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Aeronautical Study No.
2014-ANM-1654-OE

Issued Date: 02/20/2015

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**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ** (REVISED)**

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Tower WA-907 (Flowers)
Location:	Grand Coulee, WA
Latitude:	47-57-24.14N NAD 83
Longitude:	119-00-55.30W
Heights:	2327 feet site elevation (SE)
	261 feet above ground level (AGL)
	2588 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure would have no substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, pursuant to the authority delegated to me, it is hereby determined that the structure would not be a hazard to air navigation provided the following condition(s) is(are) met:

As a condition to this Determination, the structure is marked/lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, a med-dual system - Chapters 4,8(M-Dual),&12.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

- ☐ At least 10 days prior to start of construction (7460-2, Part 1)
☒ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

See attachment for additional condition(s) or information.

This determination expires on 08/20/2016 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.
- (c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within

6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is subject to review if an interested party files a petition that is received by the FAA on or before March 22, 2015. In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted to the Manager, Airspace Regulations & ATC Procedures Group, Federal Aviation Administration, 800 Independence Ave, SW, Room 423, Washington, DC 20591.

This determination becomes final on April 01, 2015 unless a petition is timely filed. In which case, this determination will not become final pending disposition of the petition. Interested parties will be notified of the grant of any review. For any questions regarding your petition, please contact Airspace Regulations & ATC Procedures Group via telephone -- 202-267-8783 - or facsimile 202-267-9328.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

This aeronautical study considered and analyzed the impact on existing and proposed arrival, departure, and en route procedures for aircraft operating under both visual flight rules and instrument flight rules; the impact on all existing and planned public-use airports, military airports and aeronautical facilities; and the cumulative impact resulting from the studied structure when combined with the impact of other existing or proposed structures. The study disclosed that the described structure would have no substantial adverse effect on air navigation.

An account of the study findings, aeronautical objections received by the FAA during the study (if any), and the basis for the FAA's decision in this matter can be found on the following page(s).

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

If we can be of further assistance, please contact Daniel Shoemaker, at (425) 227-2791. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2014-ANM-1654-OE.

Signature Control No: 221153892-243748373

(DNH)

Sheri Edgett-Baron

Manager, Obstruction Evaluation Group

Attachment(s)

Additional Information

Frequency Data

Map(s)

cc: FCC

ASN 2014-ANM-1654-OE

Abbreviations

AGL - above ground level

MSL - mean sea level

RWY - runway

VFR - visual flight rules

IFR - instrument flight rules

nm - nautical mile

Part 77 - Title 14 Code of Federal Regulations (CFR) Part 77, Objects Affecting Navigable Airspace

1. LOCATION OF PROPOSED CONSTRUCTION

This proposal is for construction of a 261-foot AGL (2588-foot MSL) antenna tower atop the high terrain just northwest of Grand Coulee, WA. The antenna tower would be located approximately 18,754 feet (3.08 nm) northeast of the RWY 21 threshold at Grand Coulee Dam Airport (3W7), and approximately 2650 feet south of an existing electrical substation. The tower would also be located in the midst of several transmission lines with large support structures of unknown height. The 3W7 airport elevation is 1588 feet MSL.

Grand Coulee Dam Airport has a single asphalt Category A (Visual) runway, aligned 3/21, which is 4199 feet long and 75 feet wide. The runway is equipped with medium-intensity runway edge lights (MIRL) and a non-Federal precision approach path indicator (PAPI) light system installed on RWY 21. The visual traffic pattern is restricted to the north side of the airport due to high terrain on the south side, requiring a nonstandard (right-hand) traffic pattern for Runway 21. There are no instrument procedures or radio navigational aids at 3W7.

According to the AirportIQ 5010 Airport Master Records and Reports website <http://www.gcr1.com/5010web/airport.cfm?Site=3W7&AptSecNum=2>, there were nine single-engine fixed-wing aircraft, one glider, and three ultra-light aircraft based at 3W7 as of 30 May 2012, which is the latest data on record. During the 12 months ending on 30 May 2012, the traffic count for Grand Coulee Dam Airport was 5000 local general aviation operations and 8000 itinerant general aviation operations, for a total of 13,000 operations.

2. OBSTRUCTION STANDARDS EXCEEDED

The structure is identified as an obstruction under the following Part 77 standard:

Section 77.17(a)(2): A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet. This antenna tower would exceed the 3W7 Part 77.17(a)(2) surface by 18 feet.

3. EFFECT ON AERONAUTICAL OPERATIONS

- a. The impact on arrival, departure, and en route procedures for aircraft operating under VFR: This antenna tower would exceed the 3W7 Part 77.17(a)(2) surface by 18 feet. The tower would be located 500 feet outside the traffic pattern airspace for Category D aircraft.
- b. The impact on arrival, departure, and en route procedures for aircraft operating under IFR: None.
- c. The impact on all planned public-use airports and aeronautical facilities: The proposed antenna tower would penetrate the 3W7 RWY 21 precision approach path indicator (PAPI) obstruction clearance surface (OCS), where the terrain at the antenna site also exceeds the 3W7 RWY 21 PAPI OCS.

The PAPI is a lighting system consisting of four light fixtures, normally installed on the left side of the approach end of a runway, which provides visual descent guidance information to pilots on final approach to the runway. These lights may be visible from up to five miles away during daylight hours, and from up to 20 or more miles away at night. The visual glide path of the PAPI typically provides safe obstruction clearance within +/-10 degrees of the extended runway centerline out to four statute miles (sm) from the runway threshold. When the aircraft is on the safe glide path, the left two lights in the array will appear white, and the right two light will be red. When the aircraft is too high on final approach, all four lights will be white, and when the aircraft is below the safe glide path, all four lights will be red. Each light is individually angled and filtered so the lights will gradually change from white to varying shades of pink to red as the aircraft descends through the glideslope, and vice versa, providing the pilot visual descent trend information. For example, the pilot of an aircraft slightly above the glide path may see a white light on the far left, a slightly pink light to the right of it, then a darker pink light, and a red light on the far right.

The standard PAPI glide path angle is three degrees. Grand Coulee Dam Airport's non-Federal PAPI glide path angle is not published, either on the AirportIQ 5010 website (<http://www.gcr1.com/5010web/airport.cfm?Site=3W7&AptSecNum=3>) or in the FAA Airport/Facility Directory. The site of the proposed antenna would be approximately one degree right of the runway centerline, which is approximately 520 feet south of the extended runway centerline. As the antenna would be 3.08 nm (3.48 sm) from the 3W7 RWY 21 threshold, it would be within the PAPI's four-statute-mile service range.

d. The cumulative impact resulting from the proposed construction or alteration of a structure when combined with the impact of other existing or proposed structures: None.

4. CIRCULATION AND COMMENTS RECEIVED

The proposal was circulated for public comment on 9 January 2015. The public comment period ended on 15 February 2015, and one comment was received as of that date.

The Confederated Tribes of the Colville Reservation expressed concern that the proposed antenna tower would lie within the traditional territory of the Nespelem tribe, one of the tribes that make up the Colville Confederated Tribes (CCT), and that prehistoric, ethnographic, historic, and traditional sites of value to the CCT surround the project area. The area has also not been previously inventoried for cultural resources, and the CCT recommended that a cultural resources inventory be completed before construction of the tower commences.

The FAA neither concurs nor non-concurs with the CCT's concerns, as these issues are not germane to the aeronautical study process. This aeronautical study is an analysis of the proposed antenna tower's potential effects on airports and airspace, the purpose of which is to identify whether the structure will pose a hazard to air navigation. The study evaluates potential impacts on visual traffic patterns and operations, instrument arrival and departure procedures, en route airspace structure, radio navigational aids, radio and visual approach and landing aids, and radar and radio communications signals. The final FAA determination resulting from the study is not a building permit, and does not take into account land-use, environmental, or archaeological/cultural issues. These concerns need to be addressed at the local, county, state, and/or tribal government level.

As they are outside the scope of this 14 CFR Part 77 aeronautical study, the CCT's comments cannot be considered in this evaluation of the proposed antenna tower.

Prior to formal circularization of the study, the FAA consulted with the Grand Coulee Dam Airport manager regarding the proposed tower. The airport manager stated that he would object to a tower that would affect the PAPI and could affect a future GPS approach to RWY 21 at 3W7.

The FAA does not concur with the 3W7 airport manager's concerns about the proposed tower. The tower would be located outside the lateral boundaries of the traffic pattern protected airspace for Category D aircraft (the highest category of aircraft that could possibly operate at 3W7). The aircraft category is a function of its final approach speed; for Category D aircraft, this speed is greater than 141 knots. Therefore, aircraft of all categories up to D operating within the designated visual traffic pattern airspace and using the PAPI on final approach will remain within the distance between the runway threshold and the proposed antenna tower, and would not overfly it. As there are currently no straight-in instrument procedures to RWY 21, and none are presently in the development and production process, the FAA cannot protect for final approaches outside the traffic pattern airspace. Future approaches will have to factor in the presence of the antenna tower when determining any minimum descent and decision altitudes, as well as the required PAPI glide path angle outside the visual traffic pattern airspace.

5. DETERMINATION - NO HAZARD TO AIR NAVIGATION

It is determined that the proposed construction would not have a substantial adverse effect on the safe and efficient use of navigable airspace by aircraft.

6. BASIS FOR DECISION

Part 77 establishes standards for determining obstructions to air navigation. A structure that exceeds one or more of these standards is presumed to be a hazard to air navigation unless the obstruction evaluation study determines otherwise. Just because a proposed structure exceeds a Part 77 surface does not automatically make it a hazard. In this case, the proposed antenna tower would penetrate the 14 CFR Part 77.17(a)(2) surface by 18 feet. It would also penetrate the 3W7 RWY 21 precision approach path indicator (PAPI) obstruction clearance surface (OCS). However, no issues related to the Part 77.17(a)(2) surface were identified in the course of the evaluation or raised in the public comment process, and the tower would be located on high terrain that also penetrates the PAPI OCS. The PAPI is intended to provide safe obstacle-free glide path guidance for both aircraft operating in the visual traffic pattern and to aircraft transitioning to a visual final approach from an instrument approach procedure. Although the tower would lie within the lateral service area of the 3W7 RWY 21 PAPI, the fact that the proposed tower is outside the visual traffic pattern airspace for Category D aircraft (which covers the widest area usually reserved for visual traffic patterns) and the fact that there are no instrument approach procedures to 3W7 mean that there are few conditions under which an aircraft would be using the VASI glide path at that distance from the airport. The incorporation of obstruction lighting will increase the visibility of the tower to pilots, and will help mitigate the PAPI OCS penetration.

Additionally, the FAA recommends that the Grand Coulee Dam Airport manager take additional steps to mitigate or eliminate numerous penetrations of the 3W7 RWY 21 PAPI OCS, such as realigning the PAPI glide path angle to provide clearance of the high terrain and other obstructions to the northeast; restricting the PAPI service volume to within two nautical miles of the RWY 21 threshold; and/or including a note in the "Remarks" section of 3W7's 5010 and Airports/Facilities Directory entry, warning of the high terrain, the transmission lines, and the antenna tower and their effects on the RWY 21 PAPI.

Frequency Data for ASN 2014-ANM-1654-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
698	806	MHz	1000	W
806	824	MHz	500	W
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W
896	901	MHz	500	W
901	902	MHz	7	W
930	931	MHz	3500	W
931	932	MHz	3500	W
932	932.5	MHz	17	dBW
935	940	MHz	1000	W
940	941	MHz	3500	W
1850	1910	MHz	1640	W
1930	1990	MHz	1640	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W



