14.0 APPENDIX 1: CAT033 EXPORTS

The ADS-B and TIS-B report downloads provide a comma separated file detailing all fields reported in each CAT033 message, as noted in previous sections of this guide. The format for this file matches the format of the FAA SBS Analysis Tool (SAT) Miscellaneous Print Function CSV Export for CAT033 messages. **Table 14-1** lists the specific fields contained in the export.

TABLE 14-1 ADS-B & TIS-B REPORT EXPORTS

Field	Description
Time	Recorded time-of-day in HH:MM:SS.FFF
DeType	Data extraction type of the record (See **Table 14-2** for code key)
FRNs	Field record numbers that are present in the ASTERIX message. They are encoded in hexadecimal with the presence of a FRN as a one and the absence as a zero. The encoding starts with FRN1 in the most significant bit and continues with as many fields as are defined in the user application profile. For example, FF900000 means fields 1 through 9 and 12 are present. Note that this isn't a FSPEC; there is no continuation bit at the end of each byte.
SAC	Service area code (hexadecimal). *(Ground System Derived)*
SIC	Service identification code (decimal). *(Ground System Derived)*
CTVID	Composite traffic volume identifier (decimal). *(Ground System Derived)*
CTVName	Composite traffic volume name. *(Ground System Derived)*
SVID	Service volume identifier (decimal). *(Ground System Derived)*
SVName	Service volume name. *(Ground System Derived)*
SVType	Service volume type (enroute, terminal, or surface). *(Ground System Derived)*
VersStat	Version status (decimal). *(Ground System Derived)*
AstxVers	ASTERIX version number (decimal). *(Ground System Derived)*
UnkVers	Unknown link version number (decimal). If this is set, the link version is 0 for 1090ES and 1 for UAT. *(Ground System Derived)*
LinkVers	Link version number (decimal). For 1090ES, zero is DO-260, one is DO-260A, and two is DO-260B. For UAT, one is DO-282A, and two is DO-282B. The link version is 0 if and only if the link version is unknown and the message is based on 1090ES. The link version should never be 0 for UAT messages.
1090ES	Report is based on 1090ES (decimal)
UAT	Report is based on UAT (decimal).

Non ADS-B	Report is based on other than ADS-B (decimal). *(Ground System Derived)*
TIS-B	TIS-B transmit flag (decimal). *(Ground System Derived)*
PosToa	Position time of applicability in HH:MM:SS.FFF. *(Avionics & Ground System Derived)*
VelToa	Velocity time of applicability in HH:MM:SS.FFF. This field is blank if the sign bit is 1 or the sign bit is 0 and bits 1 to 7 are all 0. *(Avionics & Ground System Derived)*
ModeSId	Mode S id (hexadecimal). *(Avionics Derived)*
Qual	Address qualifier (decimal). *(Avionics & Ground System Derived)*
Dupl	Duplicate address flag (decimal). *(Ground System Derived)*
TgtSVType	Target service volume type (decimal). *(Ground System Derived)*
TestMsgExtMode	Test Message Extended Mode.
TrackNum	Track number assigned by the SAT tracker (decimal). *(Ground System Derived)*
UTC	UTC coupled (decimal). *(Avionics Derived)*
NIC	Navigational integrity category (decimal). *(Avionics Derived)*
SIL	Surveillance integrity level (decimal). This field is blank if the most significant bit is zero; if it's one, this field is the two least significant bits. *(Avionics Derived)*
SIL-S	Surveillance integrity level – supplement (decimal). *(Avionics Derived)*
NAC-P	Navigational accuracy category – position (decimal). This field is blank if the most significant bit is zero; if it's one, this field is the four least significant bits. *(Avionics Derived)*
SepEligInd	Separation Eligibility Indicator (Enroute, Terminal, Oceanic, or None). *(Ground System Derived)*
SvcInTestMode	Service In Test Mode (decimal). *(Ground System Derived)*
Valid	Position validated (decimal). *(Ground System Derived)*
NAC-V	Navigational accuracy category – velocity (decimal). This field is blank if the most significant bit is zero; if it's one, this field is the three least significant bits. *(Avionics Derived)*
NIC-B	NIC barometric (decimal). *(Avionics Derived)*
Lat	Latitude in DD:MM:SS.FFF followed by direction (N or S). *(Avionics Derived)*
LatDeg	Latitude in degrees (decimal). *(Avionics Derived)*
Lon	Longitude in DDD:MM:SS.FFF followed by direction (E or W). *(Avionics Derived)*

LonDeg	Longitude in degrees (decimal). *(Avionics Derived)*
Res	Resolution of pressure altitude (feet). This field is blank if bits 15 and 16 are 0 or 3. *(Avionics Derived)*
PressAlt	Pressure altitude (feet). This field is blank if bits 1 to 14 are 2000 in hexadecimal. *(Avionics Derived)*
VVSrc	Vertical velocity source (GNSS or Baro). *(Avionics Derived)*
Vx	East/west component of velocity (knots). This field is blank if bits 12 to 23 are 0. *(Avionics Derived)*
Vy	North/south component of velocity (knots). This field is blank if bits 25 to 36 are 0. *(Avionics Derived)*
Vz	Vertical component of velocity (Ft/Min). This field is blank if bits 1 to 10 are 0. *(Avionics Derived)*
TrkOrHdgVal	Track or heading valid (decimal). *(Avionics Derived)*
TrkOrHdgInd	Track or heading indicator (Trk or Hdg). *(Avionics Derived)*
HRD	Horizontal reference direction (True or Mag). *(Avionics Derived)*
Angle	Ground track or heading (degrees). *(Avionics Derived)*
GrndSpd	Ground speed (knots). This field is blank if bits 9 to 19 are 0. *(Avionics Derived)*
LWC	Length and width code (decimal). This field is blank if bits 5 to 8 are 0. *(Avionics Derived)*
POA	Position offset applied (decimal). *(Avionics Derived)*
Aid	ATCRBS id (octal). *(Avionics Derived)*
AidVal	ATCRBS id valid (decimal). *(Ground System Derived)*
FlightId	Flight id (characters). A question mark is used in the place of any illegal character. *(Avionics Derived)*
EmitCat	Emitter category (decimal). *(Avionics Derived)*
RxATC(FRN14)	Receiving ATC services (decimal) from FRN 14. *(Avionics Derived)*
Ident(FRN14)	Ident condition (decimal) from FRN 14. *(Avionics Derived)*
SurvStat	Surveillance status (decimal). *(Avionics Derived)*
EmerPriStat	Emergency/priority status code (decimal). *(Avionics Derived)*
GeomAlt	Geometric altitude (feet). This field is blank if bits 1 to 16 are 0. *(Avionics Derived)*
DeltaAlt	Geometric altitude minus barometric altitude (feet). This field is blank if the geometric altitude is blank. This field is zero if the pressure altitude isn't available. *(Avionics Derived)*

ValidType	Validation Type (decimal). *(Ground System Derived)*
SAF	Single antenna flag (decimal). *(Avionics Derived)*
UATInCap	UAT in capability (decimal). *(Avionics Derived)*
1090InCap	1090ES in capability (decimal). *(Avionics Derived)*
TCAS	TCAS installed and operational (decimal). *(Avionics Derived)*
CDTI	CDTI traffic display capability (decimal). *(Avionics Derived)*
RxAtc(FRN16)	Receiving ATC services (decimal) from FRN 16. *(Avionics Derived)*
ValidDist	Validation Distance (decimal). *(Ground System Derived)*
Ident(FRN16)	Ident condition (decimal) from FRN 16. *(Avionics Derived)*
TcasRa	TCAS resolution advisory active flag (decimal). *(Avionics Derived)*
ARA	TCAS active resolution advisories (hexadecimal). *(Avionics Derived)*
RAC	TCAS resolution advisory complement (hexadecimal). *(Avionics Derived)*
RAT	TCAS resolution advisory terminated (decimal). *(Avionics Derived)*
MTE	TCAS multiple threats encounter (decimal). *(Avionics Derived)*
TTI	TCAS threat type indicator (decimal). *(Avionics Derived)*
TID-MdsId	TCAS threat identity data Mode S Id.
TID-Alt	TCAS threat identity data altitude.
TID-Rng	TCAS threat identity data range.
TID-Bear	TCAS threat identity data bearing.
TOMR	Time of message reception (seconds). *(Ground System Derived)*
TOMR(NSec)	Time of message reception (nanoseconds). *(Ground System Derived)*
GPSLatOff	GPS antenna lateral offset (No data, 2 meters to left, 4 meters to left, 6 meters to left, 0, 2 meters to right, 4 meters to right, or 6 meters to right). *(Avionics Derived)*
GPSLonOff	GPS longitudinal offset (0, POA, or x meters, where POA = position offset applied and x = 2, 4, …60). *(Avionics Derived)*
SelAltType	Target state: selected altitude type (decimal). *(Avionics Derived)*
SelAlt	Target state: selected altitude (feet). *(Avionics Derived)*
Baro	Target state: barometric pressure setting (millibars). *(Avionics Derived)*
SelHdg	Target state: selected heading (degrees). *(Avionics Derived)*
McpFcuSt	Target state: status of MCP/FCU mode bits (decimal). *(Avionics Derived)*

AutoPilot	Target state: autopilot engaged (decimal). *(Avionics Derived)*
VNav	Target state: vertical navigation mode engaged (decimal). *(Avionics Derived)*
AltHold	Target state: altitude hold mode engaged (decimal). *(Avionics Derived)*
Approach	Target state: approach mode engaged (decimal). *(Avionics Derived)*
LNav	Target state: lateral navigation mode engaged (decimal). *(Avionics Derived)*
EnhVal	Enhanced validation (decimal). *(Ground System Derived)*
GVA	Geometric vertical accuracy (decimal). *(Avionics Derived)*
NIC6Supp	NIC 6 supplement bits (decimal). *(Avionics Derived)*
SDA	System design assurance level (decimal). *(Avionics Derived)*
UATUpFdBk	UAT uplink feedback (decimal). *(Avionics Derived)*
SQL	Signal quality level (decimal). *(Ground System Derived)*
System	System field of the Data Source Identification for the report.
EqType	Equipment type (Reserved, SDP, RS – UAT Radio Channel, RS – LP 1090 Single Chl Radio, RS – HP 1090 Multi Chl Radio, Radar – CD2 Format, Radar – ASR Format, WAM – CD2 Format, or ASDE-X). *(Ground System Derived)*
LocId	Location id (decimal). *(Ground System Derived)*
Inst	Instance (decimal). *(Ground System Derived)*
RSID	Radio station identifier. *(Ground System Derived)*
DSName	Data source name. *(Ground System Derived)*
RadarName	Radar name. *(Ground System Derived)*
AsdeXName	ASDE-X name. *(Ground System Derived)*
ReportId	Report identifier (decimal). *(Ground System Derived)*
TimeOrig	Time of origination in HH:MM:SS.FFF. *(Ground System Derived)*
TIS-B Client	1: Update contains a broadcast address that was correlated to an ICAO receiving TIS-B Services; 0: Not receiving TIS-B Services
AirOnGnd	1: Airborne formatted update that did not meet the qualifications for actively being airborne so it is assumed to be reporting airborne while actually on the ground; 0: Not reporting airborne while on the ground
DupMsg	1: An update that was assembled into a “cluster” but not the best message of the cluster; 0: A single update, or the best update of the cluster

SquitMap	1: Update was detected within a Surface Squitter Map; 0: Update not detected within a Surface Squitter Map
RwyTaxi	(No longer used) 1: Update was detected within a Runway / Taxiway Map Element; 0: Update not detected within a Runway / Taxiway Map Element
InRule	1: Update was detected within Rule Airspace; 0: Update not detected within Rule Airspace
X_Rule	1: Update was detected with an exception within Rule Airspace; 0: Update not detected with an exception within Rule Airspace
X_ME	1: Update was detected with a Missing Element exception; 0: Update not detected with a Missing Element exception
X_IA	1: Update was detected with an Integrity / Accuracy exception; 0: Update was detected with an Integrity / Accuracy exception
X_KM	1: Update was detected with a Kinematic / Movement exception; 0: Update not detected with a Kinematic / Movement exception
X_OC	1: Update was detected with an Other Check exception; 0: Update not detected with an Other Check exception

TABLE 14-2 DE TYPE CODE KEY

DE Type (Data Extraction Type of the Record) Code Key
0 – best UAT LV+
1 – best 1090 LV+
2 – equipment status
3 – service volume status
4 – SDP status
5 – best 1090 LV-
6 – duplicate UAT LV+
7 – duplicate 1090 LV-
8 – duplicate 1090 LV+
9 – ADS-R acknowledgement or no acknowledgement
10 – TIS-B A
11 – TIS-B B
12 – TIS-B sensor status
13 – FIS-B reports
14 – best 1090 LV- surface

15 – best UAT LV- surface
16 – best UAT LV-
17 – duplicate UAT LV-
18 – 1090 service status
19 – reserved
20 – WAM Mode S
21 – WAM 1090ES
22 – WAM UAT
23 – WAM ATCRBS
24 – WAM service volume status
25 – WAM SDP status
26 – long term storage heartbeat
27 – SBS monitoring information
28 – SBA best 1090 LV+
29 – SBA service volume status
30 – SBA SDP status
31 – SBA service prediction
32 – SBA component monitoring
33 – SBA constellation monitoring
34 – SBA version number report
35 – SBA best 1090 LV-
36 – MST Trk Rpt
37 – MST Val Rpt.