DIGITAL AVIATION / FLIGHT1
NAVIGATION DATA FILE FORMAT

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Version 2.03 03. Feb 09

= Recent Changes
= Not for Trimble 2000 GPS

NOTES

All fields in the records are comma-separated
All string fields MUST contain at least one character (blank)
All numeric fields MUST contain a valid number (0 or 0.0)
Fields marked as required need to contain valid data. Other fields might be zero or blank
ISO country codes are 3-letter codes except where not available

FILE OVERVIEW

Nr	Sample content	Description	Type	Size	Req	Units/Remarks
1	Airports.txt	Airports and Runways				
2	Navaids.txt	VOR, DME and NDB				
3	Waypoints.txt	Fixes				
4	ATS.txt	ATS-Routes				
5	Proc*.txt	SIDs and STARs				

1. AIRAC CYCLE INFORMATION

used in	Airports.txt					
1	X	Record identifier	string	1		
2	0405	Current AIRAC cycle	string	4		
3	13MAY9JUN/04	Effective from/to	string	13		
4	0404	Previous AIRAC cycle	string	4		
5	15APR12MAY/04	Effective from/to	string	13		

2.	**AIRPORT**				
used in	Airports.txt				
1	A	Record identifier	string	1	
2	EDDF	ICAO code	string	4	
3	FRANKFURT MAIN	Airport name	string	20	
4	50.02642	Latitude	double		degrees
5	8.54312	Longitude	double		degrees
6	364	Elevation	int		feet
7	5000	Transition altitude	int		feet
8	5000	Transition level	int		feet
9	13123	Length of longest runway	int		feet

3.	**RUNWAY**				
used in	Airports.txt				
1	R	Record identifier	string	1	
2	07L	Runway ID	string	3	
3	69	Runway heading	int		degrees
4	13123	Runway length	int		feet
5	200	Runway width	int		feet
6	1	ILS available	bool		1 if ILS available
7	110.100	ILS frequency	double		frequency
8	69	ILS heading	int		degrees
9	50.03261	Threshold latitude	double		degrees
10	8.53463	Threshold longitude	double		degrees
11	329	Elevation at threshold	int		feet
12	3.00	Glideslope angle	double		degrees
13	49	Threshold overflying height	int		feet
14	3	Surface type	int		see runway surfaces below
15	0	Runway status	int		see runway status below

4.	**NAVAID / USER NAVAID**				
used in	Navaids.txt and UserNavaids.txt				
1	HMM	Navaid identifier	string	3	
2	HAMM	Navaid name	string	40	
3	115.650	Navaid frequency	double		frequency
4	1	VOR flag	bool		1 if VOR
5	1	DME flag	bool		1 if DME available
6	195	Range	int		nautical miles
7	51.85686	Latitude	double		degrees
8	7.70829	Longitude	double		degrees
9	237	Elevation	int		feet
10	DEU	Country code	string	3	ISO code
11	0	Exclude from auto-tune	int		1 = exclude, 0 = include

5.	**WAYPOINT**				
used in	Waypoints.txt				
1	BOMBI	Waypoint identifier	string	5	
2	50.0566	Latitude	double		degrees
3	8.80027	Longitude	double		degrees
4	DEU	Country code	string		ISO code

6.	**ATS ROUTE**				
used in	ATS.txt				
1	A	Record identifier	string	1	
2	N850	ATS route identifier	string	6	
3	9	Number of segments	int		

7. ATS ROUTE SEGMENT

used in ATS.txt

1	S	Record identifier	string	1	
2	BOMBI	Waypoint 1 identifier	string	5	
3	50.05666	Waypoint 1 latitude	double		degrees
4	8.80027	Waypoint 1 longitude	double		degrees
5	ABUMO	Waypoint 2 identifier	string	5	
6	50.14166	Waypoint 2 latitude	double		degrees
7	8.92333	Waypoint 2 longitude	double		degrees
8	43	Inbound course	int		degrees
9	43	Outbound course	int		degrees
10	7	Distance	double		nautical miles

8. USER DEFINED WAYPOINT

used in UserWpt.txt

1	ALOHA	Waypoint identifier	string	5	
2	52.322338	Latitude	double		degrees
3	7.856697	Longitude	double		degrees
4	0	Overfly	int		1 if waypoint must be overflown
5	1	Custom waypoint type	int		see custom waypoint types below
6	OSN	Parameter 1	string	5	Parameters 1 - 4 show how the
7	135	Parameter 2	string	5	waypoint was created.
8	DOM	Parameter 3	string	5	This is only for reference! Lat/Lon
9	360	Parameter 4	string	5	should be used for navigation

9. STANDARD TERMINAL ARRIVAL ROUTE (STAR)

1	STAR	Record identifier	string	4	always STAR
2	GED1W	STAR identifier	string	10	
3	ALL	Transition/Runway identifier	string	3	ALL = for all runways
4	2	STAR segment	int		see STAR segments below

The contents of field 3 depend on the airport. This may be either a runway or a transition identifier. Please use field 3 for text output on your GPS/FMS only, not for route calculation!

10.	STANDARD INSTRUMENT DEPARTURE (SID)					
1	SID	Record identifier	string	3		always SID
2	ANE4L	SID identifier	string	10		
3	07L	Transition/Runway identifier	string	3		ALL = for all runways
4	2	SID segment	int			see SID segments below

The contents of field 3 depend on the airport. This may be either a runway or a transition identifier. Please use field 3 for text output on your GPS/FMS only, not for route calculation!

11.	APPROACH TRANSITION					
1	APPTR	Record identifier	string	5		always APPTR
2	ANE4L	Approach identifier	string	10		
3	07L	Runway identifier	string	3		
4	RID	Transition fix	string	5		Initial Approach Fix

12.	FINAL APPROACH					
1	FINAL	Record identifier	string	5		always FINAL
2	ANE4L	Approach identifier	string	10		
3	07L	Runway identifier	string	3		
4	C	Approach type	string	1		see Approach Types below

13.	WAYPOINT TYPE IF (Initial Fix)					
1	IF	Record identifier	string	2	x	always IF
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	TAU	Navaid identifier	string	5		
6	69.0	Waypoint bearing	double			degrees
7	0.0	Waypoint distance	double			nautical miles
8	1	Altitude constraint	int			see Altitude Constraints below
9	4000	First altitude	int			feet
10	0	Second altitude	int			feet
11	1	Speed constraint	int			see Speed Constraints below
12	160	First speed	int			knots
13	0	Second speed	int			knots
14	0	Special Waypoint	int			see Special Waypoints below
15	0	Overfly Waypoint	bool			see Overfly Waypoints below
16	0	Missed Approach Fix	bool			

14.	WAYPOINT TYPE TF (Track to a Fix)					
1	TF	Record identifier	string	2	x	always TF
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5		
7	69.0	Waypoint bearing	double			degrees
8	0.0	Waypoint distance	double			nautical miles
9	249	Magnetic course	int			degrees
10	4.3	Distance	double			nautical miles
11	1	Altitude constraint	int			see Altitude Constraints below
12	4000	First altitude	int			feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Missed Approach Fix	bool			

15.	WAYPOINT TYPE CF (Course to a Fix)					
1	CF	Record identifier	string	2	x	always CF
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5	x	
7	69.0	Waypoint bearing	double			degrees
8	0.0	Waypoint distance	double			nautical miles
9	249	Magnetic course	int		x	degrees
10	4.3	Distance	double			nautical miles
11	1	Altitude constraint	int			see Altitude Constraints below
12	4000	First altitude	int			feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Missed Approach Fix	bool			

16.	WAYPOINT TYPE DF (Direct to a Fix)					
1	DF	Record identifier	string	2	x	always DF
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5		
7	69.0	Waypoint bearing	double			degrees
8	0.0	Waypoint distance	double			nautical miles
9	1	Altitude constraint	int			see Altitude Constraints below
10	4000	First altitude	int			feet
11	0	Second altitude	int			feet
12	1	Speed constraint	int			see Speed Constraints below
13	160	First speed	int			knots
14	0	Second speed	int			knots
15	0	Special Waypoint	int			see Special Waypoints below
16	0	Overfly Waypoint	bool			see Overfly Waypoints below

17	0	Missed Approach Fix	bool

17.	WAYPOINT TYPE AF (Arc to a fix; aka DME Arc)					
1	AF	Record identifier	string	2	x	AF
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int		x	see Turn Directions below
6	TAU	Navaid identifier	string	5	x	
7	69.0	Sweep angle	double		x	degrees
8	0.0	DME distance	double		x	nautical miles
9	249	Start radial	int		x	Start radial in degrees
10	1	Altitude constraint	int			see Altitude Constraints below
11	4000	First altitude	int			feet
12	0	Second altitude	int			feet
13	1	Speed constraint	int			see Speed Constraints below
14	160	First speed	int			knots
15	0	Second speed	int			knots
16	0	Special Waypoint	int			see Special Waypoints below
17	0	Overfly Waypoint	bool			see Overfly Waypoints below
18	0	Missed Approach Fix	bool			

18.	WAYPOINT TYPE RF (Radius to a Fix)					
1	RF	Record identifier	string	2	x	always RF
2	REDGO	Start fix	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int		x	see Turn Directions below
6	TAU	Arc Center	string	5	x	
7	249	Sweep angle	int		x	degrees
8	4.3	Radius	double		x	nautical miles
9	1	Altitude constraint	int			see Altitude Constraints below
10	4000	First altitude	int			feet
11	0	Second altitude	int			feet
12	1	Speed constraint	int			see Speed Constraints below
13	160	First speed	int			knots
14	0	Second speed	int			knots
15	0	Special Waypoint	int			see Special Waypoints below
16	0	Overfly Waypoint	bool			see Overfly Waypoints below
17	0	Missed Approach Fix	bool			

19.	WAYPOINT TYPE CA (Course to an Altitude)					
1	CA	Record identifier	string	2	x	always CA
2	0	Turn direction	int			see Turn Directions below
3	249	Magnetic course	int		x	degrees
4	1	Altitude constraint	int		x	see Altitude Constraints below
5	4000	First altitude	int		x	feet
6	0	Second altitude	int			feet
7	1	Speed constraint	int			see Speed Constraints below
8	160	First speed	int			knots
9	0	Second speed	int			knots
10	0	Special Waypoint	int			see Special Waypoints below
11	0	Overfly Waypoint	bool			see Overfly Waypoints below
12	0	Missed Approach Fix	bool			

20.	WAYPOINT TYPE CD (Course to a DME Distance)					
1	CD	Record identifier	string	2	x	always CD
2	REDGO	Waypoint identifier	string	5		
3	50.10916669	Waypoint latitude	double			degrees
4	8.85638906	Waypoint longitude	double			degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5	x	
7	53.0	Waypoint bearing	double			degrees
8	0.0	Waypoint distance	double		x	nautical miles
9	249	Magnetic course	int		x	degrees
10	4.3	DME Distance	double			nautical miles
11	1	Altitude constraint	int			see Altitude Constraints below
12	4000	First altitude	int			feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Missed Approach Fix	bool			

21.	WAYPOINT TYPE CR (Course to a Radial)					
1	CR	Record identifier	string	2	x	always CR
2	0	Turn direction	int			see Turn Directions below
3	TAU	Navaid identifier	string	5	x	
4	111.0	Radial	double		x	degrees
5	261	Course	int		x	degrees
6	1	Altitude constraint	int			see Altitude Constraints below
7	4000	First altitude	int			feet
8	0	Second altitude	int			feet
9	1	Speed constraint	int			see Speed Constraints below
10	160	First speed	int			knots
11	0	Second speed	int			knots
12	0	Special Waypoint	int			see Special Waypoints below
13	0	Overfly Waypoint	bool			see Overfly Waypoints below
14	0	Missed Approach Fix	bool			

22.	WAYPOINT TYPE CI (Course to Intercept Next Leg)					
1	CI	Record identifier	string	2	x	always CI
2	0	Turn direction	int			see Turn Directions below
3	TAU	Navaid identifier	string	5		
4	094	Intercept course	int			degrees
5	249	Magnetic course	int		x	degrees
6	1	Altitude constraint	int			see Altitude Constraints below
7	4000	First altitude	int			feet
8	0	Second altitude	int			feet
9	1	Speed constraint	int			see Speed Constraints below
10	160	First speed	int			knots
11	0	Second speed	int			knots
12	0	Special Waypoint	int			see Special Waypoints below
13	0	Overfly Waypoint	bool			see Overfly Waypoints below
14	0	Missed Approach Fix	bool			

23.	WAYPOINT TYPE FA (Course from a Fix to an Altitude)					
1	FA	Record identifier	string	2	x	always FA
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5	x	
7	69.0	Waypoint bearing	double		x	degrees
8	0.0	Waypoint distance	double		x	nautical miles
9	249	Magnetic course	int		x	degrees
10	1	Altitude constraint	int			see Altitude Constraints below
11	4000	First altitude	int			feet
12	0	Second altitude	int			feet
13	1	Speed constraint	int			see Speed Constraints below
14	160	First speed	int			knots
15	0	Second speed	int			knots
16	0	Special Waypoint	int			see Special Waypoints below
17	0	Overfly Waypoint	bool			see Overfly Waypoints below
18	0	Missed Approach Fix	bool			

24.	WAYPOINT TYPE FD (Course from a Fix to a DME Distance)					
1	FD	Record identifier	string	2	x	always FD
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	DME Identifier	string	5	x	
7	69.0	Waypoint bearing	double			degrees
8	0.0	DME Distance	double		x	nautical miles
9	249	Magnetic course	int		x	degrees
10	4.3	Distance	double			nautical miles
11	1	Altitude constraint	int			see Altitude Constraints below
12	4000	First altitude	int			feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Missed Approach Fix	bool			

25.	WAYPOINT TYPE FC (Course from a Fix to an Along Track Distance)					
1	FC	Record identifier	string	2	x	always FC
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5	x	
7	69.0	Waypoint bearing	double		x	degrees
8	0.0	Waypoint distance	double		x	nautical miles
9	249	Magnetic course	int		x	degrees
10	4.3	Track Distance	double		x	nautical miles
11	1	Altitude constraint	int			see Altitude Constraints below
12	4000	First altitude	int			feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Missed Approach Fix	bool			

26.	WAYPOINT TYPE FM (Course from a Fix to a Manual Termination)					
1	FM	Record identifier	string	2	x	always FM
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5	x	
7	69.0	Waypoint bearing	double		x	degrees
8	0.0	Waypoint distance	double		x	nautical miles
9	249	Magnetic course	int		x	degrees
10	1	Altitude constraint	int			see Altitude Constraints below
11	4000	First altitude	int			feet
12	0	Second altitude	int			feet
13	1	Speed constraint	int			see Speed Constraints below
14	160	First speed	int			knots
15	0	Second speed	int			knots
16	0	Special Waypoint	int			see Special Waypoints below
17	0	Overfly Waypoint	bool			see Overfly Waypoints below
18	0	Missed Approach Fix	bool			

27.	WAYPOINT TYPE VA (Heading to an Altitude)					
1	VA	Record identifier	string	2	x	always VA
2	0	Turn direction	int			see Turn Directions below
3	249	Heading	int		x	degrees
4	1	Altitude constraint	int		x	see Altitude Constraints below
5	4000	First altitude	int		x	feet
6	0	Second altitude	int			feet
7	1	Speed constraint	int			see Speed Constraints below
8	160	First speed	int			knots
9	0	Second speed	int			knots
10	0	Special Waypoint	int			see Special Waypoints below
11	0	Overfly Waypoint	bool			see Overfly Waypoints below
12	0	Missed Approach Fix	bool			

28.	WAYPOINT TYPE VD (Heading to a DME Distance)					
1	VD	Record identifier	string	2	x	always VD
2	REDGO	Waypoint identifier	string	5		
3	50.10916669	Waypoint latitude	double			degrees
4	8.85638906	Waypoint longitude	double			degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	DME identifier	string	5	x	
7	69.0	Waypoint bearing	double			degrees
8	0.0	DME distance	double		x	nautical miles
9	249	Heading	int		x	degrees
10	4.3	Distance	double			nautical miles
11	1	Altitude constraint	int			see Altitude Constraints below
12	4000	First altitude	int			feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Missed Approach Fix	bool			

29.	WAYPOINT TYPE VR (Heading to a Radial)					
1	VR	Record identifier	string	2	x	always VR
2	0	Turn direction	int			see Turn Directions below
3	TAU	Navaid identifier	string	5	x	
4	69.0	Radial	double		x	degrees
5	249	Heading	int		x	degrees
6	1	Altitude constraint	int			see Altitude Constraints below
7	4000	First altitude	int			feet
8	0	Second altitude	int			feet
9	1	Speed constraint	int			see Speed Constraints below
10	160	First speed	int			knots
11	0	Second speed	int			knots
12	0	Special Waypoint	int			see Special Waypoints below
13	0	Overfly Waypoint	bool			see Overfly Waypoints below
14	0	Missed Approach Fix	bool			

30.	WAYPOINT TYPE VI (Heading to Intercept Next Leg)					
1	VI	Record identifier	string	2	x	always VI
2	0	Turn direction	int			see Turn Directions below
3	TAU	Navaid identifier	string	5		
4	094	Intercept course	int			degrees
5	249	Heading	int		x	degrees
6	1	Altitude constraint	int			see Altitude Constraints below
7	4000	First altitude	int			feet
8	0	Second altitude	int			feet
9	1	Speed constraint	int			see Speed Constraints below
10	160	First speed	int			knots
11	0	Second speed	int			knots
12	0	Special Waypoint	int			see Special Waypoints below
13	0	Overfly Waypoint	bool			see Overfly Waypoints below
14	0	Missed Approach Fix	bool			

31.	WAYPOINT TYPE VM (Heading to a Manual Termination)					
1	VM	Record identifier	string	2	x	always VM
2	50.10916669	Waypoint latitude	double			degrees
3	8.85638906	Waypoint longitude	double			degrees
4	0	Turn direction	int			see Turn Directions below
5	249	Heading	int		x	degrees
6	1	Altitude constraint	int			see Altitude Constraints below
7	4000	First altitude	int			feet
8	0	Second altitude	int			feet
9	1	Speed constraint	int			see Speed Constraints below
10	160	First speed	int			knots
11	0	Second speed	int			knots
12	0	Special Waypoint	int			see Special Waypoints below
13	0	Overfly Waypoint	bool			see Overfly Waypoints below
14	0	Missed Approach Fix	bool			

32.	WAYPOINT TYPE PI (Procedure Turn)					
1	PI	Record identifier	string	2	x	always PI
2	ANU	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int		x	see Turn Directions below
6	ANU	Fix identifier	string	5	x	
7	262.0	First turn	double		x	degrees
8	12.0	Turn limit to fix	double		x	nautical miles
9	307	Outbound from fix	int		x	degrees
10	4.0	Outbound from fix	double		x	nautical miles
11	1	Altitude constraint	int			see Altitude Constraints below
12	4000	First altitude	int			feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Missed Approach Fix	bool			

33.	WAYPOINT TYPE HF (Hold at a Fix)					
1	HF	Record identifier	string	2	x	always HF
2	REDGO	Waypoint identifier	string	5	x	
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5		
7	69.0	Waypoint bearing	double			degrees
8	0.0	Waypoint distance	double			nautical miles
9	249	Inbound course	int		x	degrees
10	4.3	Leg distance	double		x	nautical miles
11	1	Altitude constraint	int			see Altitude Constraints below
12	4000	First altitude	int			feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Leg Distance Type	bool			see Hold Distance Types below
20	0	Missed Approach Fix	bool			

34.	WAYPOINT TYPE HA (Hold at a Fix to an Altitude)					
1	HA	Record identifier	string	2 x		always HA
2	REDGO	Waypoint identifier	string	5 x		
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5		
7	69.0	Waypoint bearing	double			degrees
8	0.0	Waypoint distance	double			nautical miles
9	249	Inbound course	int			degrees
10	4.3	Leg distance	double		x	nautical miles
11	1	Altitude constraint	int		x	see Altitude Constraints below
12	4000	First altitude	int		x	feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Leg Distance Type	bool			see Hold Distance Types below
20	0	Missed Approach Fix	bool			

35.	WAYPOINT TYPE HM (Hold at a Fix to a Manual Termination)					
1	HM	Record identifier	string	2 x		always HM
2	REDGO	Waypoint identifier	string	5 x		Fix to hold at
3	50.10916669	Waypoint latitude	double		x	degrees
4	8.85638906	Waypoint longitude	double		x	degrees
5	0	Turn direction	int			see Turn Directions below
6	TAU	Navaid identifier	string	5		
7	69.0	Waypoint bearing	double			degrees
8	0.0	Waypoint distance	double			nautical miles
9	249	Inbound course	int			degrees
10	4.3	Leg distance	double		x	nautical miles
11	1	Altitude constraint	int			see Altitude Constraints below
12	4000	First altitude	int			feet
13	0	Second altitude	int			feet
14	1	Speed constraint	int			see Speed Constraints below
15	160	First speed	int			knots
16	0	Second speed	int			knots
17	0	Special Waypoint	int			see Special Waypoints below
18	0	Overfly Waypoint	bool			see Overfly Waypoints below
19	0	Leg Distance Type	bool			see Hold Distance Types below
20	0	Missed Approach Fix	bool			

ARINC 424 PROCEDURE TYPE CODES

1	AF	Constant DME arc to a fix
2	CA	Course to an altitude
3	CD	Course to a DME distance
4	CI	Course to next leg
5	CF	Course to a fix
6	CR	Course to a radial termination
7	DF	Computed track direct to a fix
8	FA	Course from a fix to an altitude
9	FC	Course from a fix to a distance
10	FD	Course from a fix to a DME distance
11	FM	Course from a fix to manual termination
12	IF	Initial Fix
13	PI	Procedure turn followed by course to a fix
14	RF	Constant radius to a fix
15	TF	Track between two fixes (great circle)
16	VA	Heading to an altitude
17	VD	Heading to a DME distance
18	VI	Heading to next leg
19	VM	Heading to manual termination
20	VR	Heading to a radial
21	HF	Hold at a fix after one full circuit
22	HA	Hold at a fix after reaching an altitude
23	HM	Hold manually

TURN DIRECTIONS

0	Use shortest turn
1	Turn left
2	Turn right

ALTITUDE CONSTRAINTS

0	No restriction
1	At Altitude1
2	Above Altitude1
3	Below Altitude1
4	Between Altitude1 and Altitude2

SPEED CONSTRAINTS

0	No restriction
1	All aircraft
2	Jets only
3	Turboprop only
4	Others only

APPROACH TYPES

C	CAT II ILS Approach
I	ILS Approach
G	GPS/RNAV Approach
D	VOR/DME Approach
N	NDB/DME Approach

SPECIAL WAYPOINT TYPES

0	Normal Waypoint
1	Initial Approach Fix (IAF)
2	Final Approach Fix (FAF)
3	Missed Approach Point (MAP)

OVERFLY WAYPOINTS

0	Fly-by Waypoint
1	Overfly Waypoint

HOLD DISTANCE TYPES

0	Distance in Nautical Miles
1	Distance in Seconds

RUNWAY SURFACES TYPES

0	Concrete
1	Asphalt or Bitumen
2	Gravel, Coral or Ice
3	Other

RUNWAY STATUS

0 Takeoff and land
1 Takeoff only
2 Land only
3 Closed