| Flight Procedure Tracking Form | Action: FLIGHT CHECK | Task Type: IAP | Date Open: 05/25/2012 | Task #: 2012041821401101008 | Request #: 20120418214011 |
|---|---|---|---|---|---|
| Procedure: RNAV (RNP) Z RWY 33 AMDT 0-A | | Airport ID: KCHS | Airport: CHARLESTON AFB/INTL | | Reimbursable #: |
| City: CHARLESTON | ST: SC | GPS #: | | Estimated Chart Date: 05/02/2013 | FICO #: |
| Fac ID: | Fac. Type: RNP | Specialist: HOWARD HAWKINS | | | |

## Procedure Review

P3

| | Rec'd | Rel'd | Full Name | Comments |
|---|---|---|---|---|
| Lead: | 08/02/2012 | 12/04/2012 | CASIMIR TABAKA | |
| QA: | 12/04/2012 | 12/04/2012 | CASIMIR TABAKA | |
| Liaison: | 12/04/2012 | | Spurlin | WAIVER - APPROVAL - REQUEST POSSIBLE TABLE TOP REVIEW |

**Procedure Comments:** **Remark Type:** INFORMATION

CHARLESTON, SC CHARLESTON AFB/INTL (KCHS) RNAV (RNP) Z RWY 33, ORIG-A ENROUTE-NO FC: 1.22.13 PUB: 3.7.13

ATTACHED FORMS: 8260-3; 8260-10; 8260-9; 8260-2(S): CZSAR, ORIG.

CONTACT: DON SMITH/MARLON ROBINSON-AJV-352 LEADS, 405.954.1036 / 405.954.3636.

| APP CRS | Rwy ldg | 9001 |
|---|---|---|
| 334° | THRE | 38 |
| | Apt Elev | 46 |

NEW

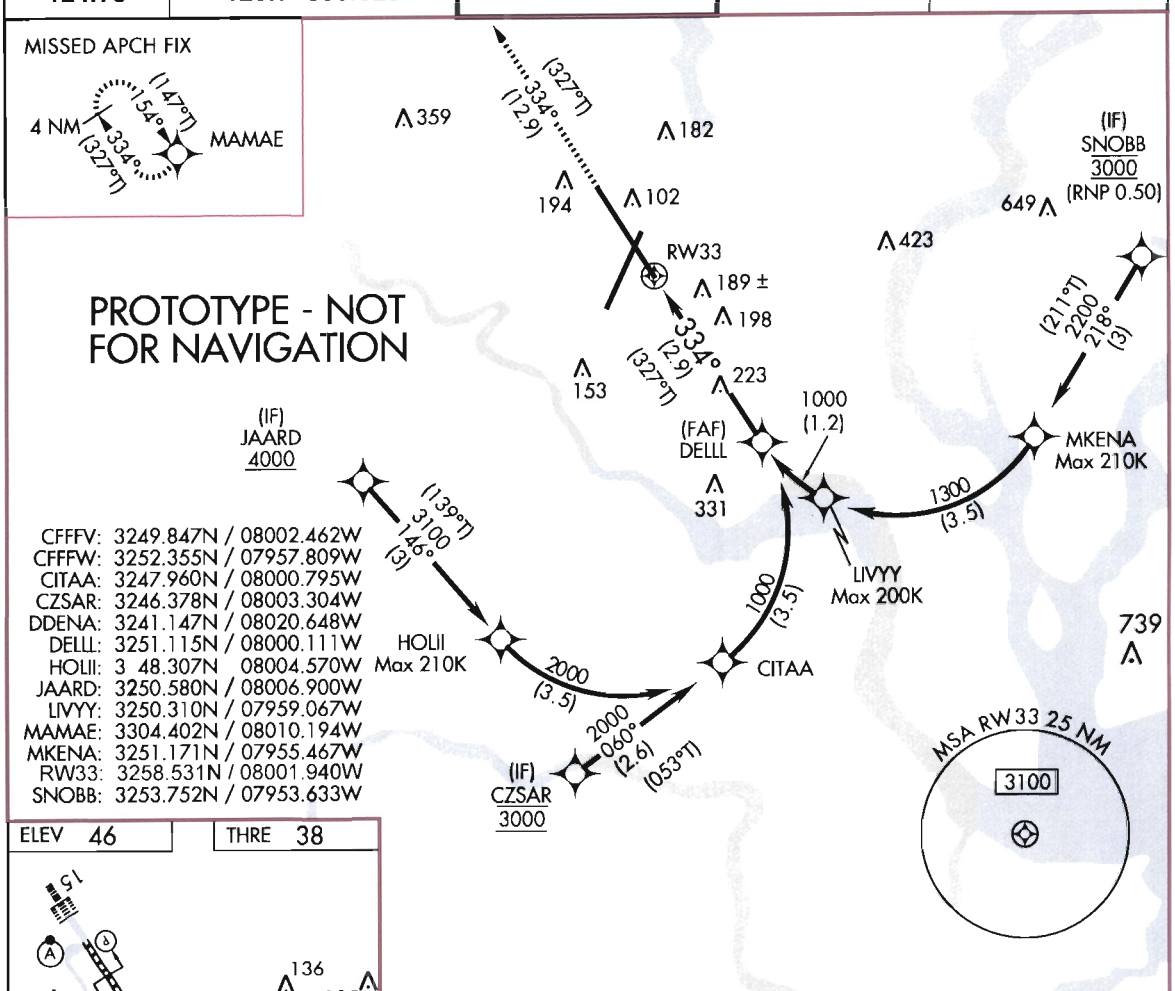
# RNAV (RNP) Z RWY 33
## CHARLESTON AFB/INTL (CHS)

For uncompensated Baro-VNAV systems, procedure NA below -5°C (23°F) or above 47°C (116°F). RF Required. GPS required. For inop MALSR, increase RNP 0.23 all Cats visibility to 1⅜ and RNP 0.30 all Cats visibility to 1⅝.

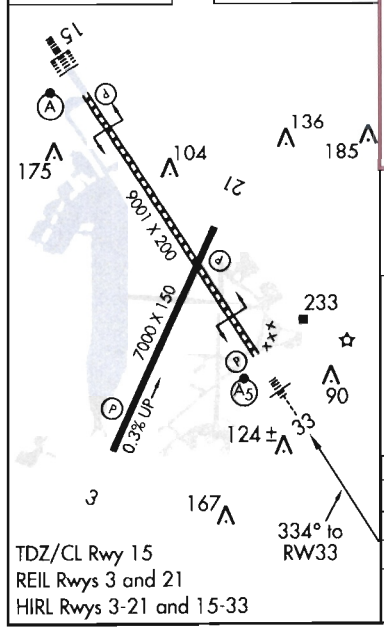
MALSR

MISSED APPROACH: Climb to 3000 on track 334° to MAMAE and hold.

| ATIS | CHARLESTON APP CON | CHARLESTON TOWER | GND CON | CLNC DEL |
|---|---|---|---|---|
| 124.75 | 120.7 306.925 | 126.0 239.0 | 121.9 348.6 | 127.325 291.65 |

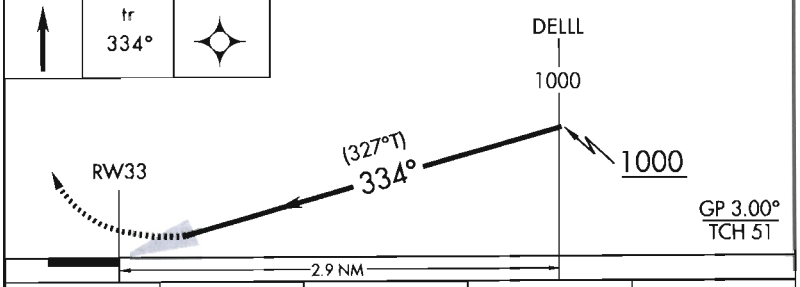



ELEV 46 THRE 38




| 3000 | tr 334° | MAMAE |
|---|---|---|

See planview for multiple IF locations.




| CATEGORY | A | B | C | D |
|---|---|---|---|---|
| RNP 0.23 DA | 435/45 | 397 (400-⅞) | | |
| RNP 0.30 DA | 509/60 | 471 (500- 1¼) | | |

**AUTHORIZATION REQUIRED**

CHARLESTON, SOUTH CAROLINA

AL-76 (FAA)

PRE-FIG

# RNAV (RNP) Z RWY 33

CHARLESTON AFB/INTL (CHS)

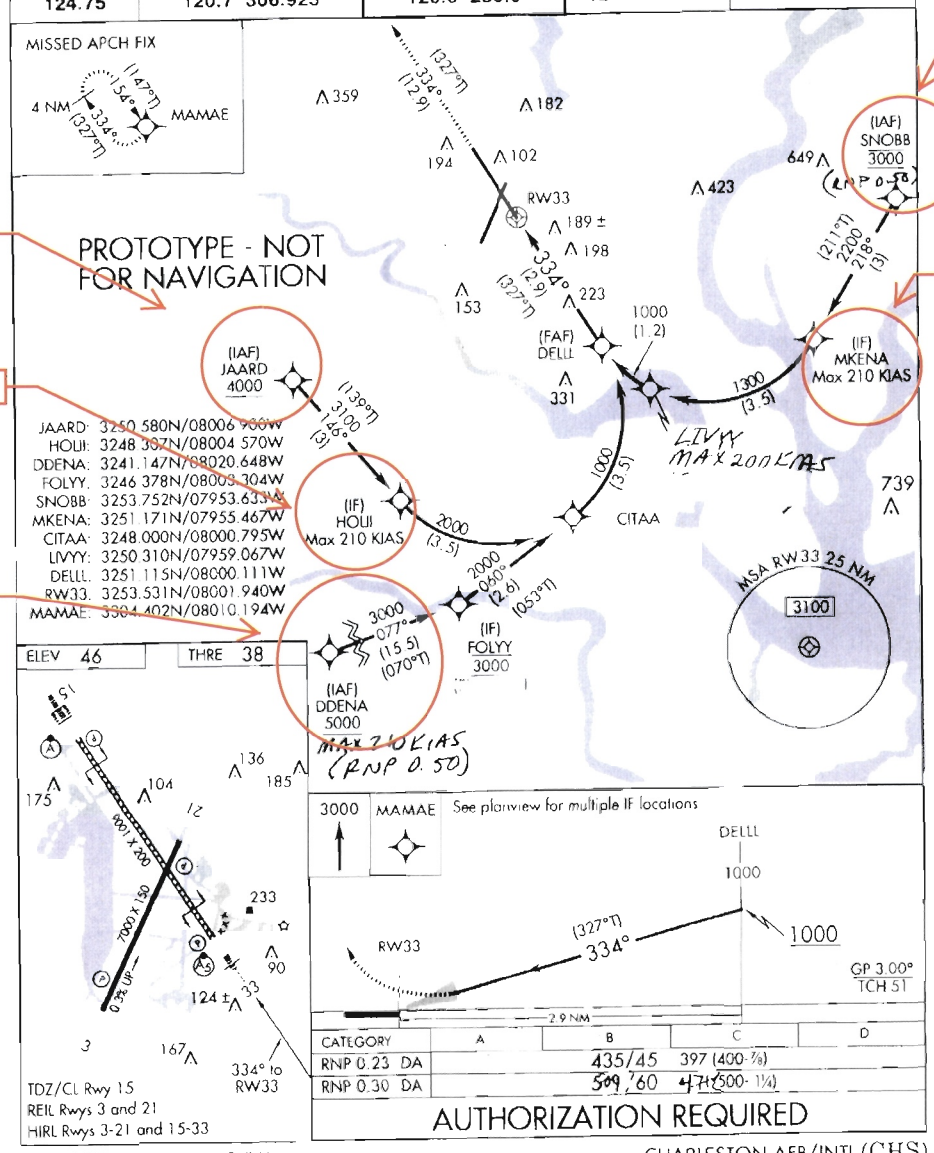
| APP CRS | Rwy ldg | 9001 |
|---|---|---|
| 334° | THRE | 38 |
| | Apt Elev | 46 |

For uncompensated Baro-VNAV systems, procedure NA below -5°C (23°F) or above 47°C (116°F). RF Required. GPS required. For inop MALSR, increase 0 23 all Cats visibility to 1 3/4 and RNP 0 30 all Cats visibility to 1⅜.

MALSR

MISSED APPROACH Climb to 3000 on track 334 to MAMAE and hold.

| ATIS | CHARLESTON APP CON | CHARLESTON TOWER | GND CON | CLNC DEL |
|---|---|---|---|---|
| 124.75 | 120.7 306.925 | 126.0 239.0 | 121.9 348.6 | 127.325 291.65 |




Change IAF to IF SNOBB

Change IAF to IF JAARD

Remove IF MKENA

Remove IF HOLLI

Fix name HOLLI or FOLYY needs to be changed due to similar sounding names

Remove IAF DDENA Segment

~~HOLLI REQUIRED~~

~~FOLYY - CITAA~~

~~EXCEEDS 31°~~

CHARLESTON, SOUTH CAROLINA

Orig PRE-FIG

32°54'N-80°02'W

CHARLESTON AFB/INTL (CHS)

RNAV (RNP) Z RWY 33

US DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

# RNAV (RNP) - STANDARD, INSTRUMENT APPROACH PROCEDURE, TITLE 14 CFR PART 97.33

Bearings, headings, courses, 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 in feet RVR.

## TERMINAL ROUTES

| FROM | TO | COURSE AND DISTANCE | ALTITUDE |
|---|---|---|---|
| JAARD (IF) | HOLII (TF) (FB) (RNP 1.00) | 146.12 / 3.00 | 3100 |
| SNOBB (IF) | MKENA (TF) (FB) (RNP 1.00) | 217.95 / 3.00 | 2200 |
| HOLII | CITAA (RF) (FB) (RNP 1.00) | (2.35 NM RADIUS CCW (CFFFV))/3.52 | 2000 |
| CZASR (IF) | CITAA (TF) (FB) (RNP 1.00) | 060.26 / 2.64 | 2000 |
| (SEE FORM 8260-10) | | | |

## MISSED APPROACH

RNP: DA

CLIMB TO 3000 ON TRACK 334.42 TO MAMAE AND HOLD.

**ADDITIONAL FLIGHT DATA:**

HOLD NW, RT, 154.34 INBOUND.
CHART FAS OBST: 198 TOWER 325251N/0800046W
CHART FAS OBST: 189 POLE 325315N/0800107W
DISTANCE TO THLD FROM 397 HATH: 1.09 NM.
CHART MINIMUM 4000 AT JAARD
ROUTE TYPE: A, H
ROUTE TYPE QUALIFIER 1: F
ROUITE TYPE QUALIFIER 2: S
#TCH 88.9 MSL (DO NOT CHART)
CHART MANDATORY 3000 AT CZSAR AND SNOBB

1. PT ____ SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT DELLL
3. FAC: 334.44 FAF: ____ DIST FAF TO MAP: ____ THLD: ____
4. MIN. ALT: DELLL 1000
5. DIST TO THLD FROM OM: 2.86 MM: ____ IM: ____ 150 HAT: ____ 100 HAT: ____ GS ANT: ____
6. MIN GS INCPT: 1000 GS ALT AT: DELLL 1000 OM: ____ MM: ____ IM: ____
7. GS ANGLE: 3.00 TCH: 50.9# 34:1 IS CLEAR
8. MSA FROM: RW33 3100

MAG VAR: 7W EPOCH YEAR: 2010

## MINIMUMS

TAKEOFF: SEE FAA FORM 8260-15A FOR THIS AIRPORT | ALTERNATE: N A | STANDARD

| CATEGORY =====> | A | | | B | | | C | | | D | | | E | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DH/MDA | VIS | HAT/HAA | DH/MDA | VIS | HAT/HAA | DH/MDA | VIS | HAT/HAA | DH/MDA | VIS | HAT/HAA | DH/MDA | VIS | HAT/HAA |
| AUTHORIZATION REQUIRED | | | | | | | | | | | | | | | |
| RNP 0.23 DA | 435 | 4500 | 397 | 435 | 4500 | 397 | 435 | 4500 | 397 | 435 | 4500 | 397 | | | |
| RNP 0.30 DA | 509 | 6000 | 471 | 509 | 6000 | 471 | 509 | 6000 | 471 | 509 | 6000 | 471 | | | |

NOTES:
CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, PROCEDURE NA BELOW -5C (23F) OR ABOVE 54C (130F).
CHART NOTE: RF REQUIRED.
CHART NOTE: GPS REQUIRED.

(SEE FORM 8260-10)

QUALITY CHECKED 1

| CITY AND STATE | ELEVATION: 46 THRE: 38 | FACILITY IDENTIFIER: | PROCEDURE NO./AMDT NO./EFFECTIVE DATE: | SUP: |
|---|---|---|---|---|
| CHARLESTON, SC | AIRPORT NAME: CHARLESTON AFB/INTL | RNAV | RNAV (RNP) Z RWY 33, ORIG-A | AMDT: ORIG |
| | | | | DATED 07/26/2012 |

| ALL AFFECTED PROCEDURES REVIEWED? | COORDINATES OF FACILITIES | REQUIRED EFFECTIVE DATE |
|---|---|---|
| [ ] YES [X] NO | | ROUTINE |

COORDINATED WITH:

| ATA | AAT | ALPA | APA | AOPA | NBAA | OTHER (specify) |
|---|---|---|---|---|---|---|
| [X] | [ ] | [X] | [X] | [X] | [X] | [X] ZJX, CHS APP CON, APRT MGR |

| FLIGHT CHECKED BY | | |
|---|---|---|
| NAME: | FIFO FIOG | DATE: |
| **DEVELOPED BY** | | |
| NAME: HOWARD L HAWKINS JR | FIFO AJV-352 | DATE: 09/13/2012 |
| **APPROVED BY** | | |
| NAME: SUSAN L CRUMB MANAGER | FIFO AJV-352 | DATE: |

CHANGES:

1. FOLYY CHANGED TO CZSAR.
2. TERMINAL ROUTE DDENA TO CZSAR REMOVED.
3. JAARD AND SNOBB CHANGED TO IF.
4. HOLII AND MKENA CHANGED TO STEPDOWN FIX.

REASONS:

1. THRU 3. FPT REQUEST.
4. ATC REQUEST.

QUALITY

Bearings, headings, courses, 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 aiport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES, (CONT.):

| FROM | TO | COURSE AND DISTANCE | ALTITUDE |
|---|---|---|---|
| MKENA | LIVYY (RF) (FB) (RNP 1.00) | (2.30 NM RADIUS CW CFFFW) / 3.47 | 1300 |
| CITAA | DELLL (RF) (FB) (RNP 1.00) | (2.35 NM RADIUS CCW CFFFV) / 3.52 | 1000 |
| LIVYY | DELLL (RF) (FB) (RNP 0.50) | (2.30 NM RADIUS CW CFFFW) / 1.21 | 1000 |
| DELLL (FAF) | RW33 (MAP) (TF) (FO) | 334.44 / 2.86 | |
| RW33 (MAP) | MAMAE (TF) (FO) (RNP 1.0) | 334.42 / 12.88 | 3000 |

NOTES, (CONT.):
CHART PLANVIEW NOTE AT MKENA : MAX 210 KIAS.
CHART PLANVIEW NOTE AT LIVYY : MAX 200 KIAS.
CHART PLANVIEW NOTE AT HOLII : MAX 210 KIAS.
CHART NOTE: FOR INOPERATIVE MALSR, INCREASE RNP 0.23 ALL CATS VISIBILITY TO 1 3/8 AND RNP 0.30 ALL CATS VISIBILITY TO 1 5/8.
CHART PROFILE NOTE: SEE PLANVIEW FOR MULTIPLE IF LOCATIONS.
CHART PLANVIEW NOTE AT SNOBB: (RNP 0.50).

QUALITY 1 CHECKED

| CITY AND STATE | ELEVATION: 46 THRE: 38 | FACILITY IDENTIFIER: | PROCEDURE NO./ AMDT NO./EFFECTIVE DATE: | SUP: |
|---|---|---|---|---|
| CHARLESTON, SC | AIRPORT NAME: CHARLESTON AFB/INTL | RNAV | RNAV (RNP) Z RWY 33, ORIG-A | AMDT: ORIG |
| | | | | DATED: 07/26/2012 |

| ALL AFFECTED PROCEDURES REVIEWED? | COORDINATES OF FACILITIES | REQUIRED EFFECTIVE DATE |
|---|---|---|
| ☐ YES ☐ NO | | |

COORDINATED WITH:

ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐ _____

| FLIGHT CHECKED BY | | |
|---|---|---|
| NAME: | FIFO | DATE: |
| **DEVELOPED BY** | | |
| NAME: | FIFO | DATE: |
| **APPROVED BY** | | |
| NAME: | FIFO | DATE: |

CHANGES:

REASONS:

**U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION**

# RNAV (RNP) STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICES - **FAR PART 97.33**

Bearings, headings, courses, 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 in feet RVR.

ARINC PACKET - 424-18 - RNAV (RNP)

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        --------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   CFFFV K70    W     N32495084W080022769                        W0076     NAR           CNF(CFFFV)
        SUSAEAENRT   CFFFW K70    W     N32522129W079574855                        W0076     NAR           CNF(CFFFW)
        SUSAEAENRT   CITAA K70    W     N32475757W080004770                        W0076     NAR           CITAA
        SUSAEAENRT   CZSAR K70    W     N32462269W080031825                        W0076     NAR           CZSAR
        SUSAEAENRT   DELLL K70    W     N32510689W080000665                        W0076     NAR           DELLL
        SUSAEAENRT   HOLII K70    W     N32481839W080043421                        W0075     NAR           HOLII
        SUSAEAENRT   JAARD K70    W     N32503478W080065398                        W0075     NAR           JAARD
        SUSAEAENRT   LIVYY K70    W     N32501857W079590403                        W0076     NAR           LIVYY
        SUSAEAENRT   MAMAE K70    C     N33042409W080101166                        W0075     NAR           MAMAE
        SUSAEAENRT   MKENA K70    W     N32511024W079552800                        W0077     NAR           MKENA
        SUSAEAENRT   SNOBB K70    W     N32534510W079533797                        W0077     NAR           SNOBB

                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        --------------------------------------------------------------------------------------------------------------------------------
        SUSAP KCHSK7ACHS     0     090YHN32535510W080022590W007000046         1800018000C    MNAR    CHARLESTON AFB/INTL

                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        --------------------------------------------------------------------------------------------------------------------------------
        SUSAP KCHSK7FH33-Z ACZSAR 010CZSARK7EA0E  B    IF                                  03000     18000                A FS
        SUSAP KCHSK7FH33-Z ACZSAR 020CITAAK7EA0E    010TF                               + 02000                          A FS
        SUSAP KCHSK7FH33-Z ACZSAR 030DELLLK7EA0EE  L010RF       0023500603    33440035  + 01000                CFFFV K7EAA FS
        SUSAP KCHSK7FH33-Z AJAARD 010JAARDK7EA0E  B    IF                               + 04000     18000                A FS
        SUSAP KCHSK7FH33-Z AJAARD 020HOLIIK7EA0E    010TF                               + 03100         210              A-FS
        SUSAP KCHSK7FH33-Z AJAARD 030CITAAK7EA0E   L010RF       0023501461    06030035  + 02000                CFFFV K7EAA FS
        SUSAP KCHSK7FH33-Z AJAARD 040DELLLK7EA0EE  L010RF       0023500603    33440035  + 01000                CFFFV K7EAA FS
        SUSAP KCHSK7FH33-Z ASNOBB 010SNOBBK7EA0E  B    IF                                  03000     18000                A FS
        SUSAP KCHSK7FH33-Z ASNOBB 020MKENAK7EA0E    010TF                               + 02200         210              A-FS
        SUSAP KCHSK7FH33-Z ASNOBB 030LIVYYK7EA0E   R010RF       0023002180    30440035  + 01300         200    CFFFW K7EAA-FS
        SUSAP KCHSK7FH33-Z ASNOBB 040DELLLK7EA0EE  R051RF       0023003044    33440012  + 01000                CFFFW K7EAA FS
        SUSAP KCHSK7FH33-Z H      020DELLLK7EA1E  F    IF                               + 01000     18000      RW33  K7PGA FS
        SUSAP KCHSK7FH33-Z H      020DELLLK7EA2W                                             A031A232                      FS
        SUSAP KCHSK7FH33-Z H      030RW33 K7PG0GY M 031TF                                 00089            -300          A FS
        SUSAP KCHSK7FH33-Z H      040MAMAEK7EA0EYM  010TF                               + 03000                          A FS
        SUSAP KCHSK7FH33-Z H      050MAMAEK7EA0EE  R   HM                       15430040  + 03000                          A FS

                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        --------------------------------------------------------------------------------------------------------------------------------
        SUSAP KCHSK7GRW33    0090013344 N32533184W080015638+0100    -0021300038000051200IICCI1
```

QUALITY 4 CHECKED

| CITY AND STATE | ELEVATION: 46 THRE: 38 | FACILITY IDENTIFIER: | PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE: | SUP: |
|---|---|---|---|---|
| CHARLESTON, SC | AIRPORT NAME: CHARLESTON AFB/INTL | RNAV | RNAV (RNP) Z RWY 33, ORIG-A | AMDT: ORIG |
| | | | | DATED: 07/26/2012 |

| ALL AFFECTED PROCEDURES REVIEWED? | COORDINATES OF FACILITIES | REQUIRED EFFECTIVE DATE |
|---|---|---|
| ☐ YES ☐ NO | | |

COORDINATED WITH:

ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐ _____

| FLIGHT CHECKED BY | | |
|---|---|---|
| NAME: | FIFO | DATE: |
| **DEVELOPED BY** | | |
| NAME: | NFPG | DATE: |
| **APPROVED BY** | | |
| NAME: | NFPG | DATE: |

CHANGES:

REASONS:

Bearings, headings, courses, 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 in feet RVR.

```
                1         2         3         4         5         6         7         8         9         0         1         2         3
MSA     123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KCHSK7SRW33 K7PG                0   18018003125                                                                        M
```

QUALITY 4 CHECKED

| CITY AND STATE | ELEVATION: 46 THRE: 38 | FACILITY IDENTIFIER: | PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE: | SUP: |
|---|---|---|---|---|
| CHARLESTON, SC | AIRPORT NAME: CHARLESTON AFB/INTL | RNAV | RNAV (RNP) Z RWY 33, ORIG-A | AMDT: ORIG |
| | | | | DATED: 07/26/2012 |

| ALL AFFECTED PROCEDURES REVIEWED? | COORDINATES OF FACILITIES | REQUIRED EFFECTIVE DATE |
|---|---|---|
| ☐ YES ☐ NO | | |

COORDINATED WITH:

ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐ _____

| FLIGHT CHECKED BY | | |
|---|---|---|
| NAME: | FIFO | DATE: |
| **DEVELOPED BY** | | |
| NAME: | NFPG | DATE: |
| **APPROVED BY** | | |
| NAME: | NFPG | DATE: |

CHANGES:

REASONS:

**U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION**

# RNAV (RNP) STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICES - **FAR PART 97.33**

Bearings, headings, courses, 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 in feet RVR.

ARINC SUMMARY - 424-18 - RNAV (RNP)

| ROUTES | TRANSITION | FIX | SEQ | USE | PATH | TURN | FO/FB | RNP | MAG(TRUE) | DISTANCE | ALTITUDE | SPEED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CZSAR | CZSAR | 010 | | IF | | FB | | | | AT 03000 | |
| | CZSAR | CITAA | 020 | | TF | | FB | 1.0 | | | AA 02000 | |
| | CZSAR | DELLL | 030 | | RF | L | FB | 1.0 | | 003.5 | AA 01000 | |
| | JAARD | JAARD | 010 | | IF | | FB | | | | AA 04000 | |
| | JAARD | HOLII | 020 | | TF | | FB | 1.0 | | | AA 03100 | AB 210 |
| | JAARD | CITAA | 030 | | RF | L | FB | 1.0 | | 003.5 | AA 02000 | |
| | JAARD | DELLL | 040 | | RF | L | FB | 1.0 | | 003.5 | AA 01000 | |
| | SNOBB | SNOBB | 010 | | IF | | FB | | | | AT 03000 | |
| | SNOBB | MKENA | 020 | | TF | | FB | 1.0 | | | AA 02200 | AB 210 |
| | SNOBB | LIVYY | 030 | | RF | R | FB | 1.0 | | 003.5 | AA 01300 | AB 200 |
| | SNOBB | DELLL | 040 | | RF | R | FB | 0.5 | | 001.2 | AA 01000 | |
| | | DELLL | 020 | FAF | IF | | FB | | | | AA 01000 | |
| | | RW33 | 030 | MAP | TF | | FO | 0.3 | | | AT 00089 | |

| MISSED APPROACH | FIX | SEQ | USE | PATH | TURN | FO/FB | RNP | MAG(TRUE) | DISTANCE | ALTITUDE | SPEED |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MAMAE | 040 | | TF | | FO | 1.0 | | | AA 03000 | |
| | MAMAE | 050 | | HM | R | FO | | 154.3(147.3T) | 004.0 | AA 03000 | |

| POINT DATA | WAYPOINT | LAT IN SECS | LONG IN SECS | LAT IN MINS | LONG IN MINS |
|---|---|---|---|---|---|
| | CFFFV | N324950.84 | W0800227.69 | N3249.847 | W08002.462 |
| | CFFFW | N325221.29 | W0795748.55 | N3252.355 | W07957.809 |
| | CITAA | N324757.57 | W0800047.70 | N3247.960 | W08000.795 |
| | CZSAR | N324622.69 | W0800318.25 | N3246.378 | W08003.304 |
| | DELLL | N325106.89 | W0800006.65 | N3251.115 | W08000.111 |
| | HOLII | N324818.39 | W0800434.21 | N3248.307 | W08004.570 |
| | JAARD | N325034.78 | W0800653.98 | N3250.580 | W08006.900 |
| | LIVYY | N325018.57 | W0795904.03 | N3250.310 | W07959.067 |
| | MAMAE | N330424.09 | W0801011.66 | N3304.402 | W08010.194 |
| | MKENA | N325110.24 | W0795528.00 | N3251.171 | W07955.467 |
| | SNOBB | N325345.10 | W0795337.97 | N3253.752 | W07953.633 |
| | RW33 | N325331.84 | W0800156.38 | N3253.531 | W08001.940 |

| RUNWAY DATA | RWY | THRESHOLD ELEVATION | TCH |
|---|---|---|---|
| | RW33 | 00038 | 51 |

QUALITY CHECKED

| CITY AND STATE | ELEVATION: 46 THRE: 38 | FACILITY IDENTIFIER: | PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE: | SUP: |
|---|---|---|---|---|
| CHARLESTON, SC | AIRPORT NAME: CHARLESTON AFB/INTL | RNAV | RNAV (RNP) Z RWY 33, ORIG-A | AMDT: ORIG |
| | | | | DATED: 07/26/2012 |

| ALL AFFECTED PROCEDURES REVIEWED? | COORDINATES OF FACILITIES | REQUIRED EFFECTIVE DATE |
|---|---|---|
| ☐ YES ☐ NO | | |

COORDINATED WITH:

ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐ _____

| FLIGHT CHECKED BY | | |
|---|---|---|
| NAME: | FIFO | DATE: |
| **DEVELOPED BY** | | |
| NAME: | NFPG | DATE: |
| **APPROVED BY** | | |
| NAME: | NFPG | DATE: |

CHANGES:

REASONS:

# STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

| 1. APP SEGMENT | FROM | TO | OBSTRUCTION | COORDINATES | ELEV. MSL | ROC | ALT. ADJUSTMENTS | MIN. ALT. |
|---|---|---|---|---|---|---|---|---|
| INTERMEDIATE: (RNP 1.00) | JAARD | HOLII | 1. AAO | 325118.00N/0800739.00W | 230 (4E) | 1000 | AC98 AT1772 | 3100 |
| | | | 2. TERRAIN | 325154.00N/0800506.00W | 33 (0) | | AS1500 | 1500 |
| INTERMEDIATE: (RNP 1.00) | SNOBB | MKENA | 5. TOWER (45-001398) | 325414.00N/0795508.00W | 645 (2C) | 1000 | AC20 AT535 | 2200 |
| | | | 6. TERRAIN | 325409.00N/0795509.00W | 60 (100) | | AS1500 | 1600 |
| INTERMEDIATE: (RNP 1.00) | HOLII | CITAA | 7. TOWER (45-000624) | 324807.00N/0800125.00W | 419 (5D) | 500 | AC50 AT1031 | 2000 |
| STEPDOWN | | | 8. TERRAIN | 324812.00N/0800100.00W | 20 (0) | | AS1500 | 1500 |
| INTERMEDIATE: (RNP 1.00) | CZSAR | CITAA | 7. TOWER (45-000624) | 324807.00N/0800125.00W | 419 (5D) | 500 | AC50 AT1031 | 2000 |
| | | | 8. TERRAIN | 324812.00N/0800100.00W | 20 (0) | | AS1000 | 1000 |
| INTERMEDIATE: (RNP 1.00) | MKENA | LIVYY | 9. TOWER (45-001317) | 324916.00N/0795726.00W | 427 (2D) | 500 | AC50 AT323 | 1300 |
| STEPDOWN | | | 10. TERRAIN | 324906.00N/0795921.00W | 30 (0) | | AS1000 | 1000 |
| INTERMEDIATE: STEPDOWN | CITAA | DELLL | 9. TOWER (45-001317) | 324916.00N/0795726.00W | 427 (2D) | 500 | AC50 | 1000 |
| (RNP 1.00) | | | 11. TERRAIN | 325112.00N/0795930.00W | 40 (0) | | AS1000 | 1000 |
| 2. PROCEDURE TURN | | | | | | | | |
| 3. MISSED APPROACH MAP: | | | | | | | | |
| ELEV: | | | | | | | | |

| 4. CIRCLING AREA | DISTANCE | HT. ABV. ARPT. REQUIRED | HT. ABV. ARPT. ACTUAL |
|---|---|---|---|
| CATEGORY A | 1.3 NM | 350 | |
| CATEGORY B | 1.5 NM | 450 | |
| CATEGORY C | 1.7 NM | 450 | |
| CATEGORY D | 2.3 NM | 550 | |
| CATEGORY E | 4.5 NM | 550 | |

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID: RW33

| SECTOR | OBSTRUCTION | BRG/DIST | ELEVATION (MSL) | M S A | SECTOR | OBSTRUCTION | BRG/DIST | ELEVATION (MSL) | M S A |
|---|---|---|---|---|---|---|---|---|---|
| 360-360 | TWR (45-000706) | 090/ 16.9 | 2016 (5D) | 3100 | | | | | |

| CITY AND STATE | ELEVATION: 46 / AIRPORT NAME: | FACILITY | PROCEDURE AND AMENDMENT NO: | REGION |
|---|---|---|---|---|
| CHARLESTON, SC | CHARLESTON AFB/INTL | RNAV | RNAV (RNP) Z RWY 33, ORIG-A | ASO |

## PART B - SUPPLEMENTAL DATA

| 1. COMMUNICATIONS WITH: | 2. WEATHER SERVICE | | 3. ALTIMETER SETTING |
|---|---|---|---|
| ZJX ARTCC<br>CHS APP CON<br>CHS TOWER | N W S | OTHER:<br>ASOS | SOURCE: KCHS<br>DISTANCE: |
| | F A A | | HOURS REMOTE OPERATION: |
| SATISFACTORY ON: | A / C | | |
| X V H F X U H F H F | LOCATION: KCHS | | ADJUSTMENT: 0 |

| | | |
|---|---|---|
| 4. MONITOR STATUS | PRIMARY NAVAID: | |
| | MONITOR POINT: | |
| | HRS OPTN: | CAT 1 |
| | | CAT 3 |
| 5. APPROACH & RUNWAY LIGHTING | X | ALSF-2 15 |
| | | (S) SALS |
| | X | MALSR 33 |
| | X | HIRL 21, 33, 15, 03 |
| | | MIRL |
| | X | REIL 21, 03 |
| | X | TDZ 15 |
| | X | C/L 33, 15 |
| | X | OTHER (SPECIFY)<br>PAPI-4L 21, 33, 15, 03 |
| 6. RUNWAY MARKINGS | BASIC | |
| | ALL WEATHER | PIR-G 21, 33, 15, 03 |
| | INSTRUMENT | |
| 7. RUNWAY VISUAL RANGE | APPROACH | 33, 15 |
| | MIDFIELD | 33, 15 |
| | ROLL OUT | 33, 15 |
| 8. GLIDE PATH | GP ANGLE: 3.00 | ELEV RWY THRESHOLD: 38.0 |
| | DISTANCE FROM RWY: | ELEV GP ANTENNA: |
| | | THRESHOLD CROSSING HEIGHT: 50.9 |
| 9. FINAL APPROACH COURSE AIMING | X | RUNWAY THRESHOLD FT. FROM THRESHOLD |
| | X | ON CENTERLINE FT. FROM CENTERLINE |

10. WAIVERS: 1

ORDER 8260.52, PARAGRAPH 2.4; TABLE 2-1 FAAO 8260.52, PARAGRAPH 2.4, TABLE 2-1. THE DESCENT GRADIENT IN THE INTERMEDIATE SEGMENT BETWEEN CZSAR AND DELLL EXCEEDS THE FINAL SEGMENT DESCENT GRADIENT. 325 FT PER NM. PARAGRAPH 1.1.1. INTERMEDIATE SEGMENT HAS MORE THAN ONE SPEED RESTRICTON, MKENA TO LIVYY 210 KONTS AND LIVYY TO DELLL 200 KNOTS.

| | |
|---|---|
| PART D - PREPARED BY: HOWARD L HAWKINS JR | DATE: 09/13/2012 |
| TITLE: AERONAUTICAL INFORMATION SPECIALIST | OFFICE: AJV-352 |

## PART C - REMARKS:

MAX SPEED LIVYY TO DELLL - 200 KIAS.

MAX SPEED MKENA TO LIVYY - 210 KIAS.

MAX SPEED HOLII TO CITAA - 210 KIAS.

MAX SPEED CITAA TO DELLL - 210 KIAS.

MAX SPEED CZSAR TO CITAA - 210 KIAS.

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

BLOCK 3: ALTIMETER SETTING
SOURCE: KCHS
DISTANCE:
2. ASOS IS ON SERVICE-A.
3. BACKUP ALTIMETER SOURCE NOT REQUIRED, REDUNDANT WEATHER SERVICE AVAILABLE.
VGSI DATA: 3.00/50

WAIVER: FAAO 8260.52 PARA 2.4 TABLE 2-1 FAAO 8260.52, PARAGRAPH 2.4, TABLE 2-1. THE DESCENT GRADIENT IN THE INTERMEDIATE SEGMENT BETWEEN CZSAR AND DELLL EXCEEDS THE FINAL SEGMENT DESCENT GRADIENT. 325 FT PER NM.

SEE ATTACHED AIRSPACE LETTER.

SNOBB TRANSITION:
INTERMEDIATE SEGMENT LIVYY TO DELLL DEVELOPED USING RNP VALUE 0.50 TO ALLEVIATE DTA PROBLEMS.

MANDATORY ALTITUDES REQUIRED BY ATC.

AUTHORIZATION REQUIRED (AR) PER AJV-3 MEMO DATED 05/17/2011.

AVERAGE LOW TEMPERATURE BASED ON 5-YEAR HISTORY (2006-2010): 06 27F 07 26F 08 19F 09 19F 10 18F

ACT: -5C

ISA DEVIATION: -20

8260.54A TABLE 2-3
LIVYY TO DELLL: 30
CITAA TO DELLL: 30
CZSAR TO CITAA: 30

HISTORICAL WIND DATA USED USED FOR TAILWIND VALUE:

HOLII TO CITAA: 47 (47.3)
MKENA TO LIVYY: 47 (46.5)

RF TURN DATA:

| SEGMENT | ALT | KIAS | KTAS | HAA | VKTW | TR | BA |
|---|---|---|---|---|---|---|---|
| CITAA-DELLL | 2000 | 210.0 | 218.40 | 1954 | 30.00 | 2.35 | 20.96 |
| HOLII-CITAA | 3100 | 210.0 | 223.02 | 3100 | 47.00 | 2.35 | 24.35 |
| LIVYY-DELLL | 1303 | 200.0 | 205.21 | 125757 | 30.00 | 2.30 | 19.34 |
| MKENA-LIVYY | 2200 | 210.0 | 219.24 | 2154 | 47.00 | 2.30 | 24.21 |

CONT.

QUALITY A CHECKED

# STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

| 1. APP SEGMENT | FROM | TO | OBSTRUCTION | COORDINATES | ELEV. MSL | ROC | ALT. ADJUSTMENTS | MIN. ALT. |
|---|---|---|---|---|---|---|---|---|
| INTERMEDIATE:STEPDOWN | LIVYY | DELLL | 12. TOWER (45-000005) | 324921.00N/0795848.00W | 423 (4D) | 500 | AC50 | 1000 |
| (RNP 0.50) | | | 11. TERRAIN | 325112.00N/0795930.00W | 40 (0) | | AS1000 | 1000 |
| FINAL: (RNP 0.23) | DELLL | RW33 | 13. POLE (KCHS0110) | 325314.74N/0800107.02W | 189 (1A) | 20.70:1 | AC3 MA16 | 435/397 |
| FINAL: (RNP 0.30) | DELLL | RW33 | 14. TOWER (45-000722) | 325251.00N/0800046.00W | 198 (1B) | 20.69:1 | AC10 MA44 | 509/471 |
| MISSED APPROACH | DA | RW33 (40:1) | 15. TOWER (45-002441) | 325335.70N/0800127.91W | 215 (5D) | ASC | AC50 | |
| (RNP 0.23-1.00) | | | | | | | | |
| MISSED APPROACH | DA | RW33 (40:1) | 14. TOWER (45-000722) | 325251.00N/0800046.00W | 198 (1B) | ASC | AC10 | |
| (RNP 0.30-1.00) | | | | | | | | |
| MISSED APPROACH | RW33 | MAMAE (40:1) | | | | ASC | | |
| (RNP 0.23-1.00) | | | | | | | | |
| MISSED APPROACH | RW33 | MAMAE (40:1) | | | | ASC | | |
| (RNP 0.30-1.00) | | | | | | | | |
| 3. MISSED APPROACH — MAP: | DA / DA | MAMAE | | | | ASC | | 3000 |
| | | | 16. TOWER (45-000610) | 330214.00N/0800951.00W | 468 (2C) | 1000 | | 1500 |
| ELEV: | 161/202 | | 17. TERRAIN | 330451.00N/0800827.00W | 92 (100) | | AS1500 | 1600 |

| 4. CIRCLING AREA | DISTANCE | HT. ABV. ARPT. REQUIRED | HT. ABV. ARPT. ACTUAL |
|---|---|---|---|
| CATEGORY A | 1.3 NM | 350 | |
| CATEGORY B | 1.5 NM | 450 | |
| CATEGORY C | 1.7 NM | 450 | |
| CATEGORY D | 2.3 NM | 550 | |
| CATEGORY E | 4.5 NM | 550 | |

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID:

| SECTOR | OBSTRUCTION | BRG/DIST | ELEVATION (MSL) | M S A | SECTOR | OBSTRUCTION | BRG/DIST | ELEVATION (MSL) | M S A |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |

QUALITY CHECKED

| CITY AND STATE | ELEVATION: 46 / AIRPORT NAME: | FACILITY | PROCEDURE AND AMENDMENT NO: | REGION |
|---|---|---|---|---|
| CHARLESTON, SC | CHARLESTON AFB/INTL | RNAV | RNAV (RNP) Z RWY 33, ORIG-A | ASO |

## PART B - SUPPLEMENTAL DATA

| 1. COMMUNICATIONS WITH: | 2. WEATHER SERVICE | | | 3. ALTIMETER SETTING |
|---|---|---|---|---|
| SATISFACTORY ON: | | N W S | OTHER: | SOURCE: |
| | | F A A | | DISTANCE: |
| | | A / C | | HOURS REMOTE OPERATION: |
| V H F / U H F / H F | LOCATION: | | | ADJUSTMENT: |

| | | |
|---|---|---|
| 4. MONITOR STATUS | PRIMARY NAVAID: | |
| | MONITOR POINT: | |
| | HRS OPTN: CAT 1 | |
| | HRS OPTN: CAT 3 | |
| 5. APPROACH & RUNWAY LIGHTING | | ALS |
| | | (S) SALS |
| | | MALS |
| | | HIRL |
| | | MIRL |
| | | REIL |
| | | TDZ |
| | | C/LINE |
| | | OTHER (SPECIFY) |
| 6. RUNWAY MARKINGS | BASIC | |
| | ALL WEATHER | |
| | INSTRUMENT | |
| 7. RUNWAY VISUAL RANGE | APPROACH | |
| | MIDFIELD | |
| | ROLL OUT | |
| 8. GLIDE PATH | GP ANGLE: | ELEV RWY THRESHOLD: |
| | DISTANCE FROM RWY: | ELEV GP ANTENNA: |
| | | THRESHOLD CROSSING HEIGHT: |
| 9. FINAL APPROACH COURSE AIMING | RUNWAY THRESHOLD | FT. FROM THRESHOLD |
| | ON CENTERLINE | FT. FROM CENTERLINE |

10. WAIVERS:

| | |
|---|---|
| PART D - PREPARED BY: | DATE: |
| TITLE: | OFFICE: |

## PART C - REMARKS:

CONTINUED.

TF TURN DATA:

| SEGMENT | ALT | KIAS | KTAS | HAA | VKTW | TR | BA |
|---|---|---|---|---|---|---|---|
| CZSAR | 3000 | 210.0 | 222.60 | 2954 | 47.00 | 3.26 | 18 |

APPLIED MEMO DATED OCT 03, 2011: REVISED PERFORMACE BASED NAVIGATION (PBN) FLY-BY (FB)/RADIUS-TO-FIX (RF) TURN MAXIMUM BANK ANGLE LIMITS; OMNI-DIRECTIONAL TAILWIND REQUIREMENTS; AND MINIMUM INITIAL DEPARTURE LEG SEGMENT LENGTH DESIGN CRITERIA.

QUALITY CHECKED

# RADIO FIX AND HOLDING DATA RECORD

**NAME:** CZSAR **STATE:** SC **COUNTRY:** US

**LATITUDE/LONGITUDE:** 324622.69N/0800318.25W **TYPE:** WP

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

**FIX USE:**

| USE TYPE | USE TITLE | FAC | PAT | AIRPORT IDENT | CITY | STATE |
|---|---|---|---|---|---|---|
| IAP | RNAV (RNP) Z RWY 33 | | | KCHS | CHARLESTON | SC (US) |
| STAR | BAGGY (RNAV) | | | KCHS | CHARLESTON | SC (US) |
| STAR | BAGGY (RNAV) | | | KJZI | CHARLESTON | SC (US) |

**REQUIRED CHARTING:** STAR, IAP

**COMPULSORY REPORTING POINT:** NO

**RECORD REVISION NUMBER:** ORIG **DATE OF REVISION:** 03/07/2013

**DEVELOPED BY:** **DATE:** 09/14/2012 **OFFICE:** AJV-352 **NAME:** HOWARD HAWKINS

**APPROVED BY:** **DATE:** **OFFICE:** AJV-352 **NAME:** SUE CRUMB

**SIGNATURE:**

**DISTRIBUTION:**
**NFDC**
**FPO:** EST
**ARTCC:** ZJX
**ATC FACILITY:** CHS APP CON
**OTHER:**

QUALITY CHECKED 1

CANCELLED

# RADIO FIX AND HOLDING DATA RECORD

**NAME:** FOLYY **STATE:** SC **COUNTRY:** US

**LATITUDE/LONGITUDE:** 324622.69N/0800318.25W **TYPE:** WP

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

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

**FIX USE:**

| USE TYPE | USE TITLE | FAC | PAT | AIRPORT IDENT | CITY | STATE |
|---|---|---|---|---|---|---|
| IAP | RNAV (RNP) Z RWY 33 | | | KCHS | CHARLESTON | SC (US) |
| STAR | BAGGY (RNAV) | | | KCHS | CHARLESTON | SC (US) |
| STAR | BAGGY (RNAV) | | | KJZI | CHARLESTON | SC (US) |

**REQUIRED CHARTING:** STAR, IAP

**COMPULSORY REPORTING POINT:** NO

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

**DEVELOPED BY:** **DATE:** **OFFICE:** AJV-352 **NAME:** HOWARD L HAWKINS JR

**APPROVED BY:** **DATE:** **OFFICE:** AJV-352 **NAME:** SUSAN L CRUMB

**SIGNATURE:**

**DISTRIBUTION:**
**NFDC**
**FPO:** EST
**ARTCC:** ZJX
**ATC FACILITY:** CHS APP CON
**OTHER:**

QUALITY 1 CHECKED

US Department of Transportation
Federal Aviation Administration

# FLIGHT PROCEDURES STANDARDS WAIVER

DATE:

1. Flight Procedure Identification:

Charleston, SC (CHS)
Charleston AFB/Intl
RNAV (RNP) Z RWY 33

2. Waiver Required and Applicable Standard:

Design instrument procedure segments to provide descent at the standard gradient. FAAO 8260.52, paragraph 2.4, table 2-1.

3. Reason for Waiver *(Justification for nonstandard treatment)*:

Ground track/descent gradient is a collaboration between the air carrier, Charleston ATC, and FAA Required Navigation Performance and Aeronavigational Products. Procedure provides optimum fuel efficiency on a repeatable ground track that procedurally separates and blends into the existing traffic flow. This procedure is connected to a RNAV STAR that provides optimized profile descent with predictable operation from the enroute environment to landing.

4. Equivalent Level of Safety Provided:

1. Procedure is an Authorization Required approach
2. Procedure provides a shallower descent in the segment prior to entry where descent exceeds the maximum, allowing decel and aircraft configuration.
3. Procedure validated in simulator test with satisfactory results.

5. How Relocation or Additional Facilities Will Affect Waiver Requirement:

NA-RNAV

6. Coordination With User Organizations *(Specify)*:

AJV-351 MJR

7. SUBMITTED BY

| Office Identification: | Title: | Signature: |
|---|---|---|
| AJV-35 | Manager, Terminal Products Group | Susan K W Cuevas for Greg Yamamoto |

FAA FORM 8260 - 1 / May 2002 (computer generated)

| 8. CONTINUATION |
|---|
| Comments: |

| 9. AFS ACTION | ☑ Approved<br>☐ Disapproved<br>☐ Not Required |
|---|---|

Comments: Approved Based on the Equivalent Level of Safety in Block 4.

| Date: | Routing Symbol: | Signature: Mark Steinbicker<br>Signed By: Mark Steinbicker<br>Tue Jun 19 2012 16:00:37 GMT-0400 (Eastern Daylight Time) |
|---|---|---|

US Department of Transportation
Federal Aviation Administration

# FLIGHT PROCEDURES STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY

CONTROL NO:

1. Flight Procedure Identification:

**Charleston, SC, (KCHS)**
**Charleston AFB Intl**
**RNAV (RNP) Z RWY 33**

2. Waiver Required and Applicable Standard:

**Design instrument procedure segments to provide descent at the standard gradient. FAAO 8260.52, paragraph 2-4, table 2-1.Descent gradient between CZSAR and DELLL 325 ft per NM. FAA0 8260.52, PARA 1.11.1. Intermediate segmemt has more than one speed restriction, MKENA to LIVYY 210 knots and LIVYY to DELLL 200 knots.**

3. Reason for Waiver *(Justification for nonstandard treatment)*:

**Ground track/descent gradient is a callaboration between the air carrier, Charleston ATC, and FAA Required Navigation Peformance and Aeronavigation Products. Procedure provides optimum fuel efficiency on a repeatable ground track that procedurally separates and blends into the existing traffic flow. This procedure is connected to a RNAV STAR that provides optimized profile descent with predicitable operation from the enroute enviroment to landing. 200 knot speed restriction applied to remain within bank angle criteria (25 degrees).**

4. Equivalent Level of Safety Provided:

**1. Procedure provides a shallower descent in the segment prior to entry where descent exceeds the maximum, allowing decel and aircraft configuration.**
**2. procedure validated in simulator test with satisfactory result.**

5. How Relocation or Additional Facilities Will Affect Waiver Requirement:

**NA-RNAV.**

6. Coordination With User Organizations *(Specify)*:

**AJV-351**_____

7. SUBMITTED BY

| DATE: | Office Identification: | Title: | Signature: |
|---|---|---|---|
| | **AJV-351** | **GREG YAMAMOTO**<br>**Manager, Terminal Products Group** | |

**FAA FORM 8260 - 1 / July 2003 (computer generated)**

| 8. CONTINUATION |
|---|
| Comments: |

| 9. AFS ACTION | | |
|---|---|---|
| | | Approved |
| | | Disapproved |
| | | Not Required |

| Comments: |
|---|

| Date: | Routing Symbol: | Signature: |
|---|---|---|
| | | |

Subject: Action: Approval Request

From Manager, Terminal Products Group, AJV-35

To: Manager, Flight Procedures Standards Branch, AFS-429

KCHS RNAV (RNP) Z RWY 33, ORIG-A

8260.52 Para 1.11.1 "AFS-400 or appropriate military authority approval is required when more than one speed restriction is desired for a particular approach segment…"

Request approval for two (2) airspeed restrictions within the same transition (210 KIAS and 200 KIAS)

Transition: MKENA to LIVYY 210 KIAS and LIVYY to DELLL 200 KIAS.

Howard Hawkins 954-2252