B. Ralph Sylvia
Senior Vice President

Detroit Edison

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NRC-88-0229
September 9, 1988

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

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) NRC Bulletin No. 88-05 and Supplements 1 & 2, "Nonconforming Materials Supplied by Piping Supplies, Inc. at Folsom, New Jersey and West Jersey Manufacturing Company at Williamstown, New Jersey," dated May 6, 1988, June 15, 1988, and August 3, 1988, respectively

Subject: Response to NRC Bulletin No. 88-05

In resporse to the NRC Bulletin No. 88-05 and Supplements 1 & 2, (Reference 2) Detroit Edison Company, hereby provides the information requested in the bulletin concerning materials supplied by Piping Supplies Inc. at Folsom, West Jersey Manufacturing Company at Williamstown, New Jersey and an affiliated Company, Chews Landing Metal Manufacturers Incorporated.

Detroit Edison is participating with the Nuclear Management And Resources Council (NUMARC) in industry activities relative to the Bulletin 88-05 and its supplements. Supplement 2 of Bulletin 88-05 has temporarily suspended, with some exceptions, the actions and reporting requirements of Bulletin 88-05 and Supplement 1 and required licensees to report the results of the record review, testing, and analysis performed as of the date of Supplement 2. Enclosure 1 of this letter provides the required response.

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1/1

If you have any questions, please contact Mr. Girija Shukla at (313) 586-4270.

Sincerely,

B Ralph Sylvia

Enclosures:

cc: Mr. A. B. Davis
Mr. R. C. Knop
Mr. T. R. Quay
Mr. W. G. Rogers

I, B. RALPH SYLVIA, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

B Ralph Sylvia

B. RALPH SYLVIA
Senior Vice President

On this 9th day of September, 1988, before me personally appeared B. Ralph Sylvia, being first duly sworn and says that he executed the foregoing as his free act and deed.

Marcia Buck

Notary Public

Notary Public, Washtenaw County, MI
My Commission Expires Jan. 11, 1992
Acting in Monroe County, MI

RESPONSE TO NRC BULLETIN 88-05 SUPPLEMENT 2

The following report provides the information requested of operating licensees in response to Bulletin 88-05 Supplement 2. The report provides the results of the Fermi 2 investigation for the following activities:

1. Records review
2. Testing
3. Analysis

o Records Review

The scope of the records review consisted of examining the following types of records:

- o Purchase orders (P.O.'s)
- o Receiving inspection reports (RIR's)
- o Field inventory records (FIR's)
- o Certified Mill test reports (CMTR's)
- o ASME code N5 data reports
- o Piping isometric drawings

The records search started by manually scanning computer generated reports listing P.O.'s and RIR's furnished by contractors involved in piping fabrication or erection. P.O.'s and RIR's for pipe fittings, flanges and items not specifically described were retrieved and examined. More than 20 reels of film and 182 boxes of unfilmed hard copy documents were examined.

The RIR's generally provided the CMTR's which identify heat numbers and the manufacturer of flanges and fittings. The Automated Records Management System (ARMS) was then searched using the heat number. This search would lead to additional documents such as FIR's, CMTR's and N5 data reports.

The FIR's and N5 data reports would identify the specific use of the material by referencing the piping isometric drawing and the piece mark.

Documents furnished by the following contractors plus Detroit Edison were reviewed for suspect flanges and pipe fittings furnished by West Jersey Manufacturing (WJM), Piping Supplies Incorporated (PSI) and Chews Landing Metal Manufacturers Incorporated (CLM).

Wismer & Becker - prime pipe erection contractor
Townsend & Bottum - RHR complex pipe erector
Reactor Controls Inc. - CRD & reactor internals contractor
General Electric I & SE - Reactor internals contractor
Walbridge Aldinger - General contractor
Bechtel - Maintenance and onsite storage building contractor.
Daniel International - Construction manager
Phoenix - Fire protection pipe erector
Monroe Plumbing & Heating - Miscellaneous pipe erector
Power Process Piping - Miscellaneous pipe erector
Taylor Engineering - Piping fabrication & supplies
Capital Manufacturing - Pipe supplier
Dravo Corporation - Pipe supplier
Magnatrol - Pressure switch supplier
Detroit Edison - Material procurement

The document review resulted in the following findings:

Document Source	Suspect Flanges Received	Suspect Flanges Installed in Plant	Suspect Flanges in Warehouse	Suspect Flanges Not used at Fermi 2	Unaccounted for Suspect Flanges
Detroit Edison	81	17	23	7	34
Wismer & Becker	164	102	11	1	50
Reactor Controls Inc.	8	8	0	0	0
Townsend & Bottum	144	84	0	0	60
Magnatrol	8	8	0	0	0
Unknown	3		3		
Dravo	6	0	6		
Totals	414	219	43	8	144

The unaccounted flanges are those which were received at Fermi 2 but not installed on safety related systems. Some of these flanges may have been used on non-safety related systems. Detroit Edison did not maintain traceability of parts used on non-safety related systems. At the end of the construction period, some of the remaining construction material was sold as surplus material. Detroit Edison did not prepare documents identifying or describing these items. Some flanges were included in these surplus material sales.

o Testing

A testing program was initiated to perform hardness tests using the Equotip testing technique on suspect flanges installed in the plant. The test program began on July 20, 1988 and was suspended on August 3, 1988 as allowed by NRC Bulletin 88-05 Supplement 2.

In addition to the Equotip hardness testing, four of the warehouse flanges were destructively tested for chemical and physical properties. Material samples of one installed flange were laboratory tested for carbon content.

Following is a summary of the test results.

Flanges Equotip tested	156
Flanges acceptable by Equotip testing	130
Flanges outside of the Equotip acceptable range	26
Flanges with justification for continued operation	26
Flanges tested for chemical & physical properties	4
Flanges with acceptable chemical and physical test results	4

Attachment A contains tables that provide detail test results presented in the format developed by NUMARC. The column headings on the "Flange Data" table provide the following information.

Line Item:	A sequence line number
Diameter:	The nominal diameter of the flange
Commodity:	The type of fitting involved, FLG = Flange
Rating:	The ASME pressure rating in PSI
Type:	The type of flange or fitting involved
Spec:	The ASME or ASTM specification for the item
Grade:	The material grade designation
Schedule:	The wall thickness of the item expressed in standard pipe size schedules.
Heat Lot:	The heat number/heat code identity of the item

CMTR-DT:	The date of the certified mill test report
Quan:	Quantity received
Qty in stk:	Quantity remaining in stock
Instld Acc:	Quantity installed in accessible areas of the plant
Instld Nac:	Quantity installed in nonaccessible areas of the plant
VNR:	The material vendor (W = West Jersey Mfg.)
Source:	The manufacturer of the material
Supply 1:	The supplier that WJM/PSI sold material to
Supply 2:	The supplier providing the subject material to the utility
ASME:	The ASME class of the item
NCA:	Material manufactured according to a quality program
Test:	Y indicates that test results are available
Remark:	Y indicates that there are remarks in the data base

The column headings on the "Test Report 1" table provide the following information:

Line Item:	The line item number corresponding to the line item number on the Flange Data Table
Spec ID:	The test specimen identity
T Ten S:	The test specimen tensile strength extroplated from the Brinell hardness
C Ten S:	The CMTR tensile strength data
T YLD S:	The test specimen yield strength
C YLD S:	The CMTR yield strength data
T PER E:	The test specimen elongation percentage
C PER E:	The CMTR elongation percentage
T PER R:	The test specimen area reduction percentage
C PER R:	The CMTR area reduction percentage
T Hard:	The test specimen Brinell hardness value converted from
C Hard:	The CMTR hardness value

The column headings on the "Test Report 2" table provide the following information.

LINE Item:	The line item number corresponding to the line item number on the Flange Data Table
SPEC ID:	The test specimen identity
T CAR P:	The test specimen carbon percentage
C CAR P:	The CMTR carbon percentage
T MAN P:	The test specimen maganese percentage
C MAN P:	The CMTR maganese percentage
T SIL P:	The test specimen silicon percentage

C SIL P:	The CMTR silicon percentage
T PHOS P:	The test specimen phophorous percentage
C PHOS P:	The CMTR phosphorous percentage
T SUL P:	The test specimen sulfur percentage
C SUL P:	The CMTR sulfur percentage
T CHM P:	The test specimen chromium percentage
C CHM P:	The CMTR chromium percentage
T NIK P:	The test specimen nickel percentage
C NIK P:	The CMTR nickel percentage
T MLYB P:	The test specimen molybdenum percentage
C MLYB P:	The CMTR molybdenum percentage
HEAT:	The type of heat treatment

o Analysis

All flanges that were inaccessible at the time of discovery were reported to the NRC Operations Center via telephone in accordance with the requirements of NRC Bulletin 88-05 Supplement 1. A total of four reports was made. Evaluations to justify continued operation (JCO) for these 20 flanges were performed. See Attachment B for a list of these flanges. All flanges identified to be in areas which are normally inaccessible during operations were tested during a recent plant shutdown. The test results determined that these flanges were acceptable.

The 26 specimens that failed the hardness test requirements were also analyzed to justify continued operation (JCO) of the plant. A summary of the results is contained in Attachment B. Flanges that failed the hardness test criteria were also reported to the NRC Operations Center via telephone as required by NRC Bulletin 88-05 Supplement 1. A total of five reports was made. Forty six JCO evaluations were performed in total.

ATTACHMENT A
TEST RESULTS

FLANGE DATA

LINE ITEM	DIAMETER	COMMODITY	RATING	TYPE	SPEC	GRADE	SCH	HEAT LOT	CNTR DT	QUAN	QTY IN STK	INSTLD ACC	INSTLD	NAC	VNR	SOURCE	SUPPLY1	SUPPLY2	ASME	NCA	TEST	REMARK
1	0.75	FLG	1500	SWRF	105		160	GDCW	06/18/82	11	0	11	0	W		WJM	GUYON ALLOYS	W & B	1	N	Y	Y
2	18.00	FLG	900	WNRF	105		80	10728	02/23/83	1	0	1	0	W		WJM	GUYON	GUYON	2	N	Y	Y
3	18.00	FLG	900	WNRF	105		80	12370	02/23/83	5	0	5	0	W		WJM	GUYON	GUYON	2	N	Y	Y
4	18.00	FLG	900	WNRF	105		80	1504	02/23/83	1	0	1	0	W		WJM	GUYON	GUYON	2	N	Y	Y
5	18.00	FLG	900	WNRF	105		80	10730	02/23/83	2	0	2	0	W		WJM	GUYON	GUYON	2	N	Y	Y
6	18.00	FLG	900	WNRF	105		80	9651	02/23/83	1	0	1	0	W		WJM	GUYON	GUYON	2	N	Y	Y
7	18.00	FLG	900	WNRF	105		80	10796	02/23/83	2	0	2	0	W		WJM	GUYON	GUYON	2	N	Y	Y
8	3.00	FLG	150	WNRF	105		80	4706	02/04/82	2	0	2	0	W		WJM	JOLIET VALVE	TOWNSEND&BOT	3	Y	Y	Y
9	18.00	FLG	300	WNRF	105		0	T76600&RT76800	02/10/83	1	0	1	0	W		WJM	GUYON	W & B	2	N	Y	Y
10	0.75	FLG	150	SWRF	105		80	E1413	05/07/81	1	0	1	0	W		WJM	CAPITOL PIPE	W & B	1	N	Y	Y
11	2.00	FLG	1500	WRNF	105		160	GDDW	04/11/83	1	0	1	0	W		WJM	GUYON	W & B	1	N	Y	Y
12	4.00	FLG	300	WNRF	105		40	4631	02/03/82	2	0	2	0	W		WJM	CAPITOL PIPE	W & B	3	N	Y	Y
13	12.00	FLG	300	RFBL	105		0	22330	09/01/83	1	0	1	0	W		WJM	GUYON	W & B	3	N	Y	Y
14	3.00	FLG	150	WNRF	105		40	38045	05/01/81	4	0	4	0	W		WJM	BARR-SAUNDER	W & B	2	N	Y	Y
15	2.50	FLG	150	WNRF	105		80	COI	06/20/84	4	0	4	0	W		WJM	DRAVO	DRAVO	2	Y	Y	Y
16	3.00	FLG	150	WNRF	105		40	38045	05/01/81	2	0	2	0	W		WJM	BARR-SAUNDER	W & B	3	N	Y	Y
17	2.50	FLG	150	RFWN	105		80	COI	06/20/84	11	0	11	0	W		WJM	DRAVO	DRAVO	2	Y	Y	Y
18	20.00	FLG	150	WNRF	105		0	9452	11/14/83	2	0	2	0	W		WJM	GUYON	W & B	2	N	Y	Y
19	0.75	FLG	150	RFSW	105		80	64C	10/28/81	3	0	3	0	W		WJM	BARR-SAUNDER	W & B	2	N	Y	Y
20	0.75	FLG	150	RFSW	105		80	3198/CBA	05/04/83	1	0	1	0	W		WJM	GUYON	W & B	2	N	Y	Y
21	0.75	FLG	150	RFSW	105		80	E1413	02/03/82	2	0	2	0	W		WJM	CP & SP CO.	W & B	2	N	Y	Y
22	0.75	FLG	150	RF	105		80	1599	02/16/83	4	0	4	0	W		WJM	GUYON	W & B	3	N	Y	Y
23	6.00	FLG	300	BL	105		40	88	01/21/83	1	0	1	0	W		WJM	GUYON	GUYON	3	N	Y	Y
24	6.00	FLG	300	WNFF	105		40	4706	02/04/82	1	0	1	0	W		WJM	JOLIET VALVE	T & B INC	3	Y	Y	Y
25	2.00	FLG	150	RFBL	105		80	B17	10/28/81	2	0	2	0	W		WJM	BARR-SAUNDER	W & B	3	N	Y	Y
26	3.00	FLG	150	WNRF	105		40	4706	02/04/82	8	0	8	0	W		WJM	JOLIET VALVE	T & B, INC	3	Y	Y	Y
27	1.00	FLG	150	RFSW	105		80	A79	02/04/82	40	0	40	0	W		WJM	JOLIET VALVE	T & B, INC	3	Y	Y	Y
28	1.00	FLG	150	RFSW	105		80	E1413	08/05/81	16	0	16	0	W		WJM	CP & SP CO.		3	N	Y	Y
29	4.00	FLG	900	WR	105		120	4064	10/30/82	1	0	1	0	W		WJM	GUYON	W & B	1	N	Y	Y
30	6.00	FLG	150	RFWN	105		40	CBP	07/24/86	4	0	4	0	W		WJM	CP & SP	CP & SP	2	Y	[illegible]	Y
31	2.00	FLG	150	RFSW	105		80	COI	07/24/86	2	0	2	0	W		WJM	CP & SP	CP & SP	2	Y	Y	Y
32	1.50	FLG	150	RFSW	105		80	CES	11/07/84	10	0	10	0	W		WJM	DRAVO	DRAVO	2	N	Y	Y
33	0.75	FLG	150	SWRF	105		0	64C	10/28/81	1	0	1	0	W		WJM	BARR-SAUNDER	W & B	2	N	Y	Y
34	0.75	FLG	600	RFSW	105		80	GDBG	11/12/82	2	2	0	0	W		WJM	GUYON	W & B	1	N	Y	Y
35	4.00	FLG	900	RFWN	105		120	4064	11/30/82	1	1	0	0	W		WJM	GUYON	W & B	1	N	Y	Y
36	1.00	FLG	150	RFSW	105		80	COH	04/30/85	1	1	0	0	W		WJM	DRAVO	DRAVO	2	N	Y	Y

TEST REPORT 1

LINE ITEM	SPEC ID	T TEN S	C TEN S	T YLD S	C YLD S	T PER E	C PER E	T PER R	C PER R	T HARD	C HARD
1	B21403876	82000	73270	0	51260	0	27	0	59	164	0
1	B21403877	79000	73270	0	51260	0	27	0	59	158	0
1	B21403**5	69000	73270	0	51260	0	27	0	59	143	0
1	B21403895	68000	73270	0	51260	0	27	0	59	142	0
1	B215223917	80000	73270	0	51260	0	27	0	59	160	0
1	B214032611	83000	73270	0	51260	0	27	0	59	158	0
1	B2140326I0	80000	73270	0	51260	0	27	0	59	160	0
1	B2140320	77000	73270	0	51260	0	27	0	59	156	0
1	B2152233A	89000	73270	0	51260	0	27	0	59	180	0
1	B2152233B	78000	73270	0	51260	0	27	0	59	157	0
1	B215223B7	78000	73270	0	51260	0	27	0	59	157	0
2	E1x3151138	77000	72535	0	38970	0	28	0	50	156	0
3	E112151 12	77000	75096	0	39254	0	28	0	60	156	0
3	E113151138	72000	75096	0	39254	0	28	0	60	151	0
3	E113146128	81000	75096	0	39254	0	28	0	60	162	0
3	E113146 13	71000	75096	0	39254	0	28	0	60	149	0
3	E113146128	79000	75096	0	39254	0	28	0	60	158	0
4	E113151148	82000	75664	0	39823	0	28	0	64	167	0
5	E11314611	82000	74527	0	40108	0	28	0	54	165	0
5	E113151148	73000	74527	0	40108	0	28	0	54	154	0
6	E11315115	73000	76518	0	40677	0	27	0	65	153	0
7	E11314613	82000	75380	0	41245	0	28	0	58	165	0
7	E11314614	83000	75380	0	41245	0	28	0	58	168	0
8	E412836.P	84000	78371	0	43950	0	30	0	54	172	0
8	E412836.0	77000	78371	0	43950	0	30	0	54	156	0
9	E413162	86000	74900	0	49090	0	30	0	59	177	0
10	B217957.33	89000	78200	0	48300	0	36	0	60	184	0
11	B21218741	81000	75490	0	55110	0	30	0	52	162	0
12	B623272 F1	72000	78086	0	41106	0	30	0	61	151	0
12	B623272 F2	65000	78086	0	41106	0	30	0	61	135	0
13	B623235 CC	74000	74100	0	42241	0	29	0	38	153	0
14	T4820975	63500	77048	0	44633	0	28	0	48	131	0
14	T4820978	63000	77048	0	44633	0	28	0	48	130	0
14	T4820955	67500	77048	0	44633	0	28	0	48	140	0
14	T4820958	63500	77048	0	44633	0	28	0	48	131	0
15	E21218449	84000	87663	0	50575	0	22	0	43	171	0
15	E21218450	83000	87663	0	50575	0	22	0	43	168	0
15	E2121885	86000	87663	0	50575	0	22	0	43	176	0
15	E.121880	85000	87663	0	50575	0	22	0	43	174	0
16	G1136591	63000	77048	0	44633	0	28	0	48	131	0
16	G1136581	89000	77048	0	44633	0	28	0	48	184	0
17	E11401166	86000	87663	0	50575	0	22	0	43	176	0
17	E11401167	84000	87663	0	50575	0	22	0	43	184	0
17	E11315348	86000	87663	0	50575	0	22	0	43	176	0
17	E11315349	88000	87663	0	50575	0	22	0	43	181	0
17	E11315354	82000	87663	0	50575	0	22	0	43	165	0

NOTE: The zero entries in columns T YLD S, T PER E, and T PER R indicate that these tests were not performed. The zero entry in the C HARD column indicates that a value was not reported in the CMTR.

YIELD REPORT I

LINE ITEM	SPEC ID	T TEM	S C TEM	S T YLD	S C YLD	S T PER E	C PER E	T PER R	C PER R	T HARD	C HARD
17	E11315355	82000	87663	0	50575	0	22	0	43	164	0
17	E11400539	88000	87663	0	50575	0	22	0	43	182	0
17	E11400540	84000	87663	0	50575	0	22	0	43	173	0
17	E1151661	87000	87663	0	505:5	0	22	0	43	178	0
17	E1151660	81000	87663	0	50575	0	22	0	43	162	0
17	E113154	84000	87663	0	50575	0	22	0	43	173	0
18	T464304	68000	73958	0	05228	0	32	0	60	142	0
18	T463092	72000	73958	0	45228	0	32	0	60	149	0
19	P444362178	83000	79800	0	51360	0	29	0	58	.89	0
19	P444362181	82000	79800	0	51360	0	29	0	58	156	0
19	P444362177	89000	79800	0	51360	0	29	0	58	144	0
20	P444362182	83000	81198	0	45196	0	25	0	51	168	0
21	P445194180	64000	78200	0	48360	0	24	0	60	173	0
21	P445194181	90000	78200	0	48360	0	24	0	60	190	0
22	R308513015	81000	77397	0	38648	0	24	0	52	163	0
22	R308513041	86000	77397	0	38648	0	24	0	52	175	0
22	R308512916	73000	77397	0	38648	0	24	0	52	152	0
22	R308512918	73000	77397	0	38648	0	24	0	52	153	0
23	G412094129	69000	80358	0	51344	0	27	0	60	145	0
24	G412094130	80000	78371	0	43950	0	30	0	54	160	0
25	G11408314	72000	79500	0	42100	0	26	0	51	149	0
25	G11408307	77000	79500	0	42100	0	26	0	51	156	0
26	R3021862F1	63000	78371	0	43950	0	30	0	54	129	0
26	R3021862F2	64000	78371	0	43950	0	30	0	54	132	0
26	R3021862F4	64000	78371	0	43950	0	30	0	54	133	0
26	R3021861F7	66000	78371	0	43950	0	30	0	54	138	0
26	R3021862F3	69000	78371	0	43950	0	30	0	54	143	0
26	R3021861F4	66000	78371	0	43950	0	30	0	54	137	0
26	R3021861F5	83400	78371	0	43950	0	30	0	54	170	0
26	R3021861F6	69000	78371	0	43950	0	30	0	54	143	0
27	R30514288	100000	80290	0	43820	0	28	0	55	211	0
27	R30514281	98000	80290	0	43820	0	28	0	55	205	0
27	R30514286	85000	80290	0	43820	0	28	0	55	174	0
27	R30514285	83000	80290	0	43820	0	28	0	55	169	0
27	R30514282	83000	80290	0	43820	0	28	0	55	168	0
27	P30514292	88000	80290	0	43820	0	28	0	55	180	0
27	R30514289	82000	80290	0	43820	0	28	0	55	167	0
27	R30514291	88000	80290	0	43820	0	28	0	55	182	0
27	R30515281	89000	80290	0	43820	0	28	0	55	184	0
27	R30515282	89000	80290	0	43820	0	28	0	55	184	0
27	R30515284	86000	80290	0	43820	0	28	0	55	175	0
27	R30515285	82000	80290	0	43820	0	28	0	55	165	0
27	R30515287	83000	80290	0	43820	0	28	0	55	168	0
27	R30515288	86000	80290	0	43820	0	28	0	55	175	0
27	R30515290	84000	80290	0	43820	0	28	0	55	171	0
27	R30515291	84000	80290	0	43820	0	28	0	55	172	0

NOTE: The zero entries in columns T YLD S, T PER E, and T PER R indicate that these tests were not performed. The zero entry in the C HARD column indicates that a value was not reported in the CMTR.

TEST REPORT 1

LINE ITEM	SPEC ID	T TEN S	C TEN S	T YLD S	C YLD S	T PER E	C PER E	T PER R	C PER R	T HARD	C HARD
27	R30515386	58000	80290	0	43820	0	28	0	55	182	0
27	R30515385	88000	80290	0	43820	0	28	0	55	182	0
27	R30515382	90000	80290	0	43820	0	28	0	55	188	0
27	R30515381	97000	80290	0	43820	0	28	0	55	178	0
27	R30515392	89000	80290	0	43820	0	28	0	55	186	0
27	R30515391	89000	80290	0	43820	0	28	0	55	183	0
27	R30515389	77000	80290	0	43820	0	28	0	55	156	0
27	R30515388	73600	80290	0	43820	0	28	0	55	154	0
27	R305206-1	82000	80290	0	43820	0	28	0	55	165	0
27	R305206-2	84000	80290	0	43820	0	28	0	55	172	0
27	R305206-3	84000	80290	0	43820	0	28	0	55	172	0
27	R305206-4	80000	80290	0	43820	0	28	0	55	160	0
27	R305205-1	88000	80290	0	43820	0	28	0	55	182	0
27	R305205-2	81000	80290	0	43820	0	28	0	55	163	0
27	R305205-3	82000	80290	0	43820	0	28	0	55	167	0
27	R305225-4	81000	80290	0	43820	0	28	0	55	163	0
27	R30514081	100000	80290	0	43820	0	28	0	55	209	0
27	R30514082	82000	80290	0	43820	0	28	0	55	165	0
27	R30514084	88000	80290	0	43820	0	28	0	55	181	0
27	R30514085	98000	80290	0	43820	0	28	0	55	205	0
27	R30514087	93000	80290	0	43820	0	28	0	55	198	0
27	R30514088	93000	80290	0	43820	0	28	0	55	197	0
27	R30514090	97000	80290	0	43820	0	28	0	55	204	0
27	R30514091	97000	80290	0	43820	0	28	0	55	203	0
28	R30515181	89000	78200	0	48300	0	36	0	60	185	0
28	R30515187	89000	78200	0	48300	0	36	0	60	187	0
28	R30515191	94000	78200	0	48300	0	36	0	60	200	0
28	R30515185	100000	78200	0	48300	0	36	0	60	209	0
28	R30515188	105000	78200	0	48300	0	36	0	60	220	0
28	R30515190	91000	78200	0	48300	0	36	0	60	192	0
28	R30515182	98000	78200	0	48300	0	36	0	60	206	0
28	R30515184	95000	78200	0	48300	0	36	0	60	261	0
28	R30515085	89000	78200	0	48300	0	36	0	60	187	0
28	R30515084	84000	78200	0	48300	0	36	0	60	172	0
28	R30515082	89000	78200	0	48300	0	36	0	60	186	0
28	R30515091	90000	78200	0	48300	0	36	0	60	188	0
28	R30515081	88000	78200	0	48300	0	36	0	60	179	0
28	R30515088	88000	78200	0	48300	0	36	0	60	181	0
28	R30515090	88000	78200	0	48300	0	36	0	60	182	0
28	30515087	88000	78200	0	48300	0	36	0	60	181	0
29	R212187899	89000	75522	0	44659	0	28	0	52	185	0
30	P443048-1	80000	70676	0	36150	0	25	0	53	160	0
30	P443048-2	80000	70676	0	36150	0	25	0	53	159	0
30	P443048-3	80000	70676	0	36150	0	25	0	53	180	0
30	P443048-4	80000	70676	0	36150	0	25	0	53	160	0
31	P445193-1	83000	87663	0	50575	0	22	0	43	168	0

NOTE: The zero entries in columns T YLD S, T PER E, and T PER R indicates that these tests were not performed. The zero entry in the C HARD column indicates that a value was not reported in the CMTR.

TEST REPORT 1

LINE ITEM	SPEC ID	T TEM	S C TEM	S T YLD	S C YLD	T PER E	C PER E	T PER R	C PER R	T HARD	C HARD
31	P445193-2	82000	87663	0	50575	0	22	0	63	166	0
32	EDP1049B3A	89000	84398	0	48281	0	27	0	54	185	0
32	EDP1049B3B	83000	84398	0	48281	0	27	0	54	169	0
32	EDP1049B3C	80089	84398	0	48281	0	27	0	54	160	0
32	EDP1049B3D	87000	84398	0	48281	0	27	0	54	178	0
32	EDP1049B3E	84000	84398	0	48281	0	27	0	54	172	0
32	EDP1049B3F	88000	84398	0	48281	0	27	0	54	181	0
32	EDP1049B1A	85000	84398	0	48281	0	27	0	54	174	0
32	EDP1049B1B	82000	84398	0	48281	0	27	0	54	166	0
32	EDP1049B1C	86000	84398	0	48281	0	27	0	54	176	0
32	EDP1049B1D	83000	84391	0	48281	0	27	0	54	170	0
33	B21795734	84000	79800	0	51560	0	29	0	58	172	0
34	WHSE 2-1	84100	80850	52200	60640	27	33	59	58	163	0
34	WHSE 2-2	78000	80850	49400	60640	29	33	55	58	149	0
35	WHSE 2	72200	0	40600	0	30	0	63	0	149	0
36	WHSE 1	72100	82355	37900	48629	33	25	49	47	140	0

NOTE: The zero entries in columns T YLD S, T PER E, and T PER R indicates that these tests were not performed. The zero entry in the C HARD column indicates that a value was not reported in the CMTR.

TEST REPORT 2

LINE ITEM	SPEC ID	T CAR P	C CAR P	T MAN P	C MAN P	T SIL P	C SIL P	T PHOS P	C PHOS P	T SUL P	C SUL P	T CHR P	C CHR P	T NIK P	C NIK P	T MLYB P	C MLYB P	HEAT
1	B21[illegible]3876	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B21403877	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B21403878	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B21403875	0.000	0.250	0.000	0.940	0.000	0.230	0.006	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B215223917	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B214032611	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B214032610	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B2140320	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B21[illegible]223A	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B2152238	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
1	B215223B7	0.000	0.250	0.000	0.940	0.000	0.230	0.000	0.010	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	BORN
2	E113151138	0.220	0.210	0.000	0.870	0.000	0.240	0.000	0.010	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	BORN
3	E113151 12	0.000	0.220	0.000	0.800	0.000	0.260	0.000	0.018	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	BORN
3	E113151138	0.000	0.220	0.000	0.800	0.000	0.260	0.000	0.018	0.000	0.010	0.000	0.000	0.000	0.900	0.000	0.000	BORN
3	E113146128	0.000	0.220	0.000	0.900	0.000	0.260	0.000	0.018	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	BORN
3	E113146 13	0.000	0.220	0.000	0.800	0.000	0.260	0.000	0.018	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	BORN
3	E113146128	0.000	0.220	0.000	0.800	0.000	0.260	0.000	0.018	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	BORN
4	E113151148	0.000	0.230	0.000	0.840	0.000	0.260	0.000	0.015	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	BORN
5	E11314611	0.000	0.220	0.000	0.840	0.000	0.210	0.000	0.014	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	BORN
5	E113151148	0.000	0.220	0.000	0.840	0.000	0.210	0.000	0.014	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	BORN
6	E11315115	0.000	0.230	0.000	0.760	0.000	0.240	0.000	0.011	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	BORN
7	E11314612	0.000	0.240	0.000	0.860	0.000	0.250	0.000	0.011	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	BORN
7	E11314614	0.000	0.240	0.000	0.860	0.000	0.250	0.000	0.011	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	BORN
8	E412836.P	0.000	0.220	0.000	0.930	0.000	0.220	0.000	0.010	0.000	0.032	0.000	0.000	0.000	0.000	0.000	0.000	
8	E412836.0	0.000	0.220	0.000	0.930	0.000	0.220	0.000	0.010	0.000	0.032	0.000	0.000	0.000	0.000	0.000	0.000	
9	E413162	0.000	0.260	0.000	0.700	0.000	0.180	0.000	0.009	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	
10	B217957.33	0.000	0.260	0.000	0.740	0.000	0.260	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	ARR
11	B21218741	0.000	0.300	0.000	0.720	0.000	0.160	0.000	0.006	0.000	0.032	0.000	0.000	0.000	0.000	0.000	0.000	BORN
12	B623272 F1	0.000	0.290	0.000	0.950	0.000	0.230	0.000	0.028	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.000	ARR
12	B623272 F2	0.000	0.290	0.000	0.950	0.000	0.230	0.000	0.028	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.000	ARR
13	B623235 CC	0.000	0.200	0.000	0.750	0.000	0.240	0.000	0.020	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	
14	T4820975	0.000	0.300	0.000	0.800	0.000	0.270	0.000	0.038	0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.000	
14	T4820978	0.000	0.300	0.000	0.800	0.000	0.270	0.000	0.038	0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.000	
14	T4820955	0.000	0.300	0.000	0.800	0.000	0.270	0.000	0.038	0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.000	
14	T4820958	0.000	0.300	0.000	0.800	0.000	0.270	0.000	0.038	0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.000	
15	E21218449	0.000	0.280	0.000	0.750	0.000	0.220	0.000	0.017	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	
15	E21218450	0.000	0.280	0.000	0.750	0.000	0.220	0.000	0.017	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	
15	E2121881	0.000	0.280	0.000	0.750	0.000	0.220	0.000	0.017	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	
15	E2121880	0.000	0.280	0.000	0.750	0.000	0.220	0.000	0.017	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	
16	G1136591	0.000	0.300	0.000	0.800	0.000	0.270	0.000	0.038	0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.000	
16	G1136581	0.000	0.300	0.000	0.800	0.000	0.270	0.000	0.038	0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.000	
17	E11401166	0.000	0.280	0.000	0.750	0.000	0.220	0.000	0.017	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	
17	E11401167	0.000	0.280	0.000	0.750	0.000	0.220	0.000	0.017	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	
17	E11315348	0.000	0.280	0.000	0.750	0.000	0.220	0.000	0.017	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	
17	E11315349	0.000	0.280	0.000	0.750	0.000	0.220	0.000	0.017	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	
17	E11315354	0.000	0.280	0.000	0.750	0.000	0.220	0.000	0.017	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	

NOTE: The zero entries in the T --- P and C --- P columns indicate that these tests were not performed.

TEST REPORT 2

LINE ITEM	SPEC ID	T CAD	P C	CAD	P T	BAR	P C	BAR	P T	SIL	P C	SIL	P T	PHOS	P C	PHOS	P T	SOL	P C	SOL	P T	CHR	P C	CHR	P T	NIE	P C	NIE	P T	NLTB	P C	NLTB	P	HEAT
17	E11315355	0.000		0.280		0.000		0.750		0.000		0.220		0.000		0.017		0.000		0.027		0.000		0.000		0.000		0.000		0.000		0.000		
17	E11400539	0.000		0.280		0.000		0.750		0.000		0.220		0.000		0.017		0.000		0.027		0.000		0.000		0.000		0.000		0.000		0.000		
17	E11400540	0.000		0.280		0.000		0.750		0.000		0.220		0.000		0.017		0.000		0.027		0.000		0.000		0.000		0.000		0.000		0.000		
17	E1151661	0.000		0.280		0.000		0.750		0.000		0.220		0.000		0.017		0.000		0.027		0.000		0.000		0.000		0.000		0.000		0.000		
17	E1151662	0.000		0.280		0.000		0.750		0.000		0.220		0.000		0.017		0.000		0.027		0.000		0.000		0.000		0.000		0.000		0.000		
17	E113154	0.000		0.280		0.000		0.750		0.000		0.220		0.000		0.017		0.000		0.027		0.000		0.000		0.000		0.000		0.000		0.000		
18	T464304	0.000		0.170		0.000		1.260		0.000		0.260		0.000		0.012		0.000		0.016		0.000		0.000		0.000		0.000		0.000		0.000		
18	T463092	0.000		0.170		0.000		1.260		0.000		0.260		0.000		0.012		0.000		0.016		0.000		0.000		0.000		0.000		0.000		0.000		
19	P444362178	0.000		0.320		0.000		0.810		0.000		0.140		0.000		0.013		0.000		0.036		0.000		0.000		0.000		0.000		0.000		0.000		
19	P444362181	0.000		0.320		0.000		0.810		0.000		0.140		0.000		0.013		0.000		0.036		0.000		0.000		0.000		0.000		0.000		0.000		
19	P444362177	0.000		0.320		0.000		0.810		0.000		0.140		0.000		0.013		0.000		0.036		0.000		0.000		0.000		0.000		0.000		0.000		
20	P444362182	0.000		0.290		0.000		0.800		0.000		0.210		0.000		0.021		0.000		0.020		0.000		0.000		0.000		0.000		0.000		0.000		NOBR
21	P445194180	0.000		0.260		0.000		0.740		0.000		0.260		0.000		0.015		0.000		0.010		0.000		0.000		0.000		0.000		0.000		0.000		LBR
21	P445194181	0.000		0.260		0.000		0.740		0.000		0.260		0.000		0.015		0.000		0.010		0.000		0.000		0.000		0.000		0.000		0.000		LBR
22	E308513015	0.000		0.210		0.000		1.070		0.000		0.260		0.000		0.006		0.000		0.015		0.000		0.000		0.000		0.000		0.000		0.000		
22	E308513041	0.000		0.210		0.000		1.070		0.000		0.260		0.000		0.006		0.000		0.015		0.000		0.000		0.000		0.000		0.000		0.000		
22	E308512916	0.000		0.210		0.000		1.070		0.000		0.260		0.000		0.006		0.000		0.015		0.000		0.000		0.000		0.000		0.000		0.000		
22	E308512918	0.000		0.210		0.000		1.070		0.000		0.260		0.000		0.006		0.000		0.015		0.000		0.000		0.000		0.000		0.000		0.000		
23	G412094129	0.000		0.260		0.000		0.750		0.000		0.250		0.000		0.013		0.000		0.023		0.000		0.000		0.000		0.000		0.000		0.000		
24	G412094130	0.000		0.220		0.000		0.930		0.000		0.220		0.000		0.010		0.000		0.032		0.000		0.000		0.000		0.000		0.000		0.000		
25	G11408314	0.000		0.300		0.000		0.820		0.000		0.210		0.000		0.010		0.000		0.020		0.000		0.000		0.000		0.000		0.000		0.000		
25	G11408307	0.000		0.300		0.000		0.820		0.000		0.210		0.000		0.010		0.000		0.020		0.000		0.000		0.000		0.000		0.000		0.000		
26	E302186281	0.000		0.220		0.000		0.930		0.000		0.220		0.000		0.010		0.000		0.032		0.000		0.000		0.000		0.000		0.000		0.000		
26	E302186282	0.000		0.220		0.000		0.930		0.000		0.220		0.000		0.010		0.000		0.032		0.000		0.000		0.000		0.000		0.000		0.000		
26	E302186284	0.000		0.220		0.000		0.930		0.000		0.220		0.000		0.010		0.000		0.032		0.000		0.000		0.000		0.000		0.000		0.000		
26	E302186287	0.000		0.220		0.000		0.930		0.000		0.220		0.000		0.010		0.000		0.032		0.000		0.000		0.000		0.000		0.000		0.000		
26	E302186283	0.000		0.220		0.000		0.930		0.000		0.220		0.000		0.010		0.000		0.032		0.000		0.000		0.000		0.000		0.000		0.000		
26	E302186284	0.000		0.220		0.000		0.930		0.000		0.220		0.000		0.010		0.000		0.032		0.000		0.000		0.000		0.000		0.000		0.000		
26	E302186285	0.000		0.220		0.000		0.930		0.000		0.220		0.000		0.010		0.000		0.032		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30514280	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30514281	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30514286	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30514285	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30514282	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30514292	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30514289	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30514291	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30515281	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30515282	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30515284	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30515285	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30515287	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30515288	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30515290	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		
27	E30515291	0.000		0.280		0.000		0.810		0.000		0.170		0.000		0.014		0.000		0.018		0.000		0.000		0.000		0.000		0.000		0.000		

NOTE: The zero entries in the T --- P and C --- P columns indicate that these tests were not performed.

TEST REPORT 2

LINE ITEM	SPEC ID	T CAR P	C CAR P	T MAR P	C MAR P	T SIL P	C SIL P	T PHOS P	C PHOS P	T SUL P	C SUL P	T CHR P	C CHR P	T NIK P	C NIK P	T MLYB P	C MLYB P	HEAT
27	E30515386	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30515385	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30515382	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30515381	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30515392	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30515391	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30515389	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30515388	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E305206-1	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E305206-2	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E305206-3	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E305206-4	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E305205-1	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E305205-2	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E305205-3	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E305205-4	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30514081	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30514082	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30514084	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30514085	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30514087	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30514088	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30514090	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014		0.010	0.000	0.000	0.000	0.000	0.000	0.000	
27	E30514091	0.000	0.200	0.000	0.810	0.000	0.170	0.000	0.014		0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515181	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515187	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515191	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515185	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515180	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515190	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515182	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515184	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515185	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515084	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515082	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515081	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515088	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515090	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
28	E30515087	0.000	0.240	0.000	0.760	0.000	0.240	0.000	0.015	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	
29	B212187PP	0.000	0.220	0.000	0.890	0.000	0.220	0.000	0.016	0.000	0.024	0.000	0.000	0.000	0.000	0.000	0.000	HORN
30	P443048-1	0.000	0.230	0.000	0.900	0.000	0.220	0.000	0.110	0.000	0.022	0.000	0.000	0.000	0.000	0.000	0.000	HORN
30	P443048-2	0.000	0.230	0.000	0.900	0.000	0.220	0.000	0.110	0.000	0.022	0.000	0.000	0.000	0.000	0.000	0.000	HORN
30	P443048-3	0.000	0.230	0.000	0.900	0.000	0.220	0.000	0.110	0.000	0.022	0.000	0.000	0.000	0.000	0.000	0.000	HORN
30	P443048-4	0.000	0.230	0.000	0.900	0.000	0.220	0.000	0.110	0.000	0.022	0.000	0.000	0.000	0.000	0.000	0.000	HORN
31	P445193-1	0.000	0.200	0.000	0.750	0.000	0.220	0.000	0.011	0.000	0.022	0.000	0.000	0.000	0.000	0.000	0.000	HORN

NOTE: The zero entries in the T --- P and C --- P columns indicate that these tests were not performed.

TEST REPORT 2

LINE ITEM	SPEC ID	T CAR	P C	CAR P	T HAR	P C	HAR P	T SIL	P C	SIL P	T PHOS	P C	PHOS P	T SUL	P C	SUL P	T CHR	P C	CHR P	T NIK	P C	NIK P	T NLYB	P C	YLYB P	HEAT	
31	P445193-2	0.000		0.280	0.000		0.750	0.000		0.220	0.000		0.011	0.000		0.022	0.000		0.000	0.000		0.960	0.000		0.000	0.000	NORM
32	EDP1049B3A	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
32	EDP1049B3B	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
32	EDP1049B3C	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
32	EDP1049B3D	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
32	EDP1049B3E	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
32	EDP1049B3F	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
32	EDP1049B1A	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
32	EDP1049B1B	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
32	EDP1049B1C	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
32	EDP1049B1D	0.000		0.230	0.000		1.320	0.000		0.260	0.000		0.020	0.000		0.019	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
33	B21795734	0.000		0.320	0.000		0.810	0.000		0.140	0.000		0.013	0.000		0.036	0.000		0.090	0.000		0.070	0.000		0.020	0.000	NORM
34	WHSE 3-1	0.250		0.240	0.880		0.900	0.220		0.260	0.020		0.010	0.019		0.020	0.090		0.000	0.070		0.000	0.020		0.000	0.000	NORM
34	WHSE 3-2	0.250		0.240	0.880		0.900	0.220		0.260	0.038		0.010	0.019		0.020	0.090		0.000	0.080		0.000	0.020		0.000	0.000	NORM
35	WHSE 2	0.210		0.220	0.910		0.890	0.180		0.220	0.020		0.016	0.025		0.024	0.090		0.000	0.030		0.000	0.020		0.000	0.000	NORM
36	WHSE 1	0.290		0.290	0.780		0.820	0.240		0.260	0.020		0.012	0.020		0.017	0.030		0.000	0.030		0.000	0.020		0.000	0.000	NORM

NOTE: The zero entries in the T --- P and C --- P columns indicate that these tests were not performed.

ATTACHMENT B

Summary Table of Justifications for Continued Operation (JCO)

ATTACHMENT B
Page 1

SUMMARY TABLE OF JUSTIFICATIONS FOR CONTINUED OPERATION (JCO)

SYSTEM	DESIGN TEMP °F	DESIGN PRESS PSI	SIZE	PRESS RATING LB	MAT'L	QUANT	NOTES	HEAT NO.
B21 MAIN STEAM	575	1250	3/4"	1500	SA105	11	(1)	GDCW
B21-MSIV ACCUMUL TANK	340	180	3/4"	150	SA105	1	(1)	E1413
B21-RPV HEAD VENT	575	1250	2"	1500	SA105	1	(1)	GDDW
B21-HEAD VENT	575	1250	4"	900	SA105	1	(1)	4064
P44-ECCW	150	150	3/4"	150	SA105	6	(1)	64C 3198/CBA E1413
E11-RHR	575	1500	18"	900	SA105	1	(2,3)	10728
T48-01 HYDROGEN RECOMB	340	75	3"	150	SA105	3	(4)	038045
C11 RADWASTE	140	150	3"	150	SA105	1	(4)	038045
R30-EDG	125	75	3"	150	SA105	3	(4)	4706
	125	75	1"	150	SA105	2	(5)	A79
R30-EDG	125	75	1"	150	SA105	12	(5)	E1413
N62-OFF GAS	390	90	6"	150	SA105	"	(6)	T8852/ GDIE
(NON SAFETY RELATED)	150	90	4"	150	SA105	"	(6)	4631

JCO SUMMARY NOTES

(1) The JCO completed prior to hardness testing due to inaccessability while the plant was in operation. During subsequent outage all flanges were hardness tested by the use of the Equotip Method. The tests proved the flanges met the required hardness range.

(2) The JCO was completed to accept flanges that did not meet the required hardness range.

(3) Subsequent metallographic testing performed on the flange determined that the material meets the required mechanical properties.

(4) The JCO is based on installation of flanges designed for a 60 ksi ultimate tensile strength specified for the system. Other piping components in the system are designed to the 60 ksi value. All test results exceed the 60 ksi minimum value. SA105-Gr I was manufactured until the early 1970s with a 60 ksi allowable.

(5) The JCO is based on Equotip hardness readings slightly above the specification range. The flanges have properties within limits, that the SA105 material may attain. Use of the higher strength material improves the structural integrity and fatigue properties over that of the normal specified material properties.

(6) <u>NON SAFETY RELATED FLANGES</u>

Manufacturer: Tube Turns
Note (5) Applies to one of these flanges. Note (4) applies to the remaining three flanges.