APROBADO POR DA/ANAC
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SUPLEMENTO AL MANUAL DE VUELO
AIRPLANE FLIGHT MANUAL SUPPLEMENT

CTS Número: **CTS Number:**	CTS 2504.05 (A)
Marca: **Make:**	Airbus
Modelo: **Model:**	A330-200 y A330-300 Series
Matrícula: **Registration No.:**	N/A
Número de Serie: **Serial Number:**	N/A

La Dirección de Aeronavegabilidad (DA) aprueba el Suplemento al Manual de Vuelo Nº DA/SMV-1087 Rev. 0 de fecha 11 de Abril de 2025, dentro del proceso de Legitimación del STC Nº ST04590AT aprobado por *FAA*, con fecha 28 de Junio de 2024.
Este Suplemento al Manual de Vuelo debe ser anexado al Manual de Vuelo básico aprobado de la aeronave. La información contenida en este documento suplementa o reemplaza al Manual de Vuelo básico solo en aquellas áreas listadas. Para información sobre limitaciones, procedimientos y performances no contenidas en este Suplemento, consultar al Manual de Vuelo básico de la aeronave.

The Dirección de Aeronavegabilidad (DA) approves the airplane Flight Manual Supplement No. DA/SMV-1087 Rev. 0 dated April 11, 2025 as part of the Validation process in Argentina of STC No. ST04590AT approved by Federal Aviation Administration dated June 28, 2024.
This Flight Manual Supplement must be added to the basic approved Flight Manual. The information stated in this document supplements or replaces the basic Flight Manual only in the parts herein listed. For limitations, procedures and performance information see the basic approved Flight Manual.

Aprobado por: **Approved by:** _____

Ing. Carlos Martin Vera
Jefe Dpto. Certificación Aeronáutica
DA - DNSO - ANAC
República Argentina

Fecha: **Date:** 11 de abril de 2025
April 11, 2025

FAA APPROVED

Aircraft Flight Manual Supplement
For A330 Series Aircraft

This supplement must be attached to the applicable FAA approved A330 Series Aircraft Flight Manuals when the aircraft Center Wing Tank (CWT) is modified with Invicta Ignition Mitigation Means (Invicta-IMM) in compliance with FAR §25.981(c), Amendment 25-125, according to Supplemental Type Certificate (STC) No. ST04590AT.

The information contained herein supplements or supersedes the basic Aircraft Flight Manual only on those areas listed. For limitations, procedures, and performance information not contained in this supplement, consult the appropriate Airbus A330 Series Aircraft Flight Manual.

Effectivity: All A330 Series aircraft operated in accordance with Airbus A330 Series Aircraft Flight Manual.

FAA Approved: Manager, AIR-711 for **Date:** 27 June 2024

Manager, Flight Test & Human Factors Branch, AIR-710
Federal Aviation Administration

FAA Approved:
Date: _____

REVISION HIGHLIGHTS AND LIST OF EFFECTIVE PAGES

Document Control

On receipt of revisions, insert pages and record date of insertion and initial of Record Custodian.

Revision Number	*Revision Date*	*Approved Date*	*By*	*Notes*
IR	04/11/2024	-		Initial release of report *(not approved by FAA)*
A	06/27/2024	See cover		Added STC No. Added clarification data and changed fuel density for Table 1. Moved text from intro to sys desc. Moved sys desc to last section.

List of Effective Pages

Page	*Rev. Number*	*Page*	*Rev. Number*	*Page*	*Rev. Number*	*Page*	*Rev. Number*
Title	A	6	A				
1	A	7	A				
2	A	8	A				
3	A	9	A				
4	A	10	A				
5	A						

Change bars will be used to indicate changes for each revision. Change bars from a previous revision are removed when a new revision is issued. Future changes to this document will be indicated as follows:

- Changes made to a line will be indicated by a vertical bar in the left margin next to the line of text containing the change.
- Changes made to a paragraph will be indicated by a vertical bar in the left margin next to the paragraph letter or number containing the change.
- Changes made to a complete page will be indicated by a vertical bar to the right of the page number.

TABLE OF CONTENTS

1. INTRODUCTION

1.1 General

1.1.1 This Aircraft Flight Manual Supplement must be carried in the aircraft at all times and used in conjunction with Airbus A330 Series Aircraft Flight Manuals.

1.1.2 This Aircraft Flight Manual Supplement contains the system description, limitations, procedures (normal, abnormal, and emergency), weight and balance data, and performance information for the operation of the aircraft after its Center Wing Tank (CWT) is modified with installation of Invicta Ignition Mitigation Means (IMM), Invicta-IMM, in compliance with FAR §25.981, Amendment 25-125.

2. SCOPE

2.1 This manual is divided into 6 basic sections as follows:

2.1.1 LIMITATIONS

This section lists FAA approved operating limitations which must be observed, except where a deviation is specifically authorized, during operation of the aircraft.

2.1.2 WEIGHT AND BALANCE DATA

This section contains data pertaining to the weight and balance effects of installation of Invicta-IMM on the operating empty weight (OEW) of the aircraft.

2.1.3 EMERGENCY PROCEDURES

This section contains addition to or alteration of FAA approved operating procedures requiring the use of special systems and/or regular systems in order to protect the occupants and the aircraft from harm during a critical condition requiring immediate response.

2.1.4 NORMAL AND ABNORMAL PROCEDURES

2.1.4.1 This section contains addition to or alteration of FAA approved Normal procedures which may be necessary in routine operation of the aircraft.

2.1.4.2 This section also contains addition to or alteration of FAA approved Abnormal procedures requiring use of special systems and/or alternate use of regular systems which, if followed, will maintain an acceptable level of airworthiness or reduce operational risk resulting from a failure condition.

2.1.5 PERFORMANCE

This section contains changes to or alteration of FAA performance data by installation of Invicta-IMM in the CWT of the aircraft.

2.1.6 SYSTEM DESCRIPTION

This section contains a brief system description of the modified Center Wing Tanks.

2.2 REFERENCES

2.2.1 FAA Approved Aircraft Flight Manual for the Airbus A330 Series

2.2.2 WARNINGS, CAUTIONS, NOTES

2.2.2.1 Warnings, Cautions, and Notes are used through this manual to focus attention on special conditions or procedures as follows:

2.2.2.1.1 WARNING: Warnings are used to call attention to operating procedures which, if not strictly adhered to, may result in personal injury or loss of life

2.2.2.1.2 CAUTION: Cautions are used to call attention to operating procedures which, if not strictly observed, may result in damage to equipment.

2.2.2.1.3 NOTE: Notes are used to highlight specific operating conditions or steps of a procedure.

3. LIMITATIONS

3.1 The Invicta-IMM fuel retention and displacement characteristics reduces the usable fuel quantity of the CWT. The maximum reduction is summarized in Table 1. These quantities reflect the maximum displacement and retention when the CWT is at full capacity. Usable fuel reduction due to fuel displacement need only be considered when the CWT is filled to maximum capacity. When determining the usable fuel reduction for a partially filled CWT, only the fuel retention needs to be considered since the fuel tank's maximum capacity is not a factor. Usable fuel reduction linearly decreases to zero with lesser fuel quantities loaded in the CWT as shown in Figure 1. Usable fuel corrections should be performed per section 7.1.4.

Table 1. Maximum Invicta-IMM CWT fuel impact. Fuel density used .785 kg/liter (6.55 lb/gal)

	Fuel Displacement (lbs)	Fuel Retention (lbs)	Total Usable Fuel Reduction (lbs)
A330 (all variants)	798 lbs 362 kg 121.9 gal 461.4 liters	1083 lbs 491 kg 165.4 gal 626.18 liters	1881 lbs 853 kg 287.3 gal 1087.58 liters

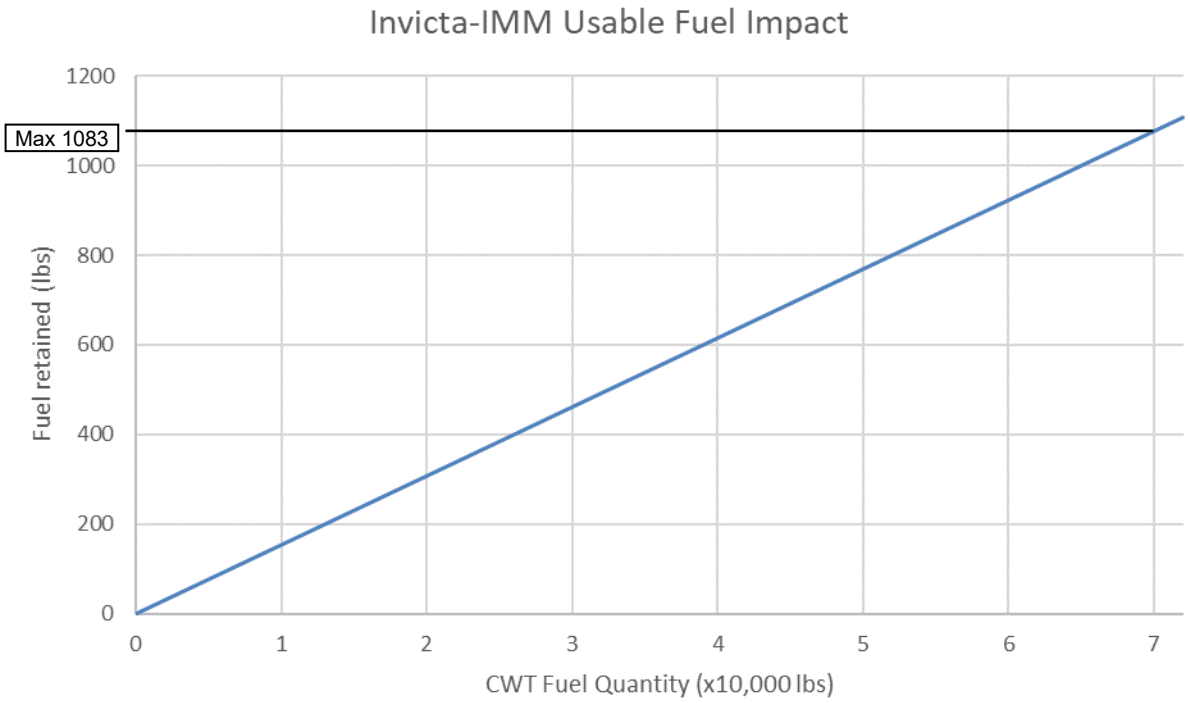

Figure 1. Usable fuel impact as a function of CWT fuel quantity for a partially filled CWT

3.2 Fuel Loading: No change from original Airbus AFM.

4. WEIGHT AND BALANCE DETERMINATION

NOTE: It is the responsibility of the aircraft operator to ensure that the aircraft is properly loaded within CG limits and remains within limits during the transfer sequence.

Refer to Jetaire Supplement to Weight and Balance Control and Loading Manual report No. 19001S0003 for added weight and moment data.

5. EMERGENCY PROCEDURE

No change from prior approved procedures.

6. NORMAL AND ABNORMAL PROCEDURES

No change from prior approved procedures.

7. PERFORMANCE

7.1 General

7.1.1 The performance section of the Aircraft Flight Manual remains applicable.

7.1.2 Consult Jetaire document 19001S0003, Supplement to Weight and Balance Control and Loading Manual to determine weight and moment changes due to Invicta-IMM installation.

7.1.3 Fuel Capacity

7.1.3.1 The total fuel capacity of the existing Center Wing Tank System is reduced by installation of Invicta-IMM in the CWT due to fuel displacement. Refer to Table 1 or Figure 1 if CWT is not at full capacity to determine the amount of fuel displaced.

7.1.3.2 Fuel quantity indicating is not affected since the fuel displaced is within the margin of error of the FQI system.

7.1.4 Usable/Unusable Fuel

7.1.4.1 Invicta-IMM installed may retain fuel. The maximum amount of fuel that can be retained is summarized in Table 1 or Figure 1 if CWT is not at full capacity. Retained fuel for other quantities of fuel loaded in the CWT is determined from Figure 1. This fuel should be treated as unusable fuel. The retained fuel quantity does not decrease over the course of the flight. The quantity of fuel retained is to be determined when the center tank is fueled.

7.1.4.2 Usable fuel inside the CWT and Usable Total Fuel is calculated by subtracting the retained fuel from the Indicated Fuel quantities as follows:

Usable Fuel in CWT = Indicated Fuel in CWT – Fuel Retained

Usable Total Fuel = Indicated Total Fuel – Fuel Retained

7.2 Percent Accuracy (± % error) of the Fuel Quantity Indication System (FQIS) has not been altered by this installation.

8. SYSTEM DESCRIPTION

8.1 General

8.1.1 Invicta-IMM is a lightweight, self-extinguishing three-dimensional skeletal matrix that suppresses fuel ignition caused by tank rupture, lightning strike or static discharge.

8.1.1.1 During an emergency fuel system event, the installed material diffuses and mitigates ignition caused by electrical spark, static discharge, or lightning strike. The foam component sequesters fuel droplets to mitigate hydrodynamic ram forces and slosh attenuation, and also absorbs foreign object debris. In some cases, fuel loss is slowed after a rupture event due to the entrainment of fuel droplets, similar to a sponge.

8.1.1.2 The ignition suppression system operates even if it is damaged or exposed.

8.1.1.3 No crew monitoring or deployment is required for system emergency operation.

8.1.2 Aircraft Modification-The key feature of the Invicta-IMM is the installation of electrically conductive polyurethane material into the Center Wing Fuel tanks.

8.1.3 Invicta-IMM interfaces directly with the aircraft liquid fuel load, and with the atmosphere above the fuel (ullage) within the tank assembly.

8.1.4 Invicta-IMM acts as a filling and sequestering material by remaining insitu (inside, in place) the fuel tank unit. Its mechanical (porous) and material (antistatic and fire retardant) properties act passively within the tank and with its fuel contents during abnormal or emergency events.

8.1.5 During an emergency fuel system event, the installed material diffuses and mitigates ignition caused by ignited fuel, electrical spark, static discharge, or lightning strike. Invicta-IMM sequesters fuel droplets to mitigate hydrodynamic ram forces and slosh attenuation, and also absorbs foreign object debris.

8.1.5.1 Invicta-IMM operates even if it is damaged or exposed. No monitoring or deployment is required for system emergency operation.

8.1.5.2 In addition to necessary FAA compliance, aircraft fuel systems with Invicta-IMM provides operators with Ignition Mitigation Means, fuel tank fire suppression and an invaluable confidence in the survivability of fuel tank rupture incidents and accidents.

8.1.6 Jetaire Aerospace, LLC has developed an advanced Ignition Mitigation Means (IMM) modification to the A330 series aircraft Center Wing Tank (CWT) fuel system. The key feature of this technology (also referred to as, Invicta Ignition Mitigation Means or Invicta-IMM) is the installation of baffle material in the normally empty fuel tanks.

8.1.6.1 Invicta-IMM is a lightweight, self-extinguishing three-dimensional skeletal matrix that suppresses fuel ignition caused by tank rupture, lightning strike, or static discharge installed into the normally empty fuel tanks.

FAA Approved Date: - This page NOT FAA APPROVED -

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