<u>Figure 1</u> Fine TIS-B Airborne Position Format

1	
2	
3	FORMAT TYPE CODE
4	(See A.4.1 and Note 1)
5	
6	SURVEILLANCE STATUS
7	
8	Reserved
9	
10	
11	ALTITUDE
12	Specified by the Format Type Code
13	
14	(1) the altitude code (AC) as specified
15	in section 2.2.13.1.2 of DO-181B but
16	with the M-bit removed
17	(Ref ARINC 429 Label 203), or
18	
19	(2) GNSS height (HAE)
20	(Ref. ARINC 429 Label 370)
21	Mode S = 0, ATCRBS = 1
22	CPR FORMAT (F) (See A.4.2.1)
23	MSB
24	
25	
26	
27	
28	
29	
30	ENCODED LATITUDE
31	
32	(CPR Airborne Format
33	See A.7.1 to A.7.5)
34	
35	
36	
37	
38	
39	LSB
40	MSB
41	
42	
43	
44	
45	
46	
47	ENCODED LONGITUDE
48	
49	(CPR Airborne Format
50	See A.7.1 to A.7.4)
51	
52	
53	
54	
55	
56	LSB

Purpose: To provide accurate airborne position information

Surveillance Status coding
0 = no condition information
1 = permanent alert (emergency condition)
2 = temporary alert (change in Mode A identity code other than emergency condition) applies to Mode S Aircraft only
3 = SPI condition

Codes 1 and 2 take precedence over code 3.

<u>Figure 2</u> Fine TIS-B Airborne Velocity Format

(Subtypes 1 and 2: Velocity Over Ground)

BDS 0,9

1	MSB		**1**	
2			**0**	
3	FORMAT TYPE CODE = 19		**0**	
4			**1**	
5	LSB		**1**	
6	SUBTYPE 1	0	SUBTYPE 2	0
7		0		1
8		1		0
9				
10	Reserved			
11				
12				
13				
14	DIRECTION BIT for E-W velocity **(0=East, 1=West)**			
15	EAST-WEST VELOCITY (10 bits)			
16	NORMAL : LSB = 1 knot		SUPERSONIC : LSB =4 knots	
17	All zeros = no velocity info		All zeros = no velocity info	
18	Value	Velocity	Value	Velocity
19	1	0 kts	1	0 kt
20	2	1 kt	2	4 kt
21	3	2 kt	3	8 kt
22	-	-	-	-
23	1022	1021 kt	1022	4084 kt
24	1023	>1021.5 kt	1023	> 4086kt
25	DIRECTION BIT for N-S velocity **(0=North, 1=South)**			
26	NORTH-SOUTH VELOCITY (10 bits)			
27	NORMAL : LSB = 1 knot		SUPERSONIC : LSB =4 knots	
28	All zeros = no velocity info		All zeros = no velocity info	
29	Value	Velocity	Value	Velocity
30	1	0 kts	1	0 kt
31	2	1 kt	2	4 kt
32	3	2 kt	3	8 kt
33	-	-	-	-
34	1022	1021 kt	1022	4084 kt
35	1023	>1021.5 kt	1023	> 4086kt
36	Reserved			
37	SIGN BIT FOR VERTICAL RATE: 0 = up, 1 = down			
38	VERTICAL RATE (9 bits)			
39	All zeros – no vertical rate information, LSB = 64 ft/min			
40	Value	Vertical rate		
41	1	0 ft/min		
42	2	64 ft/min		
43	-	-		
44	510	32576 ft/min		
45	511	> 32608 ft/min		
46				
47	Reserved			
48				
49				
50				
51				
52				
53				
54				
55				
56				

Purpose: To provide additional state information for both normal and supersonic flight.

Figure 3 Fine TIS-B Identification and Category Format

BDS 0,8

1	FORMAT TYPE CODE (See A.4.1)	
2		
3		
4		
5		
6	AIRCRAFT CATEGORY	
7		
8		
9	MSB	CHARACTER 1
10		
11		
12		
13		
14	LSB	
15	MSB	CHARACTER 2
16		
17		
18		
19		
20	LSB	
21	MSB	CHARACTER 3
22		
23		
24		
25		
26	LSB	
27	MSB	CHARACTER 4
28		
29		
30		
31		
32	LSB	
33	MSB	CHARACTER 5
34		
35		
36		
37		
38	LSB	
39	MSB	CHARACTER 6
40		
41		
42		
43		
44	LSB	
45	MSB	CHARACTER 7
46		
47		
48		
49		
50	LSB	
51	MSB	CHARACTER 8
52		
53		
54		
55		
56	LSB	

Purpose: To provide aircraft identification and category.

Type coding:

1 = Aircraft identification, category set D
2 = Aircraft identification, category set C
3 = Aircraft identification, category set B
4 = Aircraft identification, category set A

ADS-B Emitter Category coding:

Set A

0 = No ADS-B Emitter Category Information
1 = Light (< *15 500* lbs.)
2 = Small (*15 500* to 75 000 lbs.)
3 = Large (75 000 to 300 000 lbs.)
4 = High Vortex Large(aircraft such as B-757)
5 = Heavy (> 300 000 lbs.)
6 = High Performance (> 5 g acceleration and > 400kts)
7 = Rotorcraft

Set B

0 = No ADS-B Emitter Category Information
1 = Glider/sailplane
2 = Lighter-than-Air
3 = Parachutist/Skydiver
4 = Ultralight/hang-glider/paraglider
5 = Reserved
6 = Unmanned Aerial Vehicle
7 = Space/Trans-atmospheric vehicle

Set C

0 = No ADS-B Emitter Category Information
1 = Surface Vehicle – Emergency Vehicle
2 = Surface Vehicle – Service Vehicle
3 = Fixed Ground or Tethered Obstruction
4-7 = Reserved

Set D : Reserved

Aircraft identification coding (A.4.4):

<u>Figure 4</u> Fine TIS-B Surface Position Format

BDS 0,6

1	
2	
3	FORMAT TYPE CODE
4	(See A.4.1)
5	
6	
7	
8	
9	MOVEMENT
10	(See A.4.3.1)
11	
12	
13	STATUS for Gnd Tk (1 =valid, 0 = not valid)
14	MSB
15	
16	GROUND TRACK (7 bits)
17	(See A.4.3.2)
18	
19	**Resolution = 360/128 deg**
20	LSB
21	Mode S = 0, ATCRBS = 1
22	CPR FORMAT (F) (See A.4.2.1)
23	MSB
24	
25	
26	
27	
28	
29	
30	ENCODED LATITUDE
31	
32	(CPR Surface Format
33	See A.7.1 to A.7.4 and 7.6)
34	
35	
36	
37	
38	
39	LSB
40	MSB
41	
42	
43	
44	
45	
46	
47	ENCODED LONGITUDE
48	
49	(CPR Surface Format
50	See A.7.1 to A.7.4)
51	
52	
53	
54	
55	
56	LSB

Purpose: To provide accurate surface position information.

<u>Figure 5</u> Coarse TIS-B Airborne Format

BDS 0,5

1	Mode S = 0, ATCBS = 1
2	No Emergency=0, Emergency=1
3	
4	**SITE CODE**
5	
6	
7	MSB
8	
9	
10	
11	
12	VELOCITY
13	
14	
15	
16	
17	
18	
19	LSB
20	
21	ALTITUDE
22	Specified by the Format Type Code
23	
24	(1) the altitude code (AC) as specified
25	in section 2.2.13.1.2 of DO-181B but
26	with the M-bit removed
27	(Ref ARINC 429 Label 203), or
28	
29	(2) GNSS height (HAE)
30	(Ref. ARINC 429 Label 370)
31	
32	CPR FORMAT (F) (See A.4.2.1)
33	MSB
34	
35	
36	
37	ENCODED LATITUDE
38	
39	(CPR Airborne Format
40	See TBD)
41	
42	
43	
44	LSB
45	MSB
46	
47	
48	
49	ENCODED LONGITUDE
50	
51	(CPR Airborne Format
52	See TBD)
53	
54	
55	
56	LSB