Metropolitan Nashville Airport Authority NES Department Safety Meeting March 17, 2015

Butch Gelband, A.A.E., ACE





Outline

- Overview of airspace
- Complexity of BNA airspace
- Federal Aviation Regulations
- Notice of Proposed Construction
- Airport Coordination



Classes of Airspace



Airspace Features	Class A	Class B	Class C	Class D	Class E	Class G
ATC Facility	ARTCC	TRACON	TRACON or ATCT	ATCT	ARTCC	None
Operations Permitted	IFR	IFR & VFR	IFR & VFR	IFR & VFR	IFR & VFR	IFR & VFR
Entry Requirements	ATC Clearance	ATC Clearance	ATC Clearance for IFR. All require radio contact	ATC Clearance for IFR. All require radio contact	ATC Clearance for IFR. All require radio contact	None
VFR Minimum Distance from Clouds	N/A	Clear of clouds	500' below, 1,000' above, and 2000' horizontal	500' below, 1,000' above, and 2000' horizontal	500' below, 1,000' above, and 2000' horizontal	Clear of clouds
Aircraft Separation	All	All	IFR, SVFR, and runway operations	IFR, SVFR, and runway operations	IFR and SVFR	None

Courtesy of FAA

VFR Chart



IFR High Altitude Chart





Complexities of Airspace Design



BNA Flight Tracks for one day



Flight Tracks for BNA for two weeks





- Instrument Landing System (ILS)
 - Provides precision and non-precision approach capability





• Instrument Landing System (ILS)







- VOR/VORTAC
 - Non-precision approach
 - Enroute
 - Departure







BNA VORTAC





Global Position System (GPS)

- Approaches
- Enroute
- Departures





GPS approaches







Plane Encounters TV Tower in Lubbock, TX on 4 Feb, 2015





Result of Encounter with TV Tower





Aircraft was on published instrument approach; tower location was noted on approach chart



SC-2, DSFEB 2015 to DS MAR 2015

SC-2, 05 FEB 2015 to 05 MAR 2015

Tower was Charted as an obstruction





Imagine what happens when obstructions are not charted...

Issues:

- Hazard to aircraft
- Reflect navigational aid signals
- Subject to \$1,000 fine per day



Federal Grant Assurances

 (The airport) will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.

BNA's FAR Part 77 Airspace



JWN's FAR Part 77 Airspace





Arrival Surface

- Standard 3 degree approach slope
- Protected by a 50:1 FAR Part 77 approach surface and a 34:1 Terminal Instrument Procedures arrival surface





Departure Surface

- Standard climb gradient of 200 feet/nautical mile
- Protected by a 40:1 departure surface



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Federal Aviation Regulation Part 77 Safe, Efficient Use, and Preservation of the National Airspace

- Who Needs to File
- <u>14 CFR Part 77.9</u> states that any person/organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA:
- any construction or alteration exceeding 200 feet above ground level
- any construction or alteration:
 - within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 feet
 - within 10,000 feet of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 feet
 - within 5,000 feet of a public use heliport which exceeds a 25:1 surface
- any highway, railroad or other traverse way whose prescribed adjusted height would exceed the above noted standards
- when requested by the FAA
- any construction or alteration located on a public use airport or heliport regardless of height or location



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 - within 5,000 feet of a public use heliport which exceeds a 25:1 surface
- any highway, railroad or other traverse way whose prescribed adjusted height would exceed the above noted standards
- when requested by the FAA
- any construction or alteration located on a public use airport or heliport regardless of height or location



Form and Time of Notice

- FAA Form 7460-1, "Notice of Proposed Construction or Alteration"
- Must be filed 45 days before the earlier of the following days:
 - The date construction is to begin
 - The date an application for a construction permit is filed
- Applies to temporary as well as permanent structures
- The length of time a temporary structure will be used is irrelevant



FAA Form 7460-1, "Notice of Proposed Construction or Alteration"

Please Type or Paint on This Form			ExpitationCate: 10/31/2017 FOR FAA USE ONLY
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U.S. Depairment of Paragonitation Federal Academ Administration	Notice of Proposed Cons	truction or Alteration	
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Attn.	of	15. Direction from #13. to Structure:	
		16. Site Elevation (4MSL):	tî
		17. Total Structure Height (464):	
- europa		18. Overall Height (#16 + #17) /AMS/	4
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8. FCC Antenna Structure	Registration Number (#apploable):		
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FAA's OE/AAA Website

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 Index provide the field of the fiel	bstruction Evaluation Version 2015.1.2	Obstruction Evaluation / Airport Airspace Analysis (OE/AAA)	faa.gov Tools: 🛅 Print this pag
mmm drag frag frag frag frag frag frag frag frag	lome	In administering Title 14 of the Code of Federal Regulations (14 CFR) Part 77, the prime objectives of the FAA are to promote air safety and the efficient use of the navigable airspace.	To accomplish this mission, aeronautical studies are conducted based on information provided by proponents on an FAA Form 7460-1, Notice of Proposed Construction or Alteration.
Rame Control Contrelectico Control Control Contrelectico Control Contro	A OE/AAA Offices	Advisory Circular 70/7460-1K, Obstruction Marking and Lighting, describes the standards for marking and lighting structures such as buildings, chimneys, antenna towers, cooling towe	rrs, storage tanks, supporting structures of overhead wires, etc.
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Electronic FAA Form 7460-1

Federal Avia Administrati									« OE/AAA
Obstruction Evaluation Version 2015.1.3	Notice of Proposed Construction or Alteration - Off Airport								aa.gov Tools: 🚵 Print this page
Home	Add a new Case Off Airport - Desk Reference Guide V_2015.1.0								
	Add a New Case Off Airport for Wind Turbines - Met Towers - Desk Reference Guide V_2015.1.0								
View Determined Cases									
View Interim Cases	Sponsor (person, company, etc. proposing this action)								
View Proposed Cases			* Sponsor:						
View Supplemental Notices	Construction / Alteration Information		s	Structure Summary					
(Form 7460-2)	* Notice Of:			Structure Type:					
View Circularized Cases	* Duration:			Structure Name:					
Search Archives	if Temporary : Months: Days:		N	IOTAM Number:					
Circle Search for Cases	Work Schedule - Start: Schedule - Start:		P	CC Number:					
Circle Search for Airports	Work Schedule - End:		P	Prior ASN:	V - Validate	Prior			
General FAQs	*For temporary cranes-Does the permanent structure require separate notice to the FAA7		м	ficro-Siting:	(65				
Wind Turbine FAQs	To find out, use the Notice Criteria Tool. If separate notice is required, please ensure it is filed. If it is not filed, please state the reason in the Description of Proposal.								
Discretionary Review FADs	State Filing:		2	For Wind Turbine/Met Tower-Only ch location previously studied due to mi	cro-siting.				
Notice Criteria Tool			7	he FAA will validate your latitude/lon, he prior ASN to ensure the structure h	gitude coordinates against as not moved more than 500 feet.				
DoD Preliminary Screening	Structure Details								
	* Latitude:			Common Frequency Bands					
Wind Turbine Build Out	× Longitude:			Common Prequency bands	Low Free	High Freq	Free Unit	ERP	ERF Unit
Distance Calculation Tool	* Horizontal Datum:				695	200	Mma	1000	W
OE/AAA Account	* Site Elevation (SE):	(nearest foot)			505	824	MHz	500	W
Portal Page	* Structure Height (AGL):	(nearest foot)			524	549	MHa	500	W
	* Current Height (AGL):	(nearest foot)			851	555	MHz	500	W
My Cases (Off Airport) My Cases (On Airport)	* For notice of alteration or existing provide the current AGL height of the existing structure.				525	901	MHz	500	W
My Cases (Un Airport) My Sponsors	Include details in the Description of Proposal				901	902	MHa	,	W
My Circ Comments	Max Operating Height (AGL):	(nearest foot)			930	951	MHz	3500	W
Add New Case (Off Airport)	* For aeronautical study of a crane or construction equipment the maximum height should be listed above as the				931 932	932	Mma	3500	W
Add New Case (On Airport)	Structure Height (AGL). Additionally, provide the maximum operating height to avoid delays if impacts are identified that				933	932.5	MHz	17	dBW
Add Supplemental Notice	require negotiation to a reduced height. If the Structure Height and maximum operating height are the same enter the same				940	941	MHz	3500	w
(7460-2 Form)	value in both fields.				1850	1910	NHa	1840	W
My Case Transfer History	× Nacelle Height (AGL): * For Wind Turbines SODIT AGL or greater	(nearest foot)			1930	1990	MHa	1840	W
Update User Account					2305	2310	MH2 MH2	2000	W
What's New	* Requested Marking/Lighting:	None		-					
Instructions		Other:	5	Specific Frequencies					
Change Password	Audio Visual Warning System(AVWS): × Only check this box if you are proposing the	Yes		Add Specific Frequency					Clone Prior ASN frequencies
Logout	Installation and use of an Audio Visual Warning System			and opecation requestory		*Note: Selecting this	s link will only add frequency(le al frequency(les)/power must i	s)/power from th	e prior ASN listed in Structure
Televenting Recourses	* Current Marking/Lighting:	Select One				Summery. Addition	I Integratine y (real) / pointer moat	they are to be co	nsidered with your new filing.
Information Resources		Other :							
FAA Acronyms	* Nearest City:								
Forms Regulatory Policy	* Nearest State:								
	* Description of Location: On the Project Summary page upload any certified survey.	~							
Relevant Advisory Circulars Survey Accuracy		~							
	* Description of Proposal:	~							
Light Outage Reporting Useful Links									
State Aviation Contacts	Additional Location(s)								
On Airport Contacts	Additional Location(s) Add New Location(s)								
Off Airport Contacts									
		I hereby certify that all of the above statements made by me are true, complete, and correct	t to the best of my knowledge. In addition, I agree to	mark and/or light the structure in accord	sance with established marking and lighting star	noards			

Save Cancel

Airspace Determination

Air Traffic 2601 Meac	iation Administration Airspace Branch, ASW-520 ham Blvd. , TX 76137-0520	Aeronautical Study No. 2008-ASO-5853-OE
Issued Date: 10/31/200	8	
NASHVILLE, TN 372	14	
TEMPOI	RARY DETERMINATION OF NO HA	ZARD TO AIR NAVIGATION
	dministration has conducted an aeronautic plicable Title 14 of the Code of Federal R	cal study under the provisions of 49 U.S.C., egulations, part 77, concerning:
Structure: Location: Latitude: Longitude: Heights:	NASHVILLE, TN 36-09-12.96N NAD 83 86-48-31.61W 218 feet above ground level (AGL) 720 feet above mean sea level (AMSL))
	revealed that the temporary structure does vigation provided the following condition	s not exceed obstruction standards and would (s), if any, is (are) met:
	etermination, the structure is marked and/ 60-1 K Change 2, Obstruction Marking au 2.	
As a condition to this de during the hours betwee		be lowered to the ground when not in use and
This determination expi	res on 05/01/2010 unless extended, revised	d or terminated by the issuing office.
	R EXTENSION OF THE EFFECTIVE PE KED OR DELIVERED TO THIS OFFICE	
heights. Any changes in	sed, in part, on the foregoing description v coordinates and/or heights will void this o rease to heights, requires separate notice to	letermination. Any future construction or
used during actual const	ruction of a structure. However, this equip	t such as cranes, derricks, etc., which may be ment shall not exceed the overall heights as adied structure requires separate notice to the
	Page 1 of 3	

Airspace Determination

Federal Aviation Adm Air Traffic Airspace E 2601 Meacham Blvd. Fort Worth, TX 76137	Branch, ASW-520	Aeronautical Study No. 2008-ASO-5853-OE
Issued Date: 10/31/2008		
NASHVILLE, TN 37214		
TEMPORARY DET	FERMINATION OF NO HAZ	ZARD TO AIR NAVIGATION
The Federal Aviation Administrati Section 44718 and if applicable Ti		al study under the provisions of 49 U.S.C., egulations, part 77, concerning:
Latitude: 36-09-1 Longitude: 86-48-3 Heights: 218 feet	VILLE, TN 12.96N NAD 83 11.61W t above ground level (AGL) t above ground level (AGL)	
		not exceed obstruction standards and would
not be a hazard to air navigation pr		
As a condition to this Determination Advisory circular 70/7460-1 K Cha 3(Marked),4,5(Red),&12.		or lighted in accordance with FAA d Lighting, flags/red lights - Chapters
As a condition to this determination during the hours between sunset an		be lowered to the ground when not in use and
This determination expires on 05/0	1/2010 unless extended, revised	l or terminated by the issuing office.
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	s and/or heights will void this d	hich includes specific coordinates and etermination. Any future construction or the FAA.
used during actual construction of a	a structure. However, this equip	t such as cranes, derricks, etc., which may be ment shall not exceed the overall heights as died structure requires separate notice to the
	Page 1 of 3	



Notice to Airmen (NOTAM)

- Issued to make pilots and air traffic controllers aware of conditions, hazards, etc.
- Can be issued if cranes, boom trucks, etc. used on an emergency basis create a potential hazard
- Not a substitution for filing proper notice with the FAA
- Can often result in airspace restrictions or runway closures
- Airport issues notice to inform pilots and ATC; does not condone the use of NOTAMs



NOTAM

The proponent is required to provide Notice to the Federal Aviation Administration (FAA) of proposed construction or alteration under circumstances outlined in Federal Aviation Regulation (FAR) Part 77, Section 77.9, at least 45 days prior construction. The proponent's failure to do so is subject to FAA fines. This requirement applies to permanent construction as well as temporary structures, including cranes, regardless of how brief their use. Such notice may be filed via OE/AAA website at the following the FAA's link: https://oeaaa.faa.gov/oeaaa/external/portal.jsp. Note: the Metropolitan Nashville Airport Authority has no authority to approve or disapprove any such activity nor does it condone such activity without appropriate notice to the FAA.

As timely notice has not been provided for use of this crane, the information contained herein requesting issuance of a Notice to Airmen (NOTAM) is strictly advisory in nature to inform pilots and air traffic control personnel of a potentially hazardous situation.



FAA AC 70/7460-1K

Obstruction marking and lighting

"Any temporary or permanent structure, including all appurtenances, that exceeds an overall height of 200 feet above ground level (AGL) or exceeds any obstruction standard contained in 14 CFR part 77, should normally be marked and/or lighted."

Equipment on the airport and cranes in close proximity to the airport should be both marked (flagged) and lighted





Marking and Lighting

- "Any temporary or permanent structure, including all appurtenances, that exceeds an overall height of 200 feet (61m) above ground level (AGL) or exceeds any obstruction standard contained in 14 CFR part 77, should normally be marked and/or lighted."
- "An FAA aeronautical study may reveal that the absence of marking and/or lighting will not impair aviation safety."
- "Conversely, the object may present such an extraordinary hazard potential that higher standards may be recommended for increased conspicuity to ensure safety to air navigation."

• Spherical markers are used to identify overhead wires.

• Size and Color.

- "The diameter of the markers used on extensive catenary wires should be not less than 36 inches (91cm). Smaller 20-inch (51cm) spheres are permitted on less extensive power lines or on power lines below 50 feet above the ground and within 1,500 feet (458m) of an airport runway end. Each marker should be a solid color such as aviation orange, white, or yellow."

Installations.

- "(a) Spacing. Markers should be spaced equally along the wire at intervals of approximately 200 feet (61m) or a fraction thereof. Intervals between markers should be less in critical areas near runway ends (i.e., 30 to 50 feet (10m to 15m). They should be displayed on the highest wire or by another means at the same height as the highest wire. Where there is more than one wire at the highest point, the markers may be installed alternately along each wire if the distance between adjacent markers meets the spacing standard. This method allows the weight and wind loading factors to be distributed."
- (b) Pattern. An alternating color scheme provides the most conspicuity against all backgrounds. Mark overhead wires by alternating solid colored markers of aviation orange, white, and yellow. Normally, an orange sphere is placed at each end of a line and the spacing is adjusted (not to exceed 200 feet (61m)) to accommodate the rest of the markers. When less than four markers are used, they should all be aviation orange.



When is coordination necessary?

- Not necessary when:
 - Replacing a pole/tower of the same height
 - If equipment is not higher than the pole/tower on which it is being used
 - If the equipment is "shadowed" by taller structures
- Necessary when:
 - Installing a new pole/tower close to the Airport
 - When equipment used close to the Airport will exceed height of pole or tower
 - When there is doubt as to whether FAA Form 7460-1 should be filed or there is insufficient time to file
 - When working on the Airport