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PATRICK FISHER
Clerk

PUBLISH

UNITED STATES COURT OF APPEALS
FOR THE TENTH CIRCUIT

JOSEPH DODGE, individually and as personal representative of the Estate of Thelma Dodge; ROCKY MOUNTAIN EQUESTRIAN CENTER INC.; DESIREE CHRYSLER; DANIEL CHRYSLER; AUGUST CHRYSLER; CLAYTON CHRYSLER, minors, by and through their parents and next friends, Desiree Chrysler and Daniel Chrysler; PATRICK SHANE DODGE; CONNIE DODGE; NATHAN DODGE; LESLIE DODGE; BRYAN DODGE; PATRICK DODGE, minors, by and through their parents and next friends, Patrick Shane Dodge and Connie Dodge; YVONNE PEGARARO; NOAH WELCH, a minor by and through his mother and next friend Yvonne Pegararo; JEREMIAH WELCH; RHONDA BUTSON; DANIEL SLANOVICH; GUS SLANOVICH; CHANDLER CREEK COMPANIES; DONALD LUNA; SONJA LUNA; BRETT LUNA; NORMAN PLATT, individually and as personal representative of the Estate of Dorothy Platt; JAMES L. TREAT; ASPEN TRUST; BRUCE HADLEY; VIRGINIA HADLEY; JACK HADLEY; SHAYLEE HADLEY; KIM MYERS; SID MYERS; CASEY MYERS; CHAD MYERS; TRISTAN

DODGE; SHAYLEE DODGE;
DOLENE BLUE, individually and as
personal representative of the Estate of
James Blue,

Plaintiffs - Appellees,

and

RUSSELL JEWETT; BONITA
JEWETT; NARD CLAAR; SARA
CLAAR; MIKE HADLEY;
CATHERINE HADLEY; LINDA
JOHNSON; ALICIA JOHNSON;
BLAINE JOHNSON, a minor by and
through his mother and next friend
Linda Johnson; JULIE ANN
WRIGHT; JENNIFER WRIGHT;
NICOLE WRIGHT, a minor by and
through her mother Julie Ann Wright;
CANON FARMS TRUST,

Plaintiffs - Appellees/Cross -
Appellants,

v.

COTTER CORPORATION,

Defendant - Appellant/Cross -
Appellee.

JOSEPH DODGE, individually and as
personal representative of the Estate of
Thelma Dodge; DESIREE
CHRYSLER; DANIEL CHRYSLER;
AUGUST CHRYSLER; CLAYTON
CHRYSLER, minors, by and through

Nos. 01-1197 and 01-1236

their parents and next friends, Desiree Chrysler and Daniel Chrysler; PATRICK SHANE DODGE; CONNIE DODGE; NATHAN DODGE; LESLIE DODGE; BRYAN DODGE; PATRICK DODGE, minors, by and through their parents and next friends, Patrick Shane Dodge and Connie Dodge; YVONNE PEGARARO; NOAH WELCH, a minor by and through his mother and next friend Yvonne Pegararo; JEREMIAH WELCH; RHONDA BUTSON; DANIEL SLANOVICH; GUS SLANOVICH; DONALD LUNA; SONJA LUNA; BRETT LUNA; NORMAN PLATT, individually and as personal representative of the Estate of Dorothy Platt; JAMES L. TREAT; ASPEN TRUST; BRUCE HADLEY; VIRGINIA HADLEY; JACK HADLEY; KIM MYERS; SID MYERS; CASEY MYERS; CHAD MYERS; TRISTAN DODGE; SHAYLEE DODGE; DOLENE BLUE, individually and as personal representative of the Estate of James Blue; SHAYLEE HADLEY,

Plaintiffs - Appellees/Cross - Appellants,

and

ROCKY MOUNTAIN EQUESTRIAN CENTER INC.; CHANDLER CREEK COMPANIES; RUSSELL JEWETT; BONITA JEWETT; NARD CLAAR; SARA CLAAR; MIKE HADLEY;

LINDA JOHNSON; SHIRLEY LUNA;
ALICIA JOHNSON; CRYSTAL
DAWN THREET; BLAINE
JOHNSON, a minor by and through
his mother and next friend Linda
Johnson; JAMES BLUE; JULIE ANN
WRIGHT; DOROTHY PLATT;
JENNIFER WRIGHT; SHIRLEY
BICKETT; JOHN BICKETT; NICOLE
WRIGHT, a minor by and through her
mother Julie Ann Wright; RICHARD
JANITELL; CANON FARMS TRUST;
JOHN PINELL; EMMA PINELL;
THELMA DODGE; EDNA BLUE;
RALPH JANITELL; KATHERINE
HADLEY; RUTH QUICK JOHNSON,

Plaintiffs - Appellees,

v.

COTTER CORPORATION,

Defendant - Appellant/Cross -
Appellee.

Nos. 01-1591 and 02-1008

**Appeals from the United States District Court
for the District of Colorado
(D.C. No. 91-Z-1861)**

William A. VonHoene, Exelon Business Services Company, Chicago, Illinois
(John L. Watson, Esq., Paul F. Lewis, Esq., Jerry N. Jones, Esq., Rebecca L.
Crotty, Esq., Dianne M. Kueck, Esq., of Moye, Giles, O'Keefe, Vermeire &
Gorrell LLP, Denver, Colorado, Barry Levenstam, Esq., Jenner & Block, LLC,
Chicago, Illinois, on the briefs), for Defendant - Appellant/Cross - Appellee.

Don Howarth, Esq. (Suzelle M. Smith, Esq., Irene Viksman Flores, Esq., Darcy R. Harris, Esq., of Howarth & Smith, Los Angeles, California, with him on the brief), for Plaintiffs - Appellees/Cross - Appellants.

Before **KELLY** and **O'BRIEN**, Circuit Judges, and **EAGAN***, District Judge.

KELLY, Circuit Judge.

Background

I. Factual Background

This appeal represents our fourth review of the contentious litigation springing from a uranium mill operated in south-central Colorado by the Cotter Corporation (“Cotter”). In light of our previous discussion of the background of these actions in Dodge v. Cotter Corp., 203 F.3d 1190 (10th Cir. 2000) (“Dodge I”), we present only the following factual summary.

Cotter’s uranium mill (“the Mill”), which occupies a several hundred acre site in south-central Colorado, two and a half miles south of Cañon City, began operation in 1958. The Mill was operated for the extraction and concentration of uranium oxide from ore using both alkaline and acid leach processes that resulted in two types of waste: tailings, solid dust-like particles of ore, and raffinate, liquid recovered from the uranium extraction solutions. In accordance with the

* The Honorable Claire V. Eagan, United States District Judge for the Northern District of Oklahoma, sitting by designation.

state of the art at the time, these wastes were originally deposited in a series of unlined ponds.

Lincoln Park, an unincorporated area, is a mile and a half north of the Mill. The Arkansas River borders Lincoln Park's northern rim while Sand Creek and the DeWeese Dye Ditch angle across its southern perimeters. During the Mill's years of operation crushing ore into "yellowcake," a form of concentrated uranium, dry tailings were carried off-site by winds and raffinate leached into groundwater beneath the Mill and flowed north toward Lincoln Park along the Sand Creek channel.

The Atomic Energy Commission ("AEC") regulated the Mill from 1958 to 1968. During this period of AEC regulatory oversight, the AEC cited Cotter for various violations of the conditions of its license at the Mill. The State of Colorado Department of Health ("the State") took over responsibility from the AEC for licensing radioactive materials in 1968 and thus assumed regulatory oversight of the Mill at that time. Cotter continued to receive a variety of citations from the State for violating the conditions of its license. The presence of off-site contamination was identified as early as 1968. Over time, as awareness of further contamination grew, so too did the State's concern about mitigating the problem.

In an effort to clean up the site, both the Environmental Protection Agency

and the Colorado Department of Public Health and Environment (“the Department”) targeted the Mill’s unlined storage ponds as a primary source of the proliferation of such hazardous substances as uranium, molybdenum, thorium, radium, selenium, arsenic, and lead. By 1981, Cotter had closed eight unlined ponds and constructed two new tailings facilities sealed with a synthetic membrane liner and significant barriers of compacted clay. Later, Cotter added a clay barrier to the Sand Creek Dam to prevent water flow from the Mill into Lincoln Park. Despite these and various other efforts, state inspections would reveal tears in the ponds’ linings and violations of air emissions standards.

II. Procedural Background

In 1983, the State of Colorado sued Cotter in federal court for damages to natural resources and clean-up of the contamination. State of Colorado v. Cotter Corp., Case. No. 83-C-2389. In 1988, the parties settled the matter by a Consent Decree which provided a Remedial Action Plan (“the Plan”). The Plan required the creation of the Human Health Risk Assessment Panel (“the Panel”) which prepared a report in 1991 on the Lincoln Park Superfund Site evaluating the health risks to the surrounding populations from the Mill’s off-site releases. The Panel quantified exposures to Mill-related substances in air, surface water, sediment, ground water, soil, and different types of locally raised food, measured the toxicity of the exposures, and assessed the possible health risks based on those

evaluations. The Panel concluded “risks to humans were generally low, especially when judged in comparison to natural ‘background’ levels of mill-related metals in the environment.” Aplt. App. at 027896. However, the Panel excepted from that conclusion a possible health concern in drinking ground water “because of the presence of molybdenum (and, to a lesser extent, uranium) in the water.” Id.

A. The Boughton Trial and Dodge I

In 1991, a multitude of Lincoln Park residents filed an action under the Comprehensive Environmental Response Compensation and Liability Act (“CERCLA”), 42 U.S.C. §§ 9601-9675, the Price-Anderson Act, 42 U.S.C. § 2210(n)(2), and Colorado law alleging that Cotter’s negligent handling, maintenance, transportation and storage of hazardous materials used or produced at the Mill caused damage to their health and property. Residents who could not claim direct physical injury as a result of exposure sought instead to recover for the expense of medical monitoring that they claimed was necessitated by their increased health risks caused by the exposure.

After class certification was denied, representative plaintiffs selected for the first trial (“the Boughton group”) convinced a jury that Cotter was negligent in operating the Mill but failed to establish that their alleged exposure to hazardous materials required future medical monitoring. The Boughton plaintiffs’

appeal of the denial of class certification and other issues was rejected. See Boughton v. Cotter Corp., 65 F.3d 823 (10th Cir. 1995). In 1998, a second group of plaintiffs (“the Dodge group”) brought their claims to trial, hoping to make use of the finding of negligence from the Boughton trial. After the district court ruled that it would allow the offensive use of collateral estoppel of the Boughton jury’s finding of negligence, the Dodge group plaintiffs successfully established causation of their physical injuries and were awarded monetary damages by a jury. However, after we concluded in February 2000 that the district court incorrectly applied the doctrine of offensive collateral estoppel, we reversed and remanded to the district court for retrial. Dodge I, 203 F.3d at 1193.

B. Dodge II

The jury trial for the next group of plaintiffs (“the Jewett group”) occurred in October 2000. The district court denied Cotter’s motion to exclude several of the Jewett group plaintiffs’ experts on the grounds that the testimony was unreliable and inadmissible under Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579 (1993). Because the Jewett group jury found that Cotter was negligent but had not caused any of the plaintiffs’ alleged physical injuries or illnesses, the court entered judgment for Cotter on the negligence claims. However, the Jewett group jury did return verdicts in favor of ten plaintiffs for medical monitoring and in favor of eleven plaintiffs on their trespass claims. Although the jury made no

finding regarding medical monitoring for two of the plaintiffs, the district court entered judgment totaling \$241,300 for medical monitoring for all of the Jewett group plaintiffs. The jury also awarded a total of \$42,501 among the plaintiffs on their trespass claims. With interest, the total award was approximately \$300,000.

In No. 01-1197, Cotter appeals the Jewett group judgment, arguing that: (1) the district court failed to perform its gatekeeper function as required by Daubert and erred by admitting the testimony of certain plaintiffs' experts; (2) even if the expert testimony is admissible, the evidence was legally insufficient to send the negligence claim to the jury because plaintiffs failed to demonstrate either a breach or causation; (3) plaintiffs failed to introduce relevant evidence of trespass damages and the evidence is insufficient to support the trespass verdicts; and (4) the medical monitoring judgments must be reversed under Colorado law and in the absence of a supportable finding of negligent conduct. In No. 01-1236, the plaintiffs cross-appeal the Jewett group verdict on the basis that the district court erred in denying lump sum damages and in its imposition of a medical monitoring trust. The appeals represented by Nos. 01-1197 and 01-1236 are referred to herein as Dodge II.

C. Dodge III

Following the Jewett trial, the district court consolidated all remaining Dodge plaintiffs, including the remanded plaintiffs from Dodge I, into one large

plaintiff group (“the Blue group”). The Blue group plaintiffs moved the district court to allow the use of offensive collateral estoppel of the negligent conduct issue decided in the Dodge II trial. As in Dodge I, the district court granted the Blue group’s motion and barred Cotter from contesting its negligence vis-à-vis the Blue group plaintiffs. The Blue group plaintiffs offered expert witness testimony; all but one of these experts were the same as those used in the Dodge II trial. Cotter’s motion for summary judgment on the basis that plaintiffs could not satisfy their burden of demonstrating required levels of exposure to hazardous substances was denied, as was Cotter’s motion to exclude expert testimony pursuant to Daubert.

In 2001, the Blue group jury returned verdicts for all but one plaintiff. In particular, this jury found that Cotter was a cause of unspecified injuries and/or illnesses to plaintiffs. Accordingly, the district court entered judgments in favor of 20 plaintiffs for negligence for a total award of over \$12.5 million, in favor of 13 plaintiffs for trespass for a total award of over \$1.5 million, and in favor of 27 plaintiffs for negligence requiring medical monitoring. The jury also awarded over \$2.2 million in punitive damages to 26 plaintiffs. With costs and interest, the total award from the Blue trial exceeds \$43 million. Aplt. App. at 017397-403.

In No. 01-1591, Cotter appeals the Blue group judgment, arguing that: (1)

the district court erred by allowing the use of offensive collateral estoppel on the negligence issue; (2) the district court erred by admitting the testimony of certain plaintiffs' experts; (3) even if the expert testimony is admissible, the evidence was legally insufficient to send the negligence claim to the jury because plaintiffs failed to demonstrate causation; (4) the medical monitoring judgments must be reversed under Colorado law and in the absence of a supportable finding of negligence; (5) plaintiffs failed to introduce relevant evidence of trespass damages and that the evidence is insufficient to support the trespass verdicts; (6) the district court erred by allowing plaintiffs' biographical profiles into evidence; and (7) the district court erred by refusing to admit certain exhibits. In No. 02-1008, the plaintiffs cross-appeal the Blue group verdict on the basis that the district court erred in denying lump sum damages as to medical monitoring. The appeals represented by Nos. 01-1591 and 02-1008 are referred to herein as Dodge III. The plaintiffs in Dodge III have also moved this court to dismiss Cotter's appeal for lack of appellate jurisdiction, claiming that Cotter filed an untimely notice of appeal in No. 01-1591.

Discussion

I. Appellate Jurisdiction – Timeliness of the Notice of Appeal

Because the filing of a timely notice of appeal is mandatory and

jurisdictional, Budinich v. Becton Dickinson & Co., 486 U.S. 196, 203 (1988), we turn first to the Dodge III plaintiffs' motion to dismiss Cotter's appeal (No. 01-1591) for lack of appellate jurisdiction based on Cotter's alleged failure to file a timely notice of appeal. After the Dodge III jury verdicts were returned on June 28, 2001, Aplt. App. at 017265-389, the district court entered a "Judgment" on July 6 in favor of plaintiffs. Id. at 017391-395. The July 6 judgment awarded costs, prejudgment interest, and medical monitoring without specifying precise numerical amounts for these awards. In the judgment, the court informed the parties that they "may file declarations on the issue of medical monitoring within 30 days." Id. at 017394.

On July 16, Cotter filed a renewed motion for judgment as a matter of law ("JMOL") and a motion for a new trial. Id. at 027441-464. On July 19, some plaintiffs filed a motion to amend the judgment to include prejudgment interest. Declaration of Don Howarth in Support of Plaintiffs' Motion to Dismiss, filed Dec. 28, 2001, Ex. C. On August 6, both parties filed pleadings pertaining to the matter of medical monitoring. On September 10, the district court entered an order denying Cotter's motions for JMOL and for a new trial. Aplt. App. at 027494-496. Also on September 10, the court entered an order calculating amounts to be awarded for costs and for medical monitoring. Id. at 027498-503. This order also declared that because the "only remaining issue before the Court

concerns interest,” it would “amend the judgment to reflect the award of costs and medical monitoring once the parties have submitted their calculations concerning interest on the personal injury and trespass awards.” Id. at 027502.

The district court entered its amended final judgment on November 20. Id. at 017397-405. This judgment set forth the certain sums awarded for medical monitoring, prejudgment interest and costs. Cotter filed its notice of appeal (No. 01-1591) on December 20, and the plaintiffs cross-appealed (No. 02-1008) on January 3, 2002. The plaintiffs argue that the July 6 judgment is final and that the time to appeal began to run when the district court denied Cotter’s motions for JMOL and for a new trial on September 10. Plaintiffs’ Motion to Dismiss, filed Dec. 28, 2001, at 5-6.

We have “jurisdiction of appeals from all final decisions of the district courts.” 28 U.S.C. § 1291. Under § 1291, we have jurisdiction only over a “final” decision of a district court--that is, a decision that “ends the litigation on the merits and leaves nothing for the court to do but execute the judgment.” Catlin v. United States, 324 U.S. 229, 233 (1945); Albright v. UNUM Life Ins. Co., 59 F.3d 1089, 1092 (10th Cir. 1995). In other words, to be final, a decision must reflect “the termination of all matters as to all parties and causes of action.” D&H Marketers, Inc. v. Freedom Oil & Gas, Inc., 744 F.2d 1443, 1444 (10th Cir. 1984) (en banc). “[T]he touchstone of a final order is ‘a decision by the court

that a party shall recover only a *sum certain*.” Albright, 59 F.3d at 1092 (quoting former Fed. R. Civ. P. 58). Finally, in considering whether a judgment is “final” under § 1291, the “label used to describe the judicial demand is not controlling,” meaning we “analyze the substance of the district court’s decision, not its label or form.” Id.

Applying these principles, we conclude that plaintiffs’ argument is without merit and we deny the motion to dismiss. Here, a final judgment was not entered until November 20, when the district court set forth a sum certain for every part of the award, including prejudgment interest. It is clear that the July 6 directive, although titled a “Judgment,” was not a final decision under § 1291 because neither the medical monitoring award nor the prejudgment interest were finally determined. Prejudgment interest is a portion of the damages and thus is an integral part of the merits decision. Osterneck v. Ernst & Whinney, 489 U.S. 169, 175-76 & n.3 (1989); Garcia v. Burlington N. R. Co., 818 F.2d 713, 721 (10th Cir. 1987). Here, the determination of prejudgment interest was pending until November 20, which is the date the decision in this case became final. Accordingly, Cotter’s notice of appeal was timely and we therefore have appellate jurisdiction. Cotter’s related motion to strike and its related motion for sanctions and costs are denied.

II. Dodge II – Admissibility of Expert Testimony

In Dodge II, Cotter raises two issues regarding the admissibility of plaintiffs' experts. First, Cotter argues that the district court failed to perform the gatekeeper function mandated by Daubert by focusing its findings entirely on certain experts' professional qualifications and failing to make specific findings relating to the reliability of their opinions. Second, Cotter argues that had the district court performed its gatekeeper function, it would have excluded as unreliable the testimony of certain plaintiffs' experts, including geologist Glen Miller and medical experts Dr. Malin Dollinger and Dr. Martyn Smith. Dodge II Aplt. Br. at 22. Cotter does not challenge the experts' credentials, expertise or qualifications to testify as experts in their respective areas of concern.

It is by now well established that Fed. R. Evid. 702 imposes on a district court a gatekeeper obligation to "ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." Daubert, 509 U.S. at 589. This gatekeeper function requires the judge to assess the reasoning and methodology underlying the expert's opinion, and determine whether it is both scientifically valid and applicable to a particular set of facts. Id. at 592-93. The Supreme Court has made clear that "where [expert] testimony's factual basis, data, principles, methods, or their application are called sufficiently into question . . . the trial judge must determine whether the testimony has 'a reliable basis in the knowledge and experience of [the relevant] discipline.'" Kumho Tire Co. v.

Carmichael, 526 U.S. 137, 149 (1999) (quoting Daubert, 509 U.S. at 592).

To be reliable under Daubert, an expert's scientific testimony must be based on scientific knowledge, which "implies a grounding in the methods and procedures of science" based on actual knowledge, not "subjective belief or unsupported speculation." 509 U.S. at 590. In other words, "an inference or assertion must be derived by the scientific method . . . [and] must be supported by appropriate validation--*i.e.* 'good grounds,' based on what is known." Id. While expert opinions "must be based on facts which enable [the expert] to express a reasonably accurate conclusion as opposed to conjecture or speculation, . . . absolute certainty is not required." Gomez v. Martin Marietta Corp., 50 F.3d 1511, 1519 (10th Cir. 1995) (quotation omitted). "The plaintiff need not prove that the expert is undisputably correct or that the expert's theory is 'generally accepted' in the scientific community." Mitchell v. Gencorp Inc., 165 F.3d 778, 781 (10th Cir. 1999). Instead, the plaintiff must show that the method employed by the expert in reaching the conclusion is scientifically sound and that the opinion is based on facts which satisfy Rule 702's reliability requirements. Id.

To assist in the assessment of reliability, the Supreme Court in Daubert listed four nonexclusive factors that the trial court may consider: (1) whether the opinion at issue is susceptible to testing and has been subjected to such testing; (2) whether the opinion has been subjected to peer review; (3) whether there is a

known or potential rate of error associated with the methodology used and whether there are standards controlling the technique's operation; and (4) whether the theory has been accepted in the scientific community. 509 U.S. at 593-94. As noted, the list is not exclusive, and district courts applying Daubert have broad discretion to consider a variety of other factors. Kumho Tire, 526 U.S. at 150 (“[W]e can neither rule out, nor rule in, for all cases and for all time the applicability of the factors mentioned in Daubert Too much depends upon the particular circumstances of the particular case at issue.”).

Generally, the district court should focus on an expert's methodology rather than the conclusions it generates. Daubert, 509 U.S. at 595. However, an expert's conclusions are not immune from scrutiny: “A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.” General Elec. Co. v. Joiner, 522 U.S. 136, 146 (1997) (“[N]othing in either Daubert or the Federal Rules of Evidence requires a district court to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert.”). Under Daubert, “any step that renders the analysis unreliable . . . renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology.” Mitchell, 165 F.3d at 782 (quoting In re Paoli R.R. Yard PCB Litigation, 35 F.3d 717, 745 (3d Cir. 1994)). It is critical that the district court

determine “whether the evidence is genuinely scientific, as distinct from being unscientific speculation offered by a genuine scientist.” Id. at 783 (quoting Rosen v. Ciba-Geigy Corp., 78 F.3d 316, 318 (7th Cir. 1996)). Regardless of the specific factors at issue, the purpose of the Daubert inquiry is always “to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” Kumho Tire, 526 U.S. at 152.

A. Standard of Review

We review de novo the question of whether the district court applied the proper legal test in admitting an expert’s testimony. Goebel v. Denver & Rio Grande W. R.R. Co., 215 F.3d 1083, 1087 (10th Cir. 2000). Though the district court has discretion in *how* it conducts the gatekeeper function, we have recognized that it has no discretion to avoid performing the gatekeeper function. Id. (citing Kumho Tire, 526 U.S. at 158-59 (Scalia, J., concurring)). Therefore, we review de novo the question of whether the district court applied the proper standard and actually performed its gatekeeper role in the first instance. We then review the trial court’s actual application of the standard in deciding whether to admit or exclude an expert’s testimony for abuse of discretion. Joiner, 522 U.S. at 139. The trial court’s broad discretion applies both in deciding how to assess

an expert's reliability, including what procedures to utilize in making that assessment, as well as in making the ultimate determination of reliability. Kumho Tire, 526 U.S. at 152; United States v. Velarde, 214 F.3d 1204, 1208-09 (10th Cir. 2000). Accordingly, we will not disturb the district court's ruling unless it is "arbitrary, capricious, whimsical or manifestly unreasonable" or when we are convinced that the district court "made a clear error of judgment or exceeded the bounds of permissible choice in the circumstances." Atlantic Richfield Co. v. Farm Credit Bank of Wichita, 226 F.3d 1138, 1163-64 (10th Cir. 2000).

A natural requirement of the gatekeeper function is the creation of "a sufficiently developed record in order to allow a determination of whether the district court properly applied the relevant law." Goebel, 215 F.3d at 1087; see also Dodge I, 203 F.3d at 1200 n.12 (urging the district court on remand to "vigilantly make detailed findings to fulfill the gatekeeper role crafted in Daubert" to ensure that each "particular opinion is based on valid reasoning and reliable methodology"). In Velarde, we observed that "Kumho and Daubert make it clear that the [district] court must, on the record, make *some* kind of reliability determination." 214 F.3d at 1209. Thus, we held in Goebel that when faced with a party's objection, a district court "must adequately demonstrate by *specific findings on the record* that it has performed its duty as gatekeeper." 215 F.3d at 1088 (emphasis added). "Without specific findings or discussion on the record, it is impossible on appeal to determine whether the district court carefully and

meticulously reviewed the proffered scientific evidence or simply made an off-the-cuff decision to admit the expert testimony.” Id. (quotations omitted).

“In the absence of such findings, we must conclude that the court abused its discretion in admitting such testimony.” Id.

B. Background of Daubert Issues

(1) Cotter’s Daubert Motions

Before trial, Cotter moved to exclude the testimony of certain plaintiffs’ experts on the grounds that the opinions were not reliable under Daubert. Aplt. App. at 002034-101. The 47-page motion included an appendix of several thousand pages containing Fed. R. Civ. P. 26 reports from both parties’ experts, deposition testimony, and over 200 articles and studies relied upon by the experts. Id. at 002103-009852. Concluding that the motion violated local court rules regarding length, the district court returned the motion and accompanying appendix and allowed Cotter to file a revised motion and appendix, neither of which could exceed 20 pages in length. Id. at 009857-858. Cotter moved for leave to submit a lengthier appendix to provide the court with sufficient information to make its ultimate determination, id. at 009860-862, but the district court denied the motion, finding that “such material is prolix” because the 20-page limit is “sufficient to allow [Cotter] to allege that plaintiffs’ experts are not, in fact, experts, or that they base their opinions on unreliable studies or methodologies.” Id. at 009865. Cotter then submitted a revised motion and

appendix complying with the limits in which Cotter objected to the reliability of six of the plaintiffs' proposed expert witnesses. Id. at 009868-908.

The district court recognized the necessity of conducting a Daubert hearing to address several important issues raised in the motions. Id. at 010114. At a trial preparation conference, the court informed the parties that its Daubert rulings “are going to be very similar, if not the same, as [its] rulings were [in Dodge I] . . . except in the areas where the Court of Appeals [found] error.” Id. The district court also informed the parties that while it wished to conduct the Daubert hearing without live witness testimony by relying on argument and proffers, it would consider allowing live witnesses if absolutely necessary. Id. at 010166. Plaintiffs submitted several proffers in opposition to Cotter's Daubert motion including summaries of their challenged experts' opinions, bases, methods and conclusions. Id. at 010191-271, 299-307. Cotter also submitted exhibits including expert affidavits, deposition testimony, articles, studies and proffers related to the contested experts. Id. at 010330-696.

(2) The Daubert Hearing – Summary of Cotter's Arguments

At the Daubert hearing, Cotter stated its intention to introduce live testimony from three of its experts. Id. at 010700. Citing Cotter's failure to notify the court of this intention in a timely manner, the court refused to allow any live witness testimony. Id. at 010704. Thus, relying solely on evidentiary proffers, each party argued its position on the admissibility of certain expert

testimony. Id. at 010698-843. Three experts in particular were the focus of Cotter's argument. The first was geologist Glen Miller, whose expert testimony would be offered to establish the presence of harmful substances (i.e., uranium, molybdenum, arsenic, lead) in levels exceeding the natural background in soil, water and vegetation samples taken in and around plaintiffs' properties and also to establish that such substances derived from the Mill. Id. at 010755-782. The remaining two were Dr. Malin Dollinger, a medical doctor board certified in internal medicine and oncology, and Martyn Smith, Ph.D., a professor of toxicology; the testimony from these experts would be offered to establish that the harmful substances released from the Mill were a cause of plaintiffs' extensive range of maladies. Id. at 010706-726.

Briefly summarized, Cotter argued that Mr. Miller's testimony was unreliable due to his use of unreliable methodologies, specifically the method and reasoning he employed in selecting baselines with which to compare the measured levels of the substances at issue. Because each of these substances are naturally found in the environment, and because the vicinity of the Mill was known to be mineral rich and geologically varied, Cotter argued that the selection of valid baselines was nothing short of fundamental to determining if Cotter was in fact responsible for the measured levels of the substances on plaintiffs' properties. Cotter took particular issue with Mr. Miller's use of baselines from a textbook published in 1966, referred to by the author's name, "Bowen," which established

worldwide average baselines of various substances. Although Mr. Miller maintained that no superior source of pre-Mill-contamination baselines were available, Cotter argued, among other things, that use of Bowen's worldwide baselines, as opposed to baselines more directly tied to the specific mineral-rich vicinity of the Mill, rendered Mr. Miller's entire analysis unreliable. Id. at 010755-782.

Cotter also argued that the causation testimony from Drs. Dollinger and Smith was unreliable due to their reliance on improper methodology and reasoning to conclude that substances from Cotter caused the plaintiffs' maladies. Specifically, Cotter took issue with: (1) their reliance on Mr. Miller's testimony to conclude that plaintiffs were significantly exposed without any real understanding or estimate of dose or exposure amounts; (2) their conclusion without proper scientific support that the substances at issue could even cause health problems in humans like those alleged by plaintiffs; and (3) the reasoning that because nothing else seemed to account for the plaintiffs' alleged maladies, contamination from Cotter must have been the cause.

The district court recognized that several of Cotter's arguments merited close attention. Id. at 010839-840. The court specifically expressed concern with various aspects of the proposed expert testimony, including Mr. Miller's baselines for dust, vegetation and water. Id. at 010786, 010770-771, 010792-795, 010801, 010804, 010809-811. In fact, the court had the following to say regarding

perceived problems with Mr. Miller's testimony:

Let me just be very candid with you. I wish that the plaintiffs had some better information on background. I think it would be much better if they had; if they had even gone out and done some tests in the surrounding areas, rather than rely on Bowen. What is the level in Europe or Israel or South Africa, it seems to me is not that critical.

Unfortunately, they didn't. Now, if I don't give Mr. Miller a chance to show that this background is sufficient, basically the whole plaintiffs' case goes and we might as well just strike the trial. And I frankly don't want to do that. I think the plaintiffs should have some opportunity to present their case to the jury.

Id. at 010817. Recognizing the need to hear from the experts themselves, the court opted to reserve ruling on each expert until trial, at which time the court would allow in camera voir dire of each contested expert. Id. at 010839-840. As a result, at the Daubert hearing, the court made no specific findings on the record concerning the reliability of the experts' testimony. Id. at 010840. The court concluded the hearing by denying Cotter's request to proffer a complete appendix of the reports and studies relied upon by the contested experts, stating that it would ask for any additional materials if it needed them. Id. at 010842.

C. Review of the District Court's Rulings Following In Camera Voir Dire

Upon reviewing the record, we reluctantly conclude that the district court did not perform its gatekeeper function with respect to plaintiffs' experts Mr. Miller, Dr. Dollinger and Dr. Smith and thereby abused its discretion by admitting their testimony. Faced with an exceedingly difficult, complex case and obvious docket pressures, the court did not make adequate findings on the record to assure

that the expert testimony offered was both relevant and reliable, and that the particular opinions were based on valid reasoning and reliable methodology.

As is true in most any toxic tort action, the outcome of this case indisputably hinges on the testimony of experts. Recognizing this fact, in reversing and remanding Dodge I, we specifically alerted the district court to the fundamental importance of properly performing the gatekeeper function:

[B]ecause the question of expert testimony is likely to recur, we would be remiss not to indicate our concern that the district court vigilantly make *detailed* findings to fulfill the gatekeeper role crafted in Daubert Given the novelty of the medical causation theory here linking exposure to molybdenum with osteoarthritis and bony exostoses, it is essential that by *specific* findings of record the trial court assures the expert testimony offered by both sides is relevant and reliable, and the particular opinion is based on valid reasoning and reliable methodology.

203 F.3d at 1200 n.12 (quotations omitted) (emphasis added). At the Daubert hearing itself, the district court made no specific, detailed findings on the record concerning any of the experts' testimony. Therefore, unless the court made such findings at trial during the in camera voir dire of Mr. Miller, Dr. Dollinger, and Dr. Smith, it necessarily failed to perform the gatekeeper function with respect to those experts.

Regarding Mr. Miller, after a brief in camera voir dire by the parties, the court made the following findings, which we include in their entirety:

There certainly are problems here, a lot of problems, concerning water, concerning vegetation, and the differences. But what I have heard is that Mr. Miller is certainly a well-qualified geologist, got his degree in Wyoming, has a great deal of experience.

He wishes to use Bowen, which is a source or a treatise widely accepted by state agencies. He also has looked at the Southfield Mine and the values there. He has looked at many other sources, baselines and GeoTrans, and the USGS figures.

I think that the problems that exist with differences can be covered by cross-examination. And with one exception, I'm going to permit him to testify. I'd like to hear what he says. I'd like to hear the direct and cross. If there are any huge problems, I'd like to hear a Rule 50 motion at the end of the case.

But the one problem I have is the dust. There apparently is no baseline for dust. It's not in Bowen, and the Court feels that it's just speculation to let this witness testify about dust. And he may not testify concerning dust.

As far as the water, vegetation, soil, et cetera, I think that can be covered on cross-examination.

Aplt. App. at 012035-036. These findings lack the degree of specificity that would allow us to determine whether the district court properly applied the relevant law. Not only is no mention made about Mr. Miller's reasoning or the reliability of his methodology, no mention is made *at all* about how or why he arrived at his conclusion that the Bowen text was the proper source to establish baselines for the area in question. Having reviewed the record, we certainly share the district court's obvious concern about Mr. Miller's selection of baseline values. See, e.g., id. at 010817-818. However, in the absence of specific, detailed findings, it is impossible for us on appeal to determine "whether the district court carefully and meticulously reviewed the proffered scientific evidence or simply made an off-the-cuff decision to admit the expert testimony." Goebel, 215 F.3d at 1088 (quotations omitted).

Regarding the causation testimony presented by Dr. Dollinger and Dr.

Smith, the court likewise did not make adequate findings on the record to assure that the testimony offered was relevant and reliable, and that the particular opinions were based on valid reasoning and reliable methodology. In their entirety, the court's findings relating to Dr. Dollinger are as follows:

What the Court is faced with is an expert witness in internal medicine and the subspecialty of oncology who has a very fine education – Yale medical school, Phi Beta Kappa – and other excellent background; who treats patients with cancer and other diseases; who has reviewed medical literature on the effects of molybdenum, lead, arsenic, uranium, on human beings, heavy metals; who perhaps is going to disagree with defendant's experts on many of these areas. But just because Dr. Dollinger's view may be a minority view or different from defendant's does not mean that he is not qualified as an expert opinion in the area of internal medicine, oncology, to – to give testimony on whether or not different heavy metals are substantial causes of whatever the ailments are.

Now, I will take objections as we go along; and if something appears to be far afield from his specialty, I will consider the objection of Counsel.

But right now, we have a very highly qualified expert in the field of internal medicine and oncology who has a theory that – concerning the causes of cancer and other diseases which may be different from defendant's experts. Nevertheless, I think in this case the jury should be able to hear his opinions and conclusions and decide for themselves.

So according to the direction of the Tenth Circuit, which is that this court should vigilantly make detailed findings to fulfill the gatekeeper role, this court is satisfied that the jury may hear the opinions of Dr. Dollinger in this area, as far as we've gone so far, in this area under his speciality of oncology, a subspecialty of internal.

Now, if we get into detailed neurology or arthritis, I am going to have to hear from him whether this is covered by his expertise or not. And it may be that some of these opinions may be ruled otherwise. But I think I'm going to have to just take that as it comes up.

The Court will permit him to testify.

Aplt. App. at 011550-552. Again, we lack specific, detailed findings about Dr.

Dollinger’s reasoning or the reliability of his methodology in arriving at his conclusions. As with Mr. Miller, the court’s findings relative to Dr. Dollinger’s credentials and qualifications are simply insufficient by themselves to fulfill the gatekeeper function. As we have emphasized, “a district judge asked to admit scientific evidence must determine whether the evidence is genuinely scientific, as distinct from being unscientific speculation offered by a genuine scientist.” Mitchell, 165 F.3d at 783 (quoting Rosen, 78 F.3d at 318). These findings simply do not allow us to determine if the district court satisfied that requirement.

Similarly, the entirety of the district court’s findings regarding Dr. Smith’s testimony is as follows:

In order to try to satisfy the Tenth Circuit test that they indicate the court must make, the Court will agree with the plaintiffs that by proffer and by testimony a couple years ago, there has been a showing that he is undisputably an expert in the area of toxicology. It’s been indicated that his methodology is the same as the methodology that is used in nonlitigation cases. He doesn’t have to see patients. He’s a Ph.D., not an M.D. He has apparently done research, himself, on heavy metals. He teaches doctors about toxicology, and the plaintiff is conceding that there is no study in risk exposure, if I’m understanding plaintiffs correctly – . . . numerical risk exposure. So the Court will overrule the objections, the Daubert objections as to Dr. Smith, and we’ll see how it goes.

Id. at 012166. Although the court apparently alludes to Dr. Smith’s methodology, it made no specific findings and really did nothing more than note an indication that his methodology was the same as that used outside the context of litigation.

Id. Even if the court’s musings could be considered findings, they do not allow us to determine if the court applied the proper legal standard. As we observed in

Dodge I, “[g]iven the novelty of the medical causation theory here,” such findings are essential. 203 F.3d at 1200 n.12.

Even had the district court performed its gatekeeper function, on this record we would be inclined to conclude that the court abused its discretion by unreasonably limiting the evidence upon which to base the decision. It is plain that a district court exercises significant discretion in deciding how to perform its gatekeeper role. Kumho Tire, 526 U.S. at 158. While we have held that a Daubert hearing is but one method a court might choose to fulfill its gatekeeper obligation, we have also emphasized that ultimately, the obligation can be satisfied only if “the court has sufficient evidence to perform the task.” Goebel, 215 F.3d at 1087 (quotation omitted). Therefore, although a district court has discretion to limit the information upon which it will decide the Daubert issue, we review the exercise of that discretion for its abuse. See, e.g., United States v. Nichols, 169 F.3d 1255, 1262-63 (10th Cir. 1999); United States v. Call, 129 F.3d 1402, 1405 (10th Cir. 1997).

The important issue here is the aggregate effect of several of the district court’s decisions. Initially, the court limited the length of any Daubert brief and appendix to 20 pages. Aplt. App. at 009857-858. Though the court was put on notice of specific challenges to certain experts’ methodology and reasoning, it insisted on the exclusive use of argument and proffers at the Daubert hearing instead of meaningful live witness testimony. Id. at 010166. Although a detailed,

in-depth hearing addressing disputed reasoning and methodologies was critical to a proper resolution of the entire case, the Daubert hearing lasted just over four hours and allowed for little more than a cursory review of the contested issues. The court itself proved this point by asking questions of counsel that only the expert could realistically answer. See, e.g., id. at 010775, 010793-796, 010801-802, 010804.

After noting the need to hear from the experts in person to decide difficult issues, the court reserved ruling on admissibility until trial. Id. at 010839-840. And, although the court recognized the existence of significant reasoning and methodology problems, id. at 010817-818, it again declined to accept proffers of the experts' reports and full copies of all relevant studies upon which the experts relied. Id. at 010841-842. Finally, during the in camera voir dire of each expert at trial, which was the *only* time the court heard directly from the experts themselves, the court appeared to place a greater emphasis on keeping the voir dire brief than on a review of reasoning and methodology. See, e.g., id. at 011538-540, 011546, 012015, 012028, 012033, 012159.

Although each of the court's decisions taken by itself might well be within its discretion, taken together, these decisions placed an unreasonable limitation on the information available to the court and in our view exceeded the bounds of permissible choice in the circumstances. In a case like this one, where the expert testimony is crucial to the ultimate outcome, is vigorously challenged, and has

several obvious areas of concern, we think it unreasonable to limit so severely both the underlying documentation and the use of live witness testimony upon which the court might base a decision. This was not a case where the parties agreed that the Daubert issues could be decided on a stipulated record, nor was it an “ordinary case[] where the reliability of an expert’s methods [could] properly [be] taken for granted.” Kumho Tire, 526 U.S. at 152. On the contrary, in this case, we fail to see how the Daubert issues could be reliably decided without a meaningful hearing, which of necessity depends upon the use of live witness testimony as opposed to attorneys’ arguments. Because we have concluded that the district court did not perform its gatekeeper role, we do not have before us the findings required to determine definitely if the court abused its discretion by so limiting the evidence. However, from the record we do have before us, taken as a whole, we would be inclined to conclude that the court did abuse its discretion.

Having concluded that the district court improperly admitted the expert testimony by failing to perform its gatekeeper obligation, we now turn to the appropriate remedy. Given the vast investment of resources in this case by both parties and by the federal judiciary, we are reluctant to render a decision that will further delay a final resolution. Nonetheless, we must be faithful to our precedents which dictate that we reverse and remand to the district court for a new trial. See, e.g., Goebel, 215 F.3d at 1089; Velarde, 214 F.3d at 1211, 1213. In this case, we are simply unable to conclude that the erroneous admission of this

expert testimony was harmless. As we stated in Goebel, “[e]rroneous admission of evidence is harmless only if other competent evidence is ‘sufficiently strong’ to permit the conclusion that the improper evidence had no effect on the decision.” 215 F.3d at 1089 (quoting Lillie v. United States, 953 F.2d 1188, 1192 (10th Cir. 1992)). Here, the testimony of these experts was nothing short of essential to each of the plaintiffs’ claims. See, e.g., Aplt. App. at 016094 (elements of negligence claim); id. at 016104 (elements of medical monitoring claim); id. at 016099 (elements of trespass claim).

We decline to entertain the possibility of a remand to the district court to make specific findings relative to these experts, for we think no district court would be well positioned to make valid findings given the overwhelming temptation to engage in post hoc rationalization of admitting the experts. We are further persuaded on this issue by the following reasoning of one of our sister circuits:

To remand for an evidentiary hearing post-jury verdict undermines Daubert’s requirement that *some* reliability determination must be made by the trial court *before* the jury is permitted to hear the evidence. Otherwise, instead of fulfilling its mandatory role as a gatekeeper, the district court clouds its duty to ensure that only reliable evidence is presented with impunity. A post-verdict analysis does not protect the purity of the trial, but instead creates an undue risk of post-hoc rationalization. This is hardly the gatekeeping role the Court envisioned in Daubert and its progeny.

Mukhtar v. Cal. State Univ., 319 F.3d 1073, 1074 (9th Cir. 2003), amending 299 F.3d 1053, 1066 (9th Cir. 2002). Accordingly, on the basis of our holdings in

Goebel and Velarde, we reverse and remand Dodge II for a new trial.

III. The Impact on Dodge III

As we observed at the outset, the Dodge III verdict is tied directly to Dodge II given the district court's ruling that plaintiffs could make use of offensive collateral estoppel on the negligent conduct issue. Aplt. App. at 016848-851. Beyond this, however, in deciding whether to admit certain contested experts in Dodge III, the district court relied entirely on its decisions from Dodge II. As a result, the two cases are inextricably linked.

In Dodge III, Cotter once again moved to exclude under Daubert the testimony of several of the plaintiffs' experts, including Mr. Miller, Dr. Dollinger and Dr. Smith. Id. at 018798-935. Cotter also requested a Daubert hearing, id. at 018348-351, which the district court denied, explaining as follows: "[T]he Court has previously ruled on the admissibility of plaintiffs' expert testimony. To hold another hearing on the same experts, the same testimony, and the same disputes, would be duplicative, and a waste of the Court's time and resources." Id. at 019027. The court also denied Cotter's Daubert motion as it pertained to experts who testified in Dodge II. Id. at 020188.

Thus, as a result of its reliance on rulings made in Dodge II, the court in Dodge III again failed to make specific, detailed findings on the record to assure that the expert testimony offered was relevant and reliable, and that particular opinions were based on valid reasoning and reliable methodology. Therefore, for

the reasons discussed at length above, we conclude that the district court abused its discretion in Dodge III by admitting the testimony of Mr. Miller, Dr. Dollinger and Dr. Smith. Furthermore, because the claims in Dodge III are the same as those alleged in Dodge II and because they depended upon this expert testimony just as much as the Dodge II claims, we have no recourse but to reverse and remand Dodge III for a new trial.¹

For the foregoing reasons, we REVERSE and REMAND for new trial both Dodge II and Dodge III. The plaintiffs' cross appeals in both appeals are DENIED as moot. All other pending motions are DENIED as moot.

¹ Obviously, this conclusion moots the remaining issues raised in the cross-appeals. However, because the doctrine of offensive collateral estoppel might be reapplied on remand, the district court should be mindful that such application impacts both reliability of verdicts and due process rights of defendants.