HAZARDOUS MATERIALS MANAGEMENT

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SUMMARY OF CONCLUSIONS

Staff's evaluation of the proposed project (with staff's proposed mitigation measures) indicates that the project's proposed use of hazardous materials would not present a significant impact to the public. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable laws, ordinances, regulations and standards. In response to Health and Safety Code, section 25531 et seq., the applicant would be required to develop a Risk Management Plan. To insure adequacy of the Risk Management Plan, staff's proposed conditions of certification would require that the Risk Management Plan be submitted for concurrent review by United States Environmental Protection Agency, Humboldt County Health and Human Services Department, Division of Environmental Health (DEH), and the California Energy Commission staff. In addition, staff's proposed conditions of certification require Humboldt County's DEH review, and staff review and approval of the Risk Management Plan prior to delivery of any hazardous materials to the facility. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia, and site security.

INTRODUCTION

The purpose of this Hazardous Materials Management analysis is to determine if the proposed Humboldt Bay Repowering Project (HBRP) has the potential to cause significant impacts on the public as a result of the use, handling, storage, or transportation of hazardous materials at the proposed facility. If significant adverse impacts on the public are identified, Energy Commission staff must also evaluate the potential for facility design alternatives and additional mitigation measures to reduce impacts to the extent feasible.

This analysis does not address potential exposure of workers to hazardous materials used at the proposed facility. Employers must inform employees of hazards associated with their work and provide employees with special protective equipment and training to reduce the potential for health impacts associated with the handling of hazardous materials. The **Worker Safety and Fire Protection** section of this document describes the requirements applicable to the protection of workers from such risks.

Aqueous ammonia (19% ammonia in aqueous solution) is the only hazardous material proposed to be used or stored at the HBRP in quantities exceeding the reportable amounts defined in the California Health and Safety Code, section 25532 (j) (PG&E 2006a, Table 8.5-2). Aqueous ammonia will be used for controlling oxides of nitrogen (NO_x) emissions through selective catalytic reduction. The use of aqueous ammonia significantly reduces the risk that would otherwise be associated with use of the more hazardous anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the anhydrous form which is stored as a liquefied gas at elevated pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release, which can rapidly introduce

large quantities of the material to the ambient air and result in high down-wind concentrations. Spills associated with the aqueous form are much easier to contain than those associated with anhydrous ammonia and emissions from such spills are limited by the slow mass transfer from the surface of the spilled material.

Other hazardous materials, such as mineral and lubricating oils, corrosion inhibitors and biocides, will be present at the proposed facility. Hazardous materials used during the construction phase include gasoline, diesel fuel, motor oil, hydraulic fluid, welding gases, lubricants, solvents, paint, and paint thinner. No acutely toxic hazardous materials will be used onsite during construction. None of these materials pose significant potential for off-site impacts as a result of the quantities on-site, their relative toxicity, their physical state, and/or their environmental mobility. Although no natural gas is stored, the project will also involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. Natural gas will be delivered through an existing 10-inch-diameter pipeline that connects to PG&E's backbone transmission line 145 miles away. Natural gas from PG&E's Tomkins Hill wells will also be used by the project (PG&E 2006a, Section 6.0). The HBRP project will require the transportation of aqueous ammonia to the facility. This document addresses all potential impacts associated with the use and handling of hazardous materials.

LAWS, ORDINANCES, REGULATION, AND STANDARDS

The following federal, state, and local laws, ordinances, regulations, and standards (LORS) apply to the protection of public health and hazardous materials management. Staff's analysis examines the project's compliance with these requirements.

HAZARDOUS MATERIALS MANAGEMENT Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 United States Code (USC) §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III)
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Establishes a nationwide emergency planning and response program and imposes reporting requirements for businesses which store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on Risk Management Plans (42 USC §112(r)	Requires the states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.

Applicable Law	Description
49 Code of Federal Regulations Parts 172-800 (49 CFR 172-800)	U.S. Department of Transportation (U.S. DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written Spill Prevention, Control, and Countermeasures (SPCC) plan to be prepared for facilities that store significant volumes of oil that may leak into navigable waters.
49 CFR Part 190	Outlines gas pipeline safety program procedures.
49 CFR Part 191	Addresses transportation of Natural and Other Gas by Pipeline: Annual Reports, Incident Reports, and Safety-Related Condition Reports, requires operators of pipeline systems to notify the U.S. Department of Transportation of any reportable incident by telephone and then submit a written report within 30 days.
49 CFR Part 192	Addresses transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards, specifies minimum safety requirements for pipelines and includes material selection, design requirements, and corrosion protection. The safety requirements for pipeline construction vary according to the population density and land uses that characterize the surrounding land. This part also contains regulations governing pipeline construction that must be followed for Class 2 and Class 3 pipelines, and requirements for preparing a Pipeline Integrity Management Program.
6 CFR Part 27	The Chemical Facility Anti-Terrorism Standard (CFATS) regulation of the U.S. Department of Homeland Security (DHS) requires facilities that use or store certain hazardous materials to submit information to the DHS so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (Cal-ARP) requires the preparation of a Risk Management Plan (RMP) and Off-site Consequence Analysis (OCA) and submittal to the local Certified Unified Program Authority (CUPA) for approval.
Title 8, Cal. Code Regs., Section 5189	Requires facility owners to develop and implement effective safety management plans to insure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.

Title 8, Cal. Code Regs., Section 458 and Sections 500 to 515	Set forth requirements for design, construction and operation of vessels and equipment used to store and transfer ammonia. These sections generally codify the requirements of several industry codes, including the American Society for Material Engineering (ASME) Pressure Vessel Code, the American National Standards Institute (ANSI) K61.1 and the National Boiler and Pressure Vessel Inspection Code. These codes apply to anhydrous ammonia but are also used to design storage facilities for aqueous ammonia.
California Health and Safety Code, section 41700	Requires that "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity to be discharged into sources of drinking water.

The Certified Unified Program Authority (CUPA) with responsibility to review RMPs and Hazardous Materials Business Plans (HMBPs) is the Humboldt County Division of Environmental Health (DEH). In regards to seismic safety issues, the site is located in Seismic Risk Zone 4. Construction and design of buildings and vessels storing hazardous materials will meet the seismic requirements of California Code of Regulations, Title 24 and 2001 California Building Code (PG&E 2006a, Section 8.4.1.4.2).

SETTING

Several factors associated with the area in which a project is to be located affect the potential for an accidental release of a hazardous material to cause public health impacts. These include:

- local meteorology;
- terrain characteristics; and
- location of population centers and sensitive receptors relative to the project.

METEOROLOGICAL CONDITIONS

Meteorological conditions, including wind speed, wind direction and air temperature, affect the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as the associated health risks. When wind speeds are low and the atmosphere is stable, dispersion is severely reduced and can lead to increased localized public exposure.

Recorded wind speeds and ambient air temperatures are described in the Air Quality section (8.1) and Appendix 8.1 of the Application for Certification (AFC) (PG&E 2006a). Staff agrees with the applicant that use of F stability (stagnant air, very little mixing), wind speed of 1.5 meters per second, and the highest temperature recorded in the area in the last 3 years are appropriate for conducting the Offsite Consequence Analysis. Staff believes these represent a reasonably conservative scenario and thus reflects worst case atmospheric conditions.

TERRAIN CHARACTERISTICS

The location of elevated terrain is often an important factor to be considered in assessing potential exposure. An emission plume resulting from an accidental release may impact high elevations before impacting lower elevations. The site topography is mostly flat, with an average elevation of about 8-12 feet above mean sea level. Terrain in the project vicinity is generally flat to the north and east and rises rapidly to the south and east due to the Humboldt Hill land feature (PG&E 2006a, Sections 2.6.1, 8.1.1.1, and Figure 8.1-1).

LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a large bearing on health risk. Appendix 8.9A and Figure 8.9-1 of the AFC provide a list of sensitive receptors within six miles of the project site and their locations. The nearest sensitive receptor is the South Bay Elementary School located about 0.5 miles southeast of the project. Two additional schools and a daycare are located about 1 mile from the site (PG&E 2006a).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD FOR DETERMINING SIGNIFICANCE

Staff reviewed and assessed the potential for the transportation, handling, and use of hazardous materials to impact the surrounding community. All chemicals and natural gas were evaluated. Staff's analysis addresses potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. In order to accomplish this goal, staff utilizes the most current acceptable public health exposure levels (both acute and chronic) set to protect the public from the effects of an accidental chemical release.

In order to assess the potential for released hazardous materials to travel off-site and affect the public, staff analyzed several aspects of the proposed use of these materials at the facility. Staff recognizes that some hazardous materials must be used at power plants. Therefore, staff conducted its analysis by examining the choice and amount of chemicals to be used, the manner in which the applicant will use the chemicals, the manner it will be transported to the facility and transferred to facility storage tanks, and the way the applicant plans to store the materials on-site.

Staff reviewed the applicant's proposed engineering controls and administrative controls concerning hazardous materials usage. Engineering controls are those physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent a spill of hazardous material from occurring or which can limit the spill to a small amount or confine it to a small area. Administrative controls are those rules and procedures that workers at the facility must follow that will help to prevent accidents or keep them small if they do occur. Both engineering and administrative controls can act as methods of prevention or as methods of response and minimization. In both cases, the goal is to prevent a spill from moving off-site and causing harm to the public.

Staff reviewed and evaluated the applicant's proposed use of hazardous materials as described in the AFC (PG&E 2006a, Section 8.5). Staff's assessment followed the five steps listed below:

- Step 1: Staff reviewed the chemicals and the amounts proposed for on-site use as listed in Table 8.5-2 of the AFC and determined the need and appropriateness of their use.
- Step 2: Those chemicals, proposed for use in small amounts or whose physical state is such that there is virtually no chance that a spill would migrate off the site and impact the public, were removed from further assessment.
- Step 3: Measures proposed by the applicant to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different size transfer-hose couplings and administrative controls such as worker training and safety management programs.
- Step 4: Measures proposed by the applicant to respond to accidents were reviewed and evaluated. These measures also included engineering controls such as catchment basins and methods to keep vapors from spreading and administrative controls such as training emergency response crews.
- Step 5: Staff analyzed the theoretical impacts on the public of a worst-case spill of hazardous materials even with the mitigation measures proposed by the applicant. When mitigation methods proposed by the applicant are sufficient, no further mitigation is recommended. If the proposed mitigation is not sufficient to reduce the potential for adverse impacts to a level that is less than significant, staff will propose additional prevention and response controls until the potential for causing harm to the public is reduced to a level that is less than significant. It is only at this point that staff can recommend approval of the facility's use of hazardous materials.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Small Quantity Hazardous Materials

In conducting the analysis, staff determined in Steps 1 and 2 that some materials, although present at the proposed facility, pose a minimal potential for off-site impacts as they will be stored in a solid form or in small quantities, have low mobility, or have low levels of toxicity. These hazardous materials, which were eliminated from further consideration, are discussed briefly below.

During the construction phase of the project, hazardous materials proposed for use include paint, paint thinner, cleaners, solvents, sealants, gasoline, diesel fuel, motor oil, hydraulic fluid, lubricants, and welding flux. Any impact of spills or other releases of these materials will be limited to the site due to the small quantities involved, the infrequent use and hence reduced chances of release, and/or the temporary containment berms used by contractors. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel are all of very low volatility and represent limited off-site hazard even in larger quantities.

During operations, hazardous chemicals such as hydraulic and lubricating oils and other various chemicals (see **Hazardous Materials Appendix B** for a list of all chemicals proposed to be used and stored at HBRP), would be used and stored in relatively small amounts and represent limited off-site hazard due to their small quantities, low volatility, and/or low toxicity.

Various cleaning chemicals and detergents as well as corrosion inhibitors (such as potassium 2-ethylhexanoate) and sulfuric acid (in sealed batteries) will be stored on-site, but will not pose a risk of off-site impacts because of the small volumes stored and their relatively low vapor pressures that will keep spills confined to the site.

After removing from consideration those chemicals that pose no risk of off-site impact in Steps 1 and 2, staff continued with Steps 3, 4, and 5 to review the remaining hazardous materials: natural gas and aqueous ammonia.

Large Quantity Hazardous Materials

Natural Gas

Natural gas poses a fire and/or possible explosion risk as a result of its flammability. Natural gas is composed of mostly methane, but also contains ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, and tasteless and is lighter than air. Natural gas can cause asphyxiation when methane is 90% in concentration. Methane is flammable when mixed in air at concentrations of 5 to 14%, which is also the detonation range. Natural gas, therefore, poses a risk of fire and/or possible explosion if a release were to occur under certain specific conditions. However, it should be noted that, due to its tendency to disperse rapidly (Lees 1998), natural gas is less likely to cause explosions than many other fuel gases, such as propane or liquefied petroleum gas, but it can explode under certain conditions (as demonstrated by the recent natural gas detonation in Belgium in July of 2004).

While natural gas will be used in significant quantities, it will not be stored on-site. The risk of a fire and/or explosion on-site can be reduced to insignificant levels through adherence to applicable codes and development and implementation of effective safety management practices. The National Fire Protection Association (NFPA 85A) requires 1) the use of double block and bleed valves for gas shut-off; and 2) automated combustion controls. These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. The safety management plan proposed by the applicant would address the handling and use of natural gas and significantly reduce the potential for equipment failure due to improper maintenance or human error. The proposed facility will not require the installation of any new off-site gas pipeline.

Aqueous Ammonia

Aqueous ammonia will be used in controlling NO_x emissions from the combustion of natural gas in the facility. The accidental release of aqueous ammonia without proper mitigation can result in significant down-wind concentrations of ammonia gas. Two aboveground storage tanks will be used to store the 19% aqueous ammonia with a combined maximum capacity of 54,000-gallons (PG&E 2006a, Section 8.5.2.3.2).

Based on staff's analysis, as described above, aqueous ammonia is the only hazardous material that may pose a risk of off-site impacts. The use of aqueous ammonia can result in the formation and release of toxic gases in the event of a spill even without interaction with other chemicals. This is a result of its moderate vapor pressure and the large amounts of aqueous ammonia that will be used and stored on-site. However, the use of aqueous ammonia instead of the much more hazardous anhydrous ammonia (i.e. ammonia that is not diluted with water) poses far less risk.

To assess the potential impacts associated with an accidental release of aqueous ammonia, staff uses the four "bench mark" exposure levels of ammonia gas occurring off-site. These include: 1) the lowest concentration posing a risk of lethality of 2,000 ppm; 2) the Immediately Dangerous to Life and Health (IDLH) level of 300 parts-per-million (ppm); 3) the Emergency Response Planning Guideline (ERPG) Level 2 of 150 ppm, which is also the RMP Level 1 criterion used by EPA and California; and 4) the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm averaged over 30 minutes. Thus, any plausible exposures due to a potential accidental release that produces exposures below 75 ppm will be considered insignificant. If staff's analysis determines that the potential exposure associated with a potential release exceeds 75 ppm at any public receptor, staff will assess the probability of occurrence of the release and/or the nature of the potentially exposed population in determining whether the likelihood and extent of potential exposure are sufficient to support a finding of potentially significant impact. A detailed discussion of the exposure criteria considered by staff and their applicability to different populations and exposure-specific conditions is provided in **Hazardous Materials Appendices A** and **B**.

Section 8.5.2.4 and Appendix 8.5B of the AFC (PG&E 2006a) describe the modeling parameters used for the worst case accidental releases of aqueous ammonia in the applicant's Offsite Consequence Analysis (OCA). This modeling used the SLAB numerical air dispersion model for a worst-case release associated with a failure of one storage tank into the containment area and an alternative scenario consisting of a release of ammonia during truck unloading. Staff conducted its own independent modeling and found significant differences between the results it found and those the applicant found. Staff found that with an uncovered secondary containment structure, a spill of aqueous ammonia would result in impacts to the off-site public due to the migration of ammonia vapors. Staff determined that this potential impact would be significant yet could be mitigated by the use of standard engineering controls that are used at all other CEC-certified power plants. The use of a subsurface vault to contain the spilled aqueous ammonia or the placement of a cover on the top of the secondary containment structure would limit the surface area of the aqueous ammonia pool thus limiting the rate of vapor loss from the pool. This then reduces the airborne

concentration to insignificant levels. Staff therefore modeled such a structure where the spilled pool of aqueous ammonia would be open to the atmosphere through a drain opening (or spaces between the cover and the containment walls) no more than 10.5 square feet (the equivalent of a 1" space between the cover and the inside perimeter wall of the 39' by 23' secondary containment structure).

The following assumptions were made in the HARP analysis of potential impacts due to an aqueous ammonia spill from the on-site aqueous ammonia storage tank at the HBRP.

Dispersion Analysis Using HARP

Meteorological data used:	Representative (2004 met file provided by Applicant)
Area source:	Assume 10.5 square feet exposed surface of pool (this represents an area of a one inch space around the entire inside perimeter of the secondary containment structure)
Release height:	4 feet (assumed; this is min height allowed in HARP)
Emission rate:	1.6 $g/m^2/sec$ (derived using QR algorithm), which is equivalent to 12.63 lb/hour ammonia
Rural	
Fine grid:	300 m with 10 m resolution for concentrations at discrete distances and the 75 ppm isopleth 1000 m with 50 m resolution for 2 ppm isopleth
Distances determined to:	Maximum 300 ppm 150 ppm 75 ppm 50 ppm 2 ppm (odor threshold)

Results of this analysis are presented in **Hazardous Materials Management Table 2**. The maximum ammonia concentration modeled for a tank spill at Humboldt is 895 ppm at approximately 13 feet from the ammonia tank, 299 ppm occurs at a distance of approximately 83 feet, 148 ppm occurs at 164 feet distant, and 75 ppm occurs at a distance of approximately 275 feet which is on-site. The odor threshold (2 ppm) is estimated to occur approximately 1,930 feet from the ammonia tank and therefore it is conceivable that a slight odor could be noticed off-site at various locations depending upon the wind direction.

Hazardous Materials Management Table 2
Results of the Aqueous Ammonia Storage Tank Spill Analysis

ALGORITHM

$$QR = \frac{(0.0035)(u^{0.78})(MW^{(2/3)})(A)(VP)}{(T)}$$

INPUT		
Wind speed (u)	1.5	m/sec
Stability class	F	
Terrain	Rural	
Molecular weight (MW)	17	g/g-mole
Vapor pressure (VP)	190	mm Hg
Temperature	82	°F
Temperature (T1)	301	°K
VARIABLES		
Area of drain in feet	10.5	ft^2
Side length of drain	3.24	ft
Area of drain in meters	0.98	m^2
Side length of drain	0.99	m
EMISSIONS		
QR	0.21	lb/min
QR	12.63	lb/hr
QR	1.11E+05	lb/yr
QR	1.59	g/sec
QR	1.6	g/m2/sec

Concentrations at discrete distances using HARP:

Distance (feet)	Distance (meters)	Airborne Conc. (µg/m3)	Airborne Conc. (ppm)
13	4	6.21E+05	895
83	25	2.08E+05	299
164	50	1.03E+05	148
275	84	5.20E+04	75
368	112	3.47E+04	50
1,930	588	1.42E+03	2.0

Aqueous ammonia vapor pressure obtained from EPA 1999; represents 20% aqueous ammonia, wind speed of 1.5 m/sec Source: EPA 1999. "Risk Management Program Guidance for Offsite Consequence Analysis." Office of Solid Waste and Emergency Response. April. www.epa.gov/ceppo/

Staff believes that with the incorporation of the engineering controls proposed by the applicant and requested by staff for the storage and transfer of aqueous ammonia, any potential accidental release of aqueous ammonia at the project site will not cause a significant impact and will not represent a significant risk to the public.

Mitigation

The potential for accidents resulting in the release of hazardous materials is greatly reduced by the implementation of a safety management program, which includes the use of both engineering and administrative controls. Elements of facility controls and the safety management plan, as required by condition of certification **HAZ-3**, are summarized below.

Engineering Controls

Engineering controls help to prevent accidents and releases (spills) from moving off-site and impacting the community by incorporating engineering safety design criteria into the design of the facility. The engineering safety features proposed by the applicant for use at this facility include:

- construction of secondary containment areas surrounding each of the hazardous materials storage areas designed to contain accidental releases that might happen during storage or delivery plus the amount of water that would be ejected from the fire suppression system during 20 minutes;
- physical separation of stored chemicals in isolated containment areas separated by a noncombustible partition in order to prevent accidental mixing of incompatible materials which may result in the evolution and release of toxic gases or fumes;
- installation of an automatic sprinkler systems and an exhaust system for indoor hazardous materials storage areas;
- construction of a covered secondary containment area surrounding the aqueous ammonia storage tanks that can hold 150% of the contents on one tank plus the volume of 24 hours of rain assuming the 25-year storm;
- construction of a bermed containment area surrounding the truck unloading area with a sloped floor draining into the covered secondary containment around the storage tanks;
- process protective systems including continuous tank level monitors, temperature and pressure monitors, alarms, check valves, and emergency block valves.

Administrative Controls

Administrative controls also help prevent accidents and releases (spills) from moving off-site and impacting the community by establishing worker training programs, process safety management programs and by complying with all applicable health and safety LORS.

A worker health and safety program will be prepared by the applicant and will include (but is not limited to) the following elements (see the **Worker Safety/Fire Protection** section in this PSA for specific regulatory requirements):

- worker training regarding chemical hazards, health and safety issues, and hazard communication;
- procedures to ensure the proper use of personal protective equipment;

- safety operating procedures for operation and maintenance of systems utilizing hazardous materials;
- fire safety and prevention; and
- emergency response actions including facility evacuation, hazardous material spill cleanup, and fire prevention.

At the facility, the project owner will be required to designate an individual who has the responsibility and authority to ensure a safe and healthful workplace. The project health and safety official will oversee the health and safety program and will have the authority to halt any action or modify any work practice in order to protect the workers, facility, and the surrounding community in the event that the health and safety program is violated.

The applicant will also prepare an RMP for aqueous ammonia as required by CalARP regulations and condition of certification **HAZ-2** that would include a program for prevention of accidental releases and responding to an accidental release of aqueous ammonia. A Hazardous Materials Business Plan (HMBP) will also be prepared by the applicant that would incorporate state requirements for the handling of hazardous materials (PG&E 2006a, Section 8.5.4.2.2).

On-site Spill Response

In order to address the issue of spill response, the facility will prepare and implement an Emergency Response Plan which includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, prevention equipment and capabilities, etc. Emergency procedures will be established that include evacuation, spill cleanup, hazard prevention, and emergency response.

The Eureka Fire Department Regional Hazardous Materials Response Team (EFD HMRT) will be the responder for hazardous materials incidents. Estimated response time is about 45 minutes. At staff's request, the applicant has engaged in discussion with the HFD and EFD regarding potential impacts the HBRP may have on their capability to respond to incidences. All parties involved have agreed that potential impacts from the HBRP would affect the EFD HMRT. The applicant has stated that the dialog with EFD HMRT has been very productive and that an agreement was reached that PG&E will provide the HMRT with new ammonia detectors. PG&E and the EFD are also jointly preparing a FEMA grant application for a new hazmat response vehicle (CH2MHILL 2007c, WSQ 22). These measures will reduce the impacts HBRP may have on the HMRT's capability to respond. Staff therefore concludes that with the fulfillment of the agreement between PG&E and the EFD, the HMRT will be adequately equipped to respond in a timely manner.

In addition to HMRT's spill response, designated plant personnel will be assigned to a hazardous materials response team and receive first responder training, hazardous materials technical training, and training in mitigation and control measures (PG&E 2006a Section 8.5.4.2.1 and CH2MHILL 2007a DR WS #53 and #56).

Transportation of Hazardous Materials

Hazardous materials, including aqueous ammonia and cleaning chemicals, will be transported to the facility via tanker truck. While many types of hazardous materials will be transported to the site, staff believes that transport of aqueous ammonia poses the predominant risk associated with hazardous materials transport.

Staff reviewed the applicant's proposed transportation route for hazardous materials delivery (from Highway 101 to King Salmon Avenue, to the project site), considering its potential for impact on public and sensitive receptors and agrees that this is a suitable route, as it minimizes off-freeway travel distance and avoids passing directly by any local schools. The applicant stated that delivery of hazardous materials will comply with Caltrans, USEPA, California DTSC, CHP, and California State Fire Marshal regulations (PG&E 2006a, Section 8.5.4.2.4).

Ammonia can be released during a transportation accident and the extent of impact in the event of such a release would depend on the location of the accident and on the rate of dispersion of ammonia vapor from the surface of the aqueous ammonia pool. The likelihood of an accidental release during transport is dependent on three factors:

- the skill of the tanker truck driver,
- the type of vehicle used for transport, and
- accident rates along similar roads.

To address this concern, staff evaluated the risk of an accidental transportation release in the project area. Staff's analysis focused on the project area after the delivery vehicle leaves the main highway (Highway 101). Consistent with CEQA, staff believes that it is appropriate to rely on the extensive regulatory program that applies to shipment of hazardous materials on California highways to ensure safe handling in general transportation (see the Federal Hazardous Materials Transportation Law 49 USC §5101 et seq., the US Department of Transportation Regulations 49 CFR Subpart H, §172-700, and California DMV Regulations on Hazardous Cargo). These regulations also address the issue of driver competence. See AFC section 8.12 for additional information on regulations governing the transportation of hazardous materials.

To address the issue of tanker truck safety, aqueous ammonia will be delivered to the proposed facility in U.S. DOT certified vehicles with design capacity of 6,500 gallons. These vehicles will be designed to U.S. DOT Code MC-306 or MC-307. These are high integrity vehicles designed for hauling of caustic materials such as aqueous ammonia. Staff has, therefore, proposed Condition of Certification **HAZ-5** to ensure that regardless of which vendor supplies the aqueous ammonia, delivery will be made in a tanker that meets or exceeds the specifications described by these regulations.

To address the issue of accident rates, staff reviewed the technical and scientific literature on hazardous materials transportation (including tanker trucks) accident rates in the United States and California. Staff relied on six references and three federal government databases to assess the risks of a hazardous materials transportation accident.

Staff used the data from the Davies and Lees (1992) article which references the 1990 Harwood et al. study, to determine that the frequency of release for transportation of hazardous materials in the U.S. is between 0.06 and 0.19 releases per million miles traveled on well designed roads and highways. The maximum usage of aqueous ammonia each year of operation of the proposed HBRP will require about 156 tanker truck deliveries of aqueous ammonia per year, each delivering about 6,500 gallons. Each delivery will travel approximately 0.4 miles from Highway 101 to the facility along King Salmon Avenue. This would result in about 62.4 miles of delivery tanker truck travel in the project area per year (with a full load). Staff believes that the risk over this distance is insignificant. Data from the U.S. DOT show that the actual risk of a fatality over the past five years from all modes of hazardous material transportation (rail, air, boat, and truck) is approximately 0.1 in one million.

Staff therefore believes the risk of exposure to significant concentrations of aqueous ammonia during transportation to the facility are insignificant because of the remote possibility of accidental release of a sufficient quantity to present a danger to the public combined with the already diluted concentration of the aqueous ammonia being transported. The transportation of similar volumes of hazardous materials on the nation's highways is not unique nor an infrequent occurrence. Staff's analysis of the transportation of aqueous ammonia to the proposed facility (along with data from the U.S. DOT) demonstrates that the risk of accident and exposure is less than significant.

Based on the environmental mobility, toxicity, quantities present at the site and frequency of delivery, it is staff's opinion that aqueous ammonia poses the predominate risk associated with hazardous materials transportation and use at the proposed facility. Staff concludes that the risk associated with transportation of other hazardous materials to the proposed facility does not significantly increase the risk of impact beyond that associated with ammonia transportation.

Seismic Issues

The possibility exists that an earthquake would cause the failure of a hazardous materials storage tank. The quake could also cause the failure of the secondary containment system (berms and dikes) as well as electrically controlled valves and pumps. The failure of all these preventive control measures might then result in a vapor cloud of hazardous materials moving off-site and impacting the residents and workers in the surrounding community. The effects of the Loma Prieta earthquake of 1989, the Northridge earthquake of 1994, and the earthquake in Kobe, Japan, in January 1995, heighten the concern regarding earthquake safety.

Information obtained after the January 1994 Northridge earthquake showed that some damage was caused to several large storage tanks and smaller tanks associated with the water treatment system of a cogeneration facility. Those tanks with the greatest damage, including seam leakage, were older tanks, while the newer tanks sustained displacements and failures of attached lines. Therefore, staff conducted an analysis of the codes and standards that should be followed in adequately designing and building storage tanks and containment areas to withstand a large earthquake. Staff also reviewed the impacts of the February 2001 Nisqually earthquake near Olympia, Washington, a state with similar seismic design codes as California. No hazardous materials storage tanks were impacted by this quake. Referring to the sections on

Geologic Resources and Hazards and **Facility Design** in the AFC, staff notes that the proposed facility will be designed and constructed to the applicable standards of the 2001 California Building Code and the 1997 Uniform Building Code. The site is within Seismic Zone 4 (PG&E 2006a Section 8.4.1.4.2). Therefore, on the basis of what occurred in Northridge with older tanks and the lack of failures during the Nisqually earthquake with newer tanks designed to standards similar to those in California, staff determined that tank failures at the project site during seismic events are not probable and do not represent a significant risk to the public.

Site Security

This facility proposes to use hazardous materials identified by the US EPA as materials where special site security measures should be developed and implemented to prevent unauthorized access. US EPA published a *Chemical Accident Prevention Alert* regarding site security (EPA 2000a), the U.S. Department of Justice published a special report on *Chemical Facility Vulnerability Assessment Methodology* (US DOJ 2002), the North American Electric Reliability Corporation (NERC) published *Security Guidelines for the Electricity Sector* in 2002 (NERC 2002), and the U.S. Department of Energy published a draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE 2002). The energy generation sector is one of 14 areas of critical Infrastructure listed by the U.S. Department of Homeland Security. On April 9, 2007, the U.S Department of Homeland Security published, in the Federal Register (6 CFR Part 27), an Interim Final Rule requiring facilities that use or store certain hazardous materials to conduct vulnerability assessments and implement certain specified security measures. This rule was implemented with the publication of Appendix A, the list of chemicals, on November 2, 2007. While the rule applies to aqueous ammonia solutions of 20% or greater and this proposed facility plans to utilize less than 20% aqueous ammonia, staff still believes that all power plants under the jurisdiction of the Energy Commission should implement a minimum level of security consistent with the guidelines listed here.

The applicant has stated that a security plan will be prepared for the proposed facility, and will include a description of perimeter security measures, and procedures for evacuating, notifying authorities of a security breach, monitoring fire alarms, conducting site personnel background checks, site access, and a security plan and background checks for hazardous materials drivers. Perimeter security measures utilized for this facility may include security guards, security alarms, breach detectors, motion detectors, and video or camera systems (PG&E 2006a Section 8.5.4.2.5). In response to data requests submitted by staff regarding security at the HBRP site, the applicant has stated that the HBRP site will have its own perimeter and perimeter fence separate from that of the existing HBPP (which is under the security requirements of the federal Nuclear Regulatory Commission) and that during operations the perimeter security will be operated and manned by its own security personnel (CH2MHILL 2007c, DR #59-63).

In order to ensure that this facility or a shipment of hazardous material is not the target of unauthorized access, staff's proposed Conditions of Certification **HAZ-7** and **HAZ-8** requires both a Construction Security Plan and an Operations Security Plan. These plans would require the implementation of Site Security measures consistent with the above-referenced documents and Energy Commission guidelines.

The goal of these conditions of certification is to provide for the minimum level of security for power plants to protect California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks. The level of security needed for this power plant is dependent upon the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event. The results of the off-site consequence analysis prepared as part of the RMP will be used, in part, to determine the severity of consequences of a catastrophic event. In order to determine the level of security, the Energy Commission staff will provide guidance in the form of a vulnerability assessment (VA) decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002), the NERC 2002 guidelines, the U.S. Department of Energy VAM-CF model, and the U.S. Department of Homeland Security regulations published in the Federal Register (codified at 6 CFR Part 27).

These security measures include perimeter fencing and breach detectors, possibly guards, alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contact in the event of a security breach. Site access for vendors will be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors will have to maintain their transport vehicle fleets and employ only drivers who are properly licensed and trained. The project owner will be required, through its contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to the U.S. DOT requirements that hazardous materials vendors prepare and implement security plans per 49 CFR 172.800 and ensure that all hazardous materials drivers are in compliance with personnel background security checks per 49 CFR Part 1572, Subparts A and B. The compliance project manager (CPM) may authorize modifications to these measures, or may require additional measures in response to additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or NERC, after consultation with appropriate law enforcement agencies and the applicant.

CUMULATIVE IMPACTS AND MITIGATION

Staff reviewed the potential for the operation of the HBRP combined with existing facilities to result in cumulative impacts on the population within the area. Staff determined that the chemical with the most potential to cause a cumulative impact is aqueous ammonia. However, it is expected that with the mitigation measures proposed by applicant and staff's suggested conditions of certification, there will be very little possibility for significant off-site air-borne concentration of ammonia gas, and accordingly even less possibility for there to be simultaneous off-site plumes from other facilities to merge and cause any significant off-site impact. The nearest facility that stores and uses ammonia is the Humboldt Creamery Association, located about 8 miles from the proposed HBRP site (PG&E 2006a, Section 8.5.3). At this distance there are no potential cumulative impacts from the use and storage of hazardous materials.

The applicant will develop and implement a hazardous materials handling program for the HBRP project independent of any other projects considered for potential cumulative impacts. Staff believes that the facility, as proposed by the applicant and with the additional mitigation measures proposed by staff, poses a minimal risk of accidental

release that could result in offsite impacts. It is unlikely that an accidental release that has very low probability of occurrence (about one in one million per year) would independently occur at the HBRP site and another facility at the same time. Therefore, staff concludes that the facility would not contribute to a significant cumulative impact.

COMPLIANCE WITH LORS

Staff concludes that construction and operation of the HBRP as proposed by the applicant and conditioned by staff, would be in compliance with all applicable LORS concerning long-term and short-term project impacts in the area of Hazardous Materials Management.

CONCLUSIONS

Staff's evaluation of the proposed project indicates that with the implementation of mitigation measures proposed by staff and the applicant and with fulfillment of staff's conditions of certification, hazardous materials use will pose no significant impacts on the public. Staff's analysis also shows that there will be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable LORS. In response to Health and Safety Code, section 25531 et seq., the applicant will be required to develop an RMP. To insure adequacy of the RMP, staff's proposed conditions of certification require that the RMP be submitted for concurrent review by U.S. EPA and Energy Commission staff. In addition, staff's proposed conditions of certification require review and comment from the Humboldt County Division of Environmental Health (DEH) and staff's review and approval of the RMP prior to delivery of any hazardous materials to the facility. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia as well as site security.

Staff recommends the Energy Commission impose the proposed conditions of certification, presented herein, to ensure that the project is designed, constructed and operated to comply with applicable LORS and to protect the public from significant risk of exposure to an accidental ammonia release. If all mitigation proposed by the applicant and by staff are required, the use, storage, and transportation of hazardous materials will not present a significant risk to the public.

Staff proposes eight conditions of certification mentioned throughout the text (above) and listed below. **HAZ-1** ensures that no hazardous material would be used or stored at the facility except those listed and in the concentrations and volumes listed, in Appendix B of this staff assessment, unless there is prior notification to the Humboldt County Division of Environmental Health (DEH) and approval by the Energy Commission CPM. **HAZ-2** requires that an RMP be prepared and submitted prior to the delivery of aqueous ammonia.

Staff believes that an accidental release of aqueous ammonia during transfer from the delivery tanker to the storage tank is the most probable accident scenario, and therefore proposes a condition (**HAZ-3**) requiring development of a safety management plan for the delivery of aqueous ammonia. The development of a Safety Management Plan

addressing delivery of ammonia will further reduce the risk of any accidental release not addressed by the proposed spill prevention mitigation measures and the required RMP. **HAZ-4** requires that the aqueous ammonia storage tank be designed to comply with applicable LORS. The transportation of hazardous materials is addressed in **HAZ-5** and **HAZ-6**. Site security during both the construction and operations phases is addressed in **HAZ-7** and **HAZ-8**.

PROPOSED CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous material not listed in Appendix B, below, or in greater quantities or concentrations than those identified by chemical name in Appendix B, below, unless notification is given to the Humboldt County Division of Environmental Health and approved not less than two (2) business days in advance by the Compliance Project Manager (CPM).

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials and storage quantities contained at the facility.

HAZ-2 The project owner shall concurrently provide a Business Plan and a Risk Management Plan (RMP) to the Certified Unified Program Authority (CUPA) -- Humboldt County Division of Environmental Health (DEH) -- and the CPM for review. After receiving comments from the CUPA and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Business Plan and RMP shall then be provided to the CUPA for information and to the CPM for approval.

Verification: At least sixty (60) days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Business Plan to the CPM for approval. At least sixty (60) days prior to delivery of aqueous ammonia to the site, the project owner shall provide the final RMP to the CUPA for information and to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and other liquid hazardous materials. The plan shall include procedures, protective equipment requirements, training and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials including provisions to maintain lockout control by a power plant employee not involved in the delivery or transfer operation. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least sixty (60) days prior to the first delivery of aqueous ammonia to the facility, the project owner shall provide a safety management plan as described above to the CPM for review and approval.

HAZ-4 The aqueous ammonia storage facility shall be designed to either the ASME Pressure Vessel Code and ANSI K61.6 or to API 620. In either case, the storage tank shall be protected by a secondary containment basin capable of holding 125% of the storage volume or the storage volume plus the volume

associated with 24 hours of rain assuming the 25-year storm. The secondary containment shall include a cover that would minimize evaporation of ammonia to the air and the area around the storage tank, tanker transfer pad, and ammonia skid shall be equipped with ammonia sensors. The final design drawings and specifications for the ammonia storage tank, secondary containment basin, cover, transfer pad, and the number, location, and specifications of the ammonia sensors shall be submitted to the CPM.

Verification: At least sixty (60) days prior to delivery of aqueous ammonia to the facility, the project owner shall submit final design drawings and specifications for the ammonia storage tank, secondary containment basin, cover, transfer pad, and the number, location, and specifications of the ammonia sensors to the CPM for review and approval.

HAZ-5 The project owner shall direct all vendors delivering aqueous ammonia to the site to use only tanker truck transport vehicles that meet or exceed the specifications of U.S. DOT Code MC-307.

Verification: At least sixty (60) days prior to the first receipt of aqueous ammonia on site, the project owner shall submit copies of the notification letter proposed to be provided to supply vendors indicating the transport vehicle specifications to the CPM for review and approval.

HAZ-6 The project owner shall direct all vendors delivering any hazardous material to the site to use only the route approved by the CPM (from Highway 101, to King Salmon Avenue, to the project site). The project owner shall submit any desired change to the approved delivery route to the CPM for review and approval.

Verification: At least sixty (60) days prior to receipt of any hazardous materials on site, the project owner shall submit copies of the required transportation route limitation direction to the CPM for review and approval.

HAZ-7 At least 30 days prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Security Plan shall include the following:

1. Perimeter security consisting of fencing enclosing the construction area;
2. Security guards;
3. Site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
4. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;
5. Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and
6. Evacuation procedures.

Verification: At least thirty (30) days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-8 In order to determine the level of security appropriate for this power plant, the project owner shall prepare a Vulnerability Assessment and submit that assessment as part of the Operations Security Plan to the CPM for review and approval. The Vulnerability Assessment shall be prepared according to guidelines issued by the North American Electrical Reliability Council (NERC 2002), the U.S. Department of Energy (DOE 2002), and the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002).

Physical site security shall be consistent with the guidelines issued by the NERC (Version 1.0, June 14, 2002), the DOE (2002), and U.S. Department of Homeland Security regulations (6 CFR Part 27) and will also be based, in part, on the use, storage, and quantity of hazardous materials present at the facility.

The project owner shall also prepare a site-specific Security Plan for the operational phase and shall be made available to the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials storage. The level of security to be implemented will be determined by the results of the Vulnerability Assessment but in no case shall the level of security be less than that described as below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. Permanent full perimeter fence or wall, at least 8 feet high;

2. Main entrance security gate, either hand operable or motorized;

3. Evacuation procedures;

4. Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;

5. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;

6. a. A statement (refer to sample, attachment “A”) signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and federal law regarding security and privacy;

   b. A statement(s) (refer to sample, attachment “B”) signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner) that are present at any time on the

site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractor personnel that visit the project site.

7. Site access controls for employees, contractors, vendors, and visitors;

8. A statement(s) (refer to sample, attachment "C") signed by the owners or authorized representative of hazardous materials transport vendors certifying that they have prepared and implemented security plans in conformity with 49 CFR part 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;

9. Closed Circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate and the ammonia storage tank; and

10. Additional measures to ensure adequate perimeter security consisting of either:

    a. Security guards present 24 hours per day, 7 days per week.

    <u>or</u>

    b. Power plant personnel on-site 24 hours per day, 7 days per week and **all** of the following:

    1. The CCTV monitoring system required in number 9 above shall include cameras that are able to pan, tilt, and zoom (PTZ), have low-light capability, are recordable, and are able to view 100% of the perimeter fence, the ammonia storage tank, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; **and**

    2. Perimeter breach detectors **<u>or</u>** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to the security plans. The CPM may authorize modifications to these measures, or may require additional measures, such as protective barriers for critical power pant components (e.g., transformers, gas lines, compressors, etc.) depending on circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with appropriate law enforcement agencies and the applicant.

Verification: At least 30 days prior to the initial receipt of hazardous materials on-site, the project owner shall notify the CPM that a site-specific Vulnerability Assessment and Operations Site Security Plan are available for review and approval. In the Annual Compliance Report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and updated certification statements are appended to the Operations Security Plan. In the Annual Compliance Report, the project owner shall include a statement that the Operations Security Plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

SAMPLE CERTIFICATION (Attachment "A")

Affidavit of Compliance for Project Owners

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company Name)

for employment at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of Officer or Agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment "B")

Affidavit of Compliance for Contractors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company Name)

for contract work at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of Officer or Agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment "C")

Affidavit of Compliance for Hazardous Materials Transport Vendors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that the below named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B,

_____

(Company Name)

for hazardous materials delivery to

_____

(Project name and location)

as required by the California Energy Commission Decision for the above- named project.

_____

(Signature of Officer or Agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

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HAZARDOUS MATERIALS APPENDIX A

BASIS FOR STAFF'S USE OF 75 PPM AMMONIA EXPOSURE CRITERIA

Staff uses a health-based airborne concentration of 75 PPM as a threshold for initiating the evaluation of risk of exposure associated with potential accidental releases of ammonia. While this level is not consistent with the 150-ppm level used by EPA and Cal/EPA in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's analysis of the proposed project. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices and actions are implemented in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines (ERPGs) states that "these values have been derived as planning and emergency response guidelines, **not** exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures for the entire population. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. CEQA requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events, and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL. **Hazardous Materials Appendix B** provides a summary of adverse effects, which might be expected to occur at various airborne concentrations of ammonia.

Hazardous Materials Appendix A Table-1
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH[2]	NIOSH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 min.	Exposure above this level requires the use of "highly reliable" respiratory protection and poses the risk of death, serious irreversible injury or impairment of the ability to escape.
IDLH/10[1]	EPA, NIOSH	Work place standard adjusted for general population factor of 10 for variation in sensitivity	30 ppm	30 min.	Protects nearly all segments of general population from irreversible effects
STEL[2]	NIOSH	Adult healthy male workers	35 ppm	15 min. 4 times per 8 hr day	No toxicity, including avoidance of irritation
EEGL[3]	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 min.	Significant irritation but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one time exposure
STPEL[4]	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 min. 30 min. 10 min.	Significant irritation but protects nearly all segments of general population from irreversible acute or late effects. One time accidental exposure
TWA[2]	NIOSH	Adult healthy male workers	25 ppm	8 hr.	No toxicity or irritation on continuous exposure for repeated 8 hr. Work shifts
ERPG-2[5]	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	150 ppm	60 min.	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin)

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)
* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.
** The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The (WHO 1986) warns that the young, elderly, asthmatics, those with bronchitis and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants

REFERENCES FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1

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ABBREVIATIONS FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1

ACGIH, American Conference of Governmental and Industrial Hygienists
AIHA, American Industrial Hygienists Association
EEGL, Emergency Exposure Guidance Level
EPA, Environmental Protection Agency
ERPG, Emergency Response Planning Guidelines
IDLH, Immediately Dangerous to Life and Health Level
NIOSH, National Institute of Occupational Safety and Health
NRC, National Research Council
STEL, Short Term Exposure Limit
STPEL, Short Term Public Emergency Limit
TLV, Threshold Limit Value
TWA, Time-Weighted Average
WHO, World Health Organization

Hazardous Materials Appendix B

Hazardous Materials Appendix B Table 1: Hazardous Materials Proposed for Use at the HBRP[a]

Material	CAS No.	Application	Location	Hazardous Characteristics	Maximum Quantity On Site	CERCLA SARA RQ[b]
Antifreeze	57-55-6	Coolant for radiators	Radiator array and jacket water circuit	Health: causes irritation Physical: combustible	55 gallons	NA
Aqueous Ammonia 19 % solution	7664-41-7	NO_X Emissions Control	Outdoors in the ammonia unloading/storage area	Health: irritation to permanent damage from inhalation, ingestion, and skin contact Physical: reactive, vapor is combustible	54,000 gallons	100 lb
Biocide (Diethylene glycol, monomethyl ether, and others)	111-77-3 21564-17-0 6317-18-6	Biocide for diesel fuel	Adjacent to diesel tank		12 gallons	NA
Citric Acid	77-92-9	Chemical cleaning of piping	Workshop		50 lbs	NA
Cleaning chemicals/ Detergents	None	Periodic cleaning of engines	Workshop		110 gallons	NA
Corrosion inhibitor (Potassium 2-ethylhexanoate, 1H-Benzotriazole methyl)	3164-85-0 29385-43-1	Cooling water corrosion inhibitor	Radiator array and jacket water circuit	Health: may cause irritation to eyes, harmful if ingested Physical: None	5,500 gallons	NA
Diesel No. 2 (Fuel Oil for engines)	None	Fuel for engines	Diesel fuel tank	Health: Eye and skin irritation Physical: combustible	634,000 gallons	42 gal
Diesel No. 2 (Fuel Oil for black start and fire pumps)	None	Fuel for fire pump and black start unit	Diesel fuel tank	Health: Eye and skin irritation Physical: combustible	600 gallons	42 gal

Material	CAS No.	Application	Location	Hazardous Characteristics	Maximum Quantity On Site	CERCLA SARA RQ[b]
Hydraulic Oil	None	Engine lubricating oil	Contained within equipment	Health: hazardous if ingested Physical: combustible	33,000 gallons	42 gal
Exxon Mobile Pegasus 805 lube oil (zinc, phosphorodithoic acid, poly butenyl succinimide)	7440-66-6 68649-42-3	Engine lubricating oil	Oil storage areas	Health: hazardous if ingested Physical: flammable	34,500 gallons	42 gal
Mercury Vapor Lamps and Fluorescent Tubes	7439-97-6	In about 50 bulbs			~100 lbs	1 lb
Mineral Insulating Oil	8012-95-1	Transformers/switchyard	Contained within transformers	Health: minor health hazard Physical: may be combustible	15,870 gallons	42 gal
Mineral Lubricating Oil	None	Generator lubricating oil	Electrical generators	Health: minor health hazard Physical: may be combustible	12,000 gallons	42 gal
Sulfuric Acid (93%)	7664-93-9	Sealed batteries	MV building/control	Health: strong irritant to all tissues, may cause minor burns to permanent damage Physical: reactive	50 gallons	1,000 lb

a. Source: PG&E 2006a Tables 8.5-1 through 8.5-3.

b. Reportable quantities for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act.