

RADIO FIX AND HOLDING DATA RECORD

NAME: ALDER

STATE: WA

COUNTRY: US

ICAO REGION CODE: K1

LATITUDE/LONGITUDE: 464917.62N/1222451.19W

TYPE: WP, INT, DME

AIRSPACE DOCKET:

FIX TYPE OF ACTION: NO CHANGE

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM NM	FAC FEET	MRA	MAA
1	SEATTLE	SEA	VORTAC	H	167.67	186.67	37.09	37.09		4000	45000
2	OLYMPIA	OLM	VORTAC	H	095.00	114.00	21.99	21.99		5800	45000
3	MCCHORD	TCM	VORTAC	T	157.70	172.70	19.73	19.73		5800	45000

FIX RESTRICTIONS:

MCA V204 5800 EASTBOUND

HOLDING:

HOLDING TYPE OF ACTION: NO CHANGE

REMARKS:

SEATTLE (FAC 1) USED TO ESTABLISH FIX COORDINATES

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	ATOME (RNAV)			KSEA	SEATTLE	WA (US)
DP	ALDER	2, 3		KTCM	TACOMA	WA (US)
DP	MOCAA (RNAV)			KTCM	TACOMA	WA (US)
DP	TAKE-OFF MINIMUMS	1, 2		KTCM	TACOMA	WA (US)
EN ROUTE	J1	1, 2				(US)
EN ROUTE	J189	1, 2				(US)
EN ROUTE	V204	1, 2				(US)
EN ROUTE	V495	1, 2				(US)
IAP	RNAV (GPS) RWY 33			KGRF	FORT LEWIS/TACOMA	WA (US)
IAP	RNAV (GPS) RWY 35			KPLU	PUYALLUP	WA (US)
IAP	ILS OR LOC RWY 34	2		KTCM	TACOMA	WA (US)
IAP	ILS RWY 34 CAT II	2		KTCM	TACOMA	WA (US)
IAP	RNAV (GPS) RWY 34			KTCM	TACOMA	WA (US)
IAP	TACAN RWY 34	2		KTCM	TACOMA	WA (US)
IAP	RNAV (GPS) RWY 24			KTDO	TOLEDO	WA (US)
STAR	ADYMS (RNAV)			KTCM	TACOMA	WA (US)
STAR	WHYTE	1, 2		KTCM	TACOMA	WA (US)

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

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 10

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.

DEVELOPED BY:

DATE: 03/27/2017

OFFICE: AJV-5431

NAME: ROBERT GRIM

APPROVED BY:

DATE:

OFFICE: AJV-5430

NAME: PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION:

NFDC
FPO: WST
ARTCC: ZSE
ATC FACILITY: BOEING ATCT, SEA APP/DEP CON
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: ALPSE

STATE: WA

COUNTRY: US

ICAO REGION CODE: K1

LATITUDE/LONGITUDE: 481000.00N/1220500.00W

TYPE: WP

AIRSPACE DOCKET:

FIX TYPE OF ACTION: NO CHANGE

HOLDING:

HOLDING TYPE OF ACTION: NO CHANGE

FIX USE:

USE TYPE
DP
DP
DP

USE TITLE
CBAIN (RNAV)
NRVNA (RNAV)
ATOME (RNAV)

FAC PAT

AIRPORT IDENT
KBFI
KBFI
KSEA

CITY
SEATTLE
SEATTLE
SEATTLE

STATE
WA (US)
WA (US)
WA (US)

REQUIRED CHARTING: DP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 1

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.

DEVELOPED BY:

DATE: 03/24/2017

OFFICE: AJV-5431

NAME: ROBERT GRIM

APPROVED BY:

DATE:

OFFICE: AJV-5430

NAME: PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION:

NFDC
FPO: WST
ARTCC: ZSE
ATC FACILITY: BOEING ATCT, SEA APP/DEP CON
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: ARRIE **STATE:** WA **COUNTRY:** US **ICAO REGION CODE:** K1

LATITUDE/LONGITUDE: 475247.61N/1232833.00W **TYPE:** WP, INT, DME

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	FAC FEET	MRA	MAA
1	SEATTLE	SEA	VORTAC	H	280.86	299.86	54.31	54.31		10000	45000
2	OLYMPIA	OLM	VORTAC	H	318.00	337.00	59.33	59.33		10000	45000
3	TATOOSH	TOU	VORTAC	H	096.14	118.14	52.73	52.73		15000	45000
4	VICTORIA	YYJ	VOR/DME	H	162.61	179.61	50.87	50.87		15000	45000

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
SEA	VORTAC	R-281	55	100	450
OLM	VORTAC	R-318	60	100	450
TOU	VORTAC	R-096	53	150	162

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

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	HOLDING ALTITUDES DME MIN MAX	TEMPLATES MIN MAX
1	W	SEA	VORTAC	280.86	100.86	R		10 18000 28000	18 23

HOLDING RESTRICTIONS:

HOLDING LIMITED TO ESTABLISHED PATTERN

REMARKS:

PRECIPITOUS TERRAIN EVALUATION COMPLETED

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	ATOME (RNAV)			KSEA	SEATTLE	WA (US)
DP	BANGR (RNAV)			KSEA	SEATTLE	WA (US)
EN ROUTE	T263					(US)
EN ROUTE	J523	1, 2	1			WA (US)
STAR	ARRIE	1, 2, 3, 4		KTCM	TACOMA	WA (US)

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

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 8 **DATE OF REVISION:** 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.
CHANGED MIN HOLD PAT TEMPLATE FROM 17 TO 18 (265 KT, >30NM FROM FACILITY).

DEVELOPED BY: **DATE:** 03/24/2017 **OFFICE:** AJV-5431 **NAME:** ROBERT GRIM

APPROVED BY: **DATE:** **OFFICE:** AJV-5430 **NAME:** PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION: NFDC
FPO: WST
ARTCC: ZSE
ATC FACILITY: BOEING ATCT, SEA APP/DEP CON
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: BANGR

STATE: WA

COUNTRY: US

ICAO REGION CODE: K1

LATITUDE/LONGITUDE: 473838.05N/1225453.69W

TYPE: WP

AIRSPACE DOCKET:

FIX TYPE OF ACTION: NO CHANGE

HOLDING:

HOLDING TYPE OF ACTION: NO CHANGE

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	ATOME (RNAV)			KSEA	SEATTLE	WA (US)
DP	BANGR (RNAV)			KSEA	SEATTLE	WA (US)

REQUIRED CHARTING: DP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 6

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.

DEVELOPED BY:

DATE: 03/24/2017

OFFICE: AJV-5431

NAME: ROBERT GRIM

APPROVED BY:

DATE:

OFFICE: AJV-5430

NAME: PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION:

NFDC
FPO: WST
ARTCC: ZSE
ATC FACILITY: BOEING ATCT, SEA APP CON
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: BUWZO

STATE: WA

COUNTRY: US

ICAO REGION CODE: K1

LATITUDE/LONGITUDE: 465708.19N/1221834.62W

TYPE: WP, DME

AIRSPACE DOCKET:

FIX TYPE OF ACTION: NO CHANGE

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM NM	FAC FEET	MRA	MAA
1	SEATTLE	SEA	VORTAC	H	161.00	180.00	29.00	29.00		10000	17500

HOLDING:

HOLDING TYPE OF ACTION: NO CHANGE

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	ATOME (RNAV)			KSEA	SEATTLE	WA (US)
STAR	HELNS	1		KPDX	PORTLAND	OR (US)
STAR	KRATR (RNAV)			KPDX	PORTLAND	OR (US)

REQUIRED CHARTING: DP, STAR, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 3

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.

DEVELOPED BY: DATE: 03/24/2017

OFFICE: AJV-5431

NAME: ROBERT GRIM

APPROVED BY: DATE:

OFFICE: AJV-5430

NAME: PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION:

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

RADIO FIX AND HOLDING DATA RECORD

NAME: ELMAA

STATE: WA

COUNTRY: US

ICAO REGION CODE: K1

LATITUDE/LONGITUDE: 470852.95N/1232434.38W

TYPE: WP, RADAR, 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	FAC FEET	MRA	MAA
1	HOQUIAM	HQM	VORTAC	H	049.05	068.05	32.66	32.66		14500	45000
2	VICTORIA	YYJ	VOR/DME	H	161.15	178.15	94.85	94.85		24000	45000
3	SEATTLE	SEA	VORTAC	H	230.40	249.40		48.12		3200	45000

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
SEA	VORTAC	R-230	49	3200	14900

HOLDING:

HOLDING TYPE OF ACTION: NO CHANGE

REMARKS:

HOQUIAM (FAC1) USED TO ESTABLISH FIX COORDINATES.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	ELMAA	1, 2, 3		KSEA	SEATTLE	WA (US)
EN ROUTE	J589	1, 2, 3				(US)
EN ROUTE	J70	1, 2, 3				(US)
EN ROUTE	Q1					(US)

REQUIRED CHARTING: DP, CONTROLLER, EN ROUTE HIGH

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 7

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.
ADDED REMARK HOQUIAM (FAC1) USED TO ESTABLISH FIX COORDINATES.
UPDATED FIX USE.

DEVELOPED BY:

DATE: 03/24/2017

OFFICE: AJV-5431

NAME: ROBERT GRIM

APPROVED BY:

DATE:

OFFICE: AJV-5431

NAME: PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION:

NFDC
FPO: WST
ARTCC: ZSE
ATC FACILITY: BOEING ATCT, SEA APP/DEP CON
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: HAROB

STATE: WA

COUNTRY: US

ICAO REGION CODE: K1

LATITUDE/LONGITUDE: 471436.00N/1230227.00W

TYPE: WP

AIRSPACE DOCKET:

FIX TYPE OF ACTION: NO CHANGE

HOLDING:

HOLDING TYPE OF ACTION: NO CHANGE

REMARKS:

COORDINATES PROVIDED BY AIR TRAFFIC CONTROL TO FACILITATE TRAFFIC FLOW KSEA TO KLAX/KSFO.

FIX USE:

USE TYPE

USE TITLE

FAC

PAT

AIRPORT IDENT

CITY

STATE

DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	ATOME (RNAV)			KSEA	SEATTLE	WA (US)
DP	HAROB (RNAV)			KSEA	SEATTLE	WA (US)
EN ROUTE	Q5					WA (US)

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

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 5

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.

DEVELOPED BY:

DATE: 03/24/2017

OFFICE: AJV-5431

NAME: ROBERT GRIM

APPROVED BY:

DATE:

OFFICE: AJV-5430

NAME: PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION:

NFDC

FPO: WST

ARTCC: ZSE

ATC FACILITY: BOEING ATCT, SEA APP CON

OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: LOFAL

STATE: WA

COUNTRY: US

ICAO REGION CODE: K1

LATITUDE/LONGITUDE: 475105.59N/1224049.86W

TYPE: WP, INT, DME

AIRSPACE DOCKET:

FIX TYPE OF ACTION: NO CHANGE

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM NM	FAC FEET	MRA	MAA
1	SEATTLE	SEA	VORTAC	H	310.08	329.08	29.17	29.17		3000	17500
2	PAINE	PAE	VOR/DME	L	236.00	256.00	16.77	16.77		3000	17500

FIX RESTRICTIONS:

MCA V287 5000 SOUTHWEST BOUND

HOLDING:

HOLDING TYPE OF ACTION: NO CHANGE

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME DME	HOLDING ALTITUDES MIN MAX	TEMPLATES MIN MAX
1	NW	SEA	VORTAC	310.08	130.08	L	1-1 1/2	5000 17500	6 17
2	SE	SEA	VORTAC	310.08	310.08	R	1-1 1/2	6000 17500	6 17
3	SE		WP	129.08	309.08	R		5000 17500	6 17
4	NW		WP	322.59	142.59	R		5000 10000	6 10
5	NW		WP	326.59	146.59	R		3400 10000	5 10

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	AAO	475933.00N/1224933.00W	994	4E
2	200	AAO	475106.00N/1224639.00W	847	4E
2	310	AAO	474724.00N/1225345.00W	2254	4E
3	200	AAO	475106.00N/1224639.00W	847	4E
4	200	AAO	475706.00N/1225524.00W	2296	4E
5	200	AAO	475927.00N/1224936.00W	993	4E

PRECIPITOUS TERRAIN ADDITIONS:

PAT	SPEED	ADDITION
4	200	110

REASON FOR NONSTANDARD HOLDING:

PAT 1 TERRAIN AVOIDANCE

HOLDING RESTRICTIONS:

HOLDING LIMITED TO ESTABLISHED PATTERNS.

PROCEDURES REQUIRING CLIMB-IN-HOLD: PAT

PROCEDURE TITLE

PROCEDURE TITLE	AIRPORT IDENT	CITY	STATE
2 ILS OR LOC RWY 32L	KBFI	SEATTLE	WA (US)

REMARKS:

SEATTLE (FAC 1) AND PAINE (FAC 2) USED TO ESTABLISH FIX COORDINATES

PRECIPITOUS TERRAIN EVALUATION COMPLETED

HOLDING PATTERN 4 OBSTACLE IS IN SECONDARY AREA (APPROX 1.7 NM FROM EDGE OF PRIMARY) APPLYING 74 FT OF ROC; IPDS PROVIDED ACCURACY.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
EN ROUTE	V287	1, 2				(US)
EN ROUTE	V4	1, 2				(US)
EN ROUTE	V495	1, 2				(US)
IAP	RNAV (GPS) RWY 20		5	KPWT	BREMERTON	WA (US)
IAP	ILS OR LOC RWY 32L	1	2	KBFI	SEATTLE	WA (US)
IAP	RNAV (GPS) Y RWY 14R			KBFI	SEATTLE	WA (US)
IAP	RNAV (RNP) Z RWY 14R			KBFI	SEATTLE	WA (US)
IAP	ILS OR LOC RWY 34L	1, 2	1	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 34L (SA CAT I)	1, 2		KSEA	SEATTLE	WA (US)
IAP	ILS RWY 34L (SA CAT II)	1, 2	1	KSEA	SEATTLE	WA (US)
IAP	RNAV (GPS) Y RWY 34L		3	KSEA	SEATTLE	WA (US)
IAP	RNAV (RNP) Z RWY 34L		4	KSEA	SEATTLE	WA (US)
SPECIAL IAP	RNAV (RNP) M RWY 34L			KSEA	SEATTLE	WA (US)

REQUIRED CHARTING: DP, IAP, CONTROLLER, EN ROUTE LOW, SPECIAL IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 28**DATE OF REVISION:** 08/17/2017**REASON FOR REVISION:**

ADDED CBAIN AND NR/VNA SIDS TO FIX USE.
ADDED ACCURACY CODE TO HOLD PAT 5 OBSTACLE.
DELETED REMARK FROM HOLD RESTRICTIONS BLOCK.
UPDATED RWY NUMBERS FOR KBFI FROM 13/31 L/R TO 14/32 L/R.

DEVELOPED BY: **DATE:** 03/24/2017 **OFFICE:** AJV-5431 **NAME:** ROBERT GRIM**APPROVED BY:** **DATE:** **OFFICE:** AJV-5430 **NAME:** PATRICK MULQUEEN**SIGNATURE:**

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

RADIO FIX AND HOLDING DATA RECORD

NAME: NORMY

STATE: WA

COUNTRY: US

ICAO REGION CODE: K1

LATITUDE/LONGITUDE: 472546.39N/1214316.41W

TYPE: WP, DME

AIRSPACE DOCKET:

FIX TYPE OF ACTION: NO CHANGE

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM NM	FAC FEET	MRA	MAA
1	SEATTLE	SEA	VORTAC	H	071.62	090.62	23.97	23.97			45000

HOLDING:

HOLDING TYPE OF ACTION: NO CHANGE

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	ATOME (RNAV)			KSEA	SEATTLE	WA (US)
EN ROUTE	J12	1				(US)
EN ROUTE	J70	1				(US)
EN ROUTE	J90	1				(US)
EN ROUTE	V120	1				(US)

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

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 2

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.

DEVELOPED BY:

DATE: 03/27/2017

OFFICE: AJV-5431

NAME: ROBERT GRIM

APPROVED BY:

DATE:

OFFICE: AJV-5430

NAME: PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION:

NFDC

FPO: WST

ARTCC: ZSE

ATC FACILITY: BOEING ATCT, SEA ATCT, SEA APP/DEP CON

OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: OLYMPIA VORTAC **STATE:** WA **COUNTRY:** US **ICAO REGION CODE:** K1

LATITUDE/LONGITUDE: 465817.90N/1225406.60W **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	MRA FEET	MAA
1	OLYMPIA	OLM	VORTAC	H						45000

FIX RESTRICTIONS:

MCA V204 3200 WESTBOUND

HOLDING:

HOLDING TYPE OF ACTION: MODIFY

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	DME	HOLDING ALTITUDES MIN	MAX	TEMPLATES MIN	MAX
1	S	OLM	VORTAC	176.00	356.00	R	1		3100	10000	4	9
2	SE	OLM	VORTAC	151.00	331.00	L	1-1 1/2		4000	17500	4	16
3	S	OLM	VORTAC	176.00	356.00	L	1		4000	14000	4	10

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	AAO	465039.00N/1225006.00W	1113	4E
1	310	AAO	470012.00N/1230309.00W	1995	4E
2	200	AAO	465039.00N/1225006.00W	1113	4E
3	200	AAO	470009.00N/1230312.00W	2002	4E
3	310	TOWER (53-000907)	465831.00N/1230821.00W	2972	5E

REASON FOR NONSTANDARD HOLDING:

PAT 2 TO AVOID R-6703
PAT 3 TO AVOID R-6703

HOLDING RESTRICTIONS:

HOLDING LIMITED TO ESTABLISHED PATTERNS.
PRIOR COORDINATION REQUIRED WITH CONTROLLING AGENCY FOR HOLDING OVER R-6703, AND RAINIER MOA, PAT 1 ALL ALTITUDES.
ADDITIONAL AIRSPACE REQUIRED FOR HOLDING PATTERN 1, P-12.

PROCEDURES REQUIRING CLIMB-IN-HOLD:

PAT	PROCEDURE TITLE	AIRPORT IDENT	CITY	STATE
1	TAKE-OFF MINIMUMS	KOLM	OLYMPIA	WA (US)
3	YELM	KOLM	OLYMPIA	WA (US)

REMARKS:

PRECIPITOUS TERRAIN EVALUATION COMPLETED.
PAT 3 200K OBSTACLE 1.80 NM INTO SECONDARY.
FACILITY MAG VAR: E19/1995

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	PORTLAND			KPDJ	PORTLAND	OR (US)
DP	PAINE			KPAE	EVERETT	WA (US)
DP	LEWIS			KGRF	FORT LEWIS	WA (US)
DP	TAKE-OFF MINIMUMS		1	KOLM	OLYMPIA	WA (US)
DP	YELM		3	KOLM	OLYMPIA	WA (US)
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	KENT			KBFI	SEATTLE	WA (US)
DP	NEEDLE			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	HAROB (RNAV)			KSEA	SEATTLE	WA (US)
DP	SEATTLE			KSEA	SEATTLE	WA (US)
DP	SUMMA			KSEA	SEATTLE	WA (US)
DP	ALDER			KTCM	TACOMA	WA (US)
DP	MOCAA (RNAV)			KTCM	TACOMA	WA (US)
DP	OLYMPIC			KTCM	TACOMA	WA (US)
DP	PUGET			KTCM	TACOMA	WA (US)
DP	NARROWS			KTIW	TACOMA	WA (US)
DP	TAKE-OFF MINIMUMS			KTIW	TACOMA	WA (US)
EN ROUTE	J126					(US)
EN ROUTE	J34					(US)
EN ROUTE	J54					(US)
EN ROUTE	V165					(US)
EN ROUTE	V187					(US)
EN ROUTE	V204					(US)
EN ROUTE	V287					(US)
IAP	RNAV (GPS) RWY 26		2	KAST	ASTORIA	OR (US)
IAP	ILS OR LOC RWY 20			KPWT	BREMERTON	WA (US)
IAP	RNAV (GPS) RWY 2			KPWT	BREMERTON	WA (US)

IAP	RNAV (GPS) RWY 16		KCLS	CHEHALIS	WA (US)
IAP	COPTER NDB 15		KGRF	FORT LEWIS	WA (US)
IAP	ILS OR LOC RWY 15		KGRF	FORT LEWIS	WA (US)
IAP	NDB RWY 15		KGRF	FORT LEWIS	WA (US)
IAP	NDB RWY 33		KGRF	FORT LEWIS	WA (US)
IAP	RNAV (GPS) RWY 15		KGRF	FORT LEWIS	WA (US)
IAP	RNAV (GPS) RWY 33		KGRF	FORT LEWIS	WA (US)
IAP	ILS OR LOC RWY 17		KOLM	OLYMPIA	WA (US)
IAP	RNAV (GPS) RWY 17		KOLM	OLYMPIA	WA (US)
IAP	RNAV (GPS) RWY 35		KOLM	OLYMPIA	WA (US)
IAP	VOR-A	3	KOLM	OLYMPIA	WA (US)
IAP	VOR/DME RWY 35	3	KOLM	OLYMPIA	WA (US)
IAP	ILS RWY 32L		KBFI	SEATTLE	WA (US)
IAP	NDB-A		KSHN	SHELTON	WA (US)
IAP	RNAV (GPS) RWY 23		KSHN	SHELTON	WA (US)
IAP	ILS OR LOC Y RWY 34		KTCM	TACOMA	WA (US)
IAP	ILS RWY 34 (CAT II)		KTCM	TACOMA	WA (US)
IAP	TACAN RWY 34		KTCM	TACOMA	WA (US)
IAP	NDB RWY 35		KTIW	TACOMA	WA (US)
IAP	RNAV (GPS) RWY 35		KTIW	TACOMA	WA (US)
STAR	OLYMPIA	2	KPAE	EVERETT	WA (US)
STAR	OLYMPIA	2	KRNT	RENTON	WA (US)
STAR	OLYMPIA	2	KBFI	SEATTLE	WA (US)
STAR	OLYMPIA	2	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: 16

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVA SIDS TO FIX USE.
ADDED FACILITY MAG VAR TO REMARKS BLOCK.
UPDATED HOLDING RESTRICTIONS REMARKS.

DEVELOPED BY: **DATE:** 03/24/2017 **OFFICE:** AJV-5431 **NAME:** ROBERT GRIM

APPROVED BY: **DATE:** **OFFICE:** AJV-5430 **NAME:** PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION: **NFDC**
 FPO: WST
 ARTCC: ZSE
 ATC FACILITY: BOEING ATCT, SEA APP CON
 OTHER: OLM ATCT

RADIO FIX AND HOLDING DATA RECORD

NAME: PAINE VOR/DME STATE: WA COUNTRY: US ICAO REGION CODE: K1
 LATITUDE/LONGITUDE: 475511.40N/1221640.08W 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	MRA FEET	MAA
1	PAINE	PAE	VOR/DME	L						17500

HOLDING: HOLDING TYPE OF ACTION: MODIFY

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG TIME	LENGTH DME	HOLDING ALTITUDES MIN	MAX	TEMPLATES MIN	MAX
1	NW	PAE	VOR/DME	329.04	149.04	R	1		2000	10000	4	9

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	ANT (KPAET000224)	475144.14N/1221708.62W	814	1A
1	310	ANT (KPAET000224)	475144.14N/1221708.62W	814	1A

HOLDING RESTRICTIONS:

HOLDING LIMITED TO ESTABLISHED PATTERN

PROCEDURES REQUIRING CLIMB-IN-HOLD:

PAT	PROCEDURE TITLE	AIRPORT IDENT	CITY	STATE
1	BELLEVUE	KRNT	RENTON	WA (US)
1	TAKE-OFF MINIMUMS	KPAE	EVERETT	WA (US)

REMARKS:

PRECIPITOUS TERRAIN EVALUATION COMPLETED.
 ASSIGNED FACILITY MAG VAR: 20E/1990.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	ARLINGTON			KAWO	ARLINGTON	WA (US)
DP	PAINE			KPAE	EVERETT	WA (US)
DP	TAKE-OFF MINIMUMS			KPAE	EVERETT	WA (US)
DP	NASWI			KNUW	OAK HARBOR	WA (US)
DP	YELM			KOLM	OLYMPIA	WA (US)
DP	BELLEVUE		1	KRNT	RENTON	WA (US)
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	KENT			KBFI	SEATTLE	WA (US)
DP	NEEDLE			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	ATOME (RNAV)			KSEA	SEATTLE	WA (US)
DP	BANGR (RNAV)			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)
EN ROUTE	V23					(US)
EN ROUTE	V287					(US)
IAP	LOC RWY 34			KAWO	ARLINGTON	WA (US)
IAP	NDB RWY 34			KAWO	ARLINGTON	WA (US)
IAP	RNAV (GPS) RWY 34			KAWO	ARLINGTON	WA (US)
IAP	RNAV (GPS) RWY 29			KBVS	BURLINGTON/MOUNT VERNON	WA (US)
IAP	ILS OR LOC/DME Y RWY 16R			KPAE	EVERETT	WA (US)
IAP	ILS OR LOC/DME Z RWY 16R			KPAE	EVERETT	WA (US)
IAP	ILS Z RWY 16R (SA CAT II)			KPAE	EVERETT	WA (US)
IAP	RNAV (GPS) RWY 34L			KPAE	EVERETT	WA (US)
IAP	RNAV (GPS) Y RWY 16R			KPAE	EVERETT	WA (US)
IAP	RNAV (GPS) Z RWY 16R			KPAE	EVERETT	WA (US)
IAP	VOR/DME RWY 16R		1	KPAE	EVERETT	WA (US)
IAP	RNAV (GPS) Y RWY 16			KRNT	RENTON	WA (US)
IAP	RNAV (GPS) Z RWY 16			KRNT	RENTON	WA (US)
IAP	ILS OR LOC RWY 32L			KBFI	SEATTLE	WA (US)
IAP	RNAV (GPS) Y RWY 14R			KBFI	SEATTLE	WA (US)
IAP	RNAV (RNP) Z RWY 14R			KBFI	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 34C		1	KSEA	SEATTLE	WA (US)
IAP	ILS OR LOC RWY 34L		1	KSEA	SEATTLE	WA (US)
IAP	ILS OR LOC RWY 34R		1	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16C (CAT II-III)			KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16C (SA CAT I)			KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16L (CAT II-III)			KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16L (SA CAT I)			KSEA	SEATTLE	WA (US)

IAP	ILS RWY 16R (CAT II-III)		KSEA	SEATTLE	WA (US)
IAP	ILS RWY 16R (SA CAT I)		KSEA	SEATTLE	WA (US)
IAP	ILS RWY 34C (SA CAT I-II)	1	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 34L (SA CAT I-II)	1	KSEA	SEATTLE	WA (US)
IAP	ILS RWY 34R (SA CAT I-II)	1	KSEA	SEATTLE	WA (US)
IAP	RNAV (GPS) Y RWY 16C		KSEA	SEATTLE	WA (US)
IAP	RNAV (GPS) Y RWY 16L		KSEA	SEATTLE	WA (US)
IAP	RNAV (RNP) M RWY 16R (SPECIAL)		KSEA	SEATTLE	WA (US)
IAP	RNAV (RNP) Z RWY 16C		KSEA	SEATTLE	WA (US)
IAP	RNAV (RNP) Z RWY 16L		KSEA	SEATTLE	WA (US)
IAP	RNAV (RNP) Z RWY 16R		KSEA	SEATTLE	WA (US)
IAP	RNAV (GPS)-A		KS43	SNOHOMISH	WA (US)
STAR	MADEE (RNAV)		CYXX	ABBOTSFORD, BRITISH COLUMBIA	(CA)
STAR	MADEE (RNAV)		CZBB	DELTA, BC	(CA)
STAR	MADEE (RNAV)		KBLI	BELLINGHAM	WA (US)
STAR	EPHRATA		KRNT	RENTON	WA (US)
STAR	GLASR		KRNT	RENTON	WA (US)
STAR	EPHRATA		KBFI	SEATTLE	WA (US)
STAR	GLASR		KBFI	SEATTLE	WA (US)
STAR	EPHRATA		KSEA	SEATTLE	WA (US)
STAR	GLASR		KSEA	SEATTLE	WA (US)
STAR	JAWBN		KSEA	SEATTLE	WA (US)
STAR	GLASR		KTCM	TACOMA	WA (US)

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

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 17

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.
CHANGED MAX HOLD PAT TEMPLATE FROM 10 TO 9.
ADDED SPECIAL IAP TO REQUIRED CHARTING.

DEVELOPED BY: **DATE:** 03/27/2017 **OFFICE:** AJV-5431 **NAME:** ROBERT GRIM

APPROVED BY: **DATE:** **OFFICE:** AJV-5430 **NAME:** PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION: **NFDC**
 FPO: WST
 ARTCC: ZSE
 ATC FACILITY: YJJ APP CON, KBLI ATCT, BOEING ATCT, SEATTLE APP/DEP CON
 OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: SUMMA **STATE:** WA **COUNTRY:** US **ICAO REGION CODE:** K1

LATITUDE/LONGITUDE: 463704.29N/1215917.96W **TYPE:** WP, RADAR, DME

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	FAC FEET	MRA	MAA
1	SEATTLE	SEA	VORTAC	H	145.84	164.84	50.81	50.81		8000	45000
2	OLYMPIA	OLM	VORTAC	H	100.09	119.09	43.23	43.23		14700	45000

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
SEA	VORTAC	R-146	51	8000	45000

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

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	DME	HOLDING ALTITUDES MIN	MAX	TEMPLATES MIN	MAX
1	NW	SEA	VORTAC	145.84	145.84	R	1 1/2		18000	45000	18	31

HOLDING RESTRICTIONS:

HOLDING LIMITED TO ESTABLISHED PATTERN.

REMARKS:

SEATTLE (FAC 1) USED TO ESTABLISH FIX COORDINATES
HOLDING PER ATC REQUEST
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
DP	ATOME (RNAV)			KSEA	SEATTLE	WA (US)
DP	SUMMA	1		KSEA	SEATTLE	WA (US)
DP	MOCAA (RNAV)			KTCM	TACOMA	WA (US)
EN ROUTE	J5	1, 2				(US)
EN ROUTE	J54	1, 2				(US)
EN ROUTE	Q9					(US)

REQUIRED CHARTING: DP, MILITARY DP, CONTROLLER, EN ROUTE HIGH

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 13 **DATE OF REVISION:** 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.

DEVELOPED BY: **DATE:** 03/24/2017 **OFFICE:** AJV-5431 **NAME:** ROBERT GRIM

APPROVED BY: **DATE:** **OFFICE:** AJV-5430 **NAME:** PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION:

NFDC
FPO: WST
ARTCC: ZSE
ATC FACILITY: BOEING ATCT, SEA APP CON
OTHER:

RADIO FIX AND HOLDING DATA RECORD

NAME: VAMPS **STATE:** WA **COUNTRY:** US **ICAO REGION CODE:** K1

LATITUDE/LONGITUDE: 472153.62N/1215848.99W **TYPE:** DME

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

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM NM	FAC FEET	MRA	MAA
1	SEATTLE	SEA	VORTAC	H	088.37	107.37	14.07	14.07		4000	17500

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

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME DME	HOLDING ALTITUDES MIN MAX	TEMPLATES MIN MAX
1	E	SEA	VORTAC	088.37	268.37	R	1	7600 14000	8 10
2	W	SEA	VORTAC	088.37	088.37	R	1	5000 14000	5 10

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	230	AAO	472406.00N/1213906.00W	4862	4E
2	200	AAO	471936.00N/1215048.00W	3537	4E

PRECIPITOUS TERRAIN ADDITIONS:

PAT	SPEED	ADDITION
1	230	330
2	200	87

HOLDING RESTRICTIONS:

HOLDING LIMITED TO ESTABLISHED PATTERNS.

REMARKS:

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
EN ROUTE	V2	1				(US)
EN ROUTE	V298	1				(US)

REQUIRED CHARTING: DP, CONTROLLER, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 14 **DATE OF REVISION:** 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.
 UPDATED MIN HOLD PAT TEMPLATE AND AIRSPEED (PAT 2).
 DELETED FIX COORDINATES REMARK.

DEVELOPED BY: **DATE:** 03/24/2017 **OFFICE:** AJV-5431 **NAME:** ROBERT GRIM

APPROVED BY: **DATE:** **OFFICE:** AJV-5430 **NAME:** PATRICK MULQUEEN

SIGNATURE:

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

RADIO FIX AND HOLDING DATA RECORD

NAME: ZADON

STATE: WA

COUNTRY: US

ICAO REGION CODE: K1

LATITUDE/LONGITUDE: 473344.00N/1214419.00W

TYPE: WP

AIRSPACE DOCKET:

FIX TYPE OF ACTION: NO CHANGE

HOLDING:

HOLDING TYPE OF ACTION: NO CHANGE

REMARKS:

COORDINATES PROVIDED BY AIR TRAFFIC AND NOT SUPPORTED BY ANY SPECIFIC NAVIGATIONAL FACILITY
FIX WAYPOINT TO FACILITATE DEPARTURES FROM THE SEATTLE TERMINAL AREA.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	CBAIN (RNAV)			KBFI	SEATTLE	WA (US)
DP	NRVNA (RNAV)			KBFI	SEATTLE	WA (US)
IAP	ATOME (RNAV)			KSEA	SEATTLE	WA (US)

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

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 2

DATE OF REVISION: 08/17/2017

REASON FOR REVISION:

ADDED CBAIN AND NRVNA SIDS TO FIX USE.

DEVELOPED BY: DATE: 03/27/2017

OFFICE: AJV-5431

NAME: ROBERT GRIM

APPROVED BY: DATE:

OFFICE: AJV-5430

NAME: PATRICK MULQUEEN

SIGNATURE:

DISTRIBUTION:

NFDC
FPO: WST
ARTCC: ZSE
ATC FACILITY:
OTHER: BOEING ATCT, SEA APP/DEP CON