



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

April 22, 1977

Docket Nos: 50-438, 439, 553, 554, 327, 328,  
518, 519, 520, 521, 566, 567, 390, 391

Tennessee Valley Authority  
ATTN: Mr. Godwin Williams, Jr.  
Manager of Power  
830 Power Building  
Chattanooga, Tennessee 37401

Gentlemen:

SUBJECT: STANDARD FORMAT FOR METEOROLOGICAL DATA ON MAGNETIC TAPE

Regulatory Guide 1.70, Revision 2, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants" (September 1975), recommends that, if possible, hour-by-hour meteorological data should be provided on magnetic tape. The draft Environmental Standard Review Plan for meteorology (included in NUREG-0158, Part 1, January 1977) provides some guidance on the types of magnetic tapes that are acceptable and identifies limitations on block size and density. We have also developed a standardized format (Enclosure 1) for providing hour-by-hour meteorological data on magnetic tapes that would facilitate our review of atmospheric diffusion characteristics and cooling system impacts. Enclosure 2 provides a sample tape dump using this format. We would prefer receiving meteorological data magnetic tapes in the standard format; however, we will accept data on magnetic tape in any reasonable format, if the format is completely described (per guidance in NUREG-0158, Part 1) and a sample tape dump is provided. Questions on this standard format should be referred to William Snell, Hydrology-Meteorology Branch, Division of Site Safety and Environmental Analysis, phone number 301-492-7384.

This request for generic information was approved by GAO under blanket clearance number B-180225 (R0072). This clearance expires July 31, 1977.

Sincerely,

Domenic B. Vassallo, Assistant Director  
for Light Water Reactors  
Division of Project Management

Enclosures:  
As Stated

MA 4  
GD

Enclosure 1

PROPOSED FORMAT FOR HOURLY METEOROLOGICAL  
DATA TO BE PLACED ON MAGNETIC TAPE

Use:           9 track tape (7 will be acceptable)  
  
              Standard Label which would include  
  
                  Record Length = 160  
  
                  Block Size (3200 - fixed block size)  
  
                  Density (1600 BPI - 800 will be accepted).

Do Not Use:    Magnetic tapes with unformatted or spanned records.

At the beginning of each tape, use the first five (5) records (which is the equivalent of ten cards) to give a tape description. Include plant name, and location (latitude, longitude) dates of data, information explaining data contained in the "other" fields if they are used, height of measurements, and any additional information pertinent to identification of the tape. Make sure all five records are included, even if some are blank. Format for the first five records will be 160A1. Meteorological data format is (I6, I2, I3, I4, 25F5.1, F5.2, 3F5.1). Decimal points should not be included when copying data onto the tape.

All data should be given to a tenth of a unit except solar radiation which should be given to a hundredth of a unit. This does not necessarily indicate the accuracy of the data. (e.g. wind direction is usually given to the nearest degree but record it with a zero in the tenth's place. That is 275 degrees would be 275.0 degrees and placed on the tape as 2750.) All nines in any field indicates a lost record (99999). All sevens in a wind direction field indicates calm (77777). If only two levels of data, use the upper & lower levels. If only one level of data, use the upper level.

Enclosure 1

MAGNETIC TAPE  
METEOROLOGICAL DATA

LOCATION:

DATE OF DATA RECORD:

<u>I6</u>	Identifier (can be anything)	
<u>I2</u>	Year	
<u>I3</u>	Julian Day	
<u>I4</u>	Hour (on 24 hr clock)	
		<u>ACCURACY</u>
<u>F5.1</u>	Upper Measurements: Level = meters	
<u>F5.1</u>	Wind Direction (degrees)	_____
<u>F5.1</u>	Wind Speed (meter/sec)	_____
<u>F5.1</u>	Sigma Theta (degrees)	_____
<u>F5.1</u>	Ambient Temperature (°C)	_____
<u>F5.1</u>	Moisture: _____	_____
<u>F5.1</u>	Other: _____	_____
<u>F5.1</u>	Intermediate Measurements: Level = meters	
<u>F5.1</u>	Wind Direction (degrees)	_____
<u>F5.1</u>	Wind Speed (meters/sec)	_____
<u>F5.1</u>	Sigma Theta (degrees)	_____
<u>F5.1</u>	Ambient Temperature (°C)	_____
<u>F5.1</u>	Moisture: _____	_____
<u>F5.1</u>	Other: _____	_____

Enclosure 1

- 2 -

<u>F5.1</u>	Lower Measurements: Level = meters	
<u>F5.1</u>	Wind Direction (degrees)	_____
<u>F5.1</u>	Wind Speed (meters/sec)	_____
<u>F5.1</u>	Sigma Theta (degrees)	_____
<u>F5.1</u>	Ambient Temperature (°C)	_____
<u>F5.1</u>	Moisture: _____	_____
<u>F5.1</u>	Other: _____	_____
<u>F5.1</u>	Temp Diff (Upper-Lower) (°C/100 meters)	_____
<u>F5.1</u>	Temp Diff (Upper-Intermediate) (°C/100 meters)	_____
<u>F5.1</u>	Temp Diff (Intermediate-Lower) (°C/100 meters)	_____
<u>F5.1</u>	Precipitation (mm)	_____
<u>F5.2</u>	Solar Radiation (cal/cm <sup>2</sup> /min)	_____
<u>F5.1</u>	Visibility (km)	_____
<u>F5.1</u>	Other: _____	_____
<u>F5.1</u>	Other: _____	_____

Enclosure 2

NUCLEAR POWER FACILITY - METEOROLOGICAL DATA TAPE  
 1974-JUNE 1975  
 TAPE CREATED MARCH 1977  
 DATA PERIOD 1 JULY 1  
 WIND DIRECTION: 150 FT AND 33 FT  
 DATA TO NEAREST 1.0 DEG  
 WIND SPEED: 150 FT AND 33 FT  
 DATA TO NEAREST 0.1 METER/SEC  
 TEMPERATURE: 150 AND  
 33 FT  
 DATA TO NEAREST 0.1 DEGREE C  
 THIS IS A COPY OF THE ORIGINAL IVA TAPE  
 WITH THE FORMAT CHANGED AND THE UNITS  
 CHANGED AS FOLLOWS: DEGREES F TO DEGREES C  
 MPH TO METER  
 S/SEC  
 FT TO METERS  
 OTHER FIELDS: WIND DIRECTION PERSISTENCE (%)

REC 1, LENGTH 3200

74182 100	457 1900	29	215	1000	74182 200	457 1800	26	221
1000					212	0	23	
100 1700	4	39		1000	74182 400	457		
1890	35	211	1000	201	0	195	0	
44				74182 500	457 1900	37	205	960
				100 1600	9	0	41	
74182 600	457 1950	43	197	1000	74182 700	457 2050	38	194
186	0	31		100 1800	9	0	20	
1000				201	0	9		
100 1800	4	9		74182 800	457 2100	34	204	980
2140	31	218	860	100 2000	22	0	-11	
-6				249	0	710		
74182 1100	457 2420	51	258	74182 1000	457 2170	38	245	830
262	0	-11		100 2000	13	0	20	
750				249	0	710		
100 2100	36	-12		74182 1200	457 2340	53	266	
2210	44	281	660	100 2300	36	0	-12	
-12				271	0	590		
74182 1300	457 2440	50	276	74182 1400	457			
280	0	-12		100 2100	27	285	0	
660				44	287	590		
100 1900	22	-11		74182 1500	457 1970	44	287	590
291	0	-11		100 1700	22	45	292	
74182 1600	457 1930	42	288	730				
292	0	-9		74182 1700	457 1910	45	292	
960				295	0	-9		
100 1800	18	-5		74182 1800	457 1930	42	291	960
1740	32	286	980	100 1800	22	291		
-3				292	0	-5		
74182 2100	457 1770	30	266	74182 2000	457 1800	29	2	
260	0	16		100 1600	4	0	2	
930				276	0	1000		
100 1500	4	25		74182 2200	457 1800	29		
1760	30	241	980	100 1700	4	248	1000	
22				239	0	25		
74183 200	457 1790	33	230	74183 100	457 1820	33		
221	0	26		228	0	20		
940				1000				
100 1500	4	20		74183 300	457 1820	33		
1810	24	219	980	100 1600	4	215	1000	
17				214	0	222		
74183 700	457 1810	26	213	74183 600	457 1780	25		
205	0	23		208	0	25		
780				940				
100 1600	9			74183 800	457			
				216				

REC 2, LENGTH 3200

The first data record gives the following:

Year: 1974  
 Day: 182  
 Time: 0100

Height: 45.7 meters  
 Wind Direction: 198 degrees  
 Wind Speed: 2.9 m/sec  
 Ambient Temperature: 22.5°C  
 Wind Direction Persistence: 73%

Height: 10.0 meters  
 Wind Direction: 170 degrees  
 Wind Speed: 0.4 m/sec  
 Ambient Temperature: 21.8°C  
 Wind Direction Persistence: 0%

Temperature Difference (Upper-Lower): 1.9°C/100 meters