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Senior Vice President and Chief Economist



May 26, 2009

National Medal of Technology and Innovation  
Nomination Evaluation Committee  
c/o The United States Patent and Trademark Office  
Attention: Jennifer Lo, Program Manager

Re: Nomination of Dr. Zalman Shapiro

Dear NMTI Committee Members:

I submit this letter in strong support of the nomination of Dr. Zalman Shapiro for the National Medal of Technology and Innovation. Through the filter of my expertise as Chief Economist of the PNC Financial Services Group, I am particularly able to testify to the immense impact of Dr. Shapiro's considerable contributions on our national economy and, what's more, to his inspiring character. My knowledge of him has been acquired through our long association resulting from our joint service in community organizations.

Dr. Shapiro's life is not merely punctuated with innovations/contributions of enormous benefit to our country; it is indeed a continuum of outstanding achievements on behalf of the greater good. Vision of something better, integrity, and determination form the foundation for everything he does no matter the sphere within which he is operating. At 89, his commitment is undiminished.

Not just an early entrepreneur but a pioneer, Dr. Shapiro challenged himself yet again by starting a company in a young industry, one with many more questions than answers. He left behind a secure, well-paying position at the Naval Nuclear Reactor Laboratory at Bettis (operated by Westinghouse), where he was held in high regard for his innovative capabilities, technical skills, hard work, and dedication to achieving successful outcomes. For his work there, in the development of the process and equipment for large-scale production of materials essential for the construction of the first nuclear reactor to power a submarine, he was awarded Westinghouse's most prestigious corporate award, the Silver W. At the age of 33, he was the youngest recipient in their corporate history. (The USS Nautilus served as precursor to our modern nuclear-powered Navy, a crucial component of our nation's defense.)

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Recognizing opportunity, Dr. Shapiro envisioned an integrated company for commercial production of reactor fuels, materials, and equipment, Nuclear Materials and Equipment Corporation (NUMEC), which he founded in 1957. He faced stiff headwinds throughout and yet with unwavering resolve and perseverance he focused on identifying important extant problems, innovating and implementing solutions, and inspiring others to climb aboard.

With business plan in hand, his first order of business was raising necessary capital, without which he had no means of attracting the three other men who would ultimately join NUMEC at its inception. Though promised one million dollars by his backers, they only produced one quarter of that with the bonus of a dirt-floored, dilapidated steel mill building and a small office building across the street – Dr. Shapiro was seriously undercapitalized.

Nonetheless, he still managed to draw three accomplished professionals--a metallurgist, an engineer and a lawyer (who worked for the Secretary of State, John Foster Dulles)--who became the two vice-presidents and Secretary/Treasurer & Corporate Counsel. To conserve cash, Dr. Shapiro took a 25% cut in his salary (from \$16,000 to \$12,000) and froze it there for 10 years; he was the lowest paid senior employee in the company. He sought out unusual benefits to supplement employee salaries. Additionally, he arranged for employees to have some company stock from the shares designated to the original founders.

Challenges faced and overcome were a constant. At the outset, Dr. Shapiro incurred Admiral Rickover's wrath for resigning from Westinghouse to start his own company. Rickover ordered his contractors and their suppliers not to do business with NUMEC. Undeterred, Dr. Shapiro still managed to build a first-class laboratory for quality control and product and process development. To raise more capital, Dr. Shapiro obtained the support of the President of one of the Pittsburgh banks (eventually absorbed by PNC). They arrived at a creative solution - a substantial bank loan secured by buy-back contracts from NUMEC's equipment suppliers. Determination to succeed and a tremendous sense of responsibility to his employees powered Dr. Shapiro through his 12- 16 hour days, seven days a week.

His first big break came when he submitted a proposal to the Atomic Energy Commission for the development of a reactor fuel utilizing surplus plutonium. He won the major multi-year contract over Westinghouse and GE. The contract required the creation of a special new building, the world's first commercial plutonium facility, which he was able to construct after successfully obtaining the assistance of a non-profit area development company in the Kiski Valley which had an unusually high unemployment rate. The plutonium facility initially employed approximately 50 people. Of note, Admiral Rickover, having encountered problems with quality of materials provided by other suppliers, had to rely in the end on Dr. Shapiro for help for the production of reactor control material required for naval reactors.

As his company grew and required more capital, Dr. Shapiro successfully secured funding from the Starwood Corp. and the Continental Casualty Insurance Co. Then, in quick succession, he started three subsidiaries; Nuclear Decontamination Corp. (NUDEC), NUMEC Instruments & Controls Corp. (NUMINCO) in partnership with a French company (SAIP), and Isotope & Radiation Enterprises (ISORAD) in partnership with the government of Israel for irradiation pasteurization of food products and sterilization of medical supplies.

Even though NUMEC competed against many giants of industry, in just ten years NUMEC grew its workforce to almost 1000 (from the original 4) to keep up with the growing number of contracts it secured. The increased opportunities for employment assisted in revitalizing the local economy of what had been a very depressed economic community.

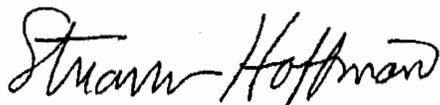
Atlantic Richfield acquired NUMEC in 1967 in an attempt to become an integrated energy company. However, after the discovery of oil in Prudhoe Bay it was sold to Babcock & Wilcox, which subsequently discontinued NUMEC's operations.

Dr. Zalman Shapiro's Westinghouse and NUMEC successes have yielded enduring and far-reaching benefits. His work was significant in paving the way to our modern nuclear-powered navy and commercial nuclear power industry. His technological genius is but one facet. He set the bar high for himself and for others; truly he led by inspiring through example. He repeatedly made sacrifices for achieving his vision of what contributed to the greater good and he did so at every level. With sheer grit and determination he held up against terrific pressures to let go.

As if that were not impressive enough, at the age of 89 he is being awarded his 15<sup>th</sup> patent, for a process of synthesizing diamonds that holds enormous potential to benefit our national economy. The forty billion dollars of annual diamond imports could be significantly reduced and opportunities for new industrial applications will abound with cheaper diamond supplies on the horizon.

Beyond doubt, Dr. Zalman Shapiro deserves this highest honor awarded America's leading innovators in recognition of his outstanding contributions to the welfare of the United States and for setting a truly inspiring example for other dedicated entrepreneurs to follow.

Sincerely,



Stuart Hoffman

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