

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of)	
)	
PRIVATE FUEL STORAGE L.L.C.)	Docket No. 72-22
)	
(Private Fuel Storage Facility))	

AFFIDAVIT OF C. FLOYD DAVIS

CITY OF MAGNA)	
)	SS:
STATE OF UTAH)	

C. Floyd Davis, being duly sworn, states as follows:

1. I am an Explosives Safety Specialist for the Utah Propulsion Center, Alliant Techsystems, Inc. In that position I coordinate explosive safety, explosive siting, process safety management and regulatory compliance with cognizant groups.
2. The following is a summary of my educational and professional experience. I have a Bachelor of Science Degree in Physics. I have worked in non-destructive testing, process and system safety, and explosive safety at Alliant/Hercules Inc. for 37 years. This experience includes 31 years in process hazards analysis, risk management, explosive operations, research and development, explosive testing and test development, development of explosive standards, risk analysis, hazardous material characteristics, accident investigation, explosive siting, and regulatory compliance.

3. I am knowledgeable of the siting requirements and general operation of the Tekoi Test Facility. I am also knowledgeable of the types of materials and rocket motors tested at Tekoi and how the rocket motors are static fired. Class 1.1 and Class 1.3 motors are static tested at the facility. Motors currently static fired at the test facility range in propellant weight from 4,500 to 82,000 lbs.

4. The Tekoi Test Facility is comprised of two operational areas: the high hazard explosive test area and the static test range. Both areas are sited as explosive facilities in accordance with the Quantity-Distance (QD) separation distances for the quantity of explosives involved as prescribed by the Department of Defense Contractors' Safety Manual for Ammunition and Explosives (DoD 4145.26M). Explosive quantity limits are set in terms of Class 1.1 explosives because those materials require greater separation distances than Class 1.3 explosives. Government approval agencies for Tekoi site plans include the Department of the Navy, Strategic Systems Project Office and the Defense Logistics Agency, Defense Contract Management Command.

5. All classes of explosives are tested at the high hazard test area and intentional detonations are an inherent part of the testing. The high hazard test area has a posted explosive limit of 200 lbs. Class 1.1 explosives. Existing separation distances can allow testing of up to 11,775 lbs. of Class 1.1 material at the facility.

6. The static test range consists of three bays. Bay 1 is presently used for machining of large rocket motors containing Class 1.1 and 1.3 propellants. Bays 2 and 3 are used for static testing of full scale rocket motors of explosive Class 1.1 and 1.3 propellants. Bay 1 has an explosive limit of 100,000 lbs. of Class 1.1 explosives. Bay 2 has a posted explosive limit of 50,000 lbs. Class 1.1 explosives but is sited for 100,000 lbs. Class 1.1. Bay 2 is not currently in use. Bay 3 has an approved explosive limit of 1.2 million lbs. of Class 1.1 explosives. The explosive limits are fixed by the locations of the test bays and Department of Defense Quantity-Distance regulations and may not be exceeded without an approved site plan.

7. Each static test bay is designed to hold rocket motors in place during testing and prevent escape in the event of a malfunction. The motors are restrained by the associated test stands and on the forward end by a thrust block or thrust tooling which measures thrust and

transfers the rocket thrust to the test pad. The rocket motor test pad in Bay 3 is of massive construction, approximately 23 feet wide by 101 feet long with embedded structural steel restraining members. In some places it is over 11 feet thick. Rocket motors are normally positioned in the test bays horizontally for test firing. Occasionally motors are tested vertically, forward end down (i.e. nozzle up). Motors tested (horizontally) in Bay 2 and Bay 3 have the nozzles pointed west and south-east respectively. If a rocket motor were to come loose from the thrust block and attach points, it would normally impact the test stand structure or thrust tooling and cause motor case failure (i.e. chamber rupture). Motor case failure reduces the probability of a motor escaping the stand and normally renders a motor incapable of flight. Some test stand designs at Tekoi incorporate specific anti-flight devices which are designed to intentionally rupture the case in the event of a restraint system failure. These systems are also intended to reduce the probability of a motor escaping the stand and render the motor incapable of flight.

8. In addition to the facility design, safety procedures at the Tekoi test facility are also intended to minimize the potential for a motor static test failure. First, before a motor is static fired, it is X-rayed, its manufacturing and inspection records are reviewed, and any deviation from the motor's design is evaluated. Deviation from design requires engineering, quality, and safety approval before the motor is tested. Only motors which are expected to perform successfully are static fired at the facility. Second, no units can be tested without the test stand in place and the thrust assembly attached.

9. No rocket motor has ever escaped a test stand at Tekoi. Only one rocket motor has escaped a test stand in the 25 year history of static testing at the Bacchus Works, Magna, Utah static test range. This area was used prior to moving to the Tekoi test facility. In the early 1960's one rocket motor escaped the test stand and traveled a short distance from the test pad but did not leave the range. As a result of this incident thrust blocks and flight restraint systems were incorporated into the design of motor static test stands. In May 1974, a partially fired rocket motor detonated in place while being tested at the Bacchus Works. The motor did not escape the test stand but test stand hardware, motor fragments, and facility debris were projected outside the test range into the surrounding area.

10. The information provided herein is meant to clarify factual issues only and in no way shall be deemed or construed as a position in support of or against the proposed nuclear storage waste facility.


C. Floyd Davis

Sworn to before me this 7th day of June 1999.


Notary Public

My Commission expires Jan. 30, 2002

