FILE NAME: Ameron (AME)

DATE: 0000

DOC#: AME002

DOCUMENT DESCRIPTION: Ameron Liability Outline

AMERON LIABILITY OUTLINE

A. Ameron Corporate History

- Current name: Ameron International (Amercoat is a division name, not corporate)
- Formerly: Ameron Pipe and Construction

B. Product History/ID

- No Date: Ameron manufactured certain industrial coatings for professional use that contained asbestos. Most of these products consisted of a liquid and non-liquid component, with the asbestos in the non-liquid component. **(Contreras, Ameron's Response to Stand rog # 15)**
    - Dimetcote- solvent based, liquid-applied inorganic zinc coatings used as thin film primers used for the prevention of corrosion on structural steel. They contained 0.34% to 5.92% asbestos by weight, and .42% to 3.44% asbestos by volume when they were made with asbestos.
    - Somastic- tar-like substance made up of sand, asphalt, cement and a small amount of asbestos thickener and it was used to coat buried pipe.
    - NuKlad- epoxy products that provided chemical resistant protective coating for concrete and expansion joint compounds at nuclear facilities. These products contained a resin and powder. The asbestos was 0.19% to 5.4% by weight and 0.16 to 2.48 by volume during the time they contained asbestos.
    - 42 Mastic- heavy-bodied compound formulated to prevent crevice corrosion around seams, bolts, and rough welds in tanks holding dilute acids, and alkalis. It was 23.81 % asbestos by weight, and 9.8% asbestos by volume during the time it was manufactured with asbestos.
    - Nu-Kem- specialty mortars and grouts used w/acid-proof bricks and tile. These products contained 0.24% to 4.14% asbestos by weight during the time they were manufactured with asbestos.
    - Tideguard 171- a two component product consisting of resin and powder that was able to cure underwater. It contained 0.67% to 1.58% asbestos by weight during the frame it was manufactured with asbestos.

  (Contreras, Ameron's Response to Stand rog # 15)

- 1955: Ameron begins producing Bondstrand pipe in 1955 at its South Gate facility, although it is not clear if this piping contained asbestos (**Friedrich Deposition of 3/24/11, at 98:19 – 99:6**).

- 1960: The first production-ready Bondstrand pipe was manufactured in 1960 in South Gate, California (**Friedrich Deposition of 3.24.11, 101:20 – 102:12**).

- 1960s-1970s: Ameron manufactured Bondstrand 4000 and 5000 series pipe which contained asbestos. Bondstrand 4000 was used to transport corrosive chemicals and 5000 was used to transport oxidizing agents and acids. These products contained a liner of asbestos encased in resin. RP-6A and RP-105 adhesives were manufactured to be used with Bondstrand 4000 and 5000 and they contained a small amount of asbestos. (**Contreras, Ameron's Response to Stand rog # 15)**

- Sept. 1968: "Bondstrand Protective Coating: Furan Guard." Furan Guard is a "2-compoent furfuryl alcohol coating specifically designed to offer added protection to the exterior of Bondstrand piping…when it is to be subjected to constant drippage or spillage of certain concentrated acids or alkalis." (**WK AME 5031**).

- Between 1962 and 1964, Ameron begins producing asbestos-containing Bondstrand 4000 series to sell to the public. **(Dalt Bordner Deposition of 9.23.03 at 23:13-24:2)**

- From 1962, when 4000 series pipe began production in Brea until Ameron stopped making Bondstrand w/asb in it, there was a constant process of researching & developing, trying to improve the product. **(Dalt Bordner Deposition of 9.23.03 at 46:19-77:1)**

- Prior to 1971: Bondstrand Series 4000 is first produced (likely around 1965, according to Friedrich). The pipe contained a grey asbestos felt liner, also called an asbestos matte. The pipe fittings also likely contained asbestos matte. Molded fittings were also made with asbestos (**Friedrich Deposition of 3/24/11 at 104:12 – 104:15; 108:2 – 108:7; 115:13 – 116:22; 121:1 – 122:12**).

    - Note: Bondstrand Engineering Guide states Bondstrand Series 4000 pipe has been "extensively used by a wide variety of industries since 1953." This is inconsistent with Friedrich's deposition testimony. (**WK AME 5016**).

- Sometime between 1972 – 1976: Bondstrand changes the lining of its Bondstrand Series 4000 and 5000 pipes to an asbestos paper liner. Paper supplied exclusively by Mead. (**Friedrich Deposition of 3/24/11 at 116:3 – 117:23; 149:9 – 149:22**).

- Oct. 17, 2002 Declaration of Dennis W. Hankey in Support of Motion of Defendant MeadWestvaco Corp. for Summary Judgment in the matter of *Francis Bertot and Cathey Bertot v. Alas Turner, Inc*. Hankey states the only asbestos containing product which Mead ever sold or manufactured for sale to Ameron was an asbestos-containing paper wrap first produced in late 1972. The pipe wrap was a new material developed specifically for Ameron in 1972. Claims product was only sold to Ameron for a short period of time. (**WK AME 5047**).

    - Note: According to Friedrich, Mead supplied asbestos paper liner to Ameron from the early 1970s until asbestos was removed from Bondstrand products in the late 1970s (**Friedrich Deposition of 3/24/11, at 203:10 – 203:18**).

- Early 1970s: Production of asbestos containing Bondstrand Series 5000 begins (likely with asbestos paper). At this time, Series 5000 fittings were also manufactured with raw asbestos as an ingredient (**Friedrich Deposition of 3/24/11 at 118:21 – 120; 129:15 – 131:6; 138:8 – 138:13**).

- No date: RP-6A and RP-106 adhesives, which were designed to be utilized with the Bondstrand Series 4000 and 5000 piping, were asbestos containing (**Friedrich Deposition of 3/24/11 at 157:5 – 157:22**)

- Although asbestos paper replaced asbestos matt for Bondstrand *pipe*, asbestos matt may have still been used in the *fittings* (**Friedrich Deposition of 3/24/11 at 197:3 – 198:8**).

- April 1976: Document entitled "Bondstrand Chemical Resistance Chart: Pipe and Fittings" notes Bondstrand RP-34 and RP-48 Epoxy adhesives, as well as RP-105 polyester adhesives, are recommended for Bondstrand Series 5000. Also notes Series 4000 has a longer service life due to the "increased liner density and thickness" (**WK AME 5018**).

- Friedrich claims Bondstrand labeled their Series 4000 and 5000 pipe products by stenciling "4000" or "5000" on the outside of its pipe fittings (**Friedrich Deposition of 3/24/11, at 275:22 – 276:9**).

- Approximately 1977: the trademark Bondstrand was stamped on the series 4000 and 5000 pipes and those pies were coated yellow on the ends of the pipe with yellow warning labels. **(Contreras, Ameron's Response to Stand rog # 34)**

- The trade mark "Somastic" was stamped on steel pipes coated with somastic. (**Contreras, Ameron's Response to Stand rog # 34)**

- The packaging of the Dimetcote coatings DSP-IM, DSP-IME, DEZ, D-6N, D9 and D9TL' Nu-Klad coatings 100, 107, 109,111,114,750 and 760; Tideguard 171; Amercoat 42; and Nuken coatings 31,123,130, 142A, 400, 410, 415 and 515 all bore the manufacturer's name. **(Contreras, Ameron's Response to Stand rog # 34)**

- 1979: Use of asbestos in Bondstrand Series 4000 and 5000 pipe ceases (**Friedrich Deposition of 3/24/11 at 154:5 – 156:15**)

- Ameron discontinued manufacturing asbestos-containing products in the late 1970s and sales were discontinued by the early 80s. **(Contreras, Ameron's Response to Stand rog # 16)** Ameron discontinued selling asbestos-containing products in the 1980s after the OSHA regulations concerning asbestos went into effect. **(Contreras, Ameron's Response to Stand rog #38)**

C. Asbestos Content of Pipe

- No date: Material procurement record shows asbestos for use in "Cellulose Asbestos Mat." (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 11 at 191:6 – 191:25**).

- Bondstrand pipe used Crocidolite (blue asbestos) in the pipe because the fibers were longer and had a superior chemical resistance. The liner consisted of 40% asbestos and 60% resin. The liner is approximately .060 in thick. The overall asbestos content of the pipe is close to 10%. Both Bondstrand 4000 and 5000 used the same asbestos mat or paper.

    - Bondstrand 4000- 30% epoxy resin, 60% fiberglass, and 10% crocidolite asb mat.
    - Bondstrand 5000- 30% polyester resin, 60% fiberglass, and 10% crocidolite asb mat.
    - Bondstrand fittings- 40% crocidolite asb, 40% resin and 20% inert fillers.

  (Declaration of Dalton W. Bordner 2-17-10; Dalt Bordner Deposition of 9.23.03 at 81:2-82:2)

- Series 4000 contained Crocidolite, blue asbestos fiber. **(Dalt Bordner Deposition of 9.23.03 at 33:15-34:2)**

- May 1964: ASARCO Bulletin on Asbestos Publications, No. 83 at 132 states "An installation of "Bondstrand" Pipe made of resin and glass filament wound on a resin impregnated crocidolite asbestos base. It was produced by Amercoat Corp. and installed at **Stauffer Chemical** Co.'s plant at Compton, Calif." **(WK AME 5059)**.

- Early 70s: Ameron began using an asbestos paper liner in Bondstrand pipe instead of the mat. **(Declaration of Dalton W. Bordner 2-17-10.)**

- 1971: "Bondstrand Series 4000 Pipe: Engineering Guide" states: "Series 4000 Bondstrand is a fiberglass-reinforced epoxy resin pipe designed for use in severe chemical services and operational temperatures…Extensively used by a wide variety of industries since 1953….The liner system used in Series 4000 Bondstrand Pipe is 0.05 resin-impregnated asbestos specially produced by Ameron…" **(WK AME 5016)**.

- 1971: "Bondstrand Series 5000 Pipe: Engineering Guide" states liner is a combination of "C-veil glass and asbestos" **(WK AME 5017)**.

- Oct. 1975: "Specification for Bondstrand Series 4000 Pipe, Fittings and Flanges" states "All filament-wound pipe, fittings and flanges supplied under this specification [Liner] shall contain a resin-rich liner reinforced with C-veil and crocidolite asbestos fibers. The liner shall have a nominal thickness of 0.050. The resin system used in this liner shall be a chemically resistant epoxy resin which has been demonstrated to be satisfactory for the intended service." **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 8 at 175:23 – 176:13; 178:19 – 178:23)(WK AME 5019)**.

- Nov. 1975: "Specification for Bondstrand Series 5000 Pipe, Fittings and Flanges" states "All filament-wound pipe, fittings and flanges supplied under this specification [Liner] shall contain a resin-rich liner reinforced with C-veil and crocidolite asbestos fibers. The liner

shall have a nominal thickness of 0.050. The resin system used in this liner shall be a chemically resistant epoxy resin which has been demonstrated to be satisfactory for the intended service." **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 10 at 181:2 – 182:2)(WK AME 5020)**

D. Warnings

- Sometime after 1972: Ameron Material Safety Data Sheet for Bondstrand 4000 and 5000 pipe and fittings notes hazards of asbestos fibers (including lung damage) and recommends assembly instructions be followed **(Friedrich Deposition of 3/24/11 and 3/25/11, Plaintiffs' Exhibit No. 40 at 315:5 – 319:5; 345:6 – 345:16)(WK AME 5015)**

  - "Bondstrand Series 4000 and 5000 Pipe and Fittings contain up to 5% Crocidolite Asbestos by weight. The limits of asbestos exposure permitted by government regulations are delineated in Section 5208, Title 8 of the Calif. Division Industrial Safety Commission"
  - "Prolonged overexposure may result in lung damage"
  - "The law requires employers to maintain asbestos dust exposure below OSHA limits. Because of the many different conditions which may exist on job site, we cannot provide a recommendation for ventilation. However, based on tests conducted by an independent occupational health consultant at the factors, the asbestos dust which results from cutting or sanding our current product, when cutting and sanding is done in accordance with installation instructions, is within the limits established by OSHA."
  - "Cut and sand this product only with adequate ventilation and in strict accordance with installation instructions."

- In the mid to late 1970s', if not before, Ameron products would have come with a warning/caution label. Ameron, where required by law, would have supplied material data safety sheets for its products to its customers. Most, if not all, of Ameron's industrial coating products had warning and/or caution labels on them from their inception regarding toxic substances contained in the products. Ameron does have examples of the warning labels used with some products, but no longer has copies of all warning labels used. The MSDS also contained warnings. **(Contreras, Ameron's Response to Stand rog # 27, 28, 58, 67, 76)**

- March 1, 1977: Interoffice memorandum from G.G. Robertson of Ameron indicating it would soon be placing warning labels on all asbestos containing products (5 yrs after Spielman report/no instruction for respirator). These are the same warnings and cautions on Ameron's MSDS sheet **(Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 41 at 351:14 – 360:16)**.

- May 2, 1977: Bondstrand adopts caution label at this time. Also, additional caution label placed on Bondstrand Series 4000 and 5000 products: **Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 42 at 372:4 – 377:10)**.

- "Further, to eliminate asbestos dust during assembly the bonding surface of all molded products and the sockets of all filament would epoxy flanges now are coated with a yellow-colored coating and labeled with a yellow warning label…For the proper assembly of Bondstrand Quick-Lock joints, removed yellow coating from all bondants…*Do not sand through light grey area*" (emphasis added)

- Mr. Lambly recalls that there were never any markings on asbestos containing Bondstrand pipe to assist workers who would be cutting or grinding it to know when they would be reaching the asbestos-containing layer. **(Neal Lambly from Daniels at 1000:6-10)**

E. Ameron's Asbestos Orders to Mead

- Jan. 23, 1973: Letter from Christopher Lobos, Group Leader, Specialty Materials, Product Engineering Department, Technical Papers Divisions, The Mead Corp. to Ameron's Dalt Bordner shows order for 10,000 lbs of crocidolite paper (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 18 at 215:13 – 217:1**).

- Apr. 12, 1976: Purchase order from Ameron's Corrosion Control Division to Mead Corp.'s Brad Wilkinson requesting 10,000 lbs of crocidolite asbestos paper (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 26 at 237:18 – 239:2**).

- Jul. 2, 1976: Purchase order from Ameron's Corrosion Control Division to Mead Corp.'s Brad Wilkinson requesting 22,000 lbs of crocidolite asbestos paper (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 27 at 239:9 – 240:3**).

- Aug. 20, 1976: Purchase order from Ameron's Corrosion Control Division to Mead Corp. for 10,000 lbs of crocidolite asbestos paper (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 28 at 240:15 – 241:4**).

- Sept. 16, 1976: Purchase order from Ameron's Corrosion Control Division to Mead Corp. for 20,000 lbs of Bondstrand crocidolite asbestos paper (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 29 at 241:10 – 242:3**).

- Nov. 8, 1976: Purchase order from Ameron's Corrosion Control Division to Mead Corp. for 20,000 lbs of Bondstrand crocidolite asbestos paper (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 30 at 242:9 – 243:3**).

F. Suppliers/Invoices to Ameron

a. Mead

- Mead was an asbestos supplier to Ameron. **(Contreras, Ameron's Response to Stand rog # 15)**

- 1972: Beginning in approximately 1972, Mead was probably the only supplier of the asbestos paper used in Bondstrand. **(Declaration of Dalton W. Bordner 2-17-10.)**

- June 17, 1975: Material Procurement document signed by Ameron's D.W. Bordner lists Mead Grade 642 crocidolite asbestos for use in Series 4000 and 5000 pipe and TBRs. Hazards note "avoid breathing of fibers" **(WK AME 5005)**.

- Feb. 17, 1976: Document entitled "Specification for Asbestos Paper Mead 642" lists fiber type as "100% crocidolite asbestos H" **(WK AME 5006)**.

- Jan. 20, 1977: Mead invoice to Ameron evidencing sales of blue crocidolite asbestos paper, which matched Ameron's purchase order in Plaintiffs' Exhibit No. 30 **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 31 at 243:9 – 244:19)**.

- June 20, 1977: Mead invoice to Ameron for 10,000 lbs of blue asbestos paper liner **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 33 at 246:13 – 246:23)**.

- Sept. 20, 1977: Mead invoice to Ameron for 8,385 lbs of blue crocidolite paper liner **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 34 at 247:6 – 248:7)**.

- Sept. 22, 1977: Mead invoice to Ameron for 8,876 lbs of blue crocidolite paper liner **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 35 at 249:1 – 249:12)**.

- Nov. 18, 1977: Mead invoice to Ameron for 1,482 lbs of blue crocidolite paper liner **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 36 at 249:18 – 250:4)**.

- Nov. 18, 1977: Mead invoice to Ameron for 5,771 lbs of blue crocidolite paper liner (debate as to whether its spec and grade, but see 255:11 – 255:23) **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 37 at 250:12 – 251:7)**.

- Nov. 22, 1977: Mead invoice to Ameron for 20,700 lbs of asbestos paper liner of various sizes (debate as to whether its spec and grade, but see 255:11 – 255:23) **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 38 at 252:15 – 253:18)**.

- Nov. 23, 1977: Mead invoice to Ameron for 10,004 lbs of blue crocidolite asbestos paper **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 39 at 254:6 – 254:19)**.

b. **<u>North American Asbestos</u>**

- North American Asbestos was an asbestos supplier to Ameron. **(Contreras, Ameron's Response to Stand rog # 15)**

- July 24, 1973: Material Procurement Sheet for Supplier N. American Asbestos shows asbestos yarn: "3-Ply 800-3 Crocidolite Asbestos Yarn." Hazards: "Dust from yarn may be harmful. Do not breathe dust." **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 12 at 192:6 – 193:8) (WK AME 5010)**.

- Oct. 21, 1975: Material Procurement Sheet for Manufacturer Cape Blue Mines Ltd, signed by Ameron's D.W. Bordner, lists crocidolite asbestos for use in RP-59 epoxy molding compound. Supplier is North American Asbestos. Hazard: "Breathing of asbestos dust may cause severe bodily harm" (**WK AME 5001**).

- Oct. 21, 1975: Material Procurement Sheet for Supplier N. American Asbestos, signed by Ameron's D.W. Bordner, lists crocidolite asbestos for use in RP-59 polyester molding compound. Supplier is North American Asbestos. (**WK AME 5003**).

c. **Cello**

- Sept. 10, 1973: Material Procurement Sheet for Manufacturer Cellulo Company lists "Asbestos Mat Pattern." (**WK AME 5009**).

- Sept. 25, 1975: Material Procurement Sheet for Manufacturer Cellulo Company lists "Asbestos mat" for use in Series 4000 and 5000 Bondstrand fittings. Document includes warning, "Dust from mat may be a health hazard" (Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit 14 at 195:17 – 197:1) (**WK AME 5007**).

- Specification Sheet for Manufacturer Cellulo Company, entitled "Specification: Cellulo Asbestos Mat," notes the type of asbestos as "Crocidolite H" (**WK AME 5008**).

- April 1975: Material Procurement Sheet for Manufacturer Dyna-Shield, Inc. lists "Prereg Asbestos Mat" for Series 4000 Bondstrand fittings. Also likely shows asbestos was acquired from Cellulo and impregnated by Dynashield (**WK AME 5011**).

- July 1976: Material Procurement Sheet for Manufacturer Dyna-Shield, Inc. lists Polyester Prereg Asbestos Mat for Series 5000 fittings. Also likely shows asbestos was acquired from Cellulo and impregnated by Dynashield (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 15 at 199:8 – 201:1**) (**WK AME 5012**).

d. **Other**

- Brodner, Ameron's PMK, recalls only one supplier of asbestos mat for pipe lengths and fittings that Ameron bought from, Special Electric or North American Asbestos. **(Dalt Bordner Deposition of 9.23.03 at 47:14-23)**

- Asbestos was supplied to Ameron by Johns-Manville Corporation, Mead, North American Asbestos, Powhatten Asbestos, Special Electric Company and Union Carbide. Asbestos may have supplied asbestos to Ameron by: Special Asbestos Company, Special Electric Company, Carey Canada, Inc., Care-Canadian Mines, Ltd., KCAC, Inc., FMC Corporation, Calidria Asbestos, U.S. Mineral, E.B. Taylor Co., Lake Asbestos, E.S. Browning Co., Warren & Bailey Co., Asbestos Asphalt and Insulation Manufacturing Co. and Phillip Carey Co. (**Contreras, Ameron's Response to Stand rog # 15)**

- 1962-1970: Bondstrand contained an asbestos-containing mat liner. Special Electric was the only supplier of the mat that Mr. Bordner is aware of. Special Electric purchased raw asbestos to make the mat from North American Asbestos Corporation (only supplier of blue asbestos in the US. In the 60s Ameron purchased the mat from Special Electric and then they bought the mat-manufacturing equipment from Special Electric. (**Declaration of Dalton W. Bordner 2-17-10.**)

- Ameron lists **Special Electric Company** and **Union Carbide Corp.** as suppliers of asbestos for its Bondstrand pipe (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit 6 at 161:16 – 165:19**).

G. Distributors

- Harrington Plastics was a distributor of Bondstrand Series 4000 and 5000 products (**Friedrich Deposition of 3/24/11, at 263:21 – 264:19**).

- 1973: Since at least 1973, Harrington Industrial Plastic's was distributing the Bondstrand product line. They continued to distribute Bondstrand continuously until the asbestos s was removed from their products in the early 80s. (**Neal Lambly Deposition 19:25-20:3; 21:7-22:12**)

- Harrington was Ameron's exclusive distributer of the Bondstrand product line for Southern and Northern California from at least 1973 until the early 80's when asbestos was removed. (**Neal Lambly Deposition 20:7-14; 21:7-22:12**)

- All of the Bondstrand pipe purchased by Harrington, from 1973-the early 80s, was manufactured at the Brea Ca plant. (**Neal Lambly Deposition 53:8-19**)

H. Diagrams/Instructions For Installing Bondstrand Pipe

- April 1969: Bondstrand brochure entitled "Bondstrand Fiberglass Reinforced Plastic Pipe" states "The pipe [Series 4000 and 5000] is simply cut to size on the job using an ordinary hacksaw…A comparative time study has shown that an equivalent installation of Bondstrand can be made in one-fourth the amount of time required for an installation of carbon steel using this technique." (**Friedrich Deposition of 3/24/11 at 169:21 – 173:3**)(**WK AME 5030**).

- June 1974: Supplemental Guide for Installing Bondstrand Insulated Pipe suggests field cutting using a hacksaw:
  - "When shorter lengths are required, insulated pipe is field cut to the desired length using a hacksaw or a power band saw"
  - "Field cutting must completely remove the factory seal at the cut end of the pipe"
  - "Using an Ameron pipe shaver with the special insulated pipe attachment, prepare spigot on the carrier pipe at the cut end in accordance with Bondstrand Assembly Instructions" (**WK AME 5027**).

- 1975-1976: Bondstrand Assembly Instructions for RP-34 Epoxy Adhesive includes image of worker using a hacksaw to cut Bondstrand pipe and recommends the use of a power driver to shave/cut pipe ends:
  - "When necessary to cut a pipe to length…Cut pipe with hacksaw, sabre saw or abrasive wheel."
  - "Shave the cut end of the pipe using the Ameron pipe shaver."
  - "All fittings, sockets, pipe ends (spigots), and pipe sockets must be clean and dry and must be sanded within two hours of assembly." **(WK AME 5021)(WK AME 5022)(WK AME 5023)**.

- Oct. 1976: Bondstrand Assembly Instructions for RP-105 Polyester Adhesive includes image of worker using a hacksaw to cut Bondstrand pipe and recommends the use of a power driver to shave/cut pipe ends:
  - "When necessary to cut a pipe to length…Cut pipe with hacksaw, sabre saw or abrasive wheel."
  - "Shave the cut end of the pipe using the Ameron pipe shaver."
  - "All fittings, sockets, pipe ends (spigots), and pipe sockets must be clean and dry and must be sanded within two hours of assembly." **(WK AME 5024)**.

- Brochure entitled "Bondstrand: Fiberglass-Reinforced Pipe and Fittings," includes clear image of worker using hacksaw to cut pipe. Document further states:
  - "Bondstrand can be assembled in a fraction o the time required for welded carbon steel pipes"
  - "Bondstrand is readily cut to size"
  - "Joining Bondstrand is a quick and easy process. You shave the pipe end to fit, sand and clean the joint surface, apply Bondstrand adhesive…" **(WK AME 5026)**.

- Jan. 25, 1977: Article authored by Ameron's D.W. Bordner entitled "Epoxy Fiberglass Pipe and its Application," which touts the benefits of epoxy fiberglass pipe over conventions steel. **(WK AME 5025)**.

> "Fiberglass pipe and fittings can be economically and reliably installed in the field. Only light weight, easy-to-use equipment is required to cut the pipe, prepare the surfaces to be joined, and cure the adhesive bonded joints. Quite often an electric saw with an abrasive wheel, a flapper sander mounted on a drill motor, and a power-driver pipe shaver are all that is needed to prepare pipe for assembly."

I. Testing

- 1972: Howard Spielman was hired my Ameron as an expert to review hazards of asbestos and make recommendations. Spielman recommended the asbestos mixing area be sectioned off, ventilated, and workers in area wear respirators. Ameron did not notify customers of new safety measures **(Friedrich Deposition of 3/24/11, at 302:13 – 313:9)**.

- 1972: Mr. Speilman was hired as an industrial hygienist to help Ameron develop its program to comply with the 1972 OSHA regulations re asbestos. **(Contreras, Ameron's Response to Stand rog # 44, 48)**

- Beginning in 1972, tests were conducted at various Ameron facilities to determine whether or not asbestos fibers would become airborne when being applied by workers or helpers. The results and conclusions of these tests indicated that asbestos fibers were becoming air borne in the Ameron production facilities. These tests were designed to determine whether workers' exposure to asbestos fibers fell within OSHA. It was concluded that Ameron's asbestos workers should wear protective breathing equipment in some areas of the factory to be in compliance with the federal and state government guidelines. **(Contreras, Ameron's Response to Stand rog # 68)**

- Oct.1977: Howard Spielman conducts test at Kerr-McGee Chemical Company (Ameron customer) to test asbestos exposure levels from Bondstrand Series 4000 and 5000 products in the field. Spielman finds significant contamination in prefab building and suggests stationary saws be equipped with ventilation. Report also finds mechanical (flapper) sanding of the spigot end should be reduced, and minimal respiratory protection is needed during sawing and sanding. **(Friedrich Deposition of 3/25/11, at 361:16 – 363:6; Plaintiffs Exhibit No. 43, 379:13 – 388:4)(WK AME 5013)**. Further, the study found that stationary cutting should be done in areas with local exhaust ventilation and that other cutting/sanding measures should be investigated to lower exposure. **(Contreras, Ameron's Response to Stand rog # 24, 43)**

J. Knowledge

- Between 1965 – 1972: Ameron did nothing to protect the health and safety of workers exposed to asbestos, and its first indication re the hazards of asbestos were in 1972 when OSHA regulations were established **(Friedrich Deposition of 3/24/11, at 294:6 – 296:25)**.

  - Between 1965 – 1972: Some Ameron workers were wearing protective clothing at its Brea facility, although it is not clear if this was done in the asbestos mixing area **(Friedrich Deposition of 3/24/11, at 297:18 – 298:4)**.

- 1972: Ameron became aware that some uses of asbestos posed a hazard to its workers when OSHA regulations came out in 72. At this time the information available to Ameron was that encapsulated and liquid products containing asbestos were considered safe by the government and medical community. **(Contreras, Ameron's Response to Stand rog # 70, 71, 72)**

- 1973: Neal Lambly knew asbestos was dangerous before he ever arrived at Ameron Lambly shared that knowledge with the folks at Ameron, about the dangers and hazards of asbestos, when he arrived in 1973 once he found out there was asbestos in Bondstrand Series 4000 and 5000 pipe products. **(Neal Lambly Deposition 106:14-25)** Mr. Lambly was aware of Dr. Selikoff's studies when he started at Ameron. He did not do anything to implement safety

precautions at Ameron. He knew of the importance of proper ventilation and exhaust to protect workers from asbestos dust. **(Neal Lambly Deposition 110:7-113:24.)**

- 1973: Mr. Neal Lambly (PMK) started at Ameron in 1973 and retired in July of 1998. He worked as the reginal manager and his duties included managing distribution, call on aengineering firms to get products specified and making sales clals. His specialty area was sales and marketing of Bondstrand product line, including series 4000 and 5000. **(Neal Lambly Deposition from Daniels at 13:19-14:10; 15:24:16:8)**

- 1974: Ameron's PMK, Mr. Friedrich, states Ameron was aware of the dangers and hazards of asbestos to their own employees and was making efforts to comply with OSHA regulations **(Friedrich Deposition of 3/24/11, at 291:24 – 292:9)**.

- Ameron's PMK, Mr. Friedrich, believes Ameron's customers should have been concerned about asbestos when OSHA regulations were released in 1972, and it was the employer's responsibility to ensure their employees were not exposed **(Friedrich Deposition of 3/25/11, at 393:15 – 393:19)**.

- September 11, 1978: Neal Lambly wrote a letter re asbestos in Bondstrand pipe due to his concern that they were not eliminating asbestos fast enough. He knew asbestos was dangerous and the purpose of the letter was to alert Ameron that they needed to do something to alert their customers to these dangers. The letter references customers being fined for failing to monitor air and provide medical exams for employees when using asbestos products. Three specific suggestions were named in the letter: "(1) An engineering bulletin covering the subject of asbestos labeling and construction practice; (2) Put the face mask over the mechanic's nose, shown on our assembly instructions (currently over his Adam's apple) or use a different cover illustration; however, this one is excellent if the mask were in the correct position; (3) Some statement in our printed assembly instructions on an insert in same until we remove asbestos from our product line, along the lines of our yellow caution encoding labels." None of these concerns were addressed by Ameron. (**Neal Lambly Deposition Contreras at 104:18-126:20; Neal Lambly Deposition in Daniels at 64:18-66:13, exhibit 16.)**

- 10/2/1978: PMK received MSDS. Material data safety sheets provided only to distributers on demand, but PMK is not aware of it ever being provided to end-users. **(Neal Lambly Deposition in Daniels at 71:23-72:17, exhibit 17.)**

- March 1979: Ameron Engineering Bulletin No. 25 entitled "Health of Fiberglass Dust" notes the widespread attention re health aspects of working with fiberglass have received, as well as studies going back to 1942. Attached in a 1968 letter from the Medical Services division of Owens-Corning, a commercial fiber-glass producer, from 1968 re said health aspects. Letter suggests workers read attached information and be prepared to provide informed answers to "help avoid unnecessary job shutdowns and ease the concern of workers," and that "an appropriate respirator may be selected from…NIOSH list attached."

- Owens-Corning advises that "in operation where an excessive dust level is not controlled by ventilation control or where upper respiratory tract (nose and throat) irritation occurs, use of a respirator designed for nuisance type dust is advisable." (**WK AME 5033**)(NIOSH list is Ameron Engineering Bulletin No. 26, **WK AME 5034**)

- 1988: A former Ameron employee. Dalt Bordner, provided information to lawyers re a worker's compensation claim concerning asbestos. (**Contreras, Ameron's Response to Stand rog # 30)**

- 1994: Ameron has a pleading from a 1994 personal injury lawsuit, *Richard Beauregard v. Manville Corp,* BC 137 466, in which they were a defendant. (**Contreras, Ameron's Response to Stand rog # 30)**

K. Customer Concerns

- May 23, 1978: Letter from Ameron to Jerry Jantz of Natkin Company which seems to provide guidance to employers on appropriate asbestos exposure levels (**Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 44 at 389:8 – 390:19**).

- September 8, 1978: Letter from Ameron's Neal Lambly to Ken Wickstorm of Resources Conservation Company re a phone call by Wickstorm inquiring into asbestos content of Bondstrand products (**Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 45 at 391:8 – 394:3**).

- September 28, 1978: Ameron letter authored by M.H. Anderson to Bill Hall of Resources Conservation Company stating "we share your concern about the health and safety of crews who must work with materials which appear to be potentially harmful" (**Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 47 at 404:25 – 406:20**).

- September 11, 1978: Interoffice memorandum by Neal Lambly, subject OSHA Mineral Fibers Asbestos Series 5000 and 4000 Components. Letter was in response to call from VP of Natkin & Co., who was fined while using 5000 Series Bondstrand for not providing exams to employees. Letter emphasized need to update assembly literature provided to customers and "minimize utilization of asbestos" (**Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 46 at 394:19 – 401:9**).

- October 4, 1978: Letter from Ameron's Neal Lambly to Carl Kammerer at Stearns re asbestos content of Series 4000 and 5000 product lines. Ameron states it plans to eliminate asbestos from Series 4000/5000 flanges by 1979 (**Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 48 at 408:9 – 410-:15**).

- Nov. 22, 1978: Correspondence from Ameron's Neal Lambly to Rick Prost of Teledyne Industries re utilization of asbestos fibers in Series 4000 and 5000 pipe, fittings and flanges (**Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 49 at 410:19 – 414:11**).

- March 16, 1979: Letter from Ameron's Neal Lambly to Bob Johnson of California & Hawaiian Sugar Co. re utilization of asbestos fibers in Ameron Series 4000 Bondstrand Pipe **(Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 50 at 414:15 – 416:12).**

- August 31, 1979: Letter from Ameron's Neal Lambly to Bill Stief, **Stauffer Chemical Co.** re Stief's request for information re utilization of asbestos fibers in Series 4000 Bondstrand pipe and flanges. Ameron assures Stauffer that by following its assembly instruction, exposure should be below OSHA regulations, and that asbestos is being phased-out of Series 4000 product lines. Paul Crist of Harrington Plastics is cc'd. **(Friedrich Deposition of 3/25/11, Plaintiffs' Exhibit No. 51 at 419:10 – 419:15; 423:17 – 430:13) (Neal Lambly Deposition 75:4-79:25; 83:6-25)(WK AME 5014).**

H. Special Equipment

- Operating Instructions for Bondstrand M74 Pipe Shaver describe how to prepare spigots on the end of Bondstrand pipes **(WK AME 5028)**

I. Ameron Correspondences with Mead Re: Asbestos Products

- Aug. 16, 1972: Mead Corp Memo to CJ Lobos, from DE Wilkinson, Jr.; Re: Ameron Corrosion Control Division, Brea California, GE Buck, relating a phone call received from Mr. Buck requesting "one (1) roll similar to the samples made for North American Asbestos." **(WK AME 5043).**

- Nov. 29, 1972: Memorandum from Mead's D.B. Wilkinson Jr. to Ameron's C.R. Wilson noting "We will shortly be running a 5,000 pound **trial** of P-220 for Ameron. From this trial please develop tentative cost figures …" **(WK AME 5044,** emphasis added).

- Dec. 13, 1972: Letter from Ameron's D.W. Bordner to Mr. Chet Lobos of Mead lists crocidolite asbestos paper under section entitled "Tentative Specification" **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 16 at 207:2 – 208:14).**

- Jan. 18, 1973: Letter from Mead's D.B. Wilkinson to Ameron's Dalt Bornder shows Ameron sought asbestos wrap to cover the elbow of pipes, but Mead was "not interested in pursuing this business." **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 17 at 213:21 – 214:23)(WK AME 5045).**

- Jan. 23, 1973: Mead Memorandum from R.L. Consolini to J.C. Genzabella re "Trial Request, Division 2P-220: Ameron Asbestos Saturating Paper." Documents trial run of asbestos-containing pipe-wrap sold by Mead to Ameron. Requests machine time be reserved to produce 10,000 pounds of 2P-220 for Ameron using same procedures for P-220. Background notes P-220 was first produced as a trial run in Dec. 1972 **(WK AME 5046)(WK AME 5047).**

J. Directory/Catalog References

- June 1950: Buyers Guide, Power Magazine, includes numerous references to Amerocoat Corp. under various product headings. (**WK AME 5058**)

- 1964: Mechanical Engineers Catalog includes numerous references to Amerocoat Corp. under various product headings (**AME 5056**).

- 1956: Directory for Modernization, Power Magazine, Mid-September, includes numerous references to Amerocoat Corp. under various product headings (**WK AME 5053**).

K. Miscellaneous

Ameron Documents

- 1964: Coatings and Their Safe Application, CG Munger, Amercoat, National Safety Congress Transactions. Here, VP Munger discusses proper procedures for the safe application of coatings to interior and closed spaces in light of the heavy solvents contained therein: Main hazards include: (1)Danger of fire or explosion; (2) Damage to the applicator from inhalation of solvents; (3) Dermatitis caused by contact with resins or solvents. Munger recommends proper ventilation and light clothing. (**WK AME 5057**)

> "It cannot be over-emphasized that adequate ventilation from either fire, explosion or health hazard standpoint is the key to good coating practice wherever these materials are used in enclosed areas."

- Apr. 4, 1975: Letter from Phillip Forbes of Ameron to Mead requesting material safety data sheets regarding grade 642 asbestos paper it supplied (**Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 25 at 229:3 – 231:2**).

- April 22, 1976: Memo to GE Huck, from E. Goller; Re: Expendable Cast Mandrels for Filament Wound Fittings. Memo notes "expendable mandrel concept and the mandrel casting machine are well beyond phase I" and "The dust problem can obviously be solved by conventional means." (**WK AME 5049**).

- January 1978: Bondstrand Technical Data, Subject: Using Dresser Couplings to Join Bondstrand, describes recommended procedure for joining Dresser mechanical joints in certain Bondstrand piping (**WK AME 5032**).

- 1994: Interrogatories Propounded to Defendant Ameron Inc. in the matter of *Richard Beauregard (sic) v. Manville Corp.*(**WK AME 5040**).

- 1995: Ameron's Response to General Order Standard Interrogatories in the matter of *Richard Beauregard (sic) v. Manville Corp.* (**WK AME 5041**).

- 1995: Ameron Records Retention Policy (**WK AME 5042**).

- 1996: Ameron Marketing Bulletin "Estimated Man-Hours for Fabrication of Bondstrand Joints," an information bulletin designed to be useful when estimating construction costs, and it includes estimate man-hours for field fabrication of piping using Quick-Lock and Key-Lock joints. **(WK AME 5029)**.

Misc. Warnings

- July 24, 1973: Material Procurement Sheet for Supplier N. American Asbestos includes following warning "Dust from yarn may be harmful. Do not breathe the dust." **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 12 at 192:6 – 193:8) (WK AME 5010)**.

- Sep. 10, 1973: Document entitled "Material Procurement, Material Asbestos Mat Pattern" includes following warning: "Asbestos fibers may be harmful if inhaled." **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 13 at 194:2 – 194:18)**.

- Sep. 25, 1975: Document entitled "Material Procurement, Material Asbestos Mat," for use in Series 4000 and 5000 Bondstrand fittings, includes the following warning: "Dust from the mat may be a health hazard." **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 14 at 195:17 – 196:12)**.

- July 1976: Document entitled "Material Procurement, Material Polyester Prereg Asbestos Mat" for Series 5000 fittings includes asbestos warning, "Asbestos fibers are harful when breathed. All waste should be collected in poly bags and disposed of properly." **(Friedrich Deposition of 3/24/11, Plaintiffs' Exhibit No. 15 at 199:8 – 199:22)**.

Technical Data Sheets

- Aug. 26, 1975: Technical Data Sheet from the North American Asbestos Corporation re crocidolite asbestos fiber Grade 713 **(WK AME 5002)**.

- Aug. 26, 1975: Technical Data Sheet from the North American Asbestos Corporation re crocidolite asbestos fiber Grade H **(WK AME 5004)**.

Documents Relating To Other Companies

- Nov. 10, 1958: Chevron Specification EG-1381-C – Thermal Insulation for Hot Lines and Vessels. Specification for Hot Piping Insulation list asbestos for various uses **(WK AME 5052**, see S. 2.032, 3.032, 4.01, 4.02, 4.03 and 4.07)

- Apr. 7, 1964: Thermal Insulation for Hot Lines and Vessels, Chevron Specification No EG-1381, lists asbestos for various uses **(WK AME 5051**, See S 2.3(b), 3.31, 4.2, and 4.4).

- May 20, 1965: Design Report, Olefins Plant Facilities, Taft, Louisiana, Part II – Crude Butadiene Storage Facilities, Union Carbide. Lists Amercoat Corp. as a recommended manufacturer under section entitled "General Painting Criteria." **(WK AME 5050)**.

- Sept. 1967: Wastewater Systems Pipes and Piping, Water and Wastes Engineering, Manual of Practice No. 3 Published by the Reuben H Donnelly Corporation pipe and piping systems used in wastewater disposal operations. Fig. 1 shows asbestos-cement sewer pipe. (**WK AME 5060**).

- Union Carbide advertisement for Calidria Resin Grade 110, 144, and 244 (**WK AME 5035**).

- Union Carbide advertisement for Calidria Resin Grade 144 asbestos notes it is "a highly purified product that is an effective, low cost thickening agent and thixotrope for epoxy resin systems....makes it especially valuable in spray application." (**WK AME 5036**).

- May 6, 1974: Union Carbide Calidria Asbestos News Release entitled "Polyester Premixes—Comparative Costs and Data" re the benefits of Calidria R-G 110 and noting its "fine particle size, high fiber content and high purity" (**WK AME 5037**).

- Union Carbide advertisement, "Resin-Grade 244 Asbestos" states it was "developed for maximum thickening efficiency and thixtropy in polyester spray-up and hand lay-up laminating resins" and provides "negligible dusting." Material Safety Data Sheet (July 1985)(p.11) includes following warning: "Overexposure to Chrysotile asbestos has caused damage to lungs (asbestosis), lung cancer and mesothelioma of the pleura and peritoneal..." (**WK AME 5038**).

- Carey Canadian Mines Material Safety Data Sheet for Chrysotile Asbestos Fibers suggests using approves respiratory equipment (when required) and includes the following warning: "Avoid breathing excessive asbestos dust" and "Prolonged continuous exposure to asbestos dust may cause impairment of the respiratory system" (**WK AME 5039**).

- Carey Chrysotile Brochure (**WK AME 5048**)

- May 20, 1965: Design Report, Olefins Plant Facilities, Taft, Louisiana, Part II – Crude Butadiene Storage Facilities, Union Carbide (**WK AME 5050**).

- July 1981: Amoco Memo to VE Harms, from MS Crowley; Re: Asbestos Levels in Pyrocrete 102, where in Ms. Crowley confirms "that the material does contain approximately 0.5% chrysotile asbestos." (**WK AE 5055**).

- Oct. 23, 1975: Protective Coatings, Asphalt Mastic with Cork, Dow Chemical Company, lists **Ameron** as the manufacturer as one of the manufacturers of inorganic zinc coating, specifically Dimecote No.6, to be applied, while surfaces are dry. (**WK AME 5054**).

- April 19, 1973: Dow Environmental Health Report: "Concentrations of asbestos during the cutting of transite, using a water saw, was found to be below the standards set in the Federal regulations, but may be significant when considering possible carcinogenesis. During the cutting of transite without water the levels were above the standards." **(WK AME 5229)**

Trade Org. Memberships

- 1954-74 Excerpts regarding American Pipe & Construction membership in AWWA **(WK AME 5231)**
- 1981-82 Excerpts regarding Ameron membership in AWWA **(WK AME 5232)**