National Aeronautics and
Space Administration

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Houston, Texas
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NASA

Reply to Attn of: SD/90-133

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TO: AH6111/Duane L. Ross

FROM: SD/William Thornton, M.D.

SUBJECT: Recognition For Outstanding Contractor Performance

NASA and JSC provides recognition and reward for outstanding performance by contractors and individuals. The enclosed is a suggestion that a record of unparalleled performance and contribution to a NASA's operational success, be so recognized.

I have enclosed some photos of typical work.

W. Thornton

William E. Thornton, M.D.

Enclosure

cc:
AL311/E. K. Fein
VP111/C. McCullough

Whitmore Enterprises is a small business in San Antonio which works at the frontiers of technical development and fabrication. This has ranged from commercial production equipment to custom made precision patient positioning and restraint equipment for high energy neutrino irradiation (LASL). Their specialty is in Biomedical and Space instrumentation. The biomedical work has covered virtually every major discipline. Innovation and creativity are one of their three Hallmarks. The second is quality and workmanship and the final is efficiency, i.e., rapid delivery at unheard of prices. The above have predictably kept the company small and "machine poor" for profits have been plowed back into machines and processes that would normally only be found in companies many times their size e.g. the do their own anodize and other plating , name plates, cold plate welding, etc. to ensure their standards are maintained in every part of fabrication.

As is usual in such cases this enterprise reflects the character and abilities of its founder and owner, Henry Whitmore, who made one reputation in the USAF with work in suits, training devices, etc. (including his patented design of the standard ejection seat air catapult trainers). He is honest, creative, perfectionist and works unceasingly. This has produced some unique efforts and results for NASA/JSC.

In 1975, on a fixed price contract, he developed, designed and fabricated this country's first prototype treadmill for weightlessness. It had to meet unheard of specifications including disassembly and reassembly (for storage)

without tools in 5 minutes. Funds were limited to a 1 g. prototype yet this one unit was subsequently qualified for flight, flew for 10 missions without difficulty and remains in working condition as a test article. A support contractor subsequently wrote a contract for purchase of 4 smaller copies of this unit which are currently the only available exercise device on shuttle.

In 1983, he produced a series of instruments for flight investigations of neurological adaptation to weightlessness. His ability to produce such sophisticated instrumentation in a limited time (months vs. years) and budget allowed a still unequaled and rapid investigation of adaptation in which Space Motion Sickness was removed from a feared unknown to a well characterized nuisance. This instrumentation included a seat mounted control package for EOG during launch, entry and flight, a precision goniometer for head motion, a linear displacement gauge for kinesimetry, a precision automated height measuring scale and others.

Another advance was made by him in lower body negative pressure apparatus in which he produced a graduated pressure garment. This was the first use of a stowable fabric and metal ring assembly vs. either a rigid metal case (US) or bulky pneumatic support rings (USSR). Experience with this prototype allowed a major advance in suit design for control of fluid distribution. The fabric/ring features are used in a current STS LBNP apparatus.

In 1985, he was a joint inventor (not under any government contract) of three inventions, which he freely assigned to the government, for an

improved waste collection system. Subsequently he built and tested several prototypes one of which is on STS-32 awaiting flight.

As funding allowed he has produced a series of improved prototype treadmills which have allowed an advanced design for EDO and Space Station. When funding was not available, and at financial risk, Whitmore developed at no cost to the government a unique treadmill belt with rigidity, but $\geq$ 20 db. less noise, than the existing Shuttle T.M.[1] This was done at no cost to the government. The only application for it is in Space.

He has developed a series of other exercise devices including a combined bike-rowing machine, a rowing machine and isometric egrometer. The latter two are slated for flight and were part of an ensemble of flight hardware that will meet the needs of Space Station. He is doing this for less than the cost and time that would usually be expected from a single item.

In summary, here is a unique individual and organization which has made repeated contributions to NASA's space flight efforts and at an unparalleled saving.[2] No other individual that I know has personally designed and built as much equipment for space flight. He literally has become a legend as regards ingenuity, reliability, quality and finish of his work. There are a rare few detractors who feel that he has deprived them of profits of one sort or another. Conversely he is an example of what has made this country and the NASA program great.

For these reasons there should be some way to recognize this modest

but immensely capable business and its leader. I should count it a privilege to provide any additional information or otherwise aid in such an effort any way possible.

1. A T.M. with this advanced belt is as quiet as a commercial 1 g unit.
2. I will be happy to provide some other examples for comparison.