NO. 10-0775

IN THE SUPREME COURT OF TEXAS

Susan Elaine Bostic, Individually and as Personal Representative of the Heirs and Estate of Timothy Shawn Bostic, Deceased; Helen Donnahoe; and Kyle Anthony Bostic,

Petitioners,

v.

Georgia–Pacific Corporation,

Respondent.

ON PETITION FOR REVIEW FROM THE FIFTH COURT OF APPEALS
AT DALLAS, TEXAS

BRIEF OF AMICI CURIAE UNION CARBIDE CORPORATION AND KELLY-MOORE PAINT COMPANY, INC. IN SUPPORT OF RESPONDENT GEORGIA–PACIFIC CORPORATION

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INTEREST OF AMICI CURIAE

Amici Curiae Union Carbide Corporation and Kelly–Moore Paint Company, Inc. (together, "Amici") file this brief in support of Respondent Georgia–Pacific Corporation. Amici paid all fees associated with preparing this brief.

From 1964 through 1985, Union Carbide mined and milled asbestos. Kelly-Moore was a manufacturer of joint compounds that, during parts of the 1960s and 1970s, utilized a small amount of chrysotile asbestos (less than 10% by weight). As frequent defendants in asbestos cases, Amici routinely encounter substantially similar, if not identical, causation evidence as offered by the Bostics' expert witnesses in this case. In fact, some of these very same witnesses regularly appear in cases against Amici, proffering the same deficient causation opinions. Given the critical role causation evidence plays in asbestos cases, and the fact that the vast majority of Texas asbestos cases involve mesothelioma, Amici have a strong interest in the proper resolution of the causation issues presented for review here.

Amici are particularly interested in the Bostics' Issues 3 and 4 (*see* Bostics' Merits Br. xiii), in which the Bostics assert that the court of appeals "incorrectly" applied the dose requirements set forth in *Borg–Warner Corp. v. Flores*, 232 S.W.3d 765 (Tex. 2007). In reality, the Bostics are asking this Court

to overturn *Borg–Warner* and adopt the same "any exposure" causation standard rejected in that opinion. As amici curiae, Union Carbide and Kelly–Moore urge the Court to reject the Bostics' attempt to limit *Borg–Warner*'s reach to the facts of that case and render impotent its dose requirements by allowing them to be satisfied with the previously discarded and scientifically unsound "any exposure" theory.

SUMMARY OF THE ARGUMENT

In *Borg–Warner*, this Court unequivocally held that in asbestos cases, substantial–factor causation requires not only "proof of mere frequency, regularity, and proximity" of asbestos exposure, but also "[d]efendant–specific evidence relating to the approximate dose to which the plaintiff was exposed, coupled with evidence that the dose was a substantial factor in causing the asbestos–related disease." 232 S.W.3d at 772–73. Contrary to the Bostics' assertions, they presented no such evidence at trial. Indeed, their experts admitted that they did not attempt to calculate the approximate dose of asbestos to which Timothy Bostic was exposed from Georgia–Pacific's joint compounds. Nor did they attempt to determine what portion of Mr. Bostic's approximate aggregate dose the approximate Georgia–Pacific dose represented.

Having failed to meet their burden of proof at trial, the Bostics offer this Court two excuses. First, they argue *Borg–Warner*'s dose requirements

categorically do not apply to mesothelioma cases. Second, they argue that the court of appeals erroneously held them to an *actual* dose standard because the testimony of Dr. William Longo—a materials scientist who performed fiber release studies—allegedly established the approximate dose of Georgia–Pacific asbestos to which Mr. Bostic was exposed.

Both arguments fail. The Bostics' first argument merely repackages the "any exposure" theory of causation expressly rejected in *Borg-Warner*. Every court considering the issue under Texas law has held that *Borg–Warner*'s dose requirements apply to mesothelioma claims. Other jurisdictions have similarly refused to exempt mesothelioma claimants from the obligation to present evidence of dose. The important public policy behind the *Borg–Warner* dose requirements—ensuring that an adequate basis exists for imposing what can be significant liability on a defendant—logically and necessarily extends to all asbestos cases, including those involving mesothelioma. The Bostics cannot articulate any principled basis for exempting mesothelioma claims from these requirements.

Second, fiber release measurements are, by themselves, not an estimation of dose. They are simply one input necessary to calculate approximate dose of exposure. Allowing plaintiffs to substitute an incomplete measurement for

a quantitative assessment of the claimant's approximate dose would render *Borg–Warner*'s dose requirements meaningless.

Moreover, the dose requirements neither create "an insurmountable bar to proving asbestos causation" nor require plaintiffs to do the "scientifically impossible," as the Bostics claim. They simply require plaintiffs to come forward with dose reconstruction evidence, which scientists—and litigation experts—have been providing for well over a decade in asbestos cases, including mesothelioma cases. It was the Bostics' abject failure to present such evidence, not scientific impossibility, that doomed their claims.

The dose requirements strike a balance between two competing principles in asbestos cases: the "proof difficulties accompanying asbestos claims," *id.* at 772, on one hand, and "causation as an essential predicate to liability" in toxic tort cases, *id.* at 770, on the other. They allow claimants a means of establishing specific causation without evidence that fibers from the defendant's particular product actually caused the claimant's disease. At the same time they maintain the "more likely than not" causation burden of proof that is fundamental to Texas jurisprudence. The Court can and should affirm the court of appeals' judgment on the ground that the Bostics failed to present evidence establishing the approximate dose of asbestos to which Mr. Bostic was exposed from Georgia–Pacific's joint compounds, coupled with evidence that the dose was sufficient to

constitute a substantial factor in causing his mesothelioma. Because that failure of proof is fatal to the Bostics' claims, the Court need not reach any other ground raised in their petition.

ARGUMENT

I. The Court should confirm that *Borg–Warner*'s dose requirements apply to all asbestos cases, including those involving mesothelioma.

In *Borg–Warner*, this Court adopted the dose requirements to provide "appropriate parameters for lawsuits alleging asbestos–related injuries" generally. *See Borg–Warner*, 232 S.W.3d at 765; *see also id.* at 770 ("In *asbestos cases*, then, we must determine whether the asbestos in the defendant's product was a substantial factor in bringing about the *plaintiff's injuries*.") (emphases added); *id.* at 773 (requiring "evidence that the dose was a substantial factor in causing the *asbestos–related disease*") (emphasis added). The Court did not limit the dose requirements to asbestosis cases, as the Bostics contend. (*See* Bostics' Merits Br. 20, 47–49).

Since *Borg–Warner*, *every* court considering the issue under Texas law has held that the dose requirements apply to asbestos cases involving mesothelioma. *See Smith v. Kelly–Moore Paint Co., Inc.*, 307 S.W.3d 829, 834 (Tex. App.—Fort Worth 2010, no pet.) (holding "that a plaintiff in a mesothelioma suit that he or she claims is caused by an asbestos-containing product must prove the elements set forth in *Borg-Warner*'s 'substantial factor causation test':

specifically, an aggregate dose of exposure from the defendant's product and a minimum threshold dose above which an increased risk of developing mesothelioma occurs"); *Ga.–Pac. Corp. v. Stephens*, 239 S.W.3d 304, 321 (Tex. App.—Houston [1st Dist.] 2007, pet. denied) ("Without quantitative evidence of exposure and any scientific evidence of the minimum exposure level leading to an increased risk of development of mesothelioma, we hold that the opinions offered by the Stephenses' experts in this case lack the factual and scientific foundation required by *Borg-Warner* and thus are legally insufficient to support the jury's causation finding."); *In re Asbestos Prods. Liab. Litig. (No. VI)*, No. MDL–875, 2012 WL 760739, at *2, 5, 7–9 (E.D. Pa. Feb. 17, 2012) (applying Texas law) (applying dose requirements to mesothelioma claim, recognizing that "*Borg-Warner* did not limit its holding to a specific disease or fiber type"); *see also Hearn v. Snapka*, No. 13–11–00332–CV, 2012 WL 7283791, at *5–7 (Tex. App.—Corpus Christi Dec. 28, 2012, pet. filed) (mem. op.) (upholding summary judgment for attorney in legal malpractice claim where claimant failed to create fact issue on "suit-within-a-suit" element because expert affidavit submitted in support of her underlying mesothelioma claim failed to comply with *Borg-Warner*'s dose requirements).

These cases properly recognize that the principles leading the Court to adopt the dose requirements apply equally to all asbestos cases: (1) all asbestos-

related diseases are "dose response";[1] (2) not every asbestos exposure results in disease; and (3) causation is "an essential predicate to liability." *Borg-Warner*, 232 S.W.3d at 770. As the First Court of Appeals explained in *Stephens*, mesothelioma is "dose responsive," meaning that "some non de minim[i]s occupational exposure must occur to increase one's risk of developing the disease." 239 S.W.3d at 321. The scientific community therefore does not generally accept the "any exposure" causation theory in the mesothelioma context, any more than it does in the asbestosis context. *Id.* at 320–21 (explaining that scientific community has not adopted plaintiffs' experts' theory "that any exposure to a product that contains asbestos results in a statistically significant increase in the risk of developing mesothelioma"); *see Borg-Warner*, 232 S.W.3d at 773 (rejecting same theory).

To permit a mesothelioma claimant recovery without the same evidentiary showing required from an asbestosis claimant is not only unfair; it would also negate the essential element of causation in mesothelioma cases. Liability would be established merely upon proof the claimant was exposed to a single fiber of asbestos from a defendant's product, without any proof the fiber

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[1] (*See* 11 R.R. 36–37 (Dr. Samuel Hammar: "Q. Are asbestos–related diseases what we call dose–response or dose–related diseases? A. Yes."); 14 R.R. 84 (Dr. William Dyson: "[A]lmost all chemical contaminants and including asbestos in terms of their health risks, it follows what's known as a dose–response relationship. That means the higher the exposure dose, the greater the risk of a disease. The lower the exposure dose, the lower the risk of disease.").)

could have meaningfully contributed to the claimant's cancer. This is a scientifically unsound approach that is contrary to a bedrock principle of Texas jurisprudence—causation.

II. No sound legal or scientific basis exists for reverting to an "any exposure" theory of causation in mesothelioma cases.

Despite this uniformity among Texas courts directly addressing the issue, the Bostics insist that a lower causation standard should apply in mesothelioma cases, based on a dictum parenthetical in *Borg-Warner* recognizing that "'it is generally accepted that one may develop mesothelioma from low levels of asbestos exposure.'" (*See* Bostics' Merits Br. 42–43 (quoting *Borg-Warner*, 232 S.W.3d at 771).) But "low levels" does not mean *no* level. The Bostics' argument that this dictum somehow excuses them from the dose requirements is simply a repackaging of the "any exposure" theory that the Court expressly rejected in that very same opinion. *See Borg-Warner*, 232 S.W.3d at 773 (rejecting court of appeals' any exposure analysis); *see also Stephens*, 239 S.W.3d at 311 ("[T]he Texas Supreme Court decided *Borg-Warner*, rejecting the 'any exposure' test for specific causation and adopting a *Lohrmann/Havner* substantial-factor causation standard.").

Numerous courts in jurisdictions outside Texas have roundly rejected similar attempts to establish causation in mesothelioma cases with "any exposure" evidence. These courts properly recognize that the "any exposure" theory lacks

any scientific basis and provides no means of distinguishing between mesothelioma cases for which a defendant properly bears responsibility and those for which it does not. *See, e.g.*, *Butler v. Union Carbide Corp.*, 712 S.E.2d 537, 540, 544, 552 (Ga. Ct. App. 2011) (affirming exclusion of specific causation expert because his "'any exposure' theory is, at most, scientifically-grounded speculation: an untested and potentially untestable hypothesis"); *Betz v. Pneumo Abex, LLC*, 44 A.3d 27, 56 (Pa. 2012) ("Dr. Maddox's any-exposure opinion is in irreconcilable conflict with itself. Simply put, one cannot simultaneously maintain that a single fiber among millions is substantially causative, while also conceding that a disease is dose responsive.").[2]

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[2] *See also*, *e.g.*, *Moeller v. Garlock Sealing Techs., LLC*, 660 F.3d 950, 954 (6th Cir. 2011) (applying Kentucky law) (holding that plaintiff failed to establish substantial factor causation evidence where expert "testified only that all types of asbestos can cause mesothelioma and that any asbestos exposure counts as a 'contributing factor'"); *Martin v. Cincinnati Gas & Elec. Co.*, 561 F.3d 439, 443 (6th Cir. 2009) (applying Kentucky law) (explaining that expert's opinion that "every exposure to asbestos, however slight, was a substantial factor" was insufficient because it would render the substantial factor test "meaningless" (quoting *Lindstrom v. A–C Prod. Liab. Trust*, 424 F.3d 488, 493 (6th Cir. 2005))); *Wannall v. Honeywell Int'l, Inc.*, No. 10–351, 2013 WL 1966060, at *15 (D.D.C. May 14, 2013) (applying Virginia law) (holding that expert's opinion that "each and every occupational exposure to asbestos-containing products in the Navy . . . and while performing automotive brake work was a substantial contributing factor in causing his malignant mesothelioma" did not raise a fact issue on causation) (citations omitted); *Smith v. Ford Motor Co.*, No. 2:08–CV–630, 2013 WL 214378, at *1–2 (D. Utah Jan. 18, 2013) (excluding Dr. Hammar's causation opinion, which was "based on a theory of causation that has variously been described as the 'every exposure' or 'every breath' theory, which holds that each and every exposure to asbestos by a human being who is later afflicted with mesothelioma, contributed to the formation of the disease," upon finding the theory to be "without scientific foundation" and "mere speculation designed for litigation"); *Anderson v. Ford Motor Co.*, ---F. Supp. 2d---, No. 2:06–CV–741, 2013 WL 3179497, at *7 (D. Utah June 24, 2013) ("[T]he every exposure theory of causation does not meet the standards set by Rule 702 and *Daubert* and must be excluded."); *Gregg v. V–J Auto Parts, Inc.*, 943 A.2d 216, 226–27 (Pa. 2007) (declining to "indulge in a fiction that each and every exposure to asbestos, no matter how minimal in relation

As one commentator has noted:

> These cases demonstrate that the any exposure theory is failing in a multitude of diverse courts and across the spectrum of asbestos cases, regardless of disease and type of exposure. Courts are appreciating that the any exposure theory can be extremely unfair when applied to defendants with small exposures, especially when the plaintiffs' experts ignore more significant exposures that almost certainly cause disease. The decisions also "reflect a proper assessment of the dose requirement of toxicology."

Victor E. Schwartz, *A Letter to the Nation's Trial Judges: Asbestos Litigation, Major Progress Made over the Last Decade and Hurdles You Can Vault in the Next*, 36 AM. J. TR. ADVOC. 1, 30–31 (2012) (citations omitted).

The Bostics' other argument for lowering the causation bar in mesothelioma cases, that the dose requirements allegedly "place an insurmountable bar to proving asbestos causation" (Bostics' Merits Br. 21), is mere hyperbole. There are a host of litigation experts who offer "dose reconstruction" or "retrospective exposure assessment" analyses,[3] and asbestos claimants regularly

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to other exposures, implicates a fact issue concerning substantial-factor causation" in mesothelioma cases); *see also Sclafani v. Air & Liquid Sys. Corp.*, Nos. 2:12–CV–3013 & 3037, 2013 WL 2477077, at *4 (C.D. Cal. May 9, 2013) (granting motion in limine excluding Dr. Brody's opinion that "each and every exposure . . . contributes to the development of' mesothelioma") (citations omitted); *see generally* Mark A. Behrens & William L. Anderson, *The "Any Exposure" Theory: An Unsound Basis for Asbestos Causation and Expert Testimony*, 37 SW. U. L. REV. 479 (2008) (discussing, with approval, case law rejecting any exposure theory).

[3] *See, e.g.*, http://www.dotsongroup.com (last visited Aug. 19, 2013) (describing legal support services provided by Kyle Dotson, CIH, as including "serving as a consulting and/or testifying expert witness in workplace injury and wrongful death litigation involving such toxic tort issues as occupational exposure to asbestos (including state–of–the–art and exposure

engage them to perform the necessary dose approximations. The Bostics presented no evidence that such analyses are scientifically impossible, and, in fact, the literature is to the contrary. *See* Mark A. Behrens & William L. Anderson, *The "Any Exposure" Theory: An Unsound Basis for Asbestos Causation and Expert Testimony*, 37 Sw. U. L. REV. 479, 509 (2008) (stating that "traditional industrial hygiene and toxicology principles and methodologies exist under which non-litigation professionals can assess whether past exposures were sufficient to cause disease," and rejecting the "contention that low dose cases cannot be proven unless plaintiffs are given the advantage of avoiding any dose assessment"); David A. Oliver, *Alas, Courts Still Resist Substantial Factor Causation*, LAW360 (Aug. 15, 2013) ("So why in a time when it's easy to find data about the asbestos exposures of people who had jobs like the plaintiff's don't we demand that experts say what they are?"), *available at* http://www.law360.com/articles/464947. The Bostics' failure to engage an expert to quantify Mr. Bostic's approximate dose does not establish the impossibility of doing so.

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reconstruction)"); http://www.jurispro.com/DanNapierMSCIHCSP (last visited Aug. 19, 2013) (describing expert services provided by Dan Napier, CIH, as including "forensic reconstruction of hazardous exposure" in asbestos cases); http://www.exponent.com/dose_reconstruction/ (last visited Aug. 19, 2013) (advertising among expert services "a variety of assessment tools to gather data to reconstruct and characterize historical exposures" to "calculate[] the historical chemical dose to which persons that worked certain jobs or used specific products were exposed").

Moreover, the Bostics' argument ignores the fact that the causation bar has already been lowered by this Court in *Merrell Dow Pharmaceuticals, Inc. v. Havner*. 953 S.W.2d 706 (Tex. 1997). *Havner* allows toxic tort plaintiffs to use statistical, epidemiological evidence showing a statistically significant doubling of the risk as circumstantial evidence of causation. *Id.* at 717–18. *Havner* thus represents a relaxation of traditional notions of causation in cases where it is scientifically impossible to come forward with direct evidence of causation. *Borg–Warner* appropriately recognized that *Havner*'s relaxed causation standard should apply in asbestos cases. *See Borg–Warner*, 232 S.W.3d at 772 (expressly acknowledging that asbestos claimants can satisfy their burden of proof with relevant epidemiological studies showing a doubled risk of their disease). Thus, far from requiring an asbestos claimant to prove the impossible—which asbestos fibers started the disease process—*Havner* and *Borg–Warner* together provide a means of establishing causation without proving that the defendant's asbestos fibers actually were the ones that caused the claimant's injury.

In short, the "any exposure" theory espoused by the Bostics is flawed because it ignores the fundamental tenet of dose and assumes, without scientific support, that any dose will cause mesothelioma. "The any exposure theory does not have any credible foundation in the scientific literature. In fact, the any exposure theory is almost entirely a litigation construct and is not widely published

or accepted in the peer–reviewed literature." Behrens & Anderson, *The "Any Exposure" Theory*, 37 Sw. U. L. REV. at 505 (citations omitted). It therefore provides no basis for recognizing a wholesale exemption from the dose and epidemiology requirements of *Borg–Warner* and *Havner* for mesothelioma cases, as the Bostics advocate.

III. The Court should affirm the court of appeals' judgment on the ground that the Bostics did not meet *Borg–Warner*'s dose requirements.

Despite contending that their mesothelioma claims are not subject to the rigors of *Borg–Warner*, the Bostics insist, presumably in the alternative, that the testimony of one of their experts, Dr. Longo, satisfied the dose requirements. (*See* Bostics' Merits Br. 44–47.) Specifically, the Bostics assert that they "calculated an approximate quantum of the dose from Georgia–Pacific['s] asbestos joint compound," citing Dr. Longo's testimony about "the amount of asbestos fibers released from Georgia–Pacific dry and pre–mixed joint compound while . . . mixing, sanding, and sweeping." (Bostics' Merits Br. 46.) The Bostics' argument ignores the scientific definition of *dose* and improperly conflates dose with the entirely distinct concept of *intensity of exposure*.

As this Court explained in *Borg–Warner*, "[o]ne of toxicology's central tenets is that 'the dose makes the poison.'" 232 S.W.3d at 770 (citation omitted). "Dose 'refers to the amount of chemical that enters the body,' and, according to one commentator, 'is the single most important factor to consider in

evaluating whether an alleged exposure caused a specific adverse effect.'" *Id.* (citing David L. Eaton, *Scientific Judgment and Toxic Torts—A Primer in Toxicology for Judges and Lawyers*, 12 J. L. & POL'Y 5, 11 (2003)). Dr. William Dyson, an industrial hygienist, explained the concept of dose at the trial below:

> [A]ll diseases, including those associated with asbestos, follow a dose–response relationship. And a dose is the multiplication product of the *exposure intensity* times the *exposure duration*. Those are the two components of dose. So measuring the airborne concentration in fibers per cubic centimeter or a million particles per cubic foot is a measure of the intensity of the exposure or the level of exposure in the air. Then you take the duration of that exposure, and those two components give you dose.

(14 R.R. 101 (emphases added); *see also id.* at 131 ("[D]ose is a two–component factor. It's the intensity of exposure, which are the measurements that Dr. Longo provides us here but also the duration of exposure.").) Thus, proof of dose requires reliable evidence of both (1) exposure concentration or intensity *and* (2) exposure duration. *See* Bernard D. Goldstein & Mary Sue Henifin, *Reference Guide on Toxicology*, *in* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 633, 638 n.12 (3d ed. 2011) ("Dose is a function of both concentration and duration.").

Dr. Longo's purported "dose" calculation, however, consists of only one half of the equation—intensity. Specifically, the Bostics point to measurements Dr. Longo took during simulated drywall work and assert that those measured levels exceed OSHA's eight–hour average standards. (*See* Bostics'

Merits Br. 46–47; *see also* 10 R.R. 61–62 (discussing exposure limits).) In fact, Dr. Longo merely supplied fiber release measurements, i.e., exposure concentration or intensity data. (*See* 14 R.R. 131 (describing the "intensity of exposure" measurements provided by Dr. Longo).)[4] Such measurements are not a proxy for dose because they only tell part of the story. What is missing from Dr. Longo's testimony is exposure duration. This second half of the dose quantification requires not only an estimation of the duration of the claimant's exposure to the measured levels of asbestos fibers, but also an assessment of the claimant's lifetime dose, as well as a comparison of the dose to comparable populations in epidemiology studies. (*See* 14 R.R. 101, 131; 15 R.R. 7.) The Court should reaffirm that evidence of mere exposure levels (estimates of the amount of fiber in the air at a given time) is insufficient to establish approximate dose (estimates of the cumulative amount of inhaled fibers over time). To hold otherwise would gut the dose requirement.

Finally, the Bostics cannot salvage their fatal lack of dose evidence with Dr. Samuel Hammar's conclusory opinion that asbestos exposure from Georgia–Pacific's joint compound was a substantial contributing factor in causing Mr. Bostic's mesothelioma. (11 R.R. 38-41, 50-51, 152-53.) Since the record

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[4] *See also* Bostics' Reply to Suppl. Br. at App'x G (purporting to attach chart of "Approximate Dose" evidence, but citing only to fibers per cc measurements, i.e., measurements of intensity alone).

contains no evidence of the approximate dose of Georgia–Pacific asbestos to which Mr. Bostic was exposed, Dr. Hammar's opinion "lack[s] the factual and scientific foundation required by *Borg–Warner* and thus [is] legally insufficient to support the jury's causation finding" in this case. *Stephens*, 239 S.W.3d at 321. The court of appeals correctly recognized as much below. *Ga.–Pac. Corp. v. Bostic*, 320 S.W.3d 588, 601 (Tex. App.—Dallas 2010, pet. filed) ("On this record, appellees' evidence is insufficient to provide quantitative evidence of Timothy's exposure to asbestos fibers from Georgia–Pacific's asbestos–containing joint compound or to establish Timothy's exposure was in amounts sufficient to increase his risk of developing mesothelioma. Therefore, appellees' evidence is legally insufficient to establish substantial–factor causation mandated by *Flores*.").

PRAYER

For these reasons, Amici respectfully submit that the Court should deny the Bostics' petition for review and affirm the court of appeals' judgment based on the Bostics' failure to satisfy *Borg–Warner*'s dose requirements.

Respectfully submitted,

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