CITY OF LONG BEACH

DEPARTMENT OF PLANNING AND BUILDING

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December 8, 2005

Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, NE, Room 1A
Washington, DC 20426

RE: Draft Environmental Impact Statement/Environmental Impact Report
Long Beach LNG Import Project
FERC Docket No. CP04-58-000, et al
POLB Application No. HDP 03-079

Dear Ms. Salas:

We greatly appreciate the opportunity to provide comments on the above referenced Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the proposed Long Beach Liquefied Natural Gas (LNG) Import Project.

This project is of considerable interest to the City of Long Beach. The EIS/EIR is a critical element of the project evaluation process. The attached comments from the City of Long Beach were prepared with the assistance of multiple City departments, Aspen Environmental and RJA Consultants.

These comments address only the adequacy of the environmental analysis in the EIS/EIR and do not represent either support or opposition of the proposed project by the City of Long Beach.

We look forward to receiving your responses to these comments. Please do not hesitate at any time to contact either myself at (562) 570-6428 or Angela Reynolds, Planning Officer, at (562) 570-6357 regarding this comment submittal.

Sincerely,

Suzanne Frick
Director of Planning and Building

Attachment: Comments on Draft EIS/EIR for Long Beach LNG Import Project

cc: Robert Kanter, Port of Long Beach

A. Comprehensive Comments

Comments on the Draft EIS/EIR, Draft General Conformity Determination, and Draft PMP Amendment No. 20

FERC Docket No. CP04-58-000, et al.
POLB Application No. HDP 03-079

This report includes the comments of the City of Long Beach on the Long Beach LNG Import Project Draft EIS/EIR. The review focuses on the adequacy of the Draft EIS/EIR in terms of compliance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Comments on the environmental document are grouped into one list of comprehensive comments following each EIS/EIR section.

Comments are on:

- incorrect implementation of CEQA or NEPA,
- technical errors,
- flawed methodology, and
- inappropriate procedures.

Major Issues

Inappropriate Treatment of Alternatives. Regulations for implementing NEPA [40 CFR 1502.14 (Alternatives including the proposed action)] illustrate that the alternatives are the "heart of the environmental impact statement."

> "*Based on the information and analysis presented in the sections on the Affected Environment (Sec. 1502.15) and the Environmental Consequences (Sec. 1502.16), it [the EIS] should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. In this section agencies shall [. . .] (b) Devote substantial treatment to each alternative considered in detail . . .* "

NEPA further requires [40 CFR 1502.15 (Affected Environment)], "*the environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration*." This means that a detailed analysis of alternatives needs to be provided at an equal level of detail as the proposed project discussion. At a minimum, the exact impacts analyzed for the proposed project should be evaluated for each alternative, including the no-project alternative.

The project objectives are defined very narrowly, making it almost impossible for any alternative to completely fulfill all project objectives. Both NEPA and CEQA discourage the establishment of such narrowly-stated objectives because it artificially limits the range of alternatives that can be considered. Although the Port of Long Beach is the location selected by SES, competing LNG proposals in the region indicate that other Southern California sites appear to be available, and they should be able to meet proposed project objectives.

Deferral of Determining Demands on Public Services. The security and emergency response requirements that will be "imposed" on the City of Long Beach are not identified. If the City of Long Beach Fire or Police Departments determine that resources, training, or equipment are necessary, a plan for funding the needs should be established and should be made available at this time for public review and comment. Without a draft Emergency Response Plan or a plan for funding, the total fiscal impact to the City of Long Beach for public services cannot be determined. The analysis in the Draft EIS/EIR does not state whether these plans would require an increase to the short- or long-term demand for public services in excess of existing and projected capabilities.

Deferral of Complete Air Quality Analysis. The Draft EIS/EIR defers providing an air quality impact analysis and proposed mitigation necessary for the project to comply with the General Conformity Rule. With availability of this information deferred, readers are left to assume that the project is not able to comply with the requirements and that recirculation of the Draft EIS/EIR will be necessary in order to provide full disclosure of the air quality impacts and mitigation.

Deferral of a Waterway Suitability Assessment. The Draft EIS/EIR defers providing a Waterway Suitability Assessment (WSA) to evaluate the suitability of the waterway for the LNG marine traffic. With this information deferred, the Draft EIS/EIR does not identify what mitigation will be necessary to address the potential safety and security concerns.

Failure to Fully Characterize Worst-Case Accident Scenarios. The Draft EIS/EIR fails to identify the "worst plausible case" of an LNG release caused by terrorism or an unintentional release along the pipeline routes. Additionally, criteria used by the Draft EIS/EIR for characterizing the hazards (such as acceptable radiant heat exposure levels and likelihood of fatalities) are not protective of public safety. Exposure of the public within the boundaries of the Port of Long Beach to safety hazards appears to be ignored. These deficiencies falsely portray the zone of potentially significant impacts by underestimating the severity of risks.

1.0 Comments on Introduction

1.1 Project Purpose and Need

Section 1.1, Project Purpose and Need. The discussion of purpose and need for the project addresses Statewide and regional natural gas resource availability, but no information is provided on the need for the terminal to be located onshore at the Port of Long Beach. The Port of Long Beach is just one of many possible locations for an LNG import facility. Therefore, the purpose and need does not demonstrate a need for this proposed action to occur onshore at the Port of Long Beach.

1.4 Consistency with Plans and Policies

Section 1.4, General Comment. This section describes the location of the project relative to city jurisdictions and city land use and zoning plans. However, a figure should be provided that shows the location of the project components relative to: (1) Port of Long Beach Harbor Planning Districts (similar to Figure 1.4.3-1, but with project components); (2) City of Long Beach boundaries and zoning designations; (3) City of Los Angeles boundaries and zoning designations; and (4) City of Carson boundaries and zoning designations. Without this information, it is impossible to determine the surrounding land uses and jurisdictions relative to all the project components, including the construction staging area and pipelines.

Section 1.4.3, POLB Port Master Plan. Page 1-16 (parag. 1) describes the permitted uses within the Harbor Planning District 4. However, it does not make any reference to the additional District 4 permitted

uses that were included with Port Master Plan Amendments No. 9 and 13. Amendment No. 9 modified the list of permitted uses in District 4 to include a three-acre site near Ocean Boulevard for a non-residential homeless service center. Amendment No. 13 also modified the list of permitted uses to include a 15-acre site in the northeast portion of the former Naval Shipyard for the City of Long Beach Police Department headquarters and training academy. The use of these sites as they are currently permitted would bring more people to the vicinity of the LNG terminal, which affects the assessment of risks to the public. The EIS/EIR should disclose the permitted uses accordingly.

Section 1.4.4, Energy Policy Act of 2005. No information is provided in the Draft EIS/EIR about relevant statements made by the State of California on the proposed project. The Safety Advisory Report (released September 7, 2005), prepared on behalf of the State by the California Energy Commission (CEC), was under review by FERC at the time of releasing the Draft EIS/EIR. The response of FERC to the issues noted in the Safety Advisory Report must be made public and must receive full public review as part of the NEPA/CEQA process.

Section 1.4.4, Energy Policy Act of 2005. The Draft EIS/EIR includes the following description: "The Energy Policy Act of 2005, enacted on August 8, 2005, is designed to encourage energy efficiency and conservation, promote alternative and renewable energy sources, reduce dependence on foreign sources of energy, increase domestic production, modernize the electricity grid, and encourage the expansion of nuclear energy." Energy efficiency and conservation are also goals of the City of Long Beach. The Draft EIS/EIR should include a discussion of whether the proposed project would be consistent with these stated goals of the Energy Policy Act.

Section 1.4.5, Southern California Association of Governments Regional Plans. The Draft EIS/EIR contains premature conclusions regarding the consistency of the proposed project with regional policies. Because many aspects of the impact analysis and mitigation are deferred, the EIS/EIR should be revised to reflect that consistency of the project with the following policies remains uncertain:

- **Policy 3.09, Growth Management Chapter, Regional Comprehensive Plan and Guide.** The finding is not supported by the Draft EIS/EIR, which fails to identify the impact of the project on public services. An Emergency Response Plan and a plan for funding the safety, security, and response resources needed by the City of Long Beach Fire or Police Departments have not been developed. Until these plans are established, the EIS/EIR should conclude that the project may interfere with the ability of the City to provide public services.
- **Policy 3.18, Growth Management Chapter, Regional Comprehensive Plan and Guide.** The finding is not supported by the Draft EIS/EIR, which shows that no alternative locations were analyzed with an equal level of detail as required by NEPA. The Draft EIS/EIR shows that significant air quality impacts would occur, and this is partly due to the proposed location within the highly-polluted South Coast Air Basin. Safety impacts could also be avoided with an alternative location. Until alternative locations are fully analyzed, the EIS/EIR should conclude that the project would occur at a location likely to cause impacts.
- **Policies 5.07 and 5.11, Air Quality Chapter Core Actions.** Findings of project consistency with air quality policies cannot be made until detailed air quality information on impacts and mitigation measures, including the measures necessary to comply with the federal General Conformity Rule, is provided.

2.0 Comments on Description of Proposed Action

Section 2.0, General Comment. The project description is very general and does not present detailed information needed to assess all of the potential impacts of the project. Heat and material balances and

more detailed equipment descriptions and process flow diagrams should be presented to allow a critical review of the engineering design of onshore facilities and related impacts.

2.1 Proposed Facilities

Section 2.1.1.5, Natural Gas Liquids Recovery System. This section notes that imported LNG that does not meet Southern California Gas Company (SoCal Gas) specifications would be routed to the NGL recovery unit, and further notes that recovered C2 (ethane – or carbon content) would be used as a fuel gas or transported to the Los Angeles Refinery Carson Plant (LARC) through the C2 (ethane – or carbon content) pipeline, and that recovered C3+ would only be used as a fuel gas within the LNG terminal. However, the SoCal Gas specifications (i.e. SoCal Gas Rule No. 30) are not provided in the EIS/EIR and the quality or range of quality of the natural gas proposed to be fed into the existing SoCal Gas system is not described. No information or compositional data has been provided that supports the contention that the NGL system design can actually meet SoCal Gas specifications for all potential LNG import sources, and that the proposed gas feed meets all of the SoCal Gas specification per Rule No. 30.

The requirements for pipeline quality natural gas are currently being reviewed both at the federal and State level. Just meeting the upper end of current SoCal Gas specifications may not meet future gas quality specification regulations. The EIS/EIR should discuss issues such as the likely future Wobbe index limits (Wobbe heating value index); current discussions indicate a potential for a 1400 Wobbe index limit. The EIS/EIR should demonstrate that the proposed design would be able to meet the range of likely new natural gas specifications.

Additionally, the EIS/EIR states that the LARC is limited to receiving 10,000 MMBtu/day of C2. However, there are no material balances to show that the amount of C2 recovered in order to meet gas specifications will not exceed this value. Production of excess C2 could create a need for onsite storage of C2+. Storage tanks for C2+ are not identified in the facility description of Section 2.1.1. The EIS/EIR should address how excess C2 would be handled or stored and the potential environmental effects of that storage.

This section also states that the LNG vehicle fuel will meet California Air Resources Board (CARB) LNG specifications. However, no such specifications exist. It is unclear if this means the LNG will meet CARB's compressed natural gas (CNG) specification or certain portions of the CNG specifications. Certainly the project is not currently designed to meet the inerts CNG specification (1.5% to 4.5% N_2 plus CO_2). As is the case with pipeline natural gas, the CNG vehicle fuel specifications are under review and a Wobbe index-based specification, among other specifications (methane number, C4+ limits, inerts limits), may be added or revised. The EIS/EIR should acknowledge that the current rulemaking processes are ongoing, and the likely outcomes should be discussed. The EIS/EIR should demonstrate that the current facility design would be able to meet the potential range of new fuel specifications.

Section 2.1.2, LNG Ships. This project, unlike other proposed LNG projects, may receive LNG from a range of suppliers around the world. It is noted in Section 2.1.2 that:

> *"LNG could be shipped from a variety of sources around the world, including Algeria, Australia, Brunei, Indonesia, Malaysia, Nigeria, Oman, Qatar, Trinidad, and United Arab Emirates. The LNG for the proposed terminal would likely be imported from six plants in the Pacific (located in Brunei, Indonesia, Malaysia, and Australia) and four plants in the Middle East (located in Oman, United Arab Emirates, and Qatar)."*

There are significant differences in the composition of the LNG from these different sources. The Draft EIS/EIR does not provide composition data or range of composition for the LNG sources. The Draft

EIS/EIR does not provide information to conclude that the design as proposed can actually handle the range of LNG compositions that these sources would provide. There are no material balances and no indications of upper limits on use of C2 at the LARC or confirmation that the separated C3+ would not overwhelm the facility fuel needs.

Based on the expected properties of LNG from Oman (~1170 Btu/scf, ~1432 Wobbe), this proposed project may not be able to handle LNG from multiple locations for several reasons: 1) capacity of LARC to receive C2 from this project; 2) separation of C3+ capabilities to bring the LNG into compliance with current SoCal Gas standards (1147 Btu/scf); and 3) the likelihood that LNG would not likely comply with a proposed 1400 Wobbe index limit.

The EIS/EIR should discuss the range of the composition of the imported LNG. Material and energy balances should be performed and provided to the public to show that the facility design can handle all potential imports as listed in Draft EIS/EIR and to provide the range of gas quality the project will supply to SoCal Gas.

Section 2.1.3, Natural Gas and C2 Pipelines and Associated Aboveground Facilities. This section notes that the project would include an odorization facility that would use methyl mercaptan. SoCal Gas typically operates odorization facilities without assistance from gas suppliers, and it uses a standard odorant mixture composed of 50% tertiary butyl mercaptan and 50% tetrahydro-thiophen. It is reasonable to expect SoCal Gas to require the facility to use a compatible odorant, and methyl mercaptan is not compatible with the mixture used by SoCal Gas due to a different odor. The EIS/EIR should provide information that SoCal Gas has agreed to allow the project to operate the odorization facility, and the project description and impact analyses should be revised such that a proper odorant mixture (i.e., odorant accidental release analysis, etc.) is analyzed.

2.2 Land Requirements

Section 2.2.2, Natural Gas and C2 Pipelines and Associated Aboveground Facilities (page 2-17, Figures 2.2.2-1 and 2.2.2-2). Pipeline construction activities in city streets should be revised to properly depict placement of K-rail. The K-rail should be placed between the construction work area and the public traffic lanes, not on the curb side of the excavation. Also, in many areas 30-feet of construction area would not be available. Normally, construction must be limited to one or two travel lanes (12 or 24-feet). A diagram should be provided depicting the construction configuration for much narrower work areas in the streets.

2.3 Construction Procedures

Section 2.3.2, Natural Gas and C2 Pipelines and Associated Aboveground Facilities (page 2-24). This section states that the trench would be of sufficient depth to provide a minimum depth of cover of 30-inches. This does not meet the minimum 49 CFR 195 requirements for many areas along the route. The statements are also inconsistent with Figures 2.2.2-1 and 2.2.2-2, which show 5-feet of cover for the natural gas line and 3-feet of cover for the C2 line. The EIS/EIR should consistently illustrate the actual proposal, and it should clearly demonstrate whether the project would comply with the 49 CFR 195 requirements.

2.7 Safety Controls

Section 2.7.2, Natural Gas and C2 Pipelines and Associated Aboveground Facilities (page 2-30). The EIS/EIR should identify whether any safety controls are proposed, beyond the minimum legal requirements of 49 CFR 192. For example, leak detection could be provided such as: a third party

intrusion alarm system could be installed; extra wall thickness could be provided to reduce the risks posed by third parties in this urban area; and additional cover could be provided. Any proposed measures to reduce the likelihood and/or consequences resulting from an unintentional pipeline release should be presented.

3.0 Comments on Alternatives

Section 3.0, General Comment. This section describes a range of project alternatives, including the no action/project alternative, alternative system locations, LNG terminal alternative locations, pipeline alternatives, dredge and fill alternatives, and vaporizer alternatives. However, none of the alternatives were analyzed in equivalent detail to the proposed project as required by NEPA. The alternatives described in Section 3.0 were all eliminated from detailed analysis for reasons of infeasibility, environment inferiority, or inability to achieve project objectives. As described below, the reasoning for eliminating alternatives is flawed and reflects bias. Additionally, the lack of detailed analysis of any alternative in comparison to the proposed project is not consistent with the intent and requirements of NEPA, which requires the EIS to devote substantial treatment to alternatives so that reviewers may evaluate their comparative merits. Further, the lack of alternatives analysis also does not fulfill the requirements of CEQA, which requires an EIR to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.

Many alternatives were dismissed because they did not fulfill all project objectives. This is largely because the project objectives are defined very narrowly, making it almost impossible for any alternative to completely fulfill all project objectives. Both NEPA and CEQA discourage the establishment of such narrowly-stated objectives because it artificially limits the range of alternatives that can be considered. Consideration of a range of reasonable alternatives is an integral component of EIS and EIR analysis and should not be limited or minimized by narrowly crafted project objectives. The objectives stated in the Draft EIS/EIR include specific quantities of natural gas and LNG (i.e., 1 Bscfd of natural gas, 150,000 gpd of LNG vehicle fuel, and 320,000 cubic meters of LNG storage), and if an alternative did not provide these specific quantities, it was eliminated from analysis. The EIS/EIR should, at a minimum, consider alternatives that provide smaller quantities of product, for example, 0.75 Bscfd of natural gas and 240,000 cubic meters of LNG storage. Smaller versions of a project are typically considered as alternatives in nearly every EIS/EIR. The quantities set by the objectives are inappropriately treated as fixed and unchangeable amounts, which limits the range of alternatives that can be considered. Unless there is evidence that achievement of these quantities is necessary for the economic or technical feasibility of the project, alternatives that provide different quantities of natural gas, LNG storage, and LNG vehicle fuel should be considered in the EIS/EIR.

The proposed Offshore LNG Facilities described in Section 3.0 of the Draft EIS/EIR (Cabrillo Port, Crystal Energy, and ChevronTexaco) were not specifically eliminated for reasons of infeasibility or inability to meet project objectives. The reasons for discarding these alternatives either need to be made clearer, or the alternatives should be analyzed in detail. While Section 3.0 contains some discussion of the environmental effects of these projects, it does not constitute treatment equivalent to the proposed project as required by NEPA. A higher level of detail and more substantial treatment of these alternatives are needed to enable reviewers and decisionmakers to evaluate their comparative merits.

Several alternatives were eliminated based on the fact that they would not avoid or substantially lessen significant environmental impacts of the proposed project. While this is a permissible rationale for eliminating alternatives under CEQA, it is not necessarily a valid reason for eliminating alternatives under NEPA. The environmental inferiority of an alternative must be clearly demonstrated in order to eliminate an alternative under NEPA. Section 3.0 of the Draft EIS/EIR does not rigorously evaluate the comparative environmental advantages or disadvantages of the alternatives and, therefore, does not

clearly demonstrate that alternatives were properly eliminated based on environmental inferiority. When the environmental advantages or disadvantages of the alternatives are fully presented, it is possible that the comparative merits of some of the eliminated alternatives, when considered on the whole, may qualify them for full evaluation in the EIS/EIR.

Section 3.0, Issues Related to Gas Quality Specifications. As described above, there is a question whether the facility design that includes separation of C2+ rather than addition of inerts (i.e., nitrogen) to address gas quality specifications will actually be able to meet likely future gas specification regulations. The alternatives analysis should discuss the option of adding inerts, rather than, or in addition to separation of C2+, in order to meet gas quality specifications. Research on gas interchangeability suggests that adding inerts is the best way to meet natural gas specifications and provide a gas quality that will minimize secondary emissions impacts.

Section 3.0, Issues Related to LNG Ship Berth Hotelling. Ships can hotel while in berth or can be fed power in a process called "cold ironing" (plugging a ship into an electrical power system that allows the ship to turn off the diesel engines that are usually used to generate electricity on the ship). This option for reducing emissions from the LNG ships should be discussed as an alternative berth design. The Port of Long Beach commissioned a study on cold ironing, available on their website. This information should be used in evaluating this alternative.

3.4 Pipeline Alternatives

Section 3.4, Pipeline Alternatives (page 3-28). The presence or absence of sensitive receptors along the proposed and alternative pipeline routes should be summarized in the descriptions of the routes. For example, the proximity of any schools, public gathering areas, high density buildings, hospitals, shopping areas, etc. to each of the pipeline alternatives should be presented, mapped, and analyzed. These high-density areas may be subjected to greater consequences in the event of an unintentional release. This important issue does not appear to have been considered in the pipeline alternative analysis.

The evaluation criteria used in the pipeline alternatives analysis (page 3-28) should consider the presence or absence of various geologic hazards (e.g., fault lines, liquefaction, subsidence, corrosive soils, etc.) along each route. The presence of such hazards could increase the likelihood of an unintentional release if not properly mitigated.

Section 3.4.1, Oil Field Variation (page 3-29). It is not clear why the pipeline would need to be installed on precast concrete supports, above grade, in this area. In the absence of definitive restrictions or conflicts, the pipeline should be buried in this area, as required by 49 CFR 192, to reduce the exposure to third party damage. If the line must be installed above grade, the EIS/EIR must describe whether compliance with 49 CFR 192 could be achieved.

Section 3.4.2, Carrack Avenue Variation (page 3-29). This alternative is eliminated from consideration partially because the route would cross 17 pipelines in Carrack Avenue. This type of crossing is typically routine for an urban construction project, and is not a sufficient feasibility hurdle for eliminating the alternative. The EIS/EIR should either substantiate its rationale for eliminating the Carrack Avenue Variation or provide an analysis of this alternative for comparison with the proposed project.

4.0 Comments on Environmental Analysis

4.1 Geology

Section 4.1.1, Significance Criteria. The geologic significance criteria fail to address impacts to the project from geologic hazards related to unsuitable soil conditions such as collapsible soils, corrosive soils, and expansive soils. According to Appendix G of the State CEQA Guidelines, the Geology and Soils analysis should at a minimum address the issue of whether the site is located "on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property." Neither the Geology nor Soils and Sediments sections consider this significance criterion.

Section 4.1.4, Geologic Hazards. No information is provided regarding geologic hazards related to expansive or corrosive soils at the LNG terminal site or along the pipeline alignments. Impacts from expansive and corrosive soils could result in significant damage to buried foundations, utilities, and pipelines. Geotechnical sampling and testing of soils at the LNG terminal site by URS in 2003 (Final Geotechnical Report, Proposed LNG Import Terminal Development, Pier Echo, Terminal Island, Port of Long Beach, California, dated November 14, 2003) indicate that these soils are generally classified as severely corrosive to ferrous metals, aggressive to copper, and severe for sulfate attack on concrete. If testing data is not available for soil characteristics along the pipeline route and for expansion potential of soils at the terminal site, assumptions should be made based on known soil characteristics of the soils in the area. Based on these previous studies, the EIS/EIR should address soil conditions related to corrosion and expansion potential.

Section 4.1.4.1, Seismic Hazards (Soil Liquefaction, Settlement, and Lateral Spreading). This subsection does not adequately describe the setting related to liquefaction, settlement, and lateral spreading along the pipeline route. No description of the potential for these phenomena within the soils along the pipeline alignments is included.

Section 4.1.4.1, Seismic Hazards (Tsunamis). This section discusses the potential for threat from tsunamis, however, it does not include any discussion of potential impact from seiches. A seiche is an oscillation in an enclosed or semi-enclosed body of water and may be triggered by moderate or larger earthquakes. Although a seiche may not be a significant threat to the facility, it may adversely affect marine vessel operations. This impact should be discussed due to the semi-enclosed nature of the Long Beach Middle Harbor and the close proximity of significant earthquake faults. If a seiche is not considered a significant impact, such a conclusion needs to be stated.

Section 4.1.4.3, Impacts and Mitigation. As noted above, the impact analysis should be expanded to address impacts to the project, especially pipelines, from corrosive and expansive soils. Mitigation measures to reduce these impacts to less than significant levels should be identified, and site-specific soil characterization should occur prior to design of final mitigation measures.

4.2 Soils and Sediments

Section 4.2, General Comment. The Soils and Sediments analysis indicates that workplans, health and safety plans, sampling and analysis plans will be prepared that will discuss monitoring for contamination and the required actions. The EIS/EIR should indicate whether individuals with proper training and background would be responsible for implementing these plans and completing the required reports.

Section 4.2.2.1, Soil Resources, Environmental Setting. The discussion does not clearly differentiate between artificial fill and native alluvial deposits, and implies that fan deposits of the Los Angeles River system would be encountered along the pipeline route. The surficial soil within all of the developed area

is likely artificial fill. Accordingly, the EIS/EIR should be revised to note that soil likely to be encountered to typical pipeline trench depths (5 to 6-feet) will be artificial fill.

Section 4.2.2.1, Soil Limitations, Potentially Contaminated Soils, and Ordnance. The discussion indicates that the artificial fill at the LNG site will not provide adequate support without settlement of the proposed LNG storage tanks. The loose, unconsolidated, liquefiable sediments would require implementation of one or more ground improvement schemes. This is significant considering the following discussion regarding Potentially Contaminated Soils and Ordnance.

The discussion indicates there is potential for contaminated soil at the LNG terminal site and along the pipeline routes despite the lack of specific findings of contamination during the geotechnical investigation for the project as well as previous Department of Navy environmental investigations. It is reasonable to assume unknown contaminated soil (and groundwater) would be encountered in project-related excavations. Of particular concern are leaking petroleum pipelines that traverse the port and on-shore areas and may be crossed by the project pipelines. Pre-construction sampling and testing, as well as full-time monitoring for contamination during excavation, should be included as mitigation in the EIS/EIR.

The presence of ordnance or munitions in the West Basin is also identified. The discussion, however, does not indicate if this is unexploded ordnance or if there is a risk of soil contamination. The potential hazard needs to be clearly articulated. Potential geotechnical ground improvements at Pier T to provide foundation support of the storage tanks may include driven piles, drilled caissons, dynamic compaction, jet grouting, over-excavation and recompaction, or stone column. Each of these methods could easily reach depths on the order of 40 to 75 feet and would have high potential to encounter unknown or buried ordnance or contaminated soil.

Section 4.2.2.2, Soil Resources, Impact and Mitigation. The discussion indicates that an Environmental Inspector (EI) would be assigned to oversee and ensure compliance with the Storm Water Pollution Prevention Plan (SWPPP), the Sediment Control Plan and applicable permit requirements. The qualifications, authority, and autonomy (i.e., affiliation with the project proponent) of the EI are not discussed here. The document presents an overall plan that would require preconstruction and construction-related work plans, investigation, sampling and testing of the LNG site and pipeline routes for soil contamination, as well as Health and Safety Plans if contamination is encountered. The qualifications and independence of the EI need to be assured.

Section 4.2.3.1, Sediments, Environmental Setting. The discussion focuses on the potential to encounter ordnance, heavy metals, PCBs, pesticides, volatile organic compounds and semi-volatile organic compounds in the harbor bottom sediments in the proposed dredge area of West Basin. Dredging volume estimates range from 275,000 to 475,000 cubic yards. Several compounds exceed regulatory limits. This is a very large volume of material with significant potential of contamination.

Section 4.2.3.2, Sediments, Impact and Mitigation. The discussion presents a construction schedule of 8 to 10 months for dredging of the harbor channel and constructing shoreline protection rock buttresses. Dredging operations would fall under a consent agreement between POLB and the California Department of Toxic Substances Control (DTSC), and the dredging would only be done with the concurrence of DTSC. In addition, the document reveals that there is a potential for dredging operations to encounter ordnance. Ordnance encountered during dredging would be handled in accordance with POLB and federal regulations, and the project engineer would contact the Navy Explosive Ordnance Disposal Office for preliminary instructions and ultimate collection of the ordnance. The Draft EIS/EIR does not provide a discussion of what would be required by the POLB or federal regulations in pre-dredging workplans. The workplans, notification procedures, and the actual potential risk to workers and the public need to be described in the EIS/EIR.

4.3 Water Resources

Section 4.3.2.1, Groundwater Resources, Environmental Setting. An error in the Draft EIS/EIR states that groundwater supplies are from the Metropolitan Water District (MWD) and the West Coast Basin. This should be revised to state that, based on the Long Beach Water Department's hydraulic model of the water supply system, the Port of Long Beach is served 100 percent MWD water under the Maximum Day Demand (1.72 times the average day demand). Other water system peaking factors may yield different percentages of water from MWD. This error also occurs in Section 4.6.6, Utilities and Service Systems.

Section 4.3.2.2, Groundwater Resources, Impact and Mitigation. The discussion here and in Section 4.6.6 indicates there would be very large volumes of potable water used for one-time hydrostatic testing of the LNG storage tanks and the natural gas and C2 pipelines. The Draft EIS/EIR shows that "Approximately 24 million gallons of water appropriated from the municipal water system would be used to hydrostatically test the LNG storage tanks, about 642,000 gallons [. . .] and about 84,300 gallons would be used [for other tests]." The discussion acknowledges the water must be purchased from the City of Long Beach but indicates that the test water does not represent a significant volume to the municipal system and that no specific mitigation measures would be required. There is no information in the Draft EIS/EIR that indicates these statements have been independently confirmed with the City of Long Beach Water Department. It is impossible to determine the impact to the water distribution system and storage facilities without providing a time factor (gallons per minute). The EIS/EIR must show the time duration of this demand before the Long Beach Water Department can assess the impact to the water system.

The EIS/EIR should also describe whether there are alternatives to using potable water. Alternative supplies such as reclaimed water should be evaluated, and the EIS/EIR should acknowledge that 75 acre-feet of treated potable water represents a significant resource, roughly equal to the annual demand of 150-200 residential users.

Section 4.3.2.2, Groundwater Resources, Construction Impacts (Site Excavation and Dewatering). This section discusses the potential for contaminated groundwater to be produced during dewatering. These operations would require proper implementation of the Health and Safety Plan to protect workers. The fluids would require sampling and laboratory testing to determine proper treatment and disposal. The Draft EIS/EIR indicates that SES would consult with POLB and RWQCB and other applicable agencies. However, it is unclear what permits would be required and whether the oversight agencies would be involved to provide routine inspection/observation to ensure the construction plans are implemented correctly by SES and their contractors.

4.4 Biological Resources

Section 4.4.3.1, Marine Organisms, Impact and Mitigation (page 4-37). Impacts to marine resources from pipeline construction are not fully evaluated in this section. The Draft EIS/EIR indicates that the use of horizontal directional drilling would avoid impacts to marine resources. This assumes there would be no release of drilling fluids into the marine environment. In addition, the Horizontal Directional Drilling Plan (in Appendix C of the Draft EIS/EIR) does not describe specific impacts or determine potential impacts to biological resources. The drilling plan does not describe the steps that would be taken to contain or clean up an accidental release of drilling fluids to waterways. The Draft EIS/EIR should analyze the impacts of an accidental release of drilling fluids to waterways and consider the effects of necessary clean up actions.

Section 4.4.3.3, Essential Fish Habitat Assessment, Impact and Mitigation (page 4-41). The analysis of potential impacts to Essential Fish Habitat (EFH) in the document indicates "Implementation of the control measures and management practices proposed by SES or required by the regulatory agencies

would serve to avoid or minimize impacts on EFH from any of the construction or operation activities." Potential impacts and mitigation should be fully evaluated in the EIS/EIR and not deferred to conditions imposed by the regulatory agencies. While the resource agencies may elect to impose additional conditions as part of the permit process, the EIS/EIR must identify potential impacts and develop mitigation to reduce or prevent potential impacts to EFH. In addition, the EIS/EIR does not indicate whether the implementation of the Horizontal Directional Drilling Plan would reduce or avoid impacts to EFH.

Section 4.4.4.1, Federal Threatened and Endangered Species (Table 4.4.4-1, pages 4-42 and 4-43). Table 4.4.4-1 of the Draft EIS/EIR indicates that California least tern, a State and federally endangered species, nest on Terminal Island. Subsequently, the text describing impacts to this species (on page 4-43) does not identify the distance of this colony from the proposed project or the potential impacts from construction related activities to this species. While it is recognized that this is a working harbor and wildlife occurring in this area are subject to a variety of potential disturbances from ongoing activities, the EIS/EIR must identify potential impacts from the proposed project specifically to State and federally listed species.

4.5 Land Use, Recreation, and Visual Resources

Section 4.5.2, Land Use and Ownership. The land use setting and impact discussion are divided into three components of the project: LNG Terminal Facilities, Natural Gas and C2 Pipelines and Associated Aboveground Facilities, and Electric Distribution Facilities. However, the Draft EIS/EIR does not correlate the land use significance criteria in Section 4.5.1 with the discussion of impacts for each component. As a result, it is not clear if each of the criteria have been considered for each of the components. In order to fully describe the potential effects of the project, each project component should be analyzed in light of the established significance criteria.

Section 4.5.2 briefly describes the location of the project components (e.g., LNG terminal, dredging activities, temporary construction site, pipelines, transmission lines) but does not provide any figure or reference a figure that shows their locations. A figure should be provided that shows (1) the locations of the project sites relative to the boundaries of the POLB, City of Los Angeles, and the City of Carson, and (2) the location of the existing land uses that surround the project.

Section 4.5.2 does not include any detailed description of the land uses that are located along the proposed pipeline routes. The land use setting should include a list of the affected land uses along the proposed pipeline routes, preferably by mile post with a level of detail similar to that in Table 4.5.5-1.

Section 4.5.2 should discuss the potential impacts of pipeline accidents on residences, schools, businesses, and sensitive land uses. Given the location of the proposed pipeline route along major public ROWs, and the fact that pipeline accidents may occur, the land use impact analysis needs to discuss the worst-case scenario with respect to impacts resulting from pipeline rupture, leakage, and any resultant explosion hazards on adjacent land uses.

Section 4.5.2.1, LNG Terminal Facilities (page 4-48). The Draft EIS/EIR analysis identifies surrounding uses on Pier T and concludes, "Operation of the LNG terminal facilities is not expected to interfere with any activities on adjacent berths." However, an increase in vessel traffic with safety zones may adversely affect existing port uses. The land use analysis should recognize the potential conflicts to the surrounding port activities and summarize the impacts within this section. Section 4.11 of the Draft EIS/EIR indicates that a Waterway Suitability Assessment (WSA) is deferred, which precludes the public opportunity for review and comment of the impacts to surrounding port uses.

In concluding that the project would not interfere with adjacent activities, the level of severity of the impact is unclear. The impact discussion should distinguish whether the impact is less than significant or whether there would be no impact. In addition, the impact conclusion does not distinguish between impacts resulting from construction versus operation of the project. Therefore, this analysis should explain the potential impacts from both construction and operation of the proposed project and the anticipated severity of these impacts.

This analysis concludes that the LNG Terminal Facility would conform to the overall goals of the current Port Master Plan, local zoning ordinances, and relevant regional plans. The Draft EIS/EIR does not identify the specific plans, policies, and zoning that would be applicable to each component of the project. Before reaching a conclusion, the land use and policy analysis should identify the applicable plans and policies and then refer the reader to the section of the document that discusses the project's consistency with each plan. Without this information, it is impossible to follow the rationale of the consistency determination.

Section 4.5.2.2, Natural Gas and C2 Pipelines and Associated Aboveground Facilities (page 4-49). This analysis describes a potential land use impact as "the disturbance of existing land uses within the construction right-of-way during construction and retention of a new permanent right-of-way for operation of the pipelines." However, the section does not include specific information regarding the land uses that could be impacted. As noted above, the land use analysis should identify a list of the adjacent land uses that may be impacted by the project and their specific locations relative to the project. This information is necessary to demonstrate how the surrounding uses might be disturbed or affected by the construction and presence of the new pipeline right-of-way.

It is stated that no residences are located closer than 500 feet from either of the pipeline routes. However, the setting discussion does not clearly identify where the nearest sensitive receptors are situated. Similarly, the statement that "industrial land would be the only land use affected by construction of the pipeline facilities" (page 4-49) is not supported by any discussion of the setting and the types of industrial land uses that are located adjacent to the pipeline facilities. A description of these land uses and their location relative to the proposed project should be included in the land use setting, preferably in the form of a figure. Without this information, the reader is left to assume that, for example, residences may be located at a distance of 500 feet from the pipelines, and the discussion of impacts appears to be unsubstantiated.

As with the discussion for the LNG Terminal Facilities, the analysis concludes that the Natural Gas and C2 pipelines would conform to the overall goals of the current Port Master Plan, local zoning ordinances, and relevant regional plans without identifying the specific plans, policies, and zoning that would be applicable. The specific policies must be identified in order to follow the rationale of the consistency determination

The analysis concludes that impacts on land uses associated with the pipeline facilities would be less than significant without explaining how a "less than significant" conclusion was reached. In addition, the impact conclusion does not distinguish between impacts resulting from construction versus operation of the project. As such, the analysis should explain the potential land use impacts from both construction and operation of the pipeline facilities and the anticipated severity of these impacts.

Section 4.5.2.3, Electric Distribution Facilities (page 4-51). The section states that the electric distribution facilities would be consistent with existing surrounding uses, but does not provide a description of the adjacent land uses. As noted above, the adjacent land uses should be described in the land use setting as well as their location relative to the proposed project. Similarly, although this discussion section concludes that the electric distribution facilities would conform to the overall goals of

the current Port Master Plan, local zoning ordinances, and relevant regional plans, it does not identify the specific plans, policies, and zoning that would be applicable to this component of the project. This analysis additionally concludes that impacts on land uses associated with the electric distribution facilities would be less than significant without explaining how a "less than significant" conclusion was reached. The analysis should explain the specific policies examined for the consistency determination, the potential land use impacts from both construction and operation of the electric distribution facilities, and the anticipated severity of these impacts.

Section 4.5.5, Recreation and Special Interest Areas. This discussion identifies a number of recreational activities, but does not provide a figure or reference a figure that shows their locations. In order for the public and decisionmakers to understand the density of surrounding recreational areas, a figure should be provided that shows the locations of the recreational areas in Table 4.5.5-1 relative to the project site and the location of local land markers such as "West Basin" and "Queens Gate."

In concluding that operation of the project would not result in a significant impact on recreation and special interest areas (page 4-56), the actual level of severity of the impact is unclear. The impact discussion should distinguish whether the impact is less than significant or whether there would be no impact and the rationale for the conclusion.

Section 4.5.6, Visual Resources (page 4-57). In order to correlate with the significance criteria, the analysis concludes that: (1) LNG facilities would not adversely affect the viewshed from sensitive locations or change the character of the landscape in terms of physical characteristics or land uses; and (2) the facilities would not block or alter an important/valued view or have an adverse effect on a scenic vista. However, the analysis does not discuss or explain how these impact characterizations were reached. In addition, the level of severity for each impact conclusion is unclear. The impact discussion should distinguish whether the impact is less than significant or whether there would be no impact.

The visual resources analysis (page 4-58) does not explain how the results presented in Table 4.5.6-1 were determined. To justify the information in the table, the following should be explained: (1) it should be clarified whether the reference points included in Table 4.5.6-1 represent the key observation points discussed earlier (on page 4-56); (2) "visibility factors" mentioned in the table footnotes should be defined; and (3) an explanation of how the "Overall Rating" scores were determined should be provided. The Overall Rating scores appear to be inconsistent. For example, both Reference Points 4a and 4b have two "medium" ratings and one "low" rating, yet the overall rating scores differ (4a is rated "medium," while 4b is rated "low"). Also, Reference Point 6 has one "high," one "medium," and one "low" rating, yet the overall rating score is "low."

4.6 Socioeconomics

Section 4.6.3, Economy and Employment. This analysis is not correlated with any significance criterion provided in Section 4.6.1. The EIS/EIR should describe the significance criteria used to assess potential economy and employment impacts and clearly state if a potential impact would occur.

Section 4.6.4, Housing. It is stated that: "Construction and operation of the Long Beach LNG Import Project would not cause the vacancy rates for temporary housing to fall below 5 percent because the vacancy rates in the project area are currently already below 5 percent." Because the vacancy rate is already below the 5 percent threshold, the significance criterion in Section 4.6.1 demonstrates that a potentially significant impact or cumulative impact could occur because of the increased demand to housing and exacerbating the lack housing. Mitigation measures should be identified to address this impact under the housing criterion.

Section 4.6.5, Public Services. It is stated that the LNG safety training module [being developed by the National Association of State Fire Marshals (NASFM) and others] and an Emergency Response Plan would reduce impacts to fire and police services. It is unclear if these plans are completed yet, or if they are intended to be mitigation for project impacts. In addition, the plan identifying the mechanisms for funding has not yet been developed. If these plans are presented as mitigation measures directly related to impacts, then more detail and/or actual mitigation language needs to be provided and the specific project impact needs to be articulated. Although the details of these plans could be established at a future date, the EIS/EIR needs to describe the performance standards, the details of the plan known to date, approval agencies, and overseeing agencies for such plans. Without a draft Emergency Response Plan or a plan for funding, the total fiscal impact to the City of Long Beach for public services cannot be determined. If the City of Long Beach Fire or Police Departments determine resources, training, or equipment are necessary, it is not clear how the needs would be funded. Comments on Section 4.11.7.4 also address the concerns of funding.

The City of Long Beach previously assessed the potential resource needs for safety, security, and response (in August 19, 2005 letter to California Energy Commission). Exhibit A-1 shows the resource needs. The analysis in the Draft EIS/EIR must clearly state whether emergency response or funding plans would increase the short- or long-term demand for public services in excess of existing and projected capabilities or create demands that exhaust or exceed the capacity of existing service systems, as per the significance criteria presented in Section 4.6.1.

Exhibit A-1. Preliminary Resource Needs for Safety, Security, and Response

TRAINING

- Firefighting Training: According to Texas A & M University, the study committee identified that sending firefighters occasionally to train on LNG fires was inadequate. A scheduled allotment of individuals, who should attend throughout the year for the life of the terminal's existence, should be identified. LNG presents unique firefighting issues the Fire Department does not face routinely. Currently, the West Coast lacks any type of LNG training facilities.
- Dive Training: As in Everett, Massachusetts, a qualified dive team will need to "clear" the dock and surrounding structures as the ship arrives in Port. This staffing-intensive operation will require continued training of dive personnel and Dive Masters.
- Hazardous Material Training: Within the day-to-day operations of an LNG terminal, situations exist that go beyond the scope and expertise of a basic firefighter. It would be reasonable to expect the proprietors of the facility to provide consistent Hazardous Materials and Confined Space training.

EQUIPMENT

- Fireboats capable of mitigating a large LNG spill on water: Currently in the United States, tugboats, which are being used to maneuver the LNG tankers dockside, are being used jointly as fireboats. The Fire Department believes that tugboat operators lack the qualifications associated with professional firefighting. We also realize that in the event of a large LNG pool fire, the tugs may be tied to the tanker as the event takes place. Their usefulness as to firefighting will be called into question. Based on fire prediction models, close proximity firefighting in regards to the tanker will be prohibitive. Firefighting efforts will be directed at covering exposures from the radiated heat, thus mitigating the problem. Additionally, if the fireboats were utilized every time an LNG tanker came to Port, maintenance costs for the boats increased activity would need to be addressed.
- Dive Team: All equipment necessary to perform the operation of searching for explosive devices as necessary. This equipment would consist of normal diving equipment (e.g., dry suits, scuba gear, PPE, etc.) and the necessary tools to perform searches, such as communication systems, infrared systems, and any other ancillary equipment that would provide for a safe working condition.
- Dive Boat and station to house the boat: This includes dive personnel, and support staff.
- Dry Chemical: According to the book "Liquefied Natural Gas in California," water is ineffective in fighting LNG fire because it provides a heat source for vaporization. Therefore, an adequate supply of dry chemical is needed to extinguish the fire.
- Fire Apparatus: An agreed upon number of fire apparatus that are equipped with the appropriate dry chemical agent that would be put into service should there be a spill in the terminal. Though the terminal will have built-in fire-extinguishing systems, it is important to have back up equipment in case of a system failure.
- Suppression Material: A sufficient supply of dry chemical on scene to replenish any used product should it be put into use.

Exhibit A-1. Preliminary Resource Needs for Safety, Security, and Response

- Staffing: A full time Fire Prevention LNG Inspector and a full time Fire Prevention Plan Checker for the duration of the construction and build-out.
- Two (2) bricks and mortar Fire Stations: Levels as low as 4,000 Btu/hr/ft^2 can cause buildings to ignite after prolonged exposure. It also states that levels as low as 7,000 Btu/hr/ft^2 can cause buildings to ignite after just a short exposure. In addition to that, it appears that the maximum exposure for firefighters to operate for long periods of time, even in personal protective gear, is approximately 2,500 Btu/hr/ft^2. In this case, both Fire Stations 15 and 20 are in areas that would be exposed to radiant heat flux that exceed the levels above.

SECURITY RESPONSE EQUIPMENT

- Boats: The Police Department will require a minimum of three (3) boats capable of transiting rough seas in order to enforce a security zone around the LNG ships. One (1) boat is required to act as a command and control vessel. This boat would be capable of supporting a long-term critical incident. The additional two (2) boats would be required to act as fast interceptor boats capable of speeds over 65MPH in order to stop any small vessels from attempting to breach the security zone around the LNG vessel. Each of these boats will require radios and electronics packages for navigation and communication. Additionally, personnel to staff the boats and maintenance, operations and replacement costs must be considered.
- Dive Team: All equipment necessary to perform the operation of searching for explosive devices. This equipment would consist of normal diving equipment (e.g. dry suits, scuba gear, PPE, etc.) and the necessary tools to perform searches, such as communications systems, infrared systems, and any other ancillary equipment that would provide for a safe working condition. Training would also be required for dive team members.
- Staffing: Personnel, equipment and training costs to secure vulnerable points on land as well as monitor the breakwater. In addition, personnel may be needed to provide an armed boarding party for the LNG ship if requested or required to do so by the USCG. The exact number of police officers and security officers needed to do this task has not yet been determined.
- Helicopter: Replacement and maintenance costs associated with the use of the police helicopter and staffing required to provide air coverage for the LNG ship's transit into the port complex.
- Weapons: Weapons systems and training required by boat crews and helicopter crews to stop a small vessel containing terrorists intent on crashing into the LNG ship.
- Docking: Additional dock space for the Police Department boats as well as a possible launch ramp next to a Police Department Boathouse to allow the quick deployment and recovery of the interceptor boats when not being used to protect the LNG ships.
- Boathouse: Relocation of the Police Department Boathouse within the harbor, possibly to Pier J, in order to ensure the Police Department resources are not destroyed and staff not injured by an LNG incident at the terminal or as the ship transits within 50-100 feet of the current Police Department Boathouse and docks.

Source: The City of Long Beach identified these needs in a preliminary assessment (August 19, 2005) letter to California Energy Commission.

Section 4.6.6, Utilities and Service Systems. Please see comments under Section 4.3.2.2 regarding the actual water supplies and the effect of the one time, temporary demand on the municipal water system. The EIS/EIR must identify the rate of water delivery (gallons per minute) of the project's large demand during construction before the impacts to existing water supplies are characterized. This water demand rate should be provided for all construction and operation activities, including hydrostatic testing.

Sections 4.6.7 and 4.6.8, Property Values and Tax Revenues. These discussions are not correlated with any significance criterion provided in Section 4.6.1. The EIS/EIR should describe the significance criteria used to assess potential property value and tax revenue impacts and clearly state if a potential impact would occur.

4.7 Transportation

Section 4.7.2.1, Environmental Setting, Ground Transportation. The intersections studied in the Draft EIS/EIR do not include ramps to Ocean Boulevard and I-710 (Long Beach Freeway) from the project site. The EIS/EIR should either identify impacts along this subject route, explain how project-related traffic would be restricted from using Ocean Boulevard to access I-710, or identify mitigation measures to force project traffic to avoid using Ocean Boulevard to access I-710.

Section 4.7.3.1, Marine Transportation, Future Traffic Levels. Marine vessel forecasts are available for 2020, and substantial growth in container traffic is expected. It is reasonable to expect this growth in container traffic to substantially increase truck traffic by 2020. The effects of the project need to be shown in conjunction with the expanded truck traffic due to increased containerized cargo movement on surrounding streets. Street traffic impacts should be analyzed under the 2020 scenario.

Section 4.7.3.2, Marine Transportation, Impact and Mitigation. The environmental setting notes that tankers chartered by the Navy use the West Basin. The impacts of LNG vessel operations on Navy operations should be described.

Section 4.7.4.2, Air Transportation, Impact and Mitigation. Take-off routes from the Long Beach Airport run down the Lost Angeles River and flight schools use the area over the port and ocean to train student pilots. The impacts to air traffic during periods of LNG vessel activity need to be discussed because air coverage may be needed to secure air space above the LNG vessel movements.

4.8 Cultural Resources

Section 4.8.4, Unanticipated Discoveries. The Draft EIS/EIR does not adequately describe the Unanticipated Discovery Plan elements that would be required to reduce potential impacts to a less than significant level. The EIS/EIR should describe what elements of the Unanticipated Discovery Plan would specifically address or provide procedures to reduce impacts to a less than significant level in the event previously unidentified cultural resources or human remains are encountered during construction. This discussion needs to be expanded to identify the types of activities SES must undertake, along with performance standards, mitigation timing, and effectiveness criteria of the plan. In addition, correspondence with SHPO and FERC should be included as an appendix to the EIS/EIR. Furthermore, if not included in the Unanticipated Discovery Plan, should human remains be found, provisions to contact the Coroner's Office must also be included, because a determination would need to be made as to whether the find is a cultural resource or a crime scene.

Section 4.8.5, Native American Consultation. Although SES stated that it would conduct follow-up phone calls with the tribes, this future action should be identified as a mitigation measure to ensure that potential impacts are reduced to a less than significant level.

Section 4.8.6, Impact and Mitigation. The discussion provided in the Draft EIS/EIR does not directly address any of the significance criteria provided in Section 4.8.1. The EIS/EIR should examine each significance criterion and clearly state if a potential impact would occur according to each criterion.

4.9 Air Quality

Please also refer to Section B of these comments for a further assessment of air quality related issues.

Section 4.9.6, General Conformity Determination. The Draft EIS/EIR includes an unusual recommendation that SES complete a full air quality analysis and identify any mitigation requirements necessary for a successful conformity determination before the end of the Draft EIS/EIR public comment period (page 4-119), which is presently set for December 8, 2005. Because the Draft EIS/EIR is an informational document, such a recommendation is not enforceable, and thus cannot be considered as a true mitigation measure [per CEQA Guidelines Section 15126.4(a)(1) and (2)]. This approach to the analysis appears to deny full public review of air quality impacts and mitigation by excluding this information from the Draft EIS/EIR.

The NEPA and CEQA documentation should provide a full description of air quality impacts and proposed mitigation necessary for the project to comply with the General Conformity Rule. The Draft EIS/EIR is the appropriate vehicle for releasing this information to the public. With availability of this information deferred, readers are left to assume that the project is not able to comply with General Conformity requirements. This analysis in Section 4.9.6 signals that recirculation of the Draft EIS/EIR will be necessary in order to provide full disclosure of the air quality impacts and mitigation.

4.10 Noise

Section 4.10.2, Environmental Setting. The duration and/or intervals of the noise observations (e.g., 24-hour observations) presented on Table 4.10.2-1 are unclear. If 24-hour measurements were taken and reported in terms of Leq(24), then they should be identified on the table in that manner.

Section 4.10.4, Impact and Mitigation (Construction). The analysis of construction noise makes a finding that is not substantiated by the significance criteria presented. The second bullet in Section 4.10.1, Significance Criteria, identifies a City of Long Beach noise threshold of 70 dBA within the Harbor District, but the regulatory background in Section 4.10.3 where the Long Beach Municipal Code is described, does not identify whether the noise limits would apply to construction. Clarifications or revisions to Sections 4.10.1 and 4.10.3 should be made to note the construction noise exemption in City of Long Beach Municipal Code Section 8.80.202. Neighboring port tenants would be subjected to the impact of intense pile driving noise, which is not described in the Draft EIS/EIR for these receptors. Although the applicable rules may exempt construction noise, the impact of pile driving at the boundary of the LNG terminal site should be quantified.

Section 4.10.4, Impact and Mitigation (Operation). The discussion of operational noise relies upon a preliminary noise study that is not provided with the Draft EIS/EIR. Therefore, it is not possible to verify the numeric basis and results of the findings presented in this analysis. The EIS/EIR should identify the preliminary noise study for public review.

4.11 Reliability and Safety

Please also refer to Sections C and D of these comments for a further assessment of reliability and safety issues.

Section 4.11.7.4, Requirements for LNG Ship Operations. The Draft EIS/EIR includes a recommendation that a Waterway Suitability Assessment (WSA) be submitted by SES before issuance of the Final EIS/EIR (page 4-164). Because the Draft EIS/EIR is an informational document, such a recommendation is not enforceable, and thus cannot be considered as a true mitigation measure [per CEQA Guidelines Section 15126.4(a)(1) and (2)]. As a result, the mitigation that would be established for safety and security of the LNG vessels is excluded from the Draft EIS/EIR. The EIS/EIR either should identify the safety and security measures that would be needed to avoid impacts, or the Draft EIS/EIR should be revised to include performance standards for the WSA and details known to date about the WSA in order to provide full disclosure of the mitigation that would be needed.

Section 4.11.7.4, Requirements for LNG Ship Operations. The Draft EIS/EIR indicates that a plan for funding all project-specific security/emergency management costs would be developed at a later date. A preliminary list of the resource needs of the Fire Department is shown in Exhibit A-1, as part of the comments on Section 4.6.5, above. Because safety and security measures related to LNG ship operations are not identified by the Draft EIS/EIR, the costs and effects these measures would have on the ability of the City of Long Beach to provide public services are not identified. The EIS/EIR should be revised to

disclose the necessary security measures and identify the effects that implementing the measures would have on other public services.

Section 4.11.12, Pipeline Facilities (page 4-188). A discussion of the explosion, burn, buoyancy, and dispersion characteristics of C2 should be presented, similar to the discussion for methane. This discussion is required in order to evaluate the characteristics of an unintentional release from the proposed C2 pipeline.

Section 4.11.12.2, Pipeline Accident Data (page 4-193). In the third paragraph after Table 4.11.12-2, the Draft EIS/EIR states that: "Older pipelines have a higher frequency of outside force incidents partly because their location may be less well known and less well marked than newer lines." A reference or data should be provided to substantiate this statement. In 1993, the California State Fire Marshal published the Hazardous Liquid Pipeline Risk Assessment. This study did not find a statistical relationship to substantiate the claim made here.

This discussion goes on to state that: "In addition, the older pipelines contain a disproportionate number of smaller diameter pipelines, which have a greater rate of outside force incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movements." Once again, a reference or data should be provided to substantiate these dubious statements. From an engineering standpoint, small diameter lines are generally much less prone to buckling or other failure due to earth or other movements.

For example, a 12-inch diameter line would have a bending stress roughly one-half that of a 24-inch line subject to the same differential settlement or lateral displacement (e.g., fault crossing). Also, from an engineering standpoint, small diameter lines are much less prone to being crushed by surcharge loads. For example, a 12-inch diameter line subjected to rail surcharge loading would have an effective stress roughly one-half that of a 24-inch diameter line of similar wall thickness and operating pressure.

Finally, small diameter lines are less prone to unintentional releases resulting from damage to the pipe wall, since for a given wall thickness and operating pressure, the stress level is much lower. (The hoop stress is directly proportional to the pipe diameter. A 24-inch diameter line has a hoop stress twice that of a 12-inch diameter line, for a similar wall thickness and operating pressure.)

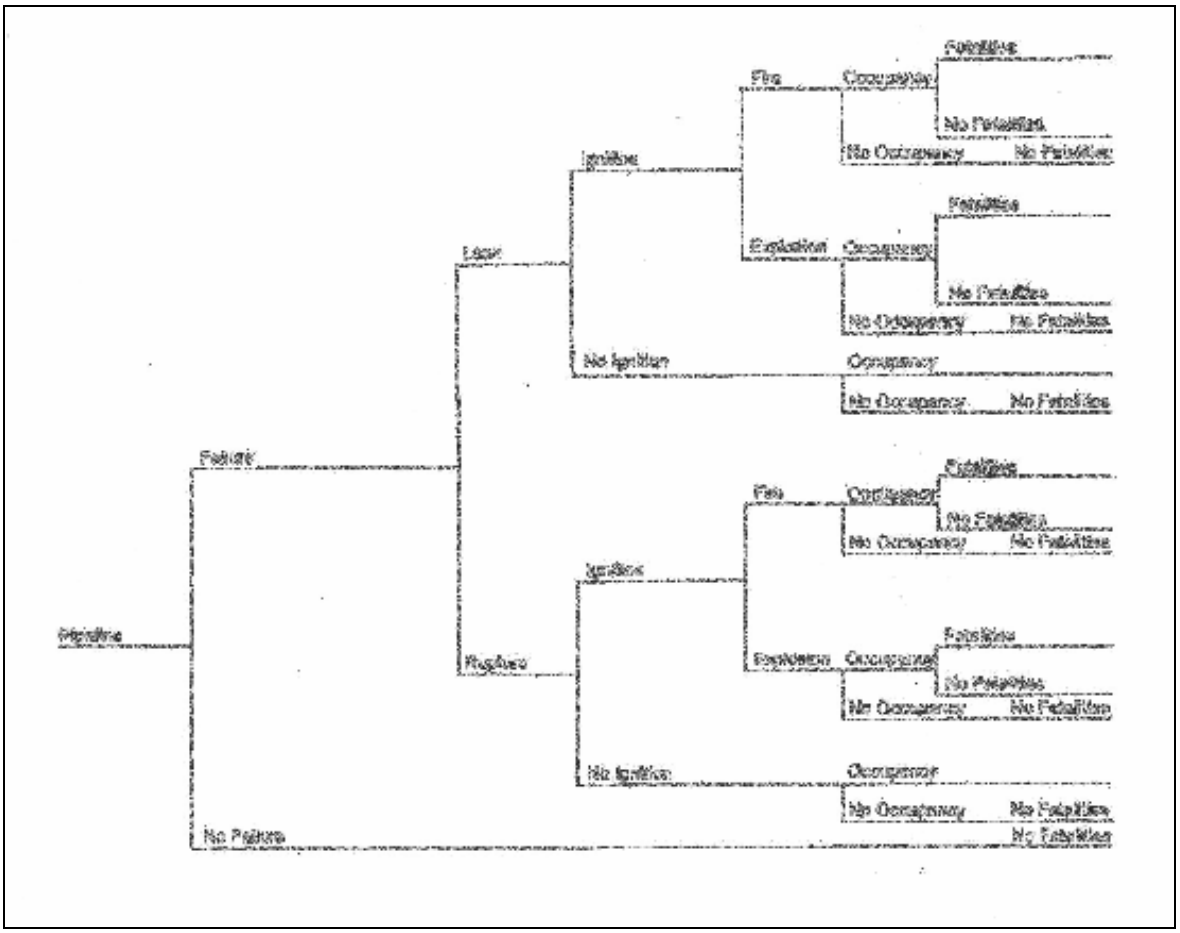
Section 4.11.12.3, Impacts on Public Safety (page 4-193). For this portion of the analysis, the Draft EIS/EIR follows a qualitative approach to determine the probability of fatalities resulting from an unintentional pipeline release. The following points regarding the qualitative approach should be considered:

- The Draft EIS/EIR determines that the likelihood of a fatality is about 1:15,000 per year, and the analysis concludes that: "This would not represent a substantial increase in the potential for incidents that would cause serious injury or death to members of the public and, therefore, should not be considered significant." This characterization of significance is not consistent with that used on other California pipeline projects subject to CEQA. One significance criterion often used for the annual individual risk of fatality is 1:1,000,000. Using this criterion, the individual risk of fatality would be considered a significant impact, since it is roughly 40 times the often-used significance criterion. The EIS/EIR should reconsider whether an appropriate significance criterion has been used.
- The significance criterion stated in Section 4.11.1 considers serious injuries as well as deaths, but injuries are not considered at all in the pipeline safety analysis in Section 4.11.12.3. Using national pipeline data, the frequency of pipeline related injuries requiring hospitalization is 0.08 incidents per 1,000 mile-years. Using this figure, the proposed project would result in an annual likelihood of

1:1,800 for an injury resulting in hospitalization. The EIS/EIR should be revised to illustrate potentially significant likelihood of injury.

- The national data used in the qualitative analysis of the Draft EIS/EIR does not accurately reflect the worst-case consequences of an unintentional release in this urban area. In fact, the national data likely underestimates the impacts to the public, possibly by a considerable amount, due to the relatively high population density. Considering the density of and high levels of activity in the surroundings, a quantitative risk assessment should be conducted for the pipelines. This analysis should be similar to that conducted for the terminal, meaning that the areas subjected to potentially injurious heat flux values should be analyzed. For the terminal, these potential exposures were limited to a relatively small area. For the pipeline, this area extends for a considerable length. As a result, a considerable number of individuals could be exposed to potentially injurious heat in the event of a release and subsequent fire or explosion. A typical pipeline quantitative analysis fault tree is included (Exhibit A-2 below) for consideration of fatalities. A similar fault tree should be developed for potential injuries. The quantitative analysis should consider both individual and societal risks. Suitable risk criteria should be developed for determining whether the likelihood of injuries and fatalities from a release pose a level of public risk that is considered significant.
- A quantitative risk analysis would likely reveal that the pipelines pose a level of risk to the public that is considered significant. Mitigation measures should be developed to mitigate these impacts to a level below that considered significant. American Petroleum Institute (API) Standard 1160 outlines some potential mitigation measures.

Exhibit A-2. Typical Pipeline Quantitative Analysis Fault Tree



4.12 Cumulative Impacts

General Comment. The cumulative impacts analysis lacks an identification of significance criteria for assessing the potential cumulative impacts. The EIS/EIR should provide significance criteria and clearly state if a potential cumulative impact would occur for each issue area.

Section 4.12.1, Geology. The cumulative analysis states that: "the additional land created by these projects would only incrementally add to the existing artificial formations in the area." However, there is no analysis to support the conclusion that this incremental addition would not be cumulatively considerable. The analysis should describe its rationale for the conclusion. Additionally, the cumulative analysis should identify the applicable codes and regulations that would be depended upon to minimize impacts associated with seismic hazards.

Section 4.12.2, Soils and Sediment. The cumulative analysis does not identify the erosion control measures that would required for all of the projects to implement in order to minimize cumulative impacts. Additionally, the analysis states that: "disturbance of the sediments in Long Beach or Los Angeles Harbors during in-water activities would temporarily resuspend sediments in the water column, which could result in localized increases in turbidity. An increase in sediment and turbidity levels could have a cumulative impact on water quality and aquatic organisms (see Sections 4.12.3 and 4.12.4,

respectively)." However, the analysis offers no mitigation to reduce the identified cumulative impacts. The EIS/EIR should provide a detailed description of all feasible mitigation for this cumulative impact.

Section 4.12.3, Water Resources. The cumulative analysis does not identify the best management practices (BMPs) that must be implemented in order to reduce the cumulative impacts of the projects identified in table 4.12-1 to less than significant levels. Additionally, the analysis does not identify whether strict operational controls (e.g., specifications for the storage of fuel and other hazardous liquids; requirements for inspection of equipment for leaks and deterioration; and notification, response, and cleanup procedures in the event of a spill) would be required to reduce cumulative impacts due to contamination to less than significant levels.

Section 4.12.11, Air Quality. The cumulative analysis states that: "even though project-specific toxic air pollutant health impacts would not be significant, it is likely that the incremental increase in the cancer risk level for toxic air pollutants as a result of the proposed project would contribute to an existing cumulatively significant health impact in the south-central Los Angeles area, the harbor area, and near freeways." However, the analysis offers no mitigation measures to reduce this significant cumulative impact. The EIS/EIR should provide a detailed description of all feasible mitigation for this cumulative impact.

Section 4.12.13, Reliability and Safety. Regarding emergency response time, the EIS/EIR should provide a reference to substantiate the statement that: "None of the projects identified in Table 4.12-1 where the environmental analysis has been completed is expected to cause an increase in response times for emergency services." Additionally, the analysis states that: "Cumulative impact on one intersection, combined with the traffic associated with the proposed project, would likely result in significant impacts during construction." However, no discussion of how this impact could affect reliability and safety is included. This apparently significant cumulative impact to emergency response should be disclosed in detail and all feasible mitigation measures must be identified.

This cumulative analysis depends on plans [LNG safety training module (developed by the National Association of State Fire Marshals (NASFM) and others and an Emergency Response Plan] that appear to remain incomplete at this time. If these plans are components of mitigation measures needed to avoid impacts, then the specific impact and actual mitigation measure language needs to be provided. Although the details of these plans could be established at a future date, the Draft EIS/EIR needs to include performance standards, details of the plan known to date, approval agencies, and overseeing agencies of the plans. It must be clearly stated exactly how these plans will reduce potential cumulative reliability and safety impacts.

4.13 Growth Inducing Impacts

The analysis of growth-inducing impacts (page 4-210) does not include any significance criteria for characterizing the potential growth inducing impacts. The EIS/EIR should identify significance criteria and clearly state if a potential impact would occur.

The Draft EIS/EIR states (page 4-210) that: "the LBFD's experience, extensive and comprehensive training in petroleum and shipboard firefighting; the training specific to LNG that would be provided by the NASFM, the OPS, the OEP, and SES; and the funding of additional emergency management equipment and personnel should adequately equip the LBPD and other local emergency providers to handle any type of emergency during operation of the proposed LNG terminal." The EIS/EIR should provide documentation or a reference from the LBFD supporting this statement. In addition, it is unclear what the specific training and additional emergency equipment and personnel would be provided. It is unclear if these plans are completed yet, or if they are intended to be mitigation associated with specific

impacts. If these plans are presented as mitigation measures directly related to impacts, then more detail and/or actual mitigation language needs to be provided and tied to the specific impact. Per State CEQA Guidelines Section 15126.4(a)(1)(B):

> *"Formulation of mitigation measures should not be deferred until some future time. However, measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way."*

Although details of these plans may be deferred to a future date, the Draft EIS/EIR needs to include performance standards, details of the plan known to date, approval agencies, and identification of the agencies overseeing the plans.

5.0 Comments on Application Summary Report

Section 5.1, Conformance with the Port Master Plan. This section acknowledges that "…an amendment to the Port Master Plan would be necessary to accommodate the LNG facility because LNG is not an expressly identified 'hazardous cargo' as permitted within the Terminal Island Planning District 4." Given that a Master Plan amendment would be required to allow siting of a LNG facility, it should be noted that CEQA clearance of the amendment should also be included in the EIS/EIR pursuant to CEQA Section 15378 (Project) and Section 15081 (Decision to Prepare an EIR). Note that per the requirements of CEQA Section 15091 (Findings), a determination of the proposed project's inconsistency with the PMP must be made prior to approval of PMP Amendment No. 20. To that end, the EIS/EIR must expressly acknowledge that an inconsistency with the current PMP exists, what the specific impacts of that inconsistency are, and the steps that will be taken to amend the PMP in order to make the project consistent with the Master Plan.

6.0 Comments on Recommendations

Section 6.1, Summary of the FERC and POLB Staffs' Environmental Analysis. NEPA and CEQA require an EIS or EIR to be an informational document that provides an objective presentation of the likely impacts of a proposed project. The purpose of indicating in the Draft EIS/EIR (as on page 6-1) that "the Agency Staffs will recommend" that the project is environmentally acceptable is questionable, and this leads the public to believe that the EIS/EIR analysis is biased in favor of the proposed project over the alternatives. As written, this discussion seems to present a rationale for project approval rather than a summary of the environmental analysis. The purpose of an EIS/EIR is to provide information to assist decisionmaking, and it would not be appropriate to attempt to influence the agency's exercise of discretion. This discussion is not required by NEPA or CEQA, nor is it appropriate.

Section 6.1, Summary of the FERC and POLB Staffs' Environmental Analysis (page 6-2, first bullet). The Draft EIS/EIR indicates that a full air quality analysis for conformity would occur at a later date. Because the impact analysis is deferred, the specific mitigation is also deferred and remains unidentified (see comments on Section 4.9.6).

Section 6.1, Summary of the FERC and POLB Staffs' Environmental Analysis (page 6-2, third bullet). The Draft EIS/EIR includes a conclusion related to radiant heat impacts caused by a source within the industrial area of the terminal at locations outside of the POLB boundary, but similar impacts from unintentional pipeline releases outside of POLB have not been presented (see comments on Section 4.11.12.3). Additionally, radiant heat exposure to public *within* the POLB boundary line should be described, and the exposure criterion for characterizing significance of this impact should be more

protective of public safety (see comments on Section 4.11.1 in attached Comments on Reliability and Safety).

Section 6.1, Summary of the FERC and POLB Staffs' Environmental Analysis (page 6-2, fourth bullet). The Draft EIS/EIR indicates that a WSA would be developed at a later date. This means that safety and security mitigation measures are deferred and unidentified. (see comments on Section 4.11.7.4).

Section 6.2, Alternatives Considered. NEPA regulations [40 CFR 1502.14 (Alternatives including the proposed action)] characterize the alternatives as the "heart of the environmental impact statement." Section 6.2 states that each of the alternatives described in Section 3.0 (Alternatives) was found to be infeasible, would not meet the proposed project's stated objectives, or would result in significant environmental impacts that would be greater than the proposed project. However, Section 3.0 does not provide any detailed analysis of the alternatives, and no alternative is considered at an equal level of detail as the proposed project. It is not sufficient to state that the alternative would not satisfy the project objectives or that it would not "substantially lessen any significant environmental effects of the proposed project." At a minimum, the locations of the impacts and references to the mitigation measures that would reduce the impacts of the alternative should be clearly delineated as part of the alternatives analysis.

For example, Section 6.2 states that impacts would not be less significant than the proposed project for the following alternatives: LNG import terminals, pipeline routes, dredge/fill, ship berth configurations, dredge disposal, dredging methods, and vaporizer alternatives. However, the alternatives discussion in Section 3.1 does not use the issue areas to compare the potential impacts of these alternatives versus the proposed project, eliminates each of these alternatives from further consideration in the EIS/EIR, and it does not present the alternatives in comparative form or provide a clear basis for choice amongst the alternatives. As such, this aspect of the Draft EIS/EIR does not fulfill the requirements of NEPA Section 1502.14.

Section 6.2, Alternatives Considered. NEPA [40 CFR 1502.16(e)] requires description of the "energy requirements and conservation potential of various alternatives" to the project, and no such description is provided. The Draft EIS/EIR merely mentions in Section 6.2, without citation or further elaboration, that conservation, as an alternative to the project, is not expected to significantly reduce the long-term demand for natural gas. The Draft EIS/EIR must include a description of the alternative's energy requirements and conservation potential in order to comply with NEPA.

Section 6.7, FERC and POLB Staffs' Recommended Mitigation. Several of the mitigation measures described in this section are not related to specific impacts discussed in Section 4.0 (Environmental Analysis). It would be helpful for the public for the EIS/EIR to illustrate what impact or impacts each measure is intended to mitigate and what the level of severity of the impact(s) would be before and after application of the measures.

Comments on Port of Long Beach Draft Master Plan Amendment No. 20

Introduction. The introduction provides information on the need to consider the development of LNG facilities in Southern California. However, there is no discussion or explanation given for choosing the Port of Long Beach as the site for the proposed project. The Amendment should illustrate that the Port of Long Beach is the location selected by SES, and although other Southern California sites may be available, they were rejected by SES.

Proposed Modifications to the Port Master Plan. This section states that the Amendment would add text under Anticipated Projects in Section VI, District 4 – Terminal Island Planning District (page VI-21).

However, this section and page number does not refer to the most current text of District 4. Two previous Port Master Plan Amendments, Nos. 9 and 13, modified the discussion of District 4 in the PMP. Amendment No. 9 consolidated the existing planning districts to form the Terminal Island Harbor Planning District (District 4). Amendment No. 13 designated a new permitted land use within District 4 and included a list of new anticipated projects. As such, the proposed Amendment No. 20 for the LNG terminal would add text to Section VI as it was previously amended.

The proposed Plan Amendment No. 20 does not include an amendment to identify LNG as a "hazardous cargo," as defined in PMP Section IV, A, 1 (Land Use Designations). Section 5.1 of the Draft EIS/EIR (Conformance with the Port Master Plan) states that an amendment to the PMP would be necessary as LNG is not an expressly identified "hazardous cargo" as permitted within Terminal Island Planning District 4. Although Amendment No. 20 proposes to add LNG Facilities to the list of permitted uses within District 4, an amendment to include LNG to the definition of "hazardous cargo" must also be considered.

Conformance with Coastal Act Policies. The discussion about public access under Section 30212 notes that allowing public access into the area near the LNG terminal would be inconsistent with the area's security and safety requirements. The discussion does not disclose that publicly-accessible parking areas and roadways approach the terminal site on the northern boundary, within the hazard footprints shown in the draft Amendment. These parking areas and roads may be freely used by workers and visitors. This discussion needs to be revised to clarify how public access is "discouraged" for safety reasons despite the unrestricted access that is provided to workers and visitors throughout the Port and immediately north and east of the terminal site.

The discussion of hazardous substance spills and cleanup procedures under Section 30232 should be revised to note that an Emergency Response Plan and a plan for funding public services related to LNG emergency response, including cleanup, have not yet been developed. Until these plans are developed, it is not possible to conclude that protection against the spillage hazardous substances can be provided.

Compliance with Risk Management Plan. The discussion and figures should be revised to identify a hazard footprint for 450 Btu/(hr-ft^2), which is the level of exposure where no injury would be expected to occur. The worker population within the hazard footprints and vulnerability zones should be disclosed.

Comments on Appendix B, Storm Water Pollution Prevention Plan

Storm Water Pollution Prevention Plan (SWPPP). This document is a comprehensive plan that outlines erosion control and site stabilization during construction of the LNG Terminal and pipelines. The SWPPP includes post-construction (operations) BMPs, control measures for painting, paving, landscaping, material delivery and storage, and chemical pollution control.

Appendix G of SWPPP, Storm Water Sampling and Analysis Plan. The Stormwater Sampling and Analysis Plan outlines sampling and laboratory testing protocols and reporting procedures. However, the plan is generic and does not identify specific sampling locations for the LNG terminal project. The document appears to be extracted from the POLB Construction SWPPP (July 2002). Specific sampling locations should be identified.

Appendix I of SWPPP, Spill Prevention and Response Procedure (SPRP). The goal of the SPRP is to avoid and minimize the environmental impact of spills or release of fuels, lubricants, or other hazardous materials. This SPRP outlines the requirements for the construction contractor to designate an independent contractor responsible for environmental clean-up. Hiring and use of this independent emergency response contractor should be included as a requirement or mitigation measure in the EIS/EIR.

Comments on Appendix C, Horizontal Directional Drilling Plan

Horizontal Directional Drilling Plan (Section 2, Horizontal Directional Drilling Process, page C-2). The drilling plan describes a previous 36-inch diameter directional-drilled crossing from Carrack Street to Terminal Island. The drilling plan for the LNG project should specifically address the experience of the construction contractor and owner of this earlier crossing. If the recent crossing experienced any significant difficulties, they should be considered by SES as part of a "lessons learned" analysis for the presently proposed crossing.

The drilling process described in the Horizontal Directional Drilling Plan (page C-2) does not account for potentially contaminated soil cuttings that may be encountered during the crossing. The drilling plan should identify the measures to test soil cuttings for potential contaminants, and it should describe how construction could be modified and what precautions could be made to handle contaminated soil cuttings.

Horizontal Directional Drilling Plan (Section 4, Containment and Control/ Measures to Contain a Release of Drilling Fluid in a Waterway, page C-3). The discussion identifies measures that might slow a release of drilling fluid into a water body, but it does not address any measures to clean up or contain an inadvertent release of drilling fluids in a waterway. Efforts to contain releases of bentonite into coastal waters would need to be undertaken, and these steps should be identified in the EIS/EIR. The drilling plan also does not fully address measures to contain or clean up large spills on land. The drilling plan (page C-4) indicates that if "it is not practical to clean up a large spill on land the material will be diluted with water and allowed to dry." Although the plan indicates that best management practices would be employed, this discussion is vague, and it ignores the steps that must be taken during a cleanup, which could increase potential impacts to water resources.

Comments on Appendix E, Draft General Conformity Determination

Draft General Conformity Determination, General Conformity Regulations. The General Conformity Regulations are in the process of being revised to include PM2.5, among other proposed changes. These changes are anticipated by the U.S. EPA to be complete by the first quarter of 2006, and are proposed to include PM2.5 precursors, such as SO_2. Since the proposed project may not be approved before the time the regulations are revised, the conformity determination may have to be revised to include any applicable revisions in the conformity regulation that occur prior to starting the proposed project. The EIS/EIR should acknowledge the changing regulatory background and illustrate the anticipated steps necessary to address the rule changes, should they become final.

Draft General Conformity Determination, Assessment of the Project Emissions. The emissions estimate for the facility operations in the Draft General Conformity Determination appears to be inconsistent with the emissions presented in Section 4.9.5. While the emissions are noted to come from Table 4.9.5-2, the LNG ship emissions that are concluded to be stationary source emissions per SCAQMD Rule 1306 cannot be determined through a comparison of Appendix E Table 3-2 and Table 4.9.5-2 in Section 4.9. The hotelling emissions and a portion of the transit emissions are subtracted out as they are assumed to be stationary source emissions that would have to be authorized and offset through SCAQMD NSR permitting. However, the non-stationary portion of the LNG ship emissions (15.6 tons per year NOx) shown in Appendix E Table 3-2 cannot be derived using the LNG ship emissions presented in Section 4.9 Table 4.9.5-2. The Draft EIS/EIR does not provide enough information on the calculations, assumptions, and emission factors to support the NOx data presented in Appendix E Table 3-2. If the actual non-stationary source portion of the LNG ship emissions is greater than that shown in Table 3-2, the NOx emissions would likely exceed the Conformity Applicability Threshold. Without this

information, it is impossible to determine whether the emissions have been accurately portrayed and whether the project could comply with the General Conformity Regulations.

Draft General Conformity Determination, Final Conformity Analysis. A final conformity analysis showing project conformity must be provided to the public before the project can be approved. If offsets are determined to be necessary, the source of the offsets, including verification of their availability for the project, would need to be included in the final conformity analysis.

Comments on Appendix G, References and Contacts

References and Contacts. For many of the policies listed in Section 1.4 of the Draft EIS/EIR, the dates that these policies were adopted and other reference information is not provided. References should be provided for the following plans and policies: POLB Port Master Plan, Water Quality Control Plan for the Los Angeles River Basin, Los Angeles County Congestion Management Program, City of Long Beach General Plan, City of Long Beach Municipal Code, General Plan of the City of Carson, City of Carson Zoning Ordinance, and the POLB Facilities Master Plan. Reference information should also be provided to aid public review of the Risk Management Plan that is described in Section 5.3.

B. Comments on Air Quality

Section 4.9 Air Quality

General Comments. The references for emission factors, modeling methods, regulatory findings, etc. are poorly documented if at all. The documentation to support the analysis results and findings needs to be clear, complete and available to the public. Clear technical document references, emission calculations, modeling input files, etc. need to be provided to support the results and findings of this section.

An air quality appendix with all emission calculations and modeling input file assumptions should be provided for review. The air quality emissions and modeling results cannot be clearly substantiated with the information presented in the EIS/EIR.

Section 4.9.1, Air Quality, Significance Criteria. The South Coast Air Quality Management District (SCAQMD) air quality significance criteria presented in this section are out-of-date. The CEQA significance criteria currently being recommended by SCAQMD are provided on their website at http://www.aqmd.gov/ceqa/handbook/signthres.doc and provided below. The major differences include the more recent Localized Significance Criteria and the revision of the regional emission criteria to be only daily emission thresholds. The air quality section should be revised to evaluate the potential air quality impacts using the current SCAQMD significance criteria.

SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment) Hazard Index ≥ 3.0 (facility-wide)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants [a]		
NO2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.25 ppm (state) 0.053 ppm (federal)	
PM10 24-hour average annual geometric average	10.4 $\mu g/m^3$ (recommended for construction) [b] 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$	

annual arithmetic mean	20 μg/m^3
Sulfate 24-hour average	1 ug/m^3
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)

[a] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
[b] Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million ug/m^3 = microgram per cubic meter ≥ greater than or equal to

Section 4.9.3.2, Air Quality, State Regulations. This section and/or Section 4.9.3.3 of the Draft EIS/EIR is missing the potential for temporary construction emission sources that may need state portable equipment registration and/or local permits from SCAQMD. The equipment items that may trigger this requirement include any stationary portable pump engines that may be working during the dredging activities, generators (>50 hp), dredges, pile drivers, cranes, and compressors.

Section 4.9.3.3, Air Quality, Local Regulations. This section appears incomplete. The following additional specific source regulations appear to be potentially applicable to the proposed project:

- Rule 462 – Organic Liquid Loading (exemption for LNG unclear)
- Rule 467 – Pressure Relief Device (C2+ rich streams with pressure release valves)
- Rule 468 – Sulfur Recovery Units (based on sulfur recovery noted on page 4-115)
- Rule 1173 – Control of Volatile Organic Compound Leaks and Releases From Components at Petroleum Facilities and Chemical Plants

A short description of each of these regulations and their applicability should be added to the air quality section as appropriate.

Section 4.9.4, Air Quality, Construction Impacts and Mitigation. This section is incomplete. There is not enough information provided to review the presented construction emissions and determine if all feasible mitigation has been proposed.

Section 4.9.4, Air Quality, Construction Impacts and Mitigation (Emission Calculations). Only a summary of the emission calculation results are provided. Specifically, the source of the emission factors are not provided, the construction schedule (hours/day, days/week, etc.) assumptions are not provided, and the effectiveness of the proposed mitigation is not provided. SCAQMD has provided on its website recommended emission factors for construction equipment by year of construction and also provides on-road traffic emission factors. It cannot be established that those recommended emission factors were used. The PM10 emissions are calculated to be higher than what would seem reasonable considering the project construction requirements. The detailed emission calculations need to be provided for review.

It is unclear if all project operating truck emissions have been presented. On Table 4.9.5-2 there is a line for truck emissions but no emissions are presented on that line, however, they do appear to included in the On-Road Vehicle category. If there are separate project truck emissions beyond the "LNG trailer Trucks" and "Delivery Trucks," they need to be added to the table, otherwise this row should be deleted.

Section 4.9.4, Air Quality, Construction Impacts and Mitigation (Mitigation). The construction impact analysis notes that the NOx, ROC, PM10, and CO emissions exceed significance thresholds. However, without detailed emission calculations it cannot be determined that the proposed project considers all feasible mitigation measures for each of the pollutants with significant emissions.

Section 4.9.5, Air Quality, Operations Impacts and Mitigation. This section is incomplete. There is not enough information provided to review the presented project emissions, the required regulatory emission offset requirements are not described thoroughly, the sources of the required offsets are not provided, and there is no determination of meeting offset requirements.

Section 4.9.5, Air Quality, Operations Impacts and Mitigation (Emission Calculations). Only a summary of the emission calculation results are provided. The emission calculation assumptions and details are not presented. Therefore, the emission calculations cannot be verified. Specific issues include the variable heater emissions from unpredictable fuels depending on the source of LNG and amount of separated C3+ that will be in the fuel. There is no information on how the heaters will be designed to handle the fuel variability and maintain best available control technology (BACT) level emissions. Further, while the heaters are assumed to be equipped with BACT, there is no mention of the assumed BACT emission levels for the heaters or other stationary sources. The detailed emission calculations should be provided for review.

In particular, the assumptions for the emissions calculations for LNG ships need to be detailed and sources of the emission factors need to be documented. The emission estimate reports commissioned by the Port of Los Angeles, and available on their website, should be considered and used as appropriate. There is no indication that the LNG ships will be dedicated to this project; and the project description indicates that the ships may come from any of a number of LNG supply sources. The assumptions made relative to ships of greatly different sizes, different ages, and different registries dramatically influence the emissions, and such assumptions need to be described.

Section 4.9.5, Air Quality, Operations Impacts and Mitigation (BACT/LAER Measures, pages 4-115 to 4-116). The analysis lists possible BACT/LAER approaches, but two of these measures are not fully documented. First, metal oxide absorption of sulfur compounds in C2, removed from the LNG, is noted to be present. Section 2 of the Draft EIS/EIR does not indicate that sulfur compound removal is necessary, so either the project description should include a description of the sulfur removal process (including waste streams), or Section 4.9.5 should be corrected by deleting this unnecessary process. Second, the fugitive ROC elements from various points are noted to be reduced by "design elements" and a leak detection and repair program. A description of the specific "design elements" that will be used by the project, including those required to comply with SCAQMD regulation, should be provided.

Section 4.9.5, Air Quality, Operations Impacts and Mitigation (Dispersion Modeling Analysis). The dispersion modeling analysis presents results without providing any information on assumptions and methods. All modeling input assumptions, modeling methods, etc. should be provided to allow the public to verify the methods and results of the modeling analysis.

Section 4.9.5, Air Quality, Operations Impacts and Mitigation (Offset Mitigation). The analysis refers to offsets as a possible mitigation strategy through the SCAQMD New Source Review (NSR) rule, but the amount of offsets is not quantified and the project's offset sources have not been provided. The project's stationary source emissions include all LNG ship emissions while hotelling, and other non-propulsion LNG ship emissions while in state waters within SCAQMD jurisdiction. The project clearly triggers the need to offset the stationary source NOx, VOC, PM10, and SO_2 emissions. However, the LNG ship emissions that are subject to SCAQMD NSR are not well documented so the exact amount of

emissions subject to offsetting cannot be easily determined. The emission totals presented should clearly reflect the SCAQMD NSR emission totals for the project.

The SCAQMD's available traditional emission reduction credits for NOx, PM10, and SO_2 are very limited and are not easy to obtain. This project does not appear to normally qualify under SCAQMD rules for RECLAIM or other SCAQMD offset programs other than obtaining traditional Emission Reduction Credits (ERCs) from the existing ERC bank. The Draft EIS/EIR does not show that the project proponent has the necessary emission reduction credits or has retained options on any credits, and the EIS/EIR does not provide any information to suggest that the proponent could obtain the required credits. Without this information, the Draft EIS/EIR does not demonstrate that the project can provide the needed mitigation or comply with SCAQMD rules and regulations. The project would not be viable if it cannot obtain necessary SCAQMD permits.

Section 4.9.5, Air Quality, Operations Impacts and Mitigation (Odor Impacts). The potential odor impacts from the odorization facility are not well documented. The specific design requirements for piping system components (pumps, valves, flanges, etc.) should be provided to confirm the impact finding presented.

Section 4.9.8, Air Quality, LNG Consumers (Natural Gas Pipeline Consumers). This section does not adequately evaluate the potential for emission increases that would result from the natural gas supplied by the project. The project's natural gas will have the potential to have higher heat content and Wobbe index than the typical SoCal Gas pipeline quality natural gas (typical SoCal Gas values are ~1,020 Btu/scf and ~1330 Wobbe index), and in particular higher than that typical in the South Bay/Long Beach area. Even if LNG is within existing gas specifications, increases in Wobbe index can cause increases in emissions when the gas is burned, with NOx being the pollutant of primary concern.

Natural gas interchangeability research work is readily available on the SoCal Gas website:

http://www.socalgas.com/business/gasquality/researchstudy.shtml

Additional natural gas quality impacts research results are available elsewhere on the internet, such as on the California Energy Commission and California Air Resources Board websites. The available data in these studies should be reviewed and summarized, and based on the range of quality of the gas to be delivered to the system (which is not disclosed in the Draft EIS/EIR), the potential impacts to current natural gas users should be adequately addressed. A simple summary of some of the available information would be as follows:

Study Source	Equipment	General Summary of Findings
SCAQMD	Microturbine	NOx increases with heat content increase
SCAQMD	Commercial Boiler	NOx increases with heat content increase
SRI	Lean Burn Engine	Significant NOx increase with heat content increase
SoCalGas	Residential furnaces	Little or no increase in NOx concentration with increased heat content
SoCalGas	Residential water heaters	Little or no increase in NOx concentration with increased heat content
SoCalGas	Natural Draft Burners	Little or no increase in NOx concentration with increased heat content
SoCalGas	Charbroiler	NOx increases with heat content increase
SoCalGas	Deep Fat Fryer	NOx increases with heat content increase
SoCalGas	Instant Water Heater	NOx increases with heat content increase
SoCalGas	Pool Heater	NOx increases with heat content increase
SoCalGas	Condensing Hot Water Boiler	NOx increases with heat content increase
SoCalGas	Lo-NOx Hot Water Boiler	NOx increases with heat content increase
SoCalGas	Lo-NOx Steam Boiler	NOx increases with heat content increase

SoCalGas	Ultra Lo-NOx Steam Boiler	NOx increases with heat content increase

Source: South Coast Air Quality Management District. Natural Gas Quality and Air Quality. Presented by Chung S. Liu, Deputy Executive Director at the California Public Utilities Commission/California Energy Commission Workshop on Natural Gas Quality. February 2005.

It should be noted that the EIS/EIR conclusion, without additional information about the likely gas quality to be supplied to the SoCal Gas system by the project, seems to conflict with the potential emission impacts of LNG presented by SCAQMD in a February 2005 presentation for CEC.[1] In fact this presentation noted that:

> *"The Rule 30 limit of 1150 Btu/scf and Wobbe number greater than 1325 are inadequate to mitigate the impacts and to protect air quality"*

This finding, without additional project information on gas quality, seems to directly conflict with the EIS/EIR finding that:

> *"The project's natural gas would have to meet the same pipeline specifications as natural gas imported from other sources; therefore, any differences in criteria pollutant or toxic air contaminant emissions on a per-volume basis are expected to be minimal."*

The emission impacts from the consumption of LNG could potentially overwhelm the project emissions and certainly overwhelm any emission reductions from mobile sources. Therefore, this issue needs to be taken much more seriously in the EIS/EIR.

Section 4.9.8, Air Quality, LNG Consumers (Vehicle Consumers). The information presented on page 4-123, particularly the potential emission reduction estimates, is not fully documented or substantiated. A number of variables are necessary to complete these calculations, but only the number of miles driven-equivalent is provided. The actual calculations are not presented and the exact source of the LNG fueled-vehicle emissions is not provided. A separate calculation using regulatory emission factor references is provided as an illustration of why the emission factors, assumptions, and calculations need to be provided to confirm the emission reduction findings:

NOx Emissions from heavy-heavy diesel trucks – assuming 2020 HHDD SCAQMD factors derived from EMFAC2002:

530,000 mi/day x 0.008102 lbs/mile = 4,294 lbs/day

NOx Emissions from heavy-heavy LNG trucks - assuming 1.908 g/bhp based on EPA MOBILE6 assumption, 4.0 bhp/mile:

530,000 mi/day x 4.0 bhp/mile x 1.908 g/bhp / 453.59 g/lb = 8,917 lbs/day

These simple calculations reveal an increase in NOx emission of 4,621 lbs/day from use of LNG. These calculations were performed using regulatory references, but these references are purposely taken out of context to minimize any emission reduction due to the use of LNG. It seems likely that the calculations presented in the Draft EIS/EIR are doing the reverse and purposely showing a much greater emission reduction than is reasonable based on truly comparable emission factors. Without well documented emission factor bases, assumptions, and sample calculations, the LNG vehicle emission reductions presented in the Draft EIS/EIR are nothing more than pure speculation.

[1] http://www.energy.ca.gov/2005_energypolicy/documents/2005-02-17+18_workshop/presentations/SCAQMD_Liu_Pan_5_2005.ppt

The LNG fuel quality will also impact emissions. It is possible that the LNG vehicle fuel provided by the project will be of higher heating content and Wobbe index than the currently available fuel, or fuels that are used for engine calibration, or even within fuel qualities specified by engine manufacturers. This issue needs to be discussed clearly with references on acceptable fuel quality for these engines, and the impacts (emissions and other engine performance issues) due to the range of fuel quality that will be supplied by the project need to be identified.

Additionally, the emission reductions from the use of LNG would be greater for the year 2010 than in later years, considering the permitting and regulatory approvals required and the four-year construction period (it is unlikely that the project could actually be in operation by the year 2010). This shows that the emission reductions presented in the Draft EIS/EIR can be very misleading without giving proper context and comparable emission factors, and the reductions are likely dramatically overstated for the life of the project.

Additionally, it cannot be concluded that the project is needed to provide the fuel to the existing/future LNG vehicles, and it has not been clearly established that there will be an increased demand in LNG of 150,000 gallons per day or if that other fuels/technologies will replace traditional fossil fuels/engine technologies within the lifetime of the project.

C. Comments on Reliability and Safety

General Comments

In the past, the evaluation of the safety and reliability of a major industrial facility that would use, store, and transport a hazardous material, would include Process Safety Management, a Hazard and Operability Study (HAZOP), an Off-site Consequence Analysis, a fire needs assessments, a fire prevention and suppression analysis, and emergency response measures. The scenarios assessed would be limited to accidental releases, that is, tank piping, valves, flanges, processes, storage areas, transfer hoses, etc. that fail accidentally. Failures in piping, valves, control systems, secondary containment, warning/detection systems, or at multiple systems on- or off-site were not considered due to the extremely small risk (odds) against simultaneous (cumulative) accidents occurring. Prevention would be emphasized and response measures would then follow. Both prevention and response would be assessed and would be followed by the OSHA hierarchy of first providing mitigation with engineering controls, followed by administrative controls, and lastly by personal protective equipment. That was before the events of September 11, 2001.

Since then, any assessment of the impacts of a release of hazardous materials or the safety and reliability of an energy-related project should and must include the added paradigm of an intentional attack on the facility and subsequent loss of hazardous materials and energy production/provision. This intentional attack could come from vandals, criminals, domestic terrorists, or foreign terrorists. The attack could come as a focused-site attack or as part of a coordinated attack on multiple sites in the immediate area. An intentional attack will most likely leave secondary containment, chemical detectors, valves, fire detection and suppression systems, and other command and control systems damaged or completely inoperative. Response systems and personnel may be rendered ineffective, inadequate, or useless. Certain critical components used to provide control and/or reliability of hazardous materials or energy production become of paramount importance.

Criticality assessment, threat assessments, vulnerability assessment, heretofore applied mostly to military or other national security venues, has now been applied – or should be applied – to chemical and flammable substances facilities in the post-9/11 era. A criticality assessment would provide an evaluation of the critical on-site, off-site and up-stream components that were of the highest necessity to either maintain safety at the proposed LNG facility or provide reliability of mission. These components could be key storage, transfer, shut-off, or detection devices whose presence and location dictate the safety and reliability of the project. For example, power supplied to the facility via overhead power lines could fail due to accidental causes or due to sabotage/terrorist actions. The facility will be equipped with an Uninterruptible Power Supply (UPS) which could also fail or be attacked. The consequences of such a plausible – and even reasonably expected - scenario would be the catastrophic loss of command and control. Emergency shut-off valves could fail even if they are designed to fail in the closed position due to malfunction or damage, and emergency communications could fail as well. The interoperability of emergency response providers has been in question in recent years from the days after 9/11 to the recent hurricanes Katrina and Wilma. It is naïve to pretend that all safety systems will work as designed, that all emergency responders will work in unison as planned, and that all back-up control and containment systems will remain intact during an accidental or intentional leak.

The rudimentary discussion of security (Draft EIS/EIR Section 4.11.8 and Appendix F, page 3-13) does not provide even a mention of a criticality or threat assessment. Appendix F, does however, allude to possible results of a criticality assessment when displaying various system failures in Tables 2-2, 2-8, and 3-1. However, these tables include the statement that "Details have been removed because this is considered Critical Energy Infrastructure Information (CEII) by the FERC." It is imperative that State

and local agencies entrusted by the public to follow their statutory responsibility to protect public health be privy under a confidentiality agreement to such system analyses.

The U.S. Department of Homeland Security has identified 14 key critical infrastructures and national icons for development of security measures. Energy is one of the key critical infrastructures and as a result, that certain assessments must be made before it can be determined what parts of the proposed project present the greatest risk and what threat exists to those systems.

It is with this background that, after an analysis, the Draft EIS/EIR is considered wholly inadequate to even attempt to begin to address the safety and reliability of a LNG facility at the POLB. Security is a critical component of the safety and reliability of this project and an EIS/EIR must include a discussion of the critical components and the threat presented to the continued operation of these components before the facility can be determined to be as safe as possible.

Section 2.0 Description of the Proposed Project

It is clear from the description of the project that the LNG carriers are a separate part of the project and that Sound Energy Solutions (SES) will not have responsibility for the sailing, management, security, or safety training of the ships and their crews. The LNG ships pose one of the greatest risks associated with the proposed project and yet there is no discussion in the document addressing the potential take-over of the ship by a terrorist group. Using an LNG ship as a weapon follows the 9/11 paradigm and should be assessed in criticality, threat, and vulnerability assessments. The statement in the Draft EIS/EIR that such an attack is improbable is unsupported. The exact purposes of a criticality assessment and threat assessment are to identify components critical to the provision of the projects mission and to assess the threat against those critically important components. An LNG tanker is a very critical component, and the threat against it is large. To ignore this matter is to exclude an extremely important assessment from the public EIS/EIR process.

Section 3.0 Alternatives

Section 3.2.2.2 Proposed LNG Facilities

The statement that the "risk of an accidental release of LNG from either onshore or offshore facilities can both be managed with safety policies and practices, and that the risk of intentional attack on either onshore or offshore facilities can be significantly reduced with security, planning, prevention, and mitigation" may be true, it is much easier and cost effective to secure an off-shore LNG facility than an on-shore facility. The POLB will be difficult to secure for several reasons, such as the lack of need for terrorists to obtain and use boats to reach their targets, the myriad places to hide and obscure movement at the Port area, the high number of visitors/tourists in the immediate area where terrorists can blend-in and "scout" the facility without detection, the number of other facilitates that immediately adjoin the fenceline of the site, etc.

Also, the Draft EIS/EIR presents inadequate information to support the contention that workers at an offshore facility may be more at risk of health and safety impacts due to the distance to emergency response and health care services. With medivac helicopters, on-site defibrillators, and on-site EMTs, the response time to handle medical emergencies can be as quick to an offshore facility as to a land-based facility where approach by land will be hampered by traffic jams (frequent in the POLB area). Both land-based and off-shore LNG terminals may be forced to rely upon air response.

Section 4.11 Reliability and Safety

Section 4.11.1 Significance Criteria, 4.11.5 Thermal and Vapor Dispersion Zones, and Appendix F, Section 2.2.3 Hazard Endpoint Criteria

CEQA requires identification and mitigation of any potentially significant public health impacts associated with a proposed project. The criteria always used in evaluating the use, storage, and transportation of hazardous materials is whether the potential impacts of a worst-case event are significant or insignificant. If it is significant, then mitigation is required to bring the level of risk down to an insignificant level. Any plausible adverse impact on public health must be viewed as a potentially significant impact and the criteria for impact on humans is the use of an appropriate exposure level with safety factors to protect against impacts to "sensitive receptors", the very young, the elderly, and those with pre-existing health conditions.

It is neither acceptable nor conventional for a Draft EIS/EIR to decide what level of adverse impact is acceptable. Toxicological endpoints, physical harm endpoints, etc. are determined from scientific studies and standards used by scientific and governmental regulatory agencies. It is not the purpose of a Draft EIS/EIR to argue against a previously established and recognized exposure standard. That should be left for an uncertainty analysis. Rather, an exposure that results in either a human No Observed Adverse Affect Level (NOAEL) or an animal Lowest Observed Adverse Effect Level (LOAEL) with a safety factor applied must be used. Any adverse effects that occur within a time frame of "seconds of exposure" rather than minutes or hours of exposure are significant impacts. Indeed, the time of exposure is also critical in determining an appropriate short-term exposure levels. All U.S. EPA short-term exposure levels for toxic substances are either for 30 minute exposures or one hour exposures, all Cal-EPA short-term exposure levels are one hour, all National Research Council SPEGL's (Short-term Public Exposure Guidance Levels) are for 30 minutes or one hour, and even Federal and California OSHA STELs (Short-term Exposure Levels) are for 30 minutes or one hour.

The Draft EIS/EIR fails to adequately or scientifically quantify risk because of its arbitrary use of a distance to a radiant heat exposure level that is arbitrarily deemed acceptable. Even a cursory review of the scientific evidence demonstrates that an exposure level of 5 KW/m^2 of skin is inadequate. In evaluating the potential for adverse impacts on surrounding populations, Appendix F Table 2-1 provides for use of a standard of 5 KW/m^2 [1,600 $Btu/(hr\text{-}ft^2)$] to evaluate public "radiant heat exposure." However, it is inappropriate to use an exposure criterion that implicitly accepts the potential for adverse impacts on the exposed public. Public exposure criteria should reflect a level of exposure that is without adverse impact, taking into account the potential variability of sensitivity in the potentially exposed population. At an exposure level of 5 KW/m^2 [1,600 $Btu/(hr\text{-}ft^2)$], first-degree burns would occur within 20 seconds (not minutes or hours), second-degree burns would occur within 30 seconds (not minutes or hours), and third-degree burns would occur within 50 seconds (not minutes or hours) with a 1% fatality rate.

Typically, acute (short-term) exposure criteria are based on a NOAEL for at least a period of 30 or 60 minutes (see discussion above), divided by a safety factor that is based on the uncertainty associated with extrapolating from the experimental data to the exposed population. An exposure criterion that is consistent with use of a NOAEL, reflecting the susceptibility and limitations of children and the elderly to escape, is 1.5 KW/m^2 [450 $Btu/(hr\text{-}ft^2)$]. At this level of exposure, no injury would occur with extended exposure. This is a safer and more appropriate exposure criterion with little potential for significant impact. The fact that the 1,600 $Btu/(hr\text{-}ft^2)$ criterion is suggested in NFPA 59A is not a justification for its use in a CEQA or NEPA analysis as a basis to conclude that a project poses no potential for significant impact. Any safety code must be considered a minimum level of protection and must be evaluated for its

applicability in each specific circumstance. While the NFPA standard may be acceptable in an industrial setting for accidental exposure of trained adult healthy workers, it is not an acceptable public exposure criterion. This view is also supported by Dr. Jerry Havens, an expert retained by the California PUC and by Dr. Harry West in testimony before the FERC (June 2005; FERC Docket Nos. CP04-36 et al.). Dr. West pointed out that the 1.5 KW/m^2 standard was consistent with the thermal radiation flux standards of the European LNG Regulations for critical areas, the U.S. HUD rule (49 Fed. reg. 5100 Feb. 10, 1984), the World Bank, and the recommendation of the American Petroleum Institute. Dr. West further provides testimony discrediting the basis of the NFPA 59 standard of 5 KW/m^2 [1,600 $Btu/(hr\text{-}ft^2)$].

Section 4.11.10.1 Selection and Probability of LNG Release Events

The Draft EIS/EIR fails to assess the critical components and the threat – external and internal – against each component. One cannot therefore predict the likelihood or intensity of on-site or off-site impacts until a criticality assessment and threat assessment is completed as part of the EIS/EIR process and until State and local government is given access to these assessments. Not completing and providing this information (at least to local and State government agencies under a non-disclosure agreement) is to deny that these threats even exist and thus render any selection and probability assessments of an LNG release deficient. It is hard to understand the failure to consider such an event in light of the 9/11 paradigm.

Section 4.11.10.2 Consequence Analysis Results for Possible LNG Release Events

The analysis of potential consequences is seriously flawed as a result of failure to consider the possibility of the use of an LNG carrier as a weapon. This section contemplates that only a high-speed collision involving the LNG tanker with a very large ship would result in a full-scale release of the LNG cargo. It was postulated that this event could only occur outside the port and at a considerable distance from populated areas. However, if a terrorist group were to obtain control of an LNG carrier, it could be directed at any target and a full-scale release could be planned to occur at a target location away from the planned ship route such as the Queen Mary.

The assumption that an attack could only occur outside the Port precludes consideration of potential exposure of the public to the consequences of a major LNG release. However, significant public exposure would result if a full release did occur in close proximity to other locations closer to populated areas of the coast.

It should also be noted that the assumption of a 20-minute release duration reduces the potential pool size that would result from a full tanker release of shorter duration. It is a plausible and creditable scenario that an attack on as tanker could result in a more rapid release. Since there is no clear basis to reject a shorter duration, the Draft EIS/EIR should include analysis using a range of assumed release values.

Comments on Appendix F, Hazards Analysis

Appendix F of the Draft EIS/EIR includes a hazards analysis report by Quest Consultants.

Appendix F, Section 1.2 (page 1-4)

The scope of the Quest study was too narrow. Without an assessment of the critical components and the threats against them, it is impossible to determine what would be the "worst case" event associated with this project. The loss of electrical control of the valves used to control the off-loading of LNG from the tank coupled with the loss of containment, the loss of the UPS, and the death/injury of critical personnel with responsibility to activate manual control valves could result in a spill of the entire contents of all land

storage tanks and all tanker storage. If the C2 pipeline were also breached in the same attack/explosion, the loss of C2 gases would also occur. A concerted attack on control systems, the pipeline, and the LNG tanker could result in the release of the entire contents of the ship, the land storage tanks, and the C2 pipeline at the same time. It would be hours before emergency response personnel could even begin to control the release, if ever. Any source of ignition – even that of a car backfiring or an electrical arc – would cause an explosion, fireball, or sustained fire of large proportion and duration. This scenario is much more serious than those identified in the Quest study.

In another example, an LNG ship under the control of terrorists could be used to attack the Queen Mary or any other target in or near the Port. The Queen Mary is a very attractive target – a fact which would have been evident had the Draft EIS/EIR included a threat assessment - and one that has already been identified as such by the State of California. (According to the State of California's Safety Advisory Report on the Project, the Queen Mary Seaport has about 2500 visitors on weekdays and about 4000 visitors on weekends. Adjacent to the Queen Mary is the Carnival Cruises terminal with 5000 visitors when docked. In addition, the Port of Long Beach is home to about 4500 public and private employees. Almost all of the Port of Long Beach, including the Queen Mary, lies within a two-mile radius of the proposed project. It would be nearly impossible for the Coast Guard to stop an LNG vessel moving at full speed before it could reach these potential targets.) A successful attack of this type could produce thousands of casualties and would be highly recognizable to the groups that terrorists would like to influence. Clearly, LNG ships are an integral part of this project and would be a serious threat if they were covertly controlled by terrorists and allowed to approach a heavily populated area of the California coast such as Long Beach.

Both of the scenarios discussed above were not considered or were dismissed without identification of highly effective mitigation measures (measures with virtually no chance of failure). In the absence of such a discussion and the identification of effective mitigation, the proposed project clearly poses a serious risk of significant impact on the public. Because this analysis is missing from the Draft EIS/EIR – indeed it appears that it was precluded by the limited scope of the Quest study – the Draft EIS/EIR is deficient.

Appendix F, Section 1.3 (page 1-4)

The Quest study states that it includes analysis of a "range of the largest accidental and intentionally-induced releases that could occur" and that "essentially, because the study evaluates a set of representative worst-case impacts, the consequences of any event that was not specifically identified could still be expected to fall within the range described in this study." As per the above discussion, these statements are not supported by the evidence.

Also, the last paragraph on the page states that "no use of proprietary, confidential, or not-to-be-publicly-disclosed information was used in this study." This statement is contradicted several times on subsequent pages of Appendix F where many details have been removed as CEII (e.g., pages 2-5. 3-5, 4-10, etc.).

Appendix F, Section 4 (pages 4-1 to 4-37)

The consequence analysis suffers from the limited scope of scenarios considered in the Quest study. The failure to consider a scenario involving a focused terrorist attack which renders certain critical components inoperable (the scenario discussed as part of Section 1.2 above) is a prime example. Loss of secondary containment, loss of pipeline, transfer pipes, and ship control valves, loss of imported electricity, loss of the on-site UPS, and loss of critical personnel will result in the loss, over a very short period of time, of the entire contents of land storage tanks, ship storage, and pipeline volumes. The loss of LNG would be huge; the risk of fire and/or explosion great. In fact, the delay in ignition could even

be planned – or be accidental – but this type of scenario would result in the formation of a massive, dense vapor cloud that could move slowly closer to populated areas prior to ignition or even detonation. The detonation of a large unconfined methane cloud has been suggested as likely to have occurred from a natural gas pipeline in Belgium. It is likely that the rapid dispersion of smaller releases have precluded frequent detonation from other methane releases of smaller amounts. It is also possible that a detonation of the methane in a confined space within the cloud caused the very large cloud in the Belgium case to detonate. A similar detonation occurred in Skikda, Algeria when a detonation in a confined space within an unconfined cloud caused detonation of the cloud itself. A large release from an LNG carrier into water near a heavily populated area could result in a similar event if an explosion within a confined space acted as an initiating event. Even if the cloud did not detonate, it could still cause a flash fire and subsequent pool fire. In either case, the resulting loss of life and economic damage would be enormous. The potential area affected by a large vapor cloud is much larger than the distance for radiant heat exposure as demonstrated by Table 4-11 of the Quest study.

Appendix F, Section 6 (pages 6-1 to 6-12)

The comparisons in this section appear to be inappropriate in that only Facility #3 is comparable to the proposed project in having LNG ships present. All other projects lack LNG ships that could be used as weapons. Additionally, the threat significance of nearby targets and associated economic loss are not at all similar to those associated with the proposed project. Finally, had a threat assessment been conducted, it would have invariably noted that foreign terrorist groups do not consider Mexico to be even remotely on the same "target level" as the United States. This and other factors significantly reduce the risk to a project sited in Mexico.

More importantly, the comparison to everyday risks found in Table 6-6 – including other fuel-handling activities - to the risk associated with the proposed project is neither appropriate nor accurate. Risks for these "other activities" appear to be underestimated and most, if not all, are not influenced by the threat of terrorism. It is also inappropriate to compare risks of projects sited decades ago, in foreign countries, or before the threat of terrorism was a recognized threat. It would be much more appropriate and useful to compare the risks of the proposed project to those associated with alternatives such as the proposed Cabrillo Port Facility.

Appendix F, Section 7.1 (page 7-1)

The conclusions are misleading and inappropriate because the Quest study does not cover the full range of impacts that could be associated with the proposed project (as explained above).

Appendix F, Section 7.2 (page 7-1)

The question of potential for terrorist attack is not beyond the scope of the existing Quest Study and is absolutely essential to any NEPA/CEQA analysis. The question of whether the facility itself is a target depends on the "threat" to this facility and the "threat" to other targets surrounding the facility. The "threat" is a function of many factors, including but not limited to the attractiveness of the target in achieving the goals of a terrorist group (e.g., injury and death to people; importance of facility; location; newsworthiness; etc.). The risk of terrorist attack at this facility's critical components has not been assessed. It is also imperative that other alternative projects that could reduce this risk be considered in the Draft EIS/EIR.

Appendix F, Section 7.3.1 (page 7-3)

The scenarios listed at the top of page 7-3 do not include all plausible and credible – and perhaps the largest - release scenarios described above. As a result of omitting a Criticality Assessment and Threat Assessment, and other scenarios that involve the LNG ship as a weapon, the statements in this section misrepresent the actual risk of the proposed project.

Appendix F, Section 7.6 (pages 7-10 to 7-15)

The summary of the Quest analysis fails to adequately include or assess the potential plausible and credible risks of the proposed project. The limited scope and other deficiencies previously discussed make it clear that the Quest study is only relevant to the extent that the scope of the analysis allowed certain scenarios to be considered. The Quest study admits that it does not properly analyze the threat of domestic or foreign terrorist attack and as a result fails to recognize the increased terrorist risk that the location of the proposed project poses. This is completely inconsistent with the actions that have been taken since 9/11 and the recommendations of the U.S. Department of Energy (DOE 2002) with regard to threat and vulnerability assessments for the energy sector.

D. COMMENTS RELATED TO PUBLIC SAFETY

POLICE

Comments on Section 4.11 Reliability and Safety

The introduction states, "The FERC staff does not agree with analyzing worst-case, high-consequence, low-probability events without accounting for the beneficial effect of preventative or mitigation measures as part of a risk management process. As a result, many of the worst-case high consequences calculated in the Hazards analysis by Quest are not considered credible events by the FERC."[2]

The danger in labeling the risk of a terrorist attack as improbable is it becomes easy to be complacent and fail to prepare or properly mitigate the risks. A perfect example of the error of complacency was found in the 9/11 Commission report as reported by Karen MacPherson of the Pittsburgh Post-Gazette, "Few government officials could envision a September 11-like scenario, the commission found, despite specific intelligence that al-Qaeda was looking to hijack planes and plow them into landmark buildings. In 1999, for example, the Federal Aviation Administration concluded that a suicide hijacking would be unlikely."[3]

Due to the potential damage and mass casualties that could occur if the LNG facility or shipping activities were to cause a release and ignition of LNG, it is imperative that security of the LNG ships, the LNG facility and fire *prevention* take top priority. The EIS/EIR goes into great detail about the capabilities of the Long Beach Fire Department and the training firefighters will be given to deal with LNG. The Long Beach Fire Department is very capable but will no doubt require specialized equipment and training. However, if there is a release and ignition of LNG, the heat generated from such a fire is so hot that firefighters will not be able to get close enough to fight the fire. The EIS/EIR and many other studies discuss the heat generated by an LNG fire in terms of BTUs. To compare, LNG burns at least 15% hotter than kerosene and 17% hotter than crude oil. "Dirty" LNG will burn hotter. As a result, first responders will be forced to wait until an LNG fire burns itself out before responding to the area to extinguish possible secondary fires and treat victims. It is critically important to do everything possible to prevent a facility, vessel or pipeline from catching on fire. Simply put, the critical issue with LNG, is not a fire problem, it is a security and fire prevention problem.

The EIS/EIR provides minimal analysis of consequence should an event occur, only disclaimers that such events are highly unlikely. The potential loss of human life, injuries and damage to Port and City infrastructure has not been addressed. Further, if an incident were to cause a shut down of the port complex, the cost of the damages to not only the Port and City of Long Beach but the potential impact on the United States economy has not been addressed.

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[2] FERC and POLB. Long Beach LNG Import Project Draft EIR/EIS, October 2005. 4-128

[3] MacPherson, Karen. "U.S. lacked Imagination in Predicting Terror Attacks". Pittsburgh Post-Gazette. August 15, 2004. Available online at http://www.post-gazette.com/pg/04228/361958.stm. See also United States. National Commission on Terrorist Attacks upon the United States. The 9/11 Commission Report. By Thomas H. Kean, et al. 2004. 15 Jan 2005. Available online at http://www.gpoaccess.gov/911/index.htm. See specifically Chapter 11, Foresight and Hindsight. 344

When examples are cited in the EIS/EIR, they are almost always positive. The optimism expressed is generally a consequence of low frequency rather than any mathematically sound reasoning. For example, the EIS/EIR cites the safety record of the LNG facility operated by Distrigas in Everett, Massachusetts.[4] The plant has been open since 1971 and there have been 450 deliveries without incident. The frequency of deliveries for this plant, at approximately 1 per month over its life, are far less than the proposed frequency for the LNG plant in Long Beach. It will take the Long Beach facility less than four years to surpass the number of delivers that Distrigas has had in 34 years.

A key component to the safety of deliveries in Massachusetts is the security plan employed by the local law enforcement agencies in cooperation with the United States Coast Guard. Currently the local agencies in Massachusetts are not reimbursed their costs for providing the required security measures. This has had a serious detrimental effect on local public safety. The EIS/EIR states Sound Energy Solutions is committed to coordinate with local emergency providers and fund all project-specific security/emergency management costs yet those costs are not identified.[5]

By failing to adequately address the security issues inherent with an LNG facility and its shipping activities and by discounting the possibility of a terrorist attack, there is potential to create a situation similar to the one in Massachusetts where the local law enforcement agencies are charged with ensuring the security of LNG ships and the LNG facility. The agencies are forced to pick up the extra manpower, equipment, and replacement costs of equipment associated with providing an adequate security zone around arriving ships. The frequency of LNG arrivals in Long Beach could multiply that financial burden on the City of Long Beach, the Long Beach Police Department and other public safety providers.

4.11.7 Marine Safety

The use of the LNG industry alone to calculate major marine accidents is not credible. It appears that Quest varies in its study between using LNG facilities when those numbers are beneficial, i.e., accident rates, and uses industry-wide numbers to its benefit to calculate the probability of terrorist events. This methodology is flawed in both circumstances.

The number of LNG vessels is relatively small and the sample size does not lend itself to an accurate prediction of events. It is more useful to calculate the accident rate of all petrochemical shipping. There is substantially more history and vessels in the entire petrochemical industry. The probabilities derived from such a large sample over a longer period of time will more accurately reflect the likelihood of marine incidents. Additionally, war events would also be in the assessment of historical data and they should appropriately factor into any risk assessment.

4.11.7.1 LNG Vessels and Ocean Voyage

The LNG import countries listed include Algeria, Australia, Brunei, Indonesia, Malaysia, Nigeria, Oman, Trinidad and Tobago and the United Arab Emirates. The Long Beach Police Department reviewed each of these countries, ranking each based on their production capabilities, friendliness to international terrorists, a background of terrorist organizations that originate in each of the countries and overall threat to LNG tankers that may enter the Port of Long Beach. Each country was assigned a numerical rank utilizing a scale of 1 to 10, with 1 being the safest and 10 being the least safe. Both 1 and 10 are extreme values. There are no benign or violently hostile countries on the list. All information for this analysis was

[4] FERC and POLB. 4-156

[5] FERC and POLB. 4-164

gathered through research sites that are non-classified and open to the public. A brief breakdown of each is as follows:

Algeria (8) - is the largest producer of LNG and currently has 10 LNG tankers registered. Terrorist organizations indigenous to Algeria include an al-Qaeda linked group identified as Salafist Group for Call and Combat, which is a splinter group of the Armed Islamic Group that sought to overthrow the Algerian Government. The Salafist is the largest and most effective group in Algeria. Due to the strength of the terrorist groups and Algeria's tendency to not support the United States politically, it is potentially a more dangerous trading partner than many of the others listed. No incidents involving LNG production have been reported, but a possibility to embarrass the Algerian Government and the United States remains.

Indonesia (8) - is one of the world's largest producers and exporters of LNG and currently has seven LNG tankers registered with more being built. The Jemaah Islamiyah (JI) is the primary terror organization in the region. It is associated with al-Qaeda and was responsible for bombings in Jakarta (2003) and Bali (2002). Many of their attacks have been associated with tourist and diplomatic locations and the organization has shown a willingness to cross international borders to carry out attacks in Malaysia and Singapore. Another group not quite as well known as JI is the Islamic Defenders Front which is dedicated to firm adherence to strict Islamic law and a re-creation of Indonesia as an Islamic state. To date there have been many threats by this group against Western interests and specifically US actions abroad. Indonesia is another example of a country rich in resources, but with a government struggling to keep alive and in control of its own country.

Malaysia (7) - is the third largest LNG exporter after Indonesia and Algeria and has 26 LNG tankers registered. JI operates in Malaysia along with other countries in the region. An organization identified as the Kumpulan Mujahidin Malaysia (KMM) has been responsible for various attacks against Westerners and Christians. KMM is an Islamic group dedicated to overthrowing the Malaysian government and creating an Islamic state in its place. Malaysia is a risk due to its association with Indonesia and the ease with which various Islamic terrorist groups can travel across its borders.

Nigeria (6) - is the largest producer of petroleum products in Sub-Saharan Africa. It is believed to have the largest natural gas reserves in Africa and has one LNG tanker at its disposal. The most active group in Nigeria is Hisba, an organization comprised of a collection of gangs of Islamic fundamentalist vigilantes in Northern Nigeria who arbitrarily impose Islamic law. Often times the police and/or military turn a blind eye to their activities. Nigeria's rank is based on the relative corruption of the government. Its dealing with Islamic factions and its closeness with other regimes make Nigeria a question mark.

Brunei (5) - produces about nine billion cubic meters of natural gas per year and has eight LNG ships registered. There are no identified terrorist organizations specifically associated with Brunei. However, because of its proximity to Malaysia and Indonesia, Brunei's most significant threat is from JI. To date there have been no attacks in Brunei; however, JI operates throughout the region and an attack on Western interests and commerce would not be out of the question. Brunei has significant potential for future problems.

Oman (4) - has been a giant in the petroleum industry for several decades. After its oil reserves were depleted, it increased natural gas production to approximately 7.43 billion cubic meters per year. Oman has no LNG ships. As of 2005, there were no known or state sponsored terrorist organizations operating in Omani territory. Oman remains sympathetic to the Palestinian cause, but chooses to distance itself presumably for economic reasons. Oman ranks between 3.5 to 4 primarily because of reliance on other nations for shipping.

United Arab Emirates (4) - currently sits on top of the world's 5th largest natural gas reserves and ranks 9th in LNG exports. The United Arab Emirates (UAE) has only one LNG tanker. The UAE, Saudi Arabia and Pakistan are the only countries that recognize the Taliban. There are no terrorist organizations with a base of operations in the UAE. The UAE has a history of being sympathetic to the Palestinian cause and the UAE has been a common landing place for hijacked aircraft in the past. The UAE is a stable and wealthy country with a large reserve of natural gas but must rely on other countries to transport its product. The UAE's risk is based on its history and the necessity to utilize other countries to transport LNG.

Trinidad and Tobago (3) - is the largest producer of natural gas in its area with 11.79 billion cubic meters of LNG produced in 2003. It has no ships registered that can carry LNG. The island has no indigenous terrorist organizations. Trinidad is one of the safest places from which to procure LNG. But, Trinidad has no LNG tankers, which forces them to rely on other nations to transport their commodity.

Australia (2) - produced 9.744 billion cubic meters of natural gas in 2003 and has four LNG tankers registered. Australia is not known for harboring international terrorist organizations. Australia is a stable first world western country with significant resources to deal with terrorist attacks. Australia is perhaps the safest of the countries listed. However, Australia is a primary ally in the United State's war on terror, and a highly visible coalition partner in Afghanistan and Iraq. Al Qaeda, as well as other Islamic terrorist groups has issued public threats against Australia and her assets. Australia remains a high profile terrorist target.

It is critical to consider the country of origin because several of the countries have unstable governments, links to terrorist organizations or terrorist organizations working within their borders that could affect the safety and security of an LNG tanker traveling to the United States. This analysis should have been a part of the EIS/EIR and as is shown above, the information is readily available through public sources. Additionally, several of these countries would require shipping routes through waters that have extensive problems with piracy. The EIS/EIR does not sufficiently address these issues.

4.11.7.2 LNG Vessel Transit in the Port of Long Beach

The size of LNG vessels and the size of the channel to/from Queens Gate will dictate that only one commercial vessel can be in the channel at one time. The exclusionary zone currently used in other operations around the country dictates half-mile security zones. If a similar approach is used in Long Beach all commercial traffic to Queens Gate inside the breakwater will be halted while the LNG vessel is in transit. Depending on the level of security, other traffic may be halted while the LNG vessel is turned to berth. The maintenance of a security zone will fall upon local law enforcement, yet the impact and costs associated with the security zone have not been addressed.

Several credible threats exist to LNG vessels that have not been explored in the EIS/EIR. These threats have been published in other studies and their inclusion in the public portion of the EIS/EIR would not compromise security. For example, the issue of a potential hijacking of an LNG vessel during normal pilot boarding operations is not addressed. The unknown factor of whether the Coast Guard would provide escort to all LNG vessels requires this scenario be reviewed and mitigated. The consequences of a hijacked LNG carrier are extreme and the relatively low technology required in such a scenario makes it a credible threat. The inability to stop a hijacked vessel underway within a timeframe sufficient to stop it before collision, allision or grounding increases the probability of such an event. It is necessary to mitigate the threat and that mitigation is likely to have costs and impact to local law enforcement.

The Coast Guard is known to board LNG vessels at other LNG terminals. The EIS/EIR does not identify the significant impact on a local jurisdiction having to assume those duties if the Coast Guard is unable to provide the resource. Further, some other LNG terminals in the United States have significant impact on local public safety agencies. The impact for Long Beach is not identified or articulated.

There is the possibility of anchoring and/or bunkering loaded LNG carriers. Both events would occur inside the breakwater. Such operations would be unusual. The need to maintain a security zone around anchored vessels would have impact and costs to local law enforcement.

4.11.8 Terrorism and Security Issues

The terror threats to a proposed LNG terminal and shipping activities have been previously documented in Richard Clarke's Security Risk Analysis for a proposed LNG facility located in Providence, Rhode Island.[6] These threats on land include: a hijacked plane crashing into the terminal or ship, a truck bomb, sabotage, man pads and anti-tank weapons. The threats on the water include: a hijacked plane crashing into the ship, hijacking or piracy at sea, intentional collisions or allisions, sabotage, a small boat bomb, port of origin security threat, mines, submarines or the threat of divers. This does not mean these methods would cause severe enough damage to an LNG ship or Terminal to cause a release of LNG, much less a fire. In fact some methods of attack would be highly ineffective due to the design of the LNG facilities and vessels.[7]

In the Quest Study, the authors state a large airplane could not penetrate the LNG storage tanks unless the engines were to strike the tanks because the bodies of airplanes are "soft" compared to the LNG tanks. This is a statement that ignores basic physics. A 200 – 400 ton aircraft traveling at 400 mph creates substantial and easily calculated potential energy. Striking a full or partially full closed container – either a ship or land based storage tank – creates enormous hydrostatic pressure. The result, even without the engines striking the tank, would be catastrophic.

Quest does not discuss what occurs to the liquid inside the storage tanks when struck with such a large object at high speed. They do not address if the storage tanks can prevent the wave of energy from an aircraft impact from causing the liquid inside to rapidly shift, subsequently causing a breech in the tanks.

It is noted by Quest in support of their discussion above, that significant aircraft debris did not exit the World Trade Center buildings. This statement is countered by photographs of the impact showing an extensive debris cloud made up of aircraft, building material and fuel fireballing out of the opposite side of the building.[8] In the World Trade Center, much of the damage to the structure was caused by the energy exerted on the target, not the actual weight or difference in density of the target versus the weapon. Quest is correct that the airplanes used for the September 11th attacks did not go completely through the World Trade Center; however a large wave of transferred energy from a 200 – 400 ton airplane traveling at 400 mph did go through the World Trade Center.

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[6] Richard Clarke. LNG Facilities in Urban Areas: A Security Risk Management Analysis for Rhode Island. Good Harbor Consulting. May 2005.

[7] For example, RPG's or similar hand held weapons are viewed as potential threats. In reality, the impact of such weapons is so minor as to render the threat negligible. Against a ship, the weapon would either be deflected by the tank design or would be unable to penetrate through the double hulls. Against an LNG terminal, the thickness of the containment vessel would prevent penetration by such a weapon.

[8] See photograph of aircraft striking the South Tower of the World Trade Center, September 11, 2001. Available online at http://thebiggestsecretpict.online.fr/nwo/wtc_crash.jpg. As fireball rises, on the opposite side of the building from the entry point, note solid debris falling at bottom of photograph.

In every other potential terrorist event, the Quest Study's first action item is "Terrorists avoid POLB security" for land-based attacks or "Terrorists avoid POLB, COLB and USCG security" for water based attacks. Security and other mitigation efforts are vital to preventing a terrorist event. Current security levels in the Port of Long Beach, both on water and landside can not adequately protect LNG shipping interests nor can they establish and maintain a security zone.

4.11.9 Emergency Response and Evacuation Planning

The discussion of evacuation routes indicates that different events may result in different levels of severity. Consequently, evacuation distances may vary depending on the severity of an event. Regardless of severity, the EIS/EIR does not identify the difficulty of evacuations, the impact on local law enforcement or the costs associated with developing, implementing and securing the evacuation zone. Depending on the evacuation distance/zone, it could be impossible to evacuate a location within a non-hazardous timeframe. Even relatively small evacuations are time intensive, labor intensive and cause enormous disruption to traffic patterns. Larger evacuations such as those required for large scale events such as a terrorist attack are nearly impossible to achieve.[9] The evacuation plan should also provide for ongoing review and update, perhaps as frequently as quarterly.

4.11.10 POLB Hazards Analysis

The calculations used by Quest in the analysis of risk are not credible. Quest itself states, "… it is impossible to predict the probability of specific intentional events (such as those perpetrated by vandals or terrorists)."[10] One section later,[11] the Hazards Analysis attempts to create a formula to determine probability of a successful terrorist incident.

The formula is not credible, does not use accepted statistical methods, and does not consider a number of factors that should be minimally included. Further, Quest improperly calculates the numbers by using the total number of facilities in the United States with threshold amounts of toxic or flammable materials. Quest derives the numbers from the EPA, which are based upon evacuation zones for vapor leaks. The actual zone of impact for an LNG incident is determined more on its fire danger than on its vapor danger, although the Sandia Report indicates unignited vapor spills should be evacuated approximately 1 to 1.5 miles. While use of EPA figures may have been unintentional it makes the EIS/EIR appear to have a predetermined goal of ensuring that LNG appears safe to the citizens.

Any formula derived for determining the probability of terrorist attack should contain a minimal set of factors, assuming they can be mathematically produced. The factors should include randomness, increased risk since 9/11, consequences of an event, mitigation factors (which may reduce the probability of an attack), increased risk due to the co-location of other desirable targets in the nearby area, etc. The formula should also minimally include a function to account for geographic site locations throughout the nation. The Los Angeles region has been clearly identified as a prime terrorist target.

Additionally, the Port of Long Beach staff acknowledges that the public is concerned over the possibility of a terrorist attack involving an LNG terminal or ship. These concerns however, are discounted in the EIS/EIR by quoting the numerical data gained from Quest. The consultants determined that the chances of a successful terrorist event would be less than seven chances in a million per year, determining the

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[9] Sandra Hughes. "Rita Exposes Evacuation Problems". CBS News. September 25, 2005. Available online at: http://www.cbsnews.com/stories/2005/09/25/national/main883599.shtml

[10] FERC and POLB. Appendix F. 3-9

[11] FERC and POLB. Appendix F. 3-12

chances of such an event to be "Improbable" based upon a Los Angeles County Fire Department (LACOFD) "Decision Tree for Analysis of Hazardous Material Release."[12]

The Quest study initially states it is impossible to predict terrorist activities and later admits that a terrorist-induced release may be possible. However the EIS/EIR attempts to use the data to discount the risks by plugging it into a LACOFD threat assessment matrix that has not been published or peer reviewed. The use of LACOFD as a resource for determining probability of a terrorist incident is curious. In addition to its lack of publication and peer review, a County Fire Department has minimal expertise in developing a threat matrix for a terrorist event. Although Quest uses unpublished data to justify its probability matrix, there are at least two sources of credible, publicly accessible sources of information, to derive probabilities of terrorist activity.

The sources include the study conducted for the Attorney General of Rhode Island by Richard Clarke, a former national security advisor.[13] Second, are the guidelines recommended by the American Petroleum Institute (API).[14] The authors of the Quest study do not use either source when deriving their probability formula. For example, Clarke in his analysis uses a military targeting matrix to determine gross probability.[15] Likewise, API uses a gross determinant of probability, then identifies mitigation strategies.[16]

4.11.10.1 Selection and Probability of Potential LNG Release Events

The probability in this section again depends on a study of dubious merit. At least two factors have significance. The baseline the LACOFD uses for determining incidents is occurrences at LNG facilities. Again, a more balanced approach would suggest using petrochemical industry-wide data for baseline calculations. Also, the calculations for intentional releases include the same seven chances in a million per year as was discounted earlier in these comments.

Comments on Appendix F, Hazards Analysis

Appendix F, Section 3.3 Terrorist Induced Releases of LNG, Natural Gas, or other Hydrocarbon Fluids in the LNG Terminal

The Quest study uses EPA RMP (Environmental Protection Agency Risk Management Program) data to assert that greater risk to the public occurs at toxic chemical facilities instead of flammable facilities. The EPA data seems to be driven solely from the perspective of vapor danger and minimizes or ignores the heat flux issue of a potential fire. It also uses data from the POLB staff to determine a 0.8 mile vulnerability of the facility to the public.

The ERPG is in conflict with the Sandia Report that states the nominal hazard distance for unignited LNG vapor spills as a result of an intentional breach could extend from 1600 meters to 2500 meters.[17] That

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[12] FERC and POLB.

[13] Clarke.

[14] American Petroleum Institute. Security Vulnerability Assessment Methodology for the Petroleum and Petrochemical Industries, Second Edition. Washington, D.C. October 2004.

[15] Clarke. 68-77

[16] American Petroleum Institute. 23-29

[17] Mike Hightower, et al. Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water. Sandia National Laboratories. December 2004. 77

distance is approximately 1 to 1.5 miles. The difference in distance is important because the greater distance impacts both the affected population and evacuation scenarios. The greater evacuation area has substantial cost and greater impact on local authorities.

The population within that arc is certainly above the 900 port workers that Quest uses to determine the probability of a terrorist attack.[18] In fact, if the population inside the new affected zone is considered to be just slightly higher - 1001 people - the calculation of the frequency of an anticipated terrorist event would be 1 divided by 11 years times 8018 facilities.[19] The answer to that calculation is 1.13×10^{-5}. In other words, there would be 1.13 chances in a hundred thousand per year that a successful terrorist-induced failure would occur in any one of the 8018 facilities. This is a ten times greater increase in the likelihood of a terrorism based incident. The only factor accounting for the extreme change in probability is an increase of only 101 people.

Summary of Comments on Appendix F, Hazards Analysis

The Quest study - without foundation - concludes there is only one credible intentional release capable of causing a radiant hazard sufficient to cause second degree burns outside the boundaries of the POLB - that of a truck bomb. It also improperly calculates the probability of a terrorist induced event as greater than seven chances in a million per year. It does not appear that either of these conclusions is supported by proper analysis.

Appendix F is inadequate to evaluate the range of possible threats, fails to properly assess the consequences of scenarios, and does not fully address mitigation issues. Additionally, the tables and charts used throughout the Quest study appear to be in conflict with reputable, published sources including the American Petroleum Institute, Good Harbor Consulting, and Sandia National Laboratories. Mathematical and statistical analysis does not appear to hold to generally accepted standards. This Appendix should be reviewed by experts in statistics and probability, as well as experts in chemical engineering.

Quest does not adequately address the hazards of both terrorism and accidental spill and ignition events that could have dramatic impact on local public safety. It will likely become necessary to shift scarce local resources to hazard mitigation that has not been fully identified because of inadequate or improper analysis. It can be assumed that local entities will bear the funding for the mitigation as well.

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[18] FERC and POLB. Appendix F. 3-12

[19] According to documents prepared by the City of Long Beach Advanced Planning, for a report by the California Energy Commission Staff, Safety Advisory Report on the Proposed Sound Energy Solutions Liquefied Natural Gas Terminal at the Port of Long Beach, September 7, 2005, the one-mile radius population is 7,743 people. 35

E. COMMENTS RELATED TO PUBLIC SAFETY

FIRE

Comments on Section 2.7 Safety Controls

These sections of the Draft EIS/EIR describe various safety controls and systems that are to be provided at the proposed facility. However, there is no mention of a plant alerting system to alert plant personnel of a significant release of material or to be used to alert adjacent facilities of a plant emergency that could extend beyond the fence-line of the facility. With the size of release that has been identified in the Quest study and the potential impact on personnel and facilities outside the fence, such an alerting system is required.

Modern well protected plants today are typically provided with such warning systems. These systems typically include both an audible siren followed by voice instructions from plant control centers as to what is occurring and what actions to take. For example, for a large release of LNG, there would be an alerting signal followed by an announcement of the type of incident and instructions for personnel, such as evacuation or to shelter in place. The system should be designed and installed to communicate to the adjacent facilities what emergency is occurring and actions to take. These actions and the use of the plant alerting system must be integrated into the overall facility emergency plan.

Comments on Section 4.6 Socioeconomics

4.6.5 Public Services

A very general description of the LBFD is provided in this section with little to no regard to the actual requirements to deal with a large LNG incident (both on-site and off-site). There could be a variety of potential incidents, such as, a pipeline failure and fire, tank fire, loading rack fire, tank truck fire in the City of Long Beach, or a ship fire while at the pier, which would require a variety response measures by the LBFD, each with a specific level of required resources. There is no documented analysis of the size of an incident that was considered in the analysis of the LBFD capabilities, nor is there any technical or operational rational analysis of what emergency response capabilities would be required from the LBFD for any sizeable incident.

A number of scenarios in Appendix F – HAZARDS ANALYSIS OF A PROPOSED LNG IMPORT TERMINAL IN THE PORT OF LONG BEACH, CALIFORNIA, provide distances to radiant heat flux levels of 1,600 Btu/(hr-ft^2), which is a heat flux that should not prove to be fatal, but will result in second degree burns, that are well beyond the fence-line of the proposed facility. For example, Table 7-1 of the Quest study provides distances from 3,320 feet up to 8,610 feet from the center of the LNG pool. Given that there is an ability to predict that such large incidents can occur, even at low probability, the Public Services should at least be evaluated to ascertain what the requirements are to address these scenarios and with an evaluation of what services can be provided.

One must also question if the target radiant heat flux level of 1,600 Btu/(hr-ft^2) that could result in second-degree burns is the appropriate target radiant heat level for personnel that do not work inside a

facility. There has been considerable use of this target radiant heat flux level for personnel that are work inside such a facility or as a target level at the fence line of such a facility, but is this the appropriate target for use in estimating off-site impacts and injuries?

This section's summary is that "Overall construction and operation of the proposed project would not result in an increase in the short- or long- term demand for public services in excess of existing and projected capabilities." It is inappropriate to conclude that there are no short- or long- term increases on the public services without first conducting a baseline assessment of what the capabilities are of the LBFD (and other public services), defining specific potential incident scenarios, and then conducting an analysis of what emergency services are required to control or mitigate these scenario's. The EIS/EIR must provide a "GAPS" analysis of the existing capabilities versus those needed, along with a financial analysis of the GAPS identified in both short- and long-term. This would then result in a more accurate portrayal of the potential public safety impacts of the proposed facility.

In addition, there is a listing of hospitals, number of beds, physicians, employees, and medical staff in the Draft EIS/EIR. Given the radiant heat flux distances noted above, there could be a significant need for treatment of burn victims. The Draft EIS/EIR clearly indicates in a number of sections that thermal radiation from fire is the major hazard to personnel. The information provided on the hospitals, etc. is meaningless since it does not indicate the average number of available beds or the extent of emergency room services available. It does not indicate if any of these hospitals have a burn center for the treatment of the severely burned, where additional burn centers are located, and the travel time to these burn centers. There is also no definitive information on the ability of emergency services (LBFD) to transport injured personnel to hospitals (numbers of ambulances, life flight services, etc.) or if there is triage capacity in the local area to evaluate and prioritize injuries for transport to respective hospitals.

The Draft EIS/EIR also provides a narrative section that indicates that SES will train personnel in LNG safety and fire protection measures. However, the costs associated with the training of rotating shift LBFD personnel and long term training costs associated with vacations, personnel turnover, retirements, etc. have not been defined and assessed in the Draft EIS/EIR.. As such, there are long term costs associated with this facility that must be identified.

As indicated in the above, the analysis on the impact to public services from the proposed facility falls well short of any technical rational assessment of the required resources to control or mitigate an incident from either an on-site or off-site incident. In addition, there has been no financial impact estimated for the required resources, which could be quite significant. For example, should it be determined that additional fire apparatus are required, ambulances, or manpower in the area of the proposed terminal, these costs are significant in both the short- and long-term. For illustration purposes, only, the cost of one industrial fire truck ranges from $400,000 up towards $1,000,000 for an aerial type apparatus. The cost of an ambulance typically ranges from $120,000 to $400,000. Each of these examples also have long-term replacement and maintenance costs that have not been considered in the socioeconomic impact analysis. Should it be determined that additional personnel are needed to staff the local fire station, there are long- term salary costs and short- term start up staffing costs that do not appear to have been taken into consideration.

4.6.6 Utilities and Service Systems

The first paragraph of this section states that "Construction and operation of the Long Beach LNG Import Project could affect the existing electric, water, storm water, and solid waste disposal systems in the project area." The last sentence of this section concludes that "Overall, construction and operation of the proposed project would not create demands that exhaust or exceed the capacity of existing utilities and

service systems." However there is little to no technical analysis of these impacts and only several paragraphs of generalized assessment of the impacts.

It is worthy to note that as described in the Draft EIS/EIR in several sections, LNG unloading, storage, and pipeline transport is new to this industrialized area. In addition, the Quest analysis indicates that a number of incidents could result in off-site damage, such as those listed in Section 5, Table 5.1 of Appendix F – HAZARDS ANALYSIS OF A PROPOSED LNG IMPORT TERMINAL IN THE PORT OF LONG BEACH, CALIFORNIA. These large scale incidents typically do result in a significant drain or loss of critical municipal services such as water for fire fighting, drainage and electrical supply.

The Draft EIS/EIR does not appear to have adequately addressed the overall impact of such a large scale incident of the impacted area, particularly with respect to Utilities and Service Systems. Such incidents could result if failure of electrical supply systems due to radiant heat exposure on power lines in the area or ground fault of electrical supplies from the initial event that results in loss of water pumps and/or drainage lift pumps. There does not appear to be any assessment of the potential for such loss of utilities in the Draft EIS/EIR. Loss of such services in the initial phase of an emergency response operations can and have proven in other industrial incidents to have a significant impact on the ability to control or mitigate such incidents. There is no discussion on the location of water pumps, drainage lift pumps, if electrical supplies in the area are underground systems and not overhead systems subject to loss from fire, where critical transformer and substations are located, all of which are examples of how significant the utilities could be impacted.

In addition, there is also no assessment of the knock-on or domino affect of an initial incident that would occur at the LNG facility on adjacent facilities and the impact of multiple fires in adjacent facilities that could tax the water supplies in the area beyond their capacities. The continuous radiant heat from an LNG fire as described in various sections of the Quest study would eventually result in additional fires in adjacent facilities that could include building fires, tank fires, and/or ship fires. There is no calculation of the required water supply for such large scale fire fighting operations or any technical assessment of the ability of the existing systems to supply such large scale volumes of water for long durations. It should be noted here that the Draft EIS/EIR under Section 2.7.1.4 indicates that the fire water tank at the proposed terminal will have adequate capacity for at least 2-hours operation of the fire pumps and will be filled from the municipal supply. With the size of the tanks, a sustained fire could burn for days, thus depleting the onsite storage and require supply at extended duration from the municipal supply system. Fire fighting at adjacent facilities on tank fires could also result in a significant fire flow requirement at extended durations. A rational analysis on the water supply is therefore required to validate the generalized statements of acceptability in the Draft EIS/EIR referenced above.

Should drainage lift pumps in the area fail due to loss of electrical supply, areas where fire fighters are working could become flooded and endanger the fire fighters and other emergency response personnel. If this occurs in an adjacent facility that stores flammable liquids, the loss of drainage lift pumps could result in pooling of flammable liquids from the drainage systems and the further potential for a vapor cloud explosion from the back-up of flammable liquids and vapors resulting in further domino affects of the LNG incident. As such, a technical assessment of the impact on the utility systems in the area if warranted, along with the estimated costs associated with any "GAPS" identified in the existing systems.

Comments on Section 4.7 Transportation

4.7.2.2 Ground Transportation, Project Impacts

This section of the Draft EIS/EIR provides and analyzes data on the predicted number of trips to/from the facility both during construction and operation. The operation descriptions indicates that 40 LNG trucks

will be loaded per day at the facility and will then make deliveries to other sites through out the area. Assuming operation 5 days a week, this is an estimated additional 10,400 or so LNG tank trucks annually leaving the terminal, and at 12 hours per day, one leaving every 18 minutes and moving about the area traffic ways. These LNG tank trucks also represent a moving potential hazard and related consequences. There is no technical assessment of the ability of the Public Services to respond to or to mitigate an incident involving an LNG tank truck. Since there are documented incidents involving fire and explosions from LNG tank trucks, it is believed that these are credible events that are created by the proposed project.

The Quest study addresses the consequences of various incidents, but does not address the consequences of a tank truck incident while in route to the end user.

Given the crowded 6 lane freeways in California, the overall consequences of an LNG tank truck accident and fire could be very significant. In addition, given that LNG tank trucks will be traveling about the area, these trucks could become a target of a terrorist attack, resulting in a large scale incident in public areas. A technical evaluation of such incidents and the emergency response requirements is needed to adequately address the impacts of the proposed facility.

Comments on Section 4.11 Reliability and Safety

This last paragraph of this section states that "The FERC staff does not agree with analyzing worst-case, high-consequence, low-probability events without accounting for the beneficial effect of preventive or mitigation measures as part of a risk management process. As a result, many of the worst-case high consequences calculated in the Hazards Analysis by Quest are not considered credible events by the FERC." The reality of the situation is that the determination of a credible event by the FERC staff has no real impact on the emergency response requirements should any of the identified incidents occur as included in the Hazards Analysis by Quest. FERC will not be the responding municipal agency to an incident and it is therefore believed that the above statement has no relevancy to any impact analysis of the emergency response needs, nor is it an acceptable excuse to avoid such issues. There are numerous worst-case, high-consequence, low-probability events that continue to occur each year resulting in loss of life and property damage and in the end, the ability of the emergency services to adequately control or mitigate the incident is not excused by regulatory bodies such as the FERC staff. A classic and recent example is the impact of Hurricane Katrina on New Orleans and the ability of the emergency services to deal with such a large scale event.

4.11.4 Storage and Retention Systems

This section describes the various tank containment systems including full containment tanks as proposed for the Long Beach terminal. However, there is limited experience as indicated in this section on the use of such tanks in the United States, and especially in an earth quake prone area such as Long Beach, California. The Hazards Analysis by Quest concludes that the failure of one or more of the LNG tanks (as proposed) as a "credible" worst-case event in Section 3.2.1, Earthquake-induced Failure of Both LNG Storage Tanks. Unless the FERC staff can produce technical studies that dispute the Quest conclusions, it is believed that FERC should re-examine their position as indicated in Section 4.11 with respect to worst-case incidents.

4.11.6 Cryogenic Design and Technical Review

The Draft EIS/EIR indicates in this section a number of areas of the design of the facility where FERC should be provided with documents for review and/or other specific requirements. Since it is understood that the LBFD will be the responding agency for fire emergencies at the proposed terminal and they will

be expected to utilize the equipment provided, it is appropriate that the LBFD have the opportunity to be involved in the selection and design requirements of the on-site fire fighting equipment. The LBFD personnel will be relying on the provided equipment and systems for the protection of their personnel during fire fighting activities, regardless of the fire size, and the equipment must be reliable state of the art equipment designed appropriately for the hazard being protected. As such, the involvement of the LBFD in the design and specification of the quality, reliability, and adequacy of such equipment and systems is necessary.

4.11.13 Conclusions on Safety Issues

In the Conclusion of this section, it is stated that "The analysis concludes that none of the potential LNG release scenarios would result in a substantial increase in the potential for incidents that would cause serious injury or death to members of the public. SES' commitment to coordinate with local emergency providers and fund all project-specific security/emergency management costs would ensure that the project would not substantially reduce the level of fire and police services. Therefore, the proposed Long Beach LNG Import Project would not result in a significant impact on public safety."

This conclusion does not adequately address any of the additional infrastructure requirements, and the short- and long-term costs associated with the emergency response requirements identified in this Draft EIS/EIR. As such, the EIS/EIR requires significant revision to address the items noted herein and cost estimated provided to ascertain the real costs and impact of the proposed facility on the public services.