipped with two independent air data systems comprised of independent, cross-coupled static sources, air data computers, and altimeters. The aircraft are also equipped with single autopilot and altitude alerting installations and two altitude-reporting transponders. The installation and operation of these systems have been shown to meet RVSM requirements.

The Cessna Model 500 aircraft is equipped with either two JT15D-1, JT15D-1A, or JT15D-1B engines, and is certified to operate up to FL410 and M_{MO}=0.70.

The Cessna Model 501 aircraft is equipped with either two:

JT15D-1, JT15D-1A, or JT15D-1B engines, and is certified to operate up to FL410 and M_{MO}=0.70.

OR

Williams FJ44-2A engines (STC number ST09559AC) and is certified to operate up to FL430 and M_{MO}=0.70.

2.2 Aircraft Configuration(Continued)

The Cessna Model 550 and 551 aircraft are equipped with two JT15D-4 engines, and are certified to operate up to FL430 and M_{MO}=0.70.

Any future engine changes/modification, including hush kits, may affect RVSM performance, and hence, these instructions. Contact Garrett Aviation Services if such engine changes/modifications are, or shall be, conducted.
The Cessna Model 500 and 501 equipped with "Longwing" and "Eagle" STC modifications have been shown to have no affect on the RVSM qualification or performance of these airplanes, and may be incorporated without changing the RVSM qualification of the airplane.

The Cessna Model 500, 501, 550, and 551 aircraft can have a Total Air Temperature (TAT) probe (P/N 102AU1AG, 102DB1CK, 102AU1AF) located at station 81.0 below the right hand nose baggage door as a part of the STC ST01392CH-D, SA01558CH-D or SA02076CH-D relocation of this probe (if installed) may invalidate the defined SSEC for this aircraft and the associated RVSM approval/compliance for this aircraft. Removal of this probe and operation of this aircraft with this probe removed will not affect the RVSM approval/compliance for this aircraft.

2.3 Aircraft System Description{tc \l2 "2.3 Aircraft System Description}

Static pressure information is provided to the air data display unit (ADDU) or Air data Computer (ADC) through cross-coupled static sources located on the left and right sides of the fuselage. The (ADDU or ADC), through a static source error correction, provide corrected altitude information to the altimeters for display. The autopilot and altitude alerter receives altitude deviation data from the Pilot's or the Copilot's altimeter. Each altimeter provides altitude data to their respective transponders for altitude reporting. The aircraft system components approved for RVSM operations on the Cessna Model 500, 501, 550 or 551 aircraft are presented in Table 2.1 or Table 2.1a.

The components listed in Table 2.1 or Table 2.1a must be maintained in accordance with approved maintenance practices, and the Initial and Continued Airworthiness instructions presented in this document. RVSM compliance was demonstrated with the following antennas installed on the test aircraft:

1. A flight phone antenna (typically 7.0 inches tall or less) located at FS 62.0 on the right hand side of the aircraft,
2. An L-Band antenna (typically 3.5 inches tall or less) located at FS 76.5 on the left hand side of the aircraft, and
3. An L-Band antenna (typically 3.5 inches tall or less) located at FS 58.0 on the left hand side of the aircraft.

Contact Garrett Aviation Services prior to the installation of any additional antennas forward of the static ports as installation of additional antennas may invalidate the RVSM certification for these aircraft.

TABLE 2.1 Required Avionics and Air Data Components for RVSM Operation Cessna Model 500, 501, 550 or 551 Aircraft

Description	Manufacturer	Model	Part Number
Air Data Display Unit #1 (ADDU1)	IS&S	ADDU	9D-80130-16
Air Data Display Unit #2 (ADDU2)	IS&S	ADDU	9D-80130-16
Analog Interface Unit (AIU1)	IS&S	AIU	9B-81040-15 or 9B-81040-26
Analog Interface Unit (AIU2)(1)	IS&S	AIU	9B-81040-15 or 9B-81040-26
Configuration Module #1 & #2 (2) (CM1 & CM2)	IS&S	CM	9B-03508-15
Transponder #1 & #2 (3)(4)	Collins or Honeywell	TDR-90 or XS-850	622-1270-001 or 7510774-901
Autopilot	Sperry/Honeywell	SPZ-500	550/551 Airplanes: 4008519-(920 or 941) 500/501 Airplanes: 4008519-811 4008519-911
Altitude Alerter	Intercontinental Dynamics or Honeywell	~ or VN-212	540-23989-311 or 4020571-(901 or 904)
Standby Altimeter (5)	As Noted	As Noted	As Noted
Total Air Temperature (TAT) Probe(6)	Rosemount	~	102AU1AG, 102DB1CK, 102AU1AF

Note:
1. If the aircraft is equipped with dual flight directors & both flight directors are capable of controlling the aircraft in RVSM airspace 2 AIU's are required. If the aircraft is equipped with dual flight directors and the #2 flight director is not capable of controlling the aircraft in RVSM airspace then ONLY 1 AIU is required.
2. When the IS&S Configuration Module (P/N 9B-03508-15) is correctly installed, the Air Data Display Units (ADDU) will display "CES1" at start-up. If either ADDU does not display "CES1" at start-up, RVSM operations are prohibited.
3. Any transponder that meets or exceeds the requirements of one of the following Technical Standard Orders (TSO) may be substituted for those listed. TSO-C74b or TSO-C74c (Mode C); TSO-C112 (Class 2a; Mode S); TSO-C112a (Mode S).
4. Only one transponder is required to be operational for operations in RVSM airspace and it must be capable of reporting altitude information from either the Pilot or Copilot's ADDU.
5. Any standby altimeter that meets or exceeds the requirements of TSO-C10b may be substituted for the unit listed.
6. For RVSM operations, the TAT probe, (if installed), must be installed on Station 81 below the right hand nose baggage door. Relocation of this probe may invalidate the defined SSEC for this aircraft and the associated RVSM approval/compliance for this aircraft.

This document does not constitute approval for installation of the components listed in Table 2.1. This document is invalid unless these components have been installed per ElectroSonics Supplemental Type Certificate ST01392CH-D or SA01558CH-D and approved by the appropriate Certifying Authority as a separate, independent approval. Replacement of the listed equipment must be accomplished with units of identical part number. If alternate avionics equipment is to be or intended to be installed, a re-evaluation of the configuration for equivalent RVSM performance must be conducted and approved.

TABLE 2.1a Required Avionics and Air Data Components for RVSM Operation Cessna Model 501 Aircraft

Description	Manufacturer	Model	Part Number	QTY
Adaptive Flight Display[6]	Collins	AFD-3010	822-1084-460	1 or 2
Adaptive Flight Display	Collins	AFD-3010E	822-1753-460	1
Display Control Panel	Collins	DCP-3030	822-1828-062	2
Display Interface Unit	Collins	DIU-3010	822-2063-001 or 822-2063-002	1 or 2
J2/Kollsman Air Data Computer[6]	Kollsman	J2/Kollsman	24471	1 or 2
Configuration Module	Kollsman		20718-0015	2
Air Data Display Unit (ADDU) [6]	IS&S	ADDU	9D-80130-32	1
Configuration Module [5] [6]	IS&S	CM	9B-03508-15	1
Analog Interface Unit	IS&S	AIU	9B-81040-26	1
Transponder #1 & #2 [1] [2]	As noted	As Noted	As Noted	2
Autopilot	Sperry/Honeywell	SP-200	4008519-811 or 4008519-911	1
Standby Altimeter [3]	As noted	As noted	As Noted	1
Total Air Temperature (TAT) Probe[4]	Rosemount	~	102AU1AG,102DB1CK, 102AU1AF	1

NOTES

1. Any Transponder that meets or exceeds the requirements of one of the following Technical Standard Orders (TSO) may be used. TSO-C66a or TSO-C47c (Mode C); TSO-C112 (Class 2a; Mode S); TSO-C112a (Mode S).
2. If only one transponder is operational, it must be capable of reporting from either the pilot's or copilot's ADC.
3. For RVSM operations, a standby altimeter that meets or exceeds the requirements of TSO-C10b must be installed.
4. For RVSM operations, the TAT Probe, (if installed), must be installed at Station 81.0 below the right hand nose baggage door.
5. When the IS&S Configuration Module (P/N 9B-03508-15) is correctly installed, the Air Data Display Unit (ADDU) will display "CES1" at start-up. If the ADDU does not display "CES1" at start-up, RVSM operations are prohibited.
6. If the aircraft has 2 AFD-3010 displays then the ADDU and configuration module are not required. If the aircraft has 1 AFD-3010, only 1 Kollsman ADC and a ADDU and configuration module are required.

This document does not constitute approval for installation of the components listed in Table 2.1a. This document is invalid unless these components have been installed per Supplemental Type Certificate SA02076CH-D and approved by the appropriate Certifying Authority as a separate, independent approval. Replacement of the listed equipment must be accomplished with units of identical part number. If alternate avionics equipment is to be or intended to be installed, a re-evaluation of the configuration for equivalent RVSM performance must be conducted and approved.

2.4 Requirements For RVSM Initial And Continued Airworthiness{tc \l2 "2.4 Requirements For RVSM Initial And Continued Airworthiness}

The following inspections, tests, and/or procedures must be included in the basic maintenance plan for the Cessna Model 500, 501, 550 or 551 aircraft seeking approval for operations in RVSM airspace to ensure initial and continued airworthiness for RVSM operation. Both systems (Pilot/Copilot) must be maintained in accordance with these instructions. The information presented in this Section supplements or supersedes the basic airplane manuals only in those areas specified. Normal air data system maintenance specified in the maintenance manual must still be followed as required. For maintenance procedures pertaining to the airplane's systems and specific avionics equipment not covered in these instructions, see the manufacturer's requirements and procedures.

2.4.1 Servicing Information For Initial Airworthiness{tc \l3 "2.4.1 Servicing Information For Initial Airworthiness}

1. The following inspections/tests are required for RVSM initial airworthiness approval:

   a. Verify the correct avionics components are installed in accordance with Section 2.3 Table 2.1 or Table 2.1a.

   b. Implement the static port refinishing process specified in Garrett Doc. No. 48-8408-001, "Citation RVSM Port Preparation Procedure for Initial and Continued Airworthiness", Revision NC, dated January 18, 2002, which is presented in Appendix A of this document.

   c. Conduct the air data system accuracy check presented in Section 3.1.1 using accurate ground test equipment, and verify the air data system errors are within specified RVSM tolerances.

   d. Conduct the following inspections for the RVSM Critical Region.

      1. Conduct a visual inspection of the RVSM Critical Region and mark the RVSM Critical Region defined by defined in Section 3.1.2 and Figure 3.1. Place the RVSM modification compliance Placard on the aircraft as defined in Section 3.1.2 and Figures 3.1 and 3.2.

      2. Verify the absence of skin waviness, scratches, damage, and prior repairs in this region.

      3. Verify entire inspection area meets any criteria found in the Cessna Model 500 Series Structural Repair Manual, Chapter 51-00-03, Aerodynamic Surfaces - Description. Repair any discrepancies found using standard procedures found in the Structural Repair Manual. If any repairs are made, complete the tasks required in Section 2.4.3.

2.4.1 Servicing Information For Initial Airworthiness{tc \l3 "**2.4.1 Servicing Information For Initial Airworthiness**} Continued.

4. Visually inspect the area around each static heater port to ensure that it complies with Figure 1 in Appendix A, including the transition from painted to unpainted surface.

5 Verify that any placards or stencils are located outside of the RVSM Critical Area defined in Figure 3.1.

e. Map the skin of the aircraft in the RVSM Critical Region as specified in Garrett Aviation Services Doc. No. 50-8432-001, Reduced Vertical Separation Minimum Skin Waviness Inspection Procedures For The Cessna Model 500/501, 550/551, S550 And 560 Citation Aircraft, Revision C, dated 1 July 2003. Once the skin is mapped the results should be compared with the tolerances in Table 2.2. If the aircraft exceeds the allowances in Table 2.2, contact Garrett Aviation Services.

f. Conduct the in-flight autopilot altitude hold check described in Section 3.1.3 and verify that the airplane can maintain the specified tolerance.

Inspections 1.c, 1.d and 1.e must be conducted at ambient temperature (50^0 to 95^0F). The aircraft does not need to be jacked or leveled to conduct these inspections and tests. No access or inspection panels are required to be opened in order to conduct these inspections and tests.

2. The following items must be accomplished by the owner/operator in order to achieve RVSM operational approval:

a. Revise the Minimum Equipment List (MEL) or a suitable alternative method to specify minimum equipment requirements for RVSM operation (see Section 4.1).

b. Verify that all flight crews are familiar with operational conditions and procedures presented in the Airplane Flight Manual Supplement (AFMS) and all other contingencies necessary for the safe operation of the Cessna Model 500, 501, 550 or 551 aircraft in RVSM airspace. Note that RVSM-specific airspace procedures (contingencies and other such protocols) may differ from region to region (i.e. Europe, North Atlantic, Pacific).

2.4.2 Servicing Information For Continued Airworthiness{tc \l3 "2.4.2 Servicing Information For Continued Airworthiness}

2.4.2.1 Twelve (12) Month Inspection Requirements

After initial airworthiness approval has been granted, the following tasks must be conducted every 12 months in service:

1. Verify the correct avionics components are installed in accordance with Section 2.3 Table 2.1, or Table 2.1a.

2. Conduct the air data system accuracy check presented in Section 3.1.1 using accurate ground test equipment, and verify the air data system errors are within specified RVSM tolerances.

3. Conduct the following inspections for the RVSM critical region:

    a. Conduct a visual inspection of the RVSM Critical Region and verify that the RVSM Critical Region corner markings as defined in Section 3.1.2 and Figure 3.1 are discernable and in good condition. Verify that the RVSM modification compliance Placard as defined in Section 3.1.2 and Figures 3.1 and 3.2 is in place and readable.

    b. Verify the absence of waviness, scratches, damage, and prior repairs.

    c. Verify that the entire inspection area meets any criteria found in the Cessna Model 500 Series Structural Repair Manual, Chapter 51-00-03, Aerodynamic Surfaces - Description. Repair any discrepancies found using standard procedures found in the Structural Repair Manual. If any repairs are made, complete the tasks required in Section 2.4.3.

    d. Verify that all placards or stencils are located outside of the RVSM Critical Area defined in Figure 3.1.

2.4.2.2 Twenty Four (24) Month Inspection Requirements

In addition to the Tasks required every 12 months in service, the following additional task must be completed every 24 months in service:

- Conduct the in-flight autopilot altitude hold check described in Section 3.1.3. Verify the airplane can maintain the specified tolerance.

2.4.3 Damage Within The RVSM Critical Region {tc \l3 "2.4.3 General Static System Servicing Information}

If damage is sustained within the RVSM Critical Region (defined in Figure 3.1) that results in any defect greater than 10 % of the sheet thickness (Cessna Model 500 Series Structural Repair Manual, Chapter 51-10-01, Section 2.A.(1)) repair as specified. After the repair is completed, the following tasks must be completed:

1. Implement the static port refinishing process specified in Garrett Doc. No. 48-84080-001, "Citation RVSM Port Preparation Procedure for Initial and Continued Airworthiness", Revision NC, dated January 18, 2002, which is presented in Appendix A of this document.

2. Conduct the air data system accuracy check presented in Section 3.1.1 using accurate ground test equipment, and verify the air data system errors are within specified RVSM tolerances.

3. Conduct the following inspections for the RVSM critical region:

   a. Conduct a visual inspection of the RVSM Critical Region and mark the RVSM Critical Region defined by defined in Section 3.1.2 and Figure 3.1. Place the RVSM modification compliance Placard on the aircraft as defined in Section 3.1.2 and Figures 3.1 and 3.2.

   b. Verify the absence of skin waviness, scratches, damage in this region.

   c. Verify that the entire inspection area meets any criteria found in the Cessna Model 500 Series Structural Repair Manual, Chapter 51-00-03, Aerodynamic Surfaces - Description. If any discrepancies are found, repair the discrepancy using standard procedures found in the Structural Repair Manual and repeat the Tasks outlined in this section.

   d. Visually inspect the area around each static heater port to ensure that it complies with Figure 1 in Appendix A, including the transition from painted to unpainted surface.

   e. Verify that any placards or stencils are located outside of the RVSM Critical Area defined in Figure 3.1.

4. Map the skin of the aircraft in the RVSM Critical Region as specified in Garrett Aviation Services Doc. No. 50-8432-001, Reduced Vertical Separation Minimum Skin Waviness Inspection Procedures For The Cessna Model 500/501, 550/551, S550 And 560 Citation Aircraft, Revision C, dated 1 July 2003. Once the skin is mapped the results should be compared with the tolerances in Table 2.2. If the aircraft exceeds the allowances in Table 2.2, contact Garrett Aviation Services.

2.4.4 Skin Contour Requirements

Garrett Aviation Services Doc. No. 50-8432-001, Rev C, dated 1July 2003, defines the skin mapping procedures and the skin locations at which the skin contour measurements will be taken for the Cessna Model 500, 501, 550 and 551 aircraft. Table 2.2 defines the minimum and maximum allowable thickness for each horizontal skin line and the skin overlap. The data collected during the skin mapping procedure must fall within the tolerances specified in Table 2.2. There is a pair of columns that give the minimum and maximum allowable thickness if 2 flexible rules are placed on each frame and a second pair of columns that give the values if 3 flexible rules are placed on each frame. The minimum and maximum allowable changes in the thickness for adjacent locations along the rigid rule are given in Table 2.2 as well. These values are unaffected by the number of flexible rules used.

The change in thickness is defined in Equation 1.

$$\Delta\text{Thickness} = \text{Thickness}_{\text{forward}} - \text{Thickness}_{\text{aft}} \quad (1)$$

The smaller location numbers are defined as forward. An example of this calculation is shown in Equation 2.

$$\Delta\text{Thickness}_1 = \text{Thickness}_1 - \text{Thickness}_2 \quad (2)$$

Table 2.2 Skin Waviness and Skin Overlay Inspection Tolerances

Flexible Rule Graduation	Aircraft Side	Thickness (in)				Change in Thickness (in)	
		2 Flexible Rules		3 Flexible Rules			
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
11.0	Left	0.031	0.050	0.051	0.070	-0.007	0.010
	Right	0.032	0.050	0.052	0.070	-0.007	0.010
10.0	Left	0.011	0.052	0.031	0.072	-0.016	0.015
	Right	0.005	0.054	0.025	0.074	-0.018	0.016
9.0	Left	0.024	0.065	0.044	0.085	-0.017	0.018
	Right	0.005	0.052	0.025	0.072	-0.017	0.013
8.0	Left	0.017	0.071	0.037	0.091	-0.018	0.024
	Right	0.005	0.045	0.025	0.065	-0.018	0.017
7.0	Left	0.012	0.063	0.032	0.083	-0.024	0.022
	Right	0.005	0.058	0.025	0.078	-0.021	0.024
6.0	Left	0.005	0.060	0.025	0.080	-0.020	0.016
	Right	0.005	0.090	0.025	0.110	-0.029	0.020
5.0	Left	0.000	0.070	0.020	0.090	-0.035	0.026
	Right	0.010	0.085	0.030	0.105	-0.030	0.028
4.0	Left	0.016	0.057	0.036	0.077	-0.014	0.013
	Right	0.032	0.062	0.052	0.082	-0.014	0.022
3.0	Left	0.024	0.049	0.044	0.069	-0.012	0.015
	Right	0.026	0.053	0.046	0.073	-0.014	0.012
Skin Overlay (See Note 1)	Left	0.033	0.051	0.033	0.051	-0.012	0.008
	Right	0.031	0.057	0.031	0.057	-0.012	0.009
2.0	Left	0.023	0.048	0.043	0.068	-0.009	0.011
	Right	0.030	0.055	0.050	0.075	-0.013	0.016
1.0	Left	0.023	0.058	0.043	0.078	-0.014	0.022
	Right	0.024	0.057	0.044	0.077	-0.013	0.011

Note 1: The Skin Overlay measurement does not utilize flexible rules so its tolerances are unaffected by the number of flexible rules specified in Table 2.2. Skin Overlay thickness measurements less than the indicated minimum specified in Table 2.2 should be acceptable as long as the corresponding changes in thickness tolerances are still maintained.

3.0 Maintenance Instructions{tc \l1 "3.0 Maintenance Instructions}

3.1 Maintenance Schedule and Required Inspections/Tests{tc \l2 "3.1 Maintenance Schedule and Required Inspections/Tests}

The Cessna Model 500, 501, 550 or 551 aircraft seeking approval for operations in the RVSM airspace must be maintained in accordance with the instructions provided in this Section to ensure initial and continued compliance to RVSM systems and performance requirements. These inspections/tests include an air data system accuracy check, visual inspection of the static ports and surrounding region and an in-flight autopilot (altitude hold) performance test. The maintenance intervals and required tasks are summarized in Sections 2.4.1, 2.4.2 and Section 4. All air data system maintenance requirements specified in the approved maintenance manual must also be followed.

3.1.1 Air Data System Maintenance Procedures{tc \l3 "3.1.1 Air Data System Maintenance Procedures}

The altimeters must be maintained in accordance with the manufacturer's maintenance manual, airplane maintenance manual and appropriate regulations. However, these components must also meet the accuracy tolerances shown in Table 3.1, when wired together as a system.

Test Procedure
Equipment Required:
Calibrated Digital Air Data Test Equipment with a combined accuracy/repeatability specification of less than ±20 ft for the test altitude range shown in Table 3.1.

This test must be performed on the aircraft using a calibrated digital air data test equipment, and is to be performed for both Pilot's and Copilot's air data systems.

1. Perform a pitot-static system leak check as described in the Maintenance Manual. For the static leak check, set the air data test unit at 30,000 feet and an indicated airspeed of 200 knots. Leak rate is not to exceed 300 feet/min.
2. Verify that the altitude indicator baro is set to 29.92 in Hg (1013.25 mb).
3. Apply the reference altitude and Mach (or airspeed) for the test condition.
4. Record the altitude displayed by the Pilot's and Copilot's altimeters.
5. Verify that the indicated altitudes are within allowable tolerances.
6. Repeat steps 3 through 5 for all test conditions listed in Table 3.1.
7. File the results with the aircraft maintenance records.

TABLE 3.1 Altimeter Functional Test Specification for Cessna Model 500, 501, 550 or 551 Aircraft

Leak Rate [1]:

Condition Number	Test Set Mach Number	Test Set Airspeed (kt)	Test Set Altitude (ft)	Pilot Altitude (ft)	Copilot Altitude (ft)	Nominal Altitude (ft)	Min Allowable Altitude	Max Allowable Altitude
1	0.400	149	29,000			28,906	28,854	28,958
2	0.500	188	29,000			28,847	28,795	28,899
3	0.600	228	29,000			28,763	28,711	28,815
4	0.700	268	29,000			28,714	28,662	28,766
5	0.400	130	35,000			34,911	34,859	34,962
6	0.500	164	35,000			34,855	34,803	34,907
7	0.600	199	35,000			34,775	34,723	34,827
8	0.700	235	35,000			34,728	34,676	34,780
9	0.400	119	40,000			39,912	39,860	39,964
10	0.500	146	40,000			39,857	39,805	39,909
11	0.600	177	40,000			39,777	39,725	39,829
12	0.700	209	40,000			39,731	39,679	39,783

Air Data Test Set Information	
Manufacturer:	Model:
Serial Number:	Date of Calibration:
Accuracy Specification:	

Note 1: For leak test, set the air data test unit at 30,000 feet and an indicated airspeed of 200 knots. Leak rate is not to exceed 300 ft/min.

3.1.2 Visual Inspection Of The Region Surrounding The Static Ports (RVSM Critical Region){tc \l3 "3.1.2 Visual Inspection Of The Region Surrounding The Static Ports (RVSM Critical Region)}

Inspection Procedure
Equipment Required: None.

Small markings must be applied to the corners of the RVSM Critical Region to allow for easy identification. These markings may be ANY shape or color; with the only requirement that they are visible to an individual conducting an inspection.

Figure 3.1 defines the RVSM Critical Region which extends from the skin abutment on Frame 117 to a line 16 inches forward of the skin abutment, and from a line 10 inches above the skin overlay to a line 3 inches below the skin overlay.

A placard, as shown in Figure 3.2, with the following wording must be installed on the aircraft as shown in Figure 3.1.

> Modifications To The Exterior Of The
> Aircraft May Affect RVSM Certification.
> Refer To Garrett Aviation Services
> Doc. No. 50-8008-004 For Requirements

Prior to all flights in RVSM airspace, the operator (flight crew) must visually inspect the RVSM Critical Region for obvious damage or deformation, such as paint chips, creases, dents or bulges in the skin or non-flush or missing fasteners due to foreign object damage, service vehicles, etc. The static port orifices must also be inspected for corrosion, elongation, deformation, and/or obstruction and the operator (flight crew) must ensure that no foreign matter is found within the port orifice. If damage or surface irregularities are found, repair the damage in accordance with the maintenance manual and/or structural repair manual. See Section 2.4.3.

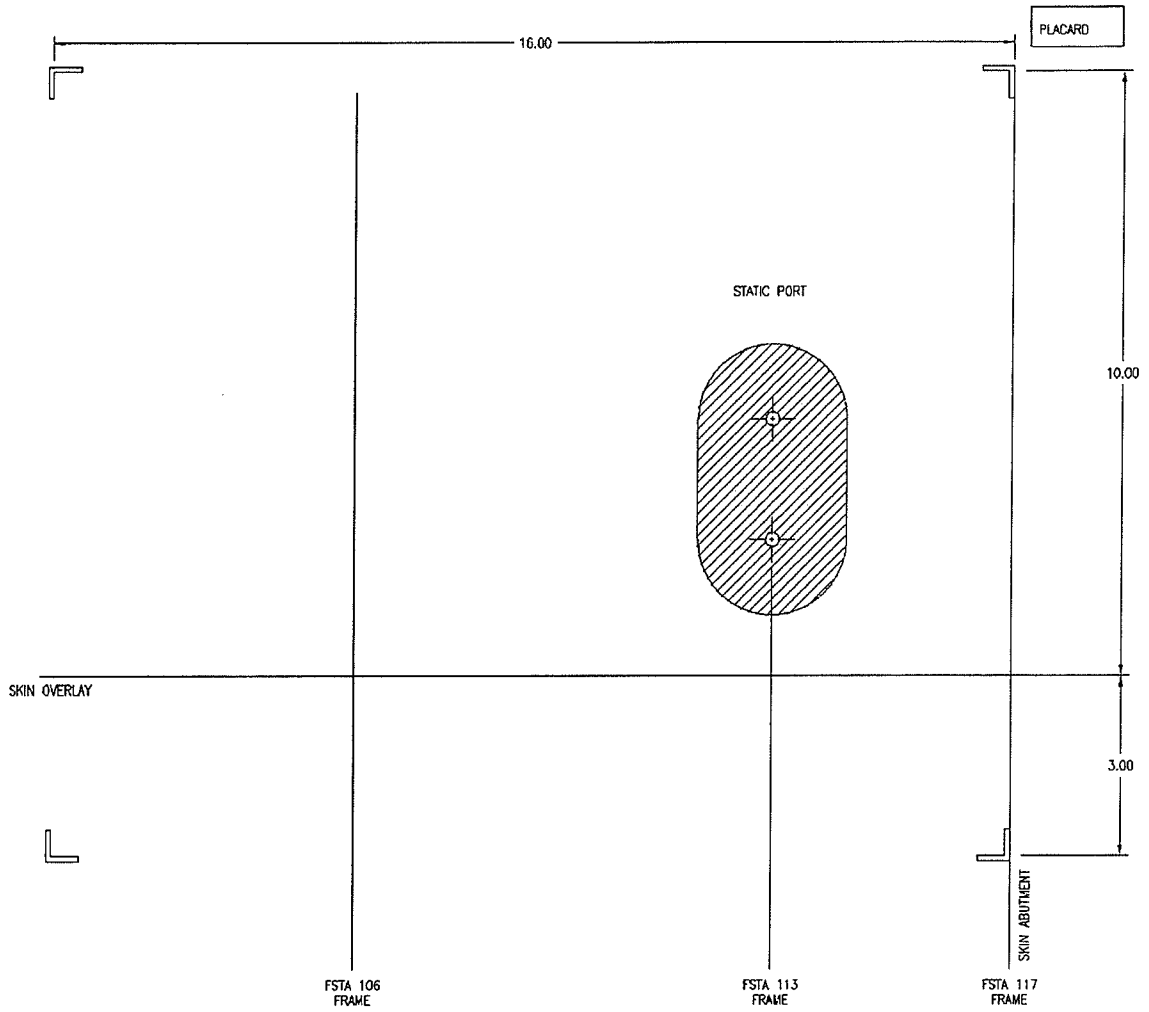

FIGURE 3.1 RVSM Critical Region Definition, Left Side Shown

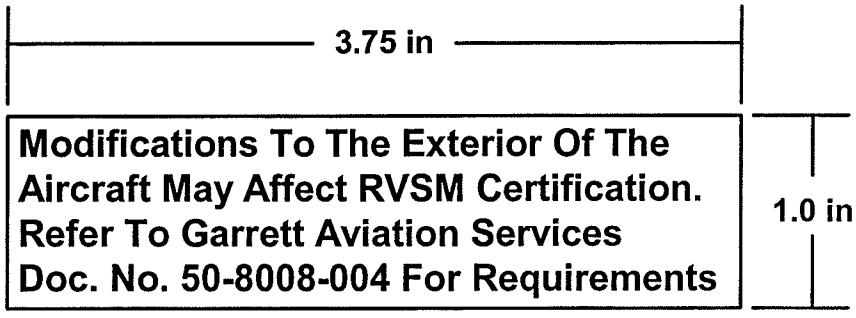

FIGURE 3.2 RVSM Critical Region Placard

3.1.3 Autopilot (Altitude Hold) Performance Test{tc \l3 "3.1.3 Autopilot (Altitude Hold) Performance Test}

RVSM operation requires that the autopilot system accurately maintains selected altitude during non-turbulent, non-gusty cruise flight. Perform required autopilot checks and/or maintenance in accordance with the component and airplane maintenance manuals. Also perform the following in-flight altitude hold performance test every 24 months.

Test Procedure
Equipment Required: None.

During normal RVSM cruise flight (at an altitude between FL290 and FL410, Baro settings of 29.92 in Hg or 1013 mb and non-turbulent, non-gusty conditions) and with the autopilot/altitude hold engaged, record the data from the primary displays (using Table 3.2) every 5 minutes for a flight segment at least 30 minutes length. The maximum altitude deviation shown on the display should not exceed +/-65 ft.

TABLE 3.2 RVSM Autopilot Performance Check Table, Cessna Model 500, 501, 550 or 551 Cruise Conditions

Airplane:				Date:		
Enroute To:				Pilot:		
Time (Minutes)	Pilot's Altimeter	Copilot's Altimeter	Pilot's Mach	Copilot's Mach	Pilot's KCAS	Copilot's KCAS
0:00						
0:05						
0:10						
0:15						
0:20						
0:25						
0:30						
0:35						
0:40						
0:45						
0:50						
0:55						
1:00						

3.2 Troubleshooting Information{tc \l2 "3.2 Troubleshooting Information}

The following information provides instructions for corrective action upon failure of the inspections/tests presented in Section 3.1.

3.2.1 Air Data System{tc \l3 "3.2.1 Air Data System}

If the air data system is found to exceed the requirements of Table 3.1, service the Pitot-static system in accordance with the maintenance manual. Check and drain the Pitot-static lines, conduct a leak check, and repeat the RVSM air data ground test in accordance with the procedures provided in Section 3.1.1. If the requirements of Table 3.1 are again exceeded, service the altimeters per the manufacturer's service requirements. The serviced units must be re-tested upon re-installation in the airplane per the requirements of Section 3.1.1.

3.2.2 RVSM Critical Region Inspection And Static Port Integrity{tc \l3 "3.2.2 RVSM Critical Region Inspection And Static Port Integrity}

If a visual inspection of the RVSM Critical Region, defined in Figure 3.1, indicates that damage, deformation, repairs, etc. exists that may impact air data system accuracy, then the operator should conduct inspection/repairs per the maintenance and/or structural repair Manuals. All repairs within the RVSM Critical Region must remain internal. If internal repairs are not possible, the inspection and tests presented in Section 2.4.3 must be conducted.

3.2.3 Autopilot (Altitude Hold) Check{tc \l3 "3.2.3 Autopilot (Altitude Hold) Check}

If the autopilot cannot maintain altitude to within ±65 feet from the selected cruise altitude, repeat the autopilot check per Section 3.1.3 ensuring the Mach number remains constant and the air remains stable during the entire check. If the check still fails, conduct autopilot component and/or servicing checks as specified in the component and airplane maintenance manuals. Repeat the test presented in Section 3.1.3, as required, to ensure that the altitude hold accuracy is maintained.

3.3 Installation/Removal Of RVSM-Relevant Components{tc \l2 "3.3 Installation/Removal Of RVSM-Relevant Components}

Installation and/or removal of all avionics equipment should be conducted in accordance with current maintenance practices. The air data system accuracy check outlined in Section 3.1.1 shall be conducted upon removal and/or installation of an air data unit.

4.0 Summary Of Operational Requirements And Conditions{tc \l1 "4.0 Summary Of Operational Requirements And Conditions}

To ensure compliance with RVSM altimetry system accuracy and integrity requirements during RVSM operations, the Citation Cessna 500, 501, 550 or 551 aircraft must incorporate the Minimum Equipment List (MEL) changes, required operational conditions, and special flight crew training.

4.1 Minimum Equipment List (MEL) Revision{tc \l2 "4.1 Minimum Equipment List (MEL) Revision}

The Cessna Model 500, 501, 550 or 551 aircraft qualified for operations in the RVSM airspace must have their MEL revised to require that the equipment listed in table 2.1 or 2.1a must be operational for dispatch into RVSM airspace:

In lieu of an MEL change, the AFM supplement may serve as the vehicle for identifying the minimum equipment requirements for RVSM operation. This should be coordinated through the FSDO when applying for Operational Approval.

4.2 Operational Conditions{tc \l2 "4.2 Operational Conditions}

4.2.1 Pre-Flight Inspection Of The RVSM Critical Region{tc \l3 "4.2.1 Pre-Flight Inspection Of The RVSM Critical Region}

A pre-flight inspection of the RVSM Critical Region is required prior to operation in RVSM airspace.

4.2.2 ADDU1 Or ADDU2 Failure{tc \l3 "4.2.2 ADDU1 Or ADDU2 Failure}

In case of ADDU1 or ADDU2 failure, a series of steps must be taken by the Pilot to ensure the airplane can appropriately maintain altitude for the remainder of the RVSM operation. These steps are summarized in the AFM supplement. For aircraft equipped with the equipment in Table 2.1a refer to the AFM supplement from STC SA02076CH-D.

4.2.3 Detection Of Dual Altitude Display Fault{tc \l3 "4.2.3 Detection Of Dual Altitude Display Fault}

To ensure a dual display fault in the air data system remains detectable, the Pilot shall note the difference between the primary altimeters, and the difference between each primary altimeter and the standby altimeter, prior to entry into RVSM airspace. Pilot should also note airspeed and Mach number.

In addition to the hourly (required) cross-cockpit checks during RVSM operations, an additional check will be made between the primary altimeters and the standby altimeter. The differences between the altitude displayed on each of the primary altimeters and the standby altimeter should remain constant at a constant Mach number. Some small variation can be expected, but both primary altitude indicator displays should not diverge significantly throughout RVSM cruise flight, relative to the standby altimeter display at a constant Mach number. In all cases, the two primary altimeters must agree to within +/-200 feet, otherwise, ATC must be notified and contingency procedures executed. Table 4.1 may be used to record these altitude comparison data.

TABLE 4.1 Altimeter Display Tracking Form

Date:				Pilot:		
Departing From:				Copilot:		
Destination:						
Time (Interval)	Time (GMT)	Pilot Mach	Pilot Alt	Copilot Mach	Copilot Alt	Standby Alt
Prior to ATC Clearance						
+1 hour						
+2 hours						
+3 hours						
+4 hours						
+5 hours						
+6 hours						

4.3 Flight Crew Training{tc \l2 "4.3 Flight Crew Training}

All flight crews must have knowledge and understanding of standard RVSM operating practices and Air Traffic Control contingencies. In addition, all flight crews must have knowledge and understanding of the information contained in this document. The operations manual should be revised to include these RVSM-specific limitations and/or procedures, if necessary.

The Flight Crew should be familiar with the specific operational guidelines and contingency procedures that may be unique from one region of RVSM airspace to another (i.e. North Atlantic, European, Pacific, West Atlantic Route System, etc.).

NOTES{tc \l1 "NOTES}

APPENDIX A
CITATION RVSM PORT PREPARATION PROCEDURE FOR INITIAL AND CONTINUED AIRWORTHINESS

GARRETT AVIATION

SPRINGFIELD, ILLINOIS

Document Number: 48-8408-001

Document Title: Citation RVSM Port Preparation Procedure for Initial and Continued Airworthiness

Written By: Roger Huneycutt, KSR

Checked By: Gary Shroyer, Garrett SPI

Approval: Terry Marshall, KSR

Approval:

Approval:

Approval:

Date: January 18, 2002		Document No.: 48-8408-001
Prepared By: R.H.		Revision: -
Approved By: GES	Section: Static Port Skin Preparation	Page: 2 of 3

1.0 INTRODUCTION

This procedure establishes the static port refinishing process for the Cessna Model 500/501/550/551 RVSM group.

2.0 REFERENCES

MATERIALS: The following materials or equivalent are acceptable:

Purpose	Material	Company	Address
Strip Paint	Oakite 157	Oakite Products, Inc.	50 Valley Rd. Berkley Heights, NJ 07922
Strip Paint	Strypeeze	Savegran Company	259 Lenox P.O. Box 130 Norwood, MA 02062
Strip Paint	Turco T-6776 LO	ELF Atochem Turco Division	Commercially available
Polish Aluminum to Mirror Finish	Tripoli T-41 Polishing Compound	Commercially available	Commercially available
Protect Paint During Mask & Strip Procedure	UUP268 Amd. 1, Grade B	Kraft Paper	Commercially available
Barrier Material, Water & Grease Proof	MIL-B-121C Grade A, Type 2 Class 1	Commercially available	Commercially available
Tape Masking	P-703	Johnson&Johnson Permacel Division	U.S.Hwy 1 P.O. Box 671 New Brunswick, NJ 08903
Protect Area during stripping	Tape, Polyethylene Coated Paper # 6223	Borden, Inc.	Borden Chemical Division 1700 Winnetka Ave. Northfield, Il 60093
Protect Area during stripping	Polyethylene Plastic 0.004 inch thick	Commercially available	Commercially available
Feather Paint Edge Smooth	ScotchBrite Roloc Type A Fine	3M Company	3M St. Paul MN 55144
Cleaning	Wiping Cloth (White, Oil Free)	Commercially available	Commercially available
Cleaning	Isopropyl Alcohol TT-I-735	Commercially available	Commercially available

3.0 PROCEDURE

Caution: Observe Safety Precautions Listed in Cessna 500 Series Maintenance Manual, Section 20-31-00

1. Protect static ports from any residue generated by the paint removal and aluminum polishing process.
2. Remove any placards within the shaded area defined by Figure 1 and within a zone that extends from the top to the bottom and ten (10) inches forward from the center of this area.
3. Thoroughly clean airplane surface to remove all grease and other dirt, which might keep the stripping agent from attacking paint.
4. Mask the area to be stripped to correspond to the shaded area defined by Figure 1.
5. Strip paint from aircraft within masked area (2.50 X 4.00 +/- 0.0125 in. , Ref. Figure 1). Paint and existing primer should be removed down to bare aluminum. Clean area and allow drying.

NOTE: Ensure mechanical methods used do not scratch or in other ways damage the surface area being stripped

6. Remove masking material.
7. "Feather" paint edge around static ports to produce a smooth transition to the area of bare aluminum surrounding the Static Ports using Fine ScotchBrite as listed.
8. Polish the bare aluminum area around the static ports using Tripoli T-41 Polishing Compound..
9. Replace any removed placards in a location that is either above or aft of the static port critical area.

Date: January 18, 2002		Document No.: 48-8408-001
Prepared By: R.H.		Revision: -
Approved By: GES	Section: Static Port Skin Preparation	Page: 3 of 3

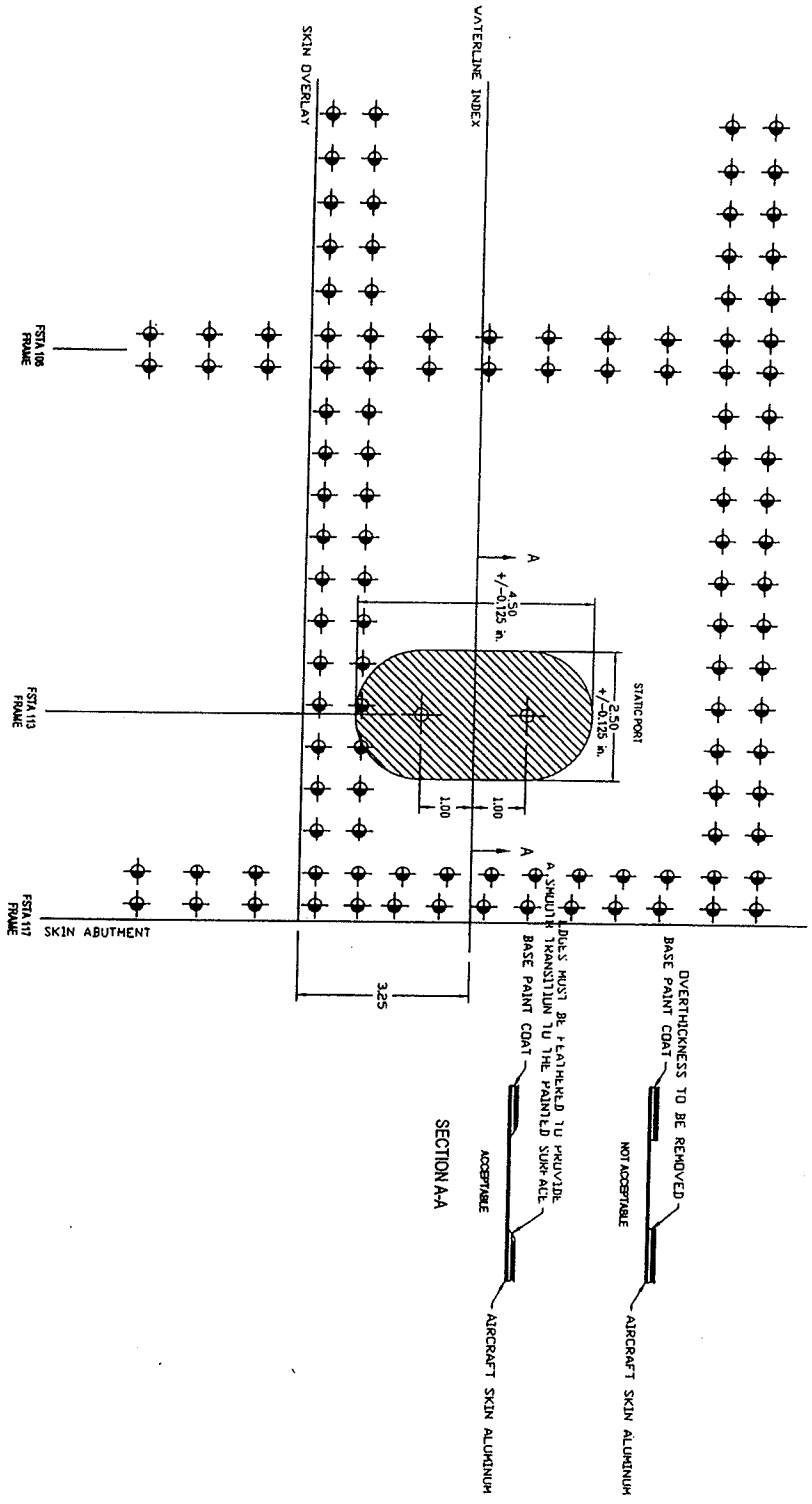

Figure 1:
Static Port Preparation Area

