

**FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE
ILS STANDARD INSTRUMENT APPROACH PROCEDURE
TITLE 14 CFR PART 97.29**

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.

<u>AIRPORT ID</u> DLH	<u>PROCEDURE NAME</u> ILS OR LOC RWY 27	<u>ORIGINAL/AMENDMENT</u> 12	<u>CITY</u> DULUTH	<u>STATE</u> MN
<u>AIRPORT ELEVATION</u> 1428	<u>TDZE</u> 1421	<u>SUPERSEDED</u> ILS OR LOC RWY 27	<u>DATED</u> 10/10/2019	<u>MAG VAR</u> 1W
<u>FACILITY</u> I-JUD	<u>COORDINATES OF FACILITIES</u>	<u>ACTUAL EFFECTIVE DATE</u>	<u>REQUIRED EFFECTIVE DATE</u> ROUTINE	<u>EPOCH YEAR</u> 2020
				<u>CANCEL/SUSPEND</u>

TERMINAL ROUTES

<u>FROM</u>	<u>FIX TYPE</u>	<u>TO</u>	<u>FIX TYPE</u>	<u>LEG TYPE</u>	<u>FO/FB</u>	<u>RNP</u>	<u>COURSE</u>	<u>DISTANCE</u>	<u>ALTITUDE</u>
DLH VORTAC		ANDOE/LKI 5.59 DME/RADAR					066.15	6.63	3200
DAYAR/DLH 15.00 DME CCW	IAF	WIRSA/DLH 15.00 DME	NOPT				15.00 DME ARC (DLH LR-086)		3200
FOSUP/DLH 15.00 DME CW	IAF	WIRSA/DLH 15.00 DME	NOPT				15.00 DME ARC (DLH LR-070)		3200
WIRSA/DLH 15.00 DME	IF	ANDOE/LKI 5.59 DME/RADAR					273.29 (I-JUD)	8.63	3200

MISSED APPROACH

MAP:

ILS: DA
LOC: 5.34 NM AFTER ANDOE/LKI 5.59 DME/RADAR

MISSED APPROACH INSTRUCTIONS:

CLIMB TO 3000 THEN CLIMBING RIGHT TURN TO 4500 ON HEADING 060 AND DLH VORTAC R-017 TO CHERL INT/DLH 15.00 DME AND HOLD.

ALTERNATE MISSED APPROACH INSTRUCTIONS (DO NOT CHART):

CLIMB TO 3300 DIRECT PYKLA LOM/RADAR AND HOLD, CONTINUE CLIMB-IN-HOLD TO 3300 (ADF REQUIRED).

PROFILE:

- PT L SIDE OF COURSE 093.29 OUTBOUND 3200 FT WITHIN 15 MILES OF ANDOE/LKI 5.59 DME/RADAR (IAF)
-
- FAC: 273.29 FAF: ANDOE/LKI 5.59 DME/RADAR DIST FAF TO MAP: 5.34 DIST FAF TO THLD: 5.34
- MIN ALT: ANDOE/LKI 5.59 DME/RADAR 3200
- DIST TO THLD FROM OM: MM: IM: 150 HAT: GS ANT: 1494
- MIN GS INCPT: 3200 GS ALT AT PFAF: ANDOE/LKI 5.59 DME/RADAR 3200 OM: MM: IM:
- GS ANGLE: 3.00 34:1: 20:1: TCH: 80.2
- MSA FROM: DLH VORTAC 3100



EQUIPMENT REQUIREMENTS NOTES:

DME OR RADAR REQUIRED.

NOTES:

CHART PLANVIEW NOTE: PROCEDURE NA FOR ARRIVAL ON DLH VORTAC AIRWAY RADIALS 052 CW 116.
 CHART PROFILE NOTE: VGSI AND ILS GLIDEPATH NOT COINCIDENT (VGSI ANGLE {ANGLE}/TCH {FEET}).
 CHART NOTE: CIRCLING NA FOR CAT E SE OF RWYS 3 AND 27.
 CHART NOTE: INOPERATIVE TABLE DOES NOT APPLY TO S-ILS 27.
 CHART NOTE: DME FROM LKI TACAN. DME USE REQUIRES SIMULTANEOUS RECEPTION OF I-JUD AND LKI DME.
 CHART NOTE: FOR INOPERATIVE ALS, INCREASE S-LOC 27 CAT E VISIBILITY TO 1 1/4 SM.

ADDITIONAL FLIGHT DATA:

CHART LKI 14.21 DME AT WIRSA.
 CHART DLH 6.63 DME AT ANDOE.
 HOLD N, RT, 197.00 INBOUND.
 CHART IN PLANVIEW: ALTERNATE MA HOLDING, HOLD W PYKLA LOM/RADAR, RT, 093.26 INBOUND.
 FAS OBST: 1605 AAO 465051N/0920436W.
 CHART VDP AT 1.35 DME.
 DISTANCE VDP TO THLD 1.10 NM.
 CHART IN PLANVIEW: PYKLA LOM/RADAR.
 CHART DLH R-182 AT DAYAR.
 CHART DLH R-009 AT FOSUP.

MINIMUMS:

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

ALTERNATE: NA ILS: STANDARD; LOC: STANDARD - CAT D, E 1000-3

<u>CATEGORY:</u>	<u>A</u>			<u>B</u>			<u>C</u>			<u>D</u>			<u>E</u>		
<u>FINAL TYPE</u>	<u>DA/MDA</u>	<u>VIS</u>	<u>HAT/HAA</u>	<u>DA/MDA</u>	<u>VIS</u>	<u>HAT/HAA</u>	<u>DA/MDA</u>	<u>VIS</u>	<u>HAT/HAA</u>	<u>DA/MDA</u>	<u>VIS</u>	<u>HAT/HAA</u>	<u>DA/MDA</u>	<u>VIS</u>	<u>HAT/HAA</u>
S-ILS 27	1621	4000	200	1621	4000	200	1651	4000	230	1651	4000	230	1651	4000	230
S-LOC 27	1860	2400	439	1860	2400	439	1860	4000	439	1860	4000	439	1860	4000	439
CIRCLING	1880	1	452	1900	1	472	1940	1 1/2	512	2400	3	972	2400	3	972

CHANGES - REASONS

1. CHANGED ALL INSTANCES OF "ANDOE OM/RADAR" TO "ANDOE/LKI 5.59 DME/RADAR" -- PFAF CHANGED TO DME FIX AND MOVED TO CO-LOCATE WITH I-JUD GS INTERCEPT; DLH NOT USABLE FOR DME DUE TO GREATER THAN 6 DEGREES DIVERGENCE IAW 8260.3G, 8-1-2.A(2).
2. CHANGED SEGMENT DLH-ANDOE COURSE/DISTANCE FROM "065.82/6.49" TO "066.15/6.63" IN TERMINAL ROUTES -- PFAF RELOCATED.
3. DELETED "INT" FROM FIX WIRSA IN TERMINAL ROUTES -- WIRSA IS A DME ONLY FIX.
4. CHANGED SEGMENT WIRSA-ANDOE DISTANCE FROM "273.29/8.77 (I-JUD)" TO "273.29 (I-JUD)/8.63" IN TERMINAL ROUTES -- PFAF RELOCATED; COURSE SPECIFIED IAW 8260.19K, 8-6-4.B(2).
5. CHANGED LOC MAP FROM "5.20 NM AFTER ANDOE OM/RADAR" TO "5.34 NM AFTER ANDOE/LKI 5.59 DME/RADAR" -- PFAF RELOCATED.
6. CHANGED DISTANCE FAF TO MAP/THLD FROM "5.20" TO "5.34" IN PROFILE LINE 3 -- PFAF RELOCATED.
7. DELETED "FOR PROCEDURE ENTRY" FROM EQUIPMENT REQUIREMENTS NOTES -- PROCEDURE ENTRY CAN BE MADE FROM DLH WITHOUT DME OR RADAR; EQUIPMENT IS REQUIRED TO IDENTIFY THE FAF.
8. CHANGED NA FOR ARRIVAL ON AIRWAY RADIALS NOTE FROM "046 CW 116" TO "052 CW 116" -- NO AIRWAY ON R-046.
9. ADDED "CHART LKI 14.21 DME AT WIRSA" IN ADDITIONAL FLIGHT DATA -- FPT REQUEST; SAME DME SOURCE AS FAF.
10. DELETED "CHART CIRCLING ICON" IN ADDITIONAL FLIGHT DATA -- UPDATED IAW FAA MEMO, SUBJECT: REMOVAL OF CIRCLING ICONS, 5/15/2025.
11. CHANGED FAS OBSTACLE FROM "1600 AAO 465050N/0920435W" TO "1605 AAO 465051N/0920436W" IN ADDITIONAL FLIGHT DATA -- UPDATED TERRAIN EVALUATION.
12. ADDED VDP IN ADDITIONAL FLIGHT DATA -- FINAL FACILITY WITH DME NO LONGER REQUIRED.
13. DELETED "CHART: ASR" IN ADDITIONAL FLIGHT DATA -- ASR APPROACHES NO LONGER PUBLISHED AT DLH.
14. DELETED "OR RADAR" IN ALTERNATE MISSED APPROACH INSTRUCTIONS --
15. ADDED "CHART NOTE: DME FROM LKI TACAN. DME USE REQUIRES SIMULTANEOUS RECEPTION OF I-JUD AND LKI DME" -- NON-PAIRED DME IAW 8260.19K, 8-6-10.K.
16. ADDED "CHART DLH 6.63 DME AT ANDOE" IN ADDITIONAL FLIGHT DATA -- REQUIRED TO FIND ANDOE FROM DLH FEEDER.



AIRPORT ID
DLH

PROCEDURE NAME
ILS OR LOC RWY 27

ORIGINAL/AMENDMENT
12

CITY
DULUTH

STATE
MN

COORDINATED WITH:

A4A ALPA AOPA APA HAI NBAA

OTHER: ZMP, DLH APP CON, DLH ATCT, AMGR, CITY OF DULUTH

FLIGHT CHECKED BY

SCOTT WIEBE

Digitally signed by
CASIMIR L TABAKA
Mar 03, 2026

OFFICE

AJF

DATE

02/27/2026

DEVELOPED BY

CASIMIR L. TABAKA (DANIEL C JOHNSEN)

Digitally signed by
CASIMIR L TABAKA
Feb 02, 2026

OFFICE

AJV-A432

DATE

10/08/2025

APPROVED BY

CASIMIR L. TABAKA

Digitally signed by
CASIMIR L TABAKA
Feb 02, 2026

OFFICE

AJV-A432

DATE

04/09/2026

TITLE
MANAGER



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

<u>AIRPORT ID</u> DLH	<u>PROCEDURE NAME</u> ILS OR LOC RWY 27	<u>AMDT NO.</u> 12	<u>CITY</u> DULUTH	<u>STATE</u> MN	<u>AIRPORT ELEVATION</u> 1428	<u>FACILITY</u> I-JUD
--------------------------	--	-----------------------	-----------------------	--------------------	----------------------------------	--------------------------

PART A: OBSTRUCTION DATA SEGMENTS

FEEDER

FROM DLH VORTAC **TO** ANDOE/LKI 5.59 DME/RADAR

RNP DISTANCE PAT MAP HAT HMAS

6.63

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
TOWER (27-000624)	464721.10N/0920651.10W	2049	250	50	4D	1000				AT151	3200
TERRAIN	465127.00N/0920854.00W	1492 (1500)								AS1500	3000

COMPUTATIONS

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

SEGMENT REMARKS:

INITIAL: ARC

FROM DAYAR/DLH 15.00 DME CCW **TO** WIRSA/DLH 15.00 DME

RNP DISTANCE PAT MAP HAT HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
TOWER (55-000635)	463207.90N/0920407.92W	1566	50	20	2C	1000				AT634	3200
TERRAIN	462912.00N/0921151.00W	1243 (1200)								AS1500	2700

COMPUTATIONS

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

SEGMENT REMARKS:



AIRPORT ID
DLH

PROCEDURE NAME
ILS OR LOC RWY 27

AMDT NO.
12

CITY
DULUTH

STATE
MN

AIRPORT ELEVATION
1428

FACILITY
I-JUD

INITIAL: ARC

FROM
FOSUP/DLH 15.00 DME CW

TO
WIRSA/DLH 15.00 DME

RNP DISTANCE PAT MAP HAT HMAS

<u>OBSTRUCTION</u>	<u>COORDINATES</u>	<u>ELEV MSL</u>	<u>HORZ</u>	<u>VERT</u>	<u>AC</u>	<u>ROC</u>	<u>OCS</u>	<u>CG</u>	<u>CGTA</u>	<u>ADJUSTMENTS</u>	<u>MIN ALT</u>
AAO	465954.00N/0915648.00W	1788	215	8	4B	1000				AT412	3200
TERRAIN	465954.00N/0915648.00W	1587 (1600)								AS1500	3100

COMPUTATIONS

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

SEGMENT REMARKS:

INTERMEDIATE: PT

FROM
15 NM

TO
ANDOE/LKI 5.59 DME/RADAR

RNP DISTANCE
15.00 PAT MAP HAT HMAS

<u>OBSTRUCTION</u>	<u>COORDINATES</u>	<u>ELEV MSL</u>	<u>HORZ</u>	<u>VERT</u>	<u>AC</u>	<u>ROC</u>	<u>OCS</u>	<u>CG</u>	<u>CGTA</u>	<u>ADJUSTMENTS</u>	<u>MIN ALT</u>
AAO	465103.00N/0920151.00W	1418	215	8	4B	500				AT1282	3200
TERRAIN	465103.00N/0920151.00W	1217 (1200)								AS1500	2700

COMPUTATIONS

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

SEGMENT REMARKS:



MISSED APPROACH: ILS

FROM
DA

TO
CHERL INT/DLH 15.00 DME

RNP **DISTANCE** **PAT** **MAP** **HAT** **HMAS**
1438

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
							ASC				4500
AAO	470818.00N/0921124.00W	1808	215	8	4B	1000					2900
TERRAIN	470818.00N/0921124.00W	1607 (1600)								AS1500	3100

COMPUTATIONS

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

SEGMENT REMARKS:

MISSED APPROACH: LOC

FROM
5.34 NM AFTER ANDOE/LKI 5.59 DME/RADAR

TO
CHERL INT/DLH 15.00 DME

RNP **DISTANCE** **PAT** **MAP** **HAT** **HMAS**
1610

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
							ASC				4500
AAO	470818.00N/0921124.00W	1808	215	8	4B	1000					2900
TERRAIN	470818.00N/0921124.00W	1607 (1600)								AS1500	3100

COMPUTATIONS

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

SEGMENT REMARKS:



AIRPORT ID
DLH

PROCEDURE NAME
ILS OR LOC RWY 27

AMDT NO.
12

CITY
DULUTH

STATE
MN

AIRPORT ELEVATION
1428

FACILITY
I-JUD

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

<u>OBSTRUCTION</u>	<u>COORDINATES</u>	<u>RADIUS</u>	<u>HAA</u>	<u>ELEV MSL</u>	<u>HORZ</u>	<u>VERT</u>	<u>AC</u>	<u>ROC</u>	<u>OCS</u>	<u>ADJUSTMENTS</u>	<u>MIN ALT</u>
CATEGORY A											
TOWER (27-022662)	465132.68N/0920917.23W	1.31	452	1576	20	3	1A	300			1880
CATEGORY B											
TREE	465127.00N/0920854.00W	1.86	472	1593	215	8	4B	300			1900
CATEGORY C											
TOWER (27-020166)	465116.82N/0921654.92W	2.92	512	1625	20	3	1A	300			1940
CATEGORY D											
TOWER (27-001743)	464739.00N/0920705.00W	3.82	972	2049	250	50	4D	300		XP40	2400
CATEGORY E											
AAO	465345.00N/0921545.00W	4.78	972	1710	215	8	4B	300			2400

CIRCLING REMARKS:

XP40 TO MAINTAIN CURRENT MINIMUMS.

MSA

CENTER	RADIUS
DLH VORTAC	25

<u>SECTOR</u>	<u>OBSTRUCTION</u>	<u>COORDINATES</u>	<u>BEARING</u>	<u>DISTANCE</u>	<u>ELEV MSL</u>	<u>HORZ</u>	<u>VERT</u>	<u>AC</u>	<u>ROC</u>	<u>OCS</u>	<u>ADJUSTMENTS</u>	<u>MIN ALT</u>
360-360	AAO	470918.00N/0914724.00W	034	27.1	2061	215	8	4B	1000			3100

MSA REMARKS:

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS:

PART B: SUPPLEMENTAL DATA

COMMUNICATIONS WITH

DLH APP CON, ZMP ARTCC, DLH TOWER

WX SERVICE	LOCATION	HRS OPERATION	ALTIMETER SOURCE	DISTANCE	WMSCR	ADJUSTMENTS
ASOS	DLH	24	DLH		Y	0
BACK-UP WX SERVICE	LOCATION	HRS OPERATION	ALTIMETER SOURCE	DISTANCE	WMSCR	ADJUSTMENTS

WX REMARKS:

SECONDARY ALTIMETER NOT REQUIRED; AIRPORT HAS REDUNDANT WEATHER SOURCE.



AIRPORT ID
DLH

PROCEDURE NAME
ILS OR LOC RWY 27

AMDT NO.
12

CITY
DULUTH

STATE
MN

AIRPORT ELEVATION
1428

FACILITY
I-JUD

PRIMARY NAVAID
I-JUD

MONITOR POINT
DLH ATCT

HRS OPERATION
24

CAT
1

<u>APPROACH AND RUNWAY LIGHTING SYSTEM</u>	<u>RUNWAY MARKINGS</u>	<u>RUNWAY VISUAL RANGE</u>
RW03 - MIRL, REIL, PAPI-4L	NPI-G	
RW21 - REIL, MIRL, PAPI-4L	NPI-G	
RW09 - ALSF-2, HIRL, TDZ, C/LINE, PAPI-4L	PIR-G	APPROACH, MIDPOINT, ROLL OUT
RW27 - MALSR, HIRL, C/LINE, PAPI-4L	PIR-G	APPROACH, MIDPOINT, ROLL OUT

GLIDESLOPE ANGLE
3.00

ELEV RWY THRESHOLD
1419.0

TCH
80.2

ELEV GS ANTENNA
1423.4

DISTANCE FROM RWY
1494

VGSI ANGLE
3.00

TCH
91.0

FINAL APPROACH COURSE AIMING

RUNWAY THRESHOLD
ON CENTERLINE

FT FROM THRESHOLD
FT FROM CENTERLINE

DISPLACED THRESHOLD DISTANCE 529

CRITICAL TEMPERATURES

CRITICAL LOW

CRITICAL HIGH

ACT

APT ISA

CRITICAL TEMPERATURE REMARKS:

"VISUAL PORTION OF FINAL" PENETRATIONS

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 HEIGHT 100 FEET PER FPT.

WAIVER FOR TCH GREATER THAN 60 FEET APPROVED BY AFS.

ILS NOT ELIGIBLE FOR LIGHT CREDIT DUE TO EXCESSIVE TCH, SEE WAIVER.

DME FROM DLH VORTAC NOT SUITABLE FOR FIX ANDOE DUE TO GREATER THAN 6 DEGREES DIVERGENCE.

ORDER 8260.3, CHAPTER 2, NEW CIRCLING CRITERIA APPLIED.



AIRPORT ID
DLH

PROCEDURE NAME
ILS OR LOC RWY 27

AMDT NO.
12

CITY
DULUTH

STATE
MN

AIRPORT ELEVATION
1428

FACILITY
I-JUD

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	3.14
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	0.90
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	272.29
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	1500
DISTANCE FROM	THLD	TO 1500FT POINT	4.85
WIDTH OF	FINAL	SEGMENT AT 1500FT POINT	1.27
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1500FT POINT	272.29
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1500FT POINT	1500

THRESHOLD COORDINATES (IF STR-IN) 465028.90N/0921048.43W
ARP COORDINATES 465031.45N/0921135.65W
RUNWAY APCH END AND DIST FURTHEST FROM ARP RUNWAY 9 DISTANCE 1.11 NM
FAF COORDINATES 465015.87N/0920302.05W
FIX NAME COORDINATES

REMARKS

THLD DISPLACED 529FT, ACTUAL COORDINATES: 465028.70N/0921040.82W

PART E: PREPARED BY

<u>NAME</u>	<u>OFFICE</u>	<u>DATE</u>	<u>TITLE</u>
CASIMIR L. TABAKA (DANIEL C JOHNSEN)	AJV-A432	10/08/2025	AERONAUTICAL INFORMATION SPECIALIST

