IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

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| EXXONMOBIL OIL CORPORATION,<br><br>Plaintiff,<br>v.<br><br>AMEX CONSTRUCTION CO., INC.,<br><br>Defendant/Third Party Plaintiff<br>v.<br><br>ISCO INDUSTRIES, LLC., and AMBITECH ENGINEERING CORP.,<br><br>. Third Party Defendants | ) | Case No. 07 C 4278<br><br>Judge Virginia M. Kendall |

**MEMORANDUM OPINION AND ORDER**

Plaintiff ExxonMobil Oil Corporation ("ExxonMobil") brought suit against Defendant Amex Construction Co., Inc. ("Amex") alleging breach of warranty and negligence after a High Density Polyethylene ("HDPE") pipe installed by Amex burst at an ExxonMobil refinery. Amex later filed a third-party complaint seeking contribution against ISCO Industries, LLC ("ISCO"), the supplier of the defective pipe, and Ambitech Engineering Corporation ("Ambitech"), the pipe designer. Ambitech and ISCO have now each filed motions to exclude certain testimony by Dr. Nicholas Biery, an expert retained by Amex. For the reasons stated below, Ambitech's motion is granted in part and denied in part. ISCO's motion is also granted in part and denied in part.

**STATEMENT OF FACTS**

On or about May 26, 2003, Exxon entered into a Continuing Services Agreement ("CSA")

with Amex. Sec. Amend. Cmplt. at ¶ 5. The CSA operated as a master contract covering all work, service, and materials provided to Exxon. *Id*. at ¶ 6. Pursuant to the CSA, on March 5, 2004, Amex submitted a proposal to Exxon for the installation of a High Density Polyethylene ("HDPE") pipe to be used for water cooling at Exxon's Joliet Refinery. *Id*. at ¶ 7. On September 30, 2004, Exxon accepted Amex's proposal and placed a service order for the installation of the HDPE pipe and related services. *Id*. at ¶ 9. Amex began work on the installation of the HDPE pipe in November of 2004. *Id*. at ¶ 10. On or about June 2, 2005, Amex completed the installation and Exxon accepted the work and put the pipe into service. *Id*. at ¶ 11.

On July 30, 2005, approximately eight weeks after the final installation, a weld holding a thirty-six inch section of the HDPE pipe failed, causing the pipe to decouple. *Id*. at ¶ 12. Because of the failure of the HDPE pipe, the refinery's cooling system lost its water circulation, resulting in an emergency shutdown of various crude production and refining units, a shutdown of the gas turbine generator, and a slowdown of crude production and refining in other units of the refinery. *Id*. at ¶ 13. The pipe failure also caused other property to be destroyed. *Id*. at ¶ 14. Approximately $900,000 in crude and hydrocarbons were burned during the emergency shutdown process and subsequent start-up process. *Id*. Various heat exchangers, pump seals, and other mechanical devices were also damaged. *Id*. at ¶ 15.

Exxon states that the HDPE pipe failed because Amex failed to use reasonable care in its installation and its selection of materials. *Id*. at ¶ 27. Amex seeks contribution from ISCO for any finding of negligence against Amex. Third Party Cmplt. at ¶ 29-30. Specifically, Amex alleges that ISCO is guilty of one or more negligent acts, including failing to warn ExxonMobil and Amex of any defective conditions that existed in the HDPE pipe, supplying inadequate pipe and fusion

machines, and improperly training field personnel. *Id*. at ¶ 20. Amex also seeks contribution from Ambitech, asserting that Ambitech negligently failed to correct or adequately test for defective conditions in the HDPE pipe and improperly designed the pipe. *Id.* at ¶ 27. Amex retained Biery, a technical consultant at SEA, Ltd., to provide expert testimony regarding the pipe burst. On May 14, 2009, Biery issued a report rendering a professional opinion as to the adequacy of the design and construction of the pipe. Ambitech and ISCO both moved to strike certain portions of Biery's testimony on July 16, 2009.

## STANDARD

The admissibility of scientific expert testimony is governed by Federal Rule of Evidence 702 ("Rule 702") and *Daubert v. Merrell Dow Pharmaceuticals, Inc*., 509 U.S. 579 (1993). *See Ervin v. Johnson & Johnson, Inc.*, 492 F.3d 901, 904 (7th Cir. 2007). Rule 702 states: "If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise." Fed.R.Evid. 702. The Seventh Circuit has developed a three-step admissibility analysis for expert testimony under Rule 702 and *Daubert*. *See Ervin*, 492 F.3d at 904. First, "the witness must be qualified 'as an expert by knowledge, skill, experience, training, or education.'" *Id.* (quoting Fed.R.Evid. 702). Second, "the expert's reasoning or methodology underlying the testimony must be scientifically reliable." *Id.* (citing *Daubert*, 509 U.S. at 592-93). Courts are, however, granted "broad latitude when [they] decide[] *how* to determine reliability." *Kumho Tire Co. v. Carmichael*, 526 U.S 137, 142 (1999). Finally, the expert's testimony must be relevant, or "assist the trier of fact to understand the evidence or to determine a fact in issue." *Ervin*, 492 F.3d at 904.

## DISCUSSION

### I. Ambitech's Motion to Bar Expert Testimony

Ambitech moves to bar any testimony related to the following four conclusions made in Biery's report: 1) "Ambitech's piping design used an incorrect wall thickness"; 2) "The use of thinner-walled HDPE pipe than required by ASME B31.3 contributed to the failure by reducing the margin of safety"; 3) "A pipe joint with the wall thickness required by ASME B31.3 . . . would most likely have had a longer life"; and 4) "ExxonMobil reviewed the design basis and did not check that the wall thickness calculation . . . was correct." (R. 165-C, at p. 1).

#### A. Qualifications

Ambitech does not challenge Biery's expert qualifications, and this Court finds that an engineer who received his Ph.D. in Materials Science and Engineering, performed graduate research measuring small strains in titanium alluminides, and currently serves as a technical consultant investigating material failures at SEA, Ltd., is qualified by knowledge, skill, experience, training, and education.

#### B. Methodology

The crux of Ambitech's argument is that Biery did not reach his conclusions through reliable methodology. Ambitech claims that Biery's methodology is flawed as to his first three conclusions because he did not independently verify that the thickness of the HDPE pipe contributed to the pipe leak, and did not conduct scientific testing to support his conclusion that a thicker-walled pipe likely would have lasted longer.

The Court first addresses Biery's methodology in finding that Ambitech's design used an inappropriate wall thickness. In reliability determinations, a court must "consider the specific

*Daubert* factors," including peer review, error rates, and acceptability of methodology in the relevant scientific community, "where they are reasonable measures of reliability." *See Kumho Tire*, 526 U.S. at 138 (citing *Daubert*, 509 U.S. at 593-94). To reach his assessment about the inappropriate wall thickness, Biery applies the equations and tables in an industry standard code, American Society of Mechanical Engineers Rule B31.3 ("ASME B31.3"), to Ambitech's pipe design. Because ASME B31.3 calculations require a greater wall thickness, Beiry concludes that the pipe design failed to comply with ASME standards. (R. 165-C, at p. 11). Biery goes on to note that under ASME B31.3, a pipe "designer is responsible to the owner for assurance that the engineering design of piping complies with the requirements of this Code." (R. 165-C, at p. 20). Thus, Dr. Biery's methodology appropriately compares Ambitech's design with a well-established standard of care to conclude that the pipe walls were too thin.

The Court next turns to Biery's conclusion that the thinner-walled pipe "contributed to the failure." Here, Biery's report goes beyond a mere application of industry standards, and makes a causal assessment that is unsupported by his analysis. As part of the court's role as "gatekeeper," it must "keep experts within their proper scope, lest apparently scientific testimony carry more weight with the jury than it deserves." *DePaepe v. General Motors Corp.*, 141 F.3d 715, 720 (7th Cir. 1998). The Seventh Circuit has made clear that an expert must "substantiate his opinion; providing only an ultimate conclusion with no analysis is meaningless." *Huey v. United Parcel Serv., Inc.*, 165 F.3d 1084, 1087 (7th Cir. 1999) (citing *Minasian v. Standard Chartered Bank, PLC*, 109 F.3d 1212, 1216 (7th Cir. 1997)). In a strict products liability and negligence case, for example, the Seventh Circuit dismissed an expert's testimony as unreliable because the expert opined that a doctor's method of sterilization caused a knee implant to fail without conducting "scientific tests or

experiments to bolster his theory." *See Fuesting v. Zimmer, Inc.*, 421 F.3d 528, 536 (7th Cir. 2005) (vacated in part on other grounds in *Fuesting v. Zimmer, Inc.*, 448 F.3d 936 (7th Cir. 2006)). The expert in *Fuesting* relied on "basic" scientific principles, but he "did not bridge the analytical gap between these basic principles and his complex conclusions" regarding causation. *Id.* Similarly, in the instant case, Biery concludes that the wall thickness contributed to the pipe burst. Yet, he testified in his deposition that he has no knowledge about the actual operating conditions of the pipe when it failed. (R. 165-D, at pp. 81-82). Moreover, Biery admitted in his deposition that he did not perform computer modeling, small-scale tests, large-scale tests, or finite element analysis that would have subjected his causal conclusion to the scientific method. (R. 165-D, at pp. 34-38). Biery does nothing to discount other causation theories or show that the wall thickness necessarily "contributed to" the pipe burst, making his testimony about contribution unreliable.

As to Dr. Biery's assessment that a thicker-walled pipe "would most likely have had a longer life," the lack of scientific support for his contribution theory also undermines his methodology here. Indeed, if the pipe's wall thickness had nothing to do with the burst, then the pipe would not have lasted longer regardless of its wall thickness. Courts have found testimony unreliable if an expert does not test or simulate what he claims is a superior design (in this case, a thicker pipe) in concluding that it would have performed better. In *Masters v. Hesston Corp*., for instance, the Seventh Circuit held expert testimony unreliable because the expert "opined that Hesston breached the first principle of engineering by not eliminating feed rolls" in his hay baler, but did not test or sufficiently research hay balers without feed rolls. *See* 291 F.3d 985, 992 (7th Cir. 2002). Biery testified in his deposition that a thicker pipe likely would have lasted longer and cited general engineering principles, but offered no further scientific testing or anecdotal evidence of this opinion.

(R. 165-D, at pp. 60-61, 63). Thus, Biery fails to produce sufficient analysis to support a conclusion that directly bears on Ambitech's liability—namely, that the pipe would likely have lasted longer if its walls were thicker.

Finally, Ambitech's motion does not specifically address Biery's fourth disputed conclusion, which claims that ExxonMobil failed to check the accuracy of the wall thickness calculation. Biery's methodology for drawing this conclusion was to review the deposition transcripts of Elizabeth Wenzel and Victor Elias, who testified that they saw, but did not object to, the specifications for the wall thickness. (R. 207-C, at pp. 26-27; R. 207-D, at pp. 24-26). The Court finds Biery's conclusion in this regard to be out of his area of expertise and to apply no scientific methodology, making it unreliable under *Daubert*. *See* 509 U.S. at 593-94. Thus, Biery is further barred from testifying about whether ExxonMobil checked the wall thickness calculation.

**C. Relevance**

Because this Court has found reliable only Biery's testimony regarding the inappropriate wall thickness of Ambitech's pipe design, the sole issue remaining is whether that testimony is relevant under *Daubert* and Rule 702. "Testimony is relevant if it helps the trier of fact in understanding the evidence or in determining a fact at issue." *Masters*, 291 F.3d at 991. Here, Biery's testimony about Ambitech's piping design and the standard in ASME B31.3 will aid the finder of fact in assessing Ambitech's liability. If Ambitech's piping design did in fact use an incorrect wall thickness, as Biery's report asserts, that could help support a claim for contribution in a negligence verdict against Amex. Biery's testimony regarding the ASME B31.3 industry standard and the thickness of the piping supplied by Ambitech is, therefore, relevant to assist the finder of fact in assessing Ambitech's negligence.

**II. ISCO's Motion to Bar Expert Testimony**

ISCO moves this Court to bar any testimony by Biery related to HDPE pipe fusion, processes, training, qualification, and inspection because he is not sufficiently qualified as an expert in this area and his testimony is unreliable.

**A. Qualifications**

ISCO first challenges Biery's expert qualifications, alleging that although he has experience with metal piping, he lacks sufficient knowledge in the specialized area of plastic HDPE piping. "A court should consider a proposed expert's full range of practical experience as well as academic or technical training when determining whether that expert is qualified to render an opinion in a given area." *Smith v. Ford Motor Co.*, 215 F.3d 713, 718 (7th Cir. 2000). As Amex summarizes in its Response to ISCO's Motion, Biery has a Ph.D. in Materials Science and Engineering, which encompasses the study of plastics and joining of polymeric materials like the HDPE pipe at issue. (R. 208, at p.4). He also has experience investigating material failures as a technical consultant at SEA, Ltd. This Court agrees with Amex that Biery's education and experience have qualified him to "interpret the applicable engineering codes." *See id.* Thus, to the extent that Biery's testimony stems from "his experience and knowledge of pipelines and pipeline codes . . . his ability to read and interpret the codes applicable to the project . . . and [] his understanding of the fundamentals of materials science and engineering," this Court finds Biery qualified under the *Daubert* standard. *See id.*

However, Biery himself admits in his deposition that he has no expertise in HDPE instruction and therefore can offer no opinion about "the adequacy of instruction given by ISCO to Amex." (R. 160-3, at pp. 238, 241). Yet, Biery's opinion that "ISCO provided and is also responsible for the

inadequacies and deficiencies of the . . . training for the Amex bonding operators," could be taken to imply that the training of Amex bonding operators was deficient. This Court finds that Biery, through his own admission, is unqualified to testify as to the adequacy of ISCO's training of Amex operators.

**B. Methodology**

ISCO claims that Biery's two ISCO-related opinions should be prohibited from presentation to the jury because they are unreliable under *Daubert*. As discussed above, a court assessing the reliability of expert testimony must "consider the specific *Daubert* factors . . . where they are reasonable measures of reliability," including peer review, error rates, and acceptability of methodology in the relevant scientific community. *See Kumho Tire*, 526 U.S. at 138 (citing *Daubert*, 509 U.S. at 593-94).

Biery's first ISCO-related conclusion is that "ISCO provided guidance regarding pressure capacity and wall thickness that did not match the requirements of ASME B31.3." (R. 165-C, at p. 1). ISCO claims that "this criticism fails" because ISCO had no knowledge that the installation of the pipeline was governed by ASME B31.3. Biery's deposition reaffirms that "as far as [he could] tell from reading the depositions," no one at ISCO was "given any information from Exxon or Ambitech that this was a B31.3 project." (R. 165-3, at pp. 201, 205). However, as Amex rightly points out, whether ISCO knew that the project was governed by ASME B31.3 is a question of fact to be resolved at trial. Biery's methodology here was simply to apply the standards supplied in ASME B31.3 to the wall thickness and pressure capacity recommendations made by Dudley Burwell of ISCO. Biery's subsequent assessment that ISCO's recommendations do not comply with ASME

B31.3 makes no claim as to whether ISCO knew about this standard. Thus, the Court finds Biery's methodology with respect to this opinion reliable under *Daubert*.

ISCO next takes issue with Biery's opinion that "ISCO provided and is also responsible for the inadequacies and deficiencies of the Bonding Procedure Specification, training for the Amex bonding operators, and qualification of the Amex bonding operators." (R. 165-C, at p. 2). ISCO first addresses the Bonding Procedure Specifications portion of this statement, arguing that Biery did not attempt to replicate the failed pipe joint or do finite element analysis of his suggested alternative design. As discussed above, this Court finds reliable Biery's methodology of comparing factual data like the Bonding Procedure Specification to the standard in ASME B31.3.

However, Biery's opinion goes beyond an assessment that the Bonding Procedure Specification was deficient, and places the responsibility for this deficiency on ISCO. Again, as part of the court's role as "gatekeeper," it must "keep experts within their proper scope, lest apparently scientific testimony carry more weight with the jury than it deserves." *DePaepe,* 141 F.3d at 720. Biery admits in his deposition that "an underlying assumption of [his] opinion" regarding the Bonding Procedure Specification was that "ISCO knew it was a B31.3 job," and that "if ISCO didn't know it was a B31.3 job, then [his] opinion might not apply to them." (R.165-3, at pp. 242-43). He concludes that "it may be that ISCO is *not*, at the end of the day, the party responsible for [complying with the bonding procedures]." (R. 165-3, at p. 243). Thus, Biery's own deposition undermines the reliability of any testimony he might give as to ISCO's responsibility, because such testimony depends on the factual assumption that ISCO knew that this was a job governed by ASME B31.3.

Similarly, as to the third component of Biery's opinion stating that ISCO is responsible for the inadequate qualification of bonding operators, Biery admits in his deposition that it is "reasonable" to say that "if they weren't aware of it, ISCO didn't have to do it." (R. 165-3, at p. 243). Again, it is appropriate methodology for Biery to compare the qualification and training procedures for bonding operators with the requirements of ASME B31.3, but he does "not bridge the analytical gap between these basic principles and his complex conclusions" regarding ISCO's responsibility. *See Fuesting*, 421 F.3d at 536. Thus, this Court finds his testimony regarding ISCO's responsibility to be unreliable.

**C. Relevance**

Because this Court has found reliable only Biery's testimony using ASME B31.3 standards to assess ISCO's wall thickness and pressure capacity recommendations, bonding specification specifications, and qualification and training of bonding operators, the sole issue remaining is whether that testimony is relevant under *Daubert* and Rule 702. "Testimony is relevant if it helps the trier of fact in understanding the evidence or in determining a fact at issue." *Masters*, 291 F.3d at 991. Biery's testimony about ISCO's recommendations and the standard in ASME B31.3 will aid the finder of fact in assessing ISCO's liability. If ISCO's recommendations do not comply with ASME B31.3, as Biery's report asserts, and the finder of fact determines that ISCO was responsible for complying with that standard, that could help support a claim for contribution in a negligence verdict against Amex. Biery's testimony regarding the adequacy of ISCO's recommendations under ASME B31.3 is, therefore, relevant to assist the finder of fact in assessing ISCO's negligence.

## CONCLUSION

Ambitech's motion is granted in part and denied in part. It is granted as to Biery's testimony about the pipe's wall thickness contributing to its failure, the longer life of a thicker-walled pipe, and ExxonMobil's assessment of the accuracy of the wall thickness calculation. It is denied as to Biery's testimony regarding the inappropriate wall-thickness in Ambitech's piping design.

ISCO's motion is also granted in part and denied in part. It is granted as to Biery's testimony about ISCO's responsibility for complying with ASME B31.3 standards and any testimony about the adequacy of the training procedures themselves. It is denied as to Biery's testimony comparing ASME B31.3 requirements with ISCO's guidance about pressure capacity, wall thickness, bonding procedure specifications, and training and qualification of bonding operators.

So ordered.

Virginia M. Kendall, United States District Judge
Northern District of Illinois

Date: November 12, 2009

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