

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WEATHERFORD INTERNATIONAL, LLC;
WEATHERFORD/LAMB, INC.;
WEATHERFORD US, LP; and
WEATHERFORD ARTIFICIAL LIFT
SYSTEMS, LLC
Petitioners

v.

PACKERS PLUS ENERGY SERVICES, INC.,
Patent Owner

Inter Partes Review
of U.S. Patent 7,861,774

EXHIBIT 1007
DECLARATION OF VIKRAM RAO

WEATHERFORD INTERNATIONAL, LLC, et al.

EXHIBIT 1007

WEATHERFORD INTERNATIONAL, LLC, et al.

v.

PACKERS PLUS ENERGY SERVICES, INC.

1. My name is Vikram Rao. I am over the age of twenty-one years, of sound mind, and capable of making the statements set forth in this Declaration. I am competent to testify about the matters set forth herein. All the facts and statements contained herein are within my personal knowledge and/or within my field of expertise, and they are true and correct to the best of my knowledge.

2. I have been asked by Edell, Shapiro & Finnan LLC to form and offer opinions regarding validity of U.S. Patent No. 7,861,774 (the “’774 Patent”). This Declaration contains a summary of and the supporting explanations for my opinions concerning the validity of the ’774 Patent.

3. I have been advised that Edell, Shapiro & Finnan LLC represents Weatherford International, LLC; Weatherford/Lamb, Inc.; Weatherford US, LP; and Weatherford Artificial Lift Systems, LLC (“Weatherford” or “Petitioner”) in this matter and that Packers Plus Energy Services, Inc. (“Packers Plus” or “Patent Owner”) owns the ’774 Patent. I have no personal or financial stake or interest in Weatherford, Packers Plus, or the ’774 Patent.

I. Education and Experience

4. My *curriculum vitae* (“CV”) is attached as Appendix A.

5. I have extensive experience in the oil and gas industry. I have worked in the oil and gas industry for almost 40 years. I have numerous patents in the industry including several relevant to the technology at issue in this *inter partes*

review. I have authored numerous articles and books in the oil and gas industry and have held several significant positions in the industry. I am an expert in well drilling and completions technology, including fracturing stimulation of wells.

6. My education includes a Bachelor of Technology degree in Metallurgy from the Indian Institute of Technology, Madras, which I received in May 1965. I next obtained a Master of Science degree in Materials Science and Engineering from Stanford University in June 1967. Finally, I received a PhD in Materials Science and Engineering from Stanford University in January 1972.

7. After receiving my PhD, I worked as a post-doctoral fellow at Stanford from 1971-1974 to facilitate continued part time involvement as Consulting Scientist for a start-up company Parlee-Anderson Corporation. I also obtained a competitive research grant from the National Science Foundation.

8. After leaving Stanford in 1974, I joined the central research laboratory of NL Industries, a conglomerate spanning metals, chemicals, and petroleum industries. I was with NL Industries until 1979. In that five-year span, I held positions of increasing responsibility, culminating in Director, Research and Development of the Metal Division, a unit with about \$400 million in sales. I was awarded 4 U.S. patents, two of which (4,158,563 and 4,159,908) were employed in commercial sales of battery grid alloys while I was still there. NL Industries employed another of my innovations for improving production rates of lead blast

furnaces with steam and oxygen injection but did not patent it.

9. From 1979 through 1984, I worked for the petroleum sector of NL Industries to join a new venture, Drilling Systems Technology (DST). This unique unit had a mix of industry and non-industry scientists and engineers dedicated to the invention of disruptive technologies for the oil and gas business. In those five years, we created innovations for a technology offering that came to be known as Measurement While Drilling (MWD). These innovations in the main comprised complex downhole operating devices and the recovery of the information at the surface as recordings as well as in real time, including an Electro-magnetic Wave Resistivity (EWR) sensor that helped facilitate a practice known as Logging While Drilling (LWD).

10. My role in this endeavor at NL Industries commenced as Chief Metallurgist in February, 1979. Within months an added role was provided of leading the real time telemetry effort. I was later appointed as Program Manager for the complete real time system including the sensors. During this period, I was awarded 3 U.S. patents, two of which were employed in commercial service (4,613,443 and 4,790,393). The '393 Patent is for a downhole gate valve releasing fluid from the interior of the tool to the annulus, similar in concept to the sliding sleeve valves in open hole in the present *inter partes* review.

11. From 1984 through 1988, I moved to the Sperry Sun operating division,

which had been acquired by NL Industries shortly prior as a vehicle for launching the fledgling MWD service. I was appointed Director, MWD Products, responsible for commercial launch of DST's innovations. The position entailed all facets of commercial launch, including sales, marketing, and field operations, both domestic and international.

12. From 1988 through 1998, I worked for Baroid Corporation, a spin-off of NL's petroleum businesses. Sperry Sun, a division, expanded to develop steerable systems, which, in conjunction with MWD, was a key enabler of horizontal drilling. Horizontal boreholes are the backbone of the industry today and their attributes are relevant to the issues pertaining to this *inter partes* review. During this period, I was variously Vice President of R&D or Business Development, both with worldwide scope. Baroid Corporation was acquired by Dresser Industries in 1994, and I continued in the roles described above.

13. Dresser Industries merged with Halliburton Company late in 1998. I was given the dual role of leading the Integrated Technology Products (ITP) and Reservoir groups. The latter comprised primarily reservoir engineers to support reservoir based decisions of the Integrated Services offering, which ran oil and gas operations on a risk/reward basis. The position was that of Vice President. I assumed also the portfolio of the ventures group, which made strategic investments in innovative startups, some of which were then purchased.

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