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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Emergency Response Data System (ERDS)
Plant Attribute Library Update

Gentlemen:

Waterford 3 is hereby submitting (attached) an update to the ERDS Plant Attribute Library (PAL) in accordance with 10CFR50, Appendix E, VI, 3.b. The update is associated with equipment and software changes being incorporated during the Waterford 3 Plant Monitoring Computer upgrade. The changes are being incorporated during Refuel 7, currently in progress. The attached updated library will be effective at the completion of the refueling outage, which is currently scheduled to occur on November 6, 1995. Waterford 3 personnel will notify the NRC Operations Center by phone when the ERDS is back in service (at the completion of the outage) with the new PAL in effect.

If you have any questions concerning the above, please contact O.P. Pipkins at (504) 739-6707.

Very truly yours,

R.F. Burski
Director
Nuclear Safety

RFB/OPP/ssf
Attachment

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APPENDIX B

ERDS COMMUNICATIONS DESCRIPTION AND SURVEY QUESTIONNAIRE

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The following is a questionnaire pertaining to the Nuclear Regulatory Commission's (NRC) Emergency Response Data System (ERDS). It consists of a series of questions concerning plant I/O points, software protocols, data formats, transmission frequencies, and other plant computer specific information to be used in the ERDS computer database files. Also, included here are descriptions and examples of data streams that the NRC is expecting to see transmitted over the communication line.

The purpose of collecting the data is to develop a plant-specific database that will be retrieved into the ERDS once the system is activated by a utility. It will also be used to design and implement ERDS software that can receive the utility's data transmission. In essence, this information will provide the basis for building a profile of the plant in the ERDS database.

In some cases, the I/O point data may be distributed over several computers. The ERDS considers this situation a multi-feeder site and Section IV must be filled out for each feeder.

For plants that utilize the PC based interface described in Appendix J, item 15, Section IV must be filled out for the ERDS interface PC as well as each computer which feeds data to the interface PC.

This request is covered by Office of Management and Budget Clearance Number 3150-0150 which expires March 31, 1992. The estimated average burden hours is 32 person hours per licensee response, including staff and management review and preparation of the requested response. These estimated average burden hours pertain only to those identified response-related matters and do not include the time for any follow on implementation. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Records and Reports Management Branch, Division of Information Support Services, Office of Information Resources Management, U.S. Nuclear Regulatory Commission, Washington, DC 20555; and to the Paperwork Reduction Project (3150-0150), Office of Management and Budget, Washington, DC 20503.

I. Contacts

Note: Please provide name, title, mailing address, and phone number.

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II. ERDS Communications Description

A. Hardware

The following hardware will be supplied:

- for a single-feeder site:

  Codex 2235 modem or equivalent – V.22 2400 bps. asynchronous. auto-dialing. auto-answer. error-correcting. using the AT command set

- for a multiple-feeder site:

  Codex 6015 multiplexer.
  Codex 2264 modem or equivalent – V.32 9600 bps. asynchronous. auto-dialing. auto-answer. error-correcting. using the AT command set
  (for an alternate approach see Appendix A. Item 7)

The modems are intended to be operated in the auto-reliable link mode (referred to as MNP in the modem manuals). There are several modem parameters that affect MNP operation. These are discussed in the sections of the modem manuals pertaining to MNP. The single feeder modems at the NRC Operations Center are configured for auto-reliable link mode. local terminal flow control. and default break handling.

B. Software

1. Data Transmission

All transmissions. from both the site and the ERDS. will be terminated with a carriage return (<CR>).

a. Site will initiate a link request in ASCII using:

- the three-character site designator.
- the word LINK.
- local site time and date in the format MM/DD/YY/HH:MM:SS. and
- a <CR>.

If the site does not receive a response from the ERDS within one minute. it should send another link request message and continue sending them at one-minute intervals. If more than five minutes elapses without a response. site personnel should notify the NRC before disconnecting the line.

b. ERDS will respond in ASCII with:

- the three-character site designator.
- the word ACCEPTED or DENIED. and
- a <CR>.

If the ERDS responds with the denied message. the site should wait one minute and then send a link request message and continue sending them at one-minute intervals. If

more than five minutes elapses without a response, site personnel should notify the NRC before disconnecting the line.

c. When the ERDS is ready to receive data, it will send an initiate message in ASCII using:

- the three-character site designator,
- the word INITIATE, and
- a <CR>.

If the ERDS does not send an initiate message within one minute of the accept message, the site should send the link reconnect message (described in Section II.B.1.f.).

d. Upon receipt of the initiate message, the plant begins transmission of data at a 15-second rate. The data string consists of:

- a header containing the three-character site designator and date and time in the format MM/DD/YY/HH:MM:SS,
- the data packet sequenced with point identifier, value, and quality tag,
- a trailer containing the checksum value of the data packet, and a <CR>.

e. When the site or ERDS wishes to terminate the connection, an ASCII message will be sent containing:

- the three-character site designator,
- the word TERMINATE, and
- a <CR>.

f. If a site is inadvertently terminated (due to loss of communications or receipt of terminate message) and the incident is still underway, the site should reconnect with the ERDS by redialing and using the link reconnect message. The link reconnect message should be used any time the phone line is lost after the receipt of an Accept Message (described in Section II.B.1.b). This message is in ASCII and will contain:

- the three-character site designator,
- the word RECONNECT,
- local site time and date in the format MM/DD/YY/HH:MM:SS, and
- a <CR>.

Upon receipt of this message, the ERDS will respond with the accept and initiate messages as described in Sections II.B.1.b and II.B.1.c. If the ERDS responds with a link deny message (described in Section II.B.1.b), the site should stop trying to reconnect and send a link request message (described in Section II.B.1.a). If the ERDS does not respond to the site's reconnect request within one minute, the site should send another reconnect request and continue sending reconnect requests once a minute. If more than five minutes elapses without a response, site personnel should notify the NRC before disconnecting the line. It is the responsibility of the site to monitor the outgoing line for loss of communications.

Once a physical connection has been established with the NRC, the site should not disconnect the phone line until a TERMINATE message (described in section

II.B.1.e) has been transmitted. If problems are encountered in the link request sequence, do not hang up the line but proceed with the steps outlined above.

g. If the site will transmit in EBCDIC rather than ASCII, the following applies:

(1) The link request message (defined in II.B.1.a) and the reconnect message (defined in II.B.1.f) must be in ASCII.
(2) All replies sent by the ERDS to the site will be in ASCII.
(3) The terminate message sent by the site may be in EBCDIC or ASCII.
(4) All update sets sent by the site must be in EBCDIC.

2. Data Format

The following three delimiters have been identified:

(1) field delimiter (*),

(2) data set delimiter (\), and

(3) carriage return (<CR>).

Note: The length of the messages sent by the ERDS (e.g., ACCEPTED, DENIED, INITIATE, TERMINATE) are variable and it is recommended that the site software use the data set delimiter as the message delimiter for messages received from the ERDS.

a. Link requests will be in ASCII as described in II.B.1.a. with each field separated by a field delimiter and the request terminated with a data set delimiter. For example, PA1*LINK*01/12/89/11:48:50\<CR>.

b. The ERDS response will be in ASCII as described in II.B.1.b. with each field separated by a field delimiter and the response terminated with a data set delimiter. For example, PA1*ACCEPTED\<CR>.

c. When the ERDS is ready to receive data it will respond in ASCII as described in II.B.1.c with each field separated by a field delimiter and the response terminated with a data set delimiter. For example, PA1*INITIATE\<CR>.

d. Data streams will be in ASCII and will consist of three parts (header, data, and trailer) as described in II.B.1.d. with each field separated by a field delimiter and each of the three parts separated by a data set delimiter. For example,

Header: PA1*01/12/89/11:50:30\
Data: B21CP004*-0.1234E+00*3*.....(for each parameter)\
Trailer: 0000056000\<CR>

e. The point identifier may be up to 12 characters in length.

f. The value may be up to 20 characters in length.

g. The following quality tags will be accepted by the ERDS:

Good	= 0	Value is within range tolerance for discreet points or input points are within tolerance for composed points.
Off-scan	= 1	Point is currently out-of-service.
Suspect	= 2	Value is not bad yet should not be considered good. This quality will occur primarily on composed values when enough good inputs are present to allow the calculation to be made yet a bad quality on other inputs may make the result questionable.
Bad	= 3	Value is not within tolerance for discreet points or calculation of a composed point may not be made due to the qualities of its inputs.
Unknown	= 4	No quality indicator available.
Operator Entered	= 5	Value has been manually entered, overriding the discreet or composed value.
High Alarm	= 6	Value is in high alarm.
Low Alarm	= 7	Value is in low alarm.

h. The checksum which accompanies each update set will be an integer value calculated by summing each of the bytes of the transmission, up to and including the dataset delimiter following the body of the update set (the body of the update set being the portion containing the parameter, value, and quality indications). This integer checksum value will then be encoded into the update set as a 10-digit value, left-padded with zeros as required to fill the 10-digit field. The checksum is the sum of the transmitted bytes.

i. The reconnect link request message will be in ASCII as described in Section II.B.1.f with each field separated by a field delimiter and the request terminated with a data set delimiter. For example, PA1*RECONNECT*01/12/89/11:48:50\<CR>.

3. Protocol

a. ERDS will use XON/XOFF to stop, resume, or suspend data transmission for the site.

b. Communication parameters:

- eight data bits
- 1 stop bit
- parity = none

4. Exceptions

Please note any exceptions which must be taken to Section II and explain why.

No exceptions to Section II.

III. Selection Of Data Feeders

A. How many data feeders are there (six maximum)?

There is one data feeder supporting the Waterford 3 ERDS interface. The Plant Monitoring Computer (PMC) is the ERDS data feeder.

B. Identify the selected data feeders and provide the following for each:

(1) a short description of the categories of data points it will provide (e.g., met. rad. or plant data points, by unit) and

(2) the rationale for selecting it if another system can also provide its categories of data points.

(1) The PMC will supply all point data in the Waterford 3 DPL. No changes to the DPL are required or anticipated during the Waterford 3 Plant Monitoring Computer replacement.

(2) All data required for the Waterford 3 DPL is available from the PMC through existing system interconnections.

C. Which data feeder is the site time determining feeder? This should be the feeder which is providing the majority of the data points.

The Plant Monitoring Computer is the site time determining feeder.

IV. Data Feeder Information

Note: A new Section IV must be filled out for each feeder system selected.

General Questions

1. **Identification of Data Feeder**

   a. What is the name in local parlance given to this data feeder (e.g., Emergency Response Information System)? Please give both the acronym and the words forming it.

   PMC - Plant Monitoring Computer

   b. Is this the site time determining feeder?

   Yes, the PMC is the site time determining feeder.

   c. How often will this feeder transmit an update set to the ERDS (in seconds)?

   An update set will be transferred to the ERDS every 30 seconds.

2. **Hardware/Software Environment**

   a. Identify the manufacturer and model number of the data feeder hardware.

   Digital Equipment Corporation Alpha 4000-610

   b. Identify the operating system.

   DEC Open VMS AXP Rev. 6.1

   c. What method of timekeeping is implemented on this feeder system (Daylight Savings, Standard, Greenwich)?

   Standard/Daylight Savings Time

   d. In what time zone is this feeder located?

   Central Time Zone

3. Data Communication Details

a. Can this data feeder provide asynchronous serial data communication (RS-232-C) with full-modem control?

Yes, the PMC can support this mode of operation and a RS-232-C serial port is available.

b. Will this feeder transmit in ASCII or EBCDIC?

The PMC will transmit in ASCII.

c. Can this feeder transmit at a serial baud rate of 2400 bps? If not, at what baud rate can it transmit?

The PMC will transmit at 2400 bps.

d. Does the operating system support XON/XOFF flow control?

XON/XOFF flow control is supported by the PMC.

1. Are any problems foreseen with the NRC using XON/XOFF to control the transmission of data?

No problems are anticipated using XON/XOFF flow control.

e. If it is not feasible to reconfigure a serial port for the ERDS linkup (i.e., change the baud rate, parity, etc.), please explain why.

N/A

f. Do any ports currently exist for the ERDS linkup?

Yes, a port is available for ERDS linkup.

1. If not, is it possible to add additional ports?

N/A

2. If yes, will the port be used solely by the ERDS or shared with other non-emergency-time users? Give details.

The port will be dedicated to the ERDS interface.

4. **Data Feeder Physical Environment and Management**

a. Where is the data feeder located in terms of the TSC, EOF, and control room?

The Plant Monitoring Computer room is immediately adjacent to the control room, within 200 feet of the TSC, and within 2 miles of the EOF.

b. Is the data feeder protected from loss of supply of electricity?

Yes, the PMC is supported by the Waterford 3 Computer SUPS (approximately 1 hour).

c. Is there a human operator for this data feeder?

Yes, there is an on-duty PMC operator/technician.

1. If so, how many hours a day is the feeder attended?

The PMC operator position is staffed 24 hours a day.