### UNITED STATES PATENT AND TRADEMARK OFFICE

### BEFORE THE PATENT TRIAL AND APPEAL BOARD

### BAKER HUGHES INCORPORATED, Petitioner,

v.

LIQUIDPOWER SPECIALTY PRODUCTS INC. (f/k/a/ LUBRIZOL SPECIALTY PRODUCTS, INC.),<sup>1</sup> Patent Owner.

> Case IPR2016-01903 Patent 8,426,498 B2

Before KRISTINA M. KALAN, CHRISTOPHER M. KAISER, and MICHELLE N. ANKENBRAND, *Administrative Patent Judges*.

KALAN, Administrative Patent Judge.

DECISION Institution of *Inter Partes* Review 37 C.F.R. § 42.108

<sup>&</sup>lt;sup>1</sup> Patent Owner represents that its name has changed from Lubrizol Specialty Products, Inc. to LiquidPower Specialty Products Inc., and that LiquidPower Specialty Products Inc. is the owner of U.S. Patent No. 8,426,498 B2 by assignment, holding all rights, title, and interest to that patent. Paper 9, 2. Accordingly, we modify the original case caption to reflect that change.

### I. INTRODUCTION

Baker Hughes Incorporated ("Petitioner") requests an *inter partes* review of claims 1–5 of U.S. Patent No. 8,426,498 B2 ("the '498 patent," Ex. 1002). Paper 2 ("Pet."). LiquidPower Specialty Products Inc. (f/k/a/ Lubrizol Specialty Products, Inc.) ("Patent Owner") filed a Preliminary Response. Paper 10 ("Prelim. Resp."). We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted "unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Applying that standard, and upon consideration of the information presented in the Petition and the Preliminary Response, we institute an *inter partes* review of claims 1–5.

### A. Related Proceedings

Petitioner identifies the following pending litigation involving the '498 patent: *Lubrizol Specialty Products, Inc. v. Baker Hughes Inc.*, No. 4:15-cv-02915 (S.D. Tex.). Pet. 2. Petitioner also identifies U.S. Patent Application No. 13/209,119, filed on August 12, 2011, as pending (Notice of Allowance issued, Sept. 20, 2016), and represents that the '119 application claims benefit to, and is a continuation in part of, U.S. Patent Application No. 11/615,539 (now U.S. Patent No. 8,022,118, "the '118 patent") to which the '498 patent claims priority. *Id.* at 3.

Concurrently with the Petition in this proceeding, Petitioner filed petitions requesting an *inter partes* review of three patents related to the '498 patent: the '118 patent (IPR2016-01896); U.S. Patent No. 8,450,249 B2 (Case IPR2016-01901); and U.S. Patent No. 8,450,250 B2 (Case IPR2016-01905). *See* Pet. 2; Paper 9, 3. Petitioner also filed an earlier

2

Petition requesting an *inter partes* review of the '118 patent. *Baker Hughes Inc. v. Lubrizol Specialty Prods., Inc.*, Case IPR2016-00734 ("734 IPR"), Paper 2. We instituted a review in the 734 IPR on October 4, 2016. 734 IPR, Paper 9.

### B. The '498 Patent

The '498 patent, titled "Drag reduction of asphaltenic crude oils," issued on April 23, 2013. The '498 patent relates to a "method of introducing a drag reducing polymer into a pipeline such that the friction loss associated with the turbulent flow though [sic] the pipeline is reduced by suppressing the growth of turbulent eddies," in which the "drag reducing polymer is introduced into a liquid hydrocarbon having an asphaltene content of at least 3 weight percent and/or an API gravity of less than about 26° to thereby produce a treated liquid hydrocarbon." Ex. 1002, Abstract.

According to the specification, "[w]hen fluids are transported by a pipeline, there is typically a drop in fluid pressure due to the friction between the wall of the pipeline and the fluid." *Id.* at 1:20–22. The pressure drop increases with increasing flow rate, resulting in energy losses and inefficiencies that increase equipment and operation costs. *Id.* at 1:24–31. The problems associated with pressure drop are most acute when fluids are transported over long distances. *Id.* at 1:29–31.

Before the '498 patent, it was known to use drag reducing polymers in the fluid flowing through a pipeline to alleviate the problems resulting from pressure drop. *Id.* at 1:33–35. A drag reducing polymer "is a composition capable of substantially reducing friction loss associated with the turbulent flow of a fluid through a pipeline" and such a composition works by "suppress[ing] the growth of turbulent eddies, which results in higher flow

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rate at a constant pumping pressure." *Id.* at 1:37–42. Drag reduction generally "depends in part upon the molecular weight of the polymer additive and its ability to dissolve in the hydrocarbon under turbulent flow." *Id.* at 1:44–46.

According to the specification, because conventional drag reducing polymers do not perform well in crude oils having a low API gravity<sup>2</sup> and/or a high asphaltene content (i.e., heavy crude oils), there exists a need for improved drag reducing polymers capable of reducing the pressure drop associated with the turbulent flow of heavy crude oils through pipelines. Id. at 1:49–54. The subject matter of the disclosed invention, therefore, "relates generally to high molecular weight drag reducers for use in crude oils." Id. at 1:15–16. More specifically, the '498 patent discloses a method for reducing the pressure drop associated with flowing a liquid hydrocarbon through a conduit, such as a pipeline. Id. at 2:48–50. The method comprises introducing a drag reducing polymer into a liquid hydrocarbon having an asphaltene content of at least 3 weight percent and/or an API gravity of less than about  $26^{\circ}$  (i.e., heavy crude oil) to produce a treated liquid hydrocarbon wherein the viscosity is not less than the viscosity of the liquid hydrocarbon prior to treatment with the drag reducing polymer. Id. at 19:2-12. The '498 patent provides several examples of suitable heavy crude oils and blended heavy crude oils. *Id.* at 4:25–34, Table 1.

The specification further explains that, "[i]n order for the drag reducing polymer to function as a drag reducer, the polymer should dissolve

<sup>&</sup>lt;sup>2</sup> The specification defines API gravity as "the specific gravity scale developed by the American Petroleum Institute for measuring the relative density of various petroleum liquids." *Id.* at 3:50–54.

or be substantially solvated in the liquid hydrocarbon." *Id.* at 11:18–20. The liquid hydrocarbon and the drag reducing polymer, therefore, have solubility parameters that can be determined according to known methods. *Id.* at 4:9–22 (setting forth known methods for determining the solubility parameter of the liquid hydrocarbon), 11:26–67 (setting forth known methods for determining the solubility parameter of the drag reducing polymer).

### C. Illustrative Claim

Claims 1, 3, and 5 are independent claims of the '498 patent. Claim 1 is illustrative of the challenged claims and recites:

1. A method comprising:

introducing a drag reducing polymer, into a pipeline, such that the friction loss associated with the turbulent flow through the pipeline is reduced by suppressing the growth of turbulent eddies, into a liquid hydrocarbon having an asphaltene content of at least 3 weight percent and/or an API gravity of less than about  $26^{\circ}$  to thereby produce a treated liquid hydrocarbon wherein the viscosity of the treated liquid hydrocarbon is not less than the viscosity of the liquid hydrocarbon prior to treatment with the drag reducing polymer; and

wherein a plurality of the repeating units comprise a heteroatom.

Ex. 1002, 19:2–14.

### D. Proposed Grounds of Unpatentability

Petitioner asserts that the challenged claims of the '498 patent are unpatentable based upon the following grounds:

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