APPENDIX K – NAVIGATIONAL AIDS

Introduction

This appendix discusses the existing and required airport navigational aids (NAVAIDs) at the Minot International Airport (MOT). NAVAIDs are any ground or satellite based electronic or visual device to assist pilots with airport operations. They provide for the safe and efficient operations of aircraft on an airport or within the vicinity of an airport. NAVAID types at or near the airport evaluated in this appendix include:

- Area Navigation
- Runway Approach
- Airfield Visual
- Meteorological
- Communications

The type of NAVAIDS required on an airport are determined by FAA guidance based on an airport's location, activity and usage type. Available FAA guidance can be found by reviewing the latest Advisory Circulars, Handbooks and Orders.

Area Navigation NAVAIDs

There are several different types of ground and/or satellite based NAVAIDs that provide guidance to aircraft in the air. The FAA owns and maintains the majority of the navigational aids in the United States; however, some are owned and maintained by state or local agencies. En-route NAVAIDs provide navigation assistance to aircraft along a route of flight.

The FAA is updating the nation's air transportation infrastructure through the Next Generation Air Transportation System (NextGen) program. A major component of NextGen is a transition to GPS-based aircraft navigation, increasing usage of satellite-based systems and decreasing reliance on traditional ground-based navigation aids and radar. New procedures and technology are to be implemented to improve the efficiency and safety of the national air transportation system. For area navigation, satellite-based NAVAIDs will primarily be used for air navigation with ground-based NAVAIDs used for secondary purposes. Other initiatives include implementing a new surveillance technology for tracking aircraft known as Automatic Dependent Surveillance-Broadcast (ADS-B) to improve position accuracy reporting and supplement ground radar data for air traffic control.

The following Area NAVAIDs are used by aircraft in and around MOT:

Global Positioning System (GPS)

GPS is a ground and satellite-based navigation system comprised of a network of satellites that transmit radio signals to provide triangulation to ground or air based receivers. Through this triangulation, longitude, latitude, altitude and speed can all be determined. A GPS procedure uses area navigation (RNAV) to help aircraft navigate on a horizontal course through pre-defined GPS waypoints. A series of ground-based transmitters, known as Wide Area Augmentation System (WAAS), enhances the precision of this system allowing receivers to accurately determine the position of a vehicle within a few horizontal and vertical feet of actual location. This enables precision-like approaches with vertical and horizontal guidance to a runway end. GPS, RNAV and WAAS are used by equipped aircraft for en-route and approach navigation and are widely available for navigation throughout the contiguous United States. This new technology is allowing required navigation performance (RNP) procedures to be

developed with three-dimensional waypoints. Future development of Local Area Augmentation System (LAAS) may provide even higher accuracy requirements.

GPS supports several en-route and terminal navigational procedures at MOT, including instrument approaches to Runway 13, 31, 8 and 26 ends.

Very-high Frequency Omni-directional Range (VOR)

A VOR is a ground-based NAVAID used for en-route and approach course navigation. The radio beacon has the longest range of currently utilized ground based NAVAIDs. Aircraft can navigate to and from this beacon using compatible airborne receivers to receive the radio signals. It gives pilots a direct indication of bearing relative to the facility. With VORs that are collocated with distance measuring equipment (DME), certain aircraft navigation radios can triangulate the signal between several different VOR/DME stations to choose a direct course of flight on a desired heading. For VORs collocated with a tactical air navigation system (TACAN) beacon, these facilities are referred to as a VORTAC. The TACAN is the system typically used by the military and the majority of VORs include a TACAN. The TACAN provides the same distance information as the DME and is available for both military and civil use. The widespread use of satellite based GPS technology has caused FAA to review decommissioning a large portion of existing VORs.

Minot VOR Facility

MOT has a VORTAC located on the airfield approximately 800 feet north of the existing Runway 8 end. This high-altitude VORTAC has an identifier of MOT and is owned and operated by the FAA. The VORTAC is used for high-altitude navigation and also for ground-based instrument approaches to Runway 13, 31, 8 and 26 ends. The MOT VOR is to be maintained by FAA as part of the Minimal Operational Network (MON) in support of transitioning to a GPS-based motivation system. The tactical portion of the VORTAC will become obsolete in the near future.

Non-Directional Beacon (NDB)

This beacon is one of the oldest types of navigational technology still used in aircraft navigation. A NDB is simply a low power AM radio station. Aircraft have equipment called Automatic Direction Finder (ADF) which allows the aircraft to tune into the frequency that the NDB is transmitting, and a dial that points a needle to the location of the NDB. NDBs are subject to lightning, precipitation static, and other disturbances that may result in erroneous navigation information. As a result of this and their replacement by GPS, NDB facilities are being decommissioned by FAA as part of the NextGen transition to GPS-based navigation. When the NDB is installed in conjunction with an ILS (Instrument Landing System) marker, the NDB is called a locator outer marker (LOM). There is no NDB system located in the vicinity of MOT. The LOM serving the Runway 31 ILS was decommissioned in 2014.

Radar

An Airport Surveillance Radar (ASR) facility provides primary and secondary surveillance radar to air traffic controllers to detect the position of aircraft within the surrounding terminal airspace, generally within 60 miles. Select civilian facilities operating ASR-8 and -9 facilities have been upgraded to a newer ASR-11 digital system compatible with ADS-B as part of the FAA's NextGen initiative. Long-range radar, known as Air Route Surveillance Radar (ARSR), provides coverage over 200 miles from the radar site for air traffic controllers responsible for large areas of airspace. Over time, ASR and ARSR will be replaced by the use of ADS-B technology as identified in FAA's NextGen implementation plan. MOT is served by an ASR-11 system located 10 miles to the north at the Minot Air Force Base. Radar coverage is generally available to the surface over MOT.

Recommendations

Recommendations for this Airport Master Plan study include relocating the VOR facility as its location limits general aviation development to meet forecasted based aircraft needs. VOR's are to be located 250 feet from taxiway centerlines and 500 feet from runway centerlines. The ground profile is to be smooth with no ground penetrating within a 1,000 foot radius. The clearance angle for metal structures is 1.2 degrees from the VOR center at ground level. Existing buildings in the west general aviation area likely penetrate this clearance angle and cause certain VOR bearings to be unusable by aircraft at lower altitudes. The existing VOR is estimated to be 10 feet below the west general aviation area elevation. The VOR clearance angle would also limit development of a 35-foot hangar to no closer than 2,150 feet from the VOR. Hangar area development and VOR siting alternatives are explored in **Chapter 5: Alternatives Analysis**.

Runway Approach NAVAIDs

Other NAVAIDs are developed specifically to provide "approach" navigation guidance, which assists aircraft in landing at a specific airport or runway. These NAVAIDs are electronic or visual in type.

Instrument Landing System (ILS)

An ILS is a ground-based system that provides precision instrument guidance to aircraft approaching and landing on a runway. ILS approaches enable a safe landing in Instrument Meteorological Conditions (IMC) with low cloud ceiling and/or visibility. An ILS operates through emitting radio beams that define the horizontal and vertical path to the runway landing threshold. Horizontal guidance is available up to 18 nautical miles and vertical guidance available up to 10 nautical miles from a runway end. Major components of ILS include:

- **Localizer (LOC):** antenna emitting a lateral signal providing pilots with horizontal position information relative to extended runway centerline.
- **Glide Slope (GS):** antenna emitting a glide path (typically 3 degrees) providing pilots with vertical guidance information relative to the runway landing threshold.
- **Inner Marker (IM) and/or Middle Marker (MM) and Outer Marker (OM):** beacons notifying pilots at critical points along the approach with an aural signal. IMs are only used for Category II and higher ILS systems.
- **Locator Outer Marker (LOM):** system is co-located with an NDB and identifies the point on the final approach course that the aircraft intercepts the glide slope and may begin descent to the runway.
- **Approach Lighting System (ALS):** visual aid providing high intensity visual lighting array.

Typical Localizer Antenna Array (FAA)

Typical Glide Slope Antenna (FAA)

The FAA is in the middle of decommissioning ILS marker beacon systems and is moving to replace these and NDB-based markers with GPS fixes.

There are three categories of ILS systems, each capable of supporting approaches in equipped aircraft with lower weather minimums, see **Table K-1**. Each category also requires an increasing complexity of airport equipment as well as aircraft and flight crew certifications.

Table K-1 – Standard ILS Categories

ILS Category	Decision Height (ft.)	Runway Visual Range (ft.)
Category I	200	2,400/1,800*
Category II	100	1,000
Category IIIa	0-100	700
Category IIIb	0-50	150
Category IIIc	0	0

Source: FAA Aeronautical Information Manual
**1800 RVR achieved with runway touchdown zone and centerline lighting*

MOT has a Category I ILS installed for Runway 31. This precision instrument approach has approach minimums as low as 200 foot cloud ceiling (decision height) and ½ mile flight visibility (2400 RVR).

Visual Guidance Slope Indicator (VGSI)

A VGSI system provides visual descent guidance to aircraft on approach to landing. There are several types of VGSI systems available. Examples include a Precision Approach Path Indicator (PAPI) system and a Visual Approach Slope Indicator (VASI). Each system directs beams of red and white light along the approach glide path set at different locations and/or angles to provide pilots with a visual indication of the aircraft's position relative to the designated approach slope for a runway. VGSI systems have a five mile range during the day and a 20 mile range at night. These systems are typically installed on runway ends with instrument approaches, but are also installed for visual runways. PAPI systems, a newer technology, consist of a single row of two to four lights radiating high intensity red or white beams to indicate whether the pilot is above or below the approach path to the runway.

Typical PAPI System (FAA)

At MOT, Runways 13, 8, and 26 are equipped with four-light PAPIs installed on the left side of the runway. Runway 31 does not have a PAPI system installed. The PAPIs are owned by MOT and maintained by the airport staff.

Runway End Identifier Lights (REIL)

REILs consist of high-intensity flashing white strobe lights located on the approach ends of runways. These lights are aimed directionally into the approach zone of aircraft to assist the pilot in early identification of the runway threshold at night or in poor visibility conditions. Additionally, these are typically installed on runways that are surrounded by a preponderance of other lights or if the runway lacks contrast with surrounding terrain. REILs are unidirectional for the designated runway approach or omnidirectional to provide good circling guidance.

REILs are installed on Runway 13, 8, and 26 at MOT. There is no need for a REIL system for Runway 31 as it has other light system installed (see *Approach Lighting System*).

Approach Lighting System (ALS)

ALS are required for runway ends which have published precision instrument approach procedures and these systems help pilots transition from instrument flight to visual flight for landing. The ALS extends beyond the approach end of the runway to provide a lighted "lead-in" for pilots to the runway threshold to transition from reference to instruments to a visual landing. There are various configurations, lighting types and complexities of these systems. The requirement for an airport runway end is dependent upon the type of precision approach and visibility minimums of the approach. Common types of ALS include:

- **Omnidirectional Approach Lighting System (ODALS):** Consists of seven omnidirectional sequenced white strobe lights along runway approach centerline providing visual guidance to non-precision runways. The system is 1,500 feet in overall length.
- **Medium-intensity Approach Lighting System with Sequenced Flashing Lights (MALSF):** System consists of seven rows of lights, three flashing lights and a row of steady burning green lights prior to runway threshold. The system is 1,400 feet in overall length.
- **Medium-intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR):** System consists of seven rows of lights, five flashing lights and a row of steady burning green lights prior to runway threshold. The system is 2,400 feet in total length and is commonly used for Category I precision approaches.
- **Approach Lighting System with Sequenced Flashing Lights (ALSF):** This is a more complex lighting system used for Category II or III precision approaches. The system includes a green threshold bar, 15 total rows of white lights, nine side rows bars along centerline, and sequenced flashing white lights.

At MOT, Runway 31 is currently served by a MALSR extending approximately 2,450 feet out from the runway end in conjunction with the ILS approach.

Recommendations

Runway 31 is recommended to have a 4-light PAPI system installed to aid in vertical guidance to the runway end. When Runway 13 approach is upgraded from 1-mile to ¾ mile flight visibility, the installation of an ALS is likely required to achieve lower weather minimums. Recommended ALS types for Runway 13 include ODALS or MALSF.

Airfield Visual NAVAIDs

Visual NAVAIDs provide airport users with visual references within the airport environment. They consist of lighting, signage and pavement markings on an airport. Visual NAVAIDS are necessary airport facility components on the airfield, promoting enhancing situational awareness, operational capability and safety.

Airport Beacon

An airport beacon is rotating light that projects a beam of alternating green and white light which appears as a series of flashes to approaching pilots. The airport beacon serves as the airport identification light so approaching pilots can identify the airport location during night and instrument flight rule conditions. The beacon is known to be visible from 40 miles away at night. The brightness or intensity of beacons can vary by airport. The intensity is dependent upon the amount of ambient light present in the area at night and the runway lighting system installed.

The rotating beacon for MOT is a white-green beacon located approximately 1,600 feet northeast of the Runway 13 end.

Runway Lighting

Runway edge lights are placed off the edge of the landing surface of a runway. The lights help pilots define the edges and end of the runway during night and low visibility conditions. These lights are spaced at equal distances along a runway, and perpendicular from side to side of a runway. These lights are generally white in color. The runway end lights appear red to a pilot approaching the end of the runway, and green as aircraft approach the runway from the air. Instrument runways have a row of eight lights at the end of a runway while visual runways have four. For medium and high intensity systems, the last 2,000 feet of each runway with instrument approaches have amber lights to caution pilots that the end of the runway is approaching. The light intensity can be adjusted by use of a radio controlled switch (pilot controlled lighting) on an airport frequency or manually by airport attendants and/or air traffic controllers. Runway lights are classified according to the intensity of light they produce:

- **High Intensity Runway Lights (HIRL)**: System is generally installed on precision instrument runways, required for RVR-based minimums.
- **Medium Intensity Runway Lights (MIRL)**: System is generally installed on visual or non-precision instrument runways.
- **Low Intensity Runway Lights (LIRL)**: System is generally installed on visual runways at small airports.

Runway 13-31 and Runway 8-26 are both equipped with HIRL systems.

Other runway lights are installed at airports to facilitate the safe and efficient operation of aircraft. These include runway centerline lighting (RCL) and touchdown zone lighting (TDZL). No runways at MOT are equipped with RCL or TDZL. An in-pavement RCL and TDZL lighting system is required for landing operations below 2,400 feet RVR.

Taxiway Lighting

Taxiway edge lighting delineates the taxiway and apron edges. Taxiway lights are blue in color and spaced according to FAA standards. Taxiway lights are, by design, of lower intensity than runway lights. The FAA standard taxiway edge lighting system is Medium Intensity Taxiway Lights (MITL). Most taxiways in the movement areas at MOT, except for Taxiway B2, are equipped with high intensity edge lights (HITL).

Other taxiway lights are installed at airports to promote safe operations. These include taxiway centerline lighting, runway guard lights (RGL), runway stop bar and clearance bar. RGL are recommended by FAA to be installed at all taxiway-runway intersections for Runway 13-31 and 8-26, particularly for “hot-spot” intersections.

An economical alternative to taxiway lighting on general aviation portions of the airport is the use of retro-reflective markers. These markers are plastic and have blue reflective material designed to reflect light back toward its source.

Pilot Controlled Lighting

Airfield lighting systems allow for pilots to control the complexity and intensity of lights. The runways at MOT are equipped with a pilot-controlled lighting system (PCL) which is available when the control tower is closed. The runway lights are able to be activated using aircraft communications radio.

Airfield Signage

Airfield signage is essential for the safe and efficient operation of aircraft and ground vehicles on the airport movement area. Signs are located adjacent to the edge of runways, taxiway and aprons. There are several types of signs that each serve a unique purpose. Common signs include:

- **Mandatory Instruction Signs:** Red with white text denoting taxiway/runway intersections, runway/runway intersections, ILS critical areas and other critical areas.
- **Location Signs:** Black with yellow text and identify the taxiway or runway where the aircraft or vehicle is located.
- **Boundary Signs:** Yellow with black text and identify the location of a critical area for a pilot exiting a runway.
- **Direction / Destination Signs:** Yellow with black text containing arrows to indicate the direction of taxiways or general direction to a location.
- **Information Signs**: Yellow with black text and provide additional information to pilots.
- **Runway Distance Remaining Signs:** Black with white numbers and provide runway distance remaining during takeoff and landing operations with a white number on black background.

Current FAA standards require all airports to have mandatory instruction signs installed at a minimum. Airports certificated under 14 CFR Part 139 must have a sign plan developed and implemented.

Pavement Markings

Pavement markings help airport users visually identify important features on the airfield. Pavement markings are installed on the runways, taxiways and aprons. FAA has defined numerous different pavement markings to promote safety and situational awareness.

RUNWAY

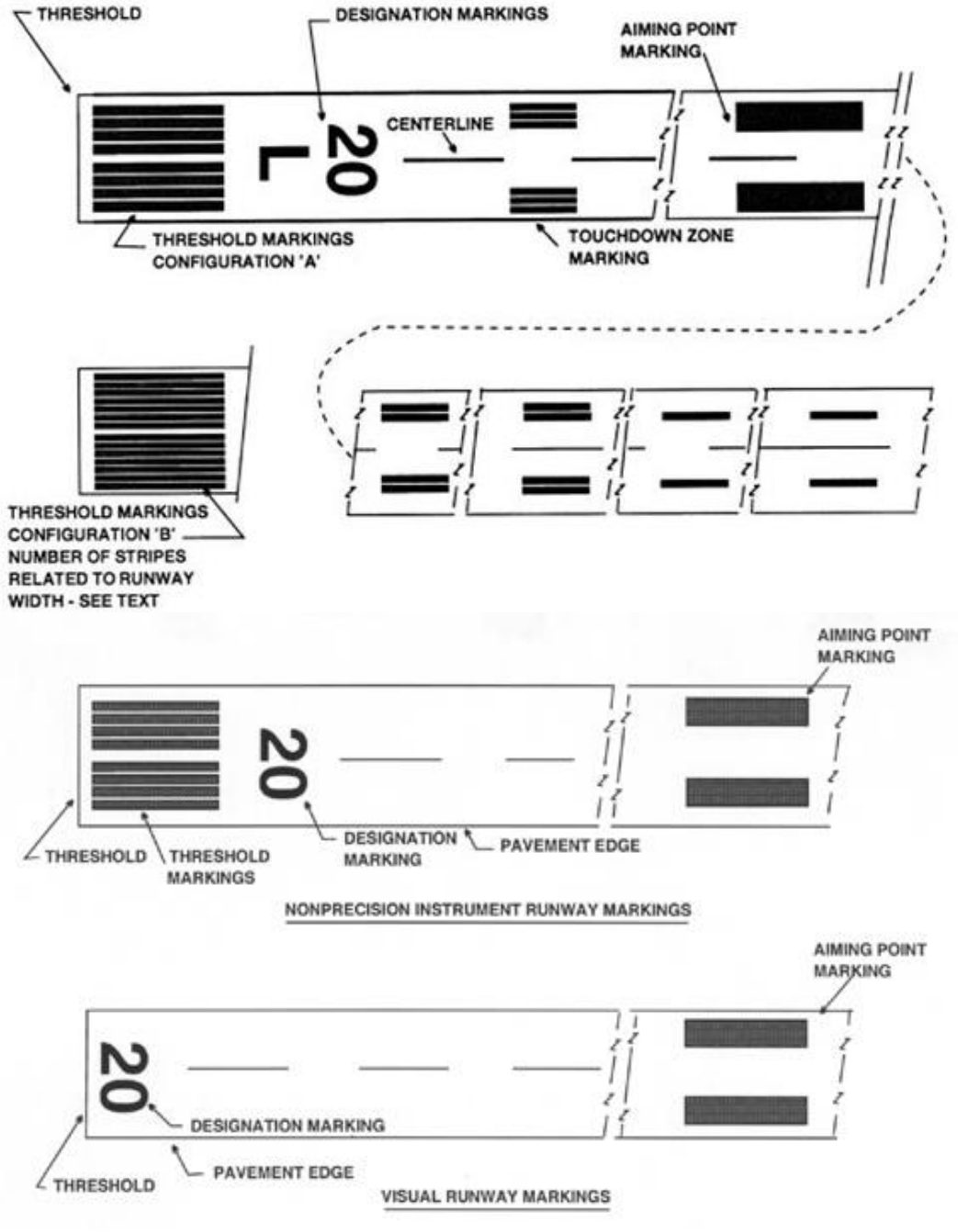
Runway pavement markings are white in color. The type and complexity of the markings are determined by the approach threshold category to the runway end. The minimum required runway markings for a standard runway are as follows, see **Exhibit K-1**:

- **Visual:** Landing designator and centerline markings
- **Non-Precision:** Landing designator, centerline and threshold markings
- **Precision:** Landing designator, centerline, threshold, aiming point, touchdown zone, and runway edge markings

Additional runway markings for a displaced threshold, blast pad, stopway or shoulders may also be required for an airport. Cone markers may be used to identify the edges and ends of turf runways.

Runway 13-31 at MOT is equipped with precision runway markings identifying the runway designation, threshold, centerline, side stripes, aiming point and touchdown zone. Runway 8-26 is equipped with non-precision runway markings identifying the runway designation, threshold, centerline and aiming point. The runway markings are reported to be in good condition.

Exhibit K-1 – Runway Markings



Source: [FAA Airmen Information Manual (AIM)]

TAXIWAY & APRON

Taxiway and apron markings are important for directional guidance for taxiing aircraft and ground vehicles. Common taxiway and apron markings include:

Taxiway Markings Near MOT Runway 31 End

- **Holding Position Markings:** Visual reference to prevent aircraft and vehicles from entering critical areas such as an active runway environment. These markings consist of yellow bars and dashes on a black background.
- **Taxiway/Taxilane Centerline:** Solid yellow stripe along the designated centerline.
- **Taxiway/Taxilane Edge:** Solid or dashed yellow stripes delineating the edge of usable taxiway.
- **Non-Movement Area:** Delineate the edge of the area controlled by local air traffic control or available for parked aircraft or objects.

Enhanced taxiway markings are required to further provide additional visual cues to an aircraft or vehicles approaching a runway holding position. Airports certificated under 14 CFR Part 139 must have enhanced markings implemented. Other markings include surface painted signs, geographic position markings and vehicle roadways. Pavement markings should have black borders to help delineate their existence on airport pavements. Some markings require glass beads for enhanced reflectivity.

Recommendations

Runway Guard Lights (RGL) are recommended at the intersection of Taxiway C and Runway 8-26 to help prevent runway incursions. This intersection is identified as a "hot-spot" intersection by FAA. In-pavement centerline and touchdown zone lights for Runway 31 are optional for RVR-based Category I ILS minimums as low as 1800 RVR.

Meteorological Aids

Aircraft operating to and from an airport require meteorological aids to provide current weather data. Weather information helps pilots make informed decision about flight operations. Airports have various aids installed providing local weather information.

Typical Weather Reporting Station System

Surface Weather Observation

There are various types of surface weather observation stations. An Automated Surface Observation System (ASOS) is a Federal weather reporting station at airports. It provides continuous 24-hour observations and reporting for the FAA, National Weather Service (NWS) and Department of Defense (DoD). The suite of sensors provide temperature, dew point, wind speed and direction, visibility, cloud ceiling and precipitation information. Some stations have optional freezing rain and thunderstorm sensors. Weather observing systems are recommended to be kept clear of agricultural operations within 100 feet, clear of objects above the 30 foot sensor height within 500 feet, and clear of high objects within 1,000 feet.

The ASOS at MOT was commissioned in 2002 and is co-located with the glideslope antenna near the Runway 31 landing threshold. The system can be accessed by pilots on frequency 118.725 MHz or by telephone at 701-837-9379. This system is entirely automated and provides current wind direction and velocity, visibility, cloud clearances, sky condition, temperature, dew point, barometric pressure, precipitation measurements and lightning detection.

Wind Cone

Wind cones visually indicate the current wind direction and velocity on an airfield. A primary wind cone is located in a central visible location on the airport and is usually lighted for night operations. A segmented circle is installed around the wind cone to aid pilots in its identification from the air. Supplemental wind cones are installed around the airfield to provide surface wind direction information to pilots where the primary wind cone is not visible. Wind cones must be lit for night air carrier operations. MOT's primary wind cone and segmented circle is located east of the GA apron, approximately 340 feet southwest of the Taxiway C2 and B intersection, north of Runway 8 end. There are three (3) supplemental wind cones located on the airfield near the Runway 13, 31 and 26 ends.

Other

Runway Visual Range (RVR) visibility sensor systems provide instant reporting of the visibility at targeted locations on the airfield. These systems must be located at the touchdown zone, mid-point (if required for runway length) and rollout points to allow for Category II or lower operations. MOT is equipped with RVR equipment at the touchdown point to Runway 31. This system allows RVR-based minimums to be published for the ILS approach to Runway 31. The system is co-located with the glideslope antenna, approximately 400 feet from Runway 13-31 centerline.

Recommendations

There are no recommended changes to metrological facilities above and beyond existing facilities.

Communication Aids

The ability for pilots to communicate with other pilots and air traffic control is critical for the safety and efficiency of the overall air transportation system.

MOT has their own Airport Traffic Control Tower (ATCT) known as Magic City Tower. ATCT provides air traffic control services for aircraft in the Minot area from 7:00 am to 10:00 pm at 118.20 MHz. This ATCT is in the FAA's contract tower program and is operated by Midwest Air Traffic Control. ATCT provides clearances, radar advisories and safety alerts to Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) flights within the controlled Class D airspace. Class D airspace controlled by the ATCT and extends out five miles from the airport and up to an altitude of 2,500 feet Mean Sea Level (MSL). See **Appendix L** for a discussion of airspace classifications.

ATCT is located adjacent to the new passenger terminal at MOT. ATCT requires a clear line of sight from the controller cab to the airport's movement areas which includes the runways, taxiways, aprons and arrival/departure corridors. Structures on an airport need to consider this design standard, and in some cases require the completion of a shadow study to demonstrate no adverse impact. There may be impacts to visibility from ATCT to Taxiway D and B southwest of Runway 8 end.

When the ATCT is closed, pilots "see-and-avoid" other aircraft in the local area aided through the use of a series of position reports using the Common Traffic Advisory Frequency (CTAF). MOT has a CTAF operating at a frequency of 118.2 MHz and local advisory frequency (UNICOM) of 122.95 MHz. Pilots, equipment, and vehicle operators use CTAF to advise each other of their movements on and around the

airport. UNICOM is a frequency for pilots to contact businesses on the field about fueling and other airport services.

A Remote Communications Outlet (RCO) provides a direct communication link with the Flight Service Station (FSS). FSS's are air traffic facilities which provide pilot briefings, flight plan processing, inflight radio communications, search and rescue (SAR) services, and assistance to lost aircraft and aircraft in emergency situations. A RCO ground station at MOT providing communications with the FSS is available on 122.20 MHz.

The terminal area generally describes the airspace within 40 nautical miles of an airport. MOT is located within of a terminal radar area for Minot Approach providing approach and departure control services. Terminal Radar Control (RAPCON) is available from Minot Air Force Base. When the RAPCON is closed, approach and departure services are provided by Minneapolis Air Route Traffic Control Center (ARTCC) located in Farmington, Minnesota. A Remote Communications Air-Ground (RCAG) station is located at MOT northeast of Runway 13 end, available on frequency 127.60 MHz. The local presence of this facility enables aircraft to communicate with Minneapolis ARTCC at a lower altitude in the local area.

Recommendations

The existing ATCT has limited line-of-sight from the tower cab to Taxiway B south of the existing Runway 8 end. The ATCT direct line-of-sight requirements also limits future building development to the east of the general aviation apron.

An alternate site for the ATCT north and east of the airfield complex should be explored. Within the planning period the structure may need to be replaced on the current site or at another location. FAA Order 6480.4A, *Airport Traffic Control Tower Siting Process* identifies the criteria used for considering a new tower location:

1. Visual performance
2. TERPS airspace surfaces
3. FAR Part 77 airspace
4. Sunlight/daylight
5. Airport/background lighting
6. Atmospheric Conditions
7. Industrial Municipal Discharge
8. Site Access
9. Interior Physical Barriers
10. Security

Preliminary ATCT siting alternatives will be reviewed in **Chapter 5: Alternatives Analysis**. The Airport Layout Plan will show a potential ATCT site location based on a preliminary analysis. Additional research and modeling will be required prior to actual site selection. An ATCT siting study would need to be initiated and conducted by the FAA.

Table K-2 – Navigational Aid Summary

Component	Runway 13/31	Runway 8/26
Runway Length (feet)	*7,700*	*6,351*
Runway Width (feet)	*150*	*100*
Pavement Markings	Precision	Non-Precision
Runway Lighting	HIRL, **CL, TDZ (31)**	HIRL
Taxiway Lighting	HITL	HITL
Approach Lighting	MALSR (31), **MALSF (13)** PAPI-4L (13, **31**) REIL (13)	PAPI-4L (8,26) REIL (8, 26)
Instrument Approach Procedures	ILS or LOC (31) RNAV (GPS) (13,31) VOR (13,31) LOC/DME (13)	RNAV (GPS) (8,26) RNAV (GPS) (8,26) VOR (8,26)
Navigational Aids	Air Traffic Control Tower (ATCT) **- New Site**	
Meteorological Facilities	Automated Surface Observation System (ASOS) Runway Visual Range (RVR) - 31 Lighted Wind Cone with Segmented Circle	

Source: Airnav.com, FAA Airport Master Record Form 5010 Report
***Blue** text indicates recommended NAVAID installation*