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
SEATTLE	SEA.HELNS5	SEA VORTAC	BUWZO DME FIX	161.00/29.00	10,000	3400		
			HELNS DME FIX	161.00/41.73 (SEA R-161 & BTG R-360)	10,000	8000		

(2) Arrival Route Description: FROM OVER HELNS ON BTG VORTAC R-360 TO KRATR (MEA 10000), THENCE AS DEPICTED TO BTG VORTAC (MEA 7000). THENCE...LANDING EAST: DEPART BTG VORTAC HEADING 280 FOR VECTORS TO THE FINAL APPROACH COURSE. LANDING WEST: DEPART BTG VORTAC HEADING 110 FOR VECTORS TO THE FINAL APPROACH COURSE.

(3) Procedural Data Notes: NOTE: DME AND RADAR REQUIRED.
NOTE: PROP/TURBOPROP: CROSS KRATR AT AND MAINTAIN 10,000'. TURBOJET: CROSS KRATR AT AND MAINTAIN 12,000 AT 300 KIAS OR LESS.

(4) Fixes and/or Holding Patterns:
CHART HOLDING AT HELNS (HOLD N, LT, 180.00 INBOUND).

(5) Communications: PORTLAND APP CON, PORTLAND INTL ATIS, PORTLAND-HILLSBORO ATIS.

QUALITY CHECKED 1

(6) Arrival Name	(7) Number	(8) STAR Computer Code	(9) Superceded Nr.	(10) Dated	(11) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

FAA Form 7100-4 (7/02)

(12) Airports Served			
Airport Name	PORTLAND INTL	City/State	PORTLAND, OR
Airport Name	PORTLAND-HILLSBORO	City/State	PORTLAND, OR
Airport Name	PORTLAND-TROUTDALE	City/State	PORTLAND, OR
Airport Name	AURORA STATE	City/State	PORTLAND, OR
Airport Name		City/State	
Airport Name		City/State	

(13) Lost Communications Procedure:

(14) Remarks:

(15) Additional Flight Data:

QUALITY CHECKED

(6) Arrival Name	(7) Number	(8) STAR Computer Code	(9) Superseded Nr.	(10) Dated	(11) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

FAA Form 7100-4 (7/02)

(16) Continuation:

(17) Changes:
Establishes BUWZO DME FIX.

(18) Reasons for Changes: ESTABLISHMENT OF NEW FIX ENABLES SEATTLE TRACON TO SEND AIRCRAFT DIRECT TO (REDUCE VERBIAGE).
04/17/2012. THIS IS AN UPDATED COPY OF THE FORM DEVELOPED ON 04/30/2010.
1. REMOVES NOTE: MAINTAIN THE LAST ASSIGNED...300 KIAS OR LESS.
06/28/2012. THIS IS A CORRECTED COPY OF THE FORM APPROVED ON 06/21/2012.
1. ADDS NOTE: PROP/TURBOPROP: CROSS AT AND MAINTAIN AT 10,000'. TURBOJET: CROSS AT AND MAINTAIN 12,000' AT 300 KIAS.

07/09/2012. THIS IS A CORRECTED COPY OF THE FORM APPROVED ON 06/21/2012.
1. REPLACES BLOCK 3 ALTITUDE/SPEED RESTRICTION WITH: NOTE: PROP/TURBOPROP: CROSS KRATR AT AND MAINTAIN 10,000'. TURBOJET: CROSS KRATR AT AND MAINTAIN 12,000 AT 300 KIAS OR LESS.

	Name *(Typed and Signed)*, Title and Organization		DATE
Developed By	Stephanie Tandberg, Airspace and Procedures Specialist, Seattle ARTCC Stephanie Tandberg		4-30-10
Approved	FIFO	Dez Silagyi	JUN 21 2012
	Reg. ATD		

QUALITY CHECKED

(5) Arrival Name	(6) Number	(7) STAR Computer Code	(8) Superseded Nr.	(9) Dated	(10) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/02	

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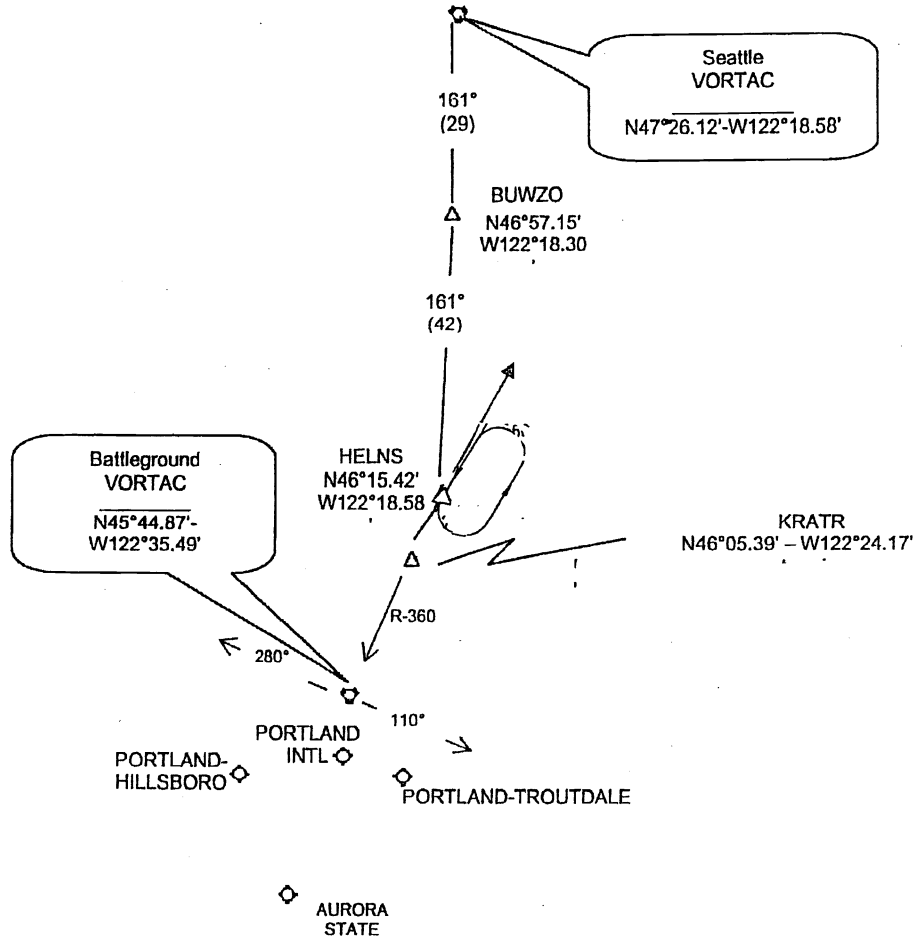
(19) Graphic Depiction:



(6) Arrival Name	(7) Number	(8) STAR Computer Code	(9) Superseded Nr.	(10) Dated	(11) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/02	

FAA Form 7100-4 (7/02)

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        BTG   K1011660VTHW N45445212W122352953    N45445163W122353227E0210002532     NARBATTLE GROUND
        SUSAD        SEA   K1011680VTHW N47260734W122183462    N47260851W122183597E0190003542     NARSEATTLE

                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   BUWZO K10    R   L N46570819W122183462                     E0164     NAR           BUWZO
        SUSAEAENRT   HELNS K10    R   L N46152510W122183458                     E0162     NAR           HELNS
        SUSAEAENRT   KRATR K10    R     N46052357W122240990                     E0162     NAR           KRATR

                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KHIOK1AHIO     0     066YHN45322620W122570070E016000208         1800018000C    MNAR    PORTLAND-HILLSBORO

                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KHIOK1EHELNS51SEA   010SEA  K1D 0V       IF                                          18000
        SUSAP KHIOK1EHELNS51SEA   020BUWZOK1EA0E       TF                     16100290
        SUSAP KHIOK1EHELNS51SEA   030HELNSK1EA0EE H    TF                     16100417
        SUSAP KHIOK1EHELNS52      010HELNSK1EA0E  H    IF                                          18000
        SUSAP KHIOK1EHELNS52      020KRATRK1EA0E       TF                     1800
        SUSAP KHIOK1EHELNS52      030BTG  K1D 0VE      TF                     1800
        SUSAP KHIOK1EHELNS53RW02  010BTG  K1D 0V       IF                                          18000
        SUSAP KHIOK1EHELNS53RW02  020KHIO K1PA0AE      VM                     2800
        SUSAP KHIOK1EHELNS53RW13  010BTG  K1D 0V       IF                                          18000
        SUSAP KHIOK1EHELNS53RW13  020KHIO K1PA0AE      VM                     2800
        SUSAP KHIOK1EHELNS53RW20  010BTG  K1D 0V       IF                                          18000
        SUSAP KHIOK1EHELNS53RW20  020KHIO K1PA0AE      VM                     1100
        SUSAP KHIOK1EHELNS53RW31  010BTG  K1D 0V       IF                                          18000
        SUSAP KHIOK1EHELNS53RW31  020KHIO K1PA0AE      VM                     1100

                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KHIOK1GRW02    0040500236 N45320079W122570912+0100    +0039500205000050100V
```

QUALITY CHECKED 1

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

FAA Form 7100-3 (9/02)

```
SUSAP KHIOK1GRW13    0066001276 N45325859W122573422+0000    +003810020000005415 0IIHI01
SUSAP KHIOK1GRW20    0040502036 N45323029W122563440-0100    +0040400208017250100D
SUSAP KHIOK1GRW31    0066003076 N45320616W122563916+0000    +0037500198000052150R
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QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

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
	SEA	SEA	010		IF		FB					
	SEA	BUWZO	020		TF		FB		161.0()	029.0		
	SEA	HELNS	030		TF		FB		161.0()	041.7		
		HELNS	010		IF		FB					
		KRATR	020		TF		FB		180.0()			
		BTG	030		TF		FB		180.0()			
	RW02	BTG	010		IF		FB					
	RW02	KHIO	020		VM		FB		280.0()			
	RW13	BTG	010		IF		FB					
	RW13	KHIO	020		VM		FB		280.0()			
	RW20	BTG	010		IF		FB					
	RW20	KHIO	020		VM		FB		110.0()			
	RW31	BTG	010		IF		FB					
	RW31	KHIO	020		VM		FB		110.0()			

POINT DATA

WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
BTG	N454452.12	W1223529.53	N4544.869	W12235.492
SEA	N472607.34	W1221834.62	N4726.122	W12218.577
BUWZO	N465708.19	W1221834.62	N4657.137	W12218.577
HELNS	N461525.10	W1221834.58	N4615.418	W12218.576
KRATR	N460523.57	W1222409.90	N4605.393	W12224.165
RW02	N453200.79	W1225709.12	N4532.013	W12257.152
RW13	N453258.59	W1225734.22	N4532.977	W12257.570
RW20	N453230.29	W1225634.40	N4532.505	W12256.573
RW31	N453206.16	W1225639.16	N4532.103	W12256.653

RUNWAY DATA

RWY	THRESHOLD ELEVATION	TCH
RW02	00205	50
RW13	00200	54
RW20	00208	50
RW31	00198	52

QUALITY CHECKED 1

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

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        BTG   K1011660VTHW N45445212W122352953    N45445163W122353227E0210002532     NARBATTLE GROUND
        SUSAD        SEA   K1011680VTHW N47260734W122183462    N47260851W122183597E0190003542     NARSEATTLE

                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   BUWZO K10    R   L N46570819W122183462                    E0164     NAR           BUWZO
        SUSAEAENRT   HELNS K10    R   L N46152510W122183458                    E0162     NAR           HELNS
        SUSAEAENRT   KRATR K10    R     N46052357W122240990                    E0162     NAR           KRATR

                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KPDXK1APDX     0     110YHN45351935W122354873E020000031         1800018000C    MNAR    PORTLAND INTL

                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KPDXK1EHELNS51SEA   010SEA  K1D 0V       IF                                          18000
        SUSAP KPDXK1EHELNS51SEA   020BUWZOK1EA0E       TF                    16100290
        SUSAP KPDXK1EHELNS51SEA   030HELNSK1EA0EE H    TF                    16100417
        SUSAP KPDXK1EHELNS52      010HELNSK1EA0E  H    IF                                          18000
        SUSAP KPDXK1EHELNS52      020KRATRK1EA0E       TF                    1800
        SUSAP KPDXK1EHELNS52      030BTG  K1D 0VE      TF                    1800
        SUSAP KPDXK1EHELNS53RW03  010BTG  K1D 0V       IF                                          18000
        SUSAP KPDXK1EHELNS53RW03  020KPDX K1PA0AE      VM                    2800
        SUSAP KPDXK1EHELNS53RW10B 010BTG  K1D 0V       IF                                          18000
        SUSAP KPDXK1EHELNS53RW10B 020KPDX K1PA0AE      VM                    2800
        SUSAP KPDXK1EHELNS53RW21  010BTG  K1D 0V       IF                                          18000
        SUSAP KPDXK1EHELNS53RW21  020KPDX K1PA0AE      VM                    1100
        SUSAP KPDXK1EHELNS53RW28B 010BTG  K1D 0V       IF                                          18000
        SUSAP KPDXK1EHELNS53RW28B 020KPDX K1PA0AE      VM                    1100

                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KPDXK1GRW03    0060000250 N45345673W122370052+0100    -0016000022000060150V
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QUALITY CHECKED 1

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

FAA Form 7100-3 (9/02)

```
SUSAP KPDXK1GRW10L   0098250990 N45354128W122354419+0000    -00137000301290491 50IIVDG1
SUSAP KPDXK1GRW10R   0110000990 N45354253W122371730+0000    -00158000230000531 50IIPDX3
SUSAP KPDXK1GRW21    0060002050 N45353861W122360085-0100    -00145000260000321 50VIGP00
SUSAP KPDXK1GRW28L   0110002790 N45344985W122350205+0000    -00158000230000551 50IIJMJ1
SUSAP KPDXK1GRW28R   0098252790 N45350294W122340584+0000    -00134000310535541 50IIIAP1
```

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

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
	SEA	SEA	010		IF		FB					
	SEA	BUWZO	020		TF		FB		161.0()	029.0		
	SEA	HELNS	030		TF		FB		161.0()	041.7		
		HELNS	010		IF		FB					
		KRATR	020		TF		FB		180.0()			
		BTG	030		TF		FB		180.0()			
	RW03	BTG	010		IF		FB					
	RW03	KPDX	020		VM		FB		280.0()			
	RW10B	BTG	010		IF		FB					
	RW10B	KPDX	020		VM		FB		280.0()			
	RW21	BTG	010		IF		FB					
	RW21	KPDX	020		VM		FB		110.0()			
	RW28B	BTG	010		IF		FB					
	RW28B	KPDX	020		VM		FB		110.0()			

POINT DATA

WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
BTG	N454452.12	W1223529.53	N4544.869	W12235.492
SEA	N472607.34	W1221834.62	N4726.122	W12218.577
BUWZO	N465708.19	W1221834.62	N4657.137	W12218.577
HELNS	N461525.10	W1221834.58	N4615.418	W12218.576
KRATR	N460523.57	W1222409.90	N4605.393	W12224.165
RW03	N453456.73	W1223700.52	N4534.946	W12237.009
RW10L	N453541.28	W1223544.19	N4535.688	W12235.737
RW10R	N453542.53	W1223717.30	N4535.709	W12237.288
RW21	N453538.61	W1223600.85	N4535.644	W12236.014
RW28L	N453449.85	W1223502.05	N4534.831	W12235.034
RW28R	N453502.94	W1223405.84	N4535.049	W12234.097

RUNWAY DATA

RWY	THRESHOLD ELEVATION	TCH
RW03	00022	60
RW10L	00030	49
RW10R	00023	53
RW21	00026	32
RW28L	00023	55
RW28R	00031	54

QUALITY CHECKED 1

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

FAA Form 7100-3 (9/02)

US Department of Transportation
Federal Aviation Administration

STAR (Data Record)

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

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        BTG   K1011660VTHW N45445212W122352953    N45445163W122353227E0210002532     NARBATTLE GROUND
        SUSAD        SEA   K1011680VTHW N47260734W122183462    N47260851W122183597E0190003542     NARSEATTLE

                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   BUWZO K10    R   L N46570819W122183462                     E0164     NAR           BUWZO
        SUSAEAENRT   HELNS K10    R   L N46152510W122183458                     E0162     NAR           HELNS
        SUSAEAENRT   KRATR K10    R     N46052357W122240990                     E0162     NAR           KRATR

                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTTDK1ATTD     0     053YHN45325770W122240450E019000039         1800018000C    MNAR    PORTLAND-TROUTDALE

                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTTDK1EHELNS51SEA   010SEA  K1D 0V       IF                                          18000
        SUSAP KTTDK1EHELNS51SEA   020BUWZOK1EA0E       TF                     16100290
        SUSAP KTTDK1EHELNS51SEA   030HELNSK1EA0EE H    TF                     16100417
        SUSAP KTTDK1EHELNS52      010HELNSK1EA0E  H    IF                                          18000
        SUSAP KTTDK1EHELNS52      020KRATRK1EA0E       TF                     1800
        SUSAP KTTDK1EHELNS52      030BTG  K1D 0VE      TF                     1800
        SUSAP KTTDK1EHELNS53RW07  010BTG  K1D 0V       IF                                          18000
        SUSAP KTTDK1EHELNS53RW07  020KTTD K1PA0AE      VM                     2800
        SUSAP KTTDK1EHELNS53RW25  010BTG  K1D 0V       IF                                          18000
        SUSAP KTTDK1EHELNS53RW25  020KTTD K1PA0AE      VM                     1100

                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTTDK1GRW07    0053990697 N45325710W122244243+0200    -0014100028000050150V
        SUSAP KTTDK1GRW25    0053992497 N45325834W122232659-0200    -0010800039000047150V
```

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

FAA Form 7100-3 (9/02)

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
	SEA	SEA	010		IF		FB					
	SEA	BUWZO	020		TF		FB		161.0()	029.0		
	SEA	HELNS	030		TF		FB		161.0()	041.7		
		HELNS	010		IF		FB					
		KRATR	020		TF		FB		180.0()			
		BTG	030		TF		FB		180.0()			
	RW07	BTG	010		IF		FB					
	RW07	KTTD	020		VM		FB		280.0()			
	RW25	BTG	010		IF		FB					
	RW25	KTTD	020		VM		FB		110.0()			

POINT DATA

WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
BTG	N454452.12	W1223529.53	N4544.869	W12235.492
SEA	N472607.34	W1221834.62	N4726.122	W12218.577
BUWZO	N465708.19	W1221834.62	N4657.137	W12218.577
HELNS	N461525.10	W1221834.58	N4615.418	W12218.576
KRATR	N460523.57	W1222409.90	N4605.393	W12224.165
RW07	N453257.10	W1222442.43	N4532.952	W12224.707
RW25	N453258.34	W1222326.59	N4532.972	W12223.443

RUNWAY DATA

RWY	THRESHOLD ELEVATION	TCH
RW07	00028	50
RW25	00039	47

QUALITY CHECKED 1

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

FAA Form 7100-3 (9/02)

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        BTG   K1011660VTHW N45445212W122352953    N45445163W122353227E0210002532     NARBATTLE GROUND
        SUSAD        SEA   K1011680VTHW N47260734W122183462    N47260851W122183597E0190003542     NARSEATTLE

                1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   BUWZO K10    R   L N46570819W122183462                    E0164     NAR           BUWZO
        SUSAEAENRT   HELNS K10    R   L N46152510W122183458                    E0162     NAR           HELNS
        SUSAEAENRT   KRATR K10    R     N46052357W122240990                    E0162     NAR           KRATR

                1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KUAOK1AUAO     0     050YHN45144970W122461220E018000200         1800018000C    MNAR    AURORA STATE

                1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KUAOK1EHELNS51SEA   010SEA  K1D 0V       IF                                          18000
        SUSAP KUAOK1EHELNS51SEA   020BUWZOK1EA0E       TF                    16100290
        SUSAP KUAOK1EHELNS51SEA   030HELNSK1EA0EE H    TF                    16100417
        SUSAP KUAOK1EHELNS52      010HELNSK1EA0E  H    IF                                          18000
        SUSAP KUAOK1EHELNS52      020KRATRK1EA0E       TF                    1800
        SUSAP KUAOK1EHELNS52      030BTG  K1D 0VE      TF                    1800
        SUSAP KUAOK1EHELNS53RW17  010BTG  K1D 0V       IF                                          18000
        SUSAP KUAOK1EHELNS53RW17  020KUAO K1PA0AE      VM                    2800
        SUSAP KUAOK1EHELNS53RW35  010BTG  K1D 0V       IF                                          18000
        SUSAP KUAOK1EHELNS53RW35  020KUAO K1PA0AE      VM                    1100

                1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KUAOK1GRW17    0050041691 N45151417W122460783-0100    +00378002000000040100RIUAO0
        SUSAP KUAOK1GRW35    0050043491 N45142515W122461652+0100    +00368001960000040100R
```

QUALITY CHECKED

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

FAA Form 7100-3 (9/02)

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
	SEA	SEA	010		IF		FB					
	SEA	BUWZO	020		TF		FB		161.0()	029.0		
	SEA	HELNS	030		TF		FB		161.0()	041.7		
		HELNS	010		IF		FB					
		KRATR	020		TF		FB		180.0()			
		BTG	030		TF		FB		180.0()			
	RW17	BTG	010		IF		FB					
	RW17	KUAO	020		VM		FB		280.0()			
	RW35	BTG	010		IF		FB					
	RW35	KUAO	020		VM		FB		110.0()			

POINT DATA

WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
BTG	N454452.12	W1223529.53	N4544.869	W12235.492
SEA	N472607.34	W1221834.62	N4726.122	W12218.577
BUWZO	N465708.19	W1221834.62	N4657.137	W12218.577
HELNS	N461525.10	W1221834.58	N4615.418	W12218.576
KRATR	N460523.57	W1222409.90	N4605.393	W12224.165
RW17	N451514.17	W1224607.83	N4515.236	W12246.131
RW35	N451425.15	W1224616.52	N4514.419	W12246.275

RUNWAY DATA

RWY	THRESHOLD ELEVATION	TCH
RW17	00200	40
RW35	00196	40

QUALITY CHECKED 1

(11) Arrival Name	(12) Number	(13) STAR Computer Code	(14) Superseded Nr.	(15) Dated	(16) Effective Date
HELNS	FIVE	HELNS.HELNS5	FOUR	08/08/2002	

FAA Form 7100-3 (9/02)

RADIO FIX AND HOLDING DATA RECORD

NAME: BUWZO **STATE:** WA **COUNTRY:** US

LATITUDE/LONGITUDE: 465708.19N/1221834.62W **TYPE:** DME

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

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	FEET	MRA	MAA
1	SEATTLE	SEA	VORTAC	H	161.00	180.00	29.00	29.00			

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	HELNS	1		KPDX	PORTLAND	OR (US)

REQUIRED CHARTING: STAR, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 07/26/2012

DEVELOPED BY: **DATE:** 03/15/2012 **OFFICE:** AJV-354 **NAME:** DAVID DOWLING

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

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: WST
ARTCC: ZSE
ATC FACILITY: SEA APP CON, PDX APP CON
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: HELNS **STATE:** WA **COUNTRY:** US

LATITUDE/LONGITUDE: 461525.10N/1221834.58W **TYPE:** 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	BATTLE GROUND	BTG	VORTAC	H	360.00	021.00	32.75	32.75		10000	17500
2	SEATTLE	SEA	VORTAC	H	161.00	180.00	70.73	70.73		10000	17500

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
SEA	VORTAC	R-161	74	10000	17500

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	N	BTG	VORTAC	360.00	180.00	L	1-1 1/2		10000	17500	11	18

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	230	AAO	461127.00N/1221127.00W	8567	4E

PRECIPITOUS TERRAIN ADDITIONS:

PAT	SPEED	ADDITION
1	230	375

REASON FOR NONSTANDARD HOLDING:
PAT 1 ATC REQUEST.

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN.

REMARKS:
BATTLE GROUND (FAC 1) USED TO ESTABLISH FIX COORDINATES
PRECIPITOUS TERRAIN EVALUATED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	HELNS	1, 2	1	KPDX	PORTLAND	OR (US)

REQUIRED CHARTING: STAR, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 4 **DATE OF REVISION:** 07/26/2012

REASON FOR REVISION:
ADDED FAC 1 AND NM DISTANCE.
CHANGED FAC 2 DME DISTANCE FROM 70.74 TO 70.73 NM.
ADDED DETAILED ESV INFORMATION.
CHANGED PAT 1 LEG LENGTH FROM DME TO TIME.
LOWERED PAT I MIN ALTITUDE FROM 11000 TO 10000.
NEW PAT 1 CONTROLLING OBSTACLE.
ADDED PRECIPITOUS TERRAIN ADJUSTMENT.
REMOVED PREVIOUS REMARKS AND ADDED TWO.
UPDATED FIX USE.
ADDED EN ROUTE LOW CHARTING.

DEVELOPED BY: **DATE:** 03/16/2012 **OFFICE:** AJV-354 **NAME:** DAVID DOWLING

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

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZSE
ATC FACILITY: PDX APP CON
OTHER:

CHECKED & QUALITY

RADIO FIX AND HOLDING DATA RECORD

NAME: KRATR **STATE:** WA **COUNTRY:** US

LATITUDE/LONGITUDE: 460523.57N/1222409.90W **TYPE:** 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	BATTLE GROUND	BTG	VORTAC	H	360.00	021.00	22.00	22.00		7000	17500

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

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
STAR	HELNS	1		KPDX	PORTLAND	OR (US)

REQUIRED CHARTING: STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 1 **DATE OF REVISION:** 07/26/2012

REASON FOR REVISION:
ADDED FAC 1 NM DISTANCE.
UPDATED FIX USE.

DEVELOPED BY: **DATE:** 03/16/2012 **OFFICE:** AJV-354 **NAME:** DAVID DOWLING

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

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: WST
ARTCC: ZSE
ATC FACILITY: PDX APP CON
OTHER:

CHECKED QUALITY

RADIO FIX AND HOLDING DATA RECORD

NAME: SEATTLE VORTAC **STATE:** WA **COUNTRY:** US

LATITUDE/LONGITUDE: 472607.34N/1221834.62W **TYPE:**

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** NO CHANGE

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	SEATTLE	SEA	VORTAC	H							45000

FIX RESTRICTIONS:
MCA V120 6300 EASTBOUND
MCA V4 5200 EASTBOUND
MCA V2-298 4300 EASTBOUND

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	E	SEA	VORTAC	104.00	284.00	R	1-1 1/2		4000	28000	4	21
2	E	SEA	VORTAC	110.00	290.00	L	1-1 1/2		3000	18000	4	16
3	SE	SEA	VORTAC	130.00	310.00	L	1-1 1/2		3000	18000	4	16
4	E	SEA	VORTAC	104.00	284.00	R	1		3000	3000	4	4

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	AAO	472709.00N/1220657.00W	870	4E
1	310	AAO	471933.00N/1215042.00W	3626	4E
2	200	AAO	472357.00N/1220809.00W	765	4E
2	310	AAO	471854.00N/1215815.00W	1368	4E
3	200	AAO	472712.00N/1221709.00W	725	4E
3	310	AAO	470754.00N/1221003.00W	1073	4E
4	200	AAO	472709.00N/1220657.00W	870	4E

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERNS

PROCEDURES REQUIRING CLIMB-IN-HOLD:

PAT	PROCEDURE TITLE	AIRPORT IDENT	CITY	STATE
1	AUBURN	KS50	AUBURN	WA (US)
2	RENTN	KRNT	RENTON	WA (US)
2	TAKEOFF MINIMUMS	KRNT	RENTON	WA (US)
2	TAKEOFF MINIMUMS	KBFI	SEATTLE	WA (US)
2	KENT	KBFI	SEATTLE	WA (US)
2	NEEDLE	KBFI	SEATTLE	WA (US)
3	TAKEOFF MINIMUMS	KSEA	SEATTLE	WA (US)

REMARKS:
PRECIPITOUS TERRAIN EVALUATION COMPLETED.
HOLDING PAT 1 (310 KNOT) CTRL OBST IS IN SECONDARY AREA AND HAS A PRIMARY EQUIVALENT HEIGHT OF 2932.
PAT 1 MAX ALTITUDE AT ATC REQUEST.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	TAKEOFF MINIMUMS			KIOW	IOWA CITY	IA (US)
DP	PORTLAND			KPDX	PORTLAND	OR (US)
DP	RIVER			KPDX	PORTLAND	OR (US)
DP	AUBURN		1, 4	KS50	AUBURN	WA (US)
DP	PAINE			KPAE	EVERETT	WA (US)
DP	YELM			KOLM	OLYMPIA	WA (US)
DP	WATTR			KCLM	PORT ANGELES	WA (US)
DP	TAKEOFF MINIMUMS			KPLU	PUYALLUP	WA (US)
DP	RENTN		2	KRNT	RENTON	WA (US)
DP	TAKEOFF MINIMUMS		2	KRNT	RENTON	WA (US)
DP	KENT		2	KBFI	SEATTLE	WA (US)
DP	NEEDLE		2	KBFI	SEATTLE	WA (US)
DP	TAKEOFF MINIMUMS		2	KBFI	SEATTLE	WA (US)
DP	BANGR (RNAV)			KSEA	SEATTLE	WA (US)
DP	ELMAA			KSEA	SEATTLE	WA (US)
DP	HAROB (RNAV)			KSEA	SEATTLE	WA (US)
DP	MOUNTAIN			KSEA	SEATTLE	WA (US)
DP	SEATTLE			KSEA	SEATTLE	WA (US)
DP	SUMMA			KSEA	SEATTLE	WA (US)
DP	TAKEOFF MINIMUMS		3	KSEA	SEATTLE	WA (US)
DP	NARROWS			KTIW	TACOMA	WA (US)
DP	TAKEOFF MINIMUMS			KTIW	TACOMA	WA (US)
DP	NACHES			KYKM	YAKIMA	WA (US)
EN ROUTE	J1					(US)
EN ROUTE	J12					(US)

CHECKED QUALITY

EN ROUTE	J12-70-90			(US)
EN ROUTE	J189			(US)
EN ROUTE	J20			(US)
EN ROUTE	J5			(US)
EN ROUTE	J502			(US)
EN ROUTE	J503			(US)
EN ROUTE	J505			(US)
EN ROUTE	J523			(US)
EN ROUTE	J65			(US)
EN ROUTE	J70			(US)
EN ROUTE	V120			(US)
EN ROUTE	V2-298			(US)
EN ROUTE	V23			(US)
EN ROUTE	V27			(US)
EN ROUTE	V4			(US)
EN ROUTE	V495			(US)
IAP	ILS OR LOC RWY 19	KPWT	BREMERTON	WA (US)
IAP	RNAV (GPS) RWY 34L	KPAE	EVERETT	WA (US)
IAP	RNAV (GPS) RWY 15	KGRF	FORT LEWIS	WA (US)
IAP	RNAV (GPS) RWY 17	KOLM	OLYMPIA	WA (US)
IAP	ILS OR LOC RWY 8	KCLM	PORT ANGELES	WA (US)
IAP	HARBOR VISUAL RWY 13R	KBFI	SEATTLE	WA (US)
IAP	ILS OR LOC RWY 31L	KBFI	SEATTLE	WA (US)
IAP	ILS RWY 13R	KBFI	SEATTLE	WA (US)
IAP	LOC/DME RWY 13R	KBFI	SEATTLE	WA (US)
IAP	BAY VISUAL RWY 16C	KSEA	SEATTLE	WA (US)
IAP	HUSKY VISUAL RWY 16C	KSEA	SEATTLE	WA (US)
IAP	ILS OR LOC RWY 16C	KSEA	SEATTLE	WA (US)
IAP	ILS OR LOC RWY 16L	KSEA	SEATTLE	WA (US)
IAP	ILS OR LOC RWY 16R	KSEA	SEATTLE	WA (US)
IAP	ILS OR LOC RWY 34L	KSEA	SEATTLE	WA (US)
IAP	ILS OR LOC/DME RWY 34C	KSEA	SEATTLE	WA (US)
IAP	ILS OR LOC/DME RWY 34R	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16C (CAT II)	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16C (CAT III)	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16L (CAT II)	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16L (CAT III)	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16R (CAT II)	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16R (CAT III)	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16R (SA CAT I)	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 34C (CAT II)	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 34L (CAT II)	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 34R (CAT II)	KSEA	SEATTLE	WA (US)
IAP	MALL VISUAL RWY 34C	KSEA	SEATTLE	WA (US)
IAP	VOR/DME RWY 16L/C	KSEA	SEATTLE	WA (US)
IAP	VOR/DME RWY 34C	KSEA	SEATTLE	WA (US)
IAP	ILS RWY17	KTIW	TACOMA	WA (US)
IAP	NDB RWY 35	KTIW	TACOMA	WA (US)
STAR	HELNS	KPDX	PORTLAND	OR (US)
STAR	JAWBN	KBFI	SEATTLE	WA (US)
STAR	CHINS	KSEA	SEATTLE	WA (US)
STAR	EPHRATA	KSEA	SEATTLE	WA (US)
STAR	GLASR	KSEA	SEATTLE	WA (US)
STAR	JAWBN	KSEA	SEATTLE	WA (US)
STAR	OLYMPIA	KSEA	SEATTLE	WA (US)
STAR	ARRIE	KTCM	TACOMA	WA (US)
STAR	WHYTE	KTCM	TACOMA	WA (US)

REQUIRED CHARTING: DP, STAR, MILITARY IAP, IAP, CONTROLLER, EN ROUTE LOW, EN ROUTE HIGH

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 15 **DATE OF REVISION:** 09/23/2010

REASON FOR REVISION:
UPDATED HOLD PAT 1 310 KNOT PATTERN CONTROLLING OBSTACLE.
INCREASED HOLD PAT 1 MIN ALT FROM 3000 TO 4000 DUE TO PAT 1 (310 KNOT) CTRL OBST.
UPDATED HOLD PAT 3 200 KNOT PATTERN CONTROLLING OBSTACLE.
UPDATED FIX USE.

THIS IS A CORRECTED COPY OF THE FORM DEVELOPED ON 04/28/2010.
1. ADDED PAT 4 FOR LEVEL HOLDING USE ON AUBURN ONE DEPARTURE.
2. ADDED REMARK FOR PAT 1 ATC REQUEST.

DEVELOPED BY: **DATE:** 07/21/2010 **OFFICE:** AVN-130 **NAME:** RUSS ROSLEWSKI

APPROVED BY: **DATE:** 07/29/2010 **OFFICE:** AVN-130 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZSE
ATC FACILITY: SEA APP CON
OTHER:

CHECKED & QUALITY

RADIO FIX AND HOLDING DATA RECORD

NAME: BATTLE GROUND VORTAC **STATE:** WA **COUNTRY:** US

LATITUDE/LONGITUDE: 454452.12N/1223529.53W **TYPE:**

INFO ONLY

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** NO CHANGE

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	BATTLE GROUND	BTG	VORTAC	H							45000
2	NEWBERG	UBG	VOR/DME	H	013.41	034.41	28.75	28.75		8000	45000
3	KLICKITAT	LTJ	VOR/DME	H	251.41	272.41	62.69	62.69		8000	45000
4	PORTLAND	PDX	VOR/DME	L	343.83	003.83	9.27	9.27		4200	17500

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
LTJ	VOR/DME	R-251	63	8000	14500

FIX RESTRICTIONS:
MCA V468 5000 NORTHEAST BOUND
MCA V112-182-520 4700 EASTBOUND
MCA V448 9400 NORTHEAST BOUND

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	BTG	VORTAC	329.16	149.16	R	1		4000	14000	4	10
2	N	BTG	VORTAC	343.83	163.83	R	1		4200	14000	5	18
3	S	BTG	VORTAC	163.00	343.00	R	1-1 1/2		4000	45000	4	29
4	N	PDX	VOR/DME	343.83	163.83	R	1		4200	14000	5	18
5	NW		WP	333.16	153.16	R		5	4200	6000	6	6

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	AAO	455430.60N/1224203.74W	1162	2A
1	310	AAO	455935.60N/1223547.85W	3155	2A
2	200	AAO	455500.00N/1223424.00W	1559	4E
2	310	AAO	455935.60N/1223547.85W	3155	2A
3	200	AAO	454703.00N/1223106.00W	837	4E
4	200	AAO	455457.00N/1223430.00W	1526	4E
4	310	AAO	455935.60N/1223547.85W	3155	2A
5	200	AAO	455430.60N/1224203.74W	1162	2A
5	310	AAO	455935.60N/1223547.85W	3155	2A

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERNS.

PROCEDURES REQUIRING CLIMB-IN-HOLD:

PAT	PROCEDURE TITLE	AIRPORT IDENT	CITY	STATE
1	TAKEOFF MINIMUMS	KPDX	PORTLAND	OR (US)
1	VOR/DME A	KSPB	SCAPPOOSE	OR (US)
1	TAKEOFF MINIMUMS	KSPB	SCAPPOOSE	OR (US)
1	VOR-A	KPDX	PORTLAND	OR (US)
1	TAKEOFF MINIMUMS	KVUO	VANCOUVER	WA (US)
2	ILS OR LOC RWY 10L	KPDX	PORTLAND	OR (US)
2	ILS OR LOC RWY 28R	KPDX	PORTLAND	OR (US)
2	VOR/DME RWY 21	KPDX	PORTLAND	OR (US)
2	LDA-A	KVUO	VANCOUVER	WA (US)
4	ILS OR LOC RWY 10L	KPDX	PORTLAND	OR (US)
4	ILS OR LOC RWY 28R	KPDX	PORTLAND	OR (US)
4	LDA-A	KVUO	VANCOUVER	WA (US)
5	RNAV (GPS) Z RWY 15	KSPB	SCAPPOOSE	OR (US)

REMARKS:
PRECIPITOUS TERRAIN EVALUATION COMPLETED.
PAT 3 REQUESTED BY PDX APP CON AND ZSE
CHART PAT 3 ENROUTE HIGH AND LOW
PAT 4 IS BASED ON PDX R-344 AT 9.27 DME AND USES PDX VOR/DME MAG VAR. MAGNETIC INBOUND COURSE MADE IDENTICAL TO PAT 2 FOR CHARTING PURPOSES.
FAC 2,3 AND 4 USED FOR ATC SUBSTITUTE ROUTES.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	EUGENE			KEUG	EUGENE	OR (US)
DP	CANBY			KHIO	PORTLAND	OR (US)
DP	SCAPO			KHIO	PORTLAND	OR (US)
DP	HRMNS (RNAV)			KPDX	PORTLAND	OR (US)
DP	LAVAA (RNAV)			KPDX	PORTLAND	OR (US)

QUALITY CHECKED

DP	MINNE (RNAV)		KPDX	PORTLAND	OR (US)
DP	PORTLAND		KPDX	PORTLAND	OR (US)
DP	RIVER		KPDX	PORTLAND	OR (US)
DP	TAKEOFF MINIMUMS	1	KPDX	PORTLAND	OR (US)
DP	WHAMY (RNAV)		KPDX	PORTLAND	OR (US)
DP	BLUE LAKE		KTTD	PORTLAND	OR (US)
DP	TAKEOFF MINIMUMS		KTTD	PORTLAND	OR (US)
DP	REDMOND		KRDM	REDMOND	OR (US)
DP	SALEM		KSLE	SALEM	OR (US)
DP	TAKEOFF MINIMUMS	1	KSPB	SCAPPOOSE	OR (US)
DP	TAKEOFF MINIMUMS		KKLS	KELSO	WA (US)
DP	YELM		KOLM	OLYMPIA	WA (US)
DP	KENT		KBFI	SEATTLE	WA (US)
DP	NEEDLE		KBFI	SEATTLE	WA (US)
DP	SEATTLE		KSEA	SEATTLE	WA (US)
DP	TAKEOFF MINIMUMS	1	KVUO	VANCOUVER	WA (US)
DP	NACHES		KYKM	YAKIMA	WA (US)
EN ROUTE	J1				(US)
EN ROUTE	J136				(US)
EN ROUTE	J15				(US)
EN ROUTE	J159				(US)
EN ROUTE	J16				(US)
EN ROUTE	J189				(US)
EN ROUTE	J67				(US)
EN ROUTE	J82				(US)
EN ROUTE	V112				(US)
EN ROUTE	V182				(US)
EN ROUTE	V23				(US)
EN ROUTE	V287				(US)
EN ROUTE	V448	3			(US)
EN ROUTE	V468				(US)
EN ROUTE	V495				(US)
EN ROUTE	V500				(US)
EN ROUTE	V520				(US)
IAP	LOC RWY 17		KUAO	AURORA	OR (US)
IAP	ILS OR LOC RWY 22		KMMV	MC MINNVILLE	OR (US)
IAP	RNAV (GPS) RWY 22		KMMV	MC MINNVILLE	OR (US)
IAP	ILS OR LOC RWY 12		KHIO	PORTLAND	OR (US)
IAP	NDB-B		KHIO	PORTLAND	OR (US)
IAP	RNAV (GPS) RWY 12		KHIO	PORTLAND	OR (US)
IAP	HI-ILS OR LOC/DME RWY 10R		KPDX	PORTLAND	OR (US)
IAP	HI-ILS OR LOC/DME RWY 28R		KPDX	PORTLAND	OR (US)
IAP	HI-TACAN RWY 10R		KPDX	PORTLAND	OR (US)
IAP	ILS OR LOC RWY 10L	2, 4	KPDX	PORTLAND	OR (US)
IAP	ILS OR LOC RWY 28R	2, 4	KPDX	PORTLAND	OR (US)
IAP	LOC/DME RWY 21	2	KPDX	PORTLAND	OR (US)
IAP	RNAV (GPS) RWY 10L		KPDX	PORTLAND	OR (US)
IAP	RNAV (GPS) RWY 10R		KPDX	PORTLAND	OR (US)
IAP	TACAN RWY 28L		KPDX	PORTLAND	OR (US)
IAP	VOR RWY 28R	2	KPDX	PORTLAND	OR (US)
IAP	VOR-A	1	KPDX	PORTLAND	OR (US)
IAP	VOR/DME RWY 21	2	KPDX	PORTLAND	OR (US)
IAP	NDB OR GPS-A		KTTD	PORTLAND	OR (US)
IAP	LOC/DME RWY 31		KSLE	SALEM	OR (US)
IAP	LOC/DME RWY 15	1	KSPB	SCAPPOOSE	OR (US)
IAP	RNAV (GPS) Y RWY 15		KSPB	SCAPPOOSE	OR (US)
IAP	RNAV (GPS) Z RWY 15	5	KSPB	SCAPPOOSE	OR (US)
IAP	VOR/DME A	1	KSPB	SCAPPOOSE	OR (US)
IAP	NDB-A		KKLS	KELSO	WA (US)
IAP	LDA-A	2, 4	KVUO	VANCOUVER	WA (US)
STAR	HELNS		KUAO	AURORA	OR (US)
STAR	HELNS		KHIO	PORTLAND	OR (US)
STAR	BONVL		KPDX	PORTLAND	OR (US)
STAR	HELNS		KPDX	PORTLAND	OR (US)
STAR	MOXEE		KPDX	PORTLAND	OR (US)
STAR	HELNS		KTTD	PORTLAND	OR (US)
STAR	OLYMPIA	3	KSEA	SEATTLE	WA (US)

REQUIRED CHARTING: DP, STAR, MILITARY IAP, IAP, CONTROLLER, EN ROUTE LOW, EN ROUTE HIGH

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 23 **DATE OF REVISION:** 05/05/2011

REASON FOR REVISION:
MOVED PAT 2 OBS TO PAT 1 310KIAS OBS
DELETED PAT 2
CHANGED PAT NUMBERS 3-5 TO 2-4 RESPECTIVELY
ADDED PAT 5 AND PAT 5 200/310KIAS OBSTACLES
ADJUSTED PAT USAGE NUMBERS FOR: OBS, CIH, REMARKS, AND FIX USAGE.
UPDATED FIX USAGE

DEVELOPED BY: **DATE:** 07/29/2010 **OFFICE:** AVN-130 **NAME:** ADOLFO URRUTIA (KYLE THOMPSON)

QUALITY CHECKED

APPROVED BY: **DATE:** 02/16/2011 **OFFICE:** AVN-130 **NAME:** DEZ SILAGYI

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: WST
ARTCC: ZSE
ATC FACILITY: PDX TRACON
OTHER:

QUALITY CHECKED