

## DECLARATION OF ALI DANESHY

1. My name is Ali Daneshy. I am over the age of twenty-one (21) 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 they are, in all things, true and correct.

2. I have been asked by Baker Hughes Incorporated (“Baker Hughes”) to submit this declaration in support of its challenge to the validity of certain claims of U.S. Patent No. 7,861,774 (“the ’774 Patent”).

### **I. Education and Experience**

3. My *curriculum vitae* is attached as Exhibit 1.

4. I received a Master of Science Degree in Mining Engineering from the University of Tehran in 1964<sup>1</sup>, a Master of Science Degree in Mineral Engineering (Rock Mechanics) from the University of Minnesota in 1968, and a Ph.D. in Mining Engineering (Rock Mechanics) from the University of Missouri-Rolla in 1969.

BAKER HUGHES INCORPORATED Exhibit 1005
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<sup>1</sup> At that time, the University of Tehran did not offer a bachelor’s degree in engineering.

5. I have more than 45 years of industry experience as a geo-mechanical engineer primarily in technology and operations of hydraulic fracturing. I began my career with Halliburton Company in 1969 and held numerous technology and management positions at Halliburton for the next 29 years in areas such as well stimulation, geo-mechanics, produced water management, software development, fluid mechanics, intelligent completions, under-balanced drilling, on-site data acquisition systems, etc. Each of the management positions I held at Halliburton was created as a result of the growth of my previous projects.

6. I started at Halliburton's Duncan, Oklahoma Research Center in 1969 as a research engineer performing research related to hydraulic fracturing. During this time, I developed a fracture design software named PROP that became a widely used fracture design program. PROP was used thousands of times annually to assist operators all over the world in planning and executing successful fracturing treatments.

7. In 1972, I was promoted to Group Leader of a new research group. As Group Leader, I led a team of 15-20 engineers in research related to hydraulic fracturing and other related fields (e.g., reservoir engineering, fluid mechanics). The success of this research justified greater resources and, in 1975, I was promoted to Section Supervisor, where I led a team of 30-50 engineers. During this time, our team focused on several main projects: (1) on-site fracturing data

acquisition software development, (2) engineering research, (3) computerized equipment used in the oil and gas field, (4) reservoir engineering, and (5) hydraulic fracturing.

8. The third of these projects was considered by many to be revolutionary at the time. It involved on-site, computerized data acquisition and analysis during hydraulic fracturing operations, primarily in oil and gas-bearing wells. The results of this data analysis could be given to the customer at the well site. No other company was performing this service at the time. In addition to these developments, I helped develop curriculum and materials for training regarding hydraulic fracturing and stimulation at Halliburton, which were used to train engineers primarily in the field.

9. In 1983, I was promoted to Department Manager of Reservoir Research and Engineering, and was responsible for the performance of 40-50 engineers who were in my department. Much of the research performed by my department during this time related to improving the technology of hydraulic fracturing, and the use of computer technology, in order to increase production of oil and gas wells and the efficiency of fracturing operations. For example, my team developed equipment for automated mixing of fracturing fluids—composed of additives and other chemicals—via computer control rather than manually.

These developments increased the effectiveness and decreased the cost of fracturing treatments.

10. I also worked with Halliburton during this time to advise and develop technologies used by oil and gas companies in performing the first commercial hydraulic fracturing operations in horizontal wells, including the very first—drilled by Maersk Oil in 1987. In this capacity, I became familiar with the pioneering “Perforate, Stimulate, Isolate” (“PSI”) system developed by Baker Oil Tools, which reduced the time to create multiple fractures in a single wellbore from weeks to days.

11. In 1989, I formed and led Halliburton’s European Research Center dedicated to oil and gas operations in the Eastern Hemisphere. While in this capacity, I continued to develop technologies used by Maersk and others to improve the production and efficiency of hydraulic fracturing of horizontally drilled wells, including those used to overcome logistical challenges.

12. In 1993, I became the Regional Technical Manager for Halliburton in Europe and Africa, while I also advised customers in the Middle East and Asia Pacific regions. As Regional Technical Manager, I worked directly with operations engineers and personnel to help them implement various Halliburton services, including services related to stimulation methods in horizontal wells. Some of my responsibilities included ensuring that new engineers were properly

trained and had access to the most up-to-date technology and resources, and promoting development of new technologies and methods to increase production from oil and gas reservoirs.

13. In 1996, I was promoted to Vice President of Integrated Technology Products and moved to Houston, Texas. While in this capacity, I was responsible for integrating leading-edge technologies into the oil and gas services business, including underbalanced drilling, multi-lateral wells, advanced data management techniques, intelligent completions, water control, and more.

14. I retired from working at Halliburton in 1999, and formed a private engineering consulting company where I continue to work as a technical advisor and consultant to oil and gas companies, and oil and gas services companies, throughout the world. My services include consultations regarding production stimulation and hydraulic fracturing of vertical and non-vertical wells, well completions, unconventional and low permeability reservoir planning and development, and reservoir stimulation.

15. Shortly after retiring from Halliburton, in 2004 I became director of the Petroleum Engineering Program at the University of Houston and, while in this position, initiated the establishment of an undergraduate petroleum engineering curriculum. I continue to teach as an adjunct professor at the University of Houston to this day. I have also been a guest lecturer on topics related to well

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