



Southern California Edison Company

23 PARKER STREET

IRVINE, CALIFORNIA 92718

October 29, 1990

F. R. NANDY
MANAGER, NUCLEAR LICENSING

TELEPHONE
(714) 587-5400

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

Gentlemen:

Subject: Docket Nos. 50-206, 50-361 and 50-362
Generic Letter 89-15, Emergency Response Data Systems
San Onofre Nuclear Generating Station
Units 1, 2 and 3

This letter provides as an enclosure our responses to the NRC questionnaire regarding the Southern California Edison (SCE) proposed Emergency Response Data System (ERDS). The questionnaire was sent to Dr. R. Waldo (SCE) from Mr. John R. Jolicoeur, Incident Response Branch, and was received on February 7, 1990. In our December 26, 1989 letter we volunteered to participate in the ERDS program as requested by Generic Letter 89-15. The responses provided in the enclosed questionnaire provide details about our proposed system.

As we discussed in our December 26, 1989 letter, for San Onofre Units 2 and 3, we are still in the process of developing an approach to provide all of the information requested for ERDS through a single data port. We will provide our proposed design by January 1, 1991. This schedule will allow adequate time for NRC review prior to installation which is scheduled for late 1991.

For San Onofre Unit 1, we listed each of the requested ERDS parameters in the enclosure to our December 26, 1989 letter. For several of the ERDS requested parameters, we stated that additional evaluations would be required to determine if they can be included in our ERDS. Our evaluation of these items is on schedule, and we will provide you with the results by January 1, 1991 as stated in our December 26, 1989 letter.

9011020003 901029
PDR ADDCK 05000206
F PNU



100040

A003
11

October 29, 1990

The Data Point Library Reference File forms (Enclosure 2 to John R. Jolicoeur's letter) for each Units 1, 2 and 3 ERDS data point will be submitted by December 15, 1991.

If you should have any questions, please do not hesitate to call me.

Very truly yours,

A handwritten signature in black ink, appearing to read "J. R. Jolicoeur". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Enclosure

cc: J. B. Martin, Regional Administrator, NRC Region V
C. Caldwell, NRC Senior Resident Inspector, San Onofre Units 1, 2 and 3
J. R. Jolicoeur, NRC Incident Response Branch
T. P. LaRosa, EI International, Inc.

I. CONTACTS

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

- A. Survey Coordinator (i.e., contact for later clarification of questionnaire answers):
- | | |
|-------------------|---------------------|
| Percy B. Haralson | Steve Hetrick |
| Computer Engineer | Computer Supervisor |
| SONGS D1K | SONGS D1K |
| (714) 368-8723 | (714) 368-8730 |
- B. Computer Hardware Specialist(s):
- Bob Boyer
Computer Engineer
SONGS D1K
(714) 368-9848
- C. Systems Software Specialist(s):
- Percy B. Haralson
- D. Application-level Software Specialist(s):
- Percy B. Haralson
- E. Telephone Systems Specialist(s):
- Bob Boyer

II. ERDS COMMUNICATIONS DESCRIPTION

A. Hardware

The following hardware will be supplied:

- for a single-feeder site:

Codex 2234 modem - 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 2260 modem - V.32 9600 bps, asynchronous, auto-dialing, auto-answer, error-correcting, using the AT command set

The modems are intended to be operated in the auto-reliable link mode (referred to as MNP in the modem manuals) with speed conversion and flow control enabled. Speed conversion allows the computer to communicate with the modem at a baud rate which is independent of the baud rate the modem is using to communicate with the remote modem. This feature is important because the modems have the ability to adjust their transmission rate downward if the remote modem is operating at a lower speed. However, in order to use speed conversion, the site computer must support some form of flow control. Three types of flow control are supported by the modems: XON/XOFF, RTS/CTS, and DTR/CTS. All of the above features are discussed in the modem manuals.

B. Software

i. 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 request message (described in Section II.B.i.a.).

- 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 reconnect link request message. 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.i.b and II.B.i.c. If the ERDS responds with a link deny message (described in Section II.B.i.b), the site should stop trying to reconnect and send a link request message (described in Section II.B.i.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.

ii. 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.i.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\- b. The ERDS response will be in ASCII as described in II.B.i.b. with each field separated by a field delimiter and the response terminated with a data set delimiter. For example, PA1*ACCEPTED\- c. When the ERDS is ready to receive data it will respond in ASCII as described in II.B.i.c with each field separated by a field delimiter and the response terminated with a data set delimiter. For example, PA1*INITIATE\- d. Data streams will be in ASCII and will consist of three parts (header, data, and trailer) as described in II.B.i.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\

- 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.i.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\

iii. 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

iv. Exceptions

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

The Plant Data Link System to which ERDS will be connected to will have an update frequency of 1 minute. The requested update frequency of 15 seconds can not be met by our Emergency Assessment and Response System which feeds data to the Plant Data Link System. Additionally, not all of the quality tags are available from each of our plant process systems.

III. SELECTION OF DATA FEEDERS

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

1 per unit

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.

Meteorological and radiation information for Units 1, 2, and 3 will come from the Emergency Assessment and Response System (EARS). General plant data points are available for Unit 2 and 3 from both the Critical Function Monitoring System (CFMS) and the Plant Monitoring System (PMS). CFMS is the preferred data feeder because it is used as the primary Safety Parameter Display System (SPDS) for Units 2 and 3. For Unit 1, general plant data points will be available from the Unit 1 SPDS (currently in the design stages).

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

Every point in the Plant Data Link System includes its original system time stamp. A defined standard site time can also be made available on ERDS if necessary.

IV. DATA FEEDER INFORMATION

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

A. General Questions

i. 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.

PMARS - Plant Multi-Access Retrieval System. This is a PC based Plant Data Link System which receives data from the Critical Functions Monitoring System, Plant Monitoring System, Emergency Assessment and Response System, and Unit 1 SPDS.

- b. Is this the site time determining feeder?

Yes

- c. What is the update frequency of this feeder (in seconds)?

60 Seconds

II. HARDWARE/SOFTWARE ENVIRONMENT

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

Digital Equipment Corp. Micro Vax III series system.

B. Identify the operating system.

VMS

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

Daylight Savings

D. In what time zone is the feeder located?

Pacific Standard

iii. Data Communication Details

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

Yes

- b. Will this feeder transmit in ASCII or EBCDIC?

ASCII

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

Yes

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

Yes

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

No

- 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.

It is feasible.

- f. Can the serial port dedicated to the ERDS be configured so that the NRC need not emulate a specific brand of terminal (i.e., can it be configured to be a "vanilla" terminal)?

Yes

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

Yes

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

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

No, the port will be available for ERDS exclusive use.

iv. Data Feeder Physical Environment and Management

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

Will be located within the control room envelope for each respective unit.

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

The data feeder will be on UPS power.

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

A human operator will be available if necessary.

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

24 hours if necessary.