NEPA ADDITIONAL NARRATIVE

III.B.1 Work to be performed outside

Auxiliary equipment (Motor Generators, Power Supplies, Transformers, Cooling Towers, water pumps), gas storage, materials and equipment are located in the yard surrounding the Tokamak and Diagnostic laboratory buildings. Maintenance performed on this equipment is done at the site of the equipment. Repairs are done both on-site or shipped to off-site vendors. New installations involving outside work include: cabling and installation of new power supplies, installation of a new air-cooled transformer, installation of new water cooling pumps, installation of a replacement cooling tower, and two building additions are planned.

III.B. 2 Major modifications of a building interior

Modification of the interior space of the Tokamak Building is always a possibility should a rearrangement of equipment or major upgrade require it, however, based on the research and operations planned and upgrades proposed during this renewal period of performance, no major modification of the building interior are anticipated. As part of the two proposed building extensions, the exterior walls of the buildings will be disturbed, although the basic wall structure will not be affected.

IV.A.10 Changes, disturbances to Coastal Zones

General Atomics Torrey Pines site which houses the DIII-D National Fusion Facility is within the California Coastal Commission jurisdiction. Activities associated with the research and operation of the DIII-D Tokamak will have no impact on the Coastal zone. Proposed building expansions will require Coastal Commission approval.

IV.B.22 Chemical Storage/Use

Small quantities of the following chemical listed in 29 CFR 1910.1000 table as listed below:
Approximate maximum storage at any given time:
Acetone – 5 gallons
Ethyl Alcohol 200 proof – 5 gallons
Isopropyl Alcohol – 5 gallons
Sulphur Hexaflouride – 9 bottles, 11.5 pounds each
Mercury (inside Ignitrons) 1-2 ounces
Potassium Silver Cyanide (silver plating) – 1 pint

IV.B.26 Spill Prevention/surface water protection

A Spill Prevention Control & Countermeasure Plan and an Oil Spill Contingency plan has been prepared in accordance with Part 112 and Part 109 of 40CFR 112. The Plan has been reviewed and certified as meeting the requirements of 40CFRT112.

IV.B.28 Hazardous Waste

Hazardous waste is generated and collected per County of San Diego, DEH, Hazmat Permit. The waste is transported off site by a licensed transportation company specializing in chemical and radiologic waste. GA has federal EPA ID #CAR00198143 for transportation of such waste. Waste generated is from general cleaning and tooling process pertaining to the fusion activities.

IV.B.30 Radioactive or radioactive mixed waste?

Although tritium is not used as a fuel in the DIII-D experiment, small quantities of tritium are produced as a natural byproduct of the fusion of deuterium nuclei in DIII-D experiments. Radioactive

mixed waste is thus generated from tritium contaminated vacuum pump oil. See above IV.B.28 for details on handling and disposal. Tritium is also released to the environment as a gaseous effluent at a maximum rate of 0.9 Curies/year in the form of HTO, HT, DT, and DTO. See below (IV.B.31) for effective dose at the site boundary resulting from this release.

IV.B.31 Radiation Exposure

The major source of radiation drives from prompt neutron emission from the fusion reaction, x-rays from high energy electrons, and gamma rays from decay of material made radioactive by the fusion neutrons. Additional radioactive sources are used for equipment calibration and include the following isotopes: AM-241, Fe-255, Cf-252, Sr-90, Co-60, and Po-210. Exposures from these additional sources is minimal compared to neutron and gamma dose rates. The facility adheres to pertinent State and Federal regulations and DOE guidance. The site ALAEA plan calls for keeping both Public and Staff exposure levels to less than the limits set by State and Federal regulations. Site boundary limits are set by California regulations. A monitoring program has been established for both site boundary and staff exposure levels. Typical public site boundary doses are 5 – 10 mrem/quarter and always below our administrative limit of 20 mrem/quarter. Employee dose rates are typically 100 mrem/quarter and always below the California limits of 5000 mrem/year and below our administrative limits of 1600 mrem/year and 400 mrem/quarter.

For Tritium release, calculations of effective dose at the site boundary (using distance from site boundary, height of exhaust, and local meterological conditions) yield total effective dose equivalent (TEDE) and effluent concentrations a factor of 1000 less than the limits (10 mrem; 1E-7 microCurie/ml) listed in 10CFR20 for tritium. The California Code of Regulations defer to the Federal Regulations, specifically 10CFR20, for dose limits to radiation workers, members of the public and effluent from licensed operations.

IV.B.34 Ozone Depleting Substances

Small amounts of gases that are classified as ozone depleting are used in DIII-D experiments and are released into the atmosphere after usage. These include:
CCl_2F_2, Freon 12, R12 < 0.9 lb/year
CF_4 – Freon 14, R14 < 1.2 lb/year

IV.B.39 Facility footprint exceeds 5,000 Square Feet

The DIII-D facility is approximately 121,000 sq ft. This includes: diagnostic labs, office trailers, ECH lab, control room, conference rooms, Tokamak vessel with all associated diagnostic equipment, and tool room.

IV.C.41 Existing, modified or new federal/state permit requirements

The following permits are currently in effect and will continue:
-APCD (Air Pollution Control District of SD County); Emergency generators, vapor degreasers, fiberglass machining room.
-County of SD, DEH (Dept. of Env. Health): Unified Program Facility Permit: Permit for Facilities that have reportable quantities of hazardous materials and that generate hazardous waste.
-San Diego Fire Department: Permits for Hazardous Materials and Compressed gas systems.
-State of California Dept. of Industrial Relations, Div of Occupational Safety and Health (DOSH): Pressure vessels (air tanks).
-California CHP: Haz Mat Transportation license.
-California DMV (Dept. of Motor Vehicles): Motor carrier permit.
-US Dept of Transportation: Hazardous Materials Cert of Registration.

-US EPA: Federal EPA ID# CA R000198143

IV.C.44 Expansion of Public utilities/services involvement

Under normal line usage, electrical line capacity is sufficient for DIII-D operation. The line was designed to be compatible with DIII-D power demands (peak and average). No significant expansion of power usage is anticipated and existing line capacity will be sufficient. A fault condition, e.g. failure of primary protective device (circuit breaker), could result in loss of power to other utility uses sharing the line. Normal water and sewer public services are utilized by the staff of the facility. Most cooling systems are operated closed loop but occasional sewer discharges occur, but are within sewer system handling capacity.

IV.C.46 Subject to an Existing Institutional Work Planning and Control Process

General Atomics' Hazardous Assessment/ Hazardous Work Authorization (HWA) procedure sets forth the requirements to comply with Federal, State and local regulations governing authorization to perform hazardous work activities. This procedure ensures that all hazardous work activities are properly planned, categorized, and controlled and is commensurate to the identified environment, safety, and health hazards; job complexities; and job coordination needs.

Prior to performing work, the responsible manager or the manager's designee must complete an HWA (GA form 754) and provide all of the following:
(a) the Requestor's contact information;
(b) an HWA number obtained from the LSNC Department;
(c) a description of the work activity to be performed under the HWA;
(d) whether the work: (1) is import/export controlled and/or (2) involves radioactive materials;
(e) a description of the major tasks or steps to complete the work activity;
(f) a description and assessment of each hazard applicable to the work activity;
(g) a listing of chemicals to be used in, and hazardous waste to be generated by, the work activity described in the HWA; the location of each; and the name and phone number of the custodian of each (if applicable);
(h) a description of environmental permits and licenses, if any, that may be required for the work activity;
(i) a description of personal protective equipment (PPE) required for the work activity;
(j) a description of training requirements for the work activity;
(k) a listing of all personnel performing the work activity;
(l) a signed acknowledgment by each person performing the work activity;
(m)the approval of the Requestor's supervisor;
(n) the approval of the responsible Level 5 manager (or higher); and
(o) the approval of the business unit's or department's designated safety representative.

Copies of the Hazard Assessment/ Hazardous Work Authorization Procedure and applicable Hazardous Work Authorization approvals for the proposed work activities are available upon request.