

DME DME Assessment Results for MALNR5 path CAKEY__KENCH__

Results Summary

Flyability:	Completed
DME/DME:	Completed - No Critical DMEs
Name:	Dennis CTR Osterhage
Project File:	C:\Users\Dennis CTR Osterhage\Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU MALNR5 RNAV STAR DME 20191101.tgs
Output File:	C:\Users\Dennis CTR Osterhage\My Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU [IFPA] MALNR5 20191101_1321 EDT\CAKEY__KENCH__KRDU MALNR5 RNAV STAR CAKEY KENCH 20191101_1321 EDT.pdf
Procedure Name:	MALNR5
Software: DmeDmePlugin:	6.0.0
Date/Time:	11/01/2019 13:21 EDT
Databases:	DTED Level 0 MAX

Failures

No Failures

Warnings

No Warnings

Notes For Flight Check

None

Flight Plan

Name	Type	Lat/Lon	Altitude (ft)	VNAV Mode	Ground Speed (kts)	Turn Type	Leg Type
CAKEY__	WP	N35° 47' 27.380", W078° 54' 34.340"	8000	VNAV	280	FLY_BY	TF
JODUS__	WP	N35° 48' 12.670", W078° 46' 51.370"	7000	VNAV	220	FLY_BY	TF
CHIRM	WP	N35° 48' 33.980", W078° 43' 11.620"	6000	VNAV	220	FLY_BY	TF
KENCH__	WP	N35° 49' 58.790", W078° 41' 27.080"	6000	VNAV	210	FLY_OVER	TF
Climb Gradient: 0.0 ft/NM up to 11000.0 ft MSL 200.0 ft/NM							

Flyability

Flight Type:	RNAV_STAR
Selected Airport:	KRDU [IFPA]
Climb Gradient:	0.0 ft/NM up to 11000.0 ft MSL 200.0 ft/NM
Speeds:	200 Ground Speed to 11000 FT
	240 Ground Speed to 18000 FT
	260 Ground Speed to 24000 FT
	340 Ground Speed above 24000 FT
Descent During a Turn:	Allowed
VNAV Mode:	Flight Plan

DME DME Assessment Results for MALNR5 path CAKEY__KENCH_

DME/DME	
RNP:	RNP 2
Flight Mode:	Manual
Line of Sight (DTED Level 0 Max):	Evaluated
Inertial Drift:	Enabled
Initial Drift:	0.558 NM
INS Drift Rate:	8.0 NM/Hour
Range Mode:	OSV
RNP Edges:	Evaluated
Min DME Range:	3.0 NM
DME Types:	DME, VOR-DME, VORTAC
DME Include Angles:	30 to 150
Critical DMEs:	Allowed
DoD Facilities:	Not included
Foreign Facilities:	Not included
High DMEs:	Included
Low DMEs:	Included
Terminal DMEs:	Included
Flight Check DMEs:	Not selected
Higher Altitudes:	Not Evaluated
Near Maximum Altitude:	Not Evaluated
Automatic ESVs:	Not enabled
Disabled DMEs:	None

DME/DME (Continued)										
DMEs Used										
#	Name	Lat/Lon	MAGVAR	Range	Type	Source	Critical	Status	Time	Distance

Flight Check DME Selection						
Distance [NM]	Selected DMEs					Alternate
0.0						

Inertial Drift Segments			
#	Start Location	End Location	Length [NM]

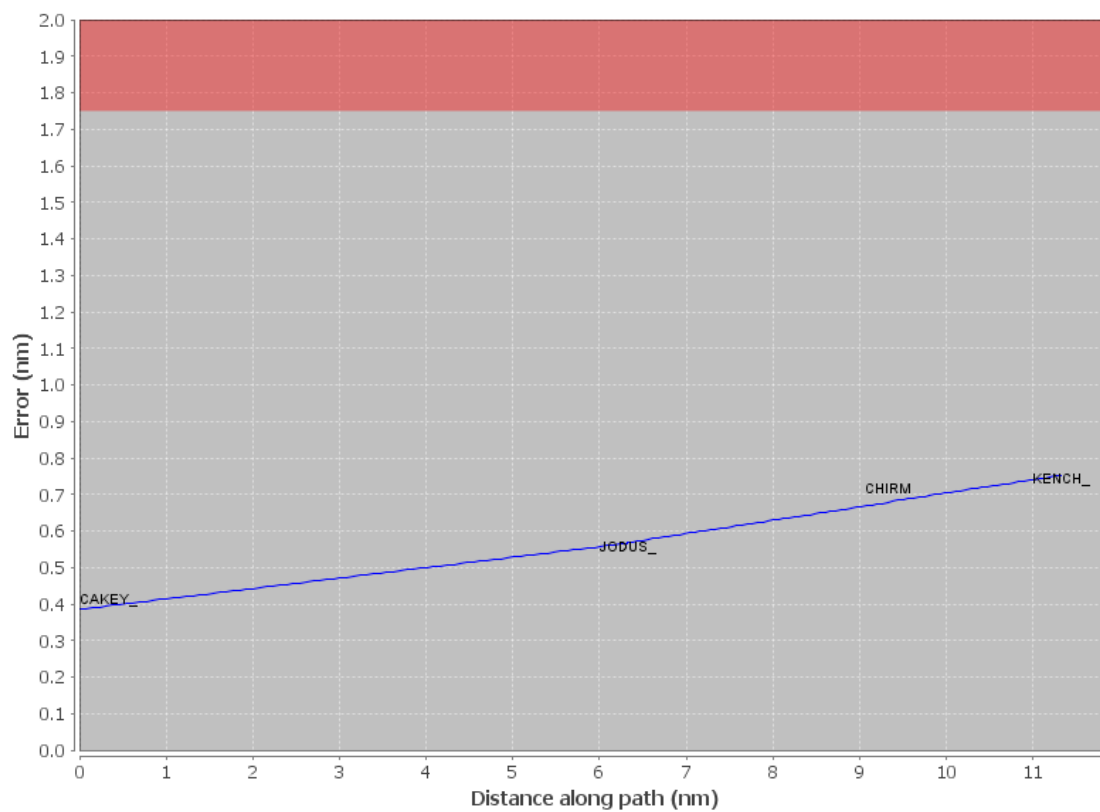
Available DMEs by Waypoints		
Waypoint Before	Waypoint After	DME List
CAKEY_	JODUS_	
JODUS_	CHIRM	
CHIRM	KENCH_	

DME DME Assessment Results for MALNR5 path CAKEY_KENCH

User Data Files								
#	File Name							
1	UserDMEsKRDU [IFPA] MALNR5 RNAV STAR_20190918_1156 EDT.udt							
User DMEs								
#	Name	Lat/Lon	MAGVAR	Range	Elevation [ft]	Frequency	Replaces	Status
1	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 116.0° to 128.0° Bearing [Mag]: 121.0° to 133.0°				Arc Distance: Out to 86.0 NM Altitude: 10900.0 to 18500.0 ft		
2	UDT ESV GSO GSO [IFPA]	N36° 02' 44.491", W079° 58' 34.950"	3.0 W	130	954.7	116.2	UDT ESV GSO	
ESV:		Bearing [True]: 90.0° to 173.0° Bearing [Mag]: 93.0° to 176.0°				Arc Distance: Out to 67.0 NM Altitude: 3900.0 to 16000.0 ft		
3	UDT ESV FLO FLO [IFPA]	N34° 13' 58.685", W079° 39' 25.780"	3.0 W	130	105	115.2	UDT ESV FLO	
ESV:		Bearing [True]: 270.0° to 355.0° Bearing [Mag]: 273.0° to 358.0°				Arc Distance: Out to 70.0 NM Altitude: 6000.0 to 33000.0 ft		
4	UDT ESV FAY FAY [IFPA]	N34° 59' 07.984", W078° 52' 30.230"	4.0 W	40	187	108.8	UDT ESV FAY	
ESV:		Bearing [True]: 320.0° to 356.0° Bearing [Mag]: 324.0° to 0.0°				Arc Distance: Out to 50.0 NM Altitude: 3500.0 to 12000.0 ft		
5	UDT ESV TYI TYI [IFPA]	N35° 58' 36.205", W077° 42' 13.434"	5.0 W	40	72.9	117.8	UDT ESV TYI	
ESV:		Bearing [True]: 260.0° to 279.0° Bearing [Mag]: 265.0° to 284.0°				Arc Distance: Out to 65.0 NM Altitude: 3000.0 to 12000.0 ft		
6	UDT ESV CHS CHS [IFPA]	N32° 53' 39.549", W080° 02' 16.131"	5.0 W	130	39	113.5	UDT ESV CHS	
ESV:		Bearing [True]: 304.0° to 17.0° Bearing [Mag]: 309.0° to 22.0°				Arc Distance: Out to 98.0 NM Altitude: 10900.0 to 18500.0 ft		
7	UDT ESV GRD GRD [IFPA]	N34° 15' 05.638", W082° 09' 14.936"	1.0 W	130	630	115.5	UDT ESV GRD	
ESV:		Bearing [True]: 52.0° to 132.0° Bearing [Mag]: 53.0° to 133.0°				Arc Distance: Out to 72.0 NM Altitude: 4000.0 to 18000.0 ft		
8	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 95.0° to 165.0° Bearing [Mag]: 100.0° to 170.0°				Arc Distance: Out to 80.0 NM Altitude: 6000.0 to 33000.0 ft		

DME DME Assessment Results for MALNR5 path CAKEY__KENCH_

DME Error



DME DME Assessment Results for MALNR5 path MALNR__PYRES

Results Summary

Flyability:	Completed
DME/DME:	Completed - No Critical DMEs
Name:	Dennis CTR Osterhage
Project File:	C:\Users\Dennis CTR Osterhage\Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU MALNR5 RNAV STAR DME 20191101.tgs
Output File:	C:\Users\Dennis CTR Osterhage\My Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU [IFPA] MALNR5 20191101_1321 EDT\MALNR__PYRES\KRDU MALNR5 RNAV STAR MALNR PYRES 20191101_1321 EDT.pdf
Procedure Name:	MALNR5
Software: DmeDmePlugin:	6.0.0
Date/Time:	11/01/2019 13:21 EDT
Databases:	DTED Level 0 MAX

Failures

No Failures

Warnings

No Warnings

Notes For Flight Check

None

Flight Plan

Name	Type	Lat/Lon	Altitude (ft)	VNAV Mode	Ground Speed (kts)	Turn Type	Leg Type
MALNR_	WP	N35° 23' 35.220", W079° 27' 09.670"	11000	VNAV	250	FLY_BY	TF
SMIRF	WP	N35° 12' 23.010", W079° 34' 01.980"	11000	VNAV	250	FLY_BY	TF
JURDI_	WP	N34° 41' 02.920", W079° 52' 14.380"	11000	VNAV	250	FLY_BY	TF
PYRES	WP	N33° 51' 43.850", W081° 32' 40.960"	11000	VNAV	250	FLY_BY	TF
Climb Gradient: 0.0 ft/NM up to 11000.0 ft MSL 200.0 ft/NM							

Flyability

Flight Type:	RNAV_STAR
Selected Airport:	KRDU [IFPA]
Climb Gradient:	0.0 ft/NM up to 11000.0 ft MSL 200.0 ft/NM
Speeds:	200 Ground Speed to 11000 FT
	240 Ground Speed to 18000 FT
	260 Ground Speed to 24000 FT
	340 Ground Speed above 24000 FT
Descent During a Turn:	Allowed
VNAV Mode:	Flight Plan

DME DME Assessment Results for MALNR5 path MALNR__PYRES

DME/DME	
RNP:	RNP 2
Flight Mode:	Manual
Line of Sight (DTED Level 0 Max):	Evaluated
Inertial Drift:	Enabled
Initial Drift:	0.558 NM
INS Drift Rate:	8.0 NM/Hour
Range Mode:	OSV
RNP Edges:	Evaluated
Min DME Range:	3.0 NM
DME Types:	DME, VOR-DME, VORTAC
DME Include Angles:	30 to 150
Critical DMEs:	Allowed
DoD Facilities:	Not included
Foreign Facilities:	Not included
High DMEs:	Included
Low DMEs:	Included
Terminal DMEs:	Included
Flight Check DMEs:	Not selected
Higher Altitudes:	Not Evaluated
Near Maximum Altitude:	Not Evaluated
Automatic ESVs:	Not enabled
Disabled DMEs:	None

DME/DME (Continued)										
DMEs Used										
#	Name	Lat/Lon	MAGVAR	Range	Type	Source	Critical	Status	Time	Distance
1	GSO	N36° 02' 44.491", W079° 58' 34.950"	3.0 W	130	H	IFPA	NO	Enabled	7.8 %	7.8 %
2	FLO	N34° 13' 58.685", W079° 39' 25.780"	3.0 W	130	H	IFPA	NO	Enabled	36.6 %	36.6 %
3	GRD	N34° 15' 05.638", W082° 09' 14.936"	1.0 W	130	H	IFPA	NO	Enabled	23.7 %	23.7 %
4	FAY	N34° 59' 07.984", W078° 52' 30.230"	4.0 W	40	L	IFPA	NO	Enabled	1.3 %	1.3 %
5	SDZ	N35° 12' 55.731", W079° 35' 16.573"	3.0 W	40	L	IFPA	NO	Enabled	23.7 %	23.7 %
6	CHS	N32° 53' 39.549", W080° 02' 16.131"	5.0 W	130	H	IFPA	NO	Enabled	36.2 %	36.2 %
7	CTF	N34° 39' 01.793", W080° 16' 29.699"	3.0 W	40	L	IFPA	NO	Enabled	49.5 %	49.5 %
8	CLT	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	L	IFPA	NO	Enabled	28.6 %	28.7 %
9	CAE	N33° 51' 26.099", W081° 03' 14.050"	2.0 W	130	H	IFPA	NO	Enabled	26.3 %	26.3 %
10	IRQ	N33° 42' 26.472", W082° 09' 43.432"	4.0 W	130	H	IFPA	NO	Enabled	4.9 %	4.9 %

DME DME Assessment Results for MALNR5 path MALNR__PYRES

Flight Check DME Selection						
Distance [NM]	Selected DMEs					Alternate
0.0	GSO	SDZ				
5.3						
21.8	FAY	SDZ	CTF			
23.7	CLT	SDZ	GSO	CTF		
29.7	CLT	SDZ	CTF			
31.2	CLT	SDZ	FLO	CTF		
34.5	FLO	CTF	SDZ			
36.1	CLT	SDZ	FLO	CTF		
45.7	FLO	CTF	SDZ			
50.7	FLO	CTF				
55.6						
66.0	FLO	CTF				
70.7	FLO	CTF	CLT			
76.4	FLO	CTF	CLT	CHS		
86.8	FLO	CTF	CLT	CAE	CHS	
91.7	FLO	CAE	CTF	CHS		
94.4	CHS	CTF	CAE			
97.5	GRD	CAE	CHS	CTF		
103.6	GRD	CAE	CHS			
124.4	GRD	CAE				
124.7						
136.9	CHS	IRQ	GRD			
141.1	GRD	IRQ				

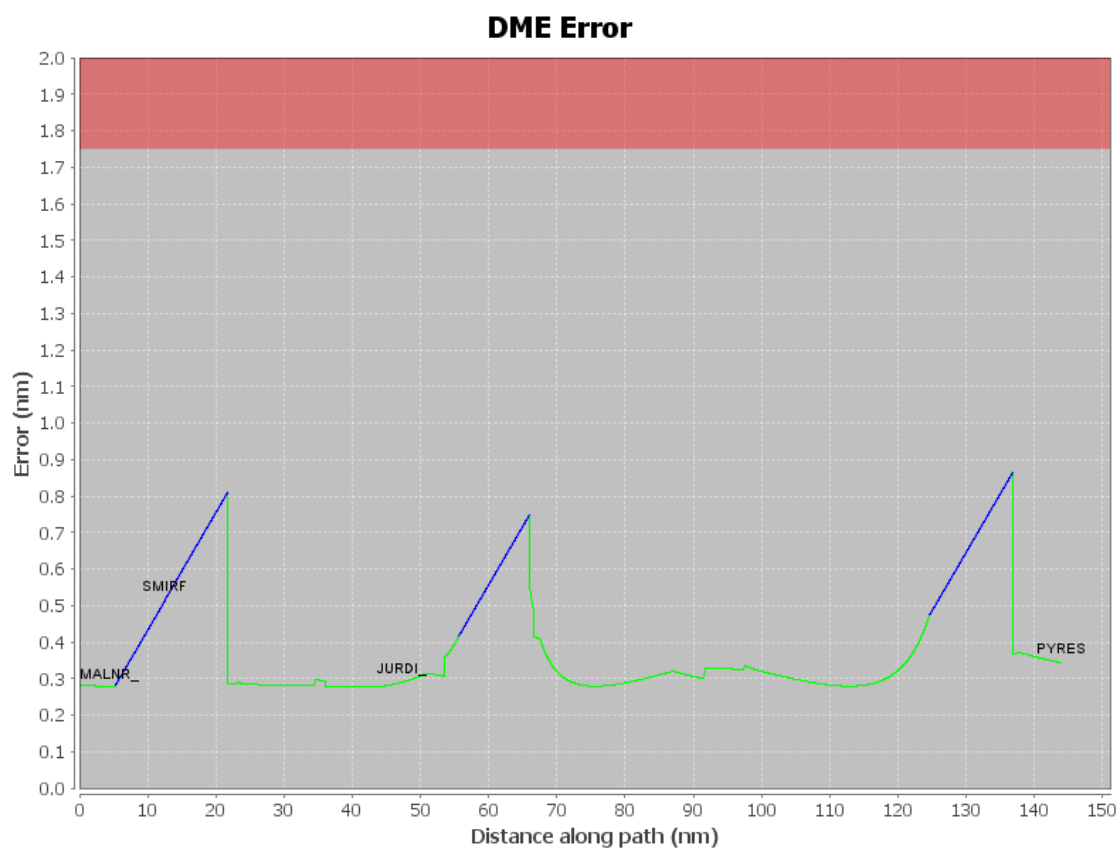
Inertial Drift Segments				
#	Start Location	End Location	Length [NM]	
1	N35° 18' 49.302", W079° 30' 05.304"	N35° 03' 59.430", W079° 38' 56.105"	16.494	
2	N34° 36' 49.190", W080° 01' 02.532"	N34° 31' 33.764", W080° 11' 56.027"	10.4135	
3	N34° 01' 38.821", W081° 12' 51.889"	N33° 55' 21.160", W081° 25' 27.932"	12.2185	

Available DMEs by Waypoints		
Waypoint Before	Waypoint After	DME List
MALNR__	SMIRF	GSO, SDZ
SMIRF	JURDI__	GSO, CTF, SDZ, FLO, CLT, FAY
JURDI__	PYRES	CTF, CAE, FLO, SDZ, GRD, IRQ, CLT, CHS

DME DME Assessment Results for MALNR5 path MALNR_PYRES

User Data Files								
#	File Name							
1	UserDMEsKRDU [IFPA] MALNR5 RNAV STAR_20190918_1156 EDT.udt							
User DMEs								
#	Name	Lat/Lon	MAGVAR	Range	Elevation [ft]	Frequency	Replaces	Status
1	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 116.0° to 128.0° Bearing [Mag]: 121.0° to 133.0°				Arc Distance: Out to 86.0 NM Altitude: 10900.0 to 18500.0 ft		
2	UDT ESV GSO GSO [IFPA]	N36° 02' 44.491", W079° 58' 34.950"	3.0 W	130	954.7	116.2	UDT ESV GSO	
ESV:		Bearing [True]: 90.0° to 173.0° Bearing [Mag]: 93.0° to 176.0°				Arc Distance: Out to 67.0 NM Altitude: 3900.0 to 16000.0 ft		
3	UDT ESV FLO FLO [IFPA]	N34° 13' 58.685", W079° 39' 25.780"	3.0 W	130	105	115.2	UDT ESV FLO	
ESV:		Bearing [True]: 270.0° to 355.0° Bearing [Mag]: 273.0° to 358.0°				Arc Distance: Out to 70.0 NM Altitude: 6000.0 to 33000.0 ft		
4	UDT ESV FAY FAY [IFPA]	N34° 59' 07.984", W078° 52' 30.230"	4.0 W	40	187	108.8	UDT ESV FAY	
ESV:		Bearing [True]: 320.0° to 356.0° Bearing [Mag]: 324.0° to 0.0°				Arc Distance: Out to 50.0 NM Altitude: 3500.0 to 12000.0 ft		
5	UDT ESV TYI TYI [IFPA]	N35° 58' 36.205", W077° 42' 13.434"	5.0 W	40	72.9	117.8	UDT ESV TYI	
ESV:		Bearing [True]: 260.0° to 279.0° Bearing [Mag]: 265.0° to 284.0°				Arc Distance: Out to 65.0 NM Altitude: 3000.0 to 12000.0 ft		
6	UDT ESV CHS CHS [IFPA]	N32° 53' 39.549", W080° 02' 16.131"	5.0 W	130	39	113.5	UDT ESV CHS	
ESV:		Bearing [True]: 304.0° to 17.0° Bearing [Mag]: 309.0° to 22.0°				Arc Distance: Out to 98.0 NM Altitude: 10900.0 to 18500.0 ft		
7	UDT ESV GRD GRD [IFPA]	N34° 15' 05.638", W082° 09' 14.936"	1.0 W	130	630	115.5	UDT ESV GRD	
ESV:		Bearing [True]: 52.0° to 132.0° Bearing [Mag]: 53.0° to 133.0°				Arc Distance: Out to 72.0 NM Altitude: 4000.0 to 18000.0 ft		
8	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 95.0° to 165.0° Bearing [Mag]: 100.0° to 170.0°				Arc Distance: Out to 80.0 NM Altitude: 6000.0 to 33000.0 ft		

DME DME Assessment Results for MALNR5 path MALNR__PYRES



DME DME Assessment Results for MALNR5 path MALNR__REDFH

Results Summary

Flyability:	Completed
DME/DME:	Completed - No Critical DMEs
Name:	Dennis CTR Osterhage
Project File:	C:\Users\Dennis CTR Osterhage\Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU MALNR5 RNAV STAR DME 20191101.tgs
Output File:	C:\Users\Dennis CTR Osterhage\My Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU [IFPA] MALNR5 20191101_1321 EDT\MALNR__REDFH\KRDU MALNR5 RNAV STAR MALNR REDFH 20191101_1321 EDT.pdf
Procedure Name:	MALNR5
Software: DmeDmePlugin:	6.0.0
Date/Time:	11/01/2019 13:22 EDT
Databases:	DTED Level 0 MAX

Failures

No Failures

Warnings

No Warnings

Notes For Flight Check

None

Flight Plan

Name	Type	Lat/Lon	Altitude (ft)	VNAV Mode	Ground Speed (kts)	Turn Type	Leg Type
MALNR_	WP	N35° 23' 35.220", W079° 27' 09.670"	11000	VNAV	250	FLY_BY	TF
ETBUY	WP	N35° 06' 48.430", W079° 29' 25.220"	11000	VNAV	250	FLY_BY	TF
HOGIL	WP	N34° 57' 19.400", W079° 31' 13.930"	11000	VNAV	250	FLY_BY	TF
REDFH	WP	N34° 22' 36.350", W079° 37' 08.340"	11000	VNAV	250	FLY_BY	TF
Climb Gradient: 0.0 ft/NM up to 11000.0 ft MSL 200.0 ft/NM							

Flyability

Flight Type:	RNAV_STAR
Selected Airport:	KRDU [IFPA]
Climb Gradient:	0.0 ft/NM up to 11000.0 ft MSL 200.0 ft/NM
Speeds:	200 Ground Speed to 11000 FT
	240 Ground Speed to 18000 FT
	260 Ground Speed to 24000 FT
	340 Ground Speed above 24000 FT
Descent During a Turn:	Allowed
VNAV Mode:	Flight Plan

DME DME Assessment Results for MALNR5 path MALNR__REDFH

DME/DME	
RNP:	RNP 2
Flight Mode:	Manual
Line of Sight (DTED Level 0 Max):	Evaluated
Inertial Drift:	Enabled
Initial Drift:	0.558 NM
INS Drift Rate:	8.0 NM/Hour
Range Mode:	OSV
RNP Edges:	Evaluated
Min DME Range:	3.0 NM
DME Types:	DME, VOR-DME, VORTAC
DME Include Angles:	30 to 150
Critical DMEs:	Allowed
DoD Facilities:	Not included
Foreign Facilities:	Not included
High DMEs:	Included
Low DMEs:	Included
Terminal DMEs:	Included
Flight Check DMEs:	Not selected
Higher Altitudes:	Not Evaluated
Near Maximum Altitude:	Not Evaluated
Automatic ESVs:	Not enabled
Disabled DMEs:	None

DME/DME (Continued)										
DMEs Used										
#	Name	Lat/Lon	MAGVAR	Range	Type	Source	Critical	Status	Time	Distance
1	GSO	N36° 02' 44.491", W079° 58' 34.950"	3.0 W	130	H	IFPA	NO	Enabled	31.1 %	31.1 %
2	FLO	N34° 13' 58.685", W079° 39' 25.780"	3.0 W	130	H	IFPA	NO	Enabled	50.2 %	50.2 %
3	FAY	N34° 59' 07.984", W078° 52' 30.230"	4.0 W	40	L	IFPA	NO	Enabled	61.1 %	61.1 %
4	SDZ	N35° 12' 55.731", W079° 35' 16.573"	3.0 W	40	L	IFPA	NO	Enabled	66.4 %	66.4 %
5	CHS	N32° 53' 39.549", W080° 02' 16.131"	5.0 W	130	H	IFPA	NO	Enabled	10 %	10 %
6	CTF	N34° 39' 01.793", W080° 16' 29.699"	3.0 W	40	L	IFPA	NO	Enabled	36.9 %	36.9 %
7	LIB	N35° 48' 41.837", W079° 36' 45.331"	3.0 W	40	L	IFPA	NO	Enabled	14.8 %	14.8 %
8	CLT	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	L	IFPA	NO	Enabled	66.8 %	66.8 %

DME DME Assessment Results for MALNR5 path MALNR__REDFH

Flight Check DME Selection						
Distance [NM]	Selected DMEs					Alternate
0.0	GSO	SDZ				
1.6	FAY	SDZ	GSO			
4.0	FAY	SDZ	GSO	LIB		
7.0	SDZ	LIB	FAY			
8.7	FAY	LIB				
9.5	FAY	LIB	GSO			
13.2	GSO	FAY				
18.0	GSO	FAY	SDZ			
19.3	GSO	CLT	FAY	SDZ		
21.8	FAY	SDZ	CLT			
30.6	FAY	SDZ	CLT	FLO		
38.2	CTF	SDZ	FAY	FLO		
39.2	CTF	SDZ	FLO	CLT		
50.3	FLO	CTF	CLT			
55.3	FLO	CTF	CLT	CHS		
61.0	CLT	FLO	CHS			

Inertial Drift Segments			
#	Start Location	End Location	Length [NM]

Available DMEs by Waypoints		
Waypoint Before	Waypoint After	DME List
MALNR__	ETBUY	GSO, LIB, SDZ, FAY
ETBUY	HOGIL	GSO, SDZ, CLT, FAY
HOGIL	REDFH	CTF, SDZ, FLO, CLT, FAY, CHS

DME DME Assessment Results for MALNR5 path MALNR__REDFH

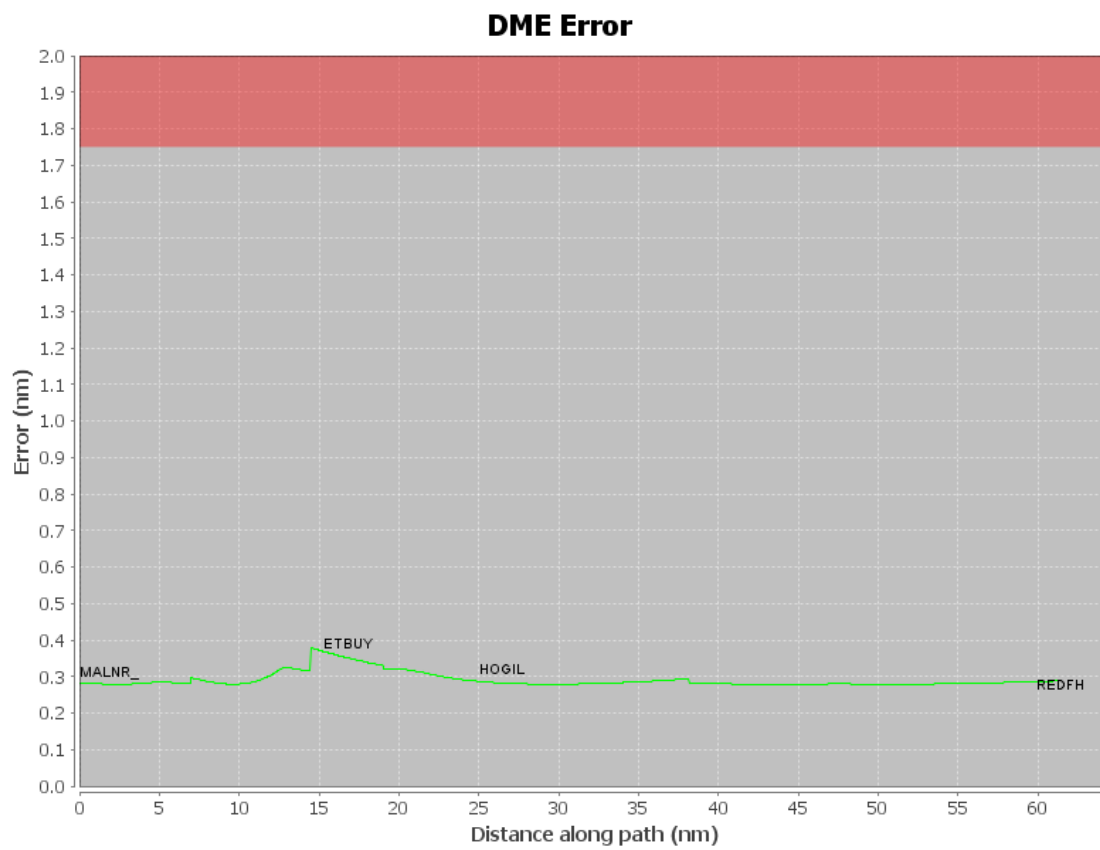
User Data Files

#	File Name
1	UserDMEsKRDU [IFPA] MALNR5 RNAV STAR_20190918_1156 EDT.udt

User DMEs

#	Name	Lat/Lon	MAGVAR	Range	Elevation [ft]	Frequency	Replaces	Status
1	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 116.0° to 128.0° Bearing [Mag]: 121.0° to 133.0°				Arc Distance: Out to 86.0 NM Altitude: 10900.0 to 18500.0 ft		
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ESV:		Bearing [True]: 90.0° to 173.0° Bearing [Mag]: 93.0° to 176.0°				Arc Distance: Out to 67.0 NM Altitude: 3900.0 to 16000.0 ft		
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ESV:		Bearing [True]: 320.0° to 356.0° Bearing [Mag]: 324.0° to 0.0°				Arc Distance: Out to 50.0 NM Altitude: 3500.0 to 12000.0 ft		
5	UDT ESV TYI TYI [IFPA]	N35° 58' 36.205", W077° 42' 13.434"	5.0 W	40	72.9	117.8	UDT ESV TYI	
ESV:		Bearing [True]: 260.0° to 279.0° Bearing [Mag]: 265.0° to 284.0°				Arc Distance: Out to 65.0 NM Altitude: 3000.0 to 12000.0 ft		
6	UDT ESV CHS CHS [IFPA]	N32° 53' 39.549", W080° 02' 16.131"	5.0 W	130	39	113.5	UDT ESV CHS	
ESV:		Bearing [True]: 304.0° to 17.0° Bearing [Mag]: 309.0° to 22.0°				Arc Distance: Out to 98.0 NM Altitude: 10900.0 to 18500.0 ft		
7	UDT ESV GRD GRD [IFPA]	N34° 15' 05.638", W082° 09' 14.936"	1.0 W	130	630	115.5	UDT ESV GRD	
ESV:		Bearing [True]: 52.0° to 132.0° Bearing [Mag]: 53.0° to 133.0°				Arc Distance: Out to 72.0 NM Altitude: 4000.0 to 18000.0 ft		
8	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 95.0° to 165.0° Bearing [Mag]: 100.0° to 170.0°				Arc Distance: Out to 80.0 NM Altitude: 6000.0 to 33000.0 ft		

DME DME Assessment Results for MALNR5 path MALNR__REDFH



DME DME Assessment Results for MALNR5 path PYRES_GLEYS_

Results Summary

Flyability:	Completed
DME/DME:	Completed - No Critical DMEs
Name:	Dennis CTR Osterhage
Project File:	C:\Users\Dennis CTR Osterhage\Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU MALNR5 RNAV STAR DME 20191101.tgs
Output File:	C:\Users\Dennis CTR Osterhage\My Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU [IFPA] MALNR5 20191101_1321 EDT\PYRES_GLEYS_\KRDU MALNR5 RNAV STAR PYRES GLEYS 20191101_1321 EDT.pdf
Procedure Name:	MALNR5
Software: DmeDmePlugin:	6.0.0
Date/Time:	11/01/2019 13:21 EDT
Databases:	DTED Level 0 MAX

Failures

No Failures

Warnings

No Warnings

Notes For Flight Check

None

Flight Plan

Name	Type	Lat/Lon	Altitude (ft)	VNAV Mode	Ground Speed (kts)	Turn Type	Leg Type
PYRES	WP	N33° 51' 43.850", W081° 32' 40.960"	11000	VNAV	250	FLY_BY	TF
JURDI_	WP	N34° 41' 02.920", W079° 52' 14.380"	11000	VNAV	250	FLY_BY	TF
SMIRF	WP	N35° 12' 23.010", W079° 34' 01.980"	11000	VNAV	250	FLY_BY	TF
MALNR_	WP	N35° 23' 35.220", W079° 27' 09.670"	11000	VNAV	250	FLY_BY	TF
WISPY	WP	N35° 37' 56.340", W079° 10' 30.990"	10000	VNAV	280	FLY_BY	TF
CAKEY_	WP	N35° 47' 27.380", W078° 54' 34.340"	8000	VNAV	280	FLY_BY	TF
FRETO	WP	N35° 53' 29.070", W078° 52' 40.610"	7000	VNAV	220	FLY_BY	TF
ORENG	WP	N35° 56' 38.800", W078° 51' 40.830"	6000	VNAV	220	FLY_BY	TF
GLEYS_	WP	N35° 58' 03.610", W078° 49' 56.110"	6000	VNAV	210	FLY_OVER	TF

Flyability

Flight Type:	RNAV_STAR
Selected Airport:	KRDU [IFPA]
Climb Gradient:	None assigned
Speeds:	200 Ground Speed to 11000 FT
	240 Ground Speed to 18000 FT
	260 Ground Speed to 24000 FT
	340 Ground Speed above 24000 FT
Descent During a Turn:	Allowed
VNAV Mode:	Flight Plan

DME DME Assessment Results for MALNR5 path PYRES_GLEYS_

DME/DME	
RNP:	RNP 2
Flight Mode:	Manual
Line of Sight (DTED Level 0 Max):	Evaluated
Inertial Drift:	Enabled
Initial Drift:	0.558 NM
INS Drift Rate:	8.0 NM/Hour
Range Mode:	OSV
RNP Edges:	Evaluated
Min DME Range:	3.0 NM
DME Types:	DME, VOR-DME, VORTAC
DME Include Angles:	30 to 150
Critical DMEs:	Allowed
DoD Facilities:	Not included
Foreign Facilities:	Not included
High DMEs:	Included
Low DMEs:	Included
Terminal DMEs:	Included
Flight Check DMEs:	Not selected
Higher Altitudes:	Not Evaluated
Near Maximum Altitude:	Not Evaluated
Automatic ESVs:	Not enabled
Disabled DMEs:	None

DME/DME (Continued)										
DMEs Used										
#	Name	Lat/Lon	MAGVAR	Range	Type	Source	Critical	Status	Time	Distance
1	FAY	N34° 59' 07.984", W078° 52' 30.230"	4.0 W	40	L	IFPA	NO	Enabled	13.4 %	13.9 %
2	CHS	N32° 53' 39.549", W080° 02' 16.131"	5.0 W	130	H	IFPA	NO	Enabled	27.5 %	27.2 %
3	CTF	N34° 39' 01.793", W080° 16' 29.699"	3.0 W	40	L	IFPA	NO	Enabled	37.6 %	37.2 %
4	CLT	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	L	IFPA	NO	Enabled	21.8 %	21.6 %
5	CAE	N33° 51' 26.099", W081° 03' 14.050"	2.0 W	130	H	IFPA	NO	Enabled	20 %	19.8 %
6	GSO	N36° 02' 44.491", W079° 58' 34.950"	3.0 W	130	H	IFPA	NO	Enabled	23.7 %	24.4 %
7	FLO	N34° 13' 58.685", W079° 39' 25.780"	3.0 W	130	H	IFPA	NO	Enabled	27.8 %	27.5 %
8	GRD	N34° 15' 05.638", W082° 09' 14.936"	1.0 W	130	H	IFPA	NO	Enabled	18 %	17.8 %
9	SDZ	N35° 12' 55.731", W079° 35' 16.573"	3.0 W	40	L	IFPA	NO	Enabled	31.7 %	31.8 %
10	LIB	N35° 48' 41.837", W079° 36' 45.331"	3.0 W	40	L	IFPA	NO	Enabled	15.5 %	16.1 %
11	RDU	N35° 52' 21.076", W078° 47' 00.032"	9.0 W	130	H	IFPA	NO	Enabled	15.8 %	16.6 %
12	IRQ	N33° 42' 26.472", W082° 09' 43.432"	4.0 W	130	H	IFPA	NO	Enabled	3.7 %	3.7 %
13	TYI	N35° 58' 36.205", W077° 42' 13.434"	5.0 W	40	L	IFPA	NO	Enabled	0.2 %	0.2 %

DME DME Assessment Results for MALNR5 path PYRES_GLEYS_

Flight Check DME Selection						
Distance [NM]	Selected DMEs					Alternate
0.0	GRD	IRQ				
2.9	GRD	IRQ	CHS			
7.1						
19.3	GRD	CAE				
19.6	GRD	CAE	CHS			
40.4	GRD	CAE	CHS	CTF		
46.4	CHS	CTF	CAE			
49.6	FLO	CAE	CHS	CTF		
52.3	FLO	CLT	CAE	CTF	CHS	
57.2	FLO	CTF	CLT	CHS		
67.6	FLO	CTF	CLT			
73.2	FLO	CTF				
78.0						
88.4	FLO	CTF				
93.2	FLO	CTF	SDZ			
98.2	CLT	SDZ	FLO	CTF		
107.9	FLO	CTF	SDZ			
109.5	CLT	SDZ	FLO	CTF		
112.8	CLT	SDZ	CTF			
114.3	CLT	SDZ	GSO	CTF		
120.3	FAY	SDZ	CTF			
122.2						
138.7	GSO	SDZ				
144.5	GSO	SDZ	LIB			
148.1	GSO	RDU	LIB	SDZ		
150.4	GSO	RDU	FAY	LIB	SDZ	
170.7	FAY	LIB	RDU	GSO		
175.2	GSO	RDU				
178.2						
179.8	GSO	RDU				
181.1						
188.9	TYI	RDU				
189.3						

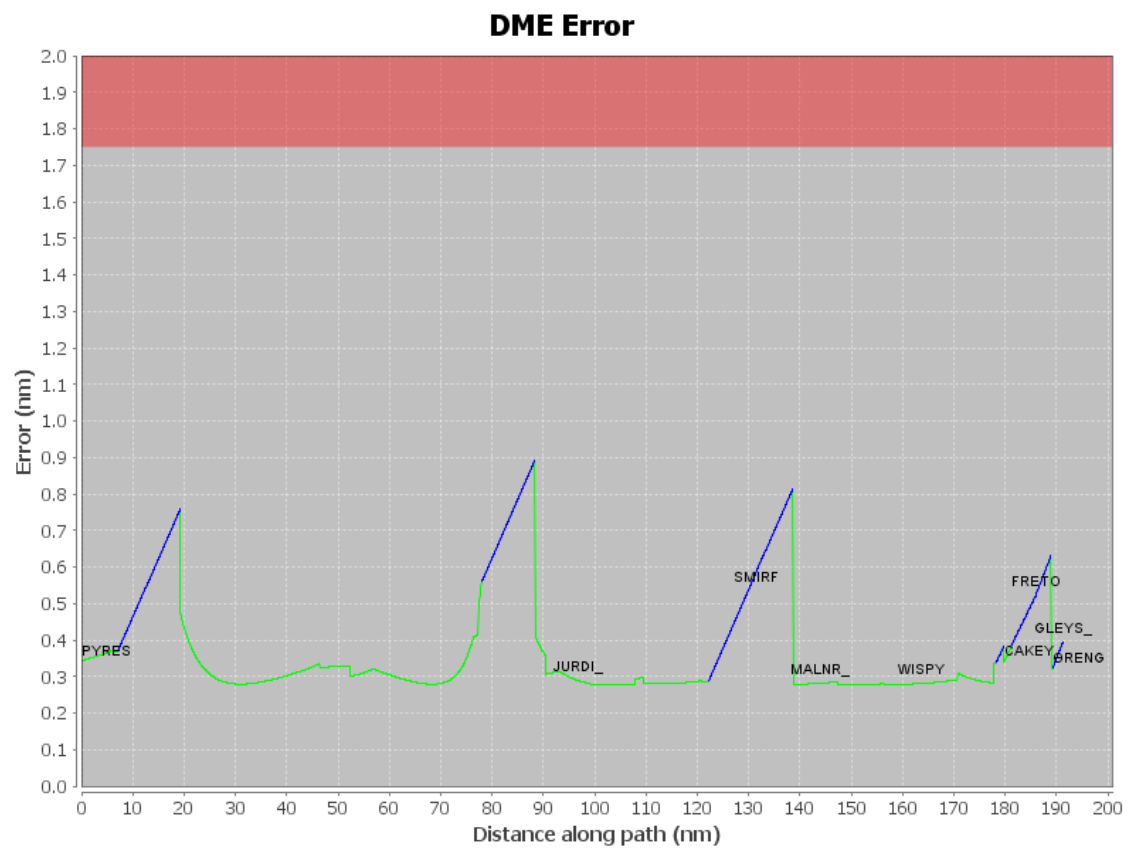
Inertial Drift Segments				
#	Start Location	End Location	Length [NM]	
1	N33° 55' 23.310", W081° 25' 23.642"	N34° 01' 40.963", W081° 12' 47.588"	12.2185	
2	N34° 31' 35.870", W080° 11' 51.675"	N34° 36' 51.289", W080° 00' 58.171"	10.4135	
3	N35° 04' 03.189", W079° 38' 53.914"	N35° 18' 53.016", W079° 30' 03.025"	16.4962	
4	N35° 46' 32.300", W078° 56' 06.936"	N35° 47' 27.380", W078° 54' 34.340"	1.5526	
5	N35° 48' 48.763", W078° 54' 08.776"	N35° 56' 21.233", W078° 51' 46.369"	7.7795	

Available DMEs by Waypoints		
Waypoint Before	Waypoint After	DME List
PYRES	JURDI_	CTF, CAE, GRD, FLO, SDZ, IRQ, CLT, CHS
JURDI_	SMIRF	GSO, CTF, FLO, SDZ, CLT, FAY
SMIRF	MALNR_	GSO, SDZ
MALNR_	WISPY	GSO, RDU, LIB, SDZ, FAY
WISPY	CAKEY_	RDU, GSO, LIB, SDZ, FAY
CAKEY_	FRETO	GSO, RDU
FRETO	ORENG	RDU, TYI
ORENG	GLEYS_	

DME DME Assessment Results for MALNR5 path PYRES_GLEYS

User Data Files								
#	File Name							
1	UserDMEsKRDU [IFPA] MALNR5 RNAV STAR_20190918_1156 EDT.udt							
User DMEs								
#	Name	Lat/Lon	MAGVAR	Range	Elevation [ft]	Frequency	Replaces	Status
1	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 116.0° to 128.0° Bearing [Mag]: 121.0° to 133.0°				Arc Distance: Out to 86.0 NM Altitude: 10900.0 to 18500.0 ft		
2	UDT ESV GSO GSO [IFPA]	N36° 02' 44.491", W079° 58' 34.950"	3.0 W	130	954.7	116.2	UDT ESV GSO	
ESV:		Bearing [True]: 90.0° to 173.0° Bearing [Mag]: 93.0° to 176.0°				Arc Distance: Out to 67.0 NM Altitude: 3900.0 to 16000.0 ft		
3	UDT ESV FLO FLO [IFPA]	N34° 13' 58.685", W079° 39' 25.780"	3.0 W	130	105	115.2	UDT ESV FLO	
ESV:		Bearing [True]: 270.0° to 355.0° Bearing [Mag]: 273.0° to 358.0°				Arc Distance: Out to 70.0 NM Altitude: 6000.0 to 33000.0 ft		
4	UDT ESV FAY FAY [IFPA]	N34° 59' 07.984", W078° 52' 30.230"	4.0 W	40	187	108.8	UDT ESV FAY	
ESV:		Bearing [True]: 320.0° to 356.0° Bearing [Mag]: 324.0° to 0.0°				Arc Distance: Out to 50.0 NM Altitude: 3500.0 to 12000.0 ft		
5	UDT ESV TYI TYI [IFPA]	N35° 58' 36.205", W077° 42' 13.434"	5.0 W	40	72.9	117.8	UDT ESV TYI	
ESV:		Bearing [True]: 260.0° to 279.0° Bearing [Mag]: 265.0° to 284.0°				Arc Distance: Out to 65.0 NM Altitude: 3000.0 to 12000.0 ft		
6	UDT ESV CHS CHS [IFPA]	N32° 53' 39.549", W080° 02' 16.131"	5.0 W	130	39	113.5	UDT ESV CHS	
ESV:		Bearing [True]: 304.0° to 17.0° Bearing [Mag]: 309.0° to 22.0°				Arc Distance: Out to 98.0 NM Altitude: 10900.0 to 18500.0 ft		
7	UDT ESV GRD GRD [IFPA]	N34° 15' 05.638", W082° 09' 14.936"	1.0 W	130	630	115.5	UDT ESV GRD	
ESV:		Bearing [True]: 52.0° to 132.0° Bearing [Mag]: 53.0° to 133.0°				Arc Distance: Out to 72.0 NM Altitude: 4000.0 to 18000.0 ft		
8	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 95.0° to 165.0° Bearing [Mag]: 100.0° to 170.0°				Arc Distance: Out to 80.0 NM Altitude: 6000.0 to 33000.0 ft		

DME DME Assessment Results for MALNR5 path PYRES_GLEYS_



DME DME Assessment Results for MALNR5 path REDFH_OTTOS_

Results Summary

Flyability:	Completed
DME/DME:	Completed - No Critical DMEs
Name:	Dennis CTR Osterhage
Project File:	C:\Users\Dennis CTR Osterhage\Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU MALNR5 RNAV STAR DME 20191101.tgs
Output File:	C:\Users\Dennis CTR Osterhage\My Documents\1-Projects\1-KRDU\RNAV STARS\MALNR\KRDU [IFPA] MALNR5 20191101_1321 EDT\REDFH_OTTOS_\KRDU MALNR5 RNAV STAR REDFH OTTOS 20191101_1321 EDT.pdf
Procedure Name:	MALNR5
Software: DmeDmePlugin:	6.0.0
Date/Time:	11/01/2019 13:21 EDT
Databases:	DTED Level 0 MAX

Failures

No Failures

Warnings

No Warnings

Notes For Flight Check

None

Flight Plan

Name	Type	Lat/Lon	Altitude (ft)	VNAV Mode	Ground Speed (kts)	Turn Type	Leg Type
REDFH	WP	N34° 22' 36.350", W079° 37' 08.340"	11000	VNAV	250	FLY_BY	TF
HOGIL	WP	N34° 57' 19.400", W079° 31' 13.930"	11000	VNAV	250	FLY_BY	TF
ETBUY	WP	N35° 06' 48.430", W079° 29' 25.220"	11000	VNAV	250	FLY_BY	TF
MALNR_	WP	N35° 23' 35.220", W079° 27' 09.670"	11000	VNAV	250	FLY_BY	TF
NYGEL	WP	N35° 29' 21.790", W079° 24' 29.670"	9000	VNAV	250	FLY_BY	TF
OTTOS_	WP	N35° 39' 00.810", W079° 07' 19.590"	6000	VNAV	210	FLY_BY	TF

Flyability

Flight Type:	RNAV_STAR
Selected Airport:	KRDU [IFPA]
Climb Gradient:	None assigned
Speeds:	200 Ground Speed to 11000 FT
	240 Ground Speed to 18000 FT
	260 Ground Speed to 24000 FT
	340 Ground Speed above 24000 FT
Descent During a Turn:	Allowed
VNAV Mode:	Flight Plan

DME DME Assessment Results for MALNR5 path REDFH_OTTOS_

DME/DME	
RNP:	RNP 2
Flight Mode:	Manual
Line of Sight (DTED Level 0 Max):	Evaluated
Inertial Drift:	Enabled
Initial Drift:	0.558 NM
INS Drift Rate:	8.0 NM/Hour
Range Mode:	OSV
RNP Edges:	Evaluated
Min DME Range:	3.0 NM
DME Types:	DME, VOR-DME, VORTAC
DME Include Angles:	30 to 150
Critical DMEs:	Allowed
DoD Facilities:	Not included
Foreign Facilities:	Not included
High DMEs:	Included
Low DMEs:	Included
Terminal DMEs:	Included
Flight Check DMEs:	Not selected
Higher Altitudes:	Not Evaluated
Near Maximum Altitude:	Not Evaluated
Automatic ESVs:	Not enabled
Disabled DMEs:	None

DME/DME (Continued)										
DMEs Used										
#	Name	Lat/Lon	MAGVAR	Range	Type	Source	Critical	Status	Time	Distance
1	GSO	N36° 02' 44.491", W079° 58' 34.950"	3.0 W	130	H	IFPA	NO	Enabled	50 %	49.9 %
2	FLO	N34° 13' 58.685", W079° 39' 25.780"	3.0 W	130	H	IFPA	NO	Enabled	36.5 %	36.5 %
3	FAY	N34° 59' 07.984", W078° 52' 30.230"	4.0 W	40	L	IFPA	NO	Enabled	63.3 %	63.3 %
4	SDZ	N35° 12' 55.731", W079° 35' 16.573"	3.0 W	40	L	IFPA	NO	Enabled	75.6 %	75.6 %
5	CHS	N32° 53' 39.549", W080° 02' 16.131"	5.0 W	130	H	IFPA	NO	Enabled	7.3 %	7.3 %
6	CTF	N34° 39' 01.793", W080° 16' 29.699"	3.0 W	40	L	IFPA	NO	Enabled	26.8 %	26.8 %
7	CLT	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	L	IFPA	NO	Enabled	48.5 %	48.6 %
8	LIB	N35° 48' 41.837", W079° 36' 45.331"	3.0 W	40	L	IFPA	NO	Enabled	33.6 %	33.6 %
9	RDU	N35° 52' 21.076", W078° 47' 00.032"	9.0 W	130	H	IFPA	NO	Enabled	20.1 %	20 %

DME DME Assessment Results for MALNR5 path REDFH_OTTOS_

Flight Check DME Selection						
Distance [NM]	Selected DMEs					Alternate
0.0	CLT	FLO	CHS			
0.6	FLO	CTF	CHS	CLT		
6.2	FLO	CTF	CLT			
11.2	FLO	CTF	SDZ	CLT		
22.3	CTF	SDZ	FLO	FAY		
23.3	CLT	FLO	FAY	SDZ		
30.9	FAY	SDZ	CLT			
39.8	FAY	SDZ	GSO	CLT		
42.2	GSO	FAY	SDZ			
43.5	GSO	FAY				
48.3	FAY	LIB	GSO			
52.0	FAY	LIB				
52.8	SDZ	LIB	FAY			
54.5	GSO	SDZ	FAY	LIB		
57.5	FAY	SDZ	GSO			
59.9	GSO	SDZ				
65.3	GSO	SDZ	LIB			
67.7	GSO	RDU	LIB	SDZ		
68.6	FAY	RDU	GSO	LIB	SDZ	

Inertial Drift Segments			
#	Start Location	End Location	Length [NM]

Available DMEs by Waypoints		
Waypoint Before	Waypoint After	DME List
REDFH	HOGIL	CTF, FLO, SDZ, CLT, CHS, FAY
HOGIL	ETBUY	GSO, SDZ, CLT, FAY
ETBUY	MALNR_	GSO, LIB, SDZ, FAY
MALNR_	NYGEL	GSO, LIB, SDZ
NYGEL	OTTOS_	RDU, GSO, LIB, SDZ, FAY

DME DME Assessment Results for MALNR5 path REDFH_OTTOS_

User Data Files

#	File Name
1	UserDMEsKRDU [IFPA] MALNR5 RNAV STAR_20190918_1156 EDT.udt

User DMEs

#	Name	Lat/Lon	MAGVAR	Range	Elevation [ft]	Frequency	Replaces	Status
1	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 116.0° to 128.0° Bearing [Mag]: 121.0° to 133.0°				Arc Distance: Out to 86.0 NM Altitude: 10900.0 to 18500.0 ft		
2	UDT ESV GSO GSO [IFPA]	N36° 02' 44.491", W079° 58' 34.950"	3.0 W	130	954.7	116.2	UDT ESV GSO	
ESV:		Bearing [True]: 90.0° to 173.0° Bearing [Mag]: 93.0° to 176.0°				Arc Distance: Out to 67.0 NM Altitude: 3900.0 to 16000.0 ft		
3	UDT ESV FLO FLO [IFPA]	N34° 13' 58.685", W079° 39' 25.780"	3.0 W	130	105	115.2	UDT ESV FLO	
ESV:		Bearing [True]: 270.0° to 355.0° Bearing [Mag]: 273.0° to 358.0°				Arc Distance: Out to 70.0 NM Altitude: 6000.0 to 33000.0 ft		
4	UDT ESV FAY FAY [IFPA]	N34° 59' 07.984", W078° 52' 30.230"	4.0 W	40	187	108.8	UDT ESV FAY	
ESV:		Bearing [True]: 320.0° to 356.0° Bearing [Mag]: 324.0° to 0.0°				Arc Distance: Out to 50.0 NM Altitude: 3500.0 to 12000.0 ft		
5	UDT ESV TYI TYI [IFPA]	N35° 58' 36.205", W077° 42' 13.434"	5.0 W	40	72.9	117.8	UDT ESV TYI	
ESV:		Bearing [True]: 260.0° to 279.0° Bearing [Mag]: 265.0° to 284.0°				Arc Distance: Out to 65.0 NM Altitude: 3000.0 to 12000.0 ft		
6	UDT ESV CHS CHS [IFPA]	N32° 53' 39.549", W080° 02' 16.131"	5.0 W	130	39	113.5	UDT ESV CHS	
ESV:		Bearing [True]: 304.0° to 17.0° Bearing [Mag]: 309.0° to 22.0°				Arc Distance: Out to 98.0 NM Altitude: 10900.0 to 18500.0 ft		
7	UDT ESV GRD GRD [IFPA]	N34° 15' 05.638", W082° 09' 14.936"	1.0 W	130	630	115.5	UDT ESV GRD	
ESV:		Bearing [True]: 52.0° to 132.0° Bearing [Mag]: 53.0° to 133.0°				Arc Distance: Out to 72.0 NM Altitude: 4000.0 to 18000.0 ft		
8	UDT ESV CLT CLT [IFPA]	N35° 11' 25.704", W080° 57' 07.176"	5.0 W	40	771	115.0	UDT ESV CLT	
ESV:		Bearing [True]: 95.0° to 165.0° Bearing [Mag]: 100.0° to 170.0°				Arc Distance: Out to 80.0 NM Altitude: 6000.0 to 33000.0 ft		

DME DME Assessment Results for MALNR5 path REDFH_OTTOS_

DME Error

