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.

AIRPORT ID	PROCEDURE NAME	ORIGINAL/AMENDMENT	CITY	STATE
SAT	RNAV (GPS) Y RWY 31L	2A	SAN ANTONIO	TX

AIRPORT ELEVATION	TDZE	SUPERSEDED	ORIGINAL/AMENDMENT	DATED	MAG VAR	EPOCH YEAR
809	790	RNAV (GPS) Y RWY 31L	2	01/25/2024	4E	2020

FACILITY	COORDINATES OF FACILITIES	ACTUAL EFFECTIVE DATE	REQUIRED EFFECTIVE DATE	CANCEL/SUSPEND
RNAV			ROUTINE	

TERMINAL ROUTES

FROM	FIX TYPE	TO	FIX TYPE	LEG TYPE	FO/FB	RNP	COURSE	DISTANCE	ALTITUDE
TRNKS	IAF	SLLOW		TF	FB	1.00	037.61	4.70	2700
TRSMO	IAF	SLLOW		TF	FB	1.00	217.68	4.70	2700
CUGRR	IAF	SLLOW		TF	FB	1.00	307.69	3.50	2700
SLLOW	IF	DEFIX		TF	FB	1.00	307.67	3.97	2200
DEFIX	FAF	RW31L	MAP	TF	FO	0.30	307.64	4.28	
RW31L	MAP	990 MSL		CA			307.64		990
990 MSL		HASDO		DF	FB	1.00			
HASDO		REUBE		TF	FO	1.00	307.48	7.06	4200

MISSED APPROACH

MAP:

LPV: DA
LNAV/VNAV: DA
LNAV: RW31L

MISSED APPROACH INSTRUCTIONS:

CLIMB TO 4200 DIRECT HASDO AND TRACK 307.48 TO REUBE AND HOLD.

ALTERNATE MISSED APPROACH INSTRUCTIONS:

PROFILE:

1. **PT** **SIDE OF COURSE** **OUTBOUND** **FT WITHIN** **MILES OF** (IAF)
2. PROFILE STARTS AT SLLOW
3. **FAC:** 307.64 **FAF:** DEFIX **DIST FAF TO MAP:** 4.28 **DIST FAF TO THLD:** 4.28
4. **MIN ALT:** SLLOW 2700, DEFIX 2200
5. **DIST TO THLD FROM OM:** **MM:** **IM:** **150 HAT:** **200 HAT:** 0.48 **GS ANT:**
6. **MIN GP INCPT:** 2200 **GP ALT AT PFAF:** DEFIX 2200 **OM:** **MM:** **IM:**
7. **GP ANGLE:** 3.00 **34:1:** IS CLEAR **20:1:** IS CLEAR **TCH:** 59.9
8. **MSA FROM:** RW31L 4100

QUALITY 13 CHECKED

PBN REQUIREMENTS NOTE:

RNP APCH - GPS.

NOTES:

CHART PROFILE NOTE: VGSI AND RNAV GLIDEPATH NOT COINCIDENT (VGSI ANGLE {ANGLE}/TCH {FEET}).
CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -5°C OR ABOVE 54°C.
CHART NOTE: * RVR 1800 AUTHORIZED WITH USE OF FD OR AP OR HUD TO DA.
CHART NOTE: CIRCLING NA NW OF RWYS 4 AND 13R.
CHART SPEED ICON IN PLANVIEW AT TRNKS: MAX 210 KIAS.
CHART SPEED ICON IN PLANVIEW AT TRSMO: MAX 210 KIAS.

ADDITIONAL FLIGHT DATA:

HOLD NW, RT, 116.77 INBOUND.
CHART FAS OBST: 1098 TOWER (48-014294) 292942N/0982455W.
CHART A-635.
CHART VDP AT 1.52 NM TO RW31L.
WAAS CHANNEL # 61209
REFERENCE PATH ID: W31A
CHART MANDATORY 4000 AT CUGRR.
LTP HAE: 211.8 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*	990	2400	200	990	2400	200	990	2400	200	990	2400	200			
LNAV/VNAV DA	1226	4000	436	1226	4000	436	1226	4000	436	1226	4000	436			
LNAV MDA	1360	2400	570	1360	2400	570	1360	1 1/4	570	1360	1 1/4	570			
CIRCLING	1380	1	571	1380	1	571	1440	1 3/4	631	1540	2 1/4	731			

CHANGES - REASONS

1. LNAV/VNAV HAT/DA CHANGED FROM 430/1220 TO 436/1226 - NEW CONTROLLING OBSTACLE.
2. LNAV CAT C/D VISABILITY CHANGED FROM 6000 RVR TO 1 1/4MI - IAW 8260.3G TABLE 3-3-1.
3. CIRCLING CHANGED CAT A/B HAT/DA 551/1380 CAT C HAT/DA 611/1420 CAT D HAT/DA 731/1540 TO CAT A/B HAT/DA 571/1380 CAT C HAT/DA 631/1440 CAT D HAT/DA 731/1540 - NEW CONTROLLING OBSTACLES.

QUALITY 13 CHECKED

AIRPORT ID	PROCEDURE NAME	ORIGINAL/AMENDMENT	CITY	STATE
SAT	RNAV (GPS) Y RWY 31L	2A	SAN ANTONIO	TX

COORDINATED WITH:

A4A [X] ALPA [X] AOPA [X] APA [X] HAI [ ] NBAA [X] **OTHER:** ZHU ARTCC, SAT APP CON, AMGR

FLIGHT CHECKED BY	OFFICE	DATE	

DEVELOPED BY	OFFICE	DATE	
ALLAN WILL (JUSTIN GRAY)	AJV-A4	06/03/2026	

APPROVED BY	OFFICE	DATE	TITLE
ALLAN WILL	AJV-A4		MANAGER

FAS DATA BLOCK INFORMATION

DATA FIELD	DATA
OPERATION TYPE	0
SBAS SERVICE PROVIDER IDENTIFIER	0
AIRPORT IDENTIFIER	KSAT
RUNWAY	RW31L
APPROACH PERFORMANCE DESIGNATOR	0
ROUTE INDICATOR	Y
REFERENCE PATH DATA SELECTOR	0
REFERENCE PATH IDENTIFIER (APPROACH ID)	W31A
LTP/FTP LATITUDE	293138.0035N
LTP/FTP LONGITUDE	0982755.9930W
LTP/FTP ELLIPSOIDAL HEIGHT	+02118
FPAP LATITUDE	293237.3145N
FPAP LONGITUDE	0982912.3650W
THRESHOLD CROSSING HEIGHT (TCH)	00059.9
TCH UNITS SELECTOR (METERS OR FEET USED)	F
GLIDEPATH ANGLE (GPA)	03.00
COURSE WIDTH AT THRESHOLD	106.75
LENGTH OFFSET	0160
HORIZONTAL ALERT LIMIT (HAL)	40.0
VERTICAL ALERT LIMIT (VAL)	35.0
CRC REMAINDER	8DA20B31

ADDITIONAL PATH POINT RECORD INFORMATION

ICAO CODE	K4
LTP ORTHOMETRIC HEIGHT	+02373
FPAP ORTHOMETRIC HEIGHT	+02373

QUALITY 13 CHECKED

FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE
STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT ID	PROCEDURE NAME	AMDT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SAT	RNAV (GPS) Y RWY 31L	2A	SAN ANTONIO	TX	809	RNAV

PART A: OBSTRUCTION DATA SEGMENTS

INITIAL

FROM	TO
TRNKS	SLLOW

RNP	DISTANCE	PAT	MAP	HAT	HMAS
1.00	4.70				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
TOWER (48-000891)	292327.00N/0982100.00W	1168	20	50	1D	1000				AT500	2700
TERRAIN	292603.00N/0982027.00W	793 (800)								AS1500	2300

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

INITIAL

FROM	TO
TRSMO	SLLOW

RNP	DISTANCE	PAT	MAP	HAT	HMAS
1.00	4.70				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
TOWER (48-023315)	292654.73N/0981835.18W	1029	250	50	4D	1000				AT600	2700
TERRAIN	293015.00N/0981957.00W	797 (800)								AS1500	2300

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

AIRPORT ID	PROCEDURE NAME	AMDT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SAT	RNAV (GPS) Y RWY 31L	2A	SAN ANTONIO	TX	809	RNAV

INITIAL

FROM	TO
CUGRR	SLLOW

RNP	DISTANCE	PAT	MAP	HAT	HMAS
1.00	3.50				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
TOWER (48-023315)	292654.73N/0981835.18W	1029	250	50	4D	1000				AT600	2700
TERRAIN	292603.00N/0982027.00W	793 (800)								AS1500	2300

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

INTERMEDIATE

FROM	TO
SLLOW	DEFIX

RNP	DISTANCE	PAT	MAP	HAT	HMAS
1.00	3.97				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
TOWER (48-011386)	292734.85N/0982425.49W	1042	50	20	2C	500				AT600	2200
TERRAIN	292612.00N/0982027.00W	793 (800)								AS1000	1800

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

FINAL: LPV

FROM	TO
DEFIX	RW31L

RNP	DISTANCE	PAT	MAP	HAT	HMAS
0.30	4.28		DA	200	

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
							ASC				990

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

FINAL: LNAV/VNAV

FROM	TO
DEFIX	RW31L

RNP	DISTANCE	PAT	MAP	HAT	HMAS
0.30	4.28		DA	436	

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
TREE	293030.00N/0982730.00W	939	215	8	4B		22.24:1			AC8	1226

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

FINAL: LNAV

FROM	TO
DEFIX	RW31L

RNP	DISTANCE	PAT	MAP	HAT	HMAS
0.30	4.28		RW31L	570	

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
TOWER (48-014294)	292941.75N/0982454.99W	1098	50	20	2C	250					1360

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

QUALITY 13 CHECKED

AIRPORT ID	PROCEDURE NAME	AMDT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SAT	RNAV (GPS) Y RWY 31L	2A	SAN ANTONIO	TX	809	RNAV

MISSED APPROACH: LPV

FROM	TO
DA	REUBE

RNP	DISTANCE	PAT	MAP	HAT	HMAS
0.30					814

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
							ASC				
AAO	294454.00N/0984648.00W	2074	164	98	4E	1000					3100
TERRAIN	294403.00N/0984642.00W	1866 (1900)								AS1500	3400

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

MISSED APPROACH: LNAV/VNAV

FROM	TO
DA	REUBE

RNP	DISTANCE	PAT	MAP	HAT	HMAS
0.30					1059

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
							ASC				
AAO	294454.00N/0984648.00W	2074	164	98	4E	1000					3100
TERRAIN	294403.00N/0984642.00W	1866 (1900)								AS1500	3400

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

QUALITY 13 CHECKED

AIRPORT ID	PROCEDURE NAME	AMDT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SAT	RNAV (GPS) Y RWY 31L	2A	SAN ANTONIO	TX	809	RNAV

MISSED APPROACH: LNAV

FROM	TO
RW31L	REUBE

RNP	DISTANCE	PAT	MAP	HAT	HMAS
0.30-1.00					1248

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
							ASC				
AAO	294454.00N/0984648.00W	2074	164	98	4E	1000					3100
TERRAIN	294403.00N/0984642.00W	1866 (1900)								AS1500	3400

COMPUTATIONS

ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

CIRCLING ☐ ALL CATS ☒ CAT A ☒ CAT B ☒ CAT C ☒ CAT D ☐ CAT E ☐ NOT AUTHORIZED

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
CATEGORY A											
BUILDING (48-005077)	293131.00N/0982959.00W	1.30	571	1073	20	10	1B	300			1380
CATEGORY B											
BUILDING (48-005077)	293131.00N/0982959.00W	1.83	571	1073	20	10	1B	300			1380
CATEGORY C											
TANK (48-001229)	293232.00N/0983136.00W	2.88	631	1140	50	20	2C	300			1440
CATEGORY D											
AAO	293232.00N/0983151.00W	3.77	731	1224	215	8	4B	300			1540

CIRCLING REMARKS:

MSA

CENTER	RADIUS
RW31L	25

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
360-360	TOWER (48-005142)	293639.00N/0985334.00W	279	22.9	3049	500	125	5E	1000			4100

MSA REMARKS:

QUALITY 13 CHECKED

AIRPORT ID	PROCEDURE NAME	AMDT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SAT	RNAV (GPS) Y RWY 31L	2A	SAN ANTONIO	TX	809	RNAV

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS:

PART B: SUPPLEMENTAL DATA

COMMUNICATIONS WITH

ZHU ARTCC, SAT TOWER, SAT APP CON

WX SERVICE	LOCATION	HRS OPERATION	ALTIMETER SOURCE	DISTANCE	WMSCR	ADJUSTMENTS
ASOS	SAT	24	SAT		Y	0

BACK-UP WX SERVICE	LOCATION	HRS OPERATION	ALTIMETER SOURCE	DISTANCE	WMSCR	ADJUSTMENTS

WX REMARKS:

BACK-UP ALTIMETER NOT REQUIRED DUE TO REDUNDANT LOCAL SOURCES.

PRIMARY NAVAID	MONITOR POINT	HRS OPERATION	CAT

APPROACH AND RUNWAY LIGHTING SYSTEM	RUNWAY MARKINGS	RUNWAY VISUAL RANGE
RW31R - MIRL, REIL, PAPI-4L	BSC-G	
RW13L - MIRL, REIL, PAPI-4L	NPI-G	
RW04 - MALS, C/LINE, HIRL, PAPI-4R	PIR-G	APPROACH
RW13R - ALSF-2, TDZ, HIRL, C/LINE, PAPI-4L	PIR-G	APPROACH, MIDPOINT, ROLL OUT
RW22 - HIRL, C/LINE, REIL, PAPI-4L	PIR-G	ROLL OUT
RW31L - MALSR, C/LINE, HIRL, PAPI-4L	PIR-G	APPROACH, MIDPOINT, ROLL OUT

GLIDESLOPE ANGLE	ELEV RWY THRESHOLD	TCH	ELEV GS ANTENNA	DISTANCE FROM RWY	VGSI ANGLE	TCH
3.00	778.5	59.9			3.00	82.3

FINAL APPROACH COURSE AIMING

RUNWAY THRESHOLD	X	FT FROM THRESHOLD	DISPLACED THRESHOLD DISTANCE
ON CENTERLINE	X	FT FROM CENTERLINE	

CRITICAL TEMPERATURES

CRITICAL LOW	CRITICAL HIGH	ACT	APT ISA
-5C	+54C	-5C	+13.4C

CRITICAL TEMPERATURE REMARKS:

AVERAGE COLD TEMPERATURE DERIVED FROM 5-YEAR HISTORY (2018-2022).
CRITICAL LOW TEMPERATURE BASED ON ACT.
DESCENT RATE (FPM): STANDARD TEMP 965 HIGH TEMP 1273.

"VISUAL PORTION OF FINAL" PENETRATIONS

QUALITY 13 CHECKED

HELICOPTER 'VISUAL PORTION OF FINAL' PENETRATIONS

and/or

5280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENETRATIONS

PENETRATIONS REMARKS:

PART C: GENERAL REMARKS:

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

VEGETATION 75 FT.

ORDER 8260.3, CHAPTER 2, NEW CIRCLING CRITERIA APPLIED.

PART D: AIRSPACE

DOCKET #

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST 100 FEET; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	THLD	**TO 1000FT POINT**	3.33
WIDTH OF	FINAL	**SEGMENT AT 1000FT POINT**	1.20
TRUE COURSE OF	FINAL	**SEGMENT CONTAINING 1000FT POINT**	311.64
HIGH TERRAIN IN	FINAL	**SEGMENT CONTAINING 1000FT POINT**	900
DISTANCE FROM	THLD	**TO 1500FT POINT**	6.05
WIDTH OF	INTERMEDIATE	**SEGMENT AT 1500FT POINT**	3.78
TRUE COURSE OF	INTERMEDIATE	**SEGMENT CONTAINING 1500FT POINT**	311.64
HIGH TERRAIN IN	INTERMEDIATE	**SEGMENT CONTAINING 1500FT POINT**	800

THRESHOLD COORDINATES (IF STR-IN)	293138.00N/0982755.99W
ARP COORDINATES	293202.25N/0982808.61W
RUNWAY APCH END AND DIST FURTHEST FROM ARP	
FAF COORDINATES	292847.17N/0982416.24W
FIX NAME COORDINATES	

REMARKS

NO ADDITIONAL AIRSPACE REQUIRED.

PART E: PREPARED BY

NAME	OFFICE	DATE	TITLE
ALLAN WILL (JUSTIN GRAY)	AJV-A4	06/03/2026	AERONAUTICAL INFORMATION SPECIALIST

QUALITY 13 CHECKED