GENERATING BUFR DATA

Indicator Section:

1-4 Octets ‘BUFR’ in CCITT International Alphabet No. 5 standard.

1-4 Octet = 01000010 01010101 01000110 01010010

5-7 Octets Total length of message. The length of the data is 95 Octet.

5-7 Octet = 0000000 00000000 001011111

8. Octet BUFR version. The version of BUFR is 2.

8. Octet = 00000010

Identification Section:

1-3 Octets The length of the section. The length of the section is 18 Octet.

1-3 Octet = 00000000 00000000 00010010

4. Octet BUFR master table number. The data is standard, so use 0.

4. Octet = 00000000

5-6 Octets Origination center of data. Use US Navy - FNOC (0 01 031 on BUFR Table) as placeholder.

5-6 Octet = 00000000 00111010

7. Octet Update sequence number. The data is original so use 0.

7. Octet = 00000000

8. Octet; 1. Bit= 0 means No Optional Sector, 1. Bit = 1 means Optional Sector will use., 2-8. Bits = 0. The data has no Optional Sector so use 0.

8. Octet = 00000000

9. Octet Data Category (BUFR Table A). Use vertical sondas.

9. Octet = 00000010

10. Octet Data sub-category. Use no sub-category.

10. Octet = 00000000

11. Octet Version of the master tables. Use version 2. (WMO FM 94 BUFR tables)

11.Octet = 00000010

12. Octet Version of the local tables. Use version 1 local tables.

12.Octet = 00000001

13. Octet Century of the data. Comes from BUFR Generation software.

13.Octet = 01011010

14. Octet Months of the data. Comes from BUFR Generation software.

14. Octet = 00000001

15.Octet Day of the data. Comes from BUFR Generation software.

15. Octet = 00000001

16. Octet Hour of the data. Use 1 as a placeholder.

16. Octet = 00000001

17.Octet Minutes of the data. Use 1 as a placeholder.

17. Octet = 00000001

18. Octet reserved.

18.Octet = 00000000

Optional Local Use Section:

No optional sector.

Data Description Section:

1-3 Octet Length of the Sector. Length of the sector is 35 Octets.

1-3 Octet = 00000000 00000000 00100011

4. Octet Set to 0.

4.Octet = 00000000

5-6 Octet Number of subsets(parameter). Use 14 parameter.

5-6 Octet = 00000000 00001110

7. Octet 1. Bit = 1 Observed Data, 1. Bit = 0 other, 2. Bit = 1 Compressed Data, 2. Bit = 1 not Compressed Data, 3-8 Bits = 0.

7.Octet = 10000000

8- Octets List of descriptors. Every descriptor is 2 Octets length. Use 14 descriptor so total length is 28 Octet.

Latitude Descriptor BUFR Table-B location F = 0, X = 27, Y = 002

8-9 Octet = 00011011 00000010

Longitude Descriptor BUFR Table-B position F = 0, X = 28, Y = 002

10-11 Octet = 00011100 00000010

Atmosphere Temperature Descriptor BUFR Table-B location F = 0, X = 12, Y = 023

12-13 Octet = 00001100 00010111

Sea Temperature Descriptor BUFR Table-B position F = 0, X = 22, Y = 049 Kelvin

14-15 Octet = 00010110 00110001

Atmosphere Pressure Descriptor BUFR Table-B location F = 0, X = 10, Y = 004 Pa

16-17 Octet = 00001010 00000100

Relative Humidity Descriptor BUFR Table-B location F = 0, X = 13, Y = 003

18-19 Octet = 00001101 00000011

Specific Humidity Descriptor BUFR Table-B location F = 0, X = 13, Y = 001

20-21 Octet = 00001101 00000001

Vapor Pressure Descriptor BUFR Table-B location F = 0, X = 13, Y = 004

22-23 Octet = 00001101 00000100

Wind Speed Descriptor BUFR Table-B location F = 0, X = 11, Y = 002

24-25 Octet = 00001011 00000010

Mean Surface Temperature Descriptor BUFR Table-B location F = 0, X = 12, Y = 052

26-27 Octet = 00001100 00110100

Potential Temperature Descriptor BUFR Table-B location F = 0, X = 012, Y = 001

28-29 Octet = 00000001 00000001

Measurement Height Descriptor BUFR Table-B location F = 0, X = 07, Y = 001

Use same descriptor and same data for other two measurement height parameters.

30-35 Octet = 00000111 00000001 00000111 00000001 00000111 00000001

Data Section:

1-3 Octet Length of sector. Length of the sector is 30.

1-3 Octet = 00000000 00000000 00011110

4. Octet set to 0.

4.Octet = 00000000

5- Data that specified by Section 3 (Data Description Section). Descriptors Show the resolution and scale factor for data.

5-6 Octet, Latitude data is taken from user entrance. Scale = 2, Offset = -9000, data length = 16 bit 2 Octet

7-8 Octet, Longitude data is taken from user entrance; Scale = 2, Offset = -9000, data length = 16 bit 2 Octet

9. Octet, Atmospheric Temperature data is taken from user entrance; Scale = 0, Offset = -99, data length = 8 bit 1 Octet

10-11 Octet, Sea Temperature data is taken from user entrance; Scale = 2, Offset = 0 data length = 16 bit 2 Octet

12-13 Octet, Atmospheric Pressure data is taken from user entrance; Scale = -1, Offset = 0 data length = 16 bit 2 Octet

14. Octet, Relative Humidity data is taken from user entrance; Scale = 0, Offset = 0 data length = 8 bit 1 Octet

15-16 Octet, Specific Humidity data is taken from user entrance; Scale = 5, Offset = 0 data length = 16 bit 2 Octet

17-18 Octet, Vapor Pressure data is taken from user entrance; Scale = -1, Offset = 0 data length = 16 bit 2 Octet

19-20 Octet, Wind Speed data is taken from user entrance; Scale = 1, Offset = 0 data length = 16 bit 2 Octet

21-22 Octet, Mean Surface Temperature data is taken from user entrance; Scale = 1, Offset = 0 data length = 16 bit 2 Octet

23-24 Octet, Potential Temperature data is taken from user entrance; Scale = 1, Offset = 0 data length = 16 bit 2 Octet

25-26 Octet, Measurement Height data is taken from user entrance; Scale = 0, Offset = 0 data length = 16 bit 2 Octet

27-28 Octet, Wind Speed Measurement Height data is taken from user entrance; Scale = 0, Offset = 0 data length = 16 bit 2 Octet

29-30 Octet, Relative Humidity Measurement Height data is taken from user entrance; Scale = 0, Offset = 0 data length = 16 bit 2 Octet

End of Message:

1-4 Octets “7777” in CCITT International Alphabet No. 5.

1-4 Octet = 00110111 00110111 00110111 00110111