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**INTERFACE CONTROL DOCUMENT
FOR THE
NOAA PROFILER NETWORK TO CLASS 1 USER**

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**APPROVED FOR
USE AS PRODUCT
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1 SCOPE

1.1 Identification

This document defines interface connection between the National Oceanic and Atmospheric Administration (NOAA) Profiler Network (NPN) System and a Class 1 User.

1.2 System Overview

The NPN is a network of vertically pointed 449 MHz wind profiling radars deployed in Alaska to support meteorology and aviation safety. There are currently three NPN radars in Alaska (Talkeetna, Homer and Anchorage) and a testbed system in Norman, OK. Each Profiler reports on wind speed and direction at 132 heights, ranging from 170 meters above ground level to a maximum of 16.2 kilometers.

1.3 Document Overview

This specification defines the application layer interface between the NPN and a Class 1 user. For this interface, this document identifies applicable standards and defines messages, product format and meaning of the packet codes. This ICD is not intended to serve as a document concerning the applicable standards. That is, the reader is assumed to be generally knowledgeable of the contents, terminology, etc., of the standards. Distribution of this document is unrestricted. This document is organized in three sections:

Section 1 provides information regarding the identification, scope, purpose and organization of this document.

Section 2 contains information about documentation relevant to this ICD, including applicable and informational documents.

Section 3 provides an overview of the application interface, operating procedures and message formats.

2 REFERENCED DOCUMENTS

2.1 Government Documents

Number	Name	Revision	Date
WMO 306 Part A	World Meteorological Organization Manual on Codes, Volume 1, International Codes, Part A - Alphanumeric Codes.		1988
WMO 306 Part B	World Meteorological Organization. Manual on Codes, Volume 1, International Codes, Part B - Binary Codes.		1988
FM 94 BUFR	A GUIDE TO THE WMO CODE FORM		2002
1990 Stackpole-Acheson Memo	Stackpole-Acheson Memo: Addition to BUFR table B Class 07		1990

3 NPN PRODUCT FORMATS

3.1 BUFR Format for NPN Products

The Profiler BUFR format is based on World Meteorological Organization (WMO) BUFR Edition 3. A BUFR message is a continuous binary stream containing six (6) sections. Documentation on the BUFR format can be found on the WMO website. Refer to the Layer 3 documentation for decoding of the message.

Each BUFR message is preceded by a 21 byte ASCII encoded WMO Abbreviated heading consisting of the data designators, ICAO, international date-time group, two (2) carriage returns and a new line. Following the header is the BUFR message, which is broken into six (6) sections. Table I, abbreviated version from the WMO FM 94 documentation, contains the name, contents and length of each section and is included for reference only. Refer to the WMO FM 94 Layer 3 documentation for decoding of each section. The BUFR message is followed by two (2) carriage returns and a new line.

Table I BUFR Section Layout

Section	Name	Description	Length (bytes)
0	Indicator Section	“BUFR”, length of message, edition number	8
1	Identification Section	Length of section, message identification	Variable
2	Optional Section	Length of section, items for local use by processing centers	Variable
3	Data Description Section	Length of section, number of subsets, data descriptors defining the data section	Variable
4	Data Section	Length of section and binary data	Variable
5	End Section	“7777” indicating end of message	4

Each section must be decoded to get the length of the section and the starting location of the next section.

3.1.1 Profiler Wind BUFR message Section 4 format

Table II is a breakdown of Section 4 of the complete BUFR message for Profiler Wind data.

Table II Profiler Wind BUFR message Section 4 format

<i>Data Field</i>	<i>Element Name</i>	<i>Table B FXY</i>	<i>Scale (10**n)</i>	<i>Reference (-n)</i>	<i>Width (Bits)</i>	<i>Units</i>
1	WMO Block #	0 01 001	0	0	7	Numeric
2	WMO Station #	0 01 002	0	0	10	Numeric
3	Type of Station	0 02 001	0	0	2	Code Table
4	Year	0 04 001	0	0	12	
5	Month	0 04 002	0	0	4	
6	Day	0 04 003	0	0	6	
7	Hour	0 04 004	0	0	5	
8	Minute	0 04 005	0	0	6	
9	Latitude	0 05 002	2	-9000	15	Degrees
10	Longitude	0 06 002	2	-18000	16	Degrees
11	Height of Station	0 07 001	0	-400	15	Meters
12	Station short name	0 01 018	0	0	40	CCITT IA5

13	Type of measuring equip	0 02 003	0	0	4	Code Table
16	Mean frequency	0 02 121	-6	0	11	Hz
19	Time Significance	0 08 021	0	0	5	
20	Averaging Time Period	0 04 026	0	-4096	13	Seconds
22	Replication number	0 31 001	0	0	8	Numeric
23	Height above station	0 07 006	0	0	15	Meters
24	Quality Indicators	0 25 034	0	0	4	Flag Table
25	Wind Direction	0 11 001	0	0	9	Degrees True
26	Wind Speed	0 11 002	1	0	12	m/s
28	Horizontal std dev.	0 11 050	1	0	11	m/s
30	Vertical component	0 11 006	2	-4096	13	m/s
31	Vertical std dev.	0 11 051	1	0	8	m/s

APPENDIX A. GLOSSARY

ASCII	American Standard Code for Information Interchange
BUFR	Binary Universal Form for the Representation of Meteorological Data
ICD	Interface Control Document
ICAO	International Civil Aviation Organization
NOAA	National Oceanic and Atmospheric Administration
NPN	NOAA Profiler Network
WMO	World Meteorological Organization