Flight Procedure Tracking Form	Action: FLIGHT CHECK	Task Type: STAR	Date Open: 08/31/2011	Task #: 2010031221479101009	Request #: 20100312214791
Procedure: STAR TSHNR (RNAV) ONE DENVER CO KDEN		Airport ID: KDEN	Airport: DENVER INTERNATIONAL		Reimbursable #:
City: DENVER	ST: CO	GPS #:		Estimated Chart Date: 11/15/2012	FICO #:
Fac ID:	Fac. Type: Proc-D	Specialist: CHARLES SCHNEIDER			

P1

DME / DME

ESV REQUEST INCLUDED

Procedure Review

	Rec'd	Rel'd	Full Name	Comments
Lead:	04/27/2012	08/13/2012	STEVEN SZUKALA	
QA:	08/13/2012	08/13/2012	STEVEN SZUKALA	
Liaison:	08/13/2012		K. Spurlin	P1 - ESV - DME/DME

Procedure Comments:

Remark Type: INFORMATION

PKG 4 of 8

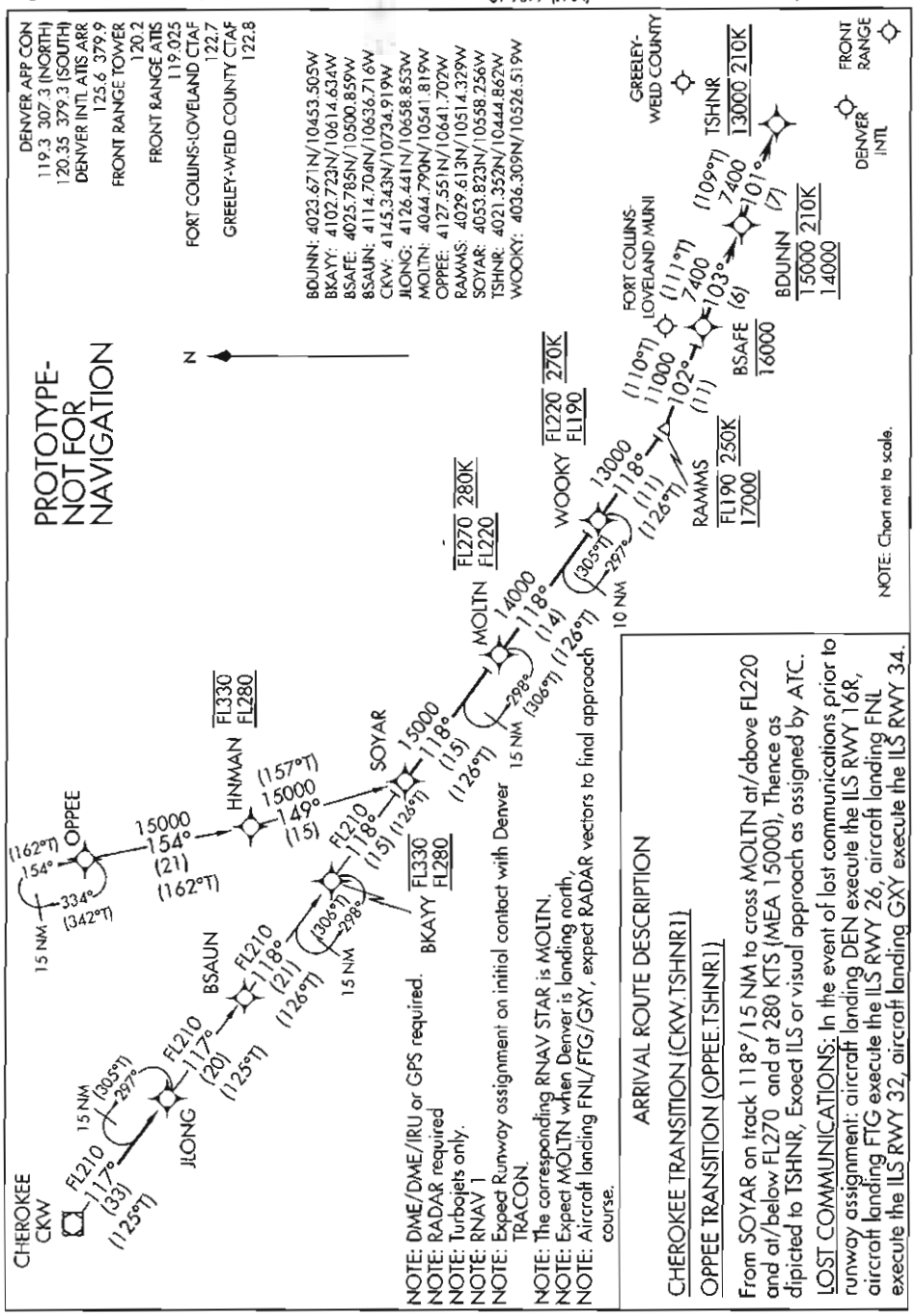
DENVER, CO DENVER INTERNATIONAL (KDEN) STAR TSHNR (RNAV) ONE ENROUTE-YES FC BY 9/18/12 PUB 11/15/12
ESV: GLL, RLG, CYS, CHE, OCS, BOY
ATTACHED FORMS: 7100-4; 7100-3; 8260-2(S); BDUNN, ORIG; BKAYY, ORIG; BSAFE, ORIG; BSAUN, ORIG; CHEROKEE (CKW) VOR/DME REV 8; HNMAN, ORIG; JLONG, ORIG; MOLTN, ORIG; OPPEE, REV 1; RAMMS INT, REV 2; SOYAR, ORIG; TSHNR, ORIG; WOOKY, ORIG.
CONTACT: ADOLFO URRUTIA/LONNIE EVERHART-AVN-130 LEADS, 405.954.2079/405.954.4576.

(TSHNR.TSHNR1) FIG

TSHNR ONE ARRIVAL (RNAV)

ST-9077 (FAA)

DENVER, COLORADO



ARRIVAL ROUTE DESCRIPTION

CHEROKEE TRANSITION (CKW.TSHNR1)

OPPEE TRANSITION (OPPEE.TSHNR1)

From SOYAR on track 118°/15 NM to cross MOLTN at/above FL220 and at/below FL270 and at 280 KTS (MEA 15000). Thence as dipicted to TSHNR. Expect ILS or visual approach as assigned by ATC.

LOST COMMUNICATIONS: In the event of lost communications prior to runway assignment: aircraft landing DEN execute the ILS RWY 16R, aircraft landing FTG execute the ILS RWY 26, aircraft landing FNL execute the ILS RWY 32, aircraft landing GXY execute the ILS RWY 34.

TSHNR ONE ARRIVAL (RNAV)

DENVER, COLORADO

(TSHNR.THSNR1) FIG

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : HAYDEN	City : HAYDEN	Ident : CHE	State : CO
Type/Class : DME	Frequency : M1190	Reference No.: 12064029	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 910278-011	347	30	66	210	220

Requirement: DEN: MOLTN RNAV STAR; MITIGATES CRITICAL DMES

Signature: Graham Bob	Routing Symbol: AJV-W21	Date: 06/25/2012

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 910278-011	347	30	66	210	220	APPROVE

Requirement/Remarks: DEN: MOLTN RNAV STAR; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: pham Vu	Routing Symbol:	Date: 06/25/2012

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 910278-011	347	30	66	210	220	APPROVE

Requirement/Remarks: DEN: MOLTN RNAV STAR; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 06/26/2012

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 910278-011	347	30				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : ROCK SPRINGS	City : ROCK SPRINGS	Ident : OCS	State : WY
Type/Class : DMER	Frequency : M1194	Reference No.: 12063932	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 960852-012	64	86	95	209	220

Requirement: DEN MOLTN AND TSHNR RNAV STARS; MITIGATES CRITICAL DMES

Signature: Graham Bob	Routing Symbol: AJV-W21	Date: 06/22/2012

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 960852-012	64	86	95	209	220	APPROVE

Requirement/Remarks: DEN MOLTN AND TSHNR RNAV STARS; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: pham Vu	Routing Symbol:	Date: 06/22/2012

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 960852-012	64	86	95	209	220	APPROVE

Requirement/Remarks: DEN MOLTN AND TSHNR RNAV STARS; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 06/25/2012

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 960852-012	64	86				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : BOYSEN RESERVOIR	City : BOYSEN RESERVOIR	Ident : BOY	State : WY
Type/Class : DMER	Frequency : M1212	Reference No.: 12063933	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 704281-017	138	150	125	209	260

Requirement: DEN MOLTN AND TSHNR RNAV STARS; MITIGATES CRITICAL DMES

Signature: Graham Bob	Routing Symbol: AJV-W21	Date: 06/22/2012

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 704281-017	138	150	125	209	260	APPROVE

Requirement/Remarks: DEN MOLTN AND TSHNR RNAV STARS; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: pham Vu	Routing Symbol:	Date: 06/25/2012

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 704281-017	138	150	125	209	260	APPROVE

Requirement/Remarks: DEN MOLTN AND TSHNR RNAV STARS; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 06/26/2012

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 704281-017	138	150				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : GILL	City : GILL	Ident : GLL	State : CO
Type/Class : DMER	Frequency : M1176	Reference No.: 12063936	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 921795-031	274	298	99	149	200

Requirement: DEN TSHNR AND MOLTN RNAV STARS; MITIGATES CRITICAL DMES

Signature: Graham Bob	Routing Symbol: AJV-W21	Date: 06/22/2012

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 921795-031	274	298	99	149	200	APPROVE

Requirement/Remarks: DEN TSHNR AND MOLTN RNAV STARS; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: pham Vu	Routing Symbol:	Date: 06/22/2012

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 921795-031	274	298	99	149	200	APPROVE

Requirement/Remarks: DEN TSHNR AND MOLTN RNAV STARS; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 06/25/2012

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 921795-031	274	298				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : KREMMLING	City : KREMMLING	Ident : RLG	State : CO
Type/Class : H-VOR	Frequency : M113.8	Reference No.: 12063931	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 711505-033	320	359	108	210	280

Requirement: DEN MOLTN AND TSHNR RNAV STARS; MITIGATES CRITICAL DMES

Signature: Graham Bob	Routing Symbol: AJV-W21	Date: 06/22/2012

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 711505-033	320	359	108	210	280	APPROVE

Requirement/Remarks: DEN MOLTN AND TSHNR RNAV STARS; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: pham Vu	Routing Symbol:	Date: 06/22/2012

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 711505-033	320	359	108	210	280	APPROVE

Requirement/Remarks: DEN MOLTN AND TSHNR RNAV STARS; MITIGATES CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 07/03/2012

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 711505-033	320	359				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : CHEYENNE	City : CHEYENNE	Ident : CYS	State : WY
Type/Class : TACR	Frequency : M1165	Reference No.: 12063930	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 704129-014	183	271	65	110	260

Requirement: DEN MOLTN AND TSHNR RNAV STARS; MITIGATE CRITICAL DMES

Signature: Graham Bob	Routing Symbol: AJV-W21	Date: 06/22/2012

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 704129-014	183	271	65	110	260	APPROVE

Requirement/Remarks: DEN MOLTN AND TSHNR RNAV STARS; MITIGATE CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: pham Vu	Routing Symbol:	Date: 06/22/2012

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 704129-014	183	271	65	110	260	APPROVE

Requirement/Remarks: DEN MOLTN AND TSHNR RNAV STARS; MITIGATE CRITICAL DMESAPPROVED. PEND. FLIGHT CHK/INSPECT @ THE REQ. DIST. AND MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 06/25/2012

Expanded Service Volume Data: (FIFO)

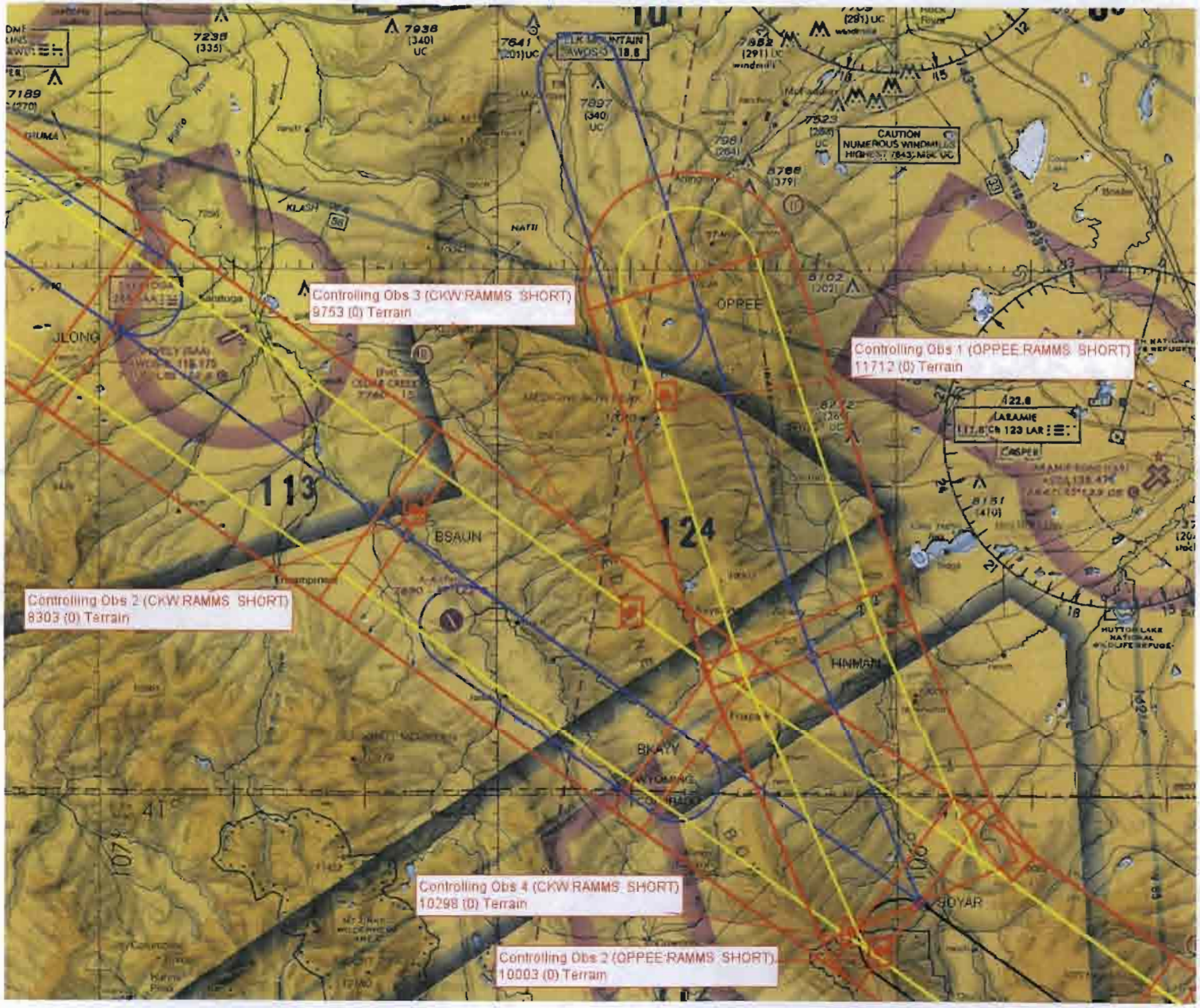
ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 704129-014	183	271				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

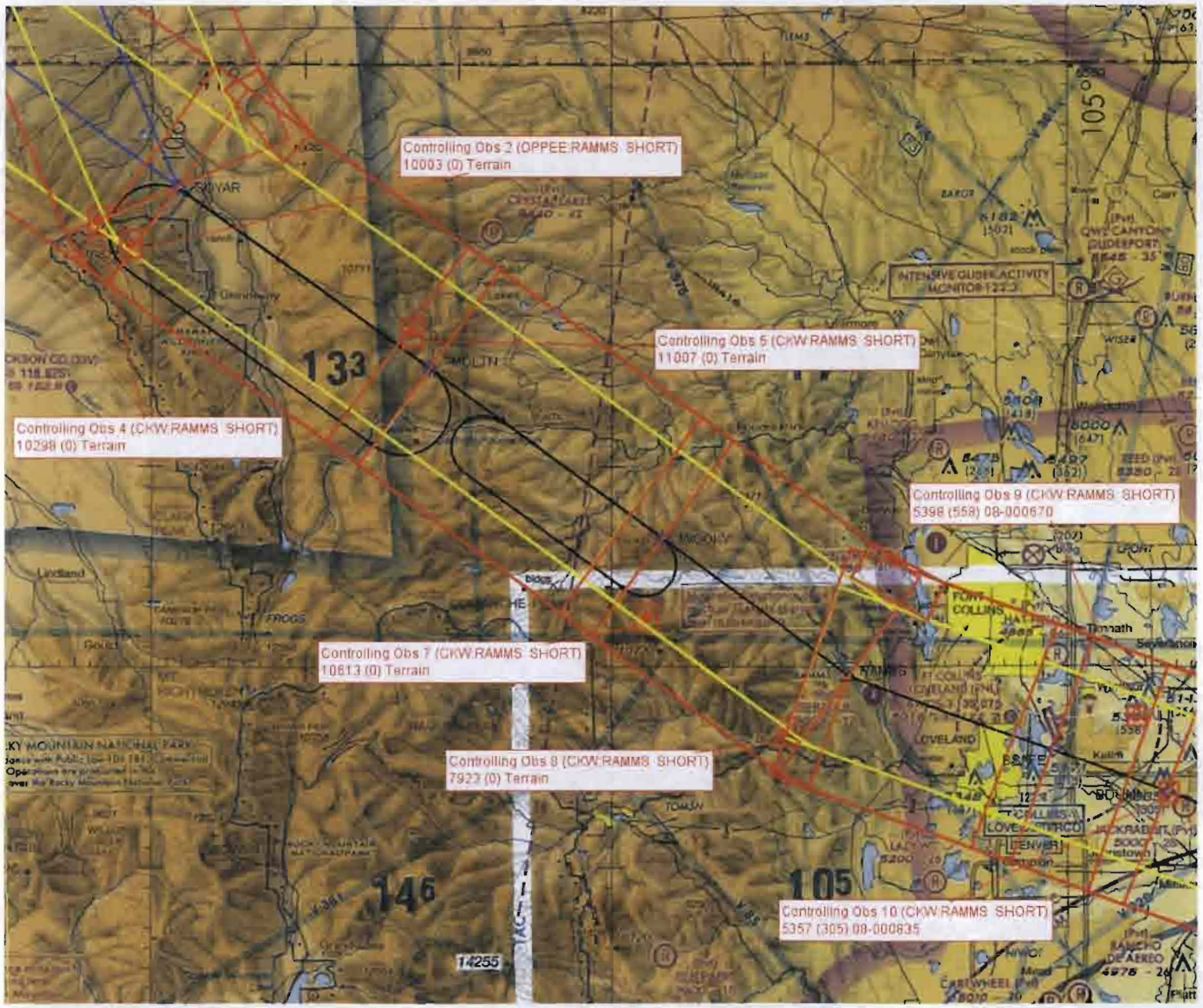
TSHNR RNAV

Created : Thu Jun 21 10:23:35 AKDT 2012 TARGETS 4.8 (April 5, 2012)



TSHNR RNAV

Created : Thu Jun 21 10:23:35 AKDT 2012 TARGETS 4.8 (April 5, 2012)



TSHNR RNAV

Created : Thu Jun 21 10:23:35 AKDT 2012 TARGETS 4.8 (April 5, 2012)

TSHNR RNAV

Created : Thu Jun 21 10:23:36 AKDT 2012 TARGETS 4.8 (April 5, 2012)

US Department of Transportation
Federal Aviation Administration

STAR - Standard Terminal Arrival

1. Bearings, headings, courses and radials are listed to the nearest hundredth (e.g. 360.00)
2. Distances are in nautical miles to nearest hundredth (e.g. 00.00)
3. Altitudes are minimum altitudes unless otherwise indicated

(1) Transition Routes

(a) Transition Name	(b) Transition Computer Codes	(c) From RNAV WP / FIX / NAVAID	(d) To RNAV WP / FIX / NAVAID	(e) Mag Course / Distance	(f) MEA	(g) MOCA	(h) MAA	(i) Crossing Altitudes / Fixes
CHEROKEE	CKW.TSHNR1	CKW VOR/DME	JLONG WP	116.72/33.00	FL210			
			BSAUN WP	117.01/20.39	FL210			
			BKAYY WP	117.55/20.54	FL210			AT/ABOVE FL280, AT/BELOW FL330
			SOYAR WP	117.55/15.26	FL210			
OPPEE	OPPEE.TSHNR1	OPPEE WP	HNMAN WP	154.01/20.68	15000			AT/ABOVE FL280, AT/BELOW FL330
			SOYAR WP	148.64/15.28	15000			

(2) Arrival Route Description: FROM SOYAR ON TRACK 117.79/15.40 TO CROSS MOLTN AT/ABOVE FL220 AND AT/BELOW FL270 AND AT 280 KTS (MEA 15000), THENCE AS DEPICTED TO TSHNR. EXPECT ILS OR VISUAL APPROACH AS ASSIGNED BY ATC.

Continued on block 16...

(3) Procedural Data Notes: NOTE: DME/DME/IRU OR GPS REQUIRED. NOTE: RADAR REQUIRED. NOTE: TURBOJETS ONLY. NOTE: RNAV1. NOTE: EXPECT RUNWAY ASSIGNMENT ON INITIAL CONTACT WITH DENVER TRACON. NOTE: THE CORRESPONDING RNAV STAR IS MOLTN. EXPECT MOLTN WHEN DENVER IS LANDING NORTH. NOTE: AIRCRAFT LANDING FNL/FTG/GXY, EXPECT RADAR VECTORS TO FINAL APPROACH COURSE.

(4) Fixes and/or Holding Patterns: CHART HOLDING AT JLONG (HOLD NW, LT, 116.72 INBOUND, 15 NM LEGS.) CHART HOLDING AT BKAYY (HOLD NW, RT, 117.55 INBOUND, 15 NM LEGS.) CHART HOLDING AT OPPEE (HOLD NW, RT, 154.01 INBOUND, 15 NM LEGS.) CHART HOLDING AT MOLTN (HOLD NW, RT, 117.79 INBOUND, 15 NM LEGS.) CHART HOLDING AT WOOKY (HOLD NW, RT, 117.97 INBOUND, 10 NM LEGS.)

(5) Communications: DEN APP CON, DEN ATIS ARR, FTG ATIS, FTG TWR, FNL CTAF, GXY CTAF

QUALITY CHECKED

(6) Arrival Name	(7) Number	(8) STAR Computer Code	(9) Superseded Nr.	(10) Dated	(11) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

(12) Airports Served	
Airport Name DENVER INTL	City/State DENVER, CO
Airport Name FRONT RANGE	City/State DENVER, CO
Airport Name FORT COLLINS/LOVELAND MUNI	City/State FORT COLLINS (LOVELAND), CO
Airport Name GREELEY-WELD COUNTY	City/State GREELEY, CO
Airport Name	City/State
Airport Name	City/State

(13) Lost Communications Procedure: IN THE EVENT OF LOST COMMUNICATIONS PRIOR TO RUNWAY ASSIGNMENT: AIRCRAFT LANDING DEN EXECUTE THE ILS RWY 16R, AIRCRAFT LANDING FTG EXECUTE THE ILS RWY 26, AIRCRAFT LANDING FNL EXECUTE THE ILS RWY 32, AIRCRAFT LANDING GXY EXECUTE THE ILS RWY 34.

(14) Remarks:

(15) Additional Flight Data: REFERENCE MAGNETIC VARIATION = KDEN 8E/2015

DME/DME/IRU ASSESSMENT SAT (RNP 2.0)
CHART FRONT RANGE
CHART FORT COLLINS-LOVELAND MUNI
CHART GREELEY-WELD COUNTY

QUALITY CHECKED

(6) Arrival Name	(7) Number	(8) STAR Computer Code	(9) Superseded Nr.	(10) Dated	(11) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

(16) Continuation:

(2) Arrival Route Description: (BLOCK 2 DETAILED ARRIVAL ROUTE DESCRIPTION FOR CHARTING)

FROM SOYAR ON TRACK 117.79/15.40 TO CROSS MOLTN AT/ABOVE FL220 AND AT/BELOW FL270 AT 280 KTS (MEA 15000), THEN ON TRACK 117.97/14.40 TO CROSS WOOKY AT/ABOVE FL190 AND AT/BELOW FL220 AT 270 KTS (MEA 14000), THEN ON TRACK 117.69/11.45 TO CROSS RAMMS AT/ABOVE 17000 AND AT/BELOW FL190 AT 250 KTS (MEA 13000), THEN ON TRACK 102.34/10.97 TO CROSS BSAFE AT/BELOW 16000 (MEA 11000), THEN ON TRACK 102.57/6.00 TO CROSS BDUNN AT/ABOVE 14000 AND AT/BELOW 15000 AND AT 210 KTS (MEA 7400), THEN ON TRACK 101.28/7.00 TO CROSS TSHNR AT 13000 AND AT 210 KTS (MEA 7400). EXPECT ILS OR VISUAL APPROACH AS ASSIGNED BY ATC.

(17) Changes:

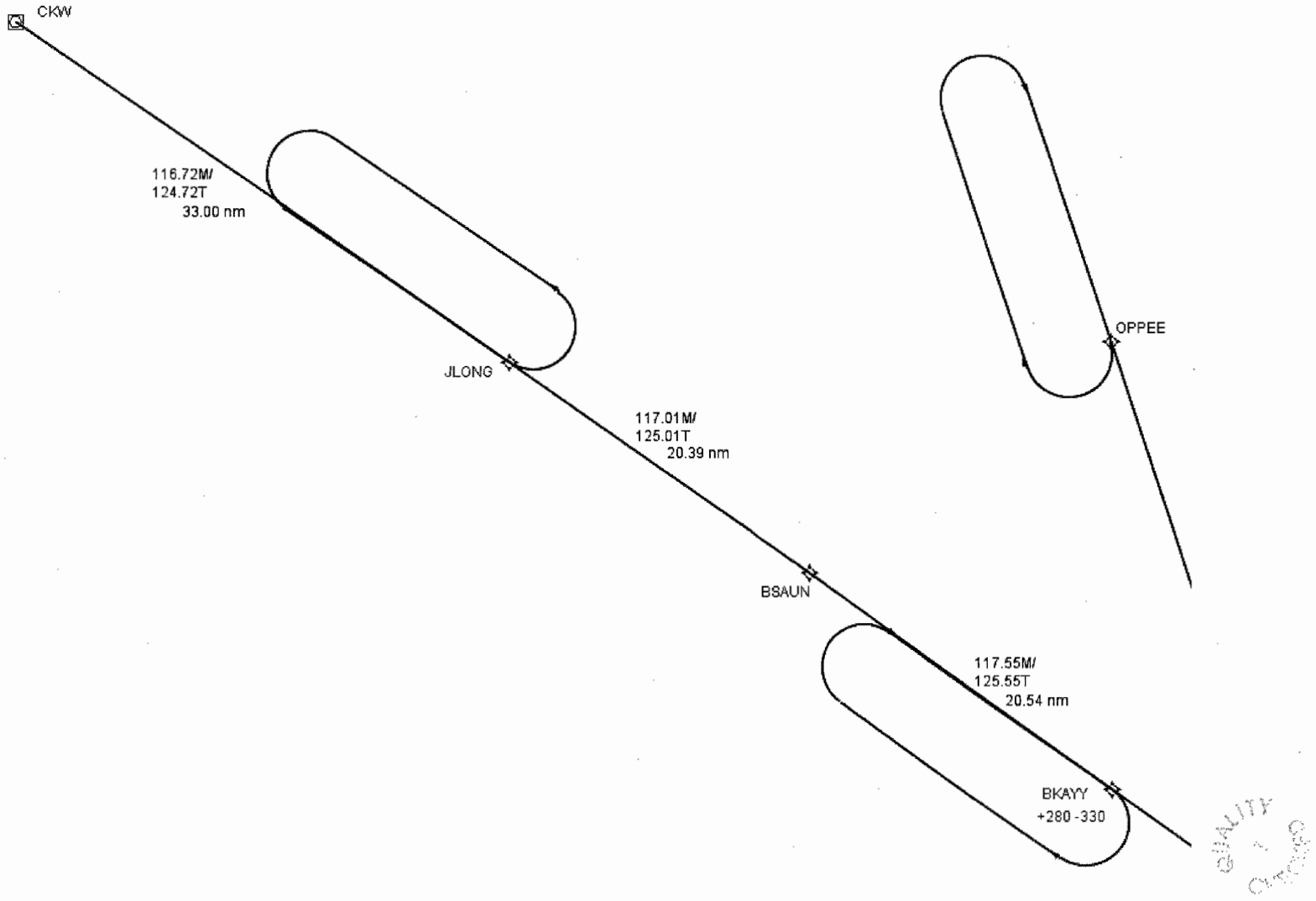
(18) Reasons for Changes:

QUALITY CHECKED

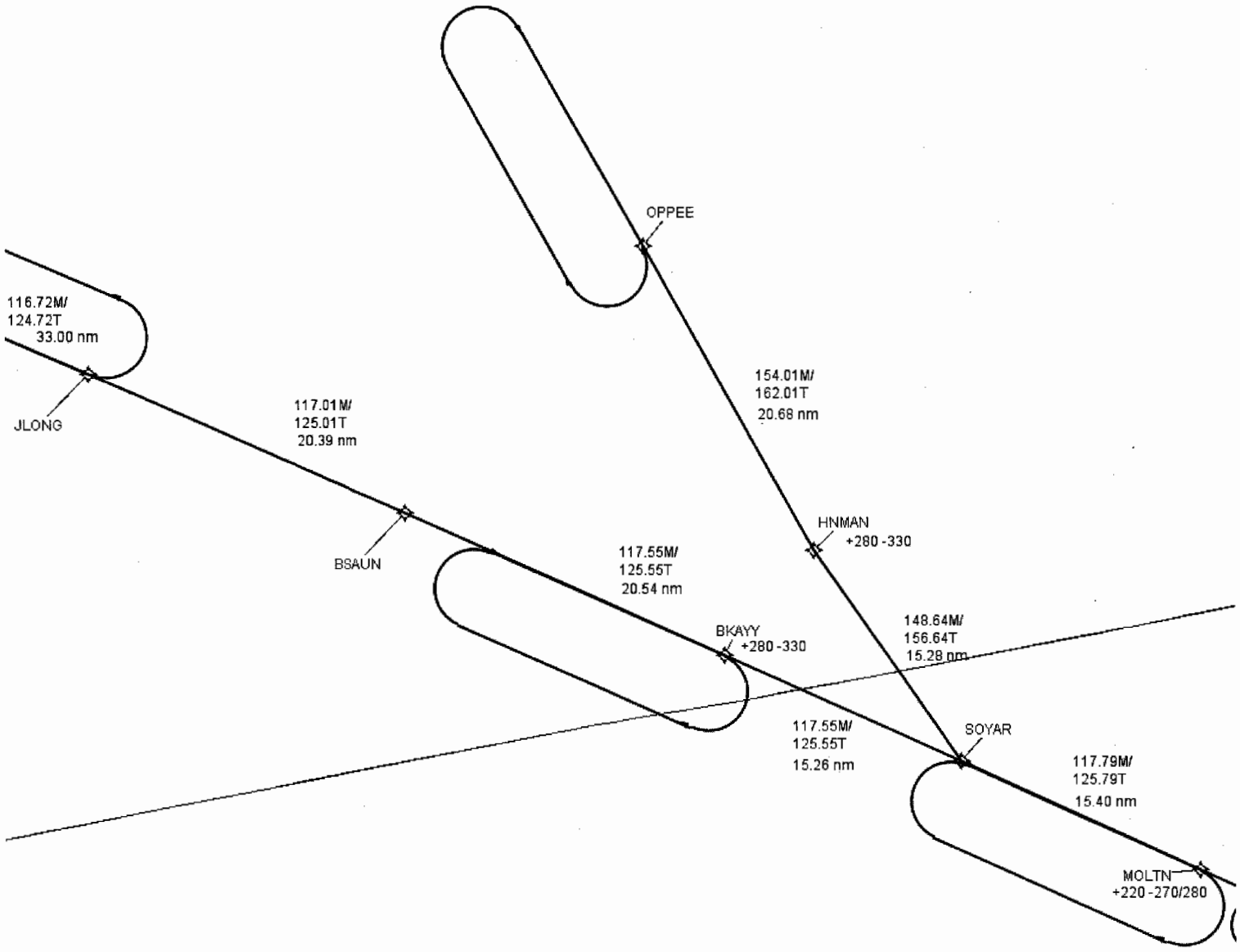
		Name (Typed and Signed), Title and Organization	DATE
Developed By		Paul D. Garcia, Support Manager, Denver ARTCC	
Approved	**NFPG**		
	Reg. ATD	John Warner, Manager, WSC, OSG	

(6) Arrival Name	(7) Number	(8) STAR Computer Code	(9) Superseded Nr.	(10) Dated	(11) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

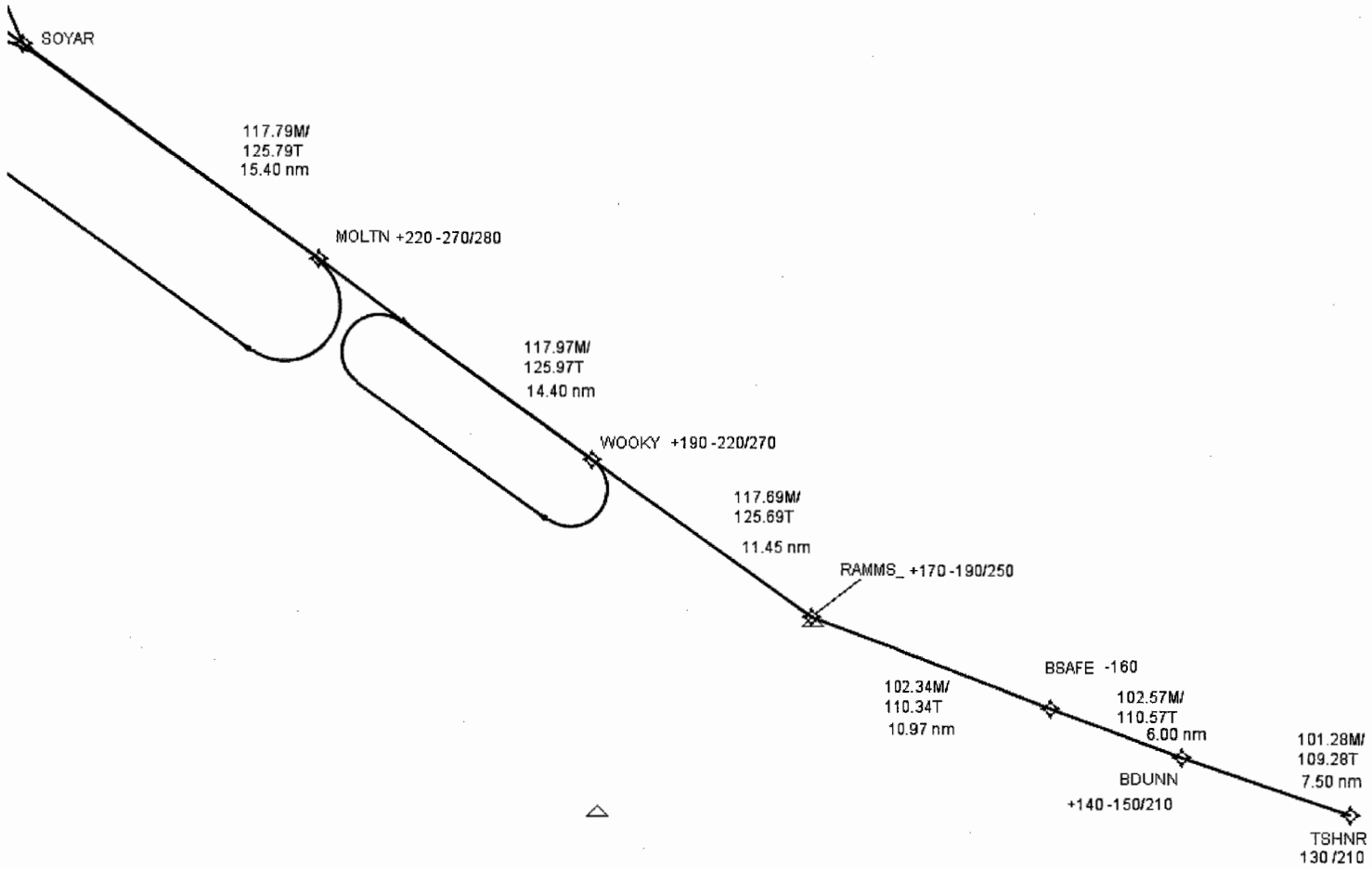
(19) Graphic Depiction (1 of 3)



(19) Graphic Depiction (2 of 3)



(19) Graphic Depiction (3 of 3)



US Department of Transportation
Federal Aviation Administration

RNAV STAR (Data Record)

(1) FIX/NAVAID	(2) LAT/LONG	(3) C	(4) FO/FB	(5) LEG	(6) TC	(7) DIST	(8) ALTITUDE	(9) SPEED	(10) REMARKS
En Route Transition									
CKW VOR/DME	414520.55N / 1073455.14W	Y		IF					CKW.TSHNR1
JLONG WP	412626.48N / 1065851.18W	Y	FB	TF	124.72	33.00			
BSAUN WP	411442.26N / 1063642.96W	Y	FB	TF	125.01	20.39			
BKAYY WP	410243.37N / 1061438.05W	Y	FB	TF	125.55	20.54	+FL280, -FL330		
SOYAR WP	405349.38N / 1055815.38W	Y	FB	TF	125.55	15.26			
En Route Transition									
OPPEE WP	412733.07N / 1061442.09W	Y		IF					OPPEE.TSHNR1
HNMAN WP	410751.91N / 1060614.84W	Y	FB	TF	162.01	20.68	+FL280, -FL330		
SOYAR WP	405349.38N / 1055815.38W	Y	FB	TF	156.64	15.28			
Common Route									
SOYAR WP	405349.38N / 1055815.38W	Y		IF					TSHNR.TSHNR1
MOLTN WP	404447.37N / 1054149.16W	Y	FB	TF	125.79	15.40	+FL220, -FL270	280K	
WOOKY WP	403618.52N / 1052631.15W	Y	FB	TF	125.97	14.40	+FL190, -FL220	270K	

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

QUALITY CHECKED

FAA Form 7100-3 (9/02)

US Department of Transportation
Federal Aviation Administration

RNAV STAR (Data Record)

RAMMS WP	402936.78N / 1051419.72W	Y	FB	TF	125.69	11.45	+17000, -FL190	250K	
BSAFE WP	402547.07N / 1050051.52W	Y	FB	TF	110.34	10.97	-16000		
BDUNN WP	402340.23N / 1045330.32W	Y	FB	TF	110.57	06.00	+14000, -15000	210K	
TSHNR WP	402121.13N / 1044451.74W	Y	FB	TF	109.28	07.00	13000	210K	

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

QUALITY CHECKED

FAA Form 7100-3 (9/02)

US Department of Transportation
Federal Aviation Administration

STAR (Data Record)

ARINC PACKET - 424-18 - STAR

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
NAVAID  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAD        CKW   K1011500VDHW N41452055W107345514    N41452055W107345514E0150070502     NARCHEROKEE

                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   BDUNN K20    W     N40234023W104533032                      E0088     NAR           BDUNN
        SUSAEAENRT   BKAYY K10    W     N41024337W106143805                      E0096     NAR           BKAYY
        SUSAEAENRT   BSAFE K20    W     N40254707W105005152                      E0089     NAR           BSAFE
        SUSAEAENRT   BSAUN K10    W     N41144226W106364296                      E0098     NAR           BSAUN
        SUSAEAENRT   HNMAN K10    W     N41075191W106061484                      E0095     NAR           HNMAN
        SUSAEAENRT   JLONG K10    W     N41262648W106585118                      E0100     NAR           JLONG
        SUSAEAENRT   MOLTN K20    W     N40444737W105414916                      E0092     NAR           MOLTN
        SUSAEAENRT   OPPEE K10    W   B N41273307W106144209                      E0096     NAR           OPPEE
        SUSAEAENRT   RAMMS K20    C   B N40293678W105141972                      E0090     NAR           RAMMS
        SUSAEAENRT   SOYAR K20    W     N40534938W105581538                      E0094     NAR           SOYAR
        SUSAEAENRT   TSHNR K20    W     N40212113W104445174                      E0087     NAR           TSHNR
        SUSAEAENRT   WOOKY K20    W     N40361852W105263115                      E0091     NAR           WOOKY

                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KDENK2ADEN     0     160YHN39514200W104402340E008005434         1800018000C    MNAR    DENVER INTL

                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KDENK2ETSHNR14CKW   010CKW  K1D 0V       IF                                                18000
        SUSAP KDENK2ETSHNR14CKW   020JLONGK1EA0E  H 010TF                    11670330
        SUSAP KDENK2ETSHNR14CKW   030BSAUNK1EA0E    010TF                    11700204
        SUSAP KDENK2ETSHNR14CKW   040BKAYYK1EA0E  H 010TF                    11760205    B FL330FL280
        SUSAP KDENK2ETSHNR14CKW   050SOYARK2EA0EE   010TF                    11760153
        SUSAP KDENK2ETSHNR14OPPEE 010OPPEEK1EA0E  H    IF                                                18000
        SUSAP KDENK2ETSHNR14OPPEE 020HNMANK1EA0E    010TF                    15400207    B FL330FL280
        SUSAP KDENK2ETSHNR14OPPEE 030SOYARK2EA0EE   010TF                    14860153
        SUSAP KDENK2ETSHNR15ALL   010SOYARK2EA0E       IF                                                18000
        SUSAP KDENK2ETSHNR15ALL   020MOLTNK2EA0E  H 010TF                    11780154    B FL270FL220     280
        SUSAP KDENK2ETSHNR15ALL   030WOOKYK2EA0E  H 010TF                    11800144    B FL220FL190     270
```

QUALITY 1 CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

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SUSAP KDENK2ETSHNR15ALL   040RAMMSK2EA0E    010TF                    11770115    B FL19017000     250
SUSAP KDENK2ETSHNR15ALL   050BSAFEK2EA0E    010TF                    10230110    - 16000
SUSAP KDENK2ETSHNR15ALL   060BDUNNK2EA0E    010TF                    10260060    B 1500014000     210
SUSAP KDENK2ETSHNR15ALL   070TSHNRK2EA0EE   010TF                    10130070      13000          210
```

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                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KDENK2GRW07    0120000825 N39502740W104433596+0000    +16128053500000551 50IIDZG1
        SUSAP KDENK2GRW08    0120000825 N39523920W104394403-0500    +16139053540000521 50IIFUI1
        SUSAP KDENK2GRW16L   0120001725 N39534933W104411250+0000    +16125053500000601 50IILTT1
        SUSAP KDENK2GRW16R   0160001725 N39534487W104414590+0000    +16040053220000552 00IIDQQ1
        SUSAP KDENK2GRW17L   0120001725 N39515383W104382870+0300    +16059053280000481 50IIBXP1
        SUSAP KDENK2GRW17R   0120001725 N39514048W104393656+0500    +16210053780000601 50IIACX1
        SUSAP KDENK2GRW25    0120002625 N39502637W104410217+0000    +16142053550000551 50IIERP1
        SUSAP KDENK2GRW26    0120002626 N39523808W104371015+0500    +15955052940000551 50IIJOY1
        SUSAP KDENK2GRW34L   0160003525 N39510679W104414772+0000    +16056053270000502 00IIDXU3
        SUSAP KDENK2GRW34R   0120003525 N39515077W104411388+0000    +16137053540000591 50IIOUF3
        SUSAP KDENK2GRW35L   0120003525 N39494193W104393798-0500    +16381054340000571 50IIAQD3
        SUSAP KDENK2GRW35R   0120003525 N39495527W104383016-0300    +16187053700000591 50IIDPP3
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(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

US Department of Transportation
Federal Aviation Administration

STAR (Data Record)

ARINC SUMMARY - 424-18 - STAR

ROUTES	TRANSITION	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE	SPEED
	CKW	CKW	010		IF		FB					
	CKW	JLONG	020		TF		FB	1.0	116.7()	033.0		
	CKW	BSAUN	030		TF		FB	1.0	117.0()	020.4		
	CKW	BKAYY	040		TF		FB	1.0	117.6()	020.5	BT FL330FL280	
	CKW	SOYAR	050		TF		FB	1.0	117.6()	015.3		
	OPPEE	OPPEE	010		IF		FB					
	OPPEE	HNMAN	020		TF		FB	1.0	154.0()	020.7	BT FL330FL280	
	OPPEE	SOYAR	030		TF		FB	1.0	148.6()	015.3		
	ALL	SOYAR	010		IF		FB					
	ALL	MOLTN	020		TF		FB	1.0	117.8()	015.4	BT FL270FL220	AT 280
	ALL	WOOKY	030		TF		FB	1.0	118.0()	014.4	BT FL220FL190	AT 270
	ALL	RAMMS	040		TF		FB	1.0	117.7()	011.5	BT FL19017000	AT 250
	ALL	BSAFE	050		TF		FB	1.0	102.3()	011.0	AB 16000	
	ALL	BDUNN	060		TF		FB	1.0	102.6()	006.0	BT 1500014000	AT 210
	ALL	TSHNR	070		TF		FB	1.0	101.3()	007.0	AT 13000	AT 210

POINT DATA

WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
CKW	N414520.55	W1073455.14	N4145.343	W10734.919
BDUNN	N402340.23	W1045330.32	N4023.671	W10453.505
BKAYY	N410243.37	W1061438.05	N4102.723	W10614.634
BSAFE	N402547.07	W1050051.52	N4025.785	W10500.859
BSAUN	N411442.26	W1063642.96	N4114.704	W10636.716
HNMAN	N410751.91	W1060614.84	N4107.865	W10606.247
JLONG	N412626.48	W1065851.18	N4126.441	W10658.853
MOLTN	N404447.37	W1054149.16	N4044.790	W10541.819
OPPEE	N412733.07	W1061442.09	N4127.551	W10614.702
RAMMS	N402936.78	W1051419.72	N4029.613	W10514.329
SOYAR	N405349.38	W1055815.38	N4053.823	W10558.256
TSHNR	N402121.13	W1044451.74	N4021.352	W10444.862
WOOKY	N403618.52	W1052631.15	N4036.309	W10526.519
RW07	N395027.40	W1044335.96	N3950.457	W10443.599
RW08	N395239.20	W1043944.03	N3952.653	W10439.734
RW16L	N395349.33	W1044112.50	N3953.822	W10441.208
RW16R	N395344.87	W1044145.90	N3953.748	W10441.765
RW17L	N395153.83	W1043828.70	N3951.897	W10438.478
RW17R	N395140.48	W1043936.56	N3951.675	W10439.609
RW25	N395026.37	W1044102.17	N3950.440	W10441.036

QUALITY CHECKED 1

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

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RW26	N395238.08	W1043710.15	N3952.635	W10437.169
RW34L	N395106.79	W1044147.72	N3951.113	W10441.795
RW34R	N395150.77	W1044113.88	N3951.846	W10441.231
RW35L	N394941.93	W1043937.98	N3949.699	W10439.633
RW35R	N394955.27	W1043830.16	N3949.921	W10438.503

RUNWAY DATA

RWY	THRESHOLD ELEVATION	TCH
RW07	05350	55
RW08	05354	52
RW16L	05350	60
RW16R	05322	55
RW17L	05328	48
RW17R	05378	60
RW25	05355	55
RW26	05294	55
RW34L	05327	50
RW34R	05354	59
RW35L	05434	57
RW35R	05370	59

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

US Department of Transportation
Federal Aviation Administration

STAR (Data Record)

ARINC PACKET - 424-18 - STAR

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                 1         2         3         4         5         6         7         8         9         0         1         2         3
NAVAID  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
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        SUSAD        CKW   K1011500VDHW N41452055W107345514    N41452055W107345514E0150070502     NARCHEROKEE

                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   BDUNN K20    W     N40234023W104533032                      E0088     NAR           BDUNN
        SUSAEAENRT   BKAYY K10    W     N41024337W106143805                      E0096     NAR           BKAYY
        SUSAEAENRT   BSAFE K20    W     N40254707W105005152                      E0089     NAR           BSAFE
        SUSAEAENRT   BSAUN K10    W     N41144226W106364296                      E0098     NAR           BSAUN
        SUSAEAENRT   HNMAN K10    W     N41075191W106061484                      E0095     NAR           HNMAN
        SUSAEAENRT   JLONG K10    W     N41262648W106585118                      E0100     NAR           JLONG
        SUSAEAENRT   MOLTN K20    W     N40444737W105414916                      E0092     NAR           MOLTN
        SUSAEAENRT   OPPEE K10    W   B N41273307W106144209                      E0096     NAR           OPPEE
        SUSAEAENRT   RAMMS K20    C   B N40293678W105141972                      E0090     NAR           RAMMS
        SUSAEAENRT   SOYAR K20    W     N40534938W105581538                      E0094     NAR           SOYAR
        SUSAEAENRT   TSHNR K20    W     N40212113W104445174                      E0087     NAR           TSHNR
        SUSAEAENRT   WOOKY K20    W     N40361852W105263115                      E0091     NAR           WOOKY

                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KFNLK2AFNL     0     085YHN40270658W105004081E009005016         1800018000C    MNAR    FORT COLLINS-LOVELAND MUNI

                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KFNLK2ETSHNR14CKW   010CKW  K1D 0V       IF                                                  18000
        SUSAP KFNLK2ETSHNR14CKW   020JLONGK1EA0E  H 010TF                    11670330
        SUSAP KFNLK2ETSHNR14CKW   030BSAUNK1EA0E    010TF                    11700204
        SUSAP KFNLK2ETSHNR14CKW   040BKAYYK1EA0E  H 010TF                    11760205    B FL330FL280
        SUSAP KFNLK2ETSHNR14CKW   050SOYARK2EA0EE   010TF                    11760153
        SUSAP KFNLK2ETSHNR14OPPEE 010OPPEEK1EA0E  H    IF                                                  18000
        SUSAP KFNLK2ETSHNR14OPPEE 020HNMANK1EA0E    010TF                    15400207    B FL330FL280
        SUSAP KFNLK2ETSHNR14OPPEE 030SOYARK2EA0EE   010TF                    14860153
        SUSAP KFNLK2ETSHNR15ALL   010SOYARK2EA0E       IF                                                  18000
        SUSAP KFNLK2ETSHNR15ALL   020MOLTNK2EA0E  H 010TF                    11780154    B FL270FL220     280
        SUSAP KFNLK2ETSHNR15ALL   030WOOKYK2EA0E  H 010TF                    11800144    B FL220FL190     270
```

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

FAA Form 7100-3 (9/02)

```
SUSAP KFNLK2ETSHNR15ALL   040RAMMSK2EA0E    010TF                    11770115    B FL19017000     250
SUSAP KFNLK2ETSHNR15ALL   050BSAFEK2EA0E    010TF                    10230110    - 16000
SUSAP KFNLK2ETSHNR15ALL   060BDUNNK2EA0E    010TF                    10260060    B 1500014000     210
SUSAP KFNLK2ETSHNR15ALL   070TSHNRK2EA0EE   010TF                    10130070      13000          210
```

```
                1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KFNLK2GRW06    0022730616 N40271008W105004166-0100    +1505104990000050040D
        SUSAP KFNLK2GRW15    0085001514 N40274421W105010270+0500    +1500004973000050100R
        SUSAP KFNLK2GRW24    0022732416 N40271753W105001393+0100    +1504204987000050040D
        SUSAP KFNLK2GRW33    0085003314 N40262508W105002589-0500    +1512905016000051100IIFNL1
```

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

US Department of Transportation
Federal Aviation Administration

STAR (Data Record)

ARINC SUMMARY - 424-18 - STAR

ROUTES	TRANSITION	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE	SPEED
	CKW	CKW	010		IF		FB					
	CKW	JLONG	020		TF		FB	1.0	116.7()	033.0		
	CKW	BSAUN	030		TF		FB	1.0	117.0()	020.4		
	CKW	BKAYY	040		TF		FB	1.0	117.6()	020.5	BT FL330FL280	
	CKW	SOYAR	050		TF		FB	1.0	117.6()	015.3		
	OPPEE	OPPEE	010		IF		FB					
	OPPEE	HNMAN	020		TF		FB	1.0	154.0()	020.7	BT FL330FL280	
	OPPEE	SOYAR	030		TF		FB	1.0	148.6()	015.3		
	ALL	SOYAR	010		IF		FB					
	ALL	MOLTN	020		TF		FB	1.0	117.8()	015.4	BT FL270FL220	AT 280
	ALL	WOOKY	030		TF		FB	1.0	118.0()	014.4	BT FL220FL190	AT 270
	ALL	RAMMS	040		TF		FB	1.0	117.7()	011.5	BT FL19017000	AT 250
	ALL	BSAFE	050		TF		FB	1.0	102.3()	011.0	AB 16000	
	ALL	BDUNN	060		TF		FB	1.0	102.6()	006.0	BT 1500014000	AT 210
	ALL	TSHNR	070		TF		FB	1.0	101.3()	007.0	AT 13000	AT 210

POINT DATA

WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
CKW	N414520.55	W1073455.14	N4145.343	W10734.919
BDUNN	N402340.23	W1045330.32	N4023.671	W10453.505
BKAYY	N410243.37	W1061438.05	N4102.723	W10614.634
BSAFE	N402547.07	W1050051.52	N4025.785	W10500.859
BSAUN	N411442.26	W1063642.96	N4114.704	W10636.716
HNMAN	N410751.91	W1060614.84	N4107.865	W10606.247
JLONG	N412626.48	W1065851.18	N4126.441	W10658.853
MOLTN	N404447.37	W1054149.16	N4044.790	W10541.819
OPPEE	N412733.07	W1061442.09	N4127.551	W10614.702
RAMMS	N402936.78	W1051419.72	N4029.613	W10514.329
SOYAR	N405349.38	W1055815.38	N4053.823	W10558.256
TSHNR	N402121.13	W1044451.74	N4021.352	W10444.862
WOOKY	N403618.52	W1052631.15	N4036.309	W10526.519
RW06	N402710.08	W1050041.66	N4027.168	W10500.694
RW15	N402744.21	W1050102.70	N4027.737	W10501.045
RW24	N402717.53	W1050013.93	N4027.292	W10500.232
RW33	N402625.08	W1050025.89	N4026.418	W10500.432

RUNWAY DATA

RWY	THRESHOLD ELEVATION	TCH

QUALITY CHECKED 7

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

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RW06	04990	50
RW15	04973	50
RW24	04987	50
RW33	05016	51

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

US Department of Transportation
Federal Aviation Administration

STAR (Data Record)

ARINC PACKET - 424-18 - STAR

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                 1         2         3         4         5         6         7         8         9         0         1         2         3
NAVAID  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAD        CKW   K1011500VDHW N41452055W107345514    N41452055W107345514E0150070502     NARCHEROKEE

                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   BDUNN K20    W     N40234023W104533032                      E0088     NAR           BDUNN
        SUSAEAENRT   BKAYY K10    W     N41024337W106143805                      E0096     NAR           BKAYY
        SUSAEAENRT   BSAFE K20    W     N40254707W105005152                      E0089     NAR           BSAFE
        SUSAEAENRT   BSAUN K10    W     N41144226W106364296                      E0098     NAR           BSAUN
        SUSAEAENRT   HNMAN K10    W     N41075191W106061484                      E0095     NAR           HNMAN
        SUSAEAENRT   JLONG K10    W     N41262648W106585118                      E0100     NAR           JLONG
        SUSAEAENRT   MOLTN K20    W     N40444737W105414916                      E0092     NAR           MOLTN
        SUSAEAENRT   OPPEE K10    W   B N41273307W106144209                      E0096     NAR           OPPEE
        SUSAEAENRT   RAMMS K20    C   B N40293678W105141972                      E0090     NAR           RAMMS
        SUSAEAENRT   SOYAR K20    W     N40534938W105581538                      E0094     NAR           SOYAR
        SUSAEAENRT   TSHNR K20    W     N40212113W104445174                      E0087     NAR           TSHNR
        SUSAEAENRT   WOOKY K20    W     N40361852W105263115                      E0091     NAR           WOOKY

                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KFTGK2AFTG     0     080YHN39470312W104321544E008005512         1800018000C    MNAR    FRONT RANGE

                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KFTGK2ETSHNR14CKW   010CKW  K1D 0V       IF                                                18000
        SUSAP KFTGK2ETSHNR14CKW   020JLONGK1EA0E  H 010TF                    11670330
        SUSAP KFTGK2ETSHNR14CKW   030BSAUNK1EA0E    010TF                    11700204
        SUSAP KFTGK2ETSHNR14CKW   040BKAYYK1EA0E  H 010TF                    11760205    B FL330FL280
        SUSAP KFTGK2ETSHNR14CKW   050SOYARK2EA0EE   010TF                    11760153
        SUSAP KFTGK2ETSHNR14OPPEE 010OPPEEK1EA0E  H    IF                                                18000
        SUSAP KFTGK2ETSHNR14OPPEE 020HNMANK1EA0E    010TF                    15400207    B FL330FL280
        SUSAP KFTGK2ETSHNR14OPPEE 030SOYARK2EA0EE   010TF                    14860153
        SUSAP KFTGK2ETSHNR15ALL   010SOYARK2EA0E       IF                                                18000
        SUSAP KFTGK2ETSHNR15ALL   020MOLTNK2EA0E  H 010TF                    11780154    B FL270FL220     280
        SUSAP KFTGK2ETSHNR15ALL   030WOOKYK2EA0E  H 010TF                    11800144    B FL220FL190     270
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QUALITY CHECKED 7

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

FAA Form 7100-3 (9/02)

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SUSAP KFTGK2ETSHNR15ALL   040RAMMSK2EA0E    010TF                    11770115    B FL19017000     250
SUSAP KFTGK2ETSHNR15ALL   050BSAFEK2EA0E    010TF                    10230110    - 16000
SUSAP KFTGK2ETSHNR15ALL   060BDUNNK2EA0E    010TF                    10260060    B 1500014000     210
SUSAP KFTGK2ETSHNR15ALL   070TSHNRK2EA0EE   010TF                    10130070      13000          210
```

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KFTGK2GRW08    0080000832 N39473842W104335487+0400    +1643905450000050100D
        SUSAP KFTGK2GRW17    0080001720 N39470815W104312724+0500    +1650805473000055100IIFZR1
        SUSAP KFTGK2GRW26    0080002632 N39473682W104321243-0400    +1654705485000045100IIFTG1
        SUSAP KFTGK2GRW35    0080003520 N39454910W104312722-0500    +1662705512000054100IIVWT1
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QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

US Department of Transportation
Federal Aviation Administration

STAR (Data Record)

ARINC SUMMARY - 424-18 - STAR

ROUTES	TRANSITION	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE	SPEED
	CKW	CKW	010		IF		FB					
	CKW	JLONG	020		TF		FB	1.0	116.7()	033.0		
	CKW	BSAUN	030		TF		FB	1.0	117.0()	020.4		
	CKW	BKAYY	040		TF		FB	1.0	117.6()	020.5	BT FL330FL280	
	CKW	SOYAR	050		TF		FB	1.0	117.6()	015.3		
	OPPEE	OPPEE	010		IF		FB					
	OPPEE	HNMAN	020		TF		FB	1.0	154.0()	020.7	BT FL330FL280	
	OPPEE	SOYAR	030		TF		FB	1.0	148.6()	015.3		
	ALL	SOYAR	010		IF		FB					
	ALL	MOLTN	020		TF		FB	1.0	117.8()	015.4	BT FL270FL220	AT 280
	ALL	WOOKY	030		TF		FB	1.0	118.0()	014.4	BT FL220FL190	AT 270
	ALL	RAMMS	040		TF		FB	1.0	117.7()	011.5	BT FL19017000	AT 250
	ALL	BSAFE	050		TF		FB	1.0	102.3()	011.0	AB 16000	
	ALL	BDUNN	060		TF		FB	1.0	102.6()	006.0	BT 1500014000	AT 210
	ALL	TSHNR	070		TF		FB	1.0	101.3()	007.0	AT 13000	AT 210

POINT DATA

WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
CKW	N414520.55	W1073455.14	N4145.343	W10734.919
BDUNN	N402340.23	W1045330.32	N4023.671	W10453.505
BKAYY	N410243.37	W1061438.05	N4102.723	W10614.634
BSAFE	N402547.07	W1050051.52	N4025.785	W10500.859
BSAUN	N411442.26	W1063642.96	N4114.704	W10636.716
HNMAN	N410751.91	W1060614.84	N4107.865	W10606.247
JLONG	N412626.48	W1065851.18	N4126.441	W10658.853
MOLTN	N404447.37	W1054149.16	N4044.790	W10541.819
OPPEE	N412733.07	W1061442.09	N4127.551	W10614.702
RAMMS	N402936.78	W1051419.72	N4029.613	W10514.329
SOYAR	N405349.38	W1055815.38	N4053.823	W10558.256
TSHNR	N402121.13	W1044451.74	N4021.352	W10444.862
WOOKY	N403618.52	W1052631.15	N4036.309	W10526.519
RW08	N394738.42	W1043354.87	N3947.640	W10433.915
RW17	N394708.15	W1043127.24	N3947.136	W10431.454
RW26	N394736.82	W1043212.43	N3947.614	W10432.207
RW35	N394549.10	W1043127.22	N3945.818	W10431.454

RUNWAY DATA

RWY	THRESHOLD ELEVATION	TCH

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

FAA Form 7100-3 (9/02)

RW08	05450	50
RW17	05473	55
RW26	05485	45
RW35	05512	54

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

US Department of Transportation
Federal Aviation Administration

STAR (Data Record)

ARINC PACKET - 424-18 - STAR

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
NAVAID  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAD        CKW   K1011500VDHW N41452055W107345514    N41452055W107345514E0150070502     NARCHEROKEE

                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   BDUNN K20    W     N40234023W104533032                      E0088     NAR           BDUNN
        SUSAEAENRT   BKAYY K10    W     N41024337W106143805                      E0096     NAR           BKAYY
        SUSAEAENRT   BSAFE K20    W     N40254707W105005152                      E0089     NAR           BSAFE
        SUSAEAENRT   BSAUN K10    W     N41144226W106364296                      E0098     NAR           BSAUN
        SUSAEAENRT   HNMAN K10    W     N41075191W106061484                      E0095     NAR           HNMAN
        SUSAEAENRT   JLONG K10    W     N41262648W106585118                      E0100     NAR           JLONG
        SUSAEAENRT   MOLTN K20    W     N40444737W105414916                      E0092     NAR           MOLTN
        SUSAEAENRT   OPPEE K10    W   B N41273307W106144209                      E0096     NAR           OPPEE
        SUSAEAENRT   RAMMS K20    C   B N40293678W105141972                      E0090     NAR           RAMMS
        SUSAEAENRT   SOYAR K20    W     N40534938W105581538                      E0094     NAR           SOYAR
        SUSAEAENRT   TSHNR K20    W     N40212113W104445174                      E0087     NAR           TSHNR
        SUSAEAENRT   WOOKY K20    W     N40361852W105263115                      E0091     NAR           WOOKY

                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KGXYK2AGXY     0     100YHN40261470W104375960E011004697         1800018000C    MNAR    GREELEY-WELD COUNTY

                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KGXYK2ETSHNR14CKW   010CKW  K1D 0V       IF                                                  18000
        SUSAP KGXYK2ETSHNR14CKW   020JLONGK1EA0E  H 010TF                    11670330
        SUSAP KGXYK2ETSHNR14CKW   030BSAUNK1EA0E    010TF                    11700204
        SUSAP KGXYK2ETSHNR14CKW   040BKAYYK1EA0E  H 010TF                    11760205    B FL330FL280
        SUSAP KGXYK2ETSHNR14CKW   050SOYARK2EA0EE   010TF                    11760153
        SUSAP KGXYK2ETSHNR14OPPEE 010OPPEEK1EA0E  H    IF                                                  18000
        SUSAP KGXYK2ETSHNR14OPPEE 020HNMANK1EA0E    010TF                    15400207    B FL330FL280
        SUSAP KGXYK2ETSHNR14OPPEE 030SOYARK2EA0EE   010TF                    14860153
        SUSAP KGXYK2ETSHNR15ALL   010SOYARK2EA0E       IF                                                  18000
        SUSAP KGXYK2ETSHNR15ALL   020MOLTNK2EA0E  H 010TF                    11780154    B FL270FL220     280
        SUSAP KGXYK2ETSHNR15ALL   030WOOKYK2EA0E  H 010TF                    11800144    B FL220FL190     270
```

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

FAA Form 7100-3 (9/02)

```
SUSAP KGXYK2ETSHNR15ALL   040RAMMSK2EA0E    010TF                    11770115    B FL19017000     250
SUSAP KGXYK2ETSHNR15ALL   050BSAFEK2EA0E    010TF                    10230110    - 16000
SUSAP KGXYK2ETSHNR15ALL   060BDUNNK2EA0E    010TF                    10260060    B 1500014000     210
SUSAP KGXYK2ETSHNR15ALL   070TSHNRK2EA0EE   010TF                    10130070      13000          210
```

```
                1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KGXYK2GRW09    0058010944 N40255047W104384602-0300    +1402404661000050100R
        SUSAP KGXYK2GRW16    0100001668 N40272250W104375605-0500    +1413304697000046100R
        SUSAP KGXYK2GRW27    0058012744 N40253523W104373372+0300    +1397304645000050100R
        SUSAP KGXYK2GRW34    0100003468 N40255464W104375165+0500    +1399804653110048100IIDCI1
```

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

US Department of Transportation
Federal Aviation Administration

STAR (Data Record)

ARINC SUMMARY - 424-18 - STAR

ROUTES	TRANSITION	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE	SPEED
	CKW	CKW	010		IF		FB					
	CKW	JLONG	020		TF		FB	1.0	116.7()	033.0		
	CKW	BSAUN	030		TF		FB	1.0	117.0()	020.4		
	CKW	BKAYY	040		TF		FB	1.0	117.6()	020.5	BT FL330FL280	
	CKW	SOYAR	050		TF		FB	1.0	117.6()	015.3		
	OPPEE	OPPEE	010		IF		FB					
	OPPEE	HNMAN	020		TF		FB	1.0	154.0()	020.7	BT FL330FL280	
	OPPEE	SOYAR	030		TF		FB	1.0	148.6()	015.3		
	ALL	SOYAR	010		IF		FB					
	ALL	MOLTN	020		TF		FB	1.0	117.8()	015.4	BT FL270FL220	AT 280
	ALL	WOOKY	030		TF		FB	1.0	118.0()	014.4	BT FL220FL190	AT 270
	ALL	RAMMS	040		TF		FB	1.0	117.7()	011.5	BT FL19017000	AT 250
	ALL	BSAFE	050		TF		FB	1.0	102.3()	011.0	AB 16000	
	ALL	BDUNN	060		TF		FB	1.0	102.6()	006.0	BT 1500014000	AT 210
	ALL	TSHNR	070		TF		FB	1.0	101.3()	007.0	AT 13000	AT 210

POINT DATA	WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
	CKW	N414520.55	W1073455.14	N4145.343	W10734.919
	BDUNN	N402340.23	W1045330.32	N4023.671	W10453.505
	BKAYY	N410243.37	W1061438.05	N4102.723	W10614.634
	BSAFE	N402547.07	W1050051.52	N4025.785	W10500.859
	BSAUN	N411442.26	W1063642.96	N4114.704	W10636.716
	HNMAN	N410751.91	W1060614.84	N4107.865	W10606.247
	JLONG	N412626.48	W1065851.18	N4126.441	W10658.853
	MOLTN	N404447.37	W1054149.16	N4044.790	W10541.819
	OPPEE	N412733.07	W1061442.09	N4127.551	W10614.702
	RAMMS	N402936.78	W1051419.72	N4029.613	W10514.329
	SOYAR	N405349.38	W1055815.38	N4053.823	W10558.256
	TSHNR	N402121.13	W1044451.74	N4021.352	W10444.862
	WOOKY	N403618.52	W1052631.15	N4036.309	W10526.519
	RW09	N402550.47	W1043846.02	N4025.841	W10438.767
	RW16	N402722.50	W1043756.05	N4027.375	W10437.934
	RW27	N402535.23	W1043733.72	N4025.587	W10437.562
	RW34	N402554.64	W1043751.65	N4025.911	W10437.861

RUNWAY DATA	RWY	THRESHOLD ELEVATION	TCH

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

FAA Form 7100-3 (9/02)

RW09	04661	50
RW16	04697	46
RW27	04645	50
RW34	04653	48

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
TSHNR RNAV	ONE	TSHNR.TSHNR1	NONE		

RADIO FIX AND HOLDING DATA RECORD

NAME: BDUNN **STATE:** CO **COUNTRY:** US

LATITUDE/LONGITUDE: 402340.23N/1045330.32W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	TSHNR (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)			KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: BKAYY **STATE:** WY **COUNTRY:** US

LATITUDE/LONGITUDE: 410243.37N/1061438.05W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

HOLDING: **HOLDING TYPE OF ACTION:** ESTABLISH

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	NW		WP	297.55	117.55	R		15	21000	45000	28	30

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN

REMARKS:
PAT 1, MIN HOLDING TEMPLATE 28 USED TO ACCOMODATE 15 DME HOLDING LEG LENGTH, 15 DME HOLDING ATC REQUEST PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	MOLTN (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)		1	KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

QUALITY 1 CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: BSAFE **STATE:** CO **COUNTRY:** US

LATITUDE/LONGITUDE: 402547.07N/1050051.52W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	TSHNR (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)			KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: BSAUN **STATE:** WY **COUNTRY:** US

LATITUDE/LONGITUDE: 411442.26N/1063642.96W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	MOLTN (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)			KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: CHEROKEE VOR/DME **STATE:** WY **COUNTRY:** US

LATITUDE/LONGITUDE: 414520.55N/1073455.14W **TYPE:**

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** MODIFY

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	DIST FROM FAC FEET	MRA	MAA
1	CHEROKEE	CKW	VOR/DME	H							17500

HOLDING: **HOLDING TYPE OF ACTION:** NO CHANGE

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	E	CKW	VOR/DME	071.18	251.18	R	1		11700	17500	9	16
2	E		WP	073.71	253.71	R		7	11700	17500	10	17

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
UPN	265	AAO	413704.30N/1072342.00W	8740	6A
1	230	AAO	414854.00N/1071930.00W	8009	4E
1	310	AAO	413704.30N/1072320.40W	8740	6A
2	230	AAO	414854.00N/1071930.00W	8009	4E
2	310	AAO	413704.30N/1072320.40W	8740	6A

HOLDING RESTRICTIONS:
UNPLANNED HOLDING AUTHORIZED AT OR ABOVE 15000

PROCEDURES REQUIRING CLIMB-IN-HOLD:

PAT	PROCEDURE TITLE	AIRPORT IDENT	CITY	STATE
1	VOR/DME RWY 22	KRWL	RAWLINS	WY (US)
2	RNAV (GPS) RWY 22	KRWL	RAWLINS	WY (US)

REMARKS:
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	ALCOS			KCPR	CASPER	WY (US)
DP	CASPER			KCPR	CASPER	WY (US)
DP	TAKE OFF MINIMUMS			KRWL	RAWLINS	WY (US)
EN ROUTE	V208	1				(US)
EN ROUTE	V26	1				(US)
EN ROUTE	V4	1				(US)
EN ROUTE	V4-6	1				(US)
EN ROUTE	V6	1				(US)
IAP	RNAV (GPS) RWY 22		2	KRWL	RAWLINS	WY (US)
IAP	VOR/DME RWY 22		1	KRWL	RAWLINS	WY (US)
IAP	NDB-A			KSAA	SARATOGA	WY (US)
IAP	RNAV (GPS) RWY 05			KSAA	SARATOGA	WY (US)
STAR	MOLTN (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)			KGXY	GREELEY	CO (US)

REQUIRED CHARTING: IAP, CONTROLLER, EN ROUTE LOW, EN ROUTE HIGH

COMPULSORY REPORTING POINT: LOW

RECORD REVISION NUMBER: 8 **DATE OF REVISION:** 11/15/2012

REASON FOR REVISION:
ADDED ENROUTE HIGH TO REQUIRED CHARTING
UPDATED FIX USE

DEVELOPED BY: **DATE:** 06/21/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

QUALITY CHECKED

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZDV

ATC FACILITY:
OTHER:

QUALITY CHECK

RADIO FIX AND HOLDING DATA RECORD

NAME: HNMAN **STATE:** WY **COUNTRY:** US

LATITUDE/LONGITUDE: 410751.91N/1060614.84W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	MOLTN (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)			KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: JLONG **STATE:** WY **COUNTRY:** US

LATITUDE/LONGITUDE: 412626.48N/1065851.18W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

HOLDING: **HOLDING TYPE OF ACTION:** ESTABLISH

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	NW		WP	296.72	116.72	L		15	21000	45000	28	30

REASON FOR NONSTANDARD HOLDING:
PAT 1 ATC REQUEST

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN

REMARKS:
PAT 1, MIN HOLDING TEMPLATE 28 USED TO ACCOMODATE 15 DME HOLDING LEG LENGTH, 15 DME HOLDING ATC REQUEST
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	MOLTN (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)		1	KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: MOLTN **STATE:** CO **COUNTRY:** US

LATITUDE/LONGITUDE: 404447.37N/1054149.16W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

HOLDING: **HOLDING TYPE OF ACTION:** ESTABLISH

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	NW		WP	297.79	117.79	R		15	15200	45000	28	30

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	265	AAO	402906.80N/1053839.00W	13760	6C

PRECIPITOUS TERRAIN ADDITIONS:

PAT	SPEED	ADDITION
1	265	375

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN

REMARKS:
PAT 1, MIN HOLDING TEMPLATE 28 USED TO ACCOMODATE 15 DME HOLDING LEG LENGTH, 15 DME HOLDING ATC REQUEST
PRECIPITOUS TERRAIN EVALUATION COMPLETED

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	MOLTN (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)		1	KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: OPPEE **STATE:** WY **COUNTRY:** US

LATITUDE/LONGITUDE: 412733.07N/1061442.09W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** MODIFY

HOLDING: **HOLDING TYPE OF ACTION:** ESTABLISH

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	NW		WP	334.01	154.01	R		15	15000	45000	28	30

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	265	AAO	412127.50N/1061905.60W	12213	6C

PRECIPITOUS TERRAIN ADDITIONS:

PAT	SPEED	ADDITION
1	265	375

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN

REMARKS:
PAT 1, MIN HOLDING TEMPLATE 28 USED TO ACCOMODATE 15 DME HOLDING LEG LENGTH, 15 DME HOLDING ATC REQUEST
PRECIPITOUS TERRAIN EVALUATION COMPLETED

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
EN ROUTE	Q150					(US)
STAR	MOLTN (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)		1	KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR, CONTROLLER, EN ROUTE LOW, EN ROUTE HIGH

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 1 **DATE OF REVISION:** 11/15/2012

REASON FOR REVISION:
ADD HOLDING PAT 1
UPDATED FIX USE

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: RAMMS **STATE:** CO **COUNTRY:** US

LATITUDE/LONGITUDE: 402936.78N/1051419.72W **TYPE:** WP, INT, DME

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** MODIFY

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	DIST FROM FAC FEET	MRA	MAA
1	MILE HIGH	DVV	VORTAC	H	314.00	322.00	45.69	45.69		11300	45000
2	GILL	GLL	VOR/DME	H	256.09	269.09		31.40		11300	45000
3	LARAMIE	LAR	VOR/DME	L	142.42	156.42	55.17	55.17		11300	45000

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
DVV	VORTAC	R-311	46	11300	19900
LAR	VOR/DME	R-142	56	11300	45000

HOLDING: **HOLDING TYPE OF ACTION:** MODIFY

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	NW	DVV	VORTAC	314.00	134.00	R	1 1/2		14500	45000	17	31

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	265	AAO	402906.80N/1053839.00W	13760	6C

PRECIPITOUS TERRAIN ADDITIONS:

PAT	SPEED	ADDITION
1	265	375

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN

REMARKS:
MILE HIGH (FAC 1) AND LARAMIE (FAC 3) USED TO ESTABLISH FIX COORDINATES
PRECIPITOUS TERRAIN EVALUATION COMPLETED
PAT 1 CONTROLLING OBSTACLE 9636 FT INTO SECONDARY (12957 EQUIV)

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
EN ROUTE	J154	1, 3				(US)
EN ROUTE	V575	1, 3				(US)
STAR	MOLTN (RNAV)			KDEN	DENVER	CO (US)
STAR	RAMMS	1, 2, 3		KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)			KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR, CONTROLLER, EN ROUTE LOW, EN ROUTE HIGH

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 2 **DATE OF REVISION:** 11/15/2012

REASON FOR REVISION:
UPDATED FIX USE
FAC 1 MAG BRG CHANGED FROM 310.94 TO 314.00
FAC 1 MAGVAR CHG FROM 11E TO 8E
FAC 2 AND FAC 3 BOTH CHANGED FROM VORTAC TO VOR/DME AND ADDED DIST FROM FAC
PAT 1 INBOUND COURSE CHANGED FROM 130.94 TO 134.00, NEW CONTROLLING OBSTACLE AND ADDED PRECIPITOUS TERRAIN ADJUSTMENT
ADDED PRECIPITOUS TERRAIN NOTE
FIX MOVED 1058.27 FT ONTO CENTERLINE, COORDINATES REVISED
FAC 1 DME CHANGED FROM 45.52 TO 45.69, FAC 3 FROM 55.35 TO 55.17
ADDED WP TO FIX TYPE

DEVELOPED BY: **DATE:** 01/25/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

QUALITY CHECKED

DISTRIBUTION:

NFDC
FPO: WST
ARTCC: ZDV
ATC FACILITY: DEN
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: SOYAR **STATE:** CO **COUNTRY:** US

LATITUDE/LONGITUDE: 405349.38N/1055815.38W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	MOLTN (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)			KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: TSHNR **STATE:** CO **COUNTRY:** US

LATITUDE/LONGITUDE: 402121.13N/1044451.74W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	ILS OR LOC RWY 16L			KDEN	DENVER	CO (US)
IAP	ILS OR LOC RWY 16R			KDEN	DENVER	CO (US)
IAP	ILS OR LOC RWY 17L			KDEN	DENVER	CO (US)
IAP	ILS OR LOC RWY 17R			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)			KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)			KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR, IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 11/01/2011 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: WST
ARTCC: ZDV
ATC FACILITY: DEN
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: WOOKY **STATE:** CO **COUNTRY:** US

LATITUDE/LONGITUDE: 403618.52N/1052631.15W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

HOLDING: **HOLDING TYPE OF ACTION:** ESTABLISH

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	NW		WP	297.97	117.97	R		10	15200	45000	15	30

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	265	AAO	402906.80N/1053839.00W	13760	6C

PRECIPITOUS TERRAIN ADDITIONS:

PAT	SPEED	ADDITION
1	265	375

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN

REMARKS:
PAT 1, MIN HOLDING TEMPLATE 15 USED TO ACCOMODATE 10 DME HOLDING LEG LENGTH, 10 DME HOLDING ATC REQUEST
PRECIPITOUS TERRAIN EVALUATION COMPLETED

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	MOLTN (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KDEN	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFTG	DENVER	CO (US)
STAR	TSHNR (RNAV)		1	KFNL	FORT COLLINS/LOVELAND	CO (US)
STAR	TSHNR (RNAV)		1	KGXY	GREELEY	CO (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 11/15/2012

DEVELOPED BY: **DATE:** 05/28/2012 **OFFICE:** AJV-354 **NAME:** CHARLES SCHNEIDER

APPROVED BY: **DATE:** **OFFICE:** AJV-354 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZDV
ATC FACILITY:
OTHER:

Name:	Martha Dunn
Project Name:	KDEN
Output File:	KDEN TSHNR1 STAR CKW TSHNR 20120621_1134
Procedure Name:	KDEN TSHNR1
Software:	RNAV-Pro™
Version:	2.36
Date/Time:	6/21/2012 11:34:51 AM
Input File:	KDEN TSHNR1 STAR CKW TSHNR 20120619_1349.txt
Databases:	AVNIS Date: 02/07/2012
	Obstacle Date: 08/26/2011
	NFD Date: 09/30/2010
	DTED® (MAX) Date: 2002

Results Summary:

Flyability	✔	**Please Check Flyability Results**
DME/DME	✔	
Radars	✔	
Comms	?	
TERPS	?	

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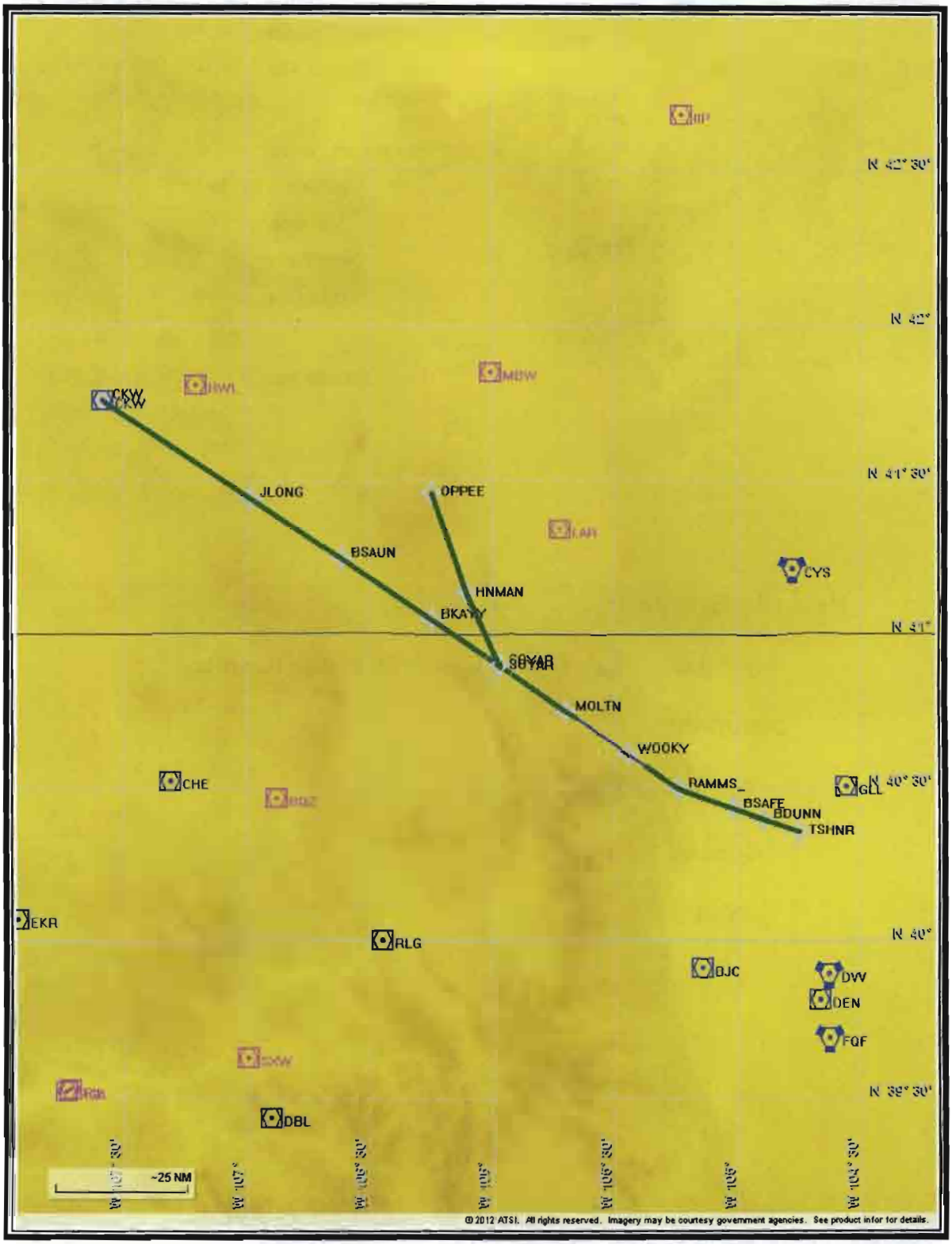
N 42° 30'
N 42°
N 41° 30'
N 41°
N 40° 30'
N 40°
N 39° 30'
CKW
JLONG
OPPEE
BSAUN
HNMAN
BKAYY
SBYAR
MOLTN
WOOKY
RAMMS
BSAFE
BDUNN
TSHNR
CYS
CHE
GLL
EKR
RLG
BJC
DVV
DEN
FQF
DBL
~25 NM
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Flight Plan

Return To Summary

Name	Type	Lat/Lon	Alt [Ft]	VNAV Mode	IAS [Kts]	Turn Type	Leg Type
CKW	WP	N 41° 45' 20.55" W 107° 34' 55.14"	21000.0	Step	240.0	Fly By	TF
JLONG	WP	N 41° 26' 26.48" W 106° 58' 51.18"	21000.0	Step	240.0	Fly By	TF
BSAUN	WP	N 41° 14' 42.26" W 106° 36' 42.96"	21000.0	Step	240.0	Fly By	TF
BKAYY	WP	N 41° 2' 43.37" W 106° 14' 38.05"	21000.0	Step	240.0	Fly By	TF
SOYAR	WP	N 40° 53' 49.38" W 105° 58' 15.38"	21000.0	Step	240.0	Fly By	TF
MOLTN	WP	N 40° 44' 47.37" W 105° 41' 49.16"	15000.0	Step	210.0	Fly By	TF
WOOKY	WP	N 40° 36' 18.52" W 105° 26' 31.15"	14000.0	Step	210.0	Fly By	TF
RAMMS_	WP	N 40° 29' 36.78" W 105° 14' 19.72"	13000.0	Step	210.0	Fly By	TF
BSAFE	WP	N 40° 25' 47.07" W 105° 0' 51.52"	11000.0	Step	210.0	Fly By	TF
BDUNN	WP	N 40° 23' 40.23" W 104° 53' 30.32"	7400.0	Step	180.0	Fly By	TF
TSHNR	WP	N 40° 21' 21.13" W 104° 44' 51.74"	7400.0	Step	180.0	Fly Over	TF

Flyability

Return To Summary

Settings:

Flight Type: Arrival
Aircraft Category: Cat D
Climb Gradient: *None assigned*
Ground Speeds:

Table:

200.0 Kts up to **11000.0 Ft.**
240.0 Kts up to **18000.0 Ft.**
260.0 Kts up to **24000.0 Ft.**
340.0 Kts up to **99900.0 Ft.**

Wind Settings: *None assigned*
Descent During a Turn: Allowed
VNAV Mode: Flight Plan

Aircraft ALTITUDE at Fly-By WP BDUNN too high.

DME/DME

Return To Summary

Settings:

RNP: 2.0
Flight Mode: Manual
Line of Sight (DTED Level 0 Max): Evaluated
DME Restrictions: Evaluated
Inertial Drift: Enabled
Initial Drift: 0.558 NM
INS Drift Rate: 8.000 NM/Hour
Range Mode: OSV
Co-Frequencies: Evaluated
RNP Edges: Evaluated
Min DME Range: 3.0 NM
Allowed Gap Length: 4.0 NM
DME Types: VOR/DME , VORTAC , TACAN , and User
DME Include Angles: 30 to 150
Critical DMEs: Allowed
DoD Facilities: Not included
Foreign Facilities: Not included
Low & Terminal DMEs: Included
Flight Check DMEs: Selected
Higher Altitudes: Evaluated
Near Maximum Altitude: Evaluated

Total Number of DMEs Used: 11

Maximum DME Error: 0.859 NM

No Critical DMEs were found

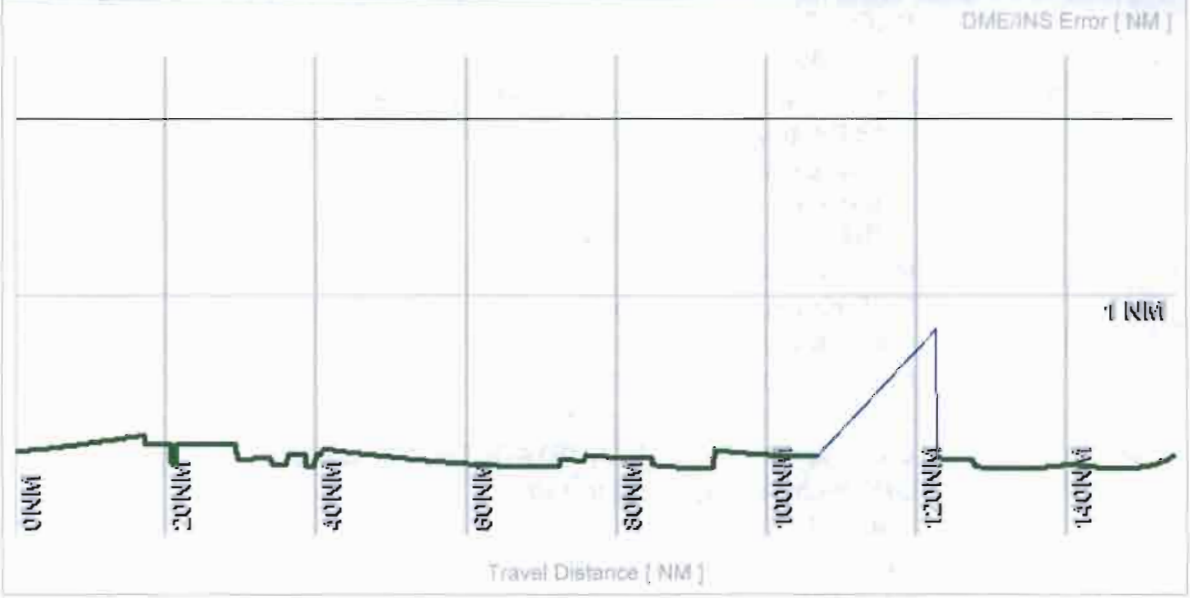
Available DMEs: OCS, BOY, CKW, RLG, CHE, CYS, GLL, LAR, DVV, DEN, FQF, BJC

Duplicate DMEs: HLE

Disabled DMEs: BVR

DME/DME (Continued.)

Return To Summary



DME/DME (Continued.)

Return To Summary

DMEs Used

#	Name	Lat/Lon/MAGVAR	Range	Source	Critical	Err. [NM]	Status	Time	Distance
1	OCS	N 41° 35' 24.77" W 109° 0' 55.19" E 13	H + ESV	User	NO	1.191	Enabled	21.0 %	22.0 %
2	BOY	N 43° 27' 47.35" W 108° 17' 58.96" E 16	H + ESV	User	NO	0.982	Enabled	10.6 %	11.1 %
3	RLG	N 40° 0' 9.51" W 106° 26' 32.96" E 14	H + ESV	User	NO	0.859	Enabled	28.8 %	30.2 %
4	CHE	N 40° 31' 12.30" W 107° 18' 17.60" E 14	H + ESV	User	NO	0.859	Enabled	7.4 %	7.8 %
5	CKW	N 41° 45' 20.55" W 107° 34' 55.14" E 15	H	Database	NO	0.859	Enabled	2.1 %	2.2 %
6	CYS	N 41° 12' 39.47" W 104° 46' 22.49" E 13	H + ESV	User	NO	1.424	Enabled	34.0 %	34.8 %
7	GLL	N 40° 30' 13.93" W 104° 33' 10.86" E 13	H + ESV	User	NO	1.021	Enabled	30.0 %	28.0 %
8	DVV	N 39° 53' 40.88" W 104° 37' 27.61" E 8	H	User	NO	0.859	Enabled	16.1 %	14.5 %
9	LAR	N 41° 20' 16.15" W 105° 43' 15.36" E 14	L	Database	NO	1.405	Enabled	19.7 %	20.1 %
10	DEN	N 39° 48' 45.05" W 104° 39' 38.66" E 8	H	User	NO	0.859	Enabled	0.2 %	0.2 %
11	BJC	N 39° 54' 46.87" W 105° 8' 20.47" E 11	H	Database	NO	0.859	Enabled	8.7 %	8.5 %

Flight Check DME Selection

Distance [NM]	Selected DMEs					Alternate
0.0	BOY	OCS	CKW	RLG	CHE	
33.0	CYS	OCS	CKW	RLG	CHE	
53.4	CYS	GLL	LAR	RLG	CHE	
73.9	DVV	GLL	LAR	RLG	DEN	CYS
89.2	DVV	GLL	LAR	CYS	DEN	BJC
104.5	CYS	LAR				
118.9	CYS	GLL	BJC			
129.8	CYS	GLL	BJC	DVV		
141.4	DEN	GLL	BJC	DVV		
147.3	DEN	GLL	BJC	DVV		

DME/DME (Continued.)

Return To Summary

Inertial Drift Segments

#	Start Location	End Location	Length [NM]
1	N 40° 43' 28.99" W 105° 39' 27.36"	N 40° 34' 9.20" W 105° 22' 35.41"	15.9
	VOR: LAR	Available from N 40° 43' 28.99" W 105° 39' 27.36" to N 40° 40' 48.97" W 105° 34' 38.06"	
	VOR: GLL	Available from N 40° 35' 33.28" W 105° 25' 8.88" to N 40° 34' 9.20" W 105° 22' 35.41"	

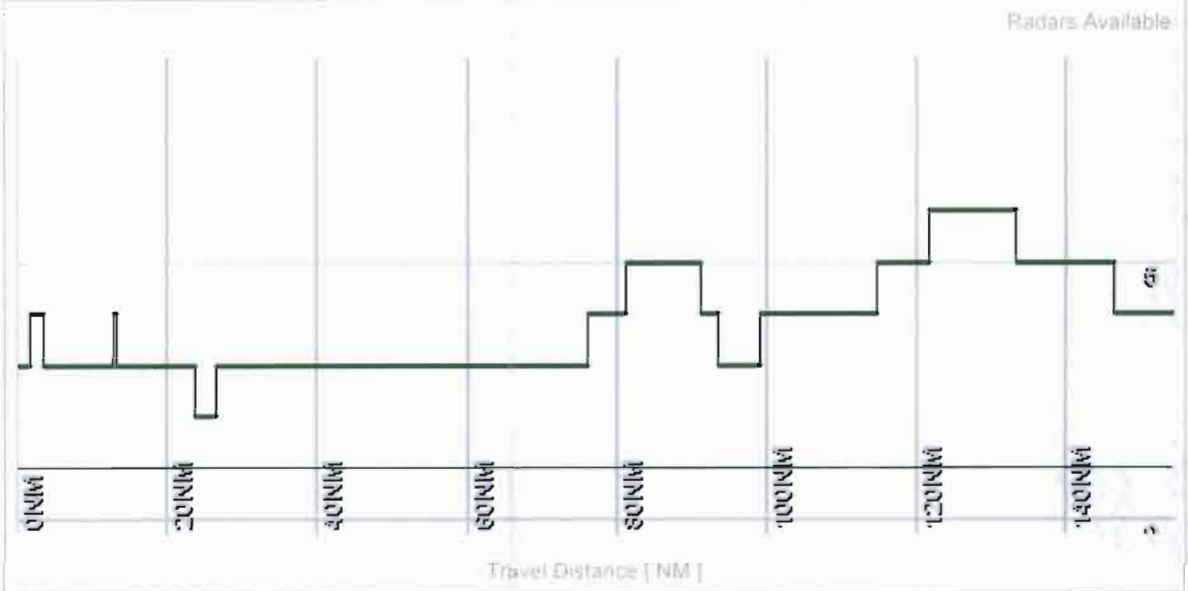
User DMEs

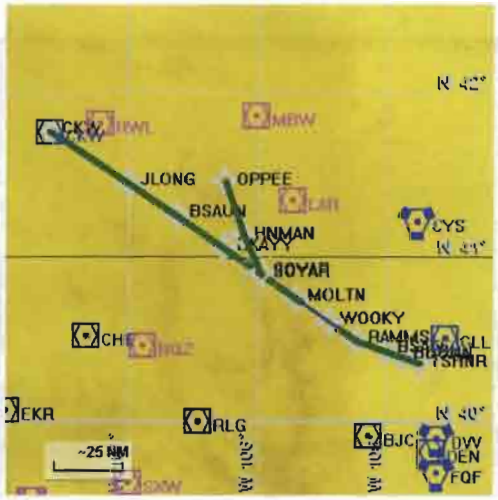
#	Name	Lat/Lon/MAGVAR	Range	Elevation [Ft]	Frequency	Replaces:	Status
1	DVV	N 39° 53' 40.88" W 104° 37' 27.61" E 8	H	5278.6	114.70	DVV	Used
2	DEN	N 39° 48' 45.05" W 104° 39' 38.66" E 8	H	5452.1	117.90	DEN	Used
3	CYS	N 41° 12' 39.47" W 104° 46' 22.49" E 13	H	6213.3	113.10	CYS	Used
	ESV:	Bearing [True]: 196.0° to 284.0° Bearing [Mag]: 183.0° to 271.0°		Arc Distance: Out to 65.0 NM Altitude: 11000.0 to 26000.0 Ft.			ENTERED
4	RLG	N 40° 0' 9.51" W 106° 26' 32.96" E 14	H	9370.0	113.80	RLG	Used
	Restriction:	Bearing [True]: 299.0° to 319.0° Bearing [Mag]: 285.0° to 305.0°		Distance: Beyond 34.0 NM Altitude: Below 16300.0 Ft.			ENTERED
	ESV:	Bearing [True]: 334.0° to 13.0° Bearing [Mag]: 320.0° to 359.0°		Arc Distance: Out to 108.0 NM Altitude: 21000.0 to 28000.0 Ft.			
5	CHE	N 40° 31' 12.30" W 107° 18' 17.60" E 14	H	7269.2	115.60	CHE	Used
	ESV:	Bearing [True]: 1.0° to 44.0° Bearing [Mag]: 347.0° to 30.0°		Arc Distance: Out to 66.0 NM Altitude: 21000.0 to 22000.0 Ft.			NOT TRUE ENTERED
6	OCS	N 41° 35' 24.77" W 109° 0' 55.19" E 13	H	6784.7	116.00	OCS	Used
	ESV:	Bearing [True]: 77.0° to 99.0° Bearing [Mag]: 64.0° to 86.0°		Arc Distance: Out to 95.0 NM Altitude: 20900.0 to 22000.0 Ft.			ENTERED
7	BOY	N 43° 27' 47.35" W 108° 17' 58.96" E 16	H	7550.0	117.80	BOY	Used
	ESV:	Bearing [True]: 154.0° to 166.0° Bearing [Mag]: 138.0° to 150.0°		Arc Distance: Out to 125.0 NM Altitude: 20900.0 to 26000.0 Ft.			ENTERED
8	GLL	N 40° 30' 13.93" W 104° 33' 10.86" E 13	H	4900.0	114.20	GLL	Used
	ESV:	Bearing [True]: 287.0° to 311.0° Bearing [Mag]: 274.0° to 298.0°		Arc Distance: Out to 99.0 NM Altitude: 14900.0 to 20000.0 Ft.			ENTERED

Radar Analysis

Return To Summary

Settings: **Radar Types:** ARSR and ASR





Name:	Martha Dunn
Project Name:	KDEN
Output File:	KDEN TSHNR1 OPPEE SOYAR 20120621_1136
Procedure Name:	KDEN TSHNR1
Software:	RNAV-Pro™
Version:	2.36
Date/Time:	6/21/2012 11:36:05 AM
Input File:	TSHNR OPPEE SOYAR 20120619_1351.txt
Databases:	AVNIS Date: 02/07/2012
	Obstacle Date: 08/26/2011
	NFD Date: 09/30/2010
	DTED® (MAX) Date: 2002

Results Summary:

Flyability	✔
DME/DME	✔
Radars	✔
Comms	?
TERPS	?

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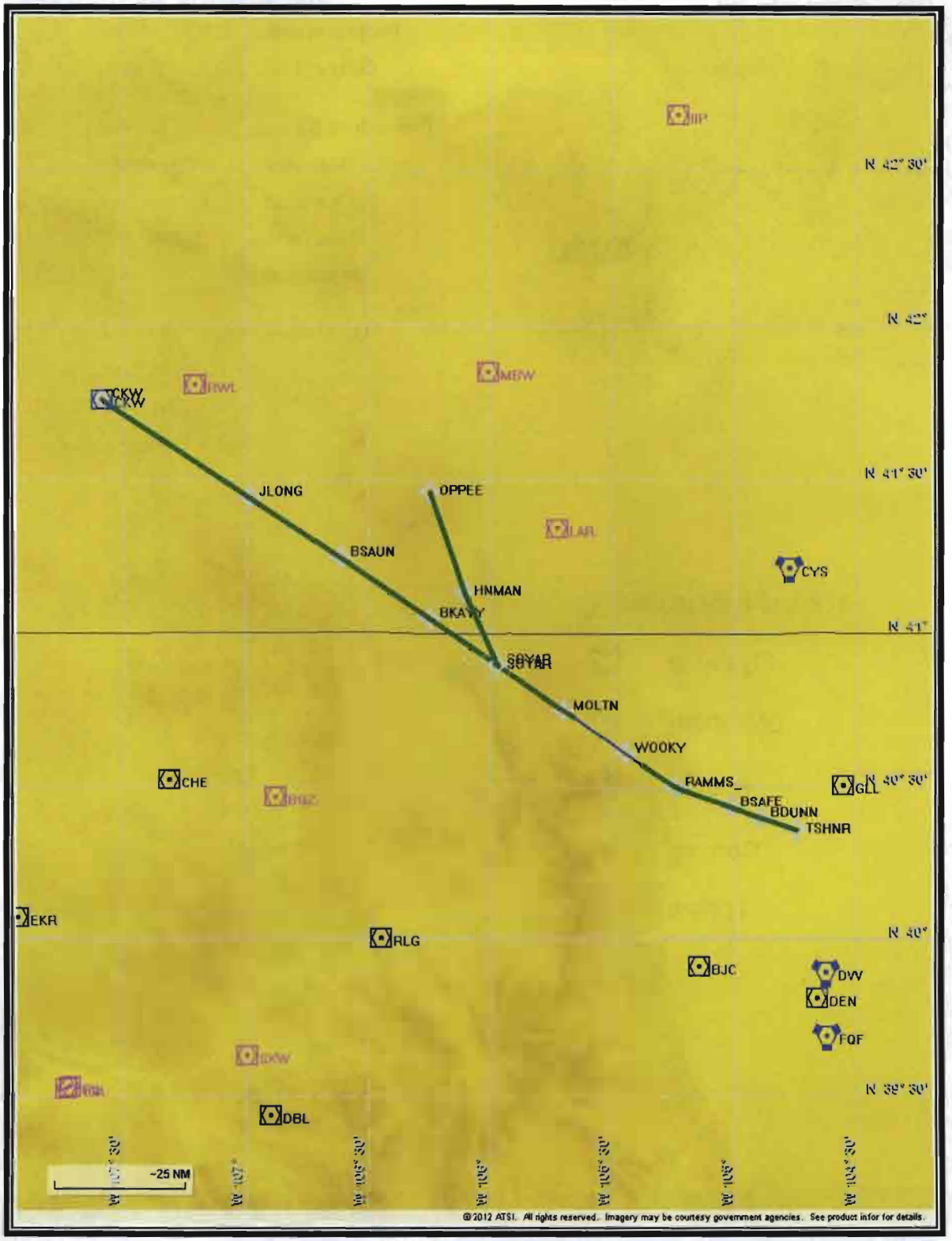
N 42° 30'
N 42°
N 41° 30'
N 41°
N 40° 30'
N 40°
N 39° 30'
JLONG
OPPEE
BSAUN
HNMAN
BKAYY
SOYAR
MOLTN
WOOKY
RAMMS_
BSAFE
BDUNN
TSHNR
CYS
CHE
GLL
EKR
RLG
BJC
DVV
DEN
FQF
DBL
~25 NM
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Flight Plan

Return To Summary

Name	Type	Lat/Lon	Alt [Ft]	VNAV Mode	IAS [Kts]	Turn Type	Leg Type
OPPEE	WP	N 41° 27' 33.07" W 106° 14' 42.09"	15000.0	Step	210.0	Fly By	TF
HNMAN	WP	N 41° 7' 51.91" W 106° 6' 14.84"	15000.0	Step	210.0	Fly By	TF
SOYAR	WP	N 40° 53' 49.38" W 105° 58' 15.38"	15000.0	Step	210.0	Fly Over	TF

Flyability

Return To Summary

Settings:	**Flight Type:** **Aircraft Category:** Cat D **Climb Gradient:** *None assigned* **Ground Speeds:** Table: **200.0 Kts** up to **11000.0 Ft.** **240.0 Kts** up to **18000.0 Ft.** **260.0 Kts** up to **24000.0 Ft.** **340.0 Kts** up to **99900.0 Ft.** **Wind Settings:** *None assigned* **Descent During a Turn:** Allowed **VNAV Mode:** Flight Plan

Entire track is fly-able

DME/DME

Return To Summary

Settings:	**RNP:** 2.0 **Flight Mode:** Manual **Line of Sight (DTED Level 0 Max):** Evaluated **DME Restrictions:** Evaluated **Inertial Drift:** Enabled **Initial Drift:** 0.558 NM **INS Drift Rate:** 8.000 NM/Hour **Range Mode:** OSV **Co-Frequencies:** Evaluated **RNP Edges:** Evaluated **Min DME Range:** 3.0 NM **Allowed Gap Length:** 4.0 NM **DME Types:** VOR/DME , VORTAC , TACAN , and User **DME Include Angles:** 30 to 150 **Critical DMEs:** Allowed **DoD Facilities:** Not included **Foreign Facilities:** Not included **Low & Terminal DMEs:** Included **Flight Check DMEs:** Selected **Higher Altitudes:** Evaluated **Near Maximum Altitude:** Evaluated

Total Number of DMEs Used: 3

Maximum DME Error: 0.395 NM.

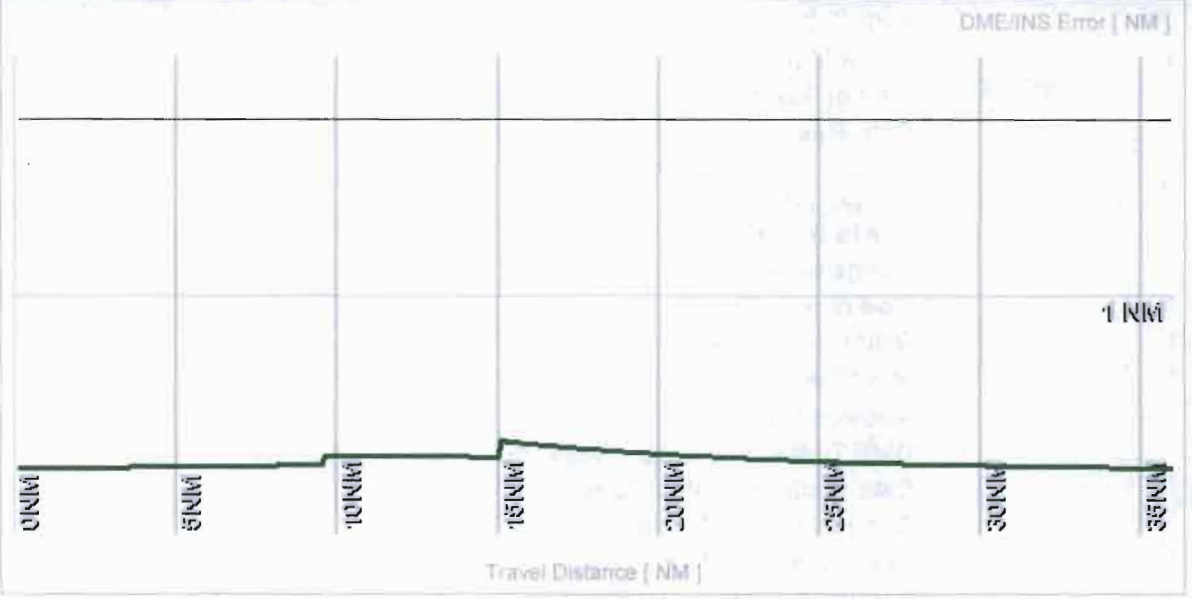
No Critical DMEs were found.

Available DMEs: GLL, LAR, MBW, CYS

Disabled DMEs: BVR

DME/DME (Continued.)

Return To Summary



DME/DME (Continued.)

Return To Summary

DMEs Used

#	Name	Lat/Lon/MAGVAR	Range	Source	Critical	Err. [NM]	Status	Time	Distance
1	LAR	N 41° 20' 16.15" W 105° 43' 15.36" E 14	L	Database	NO	0.578	Enabled	84.8 %	84.8 %
2	MBW	N 41° 50' 43.88" W 106° 0' 15.42" E 14	L	Database	NO	0.794	Enabled	41.9 %	41.7 %
3	GLL	N 40° 30' 13.93" W 104° 33' 10.86" E 13	H + ESV	User	NO	0.568	Enabled	73.3 %	73.5 %

Flight Check DME Selection

Distance [NM]	Selected DMEs					Alternate
0.0	GLL	LAR	CYS	MBW		
20.3	GLL	LAR	CYS			

User DMEs

#	Name	Lat/Lon/MAGVAR	Range	Elevation [Ft]	Frequency	Replaces:	Status
1	DVV	N 39° 53' 40.88" W 104° 37' 27.61" E 8	H	5278.6	114.70	DVV	Not Used
2	DEN	N 39° 48' 45.05" W 104° 39' 38.66" E 8	H	5452.1	117.90	DEN	Not Used
3	CYS	N 41° 12' 39.47" W 104° 46' 22.49" E 13	H	6213.3	113.10	CYS	Not Used
		ESV:	Bearing [True]: 196.0° to 284.0° Bearing [Mag]: 183.0° to 271.0°		Arc Distance: Out to 65.0 NM Altitude: 11000.0 to 26000.0 Ft.		
4	RLG	N 40° 0' 9.51" W 106° 26' 32.96" E 14	H	9370.0	113.80	RLG	Not Used
		Restriction:	Bearing [True]: 299.0° to 319.0° Bearing [Mag]: 285.0° to 305.0°		Distance: Beyond 34.0 NM Altitude: Below 16300.0 Ft.		
		ESV:	Bearing [True]: 334.0° to 13.0° Bearing [Mag]: 320.0° to 359.0°		Arc Distance: Out to 108.0 NM Altitude: 21000.0 to 28000.0 Ft.		
5	CHE	N 40° 31' 12.30" W 107° 18' 17.60" E 14	H	7269.2	115.60	CHE	Not Used
		ESV:	Bearing [True]: 1.0° to 44.0° Bearing [Mag]: 347.0° to 30.0°		Arc Distance: Out to 66.0 NM Altitude: 21000.0 to 22000.0 Ft.		
6	OCS	N 41° 35' 24.77" W 109° 0' 55.19" E 13	H	6784.7	116.00	OCS	Not Used
		ESV:	Bearing [True]: 77.0° to 99.0° Bearing [Mag]: 64.0° to 86.0°		Arc Distance: Out to 95.0 NM Altitude: 20900.0 to 22000.0 Ft.		

DME/DME (Continued.)

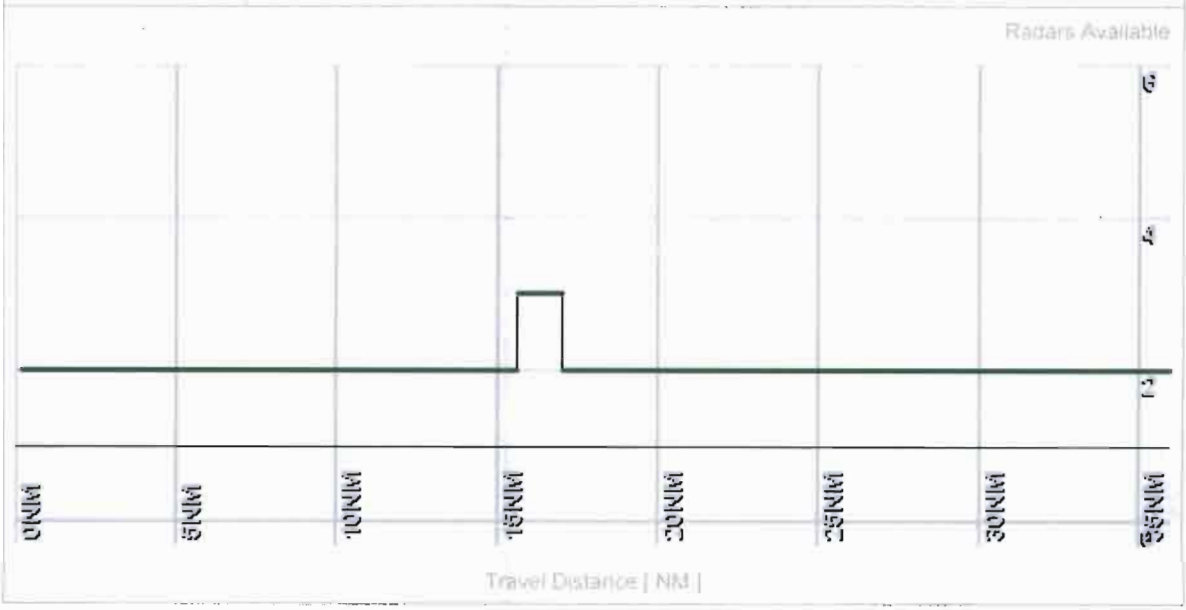
Return To Summary

User DMEs (Continued.)

#	Name	Lat/Lon/MAGVAR	Range	Elevation [Ft]	Frequency	Replaces:	Status
7	BOY	N 43° 27' 47.35" W 108° 17' 58.96" E 16	H	7550.0	117.80	BOY	Not Used
		ESV:	Bearing [True]: 154.0° to 166.0° Bearing [Mag]: 138.0° to 150.0°		Arc Distance: Out to 125.0 NM Altitude: 20900.0 to 26000.0 Ft.		
8	GLL	N 40° 30' 13.93" W 104° 33' 10.86" E 13	H	4900.0	114.20	GLL	Used
		ESV:	Bearing [True]: 287.0° to 311.0° Bearing [Mag]: 274.0° to 298.0°		Arc Distance: Out to 99.0 NM Altitude: 14900.0 to 20000.0 Ft.		

ENTERED

Radar Analysis

Return To Summary

Settings: **Radar Types:** ARSR and ASR