

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555



MAY 08 1980

MEMORANDUM FOR: Chairman Ahearne

FROM: James R. Shea, Director
Office of International Programs

THRU: Acting Executive Director for Operations

SUBJECT: SAFETY SIGNIFICANCE OF PENDING COMPONENT EXPORTS TO INDIA

In connection with IP's memorandum of March 19 to the Commissioners' assistants which enclosed copies of three pending component export license applications for Tarapur (XCOM0376, 377 and 381), you raised a question regarding the significance of the proposed Tarapur component exports for the safe operation of Tarapur Nuclear Power Station (TAPS). The fourth application listed on the IP memorandum (XCOM0382) is for the Bhabha Atomic Research Center and, therefore, will not be addressed here.

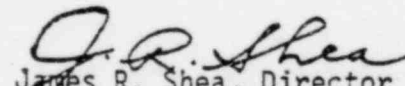
The components covered by XCOM0376 and XCOM0377 are spare parts intended for use in various coolant pumps in the Tarapur reactors. They are all standard pump components which are part of the normal spare parts complement for reactors similar to those at Tarapur. The applicant, Byron Jackson Pump Division, has advised that the Indian authorities have not expressed any urgency in connection with their order for these pump components. While there does not appear at this time to be an urgent need for these particular spares, this situation could, of course, change. NRR staff advises that it is possible that the Tarapur reactors could be operated at lower power levels without any significant increase in safety risks should these spares not be approved for export. Eventually the reactors would have to be shut down if the pumps became inoperable due to lack of spare parts. Without obtaining further information from the Indian authorities, it is impossible to determine when the lack of spare pump parts would affect normal reactor operations.

License application XCOM0381 involves the proposed export of 150 Zircaloy-4 fuel channels to Tarapur. The applicant, Carpenter Technology, has advised that serious safety problems could develop if the fuel channels are not replaced on a timely basis. The fuel bundles are clustered in the reactors in groups of four and in between the fuel channels, which encase the fuel bundles, are the control rod blades. When the fuel bundles are first inserted into the reactors, the fuel channels are very straight and square. However, as the reactor operates, the channels become rounded and bowed from top to bottom. They may eventually become so distorted that they "pinch" the control rod blades and consequently affect the speed at which the control rods can be inserted into the reactor.

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If the channels are not replaced on a timely basis, this pinching could become severe enough to jeopardize the reactor's capability to safely shut down when required by emergency situations, or even in the course of normal reactor operations. As with the coolant pump spare parts, it is difficult to predict the dates when the fuel channel distortions become so numerous and serious that continued reactor operations become unsafe. According to Carpenter's information, the last supply of approximately 150 fuel channels for Tarapur was provided two years ago by a German manufacturer. The total number of channels required at Tarapur is 284 per core (a total of 568 fuel channels for both units at Tarapur). Since the fuel channels have a life of approximately 5 years, after which there is a systematic replacement of all fuel channels, Carpenter believes that the stock of German supplied channels has been depleted and therefore the proposed export is appropriate and it can be assumed that this order is for reload purposes and not an attempt to stockpile the material. Carpenter Technology's contract is conditioned on the receipt of an export license. After the license is issued, the Company will require approximately 8 to 9 months before the fuel channels are ready for shipment.

As a final comment on the safety significance of component exports, the staff notes that if licensing action on all of the several pending Tarapur component applications continues to be withheld, this could lead to an earlier or more adverse interrelated safety impact than that which could be caused by any single export treated in isolation.


James R. Shea, Director
Office of International Programs

cc: Commissioner Gilinsky
Commissioner Kennedy
Commissioner Hendrie
Commissioner Bradford
S.Chilk, SECY
E.Hanrahan, OPE
L.Bickwit, OGC

APPENDIX C

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, 175 CURTNER AVE., SAN JOSE, CALIFORNIA 95125

RECEIVED CLEAR POWER
USNRC

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SYSTEMS DIVISION

OFFICE OF
INTERNATIONAL
PROGRAMS

BDW-80048
May 8, 1980

Mr. James R. Shea, Director
Office of International Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Application Amendment - XCOM 240

Dear Mr. Shea:

On April 25, 1979, General Electric filed an application for a license to export to the Tarapur Atomic Power Station (TAPS) certain replacement parts and components. Attached to the application was a list of the names and values of the components for which orders were pending at that time.

The application is still under review and, in the intervening year, we have received new orders. Also, we have been able to export some of the items under XCOM 20, a previously issued license covering unspecified parts up to \$100,000 in value.

In addition to those changes, we have more closely identified some of the components as not "specially designed or specially prepared" for reactor use. For example, nuts, bolts, bushings, bearings, lamps, wire rope, rectifiers, resistors, relays and similar ordinary hardware and electrical items which could be used interchangeably in non-nuclear as well as nuclear installations are now being exported under U.S. Department of Commerce regulations, as discussed with your staff from time to time.

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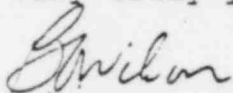
All of these changes are reflected in the enclosed revised list which shall amend, replace and supersede, in its entirety, that included with the April 25, 1979 application.

Through frequent Washington visits, numerous phone calls and letters, we are sure you are aware that General Electric is greatly concerned and disappointed at the Commission's delay in issuing XCOM 240 (and XCOM 250) for components -- most of which are safety-related -- urgently needed at TAPS to maintain plant equipment in a safe and effective condition.

It is hard to see how our proposed exports of replacements for worn or defective and potentially unsafe, TAPS parts could adversely affect nuclear safeguards objectives so long as TAPS operates on previously exported fuel enriched in the U.S. using nuclear safety technology also, in large part, of U.S. origin.

Please let us know if we can provide other information that could bring about Commission reconsideration and issuance of XCOM 240 and XCOM 250.

Very truly yours,



B. D. Wilson, Manager
Government Relations
& Export Licensing

/clk

cc: L. V. Nosenzo

Enclosure

GENERAL ELECTRIC ORDERS
FOR
TARAPUR REPLACEMENT PARTS

XCOM 240

<u>QTY</u>	<u>DESCRIPTION</u>	<u>APPROX. VALUE</u>
6	Thermal Sleeve for Control Rod	\$ 12,450
2	Ion Chambers	17,500
5	Magnet Housing for Control Rod Drives	2,950
1	Ion Chamber Drive Assembly	9,680
Various	Control Rod Drive Parts	57,800
2	LRM Drive System Mount & Gear Box	7,250
1	Log Radiation Monitor	3,500
		<hr/>
	Total Remaining	\$ 111,130

XCOM 250

6	Traversing Incore Probes	\$ 112,000
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5/8/80
BDW 80048 - Attachment
(Replaces BDW 79109-Attachment April, 1979)

APPENDIX D

APPLICATION FOR LICENSE TO EXPORT NUCLEAR
MATERIAL AND EQUIPMENT (See Instructions on Reverse)

1. APPLICANT'S USE		a. DATE OF APPLICATION		b. APPLICANT'S REFERENCE		2. NRC USE		a. LICENSE NO.		b. DOCKET NO.		
		6 MARCH 80		793-V-2785				X Com 376		11001078		
3. APPLICANT'S NAME AND ADDRESS						4. SUPPLIER'S NAME AND ADDRESS <i>(Complete if applicant is not supplier of material)</i>						
a. NAME BYRON JACKSON PUMP DIVISION ATTN: JOHN NORTON						RIS						
d. STREET ADDRESS P.O. BOX 2017, TERMINAL ANNEX						a. NAME						
c. CITY LOS ANGELES			STATE CA		ZIP CODE 90051		b. STREET ADDRESS					
d. TELEPHONE NUMBER <i>(Area Code - Number - Extension)</i> (213) 587-6171						c. CITY			STATE		ZIP CODE	
5. FIRST SHIPMENT SCHEDULED		6. FINAL SHIPMENT SCHEDULED		7. APPLICANT'S CONTRACTUAL DELIVERY DATE		8. PROPOSED LICENSE EXPIRATION DATE		9. U.S. DEPARTMENT OF ENERGY CONTRACT NO. <i>(If Known)</i>				
APRIL '80		APRIL '80		31 JANUARY '80		APRIL '81						
10. ULTIMATE CONSIGNEE						11. ULTIMATE END USE <i>(Include plant or facility name)</i>						
a. NAME TARAPUR REACTOR						INSTALLATION IN TARAPUR NUCLEAR POWER STATION						
b. STREET ADDRESS						11a. EST. DATE OF FIRST USE						
c. CITY - STATE - COUNTRY BOMBAY, INDIA												
12. INTERMEDIATE CONSIGNEE						13. INTERMEDIATE END USE						
a. NAME GOVERNMENT OF INDIA, DEPT OF ATOMIC ENERGY DIRECTORATE OF PURCHASE & STORES						EXPORT/IMPORT AND INTERNATIONAL SERVICES						
b. STREET ADDRESS 3RD FLOOR MOHATTA BLDG, PALTON ROAD						13a. EST. DATE OF FIRST USE						
c. CITY - STATE - COUNTRY BOMBAY 400 001, INDIA						RECEIVED U.S. NRC 980 MAR 11 PM 46						
14. INTERMEDIATE CONSIGNEE						15. INTERMEDIATE END USE						
a. NAME						15a. EST. DATE OF FIRST USE						
b. STREET ADDRESS												
c. CITY - STATE - COUNTRY												
16. NRC USE		17. DESCRIPTION <i>(Include chemical and physical form of nuclear material; give dollar value of nuclear equipment and components)</i>				18. MAX. ELEMENT WEIGHT		19. MAX. WT. %	20. MAX ISOTOPE WT.	21. UNIT		
		2 ROTATING FACE RINGS 4 CARBON BEARINGS 4 RETAINING RINGS 1 COOLANT RECIRCULATING IMPELLER 1 BEARING RETAINER ASSEMBLY SPECIALLY PREPARED FOR USE IN COOLANT PUMPS FOR NUCLEAR SERVICE VALUE = LESS THAN \$20,000.00										
22. COUNTRY OF ORIGIN - SOURCE MATERIAL			23. COUNTRY OF ORIGIN - SNM WHERE ENRICHED OR PRODUCED			24. COUNTRIES WHICH ATTACH SAFEGUARDS <i>(If Known)</i>						
N/A			N/A			N/A						
25. ADDITIONAL INFORMATION <i>(Use separate sheet if necessary)</i> *Copy to FDR and ACC 3-14-80 D-12 8004020240 LP 00010 00050												
26. The applicant certifies that this application is prepared in conformity with Title 10, Code of Federal Regulations, and that all information in this application is correct to the best of his/her knowledge.												
27. AUTHORIZED OFFICIAL				a. SIGNATURE				b. TITLE				
				[Signature]				TRAFFIC MANAGER				

CARPENTER TECHNOLOGY CORPORATION

SPECIAL PRODUCTS DIVISION

P.O. BOX 20538, SAN DIEGO, CALIFORNIA 92120 (714) 448-1000

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EXPORT/IMPORT
AND
INTERNATIONAL SAFEGUARDS

March 14, 1980

U. S. Nuclear Regulatory Commission
Export/Import and International Safeguards
Office of International Program
Washington, D. C. 20555

Attention: Ms. Elaine Hamby, MNBB Mail Stop 8215

Subject: Export License Application for Zircaloy-4
Fuel Channels for Tarapur Atomic Power
Station, Units 1 and 2

Reference: CarTech SPD Quotation O-306-005N

Dear Ms. Hemby:

Carpenter Technology Corporation, Special Products Division, respectfully requests the issuance of an export license for the purpose of exporting Zircaloy-4 Fuel Channels to the Government of India for end use in Tarapur Atomic Power Station. We are currently making a quotation for these parts and have as yet to receive an order. The appropriate information as required by 10CFR Part 110 is attached.

For your information, the 150 fuel channels which are required by the Government of India, in our opinion, which is supported by worldwide BWR fuel channel supply activities, represent actual operating requirements for the Tarapur Units 1 and 2 and could not, in any case, be considered as a move, in our opinion, by the Government of India, to stockpile fuel channels for future use. The last supply was made approximately two years ago by a German manufacturing firm by the name of MAN and, therefore, this requirement is timely, considering the normal fuel channel replacement requirements of an operating BWR. It would appear that the Government of India is somewhat dependent upon the U.S. supply for fuel channels as MAN has essentially gone out of the fuel channel supply business due to lack of sales activity.

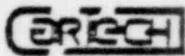
Your prompt handling of this application will be appreciated. Additionally, if possible, we would like to be appraised of any progress in obtaining such a license as our offer would be subject to receipt of such a license. Thanking you in advance for your help.

Very truly yours,

D. C. Bristol
General Sales Manager

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DCB/akh
Enclosure



CARPENTER
TECHNOLOGY CORPORATION

SPECIAL PRODUCTS DIVISION P.O. BOX 20536, SAN DIEGO, CALIFORNIA 92120 TEL: 448-1000

DATE: March 14, 1980

ADDENDUM TO
EXPORT LICENSE APPLICATION
FOR BOILING WATER REACTOR ZIRCALOY-4 FUEL CHANNELS

The following information is given in accordance with that information which is required by Paragraph 110.31, General Requirements of IOCFR Part 110.

a. Name and U.S. address of applicant:

Carpenter Technology Corporation
Special Products Division
Post Office Box 20536
San Diego, California 92120

b. Name and address of supplier of equipment and material, if different from the applicant:

None
None

c. Name and address of ultimate consignee:

Government of India
Department of Atomic Energy
Tarapur Atomic Power Station
Thana District
Maharashtra State, India

d. Name and address of intermediate consignee:

Same as above

e. Date of proposed first shipment:

January 1, 1981

f. Date of proposed completion of final shipment:

January 1, 1981

g. Contractual delivery date, if established:

Not established

h. Proposed expiration of export license:

July 1, 1981

CARPENTER TECHNOLOGY CORPORATION
Special Products Division
Post Office Box 20536
San Diego, California 92120

Date: 3/14/80
Page: 2

EXPORT LICENSE APPLICATION FOR BOILING WATER REACTOR ZIRCALOY-4 FUEL CHANNELS, continued.

- i. End use of material by all consignees:
Tarapur Atomic Power Station, Units 1 and 2

Additional information as required by Paragraph 110.32, Additional Requirements of 10CFR Part 110.

- a. General description of equipment:

160 each, 2mm (0.080") wall Zircaloy-4 alloy fuel channels for use on full elements. The channels are 4.349 inches wide with four equal sides 158 inches long.

- b. Design power level:

Unit 1 200 MWe (net)
Unit 2 200 MWe (net)

- c. Name of installation:

Tarapur Atomic Power Station

- d. Location of where equipment is to be used:

Tarapur Atomic Power Station
Thana District
Maharashtra State, India

- e. Date when equipment is needed abroad:

January 1, 1981 estimated

- f. Total dollar value of all items to be exported under the requested license:

\$738,720.00

- g. List of items to be exported:

Boiling water reactor fuel channels would be classified under Zirconium Tubes, as listed in Appendix A of Nuclear Equipment, Item A(6).

APPLICATION FOR LICENSE TO EXPORT NUCLEAR
MATERIAL AND EQUIPMENT (See Instructions on Rev. 3)

1. APPLICANT'S USE		a. DATE OF APPLICATION April 3, 1980		b. APPLICANT'S REFERENCE 09L-1646/1599		2. NRC USE		a. LICENSE NO. X Com 0395		b. DOCKET NO. 11002032		
3. APPLICANT'S NAME AND ADDRESS NAME Pacific Pumps Inc. - Div. of Dresser Ind. STREET ADDRESS 5715 Bickett Street CITY Huntington Park STATE CA ZIP CODE 90255						4. SUPPLIER'S NAME AND ADDRESS (Complete if applicant is not supplier of material) RIS						
5. TELEPHONE NUMBER (Area Code - Number - Extension) (213) #588-2201 Ext. 208				b. STREET ADDRESS				c. CITY		STATE ZIP CODE		
6. FIRST SHIPMENT SCHEDULED --		6. FINAL SHIPMENT SCHEDULED 3-12-81		7. APPLICANT'S CONTRACTUAL DELIVERY DATE 3-12-81		8. PROPOSED LICENSE EXPIRATION DATE 5-12-81		9. U.S. DEPARTMENT OF ENERGY CONTRACT NO. (If Known)				
10. ULTIMATE CONSIGNEE a. NAME Government of India b. STREET ADDRESS 3rd Floor Mohatta Bldg., Palton Road c. CITY - STATE - COUNTRY Bombay-400001, India						11. ULTIMATE END USE (Include plant or facility name) Government of India Dept. of Atomic Energy Tarapur Nuclear Power Plant 11a. EST. DATE OF FIRST USE 1965						
12. INTERMEDIATE CONSIGNEE a. NAME b. STREET ADDRESS c. CITY - STATE - COUNTRY						13. INTERMEDIATE END USE RECEIVED U.S. NRC 13a. EST. DATE OF FIRST USE						
14. INTERMEDIATE CONSIGNEE a. NAME b. STREET ADDRESS c. CITY - STATE - COUNTRY						15. INTERMEDIATE END USE 15a. EST. DATE OF FIRST USE						
16. NRC USE		17. DESCRIPTION (Include chemical and physical form of nuclear material; give dollar value of nuclear equipment and components)				18. MAX. ELEMENT WEIGHT		19. MAX. WT. %		20. MAX ISOTOPE WT.		21. UNIT
		Specially designed parts for pumps in a Safety Related System in a Nuclear Power Plant built in 1965 before Section III of ASME Boiler and Pressure Vessel Code was in existence (for "Re-Circulating and Auxiliary Clean Up" pumps and "Primary Feed" pumps) with a total value of \$284,172.50. See attachment for detail.				2,400 lbs						
22. COUNTRY OF ORIGIN - SOURCE MATERIAL N/A			23. COUNTRY OF ORIGIN - SNM WHERE ENRICHED OR PRODUCED N/A			24. COUNTRIES WHICH ATTACH SAFEGUARDS (If Known)						
25. ADDITIONAL INFORMATION (Use separate sheet if necessary) See attachment for additional "No. 17 Description"												
26. The applicant certifies that this application is prepared in conformity with Title 10, Code of Federal Regulations, and that all information in this application is correct to the best of his/her knowledge.												
27. AUTHORIZED OFFICIAL				a. SIGNATURE J. P. Bousland				b. TITLE Part Order Process Manager				

No. 25 Additional Information

SUPPLEMENT ATTACHMENT FOR "ITEM 17 DESCRIPTION"

Equipment Item 17: Are replacement parts for "Re-Circulating and Auxilliary Clean Up Pumps" and "Primary Feed Pumps" consisting of:

<u>Item</u>	<u>Description</u>	<u>Qty</u>
I	<u>Spares for Pacific Pumps - 1-1/2" UNI 12 Stg S/N 40225-28</u>	
1.	Complete internal assembly, Part No. 1308	1
2.	Bearing sleeve - Thrust, Part No. 051	3
3.	Bearing sleeve - Radial, Part No. 063	3
4.	Set thrust bearing shoes - inner 5"JHJ Kingsbury (set = 6)	3 Sets
5.	Set thrust bearing shoes - outer 5"JHJ Kingsbury (set = 6)	3 Sets
II	<u>10" BFIS 5 Stg S/N 39383-87</u>	
1.	Impeller, Part No. 028	1
2.	Wearing - intermediate cover, Part No. 032	4
3.	Bearing sleeve thrust, Part No. 051	2
4.	Set thrust bearing shoes inner 8"JHJ Kingsbury Part No. 054 (set = 6)	2 Sets
5.	Set thrust bearing shoes - outer 8"JHJ Kingsbury Part No. 058 (set = 6)	2 Sets
6.	Bearing sleeve, Part No. 063	2
7.	Pressure reducing sleeve, Part No. 077	1
8.	Pump gear and idler gear set with idler gear shaft Part No. 100/206	1
9.	Wearing ring - impeller list - 2400 + bore - 2580 D Part No. 200	2
10.	Flexible coupling assembly, Part No. 002	1
11.	Wearing ring - suction spacer, Part No. 026	3

<u>Item</u>	<u>Description</u>	<u>Qty</u>
12.	Worm, Part No. 096	2
13.	Bearing sleeve - gear pump upper, Part No. 097	1
14.	Bearing sleeve - gear pump lower, Part No. 098	1
III	<u>1-1/2" x 12" SVH S/N 40223-24</u>	
1.	Impeller, Part No. 034	1
2.	Wearing - ring case, Part No. 226	3
3.	Wearing ring - hand, Part No. 273	2
4.	Wearing impeller - head side, Part No. 278	2
5.	Wearing impeller - case side, Part No. 279	3
6.	Packing box bushing, Part No. 227	2
IV	<u>1-1/2" UNI 12 Stg S/N 40225-28</u>	
1.	Pressure reducing bushing, Part No. 065	3
2.	Pressure reducing sleeve, Part No. 077	2
3.	Set thrust - bearing shoes inner 5"JHJ Kingsbury Part No. 054 (set = 6)	2 Sets
4.	Thrust collar, Part No. 057	4
5.	Set thrust bearing shoes - outer 5"JHJ Kingsbury Part No. 058 (set = 6)	6 Sets
6.	Thrust nut, Part No. 059	2
7.	Seat adapter, Part No. 18	2
V.	<u>10"S BFIS 5 Stg S/N 39383-87</u>	
1.	Deflector ring, Part No. 007	2
2.	Case washers, Part No. 027	6
3.	Case cap nut, Part No. 477	6
4.	Case studs, Part No. 478	4
5.	Stationary oil baffles, Part No. 048	4
6.	Stationary oil baffle radial - outer, Part No. 552	2
7.	Key - pressure reducing sleeve, Part No. 088	2

<u>Item</u>	<u>Description</u>	<u>Qty</u>
8.	Key - intermediate cover wear ring locking, Part No. 1148	8
9.	Assembly rail, Part No. 462	2
10.	Wear ring - impeller suction, Part No. 201	3
11.	Worm gear, Part No. 103	2
12.	Suction spacer, Part No. 023	1
13.	Intermediate cover, Part No. 033	2
14.	Discharge spacer, Part No. 036	1
15.	Intermediate cover - discharge, Part No. 078	1
16.	Diffuser - radial, Part No. 083	2
17.	Diffuser - suction, Part No. 082	1

Above replacement parts are for original equipment furnished to the General Electric Corporation, Atomic Power Equipment Department, 175 Curtner Avenue, San Jose, California during 1965.

F.O.B. Hur Park, California, consisting of:

1.	Size 1-1/2" x 12", type SVH, pump serial 40223/24 Job P-43052 "Auxiliary Clean Up Pumps"	2
2.	Size 1-1/2", type UNI, pump serial 40225/28 Job A-43053 "Re-Circulating Clean Up Pumps"	2
3.	Size 10"S, type BFIS, pump serial 39383/87 Job B-42459 "Primary Feed Pumps"	5