PLAINTIFF'S EXHIBIT

ET-72

CAUSE NO. CC-99-8033-B

MALCOLM LEE MURPHY, JR. and ANNETTE HARBERT MURPHY	§	IN THE COUNTY COURT
V.	§	AT LAW NO. 2
OWENS CORNING (a/k/a OWENS CORNING CORPORATION); ET AL.	§	DALLAS COUNTY, TEXAS

DEFENDANT ELLIOTT TURBOMACHINERY'S OBJECTIONS AND RESPONSES TO PLAINTIFFS' (SECOND) *DUCES TECUM* DOCUMENT REQUESTS

COMES NOW, Elliott Turbomachinery, Inc., a defendant in the above-styled and numbered cause and makes and files this, its Objections and Responses to Plaintiffs' (Second) *Duces Tecum* Document Requests contained in their First Amended Notice of Taking Video-Taped 199 Deposition.

Respectfully submitted,

DeHay & Elliston, L.L.P.
901 Main Street
3500 Bank of America Plaza
Dallas, Texas 75202-3736
Telephone No.: (214) 210-2400
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By: _____
David W. Crowe
Texas State Bar No.: 05164250
John W. Arnold
Texas State Bar No.: 00795231

ATTORNEYS FOR DEFENDANT ELLIOTT TURBOMACHINERY

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the above and foregoing **Defendant Elliott Turbomachinery's Objections and Responses to Plaintiffs' (Second)** ***Duces Tecum*** **Document Requests** has been forwarded to counsel of record for Plaintiff by hand delivery and to all other known counsel of record by U.S. Mail, postage prepaid, on this the 14th day of May, 2001.

John W. Arnold

Objections to *Duces Tecum* Instructions/Definitions

1) Defendant Elliott Turbomachinery ("Defendant") and Deponent Mr. Ross Hackel ("Deponent") object to the instructions and definitions contained in Plaintiffs' First Amended Notice of Taking Video-Taped 199 Deposition to the extent same run afoul or are inconsistent with the procedures delineated in the most recent standing order governing asbestos cases in Dallas County, Texas.

2) Defendant and Deponent object to the instructions and definitions contained in Plaintiffs' First Amended Notice of Taking Video-Taped 199 Deposition to the extent same run afoul of or are inconsistent with the procedures contained in the Texas Rules of Civil Procedure.

3) Defendant and Deponent object to instruction #3 to the extent it is inconsistent with the procedures delineated in Tex. R. Civ. P. 176.6(c), 193.3 and 199.2(b)(5).

4) Defendant and Deponent object to instruction #4 to the extent it is inconsistent with the procedures for party-subpoena-related production of documents delineated in Tex. R. Civ. P. 176, 193, and 199.2(b)(5).

5) Defendant and Deponent object to the definition "identify" or "identity" to the extent it (as well as the use of those terms) is inappropriate for a subpoena *duces tecum*.

6) Defendant and Deponent object to the definition of the terms "document", "documentation", and/or "documents" to the extent it is broader than the definition of "documents and tangible things" contained in Tex. R. Civ. P. 192.3(b).

7) Defendant and Deponent object to the definition of the terms "describe" and /or "description" to the extent it (as well as the use of those terms) is inappropriate for a subpoena *duces tecum*.

8) Defendant and Deponent object to the definition of the terms "product containing asbestos fibers", "asbestos-containing products", "asbestos products" to the extent they distort and mischaracterize the nature of Defendant's business.

Defendant is a manufacturer of turbomachinery and related products such as compressors, turbochargers, ejectors, heaters, deaerators, condensers, and strainers. Defendant's primary association with asbestos-containing products was as a purchaser and user of encapsulated products, such as gaskets and/or packing, which were all manufactured by others and but a small component of Defendant's finished products. Although some asbestos-containing thermal insulation may have been used on some of Defendant's turbomachinery products, such insulation was never manufactured by Defendant.

9) Defendant and Deponent object to the definition of "distribute", "distributed", "distributor", and "distribution" to the extent it presupposes and/or assumes Defendant is a manufacturer of asbestos-containing products. As explained in the previous objection no. 8 above, Defendant is not a manufacturer of those type products. Furthermore, the language "for purposes of filling orders from other business concerns" is vague and ambiguous.

10) Defendant and Deponent object to the definition of the term "marketed" and/or "market" as vague, ambiguous and overly broad primarily because "products" is not described with sufficient particularity.

Requests, Objections and Responses

REQUEST NO. 1:

All documentation or other tangible things pertaining to Malcolm Lee Murphy, Jr.

OBJECTIONS/RESPONSE:

Defendant Elliott Turbomachinery ("Defendant") and Deponent Ross Hackel ("Deponent") object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996).

Defendant and Deponent hereby give notice they are withholding documents otherwise responsive to this request on the basis of the attorney-client privilege, work product exemption, and trade-secret/proprietary privilege.

Subject to the foregoing objections, and without waiving same, Defendant and Deponent respond by referring Plaintiffs to any and all documents produced by Elliott in its Objections and Responses to Plaintiffs' Master Interrogatories and Requests for Production, First Supplemental Objections and Responses to Plaintiffs' Master Interrogatories and Requests for Production, Second Supplemental Objections and Responses to Plaintiffs' Master Interrogatories and Requests for Production, its (4/28/2000) Objections and Responses to Duces Tecum Document Requests, as well as any documents produced in response to the *duces tecum* document requests contained herein. Defendant and Deponent also respond by referring Plaintiffs to the following documents:

ET 000110-000111A
ET 00312-00314A
ET 00371-00372

REQUEST NO. 2:

All photographs, brochures, schematics, drawings, blueprints, and promotional literature depicting asbestos-containing materials used in the manufacture of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers and/or asbestos-containing component parts of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In

addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-containing materials" or "asbestos-containing component parts" are utilized in all types of Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed.

Subject to the foregoing objections, and without waiving same, please refer to the following documents:

ET 000005-000016
ET 000161-000181

REQUEST NO. 3:

All salesmen's logs, sales invoices, purchase orders, shipping logs, packing logs, bills of lading or other documents of a similar nature reflecting or referring to the sales and/or shipments of Defendants's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers and/or asbestos-containing component parts of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers to any jobsite referenced by Plaintiff, Malcom Murphy, Jr. in either his written discovery responses or deposition testimony.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-containing materials" or "asbestos-containing component parts" are utilized in all types of Elliott

products, including those to which Plaintiffs claim Mr. Murphy was exposed. Defendant and Deponent also object to the extent this request improperly assumes "asbestos-containing component parts" would always be sold or shipped by Elliott.

Subject to the foregoing objections, and without waiving same, Defendant has previously indicated that Plaintiffs may come to its headquarters in Jeannette, Pennsylvania to examine sales-related documents generally of the type primarily sought in this request, to the extent such documents may exist. Plaintiffs, to date, have not done so. That aside, please refer to the following documents:

ET 000017- ET 000023
ET 000027- ET 000031
ET 00373- ET 00376

REQUEST NO. 4:

All documentation pertaining to the purchase of asbestos-containing component parts manufactured by others and utilized in Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers, including but not limited to purchase orders, requisitions, shipping receipts, canceled checks, ledgers, approved invoices, and the like.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-containing materials" or "asbestos-containing component parts" are utilized in all types of Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed. Defendant and Deponent also object to the extent this request improperly assumes "asbestos-containing component parts manufactured by others" would always be purchased by Elliott and then re-sold or shipped by Elliott.

Subject to the foregoing objections, and without waiving same, please refer to the following documents:

ET 000022-000026
ET 000032-000105

REQUEST NO. 5:

All documentation pertaining to the asbestos fiber and source of asbestos fiber used in the manufacture of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers and/or asbestos-containing component parts of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers, including but not limited to purchase orders, requisitions, shipping receipts, canceled checks, ledgers, approved invoices, quality control documents, and the like.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-fiber" and/or "asbestos-containing component parts" are utilized in the manufacture of or contained in all types of Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed.

Subject to the foregoing objections, and without waiving same, please refer to the following documents:

ET 000022-000026

REQUEST NO. 6:

All documentation pertaining to asbestos-containing materials used in the manufacture of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers and/or asbestos-containing component parts of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers, including but not limited to specifications, warnings, instructions, technical bulletins, manuals, etc.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-containing materials" and/or "asbestos-containing component parts" are utilized in the manufacture of or contained in all types of Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed.

Defendant and Deponent hereby give notice they are withholding documents otherwise responsive to this request on the basis of the trade-secret/proprietary privilege.

Subject to the foregoing objections, and without waiving same, please refer to the following documents:

ET 00315-00370

REQUEST NO. 7:

All salesmen's logs, sales invoices, purchase orders, shipping logs, packing logs, bills of lading, distributor documents or other documents of a similar nature reflecting or referring to the sales and/or shipments of asbestos-containing replacement parts for use in Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to

Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-containing replacement parts" would be sold or shipped by Elliott.

Subject to the foregoing objections, and without waiving same, please refer to the following documents:

ET 000017

REQUEST NO. 8:

All documentation pertaining to the installation of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers including but not limited to rosters of Defendant's employees who participated in such installation, notes, memoranda, field reports, or other documentation reflecting such installations, and/or the safety precautions taken to minimize dust hazards when installing such units.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-containing materials" and/or "asbestos-containing component parts" are utilized in the manufacture of or contained in all types of Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed. Defendant and Deponent also object to the extent this request insinuates that, as a consequence, "safety precautions taken to minimize dust hazards" should always be implemented when working with or on Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed.

Subject to the foregoing objections, and without waiving same, please refer to the following documents:

ET 000182-000232

REQUEST NO. 9:

All documentation pertaining to the maintenance, removal and replacement of asbestos-containing materials used in the manufacture of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers and/or asbestos-containing component parts of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers including but not limited to rosters of Defendant's employees who participated in such maintenance, removal or replacement operations, notes, memoranda, field reports, or other documentation reflecting such operations, and/or the safety precautions taken to minimize dust hazards when maintaining, removing or replacing such asbestos-containing materials or component parts.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-containing materials" and/or "asbestos-containing component parts" are utilized in the manufacture of or contained in all types of Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed. Defendant and Deponent also object to the extent this request insinuates that, as a consequence, "safety precautions taken to minimize dust hazards" should always be implemented when working with or on Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed.

Subject to the foregoing objections, and without waiving same, neither Defendant nor Deponent has documents responsive to this request in their possession, custody or control.

REQUEST NO. 10:

All documentation pertaining to Defendant's knowledge of the hazards of asbestos, the manner in which Defendant became aware of such hazards, and the extent of Defendant's knowledge of such hazards, including but not limited to the hazards to individuals who install, remove, cut, saw, abrade, maintain, replace or otherwise work with asbestos-containing materials used in the manufacture of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers and/or asbestos-containing component parts of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condenser and/or strainers.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-containing materials" and/or "asbestos-containing component parts" are utilized in the manufacture of or contained in all types of Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed.

Defendant and Deponent object to the language "knowledge of the hazards of asbestos" as vague, ambiguous and overly-broad.

Subject to the foregoing objections, and without waiving same, please refer to the following documents:

ET 000001
ET 000003-000004

REQUEST NO. 11:

All documentation pertaining to the asbestos content of any and all asbestos-containing materials used in the manufacture of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers and/or asbestos-containing

component parts of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers as well as:

a. any decisions Defendant may have made to reduce, alter, or eliminate the asbestos content of such materials or component parts.

b. any decisions Defendant may have made to halt the purchase of asbestos-containing component parts.

c. and if Defendant made or sold or recommended the use of non-asbestos-containing steam generating units and/or non-asbestos-containing component parts of Defendant's steam generating units that were sold to the United States for use aboard naval vessels, during the same time period as the asbestos-containing materials and/or component parts were made or sold or recommended, the manner of distinguishing between the asbestos-containing and non-asbestos-containing units or component parts.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to this request, including its sub-parts, as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request and its sub-parts as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request, including its sub-parts, improperly assumes "asbestos-containing materials" and/or "asbestos-containing component parts" are utilized in the manufacture of or contained in all types of Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed.

Subject to the foregoing objections, and without waiving same, please refer to the following documents:

ET 00315
ET 00353

REQUEST NO. 12:

All documentation pertaining to tests conducted by Defendant concerning the release of asbestos fibers associated with the installation, removal, cutting, sawing, abrading, maintenance, replacement or otherwise working with asbestos-containing materials used in the manufacture of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers and/or asbestos-containing component parts of Defendant's turbines, pumps, compressors, turbo chargers, ejectors, heaters, deaerators, condensers and/or strainers.

OBJECTIONS/ANSWER:

Defendant and Deponent object to this request as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, Defendant and Deponent object to this request as seeking documents irrelevant to this lawsuit and not reasonably calculated to lead to the discovery of admissible evidence. Specifically, the request is objectionable in these ways because it is not limited to the time periods pertaining to Mr. Murphy's alleged working life/alleged Elliott-product exposures, is not limited to the specific job sites at which Mr. Murphy or his alleged co-workers claim Mr. Murphy worked with or around Elliott products, and is not limited to the specific types of Elliott products around or with which Mr. Murphy allegedly worked.

Defendant and Deponent object to the extent this request improperly assumes "asbestos-containing materials" and/or "asbestos-containing component parts" are utilized in the manufacture of or contained in all types of Elliott products, including those to which Plaintiffs claim Mr. Murphy was exposed.

Subject to the foregoing objections, and without waiving same, Defendant and Deponent respond that they have no documents in their possession, custody or control regarding testing of the type contemplated in this request.

REQUEST NO. 13:

All documentation pertaining to the existence, extent, type, organization, filing system, method of access or retrieval, and/or location of Defendants hard copy documents or computerized records or other records pertaining to the subject matter areas described in paragraphs one through six, above, that were created, maintained or stored by electronic and/or magnetic means, including but not limited to records that have been microfilmed, microfiched, imaged, scanned, or stored on tapes, disks, diskettes, CD-rom, etc. or on or within any computer hardware, backup system, download system, file dumping or other system of information management, whether on-site or off-site.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to the request for "all documentation" as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996). In addition, to the extent this request seeks information regarding Requests 1 through 6, Defendant and Deponent incorporate herein by reference their objections and responses to those requests.

Subject to the foregoing objections, and without waiving same, Defendant and Deponent respond they have no documents responsive to this request in their possession, custody or control.

REQUEST NO. 14:

Any and all documents and other tangible things which refer to the document retention (and/or destruction) policy of Defendant, including the following;

a. Any document retention and/or destruction policies for Defendant that pertain to documents and records, including but not limited to supplements, addenda, memoranda, operating bulletins, revisions, or any other superseding instructions that referred to the stopping, suspending or resuming of such retention or destruction policies.

b. Any record retention and/or destruction, dumping, or purging policies for Defendant that pertain to documents and records created, maintained or stored by electronic and/or magnetic means, including but not limited to records that have been microfilmed, microfiched, imaged, scanned, or stored on tapes, disks, diskettes, CD-rom, databases, etc., or on or within any computer hardware, backup system, download system, file dumping or other system of information management, whether on-site or off-site, including but not limited to supplements, addenda, memoranda, operating bulletins, revisions, or any other superseding instructions that referred to the stopping, suspending or resuming of such retention or destruction policies.

OBJECTIONS/RESPONSE:

Please refer to document labeled Bates ET 00305-00311.

REQUEST NO. 15:

Any and all documentation, including but not limited to lists, inventories, indices, databases or print-outs thereof, archives, storage inventories, logs, or other search aids that refer or relate to the existence, extent, type, organization, filing system, method of access or retrieval,

and/or location of Defendant's documents (maintained or stored on-site or off-site) described in the preceding paragraphs.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to the language "Defendant's documents (maintained or stored on-site or off-site) described in the preceding paragraphs" as vague, ambiguous and overly broad.

Subject to the foregoing objections, and without waiving same, Defendant and Deponent respond they have no documents responsive to this request in their possession, custody or control.

REQUEST NO. 16:

Your current resume or Curriculum Vitae.

OBJECTIONS/RESPONSE:

Please refer to document labeled ET 00297-ET 00304.

REQUEST NO. 17:

Any and all documentation which reflects or relates in any way to any other inquiry or research conducted by you or at your request or direction in anticipation of or in the preparation of your deposition.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to the request for "any and all documentation" as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996).

Defendant and Deponent hereby give notice they are withholding documents otherwise responsive to this request on the basis of the attorney-client privilege, work product exemption, and trade-secret/proprietary privilege.

REQUEST NO. 18:

Any other documentation of any nature that constitutes, reflects, comprises, pertains, describes or relates in any way to any other document or source of information (including individuals) you relied on in preparing for your deposition.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to the request for "any and all documentation of any nature" as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996).

Defendant and Deponent hereby give notice they are withholding documents otherwise responsive to this request on the basis of the attorney-client privilege, work product exemption, and trade-secret/proprietary privilege.

REQUEST NO. 19.

Any other documentation (not otherwise produced in response to a foregoing paragraph) that you reviewed in preparation for your deposition.

OBJECTIONS/RESPONSE:

Defendant and Deponent object to the request for "any other documentation (not otherwise produced in response to the foregoing paragraph)" as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*, 937 S.W.2d 429 (Tex. 1996).

Defendant and Deponent hereby give notice they are withholding documents otherwise responsive to this request on the basis of the attorney-client privilege, work product exemption, and trade-secret/proprietary privilege.

REQUEST NO. 20:

Any and all documentation, including but not limited to notes, correspondence, memoranda, tapes, or transcriptions thereof, computerized information, minutes of meetings, or other documentation which reflects or relates in any way to conferences, meetings, or conversations you had with any individual or entity during which you prepared for or otherwise discussed this deposition.

OBJECTIONS/RESPONSE:

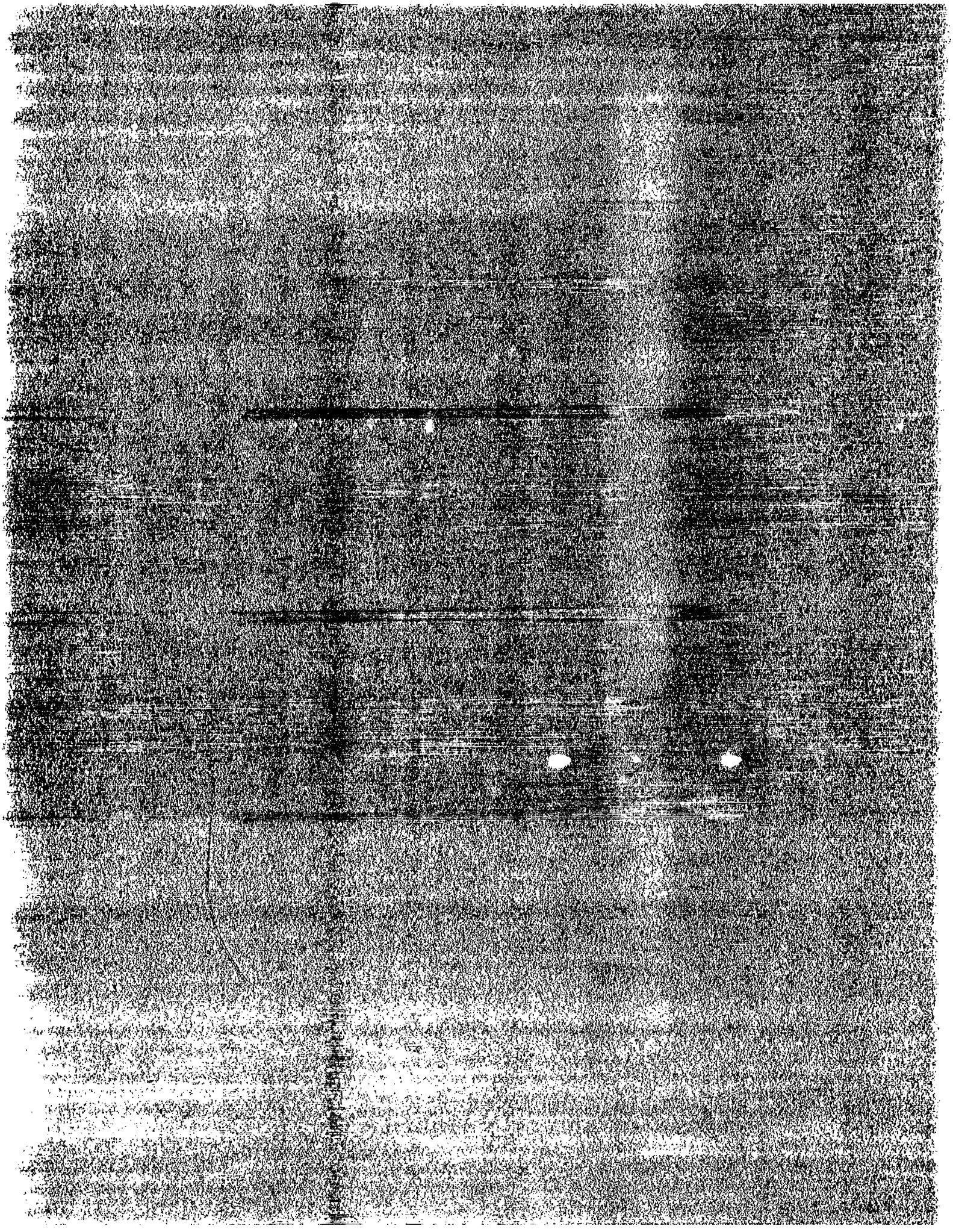
Defendant and Deponent object to the request for "any and all documentation" as overly broad, harassing, oppressive, unduly burdensome and as amounting to little more than a so-called "fishing expedition" prohibited by the Texas Supreme Court in cases such as *K-Mart v. Sanderson*,

937 S.W.2d 429 (Tex. 1996).

Defendant and Deponent hereby give notice they are withholding documents otherwise responsive to this request on the basis of the attorney-client privilege, work product exemption, and trade-secret/proprietary privilege.

CUSTOMER: Oklahoma A. & M. S.O. NO. 7180

Date	Name	Operation
12-6-49 to 12-8-49	Stuart Getz	Steamfitters still working on all three units. Insulation men working also. Other routine work preparatory to running unit
12-10-49 to 12-12-49	Stuart Getz	Getting units ready for flushing oil. Had to make up new piping from regulator to pump, offsetting the regulator.
12-13-49 12-14-49 and 12-16-49	Stuart Getz	Steamfitters still working. Fitting steel lagging on all units. Will circulate flushing oil whenever steam is available.
12-19-49	Stuart Getz	Routine work.
1-3-50 to 1-6-50 & 1-9-50	Stuart Getz	Working on fitting up piping for gland condensers and putting brush holders back on generators. Fitting steel lagging for around collector ring assembly. Steam fitters working on non-return oil piping.
1-10-50 and 1-11-50	Stuart Getz	Working on steel lagging around extraction regulator, took regulator apart to clean up, it was heavily rusted on inside. Pipefitters still working.
1-12-50 to 1-17-50	Stuart Getz	Removed the extraction regulator from the A unit - it was badly rusted on the inside, cleaned up. Steamfitters working on piping to gland condensers.
1-18-50	Stuart Getz	Steamfitters working on piping to gland condensers. Working on steel lagging.
3-15-50	Stuart Getz	Went out to job to make arrangement to get help for changing springs in non-return valves.
4-6-50	Stuart Getz	The weight levers on the non-return valves interfered with the concrete foundation due to differences in the piping drawings Corrected.
4-13-50	Stuart Getz	Shipped the springs removed from the non-return valves to Atwood and Morrill Co.
6-14-50 to 6-19-50	Stuart Getz	Routine work - put flushing oil in, started aux. oil pump, several oil leaks in field welds, repairing same. Cleaned strainers. Ran circulating oil. Started to clean up gov. linkage.
6-20-50 to 6-28-50	Stuart Getz	Routine work. Started turbine - came up to 1400 rpm and the front end became rough. Shut down and removed steam end bearing and gov. housing. Removed gov. and made adjustments to the worm setting. The worm wheel did not have enough backlash, and oil spray pipe did not spray oil in right direction. Corrected. Started unit again and operation o.k. Started aux. oil pump and made adjustments to gov. linkage.



Ross A. Hackel
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Greensburg, Pennsylvania 15601
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e-mail: rosshackel@aol.com

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DEHAY & ELLISTON

Education:

Bachelor of Science Degree 1957
Case Institute of Technology

Kepner Tregoe
Genco II School 1975

Louis A. Allen Associates
Management Seminar 1977

Hartford Graduate Center
UTC Management Program 1981

Professional:

American Society of Mechanical Engineers

Registered Professional Engineer State of Pennsylvania

Experience:

6-1957 to 11-1957 Application Engineer for Carrier Corporation, Cleveland, Ohio. As an Application Engineer selected numerous commercial and industrial refrigeration system. Handled 125 ton, minus 35 deg. F. refrigerant 12 industrial refrigeration system completely from engineering initial selection and quotation development through equipment start-up. Also did engineering work on several industrial centrifugal compressor systems. One such system was an air compressor unit and oxygen compressor unit for a 220 ton per day oxygen plant system located at a steel plant in Michigan. Work involved machinery and system engineering for such items as centrifugal compressors, steam turbine drivers, heat exchangers for gas cooling, anti-surge controls, lube system, condenser system and water seal system.

11-1957 to 11-1958 Service Engineer for Carrier Corporation, Cleveland, Ohio. As Service Engineer, I was company engineering representative and supervisor on equipment installations, start-ups and repairs involving industrial and commercial refrigeration systems and centrifugal compressors in air compression, refrigeration and process service. Work sites were primarily in Ohio, Michigan, Kentucky and Indiana. My primary installation assignment was as company engineering representative for the installation and start up of a 20 pound per second, atmospheric to 350 psig air test facility at the Atomic Nuclear Propulsion Lab in Evendale, Ohio. Involved were two 3000 HP synchronous motor/gear driven centrifugal compressor units plus associated switchgear, controls, heat exchangers, lube systems and other associated hardware.

Experience (cont'd)

11-1958 to 2-1959 attended U.S. Navy basic training under Critical Skills Program.

3-1959 to 1-1960 Service Engineer for Carrier Corporation, Cleveland, Ohio. Continued activities noted above. Was one of two company engineering representatives present for start-up of six large centrifugal compressors in an ethylene plant in Bay City, Michigan. Largest unit was 10,000 HP minus 40 deg. F propylene refrigeration system. Another installation was at 220 ton per day oxygen plant. This installation had two centrifugal oxygen compressors that were first in the country to use water seals. During start-up some difficulties were encountered. I thus became deeply involved in engineering effort to reach a satisfactory solution. Unit operated satisfactorily for many years and customer later added another units.

1-1960 to 3-1960 loaned to Carrier International Limited, New York, New York for an assignment in Bahia, Brazil. In Brazil I supervised modification of several centrifugal compressors. While modifications were considered routine for factory, they were considered extremely difficult and hazardous for field location so remote and lacking in proper tools and experienced personnel. On completion of modifications I started up one 10,000 CFM wet gas compressor and wrote detailed start-up instructions for a very complicated large propane dewaxing refrigeration system involving two steam turbine driven (approximately 4,000 HP each) centrifugal compressors and associated equipment.

3-1960 to 2-1961 Service Engineer for Elliott Company, a division of Carrier Corporation. Transferred from Carrier Corporation to Elliott Company to handle industrial centrifugal compressor line that was also transferred. Assignment as Service Engineer remained essentially as noted above except in addition to engineering assignments on jobs noted above, the area of involvement became larger and involvement more demanding. Became involved with compressors in East St. Louis, Illinois; Hagden, Arizona; and Mandan, North Dakota.

2-1961 to 3-1962 Application Engineer for Elliott Company in Cleveland, Ohio. As Application Engineer, was involved in selection of centrifugal compressors and design of surrounding systems. In addition to application work, I also had primary responsibility for equipment selection, equipment layout, system design, equipment purchase specifications, and subcontractor specifications for the following three plants:

Experience (cont'd)

a. 30,000 ICFM atmospheric to 50 psig motor/gear driven centrifugal air compressor system in Syracuse, New York. This contract involved supplying all material and hardware needed within four walls of building for air system including compressor unit, foundations, switchgear, compressor controls, heat exchangers, piping, wiring, instrumentation, floor grading and catwalks.

b. 7500 ICFM atmospheric to 110 psig motor/gear driven centrifugal air compressor for automotive assembly plant in Flint, Michigan. This contract involved supplying hardware such as motor driven centrifugal compressor unit, heat exchangers, lube system, switchgear, static exciter and compressor controls for air compression system to operate in parallel with several reciprocating compressors.

c. Motor/gear driven air compressor-gas expander unit for 300 ton per day Nitric Acid plant in Cherokee, Alabama. This contract involved design of two air compressor-gas expander units complete with switchgear, compressor controls, and lube systems.

3-1962 to 2-1964 Application Engineer in compressor sales department for Elliott Company in Jeannette, Pennsylvania. As marketing application engineer I was responsible to provide engineering support for field application and sales organization by (a) preparing engineering studies of complex compressor systems - such as analysis of Butadiene dehydrogenation process to arrive at optimum compressor arrangement; (b) analyzing equipment costs and preparing cost estimates for new proposals; (c) preparing and presenting equipment proposals to prospective clients; (d) developing or reviewing internal material specifications for compressor orders.

In December 1963 I was a member of start-up team that started up a 300 ton per day Nitric Acid plant near Tampa, Florida.

2-1964 to 7-1967, Eastern Region Engineering Manager for Elliott Company in Mountainside, New Jersey. As Eastern Region Engineering Manager I was responsible for all compressor selections and application engineering work required on east coast of the U.S. This included providing direct engineering support of salesmen in region.

Experience (cont'd)

Shortly after moving into this position, business picked up and I either selected or supervised the selections of the centrifugal compressors for 9 large ethylene plants.

These plants were built and each ethylene plant involves at least 2 or 3 cracked gas compressors, a propylene refrigeration compressor and an ethylene refrigeration compressor.

Ethylene plant compressors were not my only responsibility, as compressors and their drivers were also selected for many other services such as compression system for Butadiene plant in Poland. Compression duty for this plant required compressing approximately 300,000 ICFM of hydrocarbon gas from 2 psia to 165 psia. Smaller plants had operating problems that I traced to piping system. Net result was that I suggested design for piping configuration that avoided previous problems. This plant has been operating successfully for many years.

7-1967 to 1-1970 moved to New York City for Elliott Company. This move consolidated some Corporation functions wherein I retained Eastern Region Engineering Manager responsibilities and added on chief engineer duties from Elliott Overseas Corporation. This move increased my area of responsibility for providing sales with compressor and steam turbine engineering support to include all countries outside the U.S. and Canada. In addition, I was responsible for approving all equipment specifications going to Elliott's license in Holland and providing them with backup engineering support. During this period, ethylene plant business continued with plants in England, France, and Germany.

1-1970 transferred regional engineering office to Mountainside, New Jersey. From then until 2/72 position remained essentially the same except area of responsibility decreased as foreign business grew and engineering responsibility was picked up by newly created offices overseas.

During this period projects involved: large liquified Natural Gas (LNG) plants in Borneo and Algeria. Each LNG plant requires enormous amounts of gas compression equipment, properly selected to match the refrigeration duty; large Catadiene dehydrogenation unit for Russia. Unit required approximately 500,000 ICFM of hydrocarbon gas compression; and more ethylene plants.

Experience (cont'd)

2-1972 to 10-1980 Manager of Technical Services for Elliott Company, Jeannette, Pennsylvania. In July 1975 Elliott formed ETSCO as joint venture with its Holland licensee to handle service parts and field service business. In November 1979 ETSCO ceased active operations and business was transferred to Elliott Service Company. Department is responsible for (a) developing and producing all technical manuals required to describe all equipment built by company; (b) providing engineering expertise to customers for quick resolutions to machinery or process problems; (c) reselecting and engineering of Elliott machinery that customers want to rerate for new operating conditions; (d) developing and conducting of training programs for company service personnel and customers.

As Technical Service Manager I was either personally involved or involved as manager in virtually every major installation Elliott had installed or started up in the world. When things went smooth, involvement was relatively minor, but when consequences of something going wrong could be costly or trouble developed involvement increased. A few developments or jobs I was personally and directly involved with were:

a) Wrote a new cold and hot alignment procedure for aligning Elliott machinery. Procedures adopted as company standard.

b) Field performance testing - Witnessed inspection and reassembly of 3 body compressor string, formulated field test procedure, witnessed testing, reduced test data and presented results. Compressors were in cracked gas service in ethylene plant near Geleen, Holland.

c) In 1974 made detailed review of compressor instrumentation system for large LNG plant to be built for Sonatrach in Algeria. Review covered adequacy of anti-surge control for start-up, normal and off-design operation, and shutdown. Plant was successfully started and has been operating for more than ten years.

d) In 1976 as company representative, assisted in start-up of large LNG plant on Das Island (Mideast).

e) In late 1970's promoted and directed development of various technical training programs for Elliott's plant air package, lubrication and seal systems, gas compressor systems, and steam turbine/steam turbine generator systems.

Experience (cont'd)

f) 1978 - New high pressure Elliott steam turbine developed a mechanical problem during commissioning. At same time Elliott was manufacturing 13 other steam turbine rotors with similar design and therefore potential similar mechanical problems (manufacturing defect). Developed revised manufacturing technique, coordinated implementation of plan to correct problems. Unit that failed was repaired promptly and rest were corrected with net result that only one turbine was late going into production as scheduled (and this was only approximately two weeks late).

g. In 1978-79 Elliott was rotating equipment supplier for two large ammonia plants - one in Oklahoma and one in Trinidad. Plants were successfully commissioned.

10-1980 to 9-1987 - Director of Product Integrity for Elliott Company, Jeannette, Pennsylvania. Director of Product Integrity retained responsibilities held as Technical Services Manager and added quality assurance and associated efforts to reduce warranty and scrap and rework through improved communications. As Director of Product Integrity I still was actively involved in jobs. A few developments or jobs I was personally and directly involved with were:

a) 1980-81 - Provided technical and managerial leadership for setting up and conducting of successful test for high pressure gas injection compressor system module prior to shipment out to platform in North Sea. Because of the weather in the North Sea, timing was critical. Customer had decided to conduct test just nine months prior to required ship date and much normal installation work remained. Compressor system was designed for taking atmospheric gas to 6400 psig for reinjection. Module test was conducted on a large barge tied to the dock with temporary services and trucked in gas.

b) 1979-1983 was the company's technical expert on coupling failure in Australia ethylene plant.

c) 1982-85 - During this period, Elliott acted as general contractor for several platform compression modules - one in Scotland and one in Indonesia. Both created some unique problems that required considerable engineering and technical assistance to resolve.

Experience (cont'd)

d) 1982 - 1990 - A very large axial compressor on FCC service experienced random blade cracking after commissioning. Handled coordination of all activities between customer and Elliott including implementation of several compressor redesigns including blade with new root design and process control upgrades.

9-1987 – 2-2000 - Director of Product Integrity for Elliott Company, Jeannette, PA. In September 1987 the company was reorganized in the process of going through an LBO. Technical Serv ces was transferred to the Engineering Department and responsibilities redefined. Director of Product Integrity duties became one of Technical Consultant for company handling special major projects, safety issues, and legal complaints.

a) 11-1989 - 8-1993 - Principle engineer for the design and building of a $4 million facility to test two 6000 kW turbine generator units. Also supervised conducting of the actual testing. Tests were very unique and never done before for a steam driven unit this large and complex. Test involved dropping full electrical load instantaneously, and once stabilized, reapplying full load instantaneously. After completion of test, assisted in recovering costs to conduct test. Also assisted in installation, start-up and performance testing of units in field.

b) 6-1991 - 1-1993 - Investigated complaint against company involving poor workmanship in repair of steam turbine trip and throttle valve that resulted in overspeed failure of unit. Acted as technical consultant to attorneys before and during trial. Successfully defended Elliott's position that Elliott was not responsible for failure.

c) 6-1992 - 9-1993 - Assisted District Attorney of Harris County, Texas in investigation and prosecution of criminal case involving Trade Secrets.

d) 9-91 - 3-92 - Assisted outside attorneys in investigation and trial preparation for collection case involving recovery of costs associated with repair of third party air compressor. Reached favorable out of court settlement.

e) 2-92 - 10-97 - Assisted outside attorneys in investigation and trial preparation for product liability case involving propylene refrigeration centrifugal compressor that failed. Reached favorable out of court settlement.

f) 1-93 - Present - Investigate claims against Elliott Company related to pass usage of asbestos in it's products. Provide attorneys with technical assistance in defining locations and accessibility by operators, mechanics and others to asbestos products in Elliott Company equipment.

g) 3-94 - 8-96 - Investigated steam pipe failure in plant system. Assisted in design of replacement pipe and modification of other steam lines on same contract. Assisted attorneys in collection of Elliott costs.

h) 2-96 - 5-97 - Assisted turbocharger group in investigation of performance problem. Supervised the design, ir stallation, and testing of unit in our factory.

i) 8-95 - 7-97 - Assisted in design of full load test stand (100,000 hp gas turbine driver) for propane refrigeration, and mixed refrigerant compressors. This included work on prediction of start up performance and power requirements. Predictions were quite close and customer was very satisfied with testing program.

j) 8-97 - 2-00 - Provided technical assistance to attorneys on Elliott steam turbine generator unit implicated in boiler failure that caused death of two operators.

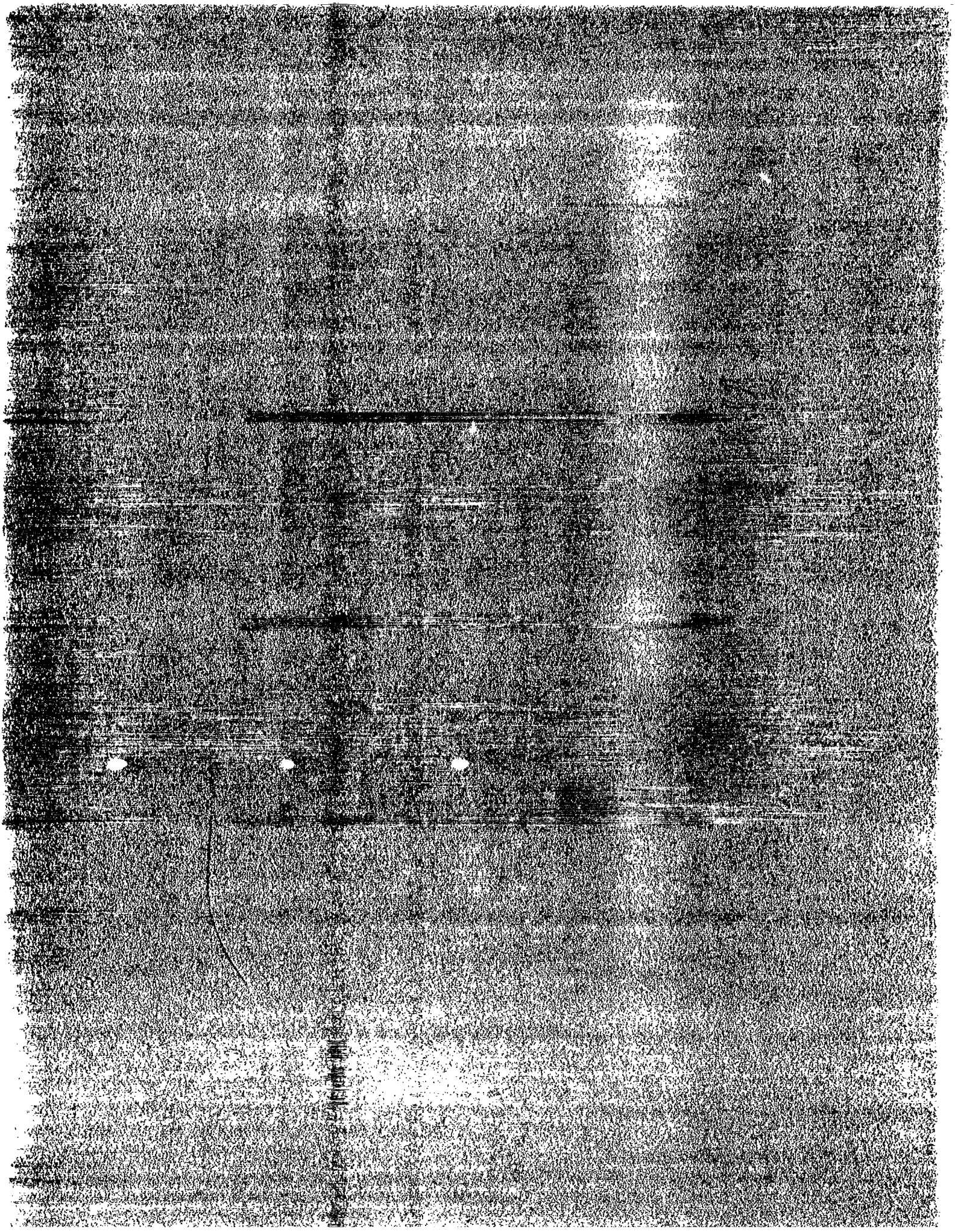
2-00 - Present - Semi-retired – Part time Rotating Equipment Consultant.

Publications:

1968 - Wrote following chapters for Compressor Refresher book published by Elliott.

a) Centrifugal Compressor Seals and Bearings
b) Centrifugal Compressor Characteristics and Materials
c) Centrifugal Air Compressor - Characteristics of Air and Selection
d) Start-up of Centrifugal Compressors

1970 - Centrifugal Compressor Inlet Piping - A Practical Guide - Co-author. Received an award from Compressed Air and Gas Institute who published paper.



ELLIOTT EBARA GROUP

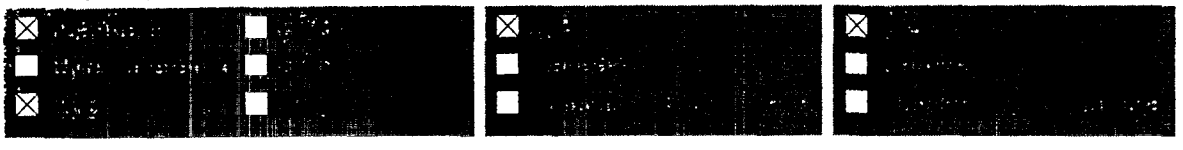
STANDARD PROCEDURE INSTRUCTION MANUAL

ECOMS File: SPI

STANDARD PROCEDURE INSTRUCTION	**Date Effective:** 08/13/91	**SPI Number:** 11-59
Manual Section: ADMINISTRATION - GENERAL POLICIES	**Date Issued:** 08/13/91	**Revision No:** NEW

Subject: Record Retention	**Supersedes:** All previous notices and instructions

This Procedure Affects: **Sales:** **Service:**



Departments Affected - Plant: All Departments	**Field:** All Offices

Purpose: To outline the policy and procedure to be followed for the retention of corporate records. To establish the policy for identifying, retaining, storing, protecting and disposing of corporate records.

Approval Signature Section

Approved By: Klaus P. Fischer **Date:** 07/15/91

Approved By: N/R **Date:**

Approved By: N/R **Date:**

Approved By: N/R **Date:**

Approved By: **Date:**

Approved By: **Date:**

Document Control: John J. Lapina **Date:** 07/14/91

DEFINITIONS (ISO)

A. Active Record - Records which continue to satisfy an immediate use requirement.

B. Inactive Record - Records for which use or reference diminishes sufficiently to permit removal from the immediate area of responsibility without impairing normal business

C. Records - Any documentary material, regardless of physical form, that is generated or received by the Company in connection with transacting its business, is related to the Company's legal obligations, and is retained for any period of time. Documentary material containing personal information such as appointment calendar is considered a record.

D. Records Management - The planned and systematic control of business records from their creation through final disposition.

E. Vital Records - Records that are considered essential to the continuity of the Company. Without them the business would be significantly impaired or could not survive a catastrophe as they are necessary for the creation of the business.

POLICY

General

1. It is the Company's policy to maintain complete, accurate and high quality records. Records are to be maintained for the period of their immediate use, unless longer retention is required for historical reference, contractual or legal requirements, or for other purposes as set forth in this SPI.

2. Records that are no longer required, or have satisfied their required period of retention, are to be destroyed in an appropriate manner.

3. Specific requirements, responsibilities and retention periods applicable to the Company's records are set forth in this SPI. If a particular type of record is not mentioned, contact the Legal Department for the appropriate retention period.

4. All employees are responsible for ensuring that accurate and complete records are identified, retained, stored, protected and subsequently destroyed within the area of assigned responsibility.

5. All subsidiaries and divisions are responsible for establishing and maintaining Records Management Programs satisfying the applicable requirement of their particular area, including any foreign government requirements, and assigning internal responsibilities for records identification, retention, protection, retrieval and disposal.

6. Records containing U.S. Government classified information and Elliott Proprietary Information are to be handled in accordance with SPIs 11-43 and 11-47, respectively.

Records Screening

7. Records are to be screened periodically to determine if they are active or inactive (see Definitions). Active records must be stored in the immediate area of responsibility.

8. Records determined to be inactive are to be reviewed for possible storage in Archives. An assessment is to be made of the:

   a. Need for retention
   b. Frequency of reference
   c. Nature of reference
   d. Established retention periods
   e. Filing requirements and
   f. Volume of files.

9. Duplicate and multiple materials are to be eliminated. The record furnishing the most conclusive evidence will be maintained. Original records are preferred unless there is a legitimate reason that the original is not available. Records are not to contain personal notations, other than the author's signature.

10. Correspondence is not to be maintained with the records unless the correspondence is an integral part of the file being sent to storage.

11. Records should be transferred to Archives at annual intervals except where the volume warrants more frequent transfer.

Records Storage

12. Archive storage

    a. Archive storage is to be maintained in accordance with SPI 12-2.

    b. Corporate headquarters and divisions/subsidiaries are to establish and maintain records centers to store, control, and protect inactive records. Records centers are to be in safe/secure locations, protected from environmental and other potential harm.

13. Vital Record Storage

    a. Corporate headquarters and divisions/subsidiaries are to identify those records which are essential to the continuity of the Company and designate them as vital records (see Definitions).

    b. Vital records are to be duplicated and duplicate records stored in off-site locations for reconstructive use in the event of a disaster. A current listing with locations of Vital Records should be maintained.

14. Electronic Storage

    a. The records management procedures and records retention periods set forth are also applicable to electronic records.

b. The use of magnetic tape, disc or similar electronic media for records storage purposes for periods which exceed one year is discouraged. Special packaging, handling and environmentally controlled facilities are required for storage period exceeding one year.

c. MIS is to maintain guidelines and advise affected personnel in their use in accommodating long-term electronic media storage equipment.

15. Film Storage

a. The records management processes and record retention period set forth are also applicable to film storage including microfilm, microfiche and similar media.

b. The use of film for records storage and retention purposes is to be selective to ensure cost effectiveness. Standard practices are to be developed and utilized when reducing information to film to ensure authenticity is not impaired.

c. SPI's are to be developed and followed by the affected area. See SPI 24-22 Sales-Service Policy, Microfiche of Shop Order Folders.

16. Access to and Retrieval of Stored Records

a. Access and retrieval are to be governed by SPI 12-2.

Records Reviewed and Destruction

17. Generally, records are to be retained in area storage or Archives for the retention periods outlined in the attached schedules. Upon expiration of an applicable retention period, the record is to be reviewed and destroyed unless an extended retention period is requested in writing, with satisfactory justification by cognizant management authority.

File Purging

18. Each company location is to conduct, at least annually, a formal files purging process. The process is to be planned and carried out within applicable functional departments. During or as a result of this process:

a. Retention requirements for all U.S. subsidiaries and divisions should be maintained, consistent with those maintained at Jeannette headquarters.

b. Records which require retention are to be identified, grouped, labeled and transferred to Archives for appropriate storage.

c. Records which have exceeded their required retention period are to be identified/destroyed; and

d. Unnecessary duplicate and multiple copies of the records are to be identified/destroyed.

19. Company supervisors are to ensure that the business files of terminating or transferring employees are reviewed concurrent with the employee's departure. Such files are to be reassigned to other employees or purged.

Training

20. All employees involved in or responsible for records management activities should be trained and kept current in all aspects of the records retention function.

Guide Lines for Correspondence and Internal Memoranda

21. Letters to be destroyed within one year:

    a. Routine letters and notes which require no acknowledgment or follow-up, such as notes of appreciation, congratulations, letter of transmittal and plans for meetings.

    b. Form letters which require no follow-up.

    c. Copies of interdepartmental or other company correspondence where a copy of same will be in the originating department's file.

    d. Letters of general inquiry and replies which complete a cycle of correspondence.

    e. Letters or complaints requesting specific action which have no further value after changes are made or action taken (such as name or address change.)

    f. Other letters of inconsequential subject matter or which definitely close correspondence to which no further reference will be necessary.

    g. Chronological correspondence files.

Letters to be kept from 1 to 5 years. (Following are examples, however the specific retention periods should be defined in the appropriate functional category or department.

    a. Letters explaining but not establishing company policy.

    b. Letters relating to establishing credit.

    c. Collection letters after the account is paid.

    d. Quotation letters where no contract results.

Letters to be kept indefinitely or for the life of the principal document which it supports. (Following are examples, however specific retention periods should be defined in the appropriate functional category or department.)

    a. Letters pertaining to patents, copyrights, bills of sale, permits, etc.

    b. Letters which constitute all or a part of a contract or which are important in the clarification of certain points in a contract.

    c. Letters denying liability of the Company.

Schedule Codes

22. C - Current
    P - Permanent
    AT - After Termination

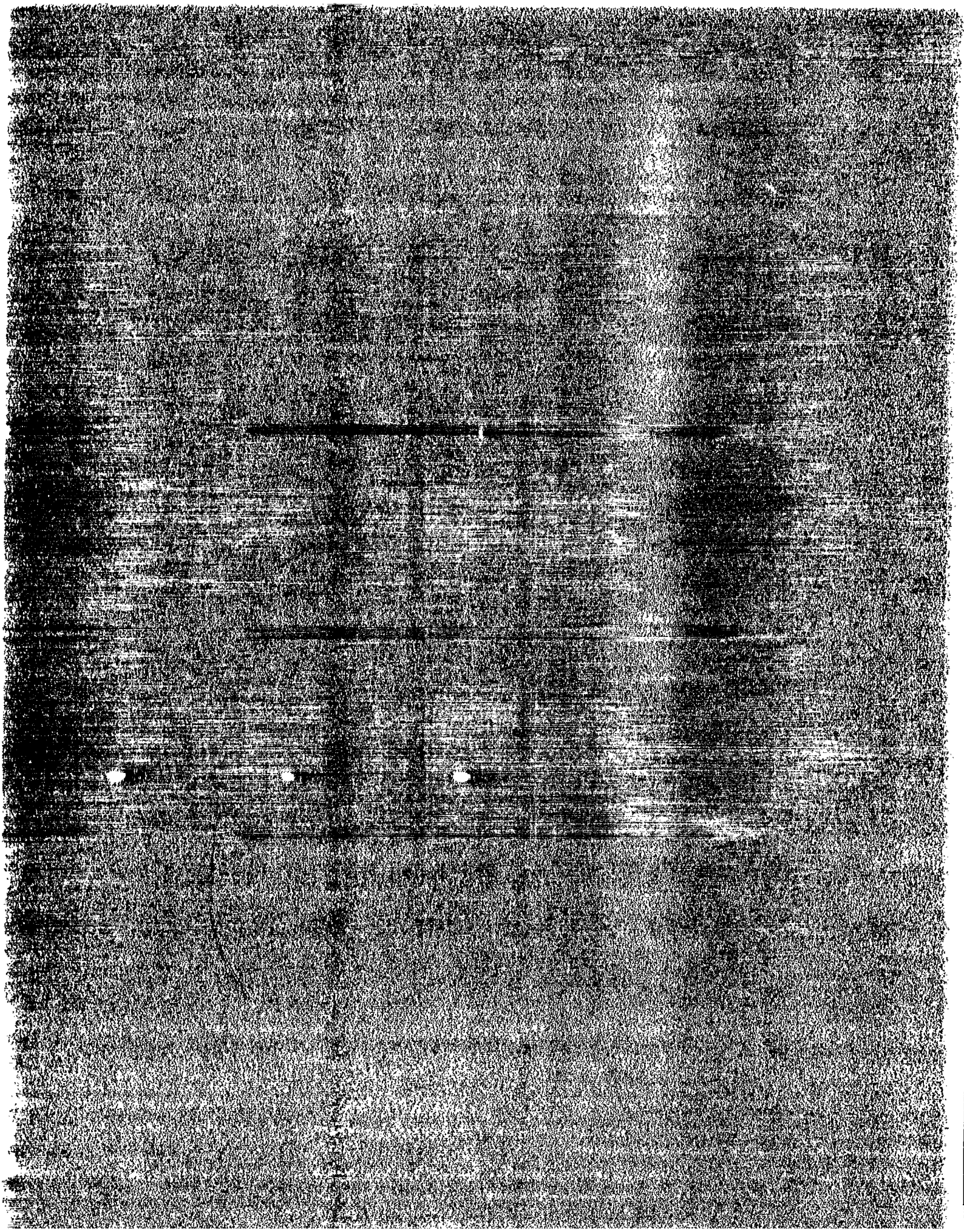
SUP - Until Superseded
OBS - Obsolete
AC - After Completion
AF - After Fiscal Year End
• - Close of Tax Year

Retention Schedules

23. Administration (General)
Contract Administration
Cost Accounting
Cost Estimates Control Department
Credits and Collections
Design Services
Disbursements Accountir g - Accounts Payable
Elliott Turbomachinery Canada
Employee Benefit
Employee Relations
Engineering
Environmental
Facilities Planning Department
Field Sales
Field Service Offices
Financial Accounting
Financial - Plant Accounting
Financial and Strategic Planning
Government Repairs/Parts
Insurance
Inventory Accounting
Legal
Manufacturing Management
Marketing
MIS Applications
MIS - Data Center
MIS - Personal Computers
MIS - Technical Computing
MIS - Telecommunications
Plant Air - Administration
Plant Air - Product Engineering
PAP - Contract Engineering
PAP - Drafting
PAP - Marketing
Payroll
Production Control
Production Management
Project Management
Purchasing
Safety - Medical - Security
Service
Tax
Turbo Products Administration
Turbo Products Group
Quality Assurances

The above Retention Schedules may be added to or revised as necessary. Such revision date is to be in the upper right hand corner of the schedule. The actual schedule will be maintained in each individual department with a "Master" Schedule from each department retained in the Systems and Procedures Department.

END OF DOCUMENT



ELLIC COMPANY - - ENGINEERING PARTMENT

Record Descriptive Specifications - Turbine

Turbine No. 13446, 13447, 13448 Gear No. —
Purchased By OKLAHOMA A&M COLLEGE, STILLWATER, OKLA.
For OKLAHOMA A&M COLLEGE, STILLWATER, OKLA.

S.O. 7180 A, B, & C
E-147599
Date 11/17/47

H.P. St. Conn. 8" L.H.
L.P. St. Conn. —
Exh. Conn. 36" Down
Extrac. Conn. 10" DOWN
Steam Strainer 8" C.S. Leslie
Shaft Size 7 3/4"
St. End Pkg. Laby. & Hahn
Diaph. Pkg. Laby.
Exh. End Pkg. Laby.
Superheat Parts YES

Governor OIL RELAY
Speed Changer MOTOR & HAND
Emerg. Gov. YES
Trip Mech. OIL
Low Oil Pr. Trip YES (ON TET)
Thrust Brg. 12.9 in. KINGS.
St. End Brg. Pedestal
Exh. End Brg. Cradle
Water Cooled Brgs. —

Valve Sizes (Order of opening)

Inlet	Extraction
1. 1 7/16	1.
2. 1 1/4	2.
3. 1 1/4	3.
4. 1 5/8	4.
5. 2 1/16	
6. 2 1/16	
7.	

Hand Valves
Valve location on nozzle sheet

Name Plate Rating
Type 2 QV 8
[illegible]-Kw: 1500
R.p.m. 3600
St. Press. 250 psig
St. Temp. 600 °F.
Exh. Press. — psig
Exh. Vac. 2 In. Hg. Abs
Extrac. Press. 50 psig
Rotation R.H.

Instruction Books - Special [illegible]

Special Construction

Thermometer wells in main brg. drains & in oil inlet & outlet to cooler
Nugent #1280A Oil Filter for 25% of lube oil flow complete with valves and automatic by-pass, steam supply & exhaust gate valves on auxiliary oil pump. steam header below floor - throttle valve below floor mounted
Taps at each pressure stage on one turbine only (7180-A), and include nipples & valves.
C.S. steam end, C.I. exhaust end. Turbine to be suitable for 400#G - 750°F.T. Furnish gage piping for gages on panel.
No foundation bolts, but furnish chock blocks & shims.

Gears Size — B.H.P. Ratio Speeds
Baseplate Soleplates Soleplates
Couplings H.S. #4 Poole Cont. Lub. L.S. —
Oil System Pump Size 6.25 Gal./100r.p.m. Driven From Gear. Piping Material Class 2
Oil Tank 200 g-l. Oil Strainer 2" Elliott Twin F.F. Turbine Brgs. Yes
Oil Cooler B&G OC5-86 Auxiliary Pump Turbo-½ Imp. F.F. Driven Mach. Brgs. Yes

Driven Machine

1500 KW .80 P.F. 3/60/2400/4160 3600 r.p.m. E.C.o. A.H. & 20 KW Exc.

Auxiliary Apparatus

SEE "D" Specs.

ORM 312A

Record Descriptive Specifications - Turbine

Turbine No. 13446, 13447, 13448 Gear No. — S.O. 7180 A,B, & C

Purchased By Oklahoma A & M College, Stillwater, Okla. E- 147599

For Oklahoma A & M College, Stillwater, Okla. Date 11/17/47

H.P. St. Conn. 8" L.H.	Governor Oil Relay	Name Plate Rating
L.P. St. Conn. —	Speed Changer Motor & Hand	Type 2 QV8
Exh. Conn. 36" Down	Emerg. Gov. Yes	Hp.-Kw: 1500
Extrac. Conn. 10" Down	Trip Mech. Oil	R.p.m. 3600
Steam Strainer 8" C.S. Leslie	Low Oil Pr. Trip Yes (On T & T)	St. Press. 250 psig
Shaft Size 7-1/4"	Thrust Brg. 12.91 in.^{2} Kings.	St. Temp. 600 °F.
St. End Pkg. Laby. & Huhn	St. End Brg. Pedestal	Exh. Press. — psig
Diaph. Pkg. Laby.	Exh. End Brg. Cradle	Exh. Vac. 2 - In. Hg. Abs
Exh. End Pkg. Laby.	Water Cooled Brgs. —	Extrac. Press. 50 psig
Superheat Parts Yes		Rotation R.H.

Valve Sizes (Order of opening)

Inlet	Extraction
1. 1-1/16	1.
2. 1-1/4	2.
3. 1-1/4	3.
4. 1-5/8	4.
5. 2-1/16	
6. 2-1/16	
7.	

Hand Valves

Valve location o nozzle sheet

Instruction Books - Special ~~xxxNxx~~

Special Construction

Thermometer wells in main brg. drains & in oil inlet & outlet to cooler.
Nugent #1280A Oil Filter for 25% of lube oil flow complete with valves and automatic by-pass.
Steam supply and exhaust gate valves on auxiliary oil pump.
Steam header below floor - throttle valve below floor.
Taps at each pressure stage on one turbine only (7180-A), and include nipples & valves.
C.S. steam end, C.I. exhaust end. Turbine tube suitable for 400#G - 750°F.T.T. Furnish gage piping for gates on panel.
No foundation bolts, but furnish chock blocks & shims.

rs	Size —	B.H.P.	Ratio	Speeds
eplate	Soleplates	Soleplates		
plings	H.S. #4 Poole Cont. Lub.		L.S. —	
System	Pump Size 6.25	Gal./100r.p.m. Driven From Gov.		Piping Material Glass 2
Tank	200 gal.	Oil Strainer 2" Elliott Twin		F.F. Turbine Brgs. Yes
Cooler	B&G OC5-86	Auxiliary Pump Turb - 1/2" Imp		F.F. Driven Mach. Brgs. Yes

Driven Machine

1500 KW .80 P.F. 3/60/2400/4160 3600 R.P.M. E. Co. AH & 20 Kw Exc.

Auxiliary Apparatus

See "D" Specs.

Copies
Spec. ✓
Turb. Eng.
Turb. Sales
2-QV-8 Turb.
Exciter

ET-00313

ELLIOTT COMPANY - - TURBINE DEPARTMENT

Descriptive Specifications

Turbine No. 12161 W Gear No. S.O. 6610

Purchased By ~~City of Marshall, Missouri~~ City of Ellsworth E- 131197

For ~~City of Marshall, Missouri~~ Date 2-20-46

Turbine
H.P. St. Conn. 6" R.H.
L.P. St. Conn. None
Exh. Conn. 48" Down
Extrac. Conn. See Below
St. Strainer yes
Buckets (C) #33
Buckets (R) #40, #50, #60
Shaft Size 9½"
St. End Pkg. Radial Labyrinth
Diaph. Pkg. Labyrinth
Exh. End Pkg. Radial Labyrinth

Governor Double Oil Relay
Synchronizer Motor (110v. AC)? Universal
Speed Changer None
Emerg. Gov. yes
Trip Mech. yes - oil
Low Oil Pr. Trip Built-in
Non-Ret. Valve None
Thrust Brg. Kingsbury (18 spin.)
St. End Brg. Pedestal
Exh. End Brg. Cradle
Water Cooled Brgs. None
Superheat Parts yes

Valve Sizes (Order of opening)

Inlet	Extraction
1. 2½"	1.
2. 2"	2.
3. 2"	3.
4. 1½"	4.
5. 2"	
6. 2"	
7.	

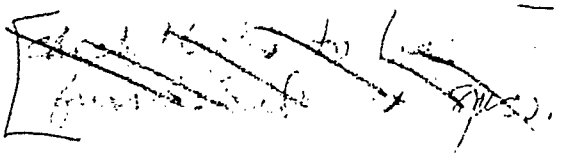
Hand Valves None
Valve location on nozzle sheet

Name Plate Rating
Type 2 NS 12
~~B. Hp.~~ Kw: 4000
R.p.m. 3600
St. Press. 400 #G.
St. Temp. 750°FTT
Exh. Press. None
Exh. Vac. 28"
Extrac. Press. Variable
Rotation R.H.

Instruction Book - Special or No. Special

Special Construction

Three uncontrolled extraction openings for feedwater heating, 4" at 3rd stage, 4" at 5th stage, and 6" at 7th stage, without blind flanges.
Automatic gland leakoff system. similar to S.B.63m
Superintendence of erection only.
Set of special wrenches, tools, & eyebolts.
No duct work furnished by Elliott Co.
Foundation bolt sleeves furnished by purchaser.
Turbine to be suitable for 440 #G. - 775°FTT emergency conditions for 15 min.
(4) Oil Cooler thermometers mounted in piping.
(6) Thermometer on each main bearing, and [illegible]
Circulating water for air and oil coolers to be 90° F.
Gen Air Cooler & Temp. alarm furnished by Ridgway - built into housing.



Gears	Size None	B.H.P.	Ratio	Speeds

Baseplate Soleplates
Couplings H.S. #5 Poole, cont. lubr., overbored to 5½" L.S. None
Oil System Pump Size 6.25 Gal./100r.p.m. Driven From Gov. Piping Material Sml's. Steel
Oil Tank Welded Steel (275 Gal.) Oil Strainer 2½" Twin F.F. Turbine Brgs. yes
Oil Cooler yes Auxiliary Pump Turbo (½" Ejn) F.F. Driven Mach. Brgs. yes

Driven Machine 4000 KW, .80 P.F., 5000 KVA, 3 Phase, 60 cycle, 2400/4156 Volt, 3600 RPM Ridgway Alternator and 35 KW, 125 Volt, 3600 RPM direct-connected exciter.

Auxiliary Apparatus

1 - 6" 600 # Trip & Throttle Valve
1 - 6" 600 # Steam Strainer
1 - Oil Cooler
1 - #5 Poole Coupling, lubr.
1 - 2½" Twin Oil Strainer
1 - M-N Aux. Oil Pump Gov.
1 - Electric Tachometer } On Gauge Board
1 - 6" Steam Gauges
2 - 4½" Steam Seal Gauges
2 - 4½" Oil Gauges
Leakoff Control
~~(1 - Press. Reg.~~
(1 - Ejector
(1 - Gland Condenser
1 - Synchronizer Motor - R/M
4 - Thermometers

Copies
Drafting 2 NS 12
3 Turb. Eng.
Turb. Sales
Service
Order
Test Floor
Cost

ORDER RECORD

FORM 1998

Priority Rating or Urgency No. ..... TURBINE DEPT. (by S.C.F.) 10-30-45. (Date Issued) S.O. 6610 E- 131197

Gov't. Contract No. or Builders Serial No. ..... Gov't Product Classification ... I.T.G. ..... Claimant Agency .....

Date of T.D. Approval ..... Scheduled Shipping Date JUNE 1946 Desired Shipping Date .....

End Use ..... Type of Plant ... POWER ..... C.M.P. Allot. No. .....

District Office K. CITY (Purchase) ..... K. CITY (Installation) ... Sold With ..... (Give M.O. or S.O. Nos., other equipment)

SERVICE RECORD	User CITY OF MARSHALL	Ser. No. 12161-W
	State MISSOURI City MARSHALL	S.O. 6610
Shipped	Purchaser CITY OF MARSHALL	Gear Ser. No.
	Address MARSHALL, MISSOURT	
Turb. Rotation	Engineer BLACK & VEATCH	E- 131197
(Facing Gov.)	P.O. CONTRACT Dated	Date 10-30-45
Clockwise	Hp. & v. 4000 Type Turb. MS Gear	
~~Counter Clock~~	R. p. m. Turb. 3600 R. p. m. Gear	
GENERATOR	Type Gov. OIL RELAY & EMERGENCY	
M.O.	Steam Conditions 400°G. - 750° F.T.T. - 28" V.C.	
Serial		
EXCITER	Casing Material C.S. STEAM END - C.I. EXH. END	
M.O.	Driven Machine 4000 K.W. 80% P.F. 3/60/2400/4160	
Serial	3600 R.P.M. ELLIOTT ALTERNATOR AND 75 K.W.,	
	125 VOLT, 3600 R.P.M. ELLIOTT EXCITER.	

FURNISH ALL STANDARD EQUIPMENT PLUS

Special Requirements

600# TRIP & THROTTLE VALVE.
EXHAUST THERMOMETER
4 OIL COOLER THERMOMETERS
BEARING THERMOMETERS
FOUNDATION BOLTS

R.H. Inlet and Throttle Valve with extended Valve Stems. See Knight Ltr. Filed 11-27-45.

Charge Engr. and Draft. to Shop Order (Yes ☒ No ☐)

Provide ... Prints for (Approval) (Record) .....

Provide ... 8 ... Instruction Books (5) CUSTOMER (1) CHGO., (1) K.CITY (1) TURB. FILE

Painting Requirements ..... CLASS 1A .....

Tests or Inspection ..... MOTOR .....

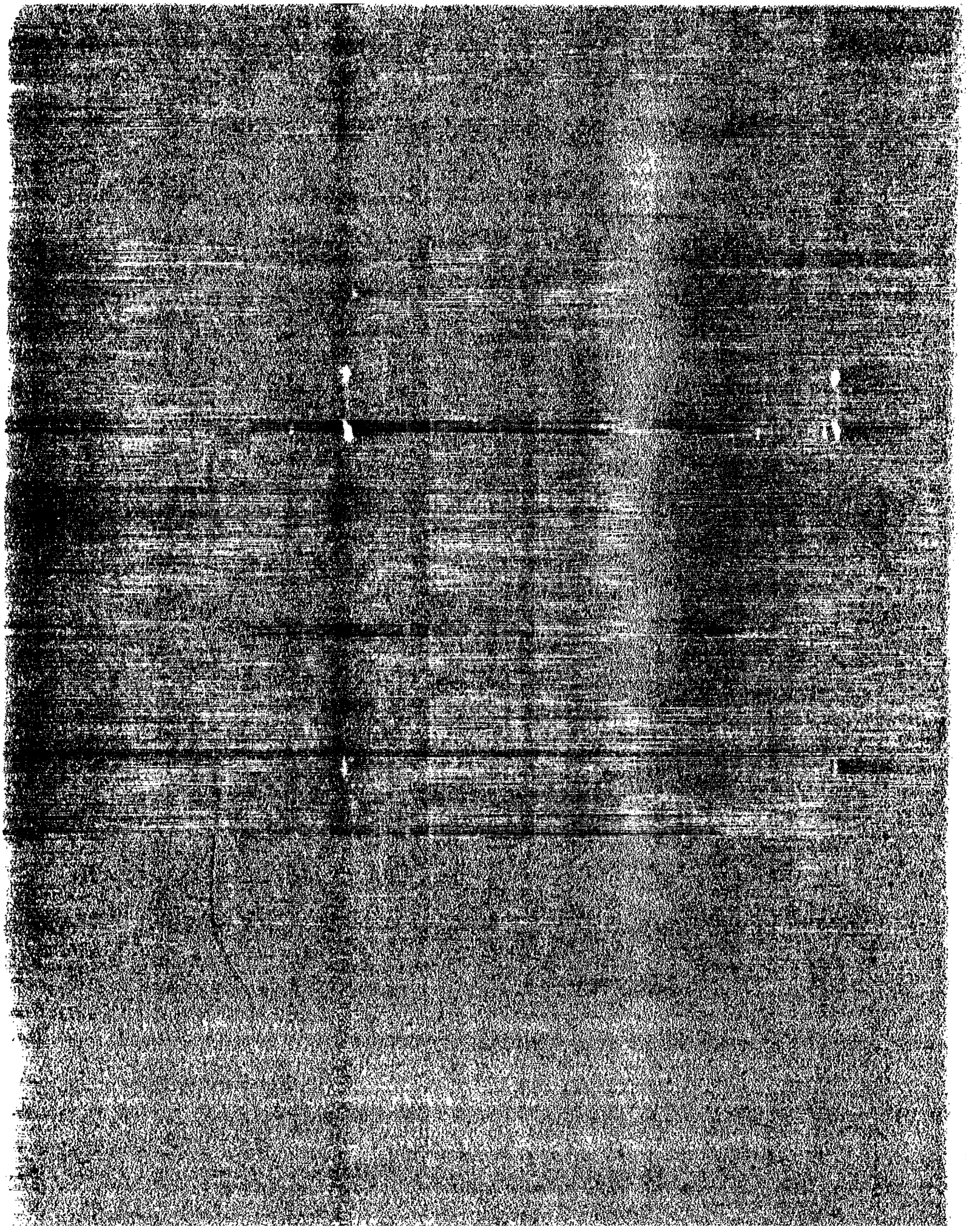
Contract Price ..... Unit Contract Price ..... Unit Weight 12,500.

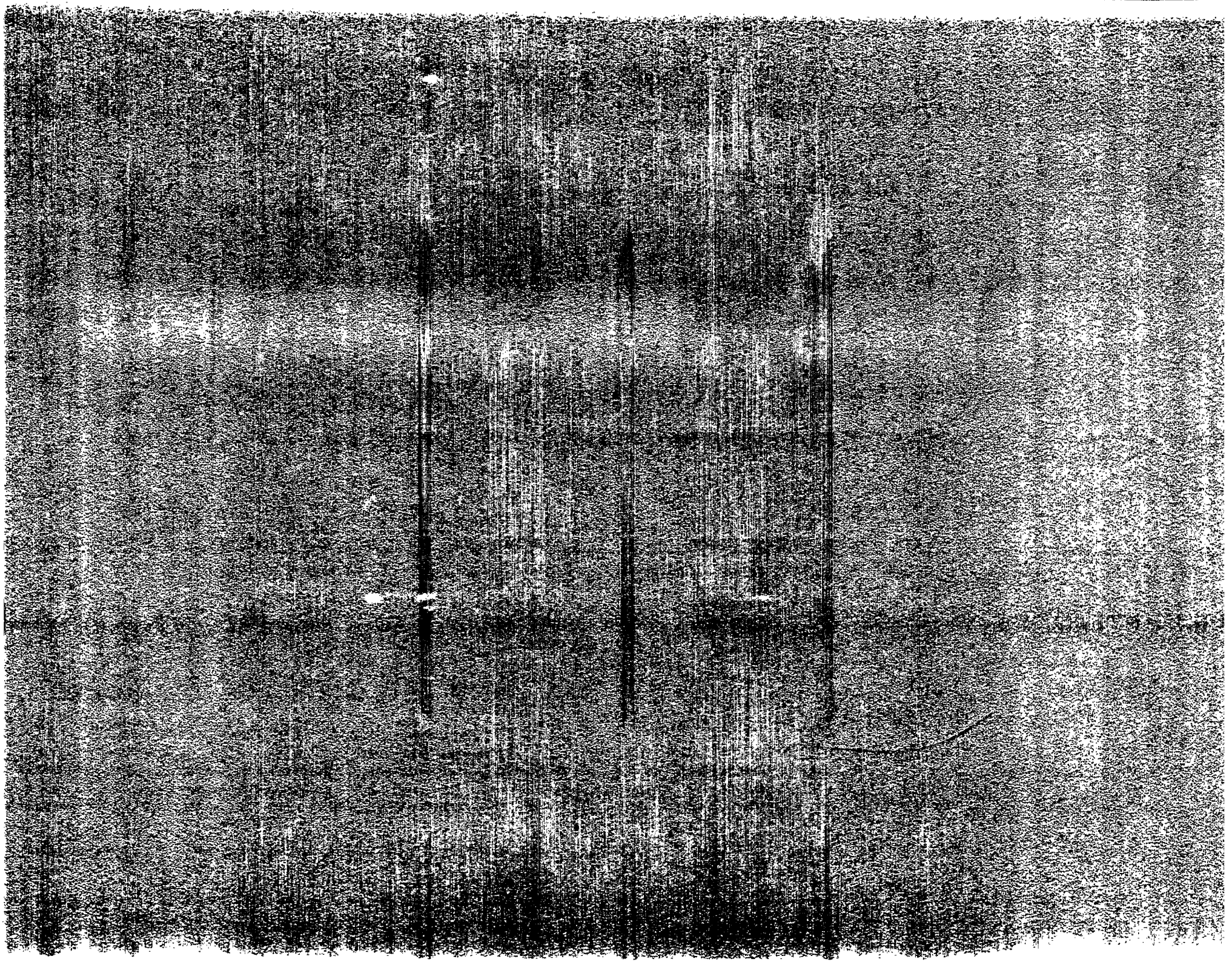
TERMS: ☐ Net 30 days ☒ Special 60% on delivery, 25% 30 Days, 15% 60 Days.
☐ Standard Contract ☐ Penalty Contract (Shipment) (Performance) ☐ Bond Required 180 Days

FIELD WORK
☐ NONE
☒ SUPT. ONLY
☐ COMPLETE ERECTION

APPROVAL	APPROVED BY	DATE
ENGR.		
CREDIT		

ET-00314A





Interoffice Letter

To: MATERIALS SPECIFICATION DISTRIBUTION LIST

Date: OCTOBER 25, 1988

From: MICHAEL S. WALKER Extension No.: 8098

Office: MATERIALS ENGINEERING Location: 66-1

Subject: **OBSOLETION OF MS-51/A**

The subject material specification is being obsoleted due to a significant increase in customers requirement that materials be asbestos free.

Please refer to Material Specification 8101 (Index 1A).

Michael S. Walker

MICHAEL S. WALKER

MSW/pbk

ET-00315

A—Action Necessary
B—Contents Essential

MATERIAL SPECIFICATION NO. 51, 51A

Form 247 A (4-64)

D ASBESTOS SHEET WITH RUBBER BINDER	Date 7/25/72 Page 1 of 2
	Superseded Date 6/5/64 (Editorial)

ed with a Non-Stick Parting Agent, Both Sides
reated with a Parting Agent, (Navy Applications)

1/4 1/8 3/32 1/16

STOCKED THICKNESS 1/32 1/64

Scope:

This specification covers a compressed chrysotile asbestos sheet stock impregnated with a synthetic binder, suitable for use to temperatures up to 850°F.

Composition:

Material purchased to this specification shall be of the following composition by weight.

Asbestos	70% minimum
Binder	10% minimum
Remainder - Filler	20% maximum

These materials shall be processed to form a tough compressible sheet.

Physical Properties:

Compressibility, nominal -

At 1,000 psi	3 to 10%
5,000 psi	7 to 17%
10,000 psi	10 to 25%

Recovery after 5,000 psi load 40% minimum

Tensile Strength -

Longitudinal	3,000 psi minimum
Transverse	1,500 psi minimum

Hardness - Shore - Durometer A - 95 ± 5

Resistance to crushing - 50,000 psi minimum

Density - Per cu. in. 1.00 oz.

Chemical Resistance:

Fuel - 5 hours in ASTM Fuel B at room temperature.

Thickness increase - 15 to 35%

ET-00316

Oil Resistance - 5 hours in ASTM 3 oil at 300°F

Thickness increase - 20 to 50%, Tensile Loss - 40% maximum

Approved

Approved

Elliott
A Division Of
Carrier Corporation

MATERIAL SPECIFICATION NO. 51, 51A

Form 247 A (4-54)

SUBJECT	Date 7/25/72	Page S1 of 1
COMPRESSED ASBESTOS SHEET WITH RUBBER BINDER	Superseded Date 6/5/64	

NOTE: THIS SHEET NOT TO BE SENT TO SUPPLIERS.

S1. Approved Sources for Material Specification 51:

		Manufacturer
S1.1	7021 Compressed Asbestos Sheet (press cured)	Garlock, Inc.
S1.2	J.C. Style 2150 Compressed Asbestos Sheet	Crane Packing Company
S1.3	#60 Service Sheet	Johns Manville Company
S1.4	#999 Wizard Sheet	U. S. Rubber Company

S2. Approved Sources for Material Specification 51A:

S2.1	150 Compressed Asbestos Sheet (ungraphited)	Melrath Supply and Gasket Company
S2.2	#61 Service Sheet	Johns Manville Company

ET-00317

Approved | Approved | Approved

Elliott
A Division Of
Carrier Corporation
Form 247 A (4-64)

MATERIAL SPECIFICATION NO. 51, 51A

SUBJECT	Date 7/25/72	Page 1 of 2
COMPRESSED ASBESTOS SHEET WITH RUBBER BINDER	Superseded Date 6/5/64	

51 - Treated with a Non-Stick Parting Agent, Both Sides
51A - Not Treated with a Parting Agent, (Navy Applications)

1. Scope:

1.1 This specification covers a compressed chrysotile asbestos sheet stock impregnated with a synthetic binder, suitable for use to temperatures up to 850°F.

2. Composition:

2.1 Material purchased to this specification shal. be of the following composition by weight.

Asbestos	70% minimum
Binder	10% minimum
Remainder - Filler	20% maximum

These materials shall be processed to form a tough compressible sheet.

3. Physical Properties:

3.1 Compressibility, nominal -

At 1,000 psi	3 to 10%
5,000 psi	7 to 17%
10,000 psi	10 to 25%

Recovery after 5,000 psi load 40% minimum

3.2 Tensile Strength -

Longitudinal	3,000 psi minimum
Transverse	1,500 psi minimum

3.: From Mat'l - Durometer A - 95 ± 5

3. Spec 51 ushing - 50,000 psi minimum

3 . in. 1.00 oz.

4 Master ance:

L file in ASTM Fuel B at room temperature.

increase - 15 to 35%

5/22/94 : - 5 hours in ASTM 3 oil at 300°F

increase - 20 to 50%, Tensile Loss - 40% maximum

ET-00318

Approved	Approved	Approved

Elliott
A Division Of
Carrier Corporation

Form 247 A (4-64)

MATERIAL SPECIFICATION NO. 51, 51A

SUBJECT	Date 7/25/72 Page S1 of 1
COMPRESSED ASBESTOS SHEET WITH RUBBER BINDER	Superseded Date 6/5/64

NOTE: THIS SHEET NOT TO BE SENT TO SUPPLIERS.

S1. Approved Sources for Material Specification 51:

		Manufacturer
S1.1	7021 Compressed Asbestos Sheet (press cured)	Garlock, Inc.
S1.2	J.C. Style 2150 Compressed Asbestos Sheet	Crane Packing Company
S1.3	#60 Service Sheet	Johns Manville Company
S1.4	#999 Wizard Sheet	U. S. Rubber Company

S2. Approved Sources for Material Specification 51A:

S2.1	150 Compressed Asbestos Sheet (ungraphited)	Melrath Supply and Gasket Company
S2.2	#61 Service Sheet	Johns Manville Company

ET-00319

Approved	Approved	Approved

INTER-OFFICE LETTER

Material Specification
Distribution List

File Copy

FROM William H. Rolshouse **DATE** 6-5-64

OFFICE Materials Engineering

SUBJECT Material Specification 51, 51A

(M)

Subject material specification has been revised to include Melrath Supply & Gasket Company as an approved source of material.

William H. Rolshouse
WILLIAM H. ROLSHOUSE

WHR/vb

SUBJECT

Compressed Asbestos Sheet with Rubber Binder

Date 6-5-64 Page 1 of 3

Superseded Date 4-29-64

51 - Graphited both sides
51A - NonGraphited (Navy Applications)

I. Scope: This specification covers a compressed chrysotile asbestos sheet stock impregnated with a synthetic binder, suitable for use to temperatures up to 850°F.

II. Composition: Material purchased to this specification shall be of the following composition:

Asbestos - 70% minimum by wt.
Binder - 10% minimum by wt.

M

These materials shall be processed to form a tough compressible sheet.

III. Physical Properties: Acceptable materials shall have the following minimum physical properties:

Compressibility, Nominal

At 1,000 psi	3 to 10%
At 5,000 psi	7 to 17%
At 10,000 psi	10 to 25%

Recovery after 5,000 psi load 40% minimum.

Tensile Strength

Longitudinal - 3,000 psi minimum
Transverse - 1,500 psi minimum

Hardness - Shore - Durometer A - 95 ±5

Resistance to crushing - 50,000 psi minimum

IV. Fuel Resistance:

5 hours in ASTM Fuel B at RT

Thickness Increase - 15 to 35%

V. Oil Resistance:

5 hours in ASTM #3 Oil at 300°F.

Thickness Increase - 20 to 50%
Tensile Loss - 40% minimum

VI. Density: Per cu. in. 1.00 oz.

ET-00321

VII. Thickness: Available in 1/64" to 1/4". Must be specified on purchase order.

Approved W. H. Rothman | Approved J. A. Cameron | Approved

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 51, 51A

Date April 29, 1964

Title: Compressed Asbestos Sheet with Rubber Binder

V. Oil Resistance:

5 hours in ASTM #3 Oil at 300°F.

Thickness Increase - 20 to 50%
Tensile Loss - 40% minimum

VI. Density:

Per cu. in. 1.00 oz.

VII. Thickness: Available in 1/64" to 1/4". Must be specified on purchase order.

VIII. Sheet Sizes: Available in large range from 40" x 40" to 150" x 150". Must be specified on purchase order.

IX. Service Suitability: The material shall be suitable for handling steam, water, air, gases, ammonia, alkalis, gasoline, and oil at temperatures up to 850°F.

X. Standard Specifications: This material meets the requirements of the following specifications:

ASTM-D-1170 Latest Revision, Grade P-1161-A
MIL-A-17472

Approved [signature]

Approved [signature]

Approved [signature]

SUBJECT

Compressed Asbestos Sheet with Rubber Binder

Date 6-5-64 Page 3 of 3

Superseded Date 4-29-64

NOTE: This sheet not to be sent to suppliers.

(M)

Approved Sources:

Material	Manufacturer
7021 Compressed Asbestos Sheet	Garlock, Inc.
Style 2150 Compressed Asbestos Sheet	Crane Packing Company
Goodyearite 106	Goodyear Tire & Rubber Company
#60 Service Sheet	Johns Manville Company
#999 Wizard Sheet	U. S. Rubber Company
125 Compressed Asbestos Sheet (Graphited both sides - Spec. 51)	Melrath Supply & Gasket Company
150 Compressed Asbestos Sheet (Ungraphited - Spec. 51A)	Melrath Supply & Gasket Company

ET-00323

Approved	Approved	Approved
J. H. Rothman	J. A. Cameron	

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 51, 51A

Date April 29, 1964

Sheet 1 No. SHEETS 3

Title: Compressed Asbestos Sheet with Rubber Binder

(M)

51 - Graphited both sides
51A - NonGraphited (Navy Applications)

I. Scope: This specification covers a compressed chrysotile asbestos sheet stock impregnated with a synthetic binder, suitable for use to temperatures up to 850°F.

II. Composition: Material purchased to this specification shall be of the following composition:

Asbestos - 70% minimum by wt.
Binder - 10% minimum by wt.

These materials shall be processed to form a tough compressible sheet.

III. Physical Properties: Acceptable materials shall have the following minimum physical properties:

Compressibility, Nominal

At 1,000 psi	3 to 10%
At 5,000 psi	7 to 17%
At 10,000 psi	10 to 25%

Recovery after 5,000 psi load 40% minimum.

Tensile Strength

Longitudinal - 3,000 psi minimum
Transverse - 1,500 psi minimum

Hardness - Shore - Durometer A - 95 ±5

Resistance to crushing - 50,000 psi minimum

IV. Fuel Resistance:

5 hours in ASTM Fuel B at RT

Thickness Increase - 15 to 35%

Approved [signature]

Approved [signature]

Approved

ET-00324

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 51, 51A

Date April 29, 1964

Sheet 3 No. SHEETS 3

Title: Compressed Asbestos Sheet with Rubber Binder

Note: This sheet not to be sent to suppliers.

(M)

Approved Sources:

Material	Manufacturer
7021 Compressed Asbestos Sheet	Garlock, Inc.
Style 2150 Compressed Asbestos Sheet	Crane Packing Company
Goodyearite 106	Goodyear Tire & Rubber Co.
#60 Service Sheet	Johns Manville Company
#999 Wizard Sheet	U. S. Rubber Company

Approved

Approved

Approved

ET-00325

TO: Material Specification Distribution List

File Copy

Material Specification No. 51, 51A

J. H. Bradbury June 13, 1957

This revision of specification 51 covers commercial quality compressed asbestos and rubber sheet packing (graphited and non-graphited). Specification 89 is rendered obsolete.

(M)

J. H. BRADBURY

ET-00326

Form 247A

ELLIOTT COMPANY

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 51, 51A

Commercial Quality Compressed Asbestos and Rubber Sheet Packing

Date Revised - June 13, 1957

51 - Graphited Both Sides
51A - Non-Graphited (Navy Applications)

Sheet 1 No. SHEETS 1

PHYSICAL PROPERTIES:-

Longitudinal Tensile Strength	5,000 psi, min.
Transverse Tensile Strength	2,000 psi, min.
Compressive Strength	40,000 psi, min.

CHEMICAL ANALYSIS:-

Asbestos	75% by wt., min.
Synthetic Rubber	10% by wt., min.

Tolerance: A tolerance of 10% is allowed on thickness less than 1/8" and 5% on greater thickness.

REMARKS:-

This material may be used up to 850°F. for gaskets on steam and water services and for all other gasket purposes where bolting or closure standards permit a relatively inelastic gasket.

Approved [signature]

Approved [signature]

Approved [signature]

ET-00327

J.C. STYLE 2150
COMPRESSED ASBESTOS SHEET PACKING

Style 2150 is composed of approximately 80% Chrysotile Asbestos Fibres, 12-1/2% G.R.S. synthetic rubber and special curing compounds. It meets Military Specifications MIL-A-17472, Class 1; MIL-G-7021; and ASTM #1170-G-1111-A (old #)

It is a good, general purpose sheet for Industrial and Marine Engine installations, and general ship requirements. It has been tested at temperatures up to 700°F. and at pressures up to 400 p.s.i.

Should be 1161A

TENSILE STRENGTH
With the grain.....4700 Lbs.per sq.in.
Across the grain.....2300 Lbs.per sq.in.
Average.....3500 Lbs.per sq.in.

COMPRESSION
12% ± 4% on sheet 1/16"thk.at 5000 Lbs.Pres. per square inch for one minute using 1/4" diameter foot with 5 lbs.pre-load. Recovery after compression..40% minimum, based on compressed thickness.

FLEXIBILITY
Without cracking, J.C.Style 2150 will bend 180° over a rod whose diameter is four times the thickness of the sheet.

DENSITY
1.00 oz.per cubic inch.

OIL RESISTANCE
Swelling in A.S.T.M. #1 oil,5 hrs.at 300°F.. 16% max.
Percent of original tensile after oil test.. 60% min.

FUEL RESISTANCE
Swelling in A.S.T.M.#1 Fuel,5 hrs.at room temperature....25% max.
Swelling in A.S.T.M.#2 Fuel,5 hrs.at room temperature....38% max.

STANDARD THICKNESSES
1/64",1/32",1/16",3/32",1/8"

SHEET SIZES

150" x 150"	50" x 50"	60" x 120"
120" x 120"	40" x 40"	40" x 120"
75" x 75"	75" x 150"	50" x 150"
60" x 60"		50" x 75"

APPROXIMATE WEIGHTS PER SHEET
50" x 50" x 1/16".....10 Lbs.
60" x 60" x 1/16".....15 Lbs.
Other Sizes in Proportion.

STANDARD PACKAGES
Sheets 50" and 60" wide rolled and packaged in cartons, approximately 200 lbs.net weight. Larger sheets in rolls,packaged in burlap.



SHEET GASKETING

Garlock Compressed Asbestos Sheet combines white or blue asbestos with a variety of binders, bonded under pressure and vulcanized into a homogeneous sheet. All styles are tough and durable with sufficient compressibility to seal properly, yet resist plastic flow under heavy bolt loads. Ideal for high pressure/high temperature applications employing rigid flanges with adequate bolting capacity. For basic information covering four popular styles, see chart below. Contact your Garlock representative on other styles.

STYLE 900

MATERIAL	Compressed Chrysotile asbestos with SBR binder					
TENSILE STRENGTH	With grain 6000 psi. Across grain 2500 psi. Average 4250 psi					
APPLICATION	Steam, gas, air and other services at temperatures to 700°F. Not recommended against extremely hot oil, organic solvents or strong mineral acids					
EQUIPMENT	On pipe flanges, boiler manholes, gasketed joints on steam engines, compressors, internal combustion engines, pumps or other equipment					
THICKNESSES (inches)	1/64, 1/32, 1/16, 3/32, 1/8, 1/16, 1/4					
SHEET SIZES (inches)	40 x 40	50 x 50	60 x 60	75 x 75	120 x 120	150 x 150
NOMINAL WEIGHTS* (pounds per sheet)	6.0	9.4	13.5	21.1	54.0	84.4

*Nominal weights for 1/16 in. thickness. Other thicknesses in proportion

7021

MATERIAL	Compressed Chrysotile asbestos with SBR binder					
TENSILE STRENGTH	With grain 6800 psi. Across grain 2500 psi. Average 5000 psi					
APPLICATION	Hot oil service at high temperature—steam or hot gases up to 700°F					
EQUIPMENT	On flanges of cracking stills and other refinery equipment, pipe lines, compressors, internal combustion engines; other high temperature applications					
THICKNESSES (inches)	1/64, 1/32, 1/16, 3/32, 1/8, 3/16, 1/4					
SHEET SIZES (inches)	40 x 40	50 x 50	60 x 60	75 x 75	120 x 120	150 x 150
NOMINAL WEIGHTS* (pounds per sheet)	6.0	9.4	13.5	21.1	54.0	84.4

*Nominal weights for 1/16 in. thickness. Other thicknesses in proportion

7228

MATERIAL	Compressed Chrysotile asbestos with neoprene binder					
TENSILE STRENGTH	With grain 5200 psi. Across grain 2800 psi. Average 4000 psi					
APPLICATION	Oil, refrigerants and solvents at temperatures to 300°F					
EQUIPMENT	On pipe flanges and gasketed joints of internal combustion engines, compressors, pumps and similar equipment					
THICKNESSES (inches)	1/64, 1/32, 1/16, 3/32, 1/8					
SHEET SIZES (inches)	40 x 40	50 x 50	60 x 60	75 x 75	120 x 120	150 x 150
NOMINAL WEIGHTS* (pounds per sheet)	6.0	9.4	13.5	21.1	54.0	84.4

*Nominal weights for 1/16 in. thickness. Other thicknesses in proportion

CONTINUED ON NEXT PAGE

rm 247 B (11-62)

File

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 372, 372A

Date May 7, 1964

Sheet 1 No. SHEETS 1

Title: Compressed Asbestos Sheet with Rubber Binder

Remarks: Subject specification is now obsolete.

For 372 use 51.

For 372A use 51A.

FOR REFERENCE ONLY
UNCONTROLLED COPY

Approved W. H. Rothman

Approved J. A. Cameron

Approved

2D1

ET-00330

Elliott
INTER-OFFICE LETTER

TO Material Specification
Distribution List

File

FROM William H. Rolshouse DATE 1-2-64

OFFICE Materials Engineering

SUBJECT Material Specification No. 372

(M)

This specification has been revised to include the Crane Packing Company as an additional approved source of supply.

William H. Rolshouse

WILLIAM H. ROLSHOUSE

WHR/vb

FOR REFERENCE ONLY
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ET-00331

2D2

FORM EC-1 A - ACTION NECESSARY B - CONTENTS ESSENTIAL C - INFORMATION ONLY

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 372

Date January 2, 1964

Sheet 1 No. SHEETS 2

Title: Compressed Asbestos Sheet with Rubber Binder

I. Scope: This specification covers a compressed chrysotile asbestos sheet stock impregnated with a SBR rubber binder, suitable for use to temperatures up to 250° F.

II. Tensile Strength:

With the grain	6800 psi
Across the grain	3200 psi
Average	5000 psi

III. Compressibility:

5000 psi Load	12± 5%
Recovery	40% min.

IV. Oil Resistance:

hours in ASTM #3 Oil at 300° F.

Thickness Increase	28%
Tensile Loss	40%

V. Fuel Resistance:

5 hours in ASTM Fuel B at RT

Thickness Increase	20%

VI. Density:

Per cu. in.	1.00 oz.

VII. Thickness: Available in 1/64" to 1/4". Must be specified on purchase order.

VIII. Sheet Sizes: Available in large range from 40" x 40" to 150" x 150". Must be specified on purchase order.

IX. Standard Specifications: This material meets the requirements of the following specifications:

ASTM-D-1170 Latest Revision
Grade P-1161-A
MIL-A-17472

Approved K K Robinson

Approved J A Cameron

Approved _____

FOR REFERENCE ONLY
UNCONTROLLED COPY

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 372

Date January 2, 1964

Sheet 2 No. SHEETS 2

Note: This sheet not to be sent to suppliers.

Approved Sources:

Material	Manufacturer
7021 Compressed Asbestos Sheet	Garlock, Inc.
Style 2150 Compressed Asbestos Sheet	Crane Packing Company

FOR REFERENCE ONLY
UNCONTROLLED COPY

Approved [signature]

Approved [signature]

Approved

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 367

Date September 11, 1963

Sheet 1 No. SHEETS 2

Title: Asbestos and Synthetic Rubber Compounded Gasket Material

I. Scope: This specification covers a high quality compressed asbestos fibre gasket material compounded with a synthetic rubber.

II. Typical Composition: Material supplied to this specification shall contain approximately 70% long fibred asbestos bonded with a synthetic rubber such as Buna-S (GR-S) and shall conform to ASTM D-1170 - Identification #p-1161A.

III. Surface Treatment: This material may be furnished with graphite on one or both sides. Unless specifically designated, the material supplied will be without surface graphite treatment.

IV. Fluid Resistance: Material supplied shall have excellent resistance to alternating wet and dry conditions involving water, steam, antifreeze solutions, caustic soda, dilute hydrochloric and acetic acids, and salt solutions.

V. Temperature Limit: The material shall maintain its chemical and physical properties to a maximum continuous operating temperature, under dry conditions, of 350°F.

VI. Fluid Absorption: Testing methods covered by ASTM D-733 Method A latest revision, shall apply. The increase in thickness shall be between 15-25% when immersed in ASTM reference fuel #1 for a period of 5 hours at 70-85°F. This value shall not exceed 15% when the samples are immersed in ASTM Oil #1 for 5 hours at 300°F.

VII. Compressibility: Test procedures outlined in ASTM D-1147 latest revision shall apply. Compressibility shall be between 15 and 25% with a load of 5000 psi. The recovery shall be 50 to 60%.

VIII. Hardness: The hardness shall range between 92 to 95 when measured with a Shore Durometer. (A scale)

IX. Tensile Strength: Test method covered by ASTM D-733 latest revision shall apply. Samples conditioned 1 hour at 212°F.
Longitudinal - 5000 to 7000 psi
Transverse - 2000 to 3000 psi

X. Sheet Size and Tolerance: The sheet size and tolerances shall be consistent with commercial practice within the industry. Special sizes and tolerances must be specified on the purchase orders.

Approved

Approved

Approved

2C1

ET-00334

orm 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 367

Date September 11, 1963

Sheet 2 No. SHEETS 2

Title: Asbestos and Synthetic Rubber Compounded Gasket Material

Note: This sheet not to be sent to suppliers.

Approved Sources and Materials:

Velumoid Company - Velbestos 172-B 130 B

Graphite on one or both sides can be supplied if requested. This condition must be specifically designated by the person initiating the requisition.

Approved

Approved

Approved

ET-00335

2C2

File

TO:	Material Specification Distribution List	Material Specifications 372, 373, 374, 375, 376	William H. Rolshouse April 29, 1963

The above subject specifications are being issued to cover materials listed on our standard raw stock list. These materials had not been previously assigned a specification number.

William H. Rolshouse

FOR REFERENCE ONLY
UNCONTROLLED COPY

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 372

Date April 25, 1963

Sheet 1 No. SHEETS 2

Title: Compressed Asbestos Sheet with Rubber Binder

I. Scope: This specification covers a compressed chrysotile asbestos sheet stock impregnated with a SBR rubber binder, suitable for use to temperatures up to 250° F.

II. Tensile Strength:

With the grain	6800 psi
Across the grain	3200 psi
Average	5000 psi

III. Compressibility:

5000 psi Load	12± 5%
Recovery	40% min.

IV. Oil Resistance:

5 hours in ASTM #3 Oil at 300° F.

Thickness Increase	28%
Tensile Loss	40%

V. Fuel Resistance:

5 hours in ASTM Fuel B at RT

Thickness Increase	20%

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VI. Density:

Per cu. in.	1.00 oz.

VII. Thickness: Available in 1/64" to 1/4". Must be specified on purchase order.

VIII. Sheet Sizes: Available in large range from 40" x 40" to 150" x 150". Must be specified on purchase order.

IX. Standard Specifications: This material meets the requirements of the following specifications:

ASTM-D-1170 Latest Revision
Grade P-1161-A
MIL-A-17472

Approved [signature]
Approved [signature]
Approved

ET-00337

2D6

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 372

Date April 25, 1963

Sheet 2 No. SHEETS 2

Note: This sheet not to be sent to suppliers.

Approved Sources:

Material	Manufacturer
7021 Compressed Asbestos	Garlock, Inc.

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Approved [signature]

Approved [signature]

Approved

ELLIOTT COMPANY

JEANNETTE. PA.

MATERIAL SPECIFICATION No. 89

Compressed Rubber Asbestos Gaskets

DATE 9-1-39

SHEET 1 No. SHEETS 2

This specification covers compressed asbestos gaskets to be used on steam and water services for temperatures up to 700°F. and for all other gasket purposes where bolting or closure standards permit a relatively inelastic gasket.

REQUIREMENTS

Packing shall be composed of asbestos fibre inerts and rubber, compounded thoroughly and evenly mixed to the desired consistency, and pressed into sheets.

RUBBER

The packing shall contain not less than 10% by weight of rubber and the finished sheet shall be free of all solvents used in the manufacture.

ASBESTOS FIBRE

The packing shall consist of not less than 75% asbestos fibre which shall be Chrysolite which in turn shall contain not less than 12% pure water of crystallization.

REMARKS

The finished packing shall be graphited* and if the manufacturers' standards conform, it is desired that each square foot or less shall be marked with the manufacturer's brand name.

While not subject to test, this quality standard requires an average tensile strength of 4000 lb. per square inch averaged upon three samples for each of two right angle directions.

The packing shall be furnished in rolls or sheets and in various thicknesses as required by the purchase orders. A tolerance of 10% is allowed on thicknesses less than 1/8" and 5% on greater thicknesses.

*Gaskets for Navy should not be graphited.

APPROVED H Bergquist

APPROVED _____

Form 21-B-306 1-30

ELLIOTT COMPANY

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 89

Compressed Rubber Asbestos Gaskets

DATE 9-1-39

SHEET 2 No. SHEETS 2

INSPECTOR

On lot purchases of several rolls, the inspector shall supply a piece cut from the sheet approximately 6" square to the laboratory for analysis.

PURCHASING DEPARTMENT

This grade of packing corresponds to a Federal Specification HH-P-46 and is available from practically all packing distributors under a variety of brand names, but is not limited to any particular brand name, the selection to be made by the Purchasing Department.

ET-00340

APPROVED H Bergquist

APPROVED [illegible]

2B2

Garlock SPEC. SHEET

STYLE	7006 & 7819
DATE	January 20, 1975
PAGE	175-4

MATERIAL: White chrysotile asbestos with SBR binder.
COLOR: 7006--Off-White
7819--Grey-Black
STYLE CODE: 7006--31417
7819--31595
SPECS: Meets ASTM-D-1170-62T, Grade P-1161A; SAE-J90A; Grade P-1161A.
USES: General purpose commercial grade sheet for industrial and marine applications. Temperatures to 750°F.

* * * * * * * * *

TYPICAL PHYSICAL VALUES

TENSILE STRENGTH:

Across Grain: 2600 psi

COMPRESSIBILITY AT 5000 PSI LOAD:

7-17%

RECOVERY FROM 5000 PSI LOAD:

40% Min.

ASTM #3 OIL IMMERSION:

5 Hours at 300°F.

Thickness Increase:	25%
Tensile Loss:	45%

ASTM REF. FUEL B IMMERSION:

5 Hours at 70-85°F.

Thickness Increase:	20%
Weight Increase:	20%

* * * * * * * * *

THICKNESSES
1/64" + .005/-.002
1/32" ± .005
1/16" ± .006
3/32" ± .008
1/8" ± .010
3/16" ± .015
1/4" ± .015

SHEET SIZES	
40" x 42"	60" x 63"
40" x 63"	60" x 126"
40" x 126"	75" x 75"
50" x 50"	75" x 150"
50" x 75"	120" x 126"
50" x 150"	150" x 150"

NOTES:
(1) Special thicknesses and/or thickness tolerances available on request.
(2) Special sheet sizes also available on request.

:RIPTION: A premium "navy grade" sheet composed of grade asbestos fibers and bonded with an SBR Elastomer. Intended as a full service gasketing material where high bolt torques, temperatures and pressures will be encountered.

.ICATIONS: Especially suited for sealing against steam, air, water, and many chemical solutions. Typical applications have been flange gaskets for paper making equipment and combustion gases.

)R: Black

:IFICATIONS: Meets ASTM D1170, P1161A, SAE J90b, P1161A, MIL-G-12803, P1161A, HH-P-0046 D Class I, MIL-A-17472B and MIL-A-7021-B Class S. is listed on QPL 17472.

ICAL WEIGHTS:

NOMINAL THICKNESS	POUNDS PER SQ. YD.	WEIGHT OF STOCK SHEETS - LBS. 50" X 50"	50" x 150"
1/64"	1.23	2.37	7.11
1/32"	2.46	4.74	14.22
1/16"	4.92	9.48	28.44
1/8"	9.84	18.96	56.88

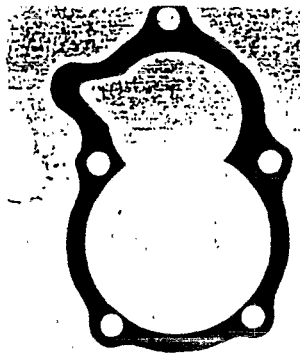
:ICAL PROPERTIES:

	Original
Density, lbs./cu.ft.	105
Longitudinal tensile strength, psi (typical)	7,000
Transverse tensile strength, psi (typical)	3,000
Compressibility, @ 5000 psi, %	7-17
Recovery, min., %	40
Flexibility factor, longitudinal, max.	10T
Flexibility factor, transverse, max.	8T
Sealability, ASTM fuel A, @ 70°F, 30" HG, 2000 psi., ML/HR	0.5

FLUID IMMERSIONS

ASTM No. 3 oil, 5 hrs. @ 300 °F	
Thickness increase, %	20-50
Tensile loss max., %	70
ASTM Fuel B, 5 hrs. @ 70-85 °F	
Weight increase, max., %	40
Thickensss increase, %	15-35

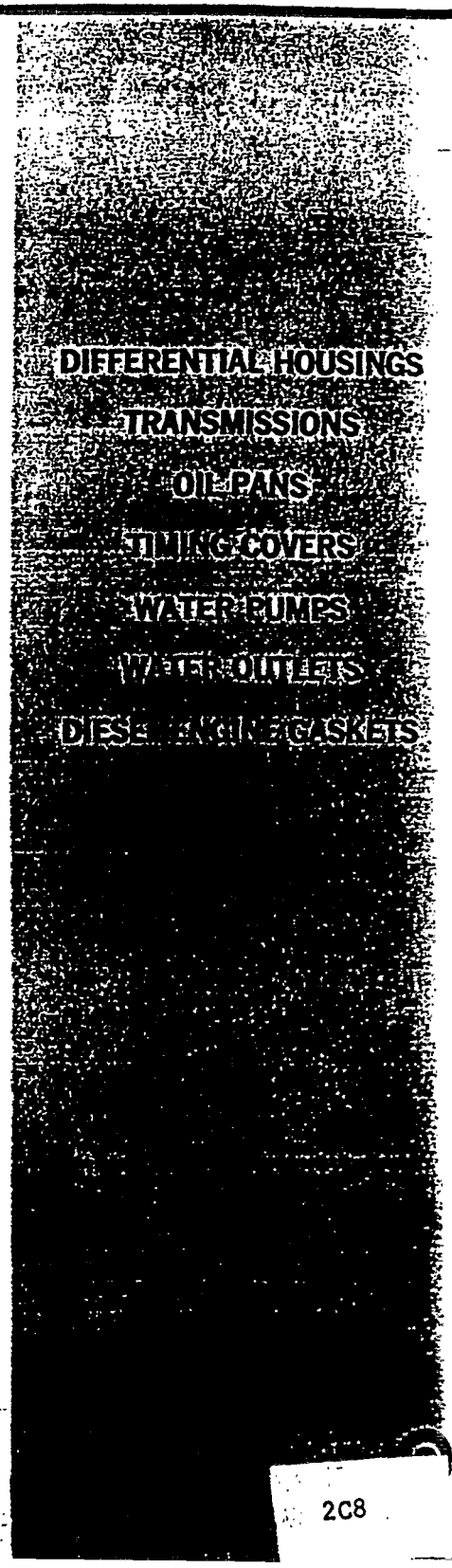
TES: Tests in accordance with ASTM designations F36, F37, F104, F146 and F152. Properties based on 1/32" thickness. See page PK-41 for General Production information.



Velbestos

CONTROLLED SWELL ASBESTOS MATERIALS

Velbestos 840 & Velbestos 880



Velbestos 840 and Velbestos 880 are compounded from a special blend of rubbers and selected asbestos fibers. They are produced by the beater addition process, resulting in homogeneous materials with a uniform distribution of fibers and binder. These materials represent a unique development in gasket technology.

Velbestos 840 and Velbestos 880 are designed to provide controlled high swelling properties in contact with petroleum oils and fuels. Both materials show minimal deterioration under these conditions, even in applications where a substantial portion of the gasket is exposed to these fluids. They are also highly resistant to water and anti-freeze solutions.

Velbestos 840 is produced to a lower density than Velbestos 880 to give higher compressibility where required for greater flange conformability. Both grades exhibit excellent sealing properties and retention of applied torque.

Velbestos 840 and Velbestos 880 contain a special surface treatment to reduce adhesion to flanges. This makes an additional anti-stick coating usually unnecessary. They possess excellent dimensional stability and aging properties. Both materials are suggested for temperatures up to approximately 400°F., depending on the conditions of the application.

Material Specifications	Velbestos 840	Velbestos 880
Compressibility @ 5000 psi. load, %	15–25	10–20
Recovery, minimum %	40	45
Tensile Strength, minimum psi.	1500	2000
Fluid Immersion		
ASTM Oil No. 1—5 hours at 300°F.		
Thickness Increase, %	20–35	20–35
ASTM Oil No. 3—5 hours at 300°F.		
Thickness Increase, %	35–60	40–65
ASTM Ref. Fuel A—5 hours at 70-80°F.		
Thickness Increase, %	15–30	15–30
ASTM Ref. Fuel B—5 hours at 70-80°F.		
Thickness Increase, %	25–40	30–45

Test Methods

Compressibility and Recovery: ASTM F 36-66, Procedure A.
Tensile Strength and Fluid Immersion: ASTM F 104-68T, Type 1 Materials.

Compliance with ASTM and SAE Specifications

ASTM F 104-68T and SAE J90b Classification System
Velbestos 840: F124700-M5
Velbestos 880: F123700-M6

ET-00343

Thickness Tolerances

Nominal Thickness	Velbestos 840	Velbestos 880
1/64"	.014-.017"	.014-.017"
.020	—	.018-.022
1/32	.028-.034	.028-.034
3/64	.043-.052	.043-.052
1/16	.057-.069	.057-.069

Standard material thicknesses are listed above. Other thicknesses can be produced if sufficient requirements exist. Please contact National Seal Division for information on the availability of thicknesses not shown.

Applications

Velbestos 840 and Velbestos 880 offer performance characteristics not previously available in rubber-asbestos gasket materials. Both grades exhibit excellent sealing and torque retention. These properties are further enhanced by a binder composition that causes the material to swell when a portion of the gasket is in contact with petroleum oils or fuels.

Deformable Flanges

The controlled swell properties of Velbestos 840 and 880 make them well adapted for sealing petroleum oils and fuels under irregular compression loads usually found in stamped flange assemblies. Typical applications are oil pans, transmission pans, timing covers and water pumps.

Compressibility

Velbestos 840 and 880 offer two levels of compressibility designed to give the conformability required for an initial seal in applications where compressed asbestos materials are too hard.

Uniformity And Economy

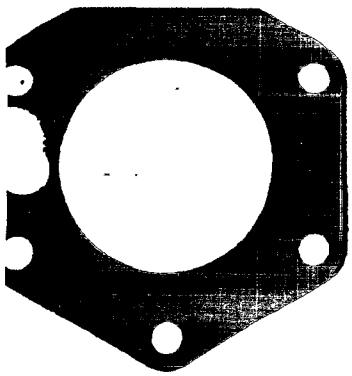
Both materials are manufactured by a process that permits intimate blending of asbestos fibers with the binder. This results in gaskets that are free from agglomerates of fiber and with cleaner cut edges than is frequently possible with compressed asbestos materials. Significant improvements in thickness uniformity are also found in Velbestos 840 and 880. Important cost savings can be realized in fabricated parts from Velbestos 840 and 880 in relation to comparable grades of compressed asbestos.

Service Limitations

HEAVY DUTY APPLICATIONS

Under unusually severe operating conditions where high internal pressures, shock loads or very high temperatures exist, Velbestos 840 and 880 may not possess adequate physical properties to perform properly. Under these circumstances, an oil resistant compressed asbestos material such as Velbestos 170-1 should be considered.

ET-00344



NITRILE RUBBER-ASBESTOS MATERIALS

Velbestos 250 & Velbestos 260

Velbestos 250 and Velbestos 260 are composed of nitrile (Buna N) rubber and asbestos fiber. They are produced by the beater addition process to provide highly uniform materials which can be fabricated into gaskets which, unlike many other asbestos base materials, have a minimum of loose fibers.

Velbestos 250 and 260 both provide outstanding sealing qualities and torque retention. Velbestos 260 is produced to a higher density than Velbestos 250 and shows better sealability and torque retention than the latter material.

Since both Velbestos 250 and 260 are made with nitrile rubber, they have excellent resistance to petroleum fuels and lubricants as well as water and antifreeze solutions. These materials are specially treated to resist flange adhesion.

Velbestos 250 and 260 have excellent dimensional stability and aging properties. They can be used at temperatures up to 500°F.

Material Specifications	Velbestos 250	Velbestos 260
Compressibility @ 5000 psi. load, %	15–25	7–17
Recovery, minimum %	40	40
Tensile Strength		
Longitudinal, minimum psi.	3000	3500
Transverse, minimum psi.	2000	2500
Fluid Immersion		
ASTM Oil No. 3 — 5 hours at 300°F.		
Compressibility, maximum %	30	30
Loss in Tensile Strength, maximum %	35	30
Thickness Increase, %	5–15	5–13
ASTM Ref. Fuel B — 5 hours at 70-80°F.		
Weight Increase, maximum %	30	30
Thickness Increase, %	5–15	5–15

Test Methods:

Compressibility and Recovery: ASTM F 36-66, Procedure A
Tensile strength: ASTM F 152-72, Type 1 Materials
Fluid Immersion: ASTM F 146-72, Type 1 Materials

Compliance with ASTM and SAE Specifications

ASTM F 104-71 and SAE J90b Classification System
Velbestos 250 : F124100-M6
Velbestos 260 : F123100-M6

ET-00345

CARBURETORS

DIFFERENTIAL HOUSINGS

OIL PUMPS

HEAVY DUTY OIL PANS

WATER PUMPS

HEAVY DUTY TRANSMISSIONS

HIGH TEMPERATURE GASKETS

Thickness Tolerances

Nominal Thickness	Velbestos 250	Velbestos 260
.010"	.009-.011"	—
1/64	.014-.017	.013-.016"
.020	.018-.022	.017-.021
1/32	.028-.034	.027-.033
3/64	.043-.052	.041-.050
1/16	.057-.069	.055-.067

Standard material thicknesses are listed above. Other thicknesses can be produced if sufficient requirements exist. Please contact Vellumoid for information on the availability of thicknesses not shown.

Applications

The outstanding qualities of Velbestos 250 and Velbestos 260 make them well suited for a wide variety of critical gasket applications. In many instances, these materials provide superior performance when compared to most other gasket materials.

Torque Retention

Both Velbestos 250 and 260 have excellent torque retention under load. Velbestos 260 is slightly superior to Velbestos 250 in this characteristic.

Sealability

These materials are designed to provide excellent sealability under moderate flange loads.

Resistance To Fluids

Since they are formulated with nitrile rubber, both Velbestos 250 and 260 exhibit high resistance to the effects of lubricating oils and petroleum fuels. They are also resistant to water, coolants and salt solutions.

Thickness Control

Velbestos 250 and 260 are manufactured to closer tolerances than most compressed asbestos materials. They are also available in lower thicknesses than many materials. These features make the materials valuable for use in shim type applications in which spacing requirements are critical.

Cost

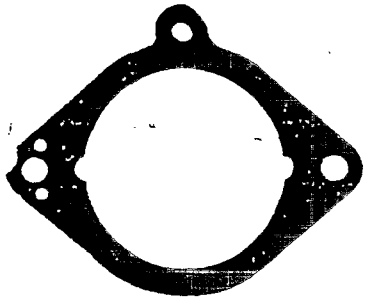
In relation to parts fabricated from comparable compressed asbestos materials, Velbestos 250 and 260 gaskets provide significant savings.

Service Limitations

OUT-OF-FLAT OR DISTORTED FLANGES

Because of the low compressibility of Velbestos 250 and 260, these materials may not compensate adequately for out-of-flat conditions which sometimes exist in stamped metal parts. In such cases, a more compressible material may be required.

ET-00346



SBR RUBBER-ASBESTOS MATERIAL
Velbestos 310

Velbestos 310 is composed of asbestos fiber and SBR rubber. It is produced by the beater addition process to provide a highly uniform material which can be fabricated into gaskets having a minimum of loose fibers.

Velbestos 310 provides excellent sealability and torque retention under load. It is highly resistant to water and anti-freeze solutions, and has good resistance to petroleum oils. Because of its special properties, Velbestos 310 provides performance which is superior to most cellulose fiber materials.

Velbestos 310 is given a special surface treatment to resist flange adhesion. The material has excellent heat aging properties and can be used at temperatures up to 500°F.

Material Spec.	Velbestos 310
Compressibility @ 5000 psi. load, %	20-30
Recovery, minimum %	30
Tensile Strength	
Longitudinal, minimum psi.	2000
Transverse, minimum psi.	1500
Fluid Immersion	
ASTM Oil No. 3 — 5 hours at 300°F.	
Loss in Tensile Strength, maximum %	60
Thickness Increase, %	10-25
ASTM Ref. Fuel B — 5 hours at 70-80°F.	
Weight Increase, maximum %	50
Thickness Increase, %	5-20

Test Methods

Compressibility and Recovery: ASTM F36-66, Procedure A
Tensile Strength and Fluid Immersion: ASTM D1170-62T, Type 1 Procedure

Compliance with ASTM D1170-62T & SAE J90a Specifications

Velbestos 310: P1261A

HEAVY DUTY OIL PANS

WATER PUMPS

DIFFERENTIAL HOUSINGS

HIGH TEMPERATURE GASKETS

STANDARD TRANSMISSIONS

COVER GASKETS

ET-00347

Thickness Tolerances

Nominal Thickness	Velbestos 310
1/64"	.014-.017"
1/32	.028-.034
3/64	.043-.052
1/16	.057-.069

Standard material thicknesses are listed above. Other thicknesses can be produced if sufficient requirements exist. Please contact Vellumoid Division for information on the availability of thicknesses not shown.

Velbestos 310

Functional Property Ratings

The physical test data that are used for material specifications, while valuable for quality control, do not give adequate information about how a material will perform in a gasket application.

Therefore, we have prepared qualitative ratings of the functional properties of Velbestos 310 to help identify the kinds of service for which the material is designed. The properties rated are those which, in most applications, are of prime importance. To provide a comparison we have also rated the functional properties of three other types of materials.

The ratings should be interpreted as follows:

1 — Excellent performance; for applications where this property is critical.
2 — Very good performance.
3 — Adequate performance.
4 — Acceptable performance; will provide good service when this property is of secondary importance in the application.
5 — Marginal performance; suitable only when this property is not a factor in the application.

The Functional Property Ratings provide a guide for selecting a gasket material. However, as a rule, it is also advisable to evaluate the performance of the gasket in the application itself. This will insure that all operating requirements have been satisfied.

Functional Property	Velbestos 310	Vellumoid 505 Fibre*	Velbuna [illegible]-25**	Velbestos 250***
Torque retention	2	[illegible]	3	1
Sealability				
Light flange loads	2	[illegible]	3	1
Moderate flange loads	1	1	2	1
High flange loads	1	1	1	1
Approximate compressibility @ 1000 psi.	15%	[illegible]	20%	[illegible]
Resistance to effects of fluid sealed				
Petroleum oils	2	1	2	1
Fuels	3	1	3	1
Water	1	1	1	1
Maximum operating temperature	500°F	250 F	300 F	500 F
Resistance to flange adhesion	2	1	2	2
Dimensional stability	1	3	2	1
Cost ratio (Vell. 505 Fibre = 1.0)	1.8	1.0	1.4	2.1

*Treated fiber material **Rubber-cellulose medium density material ***Nitrile rubber-asbestos material

ET-00348

Velbestos 310 provides a combination of valuable properties for a wide variety of gasket applications. It has relatively high density for excellent torque retention. Its asbestos-rubber content gives high sealing ability. In addition, Velbestos 310 is an economical material, even when compared to materials with far fewer attributes.

The use of Velbestos 310 is suggested for consideration in the following general situations:

LIGHTLY LOADED FLANGES

If flanges are lightly loaded and yet reasonably rigid, Velbestos 310 will provide better service than most cellulose fiber type materials.

HIGH TEMPERATURE APPLICATIONS

While cellulose fiber grades are not suitable for operating temperatures over 300°F., Velbestos 310 will provide service up to 500°F.

COMPRESSED ASBESTOS

For cost reductions, Velbestos 310 should be evaluated in applications using SBR rubber bonded compressed asbestos. If the application is not severe, Velbestos 310 will give excellent service at a substantial cost saving.

SERVICE LIMITATIONS

GASOLINE AND SOLVENT APPLICATIONS

Since Velbestos 310 does not have high resistance to aromatic fuels or solvents, its use is limited in sealing these materials. For greater resistance, Velbestos 250 or Velbuna WG-5 should be considered.

HEAVY DUTY APPLICATIONS

Where high internal pressures, shock loads, high oil temperatures or other severe operating conditions exist, Velbestos 310 may not have adequate physical properties to withstand the operating conditions. If this proves a problem, an oil resistant material such as Velbestos 260 or Velbestos 170-1 should be considered.

OUT OF FLAT OR DISTORTED FLANGES

Because of the low compressibility of Velbestos 310, the material may not compensate for out-of-flat conditions which sometimes exist in stamped metal parts under light loads. In these cases, a more compressible material may be required. The use of Vellumoid 505 Fibre, Velcar B or Velbuna WG-77 should be considered under these conditions.

ET-00349

VELLUMOID DIVISION
FEDERAL-MOGUL CORPORATION
WORCESTER, MASSACHUSETTS 01608

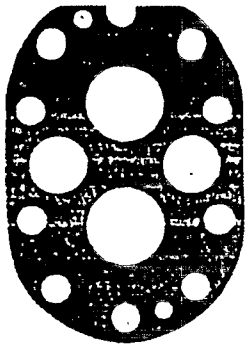
GASKET MATERIALS

SPECIAL RUBBER COMPOSITIONS	Velcon Materials
RUBBER-CELLULOSE FIBER	Velbuna WG-1 Velbuna WG-5 Velbuna WG-6 Velbuna WG-25 Velbuna WG-40 Velbuna WG-77 Velbuna WG-80 Velbuna WG-95
RUBBER-ASBESTOS FIBER	Velbestos 250 Velbestos 260 Velbestos 305 Velbestos 310
TREATED FIBER	Vellumoid Fibre Vellumoid 505 Fibre Vellumoid 444 Fibre Vellumoid 477 Fibre
RUBBER COATED MATERIALS	Velcar Nicote Bucar Velcote
ADHESIVE COATED MATERIALS	Velbond
RESIN IMPREGNATED MATERIAL	Vellutex
UNTREATED FIBER MATERIALS	Natural MRP Fibre Red MRP Fibre
COMPRESSED ASBESTOS MATERIALS	Velbestos 170-1 Velbestos 170-R Velbestos 170-5 Velbestos 130-B Velbestos 140-B Velbestos 170-4B Velbestos 172-B
STEEL & ASBESTOS MATERIAL	Velclad SK-1

ET-00350

VELLUMOID DIVISION

2015



COMPRESSED ASBESTOS MATERIALS

Velbestos 130-B & Velbestos 170-1

Velbestos 130-B is a compressed asbestos gasket material bonded with SBR (styrene-butadiene) rubber. It may be used with petroleum oils and fuels where moderate swelling is not objectionable. Velbestos 130-B exhibits excellent resistance to water, steam, anti-freezes and salt solutions.

Velbestos 170-1 is a premium grade of compressed asbestos gasket material made from long fibered asbestos bonded with neoprene (chloroprene) rubber. It possesses excellent resistance to petroleum oils and fuels. Velbestos 170-1 is also highly resistant to water, anti-freezes, caustic soda, salt solutions and many hydrocarbon solvents. It will not corrode aluminum or magnesium alloys.

Both materials are capable of withstanding high compressive loads. Their temperature limit is approximately 500° F.

	Velbestos 130-B	Velbestos 170-1
Compressibility @ 5000 psi. load, %	7–17	7–17
Recovery, minimum %	45	45
Tensile Strength		
Longitudinal, minimum psi.	4000	4000
Transverse, minimum psi.	2000	2000
Fluid Immersion		
ASTM Oil No. 3—5 hours at 300°F.		
Compressibility, maximum %	—	30
Loss in Tensile Strength, maximum %	70	50
Thickness Increase, %	20–50	15–30
ASTM Ref. Fuel B—5 hours at 70-80°F.		
Weight Increase, maximum %	35	30
Thickness Increase, %	15–35	10–25

Test Methods

Compressibility and Recovery: ASTM F 36-66, Procedure A
Tensile Strength and Fluid Immersion: ASTM F 104-68T, Type 1 Materials

Compliance with ASTM, SAE and Federal Specifications

ASTM F 104-68T and SAE J90b Classification System
- Velbestos 130-B: F112500-M6
- Velbestos 170-1: F112400-M6

ASTM D 1170-62T and SAE J90a Specifications
- Velbestos 130-B: P1161A
- Velbestos 170-1: P1151A

MIL-A-7021B Military Specification
- Velbestos 170-1: Class I

AMS 3232J Specification (SAE)
- Velbestos 170-1

DIESEL ENGINES

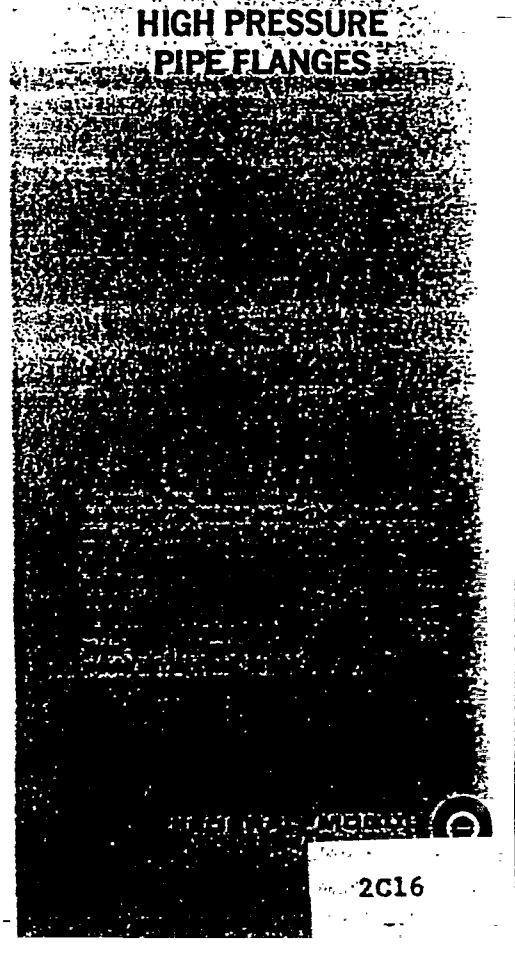
AIRCRAFT ENGINES

HEAVY DUTY TRANSMISSIONS

HEAVY DUTY AXLES

HIGH TEMPERATURE GASKETS

HIGH PRESSURE PIPE FLANGES



ET-00351

Thickness Tolerances

Nominal Thickness	Velbestos 130-B	Velbestos 170-1
1/64"	.013-.020"	.013-.020"
1/32	.026-.036	.026-.036
1/16	.056-.068	.056-.068

Standard material thicknesses are listed above. Other thicknesses can be produced if sufficient requirements exist. Please contact National Seal Division for information on the availability of thicknesses not shown.

Applications

Sealing Characteristics

Velbestos 130-B and 170-1 provide exceptionally good sealing performance under a wide range of compressive loads with rigid flanges.

Torque Retention

The relaxation properties of Velbestos 130-B and 170-1 surpass those of most other types of resilient gasket materials. This characteristic yields outstanding torque retention in many applications.

High Strength

The inherent strength of Velbestos 130-B and 170-1 make them especially well suited for many applications involving high internal pressures. This property also enables these materials to perform satisfactorily under high flange loads without rupture or extrusion.

Service Limitations

THICKNESS CONTROL

Thickness tolerances normally cannot be held as closely as for beater addition asbestos materials. Where tighter control is required, Velbestos 250, 260, 310, 840 and 880 materials should be considered, depending on the performance needs of the application.

DISTORTED FLANGES

Since Velbestos 130-B and 170-1 are relatively low in compressibility, they may not compensate adequately for out-of-flat conditions which often exist in stamped metal flanges. In such instances, a more compressible material may be required. Velbestos 310, 840, or softer materials if necessary, should be considered.

ET-00352

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Interoffice Letter

MATERIALS SPECIFICATION
DISTRIBUTION LIST

Date: JUNE 9, 1989

From: MICHAEL S. WALKER Extension No.: 8098

Office: MATERIALS ENGINEERING Location: 66-1

Subject: **REVISION OF MS-373**

This specification has been revised to delete all reference to asbestos materials.

MICHAEL S. WALKER

MSW/pbk
Attachment

FOR REFERENCE ONLY
UNCONTROLLED COPY

A—Action Necessary
B—Contents Essential
C—Information Only

Material Specification

ELLIOTT

Jeanne
Pennsylvania 15644

MS 373

Subject: LUBRICATED & GRAPHITED PACKING, BRAIDED NON-ASBESTOS

Date 6-9-89 Page 1 of 1
Superseded Date 4-25-63

R 1. Scope:

1.1 This specification covers a soft resilient braided packing made from organic fibers. The packing is thoroughly impregnated with a high flash point lubricant and graphite.

2. Service:

2.1 This material shall be suitable for centrifugal or rotary pumps handling hot or cold water, cold oils, caustic solutions, and weak acids.

3. Sizes and Packaging:

3.1 Sizes from 1/8" up to and including 1/2" shall be supplied in spool form. Sizes 9/16" and over shall be supplied in coil form. Size and quantity must be specified on the purchase order.

FOR REFERENCE ONLY
UNCONTROLLED COPY

ET-00354

INITIATED BY Michael S. Walker DATE 6.8.89 APPROVED 6/9/89

NOTE: THIS SHEET NOT TO BE SENT TO SUPPLIERS.

S1. Approved Source:

Material	Manufacturer
Style K1761 Interlace Braided Non-Asbestos Packing.	John Crane-Houdaille Inc.

R △

FOR REFERENCE ONLY
UNCONTROLLED COPY

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 373

Date April 25, 1963

Sheet 1 No. SHEETS 2

Title: Square Braided Asbestos, Lubricated and Graphited Packing

I. Scope: This specification covers a soft resilient square braided packing made from asbestos yarns. The packing is thoroughly impregnated with a high flash point lubricant and graphite.

II. Service: This material shall be suitable for centrifugal or rotary pumps handling hot or cold water, cold oils, caustic solutions and weak acids.

III. Sizes and Packaging: Sizes up to and including 1/2 inch shall be supplied in spool form. Sizes 9/16 inch and over shall be supplied in coil form. Size and quantity must be specified on the purchase order.

FOR REFERENCE ONLY
UNCONTROLLED COPY

Approved [signature]

Approved [signature]

Approved

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

(M)

MATERIAL SPECIFICATION No. 373

Date April 25, 1963

Sheet 2 No. SHEETS 2

Note: This sheet not to be sent to suppliers.

Approved Source:

Material	Manufacturer
Style 810 Square Braided Asbestos Packing	Crane Packing Co.
Style 193 Square Braided Asbestos Packing	U. S. Packing Co.

FOR REFERENCE ONLY
UNCONTROLLED COPY

Approved

Approved

Approved

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 375

Date April 25, 1963

Sheet 1 No. SHEETS 2

Title: Round Twisted Asbestos, Lubricated and Graphited Packing

I. Scope: This specification covers a round twisted asbestos packing made from long fibre Canadian asbestos yarn. The packing shall be thoroughly impregnated with a high heat resisting lubricant and graphite.

II. Service: Shall be suitable for packing small spaces subjected to high pressure steam, hot or cold water or oil.

III. Sizes and Packaging: This material is available in sizes from 1/16 inch to 1/2 inch diameter. All sizes progress by sixteenths. Normally supplied on spools. Size, length in feet or weight required shall be specified on the purchase order.

Approved

Approved

Approved

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 375

Date April 25, 1963

Sheet 2 No. SHEETS 2

Note: This sheet not to be sent to suppliers.

Approved Source:

Material	Manufacturer
Style 814 Round Twisted Asbestos Packing	Crane Packing Co.
Style 185 Round Twisted Asbestos Packing	U. S. Packing Co.

Approved _____

Approved _____

Approved _____

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 376

Date April 25, 1963

Sheet 1 No. SHEETS 2

Title: Wire Inserted Woven Asbestos, Slotted Gasketing Tape

Scope: This specification covers a slotted asbestos tape constructed of two parallel courses or strips of wire - inserted asbestos cloth frictioned with rubber cement and spaced 7/16 inch apart. These parallel strips are joined together with a fabric connecting member.

Use: Must be suitable for gasketing flanged joints on large tanks or other equipment where high temperatures and pressures exist.

Sizes: Sizes range from 1-3/16 inch width and from 1/8 inch in thickness. Width and thickness must be specified on the purchase order.

ET-00360

Approved

Approved

Approved

6A1

orm 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 376

Date April 25, 1963

Sheet 2 No. SHEETS 2

Note: This sheet not to be sent to suppliers.

Approved Sources:

Material	Manufacturer
617 Gasketing Tape	Garlock, Inc.

ET-00361

Approved

Approved

Approved

6A2

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 377

Date June 14, 1963

Sheet 1 No. SHEETS 2

Title: Asbestos Roving - Thread Reinforced

I. Scope: This specification covers a fire resistant product made from carded asbestos fibre and cotton, which is mechanically rubbed into a uniform roving around a core of cotton yarn.

II. Asbestos Content:

Min. - 80%
Max. - 84%

III. Service Temperature: Material supplied to this specification shall be capable of withstanding a maximum temperature of 450°F.

IV. Grade and Size: Material supplied shall be ASTM D-375, underwriters' grade.

Available size range shall be between 5 and 14 "cut" inclusive.

V. Standard Specification: Material supplied to this specification shall meet the requirements of ASTM D-375, latest revision.

Approved [signature]

Approved [signature]

Approved

6B1

ET-00362

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 377

Date June 14, 1963

Sheet ~~2~~ S1 No. SHEETS ~~2~~ S1

Title: Asbestos Roving - Thread Reinforced

Note: This sheet not to be sent to suppliers.

Approved Source:

Johns Manville Corporation

Note that size (cut) must be specified on the purchase order. At present our only stock size is 5 cut, but other sizes may be required for future requirements.

Approved [signature]

Approved [signature]

Approved

6B2

ET-00363

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 378

Date June 14, 1963

Sheet 1 No. SHEETS 2

Title: Asbestos Yarn - Plain

I. Scope: This specification covers a fire resistant product known as single asbestos yarn which is made from an asbestos roving.

II. Asbestos Content:

Min. - 95%
Max. - 98%

III. Service Temperature: The material supplied to this specification shall be capable of withstanding a maximum temperature of 750°F.

IV. Grade and Sizes: The material supplied shall be ASTM D-299 AAA Grade.

Sizes available shall be between 5 and 18 "cut" inclusive.

V. Standard Specification: All provisions and requirements of ASTM D-299, latest revision, shall apply.

Approved W. H. Robhouse

Approved J. A. Conner

Approved

ET-00364

6C1

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 378

Date June 14, 1963

Sheet 2 No. SHEETS 2

Title: Asbestos Yarn - Plain

Note: This sheet not to be sent to suppliers.

Approved Source:

Johns Manville Corporation

Note that size (cut) must be specified on the purchase order. At present our only stock size is 16 cut, but other sizes may be required for future requirements.

Approved _____

Approved _____

Approved _____

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 379

Date June 14, 1963

Sheet 1 No. SHEETS 2

Title: Asbestos Yarn - Waxed

I. Scope: This specification covers a fire retardant product known as single asbestos yarn which is made from rubbed asbestos roving. The finished yarn shall have a waxed surface.

II. Asbestos Content:

Min. - 80%
Max. - 84%

III. Service Temperature: The material supplied to this specification shall be capable of withstanding a maximum temperature of 450°F.

IV. Grade and Sizes: The material shall be ASTMD-299, underwriters grade.

Sizes available shall be between 5 and 18 "cut" inclusive.

V. Standard Specification: All provisions and requirements of ASTM D-299, latest revision, shall apply.

Approved W. H. Arthur

Approved J. A. Carman

Approved

ET-00366 | 6D1

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 379

Date June 14, 1963

Sheet 2 No. SHEETS 2

Title: Asbestos Yarn - Waxed

Note: This sheet not to be sent to suppliers.

Approved Source:

Johns Manville Corporation

Note that size (cut) must be specified on the purchase order. At present our only stock size is 8 cut, but other sizes may be required for future requirements.

Approved

Approved

Approved

ET-00367

6D2

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 433

Date August 15, 1963

Sheet 1 No. SHEETS 2

Title: Packing, Asbestos, Round, High Temperature

I. Scope: This specification covers a high temperature steam packing, of round cross section, made from braided long fibre white asbestos yarn.

II. Service: This material shall be suitable for service on slow speed dynamic applications, valve stems, and expansion joints, involving hot water and steam to 1250°F.

III. Treatment: This material shall be supplied without an internal lubricant. A surface coating of graphite shall be used.

IV. Sizes and Packaging: Sizes from 1/16" up to and including 3/16" round shall be supplied on 1 and 5 lb. spools. Sizes 1/4" through 1" shall be packaged as boxed coils.

Size and quantity must be specified on the purchase order.

Approved

Approved

Approved

Form 247 B (11-62)

Elliott

JEANNETTE, PA.

MATERIAL SPECIFICATION No. 433

Date August 15, 1963

Sheet 1 of 1 No. SHEETS 1 of 1

Title: Packing, Asbestos, Round, High Temperature

Note: This sheet not to be sent to suppliers.

Approved Source and Materials:

Garlock, Inc. - #1700 Braided White Asbestos Packing

Approved [signature]

Approved [signature]

Approved

ET-00369

4C2

Elliott
A Division Of
Carrier Corporation

MATERIAL SPECIFICATION NO. 473

Form 247 A (4-64)

SUBJECT	Date 10/26/71	Page 1 of 1
SHEET ASBESTOS	Superseded Date	NEW

1. Scope:

1.1 This specification covers a grade of commercially available sheet asbestos normally used for packing.

2. Stocked Size:

2.1 1/16" thick x 36" wide

3. Reorder Point:

3.1 3 rolls

4. Reorder Quantity:

4.1 10 rolls

5. Approved Grade:

5.1 J-102

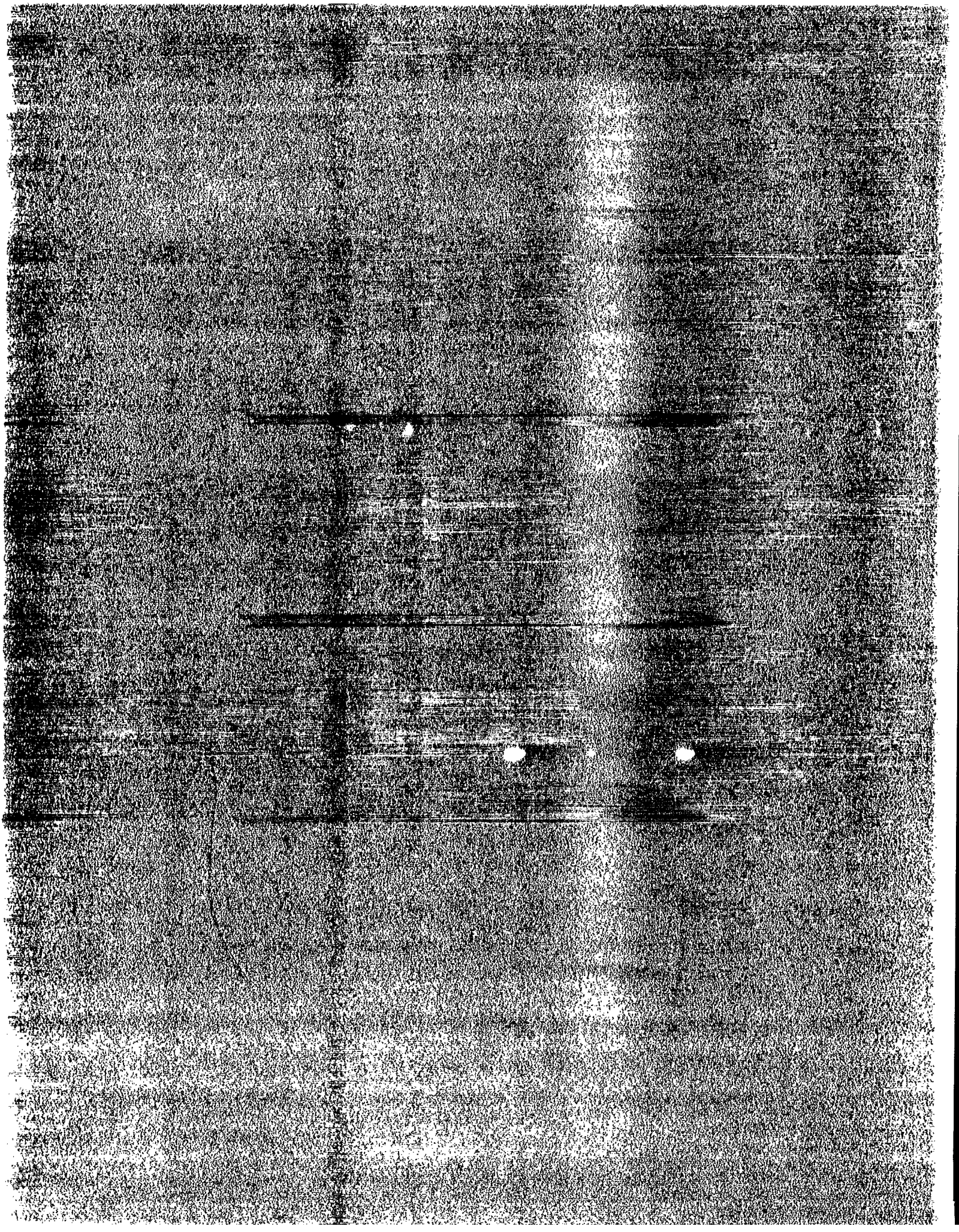
6. Approved Vendor:

6.1 Johns-Manville Sales Corporation

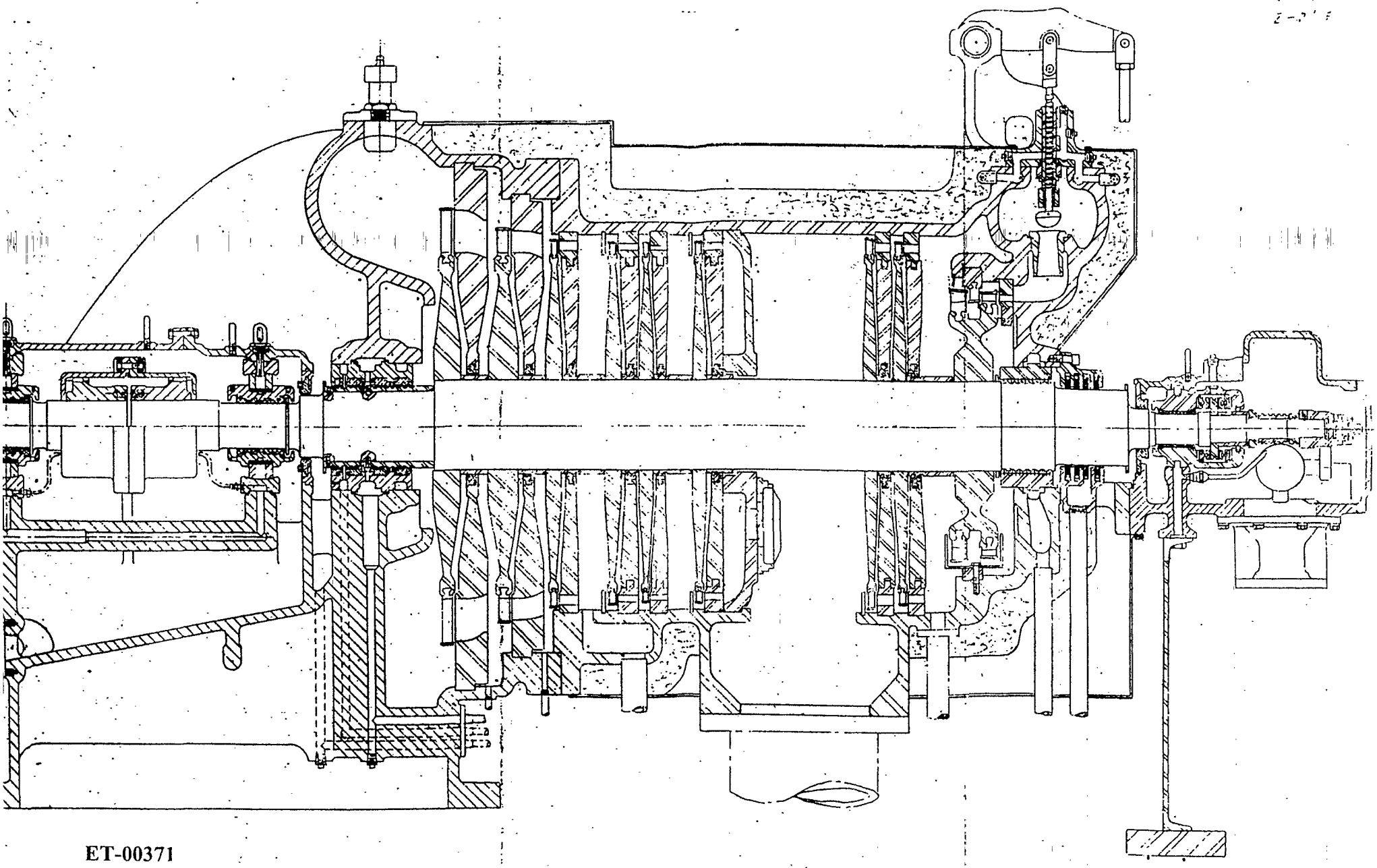
ET-00370

Approved	Approved	Approved

2E1

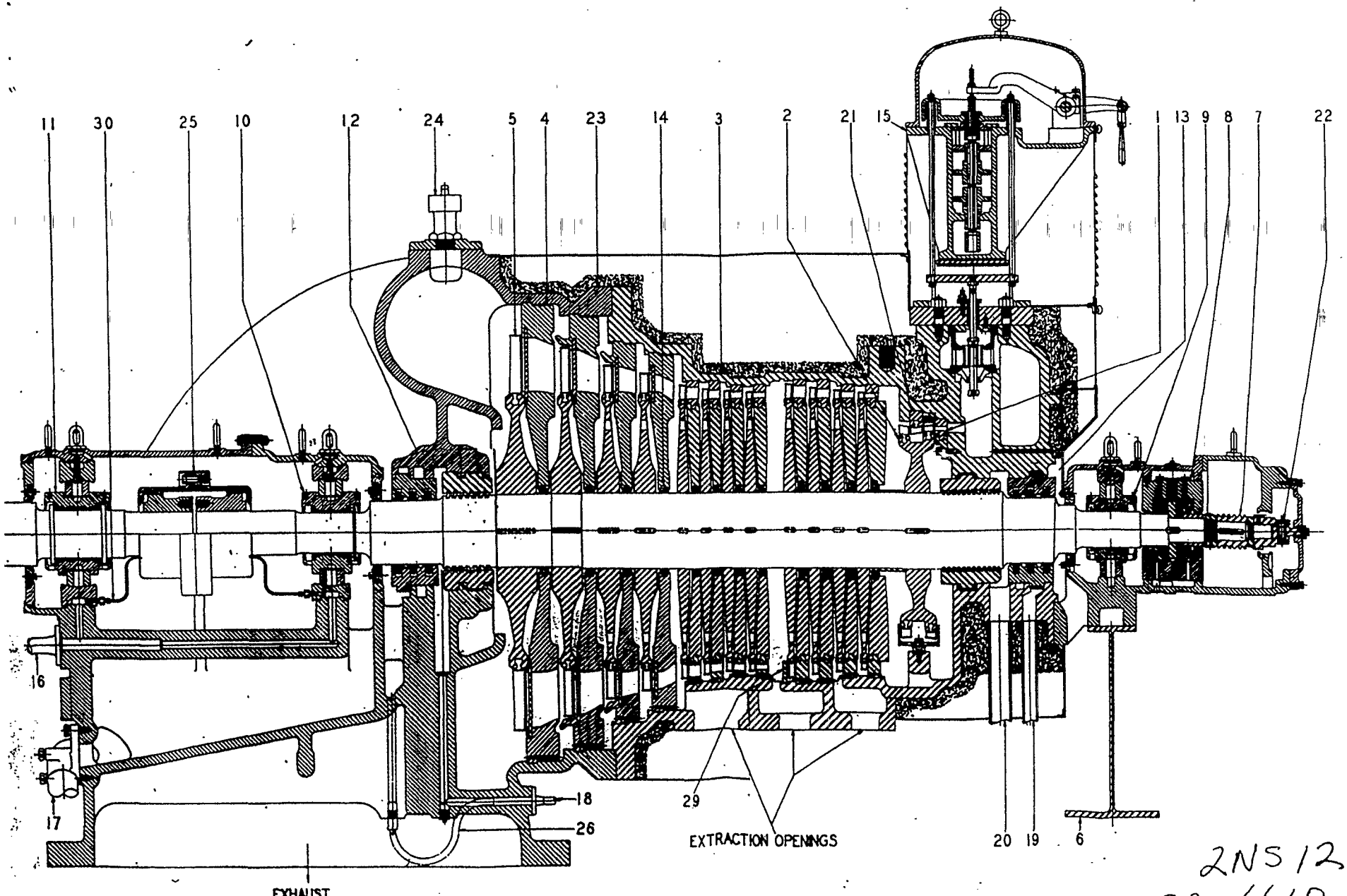


2QV8
S.O. 7180



ET-00371

CROSS SECTION OF TURBINE



ET-00372

CROSS SECTION OF TURBINE

2N512
S.O. 6610

Form No. 1081 3-47 70032 ● Dittoforms

ORDER RECORD

S.O. 40359

TURBINE DEPT. (BY AAC) 12-7-48 (DATE ISSUED) E— 158986

DESIRED SHIPPING DATE MARCH 1949 SCHEDULED SHIPPING DATE ~~MARCH~~ 1949 ~~AES~~ June

TYPE OF PLANT POWER NO. UNITS ONE SOLD WITH (GIVE M.O. OR S.O. NOS. OTHER EQUIP.)

FORM 1081-B TURBINES

SERVICE RECORD	USER OKLAHOMA A & M COLLEGE	SER. NO. 14109
SHIPPED	STATE OKLAHOMA CITY STILLWATER,	S.O. 40359
	PURCHASER FEDERAL SUPPLY COMPANY	GEAR SER. NO. -----
	ADDRESS OKLAHOMA CITY, OKLAHOMA	
TURB. ROTATION (FACING GOV.)	ENGINEER COSTON & FRANKFURT	E— 158986
	P.O. 47834 DATED 11-24-48	DATE 12-7-48
~~CLOCKWISE~~	H.P. ~~[illegible]~~ 74 TYPE TURB. 2AYR	GEAR V-62
COUNTER CLOCK	R.P.M. TURB. 3800 R.P.M. GEAR 1150	
GENERATOR	TYPE GOV. STANDARD & EMERGENCY	BEARINGS — (R.O.) — (L.O.)
M.O.	STEAM CONDITIONS 250# - 600° F.T.T. - 10#B.P.	
SERIAL	HAND VALVES ONE	EXH. (FACING GOV.) — ~~(R.H.)~~ — (L.H.)
EXCITER	CASING MATERIAL class II	
M.O.	DRIVEN MACHINE PUMP	
SERIAL		

SUPERHEAT PARTS ☒ YES ☐ NO ☒ 600° ☐ 750° ☐ SPECIAL

HAND SPEED CHANGER ☒ YES ☐ NO ☐ SPEED RANGE PLUS OR MINUS 5%

PRESS. REG. ☐ YES ☒ NO ☐ CONST. ☐ EXCESS ☐ BUILT-IN ☐ SEPARATE ☐ SPECIAL

PRESS. REG. CONDITIONS #G PUMP DISCH. PR. # EXCESS PR.

MOUNT PURCHASER'S HALF COUPLING ☐ YES ☒ NO

TURB. (OR GEAR) SHAFT END ☒ STD. ☐ SPECIAL

GEAR OFFSET (FACING GOV.) ☐ RIGHT ☐ LEFT ☒ VERT.

RANGE OF VAR. SPEED OIL GOV. TO RPM.

BASEPLATE ☐ YES ☒ NO SOLEPLATE ☐ YES ☒ NO DRIP RIM ☐ YES ☐ NO ☐ SPEC.

INSULATION & LAGGING ☒ YES ☐ NO ☒ PAINTED ☐ STNLS. STEEL ☐ SPEC.

DRIVEN MACHINE COUPLING ☐ YES ☒ NO ☐ SPEC.

DRIVEN MACHINE FURNISHED BY ☐ ELLIOTT ☒ PURCHASER. MOUNT DRIVEN MACHINE ☐ YES ☒ NO

STEAM STRAINER ☒ STD. ☐ SPEC.

COUPLING BETWEEN TURB. & GEAR ☐ STD. ☐ SPEC.

OIL COOLER ☒ STD. ☐ SPEC. WATER TEMP. 85 °F ☒ FRESH ☐ SALT

H.V. SETTING CLOSED FOR 43 H.P.

SPECIAL

FURNISH #1280 NUGENT OIL FILTER
GEAR TO BE CAPABLE OF DELIVERING 80 H.P.

SUBJECT TO 20% ADJUSTMENT

3-47 70032 ● Dittoforms

PROVIDE 7 PRINTS FOR (APPROVAL) ~~(RECORD)~~

PROVIDE 1 INSTRUCTION BOOKS

PAINTING REQUIREMENTS: ☒ STD. ☐ SPEC.

TEST OR INSPECTION NONE

SHIPPING PREPARATION: ☒ STD. ☐ SPEC.

CONTRACT PRICE UNIT CONTRACT PRICE UNIT WEIGHT 2350#

TERMS: ☐ NET 30 DAYS ☐ STD. CONTRACT ☐ PENALTY ☐ BOND REQUIRED ☐ SPECIAL

FIELD WORK
☒ NONE
☐ SUP'T. ONLY
☐ COMPLETE ERECTION

APPROVAL

ENGINEER	APPROVED BY	DATE
	AB	12/ [illegible]
	Bcn	6/1/49

FT-00373

FORM 312A

ENGINEERING DEPARTMENT

Record Descriptive Specifications - Turbine

Turbine No. 14109 Gear No. V-62 S.O. 40359

Purchased By Federal Supply Co., Oklahoma City, Okla. E- 158986

For Oklahoma A & M College, Stillwater, Okla. Date 12/10/48

H.P. St. Conn. 2" RH
L.P. St. Conn. None
Exh. Conn. 6" LH
Extrac. Conn. None
Steam Strainer Built-in
Shaft Size 2-1/4" Dia.
St. End Pkg. 4 Rings
Diaph. Pkg. None
Exh. End Pkg. 4 Rings
Superheat Parts Yes

Governor Std. (Small)
Speed Changer Hand
Emerg. Gov. Yes
Trip Mech. Std.
Low Oil Pr. Trip None
Thrust Brg. Ball
St. End Brg. Bracket
Exh. End Brg. In Gear Case
Water Cooled Brgs. Yes

Valve Sizes (Order of opening)

	Inlet	Extraction
1	1" Fluted	
2		
3		
4		
5		
6		
7		

Hand Valves 1

Valve location on nozzle sheet

Name Plate Rating
Type 2AYR
Hp.-~~Exc~~ 74
R.p.m. 3750
St. Press. 250 psig
St. Temp. 600 °F.
Exh. Press. 10 psig
Exh. Vac. -- In. Hg. Abs.
Extrac. Press. -- psig
Rotation LH

Instruction Book - Special or No. 100

Special Construction

Rotor assembly for 6190 rpm max. trip
4600 rpm trip
Cast steel steam end & steam chest for 600°F
Insulation & painted lagging
#1280A Nugent oil filter & stand
1/16" orifice in gear brg. oil lines

1" 15° V > 1V².
CB
4-12-62

Outline Y-625906

Gears Size 8.5 x 4.5 B.H.P. 74 Ratio 3.26/1 Speeds 3750/1150
Baseplate C.I. Combining plate Soleplates under turb. & gear L.S. Not furnished
Couplings H.S.
Oil System Pump Size .312 Gal./100r.p.m. Driven From Gear Piping Material Th. Wl. Stl.
Oil Tank In Gear Case Oil Strainer Nugent F.F. Turbine Brgs. None
Oil Cooler Gross RV-25 Auxiliary Pump None F.F. Driven Mach. Brgs. None

Driven Machine

Pump (Not furnished)

Auxiliary Apparatus

1 - Nugent #1280A - 4R Oil filter)
1 - Fig. 1116MA Tripod stand) P. O. 60395
1 - Gross RV-25 oil cooler

Copies
Spec. ✓
2AYR Turb.
Turb. Eng.
Turb. Sales
8.5 x 4.5 Gear

ET-00374

SHIPPING DATA COPY

ELLIOTT COMPANY

JEANNETTE, PENNA.

RECORD NO. E-153422
S.O. 40209
82.17

USTOMER'S RDER NO. & DATE C-598062 12-18-47
EQUISITION NO.
ONTRACT NO.

OUR ORDER NO E-153422

SOLD TO
INGERSOLL-RAND COMPANY
PHILLIPSBURG, NEW JERSEY

HIPPED TO AND ESTINATION
INGERSOLL-RAND COMPANY
CAMERON DIVISION
PHILLIPSBURG, NEW JERSEY

TATE OF

SOLD BY NEW YORK
PHILADELPHIA
TULSA

ATE SHIPPED 11-22-48 FROM JEANNETTE, PENNA. PREPAID OR COLLECT XXXXXXXXX

AR INITIALS & NO.

OW SHIPPED MODERN TRANSFER - COLLECT
OUTE
ERMS: NET 30 DAYS F.O.B. JEANNETTE, PENNA. (NO CASH DISCOUNT ALLOWED)

	DATE RECEIVED	DATE FORWARDED
SHIPPING DEPT.	9-17-48	NOV 23 1948
COST DEPT.		
APPLIC. ENG. DEPT.	1-2-48	
SHIPPING RECORD DEPT.	11/26/48	
ACCOUNTING DEPT.		NOV 2 1948
PROD. ENG. DEPT.		XXXXXXXXXX

JANTITY	DESCRIPTION	SERIAL NUMBER	CAT. - DWG. NUMBER	AMOUNT SHIPPED
2	95 H.P., 3500 R.P.M., FORM 2AYR TURBINE EQUIPPED WITH STANDARD & EMERGENCY GOVERNOR, 1 HAND VALVE, SUPERHAT PARTS, BUILT-IN EXCESS PRESS. REGULATOR, INSULATION AND PAINTED LAGGING,	13753 13754	40209	2

BILLED NOV 24 1948

NORMAL STEAM CONDITIONS
250# - 600° F.T.T. - 10#B.P.

MARK: P.O. C-598062

MARK: INGERSOLL-RAND P.O. 29-9111

FOR: OKLAHOMA A & M COLLEGE
STILLWATER, OKLAHOMA

2-CRATED TURBINES 2300# PKG. ATTACHED TO EACH CONTAINING:
7-WRENCHES
1-BOLT
2-BOXES 130# CONTAINING FISHER GOVERNOR

DATE ENTERED 2-20-48 JH(1200)P.M.D.
B/L ~~OR EXPRESS RECEIPT TO~~ 9-15-48 K.J.
WITH INV.

3 SHIPPING NOTICE TO PURCHASER
ATTN: C. B. HIGBEE
2 PACKING LIST TO PURCHASER

ITEMS SHOWN IN COLUMN "AMOUNT SHIPPED" WERE FORWARDED ON 11-22-48 VIA MODERN TRANSFER CO.

CHECKED BY CG

ET-00375

IPPED BY

FORM 312A

ENGINEERING DEPARTMENT

Record Descriptive Specifications - Turbine

Turbine No. 13753,13754 Gear No. None S.O. 40209

Purchased By Ingersoll-Rand Co., Phillipsburg, N.J. E- 153422

For Oklahoma A & M College, Stillwater, Okla Date 3-30-48

H.P. St. Conn. 2" R.H.
L.P. St. Conn. None
Exh. Conn. 6" L.H.
Extrac. Conn. None
Steam Strainer Built-in
Shaft Size 2-1/4" Dia.
St. End Pkg. 4 rings
Diaph. Pkg. None
Exh. End Pkg. 4 rings
Superheat Parts yes

Governor Std. (Small)
Speed Changer None
Emerg. Gov. Yes
Trip Mech. Std.
Low Oil Pr. Trip None
Thrust Brg. Ball
St. End Brg. Bracket
Exh. End Brg. Pedestal
Water Cooled Brgs. Yes

Valve Sizes (Order of opening)

Inlet	Extraction
1. 1" S.S.	1.
2.	2.
3.	3.
4.	4.
5.	
6.	
7.	

Hand Valves 1-2-1/4"
Valve location on nozzle sheet

Name Plate Rating
Type 2AYR
Hp. 95
R.p.m. 3500
St. Press. 250 psig
St. Temp. 600 °F.
Exh. Press. 10 psig
Exh. Vac. - In. Hg. Abs.
Extrac. Press. - psig
Rotation R.H.

Instruction Books - Special or No.

Special Construction

6190 RPM Max. trip - Rotor Assembly
4050 RPM Trip
H.V. for 71 hp.
Fisher Built-in excess pressure regulator for 70# excess
Pressure and 320# G pump discharge pr.
Cast Steel steam end & steam chest for 600° F
Insulation & Painted lagging.

Outline-612921

Gears Size None B.H.P. Ratio Speeds
Baseplate None Soleplates
Couplings H.S. Not furnished L.S.
Oil System Pump Size Gal./100r.p.m. Driven From Piping Material
Oil Tank Ring oiled Oil Strainer F.F. Turbine Brgs.
Oil Cooler Auxiliary Pump F.F. Driven Mach. Brgs.

Driven Machine

Pump (Not furnished)

Auxiliary Apparatus

2 - 444 Fisher Regulator Topworks P.O. #39612

Copies

Spec.
Turb.Eng.
Turb.Sales
2AYR Turb.

ET-00376

J CARLISLE DEHAY, JR.
(1922 - 1991)

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2001 MAY 15 AM 8:40

May 14, 2001

VIA HAND-DELIVERY

Mr. Ben Dubose
BARON & BUDD, P.C.
3102 Oak Lawn Avenue, Suite 1100
Dallas, TX 75219

RE: Cause No. CC-99-08033-B; *Malcolm Murphy, et al. v. Owens Corning, et al.*

Dear Ben:

Enclosed please find Defendant Elliott Turbomachinery's Objections and Responses to Plaintiffs' (Second) *Duces Tecum* Document Requests.

Should you have any questions regarding this matter, please feel free to call at any time.

Sincerely yours,

Anita F. Woolsey
Paralegal to John W. Arnold

AFW:kjt
Encls.
cc: All known counsel via first class mail