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REPORTING PROCEDURES MANUAL

for the

NUCLEAR PLANT RELIABILITY DATA SYSTEM

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INTERIM REPORT

Accession No. 7902130123

Contract Program or Project Title: Nuclear Plant Reliability Data System

Subject of this Document: Reporting Procedures Manual

Type of Document: Manual

Author(s): Southwest esearch Institute

Date of Document: April 1976

Responsible NRC Individual and NRC Office or Division:

MPA:DTS

Prepared for
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

INTERIM REPORT

REPORTING PROCEDURES MANUAL

for the

NUCLEAR PLANT RELIABILITY DATA SYSTEM

Prepared by

Southwest Research Institute
San Antonio, Texas 78284

Under the Direction of the
ANSI Subcommittee N18–20

for

AMERICAN NATIONAL STANDARDS INSTITUTE
AMERICAN PUBLIC POWER ASSOCIATION
EDISON ELECTRIC INSTITUTE
UNITED STATES NUCLEAR REGULATORY COMMISSION

April 1976

Controlled Copy No._____

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NOTE

All information requests, correspondence and general comments related to the NPRD System shall be addressed to:

Nuclear Plant Reliability Data System
Edison Electric Institute
90 Park Avenue
New York, New York 10016
Attention: G.A. Olson
Telephone: (212) 573-8700

All NPRD System Input Reports shall be addressed to:

Southwest Research Institute
Department of Quality Systems Engineering
Building 88
8500 Culebra Road
San Antonio, Texas 78284
Attention: NPRD System Coordinator
Telephone: (512) 684-5111, Ext. 2459 or 2488

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2	April 1974	General Revisions Incorporating Results of Pilot Phase Experience
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1.0 INTRODUCTION

The Nuclear Plant Reliability Data (NPRD) System was developed by the Equipment Availability Task Force of the Edison Electric Institute (EEI) at the suggestion of the N18/N41/N42/N45 Joint Steering Committee of the Nuclear Technical Advisory Board (NTAB) of the American National Standards Institute (ANSI). In the spring of 1973, Subcommittee N18-20, Nuclear Plant Reliability Data, was established under the American National Standards Committee N18, Nuclear Design Criteria, to prepare a standard method for collection of reliability data, to further develop the program, and to oversee the administration and operation of the NPRD system. Subcommittee N18-20 membership includes representatives from both privately and publicly owned electric utilities, nuclear steam system suppliers, and the United States Nuclear Regulatory Commission.

Information on file in the NPRD system is derived from standard format input reports prepared by staffs of nuclear utilities. The data are compiled and disseminated in routine periodic reports containing reliability and failure statistics for the equipment on which reports are received. In addition, special searches and reports can be made on a cost reimbursable basis. The output data are presented in a format to facilitate the derivation of reliability data. Each reporting organization is provided routine reports describing the performance of equipment within the unit(s) it operates.

Failure statistics can serve as a useful tool for the purposes of:

(1) Improving plant system reliability

(2) Increasing plant availability

(3) Expediting licensing activities

(4) Optimizing system designs

(5) Optimizing surveillance and test schedules

(6) Providing manufacturers with field performance data on their products

(7) Identifying failure trends and wear-out patterns.

The data may also be useful in maintenance management, parts inventory control and purchasing evaluations. The data are available under guidelines established by Subcommittee N18-20.

Input information for the NPRD system is solicited from all organizations operating nuclear reactors used primarily for generating electric power within the United States. It is important to note that the degree of reliance that can be placed on statistical data of the type generated in the NPRD system is strongly dependent on the completeness of reporting of information on all like items. In recognition of this fact, agreements for voluntary cooperation by staffs of both privately and publicly owned utilities operating nuclear power plants were sought, and obtained, early in the development of the NPRD system.

2.0 SCOPE

The NPRD system produces reliability and failure statistics on components and systems related to nuclear safety. Such statistics are for use in deriving reliability data of interest to operators and designers of nuclear power plants, reactor manufacturers, architect-engineering and constructor firms and regulatory agencies.

The scope of reportable items under the NPRD system, in general, includes those systems and components designated in Safety Classes 1 and 2 in the following applicable guide or standard:

(1) ANS Trial-Use Guide: Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants, N212-1973 (ANS-22).

(2) American National Standard Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants, ANSI N18.2-1973.

(3) ANS Trial-Use Guide: Nuclear Safety Criteria for the Design of Stationary Gas Cooled Reactor Plants, N213 (ANS-23).

Some types of systems and components designated in Safety Class 1 or 2 in the above documents are excluded from the NPRD system scope of reportable items for water reactor type units. These are:

(1) Spent fuel storage systems and components.

(2) Reactor pressure vessel internals

(3) Structures and components of structures.

(4) Piping, fittings and valves in pressurized water reactor systems one (1) inch or less, nominal pipe size.

(5) Piping, fittings and valves in boiling water reactor systems one and one-quarter (1-1/4) inch or less, nominal pipe size.

(6) Piping, fittings and valves in high-temperature gas-cooled reactor systems one (1) inch or less, nominal pipe size.

For guidance, the following types of systems, and components within these systems, important to nuclear safety, shall be included in the NPRDS reportable scope:

(1) Reactor coolant systems including pressure vessels.

(2) Emergency core cooling systems.

(3) Decay heat removal systems.

(4) Reactor protection systems.

(5) Reactor containment and pressure suppression systems

(6) Reactor containment isolation systems.

(7) Reactor containment emergency cooling systems.

(8) Reactor containment spray systems.

(9) Reactor containment hydrogen control systems.

(10) Those components of control rod systems which are necessary to render the reactor subcritical.

(11) Initiating systems required to accomplish safety functions, including emergency core cooling initiating systems and containment isolation initiating systems.

(12) Electrical and instrument systems and components of systems necessary for the operation of the above systems.

(13) Nuclear fuel assemblies.

Engineering data and failure reports are to be submitted on reportable items according to the procedures in Sections 9 and 11 of this manual with the exception of piping, pipe fittings and electrical conductors. Reports on piping, pipe fittings and electrical conductors are to be submitted only when failures to these specific components occur.

3.0 DEFINITIONS

The following terms and definitions are used within this manual and other NPRD system related materials.

3.1 Channel[1]

An arrangement of components and modules as required to generate a single protective action signal when required by a generating station condition. A channel loses its identity where single action signals are combined.

3.2 Component[1,2]

An assembly of interconnected parts which constitutes an identifiable device, instrument, or piece of equipment. A component can be disconnected, removed as a unit, and replaced with a spare. It has definable performance characteristics which permit it to be tested as a unit. A component could be a card or other subassembly of a larger device, provided it meets the requirements of this definition.

Components are not resistors, capacitors, pump impellers, or motor stators, for example.

3.3 Engineered Safety Features[1]

Features of a unit other than reactor trip or those used only for normal operation, that are provided to prevent, limit, or mitigate the release of radioactive material.

3.4 Failure[3]

The termination of the ability of an item to perform its required function. Failures may be unannounced and not detected until the next test (unannounced failure), or they may be announced and detected by any number of methods at the instant of occurrence (announced failure).

3.5 Failure: Vessels, Piping, Pipe Fittings, and Penetration Assemblies

For vessels, piping, pipe fittings, and penetration assemblies, a failure is any condition that permits detectable leakage of the contained fluid through the actual pressure boundary of these reportable items. A failure does not include leakage between components, such as at flange faces or around packing or gaskets, for example.

3.6 Failure: Fuel Assemblies

For fuel assemblies, a failure is any breach of the cladding or any structural change, such as distortion or break, that for safety considerations causes abnormal maintenance or early replacement of a fuel assembly.

[1]From IEEE Std. 380-1972, "Definitions of Terms Used in IEEE Nuclear Power Generating Station Standards."

[2]For the definition of "component," the NPRD systems uses the IEEE Std. 380-1972 definition of "module."

[3]From IEEE Std. 352-1972, "IEEE Trial-Use Guide: General Principles for Reliability Analysis of Nuclear Power Generating Station Protection Systems."

3.7 Failure: Control Rods, Blades, and Poison Curtains.

For control rods, blades, and poison curtains, a failure is the termination of the ability of a rod, blade or curtain to perform its required function prior to the end of its normal expected life.

3.8 Failure: System

The inability of a system to perform its required function. Failure of a subsystem or channel within a system may occur in such a way that the system retains its ability to perform its required function; in this case, the system has not failed.

3.9 Mean Time Between Failures (MTBF)[3]

The arithmetic average of operating times between failures of an item.

3.10 Mean Time to Repair (MTTR)[3]

The arithmetic average of time required to complete a repair activity.

3.11 Plant

A facility which contains one or more units.

3.12 Protective Action[1]

A protective action can be at the channel level or the system level.

(1) A protective action at the channel level is the initiation of a signal by a single channel when the variable sensed exceeds a limit.

(2) A protective action at the system level is initiation of the operation of a sufficient number of actuators to effect a protective function.

3.13 Protective Function[1]

The sensing of one or more variables associated with a particular generating station condition, signal processing and the initiation and completion of the protective action at values of the variables established in the design bases.

3.14 Protection System[1]

The electronic, electrical and mechanical devices and circuitry (from sensors to actuation device input terminals) involved in generating those signals associated with the protective function. These signals include those that actuate reactor trip and that, in the event of a serious reactor accident, actuate engineered safety features such as containment isolation, core spray, safety injection, pressure reduction, and air cleaning.

3.15 Reactor Critical Hours

The number of hours during which the nuclear reactor is critical.

3.16 Reactor Shutdown Hours

The number of hours during which the nuclear reactor is in a cold shutdown condition and it is permissible to shut down most of the protection systems and engineered safety features.

3.17 Reactor Standby Hours

The number of hours during which the nuclear reactor is at any condition between critical and cold shutdown.

3.18 Reliability[3]

The characteristic of an item expressed by the probability that it will perform a required function under stated conditions for a stated period of time.

3.19 Subsystem[1]

The part of the system which effects a particular protective function. These subsystems may include, but are not limited to those actuating: Reactor shutdown, safety injection, containment isolation, emergency core cooling, containment pressure and temperature reduction, and containment air cleaning.

3.20 System

An integral part of a nuclear unit comprising electrical, electronic, or mechanical components (or combinations thereof) that may be operated as a separate entity to perform a particular function.

3.21 Test Frequency[1]

The number of tests of the same type per unit time interval; the inverse of the test interval.

3.22 Test Interval[1]

The elapsed time between the initiation of identical tests on the same sensor, channel, etc.

3.23 Test Schedule[1]

The pattern of testing applied to parts of a system. In general, there are two patterns of interest:

(1) Simultaneous—Redundant items are tested at the beginning of each test interval, one immediately following the other.

(2) Perfectly staggered—Redundant items are tested so that the test interval is divided into equal subintervals.

3.24 Unit

A nuclear steam supply, its associated turbine-generator, auxiliaries and engineered safety features.

4.0 INPUT REPORTS

Each reporting organization shall prepare a list of the systems and components to be reported for the unit(s) it operates. Guidance on the preparation of these lists is provided in Section 2, Scope; Tables 1A through 1F, as applicable and Tables 2 and 3. Individuals preparing input reports for the NPRD system shall be fully aware of the systems and components included in the scope of the NPRD system. Exhaustive reporting of data on the items covered is necessary for the system to produce accurate output reports.

Four types of input reports shall be prepared by each participating organization, in formats described in detail in Sections 8 through 11 of this manual.

4.1 Unit Information

General descriptive information about the unit and the owner-organization shall be submitted once for the purpose of identifying subsequent output reports (see Section 8).

4.2 Engineering Description

Engineering or nameplate data on each system or component shall be submitted once and will be valid for the life of the system or component, unless the initial description is made invalid by modifications or repairs (see Section 9).

4.3 Quarterly Operating Reports

Unit service-hours information shall be sumbitted within 30 days of the end of each calendar quarter, to update the service-hour data for the systems and components in the file (see Section 10). Descriptive terms for units, systems, and components are set forth in Tables 1 through 8 of this manual.

4.4 Failure Reports

Descriptions of system and component failures shall be submitted as they occur during each calendar quarter or not later than 30 days following the end of the quarter in which the failure event occurred (see Section 11).

5.0 DATA FILE MAINTENANCE

Data file maintenance is performed routinely by the NPRD system contractor. Computer routines are provided to allow addition, replacement, correction, expansion, or deletion of any record in the main file, including reports of failures. Section 12 of this manual contains additional information and instructions for processing NPRD system data.

New data are validated for compatibility with the computer programs before entry into the main file, and invalid information is not entered. Participating utilities are responsible for assuring that data submitted is correct.* Forms that are improperly filled out may be returned to the originating organization with the errors identified for correction.

Each utility is sent a listing of its submitted system and component descriptive engineering data, for each reporting unit, after such data have been entered into the NPRD system data file.

Input source documents are retained on file by the NPRD system contractor.

*NOTE: The NPRD system contractor has developed a preprocessing package of four (4) computer programs to aid in the preparation of the most frequently used NPRD input reports. Participating organizations may obtain a complete description and procedure for obtaining this NPRD Edit System package by contacting the NPRD system coordinator (see Section 7).

6.0 OUTPUT REPORTS

6.1 Routine Output Reports

The following reports are prepared by the NPRD system contractor and distributed to program participants and others as established by the ANSI Subcommittee N18-20:

(1) Quarterly Report Q01—Quarterly Listing of Component and System Engineering Data For Individual Reporting Organizations

(2) Quarterly Report Q02—Quarterly System and Component Failure Listing

(3) Annual Report A01—Annual Report of System Reliability For Individual Reporting Organizations

(4) Annual Report A02—Annual Summary Report of System Reliability

(5) Annual Report A03—Summary Report of Component Reliability

Detailed descriptions and formats of the above listed reports are included in Section 13 of this manual.

6.2 Special Requests

Upon special request, reports involving extraction or analysis of data from the NPRD file may be prepared within guidelines established by ANSI Subcommittee N18-20. Information is retrievable on subsets of the file based on combinations of the engineering data, failure data, and control data fields, and on selected portions of these fields.

Typical analyses may provide: (1) mean time between failures (MTBF); (2) failure rates; and (3) average failure outage duration. It is the responsibility of the requestor to define the analyses to be performed. The NPRD system contractor is responsible for translating approved requests into appropriate computer programs to generate the required output reports.

Costs resulting from special requests shall be paid by the requesting organization. For each special request, appropriate control instructions establishing data cut-off provisions may be designated by ANSI Subcommittee N18-20 or the NPRD system contractor to avoid generating excessive data.

Each participating utility, nuclear steam system supplier, and architect-engineering firm may request a complete set of engineering and failure data, on tape or as a computer listing, for unit(s) owned by that utility supplied by that nuclear steam system supplier, or engineered by that architect-engineering firm.

Duplicate tapes of the updated data base are provided quarterly to the U.S. Nuclear Regulatory Commission.

7.0 COMMUNICATIONS

All information requests, correspondence and general comments related to the NPRD system shall be addressed to:

Nuclear Plant Reliability Data System
Edison Electric Institute
90 Park Avenue
New York, New York 10016
Attention: G. A. Olson
Telephone: (212) 573-8700

All NPRD system input reports and related inquiries shall be addressed to:

Southwest Research Institute
Department of Quality Systems Engineering
Building 88
8500 Culebra Road
San Antonio, Texas 78284
Attention: NPRD System Coordinator
Telephone: (512) 684-5111, Ext. 2459 or 2488

8.0 NUCLEAR UNIT INFORMATION REPORT (FORM NPRD-1)

The Nuclear Unit Information Report, form NPRD-1 shall be completed by the reporting organization for initial input into the NPRD system. The form contains information specific to a nuclear power unit and is printed in the headings of the standard quarterly and annual reports for individual reporting organizations.

Entry Instructions For
NUCLEAR UNIT INFORMATION REPORT
(Form NPRD-1)

Line	Field	Columns	Mandatory Entry	Instruction
Input Control	Action	(2)	Yes	Enter a "5" or "7" as instructed in upper portion of form. See Section 12.7.1 for proper procedure for selecting an Action code when performing deletions.
Input Control	Utility Desig.	(4-6)	Yes	Enter NPRD Utility code from Table 8.
Input Control	Plant/Unit	(7-10)	Yes	Enter NPRD Plant and Unit codes from Table 8.
Input Control	Report I.D.	(28-29)	Yes	Precoded with "AA".
Input Control	Card I.D.	(36-37)	Yes	Precoded with "01-15".

Unit Information

Print clearly the unit information specified for lines 01 through 15, entering only one letter or character per space.

The reactor rating in gross thermal megawatts shall be entered, right justified, on line 11, columns 39 through 42 so that the information can be used for interrogation purposes. The unit rating in gross electrical megawatts shall be entered, right justified, on line 12, columns 39 through 42. For uniformity, the maxiumum *dependable* unit rating should be used, e.g., the gross electrical megawatt rating corresponding to the high condenser cooling water temperature period.

Form NPRD-1

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

NUCLEAR UNIT INFORMATION REPORT

This data entry is for:

- ☐ Original Nuclear Unit Information Form (place a '7' in column two below)
- ☐ Correction to previous Nuclear Unit Information Form (place a '5' in two below)

INPUT CONTROL			UTILITY DESIG.	PLANT	UNIT		SPEC. I.D.	
1	2	3	4 5 6	7 8 9	10	11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	28 29	30 31 32 33 34 35
A	7	A	C W E	Q A D	2		A A	

01	OPERATING UTILITY NAME COMMONWEALTH EDISON COMPANY
02	STATION NAME QUAD CITIES NUCLEAR POWER STATION
03	REACTOR NAME UNIT 2
04	MAILING ADDRESS (St. or Box No.) P. O. BOX 216
05	MAILING ADDRESS (City, State, Zip Code) CORDOVA, ILLINOIS 61242
06	UTILITY CONTACT (1) Name, Phone No.) G. E. STARK 309-654-2241 EXT. 252
07	UTILITY CONTACT (2) Name, Phone No.) R. QUERIO 309-654-2241 EXT. 252
08	STATION LOCATION (City, Township, etc), (County), (State), (Zip Code) CORDOVA, ROCK ISLAND COUNTY, ILLINOIS 61242
09	NSSS SUPPLIER and TYPE OF REACTOR (BWR, HTGR, PWR, ETC.) GENERAL ELECTRIC-BWR
10	ARCHITECT – ENGINEERING FIRM SARGENT AND LUNDY
11	REACTOR RATING (MWt) 2511
12	UNIT RATING (MWe) 809
13	AEC DOCKET NO. 50-265
14	INITIAL CRITICAL DATE 72-04-26
15	COMMERCIAL SERVICE DATE 72-08-01

EXAMPLE

Form Prepared By: G. E. STARK

Phone No.: 309-654-2241 EXT. 252

Date Prepared: NOVEMBER 12, 1975

(REV. 1, 3/74)

9.0 REPORT OF ENGINEERING DATA

9.1 Report of Engineering Data (Form NPRD-2)

This section provides instructions for the use of the Report of Engineering Data form (NPRD-2) for reporting an engineering description of each applicable component and system, so that reports of failures may be correlated to the specific component or arrangement of components. The engineering data for each component make it possible to compare or average failure statistics for similar components in a number of different units or systems. A Report of Engineering Data form is also to be submitted for each applicable system. In the case of systems, an NPRD-2 form shall be prepared for each system referenced by a component report and submitted prior to or with the component report. Furthermore, some systems not considered to have safety significance may have reportable components.

Note: Because of the extensive effort required to develop descriptive engineering data on piping and fittings, a Report of Engineering Data form need not be submitted on a given pipe, pipe fitting or electrical conductors until the first Report of Failure form is submitted for that component.

It is recognized that reporting organizations will have their own identification numbering schemes for components and systems within their plants. Provisions are made on the Report of Engineering Data form (NPRD-2) to accommodate the utility's component and system codes as well as the NPRD component and system codes. The use of the NPRD component or system code plus the descriptive engineering data will enable evaluation of failure and operating data for similar components or systems in order to produce reliability data with statistical significance.

Note: Shared systems or components shall be assigned to only one plant/unit for NPRD reporting purposes. Any assignment scheme can be used as long as this requirement is met. In some cases, it may be appropriate to assign all shared systems or components to a single plant/unit until the additional units are declared commercial in order to accurately account for in-service time. At this time the shared systems or components would be reassigned as appropriate.

For reporting engineering data on frequently relocated or replaced components such as fuel elements and control rod drive mechanisms, appropriate utility identification numbers should be selected. This is necessary to minimize reporting requirements for the NPRD system. Fuel assemblies should be identified by specific serial numbers rather than by core positions. Revised engineering data are then only required when the fuel element is removed from the reactor and replaced by a new one. For control rod drive mechanisms, it may be most appropriate to identify each by its core position and not serial number when mechanisms are rotated between positions.

Note: In those cases where it is necessary to remove systems or components permanently from service, a System or Component Out-of-Service Report (Form NPRD-2B) must be submitted (see Section 9.3).

Tables 1A through 1F give lists of reactor protection system names and codes. Table 2 gives a list of generic component names and codes. These code designations for systems and components should be used where NPRD codes are called for.

Components and systems are classified relative to their significance to nuclear plant safety. The component Safety Class designation should be entered in Line A, columns 52-53. Specific instructions for entering Safety Class codes are contained in the Entry Instructions for Report of Engineering Data (Form NPRD-2) appearing in this Section.

In order to determine the effect of the basic operating mode of the components and systems on failure rates, the reporting organization shall designate whether the component or system is normally: (1) functioning, (2) in standby condition, or (3) in shutdown condition, when the reactor is critical. This is designated in Line A, columns 54-56. Guidelines are provided in Table 4 for assistance in designating the normal mode of operation of components.

In order to classify the various environmental conditions which may affect the reliability of a component or system, the environmental condition codes shall be entered in coded form on Line A, columns 57-61. Table 5 is a list of environmental codes to be used for this purpose. Because a component or system can be affected by internal environments (contained or transmitted fluids) as well as by external environments, provisions are made for describing both internal and external conditions.

Detailed descriptive engineering data obtained from Table 3 are to be entered in the applicable columns of Line D for all components. Care must be taken to select the proper codes pertaining to the actual descriptions of each component and these codes entered in columns 39-50. In the event an adequately descriptive code is not available, a code entry of "X" for "Other" shall be entered with an appropriate explanation provided under "Remarks." Other specific engineering data are to be selected and entered in the appropriate fields, designated G, H, and J.

Service hours for components and systems are estimated from reactor hours at various reactor operating conditions (critical, standby and shutdown). Since there are redundant components in protection systems and engineered safety features and it is normal practice to rotate or alternate the operation of duplicate components, their service hours and exposure to failure are reduced. To account for this situation, the Report of Engineering Data form (NPRD-2) has provisions in Line E, columns 39-53, to enter an estimated percentage of the reactor service hours at the three conditions—critical, standby and shutdown—in which the individual component or system functions. For example, a duplicate pump may be estimated to operate 50% of the time that the reactor is critical, 50% of the time the reactor is in standby condition and 20% of the time that the reactor is shut down.

Component and system testing data must be factored into reliability evaluations. Therefore, actual testing frequencies, intervals and estimated out-of-service times, if applicable, are to be submitted for each component and system. These data are to be entered in Line E, columns 54-71. It is important to note that blank entries are not allowed in columns 54-71. Therefore, zeros must be entered in those columns where testing frequencies, intervals or out-of-service times are not available. A "Remarks" section is provided for necessary elaboration and clarification.

For the purpose of this data management system, such mechanically-coupled pieces of equipment as electric motor-driven fans or pumps, motor-generator sets, diesel-generator sets, motor-operated valves, or turbine-driven pumps shall be treated as two or more components. That is, discrete component identifying numbers shall be given; a separate Report of Engineering Data (NPRD-2) for each component shall be submitted; and failures of each component shall be reported. Equipment such as canned motor pumps are to be treated as one component.

In some cases of mechanically-coupled pieces of equipment, one utility identification number may apply for the complete assembly. In such cases, this number is to be entered in the appropriate spaces of report forms and the NPRD component code is then to be used to differentiate between the individual components. Examples of such cases are as follows:

	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER
(Valve)	VALVEX	1-MSIV-001
(Valve Operator)	VALVOP	1-MSIV-001
(Pump)	PUMPXX	HPSI-123
(Motor)	MOTORX	HPSI-123

Rev. 5
Feb. 1976

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0013

REPORT OF ENGINEERING DATA

This data entry is for:

- [X] Engineering Data Report for original or replacement component or original system (place a '7' in column two below)
- [ ] Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	CODE	UTILITY DESIG.	PLANT	UNIT	SYSTEM	NSSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER *	REPORT NO.	REPORT CODE	DATA START DATE YR.	MO.	DY.
	C	7 E	CWBQAD	1	3	C	CBA			A	73	07	01

SYSTEM OR COMPONENT ENGINEERING DATA

	CODE	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE CLS.	MODE	ENVIRONMENT INT.	ENVIRONMENT EXT.	IN-SERVICE DATE YR.	IN-SERVICE DATE MO.	IN-SERVICE DATE DY.	APPLICABLE MFGR. CODE OR STANDARD
	A	CBA	0220	1	OPC			71	10	07	ASME SEC. 3-68

	CODE	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
	B			

	CODE	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
	C			PID-M-15 REV. 5

	CODE	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
	D												

OPERATION AND TESTING DATA

	CODE	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
	E	100.00	1.0000	1.00.00	0	00	00.0	1	AN	48.0000	0	0	0.0

REMARKS

SYSTEM EXAMPLE

Date Prepared: Sept. 6, 1973

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No.: 512/684-5111

(REV. 1, 3/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 9121

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
		ACTION	UTILITY OR SIG.	PLANT	UNIT	RECODE	NSSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER (REPORT NO.)	REPORT ID.	DATA START DATE (YR. MO. DY.)	
C	7	E	CWE	QAD	1	5	C	TURBIN	1-1033	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
	CODE	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE CLA.	MODC	ENVIRONMENT (INT. / EXT.)	IN-SERVICE DATE (YR. MO. DY.)	APPLICABLE MFGR. CODE OR STANDARD
A	CEA	1300	2	SB	CCRXAF	711007	NEMA-SEC. 4

38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B	T147	GS-1	35689

38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C	G080E51		PID E51-7845

38	39 40	41 42	43 44	45 46	47 48	49 50	51 52 53 54 55 56	57 58 59 60	61 62 63 64 65 66	67 68 69 70 71	72 73 74 75 76	77 78 79 80
	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
D	A	A	B	B			4500	RPM	1105	PSIG	500	HP

OPERATION AND TESTING DATA

38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
	CODE	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E		001.00	001.00	001.00	1	MO	00.0	1	QT	00.0	0	00	00.0

REMARKS

COMPONENT EXAMPLE

Date Prepared: Sept. 6, 1973

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Entry Instructions For
REPORT OF ENGINEERING DATA
(Form NPRD-2)

Each Report of Engineering Data submitted to the NPRD system contractor is to be numbered in the four-block space in the upper right corner of each NPRD-2 form by the participating organization. The numbering sequence is to begin with "1" for each batch of NPRD-2 forms submitted with the highest number equaling the total number of NPRD-2 forms in the batch.

The "Mandatory Entry" instruction specifies those entries which are checked by the computer system. If an entry is non-existent or incorrect, the report will be automatically rejected.

Line	Field	Columns	Mandatory Entry	Instruction
Input Control	Action	(2)	Yes	Enter a "5" or "7" as instructed in upper portion of form. See Section 12.7.1 for proper procedure for selecting an Action code when performing deletions.
Input Control	Utility Desig.	(4-6)	Yes	Enter NPRD Utility code from Table 8.
Input Control	Plant/Unit	(7-10)	Yes	Enter NPRD Plant and Unit codes from Table 8.
Input Control	S/C Code	(11)	Yes	Code to designate type of equipment for which completed form applies. Enter one of the following codes as applicable: Code — Type of Equipment 3 — System 5 — Component
Input Control	NSSS	(12)	Yes	Code to designate the Nuclear Steam System Supplier. Enter one of the following codes as applicable: Code — Supplier A — Babcock & Wilcox B — Combustion Engineering C — General Electric D — General Atomic E — Westinghouse F — Westinghouse (LMFBR)
Input Control	NPRD Comp. or System Code	(13-18)	Yes	If this is a system report, enter the 3-letter NPRD system code from the applicable Table 1A-1F in columns 13-15. If the submitting Utility/Plant/Unit has more than one of these systems, provision

Entry Instructions For
REPORT OF ENGINEERING DATA (Cont'd)
(Form NPRD-2)

Line	Field	Columns	Mandatory Entry	Instruction
Input Control (Cont'd)	NPRD Comp. or System Code	(13-18)	Yes	is made for coding a 3-digit sub-code in columns 16-18 to uniquely identify each system. For example, redundant emergency power systems might be coded *EDA001* and *EDA002*. A single system would be coded *EDA*. If this is a component report, enter the 6-letter NPRD component code from Table 2 in columns 13-18. Note: If the applicable Table 1A-1F or Table 2 does not have a listing for the required system or component, leave this field blank and explain under Remarks.
Input Control Case 1 (NPRD-2A Form *Not* Used)	Utility Component Identification Number (for components only) (See component example in this Section)	(19-29)	Yes	Enter Utility's component identification number as used by the Utility to identify the specific component.
Input Control Case 2 (NPRD-2A Form Used)	Utility Component Identification Number (*, Report No.) (See examples in Section 9.2)	(19-23)	Yes	In this case where there are numerous identical components within a single system, complete *one* NPRD-2 form, leaving the following fields blank: –In-Service Date –Manufacturer Serial No. –Supplier/Vendor Serial No. Since the utility component identification numbers are entered on the NPRD-2A form in this case, Column 19 is to be coded with an asterisk (*) and the report number from the upper right corner of the report form is to be entered in columns 20-23. This number is used to associate the NPRD-2 form with the corresponding NPRD-2A form(s). Columns 24-29 must be left blank.

Entry Instructions For
REPORT OF ENGINEERING DATA (Cont'd)
(Form NPRD-2)

Line	Field	Columns	Mandatory Entry	Instruction
Input Control	Data Start Date	(31-36)	Yes	Enter the date on which NPRD reliability data will commence accruing, including "Reports of Failure," Form NPRD-4. The "Data Start Date" shall be the same as or later than the "In-Service Date." The "Data Start Date" shall also be the same as or later than the commercial operation date for the unit. In the case of a replacement for a failed component, the Utility Component Identification may remain the same. However, the "Data Start Date" and "In-Service Date" must reflect the date the replacement component was placed in-service.
	System or Component Engineering Data			
A	NPRD System Code (for components only)	(39-44)	Yes	For a *component report*, enter the appropriate NPRD system code in columns 39-41. If the component is used by two or more systems, it shall be reported in the system in which it: (1) receives the most service, or (2) would be expected to experience the most failures, or (3) performs it's primary safety function.
A	Utility System Code	(45-51)	No	a. For a *system report*, enter the Utility's code, for the system being described, in columns 45-48.
			No	b. For a *component report*, enter the Utility's system code, for the system in which the component is contained, in columns 45-48.
				c. If the submitting Utility/Plant/Unit has more than one of these systems, provision is made for coding a 3-digit sub-code in colur ns 49-51 to uniquely identify each system.
A	Safe. Cls.	(52-53)	Yes[1]	In order to identify the importance of components to safety, a scheme of "Safety Classes" are used. These Safety Classes are defined in ANSI N18.2 and Trial-Use Guides N212 (ANS-22) and N213 (ANS-23).

[1] Safety class entries are not mandatory for systems, electrical components and instrumentation components. However, entries should be made when feasible.

Entry Instructions For
REPORT OF ENGINEERING DATA (Cont'd)
(Form NPRD-2)

Line	Field	Columns	Mandatory Entry	Instruction
	System or Component Engineering Data (Cont'd)			
A (Cont'd)	Safe. Cls. (Cont'd)	(52-53)		Enter the applicable Safety Class (i.e., 1, 2, 2A, 2B, 3, etc.) in columns 52-53. Enter the number (1, 2, 3) in columns 52 and the letter (A, B, C), if applicable, in column 53. If a component such as a heat exchanger has two safety classes, enter the highest class.
A	Mode	(54-56)	Yes	Enter the code for the system or component operating mode which normally applies when the reactor is critical. These codes are: Code — Code Meaning OPC — The system or component is *operating* and performing its designed function when the reactor is *critical.* SBC — The system or component is in *standby condition* when the reactor is *critical.* SDC — The system or component is in *shutdown* condition when the reactor is *critical.* Additional guidelines for selecting the appropriate code are included in Table 4.
A	Environment (For Components Only)	(57-61)	Yes	This field is to be used to enter the codes which represent the environment conditions, internal and external, to which the component is subjected. Obtain these codes from Table 5. For *internal* environment conditions, select up to three (3) codes which best describe the actual conditions when the reactor is operating. Enter these codes in columns 57-59.

Entry Instructions For
REPORT OF ENGINEERING DATA (Cont'd)
(Form NPRD-2)

Line	Field	Columns	Mandatory Entry	Instruction
	System or Component Engineering Data (Cont'd)			
A (Cont'd)	Environment (For Components Only)	(57-61)	Yes	For *external* environment conditions, select up to two (2) codes which best describe the actual conditions when the reactor is operating. Enter these codes in columns 60-61.
A	In-Service Date	(62-67)	Yes	Enter the actual date the system or component went into service. This date shall *not* be later than the "Data Start Date." When components are routinely rotated between "in-service" and "on-the-shelf" for preventive maintenance purposes, it is not necessary to submit new Report of Engineering Data forms if all other engineering data remains the same. If a component (or system) is permanently replaced due to, for example, wear-out or modifications, a System or Component Out-of-Service Report (Form NPRD-2B) must be submitted along with a new Report of Engineering Data for the replacement component (or system). See Section 9.3 for additional instructions.
A	Applicable Mfgr. Code or Standard	(68-80)	No	Enter the applicable manufacture, fabrication, or construction code or standard for the system or component. The sources of these codes and standards include, for example, ASME, ANSI, API, AWWA, TEMA, IEEE, and NEMA. In addition to the designation of the code source, the applicable code section, class and date of code are to be entered. For example, an entry might be: ASME Sec. 3-71 for "American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III–1971."

Entry Instructions For
REPORT OF ENGINEERING DATA (Cont'd)
(Form NPRD-2)

Line	Field	Columns	Mandatory Entry	Instruction
	System or Component Engineering Data (Cont'd)			
B	Mfgr. Ref. No.	(39-42)	Yes[2]	Enter the reference number from Table 9 for the manufacturer that produced the system or component. Use the vendor name normally associated with the product.
B	Manufacturer Model Number	(43-62)	Yes[2]	Enter the manufacturer's model number for the component, and if applicable, for the system. If a model number does not exist, the source drawing or document number may be entered.
B	Manufacturer Serial Number	(63-80)	No[3]	Enter the manufacturer's serial number for the component, and if applicable, for the system.
C	Supplier/Vendor Ref. No.	(39-42)	Yes[2]	Enter the reference number from Table 9 for the supplier or vendor that provided the system or component. Usually the supplier/vendor can be identified as the organization to whom the purchase order was issued.
C	Supplier/Vendor System or Component Identification Number	(43-60)	No	Enter the supplier's identification number for the component, and if applicable, for the system.
C	Source Drawing or Document Number	(61-76)	No	Enter source of engineering data for system or component, for example, P & ID No., vendor or manufacturer manual designation.
D	Engineering Data	(39-80)	Yes[2]	Enter applicable engineering data for the component according to categories and codes listed on applicable pages of Table 3. Use as many data categories as possible, but do not deviate from categories in the table. In the event an adequately descriptive code is not available, an "X" for "Other" should be entered along with an explanation being provided under "Remarks." See Section 12.6.3 for complete explanation.

[2] Entry not mandatory for systems.
[3] This entry is not mandatory but very useful for components failure evaluation.

Entry Instructions For
REPORT OF ENGINEERING DATA (Coat'd)
(Form NPRD-2)

Line	Field	Columns	Mandatory Entry	Instruction
D (Cont'd)	Engineering Data	(39-80)	Yes[2]	Fractions can be entered in fields G, H, and J by placing a decimal point in the appropriate column. Use the "Remarks" section of the form to explain discrepancies or problems.
	Opera. n and Testing Data			
E	Estimate of Component/System Operation as Percent of:			
E	1. Reactor Critical Hours	(39-43)	Yes	Enter the estimated percent of time that this system or component is operating or functioning when the reactor is *critical.* See Table 4 for guidance regarding components.
E	2. Standby Condition Hours	(44-48)	Yes	Enter the estimated percent of time that this system or component is operating or functioning when the reactor is in a *standby condition.* See Table 4 for guidance regarding components.
E	3. Reactor Shutdown Hours	(49-53)	Yes	Enter the estimated percent of time that this system or component is operating or functioning when the reactor is in a *shutdown condition.* See Table 4 for guidance regarding components.
E	Testing	(54-71)	Yes	For each of the applicable testing categories (Check, Functional Test, Calibration), select the test *interval* code and enter in appropriate columns (55-56, 61-62, 67-68, respectively). Also, for each category, enter the frequency that the test is performed within the specified interval. (For example, once per quarter or twice per week.) Enter the estimated system or component out-of-service time per test, in hours and fractions of hours, if applicable. Testing data is not to be limited to Technical Specification requirements. Preventive maintenance testing data is also essential. If the test frequency for systems or components is significantly changed, a revised Report of Engineering Data must be submitted. Accurate testing data is very important.

Time Interval	Interval Code	Time Interval	Interval Code
Day	DA	Annual	AN
Week	WK	Two Years	2A
Month	MO	Three Years	3A
Quarter	QT	Five Years	5A
Semiannual	S.	Ten Years	XA

Note: If a specific category of testing is not performed, enter zeros in all columns.

[2] Entry not mandatory for systems.

FORM NPRD–2A

REPORT OF ENGINEERING DATA SUPPLEMENT

9.2 Report of Engineering Data Supplement (Form NPRD-2A)

This form may be used where there are numerous identical components within a single system in order to reduce the overall effort in preparing descriptive engineering data. If the NPRD-2A form is used, one NPRD-2 form (Report of Engineering Data) shall be completed, leaving the following fields blank:

- In-Service Date (Line A, Col. 62-67)
- Manufacturer Serial No. (Line B, Col. 63-80)
- Supplier/Vendor Serial No. (Line C, Col. 43-60)

When the NPRD-2A form is used, the Utility Component Identification Number field of the corresponding NPRD-2 form shall be coded as follows:

Input Control Column 19—Enter an asterisk (*).
Input Control Columns 20-23—Enter the Report Number from the upper right corner of the form.
Input Control Columns 24-29—Leave blank.

Information for the above fields shall be entered on Form NPRD-2A for each identical component.

Note: The NPRD-2A form is for *components* only.

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO 0044

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

Card	Action		Utility Desig.	Plant	Unit	Code	NSSS	NPRD Comp or System Code	Utility Component Identification Number (* / Report No.)	Report I.D.	Data Start Date (YR. MO. DY.)
C	7	E	CWE	QAD	1	5	C	VALVEX	*0044	A	730701

SYSTEM OR COMPONENT ENGINEERING DATA

Card	NPRD System Code	Utility System Code	Safe Cls.	Mode	Environment Int.	Environment Ext.	In-Service Date (YR. MO. DY.)	Applicable Mfgr. Code or Standard
A	SAA	1600	2	ØP	CCT	FX		USAS B16.5

Card	Mfgr. Ref. No.	Manufacturer Model Number	Manufacturer Serial Number
B	C665	3562-U	

Card	Supp./Vend. Ref. No.	Supplier/Vendor System or Component Identification Number	Source Drawing or Document Number
C	G080		PID-M-34 REV. 5

Card	A	B	C	D	E	F	G	Units	H	Units	J	Units
D	F	D	J	G	B	B	1.0	IN	100	PSIG	200	DEGF

OPERATION AND TESTING DATA

Card	Estimate of Component/System Operation as Percent of: 1 Reactor Critical Hours	2 Standby Condition Hours	3 Reactor Shutdown Hours	Testing – Check: Freq	In-ter-val	Out of Serv (Hrs.)	Functional: Freq	In-ter-val	Out of Serv (Hrs.)	Calibration: Freq	In-ter-val	Out of Serv (Hrs.)
E	10000	10000	10000	1	QT	000	1	AM	020	0	00	000

REMARKS

EXAMPLE

Date Prepared: Aug. 28, 1973

Prepared By: BILL MILLS

Reviewed/Approved By: G.M. KREISER

Phone No. 309/654-2241

(REV. 1, 3/74)

(THIS SPACE FOR NPRD OPER. USE)

Form NPRD-2A
NUCLEAR PLANT RELIABILITY DATA SYSTEM;

SUPPLEMENT TO REPORT NO. 0044
PAGE 1 OF 1

REPORT OF ENGINEERING DATA SUPPLEMENT

(FOR COMPONENTS ONLY)

INPUT CONTROL		ACTION		UTILITY DESIG.			PLANT			UNIT	S/C CODE	NSS	NPRD COMP. CODE						REPORT NO.				REPORT I.D.			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	C	7	E	C	W	E	Q	A	D	1	5	C	V	A	L	V	E	X	·	0	0	4	4	2	A		

UTILITY COMPONENT IDENTIFICATION NUMBER (CARD A, COL. 28-38)	IN-SERVICE DATE (CARD A, COL. 62-67) YR. MO. DY.	MANUFACTURER SERIAL NUMBER (CARD B, COL. 63-80)	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER (CARD C, COL. 43-60)	LINE NO.
1-1601-58	7, 10 07	687 31825	1-1601-58	1
1-1601-59	7 11 00	768 73182L	1-1602-59	2
				3
				4
				5
				6
				7
				8
				9
				10
				11
				12
				13
				14
				15
				16
				17
				18
				19
				20
				21
				22

EXAMPLE

DATE PREPARED: Aug. 28, 1973 REVIEWED/APPROVED BY: G.M. Krieser

PREPARED BY: Bill Mills PHONE NO: 309/654/2241

(REV. 1, 3/74)

Entry Instructions For
REPORT ON ENGINEERING DATA SUPPLEMENT
(Form NPRD-2A)

Transfer the Report Number from the upper right corner of the corresponding NPRD-2 form to the four-block space at the upper right corner of each NPRD-2A form. Number each NPRD-2A form in the "Page___of___" section.

Line	Field	Columns	Mandatory Entry	Instructions
Input Control	All	(1-23)	Yes	Transfer all information from the Input Control section of the corresponding NPRD-2 form to the Input Control section of each NPRD-2A form.
1-22	Utility component Identification Number	(28-38)	Yes	Enter Utility's component identification number as used by the Utility to identify the specific component.
	In-Service Date	(39-44)	Yes	Enter the actual date the component went into service.
	Manufacturer Serial No.	(45-62)	No	Enter the manufacturer's serial number for the component.
	Supplier/Vendor System or Component Identification Number	(63-80)	No	Enter the supplier's identification number for the system or component.

FORM NPRD–2B

SYSTEM OR COMPONENT OUT-OF-SERVICE REPORT

9.3 System or Component Out-of-Service Report (Form NPRD-2B)

This form is to be used when either a system or component is to be removed permanently from service. In all cases where a system or component taken out-of-service is replaced, such replacements must be properly noted by appropriately completing Form NPRD-2 (Report of Engineering Data) as per instructions in Section 9.1.

Form NPRD-2B

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

SYSTEM OR COMPONENT OUT-OF-SERVICE REPORT

SYSTEM EXAMPLE

INPUT CONTROL		ACTION		UTILITY DESIG.			PLANT			UNIT	SIC CODE	NSSS
	1	2	3	4	5	6	7	8	9	10	11	12
	C	5	E	C	W	E	Q	A	D	1	3	C

NPRD SYSTEM OR COMPONENT CODE						UTILITY COMPONENT IDENTIFICATION NUMBER										REPORT I.D.		DATA START DATE FOR SYSTEM OR COMPONENT TAKEN OUT OF SERVICE						OUT-OF-SERVICE DATE						LINE NO
																		YR		MO		DY		YR		MO		DY		
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	
C	B	A															2	B	7	3	0	7	0	1	7	6	0	2	2	0	1
C	B	C															2	B	7	3	0	7	0	1	7	6	0	2	1	9	2
																	2	B													3
																	2	B													4
																	2	B													5
																	2	B													6
																	2	B													7
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																	2	B													19
																	2	B													20
																	2	B													21
																	2	B													22

DATE PREPARED: February 27, 1976 REVIEWED/APPROVED BY: R B. Brown

PREPARED BY: J B. Jones PHONE NO: 512/684-5111

(REV. 0, 10/75)

Form NPRD-2B

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

SYSTEM OR COMPONENT OUT-OF-SERVICE REPORT

INPUT CONTROL		ACTION		UTILITY DESIG.			PLANT			UNIT	S/C CODE	NSSS
	1	2	3	4	5	6	7	8	9	10	11	12
	C	5	E	C	W	E	Q	A	D	1	5	C

COMPONENT EXAMPLE

NPRD SYSTEM OR COMPONENT CODE						UTILITY COMPONENT IDENTIFICATION NUMBER										REPORT I.D.		DATA START DATE FOR SYSTEM OR COMPONENT TAKEN OUT-OF-SERVICE						OUT-OF-SERVICE DATE						LINE NO
																		YR.		MO.		DY.		YR.		MO.		DY.		
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	
T	U	R	B	I	N	1	-	1	0	3	3						2	B	7	3	0	7	0	1	7	6	0	2	1	6	1
C	K	T	B	R	K	1	-	1	6	-	2	-	D	1			2	B	7	3	0	7	0	1	7	6	0	2	1	2	2
C	Ø	N	R	Ø	D	1	-	0	6	-	3	9					2	B	7	3	0	7	0	1	7	6	0	1	2	3	3
C	R	D	R	V	E	1	-	0	6	-	3	9					2	B	7	3	0	7	0	1	7	6	0	1	2	3	4
F	U	E	L	X	X	1	-	0	1	-	3	6					2	B	7	3	0	7	0	1	7	6	0	1	2	3	5
																	2	B													6
																	2	B													7
																	2	B													8
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																	2	B													17
																	2	B													18
																	2	B													19
																	2	B													20
																	2	B													21
																	2	B													22

DATE PREPARED: February 27, 1976 REVIEWED/APPROVED BY: R. B. Brown

PREPARED BY: J. B. Jones PHONE NO: 512/684-5111

(REV. 0, 10/75)

Entry Instructions For
SYSTEM OR COMPONENT OUT-OF-SERVICE REPORT
(Form NPRD-25)

Line	Field	Columns	Mandatory Entry	Instructions
Input Control	Utility Desig.	(4-6)	Yes	Enter NPRD Utility code from Table 8.
Input Control	Plant/Unit	(7-10)	Yes	Enter NPRD Plant or Unit Code from Table 8.
Input Control	S/C Code	(11)	Yes	Code to designate the general equipment classification for which the completed form applies. Enter one of the following codes as applicable: Code — Equipment Classification 3 — System 5 — Component
Input Control	NSSS	(12)	Yes	Code to designate the nuclear steam supplier. Enter one of the following codes as applicable: Code — Supplier A — Babcock & Wilcox B — Combustion Engineering C — General Electric D — General Atomic E — Westinghouse F — Westinghouse (LMFBR)
1-22	NPRD System or Component Code	(13-18)	Yes	If it is a total system to be taken out-of-service, enter the 3-letter NPRD system code from the applicable Table 1A-1F in columns 13-15. If the submitting Utility/Plant/Unit has more than one of these systems, provision is made for coding a 3-digit subcode in columns 16-18 to uniquely identify each system. For example, redundant emergency power systems might be coded EDA001 and EDA002. A single system would be coded EDA. If this is a component report, enter the 6-letter NPRD component code from Table 2 in Columns 13-18.

Entry Instructions For
SYSTEM OR COMPONENT OUT-OF-SERVICE REPORT (Cont'd)
(Form NPRD-2B)

Line	Field	Columns	Mandatory Entry	Instructions
1-22 (Cont'd)	NPRD System or Component Code (Cont'd)	(13-18)		Note: In all cases where a system is taken out-of-service, its associated components must also be identified and deleted from the NPRD system data base through use of Form NPRD-2B.
1-22	Utility Component Identification Number	(19-29)	Yes[1]	Enter Utility's component identification number as used by the Utility to identify the specific component.
1-22	Data Start Date for System or Component Taken Out-Of-Service	(32-37)	Yes	Enter the date on which NPRD reliability data commenced accruing for the system or component being taken out-of-service. This date must be identical to the Data Start Date appearing in Columns 31-36 of the Report of Engineering Data (Form NPRD-2) submitted for the corresponding component or system.
1-22	Out-of-Service Date	(38-43)	Yes	Enter the actual date the system or component was permanently removed from service.

[1] For components only.

9.4 EXAMPLES OF REPORT OF ENGINEERING DATA

Form NPRD 2

(THIS SPACE FOR NPRD OPER. USE)

NUCLEAR PLANT RELIABILITY DATA SYSTEM

REPORT NO. 0001

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

Card (1)	Action (2)	(3)	Utility Desig. (4–6)	Plant (7–9)	Unit (10)	SE Code (11)	NSSS (12)	NPRD Comp. or System Code / Utility Component Identification Number (• Report No.) (13–29)	Report I.D. (30)	Data Start Date Yr. (31–32)	Mo. (33–34)	Dy. (35–36)	(37)
C	7	E	MMP	PBH	1	5	E	ACCUMUT6A	A	73	07	01	

SYSTEM OR COMPONENT ENGINEERING DATA

Card I.D. (38)	NPRD System Code (39–44)	Utility System Code (45–51)	Safe. Cls. (52–53)	Mode (54–56)	Environment Int. / Ext. (57–61)	In-Service Date Yr. / Mo. / Dy. (62–67)	Applicable Mfgr. Code or Standard (68–80)
A	PCG	CVCS	2	4PC	NG XF	701221	ASME SEC. 8

Card I.D. (38)	Mfgr. Ref. No. (39–42)	Manufacturer Model Number (43–62)	Manufacturer Serial Number (63–80)
B	Ø015	B-95386-A	1670-1 1968

Card I.D. (38)	Supp./Vend. Ref. No. (39–42)	Supplier/Vendor System or Component Identification Number (43–60)	Source Drawing or Document Number (61–76)	(77–80)
C	W120	T6A	K-PSJ105 REV. 1	

Card I.D. (38)	A (39–40)	B (41–42)	C (43–44)	D (45–46)	E (47–48)	F (49–50)	(51)	G (52–56)	Units (57–60)	(61)	H (62–66)	Units (67–70)	(71)	J (72–76)	Units (77–80)
D	B	B	B					15	PSIG		250	DEGF			

OPERATION AND TESTING DATA

Card I.D. (38)	Estimate of Component/System Operation as Percent of: 1-Reactor Critical Hours (39–43)	2-Standby Condition Hours (44–48)	3-Reactor Shutdown Hours (49–53)	Testing – Check: Freq (54)	Interval (55–56)	Out of Serv. (Hrs.) (57–59)	Functional: Freq (60)	Interval (61–62)	Out of Serv. (Hrs.) (63–65)	Calibration: Freq (66)	Interval (67–68)	Out of Serv. (Hrs.) (69–71)
E	100.00	000.00	000.00	0	00	000	1	AN	1.0	0	00	00.0

REMARKS

ACCUMU
EXAMPLE

Date Prepared: 7/11/73

Prepared By: J. B. Jones

Reviewed/Approved By: W. J. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Rev. 5
Feb. 1976

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0002

REPORT OF ENGINEERING DATA

This data entry is for:

- [X] Engineering Data Report for original or replacement component or original system (place a '7' in column two below)
- [ ] Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
		ACTION		UTILITY DESIG.	PLANT	UNIT	SYS CODE	NSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER * REPORT NO.	REPORT I.D.	DATA START DATE YR. MO. DY.	
C		7	E	IME	DCC	1	5E		AIRDRYCAS-0001		A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
		NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT. / EXT.	IN-SERVICE DATE YR. / MO. / DY.	APPLICABLE MFGR. CODE OR STANDARD
A		PAD001	CAS-0012		ϕPC	FW AF	730701	NEMA + IEEE279

	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B		P575	D947-84 2A	D-943878-7#3A32

	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C		WI 20	CAS-0013	D-19738 REV. 4

	38	39 40	41 42	43 44	45 46	47 48	49 50 51	52 53 54 55 56	57 58 59 60	61	62 63 64 65 66	67 68 69 70	71	72 73 74 75 76	77 78 79 80
		A	B	C	D	E	F	G	UNITS		H	UNITS		J	UNITS
D		B	B					150	PSIG		500	SCFM		34	DEGF

OPERATION AND TESTING DATA

	38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 58	60	61 62	63 64 65	66	67 68	69 70 71
		ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E		50.00	50.00	50.00	3	DA	0001	1	AN	4.0000			00.0

REMARKS

AIRDRY EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(IT IS SPACE FOR NPRD OPER. USE)

REPORT NO. 0003

REPORT OF ENGINEERING DATA

This data entry is for:

- [X] Engineering Data Report for original or replacement component or original system (place a '7' in column two below)
- [ ] Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
		ACTION		UTILITY DESIG.	PLANT	UNIT	TYPE CODE	NSSS	NPRD COMP. OR SYSTEM CODE	* UTILITY COMPONENT IDENTIFICATION NUMBER / REPORT NO.	SUPPLEMENT ID.	DATA START DATE YR. MO. DY.	
C	7	E	JCP	ϕCP	1	5	C	AN	NUNC	E-5632	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

	CODE	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
			NPRD SYSTEM CODE	U. LITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMEN. INT. / EXT.	IN-SERVICE DATE YR. / MO. / DY.	APPLICABLE MFGR. CODE OR STANDARD
A			IDB	ANN	2	ϕPC	AF	730701	NEMA +IEEE279
	CODE		MFGR. REF. NO.	MANUFACTURER MODEL NUMBER				MANUFACTURER SERIAL NUMBER	
B			B695	A-3490-5D-4				A397432-95	
	CODE		SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER				SOURCE DRAWING OR DOCUMENT NUMBER	
C			G350	ANN-3593				E-35965 REV. 3	
	CODE		A	B	C	D	E	F	G UNITS	H UNITS	J UNITS
D			C	B							

OPERATION AND TESTING DATA

	CODE	38	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
			39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
E			100.00	100.00	100.00	3	DA	0.1	1	AN	2.0	0	0	0.0

REMARKS

ANNUNC EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R.B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Rev. 5
Feb. 1976

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0004

REPORT OF ENGINEERING DATA

This data entry is for:

☒ Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
		ACTION		UTILITY DESIG.	PLANT	UNIT	RECORD TYPE	NSSS	NPRD COMP. OR SYSTEM CODE	* UTILITY COMPONENT IDENTIFICATION NUMBER / REPORT NO.	REPORT ID.	DATA START DATE YR. MO. DY.	
C		7	E	MYA	MYP	1	5	B	BATTRY	EPS-342	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
	CODE	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT. / EXT.	IN-SERVICE DATE YR. MO. DY.	APPLICABLE MFGR. CODE OR STANDARD
A		ECB	EPS	2	A&PC	AF	730701	WEMA + IEEE 279

	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56	57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
	CODE	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER		MANUFACTURER SERIAL NUMBER
B		E322	B-394738-56A		B-78-53964

	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
	CODE	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C		B343	EPS-342	E-349645 REV. 1

	38	39 40	41 42	43 44	45 46	47 48	49 50	51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
	CODE	A	B	C	D	E	F	G / UNITS	H / UNITS	J / UNITS
D		C	A	A	D				125VDC	800AMPH

OPERATION AND TESTING DATA

	38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
	CODE	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1 REACTOR CRITICAL HOURS	2 STANDBY CONDITION HOURS	3 REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E		100.00	100.00	00.00	1	M0	00.0	1	AN	24.0	0	00	00.0

REMARKS

BATTRY EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: M. J. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0005

REPORT OF ENGINEERING DATA

This data entry is for:

☒ Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
		PATTERN		UTILITY DESIG.	PLANT	UNIT	TYPE CODE	NSS	NPRD COMP. OR SYSTEM CODE	* REPORT NO.	RESPONSE ID.	DATA START DATE YR. MO. DY.	
C	7	E		WPPBH	15	E			BLOWER	1-W1A1	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

	CODE	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
			NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT. / EXT.	IN-SERVICE DATE YR. MO. DY.	APPLICABLE MFGR. CODE OR STANDARD
A			6BD	CAC	2	OPC	FX FX	701221	NEMA + ASTM
			MFGR. REF. NO.	MANUFACTURER MODEL NUMBER					MANUFACTURER SERIAL NUMBER
B			W120	ARR-1					W9846-A5634
			SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER					SOURCE DRAWING OR DOCUMENT NUMBER
C			W1201-W1A1						5297D47 REV. 0
			A	B	C	D	E	F	G UNITS
D			A	J	A	B			38500 SCFM
			H UNITS		J UNITS				
D			50 PSIG		150 HP				

OPERATION AND TESTING DATA

	CODE	38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	TESTING: CHECK FREQ	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
			ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF:											
			1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
E			075.00	075.00	025.00	0	00	00.01	A	N0	2000	0	00	000

REMARKS

BLOWER EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: M. J. Brown

Phone No: 512/684-5111

(REV. 1, 3/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0006

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

Card (1)	Action (2)	(3)	Utility Desig. (4–6)	Plant (7–9)	Unit (10)	SC Code (11)	NSSS (12)	NPRD Comp or System Code (13–18)	Utility Component Identification Number / Report No. (19–29)	Report I.D. (30)	Data Start Date Yr. Mo. Dy. (31–36)	(37)
C	7	E	CWE	QAD	1	5	C	CKTBRK	1-16-2-D1	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

Card I.D. (38)	NPRD System Code (39–44)	Utility System Code (45–51)	Safe. Cls. (52–53)	Mode (54–56)	Environment Int. / Ext. (57–61)	In-Service Date Yr. Mo. Dy. (62–67)	Applicable Mfgr. Code or Standard (68–80)
A	EBA	480VAC	2	ΦPC	AX AF	710107	NEMA + IEEE

Card I.D. (38)	Mfgr. Ref. No. (39–42)	Manufacturer Model Number (43–62)	Manufacturer Serial Number (63–80)
B	G080	2FV-NR	C-963909D

Card I.D. (38)	Supp./Vend. Ref. No. (39–42)	Supplier/Vendor System or Component Identification Number (43–60)	Source Drawing or Document Number (61–76)	(77–80)
C	G080	1-16-2-D1	4E1301 REV. 5	

Card I.D. (38)	A	B	C	D	E	F	G	Units	H	Units	J	Units
D	B	A	B	A	D		480	VAC	150	DEGF	30	AMP

OPERATION AND TESTING DATA

Card I.D. (38)	1-Reactor Critical Hours (39–43)	2-Standby Condition Hours (44–48)	3-Reactor Shutdown Hours (49–53)	Check Freq. (54)	Check Interval (55–56)	Check Out of Serv. (Hrs.) (57–59)	Functional Freq. (60)	Functional Interval (61–62)	Functional Out of Serv. (Hrs.) (63–65)	Calibration Freq. (66)	Calibration Interval (67–68)	Calibration Out of Serv. (Hrs.) (69–71)
E	100.00	100.00	100.00	3	DA	00.0	1	AN	0.5	0	00	00.0

(Estimate of component/system operation as percent of: columns 39–53; Testing: columns 54–71)

REMARKS

CKTBRK EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0007

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a "7" in column two below)

Correction to previous Engineering Data Report (place a "5" in column two below)

INPUT CONTROL

CARD ID	ACTION	UTILITY DESIG.	PLANT	UNIT	TYPE CODE	NSSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER *	REPORT NO.	RECORD ID	DATA START DATE YR.	MO.	DY.
C	7	E	CWE	QAD	15	C	CONROD	1-06-39		A	73	07	01

SYSTEM OR COMPONENT ENGINEERING DATA

CARD ID	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT.	ENVIRONMENT EXT.	IN-SERVICE DATE YR.	IN-SERVICE DATE MO.	IN-SERVICE DATE DY.	APPLICABLE MFGR. CODE OR STANDARD
A	RAA	0201	2	&PC	IJ	IM	71	10	07	ANSI-N500

CARD ID	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B	G080	G-80-411	CX79R

CARD ID	SUPP. VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C	G080	1-06-39	846D298 REV. 4

CARD ID	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
D	E	A	B	B								

OPERATION AND TESTING DATA

CARD ID	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E	100.00	100.00	100.00	3	DA	00.01	1	WK	00.01	1	AN	1.0

REMARKS

CONROD EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Rev. 5
Feb. 1976

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0008

REPORT OF ENGINEERING DATA

This data entry is for:

☒ Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	ACTION	UTILITY DESIG.	PLANT	UNIT	REGION	NSS	NPRD COMP. OR SYSTEM CODE	*	UTILITY COMPONENT IDENTIFICATION NUMBER REPORT NO.	MODIFICATION NO.	DATA START DATE YR.	MO.	DY.
C	7	E	CWEQAD	1	5	C	CRDRVE		1-06-39	A	730701		

SYSTEM OR COMPONENT ENGINEERING DATA

	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT.	ENVIRONMENT EXT.	IN-SERVICE DATE YR.	IN-SERVICE DATE MO.	IN-SERVICE DATE DY.	APPLICABLE MFGR. CODE OR STANDARD
A	RAA	0201	2	PC	IM	EI	71	10	07	ASME SEC. 3-68

	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B	G080	7RD514481	1-349

	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C	60801-06-39		846D298 REV. 0

	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
D	A											

OPERATION AND TESTING DATA

	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E	100.00	10000	10000	0	00	000	1	WK	00.0	0	00	00.0

REMARKS

CRDRVE EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No.: 512/684-5111

(REV. 1, 3/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0009

REPORT OF ENGINEERING DATA

This data entry is for:

- [X] Engineering Data Report for original or replacement component or original system (place a '7' in column two below)
- [ ] Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

Card (1)	Action (2)	(3)	Utility Desig. (4–6)	Plant (7–9)	Unit (10)	SC Code (11)	NSSS (12)	NPRD Comp or System Code (13–18)	Utility Component Identification Number (* / Report No.) (19–29)	Report I.D. (30)	Data Start Date Yr. (31–32)	Mo. (33–34)	Dy. (35–36)	(37)
C	7	E	GPC	EIH	1	5	C	DEMINX	G31-356-Z	A	73	07	01	

SYSTEM OR COMPONENT ENGINEERING DATA

Card I.D. (38)	NPRD System Code (39–44)	Utility System Code (45–51)	Safe. Cls. (52–53)	Mode (54–56)	Environment Int. (57–59)	Ext. (60–61)	In-Service Date Yr. (62–63)	Mo. (64–65)	Dy. (66–67)	Applicable Mfgr. Code or Standard (68–80)
A	CGA	G31	2	ØPC	HJM	GX	71	10	07	ASME SEC.3-68

Card I.D. (38)	Mfgr. Ref. No. (39–42)	Manufacturer Model Number (43–62)	Manufacturer Serial Number (63–80)
B	I345	300-56-152	D-456321B

Card I.D. (38)	Supp./Vend. Ref. No. (39–42)	Supplier/Vendor System or Component Identification Number (43–60)	Source Drawing or Document Number (61–76)	(77–80)
C	G080	G31-356-2	M-36295 REV. 1	

Card I.D. (38)	A (39–40)	B (41–42)	C (43–44)	D (45–46)	E (47–48)	F (49–50)	(51)	G (52–56)	Units (57–60)	(61)	H (62–66)	Units (67–70)	(71)	J (72–76)	Units (77–80)
D	B	B						300	GPM		10	PSID		20	GMSF

OPERATION AND TESTING DATA

Card I.D. (38)	Estimate of Component/System Operation as Percent of: 1-Reactor Critical Hours (39–43)	2-Standby Condition Hours (44–48)	3-Reactor Shutdown Hours (49–53)	Testing – Check: Freq (54)	Interval (55–56)	Out of Serv. (Hrs.) (57–59)	Functional: Freq (60)	Interval (61–62)	Out of Serv. (Hrs.) (63–65)	Calibration: Freq (66)	Interval (67–68)	Out of Serv. (Hrs.) (69–71)
E	50.00	50.00	50.00	3	DA	00.0	1	AN	8.0	0	0C	00.0

REMARKS

DEMINX
EXAMPLE

Date Prepared: 7/15/73

Prepared By: J.B. Jones

Reviewed/Approved By: R.B. Brown

Phone No. 512/684-5111

(REV. 1, 1/74)

Rev. 5
Feb. 1976

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0030

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

1	2	3	4 5 6	7 8 9	10	11 12	13 14	15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
	ACTION		UTILITY DESIG.	PLANT	UNIT	SYS CODE	NSSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER * REPORT NO.	REPORT S.O.	DATA START DATE YR. MO. DY.	
	C	7	EAPL	ARK	15	AE	LEC	ØN	RPC-356	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

CARD ID	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
		NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT. EXT.	IN-SERVICE DATE YR. MO. DY.	APPLICABLE MFGR. CODE OR STANDARD
A		EBE	RPC	2	ØPC	A4 C	721115	IEEE-323

CARD ID	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B		G315	GCN-4200	R3096B756

CARD ID	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C		G315	RPC-356	I-53842 REV. 2

CARD ID	38	A	B	C	D	E	F	39 40 41 42 43 44 45 46 47 48 49 50 51 52 53	G	UNITS	54 55 56 57 58 59 60	H	UNITS	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	J	UNITS
D		C	E	C	L	G	B		330	VAC		8	AWG			

OPERATION AND TESTING DATA

CARD ID	38	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
		39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
E		000.00	100.00	100.00	1	WK	00.0	0	000	00.0	0	000	00.0

REMARKS

ELECON EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Smith

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0010

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

Correction to previous Engineering Data Report (place a '5' in column two below)

INV CONTROL		ACTION		UTILITY DESIG.		PLANT		UNIT	ECODE	NSSS	NPRD COMP. OR SYSTEM CODE		UTILITY COMPONENT IDENTIFICATION NUMBER *	REPORT NO.		REPORT NO.	DATA START DATE YR.	MO.	DY.	
1	2	3	4 5 6		7 8 9		10	11	12	13 14 15 16 17 18		19	20 21 22 23	24 25 26 27 28 29		30	31 32 33 34 35 36			37
C	7	E	FPC		CRP		3	5	A	ENGINE		3	-R43-005			A	730701			

SYSTEM OR COMPONENT ENGINEERING DATA

RECORD CODE		NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE CLS.	MODE	ENVIRONMENT INT.	ENVIRONMENT EXT.	IN-SERVICE DATE YR.	IN-SERVICE DATE MO.	IN-SERVICE DATE DY.	APPLICABLE MFGR. CODE OR STANDARD
38		39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60	61	62 63 64	65 66	67	68 69 70 71 72 73 74 75 76 77 78 79 80
A		EEA001	R43	2	3BC		FX	700	425		NEMA/IEEE-279

RECORD CODE		MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
38		39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
B		A356	D2500-44	D369-70-456

RECORD CODE		SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
38		39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
C		B6353	-R43-005	R43-3965 REV. 3

RECORD CODE		A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
38		39 40	41 42	43 44	45 46	47 48	49 50	51 52 53 54 55 56	57 58 59 60	61 62 63 64 65 66	67 68 69 70	71 72 73 74 75 76	77 78 79 80
D		D	B	B				1500	NP	B		1800	RPM

OPERATION AND TESTING DATA

RECORD CODE		ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
38		39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
E		1.00	0.0	2.00	3	DA	00.0	1	1M	4.0	0	00	00.0

REMARKS

ENGINE EXAMPLE

Date Prepared: 7/15/73

Prepared By: J.B. Jones

Reviewed/Approved By: R.B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0011

REPORT OF ENGINEERING DATA

This data entry is for:

- ☒ Engineering Data Report for original or replacement component or original system (place a '7' in column two below)
- ☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

Col. 1	Action (2)	3	Utility Desig. (4–6)	Plant (7–9)	Unit (10)	Secode (11)	NSSS (12)	NPRD Comp or System Code (13–18)	Utility Component Identification Number (• Report No.) (19–29)	Report I.D. (30)	Data Start Date Yr. Mo. Dy. (31–36)	37
C	7	E	CWE	DRS	2	5	C	FILTER	1-E11-002	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

Card (38)	NPRD System Code (39–44)	Utility System Code (45–51)	Safe. Cls. (52–53)	Mode (54–56)	Environment Int. Ext. (57–61)	In-Service Date Yr. Mo. Dy. (62–67)	Applicable Mfgr. Code or Standard (68–80)
A	CFA	E11	2	ØPC	HMJGX	701120	ASME-SEC-3-68

Card (38)	Mfgr. Ref. No. (39–42)	Manufacturer Model Number (43–62)	Manufacturer Serial Number (63–80)
B	C105	N3563-151	W45-39-45982

Card (38)	Supp./Vend. Ref. No. (39–42)	Supplier/Vendor System or Component Identification Number (43–60)	Source Drawing or Document Number (61–76)	77–80
C	G080	1-E11-002	EØ1-3956 REV. 1	

Card (38)	A	B	C	D	E	F		G	Units	H	Units		J	Units
D	A	C	B	B				300	GPM	5	PSID		20	MICR

OPERATION AND TESTING DATA

Card (38)	Estimate of Component/System Operation as Percent of: 1-Reactor Critical Hours (39–43)	2-Standby Condition Hours (44–48)	3-Reactor Shutdown Hours (49–53)	Testing – Check: Freq (54)	Inter-val (55–56)	Out of Serv. (Hrs.) (57–59)	Functional: Freq (60)	Inter-val (61–62)	Out of Serv. (Hrs.) (63–65)	Calibration: Freq (66)	Inter-val (67–68)	Out of Serv. (Hrs.) (69–71)
E	5000	5000	5000	3	DA	000	1	AN	000	0	00	000

REMARKS

FILTER EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: M. J. Brown

Phone No.: 512/684-5111

(REV. 1, 3/74)

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0012

REPORT OF ENGINEERING DATA

This data entry is for:

☒ Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

		ACTION	UTILITY DESIG.	PLANT	UNIT	SYS CODE	NSSS	NPRD COMP. OR SYSTEM CODE	*	UTILITY COMPONENT IDENTIFICATION NUMBER REPORT NO.	REPORT TYP.	DATA START DATE YR.	MO.	DY.
	1	2 3	4 5 6	7 8 9	10	11 12	13 14 15 16 17 18		19	20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36		
C		7	E C W	E Q A	D	1	5	C F U E L X X		1-01-36	A	730701		

SYSTEM OR COMPONENT ENGINEERING DATA

	CODE	TYPE SYSTEM CODE	UTILITY SYSTEM CODE	SAFE CLS.	MODE	ENVIRONMENT INT.	ENVIRONMENT EXT.	IN-SERVICE DATE YR.	IN-SERVICE DATE MO.	IN-SERVICE DATE DY.	APPLICABLE MFGR. CODE OR STANDARD
		38 39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61		62 63 64 65 66 67			68 69 70 71 72 73 74 75 76 77 78 79 80
A		R C A	D 2 0 1	2	O P C	I J	I M	7 1	0 0	7	A N S I - N 4 6 5

	CODE	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
		38 39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
B		G 0 8 0	1 1 7 C 3 5 6 1 G 4	C X 1 5 7

	CODE	SUPP. VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
		38 39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
C		G 0 8 0	1-01-36	1 1 7 C 3 5 6 1 G 4 R E V . 3

	CODE	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
		38 39 40 41 42	43 44	45 46	47 48	49 50 51	52 53 54 55 56	57 58 59 60	61 62 63 64 65 66 67	68 69 70 71	72 73 74 75 76 77	78 79 80	
D		A	C	6	A	A							

OPERATION AND TESTING DATA

	CODE	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
		38 39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62 63 64 65		66 67	68 69 70 71	
E		1 0 0 . 0 0	1 0 0 . 0 0	0 0 . 0 0	1	D A	0 0 . 0		0 0 0 0	0 0 . 0		0 0 0 0	0 0 . 0

REMARKS

FUEL XX EXAMPLE

Date Prepared: 7/15/74

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0013

REPORT OF ENGINEERING DATA

This data entry is for:

[X] Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

[ ] Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	ACTION		UTILITY DESIG.	PLANT	UNIT	SYSTEM CODE	NSSS	NPRD COMP OR SYSTEM CODE	*	UTILITY COMPONENT IDENTIFICATION NUMBER: REPORT NO.	APPEND.	DATA START DATE: YR.	MO.	DY.	
	1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32	33 34	35 36	37
C	7	E	CWEQAD	1	5	C		GENERA1-2-6601			A	73	07	01	

SYSTEM OR COMPONENT ENGINEERING DATA

	CODE	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE CLS.	MODE	ENVIRONMENT: INT.	EXT.	IN-SERVICE DATE: YR.	MO.	DY.	APPLICABLE MFGR. CODE OR STANDARD
	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57	58 59 60 61	62 63	64 65	66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
A		EEA1-26602	2	S	BC	BF	XBF	71	10	07	EEB NEMA ASA

	CODE	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
B		E160S20E4GW-20		69-D1-1140

	CODE	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
C		W0791-2-6601		4E-1351 REV. 1

	CODE	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
	38	39 40	41 42	43 44	45 46	47 48	49 50	51 52 53 54 55 56	57 58 59 60	61 62 63 64 65 66	67 68 69 70 71	72 73 74 75 76	77 78 79 80
D		D	E	F	A	C	B	900	RPM	4160	VOLT	2500	KW

OPERATION AND TESTING DATA

	CODE	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV (HRS.)
	38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
E		000'40	000'00	000'00	3	DA	00.0	1	MO	1.0	0	00	00.0

REMARKS

GENERA EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Smith

Phone No.: 512/684-5111

(REV. 1, 3/74)

(THIS SPACE FOR NPRD OPER. USE)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

REPORT NO 0015

REPORT OF ENGINEERING DATA

This data entry is for:

☒ Engineering Data Report for original or replacement component or original system (place a "7" in column two below)

☐ Correction to previous Engineering Data Report (place a "5" in column two below)

INPUT CONTROL

1	2	3–6	7–9	10	11–12	13–18	19	20–29	30	31–36	37
	ACTION	UTILITY DESIG.	PLANT	UNIT	SYSTEM CODE	NPRD COMP. OR SYSTEM CODE	*	UTILITY COMPONENT IDENTIFICATION NUMBER / REPORT NO.	REPORT NO.	DATA START DATE YR. MO. DY.	
	C	7E	BEC	P	NS	15	C	HEATER R43-D2-156	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

38	39–44	45–51	52–53	54–56	57–61	62–67	68–80
CODE	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT. / EXT.	IN-SERVICE DATE YR. / MO. / DY.	APPLICABLE MFGR. CODE OR STANDARD
A	EEA002	R43-0022		9PC	FX	710414	WEMA

38	39–42	43–60	61–80
CODE	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B	C774	1500-95A	R936250-260

38	39–42	43–60	61–80
CODE	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C	G080	R43-D2-156	P.Φ. A35692

38	39	40–42	43–46	47–48	49–50	51–52	53–56	57–60	61–62	63–66	67–68	69–70	71–74	75–76	77–80
CODE	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS			
D	C														

OPERATION AND TESTING DATA

38	39–43	44–48	49–53	54	55–56	57–59	60	61–62	63–64	65–66	67	68–69	70–71
CODE	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)	
E	100.00	100.00	000.00	3	DA	000.1	M	Φ	1.0				

REMARKS

HEATER EXAMPLE

Date Prepared 7/15/78

Prepared By J.B. Jones

Reviewed/Approved By R.B. Smith

Phone No. 512/684-5111

(REV. 1, 3/78)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0016

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
		ACTION		UTILITY DESIG.			PLANT			UNIT	SYS CODE	NSSS	NPRD COMP. OR SYSTEM CODE						UTILITY COMPONENT IDENTIFICATION NUMBER * REPORT NO.												REPORT CD.	DATA START DATE YR.		MO.		DY.		
C	7	E	C	W	E	Q	A	D	1	5	C	H	T	E	X	C	H	1	B	-	1	0	0	3				A	7	3	0	7	0	1	

SYSTEM OR COMPONENT ENGINEERING DATA

		38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
	RECORD CODE		NPRD SYSTEM CODE						UTILITY SYSTEM CODE							SAFE CLS.		MODE		ENVIRONMENT INT.		EXT.		IN-SERVICE DATE YR.		MO.		DY.		APPLICABLE MFGR. CODE OR STANDARD														
A			C	F	A				1	0	0	0				2		S	B	C	K	Ø	X	A	F	7	1	1	0	0	7	A	S	M	E		S	E	C	.	3	-	6	8
	RECORD CODE		MFGR. REF. NO.				MANUFACTURER MODEL NUMBER																			MANUFACTURER SERIAL NUMBER																			
B			S	5	0	5	2	1	A	1	0	3	6	A	D											H	9	6	3	4	-	0	9	2							
	RECORD CODE		SUPP./VEND. REF. NO.				SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER																			SOURCE DRAWING OR DOCUMENT NUMBER																			
C			G	0	8	0	1	B	-	1	0	0	3													M	-	0	3	9		R	E	V	.		3				
	RECORD CODE		A		B		C		D		E		F			G				UNITS					H				UNITS				J				UNITS				
D			C		B		B		5		B					1	9	5	0	S	Q	F	T		4	5	0	P	S	I	G			1	0	5	M	B	H			

OPERATION AND TESTING DATA

		38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
	RECORD CODE		ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS					2-STANDBY CONDITION HOURS					3-REACTOR SHUTDOWN HOURS					TESTING: CHECK FREQ.		INTERVAL		OUT OF SERV. (HRS.)		FUNCTIONAL FREQ.		INTERVAL		OUT OF SERV. (HRS.)		CALIBRATION FREQ.		INTERVAL		OUT OF SERV. (HRS.)					
E			0	0	1	0	0	0	0	1	0	0	0	9	0	0	0	0	0	0	0	0	0	1	Q	T	0	0	0	0	0	0	0	0	0	0

REMARKS

HTEXCH EXAMPLE

Date Prepared: 7/15/73

Prepared By: R. B. Smith

Reviewed/Approved By: K. E. Jones

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0017

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
	ACTION		UTILITY DESIG.	PLANT	UNIT	SPECIAL CODE	NSSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER * REPORT NO.	REPORT I.D.	DATA START DATE YR. MO. DY.	
C	7	E	WMP	PBH	1	S	E	INSTRU	WI-4-001	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

CODE I.D.	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
		NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT. / EXT.	IN-SERVICE DATE YR. / MO. / DY.	APPLICABLE MFGR. CODE OR STANDARD
A		IAD	WI-4	2	ØPC	AF	701221	IEEE-599

CODE I.D.	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B		W120	N-3654	R6392A561

CODE I.D.	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C		WI 20	WI-4-001	N-35634 REV. 4

CODE I.D.	38	39 40 41 42	43 44	45 46	47 48	49 50 51	52 53 54 55 56	57 58 59 60	61 62 63 64 65 66	67 68 69 70 71	72 73 74 75 76	77 78 79 80
		A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
D		R	E		B	A		500	VDC	1200	MICA	1200	MICA

OPERATION AND TESTING DATA

CODE I.D.	38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
		ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E		10000	10000	0.00	3	DA	0.01	1	QT	2.01	1	AN	4.0

REMARKS

INSTRU EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Smith

Phone No. 512/684-5111

(REV. 1, 3/74)

(THIS SPACE FOR NPRD OPER. USE)

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

REPORT NO. 0018

REPORT OF ENGINEERING DATA

This data entry is for:

- [X] Engineering Data Report for original or replacement component or original system (place a "7" in column two below)
- [ ] Correction to previous Engineering Data Report (place a "5" in column two below)

INPUT CONTROL

Card (1)	Action (2)	(3)	Utility Desig. (4–6)	Plant (7–9)	Unit (10)	Secode (11)	NSSS (12)	NPRD Comp. or System Code (13–18)	Utility Component Identification Number (• Report No.) (19–29)	Report I.D. (30)	Data Start Date Yr. (31–32)	Mo. (33–34)	Dy. (35–36)	(37)
C	7	E	CWE	QAD	1	5	C	MECFUN	1-202-51A	A	73	07	01	

SYSTEM OR COMPONENT ENGINEERING DATA

Card I.D. (38)	NPRD System Code (39–44)	Utility System Code (45–51)	Safe. Cls. (52–53)	Mode (54–56)	Environment Int. / Ext. (57–61)	In-Service Date Yr. / Mo. / Dy. (62–67)	Applicable Mfgr. Code or Standard (68–80)
A	CBC	202	2	ϕPC	A2 AF	71 10 07	ASTM-1056

Card I.D. (38)	Mfgr. Ref. No. (39–42)	Manufacturer Model Number (43–62)	Manufacturer Serial Number (63–80)
B	A310	497-5	C9634-105B

Card I.D. (38)	Supp./Vend. Ref. No. (39–42)	Supplier/Vendor System or Component Identification Number (43–60)	Source Drawing or Document Number (61–76)	(77–80)
C	G080	1-202-51A	D-34620 REV. 4	

Card I.D. (38)	A (39–40)	B (41–42)	C (43–44)	D (45–46)	E (47–48)	F (49–50)	(51)	G (52–56)	Units (57–60)	(61)	H (62–66)	Units (67–70)	(71)	J (72–76)	Units (77–80)
D	3	A	D	J				1200	FTLB		1180	RPM		1160	RPM

OPERATION AND TESTING DATA

Card I.D. (38)	Estimate of Component/System Operation as Percent of: 1-Reactor Critical Hours (39–43)	2-Standby Condition Hours (44–48)	3-Reactor Shutdown Hours (49–53)	Testing – Check: Freq. (54)	Interval (55–56)	Out of Serv. (Hrs.) (57–59)	Functional: Freq. (60)	Interval (61–62)	Out of Serv. (Hrs.) (63–65)	Calibration: Freq. (66)	Interval (67–68)	Out of Serv. (Hrs.) (69–71)
E	100'00	100'00	25'00	1	5A	1'0	1	AN	2'0	0	00	00'0

REMARKS

MECFUN EXAMPLE

(REV. 1, 3/74)

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Smith

Phone No. 512/684-5111

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0019

REPORT OF ENGINEERING DATA

This data entry is for:

[X] Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

[ ] Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19	20 21 22 23	24 25 26 27 28 29	30	31 32	33 34	35 36	37
		ACTION		UTILITY DESIG.	PLANT	UNIT	SYSCOMP	NSSS	NPRD COMP. OR SYSTEM CODE	*	REPORT NO.	UTILITY COMPONENT IDENTIFICATION NUMBER	REPORT S.O.	DATA START DATE YR.	MO.	DY.	
C	7	E		CWE	QAD	1	5	C	MΦTΦRX	1	-3903		A	73	07	01	

SYSTEM OR COMPONENT ENGINEERING DATA

	CODE ID	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
			NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE CLS.	MODE	ENVIRONMENT INT. EXT.	IN-SERVICE DATE YR. MO. DY.	APPLICABLE MFGR. CODE OR STANDARD
A	A		WAA	3900	2	S	BCBCXBC	71 1001	WEMA+IEEE 232
			MFGR. REF. NO.	MANUFACTURER MODEL NUMBER					MANUFACTURER SERIAL NUMBER
B	B		G080	5K365AK169					HE375057
			SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER					SOURCE DRAWING OR DOCUMENT NUMBER
C	C		G080	HE375057					SW-M-22
			A	B	C	D	E	F	G UNITS	H UNITS	J UNITS
D	D		C	E	F					460 VAC	3550 RPM

OPERATION AND TESTING DATA

	CODE ID	38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62 63 64 65	66	67 68	69 70 71
			ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF			TESTING CHECK			FUNCTIONAL		CALIBRATION		
			1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	FREQ	INTERVAL	OUT OF SERV. (HRS.)	FREQ	INTERVAL	OUT OF SERV. (HRS.)	FREQ	INTERVAL	OUT OF SERV. (HRS.)
E	E		0'40	0'00	0'00	0	00	00'01	SA	00'0	0	00	00'0

REMARKS

Date Prepared: 7/15/73

Prepared By: J.B. Jones

Reviewed/Approved By: R.B. Smith

Phone No. 512/684-5111

(REV. 1, 3/74)

Rev. 5
Feb. 1976

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0020

REPORT OF ENGINEERING DATA

This data entry is for:

[X] Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

[ ] Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

COMP. NO.	UTILITY DESIG.	PLANT	UNIT	SYS CODE	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER * REPORT NO.	REPORT REQ.	DATA START DATE YR.	MO.	DY.
1 2 3	4 5 6	7 8 9	10	11 12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32	33 34	35 36 37
C 7 E	CWE	QAD	1	5C	PENETRX-100C		A	73	07	01

SYSTEM OR COMPONENT ENGINEERING DATA

COMP. NO.	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT.	ENVIRONMENT EXT.	IN-SERVICE DATE YR.	IN-SERVICE DATE MO.	IN-SERVICE DATE DY.	APPLICABLE MFGR. CODE OR STANDARD
38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80			
A	SAA	1600	2	Ø	PCGT	FX	71	10	07	USAS-B54

COMP. NO.	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
38	39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	
B	GOBO	P456-320B	E965392-01

COMP. NO.	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
38	39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	
C	GOBO	X100C	B-22 REV. 2

COMP. NO.	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
38	39 40 41	43 44	45 46	47 48	49 50 51	52 53 54 55 56	57 58 59 60	61	62 63 64 65 66	67 68 69 70 71	72 73 74 75 76	77 78 79 80
D	D						600	VAC	56	PSIG		

OPERATION AND TESTING DATA

COMP. NO.	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1 REACTOR CRITICAL HOURS	2 STANDBY CONDITION HOURS	3 REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
E	100.00	100.00	100.00	A	N	0.00	0	00	00.0	0	00	00.0

REMARKS

PENETR EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Smith

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0021

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a "7" in column two below)

Correction to previous Engineering Data Report (place a "5" in column two below)

INPUT CONTROL

	ACTION	UTILITY DESIG.	PLANT	UNIT	SYS CODE	NSS	NPRD COMP OR SYSTEM CODE	UTILITY COMPONENT IDENT. (ALPHA) NUMBER * REPORT NO.	REPORT SO	DATA START DATE YR MO DY
	1 2 3	4 5 6	7 8 9	10 11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36 37
C	7	E	CWEQAD	15	C	PIPEXX	1-2301-69	A	730701

SYSTEM OR COMPONENT ENGINEERING DATA

	DESCRIPTOR	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE CLS	MODE	ENVIRONMENT INT	ENVIRONMENT EXT	IN-SERVICE DATE YR MO DY	APPLICABLE MFGR. CODE OR STANDARD
		38 39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60	61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
A		SFC	2300	2	ØPC	HRX	AF	7 1 0 0	7 US AS-342

	DESCRIPTOR	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
		38 39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
B		B290	B-99461	D993634-105C

	DESCRIPTOR	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
		38 39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
C		G080	1-2301-69	RHR-M-039 REV. 4

	DESCRIPTOR	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
		38 39 40 41 42	43 44	45 46	47 48	49 50 51	52 53 54 55 56	57 58 59 60	61 62 63 64 65 66	67 68 69 70 71	72 73 74 75 76	77 78 79 80	
D		H	G	D	E	R		16IN		1500	PSIG		

OPERATION AND TESTING DATA

	DESCRIPTOR	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1 REACTOR CRITICAL HOURS	2 STANDBY CONDITION HOURS	3 REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
		38 39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
E		100.00	100.00	100.00	0	00	00.0	1	AM	4.00	0	00	0.0

REMARKS

PIPE XX EXAMPLE

Date Prepared: 7/15/73

Prepared By: J.B. Jones

Reviewed/Approved By: R.B. Smith

Phone No. 512/684-5111

(REV. 1, 3/74)

Rev. 5
Feb. 1976

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM:

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0023

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	ACTION	UTILITY DESIG.	PLANT	UNIT	SYSTEM	NSSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER (REPORT NO.)	DATA START DATE (YR. MO. DY.)
C	7	E	CWEQAD	1	5	C	PUMPXX	1-1302	A 730701

SYSTEM OR COMPONENT ENGINEERING DATA

	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE CLS.	MODE	ENVIRONMENT INT.	ENVIRONMENT EXT.	IN-SERVICE DATE YR.	IN-SERVICE DATE MO.	IN-SERVICE DATE DY.	APPLICABLE MFGR. CODE OR STANDARD
A	CEA	1300	2	SB	CØ	PX	AF	711007		ASME SEC. 3-68

	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B	B260	4X6X9 BMSD	270606

	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C	G0801-1302		RCIC-M-050

	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
D	B	C	G	B	E		2800	FTHØ	1416	GPM	4500	RPM

OPERATION AND TESTING DATA

	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E	001.00	001.00	001.00	M	Ø	0.01	Q	T	2.0000			00.0

REMARKS

PUMPXX EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Smith

Phone No: 512/684-5111

(REV. 1, 3/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0024

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a "7" in column two below)

☐ Correction to previous Engineering Data Report (place a "5" in column two below)

INPUT CONTROL

1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
	C	7	E	BGEC	C	N	1 5	BREC$MB	CVS-R02	A	730701	
			ACTION	UTILITY DES'G.	PLANT	UNIT	TYPE CODE	NSSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER * REPORT NO.	REPORT TYPE NO.	DATA START DATE YR. MO. DY.

SYSTEM OR COMPONENT ENGINEERING DATA

	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62	63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
A		5BD	CVS	2	SBC	GRZFX	7	20815	ASME SEC. 8-68
		NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT. EXT.		IN-SERVICE DATE YR. MO. DY.	APPLICABLE MFGR. CODE OR STANDARD

	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
B		C165R-635-08B		71-34943
		MFGR. REF NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER

	38	39 40 41 42	43 44 45	47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
C		W120	CVS-R02	SPEC. 1732-M-16	
		SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER	

	38	39 40	41 42	43 44	45 46	47 48	49 50	51	52 53 54 55 56	57 58 59 60	61	62 63 64 65 66	67 68 69 70 71	72 73 74 75 76	77 78 79 80
D		A	B	C	D	E	F		G	UNITS		H	UNITS	J	UNITS
		A	A						5000	BTUH		300	SCFM	625	DEGF

OPERATION AND TESTING DATA

	38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
E		00010	00000	00000	0	00	00.0	1	AM	4.0	0	00	00.0
		ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)

REMARKS

REC$MB EXAMPLE

Date Prepared: 7/15/73

Prepared By: J.B. Jones

Reviewed/Approved By: R.B. Smith

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0025

REPORT OF ENGINEERING DATA

This data entry is for:

- [X] Engineering Data Report for original or replacement component or original system (place a '7' in column two below)
- [ ] Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

Card (1)	Action (2)	(3)	Utility Desig. (4–6)	Plant (7–9)	Unit (10)	Sec. Code (11)	NSSS (12)	NPRD Comp or System Code (13–18)	Utility Component Identification Number (* Report No.) (19–29)	Report Code (30)	Data Start Date YR (31–32)	MO (33–34)	DY (35–36)	(37)
C	7	E	APL	ARK	1	5	A	RELAYX	RPS-116	A	73	07	01	

SYSTEM OR COMPONENT ENGINEERING DATA

Card (38)	NPRD System Code (39–44)	Utility System Code (45–51)	Safe. CLS (52–53)	Mode (54–56)	Environment Int. (57–59)	Environment Ext. (60–61)	In-Service Date YR (62–63)	MO (64–65)	DY (66–67)	Applicable MFGR. Code or Standard (68–80)
A	IBG	RPS	2	ØPC		AX	73	04	15	NEMA SEC. 123

Card (38)	MFGR. Ref. No. (39–42)	Manufacturer Model Number (43–62)	Manufacturer Serial Number (63–80)
B	G080	HRT-5621	R396A567

Card (38)	Supp./Vend. Ref. No. (39–42)	Supplier/Vendor System or Component Identification Number (43–60)	Source Drawing or Document Number (61–76)	(77–80)
C	W120	RPS-116	I-35461 REV. 2	

Card (38)	A (39–40)	B (41–42)	C (43–44)	D (45–46)	E (47–48)	F (49–50)	(51)	G (52–56)	Units (57–60)	(61)	H (62–66)	Units (67–70)	(71)	J (72–76)	Units (77–80)
D	B	B	C	A	C						125	VDC			

OPERATION AND TESTING DATA

Card (38)	Estimate of Component/System Operation as Percent of: 1-Reactor Critical Hours (39–43)	2-Standby Condition Hours (44–48)	3-Reactor Shutdown Hours (49–53)	Testing: Check Freq (54)	Check Interval (55–56)	Check Out of Serv. (Hrs.) (57–59)	Functional Freq (60)	Functional Interval (61–62)	Functional Out of Serv. (Hrs.) (63–65)	Calibration Freq (66)	Calibration Interval (67–68)	Calibration Out of Serv. (Hrs.) (69–71)
E	100.00	100.00	000.00	1	WK	0.3	1	QT	1.0	0	00	00.0

REMARKS

RELAYX EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Smith

Phone No.: 512/684-5111

(REV. 3, 1/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0031

REPORT OF ENGINEERING DATA

This data entry is for:

☒ Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
		ACTION		UTILITY DESIG.	PLANT	UNIT	RECORD CODE	NSS	NPRD COMP. OR SYSTEM CODE	* REPORT NO.	REPORT I.D.	DATA START DATE YR. MO. DY.	
	C	7	E	CPLH	BR2	5	E	SUP	ØRT	RCSP-004	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
		NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT. EXT.	IN-SERVICE DATE YR. MO. DY.	APPLICABLE MFGR. CODE OR STANDARD
A		CBH	RCS	1	ØPC	2 GX	701025	ANSI-N256

	38	39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		MFGR. REF. NO. / MANUFACTURER MODEL NUMBER / MANUFACTURER SERIAL NUMBER
B		D620153 52-A-963 H-932563P

	38	39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		SUPP. VEND. REF. NO. / SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER / SOURCE DRAWING OR DOCUMENT NUMBER
C		W120 RCSP-004 H-39042 REV. 3

	38	39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		A / B / C / D / E / F / G / UNITS / H / UNITS / J / UNITS
D		B A D N 30 KIPS

OPERATION AND TESTING DATA

	38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
		ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E		100.00	100.00	100.00	1	AN	00.0	12	A	8.0	00	000	00.0

REMARKS

SUPORT EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Smith

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0026

REPORT OF ENGINEERING DATA

This data entry is for:

☒ Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

Card	Action		Utility Desig.	Plant	Unit	NSSS Code	NSSS	NPRD Comp. or System Code	Utility Component Identification Number (* Report No.)	Report I.D.	Data Start Date (Yr. Mo. Dy.)	
1	2	3	4–6	7–9	10	11	12	13–18	19–29	30	31–36	37
C	7	E	APC	JMF	1	5	E	TRANSF	1-R40-T21	A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

Card	NPRD System Code	Utility System Code	Safe. Cls.	Mode	Environment (Int. / Ext.)	In-Service Date (Yr. Mo. Dy.)	Applicable Mfgr. Code or Standard
38	39–44	45–51	52–53	54–56	57–61	62–67	68–80
A	EBB	R40-0012		ØPC	AX	730613	NEMA+ IEEE279

Card	Mfgr. Ref. No.	Manufacturer Model Number	Manufacturer Serial Number
38	39–42	43–62	63–80
B	G080	T527B74396	R3456-73463

Card	Supp./Vend. Ref. No.	Supplier/Vendor System or Component Identification Number	Source Drawing or Document Number
38	39–42	43–60	61–76
C	G080	1-R40-T21	E-R40-37582 REV2

Card	A	B	C	D	E	F	G	Units	H	Units	J	Units
38	39–40	41–42	43–44	45–46	47–48	49–50	52–56	57–60	62–66	67–70	72–76	77–80
D	B	E	A	A			500	KVA	4160	VAC	120	VAC

OPERATION AND TESTING DATA

Card	Estimate of Component/System Operation as Percent of: 1-Reactor Critical Hours	2-Standby Condition Hours	3-Reactor Shutdown Hours	Testing – Check: Freq.	Check: Interval	Check: Out of Serv. (Hrs.)	Functional: Freq.	Functional: Interval	Functional: Out of Serv. (Hrs.)	Calibration: Freq.	Calibration: Interval	Calibration: Out of Serv. (Hrs.)
38	39–43	44–48	49–53	54	55–56	57–59	60	61–62	63–65	66	67–68	69–71
E	0·10	010	100·00	3	DA	000	0	00	0·0	0	00	0·0

REMARKS

TRANSF EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0027

REPORT OF ENGINEERING DATA

This data entry is for:

☒ Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

Card (1)	Action (2)	(3)	Utility Desig. (4–6)	Plant (7–9)	Unit (10)	SC Code (11)	NSSS (12)	NPRD Comp. or System Code (13–18)	Utility Component Identification Number: * Report No. (19–29)	Report I.D. (30)	Data Start Date Yr. (31–32)	Mo. (33–34)	Dy. (35–36)	(37)
C	7	E	CWE	QAD	1	5	C	TURBIN	1-1303	A	73	07	01	

SYSTEM OR COMPONENT ENGINEERING DATA

Card I.D. (38)	NPRD System Code (39–44)	Utility System Code (45–51)	Safe. Cls. (52–53)	Mode (54–56)	Environment Int. (57–59)	Ext. (60–61)	In-Service Date Yr. (62–63)	Mo. (64–65)	Dy. (66–67)	Applicable Mfgr. Code or Standard (68–80)
A	CEA	1300	2	SBC	CRX	AF	71	10	07	NEMA-SEC. 4

Card I.D. (38)	Mfgr. Ref. No. (39–42)	Manufacturer Model Number (43–62)	Manufacturer Serial Number (63–80)
B	T147	GS-1	35689

Card I.D. (38)	Supp./Vend. Ref. No. (39–42)	Supplier/Vendor System or Component Identification Number (43–60)	Source Drawing or Document Number (61–76)	(77–80)
C	G080	1-1303	RCIC-M-050 REV. 3	

Card I.D. (38)	A (39–40)	B (41–42)	C (43–44)	D (45–46)	E (47–48)	F (49–50)	(51)	G (52–56)	Units (57–60)	(61)	H (62–66)	Units (67–70)	(71)	J (72–76)	Units (77–80)
D	A	A	B	B				4500	RPM		1105	PSIG		500	HP

OPERATION AND TESTING DATA

Card I.D. (38)	Estimate of Component/System Operation as Percent of: 1-Reactor Critical Hours (39–43)	2-Standby Condition Hours (44–48)	3-Reactor Shutdown Hours (49–53)	Testing – Check: Freq. (54)	Interval (55–56)	Out of Serv. (Hrs.) (57–59)	Functional: Freq. (60)	Interval (61–62)	Out of Serv. (Hrs.) (63–65)	Calibration: Freq. (66)	Interval (67–68)	Out of Serv. (Hrs.) (69–71)
E	001.00	001.00	001.00	1	MO	00.0	1	QT	00.0	0	00	00.0

REMARKS

TURBIN EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Rev. 5
Feb. 1976

Form NPRD-2

NUCLEAR PLANT RELIABILITY DATA SYSTEM

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0028

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

	ACTION	UTILITY DESIG.	PLANT	UNIT	SYS CODE	NSSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER: #	REPORT NO.	RESTRICTED	DATA START DATE: YR.	MO.	DY.
	2	4 5 6	7 8 9	10 11	12	13	14 15 16 17 18	19	20 21 22 23 24 25 26 27 28 29	30	31 32	33 34	35 36
C	7	E C W	G Q A	D 1	5	C	V A L V E X 1 - 2 0 2 - 9 A			A	7 3	0 7	0 1

SYSTEM OR COMPONENT ENGINEERING DATA

	CODE	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT: INT.	EXT.	INSERVICE DATE: YR.	MO.	DY.	APPLICABLE MFGR. CODE OR STANDARD
		39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	58 59 60 61		62 63 64 65 66 67			68 69 70 71 72 73 74 75 76 77 78 79 80
A		C B B	0 2 0 2	1	Ø P C	I M	C I	7 1	1 0	0	7 U S A S - B 3 1 . 1 - 6 8

	CODE	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
		38 39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
B		C 2 5 5 L - 6 0 8		V 3 5 6 - 0 4 B - 1 5 0 0 D

	CODE	SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
		38 39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
C		G 0 8 0	1 - 2 0 2 - 9 A	P I D - M - 0 3 5 R E V . 3

	CODE	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
		38 39 40 41 42	43 44 45 46 47 48 49 50 51	52 53 54 55 56	57 58 59 60	61	62 63 64 65 66	67 68 69 70 71	72 73 74 75 76	77 78 79 80			
D		E	A	D	E	A	C	2 I N		1 2 5 0	P S . 2	5 7 5	D E G F

OPERATION AND TESTING DATA

	CODE	ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
		38 39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65	66	67 68	69 70 71
E		1 0 0 0 0	1 0 0 0	0 0 5 0 0 0	1	D A	0 0	1	Q T	0 5	1	A M	1 0 0

REMARKS

VALVEX EXAMPLE

Date Prepared: 7/15/78

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0029

REPORT OF ENGINEERING DATA

This data entry is for:

X Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

CODE	ACTION	UTILITY DESIG.	PLANT	UNIT	SYS CODE	NSSS	NPRD COMP. OR SYSTEM CODE	*	UTILITY COMPONENT IDENTIFICATION NUMBER REPORT NO.	RESTORED	DATA START DATE YR.	MO.	DY.
C	7	E	WMPP	B	H	1	SEVALV	4	P1-866B		A	73	0630

SYSTEM OR COMPONENT ENGINEERING DATA

CODE	NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE CLS.	MODE	ENVIRONMENT INT.	ENVIRONMENT EXT.	IN-SERVICE DATE YR.	IN-SERVICE DATE MO.	IN-SERVICE DATE DY.	APPLICABLE MFGR. CODE OR STANDARD
A	SFH	SIS	2	SBC		XF	7	0122		ASME SEC. 3-68

CODE	MFGR. REF. NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B	L200	SMB-00	R396-AX-3459

CODE	SUPP. VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER	SOURCE DRAWING OR DOCUMENT NUMBER
C	W1201-866B		SMBI-170 REV. 1

CODE	A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
D	A	D	C			D			15	FTLB		

OPERATION AND TESTING DATA

CODE	1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E	00001	00001	00001	1	DA	001	1	AN	2	0000	0000	

REMARKS

VALVOP EXAMPLE

Date Prepared: 7/15/73

Prepared By: J.B. Jones

Reviewed/Approved By: R.B. Brown

Phone No. 512/684-5111

(REV. 1, 3/74)

Rev. 5
Feb. 1976

Form NPRD 2

NUCLEAR PLANT RELIABILITY DATA SYSTEM;

(THIS SPACE FOR NPRD OPER. USE)

REPORT NO. 0022

REPORT OF ENGINEERING DATA

This data entry is for:

☒ Engineering Data Report for original or replacement component or original system (place a '7' in column two below)

☐ Correction to previous Engineering Data Report (place a '5' in column two below)

INPUT CONTROL

Card	1	2	3	4 5 6	7 8 9	10	11	12	13 14 15 16 17 18	19	20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35 36	37
		ACTION		UTILITY DESIG.	PLANT	UNIT	SYS CODE	NSSS	NPRD COMP. OR SYSTEM CODE	UTILITY COMPONENT IDENTIFICATION NUMBER *	REPORT NO.	RESUB. NO.	DATA START DATE YR. MO. DY.	
C	7	E		CWF	QAD	1	S	C	VESSEL	IRV-1		A	730701	

SYSTEM OR COMPONENT ENGINEERING DATA

Card	38	39 40 41 42 43 44	45 46 47 48 49 50 51	52 53	54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71 72 73 74 75 76 77 78 79 80
		NPRD SYSTEM CODE	UTILITY SYSTEM CODE	SAFE. CLS.	MODE	ENVIRONMENT INT. EXT.	IN-SERVICE DATE YR. MO. DY.	APPLICABLE MFGR. CODE OR STANDARD
A		CBA	RCS	1	DPC	IMXIM	701221	ASME SEC. 3-68

Card	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
		MFGR. REF NO.	MANUFACTURER MODEL NUMBER	MANUFACTURER SERIAL NUMBER
B		B015A-325		BWR-4-9

Card	38	39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62	63 64 65 66 67 68 69 70 71 72 73 74 75 76	77 78 79 80
		SUPP./VEND. REF. NO.	SUPPLIER/VENDOR SYSTEM OR COMPONENT IDENTIFICATION NUMBER		SOURCE DRAWING OR DOCUMENT NUMBER	
C		G080	IRV-1	1	17802E REV. 9	

Card	38	39 40	41 42	43 44	45 46	47 48	49 50 51	52 53 54 55 56	57 58 59 60 61	62 63 64 65 66 67	68 69 70 71	72 73 74 75 76	77 78 79 80
		A	B	C	D	E	F	G	UNITS	H	UNITS	J	UNITS
D		A	H							1200	PSIG	650	DEGF

OPERATION AND TESTING DATA

Card	38	39 40 41 42 43	44 45 46 47 48	49 50 51 52 53	54	55 56	57 58 59	60	61 62	63 64 65 66	67 68	69 70 71
		ESTIMATE OF COMPONENT/SYSTEM OPERATION AS PERCENT OF: 1-REACTOR CRITICAL HOURS	2-STANDBY CONDITION HOURS	3-REACTOR SHUTDOWN HOURS	TESTING: CHECK FREQ.	CHECK INTERVAL	CHECK OUT OF SERV. (HRS.)	FUNCTIONAL FREQ.	FUNCTIONAL INTERVAL	FUNCTIONAL OUT OF SERV. (HRS.)	CALIBRATION FREQ.	CALIBRATION INTERVAL	CALIBRATION OUT OF SERV. (HRS.)
E		100.00	100.00	100.00	0	000	0.0	1	AM	0.0	000	000	0.0

REMARKS

VESSEL EXAMPLE

Date Prepared: 7/15/73

Prepared By: J. B. Jones

Reviewed/Approved By: R. B. Smith

Phone No. 512/684-5111

(REV. 1, 3/74)

10.0 QUARTERLY OPERATING REPORT (FORM NPRD-3)

Each utility will submit one Quarterly Operating Report, form NPRD-3, for each operating unit each quarter. The Quarterly Operating Report provides unit service hour information consisting of a single report sheet submitted on a quarterly schedule. It is used to update the service hours base for the systems and components contained in the data base.

Send the Quarterly Operating Report to:

Southwest Research Institute
Department of Quality Systems Engineering
Building 88
8500 Culebra Road
San Antonio, Texas 78284
Attn: NPRD System Coordinator

within *30 days* after the end of the reporting quarter. Upon receiving form NPRD-3 from a participating organization, the NPRD system contractor generally assumes that no additional failure data (other than changes and deletions) will be received from that organization for the reporting quarter.

Rev. 5
Feb. 1976

Form NPRD-3

NUCLEAR PLANT RELIABILITY DATA SYSTEM,

QUARTERLY OPERATING REPORT

This data entry is for:

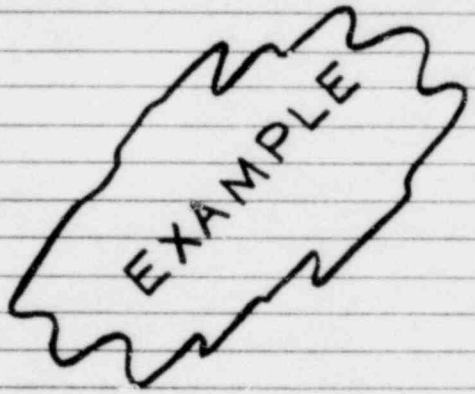
[X] New report (place a '7' in column two below)

[ ] Correction to a previously submitted report (place a '5' in column two below)

	1	2	3	4 5 6	7 8 9	10	11	12 ... 30	31 32	33 34	35 36	37
	INPUT CONTROL	ACTION		UTILITY DESIG	PLANT	UNIT	RECORD I.D.		QUARTER END DATE YR	MO	DY	
	C	7	E	WMP	PBH	1	1		73	09	30	

	38	39 40	41 42 43	44 45 46	47 48	49 50 51	52 53 54	55 56 57	58 59 60	61 62 63	64 65 66	67 68	69 70 71	72	73 74 75	76 77 78	79 80
	QUARTERLY REPORT UPDATE	RECORD I.D.	QUARTERLY UPDATE DATA: 1 REACTOR CRITICAL (HR)	2 STANDBY CONDITION (HR)	3 REACTOR SHUTDOWN (HR)		54	QUARTER START DATE YR MO DY		QUARTER END DATE YR MO DY		FAILURE REPORTS THIS QTR SYST	COMP	72	ON LINE TIME (HR)		
	F		021560	000009	00043		54	730701		730930		00	012	72	2093		

REMARKS



Date Prepared: October 20, 1973

Prepared By: J. B. Jones

(REV. 2, 10/75)

Reviewed/Approved By: R.B. Brown

Phone No: 512/684-5111

Entry Instructions For
QUARTERLY OPERATING REPORT
(Form NPRD-3)

Line	Field	Columns	Mandatory Entry	Instruction
Input Control	Action	(2)	Yes	Enter a "5" or "7" as instructed in upper portion of form. See Section 12.7.1 for instructions on performing deletions.
Input Control	Utility Desig.	(4-6)	Yes	Enter NPRD Utility Code from Table 8.
Input Control	Plant/Unit	(7-10)	Yes	Enter NPRD Plant and Unit codes from Table 8.
Input Control	Quarter End Date	(31-36)	Yes	Enter last date of reporting quarter. Date sequence is by year-month-day.
	Quarterly Report Update			
F-1	Reactor Critical (HR)	(39-43)	Yes	a. Enter number of calendar hours reactor was critical during quarter being reported. b. If it is desired to account for prior history of reactor critical hours, the first Quarterly Operating Report submitted could reflect total cumulative hours from some prior point in time to date, provided reports of all failures for the same period accompany the Quarterly Operating Report.
F-2	Standby Condition (HR)	(44-48)	Yes	a. Enter number of calendar hours reactor was in standby condition during quarter being reported. b. If it is desired to account for prior history of reactor standby condition hours, the first Quarterly Operating Report submitted could reflect total cumulative hours from some prior point in time to date, provided reports of all failures for the same period accompany the Report.
F-3	Reactor Shutdown (HR)	(49-53)	Yes	a. Enter number of calendar hours reactor was in a shutdown condition during quarter being reported.

Entry Instructions For
QUARTERLY OPERATING REPORT (Cont'd)
(Form NPRD-3)

Line	Field	Columns	Mandatory Entry	Instruction
	Quarterly Report Update (Cont'd)			
F-3 (Cont'd)	Reactor Shutdown (HR)	(49-53)	Yes	b. If it is desired to account for prior history of reactor shutdown hours, the first Quarterly Operating Report submitted could reflect total cumulative hours from some prior point in time to date, provided reports of all failures for the same period accompany the Report. c. Note: In completing positions F1, 2, and 3, assure that the sum of the hours of F1, 2, and 3 is equal to the actual calendar hours in that quarter if a total quarter is being reported. Total hours for each calendar quarter are: 1st.–2160 1st.–2184 (Leap year) 2nd.–2184 3rd.–2208 4th.–2208
F	Quarter Start Date	(55-60)	Yes	Enter date of the first day of the reporting quarter, or if a partial quarter is being reported, enter the beginning date for the period. Date sequence is by year-month-day.
F	Quarter End Date	(61-66)	Yes	Enter date of the last day of the reporting quarter. Date sequence is by year-month-day.
F	Failure Reports This Quarter (SYST)	(67-68)	Yes	Enter number of system Failure Reports submitted in report package to NPRD system contractor this quarter.
F	Failure Reports This Quarter (COMP)	(69-71)	Yes	Enter Number of Component Failure Reports submitted in report package to NPRD system contractor this quarter.
F	On-Line Time (HR)	(73-76)	Yes	Enter the total time in hours that the generator was connected to the Utility's system during this reporting quarter.

11.0 REPORT OF FAILURE (FORM NPRD-4)

A Report of Failure (Form NPRD-4) shall be prepared and submitted for *every* failure of a reportable *component* or *system*. Normally, system and component Report of Failure are to be submitted *within thirty days* after the end of the month in which the failure occurs. It is important to submit Reports of Failure on a *timely* basis for efficient system operation and to assure inclusion of the data in the appropriate Quarterly System and Component Failure Listing (NPRD Report Q02). However, it is *more important* for the Reports of Failure to be *complete* and *accurate*. If necessary, submittal of a failure report may be delayed until the information required to accurately complete the report is available. In cases when information is *incomplete* or *uncertain*, and the time period necessary to obtain the required additional information is *lengthy* or *unknown*, a failure report may be completed using *best* judgment. When additional information is obtained, and the previously submitted Report of Failure needs to be revised to improve its accuracy, a revised failure report is to be submitted. *Section 12.7* of this Manual provides instructions for preparing and submitting revised reports.

The NPRD system data processing procedure *requires* that *Report of Engineering Data (Form NPRD-2)* information be entered into the data base *prior to* entering *failure* data. Therefore, when a component or system failure occurs, it is essential to determine if applicable engineering data reports have been previously submitted. This is accomplished by *checking* the *current* Quarterly Report of Engineering Data for Individual Reporting Organizations (NPRD Report Q01) plus Reports of Engineering Data submitted since the date of the Q01 Report. If applicable engineering data reports have not been previously submitted, such reports shall be prepared and submitted with the failure reports.

Component failures can possibly result in the failure of systems which are included in the reportable scope of the NPRD system. A system failure is recognized by the inability of the system to perform *one or more* of its *required* safety functions (Definition 3.8). In many cases, a component failure will result only in the failure of a subsystem or channel and the system will retain its ability to perform its required safety functions. However, if a component failure does result in a bonafide system failure, Reports of Failure for the components and system shall be prepared and simultaneously submitted.

Utility personnel have the *primary* responsibility for assuring that failure data is complete, accurate, and properly submitted. Additionally, all Reports of Failure are reviewed upon receipt by the NPRD system contractor and the NPRD system computer programs perform edits of the submitted data. Section 12.6.2.5 of this Manual provides information regarding edit criteria and output report diagnostic messages resulting from the edits. Inaccurate and incomplete Reports of Failure will be returned to the originator for correction.

Form NPRD-4

(THIS SPACE FOR NPRD OPER.USE)

NUCLEAR PLANT RELIABILITY DATA SYSTEM

REPORT OF FAILURE

This data entry is for:

X New failure report (place a "1" in column two below)

Correction to previously submitted failure report (place a "5" in column two below)

INPUT CONTROL

1	2	3	4 5 6	7 8 9	10 11	12	13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29	30	31 32	33 34	35 36	37
	ACTION		UTILITY DESIG.	PLANT	UNIT	S/C CODE	NSS	NPRD CODE FOR FAILED SYSTEM OR COMPONENT	UTILITY COMPONENT IDENTIFICATION NUMBER	REPORT I.D.	DATE OF FAILURE YR	MO	DY	FAIL NO.
C	7	E	ABC	XYZ	15	C	VALVE	XFW-105		B	75	10	31	1

* STATUS AT TIME OF FAILURE

EVENT DATA

38	39 40	41 42	43 44	45 46	47 48	49 50	51 52	53 54	55 56	57 58	59	60 61	62 63	64 65	66 67	68 69	70 71	72 73	74 75	76 77	78 79	80
	CARD ID	FAILURE EVENT START YR	MO	DY	HR	MIN	FAILURE EVENT END YR	MO	DY	HR	MIN	*	NPRD CODE FOR RELATED SYSTEM OR COMPONENT			REPORT DATE YR	MO	DY					
G	7	5	10	13	13	23	75	10	25	14	30	A	CHA	00	17	51	02	8				

FAILURE DESCRIPTION

H DURING ØRDERLY SHUTDØWN, FEEDWATER REG VAL
J VES CAUSED ØSCILLATIØNS, EXCESS VIBRATION.
K ØNE BYPASS & TWØ LØ FLØ DRAIN LINES BRØKE.
L TURB TRIPPED, RX SCRAMMED ON HI RX LEVEL.

CAUSE OF FAILURE

M ØPERATING AND RESPØNSE CHARACTERISTICS ØF
N FEEDWATER REG VALVES INADEQUATE FØR FULL
P RANGE ØF APPLICABLE ØPERATING PARAMETERS,
Q RESULTING IN ØSCILLATIØNS & EQUIP DAMAGE.

CORRECTIVE ACTION

R FØLLØWING DYNAMIC ANALYSIS, VALVE TRIM AND
S ØPERATØRS MODIFIED TØ PRØVIDE WIDER RANGE
T CAPABILITIES AND PREVENT ØSCILLATIØNS.
U

FAILURE ANALYSIS DATA

38	39	40 41	42	43 44 45 46 47 48 49 50	51 52 53 54 55	56 57	58 59 60 61 62 63 64 65	66 67 68 69 70 71	72 73 74 75 76 77 78 79 80
	CARD ID	TYPE OF FAILURE	MODE OF FAILURE	CAUSE OF FAILURE A B	EFFECT OF FAILURE A B	FAILURE DETECTION	ACTION TAKEN A B	LICENSEE EVENT REPORT SUBMITTED (DATE) YR MO DY	
V	A		AGA	BAAK	B	BCFAFAEAF		DH	751020	

CARD I.D.	COLUMNS FROM	TO	REMARKS
			COMPONENT EXAMPLE

Date Prepared: 75/10/28

Prepared By: J. W. Brown

Reviewed/Approved By: A. B. Jones

Phone No. 714/686-3253

(REV. 2, 9/75)

Form NPRD-4

(THIS SPACE FOR NPRD OPER USE)

NUCLEAR PLANT RELIABILITY DATA SYSTEM

REPORT OF FAILURE

This data entry is for:

X New failure report (place a '7' in column two below)

Correction to previously submitted failure report (place a '5' in column two below)

INPUT CONTROL

		CYCLE		UTILITY DESIG.			PLANT			UNIT	SUB CODE	NSS	NPRD CODE FOR FAILED SYSTEM OR COMPONENT						UTILITY COMPONENT IDENTIFICATION NUMBER										REPORT I.D.	DATE OF FAILURE YR		MO		DY		FAIL NO
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
C		7	E	A	B	C	X	Y	Z	1	3	C	C	H	A	0	0	1												B	7	5	1	0	1	3	1

* STATUS AT TIME OF FAILURE

EVENT DATA

		EVENT CODE	FAILURE EVENT START YR.	MO.	DY.	HR.	MIN.	FAILURE EVENT END YR.	MO.	DY.	HR.	MIN.	*	NPRD CODE FOR RELATED SYSTEM OR COMPONENT						REPORT DATE YR.	MO.	DY
	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
G		7	5	1	0	1	3	1	3	2	3	7	5	1	0	2	5	1	4	3	0	A	V	A	L	V	E	X	7	5	1	0	2	8

FAILURE DESCRIPTION

H DURING ØRDERLY SHUTDØWN, FEEDWATER REG VAL
J VES CAUSED ØSCILLATIØNS, VIBRATIØN, DRAIN
K AND BYPASS LINE BREAKS. VALVES FAILED ØPEN
L . HI RX LEVEL CAUSED TURB TRIP, RX SCRAM.

CAUSE OF FAILURE

M MALFUNCTIØN ØF VALVES RESULTED IN UNCØNTRØ
N LLED FLØW TØ RX.
P
Q

CORRECTIVE ACTION

R FØLLØWING DYNAMIC ANALYSIS, VALVE TRIM AND
S ØPERATØRS MØDIFIED TØ PRØVIDE WIDER RANGE
T CAPABILITIES AND PREVENT ØSCILLATIØNS.
U

FAILURE ANALYSIS DATA

		CARD I.D.	TYPE OF FAILURE	MODE OF FAILURE	CAUSE OF FAILURE A	CAUSE OF FAILURE B	EFFECT OF FAILURE A	EFFECT OF FAILURE B	FAILURE DETECTION	ACTION TAKEN A	ACTION TAKEN B	LICENSEE EVENT REPORT SUBMITTED (DATE) YR.	MO.	DY.
	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
V		A		A	S	A			A	K	B	A			B	C	F	A	F	A	E	A	F		D	H	7	5	1	0	2	0

CARD I.D.	COLUMNS FROM	COLUMNS TO	REMARKS

SYSTEM EXAMPLE

Date Prepared: 75/10/28

Prepared By: J.W. Brown

Reviewed/Approved By: A. B. Jones

Phone No.: 714/686-3253

(REV. 2, 9/75)

Entry Instructions For
REPORT OF FAILURE
(Form NPRD-4)

Line	Field	Column(s)	Mandatory Entry	Instruction
Input Control	Action	(2)	Yes	Enter a "5" or "7" as instructed in upper portion of form. See Section 12.7 for instructions on deletions.
Input Control	Utility Desig.	(4-6)	Yes	Enter NPRD Utility code from Table 8.
Input Control	Plant/Unit	(7-10)	Yes	Enter NPRD Plant and Unit code from Table 8.
Input Control	S/C Code	(11)	Yes	Code to designate the general equipment classification for which the completed form applies. Enter one of the following codes as applicable: Code — Equipment Classification 3 — System 5 — Component
Input Control	NSSS	(12)	Yes	Code to designate the Nuclear Steam Supplier. Enter one of the codes as applicable: Code — Supplier A — Babcock & Wilcox B — Combustion Engineering C — General Electric D — General Atomic E — Westinghouse F — Westinghouse (LMFBR)
Input Control	NPRD Code for Failed System or Component	(13-18)	Yes	If this is a system report, enter the 3-letter NPRD system code from the applicable Table 1A-1F in columns 13-15. If the submitted Utility/Plant/Unit has more than one of these systems, provision is made for coding a 3-digit subcode in columns 16-18 to uniquely identify each system. For example, redundant emergency power systems might be coded *EDA001* and *EDA002*. A single system would be coded *EDA*. If this is a component report, enter the 6-letter NPRD component code from Table 2 in columns 13-18.

Entry Instructions For
REPORT OF FAILURE (Cont'd)
(Form NPRD-4)

Line	Field	Column(s)	Mandatory Entry	Instruction
Input Control	Utility Component Identification Number	(19-29)	Yes[1]	Enter Utility's component identification number as used by the Utility to identify the specific component.
Input Control	Date of Failure	(31-36)	Yes	Enter the date on which the system or component failure occurred. The date should be the same as the failure event start date in columns 39-44.
Input Control	Fail No.	(37)	No[2]	Since it is possible for the same system or component to fail more than once on a given day, provision is made for indicating which failure this Report of Failure represents for that day. Enter a "1" if this Report of Failure identifies the first failure; enter a "2" if it identifies the second failure, etc.
G	Failure Event Start	(39-48)	Yes	Enter the date and time (24 hour clock) that the failure event started. If a failure is known to have occurred during the time frame between scheduled test intervals, with the exact date and time of failure unknown, enter mid-point date and time of testing interval.
G	Failure Event End	(49-58)	Yes	Enter the date and time (24 hour clock) that the failure event ended. This is the time the system or component was placed back into service, or when it was available for service if it was not placed in service immediately after repairs, testing, etc., for some reason. If the system or component failure has not ended as defined above by the end of a reporting quarter, enter all "9" digits as the Failure Event End date, columns 49-58. When the actual Failure Event End date is known, it should be submitted as a change.See Section 12.7 for submitting revised reports.

[1] For *components* only
[2] This entry *is* mandatory if the same system or component fails more than once on a given day.

Entry Instructions For REPORT OF FAILURE (Cont'd) (Form NPRD-4)

Line	Field	Column(s)	Mandatory Entry	Instruction
G	Status at Time of Failure	(59)	Yes[1]	Select system, subsystem or channel as being the *lowest* level in which the failed component is installed. Indicate the status of that level by entering one of the following codes.

Code	Status
A	System in Service (operating/standby)
B	System in Test
C	System in Maintenance
D	System Out of Service (not in maintenance)
E	Subsystem/Channel in Service (operating/standby)
F	Subsystem/Channel in Test
G	Subsystem/Channel in Maintenance
H	Subsystem/Channel Out of Service (Not in maintenance)

G	NPRD Code for Related System or Component	(60-65)	Yes[1]	For *component* failure reports, enter the 3-letter NPRD system code, from Tables 1A-1F, of which the component is a part, in columns 60-62. If the submitting Utility/Plant/Unit has more than one of these systems, provision is made for coding a 3-digit subcode in columns 63-65 to uniquely identify each system. For *system* failure reports, enter the 6-letter NPRD component type code from Table 2 corresponding to the failed component in columns 60-65. If more than one type of failed component is involved with the system failure, enter the component type code that is judged most appropriate. A Report of Failure must be submitted for the type of component listed in this field.
G	Report Date	(66-71)	Yes	Enter the date the failure is reported on the NPRD-4 form. This date should be the same date as the "Date Prepared" entered at the bottom of the form.

[1] For *components* only

Entry Instructions For
REPORT OF FAILURE (Cont'd)
(Form NPRD-4)

Line	Field	Column(s)	Mandatory Entry	Instruction
H, J, K, L	Failure Description	(39-80)	Yes	This is a free format field. Include sufficient details to assist the person responsible for reviewing the failure. Descriptions should include pertinent information such as environmental or stress factors influencing the event, incident detection, etc.
M, N, P, Q	Cause of Failure	(39-80)	Yes	This is a free format field. State the actual cause of the failure, if possible. If the actual cause has not been determined, a "best judgment" cause should be described which reflects the observations of the individual(s) who evaluated the failed system or component. If transient stresses such as abnormal pressure, temperature, vibration, etc. are suspected, these should be noted. Note: after the actual cause has been determined and it differs from cause submitted, it should be submitted using a "Correction" action code of "5".
R, S, T, U	Corrective Action	(39-80)	Yes	This is a free format field. Describe actions taken by the repairing organization. If tests or recalibrations are made to verify that repairs are successful, they should be noted.

Entry Instructions For
REPORT OF FAILURE (Cont'd)
(Form NPRD-4)

Failure Analysis Data (Enter applicable failure data for the system or component according to the following categories and codes listed. *Left justify all codes*).

Line	Field	Column(s)	Mandatory Entry	Instruction
V	Type of Failure	(39-40)	Yes	Select at least one descriptor which characterizes the type of failure.

TYPE OF FAILURE (Select up to 2)

A – Mechanical
B – Corrosion
C – Other Chemical
D – Electrical
E – Electronic
F – Other Instrument

Entry Instructions For
REPORT OF FAILURE (Cont'd)
(Form NPRD-4)

Failure Analysis Data (Enter applicable failure data for the system or component according to the following categories and codes listed. *Left justify all codes*).

Line	Field	Column(s)	Mandatory Entry	Instruction
V	Mode of Failure	(41-42)	Yes	This is a field requiring an entry of a two-character code. Select a two-character code which best describes the mode of failure.

MODE OF FAILURE (Select 1)

AA – Leak
AB – Crack
AC – Breach
AD – Physical Distortion
AE – Physical Displacement
AF – Collapse
AG – Fracture/Break
AH – Won't Start/Move
AJ – Won't Stop
AK – Won't Close
AL – Won't Open
AM – Won't Hold
AN – Won't Release
AP – Out of Limits
AR – Out of Adjustment
AS – Spurious Operation
AT – False Response
XX – Other (explain in Remarks)

Entry Instructions For
REPORT OF FAILURE (Cont'd)
(Form NPRD-4)

Failure Analysis Data (Enter applicable failure data for the system or component according to the following categories and codes listed. *Left justify all codes*).

Line	Field	Column(s)	Mandatory Entry	Instruction
V	Cause of Failure (A-Category)	(43-44)	Yes	Select at least one code which categorizes the cause of failure

CAUSE OF FAILURE

A. CATEGORY (Select up to 2)

A – Engr/Design (hardware)
B – Engr/Design (procedure)
C – Manufacturing
D – Construction/Installation
E – Operating Error
F – Maintenance/Testing
G – Abnormal Service Condition
H – Natural End of Life
J – Associated Devices
K – Unknown

Line	Field	Column(s)	Mandatory Entry	Instruction
V	Cause of Failure (B-Description)	(45-50)	Yes	Select at least one two-character code which best describes the cause of failure.

CAUSE OF FAILURE

B. DESCRIPTION (Select up to 3)

AA	–	Foreign/Wrong Part	AR	–	Insulation Breakdown
AB	–	Foreign/Incorrect Material	AS	–	Short/Grounded
AC	–	Particulate Contamination	AT	–	Open Circuit
AD	–	Abnormal Wear	AU	–	Contacts Burned/Pitted/Corroded
AE	–	Lubrication Problem	AV	–	Connection Defective
AF	–	Weld Related	AW	–	Circuit Defective
AG	–	Abnormal Load	AX	–	Burned/Burned Out
AH	–	Abnormal Temperature	AY	–	Electrical Overload
AJ	–	Abnormal Pressure	AZ	–	Material Defect
AK	–	Abnormal Flow	BA	–	Excess Vibration
AL	–	Set Point Drift	BB	–	Fire/Explosion
AM	–	Improper Previous Repair	BC	–	Natural Catastrophe
AN	–	Incorrect Procedure/Instruction	BD	–	Cyclic Fatigue
AP	–	Instrument/Switch Miscalibration	XX	–	Other (explain in Remarks)

Entry Instructions For
REPORT OF FAILURE (Cont'd)
(Form NPRD-4)

Failure Analysis Data (Enter applicable failure data for the system or component according to the following categories and codes listed. *Left justify all codes*).

Line	Field	Column(s)	Mandatory Entry	Instruction
V	Effect of Failure (A-Effect on System) *(Component only)*	(51-52)	Yes	Select at lease one code which describes the effect on the system caused by a component failure.

EFFECT OF FAILURE

A. EFFECT ON SYSTEM (Select up to 2)

*A – Loss of System Function
B – Degraded System Operation
C – Loss of Redundancy
D – Loss of Subsystem/Channel
E – No Significant Effect

V	Effect of Failure (B-Effect on Plant Operation) (Component and System)	(53-55)	Yes	Select at least one code which describes the effect of the failure on the plant operation.

EFFECT OF FAILURE

B. EFFECT ON PLANT OPERATION (Select up to 3)

A – Reduced Power Operation
B – Unit Off-Line
C – Reactor Trip
D – Personnel Injury
E – Excessive Off-Site Radiation
F – Damage to Other Equipment
G – No Significant Effect

*If this code is selected, a system failure report must be submitted.

Entry Instructions For
REPORT OF FAILURE (Cont'd)
(Form NPRD-4)

Failure Analysis Data (Enter applicable failure data for the system or component according to the following categories and codes listed. *Left justify all codes*).

Line	Field	Column(s)	Mandatory Entry	Instruction
V	Failure Detection	(56-57)	Yes	Select at least one code which reflects the method by which the failure was detected.

FAILURE DETECTION (Select up to 2)

A – Operational Abnormality
B – Inservice Inspection
C – Surveillance Testing
D – Preventive Maintenance
E – Special Inspection
F – Audio Alarm
G – Visual Alarm
H – Routine Surveillance
J – Incidental Observation
X – Other (explain in Remarks)

Entry Instructions For
REPORT OF FAILURE (Cont'd)
(Form NPRD-4)

Failure Analysis Data (Enter applicable failure data for the system or component according to the following categories and codes listed. *Left justify all codes*).

Line	Field	Column(s)	Mandatory Entry	Instruction
V	Action Taken (A-Corrective Action Taken)	(58-63)	Yes	Select at least one two-character code which describes actions taken to correct the failure event.

ACTION TAKEN

A. CORRECTIVE ACTION TAKEN (Select up to 3)

AA – Recalibrate
AB – Adjust
AC – Temporary Repair
AD – Temporary Bypass
AE – Redesign
AF – Modify
AG – Repair Part(s)
AH – Replace Part(s)
AJ – Repair Component(s)
AK – Replace Component(s)
AL – Reseal
AM – Repack
AN – Request License Revision
XX – Other (explain in Remarks)

Line	Field	Column(s)	Mandatory Entry	Instruction
V	Action Taken (B-Documentation/Follow-Up)	(64-65)	Yes	Select at least one code which describes other records which may be available for study or those forwarded to other organizations for assistance in evaluation.

ACTION TAKEN

B. DOCUMENTATION/FOLLOW-UP (Select up to 2)

A – Failure reported to architect/engineer
B – Failure reported to NSSS vendor
C – Failure reported to consultant
D – Failure reported to component manufacturer
E – Failure Analysis recommended
F – Failure Analysis performed
G – Photographs were made
H – LER submitted
Z – None of the above

Line	Field	Column(s)	Mandatory Entry	Instruction
V	Licensee Event Report Submitted (Date)	(66-71)	Yes	Complete if applicable.

12.0 INSTRUCTIONS FOR PROCESSING NPRD SYSTEM DATA

12.1 Instructions for Formatting NPRD System Data Submitted to the NPRD System Contractor

NPRD Input Report Forms 1, 2, 2A, 2B, 3 and 4 shall be keyed and verified by the participating organization. Furthermore, either *original* NPRD Input Report Forms, computer printouts formatted to match NPRD Input Report Forms, or the printouts from the NPRD Edit System MERGE or BALANCE programs must be submitted to the NPRD system contractor for use as NPRD system backup (see Section 12.5 for procedure to follow in editing printouts for source document use). It is also necessary that a reproducible copy of the input data format be retained by the participating organization to protect against a possible loss in the mail.

NPRD Input Data shall be submitted to the NPRD system contractor using either of two media:

(1) *Cards* containing data transcribed from the NPRD Input Report Forms 1, 2, 2A, 2B, 3 and 4 keypunched and verified by the participating organization. Card input submitted to the NPRD system contractor will be read using an IBM 2540 Card Reader. This system requires the use of 80-column cards punched in the extended binary coded decimal interchange code (EBCDIC) convention, or

(2) *Tapes* containing verified data transcribed from the NPRD Input Report Forms 1, 2, 2A, 2B, 3 and 4 in card image format by the participating organization. Tape input will be read using an IBM 3420, 9-track tape drive. This requires that input data be written in a 9-track format at 800 or 1600 BPI using EBCDIC coding. Tape labels and end-of-file marks shall be compatible with the IBM 360/370 operating system (OS). The input tape shall be formatted in 80-column card images, one image per record without blocking. Tape labels will be ignored in input processing by the NPRD system contractor. All tapes shall have an external tape label containing the following information:

- Utility Identification
- Date of Tape Generation
- Tape Parity (Odd or Even)
- Density (800 or 1600 BPI)
- Description of Data

If additional information is required concerning the submittal of data, or the use of another reporting media is desired, e.g., disk/disketts, contact the NPRD system contractor.

12.2 Keying from Form NPRD-2, 2A, 2B, 3 and 4 on Cards or Tape

The data cards or card images shall be keyed exactly as they are coded on the forms. That is, there shall be one card or card image on tape for each line (A through E) on form NPRD-2; one card or card image on tape for each line completed on forms NPRD-2A and NPRD-2B; etc. *All cards or card images on tape from form NPRD-2A shall be physically located immediately after the respective engineering data from form NPRD-2.* The form NPRD-2B need not be physically located after the form NPRD-2 corresponding to the system or component being removed from service. Similarly, the NPRD-3 and NPRD-4 forms may be entered in any order as long as there is no mixing of these forms with matched NPRD-2 and NPRD-2A data entries.

12.3 Computer Processing of the Engineering Data

Cards or card images containing engineering data are read into the computer and sorted in such a manner as to arrange the data content in a proper sequence for processing. Sorting is performed on the following:

(1) Columns 1 through 18 for arranging input data by utility, section and NPRD system/component code.

(2) Columns 19 through 29 for arranging input data by component identification number and report/supplement to report number.

As the sorted data is read by the computer, the MERGE (see Figure 12.1) program will check for data originating from form NPRD-2. When the computer reads data originating from form NPRD-2, it will store these data temporarily for merging with data for each like component. If in fact there are multiple components, each time component information is read which originates from form NPRD-2A, it will be merged with the related NPRD-2 set of engineering data and a complete record will be created in the data base.

12.4 Supplemental General Instructions for Completing NPRD Report Forms

Table 12.1 shall be used as a reference regarding the alphanumeric and numeric format of data for the fields on the NPRD input report forms. This table also includes instructions regarding the left or right justification of data to be entered.

The areas of the various NPRD forms that are to be left blank or do not require data entry are shown on the table as blocked-out areas. The table presents the "Input Control" fields and "Report Data" fields in the same format as it shall be keyed on 80-column cards or as card images on tape, for each of the various NPRD input report forms.

12.5 NPRD Operating Procedures for Handling Report Forms, Program Printouts, and Keyed Data

The following NPRD system operating instructions are to serve as a guide for effective utilization of the system input report forms, keyed data and output reports. The method for filing of the hardcopy input reports and output reports is specified to provide for efficient tracing and checking of information.

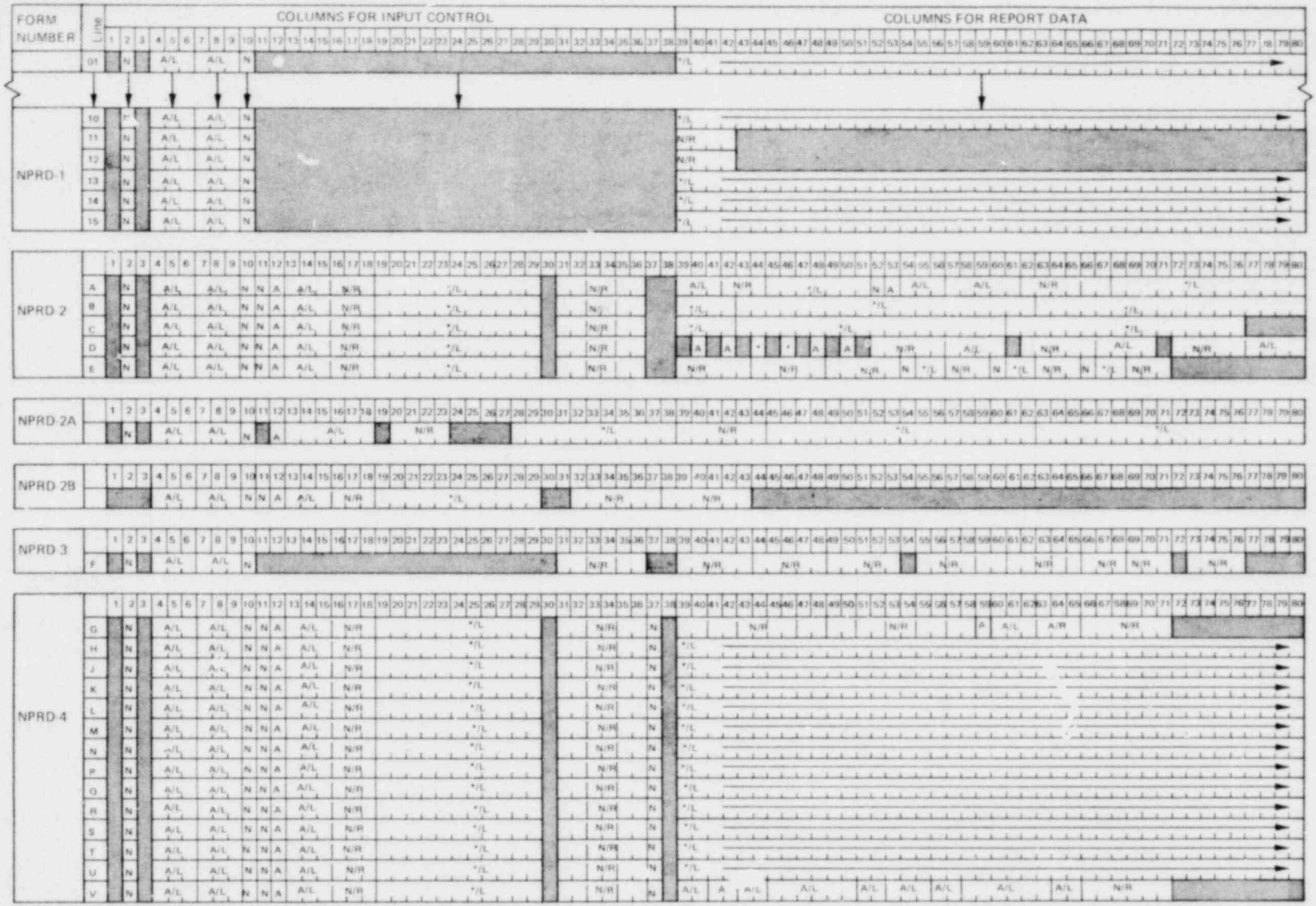
The originals of the hardcopy input report forms or properly formatted computer printouts are to be forwarded to the NPRD system contractor with the keyed data. Upon entry of these data into the NPRD system, a computer generated data listing and NPRD Date Receipt (Form NPRD-9) will be returned to the data sender for both identifying actual content of reports received and acknowledging receipt of the materials submitted.

During the process of generating the aforementioned data listing and NPRD Data Receipt form, a monthly transaction tape is produced. This tape reflects each participating organization's data inputs for a given calendar month in the exact order the input reports were received. In turn, the transaction tape(s) are utilized as input to the MERGE and BALANCE computer programs. The NPRD system flowcharts (Figures 12.1 and 12.2) illustrate the sequence of reports processing by the various NPRD system computer programs. The hardcopy input and output reports are filed by the NPRD system contractor by participating organization and by calendar quarter.

The NPRD system contractor will review the MERGE and BALANCE programs transaction printouts. If any data are found in error, appropriate steps will be taken to make necessary corrections prior to further processing. A sequential batch number is generated by the aforementioned computer programs for each report within a given batch as a mechanism to insure traceability by batch number.

TABLE 12.1

TABLE FOR USE IN COMPLETING NPRD REPORT FORMS IN REGARD TO ALPHANUMERIC, ALPHABETIC AND NUMERIC FIELDS AND THE LEFT OR RIGHT JUSTIFICATION OF THE FIELDS



LEGEND: A = Alphabetic
N = Numeric
* = Alphanumeric
L = Left Justify
R = Right Justify

NOTE: When entering information on the various NPRD data input forms, it is necessary that those keying the data be able to distinguish between zero and the letter "O" and between the number "2" and the letter "Z." It is generally considered good practice to show the letter "O" as "Ø," the letter "Z" as "Z" and all alphabetic characters being written in upper case. Each NPRD system participant should consult their own data processing organization for establishing the proper convention for alphabetic and numeric data entry.

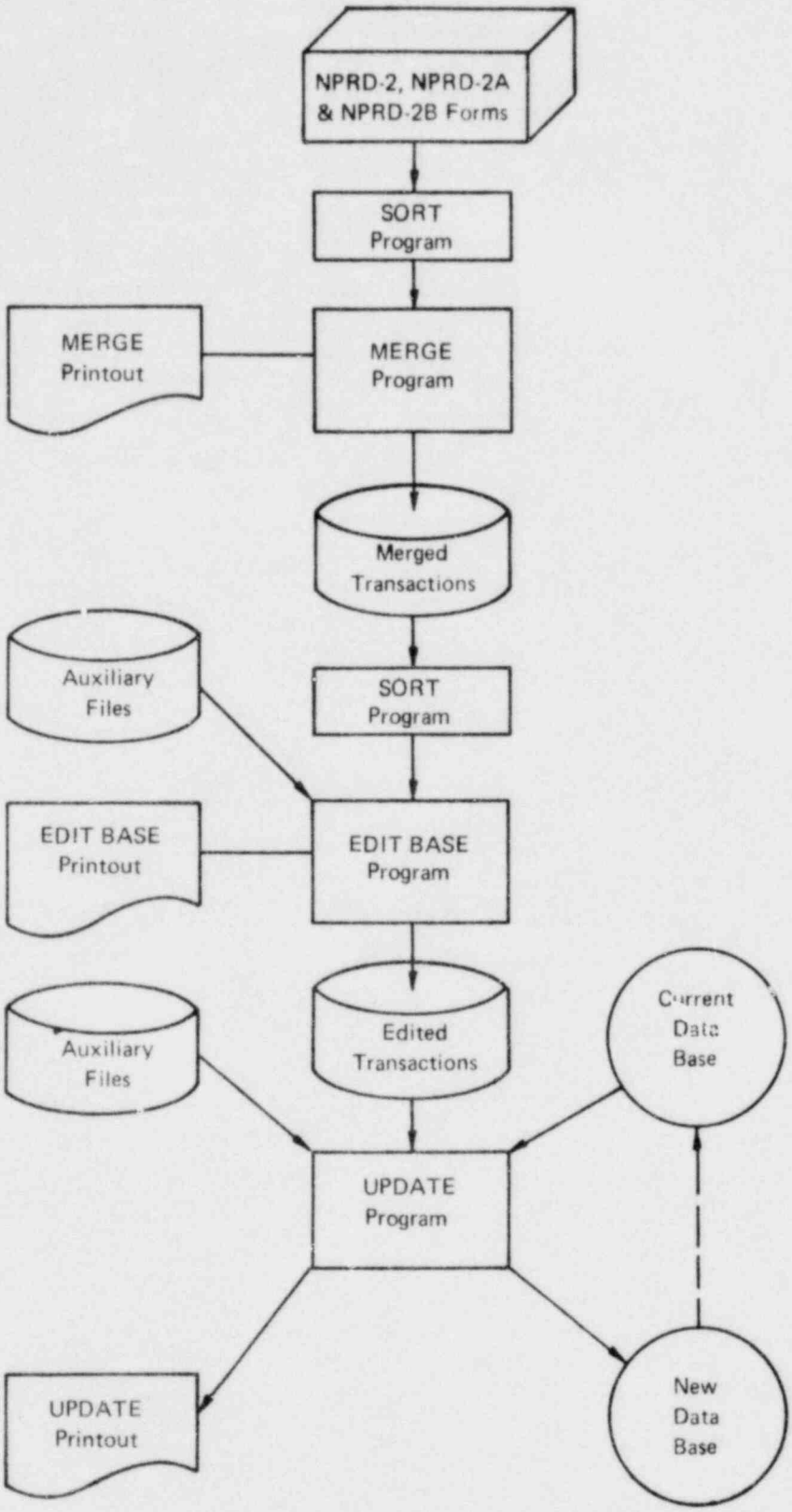


FIGURE 12.1 NUCLEAR PLANT RELIABILITY ENGINEERING
DATA FLOW

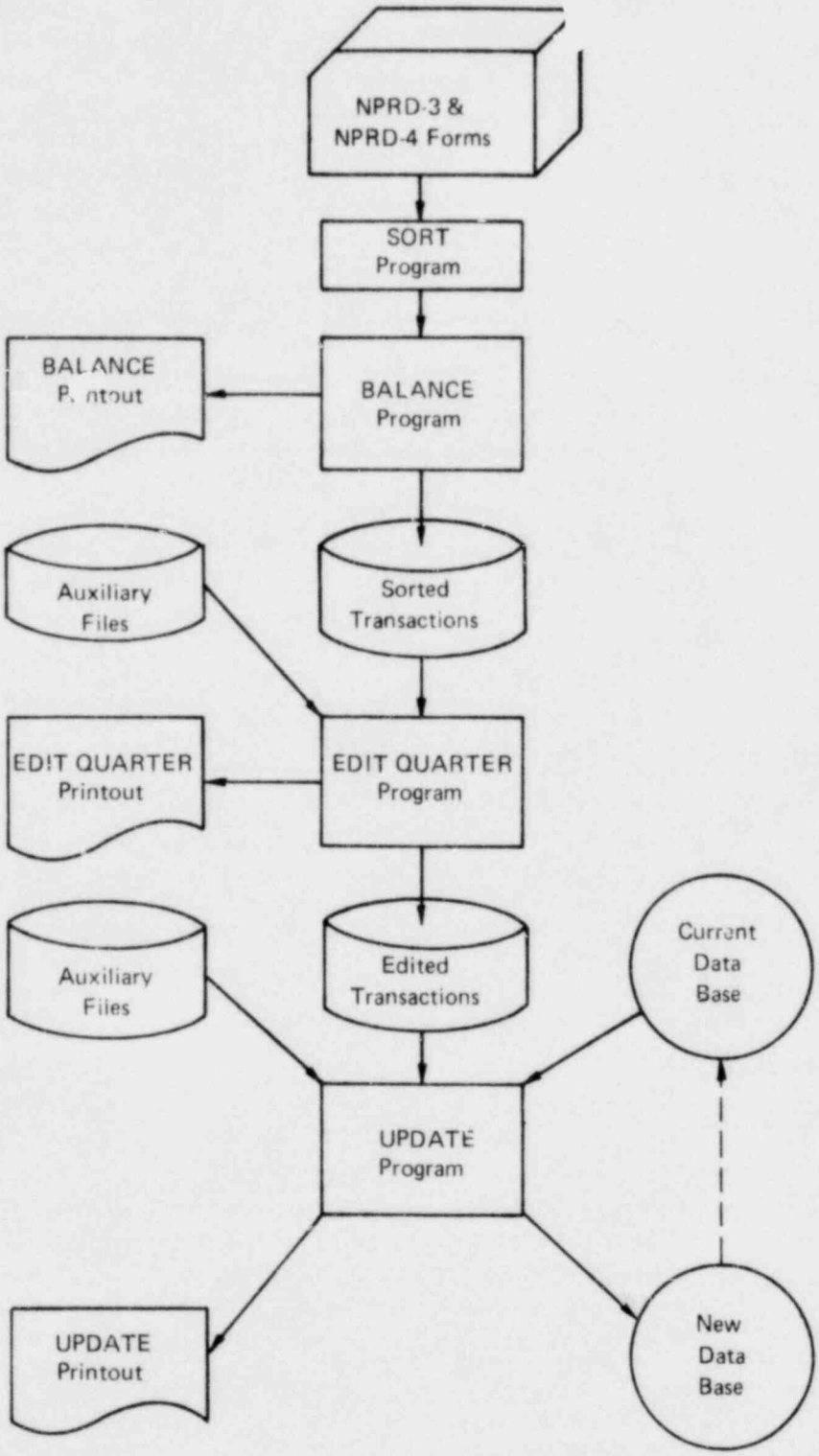


FIGURE 12.2 NUCLEAR PLANT RELIABILITY DATA SYSTEM QUARTERLY OPERATING AND FAILURE REPORT DATA FLOW

The NPRD system contractor will submit the data from the MERGE program and the BALANCE program for sorting and processing by the EDITBASE and EDITQTR programs.

The NPRD system contractor will review the listings of the edited MERGE and BALANCE programs transactions. Again, should data be found in error, appropriate action will be taken to make corrections prior to further processing. At this point the data have been processed through the entire NPRD Edit System. *This same Edit System can be made available to participating organizations by contacting the NPRD system contractor. All organizations contributing data to the NPRD system are urged to utilize the Edit System as a means for minimizing data handling efforts and enhancing NPRD data base quality.*

Following processing of the input data through the Edit System by the NPRD system contractor, these data are again processed using the UPDATE program. This program is used to perform the necessary NPRD data base file maintenance operations, i.e., add, change,or delete input report information. When the UPDATE processing is complete, the keyed data will be filed by the NPRD system contractor, the UPDATE program printout will be checked and a copy of all printouts will be transmitted to the applicable participating organizations.

In order to better assure accurate NPRD data, the participating organization shall check the printouts in the following manner:

(1) MERGE PRINTOUT

The purpose of the MERGE program is to assign a batch number to each NPRD-2, -2A and -2B report processed that allows for traceability by batch number. The program printout provides a listing of all engineering data sorted in ascending order of columns 1-37 of the Input Control data fields and card type (column 38). The major objective of the program is to merge data coded on the NPRD-2A forms with the full set of engineering data coded on the NPRD-2 forms. The participating organization shall check the printout for general content and to assure that the system and component files are properly constituted. A transaction recap is provided for each participating organization submitting forms NPRD-2, NPRD-2A and NPRD-2B. The recap will reflect total transactions submitted and total transactions rejected by card type.

(2) BALANCE PRINTOUT

The purpose of the BALANCE program is to assign a batch number to each NPRD-3 and -4 report processed that allows for traceability by batch numbers. The printout provides a list of submitted transactions sorted by system/component code (column 11), Input Control (column 1-37) and card type (column 38). Diagnostic messages are printed out for each error found in a transaction and the rejected transactions are indented slightly to make them more apparent on the printout. At the end of the printout of transactions an input record total is printed and broken down into "records-accepted" and "records-rejected" categories.

(3) EDIT BASE AND EDIT QUARTER PRINTOUTS

The EDIT BASE and EDIT QUARTER programs provide printouts which are each separated into three parts, i.e., Accepted Transactions, Rejected Transactions and Input Transaction Recap Totals. It is important to note that, with the exception of form NPRD-2B, all NPRD report data are sorted in ascending order on the first thirty-eight (38) characters of each report. Since form NPRD-2B has no requirement for card I.D., sorting

is performed on the first thirty-seven (37) characters. Input data are automatically checked by each respective Edit System program as outlined in Section 12.6, NPRD Edit Criteria.

The "Rejected Transactions" listed on the EDIT BASE and EDIT QUARTER printouts will contain appropriate error messages indicating the reason for a report group being rejected. In order to correct rejected items, the original NPRD Input Report Forms 1, 2, 2A, 2B, 3 or 4 must be totally resubmitted with appropriate corrections made. The Action Code, with the exception of form NPRD-2B which is precoded with a "5," shall be entered as "7" since the rejected items were never placed in the NPRD data base file. Since corresponding NPRD-4 forms (Report of Failure) will not be accepted in the NPRD data base by the UPDATE program until NPRD-2 data has been accepted, it is particularly important that rejected NPRD-2 and 2A data are corrected and returned as soon as possible to the NPRD system contractor.

The "Input Transaction Recap Tota's" shall be checked manually to confirm the totals for previously submitted NPRD data which are listed by individual card I.D. It should be noted that deletion transactions (Action Code "3") will not appear in these totals since a deletion transaction does not contain a card I.D.

(4) UPDATE PRINTOUT

The UPDATE program provides complete data management for all reports entering the NPRD system. The UPDATE program printout is separated into two parts, i.e., the Rejected Transaction Listing and the Input Transaction/Data Base Status Recap Totals. Rejections of previously edited data entering the UPDATE program most commonly result from:

(a) Attempting to add a new record to the data base file when a record with an identical Input Control identification already exists on the data base file..

(b) Attempting to change or delete a record which is not physically located on the data base file.

(c) Adding a new failure report (NPRD-4) to the data base file that does not have a matching Report of Engineering Data (NPRD-2) entered in the data base file.

The Recap Totals include a record of Input Transaction history for each NPRD system run as well as a recap of all previously entered transactions by Card I.D.

12.6 NPRD Edit Criteria

12.6.1 General Edit Criteria

Each input transaction that is read by the NPRD EDIT BASE, EDIT QUARTER, and UPDATE programs shall meet the following requirements or else informative error message(s) shown in parentheses after each requirement will be printed with the transaction.

(1) Action Code (column 2) must contain a valid Action Code ("3," "5," or "7"). (INVALID ACTION CODE)

(2) Column 3 must contain an "A" or an "E". (INVALID CONTROL CHARACTER)

(3) Utility/plant/unit identification (columns 4-10) must match one of the acceptable codes in the utility/plant/unit list (Table 8). (INVALID UNIT ID)

(4) Column 30 must be a "blank," "A" or "B". (INVALID SORT CHARACTER)

12.6.2 Specific Edit Criteria for NPRD-1 Reports

NPRD-1 reports (NUCLEAR UNIT INFORMATION REPORT) are identified by an "A" in column 3. (INVALID SORT CHARACTER) NPRD-1 reports shall meet the following criteria:

(1) Columns 11-27 must be blanks. (DATA IN SORT CONTROL FIELD)

(2) Columns 28-29 must contain "AA". (INVALID SORT CHARACTER)

(3) Columns 30-35 must be blanks. (DATA IN SORT CONTROL FIELD)

(4) Columns 36-37 must be equal to or greater than "01" and equal to or less than "15". (INVALID CARD TYPE)

(5) Text (columns 39-80) is entirely free-form and is not validated for any cards in the NPRD-1 report.

(6) Changes (Action Code = 5) are handled as follows for an NPRD-1 report. The entire text field, columns 39-80, must be changed in its entirety.

(7) The entire 15 cards of the NPRD-1 report will be eliminated (Action Code = 3) from the data base when columns 3-37 match the corresponding field in the old master record for the report.

12.6.3 Specific Edit Criteria for NPRD-2 Reports

NPRD-2 reports (REPORT OF ENGINEERING DATA) are identified by an "E" in column 3 and an "A" in column 30. They shall meet the following criteria:

(1) Column 11 must equal "3" or "5". (INVALID S/C CODE)

(2) Column 12 must equal "A", "B", "C", "D", "E", or "F". (INVALID NSSS CODE)

(3) Column 38 must equal "A", "B", "C", "D", or "E". (INVALID CARD TYPE)

(4) If column 11 (S/C Code) equals a "3", columns 13-15 must contain a valid System Code (Table 1A-1F) for the supplier indicated by the NSSS Code in column 12. (INVALID COMPONENT/SYSTEM CODE)

(5) If column 11 (S/C Code) equals a "5", columns 13-18 must contain a valid Component Code from Table 2 (INVALID COMPONENT/SYSTEM CODE) and columns 19-29 (Utility Component Identification number) must be other than spaces. This is not a contradiction of the instructions for coding columns 19-29 of the Input Control on the

NPRD-2 form. The component identification number is coded directly on the NPRD-2 form in columns 19-29 or it is merged from the NPRD-2A form for multiple components by the MERGE program before the EDIT BASE program is used. (EQUIPMENT ID MISSING)

(6) Data start date (columns 31-36) must be a valid date, i.e., year greater than zero, month less than 13 but greater than zero, day less than 32 but greater than zero. (INVALID START DATE)

(7) If column 11 equals "5", NPRD System Code (columns 39-41, "A" card) must be a valid System Code (Table 1A-1F) for the supplier indicated in column 12. (INVALID SYSTEM CODE)

(8) Column 52, card "A" (safety classification) must equal "1", "2", "3", or "4" for mechanical components only. The following Component Codes do not require a safety classification: ANNUNC, BATTRY, CKTBRK, GENERA, HEATER, INSTRU, MECFUN, MOTORX, RELAYX, TRANSF, and VALVOP. (INVALID SAFETY CLASSIFICATION)

(9) Columns 54-56, card "A" must equal "OPC", "SBC" or "SDC". (INVALID MODE)

(10) The External environment Code (columns 60-61) must contain at least one alphanumeric character. (NO EXTERNAL ENVIRONMENT)

(11) In-service date (columns 62-67, card "A") must be a valid date, i.e., year greater than zero, month less than 13 but greater than zero, day less than 32 but greater than zero. (INVALID IN-SERVICE DATE)

(12) Both the manufacturer reference number (columns 39-42, card "B") and the manufacturer model number (columns 43-62, card "B") must contain other than spaces for components. The manufacturer reference number must contain an alphabetic first character followed by three numeric entries. (NO MFR NUMBER and/or NO MODEL NUMBER)

(13) The supplier/vendor reference number (columns 39-42, card "C") must be other than spaces for components and the first character (column 39) must be alphabetic followed by three numeric entries. (NO VENDOR REFERENCE) A check is made initially to establish the inclusion of the "C" card in the submitted data set. (REQUIRED CARD OMITTED)

(14) A check is made for the presence of an "X" Code(s) in card "D". ("X" CODE IN D CARD)

Note: The presence of the message "X CODE IN D CARD" does not indicate a data input error nor has the data content of the associated form NPRD-2 (or NPRD-2A) been deleted from the NPRD data base. This message is provided to inform those inputting engineering data that further effort must be made by the participant to identify an appropriate code for entry on the "D" card. Once the proper data code has been established, the participant shall submit a change card (Action Code = 5) containing the updated information along with an exact match on the Input Control Field of the data base record being modified.

(15) A check is made for the presence of the "E" card. (REQUIRED CARD OMITTED)

(16) The sum percentage of reactor critical hours (columns 39-43, card "E"), standby condition hours (columns 44-48, card "E") and reactor shutdown hours, (columns 49-53, card "E") must contain numeric values of not greater than 300 or less than zero. All values entered are to be right-justified. (INCORRECT TOTAL SVC HRS)

(17) Each testing interval (columns 55-56, 61-62, 67-68, card "E") must contain zeros or contain an acceptable value from the table shown in the data entry instructions (see Section 9.1). (TESTING INTERVAL INVALID)

(18) If a testing interval contains other than zeros, the testing frequency (columns 54, 60, 66, card "E") must be a non-zero numeric value. (TEST FREQUENCY INVALID)

(19) Changes in any data element require an exact match in columns 3-38 of the NPRD-2 record to which the change is to be made.

(20) Deletion cards (Action Code = 3) which match in columns 3-37 of the NPRD-2 form will cause all records with that tag to be eliminated from the NPRD data base file.

(21) Attempts to enter forms NPRD-2, NPRD-2A, or NPRD-2B that result in designating a duplicate Utility Component Identification number to the same type component will cause all cards of the applicable data sets to be rejected. (DUPLICATE INPUT CONTROL)

12.6.4 Specific Edit Criteria for NPRD-2B Reports

NPRD-2B reports (SYSTEM OR COMPONENT OUT-OF-SERVICE REPORT) are identified by a 2B in columns 30-31. They shall meet the following criteria:

(1) The data start date (columns 32-37) for system or component taken out-of-service is compared with the data start date for the corresponding form NPRD-2. (2B-START DATE INVALID)

(2) The out-of-service date (columns 38-43) is checked against the corresponding form NPRD-2 in-service date. The out-of-service date must be equal to or greater than the value shown for in-service date on form NPRD-2. (2B-OUT-SV DATE INVALID)

(3) The edit criteria for all remaining data fields on form NPRD-2B are identical to those described for NPRD-2 reports (see Section 12.6.3).

12.6.5 Specific Edit Criteria for NPRD-3 Reports

NPRD-3 reports (QUARTERLY OPERATING REPORT) are identified by a "1" in column 11 and an "F" in column 38. They shall meet the following criteria:

(1) Columns 12-30 must be blank. (DATA IN SORT CONTROL FIELD)

(2) Quarter end date (columns 31-36) must match the appropriate valid quarter end date, i.e., March 31, June 30, September 30 or December 31. (INVALID QUARTER START END DATE)

(3) Column 37 must be blank. (DATA IN SORT CONTROL FIELD)

(4) The sum of the quarterly update data (columns 39-43, columns 44-48, columns 49-53) must be a numeric value and equal the number of hours per quarter shown for line F-3 on page 10-4. (INVALID QUARTERLY OPER HOURS)

(5) Quarter start date (columns 55-60) and quarter end date (columns 61-66) must be the exact starting and ending dates of the appropriate quarter, as depicted in columns 31-36. (INVALID QUARTER START/END DATE)

(6) On-line time (columns 73-76) must be spaces or a right-justified numeric value and less than or equal to reactor critical hours (columns 39-43). (INCORRECT ON-LINE TIME)

(7) "Change" cards or "Deletion" cards for this report must match in columns 3-38 of the report to be changed.

12.6.6 Specific Edit Criteria for NPRD-4 Reports

NPRD-4 forms (REPORT OF FAILURE) are identified by an "E" in column 3 (INVALID CONTROL CHARACTER) and a "B" in column 30 (INVALID SORT CHARACTER). They shall meet the following criteria:

(1) Column 11 must equal "3" or "5". (INVALID S/C CODE)

(2) Column 12 must equal "A", "B", "C", "D", "E" or "F". (INVALID NSSS CODE)

(3) If column 11 (S/C Code) equals a "3", columns 13-15 must contain a valid System Code (Table 1A-1F) for the supplier that is indicated by the NSSS Code in column 12. (INVALID COMPONENT/SYSTEM CODE)

(4) If column 11 (S/C Code) equals a "5", columns 13-18 must contain a valid Component Code (Table 2) (INVALID COMPONENT/SYSTEM CODE) and columns 19-29 (Utility Component Identification number) must be other than blank. (EQUIPMENT ID MISSING)

(5) Date of failure (columns 39-44). (INVALID START DATE)

(6) Failure number (column 37) must be numeric or blank. (FAILURE NUMBER NON-NUMERIC)

(7) Column 38 must equal "G", "H", "J", "K", "L", "M", "N", "P", "Q", "R", "S", "T", "U", or "V". (INVALID CARD TYPE)

(8) Failure event start (columns 39-48) and failure event end (49-58) must be valid date-time groups; year greater than zero, month less than 13 but greater than zero, day less than 32 but greater than zero. Hours must fall between 00 and 24 and minutes less than 60. Maximum time value is 2400. (INVALID EVENT DATE OR TIME)

(9) If column 11 (S/C Code) equals a "5", column 59 (status code) must contain "A", "B", "C", "D", "E", "F", "G", or "H" per instruction on page 11-6. (INVALID STATUS CODE)

(10) If column 11 (S/C Code) equals a "5", columns 60-62 (NPRD System Code) must contain a valid system code (Table 1A-1F) for the supplier indicated by the NSSS Code in column 12. (INVALID SYSTEM/COMPONENT CODE) Columns 63-65 are used for the Utility System Identification if appropriate.

(11) If column 11 (S/C Code) equals a "3", columns 60-65 must contain a valid NPRD Component Code (Table 2). (INVALID SYSTEM/COMPONENT CODE)

(12) Report date (columns 66-71) must be a valid date, i.e., columns 66-67 greater than zero; columns 68-69 less than 13 but greater than zero; columns 70-71 less than 32 but greater than zero. (INVALID REPORT DATE)

(13) Cards "H", "J", "K", "L", "M", "N", "P", "Q", "R", "S", "T", and "U" are entirely free-form. Cards "H", "M", and "R" are mandatory entries. (H, M, OR R CARD OMITTED) Cards "H", "M", and "R" must contain at least one character of data in each card. (H, M, OR R CARD BLANK)

(14) Card "V" must be submitted for each failure report. (V CARD OMITTED)

(15) Type of failure (columns 39-40, card "V") must contain at least one left-justified entry from page 11-8. If an entry appears for column 39, column 40 is checked for presence of valid entry. (INVALID TYPE OF FAILURE)

(16) Mode of failure (columns 41-42, card "V") must contain at least one left-justified entry from page 11-8. (INVALID TYPE OF FAILURE)

(17) Cause of failure (columns 43-44, card "V") must contain at least one left-justified entry from Table A, page 11-10. Cause of failure (column 45-50, card "V") must contain at least one left-justified entry from Table B, page 11-10. (INVALID CAUSE OF FAILURE)

(18) Effect of failure (columns 51-52, card "V") must contain at least one left-justified entry from Table A, page 11-11. Effect of failure (columns 53-55) must contain at least one left-justified entry from Table B, page 11-11. (INVALID EFFECT OF FAILURE)

(19) Failure detection (columns 56-57, card "V") must contain at least one left-justified entry from page 11-12. (INVALID FAILURE DETECTION)

(20) Action taken (columns 58-63, card "V") must contain at least one left-justified entry from Table A, page 11-13. Action taken (columns 64-65, card "V") must contain at least one left-justified entry from Table B, page 11-13. (INVALID ACTION TAKEN)

(21) Licensee Event Report submitted date (columns 66-71, card "V") must contain blanks or a valid date group, i.e., year greater than zero, month less than 13 but greater than zero, day less than 32 but greater than zero. (INVALID LICENSEE DATE)

12.6.6 Accepted and Rejected Transactions

When records are being added to the NPRD data base, certain restrictions apply as to the number and type of input records which constitute an *addition* (Action Code = 7). Required report elements are:

(1) For an NPRD-1 report, all cards (01 through 15) are necessary in order for an *addition* to be made to the data base. No cards may be added on an individual basis.

(2) An NPRD-2 report requires all cards ("A" through "E") when the report is for a component. When the report is for a *system*, cards "B" and "D" are normally omitted.

(3) NPRD-3 reports are single-card reports and are handled on a single-card basis.

(4) An NPRD-4 report requires "G", "H", "M", "R", and "V" cards for a complete report. Cards "J", "K", "L", "N", "P", "Q", "S", "T", and "U" may be omitted and added later by using Action Code = 5 (change transaction). In addition cards "H", "M", and "R" must contain at least a one character entry.

(5) An NPRD-4 report cannot be added to the NPRD data base file unless the corresponding Report of Engineering Data (NPRD-2) has also been added to the data base file. However, both the NPRD-2 and the NPRD-4 reports for the identical system or component may be submitted in the same batch of data for processing by the NPRD system.

As each utility recap listing is produced, the totals and subtotals developed are added to running totals which are used in conjunction with the cross-check record at the end of the old master file to verify the actions performed during the UPDATE run.

12.7 UPDATE Program Action Codes, Edit Criteria, and Transaction Recap Totals

The UPDATE program performs all data management functions required by the NPRD system. Sorted input records from NPRD-1, 2, 3, and 4 reports reflecting changes, deletions, and additions to the NPRD system data base are verified and passed against a master file containing all data base records for the NPRD system. As the master file is read, its contents are updated as required by the input transactions and a new NPRD system data base is generated. UPDATE is the only computer program in the NPRD system which alters the permanent data base.

12.7.1 UPDATE Action Codes

The UPDATE program functions on the NPRD data base depending on Action Codes contained in column 2 of the Input Control Field of input transactions. Only three Action Codes are valid. These Action Codes initiate the following functions:

ADD (Action Code = 7): Verified input records containing this code are added to the data base. Generally, a report with Action Code "7" should be a complete report and not *part* of the required report or cards (see Section 12.6.6). Otherwise, the transaction will be rejected with the appropriate error message being displayed.

CHANGE (Action Code = 5): Selected fields of individual records within the NPRD data base may be changed using this function. Columns 3-37 for NPRD-1 reports and columns 3-38 for NPRD-2, 3, and 4 reports of the CHANGE card must be an exact match on the Input Control Field of the data base record to be altered. Fields left blank on the CHANGE card will not be altered on the data base record. CHANGED fields will be checked for validity, when possible, before being applied to the data base. Use of forms NPRD-2A or NPRD-2B may be used for submitting changes.

Changes in form NPRD-2A can be made only when submitted in proper sequence along with its corresponding complete NPRD-2 report. Form NPRD-2B serves only one purpose, i.e., to identify systems or components that are removed from service. For this reason the form NPRD-2B is viewed by the NPRD system programs as a "change" card.

DELETE (Action Code = 3): An Action Code of "3" will cause a record to be physically removed from the data base. An example of a situation in which an Action Code of "3" is used is to delete any type of erroneous report, such as an engineering data report on the file with a Utility Component Identification Number that is incorrect and does not match the number physically tagged on the component. Extreme care must be taken in using an Action Code of "3" since other reports, such as those relating to failures, may be affected.

The Input Control Field (columns 1-37) of the card used to delete a report in the data base must match the Input Control Field of the report to be deleted. Only one card coded in columns 1-37 is necessary to delete the entire report in the data base file. Use of forms NPRD-2A and NPRD-2B are not permitted for submitting deletions.

12.7.2 UPDATE File Maintenance Report

The UPDATE program provides a listing of rejected transactions only. Rejections are listed as an entire grouping (i.e., cards 1-15 for NPRD-Form 1, cards A-E for NPRD-Form 2, etc.). An error message which will precede the record grouping is described below.

(1) "NO MATCHING MASTER" appearing for an Action Code "5"or "3" entry is caused by an attempt to change or delete a record from the NPRD data base file that does not exist on the file.

(2) "NO ENG. DATA ON FILE" appearing when a failure report (NPRD-4) is being entered as a new entry with an Action Code of "7" and engineering data (NPRD-2) for the failed component or system has not been placed on the NPRD data base file.

(3) "DUPLICATE MASTER" will appear as an error message when any new entry with an Action Code of "7" is being added to the data base file and a record already exists on the data base file with an identical control field (columns 1-37).

Please note that data appearing on the rejected transactions printout has not been placed on the data base file.

12.7.3 Transaction Recap Totals

Recap Totals and Subtotals. As input transactions are processed for each utility, the following subtotals are developed and held for the recap listing:

(1) Accepted transactions–
   (a) Subtotals by action code
   (b) Subtotals by input card type

(2) Rejected transactions–subtotal by card type

(3) Transactions read from old master file–subtotal by card type

(4) Transactions output to new master file–subtotal by card type.

13.0 NPRD OUTPUT REPORTS–ELEMENT DEFINITIONS AND REPORT SAMPLES

13.1 Definitions of NPRD Quarterly Report Elements

The following definitions apply specifically to quarterly reports produced by the NPRD computer system. For the quarterly Listing of Component and System Engineering Data for Individual Reporting Organizations (NPRD Report QO1) the definitions are applied to data for specific units operated by the reporting organizations. For the Quarterly Component Failure Listing (NPRD Report QO2) the definitions apply to all units reporting and the report lists data from all reporting units. The QO2 Report provides the nuclear industry with a listing on all component failures included in the NPRD data base each quarter.

13.1.1 Element Definitions for NPRD Report Q01–"Quarterly Listing of Component and System Engineering Data For Individual Reporting Organizations" (Figure 13.1.1)

13.1.1.1 NPRD Oper. Report No.

The sequential identification number is given to each NPRD Report of Engineering Data (NPRD-2) for nuclear plant *components* received by the NPRD System Operator. The number has three elements:

(1) The year for which the report applies, e.g., "73",

(2) The calendar quarter for which the report applies, i.e., "1, 2, 3 or 4," and a batch designator for identifying the batch within the quarter, e.g., "A, B, C . . . Z" and

(3) The sequential number for the specific Engineering Data Report (NPRD-2) beginning with 0001 for each batch.

13.1.1.2 Data from Report of Engineering Data (form NPRD-2)

All items listed on this report are coded and input to the system data base on the Report of Engineering Data. The items are described in Section 9 of this manual. The Q01 report provides a complete or partial listing as desired of the Engineering Data in the NPRD data base.

13.1.2 Element Definitions for NPRD Report Q02–"Quarterly Component Failure Listing" (Figure 13.1.2)

13.1.2.1 NPRD Failure Rpt. No.

The specific sequential identification number is given to each NPRD Report of Failure for nuclear plant *components* received by the NPRD System Contractor. The number has three elements:

(1) The year for which the report applies, e.g., "73",

(2) The calendar quarter for which the report applies, i.e., "1, 2, 3, or 4," and

(3) The sequential number for the specific failure report beginning with "0001" each quarter.

13.1.2.2 NPRD Comp. Code

Nuclear plant component codes from NPRD Reporting Procedures Manual, Table 2.

13.1.2.3 Component Description

This section includes information from two (2) basic sources. The first is the amplifying definition of the "NPRD Component Code" described above and as listed in Tabie 2 of the NPRD Reporting Procedures Manual.

The second is detailed descriptive information extracted from the Engineering Data for the particular component in the NPRD data base. Wherever feasible, descriptive codes are spelled out to provide more readily useable data.

13.1.2.4 Date of Failure

The date that the subject failure was reported to have originally occurred. This information is submitted on the "Report of Failure" (Form NPRD-4).

13.1.2.5 Fail. No.

The sequential number for the reported component failure for the specified failure date. This number is necessary in case more than one failure occurs for a particular component on a single date.

13.1.2.6 Failure Outage Duration

The time in hours and minutes the subject component was out of service due to the failure. These figures are calculated from the "Failure Event Start" and "Failure Event End" as reported on the "Report of Failure" form.

13.1.2.7 Failure Characterization Codes

The letter codes as designated on the submitted Report of Failure which provide several characteristic details about the component failure.

13.1.2.8 Failure Characterization Description

Verbal descriptions of the various listed "CODES" which provide details about the component failure.

13.1.2.9 Failure Description

A narrative description of the component failure as entered on lines H and J of the Report of Failure.

13.1.2.10 Cause and Corrective Action

A narrative description of the cause of the failure and corrective action taken for the failure as entered on lines K and L of the Report of Failure.

NPRD REPORT 001

QUARTERLY REPORT OF ENGINEERING DATA
FOR INDIVIDUAL REPORTING ORGANIZATIONS

(SAMPLE)
(SEPT, 1974)
PAGE 001

PERIOD: 10/01/73 THRU 12/31/73
UTIL/PLT/UNIT: CWE-DRS-3
01 COMMONWEALTH EDISON COMPANY
02 DRESDEN NUCLEAR POWER STATION
03 UNIT 3
04 P.O.BOX 1234
05 MORRIS, ILLINOIS 12345

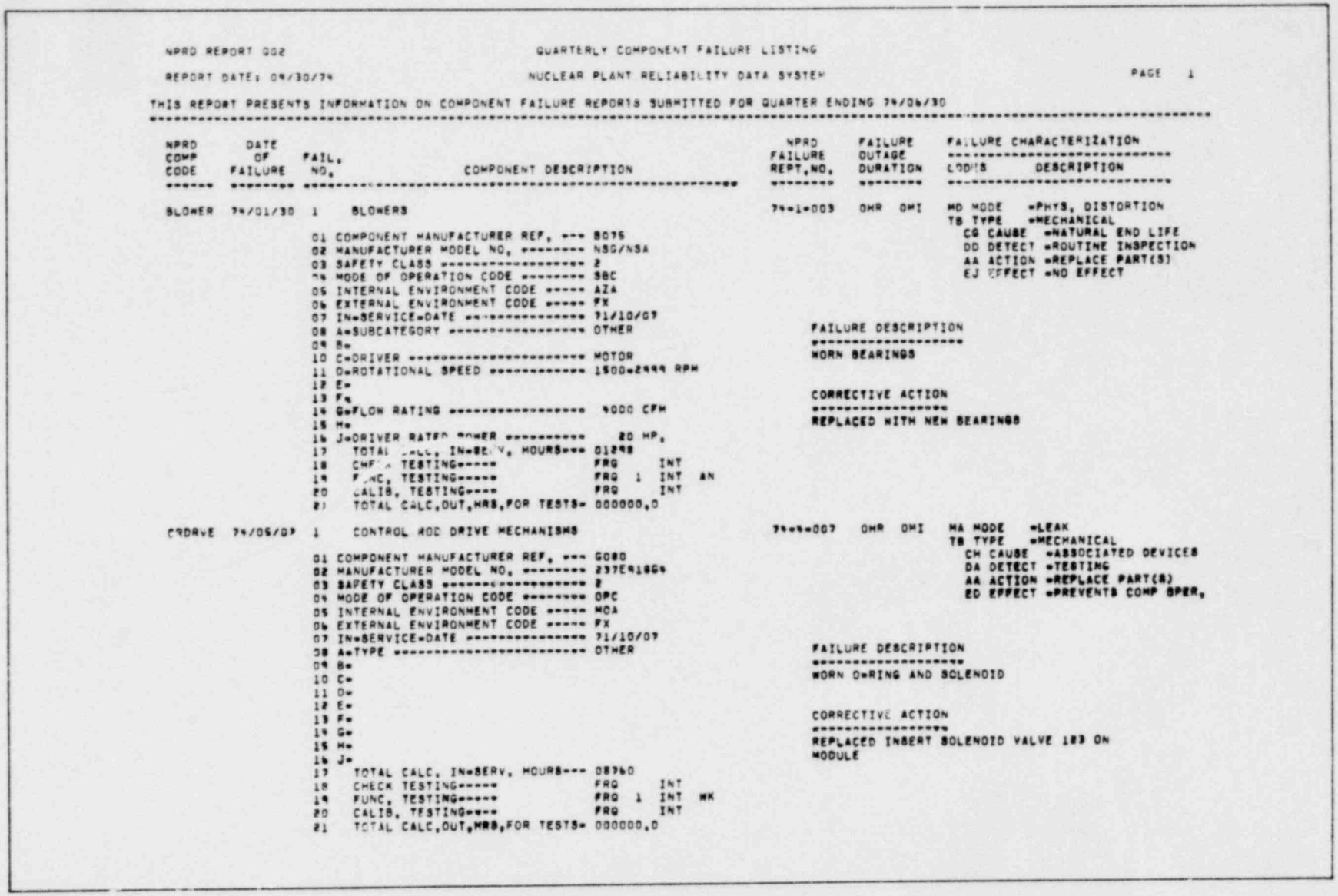
NUCLEAR PLANT RELIABILITY DATA SYSTEM
06 UTIL CONTACT: J.B.SMITH 312/123-4567
07 H.J.JONES 312/123-4567
08 STA,LOC-MORRIS,GRUNDY COUNTY,ILLINOIS 12345
09 NSSS SUPPLIER + REACTOR TYPE:GE-BWR
10 ARCHITECT-ENGINEER: SARGENT AND LUNDY

11 REACTOR RATING: 2300MWT
12 UNIT RATING: 715 MWE
13 AEC DOCKET NO.: 50-249
14 INITIAL CRITICAL DATE: 1/31/71
15 COMMERCIAL SERVICE DATE: 10/71

NPRD OPER,REPORT NO.	73-4A-0001	73-4A-0002	73-4A-0003	73-4A-0004	73-4A-0005
COMP,OR SYSTEM CODE	CRDRVE	CRDRVE	CRDRVE	CRDRVE	CRDRVE
UTILITY I.D.NO.	1-306-14-11A	1-306-14-15A	1-306-14-19A	1-306-14-23A	1-306-14-27A
DATA START DATE	730701	730701	730701	730701	730701
SYSTEM CODE	RBA	RBA	RBA	RBA	RBA
UTILITY CODE	0300	0300	0300	0300	0300
SAFETY CLASS.	2	2	2	2	2
MODE	OPC	OPC	OPC	OPC	OPC
ENVIRONMENT CODES	MOAFX	MOAFX	MOAFX	MOAFX	MOAFX
IN-SERVICE DATE	711007	711007	711007	711007	711007
MFGR,CODE OR STD.	ASME SEC,3-1	ASME SEC,3-1	ASME SEC,3-1	ASME SEC,3-1	ASME SEC,3-1
MFGR,REF,NO.	G080	G080	G080	G080	G080
MFGR,MODEL NO.	237E41864	237E41864	237E41864	237E41864	237E41864
MFGR,SERIAL NO.					
SUPP,/VEND,REF,NO.	G080	G080	G080	G080	G080
SUPP,/VEND,I.D,NO.	1-306-14-11	1-306-14-15	1-306-14-19	1-306-14-23	1-306-14-27
DWG,OR DOCUMENT NO.	GEI-92807A	GEI-92807A	GEI-92807A	GEI-92807A	GEI-92807A
ENG,DATA A THRU G	AX	AX	AX	AX	AX
ENG,DATA H AND J					
OPC HRS,PCT.	100,00	100,00	100,00	100,00	100,00
SPC HRS,PCT.	100,00	100,00	100,00	100,00	100,00
SDC HRS,PCT.	100,00	100,00	100,00	100,00	100,00
TESTING CHECK					
TESTING FUNCTIONAL	1WK	1WK	1WK	1WK	1WK
TESTING CALIBRATION					

NPRD OPER,REPORT NO.	73-4A-0006	73-4A-0007	73-4A-0008	73-4A-0009	73-4A-0010
COMP,OR SYSTEM CODE	VALVEX	VALVEX	VALVEX	VALVEX	VALVEX
UTILITY I.D. NO.	1-203-4A	1-203-4B	1-203-4C	1-203-4D	1-203-4E
DATA START DATE	730701	730701	730701	730701	730701
SYSTEM CODE	CBA	CBA	CBA	CBA	CBA
UTILITY CODE	0203	0203	0203	0203	[illegible]
SAFETY CLASS	2	2	2	2	2
MODE	OPC	OPC	OPC	OPC	OPC
ENVIRONMENT CODES	ISCIT	ISCIT	ISCIT	ISCIT	ISCIT
IN-SERVICE DATE	711007	711007	711007	711007	711007
MFGR,CODE OR STD.	USAS-B16,5	USAS-B16,5	USAS-B16,5	USAS-B16,5	USAS-B16,5
MFGR,REF,NO.	D245	D245	D245	D245	D245
MFGR,MODEL NO.	6-37770A	6-37770A	6-37770A	6-37770A	6-37770A
MFGR,SERIAL NO.					
SUPP,/VEND,REF,NO.	G080	G080	G080	G080	G080
SUPP,/VEND,I.D,NO.	1-203-4A	1-203-4B	1-203-4C	1-203-4D	1-203-4E
DWG,OR DOCUMENT NO.	M-013	M-013	M-013	M-013	M-013
ENG,DATA A THRU G	AGBACBDGEAFD 6IN.	AGBACBDGEAFD 6IN.	AGBACBDGEAFD 6IN.	AGBACBDGEAFD 6IN.	AGBACBDGEAFD 6IN.
ENG,DATA H AND J	01500PSIA 575F.	01500PSIA 575F.	01500PSIA 575F.	01500PSIA 575F.	01500PSIA 575F.
OPC HOURS PCT.	100,00	100,00	100,00	100,00	100,00
SBC HOURS PCT.	100,00	100,00	100,00	100,00	100,00
SDC HOURS PCT.	100,00	100,00	100,00	100,00	100,00
TESTING CHECK	1AN	1AN	1AN	1AN	1AN
TESTING FUNCTIONAL					
TESTING CALIBRATION					

FIGURE 13.1.1. QUARTERLY REPORT OF ENGINEERING DATA FOR INDIVIDUAL REPORTING ORGANIZATIONS



```
NPRD REPORT 002                          QUARTERLY COMPONENT FAILURE LISTING
REPORT DATE: 09/30/74                    NUCLEAR PLANT RELIABILITY DATA SYSTEM                    PAGE  1

THIS REPORT PRESENTS INFORMATION ON COMPONENT FAILURE REPORTS SUBMITTED FOR QUARTER ENDING 74/06/30
```

NPRD COMP CODE	DATE OF FAILURE	FAIL. NO.	COMPONENT DESCRIPTION	NPRD FAILURE REPT.NO.	FAILURE OUTAGE DURATION	FAILURE CHARACTERIZATION CODES	FAILURE CHARACTERIZATION DESCRIPTION
BLOWER	74/01/30	1	BLOWERS	74*1*003	0HR 0MI	MD MODE *PHYS, DISTORTION TB TYPE *MECHANICAL CG CAUSE *NATURAL END LIFE DD DETECT *ROUTINE INSPECTION AA ACTION *REPLACE PART(S) EJ EFFECT *NO EFFECT	

```
01 COMPONENT MANUFACTURER REF, *** B075
02 MANUFACTURER MODEL NO, ******** NSG/NSA
03 SAFETY CLASS ******************** 2
04 MODE OF OPERATION CODE ********* SBC
05 INTERNAL ENVIRONMENT CODE ****** AZA
06 EXTERNAL ENVIRONMENT CODE ****** FX
07 IN*SERVICE*DATE ***************** 71/10/07
08 A*SUBCATEGORY ******************* OTHER
09 B*
10 C*DRIVER ************************ MOTOR
11 D*ROTATIONAL SPEED ************** 1500*2999 RPM
12 E*
13 F*
14 G*FLOW RATING ******************* 9000 CFM
15 H*
16 J*DRIVER RATED POWER ************ 20 HP,
17   TOTAL CALC, IN*SERV, HOURS**** 01298
18   CHECK TESTING****** FRQ  INT
19   FUNC, TESTING****** FRQ  1  INT  AN
20   CALIB, TESTING***** FRQ  INT
21   TOTAL CALC,OUT,HRS,FOR TESTS* 000000,0
```

FAILURE DESCRIPTION
WORN BEARINGS

CORRECTIVE ACTION
REPLACED WITH NEW BEARINGS

CRDRVE	74/06/07	1	CONTROL ROD DRIVE MECHANISMS	74*4*007	0HR 0MI	MA MODE *LEAK TB TYPE *MECHANICAL CM CAUSE *ASSOCIATED DEVICES DA DETECT *TESTING AA ACTION *REPLACE PART(S) ED EFFECT *PREVENTS COMP OPER,	

```
01 COMPONENT MANUFACTURER REF, *** G080
02 MANUFACTURER MODEL NO, ******** 237E9186G
03 SAFETY CLASS ******************** 2
04 MODE OF OPERATION CODE ********* OPC
05 INTERNAL ENVIRONMENT CODE ****** MOA
06 EXTERNAL ENVIRONMENT CODE ****** FX
07 IN*SERVICE*DATE ***************** 71/10/07
08 A*TYPE ************************** OTHER
09 B*
10 C*
11 D*
12 E*
13 F*
14 G*
15 H*
16 J*
17   TOTAL CALC, IN*SERV, HOURS*** 08760
18   CHECK TESTING****** FRQ  INT
19   FUNC, TESTING****** FRQ  1  INT  WK
20   CALIB, TESTING***** FRQ  INT
21   TOTAL CALC,OUT,HRS,FOR TESTS* 000000,0
```

FAILURE DESCRIPTION
WORN O*RING AND SOLENOID

CORRECTIVE ACTION
REPLACED INSERT SOLENOID VALVE 183 ON MODULE

FIGURE 13.1.2. QUARTERLY COMPONENT FAILURE LISTING

13.2 Definitions of NPRD Annual Report Elements

The following definitions apply specifically to annual reports produced by the NPRD computer system. For the "Annual Report of System Reliability" (NPRD Report A01) and "Annual System and Component Failure Listing" (NPRD Report A02) produced for individual reporting organizations, the definitions are applied to data for specific units operated by the reporting organizations. For the annual "Summary Report of System Reliability" (NPRD Report A03) the definitions apply to all units reporting in computing average data across the board. The "Summary Report of Component Reliability", (NPRD Report A04) provides the nuclear industry with statistics on all components included in the NPRD data base.

13.2.1 Element Definitions for NPRD Report A01—"Annual Report of System Reliability For Individual Reporting Organizations" (Figure 13.2.1)

13.2.1.1 NPRD System Code

Nuclear plant system codes from Tables 1A, 1B, 1C, 1D and 1E of the NPRD Reporting Procedures Manual.

13.2.1.2 Utility System I.D.

Nuclear plant system designation as specified by the Utility on submitted Report of Engineering Data forms (No. NPRD-2).

13.2.1.3 Oper. Mode

The nuclear plant system operating mode which *normally* applies when the reactor is critical. The codes for the three modes (OPER, STDBY and SHTDN) are specified by the Utility on submitted NPRD-2 forms.

Code	Code Meaning
OPER	The system or component is normally *operating* and performing its designated function when the reactor is *critical.*
STDBY	The system or component is normally in *standby* condition when the reactor is *critical.*
SHTDN	The system or component is normally in *shutdown* condition when the reactor is *critical.*

13.2.1.4 Period

Reliability statistics for two (2) differing periods are included in this report: (1) Reliability statistics on accumulated data for the current specified period, and (2) reliability statistics on accumulated data from "Data Start Date" for the particular nuclear plant system, through the end of the past calendar year.

13.2.1.5 Hours in Period

Total hours for which reliability data has been accumulated in the corresponding "PERIOD".

13.2.1.6 Calculated In-Service Hours

Reactor Critical–Hours system was calculated to be operational while reactor was critical in the corresponding "PERIOD". The sum of the products of "Reactor Critical Hours" on the Quarterly Operating Reports times the "Percent Reactor Critical Hours" as reported on Report of Engineering Data forms.

Reactor Standby–Hours system was calculated to be operational while reactor was in standby condition in the corresponding "PERIOD". The sum of the products of "Reactor Standby Hours" on the Quarterly Operating Reports times the "Percent Standby Condition Hours" as reported on Report of Engineering Data forms.

Reactor Shutdown–Hours system was calculated to be operational while reactor was shutdown in the corresponding "PERIOD". The sum of the products of "Reactor Shutdown Hours" on the Quarterly Operating Reports times the "Percent Reactor Shutdown Hours" as reported on Report of Engineering Data forms.

13.2.1.7 Total In-Service Hours

The sum of the hour figures in the three columns under "Calculated In-Service Hours" for the corresponding "PERIOD".

13.2.1.8 Syst. Out. Hrs. Due to Fail.

The summation of the hours that the system was out of service due to system or component failure. These figures for each designated "PERIOD" are calculated from data included on Reports of Failure submitted by the reporting organization.

13.2.1.9 No. of Failures

These figures are the summations of failures of the corresponding nuclear plant system for the designated "PERIOD" as submitted by the reporting organization on Report of Failure forms (NPRD-4).

13.2.1.10 Avg. Syst. Out. Dur. Per Fail. (Hours)

These figures are the average system outage hours per failure for the specified nuclear plant system for the designated "PERIOD". Calculated by dividing "Syst. Out. Hrs. Due to Fail." by "No. of Failures" for the designated "PERIOD".

13.2.1.11 Failures Per 1000 In-Serv. Hrs.

These figures are calculated by dividing the "Total In-Service Hours" for the system for the designated "PERIOD" by 1000 and then dividing the "No. of Failures" by this quotient.

Example:

$$\begin{matrix}\text{Failures}\\ \text{Per 1,000}\\ \text{In-Service}\\ \text{Hours}\end{matrix} = \frac{1 \text{ System Failure}}{\frac{10{,}000 \text{ Total In-Serv. Hrs.}}{1{,}000}} = 0.1$$

13.2.1.12 Number of Tests

The total number of system tests are accumulated and entered for the corresponding "PERIOD". Input data are obtained from the system Report of Engineering Data and Quarterly Operating Reports.

13.2.1.13 Reactor Critical Hours

The summation of the "Reactor Critical Hours" submitted on all Quarterly Operating Reports for the specified "PERIOD" (current or cumulative).

13.2.1.14 Reactor Standby Hours

The summation of the "Standby Condition Hours" submitted on all Quarterly Operating Reports for the specified "PERIOD" (current or cumulative).

13.2.1.15 Reactor Shutdown Hours

The summation of the "Reactor Shutdown Hours" submitted on all Quarterly Operating Reports for the specified "PERIOD" (current or cumulative).

13.2.1.16 Unit On-Line Time

The summation of the "On-Line Time (Hr.)" submitted on all Quarterly Operating Reports for the specified "PERIOD" (current or cumulative).

13.2.2 Element Definitions for NPRD Report A02—"Annual System and Component Failure Listing By Individual Reporting Organization" (Figure 13.2.2)

13.2.2.1 System/Component Code

Nuclear plant system code from NPRD Reporting Procedures Manual Tables 1A, 1B, 1C, 1D and 1E. Component type code from Table 2.

13.2.2.2 System/Component Description

Nuclear plant system descriptions from NPRD Reporting Procedures Manual Tables 1A, 1B, 1C, 1D and 1E. Component type descriptions from Table 2.

13.2.2.3 Utility System I.D.

Nuclear plant system designation as specified by the Utility on submitted Report of Engineering Data and Report of Failure forms (NPRD-2 and NPRD-4 respectively). I.D. designations must be the same on each type report for a given plant system.

13.2.2.4 Utility Component I.D.

Nuclear plant component designation as specified by the Utility on submitted Report of Engineering Data and Report of Failure forms (NPRD-2 and NPRD-4 respectively). Component designations must be the same on each type report.

13.2.2.5 Comp. Mfgr.

Identification of manufacturer of component that failed. Input information is obtained from submitted Report of Engineering Data.

13.2.2.6 Fail. Rept. Type

Designation of the type of failure the listing pertains to, either system failure (S) or component failure (C).

13.2.2.7 Date of Failure

The date that the subject failure was reported to have originally occurred. This information is submitted on Form NPRD-4, Report of Failure.

13.2.2.8 Fail. No.

The sequential number for the reported component or system failure for the specified failure date. This number is necessary *in case* more than one failure occurs for a particular system or component on a single date.

13.2.2.9 Failure Outage Duration

The time in hours and minutes the subject system and/or component was out of service due to the failure. These figures are calculated from the "Failure Event Start" and "Failure Event End" as reported on the Report of Failure form.

13.2.2.10 Failure Characterization Codes

The letter codes as designated on the submitted Report of Failure which provide several characteristic details about the system or component failure.

13.2.2.11 Failure Characterization Description

Verbal descriptions of the various listed "CODES" which provide details about the system or component failure.

13.2.2.12 Failure Description

A narrative description of the component or system failure as entered on lines H and J of the Report of Failure.

13.2.2.13 Cause and Corrective Action

A narrative description of the cause of the failure and corrective action taken for the failure as entered on lines K and L of the Report of Failure.

13.2.2.14 Total Failure Reports–Systems

The sum of all system failures reported for the particular nuclear unit for the specified period–Current year or Cumulative.

13.2.2.15 Total Failure Reports–Components

The sum of all component failures reported for the particular nuclear unit for the specified period–Current year or Cumulative.

13.2.2.16 Cumulative Period Start Date

Failure Reports are accumulated from the earliest date (data start date on Engineering Data Reports) that data was received for the particular plant system or components.

13.2.3 Element Definitions for NPRD Report A03–"Annual Summary Report of System Reliability" (Figure 13.2.3)

13.2.3.1 NPRD System Code

Nuclear plant system codes from Tables 1A, 1B, 1C, 1D and 1E of the NPRD Reporting Procedures Manual.

13.2.3.2 Oper. Mode

The nuclear plant system operating mode which *normally* applies when the reactor is critical. The codes for the three modes (OPER, STDBY and SHTDN) are specified by the Utility on submitted NPRD-2 forms.

Code	Code Meaning
OPER	The system or component is normally *operating* and performing its designated function when the reactor is *critical*.
STDBY	The system or component is normally in *standby* condition when the reactor is *critical*.
SHTDN	The system or component is normally in *shutdown* condition when the reactor is *critical*.

13.2.3.3 Period

Reliability statistics for two (2) differing periods are included in this report: (1) Reliability statistics on accumulated data for the current specified period, and (2) reliability statistics on

accumulated data from "Data Start Date" for the particular nuclear plant system, through the end of the past calendar year.

13.2.3.4 Total Syst. Pop.

The total population of nuclear unit systems having the same NPRD system code on which reliability data are being reported.

13.2.3.5 Calculated System In-Service Hours

Reactor Critical (X1,000)—Hours systems calculated to be operational while reactor was critical in the corresponding "PERIOD". The sum of the products of "Reactor Critical Hours" on the Quarterly Operating Reports times the "Percent Reactor Critical Hours" as reported on Report of Engineering Data forms divided by 1,000.

Reactor Standby (X1,000)—Hours systems calculated to be operational while reactor was in standby condition in the corresponding "PERIOD". The sum of the products of "Reactor Standby Hours" on the Quarterly Operating Reports times the "Percent Standby Condition Hours" as reported on Report of Engineering Data forms divided by 1,000.

Reactor Shutdown (X1,000)—Hours systems calculated to be operational while reactor was shutdown in the corresponding "PERIOD". The sum of the products of "Reactor Shutdown Hours" on the Quarterly Operating Reports times the "Percent Reactor Shutdown Hours" as reported on Report of Engineering Data forms divided by 1,000.

13.2.3.6 Total In-Service Hours (X1,000)

The sum of the hour figures in the three columns under "Calculated In-Service Hours" for the corresponding "PERIOD".

13.2.3.7 Avg. In-Serv. Hours Per Syst.

Total calculated in-service hours for the particular system type divided by the total population of the system type.

13.2.3.8 Syst. Out. Hrs. Due to Fail.

The summation of the hours that the systems were out of service due to system or component failure. These figures for each designated "PERIOD" are calculated from data included on Reports of Failure submitted by the Utility.

13.2.3.9 No. of Failures

These figures are the summations of failures of the corresponding nuclear plant systems for the designated "PERIOD" as submitted by the Utility on Report of Failure forms.

13.2.3.10 Avg. Syst. Out. Dur. Per Fail. (Hours)

These figures are the average system outage hours per failure for the specified nuclear plant systems for the designated "PERIOD". Calculated by dividing "Syst. Out. Hrs. Due to Fail." by "No. of Failures" for the designated "PERIOD."

13.2.3.11 Failures Per Mil. In-Serv. Hrs.

These figures are calculated by dividing the "Total In-Service Hours" for the system for the designated "PERIOD" by 1,000,000 and then dividing the "No. of Failures" by this quotient.

Example:

$$\begin{matrix}\text{Failures}\\ \text{Per Million}\\ \text{In-Service}\\ \text{Hours}\end{matrix} = \frac{1 \text{ System Failure}}{\frac{10{,}000 \text{ Total In-Serv. Hrs.}}{1{,}000{,}000}} = 100.00$$

13.2.3.12 Number of Tests

The total number of system tests are accumulated and entered for the corresponding "PERIOD". Input data are obtained from the system Report of Engineering Data and Quarterly Operating Reports.

13.2.3.13 Total No. Units Reporting

The sum of all nuclear generating units reporting under the NPRD program for the designated "PERIOD".

13.2.3.14 Total Reactor Critical Hours (X1,000)

The summation of the "Reactor Critical Hours" submitted on all Quarterly Operating Reports for the specified "PERIOD" (current or cumulative).

13.2.3.15 Total Reactor Standby Hours (X1,000)

The summation of the "Standby Condition Hours" submitted on all Quarterly Operating Reports for the specified "PERIOD" (current or cumulative).

13.2.3.16 Total Reactor Shutdown Hours (X1,000)

The summation of the "Reactor Shutdown Hours" submitted on all Quarterly Operating Reports for the specified "PERIOD" (current or cumulative).

13.2.3.17 Start Date

The specific date of the beginning of the designated "PERIOD" for which nuclear plant system reliability data are accumulated and reported in the subject report.

13.2.3.18 End Date

The specific date of the end of the designated "PERIOD" for which nuclear plant system reliability data are accumulated and reported in the subject report.

13.2.3.19 Hours in Period

Total hours for which reliability data have been accumulated in the corresponding "PERIOD".

13.2.4 Element Definitions for NPRD Report A04—"Summary Report of Component Reliability" (Figure 13.2.4)

13.2.4.1 NPRD Comp. Code

Nuclear plant component codes from NPRD Reporting Procedures Manual, Table 2.

13.2.4.2 Component Classification By Subcategory

This section provides further breakdown of nuclear plant components by subcategories selected from Table 3 of the NPRD Reporting Procedures Manual. The subcategories are selected to give a useful display of the statistics available within the NPRDS data bank. One category of component may be reported by the major subcategory only, such as "type". Other component categories may be divided into as many as two or three subcategories. Statistics for any one component are included in only one subcategory. The subcategories are not overlapping.

13.2.4.3 Total Comp. In Subcat.

The total number of nuclear plant components on which statistics are presented is listed in this column. The grand total of this column represents the *total* components within the NPRD data base for which Reports of Engineering Data have been submitted.

13.2.4.4 Total In-Serv. Hours (Mil.)

The sum of the hour figures in the three columns under "Calc. Comp. In-Serv. Hours" (shown in millions).

13.2.4.5 Total Number Failures

The summation of the total reported failures for the corresponding component subcategory.

13.2.4.6 Failures Per Mil. In-Serv. Hours

These figures are calculated by dividing the "Total Number Failures" for the corresponding component subcategory (Section 13.2.4.5 above) by the "Total In-Serv. Hours (Mil.)" for that component subcategory (Section 13.2.4.4 above).

Example:

$$\text{Failures Per Million In-Service Hours} = \frac{\text{1 Failure in Comp. Subcategory}}{\text{3.71 Total In-Serv. Hours (Mil.)}} = 0.269$$

13.2.4.7 Avg. Out of Serv. Time (Hours)

The average component outage hours per failure for the corresponding component subcategory. Calculated by dividing the total component subcategory outage hours due to failure as reported on individual component Report of Failure forms by the "Total Number Failures" for that component subcategory.

NPRD REPORT A01

ANNUAL REPORT OF SYSTEM RELIABILITY
FOR INDIVIDUAL REPORTING ORGANIZATIONS

(SAMPLE)
(APRIL, 1979)

YEAR = 1979
UTIL/PLT/UNIT: CWE-ORS-3

NUCLEAR PLANT RELIABILITY DATA SYSTEM

PAGE 0001

01 COMMONWEALTH EDISON COMPANY
02 DRESDEN NUCLEAR POWER STATION
03 UNIT 3
04 P.O.BOX 1234
05 MORRIS, ILLINOIS 12345
06 UTIL.CONTACT: J.B.SMITH 312/123-4567
07 M.J.JONES 312/123-4567
08 STA. LOC=MORRIS, GRUNDY COUNTY, ILLINOIS 12345

09 NSSS SUPPLIER + REACTOR TYPE:GE-BWR
10 ARCHITECT-ENGINEER: SARGENT AND LUNDY
11 REACTOR RATING: 2300 MWT
12 UNIT RATING: 715 MWE
13 AEC DOCKET NO.: 50-249
14 INITIAL CRITICAL DATE: 1/31/71
15 COMMERCIAL SERVICE DATE: 10/71

NPRD SYSTEM CODE	UTILITY SYSTEM I.D.	OPER. MODE	PERIOD	HOURS IN PERIOD	CALCULATED IN-SERVICE HOURS: REACTOR CRITICAL	REACTOR STANDBY	REACTOR SHUTDOWN	TOTAL IN-SERV. HOURS	SYS.OUT. HRS. DUE TO FAIL.	NO. OF FAILS	AVG.SYS. OUT.DUR. PER FAIL (HOURS)	FAILURES PER 1000 IN-SERV. HOURS	NO. OF TESTS
PLANT VENTILATION SYSTEM													
AAC001	RXCU-001	OPER.	01/79-12/79	8760	3548	132	700	4380	7.50	1	7.50	0.228	2
			01/73-12/79	17520	6921	351	1988	8760	16.50	2	8.25	0.228	4
AAC002	RXCU-002	OPER.	01/79-12/79	8760	3548	132	700	4380	.00	0	.00	0.000	2
			01/73-12/79	17520	6921	351	1988	8760	6.50	1	6.50	0.114	5
PLANT FIRE-PROTECTION SYSTEM													
AB8001	COND-001	OPER.	01/79-12/79	8760	7096	264	0	7360	.00	0	.00	0.000	13
			01/73-12/79	17520	13892	702	0	14594	.00	0	.00	0.000	28
AB8002	COND-002	OPER.	01/79-12/79	8760	7096	264	0	7360	5.45	1	5.45	0.136	19
			01/73-12/79	17520	13892	702	0	14594	5.45	1	5.45	0.069	22
COMMUNICATIONS													
AC8001	RELF-001	OPER.	01/79-12/79	8760	7096	264	0	7360	.00	0	.00	0.000	45
			01/73-12/79	17520	13892	702	0	14594	64.75	1	64.75	0.069	80

RECAP OF UNIT OPERATING DATA

	CURRENT PERIOD	CUMULATIVE PERIOD
REACTOR CRITICAL HOURS	7096	13892
REACTOR STANDBY HOURS	264	702
REACTOR SHUTDOWN HOURS	1400	2926
UNIT ON-LINE TIME	7062	13784

FIGURE 13.2.1. ANNUAL REPORT OF SYSTEM RELIABILITY FOR INDIVIDUAL REPORTING ORGANIZATIONS

NPRD A02 — ANNUAL SYSTEM AND COMPONENT FAILURE LISTING BY INDIVIDUAL REPORTING ORGANIZATION — (SAMPLE) (APRIL, 1979)

YEAR 1979
UTIL/PLT/UNIT:CWE-DRS-3

NUCLEAR PLANT RELIABILITY DATA SYSTEM

01 COMMONWEALTH EDISON COMPANY
02 DRESDEN NUCLEAR POWER STATION
03 UNIT 3
04 P.O.BOX 1234
05 MORRIS, ILLINOIS 12345
06 UTIL.CONTACT: J.B.SMITH 312/183-4567
07 M.J.JONES 312/123-4567
08 STA. LOC-MORRIS, GRUNDY COUNTY, ILLINOIS 12345
09 NSSS SUPPLIER + REACTOR TYPE:GE-BWR
10 ARCHITECT-ENGINEER: SARGENT AND LUNDY
11 REACTOR RATING: 2300 MWT
12 UNIT RATING: 715MWE
13 AEC DOCKET NO.: 50-249
14 INITIAL CRITICAL DATE: 1/31/71
15 COMMERCIAL SERVICE DATE: 10/71

SYSTEM COMPONENT CODE	SYSTEM COMPONENT DESCRIPTION	UTILITY SYSTEM I.D.	UTILITY COMPONENT I.D.	MFGR. REF. NO.	FAIL. REPT. TYPE	DATE OF FAILURE	FAIL. NO.	FAILURE OUTAGE DURATION	FAILURE CHARACTERIZATION CODES	FAILURE CHARACTERIZATION DESCRIPTION
CEA	RESIDUAL HEAT REMOVAL SYS.	RHR	RHR-V156	A200	C	79-01-03	1	4HR 25MIN	MB MODE	- WONT CLOSE
VALVEX	VALVES								TB TYPE	- MECHANICAL
									CB CAUSE	- MANUFACTURING
									DB DETECT	- PREVENTATIVE MAINT
									AB ACTION	- REPAIR PARTS
									ED EFFECT	- PREVENTS COMP.OPER
CHA	COND. AND FEEDWATER SYSTEM	FW	FW-V005	C235	C	79-01-15	1	6HR 53MIN	ME MODE	- WONT OPER.PER SPEC
VALVOP	VALVE OPERATORS								TB TYPE	- MECHANICAL
									CJ CAUSE	- MATERIAL DEFECT
									DA DETECT	- TESTING
									AA ACTION	- REPLACE PARTS
									EC EFFECT	- SYS.OPER.DEGRADED

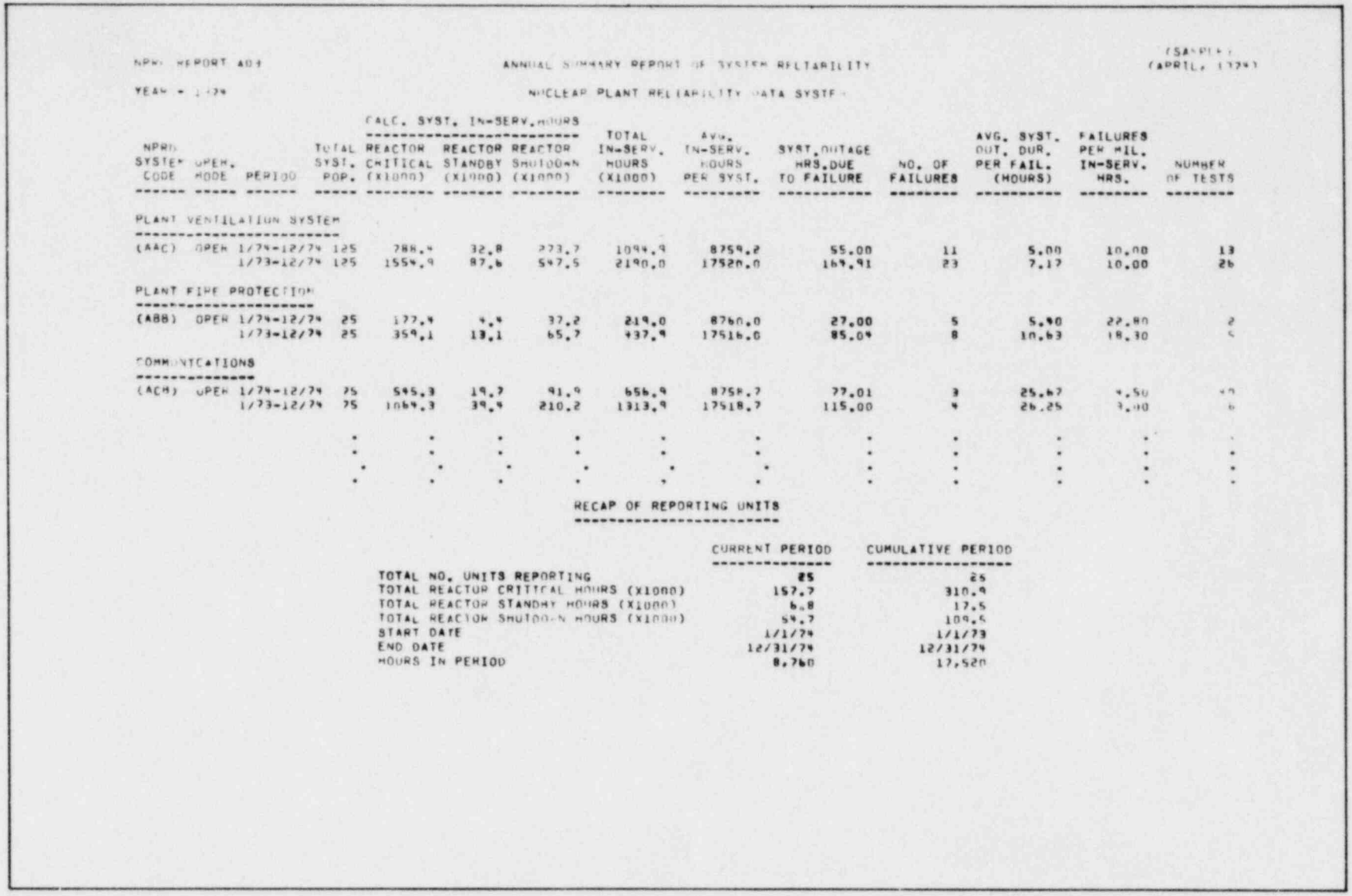
FAILURE DESCRIPTION
VALVE WOULD NOT CLOSE WHEN RHR SYS.OPER.DURING ANNUAL FUNC.TEST

CAUSE AND CORRECTIVE ACTION
VALVE DISMANTLED CLEANED INSPECTED. RETESTED SATISFACTORILY

FAILURE DESCRIPTION
VALVE WOULD NOT CLOSE PER SPECS. DIAPHRAGM HAD HOLE IN IT.

CAUSE AND CORRECTIVE ACTION
REPLACED DIAPHRAGM AND RETESTED SATISFACTORILY.

FIGURE 13.2.2. ANNUAL SYSTEM AND COMPONENT FAILURE LISTING BY INDIVIDUAL REPORTING ORGANIZATION



NPRD REPORT A04 — ANNUAL SUMMARY REPORT OF SYSTEM RELIABILITY — (SAMPLE) (APRIL, 1974)

YEAR = 1974 — NUCLEAR PLANT RELIABILITY DATA SYSTEM

NPRD SYSTEM CODE	OPER. MODE	PERIOD	TOTAL SYST. POP.	CALC. SYST. IN-SERV. HOURS: REACTOR CRITICAL (X1000)	REACTOR STANDBY (X1000)	REACTOR SHUTDOWN (X1000)	TOTAL IN-SERV. HOURS (X1000)	AVG. IN-SERV. HOURS PER SYST.	SYST. OUTAGE HRS. DUE TO FAILURE	NO. OF FAILURES	AVG. SYST. OUT. DUR. PER FAIL. (HOURS)	FAILURES PER MIL. IN-SERV. HRS.	NUMBER OF TESTS
PLANT VENTILATION SYSTEM													
(AAC)	OPER	1/74-12/74	125	788.4	32.8	273.7	1094.9	8759.2	55.00	11	5.00	10.00	13
		1/73-12/74	125	1554.9	87.6	547.5	2190.0	17520.0	169.91	23	7.17	10.00	26
PLANT FIRE PROTECTION													
(ABB)	OPER	1/74-12/74	25	177.4	4.4	37.2	219.0	8760.0	27.00	5	5.40	22.80	2
		1/73-12/74	25	359.1	18.1	65.7	437.9	17516.0	85.04	8	10.63	18.30	5
COMMUNICATIONS													
(ACM)	OPER	1/74-12/74	25	595.3	19.7	91.9	656.9	8758.7	77.01	3	25.67	4.50	10
		1/73-12/74	25	1069.3	39.9	210.2	1313.9	17518.7	115.00	4	26.25	3.00	6
				.	.	.	.	.	.	.	.	.	.
				.	.	.	.	.	.	.	.	.	.
				.	.	.	.	.	.	.	.	.	.
				.	.	.	.	.	.	.	.	.	.

RECAP OF REPORTING UNITS

	CURRENT PERIOD	CUMULATIVE PERIOD
TOTAL NO. UNITS REPORTING	25	25
TOTAL REACTOR CRITICAL HOURS (X1000)	157.7	310.9
TOTAL REACTOR STANDBY HOURS (X1000)	6.8	17.5
TOTAL REACTOR SHUTDOWN HOURS (X1000)	59.7	109.5
START DATE	1/1/74	1/1/73
END DATE	12/31/74	12/31/74
HOURS IN PERIOD	8,760	17,520

FIGURE 13.2.3. ANNUAL SUMMARY REPORT OF SYSTEM RELIABILITY

PRC REPORT A04 — ANNUAL SUMMARY REPORT OF COMPONENT RELIABILITY — (SAMPLE) (APRIL 1974)

REPORT DATE: 02/15/74 — NUCLEAR PLANT RELIABILITY DATA SYSTEM

THIS REPORT INCLUDES STATISTICS ON ALL COMPONENTS IN THE NPRDS DATA BASE AS OF 12/31/73

NPRD COMP CODE	COMPONENT CLASSIFICATION BY SUBCATEGORY	TOTAL COMP. IN SUBCAT	TOTAL IN-SERV. HOURS (MIL.)	TOTAL NUMBER FAILURES	FAILURES PER MIL. IN-SERV. HOURS	AVG. OUT OF SERV TIME (HOURS)
ACCUMU	A=A TYPE=LIQUID,PRESS.	114	3.316	0	0.000	0.0
ACCUMU	A=B TYPE=LIQUID,UNPRESS	26	1.512	0	0.000	0.0
ACCUMU	A=C TYPE=GAS	11	0.732	0	0.000	0.0
AIRDRY	A=D TYPE=HEATLESS,AUTO.	56	3.710	1	0.269	4.5
AIRDRY	A=G TYPE=REFRIGERATED	32	2.075	0	0.000	0.0
BATTRY	A=A TYPE=CHARGING UNIT C=A APPL=STATION BATTERY	XXX	X.XXX	X	X.XXX	X.X
BATTRY	A=A TYPE=CHARGING UNIT C=B APPL=SWITCHYARD BAT.	XXX	X.XXX	X	X.XXX	X.X
BATTRY	A=C TYPE=WET CELL C=A APPL=STATION BATTERY	XXX	X.XXX	X	X.XXX	X.X
BATTRY	A=C TYPE=WET CELL C=B APPL=SWITCHYARD BAT.	XXX	X.XXX	X	X.XXX	X.X
BLOWER	A=A SUBCAT=COMPRESSOR C=A DRIVER=MOTOR	XXX	X.XXX	X	X.XXX	X.X
BLOWER	A=A SUBCAT=COMPRESSOR C=B DRIVER=TURBINE	XXX	X.XXX	X	X.XXX	X.X
BLOWER	A=A SUBCAT=COMPRESSOR C=C DRIVER=INTER.COMB.ENG.	XXX	X.XXX	X	X.XXX	X.X
BLOWER	A=B SUBCAT=GAS CIRCULATOR C=B DRIVER=TURBINE	XXX	X.XXX	X	X.XXX	X.X
BLOWER	A=C SUBCAT=FAN C=A DRIVER=MOTOR	XXX	X.XXX	X	X.XXX	X.X
BLOWER	A=C SUBCAT=FAN C=B DRIVER=TURBINE	XXX	X.XXX	X	X.XXX	X.X
BLOWER	A=D SUBCAT=VENTILATOR C=A DRIVER=MOTOR	XXX	X.XXX	X	X.XXX	X.X

FIGURE 13.2.4. ANNUAL SUMMARY REPORT OF COMPONENT RELIABILITY

TABLE 1

STANDARD SYSTEM CODING FOR NUCLEAR PLANTS

TABLE 1

STANDARD SYSTEM CODING FOR NUCLEAR PLANTS
(To Be Used Only As a Guide–Obtain Actual Codes From Tables 1A-1E)

System Description	Standard Generic Code
Reactor	RXX
Reactor Vessel Internals	RAX
Reactivity Control Systems	RBX
Reactor Core	RCX
Reactor Coolant System & Connected Systems	CXX
Reactor Vessels & Appurtenances	CAX
Coolant Recirculation Systems & Controls	CBX
Main Steam Systems & Controls	CCX
Main Steam Isolation Systems & Controls	CDX
Reactor Core Isolation Cooling Systems & Controls	CEX
Residual Heat Removal Systems & Controls	CFX
Reactor Coolant Cleanup Systems & Controls	CGX
Feedwater Systems & Controls	CHX
Reactor Coolant Pressure Boundary Leakage Detection Systems	CIX
Other Coolant Subsystems & Their Controls	CJX
Engineered Safety Features	SXX
Reactor Containment Systems	SAX
Containment Heat Removal Systems & Controls	SBX
Containment Air Purification & Cleanup Systems & Controls	SCX
Containment Isolation Systems & Controls	SDX
Containment Combustible Gas Control Systems & Controls	SEX
Emergency Core Cooling Systems & Controls	SFX
Control Room Habitability Systems & Controls	SGX
Other Engineered Safety Feature Systems & Their Controls	SHX
Instrumentation and Controls	IXX
Reactor Trip Systems	IAX
Engineered Safety Feature Instrument Systems	IBX
Systems Required for Safe Shutdown	ICX
Safety Related Display Instrumentation	IDX
Other Instrument Systems Required for Safety	IEX
Other Instrument Systems Not Required for Safety	IFX
Electric Power Systems	EXX
Offsite Power Systems & Controls	EAX
AC Onsite Power Systems & Controls	EBX
DC Onsite Power Systems & Controls	ECX
Onsite Power Systems & Controls (Composite AC & DC)	EDX

TABLE 1

STANDARD SYSTEM CODING FOR NUCLEAR PLANTS (Cont'd)

System Description	Standard Generic Code
Electric Power Systems (Cont'd)	
Emergency Generator Systems & Controls	EEX
Emergency Lighting Systems & Controls	EFX
Other Electric Power Systems & Controls	EGX
Fuel Storage and Handling Systems	FXX
New Fuel Storage Facilities	FAX
Spent Fuel Storage Facilities	FBX
Spent Fuel Pool Cooling & Cleanup Systems & Controls	FCX
Fuel Handling Systems	FDX
Auxiliary Water Systems	WXX
Station Service Water Systems & Controls	WAX
Cooling Systems for Reactor Auxiliaries & Controls	WBX
Demineralized Water Make-Up Systems & Controls	WCX
Potable & Sanitary Water Systems & Controls	WDX
Ultimate Heat Sink Facilities	WEX
Condensate Storage Facilities	WFX
Other Auxiliary Water Systems & Their Controls	WGX
Auxiliary Process Systems	PXX
Compressed Air Systems & Controls	PAX
Process Sampling Systems	PBX
Chemical, Volume Control, & Liquid Poison Systems & Controls	PCX
Failed Fuel Detection Systems	PDX
Other Auxiliary Process Systems & Their Controls	PEX
Other Auxiliary Systems	AXX
Air Conditioning, Heating, Cooling & Ventilation Systems & Controls	AAX
Fire Protection Systems & Controls	ABX
Communication Systems	ACX
Other Auxiliary Systems & Their Controls	ADX
Steam and Power Conversion Systems	HXX
Turbine-Generators & Controls	HAX
Main Steam Supply System & Controls (Other Than CCX)	HBX
Main Condenser Systems & Controls	HCX
Turbine Gland Sealing Systems & Controls	HDX
Turbine Bypass Systems & Controls	HEX
Circulating Water Systems & Controls	HFX

TABLE 1

STANDARD SYSTEM CODING FOR NUCLEAR PLANTS (Cont'd)

System Description	Standard Generic Code
Steam and Power Conversion Systems (Cont'd)	
Condensate Clean-Up Systems & Controls	HGX
Condensate and Feedwater Systems & Controls (Other Than CHX)	HHX
Steam Generator Blowdown Systems & Controls	HIX
Other Features of Steam & Power Conversion Systems (not included elsewhere)	HJX
Radioactive Waste Management Systems	MXX
Liquid Radioactive Waste Management Systems	MAX
Gaseous Radioactive Waste Management Systems	MBX
Process & Effluent Radiological Monitoring Systems	MCX
Solid Radioactive Waste Management Systems	MDX
Radiation Protection Systems	BXX
Area Monitoring Systems	BAX
Airborne Radioactivity Monitoring Systems	BBX

TABLE 1A

BOILING WATER REACTOR

List of Systems/Equipment Groups
GENERAL ELECTRIC UNIT

NPRD System Code	Supplier Standard Code	System Title	NPRD System Code	Supplier Standard Code	System Title
RAA	B11,B13	Reactor Assembly (Internals)	IEA	H11-H14	Control Room Panels
RBA	C11,C12	Control Rod Drive Hydraulic Control System	IEB	H21-H24	Local Panels and Racks
RCA	J11	Fuel & Reloads	EAA	S11,S22	Power Transmission Systems
CAA	B11,B13	Reactor Assembly (Vessel)	EBA	R11-R34	Plant Electrical Systems (AC)
CAB	F13,F19	Reactor Vessel Servicing Equipment	EBB	R40	Standby Power System
CAC	F14,F20	In-Vessel Servicing Equipment	ECA	R41	DC Instrument Power
CAD	F17,F23	Under-Vessel Servicing Equipment	ECB	R42	Battery System
CBA	B21,B22	Nuclear Boiler System	EEA	R43	Diesel Emergency Power System
CBB	B31-B35	Reactor Recirculation System	FBA	F16,F22	Fuel Storage Equipment
CBC	C81	Recirculation Flow Control System	FCA	G41-G44	Fuel Pool Cooling & Cleanup System
CCA	N11	Steam System	FDA	F11-F18	Fuel Servicing Equipment
CEA	E51	Reactor Core Isolation Cooling System	FDB	F15,F21	Refueling Equipment
CFA	E11,E12,E14	Residual Heat Removal System	WAA	P41	Service Water System
CFB	E52	Isolation Condenser/Auxiliary Cooling System	WBA	P42	Reactor Bldg. Closed Cooling Water System
CGA	G31-G33,G36	Reactor Water Cleanup System	WCA	P21	Make-up Water System
CHA	N21	Condensate and Feedwater System	WFA	P11	Condensate Transfer & Storage System
CIA	E31	Leak Detection System	PAA	P50-P52	Instrument/Service Air System
SAA	T23	Containment and Pressure Suppression System	PBA	P33	Sampling Systems
SBA	T47	Containment Atmosphere Cooling System	PCA	C41	Standby Liquid Control System
SCA	T48	Containment Atmosphere Control/Innerting System	AAA	T41	Reactor Bldg. Heating, Ventilation and Air-conditioning System
SDC		Containment Isolation System and Controls	ABA	T43	Fire Protection System
SEA	T46	Standby Gas Treatment System	ACA	R51	Communication System (Intra Plant)
SFA	E15,E17	Low Pressure Coolant Injection and Containment Cooling System	HCA	N61	Main Condenser System
			HFA	N71	Circulating Water System
SFB	E21,E22	Core Spray/High Pressure Core Spray System	MAA	G11-G18	Radioactive Waste Disposal Systems (Liquid)
			MBA	N62,N64,Y32	Off-Gas System
SFC	E41	High Pressure Coolant Injection System	MCA	D11-D14,D17,D18	Process Radiation Monitoring System
IAA	C51-C53	Neutron Monitoring System	BAA	D21,D22	Area Radiation Monitoring System
IBA	C71,C73	Reactor Protection System	BBA	D23	Primary Containment Atmosphere Monitoring System
ICA	C61	Remote Shutdown System			

*Where there are no "Supplier Standard Codes" listed, the Utility shall provide the codes (four characters, maximum) as necessary.

TABLES 1A, 1B, 1C, 1D, 1E & 1F

NPRD SYSTEM CODES FOR INDIVIDUAL NUCLEAR POWER PLANTS

TABLE 1B

PRESSURIZED WATER REACTOR

List of Systems/Equipment Groups
BABCOCK & WILCOX UNIT

NPRD System Code	Supplier Standard Code*	System Title	NPRD System Code	Supplier Standard Code*	System Title
RAB		Reactor Internals	IEI		Control Boards and Panels
RBB	CRD	Control Rod Drive System	IFA	ICI	In-Core Instrumentation
RCC	–	Reactor Core	EBE		A.C. Power Distribution System
CAE	RV	Reactor Vessel	EBG		A.C. Instrument Power
CBD	RCS	Reactor Coolant	ECD		D.C. Power Systems and Controls
CBE	PZR	Pressurizer	EDA		Emergency Power Systems
CBF	PR	Pressurizer Relief System	EEC		Emergency Diesel Generator System
CFC	DH	Decay Heat Removal System	FCB	SF	Spent Fuel Cooling System
SAB		Reactor Building Penetrations	FDC	FH	Fuel Handing System
SBB		Reactor Building Cooling System	FDD		Fuel Handling Bridge
SCB		Reactor Building Purge & Ventilation System	WAB	LPSW	Low Pressure Service Water System
SCC	BS	Reactor Building Spray System	WBB	CC	Component Cooling System
SDA		Fluid Block System	WGA		Chilled Water System
SEC		Containment Combustible Gas Control System	PCB	MU	Makeup and Purification System
SFD	HPI	High Pressure Injection System Function of MU	PCC	CA	Chemical Addition System
SFE	CF	Core Flooding System	PCD	BWST	Borated Water Storage Tank
SFF	LPI	Low Pressure Injection System Function of DH	HBA	SP	Steam Supply System
SGA		Control Room Habitability System	HEA	TBS	Turbine Bypass System
IAB	NI	Nuclear Instrumentation	HFC		Circulatory Water System
IBB	RPS	Reactor Protection System	HHA	FW	Feedwater System
IBC	SFAS	Safe Features Actuation System	HHB		Emergency Feedwater System
IEC	ICS	Integrated Control System	MAB	WD	Waste Disposal System
IED	NNI	Non-Nuclear Instrumentation	BAB	RMS	Radiation Monitoring System

*Where there are no "Supplier Standard Codes" listed, the Utility shall provide the codes (four characters, maximum) as necessary.

TABLE 1C

PRESSURIZED WATER REACTOR

List of Systems/Equipment Groups
COMBUSTION ENGINEERING UNIT

NPRD System Code	Supplier Standard Code*	System Title
RAC	INT	Reactor Internal Structures
RBC	CRD	Control Rod Drive Mechanisms
RCB	COR	Reactor Core
CAF		Reactor Vessel
CBG	RCS	Reactor Coolant Systems and Control Instrumentation
CFD	SCS	Shutdown Cooling System
CFE	SCI	Shutdown Cooling Interlocks
SAD		Containment System, Incl. Penetrations
SBC	CEC	Containment Emergency Cooling System
SCD	CSS	Containment Spray Systems
SEB		Nitrogen Gas System
SFG	SIS	Safety Injection System
IAC	NIN	Nuclear Instrumentation
IBD	RPS	Reactor Protection System
IBE	ESA	Engineered Safety Feature Actuation
IBF	ECP	Emergency Control Panel
IDA	SDR	Safety Related Display Instrumentation
IDB	CPI	CEA Position Instrumentation
IEE	OCS	Operating Control Stations
IEF	NNI	Non-Nuclear Process Instrumentation
IFB	ICI	In-Core Instrumentation

NPRD System Code	Supplier Standard Code*	System Title
EBC	SPD	Station Power Distribution System
EBH		A.C. Instrument Power System
[illegible]CE		D.C. Instrument Power System
[illegible]B	EPS	Emergency Power Sources
[illegible]		Diesel Standby Power System
FCC	PCS	Spent Fuel Pool Cooling System
FD[illegible]	FHS	Fuel Handling System
WAC	SWS	Service Water System
WBC	CCS	Component Cooling System
WCB		Primary Makeup Water System
PAB	CAS	Compressed Air System
P[illegible]B	SAM	Sampling System
[illegible]CE	CSR	Reactivity Control System
[illegible]CF	CVC	Chemical & Volume Control System
AAB	CPV	Containment Penetration Room Ventilation System
AAC	PVS	Plant Ventilation System
ABB	FPS	Plant Fire Protection System
ACB	COM	Communications
HBB	SFC	Steam and Feedwater System
MAC	WMS	Waste Management System (Liquid)
MBB	WMS	Waste Management System (Gaseous)
MCB	RMS	Radiation Monitoring System
BAC	RPM	Radiation Protection and Monitoring

*Where there are no "Supplier Standard Codes" listed, the Utility shall provide the codes (four characters, maximum) as necessary.

TABLE 1D

PRESSURIZED WATER REACTOR

List of Systems/Equipment Groups
WESTINGHOUSE UNIT

NPRD System Code	Supplier Standard Code*	System Title	NPRD System Code	Supplier Standard Code*	System Title
RAD	RC	In-Core Equipment (Mech. Only)	WAD	SW	Service Water System (Nuclear)
RBD		Rod Cluster Control System	WBD	CC	Component Cooling Systems
RCD	–	Reactor Core	WCC		Makeup Water System
CBH	RC	Reactor Coolant System	WGB		Chilled Water System
CFF	RH	Residual Heat Removal System	PAD		Instrument and Service Air System
SAC		Containment System, Inc. Penetrations	PBC	SS	Sampling System
SBD		Containment Ventilating System	PCG	CS	Chemical & Volume Control System
SCE	SI	Containment Spray System	PCH	BR	Boron Recycle System
SCF		Annulus Vent System	PCI	TR	Boron Thermal Regeneration Sub-System
SCG		Containment Air Return System	PEB		Auxiliary Steam System
SDB		Containment Isolation System	AAD		Air Conditioning System (Control Room)
SED		Containment Combustible Gas Control System	AAE		Auxiliary Building Ventilation System
SFH	SI	Safety Injection System	AAF		Electrical Equipment Ventilation
IAD	NI	Nuclear Protection INstrumentation	AAG		Screen House Ventilation System
IBG		Reactor Protective & Safeguards Logic	AAH		Turbine Building Ventilation System
IEG	XI	Process Protection Instrumentation	ABD		Fire Protection System
IEH		Control Boards and Panels	ACC		Communication System (Emergency)
EBD		Auxiliary Power System	HBC		Steam System
EBF		A.C. Power Systems and Controls	HFD		Circulating Water System
ECC		D.C. Power System and Controls	HHC	FC	Feedwater System (Auxiliary)
EDC	ES	Electrical Systems (Protection Only)	HHE		Condensate Systems
EEB	CD	Emergency Diesel Auxiliary System	HHF		Steam Generator Feedwater System
EFA		Lighting System (Emergency)	HIA	SB	Steam Generator Blowdown Processing System
FCD	SF	Spent Fuel Pit Cooling System	MAD	WF	Waste Processing System (Liquid Sub-System)
FCE	WS	Refueling Water System	MAE		Equipment Drain System
FDF	FH	Fuel Handling and Storage Equipment	MBC	GH	Waste Processing System (Gas Sub-System)
FDG		Refueling Equipment	MCC		Radiation Monitoring System

*Where there are no "Supplier Standard Codes" listed, the Utility shall provide the codes (four characters, maximum) as necessary.

TABLE 1E

HIGH TEMPERATURE GAS COOLED REACTOR

List of Systems/Equipment Groups
GENERAL ATOMIC UNIT

NPRD System Code	Supplier Standard Code	System Title
RBE	12	Control Rod and Drive System
RBF	11	Reserve Shutdown System
FBB	14	Fuel Storage Facility
FDH	13	Fuel Handling System
CAG	11	Prestressed Concrete Reactor Vessel
CBI	21	Primary Coolant System and Helium Circulatory Auxiliary System
CBJ	46	Prestressed Concrete Reactor Vessel Liner Cooling System
CJA	11	PCRV Auxiliary Piping System
CJB	11	PCRV Pressure Relief System
CJC	24	Helium Storage System
CJD	47	Purification Cooling Water System
CGB	23	Helium Purification System
IAE	11	Nuclear Instrumentation
IBH	93	Plant Protection System
EDD	92	On-Site Electrical System
WAE	42	Service Water System
WBE	46	Reactor Plant Cooling Water System
PAC	82	Instrument and Service Air System
PEA	84	Auxiliary Boiler System
AAI	73	Reactor Building Heating, Ventilation and Air Conditioning System
AAJ	75	Control Room and Service Building Heating, Ventilation and Air Conditioning System
AAK	75	Turbine Building Heating and Ventilation System
ABC	45	Fire Protection Water System
ADA	91	Hydraulic Power System
ADB	25	Nitrogen System
HBD	52	Turbine Steam System
HBE	22	Secondary Coolant System
HFB	41	Circulating Water System
HHD	31	Feedwater and Condensate System

TABLE 1F

LIQUID METAL FAST BREEDER REACTOR (LMFBR)

List of Systems/Equipment Groups
Clinch River Breeder Reactor Plant
WESTINGHOUSE UNIT

NPRD System Code	Supplier Standard Code	System Title
RAE	31	Support & Restraint Structures
RBG	31	Control Rod Drives
RBH	90	Reactor Control Subsystem
RBI	90	Primary Control Rod Drive Mechanism Control
RBJ	90	Secondary Control Rod Drive Mechanism Control
RCF	31	Reactor Assemblies
CAH	32	Reactor Enclosure System
CBN	51	Reactor Heat Transport System (Primary & Intermediate, Na)
CBP	90	Heat Transport System Flow Control Subsystem
CCB	53	Steam Generator System
CGC	81	Auxiliary Liquid Metal System
CJA	52	Steam Generatory Auxiliary Heat Removal System
CJB	99	Decay Heat Removal System
SAE	27	Reactor Containment System (Sealing)
SDC	99	Containment Isolation System
IAF	56	Reactor Heat Transport Instrumentation System (Primary & Intermediate, Sodium; Steam Generator)
IAG	90	Permissives & Interlocks Subsystem
IAH	92	Reactor & Vessel Instrumentation System
IAI	95	Flux Monitoring System
IBI	55	Reactor Containment Instrumentation System
IBJ	66	Leak Detection Instrumentation System
ICB	90	Remote Shutdown Control Subsystem
ICC	99	Shutdown System
IDC	63	Auxiliary Liquid Metal Instrumentation System
IDD	91	Data Handling & Display System
IEH	58	Radioactive Waste Instrumentation System
IEI	60	Plant Fire Protection Instrumentation System (Sodium & Non-Sodium)
IEJ	62	Impurity Monitoring & Analysis Instrum. System
IEK	67	Plant Annunciator System (Nuclear Island & BOP)
IFD	54	Recirculating Gas Cooling Instrumentation System
IFE	57	Auxiliary Coolant Fluid Instrumentation System
IFF	59	Heating & Ventilation Instrumentation System
IFG	61	Inert Gas Receiving & Processing Instrum. Sys.
IFH	69	Balance-Of-Plant Instrum. & Control System

NPRD System Code	Supplier Standard Code	System Title
EAB	11	Off-Site Electric Power Transmission System & Controls
EDE	12	On-Site Electric Power Distribution System & Controls (Composite AC & DC)
EGA	13	Grounding & Cathodic Electric Power Protection System
EGB	16	Lighting System (Normal & Emergency)
FDH	41	Reactor Refueling Handling System
WCD	75	Treated Water System
WEA	74	River Water Service System
PAE	22	Compressed Air System
PDA	94	Fuel Failure Monitoring System
PEC	22	Carbon Dioxide System
PED	22	Hydrogen System
PEE	44	Large Component Maintenance System (Nuclear) Island)
PEF	45	Large Component Maintenance System (BOP)
PEG	68	Piping & Equipment Electrical Heating & Control System
PEH	76	Waste Water Treatment System
PEI	82	Inert Gas Receiving & Processing System (Ar, N_2)
PEJ	85	Impurity Monitoring & Analysis System
AAI	25	Heating & Ventilation System
ABE	26	Plant Fire Protection System (Sodium & Non-Sodium)
ACD	15	Communications System
ADC	23	Auxiliary Coolant Fluid System (Dowtherm)
ADD	28	Recirculating Argon Cooling System
ADE	28	Recirculating Nitrogen Cooling System
HAA	12	Turbine-Generator & Controls System
HBE	72	Main & Auxiliary Steam System
HFD	73	Heat Rejection System
HHG	71	Feedwater & Condensate System
MAF	24	Liquid Radwaste System
MDA	24	Solid Radwaste System
BAD	96	Radiation Monitoring System

TABLE 2

LIST OF COMPONENT TYPES AND CODES

TABLE 2

COMPONENT TYPES AND CODES

Component Type Six-Letter Code	Component Type Includes:	Table 3 Page
Accumulators ACCUMU	Scram Accumulators Safety Injection Tanks Surge Tanks	T3-1
Air Dryers AIRDRY		T3-2
Annunciator Modules ANNUNC	Alarms Bells Buzzers Claxons Horns Gongs Sirens	T3-3
Batteries & Chargers BATTRY	Chargers Dry Cells Wet Cells Storage Cells	T3-4
Blowers BLOWER	Compressors Gas Circulators Fans Ventilators	T3-5
Circuit Closers/Interrupters CKTBRK	Circuit Breakers Contactors Controllers Starters Switches (other than sensors) Switchgear	T3-6
Control Rods CONROD	Poison Curtains	T3-7
Control Rod Drive Mechanisms CRDRVE		T3-8
Demineralizers DEMINX	Ion Exchangers	T3-9
Electrical Conductors ELECON	Bus Cable Wire	T3-10
Engines, Internal Combustion ENGINE	Butane Engines Diesel Engines Gasoline Engines Natural Gas Engines Propane Engines	T3-11

TABLE 2

COMPONENT TYPES AND CODES (Cont'd)

Component Type Six-Letter Code	Component Type Includes:	Table 3 Page
Filters FILTER	Strainers Screens	T3-12
Fuel Elements FUELXX		T3-13
Generators GENERA	Inverters	T3-14
Heaters, Electric HEATER		T3-15
Heat Exchangers HTEXCH	Condensers Coolers Evaporators Regenerative Heat Exchangers Steam Generators Fan Coil Units	T3-16
Instrumentation and Controls INSTRU		T3-17
Mechanical Function Units MECFUN	Mechanical Controllers Governors Gear Boxes Varidrives Couplings	T3-19
Motors MOTORX	Electric Motors Hydraulic Motors Pneumatic (Air) Motors Servo Motors	T3-20
Penetrations, Primary Containment PENETR	Air Locks	T3-21
Pipes, Fittings PIPEXX		T3-22

TABLE 2

COMPONENT TYPES AND CODES (Cont'd)

Component Type Six-Letter Code	Component Type Includes:	Table 3 Page
Pumps PUMPXX		T3-23
Recombiners RECOMB		T3-24
Relays RELAYX		T3-25
Shock Suppressors and Supports SUPO'.1		T3-26
Transformers TRANSF		T3-27
Turbines TURBIN	Steam Turbines Gas Turbines Hydro Turbines	T3-28
Valves VALVEX	Valves Dampers	T3-29
Valve Operators VALVOP		T3-30
Vessels, Pressure VESSEL	Containment Vessels Drywells Pressure Suppression Pressurizers Reactor Vessels	T3-31

TABLE 3

COMPONENT ENGINEERING DATA

TABLE 3

COMPONENT ENGINEERING DATA

ACCUMULATORS (ACCUMU)

A. Type

A–Liquid, Pressurized
B–Liquid, Unpressurized
C–Gas
X–Other (explain under "Remarks")

B. Application

A–Safety Injection Tank
B–Scram Accumulator
C–Surge Tank
D–Holdup/Storage Tank
X–Other (explain under "Remarks")

C. Material

(see Table 6)

G. Pressure Rating

(PSIG)

H. Temperature Rating

(DEGF)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

AIR/GAS DRYERS (AIRDRY)

A. Type

A–Heat Reactivated
B–Heat Reactivated, External Blower
C–Heatless, Manual
D–Heatless, Automatic
E–Absorption
F–Adsorption
G–Refrigerated
X–Other (explain under "Remarks")

B. Cycle Period

A–Less than 30 MIN
B–30 MIN to less than 6 HR
C–6 HR to less than 24 HR
D–24 HR and longer

G. Pressure Rating

(PSIG)

H. Flow Rate

(SCFM)

J. Output Dewpoint

(DEGF)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

ANNUNCIATOR MODULES (ANNUNC)

A. **Means of Annunciation**

A–Audio
B–Visual
C–Audio/Visual
X–Other (explain under "Remarks")

B. **Construction**

A–Relay
B–Solid State

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

BATTERIES AND CHARGERS (BATTRY)

A. Type

A–Charging Unit
B–Dry Cell
C–Wet Cell

B. Number of Cells and Activation

A–Multiple Cel', Preactivated
B–Multiple Cell, Reserve
C–Single Cell, Preactivated
D–Single Cell, Reserve
X–Other (explain under "Remarks")

C. Application

A–Station Battery
B–Switchyard Battery
X–Other (explain under "Remarks")

D. Electrode Material

A–Lead
B–Magnesium-Silver Chloride
C–Mercury
D–Nickel-Cadmium
E–Silver-Cadmium
F–Silver-Zinc
G–Zinc-Silver
H–Zinc-Silver Peroxide
X–Other (explain under "Remarks")

H. Voltage Rating

(VDC)

J. Capacity Rating

(AMPH)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

BLOWERS (BLOWER)

A. **Subcategory**

A–Compressor
B–Gas Circulator
C–Fan
D–Ventilator
X–Other (explain under "Remarks")

B. **Type**

A–Axial, Single Stage
B–Axial, Two or more Stages
C–Radial, Vertical Shaft
D–Radial, Horizontal Shaft
E–Pneumatic Eductor
F–Centrifugal, Single Stage
G–Centrifugal, Multi-Stage
H–Positive Displacement
J–Rotary Vane
X–Other (explain under "Remarks")

C. **Driver**

A–Motor
B–Turbine
C–Internal Combustion Engine
X–Other (explain under "Remarks")

D. **Rotational Speed**

A–Less than 1500 RPM
B–1500-2999 RPM
C–3000-10,000 RPM
D–Over 10,000 RPM

G. **Flow Rating**

(SCFM)

H. **Pressure (Compressors)**

(PSIG)

J. **Driver Rated Power**

(HP)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

CIRCUIT CLOSERS/INTERRUPTERS (CKTBRK)

A. Subcategory

A–Circuit Breaker
B–Contactor
C–Controller
D–Starter
E–Switch (other than sensor)
F–Switchgear
X–Other (explain under "Remarks")

B. Type

A–Indoor, Metal Clad
B–Indoor, Sealed
C–Indoor, Unenclosed
D–Outdoor, Metal Clad
E–Outdoor, Sealed
F–Outdoor, Enclosed
X–Other (explain under "Remarks")

C. Actuation

A–Thermal
B–Magnetic
C–Motor
D–Manual

D. Arc Quenching Medium

A–Air
B–Oil
C–SF_6
X–Other (explain under "Remarks")

E. Voltage Rating Category

A–0-299 VDC
B–0-299 VAC
C–300-699 VAC
D–700-3,999 VAC
E–4,000-5,999 VAC
F–6,000-9,999 VAC
G–10,000-15,999 VAC
H–Over 16,000 VAC

F. HP Rating (Motor Starters)

A–Less than 1 HP
B–1-19.9 HP
C–20-99.9 HP
D–100-500 HP
E–Over 500 HP

G. Operating Voltage

(VDC or VAC)

H. Temperature Rating

(DEGF)

J. Current Rating

(AMP)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

CONTROL RODS (CONROD)

A. Type

A–Cylindrical
B–Rectangular
C–Vaned
D–Plate
E–Cruciform
F–Clustered
X–Other (explain under "Remarks")

B. Application

A–Shutdown
B–Shim
C–Regulating
D–Oscillating
E–Poison Curtain
F–Power Density Shaping
X–Other (explain under "Remarks")

C. Poison Material

A–Boron
B–Boron Carbide
C–Cadmium
D–Silver-Indium-Cadmium
E–Borosilicate Glass (12.5% B_2O_3)
F–Borosilicate Glass (18.0% B_2O_3)
X–Other (explain under "Remarks")

D. Cladding Material

(See Table 6)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

CONTROL ROD DRIVE MECHANISMS (CRDRVE)

A. Type

A–Hydraulic Piston
B–Rack and Pinion
C–Magnetic Jack Latch
D–Lead Screw/Roller Nut
E–Combination
F–Motor, Drum and Cable
X–Other (explain under "Remarks")

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

DEMINERALIZERS (DEMINX)

A. **Type**

A–Anion
B–Mixed Bed
C–Cation
X–Other (explain under "Remarks")

B. **Regeneration**

A–Chemical
B–Resin Replacement
C–Ultrasonic
D–Combination
X–Other (explain under "Remarks")

G. **Flow Rate**

(GPM)

H. **Pressure Drop**

(PSID)

J. **Flow Density**

(GMSF)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

ELECTRICAL CONDUCTORS (ELECON)

A. Type

A–Bus
B–Control Cable
C–Power Cable
D–Signal Cable
E–Thermocouple Extension Wire
X–Other (explain under "Remarks")

B. Terminal Type

A–Mechanical (Bolt, Screw)
B–Full Compression
C–Partial Compression
D–Indented
E–Solder
F–None
X–Other (explain under "Remarks")

C. Voltage Rating

A–0-50 Volts
B–51-300 Volts
C–301-600 Volts
D–601-2,000 Volts
E–2,001-5,000 Volts
F–5,001-8,000 Volts
G–8,001-15,000 Volts
H–15,001-25,000 Volts
J–25,001 Volts and Over
K–Nonapplicable
X–Other (explain under "Remarks")

D. Insulation Type

A–Bare
B–Natural Rubber
C–Butyl Rubber
D–Ethylene Propylene Rubber
E–Styrene–Butadiene Synthetic Rubber
F–Silicone Rubber
G–Cross-Linked Polyethylene
H–Polyethylene
J–Chlorosulfonated Polyethylene
K–Polyvinyl Chloride
L–Cross-Linked Polyvinyl Chlor
M–Vinyl
N–Teflon
O–Asbestos
P–Varnished Cambric
Q–Paper
R–Glass
S–Film
T–Mineral (Magnesium Oxide, etc.)
X–Other (explain under "Remarks")

E. Jacket Material

A–Asbestos
B–Chlorosulfonated Polyethylene
C–Cotton
D–Ethylene Propylene Rubber
E–Glass
F–Lead
G–Neoprene
H–Nylon
J–Polyethylene
K–Polyvinyl Chloride
L–Nitrile Polyvinyl Chloride
M–Rubber
N–Vinyl
O–Aluminum
P–Copper
Q–Copper Braid
R–Steel Braid
S–Nickel-Chrome Iron Alloy
T–None
X–Other (explain under "Remarks")

F. Conductor Material

A–Copper
B–Aluminum
C–Tin
D–Steel, Copper Clad
E–Steel, Aluminum Clad
F–Iron-Constantan
G–Copper-Constantan
H–Chromel-Alumel
J–Chromel-Constantan
K–Tungsten-Tungsten
X–Other (explain under "Remarks")

G. Circuit Voltage (If Applicable)

VDC or VAC

H. Conductor Size

AWG, MCM, or IN

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

ENGINES, INTERNAL COMBUSTION (ENGINE)

A. Type

A–Two Stroke, Reciprocating, In-Line Block
B–Two Stroke, Reciprocating, V-Block
C–Four Stroke, Reciprocating, In-Line Block
D–Four Stroke, Reciprocating, V-Block
E–Two Stroke, Radial
F–Four Stroke, Radial
X–Other (explain under "Remarks")

B. Fuel

A–Gas, Butane
B–Diesel or No. 2 Fuel Oil
C–Gasoline
D–Gas, Natural
E–Gas, Propane
X–Other (explain under "Remarks")

C. Capacity Rating

A–Less than 1000 HP
B–1000-5000 HP
C–Above 5000 HP

G. Power Rating

(HP)

H. Cylinders

(No. of cylinders)

J. Rotational Speed

(RPM)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

FILTERS (FILTER)

A. **Type**

A–Mechanical Restriction, Mesh/Screen
B–Membrane
C–Porous Solid/Loose Material
D–Chemical/Fluid
E–Gravity/Settling
F–Centrifugal
G–Electrostatic/Magnetic
X–Other (explain under "Remarks")

B. **Filtered Medium**

A–Gas
B–Solid
C–Liquid
X–Other (explain under "Remarks")

C. **Filter Material**

(See Table 6)

D. **Body Material**

(See Table 6)

G. **Flow Rate**

(SCFM or GPM)

H. **Pressure Drop**

(PSID)

J. **Maximum Particle Size**

(MICR or OPI)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

FUEL ELEMENTS (FUELXX)

A. Type

A–Initial Core
B–Reload
C–Developmental
X–Other (explain under "Remarks")

B. Fuel Material

A– UO_2
B–UO_2–PuO_2
C–UO_2–Gd_2O_3
X–Other (explain under "Remarks")

C. Cladding Material

(See Table 6)

D. Fuel Form

A–Sintered Pellets
B–Hot Pressed Pellets
C–Annular Pellets
D–Powder
X–Other (explain under "Remarks")

E. Internal Condition (As Applicable)

A–Pre-pressurized
B–Not Pre-pressurized

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

GENERATORS (GENERA)

A. Type

A–Alternator
B–Converter
C–Dynamotor
D–Generator
E–Amplidyne
F–Inverter
X–Other (explain under "Remarks")

B. Voltage Range

A–Less than 100 VDC
B–100-299 VDC
C–300 VDC or higher
D–100-299 VAC single phase
E–100-299 VAC polyphase
F–300-499 VAC polyphase
G–500-699 VAC polyphase
H–2,000-2,599 VAC polyphase
J–3,500-4,999 VAC polyphase
K–6,000-6,999 VAC polyphase
L–13,000-13,999 VAC polyphase
M–Over 14,000 VAC polyphase
X–Other (explain under "Remarks")

C. Capacity

A–Less than 1 KW
B–1-9.9 KW
C–10-49 KW
D–50-249 KW
E–250-999 KW
F–1000-5000 KW
G–Over 5000 KW

D. Output

A–Alternating Current
B–Direct Current
C–Variable Frequency, AC

E. Driver Type

A–Motor
B–Turbine, Steam
C–Internal Combustion Engine
D–Turbine, Hydro
E–Turbine, Combustion
F–None
X–Other (explain under "Remarks")

F. Application

A–Emergency, Sole Source
B–Emergency, Redundant Source
C–Emergency, Shared
D–Normal Source
X–Other (explain under "Remarks")

G. Rated Rotational Speed

(RPM at rated output)

H. Voltage Rating

(VDC or VAC)

J. Power Rating

(KW)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

HEATERS, ELECTRIC (HEATER)

A. Application

A - Pressurizer Heater
B - Heat Tracing
C - Engine Block Heater
X - Other (explain under "Remarks")

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

HEAT EXCHANGERS (HTEXCH)

A. Subcategory

A–Heater/Superheater
B–Boiler
C–Cooler
D–Condenser
E–Evaporator
F–Steam Generator
G–Heater/Cooler
X–Other (explain under "Remarks")

B. Type

A–Horizontal Shell and Tube
B–Vertical Shell and Tube
C–Shell and Concentric Tube
D–Shell and Multi-Section Tube
E–Shell and Tube plus Steam Drum
F–Concentric Tube and Steam Drum
G–Direct Contact
H–Radiator Type
X–Other (explain in "Remarks")

C. Configuration

A–Straight Tube
B–U-Tube
C–Helical Coil
X–Other (explain under "Remarks")

D. Tube Material

(See Table 6)

E. Tube Side Velocity (Design)

A–Less than 4 FPS
B–4 to < 5 FPS
C–5 to < 6 FPS
D–6 to < 7 FPS
E–7 to < 8 FPS
F–8 to < 9 FPS
G–9 to < 10 FPS
H–Greater than 10 FPS

G. Heat Transfer Surface Area

(Thousands of Square Feet)
(Abbreviate–KSFT)

H. Shell Pressure

(PSIG)

J. Heat Transfer Capacity (Design)

(Million Btu/hr)
(Abbreviate-MBH)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

INSTRUMENTATION AND CONTROLS (INSTRU)

A. Parameter Measured

A–Analysis (chemical)
C–Conductivity
E–Voltage
F–Flow
H–Humidity
I–Current
L–Level
P–Pressure
Q–Torque
R–Radiation
S–Speed or Frequency
T–Temperature
U–Multi-variable
V–Vibration
Y–Resistance
Z–Position
X–Other (explain under "Remarks")

B. Type (Primary Function)

C–Controller
E–Sensor/Detector/Element
I–Indicator
Q–Intergrator (Totalizer)
P–Power Supply
R–Recorder
S–Switch
T–Transmitter
Y–Computation Module[1]
X–Other (explain under "Remarks")

C. Type (Secondary Function, If Applicable)

C–Controller
D–Differential
E–Sensor/Detector/Element
I–Indicator
Q–Integrator (Totalizer)
R–Recorder
S–Switch
T–Transmitter
Y–Computation Module[1]
X–Other (explain under "Remarks")

[1] Device for modifying the process signal, e.g., Computer, Converter, Calculator, Amplifier, etc.

[2] The groupings under "Principle of Operation" are primarily for convenience. Use the most appropriate description even though it might be listed under a non-applicable component type.

[3] Two entries are available for the "Principle of Operation" in columns 46 and 48, Card D, Form NPRD-2.

D. & E. Principle of Operation[2,3]

	Transmitters and Elements
A	A–Diaphragm
A	B–Bellows
A	C–Bourdon Tube
A	D–Manometer
A	E–Ultrasonic
A	F–Helix
A	G–Conductance
A	H–Turbine
A	I–Paddle/Target
A	J–Orifice
A	K–Nozzle
A	L–Venturi Tube
A	M–Positive Displacement
A	N–Hot Wire Flowmeter
A	O–Pitot Tube
A	P–Resistance Change
A	Q–Float
A	R–Dielectric/Capacitive
A	S–Nuclear Gage
A	U–Piezoelectric
A	V–Photoelectric
A	W–Strain Gage/Resistance
A	Y–Scintillation
A	Z–Geiger-Muller
B	A–Ion Chamber, Compensated
B	B–Ion Chamber, Uncompensated
B	C–Fission Chamber
B	D–Thermopile
B	E–Self-energized or Solid State Neutron Detector
B	G–Filled-Liquid or Gas
B	H–Bimetallic
B	I–Thermocouple
B	J–Thermistor
B	K–Sensistor
B	L–Radiation Pyrometer
B	M–Potentiometric
B	N–Hygroscopic
B	O–Ion Exchange
B	X–Other (explain under "Remarks")

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

INSTRUMENTATION AND CONTROLS (INSTRU) (Cont'd)

D. & E. Principle of Operation (Cont'd)

Indicators

C A–Iron Vane
C B–d'Arsonval Galvanometer (Millivoltmeter)
C C–Mechanical
C X–Other (explain under "Remarks")

Computation Module, Reversing Device, Power Supply

D A–Amplifier
D B–E-P Converter
D C–I-P Converter
D D–M-I Converter
D E–I-I Converter
D F–Summer
D G–Averager
D H–Differentiator
D I–Integrator
D J–Function Generator
D K–Multi-function Generator
D L–Square-Root Converter
D M–E-E Converter
D N–I-E Converter
D X–Other (explain under "Remarks")

Switch

E A–Micro
E B–Mercury
E C–Reed
E D–Solid State
E X–Other (explain under "Remarks")

Controller

F A–Pneumatic-proportional
F B–Pneumatic-On-off
F C–Pneumatic-Other
F D–Electronic-proportional
F E–Electronic-On-off
F F–Electronic-Other
F X–Other (explain under "Remarks")

D. & E. Principle of Operation (Cont'd)

Recorder

G A–Servo-driven Feedback
G B–Galvonometer Type
G C–Pneumatic
G X–Other (explain under "Remarks")

Other

X X–Other (explain under "Remarks")

G. Maximum Input

(For analog type devices, only.)
(See Table 7 for units abbreviations.)

H. Maximum Output

(For analog type devices, only.)
(See Table 7 for units abbreviations.)

J. Span of Output

(For analog type devices, only.)
(See Table 7 for units abbreviations.)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

MECHANICAL FUNCTION UNITS (MECFUN)

A. **Subcategory**

A–Controller or Governor
B–Coupling
C–Power Transmission Device
X–Other (explain in "Remarks")

B. **Application**

A–Alignment Device (Coupling)
B–Direction Changer
C–Engine Control
D–Fan Control
E–Pump Control
F–Speed Changer
G–Turbine Control
X–Other (explain in "Remarks")

C. **Type**

A–Centrifugal
B–Flexible
C–Geared
D–Mechanical Hydraulic
X–Other (explain in "Remarks")

D. **Rating (of Component or Component Controlled)**

A–Less than 1 HP
B–1-4.99 HP
C–5-24.9 HP
D–25-99.9 HP
E–100-499 HP
F–500-999 HP
G–1000-1999 HP
H–2000-2999 HP
J–3000 HP and larger

G. **Torque (If Applicable)**

(FTLB)

H. **Max. Input Rotation Speed (If Applicable)**

(RPM)

J **Max. Output Rotational Speed (If Applicable)**

(RPM)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

MOTORS, (MOTORX)

A. **Type**

A–Synchronous
B–Hysteresis-Synchronous
C–Induction, Squirrel Cage
D–Induction, Slip Ring
E–Induction, Repulsion Start
F–Capacitor Start
G–Split Phase
H–DC Commutator, Single Speed
J–DC Commutator, Variable Speed
K–Hydraulic
L–Pneumatic
X–Other (explain under "Remarks")

B. **Rating (hp)**

A–Less than 1 HP
B–1-4.99 HP
C–5-24.9 HP
D–25-99.9 HP
E–100-499 HP
F–500-999 HP
G–1000-1999 HP
H–2000-2999 HP
I–3000 HP and larger

C. **Capacity-Line Voltage (If Applicable)**

A–Less than 100 VDC
B–100-299 VDC
C–300 VDC or higher
D–100-299 VAC single phase
E–100-299 VAC polyphase
F–300-499 VAC polyphase
G–500-699 VAC polyphase
H–2,000-2,599 VAC polyphase
J–3,500-4,999 VAC polyphase
K–6,000-6,999 VAC polyphase
L–13,000-13,999 VAC polyphase
M–Over 14,000 VAC polyphase
X–Other (explain under "Remarks")

H. **Voltage Rating (If Applicable)**

(VDC or VAC)

J. **Rotational Speed**

(RPM)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

PENETRATIONS, PRIMARY CONTAINMENT (PENETR)

A. **Subcategory**

A–Personnel Access
B–Fuel Handling
C–Equipment Access
D–Electrical
E–Instrument Line
F–Process Piping
X–Other (explain under "Remarks")

B. **Type**

A–Internal Welded End
B–Cartridge
Z–None of These

G. **Max. Voltage Rating of Penetration Conductors (If Applicable)**

(VAC or VDC)

H. **Press. Rating (If Applicable)**

(PSIG)

J. **Max. Internal Operating Pressure of Pipe Penetrations (If Applicable)**

(PSIG)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

PIPES, FITTINGS (PIPEXX)

A. **Subcategory**

A–Straight Section*
B–Elbow
C–Tee
D–Reducer
E–Nozzle/Safe End
F–Thermowell
G–Connecting Weld
H–Rupture Diaphragm
X–Other (explain under "Remarks")

*Including bends > 5 diameters

B. **Material**

(see Table 6)

C. **Size Group (Nom. Diam.)**

A–Less than 4 IN
B–4 to 6 IN
C–6 to 10 IN
D–10 to 16 IN
E–16 IN and larger

D. **Schedule**

A–5S
B–10S
C–20
D–30
E–40
F–60
G–80
H–100
J–120
K–140
L–160
M–405
N–80S
P–XS
R–XXS
X–Other (explain under "Remarks")

E. **Normal Fluid Carried**

(see Table 5)

G. **Nominal Diameter**

(IN)

H. **Press. Rating (If Applicable)**

(PSIG)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

PUMPS (PUMPXX)

A. **Type**

A–Axial
B–Centrifugal
C–Diaphragm
D–Gear
E–Reciprocating
F–Radial
G–Rotary
H–Vane Type
J–Electromagnetic
K–Jet
X–Other (explain under "Remarks")

B. **Inlet Size (Inlet Diameter-Inches)**

A–Under 2 IN
B–2-5.99 IN
C–6-11.99 IN
D–12-17.99 IN
E–18-28 IN
F–Over 28 IN

C. **Materials (Body)**

(see Table 6)

D. **Type of Shaft Seal**

A–Packing Gland
B–Mechanical Seal
C–Canned Motor Pump–No Seals
D–HP Fluid Injection
X–Other (explain under "Remarks")

E. **Flow Capacity**

A–Under 500 GPM
B–500-2499 GPM
C–2500-9999 GPM
D–10,000-50,000 GPM
E–Over 50,000 GPM

G. **Total Developed Head at Rated Capacity**

Actual Head in Feet (FTHO)

H. **Flow Rating**

(GPM)

J. **Rotational Speed at Rated Capacity**

(RPM)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

RECOMBINERS (RECOMB)

A. Type

A–Flame
B–Catalytic
C–Thermal
X–Other (explain under "Remarks")

B. Inerting Agent

A–Steam/Water
B–Nitrogen
C–Air
X–Other (explain under "Remarks")

G. Design Heat Rate

(BTUH)

H. Flow Rate

(SCFM)

J. Operating Temperature

(DEGF)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

RELAYS (RELAYX)*

A. Type

A–Control, General Purpose
B–Control, Sealed
C–Miniature
D–Switchgear, Protective
E–Switchgear, Protective, Slow Acting
F–Switchgear, Auxiliary
G–Mercury Wetted
H–Time Delay, Pneumatic
J–Time Delay, Solid State
K–Reed
L–Telephone
M–Event Sequencer, Timer, or Time-Sequence Controller
S–Solid State (SCR's)
X–Other (explain under "Remarks")

B. Type Operating Voltage/Current (Coil)

A–AC
B–DC

C. Coil Operating Range

A–Less than 50 V
B–50-99 V
C–100-199 V
D–200-300 V
E–Over 300 V
F–0-5 A
G–5-10 A
H–10-20 A
J–Over 20 A

D. Coil Status

A–Normally Energized
B–Normally Deenergized

E. Contact Voltage Range

A–Less than 50 VAC
B–50-99 VAC
C–100-199 VAC
D–200-300 VAC
E–Over 300 VAC
F–Less than 50 VDC
G–50-99 VDC
H–100-199 VDC
J–200-300 VDC
K–Over 300 VDC
L–Multiple

G. Operating Current (Coil)**

(ADC or AAC)

H. Operating Voltage (Coil)**

(VDC or VAC)

*Note: If the relay has its coil in one system and its contacts in another/other system(s), select the system code in which the relay *coil* is located.

**Note: A value for either G or H must be entered on line D of Form NPRD-2.

If a system conforms to the functional intent of the definition of "protection system" (Section 3.14), the individual relays in that system shall be reported.

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

SHOCK SUPPRESSORS AND SUPPORT (SUPORT)

A. Function

A–Hangers
B–Supports
C–Spring Loaded Sway Brace/Stabilizers
D–Snubbers
X–Other (explain under "Remarks")

B. Type of Support

A–Hydraulic
B–Constant Support Spring Hanger
C–Variable Support Spring Hanger
D–Rolling or Sliding
E–Rod Type Hanger
F–Cable
G–Anchor
H–Guide
I–Restraint
J–Rigid Strut Tension/Compression
X–Other (explain under "Remarks")

C. & D. Type of Attachment (Both Ends)*

A–Weld
B–Cast
C–Forge
D–Bolt
E–Pin
F–Clamp
G–Slide Joint
H–Cradle
I–Strap
J–Saddle
K–Ear
L–Shoe
M–Lug
N–Cylinder
O–Ring
P–Skirt
Q–Plate
R–Angle Clip
S–Sling
T–Clevis
U–Turnbuckle
X–Other (explain under "Remarks")

G. Rating (If Applicable)

Force, in thousands of pounds (KIPS)

*The type of Shock Suppressor attachment at both ends must be reported in columns 44 and 46, Card D, Form NPRD-2. Should both ends have same type attachment, the identical code should be entered in columns 44 and 46 of Card D.

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

TRANSFORMERS (TRANSF)

A. Type

A–Power Step-up
B–Power Step-down
C–Voltage
D–Current
E–Tripping/Holding
F–Differential/Regulating
G–Transducer/Coupling
H–Variable
J–Isolation
X–Other (explain under "Remarks")

B. Input Voltage

A–0-299 VAC
B–300-699 VAC
C–700-1,999 VAC
D–2,000-2,999 VAC
E–3,000-5,999 VAC
F–6,000-8,999 VAC
G–9,000-14,999 VAC
H–15,000-35,999 VAC
J–Over 36,000 VAC

C. Output Voltage

A–0-299 VAC
B–300-699 VAC
C–700-1,999 VAC
D–2,000-2,999 VAC
E–3,000-5,999 VAC
F–6,000-8,999 VAC
G–9,000-14,999 VAC
H–15,000-35,999 VAC
J–Over 36,000 VAC

D. Cooling

A–Air Cooled, Natural Circulation
B–Air Cooled, Forced Circulation
C–Oil Cooled, Natural Circulation
D–Oil Cooled, Forced Circulation
E–Forced Circulation Oil Cooled with Forced Air Circulation over Radiators (FO/FA)
X–Other (explain under "Remarks")

G. Volt-Ampere Rating

(KVA)

H. Input Voltage

(VAC)

J. Output Voltage

(VAC)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

TURBINES (TURBIN)

A. Type

A–Single Stage, Noncondensing (Steam)
B–Single Stage, Condensing (Steam)
C–Multistage, Noncondensing (Steam)
D–Multistage, Single Flow, Condensing (Steam)
E–Multistage, Double Flow, Condensing (Steam)
F–Multistage, Multiflow, Condensing (Steam)
G–Combustion
H–Hydro
X–Other (explain under "Remarks")

B. Type Blading

A–Impulse
B–Reaction
C–Impulse and Reaction
D–Velocity
E–Tangential Reentry
X–Other (explain under "Remarks")

C. Capacity

A–Less than 500 HP
B–500-999 HP
C–1000-5000 HP
D–Over 5000 HP

D. Speed

A–Less than 1000 RPM
B–1000-5000 RPM
C–Over 5000 RPM

G. Speed

(RPM)

H. Inlet Pressure Rating

(PSIG)

J. Power Rating, Shaft

(HP)

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

VALVES (VALVEX)[1]

A. Type

A–Ball
B–Butterfly
C–Check
D–Diaphragm
E–Gate
F–Globe
G–Needle
H–Plug
J–Nozzle
K–Single Blade
L–Parallel Blade
M–Opposed Blade
N–Proportioning Louver
P–Angle
X–Other (explain under "Remarks")

B. Operator

A–Manual
B–Electric Motor/Servo
C–Hydraulic
D–Pneumatic/Diaphragm/Cylinder
E–Solenoid
F–Float
G–Explosive, Squib
H–Mechanical (Differential Pressure to Open/Spring Force to Close)
J–None
X–Other (explain under "Remarks")

C. Function/Application

A–One-Way Flow
B–Pressure Relief
C–Vacuum Relief
D–Shutoff, Isolation, Stop
E–3-Way Selector
F–4-Way Selector
G–Flow Control
H–Pressure Control
L–Vent
N–Sample
P–Drain
Q–Bypass
X–Other (explain under "Remarks")

D. Material (Body)

(see Table 6)

E. Material (Body Type)

A–Cast
B–Forged
C–Fabricated

F. Nominal Inlet Size (Range)*

A–Under 1/2 IN
B–1/2 to 1.99 IN
C–2 to 3.99 IN
D–4 to 11.99 IN
E–12 to 19.99 IN
F–20 to 39.99 IN
G–40 to 59.99 IN
H–Over 60 IN

G. Size (Inlet)*

(IN)

H. Maximum Operating Pressure

(PSIG)

J. Maximum Operating Temperature

(DEGF)

*Note: If a valve is multi-ported on the inlet, enter size for largest inlet if sizes differ.

[1] Codes are contained herein to allow for the classification of Dampers within this component category.

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

VALVE OPERATORS (VALVOP)[1]

A. Type

A–Electric Motor-AC
B–Electric Motor-DC
C–Hydraulic
D–Pneumatic/Diaphragm/Cylinder
E–Solenoid-AC
F–Solenoid-DC
G–Float
H–Explosive, Squib
J–Mechanical (Differential Pressure to Open/ Spring Force to Close)
X–Other (explain under "Remarks")

B. Sub-Type

A–Reverse Acting
B–Direct Acting
C–Double Acting
D–Geared
E–Proportional
F–Pilot Activated
X–Other (explain under "Remarks")

C. Actuation Speed

(Time for full stroke)

A–Instantaneous
B–0.9.99 SEC
C–10-60 SEC
D–Greater than 60 SEC

F. Nominal Size (Range)

(Use same letter as used for corresponding valve or damper)

G. Force Rating*

(LB)

H. Torque Rating*

(FTLB)

*Enter a value for *either* G *or* H.

[1]Codes are contained herein to allow for the classification of Damper Operators within this component category.

TABLE 3

COMPONENT ENGINEERING DATA (Cont'd)

VESSELS, PRESSURE (VESSEL)

A. Subcategory

A–Reactor Vessel
B–Pressurizer Vessel
D–Containment/Drywell
E–Pressure Suppression
X–Other (explain under "Remarks")

B. Material

(see Table 6)

H. Max. Operating Pressure

(If not applicable, enter Max. Design Pressure)
(PSIG)

J. Max. Operating Temperature

(If not applicable, enter Max. Design Temperature)
(DEGF)

TABLE 4

GUIDELINES FOR DESIGNATING MODE OF OPERATION OF COMPONENTS

TABLE 4

GUIDELINES FOR DESIGNATING MODE OF OPERATION OF COMPONENTS LINE (A) COLUMNS (54-56) ON REPORT OF ENGINEERING DATA FORM

Note: The mode designation is the normal mode of operation of the *component when the reactor is critical.*

Component Description	Component Status		
	Functioning (OPC)	Standby (SBC)	Shutdown (SDC)
Accumulators	Pressurized, valved in service	Pressurized, ready to operate	Depressurized, not in service
Air Dryers	Passing gas and drying same	Ready to receive gas, energized	De-energized, not functional
Annunciator Modules	Receiving input and sending alarm output	Energized and/or ready to operate	De-energized
Batteries and Chargers	Supplying load	Ready to supply load	Discharged/disconnected
Blowers	Running	Ready to run	Valved out and/or de-energized
Circuit Closures/ Interrupters	Opening or closing	Ready to open or close	Racked out and/or control power off
Control Rods	Functioning to control reactor or ready to be automatically inserted	(Not applicable)	(Not applicable)
Control Rod Drive Mechanisms	Energized and operating or ready to operate	Energized but not required	De-energized, not required to be operational
Demineralizers	Passing fluid and demineralizing	Ready to demineralize but not passing fluid	Valved out
Engines, Internal Combustion	Running	Ready to run	Fuel valved out and/or control circuit off
Filters	Passing fluid and filtering or straining	Ready to function but not passing fluid	Valved out

TABLE 4

GUIDELINES FOR DESIGNATING MODE OF OPERATION OF COMPONENTS LINE (A) COLUMNS (54-56) ON REPORT OF ENGINEERING DATA FORM (Cont'd)

Component Description	Component Status		
	Functioning (OPC)	Standby (SBC)	Shutdown (SDC)
Fuel Elements	Installed in reactor	(Not applicable)	(Not applicable)
Generators	Generating	Ready to generate	Not ready to function
Heat Exchangers	Passing fluid and transferring heat	Ready to transfer heat	Valved out and/or de-energized
Heaters (electric)	Energized, heating medium as required	De-energized, operable as required	De-energized, not functional
Instrumentation and Controls	Functioning as designed	(Not applicable)	De-energized, not functional
Motors	Running	Ready to run	De-energized and/or control switch off
Penetrations, Primary Containment	Functioning to provide containment barrier, as required	Functional but not required	Not functional to provide containment barrier
Pipes, Fittings	Passing fluid, piping boundary integrity required	Not passing fluid, ready to function	Not functional to carry fluid, isolated from primary system, etc.
Pumps	Pumping	Ready to pump	Valved out and/or motive force secured
Recombiners	Functioning to recombine gases	Functional but not passing fluids	Not functional, valved out
Relays	Functioning as designed	(Not applicable)	Control power de-energized, not functional

TABLE 4

GUIDELINES FOR DESIGNATING MODE OF OPERATION OF COMPONENTS LINE (A) COLUMNS (54-56) ON REPORT OF ENGINEERING DATA FORM (Cont'd)

Component Description	Component Status		
	Functioning (OPC)	Standby (SBC)	Shutdown (SDC)
Transformers	Energized, passing current	Functional, not passing current	Not functional, disconnected
Turbines	Running, passing fluid, providing energy source	Not running, ready to operate	Not functional, valved out
Valves	Controlling, energized, functioning as designed	Functional, not functioning as designed	De-energized, not functional
Valve Operators	Functioning to position valve	Ready to function	Not functional, valved out, de-energized
Vessels, Pressure	Functioning to retain gases or liquids under pressure	Functional but not pressurized	Not functional, valved out, vented

TABLE 5

ENVIRONMENT CODES

TABLE 5

ENVIRONMENT CODES, INTERNAL OR EXTERNAL

Code	Environment
A	Temperature and Humidity Controlled
B	Temperature and Humidity Not Controlled
C	High Humidity
D	Dirty or Dusty Atmosphere
E	Vibration
F	Ambient Temperature Between $-10^{\circ}F$ and $+120^{\circ}F$
G	Ambient Temperature Between $120^{\circ}F$ and $180^{\circ}F$
H	Ambient Temperature Over $180^{\circ}F$
I	Radiation Field, Predominantly Neutrons and Gamma
J	Radiation Field, Predominantly Alpha, Beta or Gamma
K	Natural Fresh Water (Well, River, Lake)
L	Sea Water or Brackish Water
M	Reactor Water or Primary Coolant Water
N	Borated Reactor Water or Borated Primary Coolant Water
O	Condensate, High Purity Water
P	Secondary Coolant Water and/or Treated Water
Q	Boric Acid Solution
R	Steam
S	Chemical Solution Other Than Boric Acid
T	Nitrogen
U	Argon
V	Helium
W	Compressed Air
Y	Liquid Waste
Z	Gaseous Waste
2	Oil
3	Sulfur Hexaflouride (SF_6)
4	Air
5	Resin Slurry
6	Insulated
X	Other (explain under "Remarks")

TABLE 6

MATERIALS CODES

TABLE 6

MATERIALS CODES

Code	Material
A	Aluminum
B	Austenitic Stainless Steel–Type 304
C	Austenitic Stainless Steel–Type 316
D	Austenitic Stainless Steel–Type 347
E	Austenitic Stainless Steel–Other Types
F	Brass or Bronze, including Admiralty Metal
G	Carbon Steel
H	Carbon Steel/Stainless Clad
I	Cast Iron
J	Cellulose
K	Ceramic
L	Charcoal
M	Cloth or Paper
N	Concrete
O	Copper
P	Copper-Nickel
Q	Diatomaceous Earth
R	Ferritic Stainless Steel
S	Fiberglass
T	Graphite
U	Iron-Chrome-Nickel Alloys (Inconel, etc.)
V	Lead
W	Nichrome
X	Nickel-Cadmium
Y	Resin
Z	Rubber
2	Sand
3	Sintered Metal
4	Steel, Alloys Other than Carbon or Stainless
5	Stellite
6	Zircaloy–2
7	Zircaloy–4
9	Other (explain under "Remarks")

TABLE 7

UNITS ABBREVIATIONS

TABLE 7

UNITS ABBREVIATIONS

AAC	Ampere Alternating Current
ADC	Ampere Direct Current
AMP	Ampere
AMPH	Ampere-Hour
AWG	American Wire Gage
BTUH	British Thermal Units Per Hour
CC	Cubic Centimeter
CFS	Cubic Feet Per Second
CPM	Counts Per Minute
CPS	Counts Per Second
CUFT	Cubic Feet
CUIN	Cubic Inches
DCPM	Decades Per Minute
DEG	Degree
DEGC	Degrees Centigrade
DEGF	Degrees Fahrenheit
DEGK	Degrees Kelvin
DPM	Disintegrations Per Minute
FPM	Feet Per Minute
FPS	Feet Per Second
FT	Feet
FTHO	Feet of Water
FTLB	Foot-Pounds
GAL	Gallons
GMSF	Gallons Per Minute Per Square Foot
GPM	Gallons Per Minute
HP	Horsepower
HR	Hours
HZ	Cycles Per Second
IN	Inches
INHG	Inches of Mercury
INHO	Inches of Water
INPS	Inches Per Second
KCFM	Thousand Cubic Feet Per Minute
KCPM	Thousand Counts Per Minute
KCPS	Thousand Counts Per Second
KDPM	Thousand Disintegrations Per Minute
KFLB	Thousands of Foot-Pounds
KGPM	Thousand Gallons Per Minute
KHR	Thousands of Hours
KHZ	Thousand Cycles Per Second
KIPS	Force in Thousands of Pounds
KLB	Thousands of Pounds
KLBH	Thousand Pounds Per Hour
KR	Thousands of Roentgens
KRPH	Thousand Roentgens Per Hour
KSFT	Thousands of Square Feet
KVA	Kilovolt-Ampere
KVAC	Kilovolts Alternating Current
KVDC	Kilovolts Direct Current
KW	Kilowatts
KWFT	Kilowatt Per Foot
LB	Pounds
LBHR	Pounds Per Hour
MAMP	Milliampere
MBH	Million British Thermal Units Per Hour
MCCC	Micro-Curies Per Cubic Centimeter
MCFM	Million Cubic Feet Per Minute
MCM	Thousand Circular Mills
MCPM	Million Counts Per Minute
MCPS	Million Counts Per Second
MCS	Micro-Curies Per Second
MDPM	Million Disintegrations Per Minute
METR	Meter
MFLB	Millions of Foot-Pounds
MGPM	Million Gallons Per Minute
MHO	Mho
MHR	Millions of Hours
MHZ	Million Cycles Per Second
MICA	Micro-Amperes
MICR	Microns
MILS	Thousandths of Inches
MIN	Minutes
MMHG	Millimeters of Mercury
MMHO	Micro-Mhos
MLB	Millions of Pounds
MLBH	Million Pounds Per Hour
MR	Milliroentgen
MRAD	Millirad
MREM	Millirem
MRPH	Milliroentgens Per Hour
MSFT	Millions of Square Feet
MW	Megawatts
MWDT	Megawatt Days Per Ton
MWT	Megawatts Thermal
NAMP	Nano-Amperes
NCMS	Neutrons Per Square Centimeter Per Second
OHM	Ohm
OPI	Openings Per Inch
PCRP	Percent of Rated Power
PCT	Percent
PER	Period
PH	pH (Hydrogen Potential)
PPB	Parts Per Billion
PPM	Parts Per Million
PSI	Pounds Per Square Inch
PSIA	Pounds Per Square Inch—Absolute
PSID	Pounds Per Square Inch—Differential
PSIG	Pounds Per Square Inch—Gage
R	Roentgen
RAD	Radiation Absorbed Dose
REM	Roentgens Equivalent Man
RPH	Roentgens Per Hour
RPM	Revolutions Per Minute
SCFM	Standard Cubic Feet Per Minute
SEC	Seconds
SQFT	Square Feet
T	Tonne (Metric Ton)
TNL	Ton (Long)
TNSH	Ton (Short)
VAC	Volts Alternating Current
VDC	Volts Direct Current
WATT	Watt
ZZZ	Not Applicable

TABLE 8

UTILITY/PLANT/UNIT CODES

TABLE 8

UTILITY / PLANT / UNIT CODES

NPRD Utility Code	NPRD Plant/Unit Code	Name	Actual or Estimated Year of Operating License
APC		Alabama Power Company	
	JMF 1	Joseph M. Farley 1	77
	JMF 2	Joseph M. Farley 2	79
	ARB 1	Alan R. Barton 1	85
	ARB 2	Alan R. Barton 2	86
	ARB 3	Alan R. Barton 3	86
	ARB 4	Alan R. Barton 4	87
APS		Arizona Public Service	
	PAV 1	Palo Verde 1	82
	PAV 2	Palo Verde 2	84
	PAV 3	Palo Verde 3	86
APL		Arkansas Power & Light Company	
	ANO 1	Arkansas Nuclear One–1	74
	ANO 2	Arkansas Nuclear One–2	78
BGE		Baltimore Gas & Electric Company	
	CCN 1	Calvert Cliffs 1	74
	CCN 2	Calvert Cliffs 2	77
BEC		Boston Edison Company	
	PPS 1	Pilgrim 1	72
	PPS 2	Pilgrim 2	82
	PPS 3	Pilgrim 3	*
CPL		Carolina Power & Light Company	
	HBR 2	H. B. Robinson 2	70
	BEP 1	Brunswick 1	77
	BEP 2	Brunswick 2	74
	SHS 1	Shearon Harris 1	84
	SHS 2	Shearon Harris 2	86
	SHS 3	Shearon Harris 3	88
	SHS 4	Shearon Harris 4	90
	SRS 1	South River 1	*
	SRS 2	South River 2	*
	SRS 3	South River 3	*

*Date of Commercial Operation unannounced.

TABLE 8

UTILITY / PLANT / UNIT CODES (Cont'd)

NPRD Utility Code	NPRD Plant/Unit Code	Name	Actual or Estimated Year of Operating License
CGE		Cincinnati Gas & Electric Company	
	WHZ 1	W. H. Zimmer 1	78
	WHZ 2	W. H. Zimmer 2	84
CEI		Cleveland Electric Illuminating Co.	
	PNP 1	Perry 1	80
	PNP 2	Perry 2	82
CWE		Commonwealth Edison Company	
	DRS 2	Dresden 2	70
	DRS 3	Dresden 3	71
	QAD 1	Quad Cities 1	72
	QAD 2	Quad Cities 2	72
	ZIS 1	Zion 1	73
	ZIS 2	Zion 2	73
	LSC 1	La Salle County 1	79
	LSC 2	La Salle County 2	80
	BYS 1	Byron 1	80
	BYS 2	Byron 2	82
	BRS 1	Braidwood 1	81
	BRS 2	Braidwood 2	82
CYA		Connecticut Yankee Atomic Power Co.	
	HNP 1	Haddam Neck	67
CEC		Consolidated Edison Company	
	IPS 2	Indian Point 2	73
	IPS 3	Indian Point 3	75
CPC		Consumers Power Company	
	PAL 1	Palisades 1	71
	MID 1	Midland 1	82
	MID 2	Midland 2	81
DEC		Detroit Edison Company	
	EFP 2	Enrico Fermi 2	*

*Date of Commercial Operation unannounced.

TABLE 8

UTILITY / PLANT / UNIT CODES (Cont'd)

NPRD Utility Code	NPRD Plant/Unit Code	Name	Actual or Estimated Year of Operating License
DEC (Cont'd)	GEC 2	Greenwood 2	*
	GEC 3	Greenwood 3	*
DPC		Duke Power Company	
	NEE 1	Oconee 1	73
	NEE 2	Oconee 2	73
	NEE 3	Oconee 3	74
	MGS 1	McGuire 1	78
	MGS 2	McGuire 2	79
	CNS 1	Catawba 1	79
	CNS 2	Catawba 2	80
	PNS 1	Perkins 1	83
	PNS 2	Perkins 2	85
	PNS 3	Perkins 3	87
	CNP 1	Cherokee 1	84
	CNP 2	Cherokee 2	86
	CNP 3	Cherokee 3	88
DLP		Duquesne Light Company	
	BVS 1	Beaver Valley 1	76
	BVS 2	Beaver Valley 2	81
FPC		Florida Power Corporation	
	CRP 3	Crystal River 3	76
FPL		Florida Power & Light Company	
	TPS 3	Turkey Point 3	72
	TPS 4	Turkey Point 4	73
	SLS 1	St. Lucie 1	76
	SLS 2	St. Lucie 2	80
	SDS 1	South Dade 1	85
	SDS 2	South Dade 2	85
GPC		Georgia Power Company	
	EIH 1	Edwin I. Hatch 1	74
	EIH 2	Edwin I. Hatch 2	79
	AWV 1	Alvin W. Vogtle 1	*
	AWV 2	Alvin W. Vogtle 2	*

*Date of Commercial Operation unannounced.

TABLE 8

UTILITY / PLANT / UNIT CODES (Cont'd)

NPRD Utility Code	NPRD Plant/Unit Code	Name	Actual or Estimated Year of Operating License
GSU		Gulf States Utilities Co.	
	RBS 1	River Bend 1	80
	RBS 2	River Bend 2	82
	BHS 1	Blue Hills 1	83
	BHS 2	Blue Hills 2	85
HLP		Houston Lighting ar Power Co.	
	ACP 1	Allen's Creek 1	*
	ACP 2	Allen's Creek 2	*
	STN 1	South Texas 1	80
	STN 2	South Texas 2	82
IPC		Illinois Power Company	
	CPP 1	Clinton 1	81
	CPP 2	Clinton 2	84
IME		Indiana & Michigan Electric Co.	
	DCC 1	D. C. Cook 1	74
	DCC 2	D. C. Cook 2	77
IEL		Iowa Electric Light & Power Co.	
	DAC 1	Duane Arnold	74
JCP		Jersey Central Power & Light Co.	
	OCP 1	Oyster Creek 1	69
	FRS 1	Forked River 1	82
KGE		Kansas Gas and Electric Co.	
	WCS 1	Wolf Creek 1	82
LIL		Long Island Lighting Company	
	SNS 1	Shoreham 1	79
	JPS 1	Jamesport 1	82
	JPS 2	Jamesport 2	84

*Date of Commercial Operation unannounced.

TABLE 8

UTILITY / PLANT / UNIT CODES (Cont'd)

NPRD Utility Code	NPRD Plant/Unit Code	Name	Actual or Estimated Year of Operating License
LPL		Louisiana Power & Light Company	
	WGS 3	Waterford 3	80
MYA		Maine Yankee Atomic Power Company	
	MYP 1	Maine Yankee 1	72
MEC		Metropolitan Edison Company	
	TMI 1	Three Mile Island 1	74
	TMI 2	Three Mile Island 2	78
MPC		Millstone Point Company	
	MNS 1	Millstone 1	70
	MNS 2	Millstone 2	74
	MNS 3	Millstone 3	82
MPL		Mississippi Power & Light Co.	
	GGS 1	Grand Gulf 1	79
	GGS 2	Grand Gulf 2	81
NPP		Nebraska Public Power District	
	CPR 1	Cooper 1	74
NEE		New England Electric System	
	CNS	Charlestown 1	83
	CNS	Charlestown 2	85
NMP		Niagara Mohawk Power Corporation	
	NMP 1	Nine Mile Point 1	69
	NMP 2	Nine Mile Point 2	82
NEV		Northeast Utilities Service Co.	
	MPS 1	Montague 1	88
	MPS 2	Montague 2	88
NIC		Northern Indiana Public Service Co.	
	BGS 1	Bailly 1	80

TABLE 8

UTILITY / PLANT / UNIT CODES (Cont'd)

NPRD Utility Code	NPRD Plant/Unit Code	Name	Actual or Estimated Year of Operating License
NSP		Northern States Power Company	
	MNP 1	Monticello 1	71
	PIN 1	Prairie Island 1	73
	PIN 2	Prairie Island 2	74
	TEP 1	Tyrone 1	85
	TEP 2	Tyrone 2	*
OPP		Omaha Public Power District	
	FCS 1	Ft. Calhoun 1	73
	FSC 2	Ft. Calhoun 2	83
PGE		Pacific Gas & Electric Company	
	DCP 1	Diablo Canyon 1	76
	DCP 2	Diablo Canyon 2	77
PPL		Pennsylvania Power and Light Co.	
	SES 1	Susquehanna 1	80
	SES 2	Susquehanna 2	82
PEC		Philadelphia Electric Company	
	PBS 2	Peach Bottom 2	73
	PBS 3	Peach Bottom 3	74
	LGS 1	Limerick 1	81
	LGS 2	Limerick 2	82
	FGS 1	Fulton 1	*
	FGS 2	Fulton 2	*
PGC		Portland General Electric Company	
	PSN-1	Pebble Springs 1	83
	PSN-2	Pebble Springs 2	86
	TNP 1	Trojan 1	75
PEP		Potomac Electric Power Co.	
	DPS 1	Douglas Point 1	85
	DPS 2	Douglas Point 2	87
PNY		Power Authority of the State of New York	
	JAF 1	FitzPatrick 1	74
PSC		Public Service Company of Colorado	
	FSV 1	Ft. St. Vrain 1	73

*Date of Commerical Operation unannounced.

TABLE 8

UTILITY / PLANT / UNIT CODES (Cont'd)

NPRD Utility Code	NPRD Plant/Unit Code	Name	Actual or Estimated Year of Operating License
PEG		Public Service Electric & Gas Co.	
	SGS 1	Salem 1	76
	SGS 2	Salem 2	79
	HCS 1	Hope Creek 1	82
	HCS 2	Hope Creek 2	84
	AGS 1	Atlantic 1	85
	AGS 2	Atlantic 2	87
	AGS 3	Atlantic 3	90
	AGS 4	Atlantic 4	92
PSI		Public Service of Indiana	
	MHS 1	Marble Hill 1	83
	MHS 2	Marble Hill 2	84
PSN		Public Service of New Hampshire	
	SBK 1	Seabrook 1	80
	SBK 2	Seabrook 2	82
PSO		Public Service of Oklahoma	
	BFS 1	Black Fox 1	83
	BFS 2	Black Fox 2	85
PSP		Puget Sound Power & Light Co.	
	SCS 1	Skagit County 1	82
	SCS 2	Skagit County 2	85
RGE		Rochester Gas & Electric Company	
	REG 1	Robert E. Ginna 1	69
SMU		Sacramento Municipal Utility District	
	RSS 1	Rancho Seco 1	74
SDG		San Diego Gas and Electric Co	
	SDP 1	Sundesert 1	85
	SDP 2	Sundesert 2	88

TABLE 8

UTILITY / PLANT / UNIT CODES (Cont'd)

NPRD Utility Code	NPRD Plant/Unit Code	Name	Actual or Estimated Year of Operating License
SCE		Southern California Edison Company	
	SOS 1	San Onofre 1	67
	SOS 2	San Onofre 2	80
	SOS 3	San Onofre 3	82
SCC		South Carolina Electric & Gas Company	
	VCS 1	Virgil C. Summer 1	79
TVA		Tennessee Valley Authority	
	BNP 1	Bellefonte 1	80
	BNP 2	Bellefonte 2	81
	BRF 1	Browns Ferry 1	73
	BRF 2	Browns Ferry 2	74
	BRF 3	Browns Ferry 3	76
	HVA 1	Hartsville A1	81
	HVA 2	Hartsville A2	82
	HVB 1	Hartsville B1	81
	HVB 2	Hartsville B2	82
	PBP 1	Phipps Bend 1	83
	PBP 2	Phipps Bend 2	84
	SNP 1	Sequoyah 1	77
	SNP 2	Sequoyah 2	78
	WBP 1	Watts Bar 1	78
	WBP 2	Watts Bar 2	79
	YCP 1	Yellow Creek 1	83
	YCP 2	Yellow Creek 2	84
TUG		Texas Utilities Generating Co.	
	CPS 1	Comanche Peak 1	79
	CPS 2	Comanche Peak 2	82
TEC		Toledo Edison Company	
	DBS 1	Davis-Besse 1	76
	DBS 2	Davis-Besse 2	83
	DBS 3	Davis-Besse 3	85
UEC		Union Electric Co.	
	CAY 1	Calloway 1	81
	CAY 1	Calloway 2	83
VYC		Vermont Yankee Nuclear Power Corporation	
	VYS 1	Vermont Yankee 1	72

TABLE 8

UTILITY / PLANT / UNIT CODES (Cont'd)

NPRD Utility Code	NPRD Plant/Unit Code	Name	Actual or Estimated Year of Operating License
VEP		Virginia Electric & Power Company	
	SPS 1	Surry 1	72
	SPS 2	Surry 2	73
	SPS 3	Surry 3	83
	SPS 4	Surry 4	84
	NAS 1	North Anna 1	77
	NAS 2	North Anna 2	77
	NAS 3	North Anna 3	80
	NAS 4	North Anna 4	81
WPP		Washington Public Power Supply System	
	WNP 1	WPPSS Nuc. Project 1	80
	WNP 2	WPPSS Nuc. Project 2	78
	WNP 3	WPPSS Nuc. Project 3	81
	WNP 4	WPPSS Nuc. Project 4	82
	WNP 5	WPPSS Nuc. Project 5	83
WEP		Wisconsin Electric Power Co.	
	KNP 1	Koshkonong 1	83
	KNP 2	Koshkonong 2	84
WMP		Wisconsin Michigan Power Company	
	PBH 1	Point Beach 1	70
	PBH 2	Point Beach 2	71
WPS		Wisconsin Public Service Corporation	
	KNP 1	Kewaunee 1	73

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

NOTE: If the required vendors are not included in Table 9, list them and submit the list to the NPRD system contractor. The NPRD system contractor will assign reference numbers and return the list for use. The additional vendors and associated reference numbers will be included on the next update of Table 9.

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
A005	A AND A MANUFACTURING CO.
A010	A. R. T. RESEARCH CORP.
A015	A.P.V. COMPANY, INC.
A020	AAH NUCLEAR CORP.
A021	ABBOTT
A022	ABANA PRODUCTS, INC.
A023	ABCO WELDING & INDUSTRIAL CO.
A024	ABLE SCALES CO.
A025	ACCELERATORS, INC.
A026	ACCO-ELECTRO MECHICAL DIVISION
A028	ACE CONTROLS
A030	ACCURATE ENGINEERING CO.
A031	ACID PRODUCTS CO. INC.
A032	ACF INDUSTRIES INC.
A033	ACME WELDING - DIV OF UNITED TOOL AND DIE.
A034	A-C PIPE CO.
A035	ACME IND
A036	ACORN PIPE AND IRON WORKS
A037	ACS INDUSTRIES INC.
A038	ACOPIAN
A040	ACTON ENVIRONMENTAL TESTING CORP.
A045	AD-O-PLASTIC
A050	ADAM, FRANK
A055	ADAMS & WESTLAKE
A060	ADAMS, R. P. CO., INC.
A063	ADAPTO STEEL PRODUCTS
A065	ADE CORP.
A070	ADELPHI INDUSTRIES
A072	ADSCO DIV. (YUMA)
A075	ADVANCED PRODUCTS CO.
A077	ADVANCED TESTS AND INSPECTIONS, INC.
A078	ADVANCE EQUIPMENT
A080	AEG TELEFUNKEN
A085	AERMOTOR
A089	AEROFIN CORP.
A090	AERO RESEARCH CO
A095	AEROJET MANUFACTURING CO.
A100	AEROQUIP CORP.
A102	AEROPROCESS, INC
A105	AEROTEST OPERATIONS
A108	AFFILIATED STEAM EQUIPMENT CO.
A109	AGASTAT RELAY CO.
A110	AEROVENT FAN
A111	AILTECH
A112	AETNA MACHINE CORPORATION
A113	AIR CORRECTION DIV, UNIVERSAL OIL
A114	AIR-MAZE DIV. (ROCKWELL STANDARD)
A115	AIR PREHEATER COMPANY
A116	AIR FILTER AND EQUIPMENT CO.
A117	AIR CONTROL INCORPORATED
A118	AIR MONITOR CORP.
A119	AIRMATIC VALVE INC
A120	AIR PRODUCTS & CHEMICALS INC.
A121	AIRPAX
A123	AIRPAC ELECTRONICS
A125	AIR-TEC, INC.
A127	AIRCO LABORATORY
A130	AIRCO SPEER CARBON-GRAPHITE DIV.
A135	AIRCO TEMESCAL
A140	AIRCO CRYOPLANTS CORP.
A142	AIRCO WELDING SUPPLY
A144	ALABAMA PIPE CO.
A145	AITKEN PROD
A146	ALBANY PRODUCTS
A147	ALBERT PIPE & SUPPLY
A148	ALBI MFG.-CITIES SERVICE CO.
A149	ALCATEL VACUUM PRODUCTS
A150	AJAX IRON WORKS
A151	ALABAMA POWER COMPANY
A152	ALCO ENGINE DIVISION, WHITE IND.
A153	ALL BORO METAL PRODUCTS CO.
A154	ALEXANDER CHEMICAL CO.
A155	ALLEGHENY LUDLUM STEEL CORP.
A156	ALEXANDER VACUUM RESEARCH, INC.
A157	A-LINED HANDLING SYSTEM
A160	ALLEN-BRADLEY CO
A164	ALLEN, N. L. CORPORATION
A165	ALLEN-SHERMAN-HOFF
A167	ALLEN, W.D., MANUFACTURING CO.
A169	ALLIED BUILDING SYSTEMS
A170	ALLIED CHEMICAL CORP.
A171	ALLIED CONTROL CO.
A172	ALLIED ENGINEERING & PRODUCTION
A173	ALLIED ELECTRONICS
A175	ALLIED-GULF NUCLEAR SERVICES
A177	ALLIED STRUCTURAL STEEL
A178	ALLIED RADIO
A180	ALLIS CHALMERS
A185	ALLIS, LOUIS
A186	ALLOY FLANGE AND FITTING CO.
A187	ALLOY MACHINES
A188	ALLOY RODS
A189	ALLOY STAINLESS PRODUCTS CO.
A190	ALLOY STEEL PRODUCTS CO
A191	ALLOY SLING CHAINS, INC.
A194	ALL-STAINLESS PRODUCTS CO.
A195	ALLSTATES DESIGN & DEVELOPMENT CO.
A196	ALMEDA TANK
A197	ALNOR INSTRUMENT CO
A200	ALOYCO, INC.
A205	ALPHA SCIENTIFIC, INC.
A207	ALPHA TANK & METALS MANUFACTURING
A208	ALTEN
A209	ALTO ENGINEERING ASSOCIATES
A210	ALUMINUM CO. OF AMERICA
A211	AMAX
A213	AM AND M, INC.
A214	AMBER/BOOTH CO.
A215	AMF BEAIRD, INC.
A217	AMELCO ELECTRIC CO., INC.

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
A220	AMERICAN AIR FILTER CO., INC.
A225	AMERICAN ATOMICS CORP.
A230	AMERICAN BEARING
A235	AMERICAN BLOWER CORP
A237	AMERICAN BOILER & TANK CO.
A238	AMERICAN BOSCH DIV, ARMA CORP.
A240	AMERICAN BRIDGE
A242	AMERICAN CAST IRON PIPE CO.
A245	AMERICAN CHAIN AND CABLE COMPANY
A250	AMERICAN ENGINEERING
A255	AMERICAN FOUNDRY & FURNACE
A260	AMERICAN GAS & CHEMICALS INC.
A265	AMERICAN GAS ACCUM
A270	AMERICAN INSTRUMENT CO.
A275	AMERICAN LAFRANCE
A280	AMERICAN LEWA, INC.
A285	AMERICAN MACHINE & FOUNDRY COMPANY
A290	AMERICAN MANGANESE DIV
A295	AMERICAN MARSH PUMPS
A300	AMERICAN METAL CLIMAX, INC.
A302	AMERICAN MONORAIL, INC.
A305	AMERICAN OPTICAL CORP.
A306	AMERICAN PAMCOR,INC.
A309	AMERICAN SMELTING AND REFINING CO.
A310	AMERICAN STANDARD INDUSTRIES
A310	AMERICAN STD
A315	AMERICAN STEAM CONVEYOR
A320	AMERICAN STEAM PUMP
A322	AMERICAN STEEL & ALUMINIUM CO.
A325	AMERICAN TEL & RADIO
A330	AMERICAN TOOL WORKS
A335	AMERICAN TRANSFORMER
A340	AMERICAN WARMING & VENTILATING INC.
A345	AMERICAN WELL WORKS
A350	AMERON
A355	AMERSHAM/SEARLE CORP.
A357	AMERTAP CORPORATION
A360	AMES CO.
A365	AMETEK/CALMEC
A366	AMINCO
A367	AMLAB INC.
A368	AMOT CONTROL CORP
A370	AMPEREX ELECTRONIC CORP.
A375	AMPEX CORP.
A380	AMPHENOL
A382	AMP SPECIAL INDUSTRIES
A384	ANACONDA AMERICAN BRASS CO.
A385	ANACONDA WIRE AND CABLE CO.
A387	ANAMET LABORATORIES
A390	ANCHOR ALLOYS INC.
A392	ANCHOR EQUIPMENT CO.
A394	ANCHOR PACKING CO.
A395	ANCHOR VALVE CO.
A400	ANDALE COMPANY
A405	ANDERSON ELEC CORP
A410	ANDERSON, C. J.
A415	ANDERSON, GREENWOOD & CO.
A416	ANDERSON SUPPLY CO., INC.
A417	ANDERSON, V. D.
A420	ANDONIAN CRYOGENICS INC.
A425	ANISTICS INC.
A427	ANNIN CO.
A430	ANSUL CHEMICAL
A435	API INSTR CO
A437	APPARATUS SERVICE CO.
A440	APPLETON
A445	APPLIED DYNAMICS, INC.
A450	APPLIED HEALTH PHYSICS, INC.
A455	APPLIED NUCLEONICS COMPANY, INC.
A460	APPLIED RADIATION CORP.
A465	APPLIED SYSTEMS CORP.
A466	A.P.V. COMPANY, INC.
A470	AQUA CHEM, INC.
A471	ARCOS CORPORATION
A472	ARKANSAS POWER & LIGHT COMPANY
A473	ARAGON ENGINEERING CO.
A474	ARGONNE NATIONAL LAB
A475	ARI INDUSTRIES, INC.
A478	ARIZONA GEAR
A480	ARMCO STEEL CORP.
A485	ARMSTRONG MACH
A488	ARMOR
A490	ARROWHEAD
A492	ARRON,HART & HEGEMAN
A495	ARTISAN INDUSTRIES INC.
A498	ASBESTOS AND MAGNESIA MATERIALS CO.
A500	ASEA ELECTRIC, INC.
A501	ASHCROFT GAUGE
A502	ASHCROFT SWITCH
A504	ASHLAND PETROLEUM CO.
A505	ASSEMBLY PRODUCTS INC
A506	ASSOCIATED INSTRUMENTS
A507	ASSOCIATED CONTROL EQUIPMENT
A508	ASSOCIATED INSULATION
A510	ASSOCIATED PIPING & ENGINEERING CORP.
A511	ASSOCIATE RESEARCH INC.
A512	ASSOCIATED SPRING CORP.
A513	ASSOCIATED PRODUCTS CONTROL
A515	ASTRO INDUSTRIES, INC.
A520	ASTRO-ARC CO.
A525	ATCOR, INC.
A532	ATEC, INC.
A535	ATKOMATIC VALVE CO., INC.
A540	ATLAS CAR & MANUFACTURING CO., THE
A545	ATLAS CORP.
A550	ATLAS INDUSTRIAL MANUFACTURING COMPANY
A555	ATMOSPHERIC SCIENCES, INC.
A557	ATOMATIC MANUFACTURING CO.
A560	ATOMERGIC CHEMETALS CO.
A565	ATOMIC DEVELOPMENT CORP.

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
A520	ATOMIC POWER DEVELOPMENT ASSOC. INC.
A525	ATOMIC PRODUCTS CORP.
A580	ATOMICS INTERNATIONAL
A585	ATWOOD & MORRILL CO., INC.
A587	AUL INSTRUMENTS
A590	AURORA PUMP
A594	AUTEC SYSTEMS INC.
A595	AUTO CONTROL
A600	AUTO ELECTRIC
A605	AUTO SPRINKLER CORP
A607	AUTOMATED HANDLING SYSTEMS, INC.
A610	AUTOMATIC SWITCH COMPANY (ASCO)
A611	AUTOMATIC TIMING AND CONTROL INC.
A613	AUTOMATIC VALVE COMPANY
A615	AUTOCALI
A620	AUTOCLAVE ENGINEERS, INC.
A625	AUTOCON INDUSTRIES
A627	AUTOMATIC HANDLING SYSTEMS
A629	AUTOMATIC INDUSTRIES INC.
A630	AUTOMATIC MANUFACTURING CO.
A640	AUTOMATION INDUSTRIES INC.
A645	AUTOMATION PRODUCTS, INC.
A650	AUTOMATION/CONAM
A655	AUTOVENT FAN
A660	AVCO CORP.-TULSA OPERATION
A661	AVERY, P. F. CORPORATION
A662	AVTEL CORPORATION
A664	AXISCO CORPORATION
A665	AXIAL CORP.
A670	AYCOCK, INC.
B003	B. & H. ENGINEERING, INC.
B004	B & B INSTRUMENTS
B005	B-K CONTROLLER
B010	BABCOCK & WILCOX CANADA LTD.
B015	BABCOCK & WILCOX COMPANY
B020	BABCOCK & WILCOX TUBULAR PRODUCTS
B025	BABCOCK ELECTRONICS CORP.
B030	BABCOCK-PERSTA
B042	BACHARACH INSTRUMENT COMPANY
B033	BACON TANK & MFG. CO.
B034	BADGER EXPANSION JOINT
B035	BADGER METER CO
B037	BAHNSON SERVICE CO.
B040	BAILEY INSTRUMENT CO., INC.
B045	BAILEY METER COMPANY
B047	BAILEY, CHARLES W., COMPANY
B050	BAIRD ATOMIC INC.
B055	BAKER CASTOR OIL CO.
B059	BALDWIN LABORATORIES INC.
B060	BALDOR ELECTRIC
B062	BALDWIN - LIMA - HAMILTON CORP.
B063	BALTIMORE GAS & ELECTRIC COMPANY
B064	BARBER, W.H., CHEMICAL CO.
B065	BARKER, JAMES J. CONSULTING SERVICE
B066	BARBER-COLMAN CO.
B070	BARKSDALE VALVE COMPANY
B075	BARNEBEY-CHENEY
B076	BARNES, JOHN,-CORP.
B077	BARRETT-HAENTJENS CO.
B080	BARTON INSTRUMENT CO.,DIVISION OF ITT
B085	BASCO, INC.
B090	BASIC TECHNOLOGY, INC.
B093	BASLER ELECTRIC
B095	BATES STEEL TRUSS
B100	BATH IRON WORKS
B105	BAUSCH & LOMB, INC.
B110	BAY CITY TRACTION
B115	BAYLEY, W.
B120	BEACH-RUSS CO.
B125	BEAUMONT MFG
B130	BECHTEL CORP.
B135	BECKMAN INSTRUMENTS, INC.
B138	BEEVER, ALBERT JR. CO.
B140	BEFFEL LIGHTING
B145	BELCO POLLUTION CONTROL CORP.
B150	BELFAB/BAILEY METER CO.
B155	BELFAB, INC.
B160	BELL & GOSSETT
B165	BELL AND HOWELL
B170	BELL, INC., F.W.
B175	BELLEFONTAINE BRIDGE
B177	BELLOWS-VALAIR
B178	BELLOVE CO
B180	BELMONT IRON
B185	BELMONT SMELTING & REFINING WORKS, INC.
B187	BEN BRUNDAGE CO
B190	BENDER HARRICK
B195	BENDIX AVIATION
B200	BENDIX CORP., THE
B202	BENDIX PROCESS INSTRUMENTS DIVISION
B203	BENFIELD ELECTRIC
B205	BENJAMIN ELEC MFG CO
B208	BENTLEY NEVADA
B210	BERGEN & PATTERSON
B213	BERKLEY PUMP CO
B215	BERKELEY NUCLEONICS CORP.
B216	BERKELEY STEEL CONSTRUCTION CO.
B217	BERLIN CHAPMAN
B218	BERLIN STEEL CO.
B220	BERTRAM CO, H. P.
B222	BERTAN ASSOCIATION INC.
B225	BEST ELECTRO CONTROLS
B230	BETA CORP.
B231	BETHEA CO. INC.
B232	BETHLEHEM FOUNDRY AND MACHINE CO.
B235	BETHLEHEM STEEL
B237	BETTIS CORPORATION
B240	BIACH INDUSTRIES, INC.
B245	BICRON CORP.
B250	BIF

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
B255	BIN-DICATOR
B260	BINGHAM PUMP CO
B265	BINGHAM-WILLAMETTE CO.
B270	BIO-RAD LABORATORIES
B275	BIONUCLEAR
B277	BIRD MACHINE
B280	BISHOPRIC PRODUCTS CO., THE
B283	BLACK & DECKER
B285	BLACK & VEATCH CONSULTING ENGINEERS
B290	BLACK-SIVALS-BRYSON
B295	BLACK, SIVALLS & BRYSON, INC.
B300	BLACKBURN-JASPER CORP
B305	BLACKBURN, INC., P. W.
B310	BLACKMER PUMP
B315	BLAW-KNOX CHEMICAL PLANTS, INC.
B320	BLH ELECTRONICS, INC.
B325	BLICKMAN, INC., S.
B328	BLUE, JOHN CO DIVISION- SUBSCRIPTION TV
B330	BLUME, JOHN A. & ASSOC.
B335	BODENDIECK TOOL
B338	BODINE ELECTRIC CO
B340	BOEING COMPUTER SERVICES, INC.
B341	BOEING CO., THE
B342	BOEN TOOL & DYE CO.
B343	BOHN ALUMINUM-BRASS CO.
B345	BONNEY FORGE DIV.
B350	BORG-WARNER CORP.
B355	BORIDE PRODUCTS, INC.
B357	BOSTON EDISON COMPANY
B360	BOSTON GEAR WORKS
B365	BOSTON INSULATED WIRE & CABLE CO.
B367	BOSTON METAL DOOR CO.,INC.
B368	BOSTON PIPE & FITTINGS, INC.
B370	BOVEE & CRAIL CONSTRUCTION CO.
B375	BOWSER IND
B380	BRADLEY CORPORATION
B381	BRAMAN-DOW CO.
B385	BRAM METALLURGICAL-CHEMICAL CO.
B387	BRAND INSULATION INC.
B390	BRANDYWYNE INDUSTRIES, INC.
B392	BRASCH MFG.
B395	BRAUN & CO., C.F.
B400	BRAUNLICH-ROESSLER COMPANY
B403	BREWER ENGINEERING LABORATORIES, INC.
B405	BRICE-HAYES CO
B408	BRIDGEPORT TESTING
B410	BRIDGES ELEC
B412	BRIGGS ELECTRIC SWITCHBOARD CO.
B415	BRISTOL
B420	BROBECK & ASSOCIATES, WILLIAM M.
B425	BROKAW, R. T.
B430	BROOKLINE INSTRUMENT CO., INC.
B435	BROOKS & PERKINS, INC.
B440	BROOKS INSTRUMENT COMPANY
B445	BROOKS ROTAMETER

REF NO.	VENDOR
B450	BROWN & ROOT INC.
B453	BROWN & SHARPE
B455	BROWN BOVERI
B460	BROWN FINTUBE CO
B465	BROWN INSTRUMENT DIV
B470	BROWN MINNEAPOLIS TANK & FABRICATING CO
B475	BROWN, DAYTON T. INC.
B480	BROWNE-MORSE
B485	BRUCE GM DIESEL, INC.
B486	BRUSH WELLMAN INC.
B487	BS & B SAFETY CO.
B490	BTU ENGINEERING CORP.
B495	BUCHANAN STEEL PRODUCTS
B500	BUDA DIV
B505	BUEHLER CORP., THE
B510	BUELL ENGINEERING CO
B515	BUFFALO FORGE
B517	BUFFALO PUMPS
B520	BUFFALO TANK
B522	BUFFALOW'S IND'L REFRIG'N SERVICE
B525	BUILDERS-PROVIDENCE
B530	BUILDERS, ROY L.
B535	BULLDOG BOLT
B540	BULLDOG ELEC PROD DIV
B541	BUMSTEAD, WOOLFORD & RILEY
B542	BUNKER HILL
B545	BUNTING, BRASS & BRONZE CO.
B550	BURGESS BATTERY
B555	BURGESS INDUSTRIES
B560	BURGESS-MANNING
B562	BURLING
B565	BURNDY CORP
B567	BURNS & NOVIA
B570	BURNS AND ROE, INC.
B572	BURNS ENGINEERING
B573	BURR BROWN
B574	BUSCH COMPANY
B575	BUTLER
B576	BURREN TRANSFER
B580	BYRON JACKSON PUMPS, INC.
C005	C. J. ENTERPRISES
C010	C.V.I.
C015	C-COR ELECTRONICS, INC.
C020	C-E IN-VAL-CO
C021	CABOT CHEMTROL
C022	CABLE KING
C025	CADILLAC MACHINE
C030	CALATOMIC, INC.
C031	CALIFORNIA BIONUCLEAR CORP.
C032	CALCOR SPACE FACILITY
C033	CALGON CORP
C034	CALIFORNIA INSTRUMENT CO.
C035	CALUMET & HECLA CORP.
C036	CALIMATIC
C040	CALVERT

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
C045	CAMBRIDGE FILTER CORP.
C050	CAMBRIDGE NUCLEAR RADIOPHARMACEUTICAL CORP
C052	CAMBRIDGE THERMONIC CORP
C053	CARRIER DEHLER
C055	CAMCO FITTINGS CO.
C057	CAMERADIO COMPANY
C060	CAMERON IRON WORKS, INC.
C064	CAMPBELL CONSTRUCTION
C065	CANADIAN STEEL FOUNDRIES
C070	CANBERRA INDUSTRIES, INC.
C075	CANNON ELECTRIC - ITT
C080	CANNON TOOL CO.
C082	CAPE ANN TOOL CO.
C085	CAPINTEC INC.
C086	CAPITAL FIRE EQUIPMENT CO.
C088	CAPITOL LIGHT & SUPPLY CO.
C090	CAPITOL MANUFACTURING CO.
C095	CAPITOL PIPE & STEEL PRODUCTS, INC.
C098	CAPITAL WESTWARD INC.
C100	CAR-BEE INC
C105	CARBOLINE CO.
C110	CARBON STEEL PRODUCTS CORP.
C115	CARBORUNDUM CO.
C120	CARD KEY SYSTEMS
C125	CARDOX CORP
C130	CARGOCAIRE ENGINEERING CORP.
C132	CARLISLE TIRE AND RUBBER CO.
C135	CARLSON, INC., G. O.
C136	CARNES COMPANY
C137	CARMAN INDUSTRIES, INC.
C138	CAROLINA POWER & LIGHT COMPANY
C139	CAROLINA INDUSTRIAL PIPING
C140	CARPENTER TECHNOLOGY CORP.
C141	CARPENTER STEEL
C143	CARR CO.
C145	CARRICK ENGINEERING
C150	CARRIER CORP
C151	CARRIER MFG.CO.,INC.
C155	CARTER MOTOR CO
C160	CASCADE PUMP
C162	CASH,A.,&
C165	CATALYTIC INC.
C167	CATALYTIC PRODUCTS INTERNATIONAL
C168	CATCHING ENGINEER
C170	CATERPILLAR TRACTOR
C172	CBI NUCLEAR COMPANY
C173	C&D BATTERIES, DIVISION OF ELTRA CORP.
C175	CECO STEEL PROD CORP
C180	CELESCO
C182	CENTER - LINE INC.
C183	CENTRALAB
C184	CENTRAL PIPE & FITTINGS
C185	CENTRAL RESEARCH LABORATORIES, INC.
C190	CENTRAL SCIENTIFIC CO.
C191	CENTRAL STATES PIPE
C192	CENTRAL STEEL AND WIRE
C193	CENTRAL SWITCHBOARD CORPORATION
C194	CENTRI MASTER
C195	CENTRIFIX DIV.
C200	CENTURY ELECTRIC
C202	CENTURY INSTRUMENTS
C205	CERADYNE, INC.
C210	CERAMASEAL, INC.
C215	CERAMCO INC., CHEMISTS
C217	CERAMIC COOLING TOWER CO.
C220	CERAMTEC INDUSTRIES, INC.
C222	CERRO WIRE & CABLE CO.
C225	CERTIFIED RADIATION INSTRUMENT CO.
C230	CHAIN BELT
C235	CHAMBERS, A. H. & SONS
C240	CHAMPION BLOWER & FORGE CO. INC.
C240	CHAMPION, INC.
C245	CHANCE, A. B.
C250	CHANDLER ENGINEERING CORP.
C253	CHAPIN-HANGS
C255	CHAPMAN VALVE & MFG
C257	CHASE BRASS AND COPPER CO.
C258	CHASE NUCLEAR DIVISION
C260	CHATILLON, JOHN & SONS
C265	CHATTANOOGA BOILER AND TANK CO.
C268	CHEFLEX
C270	CHEM-NUCLEAR SYSTEMS, INC.
C275	CHEM-TROL CORP
C277	CHEMICAL AND POWER PRODUCTS, INC.
C280	CHEMAPEC, INC.
C284	CENTRALAB
C285	CHEMETRON CORP.
C290	CHEMICAL SEPARATIONS CORP.
C295	CHEMIQUIP PRODUCTS CO., INC.
C297	CHEMPRO SEALOL
C300	CHEMPUMP CORP
C305	CHEMTREE CORP.
C307	CHICAGO BLOWER CORP.
C310	CHICAGO BRIDGE AND IRON COMPANY
C311	CHICAGO FLUID POWER
C312	CHICAGO GUARENTEE COMPANY
C313	CHICAGO FITTING CORPORATION
C314	CHICAGO FLY ASH
C315	CHICAGO HEATER
C320	CHICAGO PUMP
C325	CHICAGO SWBD MFG
C326	CHICAGO TRANSPARENT, INC.
C327	CHICAGO TUBE & IRON CO.
C330	CHISHOLM & MOORE MFG
C331	CHOMTRON
C332	CHROMALOX
C333	CHROMATICS CORP.
C334	CHRISTY PARK WORKS
C335	CHROMETICS INC.
C337	CINCINNATI GAS & ELECTRIC COMPANY

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
C338	CIVES CORP.
C339	CIRCLE SEAL
C340	CLARAGE FAN
C342	CLA VAL CO
C345	CLARE, C. P.
C350	CLARK AND WHEELER ENGINEERING, INC.
C355	CLARK BROTHERS
C360	CLARK CONTROLLER
C365	CLARK COOPER
C370	CLARK, FRED C.
C371	CLARK RELIANCE
C372	CLAYTON MFG. CO.
C376	CLEAVER-BROOKS
C377	CLECO PNEUMATIC
C380	CLEMENT ELECTRIC
C382	CLEVELAND BEACON PRODUCTS
C385	CLEVELAND CRANE & ENGG
C390	CLEVELAND PRECISION INDUSTRIES INC.
C395	CLEVELAND SWITCH
C400	CLEVELAND TRAMRAIL
C405	CLEVELAND VIBRATORS
C410	CLIMAX MOLYBDENUM CO. OF MICHIGAN
C415	CLIMET INSTRUMENTS CO.
C418	CLOW CORP.
C420	CLYDE IRON WORKS, INC.
C423	COAST ENGNG. LAB
C425	COBER ELECTRONICS INC.
C430	COCHRAN CORP
C435	COCHRAN ELECTRIC CO
C437	COEN CO.
C440	COGSWELL
C441	COHN ELECTRONICS DIV.
C442	COHU ELECTRONICS
C445	COL-ex CORP.
C447	COLE ENGINEERING INC
C449	COLEMAN, A.R.
C450	COLEMAN SYSTEMS
C451	COLE-PALMER INSTRUMENT CO.
C 52	COLLIER CONSTRUCTION CO.
C455	COLLINS & ASSOC., DON L.
C460	COLONIAL ELEC PROD
C 62	COLONIAL KOLONITE CO.
C463	COLONIAL MACHINE COMPANY
C465	COLORADO RESEARCH CORP
C470	COLT INDUSTRIES, INC.-
C475	COLTS PATENT FIRE ARMS
C480	COLUMBIA ELECTRIC
C485	COLUMBIA RESEARCH CORP.
C486	COLUMBUS TESTING LABORATORIES, INC.
C487	COMBINATION PUMP VALVE CO.
C490	COMBUSTION ENGINEERING, INC.
C493	COMFORT CONTROL
C495	COMMERCIAL FILTERS CORPORATION
C497	COMMANDER STEEL BUILDING SALES CO.
C500	COMMONWEALTH ASSOCIATES INC.
C502	COMMONWEALTH EDISON COMPANY
C504	COMMUNICATIONS & CONTROL CO.
C505	COMMUNICATION EQUIP
C506	COMPUDYNE CORP.
C507	COMSTOCK, L. K., CO.
C510	CONAM INSPECTION INC.
C515	CONAX CORP.
C518	CONDEE MILKING MACHINE COMPANY
C520	CONDEC CORP.
C525	CONDIT WORKS, A-C MFG
C526	CONNECTICUT PLUMBING
C527	CONNECTICUT YANKEE ATOMIC POWER CO.
C530	CONOFLOW CORP
C535	CONRAC CORP.
C536	CON-RAD DIV U.S. INDUSTRIES
C537	CONRY F. CONTRACTORS
C540	CONS ASHCROFT HANCOCK
C545	CONS SAFETY VALVE DIV
C550	CONSECO
C555	CONSOLIDATED HALERS
C560	CONSOLIDATED CONTROLS CORP.
C562	CONSOLIDATED EDISON COMPANY
C563	CONSOLIDATED ELECTRODYNAMICS CORP.
C565	CONSOLIDATED ENERGY SERVICES, INC.
C566	CONSOLIDATED LIGHTING CO.
C567	CONSOLIDATED SAFETY RELIEF VALVES
C568	CONSOLIDATED VALVE CORP.
C570	CONST MACH
C572	CONSTRUCTION MANAGEMENT ORGANIZATION
C573	CONSTRUCTION SPEC.
C575	CONSUMERS POWER COMPANY
C580	CONTAINER RESEARCH CORP.
C585	CONTINENTAL BOILER
C586	CONTINENTAL CONCRETE PIPE CO.
C587	CONTINENTAL EQUIP. CO.
C588	CONTINENTAL ELECTRIC CO.INC.
C590	CONTINENTAL OIL CO.
C593	CONTINENTAL SALES & ENGINEERING CO.
C595	CONTINENTAL WIRE & CABLE CORP.
C598	CONTROL ASSOCIATES, INC.
C600	CONTROL COMPONENTS
C605	CONTROL CORP
C610	CONTROL DATA CORP.
C612	CONTROL DIVISION OF AMERACE
C615	CONTROL PRODUCTS CORPORATION
C620	CONTROL TECHNOLOGY CO., INC.
C623	CONTROLLED EQUIPMENT CO.
C625	CONTROLS FOR ENVIRONMENTAL POLLUTION,INC.
C627	COPE, T.J.
C630	CONTROMATICS CORP.
C631	CONVAL INC.
C632	CONVEYOR DYNAMICS INC.
C633	COOPER PENJAX
C634	COOPER-HESSEMER COMPANY
C635	COPES-VULCAN, INC.

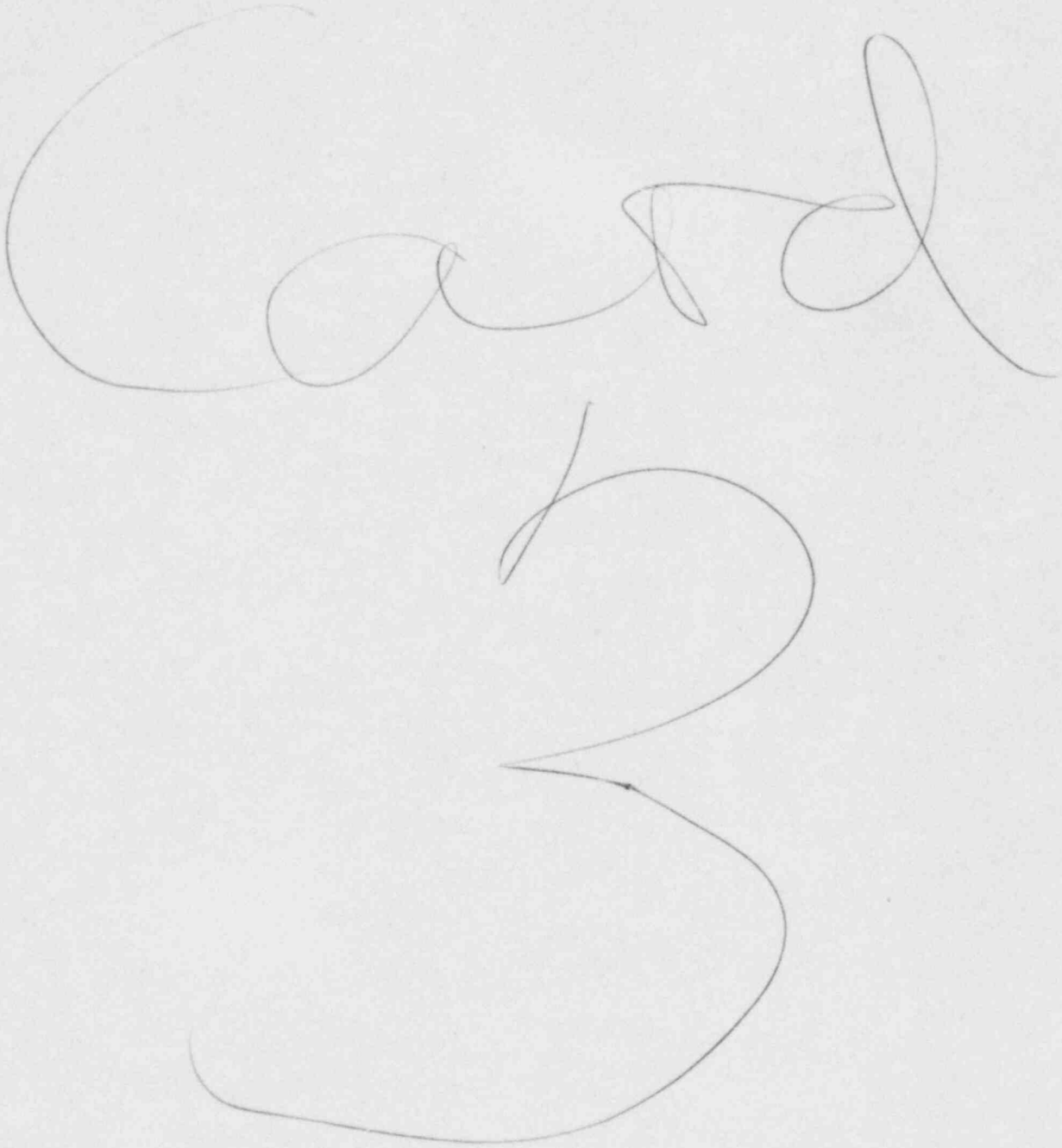


TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
C636	COPPERFIELD STEEL, INC.
C637	COOK, LOREN CO.
C638	COOK IRON STORE
C639	COPPER FITTINGS CO., I.C.
C640	CORBUS ENGINEERING CORP.
C641	COOK
C642	CORDON INT'L CORP.
C643	CORROSTOPPERING INC. = SAHAN CENTURY
C644	CORKEN PUMP CO.
C645	CORY, CHARLES & SON
C646	COOKSON
C647	COTTRELL-RESEARCH-MANSON
C648	COMAC
C649	COMCO
C650	COSMODYNE
C651	COULTER STEEL AND FORGE CO.
C653	COURTNEY ENG. CO.
C654	CRAFTAELL
C655	CRAIG SYSTEMS CORP.
C657	CONAC DYNAMICS LTD.
C660	CRAMER CONTROL CORP
C665	CRANE COMPANY
C666	CRANE DEMING PUMPS
C670	CRANE HOIST ENGINEERING & MFG. CO.
C672	CRANE, JOHN CO.
C675	CRANE MIDWEST FITTING CORPORATION
C680	CRANE-FLOMATICS DIV.
C681	CRANE PACKING CO.
C682	CRANE SUPPLY CO
C683	CRANE TELTOYNE CHEM-PUMP DIVISION
C685	CRAWFORD FITTING CO.
C690	CREUSOT-LOIRE (FRANCE)
C695	CROLL-REYNOLDS ENGINEERING CO., INC.
C700	CRONELL IRON WORKS
C705	CRONELL ZUBLIER
C708	CROA, LEWIS A.
C710	CROSBY VALVE & GAGE CO.
C715	CROSBY-ASHTON GAGE CO.
C720	CROUSE-HINDS
C723	CRUMP, AL
C725	CRYOGENIC ENGINEERING CO. (CRYENCO)
C730	CRYOGENIC TECHNOLOGY, INC.
C735	CULLIGAN INTERNATIONAL
C740	CUMBERLAND RESEARCH CORP.
C742	CUMMINS ENGINE CO., INC.
C743	CUNNINGHAM SUPPLY CO.
C745	CUNO ENGG CORP
C747	CURTIS-WRIGHT
C750	CUSTOM ALLOY CORP.
C753	CUSTOM COMPONENT SWITCHES, INC.
C755	CUSTOM COAT PROD
C760	CUSTOM ENGG CORP
C761	CUSTOM INDUSTRIAL CONTROL
C762	CUSTOM PLASTIC
C763	CUSTOM SWITCHES
C765	CUSTOMLINE CONTROL PRODUCTS, INC.
C770	CUTLER-HAMMER
C775	CUTTER ELEC & MFG
C780	CVI CORP.
C785	CYCLONE FENCE
C790	CYCLOPS CORP.
C795	CYCLOTRON CORP., THE
D005	D'APPOLONIA,E. CONSULTING ENGINEERS,INC.
D007	DAIRYLAND POWER COOPERATIVE
D010	DAMES & MOORE
D011	DANA LABORATORIES
D012	DANIEL INDUSTRIES, INC.
D013	DANIEL BOLT CO.
D015	DANIEL ORIFICE COMPANY
D017	DANKAS, WALTER, COMPANY
D018	DANTO
D020	DARLING VALVE & MANUFACTURING COMPANY
D02[illegible]	D[illegible]-ING-ANCHOR
D0[illegible]	A TECHNOLOGY CORP
D0[illegible]	TEX
D0[illegible]	DETROIT EDISON COMPANY
D037	DAUGHERTY COMPANY INC.
D038	DAVID ROUND AND SON INC.
D040	DAVIS AND WILDER, INC.
D041	DAVIS CONSTRUCTION.
D043	DAVIS METAL PRODUCTS
D045	DAYCO SHEET METAL
D047	DAYSTROM INC.
D048	DAYTON ELECTRIC MFG CO
D050	DE LAVAL SEPARATOR
D055	DE LAVAL TURBINE, INC.
D060	DE ZURICK CORP
D065	DEANS BROS PUMP
D067	DEARBORN RUBBER CORP.
D068	DEARMAN MFG.
D069	DEARBORN WIRE & CABLE CO.
D070	DECATUR PUMP CO
D075	DEFENSE APPAREL NU-CON PRODUCTS
D077	DEGREMONT INC.
D080	DEKORON DIV.
D083	DELAWARE ALLOY FORGE CO.
D085	DEL ELECTRONICS CORP.
D090	DEL MAR ENGINEERING LABORATORIES
D091	DELMARR TRANSMITTER CO.
D092	DELCO CO.
D095	DELLE ARISTRON
D099	DELTA IRON WORKS,INC.
D100	DELTA SOUTHERN CO.
D102	DELTA SWITCH BOARD COMPANY
D105	DELTA-STAR ELEC DIV
D110	DELTRON INC.
D115	DELUXE METAL FURNITURE
D120	DEMING CO
D122	DENISON DIVISION

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
D125	DEPPMANN, H. L.
D128	DESOMATIC PRODUCTS CO.
D130	DETROIT HOIST & MACHINE
D135	DETROIT STEEL CORP
D140	DEUTERIUM CORP.
D142	DEVAR CONNETICUTT
D145	DEVCO ENGINEERING INC.
D147	DEZURIK
D149	DIALCO
D150	DIAMOND POWER SPECIALTY CORP.
D155	DIAMOND SHAMROCK CHEMICAL CO.
D156	DIANO CORP.-NDT PRODUCTS DIV.
D157	DICK,A.B.,CO.
D158	DIETZ
D159	DICKSON COMPANY
D160	DIGITAL EQUIPMENT CORP.
D161	DIGITRAN
D165	DIKEWOOD CORP., THE
D170	DILLON, A. C. & CO., INC.
D175	DINGS MAGNETIC SEP
D176	DIVAC ELECTRONICS
D177	DOLLINGER CORP.
D178	DOLPHIN ENGINEERING CO
D180	DONALDSON COMPANY
D182	DONOVAN SALES CO
D185	DOOR-MAN MANUFACTURING CO.
D190	DORNBLATT & ASSOCIATES, INC.
D195	DOSIMETER CORP.
D200	DOSSERT MFG
D205	DOUGLAS LABS., DONALD W.
D210	DOUGLAS UNITED NUCLEAR, INC.
D212	DOVER CORPORATION
D215	DOW CHEMICAL COMPANY, THE
D220	DOWN RIVER MECHANICAL, INC.
D223	DOWNS CRANE & HOIST CO.
D225	DOWZER ELEC MACH WKS
D230	DOYLE, M. J. CO.
D231	DOYLE AND ROTH MANUFACTURING CO.
D232	DRAGON VALVE, INC.
D235	DRAVER CORP
D237	DRAVO-DOYLE CO.
D240	DRAVO, INC.
D243	DRESSER INDUSTRIAL VALVE & INST. DIV.
D245	DRESSER INDUSTRIES, INC.
D246	DRIERITE, W.A.,HAMMOND,CO.
D247	DSD COMPANY, THE
D248	DRYER DYNAMICS CORP.
D249	DUAL SNAP
D250	DU KANE CORP
D255	DU PONT DE NEMOURS & CO., INC., E.I.
D257	DUKE POWER COMPANY
D260	DUNCAN ELECTRIC
D265	DUNEGAN CORP.
D270	DUNHAM, C. A.
D271	DUQUESNE LIGHT COMPANY
D272	DURAMETALLIC CORP.
D273	DUR-A-FLEX SEAMLESS FLOORS
D274	DURRETT-SHEPPARD CORPORATION
D275	DURIRON CO., INC
D276	DO-ALL MIDWEST CO.
D277	DURO-INSTRUMENT CO
D280	DWIGHT FOOTE, INC.
D282	DWYER
D283	DYNALCO CORP
D285	DYNALECTRON AEROSPACE OPERATIONS
D286	DYNAGE
D287	DYNAMATICS
D289	DYNASCIENCE CORPORATION
D290	DYNATECH R/D CO.
E005	E. B. V. SYSTEMS, INC.
E010	E. G. & G. INC.
E015	E.I.L. INSTRUMENTS COMPANY
E020	EAGLE SIGNAL
E025	EAGLE-PICHER INDUSTRIES, INC.
E030	EANCO, INC.
E035	EARLE EQUIPMENT
E040	EARTH ENVIRONMENT MONITORING
E042	EAST BAY STEEL PRODUCTS, INC.
E044	EASTERN CONTROLS
E045	EASTERN INDUSTRIES
E050	EASTERN SPECIALTIES
E052	EASTER OWENS ELECTRICAL CO
E055	EASTMAN KODAK CO.
E060	EATON METAL PRODUCTS CO.
E062	EATON, YALE & TOWNE INC.
E065	EBASCO SERVICES INC.
E070	EBERLINE INSTRUMENT CORP.
E072	EHKO PIPING SYSTEMS
E073	ECON-O-TROL
E074	ECKART & FINARD CO.
E075	ECO PUMP CORP.
E077	ECO-SCIENCE LAB.
E080	ECODYNE COOLING PRODUCTS CO.
E085	EDLOW INTERNATIONAL CO.
E090	EDWARDS CO
E095	EDWARDS VALVES DIV
E096	EDWARD STAUBER WHOLESALE HARDWARE, INC.
E098	ELASTIC STOP NUT CORP. OF AMERICA-AGAST
E100	ELECTRIC ARC CO.
E105	ELECTRIC COMMUNICATION
E110	ELECTRIC ENGINEERING EQUIPMENT
E115	ELECTRIC MACHINE MFG
E120	ELECTRIC MACHINERY MFG. CO.
E125	ELECTRIC POWER EQUIP
E130	ELECTRIC PRODUCTS
E135	ELECTRIC REGULATOR
E137	ELECTRIC THERMOMETERS, INC.
E140	ELECTRIC SERVICE
E141	ELECTRIC SUPPLY CORPORATION
E141	ELECTRIC SUPPLY CORP.

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
E102	ELECTRO CORPORATION
E105	ELECTRO DEVICES, INC.
E106	ELECTRO-MECHANICS
E107	ELECTRO - MOTIVE DIV. OF G. M.
E108	ELECTRO PRODUCTS
E109	ELECTRO PRODUCTS LABORATORIES
E150	ELECTRO RUST-PROOFING
E155	ELECTRO SWITCH CORP
E160	ELECTRO-MOTIVE DIV.
E165	ELECTROID CO.
E168	ELECTROL, INC.
E170	ELECTROMETER CORP.
E175	ELECTROMODE
E180	ELECTRONIC ASSOCIATES INC.
E185	ELECTRONIC CONTROL
E190	ELECTRONIC COUNTERS CORP.
E193	ELECTRONIC DISTRIBUTORS, INC.
E195	ELECTRONIC ENGINEERING
E200	ELECTRONIC SPACE PRODUCTS, INC.
E202	ELECTROSTATICS
E205	ELECTRONIZED CHEMICALS CORP.
E210	ELECTROSYN TECHNOLOGY LABORATORIES,INC.
E215	ELGIN SOFTENER, INC.
E219	ELLENCO, INCORPORATED
E220	ELLIOTT CO
E222	ELLISON - INSTR.
E225	ELSCINT INC.
E226	ELTRA CORPORATION
E227	ELWOOD NUCLEAR SAFETY
E230	EMANON CO., INC.
E231	EMC
E232	EMERSON ELECTRIC CO.
E233	EMPIRE STEEL CASTING,INC.
E235	EMR-COMPUTER
E240	EMR-PHOTOELECTRIC
E245	EMR-TELEMETRY
E246	ENDEVCO INC.
E247	ENDICOTT FORGING
E250	ENERGY INC.
E255	ENERGY SCIENCES INC.
E259	ENGDAHL ENTERPRISES
E260	ENGELHARD INDUSTRIES
E265	ENGINEERING DATA SYSTEMS, INC.
E270	ENGINEERS AND FABRICATORS, INC.
E275	ENGLISH ELECTRIC
E277	ENPRO
E280	ENSIGN ELECTRIC & MFG
E285	ENVIROGENICS COMPANY
E290	ENVIRONMENTAL ANALYSTS, INC.
E292	ENVIRONMENTAL PRODUCTS
E295	ENVIRONMENTAL RESEARCH CORP.
E300	EON CORP.
E301	EPPERSON & CO.
E302	ERDCO ENGINEERING CO
E305	ERICO PRODUCTS, INC.
E310	ERIE ELECTRIC COMPANY
E312	ERNST GAGE CO.
E315	ESCO CORPORATION
E320	ESCO PRODUCTS
E325	ESSELSTYN-MURPHY-MANF
E327	ESSEX INTERNATIONAL
E328	ESSEX WIRE CORP
E330	ESTERLINE-ANGUS
E335	EST ASSOCIATES, INC.
E340	EUCLID ELEC & MFG
E342	EVANS EQUALIZING CO.
E343	EVANS, GEORGE CO.
E344	EVERS CO.
E345	EX-CELLO CORP
E346	EVER-TITE COUPLING CO., INC.
E350	EXECUTONE INC
E355	EXIDE INDUSTRIAL DIV
E360	EXXON NUCLEAR CO., INC.
E361	FAING-RECORDS & ASSOCIATES
E365	EYERS CO.
F002	F & S CENTRAL
F005	FABOMID, INC.
F007	FACE VALVE CO.
F010	FAIRBANKS MORSE
F013	FAIRCHILD PRODUCTS MILLER
F014	FALCON MARINE CO.
F015	FALK CORP
F020	FANSTEEL, INC.
F025	FARGO MFG CO
F030	FARR CO.
F035	FARRIS ENGINEERING
F037	FARVAL CORPORATION
F040	FASCO INDUSTRIES INC
F045	FED AMER CEMENT & TILE
F046	FEDCO CONTROL
F047	FEDERAL CEMENT PRODUCTS, INC.
F050	FEDERAL ENTERPRISES
F053	FEDERAL-MOGUL CORP.
F055	FEDERAL PACIFIC ELEC
F057	FEDERAL PRODUCTS CORPORATION
F060	FEDERAL SIGN & SIGNAL
F062	FEDERAL STEEL CORP
F065	FEDERAL TEL & RADIO
F067	FEE & MASON
F070	FEMCO, INC
F075	FENESTRA BLDG PROD
F080	FENWAL ELECTRONICS CO.
F081	FENWALL,INC.
F083	FERGUSON MACHINE CO.
F085	FERMONT DIV.
F090	FERRANTI-PACKARD ELEC
F095	FIELD EMMISSION CORP.
F097	FIESE & FIRSTENBERGER MFG COMPANY
F100	FIFTH DIMENSION, INC.
F103	FIKE METAL CO.

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
F105	FILTECH, INC.
F110	FILTERITE CORP.
F112	FINNIGAN, J.J.
F115	FIRST COLONY CORP
F118	FISCHBACH & MATFIELD ELECT CO.(JOINT-VENTU
F120	FISCHER & PORTER CO.
F125	FISHER CONTINENTAL
F128	FLOW TECHNOLOGY INC.
F130	FISHER CONTROLS CO.
F135	FISHER GOVERNOR
F140	FISHER PIERCE DIV
F141	FISHER SCIENTIFIC
F143	FLAGG, C. N. CO.
F145	FLAKICE
F150	FLANDERS FILTERS, INC.
F153	FLEXITALLIC
F155	FLEXONICS DIV.-UOP
F158	FLICK REEDY CORP.
F160	FLINT STRUCTURAL STEEL
F161	FLORIDA BOLT & NUT CO.
F162	FLORIDA POWER CORPORATION
F163	FLORIDA POWER & LIGHT COMPANY
F164	FLOWLINE CORP.
F165	FLUID DYNAMICS
F166	FLOMATICS
F167	FLUID CONTROLS CORP.
F168	FLOW MEASUREMENT SYSTEMS
F169	FLUID KINETICS CORPORATION
F170	FLUOR POWER INC.
F171	FLUOROCARBON CO.
F172	FMC CORP.
F173	FLUID LINE ENGINEERING, INC.
F174	FOSTER, L. B. CO.
F175	FOSTER WHEELER
F176	FLOW PRODUCTS
F180	FOXBORO CO., THE
F181	FRABIMOR EQUIPMENT & CONTROL
F183	FRAM CORP.
F185	FRAMATOME (FRANCE)
F190	FRANKLIN ELECTRIC
F195	FRANKLIN INSTITUTE RESEARCH LABORATORIES
F200	FRANKLIN MILLER, INC.
F202	FRASSE, PETER A., & CO. INC.
F203	FRAY WELDING CO.
F204	FRED L. TOURTELOT COMPANY
F205	FREDERICK & CO
F206	FREESEN BROTHERS INC.
F207	FREIDMAN, A. J. SUPPLY
F210	FREQUENCY CHANGE
F212	FROMSEN HEAT TRANSFER LTD (CANADA)
F213	FROST ENGINEERING
F215	FRUEHAUF TRAILER
F220	FUEL MANAGEMENT CORP.
F225	FUEL TRAC
F227	FULFLO SPECIALTIES
F229	FULLER-AUSTIN INSULATION CO.,INC.
F230	FULLER CO
F231	FULTON SHIPYARD
F232	FULTON SYLPHONE CO.
F234	FURNAS ELECTRIC CO.
F235	FYR-FYTER CO
G005	G&W ELEC SPECIALTY
G010	GAI-TRONICS CORP
G012	GALE ALLOY CORP.
G015	GALIGHER CO
G017	GALLAND-HENNING
G020	GAMAH DIV.
G025	GAMMA INDUSTRIES, INC.
G040	GAMMA PROCESS CO., INC.
G035	GARDNER-DENVER
G038	GARRETT BRASS
G040	GARLOCK, INC
G042	GARRETT FLUID COMPONENTS
G043	GATEWAY - CHILSTROM
G044	GATE CITY STEEL
G045	GAULIN CORP.
G046	GAST MANUFACTURING CORPORATION
G047	GAYNES
G048	GELMAN INSTRUMENT CO.
G050	GEMS, INC.
G055	GEN AMER TRANS CORP
G060	GEN DEVICE & FITTING
G063	GENERAL ATOMIC CO.
G065	GENERAL CABLE CORP.
G070	GENERAL CONCRETE CO
G075	GENERAL DYNAMICS
G080	GENERAL ELECTRIC CO.
G085	GENERAL ENERGY RESOURCES, INC.
G090	GENERAL EQUIPMENT & MFG
G095	GENERAL FIREPROOFING
G098	GENERAL IONICS
G099	GENERAL METERS AND CONTROL COMPANY
G100	GENERAL MOTORS
G105	GENERAL NUCLEAR INC.
G110	GENERAL PHYSICS CORP.
G112	GENERAL PRECISION INC.
G115	GENERAL RADIO
G120	GENERAL RAILWAY SIGNAL
G125	GENERAL REGULATOR CORP
G130	GENERAL TRANSDUCER
G132	GEORGIA POWER COMPANY
G135	GEOSCIENCE, LTD.
G140	GEOTECH
G145	GIBBS & HILL, INC.
G150	GILBERT ASSOCIATES, INC.
G152	GILBERT MANUFACTURING COMPANY
G153	GIMBEL MACHINE WORKS
G154	GIRDLER FOUNDATION & EXPLORATION CO.
G155	GLADSTONE LABORATORIES, INC.
G159	GLEASENER-MARDWELL COMPANY

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
G160	GLEASON REEL & CO
G165	GLEASON, J. L. & CO
G166	GLEN CONTROLS INC
G167	GODDARD MANUFACTURING CORP.
G168	GOLDEN GATE SWITCHBOARD COMPANY
G170	GOLLOH ANALYTICAL SERVICE CORP.
G173	GOODALL RUBBER CO.
G175	GORDON, CLAUD S. CO.
G180	GORMAN RUPP
G185	GOULD-NATIONAL BATT
G190	GOULDS MANUFACTURING
G195	GOULDS
G200	GOULDS PUMPS INC.
G202	GPE CONTROLS
G205	GRACE, W. R., COMPANY
G206	GRACO INCORPORATED
G208	GRAPHICS CONTROLS CORP.
G209	GRAPHICS DIVISION
G210	GRAHAM MANUFACTURING
G213	GRAHAM WHITE SALES CORP.
G214	GRANT GEAR WORKS
G215	GRAVER TANK & MFG. CO.
G220	GRAVER WATER CONDITIONING CO.
G223	GRAYHILL
G225	GRAY TOOL CO.
G240	GRAYBAR ELEC CO, INC
G232	GRAYWOOD
G235	GREAT LAKES CARBON CORP.
G237	GREAT LAKES DREDGE & DOCK CO.
G240	GREEN FUEL ECONOMIZER
G245	GREEN, S. M. CO
G246	GREENE, ARNOLD
G247	GREENVILLE TUBES
G249	GRESEN MANUFACTURING CO.
G250	GREER HYDRAULICS, INC.
G251	GREFCO,INC.
G252	GREKE HEATING CO.
G253	GREGORY SALISBURY METAL PRODUCTS,INC.
G254	GRIFFIN PIPE PRODUCTS
G255	GRINNELL CORP.
G256	GRINNELL FIRE PROTECTION
G257	GRINNELL INDUSTRIAL PIPING, INC.
G260	GRISCOM-RUSSELL
G263	GRITS BROS. MFG.CO.
G265	GROVE VALVE AND REGULATOR CO.
G270	GROVER WATER COND CO
G272	GTE SYLVANIA INC.
G273	GUARDIAN ELECTRIC
G274	GUILBERT,INC.
G275	GUINARD PUMP COMPANY
G280	GULF COMPUTER SCIENCES INC.
G285	GULF DEGREMONT INC. *SEE D077
G290	GA ELECTRONIC SYSTEMS DIV.
G295	GULF ENERGY & ENVIRONMENTAL SYS-TRIGA RCTR
G300	GA ENVIRONMENTAL SYSTEMS DIV.
G305	GULF GENERAL ATOMIC, INC. *SEE G063
G306	GULF OIL CORP.
G307	GULF STATES TUBE CORP.
G308	GULF SUPPLY
G310	GULF UNITED NUCLEAR FUELS CORP.
G315	GULTON INDUSTRIES, INC.
G316	GUNTERT AND ZIMMERMAN
G317	GUMPERT, R.T.
G318	GUNDERSON BROTHERS ENGINEERING COMPANY
G320	GUTH, EDWIN
H005	HACH CHEMICAL CO
H007	HACKNEY IRON & STEEL CO.
H010	HAGAN CHEM & CONTROLS
H015	HAGAN CONTROLS
H020	HAGAN/COMPUTER SYSTEMS
H022	HAGER, WM
H023	HAIG CO.
H024	HAJOCA CORPORATION
H025	HAMILTON MANUFACTURING CO.
H026	HALF FORDEN ASSOCIATED
H027	HALLER TESTING LAB.
H030	HAMILTON, G. V.
H032	HAMLIN
H035	HAMMEL DAHL
H037	HANCOCK CO.
H040	HANDLEY-BROWN
H041	HANKISON CORP
H042	HANSEN SUPPLY
H045	HARLO CORP
H046	HARNISCHFEGER CORPORATION
H050	HARPER ELECTRIC FURNACE CORP.
H055	HARPER INC. - ITT
H060	HARRISON MANUFACTURING CO.
H065	HARSHAW CHEMICAL CO.
H070	HARSHMAN ASSOCIATES, INC.
H073	HARTFORD VALVE & FITTING CO.
H075	HARTMAN, WM E.
H080	HARTY, R. V. DIV.
H081	HARTZELL PROPELLER FAN CO.
H085	HARVESTORE PROD, INC
H087	HARVILL CO.
H090	HARWOOD, INC
H095	HARZA, L. F. ENGG
H097	HASKEL ENGINEERING
H098	HASKELL, WM. CO.
H100	HATHAWAY INSTRUMENT
H101	HATTER, N.J.
H102	HAUGHTON ELEVATOR CO.
H105	HAUSERMAN, E. F. CO
H110	HAVEN-BUSCH CO
H112	HAWBY FORGE CO.
H115	HAWS DRINKING FAUCET CO.
H118	HAYDEN COMPANY
H120	HAYDEN MFG
H125	HAYES CORP.

TABLE 9

VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
H127	HAYWARD TYLER
H130	HEALEY, W. F. & ASSOC
H135	HEALTH PHYSICS ASSOCIATES LTD.
H137	HEALY RUFF CO.
H138	HEISE BOURDON TUBE CO.
H139	HELGESON NUCLEAR SERVICES INC.
H140	HELICOID GAGE CORP.
H141	HEINEMANN ELECTRIC CO.
H142	HECO PACIFIC
H144	HENDERER
H145	HENDRIX WIRE & CABLE
H146	HENRY NEAGARD AND CO.
H147	HENRY, J. J. CO.
H150	HENSCHEL CORP
H152	HERRON TESTING LABORATORIES INC.
H155	HERTNER, H. H. ELEC
H157	HEVI-DUTY ELECTRIC CO.
H160	HEWITT-ROBINS, INC
H165	HEWLETT-PACKARD CO.
H167	HEX INDUSTRIES, INC.
H170	HEYL-PATTERSON, INC
H175	HI-PURITY MATERIALS, INC.
H180	HI-SHEAR CORP.
H185	HI-VOLTAGE EQUIP
H187	HICKEY,FRED
H190	HIGH VOLTAGE ENGINEERING CORP.
H192	HILLERY, H. R. CO.
H193	HILLIARD CO.
H195	HILLS-MCCANNA CO.
H197	HILTI FASTENING SYSTEMS
H200	HITACHI ELECTRIC
H205	HITCO-MATERIALS DIV.
H210	HITTMAN NUCLEAR & DEVELOPMENT CORP.
H215	HOFFMAN INDUSTRIES
H220	HOFFMAN INTERNATIONAL, INC.
H225	HOIST EQUIPMENT, INC.
H230	HOKE, INC.
H232	HOLLERAN, M. J., INC.
H235	HOLLISTER-WHITNEY
H240	HOLMES & NARVER, INC.
H245	HOLOBEAM INC.
H250	HOLOSONICS, INC.
H252	HOLT BROTHERS
H255	HOLTZER-CABOT ELEC
H257	HOMESTEAD INC. - VALVE DIV.
H260	HONEYWELL CORPORATION
H262	HOUSE OF STAINLESS STEEL INC.
H265	HOUSTON INSTRUMENT CO.
H266	HOWARD, C.E. CORPORATION
H267	HOWARD H. H. COMPANY
H270	HOWE-RICHARDSON SCALE
H275	HOWELL ELEC MOTORS
H278	HOYT-GRANT CO.
H280	HR FILTERS
H285	HRB
H290	HRUDEN LABORATORY PRODUCTS
H295	HUBBARD & CO
H300	HUGHES ELECTRONICS
H305	HUICO, INC.
H309	HUNT, C.B. & SON
H310	HULL ASSOCIATES
H311	HUTCHINSON & GUNTER
H312	HUMPHREY ELEVATOR & TRUNCK COMPANY
H313	HUNT, RODNEY CO.
H314	HUNTINGTON ALLOY CO.
H315	HUNGERFORD & TERRY, INC
H316	HUNT, ROBERT W.
H317	HUSSMAN SAN FRANCISCO, INC.
H318	HURON INDUSTRIES
H319	HUSKY PRODUCTS.
H320	HYDRAMET AMERICAN, INC.
H321	HYBRID SYSTEMS INC.
H325	HYDRAULIC RESEARCH
H330	HYDRIL
H335	HYDRO-ASH CORP
H340	HYDRODYNE
H341	HYDROMATION ENGINEERING CO.
H342	HYDROMATION FILTER COMPANY
H350	HYGRODYNAMICS INC.
I005	I-T-E CIRCUIT BREAKER
I010	IBM CORP
I011	IDEAL ELECTRIC AND MANUFACTURING CO.
I012	IDEAL FORGING CO.
I014	IDEAL TOOL AND MANUFACTURING
I015	ILC TECHNOLOGY
I017	ILG INDUSTRIAL
I020	ILLINOIS WATER TREATMENT CO.
I025	IMEACON CONSULTANTS
I027	IMPERIAL-EASTMAN CORP.
I030	IMPERIAL ELEC CO
I031	INDEECO
I032	INDIANA & MICHIGAN ELECTRIC COMPANY
I033	INDIKON
I034	INDUSTRIAL ACCOUSTICS CO., INC.
I035	INDUSTRIAL BRONNHUIST
I036	INDUSTRIAL BIO-TEST LABORATORIES INC.
I037	INDUSTRIAL CONCEPTS CORP.
I040	INDUSTRIAL ELEC & TRANS
I041	INDUSTRIAL ELECTRICAL MANUFACTURING,INC.
I042	INDUSTRIAL ENGINEERING CONSTRUCTION SERVIC
I045	INDUSTRIAL ENGINEERING AND EQUIPMENT
I046	INDUSTRIAL ERECTORS INC.
I047	INDUSTRIAL FILTER COMPANY
I048	INDUSTRIAL INSPECTION INC.
I049	INDUSTRIAL MECHANICS
I050	INDUSTRIAL NUCLEONICS CORP.
I053	INDUSTRIAL INSTRUMENT
I055	INDUSTRIAL PROCESS ENGINEERING
I060	INDUSTRIAL REACTOR LABORATORIES, INC.
I063	INDUSTRIAL TIMER CORP.

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
I065	INDUSTRIAL RUBBER PRODUCTS
I066	INDUSTRIAL SERVICE CO.
I067	INDUSTRIAL STAINLESS STEEL, INC.
I068	INDUSTRIAL VALVE & INSTRUMENT CO.
I069	INFILCO, DIV. WESTINGHOUSE
I070	INGALLS IRON WORKS
I075	INGERSOLL-RAND CO
I077	INLAND STEEL
I080	INLAND-RYERSON CONSTRUCTION PRODUCTS CO.
I085	INSTITUTE FOR RESOURCE MANAGEMENT, INC.
I086	INSTRUMATICS INC.
I087	INSTRUMENT ASSOCIATES
I088	INSTRUMENT SYSTEMS CO.
I089	INSTRUMENTS DISPLAY INC.
I090	INSTRUMENT TECHNOLOGY, INC.
I093	INSTRUMENT SPECIALTIES
I094	INSTRUMENT AIR
I095	INSUL-8-CORP
I100	INSULATION SYSTEMS INC.
I102	INTELCOM RAD TECH
I105	INTERDEVELOPMENT, INC.
I110	INTEREX CORP.
I111	IDEAL ELECTRIC AND MANUFACTURING CO.
I113	INTERCONTINENTAL CONSTRUCTION CO.
I115	INTERNATIONAL CHEMICAL & NUCLEAR CORP.
I120	INTERNATIONAL DERRICK
I125	INTERNATIONAL HARVESTER
I130	INTERNATIONAL INSTRUMENTS, INC.
I132	INTERNATIONAL METAL PRODUCTS, INC.
I135	INTERNATIONAL NUCLEAR CO.
I140	INTERNATIONAL NUTRONICS, INC.
I141	INTERNATIONAL SUPPLY
I145	INTERNATIONAL STACEY
I147	INTERNATIONAL SWITCHBOARD CORP.
I150	INTERNATIONAL THERMAL INSTRUMENT CO.
I152	INTERPACE CORP/PULSE FEEDER DIVISION
I155	INTERSTATE INDUSTRIAL UNIFORM RENTAL SERV.
I160	INTERSTATE LAUNDRY & DECONTAMINATION SERV.
I165	INTERTECHNIQUE INSTRUMENTS, INC.
I170	INTSEL CORP.
I173	INVENTRON INDUSTRIES INC.
I174	INVENTRON
I175	IONICS, INC.
I177	IOWA ELECTRIC LIGHT & POWER COMPANY
I180	IPAC GROUP, INC.
I181	IRSAY, ROBERT, INC.
I182	ISHIKAWAJIMA HARIMA IND. (IHI-JAPAN)
I183	IRVIN STEEL
I185	ISOLAB INC.
I190	ISOMEDIX, INC.
I195	ISONET CORP.
I200	ISOTOPE PRODUCTS LABORATORIES
I202	ITE IMPERIAL CORPORATION
I204	ITT-BARTON
I205	ITHACO, INC.
I206	ITT GENERAL CONTROLS
I207	ITT GRINNELL
I208	ITT HAMMEL DAHL CONOFLOW
I210	ITT SUPRENANT
J001	JACOBY - TARBOX
J002	JAMCO-WESTEON
J005	JAMES & CO., FRED S.
J010	JAMES BURY CORP
J012	JAMES, POND & CLARK DIV.
J014	JANOS ASHESTOS
J015	JAPAN STEEL WORKS (JAPAN)
J020	JARVIS ENGINEERING
J023	JAY INSTRUMENT & SPECIALITY CO.
J025	JEFFERSON ELECTRIC
J030	JEFFERY-DEWITT INS CORP
J035	JELCO INC.
J036	JENKINS VALVE CORP.
J037	JENSEN INSTRUMENT
J040	JERGUSON GAGE & VALVE CO.
J045	JERPBAK-BAYLESS CO.
J047	JERSEY CENTRAL POWER & LIGHT COMPANY
J050	JERSEY NUCLEAR CO., INC.
J055	JESSOP STEEL CO.
J057	JO-BELL PRODUCTS
J060	JOHNS-MANVILLE CORP.
J065	JOHNSON & HIGGINS
J070	JOHNSON ASSOCIATES INC., E. R.
J075	JOHNSON DIVISION, U.O.P.
J076	JOHNSON ENGINEERING
J077	JOHNSON FIREPROOF DOOR CO., INC.
J080	JOHNSON GEAR
J085	JOHNSON MANUFACTURING
J090	JOHNSON SERVICE CO.
J095	JOHNSO[illegible] ALDOLPH
J100	JOHNSTON LABORATORIES, INC.
J105	JOHNSTON PUMP CO.
J107	JOLIET CONCRETE PRODUCTS
J110	JONATHAN MANUFACTURING CO.
J112	JONES AND LAUGHLIN
J113	JONES AND MCKNIGHT, INC.
J115	JORDAN NUCLEAR CO.
J117	JORGENSEN, E. M.
J120	JOSLYN MFG & SUPPLY
J125	JOSLYN STAINLESS STEELS
J127	JOY MANUFACTURING CO.
J130	JRB ASSOCIATES, INC.
J136	JUNO INDUSTRIES
J140	JUSTIN ENTERPRISE
K002	KACENA COMPANY
K005	KAHN & CO
K010	KAISER ENGINEERS
K012	KIASER STEEL CO.
K015	KALAMAZOO T&S
K020	KAMAN SCIENCES CORP.
K021	KANTO VALVE CO

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
K022	KATES, K.A. COMPANY
K025	KATO ENGINEERING
K027	KARTHAUSER CO.
K030	KAVLICO ELECTRONICS INC.
K035	KAWECKI BERYLCO INDUSTRIES, INC.
K037	KAYN, CHARLES C., CO.
K039	KAYRO PRECISION CASTING CORP.
K040	KEARNEY, J. R.
K041	KECKLEY, Q.C., CO.
K042	KEENE CORPORATION
K043	KEELER & LONG
K045	KEITHLEY INSTRUMENTS, INC.
K047	KEL-RIN
K050	KELLOGG-AMERICAN, INC
K055	KELLOGG, M. W. CO., THE
K058	KELLY, D. H. CO.
K060	KELLY PIPE CO.
K065	KELLY, O. G. CORPORATION
K070	KENCO, INC
K073	KENDALL
K075	KENNEDY VALVE MFG CO
K078	KEPCO
K080	KERITE CO., THE
K081	KETRING PRODUCTS
K083	KEROTEST CONSOLIDATED
K085	KEROTEST MANUFACTURING CORP.
K090	KERR MACHINERY CO
K095	KERR-MCGEE CORP.
K100	KERRIGAN IRON WORKS
K102	KEUFFEL & ESSER
K105	KEVEX CORP.
K110	KEWAUNEE MFG
K115	KEWAUNEE SCIENTIFIC EQUIPMENT CORP.
K117	KEYSTONE PIPE AND SUPPLY CO.
K120	KIDDE, WALTER & CO
K125	KIELEY & MUELLER CO
K126	KILLEBREW ENGINEERING CORP.
K127	KIMMERLE BROS.
K130	KINEMETRICS, INC.
K131	KING-KNIGHT CO.
K132	KING-LAR CO.
K135	KING-SEELEY THERMOS CO.
K140	KINGSBURY, ALBERT
K141	KING, T. E. CO.
K143	KINNEY, S.P. ENGINEERING, INC.
K145	KINNEAR MANUFACTURING
K150	KIRK & BLUM
K155	KIRK, MORRIS P. & SONS, INC.
K160	KIRKHOF ELECTRIC
K165	KIROMAC MANUFACTURING
K170	KISTLER INSTRUMENT CO.
K172	K&K MACHINING, INC.
K175	KLEIN, SCHANZLIN AND BECKER
K180	KLEMP, WILLIAM F. CO
K182	KLOCKNER-MOELLER
K185	KOHE COMPANY
K187	KOCH ENGINEERING COMPANY
K190	KODEL ELECTRIC & MFG CO
K192	KOERNER, LENSCH, KAEFIELD
K195	KOLLMORGEN CORP.
K200	KOPPERS CO, INC
K201	KRISTAL ASSOCIATES
K202	KROUGH PUMP CO.
K203	KRAMER, F.C.
K204	KRAUSS, JOHN F., COMPANY
K205	KSB PUMP SULZER BROS. COMPANY
K206	KREZ, PAUL J. COMPANY
K210	KUBOTA, LTD. (JAPAN)
K215	KUHLMAN ELECTRIC CO
K220	KULITE SEMICONDUCTOR PRODUCTS INC.
K225	KULITE TUNGSTEN CO.
K230	KULJIAN CORP., THE
K235	KUNKLE VALVE CO
K236	KURIMOTO IRON WORKS LTD.
K237	KYNEX CORP.
L002	L & A CO.
L003	L. A. WATER CONDITIONING
L004	L.A. WATER TREATMENT DIV CHROMALLOY AMER.
L005	L & S MACHINE COMPANY, INC.
L010	L N D, INC.
L015	LA MARCHE MFG CO
L017	LABARGE TUBULAR DIV. LTD.
L020	LABOUR COMPANY
L025	LADISH CO.
L027	LAKE COUNTY SUPPLY
L030	LAKE ERIE ELECTRIC
L035	LAKESIDE BRIDGE & STEEL CO.
L040	LAMAR PIPE CO
L045	LAMBDA ELECTRONICS
L050	LAMCO INDUSTRIES, INC.
L052	LAMESA TOOL AND MANUFACTURING CO.
L055	LANCASTER IRON WORKS
L060	LANCE IRON WORKS
L065	LANDAUER, JR. & CO., R.S.
L070	LANDSVERK CORP.
L072	LANDMAYER STEEL CO.
L075	LANSING STEEL CORP
L080	LAPP ENGINEERING COMPANY
L084	LASHER SUPPLY CO.
L085	LAPP INSULATOR CO
L086	LATROBE STEEL COMPANY
L087	LAURENCE, R.G. CO, INC.
L088	LAWRENCE PUMPS INC.
L089	LAW ENGINEERING TESTING CO.
L090	LAYNE NORTHERN
L095	LAYNE-BOWLER, INC
L100	LEAHY CO
L105	LEAR SIEGLER, INC.
L110	LEATHERMAN
L111	LEAVELL BRAVO

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
L112	LEBANON STEEL FOUNDRY
L115	LECROY RESEARCH SYSTEMS CORP.
L120	LEDOUX & CO.
L122	LEE C. MOORE CORP.
L125	LEE METAL PRODUCTS CO.
L130	LEEDS & NORTHRUP CO.
L134	LEFFELL, JAMES CO
L137	LEHIGH STRUCTUAL STEEL CO.
L140	LEICO INDUSTRIES, INC.
L142	LEIGHTON ST.
L145	LEITELT IRON WORKS
L147	LELAND
L150	LENOX INSTRUMENT CO.
L152	LENZ CO.
L155	LEOPOLD, VOLPEL & CO
L160	LERMA ENGG CORP
L165	LERMA ENGINEERING CO.
L170	LESLIE CO.
L173	LESMAN INSTRUMENT COMPANY
L175	LESTER EQUIP CO
L176	LEVINSON STEEL CO.
L178	LEWIS BROTHERS BATTERY CO.
L179	LEWIS ENGINEERING CO.
L180	LEYBOLD-HERAEUS INC.
L185	LFE CORP.
L190	LFE ENVIRONMENTAL ANALYSIS LABS.
L194	LIGHTRON CO. OF CORNWALL
L195	LIBERTY AERO
L196	LIFT ALL CO.
L197	LIQUID SYSTEMS
L200	LIMITORQUE CORP.
L202	LIN-DON
L205	LINCOLN ELECTRIC CO
L207	LINDAHL BROTHERS
L210	LINDBERG
L215	LINDE DIV.
L220	LIVE MATERIAL INDUSTRIES
L225	LINK-BELT CO
L230	LINK, HERBERT D.
L231	LIPS SPLICING SERVICE
L232	LITTON INDUSTRIES
L233	LIQUID DYNAMICS CORP.
L235	LIQUIDMETER CORP
L237	LIQUIDONICS INC.
L238	LIZ INDUSTRIAL SALES COMPANY
L240	LOCHINVAR WATER HEATER
L245	LOCKE DEPT, GE CO
L250	LOCKHEED
L252	LOGAN MANUFACTURING CO.
L255	LOMAX INC.
L260	LOMBARD GOVERNOR
L265	LONERGAN
L267	LONG ISLAND LIGHTING COMPANY
L270	LORAIN PRODUCTS CORP
L275	LOTEPRO CORP.

REF NO.	VENDOR
L277	LOYOLA INDUSTRIES, INC.
L280	LOUIS ALLIS CO
L281	LOUISIANA POWER & LIGHT COMPANY
L282	LUCAS & SONS CO.
L285	LUDLUM MEASUREMENTS, INC.
L290	LUKENS STEEL CO.
L292	LUMINOUS CEILINGS, INC.
L295	LUNDELL CONTROLS - TECHNOLOGY INC.
L300	LUNKENHEIMER CO., THE
L305	LUPTON, DAVID & SONS
M005	M G SCIENTIFIC
M007	MACK IRON WORKS CO.
M010	MACOMBER, INC
M012	MACWHYTE WIRE ROPE COMPANY
M013	MADDEN CORP
M014	MAGNA CORP.
M015	MAGNAFLUX CORP.
M016	MADSEN CO.
M017	MAENAKA VALVE WORKS
M020	MAGNATECH
M022	MAGNEMELIC
M025	MAGNETIC ENGG CO
M040	MAGNETIC METALS CO.
M035	MAGNETICS, INC.
M040	MAGNETROL, INC.
M045	MAHON, R. C. CO
M048	MANATROL DIVISION-PARKER-HANNIFIN CORP.
M050	MAIN, INC., CHAS. T.
M051	MAINE YANKEE ATOMIC POWER COMPANY
M052	MANCO MANUFACTURING COMPANY
M053	MANCIR CO.
M055	MANISTEE IRON WORKS
M060	MANN CO., DAVID A.
M065	MANNING-MAXWELL-MOORE
M070	MANSFIELD & GREEN DIVISION, AMTEC, INC.
M072	MANSFIELD, JAMES, & SON INC.
M075	MANTON GAULIN
M080	MARATHON ELEC MFG
M082	MARLIN MFG.
M083	MARK CONTROL
M084	MARKLE ELECTRIC PRODUCTS INC.
M085	MARLEY CO., THE
M086	MARLOW INDUSTRIES, INC.
M088	MARNEL ENGINEERING CO.
M090	MAROTTA SCIENTIFIC CONTROLS, INC.
M095	MAROTTA VALVE CORP
M100	MARQUETTE ELEC SWBD CO
M105	MARSH & MCLENNAN, INC.
M110	MARSH INSTRUMENT COMPANY
M113	MARSHALLTOWN MANUFACTURING INC.
M114	MARUSHIMA HYDRAULIC GATE WORKS LMTD.
M115	MASON & HANGER-SILAS MASON CO., INC.
M120	MASONEILAN INTERNATIONAL, INC.
M125	MASONITE CORP.
M127	MASS. MATERIAL RESEARCH

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
M130	MAST DEVELOPMENT CO.
M134	MASTER BUILDERS
M135	MASTER ELECTRIC
M136	MASTER GAUGE CO.
M137	MASTER METAL ROD
M140	MATERIALS ANALYSIS CO.
M145	MATHESON GAS PRODUCTS
M147	MATTHEWS CONVEYOR
M150	MATTHEY BISHOP, INC.
M154	MAUL CO
M156	MAURO, R.J. & ASSOCIATES
M157	MAVRIC
M159	MAXION PRE-MIX CO.,INC.
M160	MAXWELL LABORATORIES, INC.
M161	MAYNARD ELECTRIC STEEL CASTING CO.
M164	MAZZELLA WIRE CO.
M169	MCCAFFRAY CO.
M165	MCCORMACK'S HIGHWAY TRANS., INC.
M166	MCALLISTER EQUIPMENT CO.
M167	MCCULLOUGH ELECTRIC CO.
M170	MCDONNELL & MILLER ITT
M173	MCDONNELL-WELLMAN ENGINEERING CO.
M175	MCGRAW EDISON
M177	MCHENRY SAND & GRAVEL
M180	MCGREGOR MICHIGAN
M181	MCJUNKIN CORP.
M182	MCKAY
M183	MCKENZIE MARINE CONSTRUCTION CO.
M184	MCMASTER-CARR CO.
M185	MCPHERSON ASSOCIATES, INC.
M190	MCSAVANEY SIGN CO
M195	MECH-TRONICS NUCLEAR CORP.
M198	MECHANICAL PRODUCTS
M200	MECHANICAL SERVICE CO
M205	MECHANICAL SPECIALTIES CO.
M210	MECHANICAL SPECIALTY PRODUCTS, INC.
M215	MECHANICS RESEARCH INC.
M220	MEDI-RAY, INC.
M221	MEDUSA PORTLAND CEMENT CO.
M222	MELANEY ENGINEERING CO.
M224	MELRATH SUPPLY & GASKET
M225	MELTRON CORP
M230	MEMCO MFG
M231	MERCER RUBBER CO.
M235	MERCOID CORP
M240	MERCURY COMPANY
M245	MERIAM CO
M246	MERIAM INSTRUMENTS
M247	MERIDEN-COOPER CO.
M248	MERIT
M249	MERQUIP ELECTRIC
M250	MERRIMAN INC.
M251	MERSICK, C. S. CO.
M253	MESCO CORPORATION
M255	MESKER, GEORGE L. CO

REF NO.	VENDOR
M260	MESTA MACHINE CO.
M265	METAL ARTS CO
M270	METAL BELLOWS
M272	METAL GOODS CO.
M275	METAL OFFICE FURNITURE
M277	METALLOY INC.
M280	METEOROLOGY RESEARCH, INC.
M281	METERON INSTRUMENTS,INC.
M282	METER DEVICES CO.
M283	METER & CONTROLS, INC.
M284	METER MAKERS
M285	METRA INSTRUMENTS
M290	METRIX, INC.
M292	METROPOLITAN EDISON COMPANY
M293	METROVONICS
M294	MEYER INDUSTRIES
M295	MICHIGAN FABRICATING & WELD
M300	MICHIGAN TRACTOR & MACHINE
M302	MICRO SWITCH
M303	MIDCO PIPE & TUBE, INC.
M304	MID-CITY ARCHITECTURAL IRON CO.
M305	MID-VALLEY, INC.
M307	MIDDLESEX STAINLESS FITTINGS
M310	MIDWAY CO.
M311	MIDWEST STEEL
M312	MIDWEST ENGINEERING CO.
M313	MIDWEST METALS,INC.
M314	MID-WEST INSTRUMENT
M315	MIDWEST PIPING
M317	MIEHLE GOSS DEXTER PNEUMATICS CO.
M318	MIKUNI JUKOYGO,LTD.
M320	MILES LABORATORIES, INC.
M321	MILLER, RAY INC.
M322	MILLER FLUID POWER CO.
M323	MILLIPORE FILTER CORP
M324	MILLIS JOHN H. COMPANY
M325	MILTON-ROY CO
M326	MILLS IRON WORKS INC.
M328	MILNE ASSOC.
M330	MILWAUKEE BOILER & TANK
M332	MILWAUKEE CYLINDER CO.
M333	MINCO
M335	MINE SAFETY APPLIANCES CO.
M340	MINNEAPOLIS-HONEYWELL
M345	MINNESOTA MINING & MFG., 3M CO.
M350	MINNOTTE MANUFACTURING CORPORATION
M355	MIRROR INSULATION COMPANY
M356	MILLSTONE POINT COMPANY
M358	MISSION MANUFACTURING CO.
M360	MISSION VALVE AND PUMP COMPANY
M362	MISSISSIPPI VALLEY EQUIPMENT INC.
M365	MISSISSIPPI VALLEY STR STEEL
M370	MISSOURI BOILER & TANK
M372	MITAKI CO.
M375	MITCHELL, JOHN E., COMPANY

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
M377	MITCHELL TECHNOLOGY, INC.
M380	MITSUBISHI HEAVY INDUSTRIES (JAPAN)
M385	MITSUBISHI INTERNATIONAL CORPORATION
M386	MIXING EQUIPMENT CO.
M387	MLW INDUSTRIES
M388	MOHR, JOHN, & SONS
M389	MOLINE CONSUMERS
M390	MOLONEY ELEC CO
M391	MOBIL OIL CORP.
M392	MODPAK
M393	MOFFIT COMPANY
M395	MOLYCORP-MOLYBDENUM CORP. OF AMERICA
M396	MOLLER CO.
M397	MONARCH FORGE & MACHINE WORKS INC.
M400	MONITOR LABS INC.
M405	MONROE, R. AND SONS
M410	MONSANTO RESEARCH CORP.
M415	MONTGOMERY ELEVATOR
M420	MONTREAL LOCOMOTIVE WORKS - WORTHINGTON
M421	MOORE, I. P. CO.
M422	MOORE INDUSTRIES.
M423	MOOG INC.
M424	MOORE DRY DOCK CO.
M425	MOORE & SHAVER, INC.
M430	MOORE PRODUCTS COMPANY
M435	MORGAN ELECTRIC
M440	MORGAN SMITH, S. CO
M445	MORRIS MACHINE WORKS
M447	MORRISON BROTHERS
M450	MOSSMAN, DONALD P, INC
M452	MOTOR ALLIANCE CORP.
M455	MOTOROLA
M460	MPR ASSOCIATES, INC.
M465	MSA INTERNATIONAL
M470	MSA RESEARCH CORP.
M475	MUELLER
M477	MULTIMETALS CO.
M478	MULTISTRESS INC.
M480	MUNROE, R. AND SONS
M485	MURDOCK LEAD CO., THE
M490	MURDOCK, INC.
M492	MURRAY AND TRETTEL INC.
M495	MUSKEGON BOILER WORKS
M497	MUSONICS
N005	NALCO CHEMICAL CORP.
N007	NAMCO CONTROLS
N010	NASH ENGINEERING CO., THE
N015	NATIONAL ACME CO
N020	NATIONAL ANNEALING BOX CO.
N025	NATIONAL BERYLLIA CORP.
N026	NATIONAL CERTIFIED PIPE WELDING BUREAU
N027	NATIONAL CYLINDER GAS CO.
N030	NATIONAL ELECTRIC SIGN
N035	NATIONAL ENVIRONMENTAL INSTRUMENTS, INC.
N040	NATIONAL FORGE CO.

REF NO.	VENDOR
N042	NATIONAL LEAD CO.
N045	NATIONAL NUCLEAR CORP.
N047	NATIONAL PLUMBING
N050	NATIONAL SPECTROGRAPHIC LABS.
N052	NATIONAL STAINLESS CORP.
N055	NATIONAL TANK CO
N060	NATIONAL VALVE & MANUFACTURING COMPANY
N065	NATIONAL-STANDARD CO.
N067	NEBRASKA PUBLIC POWER DISTRICT
N070	NECI-NUCLEAR ENGINEERING & COMPONENTS, INC.
N075	NEELY, JAMES V.
N077	NELSON STEEL & WIRE CO.
N080	NELSON ELECTRIC
N085	NELSON STUD WELDING
N090	NEMA, INC.
N091	NESCO CO.
N095	NEUTRON PRODUCTS, INC.
N096	NEWARK
N097	NEWBERG, GUST, K., CONSTRUCTION CO.
N098	NEW ENGLAND BOLT
N099	NEW ENGLAND CONTROLS, INC.
N100	NEW ENGLAND METAL SPINNING CO. INC.
N101	NEW ENGLAND INSULATION
N102	NEW ENGLAND SILICA
N105	NEW ENGLAND NUCLEAR
N106	NEW HAVEN TESTING LABORATORY
N107	NEW YORK BLOWER
N108	NEW YORK AIR & BRAKE CO.
N109	NEW JERSEY ELECTRIC CORPORATION
N110	NEW YORK TESTING LABORATORIES, INC.
N115	NEWPORT NEWS SHIPBUILDING & DRY DOCK CO.
N120	NGK INSULATOR
N121	NIFE
N122	NIAGARA MOHAWK POWER CORPORATION
N125	NIAGARA TRANSFORMER
N126	NIANTIC TOOL CO.
N130	NILES STEEL TANK
N135	NIPPON STAINLESS (JAPAN)
N140	NL INDUSTRIES INC.
N145	NON LINEAR SYSTEMS, INC.
N150	NOOTER CORP.
N155	NORBATROL ELECTRIC CORP.
N158	NORTHEAST UTILITIES SERVICE CO.
N159	NORSTRUM
N160	NORHOTROL ELECTRONICS
N161	NORGREN, C. A., CO.
N162	NORTH AMERICAN CARBON, INC.
N163	NORMAN ENGINEERING
N164	NORMAN ASSOCIATES
N165	NORTH EQUIPMENT CO
N166	NORTHERN BOILER CO.
N167	NORTHERN INDIANA PUBLIC SERVICE COMPANY
N168	NORTH AMERICAN ROCKWELL CORP.
N169	NORTHERN HEATING SUPPLY CO.
N170	NORTHERN MFG

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
N175	NORTHERN SCIENTIFIC, INC.
N177	NORTHERN STATES POWER COMPANY
N178	NORTHERN STEEL
N180	NORTHROP CORPORATE LABORATORIES
N185	NORTHWESTERN MFG CO
N187	NORTHWESTERN STEEL & WIRE CO.
N190	NORTON CO.
N192	NORWALK FABRICATORS, INC.
N195	NUCLEAR ASSOCIATES INTERNATIONAL CORP.
N200	NUCLEAR ASSOCIATES, INC.
N205	NUCLEAR ASSURANCE CORP.
N210	NUCLEAR AUDIT & TESTING CO.
N215	NUCLEAR BOLTING, INC.
N220	NUCLEAR CHEMICALS & METALS CORP.
N225	NUCLEAR COMPONENTS, INC.
N230	NUCLEAR CONSULTING SERVICES INC.
N233	NUCLEAR CONTAINERS,INC.
N235	NUCLEAR CONTAINMENT SYSTEMS, INC.
N240	NUCLEAR CONTROLS AND ELECTRONICS CORP.
N245	NUCLEAR CORP. OF AMERICA
N250	NUCLEAR DATA, INC.
N255	NUCLEAR DEVELOPMENT LAB., INC.
N260	NUCLEAR DIAGNOSTIC LABS, INC.
N265	NUCLEAR DIODES, INC.
N270	NUCLEAR DYNAMICS, INC.
N275	NUCLEAR ENGINEERING CO., INC.
N280	NUCLEAR ENTERPRISES, INC.
N285	NUCLEAR ENVIRONMENTAL ENGINEERING, INC.
N290	NUCLEAR EQUIPMENT CHEMICAL CORP.
N295	NUCLEAR EQUIPMENT CORP.
N300	NUCLEAR FUEL SERVICES, INC.
N305	NUCLEAR MEASUREMENTS CORP.
N310	NUCLEAR PACIFIC, INC.
N315	NUCLEAR POWER CORP.
N320	NUCLEAR POWER EXPERIENCE
N325	NUCLEAR RADIATION DEVELOPMENTS, INC.
N330	NUCLEAR RESEARCH CORP.
N335	NUCLEAR SAFETY ASSOCIATES
N340	NUCLEAR SEMICONDUCTOR, INC.
N345	NUCLEAR SERVICE & CONSTRUCTION CO.,INC.
N350	NUCLEAR SERVICE LABORATORIES
N355	NUCLEAR SERVICES CORP.
N360	NUCLEAR SHIELDING SUPPLIES & SERVICE,INC.
N365	NUCLEAR SOURCES & SERVICES, INC.
N370	NUCLEAR SUPPLY CO.
N375	NUCLEAR SURVEILLANCE & AUDITING CORP.
N380	NUCLEAR TECHNOLOGY CORP.
N385	NUCLEAR WASTE SYSTEMS CO.
N390	NUCLEAR-CHICAGO CORP.
N395	NUCLEOMETRICS, INC.
N400	NUCLEUS, INC., THE
N405	NUCLIDE CORP.
N410	NUCOR CORP.
N415	NUGENT, AN W. CO
N417	NUMATICS
N420	NUMEC
N425	NUPRO CO.
N430	NUS CORP.
N435	NUTEC, INC.
N440	NUTEX CORP.
N445	NUTS, INC.
0002	OAKLAND MACHINE WORKS
0005	O'BRIEN, INC., D. G.
0006	OCONNOR ASSOCIATES
0010	O'DONNELL & ASSOCIATES, INC.
0015	OAT, JOSEPH AND SONS, INC.
0020	OFFSHORE POWER SYSTEMS
0025	OGALLALA ELECTRONICS
0027	OHAELY, J.D. CONSTRUCTION,
0030	OHIO BRASS CO
0032	OHIO ELECTRIC COMPANY
0035	OHIO INJECTOR
0036	OIL INDUSTRIES MFG. & ENGINEERING
0040	OKONITE CO., THE
0041	OLSON, E.W. CO.
0042	OMAHA PUBLIC POWER DISTRICT
0045	OMEGA ENGINEERING, INC.
0050	ONAN, D. W. & SONS, INC
0055	OPELIKA WELDING, MACHINE & SUPPLY, INC.
0060	OPTICS FOR INDUSTRY
0065	ORTRON CORPORATION - BETA DIVISION
0070	ORTEC, INC.
0075	OSBORNE ELECTRIC
0080	OSTER MANUFACTURING CO
0085	OTIS ELEVATOR CO
0087	OTTONA SILICA
0090	OVERHEAD CRANE & SERV
0095	OVERHEAD DOOR CO
0100	OVERHOFF & ASSOCIATES
0105	OVERLY MANUFACTURING CO.
0110	OWENS-CORNING
P004	P & W INDUSTRIES
P005	P. X. ENGINEERING CO.
P010	P.P.I.
P011	PACE TRANSDUCER CO.
P012	PACIFIC CRANE
P013	PACIFIC COAST ENGINEER CO.
P014	PACIFIC AIR PRODUCTS
P015	PACIFIC ELECTRIC MFG
P016	PACIFIC ENGINEERING
P017	PACIFIC GAS & ELECTRIC COMPANY
P018	PACIFIC GAS EQUIPMENT
P019	PACIFIC HYDRO
P020	PACIFIC NUCLEAR PRODUCTS
P025	PACIFIC PUMPS
P026	PACIFIC PUMPING COMPANY
P029	PACIFIC SCIENTIFIC CO.
P030	PACIFIC STEEL PRODUCTS CO.
P031	PACIFIC TRANSDUCER CORPORATION
P032	PACIFIC VALVES INC.

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
P035	PACKARD ELECTRIC CO
P040	PACKARD INSTRUMENT CO., INC.
P045	PAGE ENGINEERING COMPANY
P050	PALL TRINITY MICRO CORP.
P053	PALMER INSTRUMENTS INC.
P054	PAMOTOR
P055	PANALARM CO
P060	PANGBORN CORP
P062	PARAGON ELECTRIC CO.
P064	PARAMETRIC, INC.
P070	PARKER HANNIFIN CORP.
P075	PARKER PACKING CO.
P080	PARKERSBURG RIG & REEL
P082	PARKER SEAL CO.
P085	PARSONS CO., RALPH M.
P087	PARTLOW CORP.
P088	PARTLOW CORP.
P090	PATHWAY BELLOWS, INC.
P095	PAUL-MUNROE HYDRAULICS INC.
P096	PAWTUCKET MFG.
P097	PDM STEEL
P100	PEABODY ENGINEERING CORP.
P105	PEARSON MANUFACTURING
P108	PEECO CORP.
P110	PEELLE CO
P112	PEERLESS MANUFACTURING COMPANY
P115	PEERLESS PUMP CO
P120	PEERLESS WATER SOFTNER
P125	PENBERTHY
P128	PENN BASO CONTROLS
P129	PENN CONTROLS INC.
P130	PENN FLEX METAL TUBING
P132	PENN METER CO.
P135	PENN PUMP & COMPRESSOR
P140	PENN STATE TOOL & DIE CORPORATION
P145	PENN TRANSFORMER DIV
P150	PENN UNION ELECTRIC
P151	PENNIMAN & BROWNE, INC.
P152	PENN VENTILATOR COMPANY,
P155	PENNWALT CORP.
P160	PERFEX, INC.
P165	PERKIN-ELMER CORP., THE
P170	PERMALI, INC.
P175	PERMUTIT CO., THE
P180	PET HEAT & POWER CO
P185	PETERSON ASSOC., ARTHUR V.
P187	PETERSON DIVING SERVICE
P190	PETERSON TRACTOR CORP
P191	PHELPS DODGE CORP.
P192	PHILADELPHIA ELECTRIC COMPANY
P195	PHILADELPHIA GEAR CORP.
P200	PHILCO FORD CORP.
P203	PHILPOT, R.D., INDUSTRIES, INC.
P205	PHILIPS-ELNET CORP.
P210	PHILLIPS & DAVIES
P212	PHILLIPS - GETSCHOW CO.
P214	PHOENIX STEEL
P215	PHYSICAL SCIENCES CORP.
P220	PHYSICS INTERNATIONAL CO.
P225	PICKARD, LOWE & ASSOC.
P230	PICKER CORP.
P232	PIN VENTILATOR CO.,INC.
P233	PINE, WILLIAM S.
P235	PIONEER ALUMINUM INC.
P240	PIONEER SERVICE & ENGINEERING CO.
P241	PIONEER STANDARD
P242	PIPECO STEEL CORP.
P243	PIPE FABRICATING AND SUPPLY
P245	PIPE LINE PROTECTION CO
P250	PIPE MACHINERY CO.
P252	PITTSBURG ACTIVATED CARBON
P253	PITTSBURG-CORNING
P255	PITTSBURG CRANE & CONVEYOR CO.
P257	PITTSBURG METALS
P260	PITTSBURGH BRIDGE & IRON
P262	PITTSBURG TESTING LABORATORY
P265	PITTSBURGH TRANSFORMER
P267	PITTSBURG VALVE AND FITTING CO.
P270	PITTSBURGH-DES MOINES STEEL CO.
P272	PLAINVILLE MFG. CO.
P273	PLANT CITY STEEL CO.
P275	PLASTER PRODUCTS
P280	PLASTIGAGE
P285	PLYMOUTH TUBE
P286	PNEUMATIC ELECTRIC
P287	P.N.I.
P288	POLYPHASE INSTRUMENT CO.
P289	POPE-MORRISON COMPANY
P290	PORTA POWER
P291	PORCELAIN ENAMEL FINISHERS
P292	PORTEC INCORPORATED
P295	PORTER, H. K. CO., INC.
P296	PORTER PEERLESS MOTORS
P297	POTTER & BRUMFIELD
P300	PORTERSVILLE EQUIPMENT CO.
P301	PORTLAND GENERAL ELECTRIC COMPANY
P302	POTTER ELECTRIC SIGNAL & MFG. INC.
P303	POSEY IRON WORKS
P304	POSI-SEAL
P305	POWELL CO., WM., THE
P310	POWELL MANUFACTURING AND ELECTRICAL CORP.
P312	POWELL, W. W., CO.
P313	POWER AUTHORITY OF NEW YORK
P314	POWER-MATE
P315	POWER EQUIPMENT CO
P316	POWER ENGINEERING AND EQUIPMENT CO.
P317	POWER PIPING COMPANY
P318	POWER SYSTEMS
P319	POWER CONVERSION PRODUCTS, INC.
P320	POWERLITE SWITCHBOARD

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
P321	POWERS REGULATOR CO.
P322	POWER TECH
P323	POWER DESIGNS INC.
P325	POWNELL PROD CO
P330	PPB, INC.
P331	PPG INDUSTRIES
P335	PRATT WHITNEY AIRCRAFT
P340	PRATT, HENRY CO.
P345	PRECIPITATION CO
P347	PRECISION CASTING
P350	PRECISION SCIENTIFIC CO.
P355	PRECISION STANDARDS CORP.
P360	PRECISION THERMOMETER & INSTRUMENT CO.
P361	PRENTIS & CO., J. L.
P362	PRE-CON INC.
P365	PRESCON CORP., THE
P368	PRESPRAY CORPORATION
P370	PRESRAY CORP., THE
P375	PRESRAY CORPORATION
P377	PRESSED STEEL TANK CO.
P380	PRESSIN COMPANY
P385	PRESSURE PRODUCTS INDUSTRIES
P387	PRESSURE SWITCH CO.
P387	PRESSURE SWITCH
P390	PRINCETON APPLIED RESEARCH CORP.
P395	PRISON CO, INC
P397	PRITCHARD PRODUCTS CORP.
P399	PROCESS ENGINEERING, INC.
P400	PROCESS EQUIPMENT CO., INC.
P402	PROCESS EQUIPMENT CORP.
P403	PROCESS SALES
P404	PROCESS INSTRUMENT
P405	PROGRAMMED & REMOTE SYSTEMS CORP.
P410	PROGRESS MFG
P415	PROGRESSIVE FAB, INC
P417	PROSSER INDUSTRIES
P420	PROTECTIVE PACKAGING INC.
P421	PSI PRODUCTS, INC.
P422	PUBLIC SERVICE COMPANY OF COLORADO
P423	PUBLIC SERVICE ELECTRIC & GAS COMPANY
P425	PULSATION CONTROLS CORP
P427	PYCO
P429	PYCO/TRINITY
P430	PYLE-NATIONAL DIV.
Q001	Q DOT CORP.
Q002	QUALIGAGE CO.
Q003	QUAKER ALLOY CASTINGS CO.
Q005	QUARTZ PRODUCTS CORP.
Q008	QUINCY COMPRESSOR CO.
Q010	QUINDAR ELECTRONICS
R005	R&IE
R010	RADAK CORP
R012	RADECO, INC.
R015	RADFORM TOOL COMPANY
R020	RADIATION DYNAMICS, INC.
R025	RADIATION ELECTRONICS INC.
R030	RADIATION INDUSTRIES INC.
R035	RADIATION INTERNATIONAL INC.
R040	RADIATION MANAGEMENT CORP.
R045	RADIATION MATERIALS CO. INC.
R050	RADIATION RESEARCH ASSOC., INC.
R055	RADIATION SERVICE ASSOCIATES
R060	RADIATION TECHNOLOGY INC.
R065	RADIO RECEPTOR CO
R070	RADIOLOGICAL SYSTEMS
R075	RADIUM CHEMICAL CO., INC.
R080	RAHISER, ROBERT M. & ASSOCIATES, INC.
R081	RAINEAR, C. J. INC.
R082	RAMCON CORP.
R083	RAM FORGED STEEL,INC.
R085	RAMSEY ENGG
R087	RAPISTAN, INC.
R090	RAWSON-LUSH INSTRUMENT CO., INC.
R093	RAY ENGINEERING CO.
R095	RAY PROOF CORP.
R097	RAY WELCH INSTRUMENT
R098	RAYCHEM CORP.
R100	RAYMOND BROS PULVERIZER
R102	RAYMOND CONTROLS
R105	RAYTHEON CO.
R110	RCA COMMUNICATIONS SYSTEMS DIV.
R115	RCA ELECTROMAGNETIC & AVIATION SYSTEMS DIV
R120	RCA ELECTRONIC COMPONENTS
R125	RCA MISSILE AND SURFACE RADAR DIV.
R130	RCA SOLID STATE DIV.
R135	ROF CORP.
R137	RED VALVE CO.
R138	REDA PUMP COMPANY
R140	REACTOR CONTROLS INC.
R145	REACTOR EXPERIMENTS, INC.
R150	READING CHAIN & BLOCK
R155	RECO
R156	REED ELECTRIC
R157	REESE, A. J., TESTING LABORATORY
R158	REFRIGERATING SPECIALITIES CO.
R159	RELIANCE CUSTOM CONTROLS
R160	RELIANCE ELECTRIC & ENGINEERING
R165	RELIANCE ELECTRIC COMPANY
R170	RELIANCE STEEL PROD
R171	RELIABLE SHEET METAL WORKS INC.
R173	RELIANCE TRUCK CO.
R175	REM INC.
R177	REMINGTON
R180	REMRAM CO., INC., THE
R185	REMOTION CO.
R190	REMPE CO
R193	REOTEMP INSTRUMENT CO.
R195	REPUBLIC FLOW METERS
R197	REPUBLIC MFG. CO.
R200	REPUBLIC STEEL CORP.

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
R205	RESEARCH IND LTD
R210	RESEARCH, INC.
R215	RESIN-FAB CORP
R216	RETEC DEVELOPMENT LAB.-BURTON DIVISION
R217	REULAND ELECTRIC CO.
R220	REUTER-STOKES ELECTRIC COMPANY
R225	REUTER-STOKES ELECTRIC COMPANY %CANADA<
R230	REVERE ELECTRONICS DIVISION
R235	REX CHAINBELT
R240	REYNOLDS MANUFACTURING CO.
R242	REYNOLDS METAL
R245	RFL INDUSTRIES INC
R249	RICH,INC.
R250	RICHARDS OF ROCKFORD, INC.
R252	RICHARDS TANK CORPORATION
R254	RICHARDS, L.K.
R255	RICHARDS WILCOX DIV
R260	RICHARDSON CO., THE
R265	RICHARDSON SCALE
R270	RICHARDSON-ALLEN CORP
R275	RICHMOND FIRE DOOR CO
R280	RICHMONDS ENGINEERING COMPANY
R281	RILEY-BEAIRD, INC.
R282	RIPPEL ARCHITECTURAL METALS
R283	RILEY STOKER CO.
R285	ROBBINS & MYERS
R287	ROBERTS,R. P.
R290	ROBERTSHAW CONTROLS CO.
R295	ROBERTSON CO
R296	RAY MELCH, INC.
R298	R.O. VALVE CO.
R300	ROBERTSON MANUFACTURING CO.
R305	ROBICON, INC.
R306	ROBYON BACKING RINGS CO.
R308	ROBINSON CARTAGE CO.
R310	ROBINSON CORP.
R315	ROBINSON ORIFICE
R320	ROBOT APPLIANCE
R325	ROBOT INDUSTRIES INC
R330	ROCHESTER ELEC PROD
R332	ROCHESTER GAS & ELECTRIC COMPANY
R335	ROCHESTER INSTRUMENT SYSTEMS, INC.
R336	ROCHESTER NUT & BOLT CO.
R338	ROCKAELL BRODIE
R340	ROCKAELL MANUFACTURING CO.
R341	ROCKAELL STANDARD CORP.
R343	ROCKWOOD CO.
R345	RODNEY HUNT MACH CO
R346	RODGERS, LEROY F.
R347	ROEMER ELECTRIC STEEL FOUNDRY CO.
R350	ROHM AND HAAS CO.
R353	ROHN COMMUNICATION FACILITIES CO, IN.
R355	ROHN JFG
R360	ROLLER SMITH CORP
R362	ROOTS - CONNERSVILLE BLOWER
R365	ROPER, GEORGE D. CORP
R367	ROSCO-KENT
R368	ROPER HYDRAULICS,INC.
R369	ROSEMOUNT, INC.
R370	ROSEMOUNT ENGINEERING COMPANY
R372	ROSAEN
R375	ROSS HEATER & MFG
R376	ROSS OPERATING VALVE CO.
R377	ROSS - MEEHAN FOUNDRIES
R378	ROTORK INC.
R379	ROTH, ROYE COMPANY
R380	ROTTERDAM DOCKYARD CO.
R381	ROTHER&MUHLER ENGINEERING
R382	ROTRON INDUSTRIES
R385	ROVANG & ASSOCIATES
R389	ROWAN CONTROLLER
R390	ROWE INDUSTRIES DIV.
R395	ROYAL ELEC MFG
R400	ROYAL INDUSTRIES, INC.
R401	R. T. & E. CORP.
R402	R - P & C BAR STOCK VALVE CO.
R403	RUCKER COMPANY, THE
R404	RTD INC.
R405	RURSEY PUMP CO
R406	RUEMELIN MANUFACTURING CO.
R410	RUNDEL ELECTRIC
R411	RUSKIN MFG CO.
R412	RUST ENGINEERING
R413	RUSS ELECTRIC
R414	RUSTRAK
R415	RYERSON, J. T. & SON
R416	RYERSON STEEL
R417	RYRON INDUSTRIES
S005	SKC ELECTRIC
S006	S & K INSTRUMENTS DIVISION
S007	SACRAMENTO MUNICIPAL UTILITY DISTRICT
S010	SAFETY SOCKET SCREW CORP.
S015	SANDERSON & PORTER, INC.
S020	SANDUSKY FOUNDRY & MACHINE CO.
S023	SALEM LINE
S025	SANDVIK SPECIAL METALS CORP.
S030	SANDVIK STEEL INC.
S035	SANGAMO ELECTRIC CO
S036	SANYMETAL PRODUCTS CO.
S037	SARACCO TANK MFG. CO.
S038	SARAN LINED PIPE CO.
S039	SARCO
S040	SARGENT & LUNDY
S045	SARKES TARZIAN, INC
S050	SAUERMAN BROS
S052	SCHAEVITZ ENGINEERING
S054	SCAM INSTRUMENT CORP.
S055	SCHAUB, F. H., ENGG
S056	SCHAUB MAGNETICS INC.
S060	SCHAUER MANUFACTURING

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
S065	SCHOTT OPTICAL GLASS INC.
S068	SCHUBERT HEAT TREATING CO.
S070	SCHULER ENGINEERING CO
S073	RADONT
S075	SCHUTTE AND KOERTING CO.
S080	SCHWAGER-WOOD
S085	SCHWARZ/MANN
S090	SCHWARZKOPF DEVELOPMENT CORP.
S093	SCHWITZER
S095	SCI CHEMICAL-PHESE DIV.
S100	SCIENCE ACCESSORIES CORP.
S102	SCIENCE APPLICATIONS, INC.
S105	SCOVILL MANUF. CO.
S110	SEALOL INC.
S111	SEALY & JONES
S112	SEARLE RADIOGRAPHICS INC.
S115	SEATON WILSON INC.
S116	SEKA LABORATORIES, INC.
S117	SECHERON WORKS CO., LTD
S120	SEILER, P. J., INC.
S125	SEIMANS
S126	SELF ORGANIZING SYSTEMS, INC.
S127	SELMER INDUSTRIES
S130	SENSOR DYNAMICS, INC.
S135	SENTRY EQUIPMENT CORP.
S140	SERFILCO
S142	SERVICE SURVEYING & ENGR. CO.
S143	SETHCO
S145	SHANSTROM NUCLEAR ASSOC.
S147	SHARPLESS STOKES DIVISION, PENNWALT
S150	SHARPSVILLE STEEL FABRICATORS
S152	SHAW, BENJAMIN F., COMPANY
S155	SHAW-BOX CRANE & HOIST
S157	SHEFFER
S160	SHENANGO CO., THE
S165	SHEPARD-NILES CRANEHOIST
S170	SHEPHERD, J. L. AND ASSOCIATES
S172	SHICK TUBE - VEYOR CORP.
S175	SHIELDS RUBBER COMPANY
S176	SHINMEIWA IND. CO., LTD
S177	SHINN ENGINEERING
S178	SHINNER PRECISION, INC.
S179	SHIPMAN'S FIRE EXTINGUISH CO.
S180	SHM NUCLEAR CORP.
S182	SIERRACIN/HARRISON
S185	SIGMA INSTRUMENTS, INC.
S190	SIGNAL ENGINEERING MFG
S195	SIGNAL HILL ELECTRIC, INC.
S197	SIHI PUMPS
S200	SIMPLEX VALVE & METER
S202	SIMPLEX WIRE AND CABLE CO.
S203	SIMPSON
S204	SIMMONDS PRECISION
S205	SINGER CO., THE
S210	SINTERCAST
S211	SKIDMORE-WILHELM CO., INC.
S212	SKINNER UNIFLOW VALVES
S213	SKOLNIK DRUM CORPORATION
S215	SLY, W. A. MFG
S217	SMITH, A.O.
S218	SMITH & CLARK
S220	SMITH-MOON STEEL CO
S225	SMITH, ELWIN G.
S230	SMITH, J. R. MANUFACTURING CO.
S233	SMITHER, JACK M. & CO.
S235	SMOOT ENGINEERING CO
S236	SNAP-ON TOOLS, INC.
S237	SNOOK, J. W., CO.
S238	SOIL TESTING SERVICE INC.
S240	SOLA BASIC INDUSTRIES
S245	SOLA ELECTRIC CO
S246	SOLAR-DIV. INTERNATIONAL HARVESTER.
S247	SOLLAIR CORP.
S248	SOLAR SUPPLY CO.
S250	SOLID STATE CONTROLS, INC.
S254	SOLON MFG. CO.
S255	SOLID STATE RADIATIONS, INC.
S256	SONECO SERVICES, INC.
S257	SORENSEN
S260	SOSTMAN, H. F. COMPANY
S261	SOUTH CAROLINA ELECTRIC & GAS COMPANY
S262	SOUTHERN CALIFORNIA EDISON COMPANY
S264	SOUTHERN BOILER AND TANK WORKS, INC.
S265	SOUTHERN ENGG-PUMP CO
S270	SOUTHERN NUCLEAR ENGINEERING, INC.
S275	SOUTHERN STATES EQUIP
S280	SOUTHWEST FABRICATING & WELDING CO., INC.
S285	SOUTHWEST RESEARCH INSTITUTE
S290	SOUTHWESTERN ENGINEERING CO.
S292	SOUTHWESTERN LABORATORIES
S293	SPARTON SOUTHWEST INC.
S295	SPECIAL EQUIPMENT CORPORATION
S300	SPECTROMAGNETIC INDUSTRIES
S305	SPEEDWAY MACHINE & TOOL COMPANY
S310	SPELLMAN HIGH VOLTAGE ELECTRONICS CORP.
S312	SPENCER TURBINE CO.
S313	SPENCER, WHITE & PRENTIS
S315	SPERTI FARADAY, INC
S317	SPIN CRAFT
S320	SPOONER & MERRILL CO
S321	SPIRO, U. S. A., INC.
S325	SPRAY ENGINEERING CO.
S330	SPRAYING SYSTEMS CO.
S335	SPRINGFIELD BOILER
S340	SPRINGFIELD FOUNDRY INC.
S342	SPRINKMAN SONS CORP.
S343	S.Q. CONSTRUCTION
S345	SQUARE D CO
S348	S-T-M SUPPLY CO.
S350	ST. JOHN X-RAY LAB.

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
S355	STACKPOLE CARBON CO.
S359	STAIN-STEEL INC.
S360	STAHL RIDER, INC.
S361	STANCOR
S362	STAINLESS ALLOY METALS
S363	STAINLESS PIPE & FITTINGS, INC.
S364	STAINLESS PRODUCTS
S365	STAINLESS EQUIPMENT CO.
S366	STANDARD FITTING CO.
S367	STANDARD SWITCH
S368	STANDARD PRESSED STEEL CO.
S369	STANCO BOLT CO.
S370	STANLEY CONSULTANTS, INC.
S371	STALLINGS & LANLEY
S372	STANRAY CORP., IND. SERVICE DIV.
S373	STAPLES & PFEIFFER
S374	STARRETT, L. S.
S375	STATES CO, THE
S376	STAR HYDRAULICS
S377	STAPLEX CO.
S379	STATIC PRODUCTS
S380	STATHAM INSTRUMENTS, INC.
S381	STAUFF CORPORATION
S382	STATIC-O-RING
S383	STD TOOL AND DIE
S385	STEARNS MAGNETIC MFG CO
S390	STEARNS-ROGER CORP.
S392	STEARNS-ROGER FABRICATORS INC.
S395	STEEL FABRICATING CO
S397	STEEL FORGINGS INC
S400	STEPCO STEEL CO
S402	STELLITE DIVISION
S403	STEPHENS-ADAMSON MFG. CO.
S404	STERLING ELECTRIC MOTORS, INC.
S405	STERLING TOOL
S406	STEVENS INSTRUMENT
S407	STEWART & STEVENSON SERVICES INC.
S410	STOCK EQUIPMENT CO
S411	STOCKWELL LAB.
S412	STOCKTON STEEL
S413	STOCKHAM VALVE CO.
S415	STOLLER CORP., S. M.
S420	STONE & WEBSTER ENGINEERING CORP.
S425	STOW MFG. CO.
S427	STRAHMAN
S430	STRAINSERT CO.
S432	STRATFLON PRODUCTS, INC.
S435	STRONG-CARLISLE-HAMMOND
S440	STRUTHERS DUNN, INC
S443	STRUTHERS NUCLEAR & PROCESS CO.
S445	STRUTHERS WELLS CORP.
S447	STRYCO MANUFACTURING CO.
S450	SULZER BROS. INC.
S452	SULZER - KSB
S453	SUN SHIPBUILDING & DRYDOCK COMPANY
S454	SIMITOMO METAL INDUSTRIES
S455	SUNDH ELECTRIC CO
S460	SUNDSTRAND CORP.
S465	SUNTAC NUCLEAR CORP.
S470	SUPERINTENDENCE CO., INC.
S472	SUPERIOR AIR HANDLING CO.
S475	SUPERIOR ELECTRICAL CO
S480	SUPERIOR SWBD & DEVICES
S485	SUPERIOR TUBE
S490	SUSQUEHANNA-WESTERN, INC.
S492	SUTORBILT CORPORATION
S495	SW FABRICATING & WELDING CO
S496	SWAN MFG
S497	SWAN ENGINEERING AND MACHINERY CO.
S498	SWANSON ENGINEERING
S500	SWARTWOUT CO
S505	SWECO INC
S507	SWEELLAND CORP.
S508	SWENDEMAN
S510	SWENSON- DIV. OF AMITING CORPORATION
S515	SWEPCO TUBE CORP.
S517	SWISS HAMMER
S518	SWITCHCRAFT
S519	SYNCHRO START PRODUCTS
S520	SYNTRON CO
S523	SYRACUSE ELECTRONICS
S525	SYSTEMS ENGINEERING LABORATORIES, INC.
T004	TSF MFG. CO.
T005	T X T
T010	TAGGART, INC., ROBERT
T015	TAGLIABUE MFG
T020	TARGET ROCK CORPORATION
T023	TASKER INDUSTRIES
T025	TATE TEMCO, INCORPORATED
T027	TANOSIG ASSOCIATE INC.
T028	TAULMAN CO.
T030	TAYLOR ENGINEERING CORP.
T035	TAYLOR FORGE DIV.
T040	TAYLOR INSTRUMENT PROCESS CONTROL DIV.
T045	TAYLORED INDUSTRIES
T050	TECH ELECT PNL CORP
T055	TECH ELECTRIC
T060	TECHNIC INC.
T065	TECHNICAL ASSOCIATES
T067	TECHNICAL DISTRIBUTORS, INC.
T070	TECHNICAL OPERATIONS, INC.
T075	TECHNICAL PRODUCTS, INC
T076	TECHNOLGY INC.
T077	TECHNI-FAB., INC.
T079	TEKTRO INC.
T080	TEKTRONIX, INC.
T082	TELEDYNE COLOMBIA - SUMMERILL
T083	TELEDYNE CORPORATION
T085	TELEDYNE MATERIALS RESEARCH
T090	TELEDYNE-BROWN ENGINEERING

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
T095	TELEDYNE-FARRIS ENGINEERING
T100	TELEDYNE-GEOTECH
T105	TELEDYNE-ISOTOPES
T107	TELEDYNE MCKAY MFG. CO.
T109	TELEDYNE PHILBRUCK NEXUS
T110	TELEDYNE-WAH CHANG ALBANY
T115	TELEFLEX, INC.
T116	TELMAR
T117	TEMP FLEX DIV, ASSOCIATED PIPING
T120	TEMPO INSTRUMENT, INC
T125	TEMTEX TEMPERATURE SYSTEMS & COMPONENTS CO
T130	TENNECOMP SYSTEMS, INC.
T135	TENNELEC, INC.
T140	TENNESSEE NUCLEAR SPECIALTIES, INC.
T142	TENNESSEE VALLEY AUTHORITY
T145	TENNEY ENGINEERING, INC.
T147	TERRY STEAM TURBINE COMPANY
T150	TESHIBA MANUFACTURING
T152	TEXAS BOLT CO.
T153	TEXAS ELECTRIC STEEL CASTING CO.
T154	TEXAS FORGE
T155	TEXAS INSTRUMENTS INC.
T156	TEXAS FALNGE AND MFG.
T157	TEXAS METAL WORKS, INC.
T160	TEXAS PIPE AND BENDING, INC.
T161	TGM DETECTORS, INC.
T162	THERMAL MANUFACTURING CO.
T163	THAMES PERMACRETE
T164	THAMES VALLEY STEEL CORPORATION
T165	THERMO ELECTRIC
T166	THERMALINK CORPORATION
T168	THERMO-COUPLE
T169	THERMO-COUPLE PRODUCTS CO.
T170	THERMO ELECTRON CORP.
T175	THERMO MAGNETICS, INC.
T180	THERMOMATICS, INC.
T185	THERMON MFG
T190	THERMONETICS CORP.
T192	THERMO VOLT
T193	THERMXCHANGER
T195	THETA INSTRUMENT CORP.
T197	THOMAS A. EDISON IND.
T200	THOMPSON ELECTRIC CO
T203	THOMPSON TANK & MFG. CO.
T205	THOMSON, C. N. CO.
T210	TIGERMAN ENGINEERING
T211	TIMKER & RASOR CO.
T212	TIME NATIONAL LABORATORIES
T215	TIMES WIRE AND CABLE
T217	TIMKIN ROLLER BEARING
T218	TITAN
T220	TITANIUM METAL CORP. OF AMERICA
T225	TITUS MFG CO
T230	TOKE DEUTSCHMANN CO
T235	TODD SHIPYARDS CORP.
T239	TOKHEIM CO.
T240	TOKYO SHIBAURA ELECTRIC CO. LTD.(TOSHIBA)
T242	TOLEDO EDISON COMPANY
T243	TOLL ASSOCIATES
T244	TOMKINS-JOHNSON
T245	TOOLING SPECIALISTS, INC.
T248	TOPAZ ELECTRONICS
T250	TORNGREN CO.
T253	TORAICO ELECTRONICS INC.
T255	TOWER IRON WORKS, INC.
T256	TOWER-OLSCHAN CO.
T257	TOYO KEIKI KOGYO
T260	TRACER LAB
T262	TRACOR NORTHERN, INC.
T265	TRANE CO
T270	TRANS-WEIGH CO
T275	TRANSAMERICAN INSTRUMENT CORP.
T280	TRANSCO INC.
T283	TRANSENERGY CORP.
T285	TRANSFER SYSTEMS INC.
T287	TRANSMATION, INC.
T290	TRANSNUCLEAR INC.
T295	TRANTER MFG., INC.
T300	TRAPELO
T305	TRAVERSE CITY IRON WKS
T309	TREVICE, H.O., COMPANY
T310	TRENT TUBE DIV.
T311	TRINITY FORGE INC.
T312	TRINITY EQUIPMENT CORP.
T313	TRI-STATE MOTOR EXPRESS
T314	TRIANGLE ENGINEERING CO.
T315	TRUMBULL ELECTRIC MFG
T316	TRIDENT
T317	TRIAD TRANSFORMER
T319	TRU-SEAL INC.
T320	TRUSCON STEEL CO
T322	TUBES-GEIGER MULLER
T325	TUBE METHODS INC.
T327	TUBE SALES
T330	TUBE TURNS DIV
T335	TUBECO, INC.
T337	TUBULAR PRODUCTS DIV.
T340	TUFLINE
T343	TUTHILL PUMP CO.
T345	TURCO PRODUCTS
T346	TURNER IRON CO.
T347	TWIN CITY TESTING
T348	TWINING LABORATORIES
T349	TWINCO INC.
T350	TYLAN CORP.
U001	UCHIDA OIL HYDRAULICS
U002	U. N. ALLOY STEEL
U005	U. S. ELECTRIC
U010	U. S. GAGE COMPANY
U012	U.S.GROUT CORP.

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
U013	U.S. MOTORS
U015	U.S. NUCLEAR, INC.
U016	U. S. WELDING SUPPLY
U017	UEHLING INSTRUMENT CO.
U018	U.S. PUMPS INC.
U020	UGINE INDUSTRIES, INC.
U025	ULTRA CARBON CORP.
U027	UMA
U030	UNIFORM TUBES INC.
U033	UNILOC
U035	UNION CARBIDE CORP.
U040	UNION CONVEYOR CORP
U045	UNION ELECTRIC MFG
U050	UNION METAL MFG
U055	UNION PUMP COMPANY
U057	UNION SPRING & MANUFACTURING COMPANY
U060	UNION STEAM PUMP CO
U062	UNION STEEL CORP.
U065	UNION SW & SIGNAL DIV
U066	UNIROYAL, INC.
U067	UNITECH COMPANY
U068	UNISTRUT CORPORATION
U069	UNIT ELECTRIC CO.
U070	UNITED AIRCRAFT PRODUCTS, INC.
U075	UNITED ELECTRIC CONTROLS COMPANY
U080	UNITED ENGINEERS & CONSTRUCTORS, INC.
U085	UNITED MINERAL & CHEMICAL CORP.
U090	UNITED NUCLEAR CORP.
U095	UNITED STATES PIPE & FOUNDRY COMPANY
U100	UNITED STATES RADIUM CORP.
U105	UNITED STATES STEEL CORP.
U109	UNITED TRANSFORMER COMPANY
U110	UNITED STATES TESTING CO., INC.
U115	UNITRON INSTRUMENT CO.
U120	UNIVERSAL FABRICATED PRODUCTS COMPANY
U125	UNIVERSAL INDUSTRIES
U130	UNIVERSAL OIL PRODUCTS CO.
U135	UNIVERSAL TECHNICAL TESTING LABORATORIES
U139	UNIV. OF CALIF., C. OF ENGR., O. R. S.
U140	UNIVERSITY SOFTWARE SYSTEMS
U145	UPTEGRAFF, R. E. CO
U150	US ELECTRICAL MOTORS
U155	US HOFFMAN MACHINE
U160	USC INC./ENERGY SYSTEMS GROUP
U165	US GYPSUM CO.
V005	V.O.P.
V010	VACCO INDUSTRIES
V015	VACUMITE INC.
V020	VACUUM INDUSTRIES INC.
V025	VACUUM/ATMOSPHERES CORP.
V030	VALCOR ENGINEERING CORP.
V035	VALIDYNE ENGINEERING CORP.
V036	VALLEY STEEL PRODUCTS CO.
V037	VALTEK INCORPORATED
V038	VALVE AND PRIMER CORP.
V040	VANCE JIG BORING SERVICE, INC.
V045	VANCE PRECISION INDUSTRIES
V050	VANTON PUMP & EQUIPMENT CORP.
V052	VAPOR CORPORATION - TXT DIVISION
V054	VAREC, INC.
V060	VARIAN ASSOCIATES
V065	VARIAN DATA MACHINES
V070	VECTOR CORP.
V075	VEEDER ROOT COMPANY
V080	VELAN ENGINEERING COMPANIES
V085	VELAN VALVE CORP.
V090	VELONEX
V091	VERAKO PRODUCTS
V092	VENETIAN ORNAMENTAL IRON WORKS, INC.
V093	VERMONT YANKEE NUCLEAR POWER CORP.
V094	VERSABAR CORPORATION
V095	VERSA PRODUCTS
V096	VERMONT RESEARCH CORP
V097	VERIFLO
V100	VEZAN-WEST AND CO.
V102	VIBRANETICS, INC.
V103	VIBRATION ELIMINATOR CO.
V104	VIBRATION CONTROLS CORP.
V105	VICKERS, INC
V110	VICKERY SIMMS, INC.
V115	VICTOREEN INSTRUMENT DIV.
V117	VICTOR SPECIALTIES
V118	VIDEOTECHNIQUES
V120	VIKING INDUSTRIES
V125	VIKING PUMP CO
V127	VIRGINIA ELECTRIC & POWER COMPANY
V129	VISCOSITY OIL CO.
V130	VISUAL INDUSTRIAL PRODUCTS, INC.
V132	VITRO ENGINEERING DIVISION
V135	VOGT, HENRY MACHINE CO.
V140	VOKES, H. L. CO
V142	VOTAW PRECISION TOOL COMPANY
W005	WAGNER ELEC CORP
W010	WAKEFIELD BRASS CO
W012	WALCON CORP.
W013	WALDEN INDUSTRIAL
W015	WALKER-PARKERSBURG DIV
W020	WALL TUBE & METAL PRODUCTS CO.
W023	WALLACE-MURRAY CORP.
W025	WALLACE & TIERNAN, INC
W030	WALWORTH CO.
W032	WALTER NORRIS ENGINEERING CO.
W033	WALTER KIDDE & CO., INC
W034	WALSH CONSTRUCTION CO.
W035	WANG LABORATORIES, INC.
W037	WARCO CONTROL CENTER
W040	WARD LEONARD ELECTRIC COMPANY
W045	WARNER & SWASEY CO
W050	WARNER ELEVATOR MFG CO
W052	WARREN BARR SUPPLY CO.

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR
W055	WARRICK, CHARLES, F. CO
W057	WASHINGTON PUBLIC POWER SUPPLY SYSTEM
W060	WASHINGTON TOOL AND MACHINE COMPANY
W063	WATER TREATMENT CORP.
W065	WATLOW ELECTRIC MFG. CO.
W066	WAUKEGAN STEEL
W067	WATSON MANUFACTURING CO.,INC.
W068	WATSON-STILLMAN CO.
W069	WAYNE ELECTRONICS
W070	WAUKESHA FOUNDRY CO., INC.
W071	WEATHERGUARD PRODUCTS
W072	WEIL PUMP CO.
W073	WEINMAN PUMP MFG. CO.
W074	WEBER GAGE CO.
W075	WEKSLER INSTRUMENT CORPORATION
W076	WEJ-IT EXPANSION PRODUCTS
W077	WELDCRAFT EQUIPMENT CO.
W078	WEBSTER ELECTRIC
W079	WEDCO CORP.
W080	WELDING AND STEEL FABRICATION CO., INC.
W081	WECO
W085	WERNER & PFLEIDERER CORP.
W090	WESCHLER ELECTRIC CORPORATION
W091	WESMAR
W092	WESTERN ARCHITECTURE IRON
W093	WESTERN CONTROLS INC.
W094	WESTERN CONCRETE STRUCTURES
W095	WESTERN ELECTRIC
W097	WESTERN ENGINE CO.
W098	WESTERN FORGE AND FLANGE
W099	WESTERN GEOPHYSICAL ENGINEERS, INC.
W100	WESTERN INDUSTRIES, INC
W101	WESTERN HYDRAULIC
W103	WESTERN GEAR CORP
W105	WESTERN PIPING & ENGINEERING CORP. OF L.A.
W110	WESTERN PRECIPITATION
W115	WESTERN SINTERING CO., INC.
W117	WESTERN TOOL
W120	WESTINGHOUSE ELECTRIC CORPORATION
W125	WESTON ELEC INSTRUMENT
W126	WESTON GEOPHYSICAL ENGINEERS, INC.
W127	WESTON HYDRAULICS DIV.
W130	WESTRONICS, INC.
W131	W.F. & JOHN BARNES
W132	WHEATLEY, CHARLES, COMPANY
W135	WHEATON SCIENTIFIC
W140	WHEELER, C. H. DIV
W141	WHEELER REFLECTOR CO.,INC.
W145	WHEELING CORRUGATING
W150	WHIRL AIR FLOW
W151	WHITE ENGINE INC.
W152	WHITE INDUSTRIAL POWER, INC.
W153	WHITE, J.S.
W155	WHITE, RALPH CO., THE
W160	WHITEHEAD & KALES CO.
W161	WHITEHEAD METAL
W165	WHITEY CO.
W170	WHITING CORP
W175	WHITING FOUNDRY EQUIP
W180	WHITLOCK MFG. CO., THE
W185	WHITTAKER CORP.
W190	WHITTAKER DIVISION OF TASKER INDUSTRIES
W195	WICKES BOILER CO
W200	WIEGAND, EDWIN L. CO.
W210	WIGGINS, STANLEY B.
W213	WILD-HEERBRUGG CORPORATION
W214	WILKERSON CORP.
W215	WILKES PRECISION
W216	WILKENS ANDERSON
W217	WILLIAMS AND CO.
W222	WILLAMETTA CO.
W225	WILLIAMSON CORP.
W227	WILLIANETTE IRON & STEEL CO.
W230	WING, L. J. MFG
W232	WINSMITH INC.
W235	WINSTON MFG CO
W237	WINTER CONTROL
W240	WISCONSIN BRIDGE & IRON
W241	WISCONSIN CENTRIFUGAL INC.
W242	WISCONSIN MICHIGAN ELECTRIC COMPANY
W244	WISMER BECKER
W245	WISCONSIN PROTECTIVE COATING CORP.
W247	WISCONSIN PUBLIC SERVICE CORPORATION
W248	WISCONSIN STEEL
W249	WISS,JANNEY, ELSTNER AND ASSOCIATES
W250	WITCO CHEMICAL CO.
W251	WISD
W255	WKM VALVE DIV.
W260	WOLFE AND MANN MFG. CO., THE
W265	WOLLENSAK, INC.
W270	WOLVERINE TUBE DIV.
W275	WOOD, JOHN MFG
W280	WOOD, N. COUNTER LABORATORY, INC.
W285	WOODBRIDGE ORNAMENTAL
W287	WOODS, T.B. AND SONS
W290	WOODWARD GOVERNOR CO
W295	WOODWARD-ENVICON, INC.
W297	WOODWARD-MOORHOUSE & ASSOCIATES, INC.
W300	WOOLEY CO
W302	WOOLLEY, W. J. CO.
W303	WOOLSEY MAINE INDUSTRIES
W304	WOOSTER ELECTRIC CO.
W305	WORCESTER CONTROLS CORP.
W306	WORCESTER POLYTECHNIC INST. MECH ENG DEPT
W308	WORCESTER VALVE CO INC.
W310	WORDEN-ALLEN CO
W312	WORLD WIDE RESEARCH
W314	WORTHINGTON CONTROLS COMPANY
W315	WORTHINGTON CORP.
W317	WORTHINGTON SALES INTERNATIONAL

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VENDOR LIST AND REFERENCE NUMBERS

REF NO.	VENDOR	REF NO.	VENDOR
W320	WRIGHT-AUSTIN CO		
W325	WRIGHT, HOWARD S. CONSTRUCTION CO.		
W327	WSF INDUSTRIES, INC.		
W330	WYATT DIV.		
W335	WYATT INDUSTRIES, INC.		
W340	WYMAN-GORDON CO.		
X001	XEROX DATA SYSTEM		
X002	XEROX CORPORATION		
X005	X-RAY ENGINEERING CO.		
X007	X-RAY INDUSTRIAL		
X010	X-RAY PRODUCTS CORP.		
Y003	YALE		
Y004	YANKEE ATOMIC ELECTRIC CO.		
Y005	YARNALL-WARING CO		
Y010	YARWAY CORP		
Y011	YAWATA IRON & STEEL CO.		
Y012	YEAGER, HENRY J. ASSOCIATES		
Y015	YEOMANS BROTHERS		
Y020	YORK, D. H., CO.		
Y021	YOUNG RADIATOR CO.		
Y022	YOUNGSTOWN SHEET AND TUBE CO.		
Y025	YOUNGSTOWN STEEL TANK		
Y027	YOUNGSTOWN WELDING AND ENGINEERING		
Y029	YUBA CONSOLIDATED INDUSTRIES		
Y030	YUBA HEAT TRANSFER		
Z001	ZACHRY CO., H.B.		
Z002	ZELLEA BROTHERS, INC.		
Z003	ZANE WELDCRAFT, INC.		
Z004	ZAUG CO., JOHN		
Z005	ZIRCONIUM TECHNOLOGY CORP.		
Z008	ZINSCO ELECTRICAL PRODUCTS		
Z010	ZURN IND, INC		