

**Table O-1. NextGen FOC Functions, Functional Requirements, and Performance Requirements for Observation and Forecast**

	<b>FOC OBSERVATION</b>		<b>FOC FORECAST</b>
1.	Observe Turbulence	F	Forecast Turbulence
2.	The NextGen NAS shall observe turbulence in eddy dissipation rate.	FR	The NextGen NAS shall forecast turbulence in eddy dissipation rate.
3.	The NextGen NAS shall observe turbulence in high-density terminal airspace with an accuracy of plus or minus 0.005 of the cube root of the eddy dissipation rate.	PR	The NextGen NAS shall forecast turbulence in high-density terminal airspace with an accuracy of plus or minus 10 percent eddy dissipation rate.
4.	The NextGen NAS shall observe turbulence in designated en route terminal airspace with an accuracy of plus or minus 0.005 of the cube root of the eddy dissipation rate.	PR	The NextGen NAS shall forecast turbulence in designated en route terminal airspace with an accuracy of plus or minus 10 percent eddy dissipation rate.
5.	The NextGen NAS shall observe turbulence in designated global terminal airspace with an accuracy of plus or minus 0.005 of the cube root of the eddy dissipation rate.	PR	The NextGen NAS shall forecast turbulence in designated global terminal airspace with an accuracy of plus or minus 10 percent eddy dissipation rate.
6.	The NextGen NAS shall observe turbulence in en route airspace with an accuracy of plus or minus 0.005 of the cube root of the eddy dissipation rate.	PR	The NextGen NAS shall forecast turbulence in en route airspace with an accuracy of plus or minus 10 percent eddy dissipation rate.
7.	The NextGen NAS shall observe turbulence in global airspace with an accuracy of plus or minus 0.005 of the cube root of the eddy dissipation rate.	PR	The NextGen NAS shall forecast turbulence in global airspace with an accuracy of plus or minus 10 percent eddy dissipation rate.
8.	Determine Location of Turbulence	F	Forecast Location of Turbulence
9.	The NextGen NAS shall determine the location of turbulence.	FR	The NextGen NAS shall forecast the location of turbulence.
10.	Determine Peak Value of Turbulence	F	
11.	The NextGen NAS shall determine the peak value of turbulence in eddy dissipation rate.	FR	
12.	The NextGen NAS shall determine the peak value of turbulence in high-density terminal airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	
13.	The NextGen NAS shall determine the peak value of turbulence in designated en route terminal airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	
14.	The NextGen NAS shall determine the peak value of turbulence in designated global terminal airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	
15.	The NextGen NAS shall determine the peak value of turbulence in en route airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	

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	<b>FOC OBSERVATION</b>		<b>FOC FORECAST</b>
16.	The NextGen NAS shall determine the peak value of turbulence in global airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	
17.	Determine Time of Occurrence of Peak Value of Turbulence	F	
18.	The NextGen NAS shall determine the time of occurrence of peak value of turbulence in seconds.	FR	
19.	The NextGen NAS shall determine the time of occurrence of peak value of turbulence in high-density terminal airspace with an accuracy of plus or minus 0.5 second.	PR	
20.	The NextGen NAS shall determine the time of occurrence of peak value of turbulence in designated en route terminal airspace with an accuracy of plus or minus 0.5 second.	PR	
21.	The NextGen NAS shall determine the time of occurrence of peak value of turbulence in designated global terminal airspace with an accuracy of plus or minus 0.5 second.	PR	
22.	The NextGen NAS shall determine the time of occurrence of peak value of turbulence in en route airspace with an accuracy of plus or minus 0.5 second.	PR	
23.	The NextGen NAS shall determine the time of occurrence of peak value of turbulence in global airspace with an accuracy of plus or minus 0.5 second.	PR	
24.	Calculate Average Value of Turbulence	F	
25.	The NextGen NAS shall calculate the average value of turbulence in eddy dissipation rate.	FR	
26.	The NextGen NAS shall calculate the average value of turbulence in high-density terminal airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	
27.	The NextGen NAS shall calculate the average value of turbulence in designated en route terminal airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	
28.	The NextGen NAS shall calculate the average value of turbulence in designated global terminal airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	
29.	The NextGen NAS shall calculate the average value of turbulence in en route airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	

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FOC OBSERVATION			FOC FORECAST
30.	The NextGen NAS shall calculate the average value of turbulence in global airspace with an accuracy of plus or minus 0.005 eddy dissipation rate.	PR	

Table N-1a. Resolution and Accuracy Values for Observation Location and Update Rates for Observations											
Location		High-Density Terminal Airspace		Designated En Route Terminal Airspace		Designated Global Terminal Airspace		En Route Airspace		Global Airspace	
		Conv. Met. Element	Non-Conv. Met. Element	Conv. Met. Element	Non-Conv. Met. Element	Conv. Met. Element	Non-Conv. Met. Element	Conv. Met. Element	Non-Conv. Met. Element	Conv. Met. Element	Non-Conv. Met. Element
<b>Horizontal Resolution</b>		0.5 km (≈ 0.27 nmi)		1 km (≈ 0.54 nmi)	4 km (≈ 2.16 nmi)	10 km (≈ 5.4 nmi)		1 km (≈ 0.54 nmi)	4 km (≈ 2.16 nmi)	10 km (≈ 5.4 nmi)	
<b>Horizontal Accuracy</b>		± 0.25 km (≈ 0.14 nmi)		± 0.5 km (≈ 0.27 nmi)	± 2 km (≈ 1.08 nmi)	± 5 km (≈ 2.7 nmi)		± 0.5 km (≈ 0.27 nmi)	± 2 km (≈ 1.08 nmi)	± 5 km (≈ 2.7 nmi)	
<b>Vertical Resolution</b>	Surface to ≤ 5,000 ft AGL	100 ft		100 ft		100 ft		500 ft		500 ft	
	> 5,000 ft AGL to Top of Terminal/Controlled Airspace	500 ft		500 ft		500 ft					
<b>Vertical Accuracy</b>	Surface to ≤ 5,000 ft AGL	± 50 ft		± 50 ft		± 50 ft		± 250 ft		± 250 ft	
	> 5,000 ft AGL to Top of Terminal/Controlled Airspace	± 250 ft		± 250 ft		± 250 ft					
<b>Update Rate</b>		≤ 1 min	≤ 5 min	≤ 1 min	≤ 5 min	≤ 10 min	≤ 20 min	≤ 2 min	≤ 5 min	≤ 10 min	≤ 20 min

Note: For location of clouds, vertical resolution and accuracy apply from 100 feet to the top of the terminal/controlled airspace.

Note: For location of mist, fog, low-level wind shear, well-developed dust whirls, and well-developed sand whirls, vertical resolution and accuracy apply from the surface to approximately 2,000 feet.

<b>Table N-2a. Forecast Temporal Resolution Increments</b>					
	<b>High-Density Terminal Airspace</b>		<b>Designated En Route Terminal Airspace and En Route Airspace</b>		<b>Designated Global Terminal Airspace and Global Airspace</b>
<b>Forecast Period</b>	<b>Convective Meteorological Element</b>	<b>Non-Convective Meteorological Element</b>	<b>Convective Meteorological Element</b>	<b>Non-Convective Meteorological Element</b>	<b>Convective and Non-Convective Meteorological Element</b>
<b>0 to ≤ 15 min</b>	1 min	15 min	15 min	30 min	1 h
<b>&gt; 15 min to ≤ 45 min</b>	5 min				
<b>&gt; 45 min to ≤ 2 h</b>	10 min				
<b>&gt; 2 h to ≤ 4 h</b>	15 min				
<b>&gt; 4 h to ≤ 60 h</b>	1 h		1 h		6 h
<b>&gt; 60 h to ≤ 7 d</b>	3 h				

Note: For ocean and large lake weather information elements, the forecast period only goes out to 48 hours.

<b>Table N-2b. Forecast Update Rate and Model End-to-End Latency</b>								
	<b>High-Density Terminal Airspace</b>		<b>Designated En Route Terminal Airspace and En Route Airspace</b>				<b>Designated Global Terminal Airspace and Global Airspace</b>	
	<b>Convective and Non-Convective Meteorological Element</b>		<b>Convective Meteorological Element</b>		<b>Non-Convective Meteorological Element</b>		<b>Convective and Non-Convective Meteorological Element</b>	
<b>Forecast Period</b>	<b>Update Rate</b>	<b>Model End-to-End Latency</b>	<b>Update Rate</b>	<b>Model End-to-End Latency</b>	<b>Update Rate</b>	<b>Model End-to-End Latency</b>	<b>Update Rate</b>	<b>Model End-to-End Latency</b>
<b>0 to ≤ 2 h</b>	≤ 5 min	≤ 2.5 min	≤ 10 min	≤ 5 min	≤ 30 min	≤ 15 min	≤ 3 h	≤ 90 min
<b>&gt; 2 h to ≤ 4 h</b>	≤ 10 min	≤ 5 min	≤ 30 min	≤ 15 min				
<b>&gt; 4 h to ≤ 10 h</b>	≤ 30 min	≤ 15 min	≤ 60 min	≤ 30 min	≤ 60 min	≤ 30 min		
<b>&gt; 10 h to ≤ 24 h</b>	≤ 1 h	≤ 30 min	≤ 3 h	≤ 90 min	≤ 3 h	≤ 90 min		
<b>&gt; 24 h to ≤ 4 d</b>	≤ 3 h	≤ 90 min			≤ 6 h	≤ 3 h	≤ 6 h	≤ 3 h
<b>&gt; 4 d to ≤ 7 d</b>	≤ 6 h	≤ 3 h	≤ 6 h	≤ 3 h	≤ 6 h	≤ 3 h		

Note: For ocean and large lake weather information elements, the forecast period only goes out to 48 hours.

**Table N-2c. Forecast Horizontal Resolution and Accuracy**

	<b>High-Density Terminal Airspace</b>	<b>Designated En Route Terminal Airspace and En Route Airspace</b>		<b>Designated Global Terminal Airspace and Global Airspace</b>
<b>Forecast Period</b>	<b>Convective and Non-Convective Meteorological Element</b>	<b>Convective Meteorological Element</b>	<b>Non-Convective Meteorological Element</b>	<b>Convective and Non-Convective Meteorological Element</b>
<b>Horizontal Resolution</b>	0.5 km (≈ 0.27 nmi)	1 km (≈ 0.54 nmi)	4 km (≈ 2.16 nmi)	10 km (≈ 5.4 nmi)
<b>Horizontal Accuracy</b>				
<b>0 to ≤ 15 min</b>	± 0.25 km (≈ 0.14 nmi)	± 0.5 km (≈ 0.27 nmi)	± 2 km (≈ 1.08 nmi)	± 5 km (≈ 2.7 nmi)
<b>&gt; 15 min to ≤ 45 min</b>				
<b>&gt; 45 min to ≤ 2 h</b>		± 1 km (≈ 0.54 nmi)		
<b>&gt; 2 h to ≤ 4 h</b>				
<b>&gt; 4 h to ≤ 10 h</b>	± 0.5 km (≈ 0.27 nmi)	± 2 km (≈ 1.08 nmi)		
<b>&gt; 10 h to ≤ 24 h</b>	± 1 km (≈ 0.54 nmi)			
<b>&gt; 24 h to ≤ 60 h</b>				
<b>&gt; 60 h to ≤ 7 d</b>	± 2 km (≈ 1.08 nmi)	± 4 km (≈ 2.16 nmi)		± 8 km (≈ 4.32 nmi)

<i>Table N-2d. Forecast Vertical Resolution and Accuracy</i>				
Forecast Period		High-Density Terminal Airspace, Designated En Route Terminal Airspace, Designated Global Terminal Airspace	En Route Airspace	Global Airspace
		Convective and <i>Non-Convective Meteorological Element</i>	Convective and Non-Convective Meteorological Element	
Vertical Resolution	Surface to ≤ 5,000 ft AGL	100 ft	500 ft	
	> 5,000 ft AGL to Top of Terminal/ Controlled Airspace	500 ft		
<b>Vertical Accuracy</b>				
	Surface to ≤ 5,000 ft AGL	± 50 ft	± 250 ft	
0 to ≤ 15 min				
> 15 min to ≤ 45 min				
> 45 min to ≤ 2 h		± 100 ft	± 500 ft	
> 2 h to ≤ 4 h				
> 4 h to ≤ 10 h				
> 10 h to ≤ 24 h				
> 24 h to ≤ 60 h				
> 60 h to ≤ 7 d				
<b>Vertical Accuracy</b>				
	> 5,000 ft AGL to Top of Terminal/ Controlled Airspace	± 250 ft	± 500 ft	
0 to ≤ 15 min				
> 15 min to ≤ 45 min				
> 45 min to ≤ 2 h		± 500 ft	± 1,000 ft	
> 2 h to ≤ 4 h				
> 4 h to ≤ 10 h				
> 10 h to ≤ 24 h				
> 24 h to ≤ 60 h				
> 60 h to ≤ 7 d				

Note: For location of clouds, vertical resolution and accuracy apply from 100 feet to the top of the terminal/controlled airspace.

Note: For location of mist and fog, vertical resolution and accuracy apply from the surface to approximately 2,000 feet.

Table N-2e. Forecast Verification Skill			
Forecast Period	High-Density Terminal Airspace	Designated En Route Terminal Airspace and En Route Airspace	Designated Global Terminal Airspace and Global Airspace
0 to ≤ 15 min	≥ 95%	≥ 92%	≥ 88%
> 15 min to ≤ 45 min			
> 45 min to ≤ 2 h			
> 2 h to ≤ 4 h	≥ 90%	≥ 88%	
> 4 h to ≤ 10 h	≥ 88%	≥ 85%	≥ 82%
> 10 h to ≤ 24 h	≥ 85%	≥ 82%	≥ 80%
> 24 h to ≤ 60 h	≥ 75%	≥ 75%	≥ 75%
> 60 h to ≤ 7 d	≥ 60%	≥ 60%	≥ 60%

Note: For ocean and large lake weather information elements, the forecast period only goes out to 48 hours.

Note: For type of precipitation, the forecast verification skill for all terminal airspace will be the same as high-density terminal airspace.