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GENERAL [LOGO] ELECTRIC DIAL
PLASTICS ENGINEERING DEPARTMENT COMM

ONE PLASTICS AVENUE 8*236
PITTSFIELD, MASS. 01201

January 23, 1979

Mr. G. Hiner
Office

Subject: Medical Evaluation of GENAL Asbestos Free
Brochures

I expect the first reaction of the average person to the attached brochures would be that GE has done a very good thing to eliminate asbestos from its products, starting in 1972; and that GENAL certainly is a better product to purchase than competitive phenolics containing asbestos. The brochures are very effective marketing tools.

However, there is a major problem and risk to PBD in using this advertising and sales approach. While we can be proud that we stopped using asbestos in 1972, how do we justify our use before 1972 when the suggestion that a relationship existed between asbestos and cancer was made in 1935 and confirmed in 1955?

We lay ourselves open to attack on issues such as:

- Why did we continue to use asbestos when it was a known health risk?
- What have our medical examinations on exposed workers shown (PBD did not do exams religiously or at all over the years)?

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- What special efforts is PBD making for retired exposed workers?
- What efforts have we made to track down and inform/examine workers exposed long ago who have left GE or transferred to other organizations?
- What has GE done for exposed workers who have died of asbestos induced cancer and their families?

Any of these issues could potentially give us very negative publicity in spite of the fact that we are doing a better job than our competitors [sic]. On a relative scale we are doing fine. On an absolute scale, our performance leaves much to be desired. Consider that

- Asbestos exposure in industry is one of the most serious issues facing American industry today. Heavy exposure to asbestos may lead to a related death rate of approximately 46%. Disease follows exposure by a period of 15-20 years. The disease that follows (cancer of the lung, pleura or peritoneum) is fatal. No effective therapy exists. Cessation of use in 1972 does not relieve the issue of dangerous exposure to workers and consumers in 1965, for instance.
- All MD's in the nation have received a Physician's Advisory Letter describing the effects of asbestos exposure (see attachment #1).

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- All Social Security recipients have received such an advisory letter from the Secretary of Health, Education and Welfare.
- A national TV campaign stating the dangers of asbestos exposure is being planned.
- A \$20,000,000 out of court settlement has been made to 455 asbestos workers and more are predicted to come (see attachment #2).

In my view, the risks outweigh the benefits and my recommendation would be to discontinue this marketing strategy. I would use the "asbestos free" approach *verbally* with purchasing agents and molders. I would not use it in media advertising, on truck sides or in our mailing campaigns.

/s/ Wm. J. Taylor, M.D.
William J. Taylor, M.D.

-W
Attach.

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GABRIEL A. JACKSON, State Bar No. 98119
C.J. MANOLI, State Bar No. 147342
COURTNEY M. KING, State Bar No. 221239
JACKSON & WALLACE LLP
55 Francisco Street, 6th Floor
San Francisco, CA 94133
Tel: 415.982.6300
Fax: 415.982.6700

Attorneys for Defendant
BUFFALO PUMPS, INC.

IN THE SUPERIOR COURT OF THE
STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF LOS ANGELES

CONRAD BEAUCHAMP
and OPAL GERALDINE
BEAUCHAMP,

Plaintiffs,

v.

ALLIS-CHALMERS
CORPORATION PRODUCT
LIABILITY TRUST, et al.,

Defendants.

Case No. BC-357289

**RESPONSES OF
DEFENDANT
BUFFALO PUMPS,
INC. TO PLAINTIFFS'
STANDARD INTER-
ROGATORIES**

PROPOUNDING PARTY: Plaintiffs CONRAD
BEAUCHAMP and
OPAL GERALDINE
BEAUCHAMP,

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RESPONDING PARTY: Defendant BUFFALO
PUMPS, INC.

SET NO.: One

Preliminary Statement

The following responses are based upon the information that is presently known and available to Buffalo Pumps, Inc. based upon a reasonable investigation. Buffalo Pumps, Inc. believes that these responses are accurate as of the date made. However, many of the matters inquired about in Plaintiffs' Discovery took place decades ago, therefore, information may be incomplete or no longer available due to the passage of time. Although Buffalo Pumps, Inc. has endeavored to conduct a reasonable investigation, Buffalo Pumps, Inc. cannot exclude the

* * *

[5] 14. Have you, at any time, engaged in the processing, marketing, and sale of [illegible] containing asbestos fibers?

RESPONSE

Buffalo Pumps, Inc. incorporates by reference herein the foregoing Preliminary Statement and General Objections. Buffalo Pumps, Inc. further objects to this request on the grounds that it is overly broad, unduly burdensome, vague and ambiguous, and seeks information that is neither relevant nor reasonably calculated to lead to the discovery of admissible

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evidence. Without waiver of and subject to its objections, Buffalo Pumps, Inc. responds as follows:

Buffalo Pumps, Inc. is a manufacturer of centrifugal pumps. Buffalo Pumps, Inc. understands that, at various times, centrifugal and perhaps certain other types of pumps were manufactured at the North Tonawanda facility by the Buffalo Pumps Division of the Buffalo Forge Company and the Buffalo Steam Pump Co. Buffalo Pumps, Inc. believes that the pumps were made of metal alloys, and that the pumps themselves contained no asbestos materials. Typically, however, the metal components of certain of these pumps would have required packing and gaskets. Upon manufacture, the original pump typically would be supplied to a customer with the appropriate packing and gaskets. Between 1955 and 1985, and during at least some periods of time prior to 1955, gaskets and packing supplied in certain original pumps manufactured by the Buffalo Pumps Division of the Buffalo Forge Company and the Buffalo Steam Pump Co. contained asbestos. Upon a reasonable investigation, neither the Buffalo Pumps Division of the Buffalo Forge Company nor the Buffalo Steam Pump Co. manufactured the gasket or packing material installed in any of their respective pumps; to the contrary, such materials were mined, manufactured, marketed, sold, and supplied by others. Buffalo Pumps, Inc. believes that the Buffalo Pumps Division of the Buffalo Forge Company on some occasions provided small numbers of gaskets to certain customers along with other replacement parts for certain pumps.

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Buffalo Pumps, Inc. has not engaged in the mining, processing, or manufacturing of any asbestos-containing product as it understands those terms in the context of Plaintiffs' Discovery. In 1987, Buffalo Pumps, Inc. filled an order for a United States Navy vessel for which the [6] pertinent specifications required the use of asbestos-containing gaskets. Since Buffalo Pumps, Inc. was not using asbestos-containing gaskets, the customer provided the gaskets. Buffalo Pumps, Inc. affixed warning labels to the pumps containing the customer-supplied gaskets prior to shipment. See Response to Standard Interrogatory 28.

Buffalo Pumps, Inc. has come to understand that certain pumps manufactured by the Buffalo Pumps Division of the Buffalo Forge Company and/or by the Buffalo Steam Pump Co. may have been insulated in their ultimate applications, and that in some instances the insulation contained asbestos as an ingredient.

Upon a reasonable investigation, Buffalo Pumps, Inc. is not aware that any gasket and packing materials installed on its pumps or those of the Buffalo Pumps Division of the Buffalo Forge Company and/or Buffalo Steam Pump Co. bore any product or trade name. Buffalo Pumps, Inc. has not located specific information with respect to the content, including the type of asbestos fiber, if any, in much of the gasket and packing material supplied with pumps by the Buffalo Pumps Division of the Buffalo Forge Company or the Buffalo Steam Pump Co. To the extent that Buffalo Pumps, Inc. is aware of and/or has located military or other customer specifications that reference the type of

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asbestos fiber in any gasket or packing materials, the referenced fiber type is chrysotile.

After a reasonable investigation, Buffalo Pumps, Inc. is not aware that the Buffalo Pumps Division of the Buffalo Forge Company utilized any packaging or containers, as that term is reasonably understood in the context of pump manufacture and supply, for its pumps.

After a reasonable investigation, Buffalo Pumps, Inc. believes that gaskets and packing materials used by the Buffalo Pumps Division of the Buffalo Forge Company were manufactured and/or supplied by: John Crane Company, Sealing Devices, Inc., and/or Ace-O-Pax.

The only manufacturing plant ever operated by Buffalo Pumps, Inc. or, to its knowledge, the Buffalo Pumps Division of the Buffalo Forge Company, is a facility located in North Tonawanda, New York.

The business of Buffalo Pumps, Inc. and, before it, the Buffalo Pumps Division of the Buffalo Forge Company and the Buffalo Steam Pump Co., has at all times been the manufacture

* * *

[13] Buffalo Pumps, Inc. states that in 1987, Buffalo Pumps, Inc. filled an order for a United States Navy vessel for which the pertinent specifications required the use of asbestos-containing gaskets. Since Buffalo Pumps, Inc. was not using asbestos-containing gaskets, the customer provided the gaskets. Buffalo

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Pumps, Inc. affixed warning labels to the pumps containing the customer-supplied gaskets prior to shipment. The text of these labels read as follows:

DANGER
GASKET MATERIAL CONTAINS ASBESTOS
AVOID OPERATIONS TO IT THAT
WILL CREATE DUST
CANCER AND LUNG DISEASE HAZARD

After a reasonable investigation, Buffalo Pumps, Inc. is not aware that the Buffalo Pumps Division of the Buffalo Forge Company published or distributed any printed material containing any warnings concerning the possibility of injury resulting from the use of asbestos-containing component products. To the extent it has located responsive documents, Buffalo Pumps, Inc. will make them available for inspection and copying at a mutually convenient time.

See also Response to Standard Interrogatory 14.

29. If so, please state:

- (a) When did the warning first appear?
- (b) What was the precise wording of the warning, when it first appeared?
- (c) Was the warning altered, amended or changed in any manner? If so, how and when?
- (d) Where was the warning located on the product or packaging?

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(e) When did you become aware of warnings placed on products distributed by other manufacturers or suppliers of asbestos or asbestos containing products?

(f) State the manner in which your product is shipped and the type of container in which it is shipped to retailers;

(g) State whether any industrial psychologists or human factors engineers were consulted prior to utilizing such warnings, cautions, etc.

* * *

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STANDARD FORM 30, JULY 1966 GENERAL SERVICES ADMINISTRATION FED PROC REG. (41 CIR) 1-16.101	AMENDMENT OR SOLICITATION/ MODIFICATION OF CONTRACT	Page of 1 7
1. AMENDMENT/MODIFICATION NO. P00002		2. EFFECTIVE DATE 75 mar 25
3. PRODUCTION/PURCHASE REQUEST NO. N65540-3044-1277	4. PROJECT NO. (If applicable)	
5. ISSUED BY P40:DJC Naval Regional Procurement Office U. S. Naval Base, Bldg. 600 Philadelphia, Pa. 19112		CODE <u>N00140</u>
6. ADMINISTERED BY (If other than block 3) Commander, DCASD Springfield 240 Route 22 Springfield, NJ 07081		CODE
7. CONTRACTOR NAME AND ADDRESS	CODE 23230	FACILITY CODE
(Street, City, County, State, and ZIP Code)	Foster Wheeler Corp. 110 South Orange Ave. Livingston, NJ 07039	351-2195 CONTRACT FILE
8. <input type="checkbox"/> amendment of solicitation no. <u>N00140</u> dated _____ (See blank 9)		
<input checked="" type="checkbox"/> modification of contract/order no. <u>N00140-73-C-0885</u> dated <u>73 JUN 25</u> (See blank 11)		

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9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATION

The above numbered solicitation is amended or set forth in block 12. The hour and date specified for receipt of Offers is extended is not extended

Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods

(a) By signing and returning 2 copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment number. **FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER.** If, by virtue of this amendment you decide to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10.	[Illegible] and [Illegible]	Obj. Ct.	Bureau Conf. No.	Sub. Allot.
	(RCP No. 301-301-3-040) AA 1731804.2472	000	00024A	
	Authentication Acct'g Acct'y	Trans Type	Property Acct'g Acct'y	
	065872	2D	000000	

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County	Cost Code	Amount
	007208000FFQ	decrease \$8,329.62
<p>11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS</p> <p>(a) <input type="checkbox"/> This Change Order is issued pursuant to _____</p> <p>The Changes set forth in block 12 are made to the above numbered contract/order</p> <p>(b) <input type="checkbox"/> The above numbered contract/order is modified to reflect the administrative changes, or changes in paying office, appropriation date, etc.) set forth in block 12.</p> <p>(c) <input checked="" type="checkbox"/> This Supplemental Agreement is entered into pursuant to authority of <u>GENERAL CONTRACTUAL AUTHORITY</u> It modifies the above numbered contract as set forth in block 12.</p>		
<p>12. DESCRIPTION OF AMENDMENT/MODIFICATION</p> <p>THIS SUPPLEMENTAL AGREEMENT OF SETTLEMENT, entered into this 25 day of March , 1975 between the UNITED STATES OF AMERICA (hereinafter called "the Government"), represented by the Contracting Officer executing this contract, and Foster Wheeler Corporation.</p> <p>a Corporation organized and existing under the Laws of the State of New York; (hereinafter called "the Contractor").</p> <p>WITNESSETH THAT:</p> <p>WHEREAS, the Contractor and the Government have entered into Contract No N00140-73-C-0885 under date of 25 June 1973 which, together with any and all amendments, changes, modifications and</p>		

<p>supplements thereto, is hereinafter referred to as “the contract”; and</p> <p>WHEREAS, the contract provides that the performance of work thereunder may at the convenience or option of the Government be terminated by the Government in whole or from time to time, in part, whenever any such termination is determined to be for the best interest of the government, and that the Contractor and Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of such termination, and</p> <p>WHEREAS, the Contractor is willing to waive unconditionally any claim against the Government by reason of such termination.</p> <p>NOW, THEREFORE, the parties hereto agree as follows:</p> <p>ARTICLE 1. The terminated portion of the contract is designated as follows:</p> <p>Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore, changed, remain unchanged and in full force and effect.</p>	
<p>13. <input type="checkbox"/> CONTRACTOR/OFFERORS IS NOT REQUIRED TO SIGN THIS DOCUMENT</p> <p><input checked="" type="checkbox"/> CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN <u>2</u> COPIES TO ISSUING OFFICE</p>	
<p>14. NAME OF CONTRACTOR/ OFFEROR BY _____ (Signature of person authorized to sign)</p>	<p>17. UNITED STATES OF AMERICA BY <u>[Illegible]</u> (Signature of Contracting Officer)</p>

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15. NAME AND TITLE OF SIGNED <i>(Type or print)</i>	16. DATE SIGNED	18. NAME OF CONTRACTING OFFICER <i>(Type or print)</i> W. E. GOULD	19. DATE SIGNED 75 Mar 25
* * *			

(6) NAVSHIPS 0351-065-1000 (for main boilers used on CVA-64)

(7) NAVSHIPS 0351-065-2000 (for main boilers used on CV-63)

A. SCOPE OF WORK

1. The contractor shall perform shipchecking, writing, editing, art and production services to accomplish a major revision of each of the above manuals: NAVSECPHILADIV shall either furnish to the contractor all basic information (raw material) necessary to accomplish the revisions, or instruct the contractor as to where some information can be readily obtained. For each manual revision, this information will include such items as the existing manual; new or revised procedures for boiler maintenance; description, operation and maintenance information for newly installed equipment; and photographs of boiler equipment. The contractor shall use new technical manual stock numbers, to be supplied by NAVSECPHILADIV, in lieu of the original manual numbers referenced above on all tasks. Each manual will be prepared as a two volume set. A different number will be assigned to each volume. The acronym "NAVSEA" shall be used in the manual stock number located on the front cover, spine, title page, marginal copy and/or text references instead of

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“NAVSHIPS” used in original manuals. The command authorization on the front cover and title page shall read “Published by Direction of Commander, Naval Sea Systems Command”. The Hull designation CV should be used in lieu of CVA on manual (7) above.

Services required from the contractor are described as follows, and shall be furnished for each manual revision to the extent specified in paragraph A3 below:

(1) Page 2, paragraph e(3) Each manual shall consist of two volumes containing approximately 550 pages of text and text illustrations and 115 fold-out drawings.

(2) Page 2, paragraph e(5) substitute “Univers Bold Type” for “Classified News Type”.

(3) Page 3 paragraphs 2 and 3, and pages 4 and 5 in their entirety, are hereby superseded by the following:

2. Each revised manual shall include the following elements, in the order shown. Each text section shall have a divider sheet.

VOLUME I

a. Cover and Spine

b. Front matter

- (1) Title page
- (2) List of effective pages
- (3) Change record
- (4) Approval and procurement record page
- (5) Content assurance page
- (6) Safety summary
- (7) Quick index page
- (8) Table of contents

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(9) List of text illustrations	
(10) List of engineering drawings (plans) in volume II	
c. Section A – Boiler Description and Design Data	
d. Section B – Boiler Operation	
e. Section C – Boiler Planned Maintenance	
f. Section D – Boiler Corrective Maintenance	
g. Section F – Fuel Oil Burners	
h. Section G – Flame Scanner (if required)	
i. Section H – Smoke indicators	
j. Section J – Soot Blowers	
k. Section K – Draft Gage	
l. Section M – Water Level Indicators	
m. Section N – Safety Valves	
n. Section P – Hydrostatic Pump and Test Methods	
o. Section R – Repair Parts List	
p. Section S – Special Tools and Equipment List	
q. Section T – Maintenance Materials List	
r. Appendices (if required)	
s. Glossary	
t. User Activity Comment Sheets (3)	
<u>VOLUME II</u>	
a. Cover and spine	
b. Front matter	
(1) Title page	
(2) List of effective pages	
(3) Change record	
(4) Approval and procurement record page	
(5) List of engineering drawings (plans) in volume II	

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- c. Engineering Drawings (plans)
- d. User Activity Comment Sheets (3)

3. For each manual revision, the contractor shall perform the shipchecking described in paragraph C1 below. The extent of other contractor services required for each manual revision is as follows:

SEE FOLLOWING PAGE

* * *

(4) Page 7 paragraph B 4 b – Superseded by the following:

Line art text illustrations should be incorporated into text camera ready copy properly sized. Photographic text illustrations must be separately mounted, covered, and marked to indicate cropping and percent reduction required.

(5) Page 8 – paragraph C – In order to provide for the deletion of the manuals required for the DD937 and DD948 boiler classes and the re-scheduling of the remaining manuals, the tabulation shown for shipchecking on page 8 is deleted and the following substitution is hereby incorporated:

Shipchecks should be conducted on one (1) ship in each boiler class except for the DLG-19 and DDG-4 classes which will require checking two (2) ships each. By the terms of the contract, four (4) shipchecks will be required to be conducted on the west coast and five on the east coast.

(6) Delivery schedule set forth in modification P00001 to the contract is superseded by the following:

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<u>SHIPS CLASS</u>	<u>TASK #</u>	<u>CONTRACTOR</u>
		<u>SUBMITTAL</u>
		<u>PRELIMINARY DRAFT</u>
---	<u>Re</u> I	Completed
DLG-19	II	Completed
CVA-66✓✓	VI	16 JUN 1975
DDG-23✓✓	IV	15 MAR 1975
DDG-4✓✓	V	15 MAY 1975
CVA-64✓✓	VII	15 JUL 1975
CV-63✓	X	15 OCT 1975
DDG-35✓✓	XIII	15 DEC 1975
<u>FINAL TASK #</u>		<u>CONTRACTOR</u>
		<u>SUBMITTAL FINAL</u>
		<u>COPIES</u>
Re: ---	1/75	---
✓III	10/10/75	Sixty Days from Final
✓✓XI	9/1/75	Approval of Preliminary
✓✓VIII	11/75	Draft
✓IX	4/76	↓
✓✓XII		
XIV		
XV		
<p>The Government shall be allowed 90 days from receipt to review and comment on the preliminary draft of each manual. The Government is at liberty to make comments on any aspect of the preliminary draft at this time and to require any changes desired in scope, content, wording, format and editorial treatment as long as such changes do not cause the contractor to perform work beyond the scope of the contract. If in the Government's opinion the preliminary draft requires changes or additions, the contractor will be required to revise and resubmit the preliminary draft or portions thereof for re-review by</p>		

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the Government. The contractor shall resubmit the preliminary draft or portions thereof within 30 days from the termination of the 90 day Government review period.

Once the Government has approved the preliminary draft it may not subsequently require the contractor to make changes without claim by the contractor. The contractor continues to be responsible to correct spelling, grammatical and typographical errors even if discovered after the preliminary draft approval date. In addition, the Government may require changes to the final artwork and drawings, since in the preliminary manual this material is only required in rough form.

All additional cost associated with revision and resubmittal of preliminary and final task material, within the scope of the contract, will be borne by the contractor. The Government reserves the right to require adequate consideration from the contractor for any extension of the delivery schedule necessitated by the resubmission.

* * *

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**NAVSEA 0951-LP-039-7010
VOLUME I OF II**

TECHNICAL MANUAL

**DESCRIPTION, OPERATION AND
MAINTENANCE INSTRUCTIONS**

1200 PSI MAIN BOILER

FOSTER WHEELER CORPORATION, D TYPE

[SEAL]

USS DAVIS (DD 937)
USS JONAS INGRAM (DD 938)
USS BLANDY (DD 943)
USS MULLINNIX (DD 944)
USS DECATUR (DDG 31)

Each transmittal of this document outside the Department of Defense must have the approval of NAVSEA (Code 522).

This publication and Volume II, NAVSEA 0351-LP-039-7020, supersede NAVSEA 0351-LP-055-3003 dated July 1969.

Published by direction of Commander,
Naval Sea Systems Command.

15 MAY 1980

* * *

SUMMARY OF SAFETY PRECAUTIONS

Boiler operation and maintenance is serious business because it is the ship's power source. Improper operation will cause delay of the ship. But more important, improper operation can result in damaged equipment, injury and/or loss of human life

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Most of the material in this manual referred to as lagging, insulation, insulating board, packing, sheet/compressed or spiral wound gaskets contains asbestos. Asbestos is a major health hazard. All suspected material must be ripped-out, and disposed of in accordance with NSTM Chapter 635 and approved shipyard procedures when replacement is necessary.

This technical manual contains many NOTES, CAUTIONS and WARNINGS located where they will do the most good. Believe in them. They are important and could save your life.

The following is a summary of precautions:

Before removing any fittings or parts subject to pressure, or loosening a manhole or handhole plate fitting of a boiler after it has been under steam, steps should be taken to insure a complete absence of pressure by opening the drum vent.

It should always be borne in mind that a fall in steam pressure, unless there is some apparent reason for it, is a possible indication of low water.

There is always danger that steam may leak to an idle or open boiler through a leaky blow valve, when the blow valve of another boiler connected to the common blow line is opened. This same danger exists with respect to stop valves, feed valves, etc. To prevent injury to personnel, the practice of entering a boiler under these circumstances should be avoided, unless necessary to do so in emergency situations. In those

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situations, extreme caution shall be observed, especially if double valve protection is not provided.

Tag-out in accordance with OPNAVINST 3120.32 article 630.17 and wire shut the supply valves of steam smothering systems while men are working in the vicinity thereof. To guarantee that these valves will not be opened, consideration may be given to the use of chains or padlocks while men are working.

Do not use open flames in oil-burning firerooms (except as authorized), oil tanks, or near oil hose, oil vents, etc.

Remove atomizer from register as soon as possible after securing oil to burner.

The temperature of any fuel should never be raised to or above the flash point in any part of the system.

Observe the following precautions to reduce danger of flarebacks:

Purge the furnace before each light-off.

Do not allow oil to accumulate in furnace. Fuel oil root valves and safety shut-off valves must be tested periodically and maintained tight.

When a burner is secured, both its root valve and safety shut-off valve must be shut.

Never attempt to relight an atomizer from hot brick wall. Use a torch.

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When lighting off with a torch, stand well clear of the light-off port, to avoid injury in case of flareback.

Do not use oil from a tank in which there is more than 0.1% of BS&W in the oil.

* * *

Castable refractory and insulation layers are installed over the furnace drain. During boiler operation, the bricks protect the drain and casing in this area from damage by radiant heat. When water washing procedures are required, the castable and insulation are removed and drain is uncapped to facilitate removal of water. (For drain location, see Plan A-3.)

D-7-3. BAKING OUT PROCEDURES

a. *Drying Out Mortar.* This requires no consideration because of the small amount of moisture involved, and because plastic or castable refractory installed after brickwork governs drying and baking out procedure.

b. *Baking Out Plastic Fireclay Refractory.* Air drying prior to firing is unnecessary and, in fact, is undesirable since shrinkage is increased. The method of firing must necessarily be that which suits the condition existing at the time of installation; firing initially at a rate sufficient to form steam within the plastic mass should be carefully avoided. The necessity for baking out plastic presents an inconvenient situation especially during building or overhaul periods. This is one reason why use of castable is preferred. Careful

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planning of work is required in preparing to bake out plastic. The following procedure will give optimum results and should be followed, whenever practical, for burner fronts rebuilt completely with plastic refractory in lieu of burner tile:

NOTE

It is not possible to bake out plastic refractory properly without firing the boiler. Castable refractory must be used if the service available and the condition of the boiler do not permit operation.

1. The boiler should be lit off within 24 hours of completion of the plastic installation. If this is not possible, the plastic should be kept moist by covering with damp cloths or plastic film until just before lighting off.

2. The superheater must be protected while baking out. Superheater protection steam, when available, should always be used. If no steam is available, the procedure and cautions for cold light off in Section B should be observed.

CAUTION

Superheater outlet temperature should not exceed 850 degrees F while raising steam.

3. One burner with a standard VP-12-2855 atomizer should be lit off (in accordance with Section B-5-1) for one hour at the minimum oil rate (about 65 psi supply pressure). Then slowly increase boiler firing rate so

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that boiler operating pressure is maintained about three to four additional hours.

4. To develop strength, furnace temperature should be gradually increased to the maximum attainable temperature for the steam demand conditions (normally maximum port auxiliary load). Firing at the boiler full-power rating is desirable if permitted by the steaming conditions.

5. Firing of the boiler at the maximum practical temperature should be continued for a period of several hours to develop bonding in the plastic.

If time is available, after completion of baking out procedure and when brickwork has cooled sufficiently, it is advisable to open furnace and inspect settings.

c. *Baking Out of Castable Refractory.* Castable refractory should be allowed to dry (cure) for at least one, but preferably two days before baking out. Indefinitely long drying periods are not harmful. Baking out of castable refractory should be performed in the same manner as for plastic refractory.

D-8. CASING

D-8-1. REPLACEMENT OF CASING GASKETS

a. *Types of Gaskets*

1. During original construction 1/8-inch thick copper clad asbestos gaskets were used for all casing seals. Two types of replacement gaskets are commonly used to seal access doors and panels. A

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“tadpole” or bulb-type gasket is used with access doors that are installed with clamps and a flat ribbon-type gasket is used with bolted-on panels. The flat ribbon-type gasket is usually 1/8-inch thick. Gaskets made of asbestos material must not be used; they must be replaced with gasket made of ceramic or fiberglass material.

2. A 3/8-inch ceramic fiber rope can be used as a temporary gasket by itself or can be used to supplement other gaskets in stopping air leaks due to casing distortion or warpage. When using ceramic fiber rope as a gasket on a bolted door, the rope should be laced between studs.

b. *Gasket Installation.* Inner or outer casing surfaces where gaskets seat should be inspected before panel or door gasket installation to insure satisfactory surface conditions are present. Corrosion deposits or remains of old gasket material should be removed by scraping and wire brushing. If casing frames have been repaired or replaced, and welding has been accomplished in a gasket seating area, excess weld should be removed by grinding to insure surface is entirely smooth. Also remove any weld splatter by grinding. If stud replacement has been accomplished, remove any excess weld at stud base by grinding to insure panel will fit tightly against seating surface.

Gaskets can be held in the proper position when refitting a panel by the use of small pieces of masking tape.

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The complete gasket for an access door or panel will generally be made up by using strips of gasket material which must be joined together properly to prevent air leakage where the pieces come together. The preferred method of joining gasket strips at the corners is with a “dove tail” joint. The male dove tail should be cut 1-inch wide at the top, and tapered to 5/8-inch wide at the bottom. The female joint should be traced and matched to each male end. Mark all gasket pieces to avoid mis-matching dove tails during installation.

Using boiler sealing compound (see Section R) at the gasket joint is a more common and simpler method of sealing a joint but is not as effective as dove tails since sealing compound after exposure to high heat for a period of time becomes hard and brittle and thus loses its sealing properties. To seal a joint with compound, first cut the gasket strips the desired lengths and place on the boiler. Take a small amount of compound and press it into the joint of the gasket strips. When the panel is replaced, the compound will be compressed into the joint. Boiler sealing compound can also be used to temporarily seal a panel where distortion beyond the sealing capability of a regular gasket material exists.

D-8-2. REPAIR OF CASING FASTENERS.

Frequent removal and installation of access panels for inspection and cleaning will most likely necessitate repair of the fasteners which will hold the panels to the boiler. Studs will be sheared off or their threads will

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become stripped. These conditions usually result from an overtightening of the nut. Panels which are not frequently removed or those which have been exposed to moisture may be difficult to remove because the nuts have become “frozen” from corrosion.

NOTE

The use of an anti-seize compound (see Section T) on all threaded surfaces should be standard procedure when installing casing. This compound will withstand the temperatures of the boiler and resist corrosion and thereby make removal easier. Application can be accomplished with a thin acid brush since only enough compound is needed to lightly coat the threads of the stud or bolt.

a. *Studs.* Since the casing must be maintained airtight, repair of broken or missing studs must be accomplished. A panel which is difficult to remove or install may have one or more bent studs. Determine which direction the stud must travel in order to move free in the panel bolt hole. Thread the proper size nut on the end of the stud. Tap the nut lightly with a hammer to straighten the stud.

A die nut (see Section S) can be used to repair threads which are not severely damaged. The die nut should be threaded on as in tightening a regular nut. Back the tool off 1/2 turn every two revolutions or even more frequently if resistance is encountered. This allows the metal chips (if any) to become free of the cutting surfaces. If the nut is extremely loose on the stud

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(indicating shallow threads) after rethreading, the stud should be replaced.

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