Flight Procedures Cover Page	Task Action: FLIGHT CHECK	Task Type: SID	Estimated Chart Date: 10/29/2026	APWS Task ID: 4B73177EF8674673966093CD288AE51E	APWS Project ID: 0665C296CFC246219A52ED68D34296FC
Procedure: KBREW ONE DEPARTURE (RNAV)		Enroute: YES	Specialist: Tuttle, Judith		Agreement Number:
Airport ID: KMSP			Airport City: MINNEAPOLIS		State: MN
Facility ID:	Facility Type:	Flight Inspection Remark Type: Hold FC Slot			

QUALITY 8 CHECKED

Data as of: 08/10/2026 12:28:21 CDT

FIPC DME/DME FORM

PROCEDURE:	AIRPORT NAME:	AIRPORT ID:	SPECIAL CONTROL NO:
KBREW ONE DEPARTURE (RNAV)	MINNEAPOLIS-ST PAUL INTL/WOLD-	KMSP	BG-07-023-26

FAC ID: KBREW1	CITY: MINNEAPOLIS	ST: MN	ORIG CHART DATE: 10/29/2026

DFL TYPE:	THIRD PARTY:	EST. TIME ON SITE:	REIMB. NUMBER:	PTS TASK ID:
PROC/D	☐ YES	1.0	AC0721	4B73177EF8674673966093CD288AE51E

PREFLIGHT NOTES

REVIEWER: scott wiebe

DATE: 08/05/2026

COMMENTS:

CHECK ONE:
☒ FLT CK REQ ☐ NFCR ☐ REJECT

	YES	NO
CPV COMPLETE?	X	

PROCEDURE RESULTS

INSPECTION DATE:	CREW #:	N #:	INSTRUMENT PROCEDURE STATUS:	ARINC CODING:
08/05/2026	VN219	N79	☒ SAT ☐ SAT W/CHANGES ☐ UNSAT	☒ SAT ☐ SAT/GOLD ☐ UNSAT

FLIGHT INSPECTOR SIGNATURE:	PRINTED NAME:	NOTAM INITIATED?
scott wiebe @ 08/05/2026 14:59	WIEBE, GREGORY SCOTT	☐ YES ☒ NO

FLIGHT INSPECTOR REMARKS:

DME/DME STATUS:	SPECIALIST SIGNATURE:	PRINTED NAME:
☒ SAT ☐ UNSAT	lisa a-ctr thrysoe @ 08/21/2026 14:47	Lisa Thrysoe

SPECIALIST REMARKS:

Post Flight DME/DME Analysis has been performed on the KMSP KBREW1 SID with satisfactory results. All modeled DME's and ESV's were recorded by Flight Inspection and suitable for DME/DME/IRU operations.

IN-FLIGHT OBSTACLE REPORT

OBSTRUCTION ID #:	COORDINATES OR LOCATION:	GNSS ALTITUDE (MSL):	BAROMETRIC ALTITUDE (MSL):	HEIGHT ABOVE GROUND LEVEL:

Procedure Comments:
ACTIVE AIRPORT DATA USED FOR PROCEDURE DEVELOPMENT.

WAIVERS (1): ATC REQUESTED ALTITUDE LOWER THAN UNRESTIRCTED CLIMB ALLOWED BY TERPS EVALUATION; WAIVER (2): REDUCED ROC; WAIVER (3): ATC CLIMB GRADIENTS.

CONTACT: RAKE MCGRAW (AJV-A422), 405.954.8711.

KMZ:
KSTP_DIV_DEP_RWY_09_AMDT_1: 310 CG AND CGTA CONTROLLING OBSTACLE.
KSTP_DIV_DEP_RWY_09_AMDT_1_1: CEILING, VISIBILITY, 310 CG AND CGTA CONTROLLING OBSTACLES.
KSTP_DIV_DEP_RWY_09_AMDT_1_2: 280 CG AND CGTA CONTROLLING OBSTACLES.
KSTP_DIV_DEP_RWY_27_AMDT_1: CG AND CGTA CONTROLLING OBSTACLES.
KSTP_DIV_DEP_RWY_27_AMDT_1_1: CTA CONTROLLING OBSTCLE (2438 FT MSL TOWER)
KSTP_DIV_DEP_RWY_32_AMDT_1: CG AND CGTA CONTROLLING OBSTACLES.
KSTP_DIV_DEP_RWY_32_AMDT_1_2: CTA CONTROLLING OBSTACLE (1271 FT MSL BUILDING

06/18/2026: THIS IS AN UPDATED COPY OF THE FORM DEVELOPED ON 04/17/2026:
8260-15B:
1. DP ROUTE DESCRIPTION: UPDATED MSP, ANE, FCM AND STP INSTRUCTIONS FROM “…TO CROSS HRBEK AT OF ABOVE 4000…” TO “…TO CROSS HRBEK AT OF ABOVE 5000…”- TO ENSURE AIRCRAFT RECEIVE DME/DME COVERAGE.
2. ADDITIONAL FLIGHT DATA: UPDATED CHART: MINIMUM CROSSING ALTITUDE AT HRBEK FROM “4000” TO “5000” - TO ENSURE AIRCRAFT RECEIVE DME/DME COVERAGE.

08/06/2026: THIS IS AN UPDATED COPY OF THE FORM DEVELOPED ON 04/17/2026:
8260-15B:
1. REMARKS: ADDED REMARK TITLE "WAIVER REFERENCE HEADER: TO WAIVERS NOTE.
2. REMARKS: DELETED "PILOTS ARE REQUIRED PER 14 CFR TO CHECK THEIR ALTIMETER ON THE GROUND AND ENSURE IT IS NOT MORE THAN 75 FEET OFF FROM THE AIRPORT ALTITUDE WHEN DEPARTING. ATC IS REQUIRED TO VALIDATE THE ALTITUDE ON INITIAL CONTACT".
3. REMARKS: DELETED "PER 14 CFR, PART 91.185 THE PILOT IS EXPECTED TO CLIMB TO THE REQUESTED/ASSIGNED ALTITUDE AND PROCEED DIRECT TO THE ASSIGNED/FILED ROUTE OF FLIGHT".
4. REMARKS: DELETED "LEVEL ROC ON APPROACH IS 500/250 IN THE TERMINAL ENVIRONMENT. THE AIRCRAFT WOULD ONLY BE ASSIGNED THE INITIAL ALTITUDE BASED ON THE MVA (SEE ATTACHED SUPPORTING DOCUMENTATION FOR THE CONTROLLING OBSTACLE INFORMATION) FOR A SHORT PERIOD OF TIME TO ENSURE INITIAL SEPARATION. THE AIRCRAFT WILL THEN BE ASSIGNED THE MAINTAIN ALTITUDE (SEE ATTACHED SUPPORTING DOCUMENTATION FOR THE MAINTAIN ALTITUDE ASSIGNED BY ATC)".
5. REMARKS: ADDED "ATC FACILITY OPERATING RESTRICTION:" TO DP RESTRICTIONS FOR ATC FACILITIES NOTE.
6. REMARKS: ADDED PILOT AND CONTROLLER ADVISORY NOTE: ALL AIRCRAFT: ATC CROSSING RESTRICTIONS AND CLIMB GRADIENTS: IF UNABLE TO ACCEPT CROSSING RESTRICTIONS AND CLIMB RATES ADVISE ATC PRIOR TO TAXI. (RUNWAYS): CROSS (WAYPOINT) AT OR ABOVE (ALTITUDE), (CG) FT/NM TO ALTITUDE.
7. REMARKS: ADDED "SATELLITE AIRPORT LOA NOTES:" TO ANE TURN RESTRICTION NOTE.

QUALITY 8 CHECKED

FLIGHT PROCEDURE STANDARDS WAIVER

1. FLIGHT PROCEDURE IDENTIFICATION:

Minneapolis, MN: MSP, ANE, FCM; St Paul, MN: STP
BITEZ DEPARTURE (RNAV), BUNYN DEPARTURE (RNAV), HTDSH DEPARTURE (RNAV), KBREW DEPARTURE (RNAV), MINNEAPOLIS DEPARTURE, NRTHN DEPARTURE (RNAV), SNOWZ DEPARTURE (RNAV), SNUPE DEPARTURE (RNAV), TOTTZ DEPARTURE (RNAV), ZMBRO DEPARTURE (RNAV).

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

Deviation from standard criteria. 8260.3, Paragraph 1-4-2. An ATC requested maintained altitude lower than the unrestricted climb allowed by TERPS evaluation.

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

FAA Order 8260.3 does not describe how to assess obstacles for a SID supporting a range of initial headings when ATC requests a maintain altitude lower than unrestricted climb allowed by TERPS. AFS issued a Memo dated May 23, 2023 with the subject “Clarification to FAA Order 8260.46, Departure Procedure (DP) Program, Standard Instrument Departure (SID), which states a waiver is required to apply 8260.3, 13-2 in this case. (include evaluation method of the hold down maintain altitude, justification and description of the requested altitude vs the altitude of the unrestricted climb allowed by TERPS).

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

FAA Order 8260.3, Section 13-2, Diverse Departure Assessment was applied to assess obstacles to ensure obstacle clearance to the requested altitude and for the evaluation of the hold down altitude.
a. TERPS maintain/top altitude: (jets) 7000 / (props) 5000. (see attachment hold down altitudes supporting equivalent level of safety (els) calculations).
b. Lowest assigned altitude by ATC: per the Minneapolis ATCT/TRACON letter of agreement (LOA), the lowest assigned altitude will be 2500 MSL (or higher). (see attachment hold down altitudes supporting equivalent level of safety (ELS) calculations).
c. Diverse assessment distance (and altitude): a 25 NM diverse assessment distance was utilized, from which the departure end of runway (DER) to departure reference point (DRP) distance was subtracted to yield precise evaluation distances between 23.52 NM and 24.01 NM. This resulted in calculated diverse assessment altitudes for each runway ranging from 5,532 MSL to 5,642 MSL, which were then rounded up to 5,600 or 5,700 MSL. (see attachment hold down altitudes supporting equivalent level of safety (ELS) calculations).
d. The MVA assessment: the minimum vectoring altitude (MVA) is 2500 ft for RWYS 4, 12L/R, 17, 22, and 30L/R based on a 1549 FT MSL controlling obstacle, and the MVA is 2700 feet for RWY 35 based on a 1743 FT MSL controlling obstacle. The evaluation explicitly notes that ATO is allowed to round down when the obstacle clears the MVA boundary by 49 FT or less, and an AFS waiver is approved for 49 FT less required obstacle clearance (ROC) for TERPS. (see attachment hold down altitudes supporting equivalent level of safety (ELS) calculations).
e. Climb gradient for obstacle assessment.
f. Radar is required for the SID.
g. FAA JO 7110.65, paragraph 5-6-3.b. "After reaching the first MVA/MIA sector, all subsequent MVA/MIA sectors encountered must be met." This requires the controller to ensure the aircraft doesn't go into a higher MVA once they reached the first MVA sector altitude.
h. ATC is not allowed to let an aircraft climbing to the initially assigned altitude in b above enter a higher MVA unless ATC has assigned and the pilot reached the altitude equal to or higher than the MVA sector they are entering or FAA Order 7110.65, paragraph 5-6-3.a.(1) or (2) is being applied (ATC is responsible for obstacle separation until the aircraft reaches the MVA altitude or higher).
i. Affected MSP ATC Facilities will make sure all controllers are aware of this waiver for compliance.

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

ATC needs to vector aircraft for separation within a constrained airspace (Class B). The design requirement for vectors is compliant with FAA Order 8260.58, Appendix E.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

This action was coordinated with MSP TRACON (M98), ZMP ARTCC, Minneapolis Tower, Delta and Southwest Airlines, NATCA, AJV-A, Central Service Area Flight Procedures Team leads, and FS.

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
	AJV-A422	MANAGER	*Digitally signed by* ***ALLAN WILL*** Aug 13, 2026

8. AFS ACTIONS:

☐ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:

DATE	ROUTING SYMBOL	SIGNATURE

FLIGHT PROCEDURE STANDARDS WAIVER

1. FLIGHT PROCEDURE IDENTIFICATION:

Minneapolis, MN: MSP, ANE, FCM; St Paul, MN: STP
BITEZ DEPARTURE (RNAV), BUNYN DEPARTURE (RNAV), HTDSH DEPARTURE (RNAV), KBREW DEPARTURE (RNAV), MINNEAPOLIS DEPARTURE, NRTHN DEPARTURE (RNAV), SNOWZ DEPARTURE (RNAV), SNUPE DEPARTURE (RNAV), TOTTZ DEPARTURE (RNAV), ZMBRO DEPARTURE (RNAV).

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

Deviation from standard criteria. 8260.3, Paragraph 2-1-3. Using less ROC than required for DP level OCS.

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

a. Two different rounding criteria are used for evaluation.
(1). FAA Order 8260.3 requires 1000 feet of level ROC when assessing level flight. The altitude must be rounded up to the next higher 100 foot altitude.
(2). ATO allows the altitude to be rounded down to the next lower 100 foot for 49 feet or less.
b. MSP ATCT/TRACON will be using radar vectors and the MVA to separate aircraft.
c. The TERPS evaluation doesn't account for the ATC hold down/lowest assigned altitude.
d. The departure procedures were designed originally before the change to criteria but have not been brought into compliance. MSP ATCT/TRACON has a need to separate the flow for departures and arrivals. MSP ATCT/TRACON has an LOA requirement to turn departures based on a range of headings using all runways when needed and the lowest altitude assigned would be based on the MVA.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

a. Aircraft will be required to climb to ATC assigned altitude based on radar and the MVA so controllers will know where the aircraft is (see attached supporting documentation for the ATC hold down/lowest altitude).
b. ATC is required to validate the altitude on initial contact.
c. While standard TERPS criteria requires 1,000 feet of required obstacle clearance (ROC) for a level-surface departure evaluation, aircraft operating in the terminal environment during an instrument approach safely maneuver with intermediate and final segment ROC values of 500 feet and 250 feet, respectively. The initially assigned ,VA provides a minimum of 951 feet of ROC (accounting for the maximum 49-foot ATC round-down allowance). Because departing aircraft will only be held at this initial MVA for a short period to ensure initial separation before climbing to the assigned maintain altitude, this >950-foot clearance provides an equivalent level of safety that far exceeds the 500-foot and 250-foot ROC deemed safe for arriving aircraft maneuvering in the same airspace.

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

Climbing the aircraft to an altitude 100 foot higher will cause major issues with LOA and other ATC existing agreements.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

This action was coordinated with MSP TRACON (M98), ZMP ARTCC, Minneapolis Tower, Delta and Southwest Airlines, NATCA, AJV-A, Central Service Area Flight Procedures Team leads, and FS.

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
	AJV-A422	MANAGER	*Digitally signed by* ***ALLAN WILL*** Aug 13, 2026

8. AFS ACTIONS:

☐ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:

DATE	ROUTING SYMBOL	SIGNATURE

FLIGHT PROCEDURE STANDARDS WAIVER

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BITEZ DEPARTURE (RNAV), BUNYN DEPARTURE (RNAV), HTDSH DEPARTURE (RNAV), KBREW DEPARTURE (RNAV), MINNEAPOLIS DEPARTURE, NRTHN DEPARTURE (RNAV), SNOWZ DEPARTURE (RNAV), SNUPE DEPARTURE (RNAV), TOTTZ DEPARTURE (RNAV), ZMBRO DEPARTURE (RNAV).

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

Publish ATC Climb Gradients (CG). FAA Order 8260.46,
2-1-1.a. Instrument flight procedures (IFPs) must be designed, documented, and processed in accordance with these standards; however, obstacles, navigation information, or traffic congestion may require special consideration, where justified by operational requirements. When IFPs cannot be designed/documented in accordance with applicable standards, apply Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), paragraph 1-4-2.
2-1-5h(2)(b) When ATC requests a minimum “at or above” altitude restriction at a fix in an initial SID routing (prior to reaching the SID termination fix) that is higher than the required procedure design minimum altitude at the same fix, the higher requested ATC altitude then becomes the minimum altitude at that fix. This altitude must support all procedure design and criteria requirements [i.e., obstacle clearance/procedure design constraints/navigation solution and the ATC requirement(s)].
a. When establishing crossing altitudes for other than meeting obstacle clearance and/or to support a shortened ICA to ensure LNAV engagement can occur before turning, stakeholders should give consideration to aircraft performance limitations based on the type of aircraft expected to be using the SID and whether those aircraft will be capable of meeting these altitude restrictions. This may require consultation with industry partners and local operators that could be impacted.
b. Calculate (but do not publish) the CG necessary to meet each minimum altitude restriction. FPAG’s approval is required if the calculated CG exceeds 500 ft/NM (600 ft/NM for helicopters).

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

Previously MSP conventional DPs used radar vectors with a crossing restriction at an DME/ARC. This will be replaced by PBN DPs with an Open SID design replicating the DME/ARC crossing restriction. The ATC waypoint crossing restrictions cause CG's higher than standard. The climb gradients provide procedural separation of the departures from satellite airport Class D airspace, satellite controller airspace and aircraft executing instrument approaches into satellite airports as well as supporting noise abatement procedures. This ensures traffic flow for all airports and if the aircraft cannot accept the climb gradient ATC will coordinate for separation. Historically most aircraft have been able to make the crossing altitudes. This will reduce coordination approximately 12 times a day on average.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

a. The procedure will include the ATC Climb gradients in the departure route description after the common information statement (see FAA Form 8260-15B departure route descriptions for details instructions). The climb gradients are based on the MSP 7.5 DME arc to 3500 (Rwy 17, 12L, 12R) and 7 DME arc to 4000 (Rwy 31L/31R) at the closest point the aircraft can be to the arcs. Crossing restriction and climb gradient information: "All AIRCRAFT: ATC CROSSING RESTRICTIONS AND CLIMB GRADIENTS: IF UNABLE TO ACCEPT CROSSING RESTRICTIONS AND CLIMB RATES ADVISE ATC PRIOR TO TAXI. (Runways): cross (waypoint) at or above (altitude), (CG) FT/NM to (altitude)."
b. When a pilot cannot accept the restriction controllers will coordinate with the controller in the adjacent airspace or assign a different departure.

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

Discarding the crossing altitude in favor of a standard climb was considered, but due to the high density air traffic in the MSP airspace, the risk of essential controller transmissions and the loss of traffic flow was regarded as being too great.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

This action was coordinated with MSP TRACON (M98), ZMP ARTCC, Minneapolis Tower, Delta and Southwest Airlines, NATCA, AJV-A, Central Service Area Flight Procedures Team leads, and FS.

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
	AJV-A422	MANAGER	*Digitally signed by* ***ALLAN WILL*** Aug 13, 2026

8. AFS ACTIONS:

☐ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

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