

PACIFIC PUMPS DESIGN REPORT

P.O. 546-CAL-169450-BN

8311070586 831018
PDR ADCK 05000395
P PDR

PACIFIC PUMPS

DESIGN REPORT

NUCLEAR SERVICE PUMP
OPERABILITY CALCULATIONS

Class 2

Customer:

P. O. No:

Spin No:

WESTINGHOUSE N.E.S.

546-CAL-169450-BN

CSAPCH DAP/DBP/OHI/OKB/WAT/WBT /CGE

Pacific Shop Order No:

Pump Serial No:

Pump Size & Type:

5B-48530/31/32 & 5B-48897

48582 thru 485893 & 49178 thru 49180

2½" RL-IJ

APPROVALS

	ORIGINAL ISSUE	REV. 1	REV. 2	REV. 3	REV. 4
AUTHOR	<i>E. J. Panft</i>				
REVIEWER	<i>R. D. Hansen</i>				
CERTIFIER	<i>W. E. Shipman</i>				
RELEASE DATE	<i>3-16-76</i>				

Dresser Industries, Inc.
Pacific Pumps Division
5715 Bickett Street
Huntington Park, CA 90255

PACIFIC PUMPS

DIVISION OF DRESSER INDUSTRIES

TECHNICAL DATA

DATE EFFECTIVE

9-20-73

PAGE NO.

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62.

DATE REVISED

0

PROJECT NO.

K-318

SUBJECT:

CUSTOMER WESTINGHOUSE ELECTRIC CORP.

SHOP ORDER NOS.

5348530/31/32

CONTRACT 546-CAL-169450-BN

SIZE & TYPE

5348604

2-1/2 RL II

DESIGN CALCULATIONS1.0 INTRODUCTION

The purpose of this report is to analytically demonstrate that the subject Section III Class 2 pumps are suitable for the conditions outlined in the Owner's Design Specification.

The calculations assume worst condition loadings due to maximum internal pressure, peak nozzle loads and design basis earthquake (DBE) seismic forces. Conservative assumptions are also made concerning the dimensions of the pressure boundary parts. The calculations in this report incorporate the wall thicknesses shown in Sketch 1.0. These dimensions are less than the Manufacturing drawings indicate. They represent the final minimum acceptable thicknesses after all fabricating, machining and testing is completed.

1.1 REFERENCED DOCUMENTS

1. ASME Boiler and Pressure Vessel Code Section III 1971.
2. ASME Boiler and Pressure Vessel Code Section VIII Div. 1, 1971.
3. Welding Research Council Bulletin 107 Aug. 1965, 3rd revised printing April, 1972.
4. Owner's Design Specification.
5. "Vibrations in Boiler Feed Pumps" by A. E. Duncan Paper #8 Proceedings of the Institute of Mechanical Engineers (UK). 1966-67
6. Formulas for Stress and Strain, R. J. Roark, 4th ed.

Calculations By: J. J. Rault
Date: 9-17-72Checked By: J. E. Stearns
Date: 9-20-73Approved By: W. E. S. J. J.
Date: 9-21-73

PACIFIC PUMPS

DIVISION OF **DRESSER** INDUSTRIES

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SIZE & TYPE

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Calculations By: J. J. RaultDate: 1-9-73Checked By: [Signature]Date: 1-12-73Approved By: [Signature]Date: 1-12-73

PACIFIC PUMPS

DIVISION OF **DRESSER** INDUSTRIES

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Calculations By: J. J. Rault

Date: 9-17-73

Checked By: J. S. Stein

Date: 9-20-73

Approved By: V. C. D. J. W.

Date: 9-21-73

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SUBJECT:

CUSTOMER WESTINGHOUSE ELECTRIC CORP.

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5B48530/31/32

5B48604

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1.2 LIST OF DRAWINGS AND MATERIALS FOR PRESSURE BOUNDARY PARTS

Part Name	Material	Drawing No.
Case Forging	SA-182 F304	C-17170
Case 1st Oper.	" "	D-14614
Case Weld Ass'y.	" "	D-14616
Case Top View	" "	D-14639
Case End View	" "	D-14642
Case Final Oper.	" "	D-14602
Case Align Lug	" "	D-14614
Case Centering Fin	SA-240-304	D-14614
Case By-Pass Flange	SA-182 F304L	B-19917
Case By-Pass Nipple	SA-312 304L	D-14614
Case Drain Nipple	" "	"
Case Drip Pocket	SA-351 CF8	C-15767
Case Feet	" "	D-14616
Head Forging	SA-182 F304	C-17174
Head Final Oper.	" "	D-14604
Head By-Pass Flange	SA-182 F304L	B-19918
Head By-Pass Connection	SA-312 304L	D-14615
Head Drip Pocket	SA-351 CF8	C-15766
Disch. Nozzle Forging	SA-182 F304	B-19899
Suct. Nozzle Forging	" "	B-19894
Suct. Nozzle Flat'ng. Oper.	" "	C-17172
Suct. Nozzle 1st Oper	" "	B-19895
Suct. Nozzle	" "	C-17173
By-Pass Pipe	SA-312 304L	D-14623
By-Pass Flange	SA-182 F304L	D-14623
Seal Hsg. Forge - Thst.	SA-182 F304	C-17176
Seal Hsg. Forge - Suct.	" "	C-17176
Seal Hsg. Thrust	" "	D-14618
Seal Hsg. Suct.	" "	D-14617
Seal Plate Thrust	" "	D-14638
Seal Plate Suct.	" "	D-14638
Case Stud	SA-193 B7	B-19897
Hex Nut	SA-194 7	E-19901
Parker Fittings	SA-403 WP 316L (Seal Flush Piping)	
Socket Weld Fitting	" WP 304L (Drain Piping)	
Min. Flow Orifice Tube	SA-312 304L	C-17543
Cap Screws	SA-193 B6 (Seal Housing) Buyouts	
Drain Pipe Support PL	SA-240-304	D-14602
Seal Flush Piping	SA-213-304L	C-17542
Assembly Rail Guide	SA-479-304	D-14602
Dischg. Nozzle Final	SA-182-F304	C-17175
Dischg. Hd. Weld Ass'y.	See C-15767 & C-17174	C-17178
Seal Flush Adapter Suct.	SA-479-304	C-17885
Seal Flush Adapter Disch.	SA-479-304	C-17884

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2-1/2 RL II

2.0 Design Conditions

- 2.1 Maximum design pressure - 2800 psig
Maximum design temperature - 300°F
Maximum suction pressure - 300 psig
Pump operating speed - 4850 RPM
Pump design flow - 150 GPM to 550 GPM
Pump Horsepower - 480 BHP to 650 BHP

- 2.2 Peak Load on Pump Nozzles: Ref. 4. - 3.1.22.2
based on attached pipe:

Suction 6" schedule 80 SA-430-304

Discharge 4" schedule 160 SA-430-304

- 2.2.1 Suction nozzle loads:

Axial and Transverse shear forces -- + 5,200 lb.

Torsional and Bending Moments -- + 75,800 lb.-in.

- 2.2.2 Discharge Nozzle loads:

Axial and Transverse shear forces -- + 4,100 lb.

Torsional and Bending Moments -- +36,600 lb.-in.

- 2.3 Seismic Loads: Ref. 4. - 3.1.21

DBE (Design Basis Earthquake)

Horizontal -- + 3.0g acceleration

Vertical -- + 2.0g acceleration

NOTE: For these calculations all of the above conditions are assumed to act simultaneously.

- 2.4 Resultant Loads on Pump Assembly

- 2.4.1 Assumptions:

- The center of gravity is coincident with the pump shaft centerline and the centroid of the pump hold down bolts.
- The pump is a rigid body.
- External forces and moments are translated to the center of gravity.

- 2.4.2 Forces at center gravity (See Sketch 2.4)

Source	F _{xo}	F _{yo}	F _{zo}
Suction nozzle	+ 5,200	+ 5,200	+ 5,200
Discharge nozzle	+ 4,100	+ 4,100	+ 4,100
Seismic	+ 22,500	+15,000	+ 22,500
Pump weight	---	- 7,500	---
Resultant Forces	+ 31,800	+24,300	+ 31,800

Calculations By: J. R. Ruff

Date: 1-9-73

Checked By: J. R. Ruff

Date: 1-12-73

Approved By: W. D. Ruff

Date: 1-12-73

TECHNICAL DATA

SUBJECT:

CUSTOMER: WESTINGHOUSE ELECTRIC CORP.

SHOP ORDER NOS.

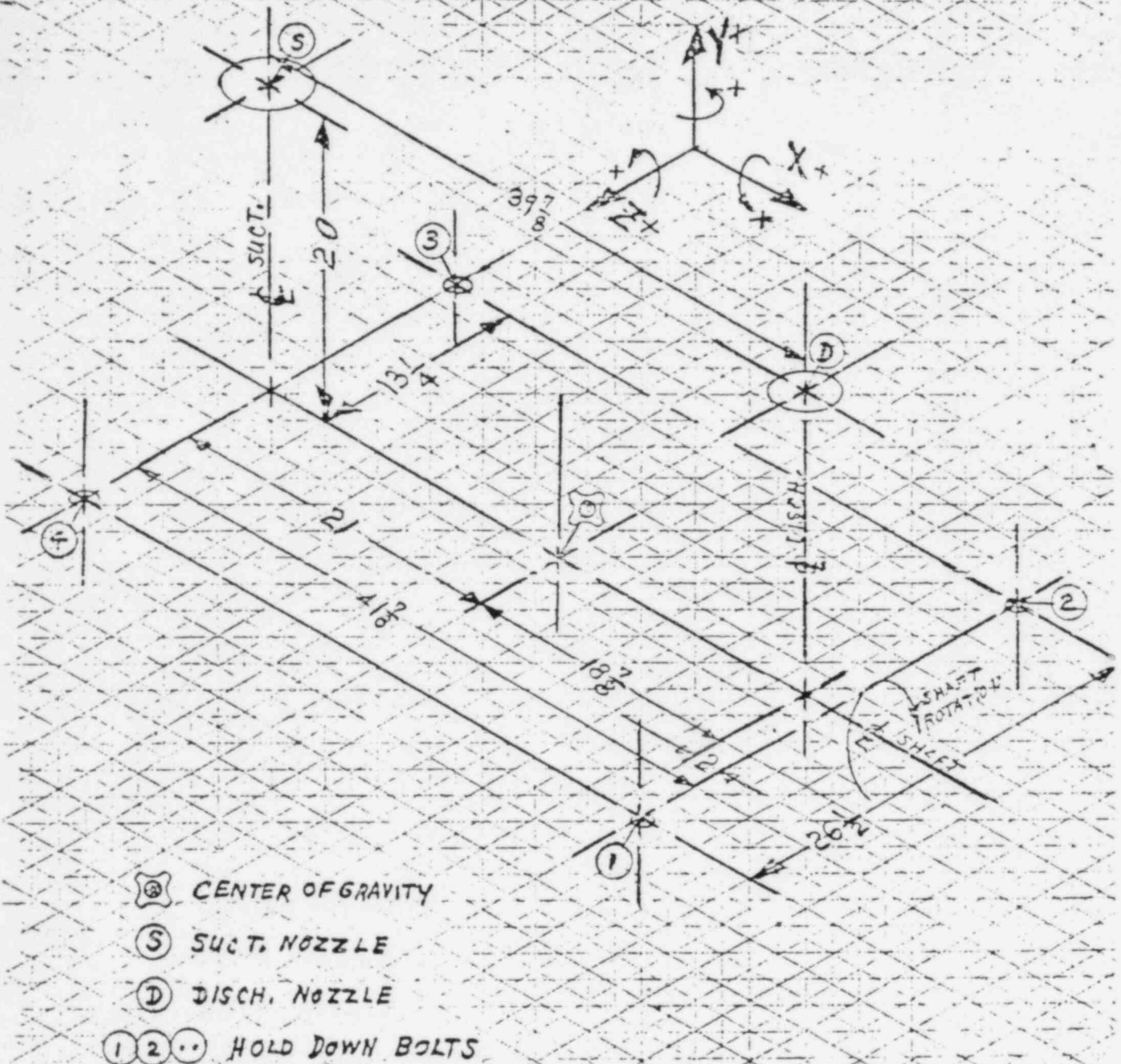
5348530/31/32

CONTRACT: 546-CAL-169450-BN

SIZE & TYPE

5B48604

2-1/2 RL II



SKETCH 2.4

Calculations By: J. J. RuffDate: 1-9-73Checked By: R. LightDate: 1-12-73Approved By: J. J. RuffDate: 1-12-73

PACIFIC PUMPS

DIVISION OF **DRESSER** INDUSTRIES

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2.4.3 Moments around center of gravity (See Sketch 2.4)

Source	Mxo	Myo	Mzo
Suct. Noz. Force	+ 5200x20in.	+ 5200x21in.	+ 5200x21+20
Suct. Noz. Mom.	+ 75800	+ 75800	+ 75800
Disch. Noz. Force	+ 4100x20in.	+ 4100x18 7/8	+ 4100x18 7/8+20
Disch. Noz. Mom.	+ 36600	+ 36600	+ 36600
Shaft Torque	- 8440	---	---
Seismic	---	---	---
Resultant Mom.	+298400 -306840	+299000	+485000

Pump Weight = 7500 LB, Shaft torque = $\frac{63,000 \text{ BHP}}{\text{RPM}}$ = 8400 LB-IN

3.0 Case Stresses

3.1 Stress Due To Internal Pressure

3.1.1 Center Section Between Nozzles Ref. 1. Para. A-2221

Primary - Membrane Stress Intensity

$$S = \frac{PR}{t} + \frac{P}{2} = 13,780 \text{ psi}$$

P = 2800 psi max. discharge pressure

R = 7.18 in. case inside radius

t = 1.625 in. case thickness

3.1.2 Outer Surface of Case At Discharge Nozzle Ref. 1. Para. A-2212

$$\begin{aligned} \text{(a) } \sigma_t &= \frac{P(1 + Z^2)}{(Y^2 - 1)} = 7335 \text{ psi} && \text{Principal Stresses} \\ \text{(b) } \sigma_l &= \frac{P}{(Y^2 - 1)} = 3667 \text{ psi} && \text{outside radius - 10.625 in.} \\ \text{(c) } \sigma_r &= \frac{P(1 - Z^2)}{(Y^2 - 1)} = 0.0 \text{ psi} && \text{inside radius - 8.0 in.} \end{aligned}$$

P = 2800 psi

Y = ratio outside to inside radii

Y = 1.328

Z = ratio outside to intermediate radii

Z = 1.0 at outside surface

Calculations By: J. J. Rait

Date: 1-7-73

Checked By: J. J. Rait

Date: 1-12-73

Approved By: W. S. J. I.

Date: 1-12-73

WESTINGHOUSE

PURCHASE ORDER #546-CAL-169450-BN

INVOICE IN DUPLICATE - INCLUDE D-495 NO
ON INVOICE IN DUPLICATE FORM
SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE

54B-CAL-189450-221

2.2.1 INJECTION PUMPS

MALT-205

ROYAL DOG

2-0-

ITEM	QUANTITY	UNIT	TYPE	DESI
------	----------	------	------	------

IDENTIFICATION NO. / E. SPEC.

SPIN NO.

SUP DAILY

LIMIT PRICE

AGING/SAFETY INJECTION PUMPS

LER SHALL DESIGN, FURNISH ALL MATERIAL,
TURE, TEST, INSPECT, PACKAGE AND WARRANT
CHARGING/SAFETY INJECTION PUMPS IN ACCORDANCE
WITH THE ADMINISTRATIVE AND TECHNICAL REQUIREMENTS
SPECIFIED HEREIN.

NOTE: DEFINITIVE REQUIREMENTS SPECIFIED IN THE INDIVIDUAL PROJECT ORDERS TAKE PRECEDENCE OVER THOSE SPECIFIED IN THIS BASE ORDER.

ATTACHED PAGES 1 THRU 10 OF THIS BASE PURCHASE ORDER AND THE PROJECT ORDERS AS DESCRIBED BELOW, APPLY AND BECOME A PART OF THIS CONTRACT.

DAV PLANT	-----P.O.	546-CAL-169451-BN
DBF PLANT	-----P.O.	546-CAL-169452-BN
DHI PLANT	-----P.O.	546-CAL-169453-BN
OKB PLANT	-----P.O.	546-CAL-169454-BN
WAT PLANT	-----P.O.	546-CAL-169455-BN
WST PLANT	-----P.O.	546-CAL-169457-BN
CGE PLANT	-----P.O.	546-CAL-169458-BN

NAFSA CODE

PACIFIC PU

ORDER
PLACED
WITH

PACIFIC PUMPS, INC.

5715 BICKETT & SLAUSON STREETS
HUNTINGTON PARK, CALIF. 90256

SPECIAL SHIPPING INSTRUCTIONS

PARCEL POST ADDRESS ONLY PITTSBURGH PA 15206	PARCEL POST MAILING CENTER P.O. BOX 133 PITTSBURGH PA 15206	PARCEL POST ADDRESS ONLY P.O. BOX 133 PITTSBURGH PA 15206	OTHER SEE PUB. MAIL OTHER	SHIP VIA REG OR LESS 7 1/2 TO 300 31 1/2 & OVER	PARCEL POST REG OR LESS 31 1/2 & OVER AIR/POST FISHNET	POST OTHER
FREIGHT AIR/REG & INT'L ST PITTSBURGH PA 15271	FREIGHT MAILING CENTER AIR/REG FEE NO PITTSBURGH PA 15206	FREIGHT INTERSTATE NO MAILING FEE NO PITTSBURGH PA 15467	PREPAID COLLECT ALLOWED NOT ALLOWED			
			OTHER X			

ISSUING ORDER TO AND DATE

D. W. KAY

9-6-72

Return to

ADDRESS CORRESPONDENCE NO. BUYER

S. C. LIBROTH/M5

GOVERNMENT CONTRACT NO.

AREA CODE 412

373-4426

$$\text{SiH}_3\text{OP} \rightarrow \text{OH} \text{ (羟基)} \rightarrow \text{OH} \text{ (羟基)} \rightarrow \text{SiH}_3\text{OGe} \rightarrow \text{HOGe} \text{ (羟基)}$$

C. J. PARISE

PURCHASING DEPARTMENT AUTHORIZED BY

G. S. HAIGHT, JR.

$y = 2x + 1$

MATHEMATICS
SERVICES

COMP

ACCTG
NOTEACCTG
NOTE[illegible]

PURCHASE ORDER - CONTINUATION

ENCLOSURE TO FACILITATE PAYMENT

SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE

PURCHASE ORDER NUMBER

346-CAL-169450-DN

ORDER PLACED WITH

PACIFIC PUMPS, INC.

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS

P.O. BOX 355 PITTSBURGH, PA. 15230



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DATE
9-20-72

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ITEM	QUANTITY	U. M.	TYPE	DEST.	DESCRIPTION IDENTIFICATION NO. / E-SPEC	SPM NO.	SHIP DATE	UNIT PRICE
					"SELLER CERTIFIES THAT THE PRICE PROVIDED FOR HEREIN IS IN COMPLIANCE WITH THE LAWS, ORDERS AND REGULATIONS PROVIDING FOR THE STABILIZATION OF PRICES. IF SUCH PRICE IS HIGHER THAN WHAT IS LEGALLY PERMITTED, THE PRICE SHALL BE REDUCED TO THE HIGHEST PRICE PERMITTED BY APPLICABLE LAW." II. <u>DESCRIPTION OF EQUIPMENT</u> A) CENTRIFUGAL CHARGING/SAFETY INJECTION PUMP, WITH MECHANICAL SEALS, KINGSBURY THRUST BEARING, RADIAL SLEEVE BEARINGS, AND CARBON STEEL BEARING CASES. THIS PUMP SHALL MEET ALL REQUIREMENTS OF E-SPEC 678815, REV. 0 DATED 11-12-71. THE FOLLOWING EQUIPMENT SHALL ALSO BE INCLUDED: 1. BEARING LUB. OIL SYSTEM WITH OIL COOLERS SUITABLE FOR BRACKISH WATER 2. AUXILIARY LUB. OIL SYSTEM (PUMP ONLY) 3. SEAL COOLERS AND ASSOCIATED PIPING 4. FABRICATED STEEL BASEPLATE 5. MINIFLOW ORIFICE (60 GPM) 6. WESTINGHOUSE ELECTRIC MOTORS 7. WESTINGHOUSE SPEEDER GEARS III. <u>APPLICABLE DOCUMENTS</u> E-SPEC 678815, REV. 0 DATED 11-12-71 QUALITY ASSURANCE SPECIFICATIONS QCS-1, DATED 1-2-70 ADMINISTRATIVE SPECIFICATION FOR THE PROCUREMENT OF NUCLEAR STEAM SUPPLY SYSTEM COMPONENTS DATED FEBRUARY 25, 1970 PS-292722, REV. 6, "CLEANING AND PACKAGING REQUIREMENTS OF EQUIPMENT FOR USE IN THE NUCLEAR STEAM SUPPLY SYSTEMS", WITH EXCEPTION THAT GRADE B WATER SHALL BE USED FOR HYDRO TEST PUMP MOTOR SPECIFICATION 677474, REV. 0 DATED 3-13-72			

PHASE ORDER - CONTINUATION

ISSUE IN DUPLICATE - INCLUDE DAPHS NO.
ON INVOICE TO FACILITATE PAYMENT
SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS
P.O. BOX 355 PITTSBURGH, PA 15230



9.841340

PURCHASE ORDER NUMBER 546-CAL-169450-BN					ORDER PLACED WITH PACIFIC PUMPS, INC.		DATE 9-20-72		PAGE 3 OF 10 PAGES	
ITEM	QUANTITY	U/M	TYPE	DEST	DESCRIPTION / IDENTIFICATION NO. / E. SPEC.	SPIN NO.	SHIP DATE	UNIT PRICE		
					EDSK 271C155, REV. 3 PS-83860, "MARKING OF REACTOR PLANT COMPONENTS." REV. 2 PS-85310-QA, REV. 2 DN FORM 54018C - DEFECT NOTICE FORM IV. <u>REQUIREMENTS</u> A) PUMP - 1. THE PUMP SHALL MEET EQUIPMENT SPECIFICATION 678815, REV. 0 DATED 11-12-71. ALL REFERENCED SPECIFICATIONS AND CODES SHALL BE COMPLIED WITH. 2. A STRESS ANALYSIS OF THE PUMP CASE AND BOLTING SHALL BE PERFORMED TO ASME SECTION VIII, DIVISION I AND SUBMITTED TO W FOR INFORMATION. 3. THE PUMP SHALL BE CAPABLE OF MEETING THE HEAD TOLERANCES FOR SHUT OFF AND DESIGN AS SPECIFIED IN THE PUMP DATA BOOKLETS: SICH 808 - DAP/DBP SIP 748 - OHI/OKB OH 806 - WAT/WBT SICH 816 - CGE 4. THE PUMP MUST BE CAPABLE OF WITHSTANDING A RAPID TEMPERATURE EXCURSION FROM 40°F TO 300°F WITHOUT SUSTAINING STRUCTURAL DAMAGE OR ANY LOSS OF FUNCTION. 5. THE FIRST PUMP MANUFACTURED SHALL BE PERFORMANCE TESTED TO DETERMINE LIMITING SUCTION REQUIREMENTS. NO AUDIBLE EVIDENCE OF CAVITATION SHALL BE PRESENT AT THE NOMINAL NPSH REQUIRED FOR ANY GIVEN HEAD/FLOW RELATIONSHIP. NPSH TEST SHALL BE PERFORMED ON THE FIRST UNIT IN ACCORDANCE WITH THE STANDARDS OF THE HYDRAULIC					

PHASE ORDER - CONTINUATION

INVOICE IN DUPLICATE - INCLUDE D.U.N.'S NO.
ON INVOICE TO FACILITATE PAYMENT
SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS

P.O. BOX 355 PITTSBURGH, PA. 15230



P 541340

PURCHASE ORDER NUMBER

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ITEM	QUANTITY	U/M	TYPE	DEST	DESCRIPTION / IDENTIFICATION NO. / E-SPEC	SPIN NO.	SHIP DATE	UNIT PRICE
					INSTITUTE. PACIFIC PUMPS SHALL WORK TO 1% HEAD DEVIATION IN LIEU OF 3% AT DESIGN FLOW. 6. THE PUMP WILL BE EXPECTED TO OPERATE WITH SUMP WATER WHICH WILL CONTAIN PAINT FLAKES AND SOFT RESIDUE, THERMAL INSULATION AND CONCRETE DUST. THESE SOLIDS WILL SETTLE OUT IN A RELATIVELY SHORT TIME, HOWEVER, THE EFFECT OF MINUTE PARTICLES PRESENT DURING LONG TERM RECIRCULATION SHOULD BE CONSIDERED. 7. IMPACT TESTS ARE REQUIRED FOR FERRITIC STEEL MATERIALS WHERE USED AS PRESSURE CONTAINING PARTS. TESTING SHALL BE PERFORMED PER NC-2310 AND NC-2320 OF ASME CODE, SECTION III. B) MOTORS - 1. SHALL BE IN ACCORDANCE WITH EQUIPMENT SPECIFICATION E-677474, REV. 0 DATED 3-13-72 AND ATTACHED W MOTOR DATA SHEET (FORM 54082). THIS DATA SHEET SHALL BE COMPLETED AND SUBMITTED FOR INFORMATION. C) GEARS -- 1. GEARS SHALL MEET REQUIREMENTS OF E-SPEC 678815, REV. 0 DATED 11-12-71. V. <u>DELIVERY REQUIREMENTS</u> - ARE PRESENTED ON THE INDIVIDUAL PLANT PURCHASE ORDERS. VI. <u>BILLING</u> EACH SHIPMENT AGAINST EACH PLANT INVOLVED SHALL BE BILLED ON AN INDIVIDUAL INVOICE. SINGLE INVOICES COVERING MORE THAN ONE PLANT WILL NOT BE ACCEPTED. EACH INVOICE SHALL CLEARLY INDICATE THE PLANT INVOLVED AND SHALL LIST THE ITEM NUMBERS, DESCRIPTION AND UNIT PRICES EXACTLY AS THEY APPEAR IN THE APPLICABLE SECTION.			

PURCHASE ORDER - CONTINUATION

INVOICE IN DUPLICATE - INCLUDE D-U-N-S NO.

ON INVOICE TO FACILITATE PAYMENT

SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS

P.O. BOX 355 PITTSBURGH, PA 15230



P-541340

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9-20-72

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ITEM	QUANTITY	U/M	TYPE	DEST	DESCRIPTION / IDENTIFICATION NO. / E. SPEC.	SPIN NO	SHIP DATE	UNIT PRICE
					VII. <u>TERMS & CONDITIONS</u> 1. ADDITIONAL TERMS AND CONDITIONS FOR USE WITH KANSAS ELECTRIC POWER UNITS 1 & 2 (OH/OKB) DATED MAY 1, 1972 ARE APPLICABLE. 2. ADDITIONAL TERMS AND CONDITIONS FOR USE WITH TENNESSEE VALLEY AUTHORITY CONTRACTS WATTS BAR NUCLEAR PLANT UNITS 1 & 2 DATED MAY 1, 1972 ARE APPLICABLE. 3. W-PWR TERMS AND CONDITIONS 101971A ARE APPLICABLE WITH THE FOLLOWING EXCEPTIONS: A. ITEM 3 - TERMS OF PAYMENT. CHANGE SECOND LINE TO READ - "UNTIL PURCHASED PRODUCT IS SHIPPED AND ACCEPTABLE SHIPPING DOCUMENTS ARE RECEIVED BY BUYER." B. ITEM 4 - DELIVERY - PARA. 4A - FIRST SENTENCE OF PARAGRAPH TO READ - "TIME OF DELIVERY IS AN ESSENTIAL ELEMENT OF THE ORDER." - PARA. 4C - ADD THE FOLLOWING - "PROVIDED IT IS DONE AT THE SELLERS' PLANT." C. ITEM 11 - COMPLIANCE WITH LAWS AND STANDARDS. ADD TO LAST SENTENCE - "IS PLACED, AS IDENTIFIED BY BUYER IN ITS PURCHASE ORDER." D. ITEM 14 - WARRANTY 14A - DELETE THE WORDS "SHALL BE MERCHANTABLE". - CHANGE THE WORD "CONTEMPLATED" TO "SPECIFIED". 14B - AFTER THE WORD "NECESSARY" IN THE 4TH LINE, CHANGE AS FOLLOWS - ("INCLUDING REMOVAL AND REINSTALLATION, HOWEVER, COST OF REMOVAL AND REINSTALLATION TO BE NEGOTIATED)" TO "CORRECT OR REPLACE,			

CHASE ORDER - CONTINUATION

ISSUE IN DUPLICATE - INCLUDE D.U.M.B. NO.
ON INVOICE TO FACILITATE PAYMENT
SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS
P.O. BOX 355 PITTSBURGH, PA. 15230



F-541240

PURCHASE ORDER NUMBER
546-CAL-169450-BN

ORDER PLACED WITH
PACIFIC PUMPS, INC.

DATE
9-20-72

PAGE 6 OF 10 PAGES

ITEM	QUANTITY	U/M	TYPE	DEST	DESCRIPTION / IDENTIFICATION NO. / E SPEC	SPIN NO.	SHIP DATE	UNIT PRICE																																																							
					AT THE OPTION OF THE SELLER, SUCH DEFECTIVE WORK," NOTE THAT THE WORD BUYER HAS BEEN CHANGED TO SELLER. SELLER'S DECISION TO REPAIR OR REPLACE WILL BE REASONABLE TAKING INTO CONSIDERATION ALL COSTS ASSOCIATED WITH SUCH REPAIRS OR REPLACEMENT INCLUD- ING COSTS, IF ANY, OF BUYER AND BUYER'S CUSTOMER. - ADD TO 14B "BUYER SHALL FOLLOW SELLER'S STORAGE PROCEDURE AND REQUEST SELLER'S TECHNICAL SERVICES, AT BUYER'S EXPENSE, TO SUPERVISE PREPARATION AND START-UP OF EQUIPMENT.																																																										
					VIII. <u>OPTION</u> W-PWR RESERVES THE RIGHT TO ADD ADDITIONAL UNITS FOR 1974 DELIVERY AT A COST OF----- AND 1975 DELIVERY AT A COST OF----- THIS OPTION IS VALID FOR ONE (1) TO TWELVE (12) UNITS PER YEAR AND MUST BE EXERCISED BY 12-31-73 FOR 1974 DELIVERY OR 12-31-74 FOR 1975 DELIVERY. ALL REQUIRE- MENTS OF THIS PURCHASE ORDER SHALL BE MET IN THE EVENT THIS OPTION IS EXERCISED.																																																										
					IX. <u>SUBMITTAL REQUIREMENTS</u> <table><thead><tr><th></th><th><u>DOCUMENT</u></th><th><u>PARA IN E-678815</u></th><th><u>ITEM CODE</u></th><th><u>DUE DATE</u></th></tr></thead><tbody><tr><td></td><td>A. <u>FOR APPROVAL</u></td><td></td><td></td><td></td></tr><tr><td>001</td><td>SEISMIC CALCULATIONS</td><td>3.1.21</td><td>AD</td><td>1-5-73</td></tr><tr><td>002</td><td>OUTLINE DRAWING-PUMP/MOTOR/GEAR</td><td>3.2.1.2 3.1.2.3 3.1.2.4</td><td>DG</td><td>12-8-72</td></tr><tr><td>003</td><td>CROSS-SECTION ASSEMBLY - PUMP</td><td>3.2.2</td><td>DG</td><td>1-5-73</td></tr><tr><td>004</td><td>MECHANICAL SEAL WITH BILL OF MATERIAL</td><td>3.2.4</td><td>DG</td><td>1-5-73</td></tr><tr><td>005</td><td>GEAR OUTLINE DRAWING</td><td></td><td>DG</td><td>12-8-72</td></tr><tr><td></td><td>MANUFACTURING PROCEDURES</td><td></td><td></td><td></td></tr><tr><td>006</td><td>A. MANUFACTURING WELDS</td><td>5.1.2.2</td><td>PC</td><td>1-19-73</td></tr><tr><td>007</td><td>B. WELD PROCEDURE QUALIFICATION TEST RESULTS</td><td>5.1.2.2</td><td>PC</td><td>1-19-73</td></tr><tr><td>008</td><td>C. MAJOR WELD REPAIR</td><td>5.1.2.2</td><td>PC</td><td>1-19-73</td></tr></tbody></table>		<u>DOCUMENT</u>	<u>PARA IN E-678815</u>	<u>ITEM CODE</u>	<u>DUE DATE</u>		A. <u>FOR APPROVAL</u>				001	SEISMIC CALCULATIONS	3.1.21	AD	1-5-73	002	OUTLINE DRAWING-PUMP/MOTOR/GEAR	3.2.1.2 3.1.2.3 3.1.2.4	DG	12-8-72	003	CROSS-SECTION ASSEMBLY - PUMP	3.2.2	DG	1-5-73	004	MECHANICAL SEAL WITH BILL OF MATERIAL	3.2.4	DG	1-5-73	005	GEAR OUTLINE DRAWING		DG	12-8-72		MANUFACTURING PROCEDURES				006	A. MANUFACTURING WELDS	5.1.2.2	PC	1-19-73	007	B. WELD PROCEDURE QUALIFICATION TEST RESULTS	5.1.2.2	PC	1-19-73	008	C. MAJOR WELD REPAIR	5.1.2.2	PC	1-19-73			
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PHASE ORDER - CONTINUATION

Westinghouse Electric Corporation

7341240

BY CHECK OR MONEY ORDER - INCLUDE D.U.N.S. NO.
ON INVOICE TO FACILITATE PAYMENT
SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE

NUCLEAR ENERGY SYSTEMS
P.O. BOX 333 PITTSBURGH, PA. 15230



PURCHASE ORDER NUMBER
546-CAL-169450-BN

ORDER PLACED WITH
PACIFIC PUMPS, INC.

DATE
9-20-72

PAGE 7 OF 10 PAGES

ITEM	QUANTITY	U/M	TYPE	DEST	DESCRIPTION / IDENTIFICATION NO. / E. SPEC.	SPIN NO.	SHIP DATE	UNIT PRICE
					<u>SUBMITTAL REQUIREMENTS</u>			
					<u>DOCUMENT</u>	<u>PARA IN E-678815</u>	<u>ITEM CODE</u>	<u>DUE DATE</u>
					A. <u>FOR APPROVAL (CONT.)</u>			
009					MANUFACTURING AND PROCESSING PROCEDURES	5.1.2.3	PC	12-8-72
					<u>NON-DESTRUCTIVE TEST PROCEDURES</u>			
010					PENETRANT TESTING	5.1.2.4A	PC	11-10-72
011					HYDROTESTING	5.1.2.4B	PC	11-10-72
012					PERFORMANCE TESTING	5.1.2.4C	PC	11-10-72
013					RADIOGRAPHIC TESTING WITH SHOOTING SKETCH	5.1.2.4D	PC	11-10-72
014					ULTRASONIC TESTING	5.1.2.4E	PC	12-8-72
015					MAGNETIC PARTICLE TESTING	5.1.2.4F	PC	11-10-72
016					NPSHR TESTING	5.1.2.4G	PC	11-10-72
017					VISUAL INSPECTION TESTING	5.1.2.4H	PC	11-10-72
018					INSPECTION PROCEDURE Q.A. MANUAL (2 COPIES)	5.1.2.5	PC	11-10-72
019					QUALIFICATION RECORDS FOR WELDING OPERATORS, PROCEDURES AND NON-DESTRUCTIVE PROCEDURES	5.1.2.6	QR	11-10-72
020					PROCEDURES FOR COMPLIANCE WITH QCS-1	5.1.2.7	PC	11-10-72
021					CLEANING PROCEDURES	5.1.2.8	PC	11-10-72
022					HEAT TREATMENT	5.3	PC	1-5-73
023					PAINTING	7.2	PC	11-10-72
024					PACKAGING AND PACKING, LONG TERM STORAGE, EXPORT & DOMESTIC PACKAGING	7.3	PC	11-10-72
025					PERFORMANCE TEST DATA			1 WEEK AFTER TEST

CHASE ORDER - CONTINUATION

INVOICE IN DUPLICATE INCLUDE D.U.N.S. NO.
ON INVOICE TO FACILITATE PAYMENT
SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS

P.O. BOX 355, PITTSBURGH, PA 15230



P.541240

PURCHASE ORDER NUMBER
546-CAL-169450-BN

ORDER PLACED WITH
PACIFIC PUMPS, INC.

DATE
9-20-72

PAGE 8 OF 10 PAGES

ITEM	QUANTITY	U/M	TYPE	DEST	DESCRIPTION / IDENTIFICATION NO. / E. SPEC.	SPIN NO.	SHIP DATE	UNIT PRICE
					<u>SUBMITTAL REQUIREMENTS</u>			
					<u>DOCUMENT</u> <u>PARA IN E-678815</u> <u>ITEM CODE</u> <u>DUE DATE</u>			
					A. <u>FOR APPROVAL (CONT.)</u>			
026					PERFORMANCE TEST CURVE		1 WEEK AFTER TEST	
027					INSTRUCTION BOOKS (THREE COPIES OF A PRELIMINARY MANUAL PER PLANT ARE REQUIRED FOR APPROVAL ACTION PRIOR TO ISSUE OF FINAL MANUALS)	8.2 MA	3-2-73	
					B. <u>FOR INFORMATION AND COMMENT</u>			
					<u>MOTOR DATA</u>			
					<u>DOCUMENT</u>			
028					MOTOR OUTLINE DRAWING - INCLUSIVE OF ALL TECHNICAL DATA	3.2.1.1 DG	11-24-72	
					C. <u>FOR INFORMATION</u>			
029					TORQUE VS. SPEED CURVE MOTOR ²²	QR	11-24-72	
030					TORQUE VS. SPEED CURVE PUMP ²²	QR	11-24-72	
					100% AND 80% VOLTAGE ²² INCLUDE PUMP AND MOTOR ON SAME SHEET			
031					SAFE TIME VS. CURRENT CURVE	QR	11-24-72	
032					COMMERCIAL TEST DATA (FORM 26604 OR BU226) FROM W BUFFALO	QR	11-24-72	
033					INSPECTOR CHECK LIST AT FINAL ASSEMBLY (FORM BU30333) FROM W BUFFALO	QR	11-24-72	
034					QUALITY DOCUMENTATION PACKAGE: (ONE FOR EACH PUMP)	QR	2 WEEKS AFTER PUMP SHIPMENT	
					A. CHEMICAL & PHYSICAL CERTIFICATION OF ALL PRESSURE CONTAINING MATERIALS			
					B. HYDROSTATIC TEST REPORT			
					C. ALL NON-DESTRUCTIVE INSPECTION REPORTS			

CHASE ORDER - CONTINUATION

INVOICE OR BUREAU: ENCLOSE D.M.H.S. NO.
ON RECEIPT TO FACILITATE PAYMENT

SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS

P.O. BOX 355 PITTSBURGH, PA 15230



P. 541340

PURCHASE ORDER NUMBER

546-CAL-169450-DN

ORDER PLACED WITH

PACIFIC PUMPS, INC.

DATE

9-20-72

PAGE 9 OF 10 PAGES

ITEM	QUANTITY	U.M.	TYPE	DEST	DESCRIPTION / IDENTIFICATION NO. / E. SPEC.	SPIN NO.	SHIP DATE	UNIT PRICE
					FOR INFORMATION			
					PARA IN E-678815	ITEM CODE	DUE DATE	
					D. MOTOR-COMMERCIAL TEST DATA (FORM 26604 OR BU226)			
					E. MOTOR-INSPECTION CHECK LIST AT FINAL ASSEMBLY (FORM BU30333)			
					F. PUMP-FINAL ASSEMBLY CHECK LIST			
					G. FOLLOWING WILL NOT BE SUBMITTED BUT WILL BE KEPT ON RECORD BY W. BUFFALO:	QR		
					1. WATER TEST (FORM BU995)			
					2. DIP AND BAKE TAG (FORM BU910)			
					H. PUMP DATA BOOKLET	AD		
					SPARE PARTS LIST - TO BE SUBMITTED 8.1		12-8-72	
					ON FORM W 54948			
					X. DRAWING SUBMITTALS			
					THE REQUIREMENT IN SECTION 5 OF THE PURCHASING ADMINISTRA- TIVE SPECIFICATION DATED FEBRUARY 25, 1970, WHICH ESTABLISHES THE STANDARD REQUIREMENTS FOR EACH DRAWING REQUIRED FOR SUBMITTAL, IS HEREBY MODIFIED AS FOLLOWS:			
					1. ONE ROLLED REPRODUCIBLE OF UNIFORM DENSITY CAPABLE OF PRODUCING CLEAR, SHARP PRINTS.			
					2. TWO ROLLED FULLSIZE SHARP BLACK AND WHITE (BACK- GROUND) PRINTS SUITABLE FOR MICROFILMING.			
					3. DRAWINGS SUBMITTED MUST BE FIRST GENERATION COPIES MADE FROM THE ORIGINAL.			
					WHERE THE EQUIPMENT SPECIFICATION MODIFIES THESE QUANTITY REQUIREMENTS, THE SPECIFICATION TAKES PRECEDENCE. BLUE LINE PRINTS ARE NO LONGER ACCEPTABLE. REDUCED SIZE			

035

9-20-72

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS

P.O. BOX 355 PITTSBURGH, PA. 15220

PURCHASE ORDER - CONTINUATION

ISSUED IN DUPLICATE - ORIGINAL TO BE MAILED TO PACIFIC FILMS, INC. ON ALL CORRESPONDENCE

ORDER PLACED WITH PACIFIC FILMS, INC.

PURCHASE ORDER NUMBER 946-CAL-169450-BN



DATE

9-20-72

SHIP NO

PAGE 10 OF 10 PAGES

SHIP DATE

UNIT PRICE

DESCRIPTION / IDENTIFICATION NO / E SPEC

BLACK AND WHITE PRINTS ARE NOT ACCEPTABLE. ALL MICRO-FILMING WILL BE DONE USING THE BLACK AND WHITE COPY. A BLACK AND WHITE PRINT IS DEFINED AS A DIAZO PROCESS EXPOSED, MICROFILMED, BLACK LINES APPEAR ON A WHITE BACKGROUND. PROPER SENSITIZED COATING OF THE PAPER RESULTS IN THE BLACK LINES. THIS PAPER IS AVAILABLE FROM ALL DIAZO SUPPLIERS.

ITEM

QUANTITY

U M

PURCHASE ORDER CHANGE NOTICE

INVOICE IN DUPLICATE - INCLUDE D-U-44 NO.

ON INVOICE TO FACILITATE PAYMENT.

SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE.

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS

P.O. BOX 355, PITTSBURGH, PA 15230



PURCHASE ORDER NUMBER

546-CAL-169450-BN

C.N. NO.

006

DATE

5-9-74

DESCRIPTION

ADMINISTRATIVE

CHANGE

MULT-205

TOTAL DOLLAR VALUE

-0-

ITEM	QUANTITY	U/M	TYPE	DEST.	DESCRIPTION / IDENTIFICATION NO. / E. SPEC.	SPIN NO.	SHIP DATE	UNIT PRICE
					SECTION IX SUBMITTAL REQUIREMENTS ITEM 008 GEAR OUTLINE DRAWING TO BE SUBMITTED FOR INFORMATION AND COMMENT ONLY. REF. CHANGE NOTICE #003 DATED 5-23-73 E-SPECIFICATION 678815, REV. 0 DATED 11-12-71 IS HEREBY SUPERSEDED BY E-SPECIFICATION 678815, REV. 2 DATED 9-6-73. E-SPECIFICATION 952250, REV. 0 IS DELETED. ALL OTHER PURCHASE ORDER REQUIREMENTS REMAIN THE SAME.			

PAGE 1 FINAL

SUPPLIER CODE

PACIFIC PU

ORDER
PLACED
WITH

PACIFIC PUMPS DIVISION
5715 BICKETT STREET
HUNTINGTON PARK, CALIF. 90256
ATTN: D. MAC KAY

CHANGE NOTICE

THIS CHANGE NOTICE APPLIES TO THE PURCHASE ORDER SPECIFIED ABOVE DATED

9-20-72

COMPARISON ORDER TO AND DATE

ADDRESS CORRESPONDENCE TO BUYER

AREA CODE 412

S. C. LIBROTH/MS

PHONE NO. 373-4426

PURCHASING DEPARTMENT AUTHORIZED BY

DISTRIBUTION

A. MAC CRUM

DELIVER TO:

GOVERNMENT CONTRACT NO.

SHOP ORDER OR BUDGET HOLDER

A. MAC CRUM

S. C. LIBROTH

MATERIAL
SERVICES

COMP

ACCTG.
NOTE

ORDER CHANGE NOTICE

IN DUPLICATES - INCLUDE D.U.N.S. NO.
 TO FACILITATE PAYMENT
 SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE.

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS
 P.O. BOX 333, PITTSBURGH, PA. 15230



F. 80360

PURCHASE ORDER NUMBER 546-CAL-169458BN	C. N. NO. #002	DATE 4-12-73	DESCRIPTION CHARGING SAFETY INJECTION PUMP	CHARGE C&E-205	TOTAL DOLLAR VALUE -0-
---	-------------------	-----------------	---	-------------------	---------------------------

ITEM	QUANTITY	U. M.	TYPE	DEST.	DESCRIPTION / IDENTIFICATION NO. / E. SPEC.	SP. N. NO.	SHIP DATE	UNIT PRICE
					<u>ADD UNDERNOTE</u> THIS PLANT IS PART OF THE OVERALL BASE CONTRACT PURCHASE ORDER 546-CAL-169450-BN AND ALL REQUIREMENTS CONTAINED THEREIN BECOME PART OF AND APPLY TO THIS PLANT ORDER UNLESS SPECIFICALLY MODIFIED HEREIN.			

SUPPLIER CODE

PACIFIC PU

ORDER
 PLACED
 WITH

PACIFIC PUMP CO.
 5715 BICKETT STREET
 HUNTINGTON PARK, CALIF. 90256

ATTENTION: D. MACKAY

CHANGE NOTICE

THIS CHANGE NOTICE APPLIES TO THE PURCHASE
 ORDER SPECIFIED ABOVE DATED:

ISSUING ORDER TO AND DATE

ADDRESS CORRESPONDENCE TO BUYER

AREA CODE 412

PURCHASING DEPARTMENT AUTHORIZED BY

NO

DELIVER TO:

S. C. LIBROTH
 GOVERNMENT CONTRACT NO.

PHONE NO. 373-4426

S. C. LIBROTH

SHOP ORDER OR BUDGET HOLDER

WATERMARK
 PERMIT

CCAP

ACCEPT
 NO.

PUM

C. J. PALISE

PURCHASE ORDER CHANGE NOTICE

INVOICE IN DUPLICATE - INCLUDE D.U.N.S. NO.
ON INVOICE TO FACILITATE PAYMENT.
SHOW PURCHASE ORDER NO. ON ALL CORRESPONDENCE.

Westinghouse Electric Corporation

NUCLEAR ENERGY SYSTEMS
P.O. BOX 355, PITTSBURGH, PA 15230



F-64208

PURCHASE ORDER NUMBER		C.N. NO.	DATE	DESCRIPTION	CHARGE	TOTAL DOLLAR VALUE		
546-CAL-169458-BN		007	3-15-74	CHARGING/SAFETY INJECTION PUMPS	CGE-205	-0-		
ITEM	QUANTITY	U.M.	TYPE	DEST	DESCRIPTION / IDENTIFICATION NO. / E. SPEC.	SPIN NO.	SHIP DATE	UNIT PRICE
					CHARGING/SAFETY INJECTION PUMP	CSAPCH-01	8-30-74	
A01	1	EA	CM	B	EQUIPMENT SPECIFICATION 678815, REV. 0 DATED 11-12-71 IS HEREBY SUPERSEDED BY 678815, REV. 2 DATED 9-6-73. EQUIPMENT SPECIFICATION 952274, REV. 0 IS SUPERSEDED BY 952274, REV. 2 DATED 2-1-74.			-0-
					CHARGING/SAFETY INJECTION PUMP	CSAPCH-02	8-30-74	
A02	1	EA	CM	B	EQUIPMENT SPECIFICATION 678815, REV. 0 DATED 11-12-71 IS HEREBY SUPERSEDED BY 678815, REV. 2 DATED 9-6-73. EQUIPMENT SPECIFICATION 952274, REV. 0 IS SUPERSEDED BY 952274, REV. 2 DATED 2-1-74.			-0-
					CHARGING/SAFETY INJECTION PUMP	CSAPCH-03	8-30-74	
A03	1	EA	CM	B	EQUIPMENT SPECIFICATION 678815, REV. 0 DATED 11-12-71 IS HEREBY SUPERSEDED BY 678815, REV. 2 DATED 9-6-73. EQUIPMENT SPECIFICATION 952274, REV. 0 IS SUPERSEDED BY 952274, REV. 2 DATED 2-1-74.			
					TOTAL PLANT PRICE REMAINS -----			
					PAGE 1 FINAL			

BUYER CODE

PACIFIC PU

ORDER
PLACED
WITH

PACIFIC PUMPS DIVISION
5715 BICKETT & SLAUSON STREETS
HUNTINGTON PARK, CALIF. 90255
ATTN: D. MAC KAY

CHANGE NOTICE

THIS CHANGE NOTICE APPLIES TO THE PURCHASE
ORDER SPECIFIED ABOVE DATED

9-20-72

EFFECTIVE DATE: ORDER PU AND DATE

D. MAC KAY
REGISTRATION
R. W. MILLER

DELIVER TO:

ADDRESS CORRESPONDENCE TO BUYER

S. C. LIBROTH/MS
GOVERNMENT CONTRACT NO.

AREA CODE 418

PHONE NO. 373-5426
WORK ORDER OR BUYER NUMBER
A. MAC CRUM

PURCHASING DEPARTMENT AT THE BUYER'S

S. C. LIBROTH

MATERIAL
DATE
BY
DATE

WESTINGHOUSE

QUALITY RELEASE NO. 21498

QUALITY ASSURANCE
Form 100-1

WESTINGHOUSE ELECTRIC CORPORATION
NUCLEAR ENERGY SYSTEMS
PWR SYSTEMS DIVISION

OR 21488

(2)

UNIT NO.	DATE	PROJECT	REV.	BY	DATE
CAV	10-5-50	1.69.45.8.4.6	205	W. F. E. 2.1.1.7.5	
TAMING TAMP. DIO		HE	31	B	13
670615 Rev 3		95-274 Rev 2	FC 44179 Rev 1		
ACCS		SEARCH-OS	CRASHING, SAFETY THERMAL TAMP		
Ca. Power to Motor for		Control	10-6-50		
32-A					
CS 49180		72F44918	72F44918	5-2003-11-31	5-2003-02-01

The following items have been reviewed by Q.A. Code designations are: A - Acceptance, C - Compliance, S - Review of the standard method for Q.A. 1. All applicable items are listed here. Records are available for each.

CODE	CODE	CODE
A Material Characteristics	A Operating Electrical Test Records	A Visual Inspection
A Heat Treat Records	A Non-Destructive Test Records	A Dimensional Inspection
A RT Film and Records	A Pressure Test Records	A Coatings
A UT Records	A Non-Destructive Test Records	A Painting
A UT Records	A Performance Test Records	C Packaging
A Assembly Series Report	A Welding Personnel Qual. Cert.	
A Assembly Design Analysis	A NDE Personnel Qual. Cert.	
A Design/Manufacturing/Assembly/Inspection	A Name Plate Records	
A COST OF VARIANCE	A Code Form 101, N11	

SHIPPED "SECRET" 2 QUOTE VALUES ARE FOR MATERIAL LIST ITEM
C5 AND 1 FOR FROM SOURCE FOR, WITH MATERIAL LIST ITEM
WESTINGHOUSE UNIT IS SHIPPED IN CRASH - REPAIR
AND RE-RELEASE AS NECESSARY BEFORE SHIPMENT
THRU THE ORDER 648897

THE SUPPLIER CERTIFIES that for the equipment and material
referred to in this document, the following requirements have been met. All
deviations, if any, are listed below.

James E. May 26 50
W. F. E. 2.1.1.7.5

QUALITY ASSURANCE

3)

ON FILM STR 107 - 275 - 5.85

603

21998

[illegible]

The attributes listed below have been reviewed by: ☐ Y ☐ A (Color design only) and ☐ A (Accessibility) ☐ C (Compatibility) ☐ W (Review of the attached copyright for the work)
☐ A (A) Non-descriptible items are listed on: ☐ R (Records are available for audit)

CODE		CODE		CODE	
A	Material Certifications	A	Operating Electronics Test Records	A	Visual Inspections
A	Heat Treat Records	A	Non-Operating Stress Test Records	A	Drawing and Schematics
A	PT Film and Records	A	Pressure Test Records	A	Client Lists
A	PT Mt. Records	A	Non-Operating Stress Test Records	A	Finishing
A	UT Records	A	Performance Test Records	A	Packaging
A	Approved Stress Report	A	Shipping Personnel Qual. Cert.		
A	Approved Design Approval	A	MCQ Personnel Qual. Cert.		
	Approved Shipping Drawings and Material Approval	A	Name Plate Fabrication		
B	CERT. OF COMPL. INVOICE	A	Code Form <u>100-1001</u>		

* ADMITTED TO RELEASE AFTER INSPECTION AFTER
STORAGE (SHIP IN PLACE)

The respondent further testified that the parties discussed matters of domestic violence and the possibility of future arrest and non-rehabilitation of the respondent. The respondent stated that the parties discussed the possibility of future arrest and non-rehabilitation of the respondent. The respondent stated that the parties discussed the possibility of future arrest and non-rehabilitation of the respondent. The respondent stated that the parties discussed the possibility of future arrest and non-rehabilitation of the respondent.

QUALITY ASSURANCE

QUALITY RELEASE
SUPPLEMENT
FORM 900006

WESTINGHOUSE ELECTRIC CORPORATION
NUCLEAR ENERGY SYSTEMS
PWR SYSTEM DIVISION

94 (2) 86

APR 6 1970 QR-21498-2

DATE	NAME	PROJECT NO.	PROJECT	ITEM NO.	DATE	DATE
CPI	169450	116745A	116	31	0	13
<i>Ex. Pumps</i>						
WTRIS	Rev. 2	952274	Rev. 2	FL 49179	Rev. 1	
ADZ	CSAPR-03	Copy of Safety Injection Pump			1	
SPN	SH	Gibbsville National Guard			Gibbsville SH	
MS	49180	254, 155	38-268833-02, 152-268833-02			

The following items have been reviewed by: (1) O.A. E.E. designations are: A-acceptance, C-checking, S-shipment of the aircraft signed for (2) O.A. Non-applicable items are listed as: (1) records are maintained for 2-20

CODE	DESCRIPTION	CODE	DESCRIPTION
A	Mastered Certifications	A	Operating Experience Test Records
A	Heat Treat Records	A	Visual Inspection
A	RT Film and Records	A	Disposition Inspection
A	PT/RT Records	A	Chemicals
A	UT Records	A	Painting
A	Approved Stress Report	A	Painting
A	Approved Design Analysis	A	Performance Test Records
A	Operating Experience Test Records	A	Working Personnel Qual. Cert.
A	Code of Compliance	A	MCR Personnel Qual. Cert.
		A	Photo Records
		A	Code Form 100-1, 100-2

REMARKS

Support Start: 1 maintenance flow active

Supportment issued to release 4 globe valves listed above

The manufacturer's quality control system is in accordance with the requirements of the contract. The manufacturer's quality control system is in accordance with the requirements of the contract. The manufacturer's quality control system is in accordance with the requirements of the contract.

GST GILF
WESTINGHOUSE ELECTRIC CORPORATION

QUALITY ASSURANCE

Volume 13, Issue 6

MAY 12 1976 CR-71471

SVT CD	ALSO P/O	PROJECT #	PROJECT	ZONE	DO CO	DO	DO	DO	DO
SAV	109450	169458C(E)		Z05	18	17	16	15	14
PACIFIC PUMPS		118		31	B : 17				
E78815 REV 2		952274 REV 2		PC 49179 REV 1					
6023		CSAPEN 03		CHARGING SAFETY DETECTION PUMPS					
RPP S/N		OFFICE NATIONAL STANDARDS		OFFICE TSP MATERIAL					
49150		194		284283-AC					

The attributes listed above have been reviewed by the ICJ & A. Some attributes are not applicable to the ICJ & A. Non-applicable items are marked with "N/A". Records are available for audit.

[illegible]

SUPPLEMENT ISSUED - PLEASE THE MINIMUM PLAN MAKE
LISTED ABOVE RAILROADS AND SHIPPED SHORT.

Die Besetzung der Aufgaben ist wie folgt:

ORATION *q* OR, 21499
OK-FILM ITM APR 29 75

[illegible]

The attributes listed on this page have been reviewed by: ☐ A. A. R. Code designations are: ☐ An abstract only ☐ Consistency ☐ Review of the abstract against the ☐ A. A. R. Code designations are used (all) ☐ Records are available for work

CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
A	Material Certificate	A	Operating Electrical Test Records	A	Visual Inspection
A	Heat Treat Records	A	Operating Electrical Test Records	A	Dimensional Inspection
A	RT Film and Records	A	Pressure Test Records	A	Cleanliness
A	RT AIT Records	A	Operating Electrical Test Records	A	Painting
A	UT Records	A	Performance Test Records	A	Packaging
A	Approved Stress Report	A	Welding Personnel Qual. Cert.		
A	Approved Design Analysis	A	NDE Personnel Qual. Cert.		
A	Operating Electrical Test Records	A	Name Plate Facsimile		
A	ASME Certificate	A	Code Form <u>1010/1020</u>		

$\text{put } x \leftarrow x + \text{num} \quad \text{if } \text{get}(x) = 0$

- * SHIPPED SHORT: 3 MORE INCHES PER RING MATERIAL
- * LIST ITEM # 05 AND 1 UNLESS OTHERWISE NOTED
- * pump MATERIAL LIST ITEM V. 02

THE SUPPLIER CERTIFIES that for the equipment and material released, all contractual requirements have been met. Approved deviations, if any, are listed above.

Carroll J. [Signature]
W. A. [Signature]

QUALITY ASSURANCE

444

TELETYPE DIVISION
RECEIVED APR 1 1976

The expenditures listed below have been reviewed by ☒ G.A. Korte design shows are A-approximately C-considerable W-were one of the significant expenditures

☒ G.A. Item-applicable items are listed out. Records are available for audit.

APR 12 1968 10:11 AM LISTED BY [illegible] 101-101

Shipping sheet - 1 minimum flow certified

Supplement issued to revise 4 globe values listed above

[illegible]

AST-6-12

QUALITY ASSURANCE
SUPPLEMENT
FORM 1000

WESTINGHOUSE ELECTRIC CORPORATION
NUCLEAR POWER SYSTEMS
PWR SYSTEMS DIVISION

MAY 12 1978

21499

QTY TO	QTY	PROJECT	PROJECT	S.D. NO.	QTY	QTY	QTY
CAV	169450	169450	BCGEI	205	10	10	10
PACIFIC PUMPS				118	31	10	10
678815 REV 2				752274 REV 2	FC 49179 REV 1		
A20, A21, CSARCH 01-02				CHARMING SAFETY INJECTION PUMP			
PUMP SIN				DRIFKE NATIONAL BOARD			
49178				192			
49179				193			
				2P4283-AA			
				2P4283-AB			

The information listed below have been reviewed by Q.A. Code designations are: A - Acceptability, C - Compliance, W - Withdrawal of the certificate issued by Q.A. If non-applicable items are listed out, Records are available for audit.

CODE	CODE	CODE
A Material Certifications	A Operating Electrical Test Records	A Visual Inspection
A Heat Treat Records	A Insulation Test Records	A Dimensional Inspection
A RT Film and Records	A Pressure Test Records	A Cleanliness
A PT MT Records	A Gap-Exposure-Test Records	A Painting
A UT Records	A Performance Test Records	A Packaging
A Approved Stress R	A Welding Personnel Qual. Cert.	
A Approved Design Analysis	A NDE Personnel Qual. Cert.	
A Approved Materials Storage & Control Methods	A Name Plate Records	
A CERT OF COMPLIANCE	A Code Form 100-1	

SUPPLEMENT ISSUED TO RELEASE THE TWO INVENTORY FILED FILES LISTED ABOVE WHICH WERE SHIPPED SHORT.

QUALITY ASSURANCE