

**FEDERAL AVIATION ADMINISTRATION**  
**FLIGHT STANDARDS SERVICE**  
**RNAV (GPS) STANDARD INSTRUMENT APPROACH PROCEDURE**  
**TITLE 14 CFR PART 97.33**

Bearings, headings, courses, tracks and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated.  
 Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or feet RVR.

<b><u>AIRPORT</u></b> WATERLOO RGNL	<b><u>AIRPORT ID</u></b> KALO	<b><u>PROCEDURE NAME</u></b> RNAV (GPS) RWY 12	<b><u>ORIGINAL/AMENDMENT</u></b> 1	<b><u>CITY</u></b> WATERLOO	<b><u>STATE</u></b> IA
<b><u>AIRPORT ELEVATION</u></b> 873	<b><u>TDZE</u></b> 873	<b><u>SUPERSEDED</u></b> RNAV (GPS) RWY 12	<b><u>ORIGINAL/AMENDMENT</u></b> ORIG	<b><u>DATED</u></b> 09/28/2006	<b><u>MAG VAR</u></b> 0E
<b><u>FACILITY</u></b> RNAV	<b><u>COORDINATES OF FACILITIES</u></b>	<b><u>ACTUAL EFFECTIVE DATE</u></b> 13 SEPTEMBER 2018	<b><u>REQUIRED EFFECTIVE DATE</u></b> ROUTINE	<b><u>CANCEL/SUSPEND</u></b>	<b><u>EPOCH YEAR</u></b> 2020

**TAA**

<b><u>FROM</u></b>	<b><u>FIX TYPE</u></b>	<b><u>TO</u></b>	<b><u>FIX TYPE</u></b>	<b><u>ALTITUDE</u></b>
1. 038/30 CW 218/30	NOPT	EYUCE	IF/IAF	3400
2. 218/30 CW 308/30		GEYEB	IAF	3400
3. 308/30 CW 038/30		HOXUR	IAF	3400

**TERMINAL ROUTES**

<b><u>FROM</u></b>	<b><u>FIX TYPE</u></b>	<b><u>TO</u></b>	<b><u>FIX TYPE</u></b>	<b><u>LEG TYPE</u></b>	<b><u>FO/FB</u></b>	<b><u>RNP</u></b>	<b><u>COURSE</u></b>	<b><u>DISTANCE</u></b>	<b><u>ALTITUDE</u></b>
HOXUR	IAF	EYUCE	NOPT	TF	FB	1.00	037.56	7.00	3400
GEYEB	IAF	EYUCE	NOPT	TF	FB	1.00	217.63	7.00	3400
EYUCE	IF/IAF	CULCA		TF	FB	1.00	127.63	6.40	2800
CULCA	FAF	WONDU/1.80 NM TO RW12		TF	FB	0.30	127.71	4.08	
WONDU/1.80 NM TO RW12		RW12	MAP	TF	FO	0.30	127.71	1.80	
RW12	MAP	1073 MSL		CA			127.71		
1073 MSL		KUCTE		DF	FO	1.00			3400

**MISSED APPROACH**

**MAP:**

LPV: DA  
 LNAV/VNAV: DA  
 LNAV: RW12

**MISSED APPROACH INSTRUCTIONS:**

CLIMB TO 3400 DIRECT KUCTE AND HOLD.

**ALTERNATE MISSED APPROACH INSTRUCTIONS:**



PROFILE:

1. PT

SIDE OF COURSE

OUTBOUND

FT WITHIN

MILES OF (IAF)
2. HOLD NW EYUCE, RT, 127.63 INBOUND, 3400 FT. IN LIEU OF PT (IAF), MAX 6000.
3. FAC: 127.71      FAF: CULCA      DIST FAF TO MAP: 5.88      DIST FAF TO THLD: 5.88
4. MIN ALT: EYUCE 3400, CULCA 2800, WONDU/1.80 NM TO RW12 1500\*
5. DIST TO THLD FROM OM:      MM:      IM:      150 HAT:      200 HAT: 0.46      GS ANT:      MM:      IM:
6. MIN GP INCPT: 2800      GP ALT AT FAF : CULCA 2800      OM:
7. GP ANGLE: 3.00      34:1: IS CLEAR      20:1: IS CLEAR      TCH: 55.0
8. MSA FROM:

PBN REQUIREMENTS NOTE:

RNP APCH.

NOTES:

CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -19C OR ABOVE 54C.  
CHART NOTE: FOR INOPERATIVE ALS, INCREASE LNAV/VNAV ALL CATS TO RVR 5500.  
CHART NOTE: #RVR 1800 AUTHORIZED WITH USE OF FD OR AP OR HUD TO DA.

ADDITIONAL FLIGHT DATA:

CHART 1012 TRANSMISSION LINE 423531N/0922632W  
CHART CIRCLING ICON.  
CHART VDP AT 1.03 NM TO RW12\*  
\*LNAV ONLY  
WAAS CHANNEL #72801  
REFERENCE PATH ID: W12A  
CHART FAS OBST: 1005 TREE 423506N/0922529W.  
HOLD SE, RT, 307.94 INBOUND  
LTP HAE: 234.5 M

MINIMUMS:

TAKEOFF: SEE FAA FORM 8260-15A FOR THIS AIRPORT

ALTERNATE: NA ☐ STANDARD - CAT D 800-2 1/4

CATEGORY:	A			B			C			D			E		
FINAL TYPE	DA/MDA	VIS	HAT/HAA	DA/MDA	VIS	HAT/HAA	DA/MDA	VIS	HAT/HAA	DA/MDA	VIS	HAT/HAA	DA/MDA	VIS	HAT/HAA
LPV DA #	1073	2400	200	1073	2400	200	1073	2400	200	1073	2400	200			
LNAV/VNAV DA	1252	3000	379	1252	3000	379	1252	3000	379	1252	3000	379			
LNAV MDA	1260	2400	387	1260	2400	387	1260	3500	387	1260	3500	387			
CIRCLING	1360	1	487	1400	1	527	1480	1 3/4	607	1600	2 1/4	727			



**CHANGES - REASONS**

1. TERMINAL ROUTES: HOXUR - EYUCE UPDATED COURSE/DISTANCE FROM 034.58/5.00 TO 037.63/7.00 - SEGMENT RECALCULATION WITH MAGVAR UPDATE AND PBN SEGMENT LENGTH CRITERIA.
2. TERMINAL ROUTES: GEYEB - EYUCE UPDATED COURSE/DISTANCE FROM 214.68/5.00 TO 217.63/7.00 - SEGMENT RECALCULATION WITH MAGVAR UPDATE AND PBN SEGMENT LENGTH CRITERIA.
3. TERMINAL ROUTES: EYUCE - CULCA UPDATED COURSE/DISTANCE FROM 124.63/6.50 TO 127.63/6.40 - SEGMENT RECALCULATION WITH MAGVAR UPDATE/NEW PFAF LOCATION.
4. TERMINAL ROUTES: UPDATED CULCA FROM RW12 TO WONDU, COURSE/DISTANCE FROM 124.71/5.78 TO 127.71/4.08 - MAG VAR/RECALCULATED DISTANCE WITH SDF.
5. TERMINAL ROUTES: ADDED SDF WONDU - RW12 - MAINTAIN MDA.
6. UPDATED LINE 2 HOLD COURSE FROM 124.63 INBOUND TO 127.64. - MAGVAR UPDATE/RECALCULATED COURSE
7. UPDATED LINE 3 FAC FROM 124.71 TO 127.71, DIST FAF TO MAP/THLD FROM 5.78 TO 5.88. - MAGVAR UPDATE/ OPTIMUM PFAF LOCATION
8. UPDATED LINE 4 MIN ALT; ADDED WONDU/1.80 NM TO RW12 1500\* - ADDED STEPDOWN FIX
9. UPDATED LINE 6 ADDED GS ALT AT FAF: CULCA 2800 - .19H CH 8
10. UPDATED LINE 7 TCH VALUE FROM 54.8 TO 55.0 - MATCH ILS TCH/AIRNAV DATA
11. UPDATED LINE 7 ADDED 20:1 IS CLEAR - .19H CH 8
12. UPDATED LPV DA/HAT FROM 1123/250 TO 1073/200 - ASC
13. UPDATED LNAV/VNAV DA/HAT FROM 1273/400 TO 1252/379; VIS ALL CATS FROM RVR 4000 TO 3000 - CONTROLLING OBSTRUCTIONS/VIS CK CALCULATION.
14. UPDATED LNAV VISIBILITY CAT C/D FROM 2400 TO 3500 - VIS CK CALCULATION.
15. UPDATED CIRCLING MDA CAT A FROM 1380/507 TO 1360/487; CAT B FROM 1380/507 TO 1400/527; CAT C FROM 1380/507 TO 1480/607; CAT D FROM 1480/607 TO 1600/727 - NEW CONTROLLING OBSTRUCTION FROM EXPANDED CIRCLING RADIUS.
16. UPDATED CIRCLING VISIBILITY CAT A/B FROM 1 1/4 TO 1, CAT C FROM 1 1/2 TO 1 3/4, CAT D FROM 2 TO 2 1/4 - VIS CK CALCULATION.
17. ADDITIONAL FLIGHT DATA UPDATED FAS OBST FROM 995 TREE 423436N/0922516W TO 1005 TREE 423506N/0922529W- NEW FINAL OBSTRUCTION.
18. ADDITIONAL FLIGHT DATA UPDATED VDP FROM 1.04 TO 1.03 NM - RECALCULATED DISTANCE
19. ADDITIONAL FLIGHT DATA UPDATED PROCEDURE MAGVAR FROM 3E/85 TO 0E/2020 - MAGVAR TOLERANCE
20. ADDITIONAL FLIGHT DATA ADDED CHART CIRCLING ICON - APPLIED NEW CIRCLING RADIUS
21. CHART NOTE; UPDATED BARO-VNAV RESTRICTION NOTE FROM NA BELOW -16C (4F) OR ABOVE FROM 47C (117F) TO 54C TO -19C OR ABOVE 54C - RECALCULATED USING 5 YR HISTORY WX DATA, NEW NOTE FORMAT.
22. UPDATED TAA SI FROM 035/30 CW 215/30 TO 038/30 TO 218/30; RB FROM 215/30 CW 305/30 TO 218/30 CW 308/30; LB 305/30 CW 035/30 TO 308/30 CW 038/30 - MAGVAR UPDATE
23. ADDITIONAL FLIGHT DATA HOLD FROM 304.93 INBOUND TO 307.94 - MAG VAR/MATCH R30 INTERMEDIATE COURSE.
24. UPDATED FAS DATA OFFSET FROM 0312 TO 192 - RECALCULATED
25. UPDATED FAS DATA LTP LATITUDE FROM 423357.7300N TO 423357.7285N; LONGITUDE FROM 0922443.0700W TO 0922443.0115W - UPDATED DATA
26. UPDATED FPAP LAT/LONG FROM 423300.7400N/0922303.6500W TO 423303.1150N/0922307.7355W - UPDATED DATA
27. CRC REMAINDER UPDATED FROM 070B27EF TO 9119A473- SYSTEM CALCULATION.
28. UPDATED VAL FROM 50 TO 35 - RECALCULATE WITH 200' HAT.

<u>AIRPORT</u> WATERLOO RGNL	<u>AIRPORT ID</u> KALO	<u>PROCEDURE NAME</u> RNAV (GPS) RWY 12	<u>ORIGINAL/AMENDMENT</u> 1	<u>CITY</u> WATERLOO	<u>STATE</u> IA
<u>COORDINATED WITH:</u>					
A4A <input checked="" type="checkbox"/> ALPA <input checked="" type="checkbox"/> AOPA <input checked="" type="checkbox"/> APA <input checked="" type="checkbox"/> HAI <input type="checkbox"/> NBAA <input checked="" type="checkbox"/> <u>OTHER:</u> ZAU, ALO ATCT, ALO APP CON, AMGR					
<u>FLIGHT CHECKED BY</u>  PENDING		<i>Digitally signed by</i> <b>ROBERT G HAMILTON</b> Jul 31, 2018	<u>OFFICE</u>	<u>DATE</u>	
<u>DEVELOPED BY</u> HEIDI SNIDER	<i>Digitally signed by</i> <b>HEIDI SNIDER</b> Jun 20, 2018		<u>OFFICE</u> AJV-5423	<u>DATE</u> 04/09/2018	
<u>APPROVED BY</u> JULIE MORGAN		<i>Digitally signed by</i> <b>ROBERT G HAMILTON</b> Jul 31, 2018	<u>OFFICE</u> AJV-5420	<u>DATE</u>	<u>TITLE</u> MANAGER



**FAS DATA BLOCK INFORMATION**

<b><u>DATA FIELD</u></b>	<b><u>DATA</u></b>
OPERATION TYPE	0
SBAS SERVICE PROVIDER IDENTIFIER	0
AIRPORT IDENTIFIER	KALO
RUNWAY	RW12
APPROACH PERFORMANCE DESIGNATOR	0
ROUTE INDICATOR	
REFERENCE PATH DATA SELECTOR	0
REFERENCE PATH IDENTIFIER (APPROACH ID)	W12A
LTP/FTP LATITUDE	423357.7285N
LTP/FTP LONGITUDE	0922443.0115W
LTP/FTP ELLIPSOIDAL HEIGHT	+02345
FPAP LATITUDE	423303.1150N
FPAP LONGITUDE	0922307.7355W
THRESHOLD CROSSING HEIGHT (TCH)	00055.0
TCH UNITS SELECTOR (METERS OR FEET USED)	F
GLIDEPATH ANGLE (GPA)	03.00
COURSE WIDTH AT THRESHOLD	106.75
LENGTH OFFSET	0192
HORIZONTAL ALERT LIMIT (HAL)	40.0
VERTICAL ALERT LIMIT (VAL)	35.0
CRC REMAINDER	9119A473

**ADDITIONAL PATH POINT RECORD INFORMATION**

ICAO CODE	K3
LTP ORTHOMETRIC HEIGHT	+00266
FPAP ORTHOMETRIC HEIGHT	+00266

