BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET
SAN FRANCISCO, CA 94109

CEQA INITIAL STUDY

May 6, 2003

BACKGROUND

Project Title

Sandia National Laboratories' (SNL) request for an Authority to Construct and Permit to Operate from the Bay Area Air Quality Management District (BAAQMD) for the proposed Glass Furnace Combustion and Melting Lab in the Combustion Research Facility (CRF) Project.

CEQA Background

This project is subject to the California Environmental Quality Act (CEQA).

CEQA requires environmental review for projects developed or approved by California state, regional, or local government. Normally, the agency with general governmental powers, such as a city or county, rather than an air pollution control district serves as "lead agency" under CEQA, however, because BAAQMD is the only agency from which a permit is required for this project, the District will be the lead agency for the CEQA review of this project.

Because the project is proposed at a United States Department of Energy (DOE) facility, it is subject to the requirements of the National Environmental Policy Act (NEPA). According to Barbara Larsen, environmental planning lead of SNL, the DOE's NEPA compliance officer has conducted a NEPA review of the project and has determined that the project fits one of the DOE's categorical exclusions. Therefore, the proposed project is excluded from further NEPA review. On October 15, 2002, the District received the NEPA Checklist from the DOE confirming that the project is categorically excluded from NEPA review.

Based on the permit application and the CEQA Appendix H Environmental Information Form submitted by SNL, the District has determined that the project may potentially have a significant effect on the environment. As the CEQA Lead Agency, the District has prepared this Initial Study in order to determine whether to prepare an Environmental Impact Report (EIR) or Negative Declaration for this project.

Project Description

SNL is a United States DOE facility located in Livermore, CA. This facility conducts a variety of government sponsored research operations.

For this application, SNL is proposing to construct a new CRF in a current vacant laboratory in Building 906. The CRF will investigate problems relating to heat transfer, melting chemistry, furnace control, diagnostics, and modeling for the glass

manufacturing industry. The CRF will include raw material and cullet (crushed glass) storage areas, raw material and cullet weigh hoppers, a batch mixer, 3 screw conveyors, a bucket elevator, a feed hopper (for the mixed batch), a glass melting furnace, a quench tank, a drag conveyor (for moving the quenched cullet to the storage area), and two dust collectors.

SNL is also expecting to have a standby generator for this facility in case of a power outage. However, the size and type of generator have not yet been determined. SNL will submit a separate application for the standby generator, when more information is available.

Further Description of the Proposed Glass-Melting Furnace:

The glass-melting furnace will have a 6 foot by 12 foot melting area and will be capable of producing up to 25 tons/day of flint (clear) glass, although the furnace will normally produce an average of only 1 ton of glass/day.

To facilitate comparison of this project's research glass melting furnace to "commercial" glass melting furnaces, the following discussion is provided.

According to the Environmental Protection Agency's (EPA) AP-42 Emission Factor chapter on glass manufacturing, "The furnace most commonly used [for glass manufacturing] is a continuous regenerative furnace capable of producing between 50 and 300 tons of glass per day." The glass production rate of commercial glass melting furnaces in the Bay Area averaged 240 tons per day per furnace during recent District source tests.

EPA also discusses glass furnaces in a June 1994 report titled "Alternative Control Techniques - NOx Emissions from Glass Manufacturing (EPA-453/R-94-037). The glass melting furnaces studied in the report ranged in size from 75 to 750 tons of glass produced per day.

The project's glass melting furnace is clearly much smaller in size than commercial glass melting furnaces.

Potential emissions of arsenic, cadmium, and lead from the glass-melting furnace exceed the District's toxic air contaminant risk screen trigger levels. Therefore, the District conducted a toxics risk screen for this project using the HRA Program to evaluate total risk from multiple pathways. The ISCST3 dispersion model with meteorological data from the adjacent Lawrence Livermore Laboratories was used to estimate ambient pollutant concentrations at residential and off-site worker locations. In accordance with the District's Risk Management Policy, the proposed project passes the toxics risk screen and is acceptable.

Although the annual air emissions from this project are not large, the potential daily emissions from this project will trigger the District's Best Available Control Technology (BACT) requirements for nitrogen oxides (NOx), fine particulate matter (PM10), and sulfur dioxide (SO2) emissions from the proposed glass furnace. Based on the District's draft engineering evaluation report, the project will comply with District BACT requirements for these pollutants. Please refer to the District's draft engineering evaluation report for further details on the BACT determination for this project. Compliance with District BACT requirements for PM10 will minimize the arsenic, cadmium, and lead emissions from the proposed glass-melting furnace.

Permit Application Number: 3107

Name, Address, Contact and Phone Number of Proponent

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Project Location

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ENVIRONMENTAL IMPACTS

(Note: All answers are explained on attached sheets.)

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Land Use and Planning. Would the proposal:				
a. Conflict with general plan designation or zoning?	_____	_____	_____	X
b. Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?	_____	_____	_____	X
c. Be incompatible with existing land use in the vicinity?	_____	_____	_____	X
d. Affect agricultural resources or operations (e.g. impacts to soils or farmlands, or impacts from incompatible land uses?	_____	_____	_____	X
e. Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?	_____	_____	_____	X
2. Population and Housing. Would the proposal:				
a. Cumulatively exceed official regional or local population projections?	_____	_____	_____	X
b. Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure?	_____	_____	_____	X
c. Displace existing housing, especially affordable housing?	_____	_____	_____	X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
3. Geologic Problems. Would the proposal result in or expose people to potential impacts involving:				
a. Fault rupture?			X	
b. Seismic ground shaking?				X
c. Seismic ground failure, including liquefaction?				X
d. Seiche, tsunami, or volcanic hazard?				X
e. Landslides or mud flows?				X
f. Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill?				X
g. Subsidence of the land?				X
h. Expansive soils?				X
i. Unique geologic or physical features?				X
4. Water. Would the proposal result in:				
a. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?				X
b. Exposure of people or property to water related hazards such as flooding?				X
c. Discharge into surface waters, or in any alteration of surface water quality (e.g. temperature, dissolved oxygen, or turbidity)?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Changes in the amount of surface water in any water body?				X
e. Changes in currents, or the course or direction of water movements?				X
f. Change in the quantity of ground waters through direct additions or withdrawals, through interception of an aquifer by cuts or excavations, or through substantial loss of groundwater recharge capability?				X
g. Altered direction or rate of flow of groundwater?				X
h. Impacts to groundwater quality?				X
i. Substantial reduction in the amount of groundwater otherwise available for public water supplies?				X
5. Air Quality. Would the proposal:				
a. Violate any air quality standard or contribute to an existing or projected air quality violation?			X	
b. Expose sensitive receptors to pollutants?			X	
c. Alter air movement, moisture, or temperature, or cause any change in climate?				X
d. Create objectionable odors?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
6. Transportation/Circulation. Would the proposal result in:				
a. Increased vehicle trips or traffic congestion?			X	
b. Hazards from design features (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?				X
c. Inadequate emergency access or access to nearby uses?				X
d. Insufficient parking capacity on-site or off-site?				X
e. Hazards or barriers for pedestrians or bicyclists?				X
f. Conflicts with adopted policies supporting alternative transportation (e.g. bus turnouts, bicycle racks)?				X
g. Rail, waterborne, or air traffic impacts?				X
7. Biological Resources. Would the proposal result in impacts to:				
a. Endangered, threatened, or rare species or their habitats (including, but not limited to, plants, fish, insects, animals, and birds?				X
b. Locally designated species (e.g. heritage trees)?				X
c. Locally designated natural communities (e.g. oak forest, coastal habitat, etc.)?				X
d. Wetland habitat (e.g. marsh, riparian and vernal pool)?				X
e. Wildlife dispersal or migration corridors?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
8. Energy and Mineral Resources. Would the proposal:				
a. Conflict with adopted energy conservation plans?				X
b. Use non-renewable resources in a wasteful and inefficient manner?				X
c. Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?				X
9. Hazards. Would the proposal involve:				
a. A risk of accidental explosion or release of hazardous substances (including, but not limited to, oil, pesticides, chemicals, or radiation)?			X	
b. Possible interference with an emergency response plan or an emergency evacuation plan?				X
c. The creation of any health hazard or potential health hazard?				X
d. Exposure of people to existing sources of potential health hazards?				X
10. Noise. Would the proposal result in:				
a. Increases in existing noise levels?			X	
b. Exposure of people to severe noise levels?			X	
11. Public Services. Would the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:				
a. Fire protection?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
b. Police protection?				X
c. Schools?				X
d. Maintenance of public facilities, including roads?				X
e. Other governmental services?				X
12. Utilities. Would the proposal result in a need for new systems or supplies, or substantial alterations to the following utilities:				
a. Power or natural gas?			X	
b. Communications systems?				X
c. Local or regional water treatment or distribution facilities?				X
d. Sewer or septic tanks?				X
e. Storm water drainage?				X
f. Solid waste disposal?				X
g. Local or regional water supplies?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
13. Aesthetics. Would the proposal:				
a. Affect a scenic vista or scenic highway?				X
b. Have a demonstrable negative aesthetic effect?				X
c. Create light or glare?				X
14. Cultural Resources. Would the proposal:				
a. Disturb paleontological resources?				X
b. Disturb archaeological resources?				X
c. Affect historical resources?				X
d. Have the potential to cause a physical change which would affect unique ethnic cultural values				X
e. Restrict existing religious or sacred uses within the potential impact area?				X
15. Recreation. Would the proposal:				
a. Increase the demand for neighborhood or regional parks or other recreational facilities?				X
b. Affect existing recreational opportunities?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
16. Mandatory Findings of Significance.				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?				X
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?				X
c. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)				X
d. Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

DETERMINATION

On the basis of this initial evaluation:

___X___ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

_____ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION will be prepared.

_____ I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

_____ I find the proposed project MAY have a significant effect on the environment, but at least one "potentially significant impact" or "potentially significant unless mitigated" impact (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

_____ I find that, although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because all potentially significant effects (1) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures from the EIR that are imposed upon the proposed project.

Barry G. Young Date
Principal Air Quality Engineer

William C. Norton Date
Executive Officer/Air Pollution Control Officer

Reviewed by:

Steve Hill Date
Manager, Permit Evaluation

William deBoisblanc Date
Director of Permit Services

Brian Bunger Date
District Counsel

Peter Hess Date
Deputy Air Pollution Control Officer

Attachment

SANDIA NATIONAL LABORATORIES
COMBUSTION RESEARCH FACILITY PROJECT

ENVIRONMENTAL IMPACTS - RESPONSES

1. **Land Use and Planning.** Would the proposal:

   a. Conflict with general plan designation or zoning? **No Impact**

   Per the Department of Energy's (DOE's) 10/7/02 letter to the District, the planned glass laboratories will be operated by Sandia National Laboratories (SNL), which is owned by the United States Department of Energy. SNL conducts research on various activities including material manufacturing. Therefore, the planned glass laboratory would be consistent with existing activities at the site and would not require a change in the existing zoning classification.

   Per the applicant's submitted California Environmental Quality Act (CEQA) Appendix H, the existing zoning district is an "exempt public agency" and will not change the pattern, scale or character of the general area of the project. The Combustion Research Facility (CRF) is located within the developed portion of the Sandia site. This developed area is surrounded on the west, south, and east by open space that serves as a security buffer. Land uses adjacent to the Sandia site include agriculture (grazing and vineyards) with rural residential to the west, south, and east. Single-family residential development is planned along the western boundary of the site. Lawrence Livermore National Laboratory (LLNL), another research facility similar to Sandia, is located to the north.

   b. Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project? **No Impact**

   Per the DOE's 10/7/02 letter to the District, the planned project would include new stationary sources of emissions. These sources would require Bay Area Air Quality Management District (BAAQMD) permits and would comply with the applicable BAAQMD regulations. Therefore, the planned project would not conflict with any local air quality plans.

   c. Be incompatible with existing land use in the vicinity? **No Impact**

   Per the DOE's 10/7/02 letter to the District, the proposed project would not change on-site land use. Therefore, the proposed project would not change the compatibility of SNL with the existing land use in the vicinity.

   d. Affect agricultural resources or operations (e.g. impacts to soils or farmlands, or impacts from incompatible land uses? **No Impact**

   Per the DOE's 10/7/02 letter to the District, the SNL conducts research on various activities including material manufacturing. Therefore, the planned glass laboratory would be consistent with existing activities at the site. These activities do not significantly affect the nearby agricultural areas.

e. Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)? **No Impact**

Per the DOE's 10/7/02 letter to the District, the proposed Glass Lab will be located in an existing, vacant, high-bay laboratory located in the CRF and is not expected to disrupt or divide the physical arrangement.

2. **Population and Housing.** Would the proposal:

a. Cumulatively exceed official regional or local population projections? **No Impact**

Per the applicant's submitted CEQA Appendix H, the project will result in the minor employment increase of 12 people per day over three shifts. This minor change is not expected to affect official regional or local population projections.

b. Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure? **No Impact**

No new housing units are proposed as part of the project, and the proposed modifications to existing facilities and installation of new equipment would not induce any additional population growth, either directly or indirectly.

c. Displace existing housing, especially affordable housing? **No Impact**

No housing units will be displaced by this project because the equipment is to be set up inside the existing CRF located at the Sandia site.

3. **Geologic Problems.** Would the proposal result in or expose people to potential impacts involving:

a. Fault rupture? **Less than Significant Impact**

Per the applicant's submitted CEQA Appendix H, the construction of the CRF was completed in 1980 and the facility meets all applicable building codes and seismic safety standards.

Per the DOE's 10/7/02 letter to the District, the Las Positas fault, an active fault, traverses the southern portion of the site. All modifications to the existing facility and installation of new equipment will comply with current best practice engineering and seismic design standards.

b. Seismic ground shaking? **No Impact**

Per the applicant's Submitted CEQA Appendix H, the construction of the CRF was completed in 1980 and the facility meets all applicable building codes and seismic safety standards.

Per the DOE's 10/7/02 letter to the District, the glass lab will be located in an existing facility and all modifications to the existing facility and installation of new equipment will comply with current best practice engineering and seismic design standards.

c. Seismic ground failure, including liquefaction? **No Impact**

Per the DOE's 10/7/02 letter to the District, the proposed Glass Lab will be located in an existing, vacant, high-bay laboratory located in the CRF. The original 20,000-ft² facility opened in 1981, and the second phase (21,000-ft²) became fully operational in 2000. The soils beneath the site were evaluated for suitability prior to construction. The soils are not prone to liquefaction.

d. Seiche, tsunami, or volcanic hazard? **No Impact**

Per the DOE's 10/7/02 letter to the District, the project site is not located in an area with seiche, tsunami, or volcanic hazards.

e. Landslides or mud flows? **No Impact**

Per the applicant's submitted CEQA Appendix H, the topography at the CRF location is flat, and therefore will not be at risk for landslides or mudflows.

f. Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill? **No Impact**

Per the applicant's submitted CEQA Appendix H, the site is not on filled land.

Per the DOE's 10/7/02 letter to the District, the proposed Glass Lab will be located in an existing, vacant, high-bay laboratory located in the CRF. The original 20,000-ft² facility opened in 1981, and the second phase (21,000-ft²) became fully operational in 2000. The soils beneath the site were evaluated for suitability prior to construction. The soils are not prone to erosion or instability.

g. Subsidence of the land? **No Impact**

Per the DOE's 10/7/02 letter to the District, the proposed Glass Lab will be located in an existing, vacant, high-bay laboratory located in the CRF. The original 20,000-ft² facility opened in 1981, and the second phase (21,000-ft²) became fully operational in 2000.

h. Expansive soils? **No Impact**

Per the DOE's 10/7/02 letter to the District, the proposed Glass Lab will be located in an existing, vacant, high-bay laboratory located in the CRF. The original 20,000-ft² facility opened in 1981, and the second phase (21,000-ft²) became fully operational in 2000. The soils beneath the site were evaluated for suitability prior to construction. The soils are not prone to expansion.

i. Unique geologic or physical features? **No Impact**

Per the DOE's 10/7/02 letter to the District, the proposed project is not expected to impact any unique geologic or physical features.

4. Water. Would the proposal result in:

a. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff? **No Impact**

Per the submitted CEQA Appendix H, there will be no change in existing features of any bays, tidelands, beaches, or hills, or substantial alteration of ground contours and there will be no change or alteration of existing drainage patterns.

b. Exposure of people or property to water related hazards such as flooding? **No Impact**

Per the submitted CEQA Appendix H, there will be no change in existing features of any bays, tidelands, beaches, or hills, or substantial alteration of ground contours and there will be no change or alteration of existing drainage patterns.

c. Discharge into surface waters, or in any alteration of surface water quality (e.g. temperature, dissolved oxygen, or turbidity)? **No Impact**

Per the DOE's 10/7/02 letter to the District, the wastewater would not be discharged into surface waters. Approximately 100 gallons of wastewater would be disposed of weekly from the proposed project. The wastewater would be directed to an existing Liquid Effluent Control System (LECS) serving the CRF. The LECS consists of retention tanks where potentially contaminated laboratory wastewater from the whole site is routed. The contents of the tanks are sampled and analyzed for metals and pH before being discharged to the site's sanitary sewer system.

d. Changes in the amount of surface water in any water body? **No Impact**

Per the submitted CEQA Appendix H, there will be no change in existing features of any bays, tidelands, beaches, or hills, or substantial alteration of ground contours and there will be no change or alteration of existing drainage patterns.

e. Changes in currents, or the course or direction of water movements? **No Impact**

Per the submitted CEQA Appendix H, there will be no change in existing features of any bays, tidelands, beaches, or hills, or substantial alteration of ground contours and there will be no change or alteration of existing drainage patterns.

f. Change in the quantity of ground waters through direct additions or withdrawals, through interception of an aquifer by cuts or excavations, or through substantial loss of groundwater recharge capability? **No Impact**

Per the submitted CEQA Appendix H, there will be no change in existing features of any bays, tidelands, beaches, or hills, or substantial alteration of ground contours and there will be no change or alteration of existing drainage patterns.

g. Altered direction or rate of flow of groundwater? **No Impact**

Per the submitted CEQA Appendix H, there will be no change in existing features of any bays, tidelands, beaches, or hills, or substantial alteration of ground contours and there will be no change or alteration of existing drainage patterns.

h. Impacts to groundwater quality? **No Impact**

Per the DOE's 10/7/02 letter to the District, the wastewater would be discharged into the LECS and therefore would not impact ground water quality. Also, per the submitted CEQA Appendix H, there will be no change in ocean, bay, lake, stream, or groundwater quality or quantity.

i. Substantial reduction in the amount of groundwater otherwise available for public water supplies? **No Impact**

Per the submitted CEQA Appendix H, there will be no change in groundwater quantity.

5. Air Quality. Would the proposal:

a. Violate any air quality standard or contribute to an existing or projected air quality violation? **Less than Significant Impact**

b. Expose sensitive receptors to pollutants? **Less than Significant Impact**

The proposed project's estimated maximum VOC, NOx, and PM10 emissions are below the BAAQMD significance impact threshold level of 80 pounds/day and 15 TPY. The *Bay Area 2000 Clean Air Plan* is the state-mandated regional air quality plan. This plan contains mobile source, stationary source, and transportation source controls necessary in the region to attain state ozone air quality standards. The 2001 San Francisco Bay Area Ozone Attainment Plan is the plan mandated by the Federal Clean Air Act to attain the Federal one-hour ozone standard. The proposed project does not conflict with any assumptions used in preparation of the plans or the implementation of any specific control measures contained in those plans. Routine operation of the proposed project is not expected to violate any air quality standard.

Per BAAQMD CEQA guidelines, section 2.3, which describes thresholds of significance for project operations, a project that generates criteria air pollutant emissions in excess of 80lb/day (15TPY), would be considered to have a significant air quality impact. Per the District's engineering evaluation report, the maximum daily emissions (in lbs/day) from this project, based on maximum production of 25 tons per day, are as follows: precursor organic compounds (POC) = 5.00 lb/day, nitrogen oxides (NOx) = 37.5 lb/day, and fine particulate matter (PM10) = 26.11 lb/day.

Although the annual air emissions from this project are not large, the project will trigger Best Available Control Technology (BACT) for NOx, PM10, and SO2 emissions from the proposed glass furnace. In addition, the project will require emission offsets for NOx emission increases, and will require a risk screening analysis, per the District's Risk Management Policy, due to arsenic, cadmium, and lead emissions from the glass furnace. Based on the District's draft engineering evaluation report, the project will comply with District BACT requirements, District offset requirements, and the District's Risk Management Policy.

Toxic Risk Management Policy:

The District's Toxics Evaluation Section conducted a risk screen for this project using the HRA Program to evaluate total risk from multiple pathways. The ISCST3 dispersion model with meteorological data from the LLNL was used to estimate the ambient pollutant concentrations at residential and off-site worker locations. The detailed risk screening analysis is attached to the District's engineering evaluation report for this project.

For residential receptors, the maximum increased cancer risk was determined to be 0.7 in a million; and the maximum non-cancer risk was determined to be a Hazard Index of 0.005. For offsite worker receptors, the maximum increased cancer risk was determined to be 1.0 in a million; and the maximum non-cancer risk was determined to be a Hazard Index of 0.016. In accordance with the District's Risk Management Policy, the proposed project passes the risk screen.

Tail-Pipe Emissions from Diesel-Fueled Trucks associated with this project:

Per the DOE's 10/7/02 letter to the District, the proposed Glass Lab will be located in an existing, vacant, high-bay laboratory located in the CRF. Diesel truck activity during mobilization, construction, demobilization is estimated to be 20 trips with a maximum of 25 trips. On-going operation will require 3 diesel truck trips per week.

On January 29, 2003, the BAAQMD Toxics Evaluation Section completed a health risk screening analysis for increases in tail-pipe emissions from diesel-fueled trucks associated with this project. The maximum health risks were estimated using guideline procedures adopted for use in the Air Toxics Hot Spots (ATHS) Program. The general ATHS Program approach involves using air emissions estimates and dispersion modeling to estimate maximum ambient air concentrations of toxic air contaminants (TACs), and then using these concentrations to estimate an individual's maximum exposure and health risk based on toxicity values adopted by the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA). For diesel-fueled engines, OEHHA has adopted a chronic Reference Exposure Level (REL), and inhalation cancer unit risk factor (URF), which use diesel particulate matter (PM) as a surrogate for all emitted TACs.

A running emission factor of 0.67 g/mile was used to estimate diesel-PM emissions from trucks. This is the emission factor used by the California Air Resources Board (CARB) to estimate emissions from diesel-fueled trucks for the highway scenarios evaluated in Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles, CARB, October 2000.

Vehicle activity was assumed to be 156 round trips (312 one-way trips) per year. The tailpipe emissions from trucks that occur from the point where they exit the I-580 freeway were evaluated. The trucks were assumed to approach the facility traveling southbound on South Vasco Road, and then eastbound on East Avenue. After entering the facility, the trucks were assumed to travel to the location of the proposed source where the engines were assumed to be shutdown. The trucks were then assumed to re-start, turn around, and follow the same route back to I-580.

Maximum annual average dispersion factors were generated using Environmental Protection Agency's (EPA's) ISCST3 dispersion model. A series of adjacent three-dimensional area sources were established along the truck route previously described. Area source widths were selected to be 50 feet. An emission release height of three meters was assumed, along with an initial vertical dimension (SZINT) of three meters. Emission rates for each area source were set at 1 gram/second per 500 feet of roadway.

Meteorological inputs consisted of sequential on-site surface wind data collected at the LLNL. Receptor inputs consisted of a rectangular grid of receptor points spaced at 100-meter intervals within the modeling domain.

For this project, the maximum chronic health index was estimated to be 8.7E-05 (less than the significance threshold of 1). The maximum lifetime cancer risk was estimated to be 0.13 in one million (less than the significance threshold of 10 in one million). Therefore, the health risk associated with the increased diesel-fueled truck traffic is assessed to be not significant.

Since the emissions of POC, NOx and PM10 do not exceed 80 lb/day and the health risk associated with the tail-pipe emissions from increased diesel truck traffic is not significant, the proposed project is expected to have less than significant air quality impact.

c. Alter air movement, moisture, or temperature, or cause any change in climate? **No Impact**

This project is not expected to result in any changes to the climate, air movement, moisture, or temperature.

d. Create objectionable odors? **No Impact**

Per the DOE's 10/7/02 letter to the District, the proposed project would use natural gas, oxygen, sand, sodium carbonate, limestone, sodium sulfate, and crushed recycled glass. Also, 4 liters/yr of solvents (such as acetone or IPA) will be used for cleaning of optical equipment. About 8 liters/yr of methanol will be needed for laser dyes in a closed loop system. Per the proposed District permit conditions, the particulate matter emissions are to be abated by a dust collector with bag and HEPA filters. So, it is expected that particulate matter emissions of sand, sodium carbonate, limestone, sodium sulfate, and crushed recycled glass to be insignificant. Also, the annual quantity of solvents proposed for use is very small. Therefore, we expect no significant objectionable odors. These sources would not create significant levels of odors that would affect off-site individuals.

6. Transportation/Circulation. Would the proposal result in:

a. Increased vehicle trips or traffic congestion? **Less than Significant Impact**

The proposed project will cause a limited number of increased vehicle trips during the construction period and on-going after the project is completed. During the construction period, 20 diesel-fueled truck trips are expected with a maximum of 25 trips. After the project is constructed, on-going truck deliveries will be 3 diesel-fueled truck trips/week.

b. Hazards from design features (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)? **No Impact**

The proposed project will not result in hazards from design features or incompatible uses since the project does not involve any modifications to roadways at or in the vicinity of the project site.

c. Inadequate emergency access or access to nearby uses? **No Impact**

The proposed project site currently has adequate emergency access and allows access to nearby uses as necessary for facility operations. The proposed project will not in any way alter emergency or nearby use access to the site.

d. Insufficient parking capacity on-site or off-site? **No Impact**

Workers involved with construction of the proposed project will park their vehicles in existing areas at the project site. There is adequate parking at the project site to support the increase in parking demand during project construction.

e. Hazards or barriers for pedestrians or bicyclists? **No Impact**

The proposed project will not result in hazards or barriers for pedestrians or bicyclists since the project site is a secured location with no pedestrian or bicycle access.

f. Conflicts with adopted policies supporting alternative transportation (e.g. bus turnouts, bicycle racks)? **No Impact**

No aspect of the proposed project will conflict with adopted policies supporting alternative transportation.

g. Rail, waterborne, or air traffic impacts? **No Impact**

No aspect of the proposed project will result in rail, waterborne, or air traffic impacts since none of these modes of transportation will be used by, or result from, the proposed project.

7. **Biological Resources.** Would the proposal result in impacts to:

a. Endangered, threatened, or rare species or their habitats (including, but not limited to, plants, fish, insects, animals, and birds)? **No Impact**

Per the applicant's submitted CEQA Appendix H, vegetation within the boundaries of the CRF consists of landscaped areas with lawn, ornamental trees and shrubs. There are no sensitive plant species in the area. The CRF does not provide habitat for any sensitive wildlife species. Many bird species have been observed on-site and are likely to be found occasionally within the vicinity of the CRF.

Also, per the applicant's submitted CEQA Appendix H, plant and wildlife surveys were conducted at Sandia in spring 2001. Surveys focused on identifying species that are common to the region and that could potentially be found onsite. No threatened or endangered species were found during the surveys. Although none were observed during the surveys, California tiger salamanders have been found on-site in the past. The tiger salamander is a federal candidate species and state "species of special concern". California red-legged frogs are also known to exist in the surrounding area, but none have been found at the Sandia site. Loggerhead shrikes, a bird protected under the Migratory Bird Treaty Act and a state "species of special concern", are known to nest at the Sandia site. There are no nesting sites near the CRF.

Per the DOE's 10/7/02 letter to the District, the area is developed. The site does not provide suitable habitat for rare or threatened or endangered species. No sensitive plant species are located on-site. The area around the CRF is landscaped with lawn and ornamental trees and shrubs. The proposed project location (the CRF) is not within the potential habitat area for California tiger salamanders. The CRF is west of the critical habitat for the California red-legged frog. There are no surface water sources in the project vicinity to support amphibian species. Nesting sites of the Loggerhead shrike are not near the project location.

b. Locally designated species (e.g. heritage trees)? **No Impact**

Per the DOE's 10/7/02 letter to the District, the area surrounding the building is a maintained landscaped area with no heritage trees or other locally designated species.

c. Locally designated natural communities (e.g. oak forest, coastal habitat, etc.)? **No Impact**

Per the DOE's 10/7/02 letter to the District, the area around the CRF is landscaped and is identified as altered habitat.

d. Wetland habitat (e.g. marsh, riparian and vernal pool)? **No Impact**

Per the DOE's 10/7/02 letter to the District, there are no wetland areas in the vicinity of the CRF. The closest wetland area is in the eastern portion of Arroyo Seco on Sandia property about 1200 feet southeast of the project location.

e. Wildlife dispersal or migration corridors? **No Impact**

Per the DOE's 10/7/02 letter to the District, the glass lab will occupy space within an existing facility. Activities that could affect dispersal or migration of wildlife (construction of roads, fences, exterior walls, etc) will not be undertaken for this project.

8. **Energy and Mineral Resources.** Would the proposal:

a. Conflict with adopted energy conservation plans? **No Impact**

The proposed project will not conflict with any known, adopted energy conservation plans.

b. Use non-renewable resources in a wasteful and inefficient manner? **No Impact**

The proposed project will not use non-renewable resources in a wasteful or inefficient manner since the project is subject to Corporate policy standards for resource use and efficiency.

c. Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State? **No Impact**

The proposed project site contains no known mineral resources. The proposed project will not result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State.

9. Hazards. Would the proposal involve:

a. A risk of accidental explosion or release of hazardous substances (including, but not limited to, oil, pesticides, chemicals, or radiation)? **Less than Significant Impact**

Per the DOE's 10/7/02 letter to the District, the sand (silicon dioxide) by itself is considered carcinogenic. However, emissions of sand are expected to be minimal because of the dust collector. Also, 4 liters/yr of solvents (such as acetone or IPA) would be used for cleaning of optical equipment. About 8 liters/yr of methanol would be needed for laser dyes in a closed loop system. Acetone and IPA are considered flammable and methanol is considered both a poison and flammable. However, these solvents are used in very small quantities and waste generated from the use of these solvents would be disposed of using existing site waste management procedures.

In addition, 10,000 gallons of liquid oxygen would be used per week. Consequently, the liquid oxygen tank would require filling weekly. Engineering controls would be included in the design and installation of the tank to minimize the potential for a fire hazard associated with liquid oxygen. Appropriate administrative controls would also be implemented to minimize the potential for accidental release of liquid oxygen during refilling of the tank.

Per BAAQMD CEQA guidelines, section 2.3, the determination of significance for potential impacts from accidental releases of acutely hazardous materials (AHMs) should be made in consultation with the local administering agency of the Risk Management Prevention Program (RMPP). An RMPP identifies potential accident scenarios involving acutely hazardous materials, evaluates the public safety impacts of those accidents, provides an audit of administrative and operating programs designed to prevent accidents involving acutely hazardous materials, and provides emergency response plans to minimize releases and their effects should they occur. The local administering agency of the RMPP and the Governor's Office of Emergency Services will be provided a copy of this CEQA document for their review and comment during the public comment period.

A significant amount of Liquid oxygen would be used at the Glass Lab. Per Hawley's Condensed Chemical Dictionary, 14th Edition, Liquid Oxygen may explode on contact with heat or oxidizable materials. It is an irritant to skin and tissue. According to Rick Shih, of Sandia's Air Quality Program, Praxair, Incorporated is responsible for refilling liquid oxygen tanks and will implement appropriate administrative measures to ensure safety.

Per the 2/27/03 email message from Sandia, refilling of the liquid oxygen tank would be performed by the vendor supplying the liquid oxygen. The vendor would have their own procedures for refilling oxygen tanks, which will be reviewed by SNL Safety personnel. These procedures would have to be in compliance with any applicable standards set forth by Federal OSHA, California OSHA, the Compressed Gas Association, ASME Boiler and Pressure Vessel Codes, ANSI, NPFA 50, and 49 CFR 171-179.

Also per Praxair's website, Praxair's Safety, Health and Environmental Policy is described as follows:

Praxair conducts its business responsibly and in a way that protects the health and safety of its employees, its customers, the public and the environment.

Requirements:

Implement and maintain programs that provide reasonable assurance that the business will do the following:

- **Comply with all applicable governmental and internal health, safety and environmental requirements.**
- **Design facilities and conduct operations in a way that avoids unacceptable risk to human health, safety and the environment.**
- **Produce and sell products that, if manufactured, used, handled, stored, distributed and disposed of using Praxair's product safety communications and common safety practices, do not present an unacceptable risk to human health, safety and the environment.**
- **Conduct appropriate research and communicate the known hazards of its products and operations with relevant health, safety and environmental protection information to potentially affected persons.**
- **Establish and present responsible and consistent positions to governments and the public. These positions concern health, safety and environmental matters affecting products and operations.**
- **Remain committed to a continuous improvement process that enables all employees to perform to their full potential concerning safety, health and environmental matters.**

Praxair's Safety practices:

Safety is a major factor in Praxair's design and operating strategy. Safety also is part of Praxair's Quality Management System which requires that safety reviews be built into each capital project.
Various engineering groups are certified ISO 9001.

Brief descriptions of safety practices at various stages of project development follow:

Design
A formal hazard analysis process is designed to ensure effective multidisciplinary reviews at appropriate times during the evolution of a project into an operating facility. These reviews provide checks on the decisions made by individual engineering groups, and ensure that the safety and operability of the total integrated system are clearly addressed. These safety reviews are applied to all projects from the program-definition stage through the detailed design, construction, start-up and initial production phases.

Construction
Minimizing injuries during construction requires a multifaceted approach, including screening criteria for potential construction contractors (including minimum acceptable historical rates for EMR, OSHA recordables and lost workdays); publication of construction safety manuals, construction safety standards and procedures; education and training of both construction supervisors and employees; enforcement of job site procedures; and thorough investigation of all injuries, accidents and near misses at construction sites.

Production
To maintain safe behavior and safe work practices at Praxair facilities worldwide, safety training is conducted for operating, distribution and maintenance personnel on an ongoing basis. All sites are provided with procedures, manuals and other information that ensures common work practices are followed that not only meet legal requirements but also represent "best practices." Plant safety assessments and hazard reviews are conducted by

department, line and safety-management personnel to ensure that the safeguards and management systems built into each facility are used correctly and maintained. A comprehensive near-miss reporting program ensures that the causes of all incidents are identified and that corrective actions are taken to prevent recurrence.

Walk-around inspections by plant personnel or supervisors, line management assessments and routine surveys also support the ongoing process of encouraging safe work practices, preventing unsafe conditions and developing corrective action quickly to eliminate potential causes of accidents.

In 1999, a third party evaluated Praxair's Safety, Health and Environmental (SHE) Assessment Program. Environmental Resources Management found that "In our opinion, the program provides competent, reliable and objective information to management about the status of the company's SHE compliance programs and performance. Further, Praxair's management is responsive in corrective deficiencies when they are identified by the program."

Radioactive sources would also be present. Two krypton-85 sources, one 2-millicurie source, and one 10-millicurie source would be used in a fine particle sizing system. These sources would be enclosed in aerosol neutralizers. The sources would be placed into the inventory of radioactive sources, when they arrive on-site and would be appropriately labeled. Handling of these sources would be conducted in accordance with site procedures.

Therefore, we expect the proposed project would have less than significant hazard impact.

b. Possible interference with an emergency response plan or an emergency evacuation plan? **No Impact**

Per the DOE's 10/7/02 letter to the District, the Glass Lab operations will be incorporated into the existing SNL Emergency Response and Emergency Evacuation Plans.

c. The creation of any health hazard or potential health hazard? **No Impact**

Per the DOE's 10/7/02 letter to the District, any health hazards associated with construction or operation of the proposed Glass Lab will be identified, evaluated and controlled through Sandia's existing Integrated Safety Management System (ISMS), the project would have no impact on creation of any health hazard or potential health hazard.

d. Exposure of people to existing sources of potential health hazards? **No Impact**

Per the DOE's 10/7/02 letter to the District, any health hazards associated with construction or operation of the proposed Glass Lab will be identified, evaluated and controlled through Sandia's existing ISMS, the project would have no impact on existing sources of any health hazard or potential health hazard.

10. Noise. Would the proposal result in:

a. Increases in existing noise levels? **Less than Significant Impact**

Per the DOE's 10/7/02 letter to the District, noise would be generated by the furnace blowers, flames, and gas flows. Hearing protection would be provided to laboratory personnel exposed to above noise exposure limits. Hearing conservation training and audiometric testing would be required for these personnel. The level of noise generated is not expected to increase noise above existing levels for off-site receptors.

b. Exposure of people to severe noise levels? **Less than Significant Impact**

Per the DOE's 10/7/02 letter to the District, noise would be generated by the furnace blowers, flames, and gas flows. Hearing protection would be provided to laboratory personnel exposed to above noise exposure limits. Hearing conservation training and audiometric testing would be required for these personnel. The level of noise generated is not expected to severely impact off-site receptors.

11. Public Services. Would the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:

a. Fire protection? **No Impact**

The proposed project will have no effect upon, or result in the need for new or altered fire protection services since the project is consistent with, and makes only minor changes to, existing operations at the project site. Fire suppression systems at the project site will remain adequate following completion of the project, and is not expected to place additional fire protection services above existing levels.

b. Police protection? **No Impact**

The proposed project will have no effect upon, or result in the need for new or altered police protection services since the project is consistent with, and makes only minor changes to, existing operations at the project site. Tight security and limited access to the project site will remain adequate following completion of the project, and is not expected to place additional police protection services above existing levels.

c. Schools? **No Impact**

The proposed project will have no effect upon, or result in the need for new or altered schools since the project is consistent with, and makes only minor changes to, existing operations at the project site and does not involve housing or other public development.

d. Maintenance of public facilities, including roads? **No Impact**

The proposed project will have no effect upon, or result in the need for maintenance of public facilities, including roads since the project is consistent with, and makes only minor changes to, existing operations at the project site. Project construction activities will cause no significant impact to public facilities, including roads. Routine operation of the proposed project is not expected to have an effect on, or result in additional need for, maintenance of public facilities, including roads.

e. Other governmental services? **No Impact**

The proposed project will have no effect upon, or result in the need for other governmental services.

12. Utilities. Would the proposal result in a need for new systems or supplies, or substantial alterations to the following utilities:

a. Power or natural gas? **Less than Significant Impact**

Per the DOE's 10/7/02 letter to the District, the Glass Lab would be connected to the existing site natural gas distribution system. In 2001, the Sandia site used 714,792 therms of natural gas. It is estimated that the Glass Lab's annual natural gas consumption would be approximately 377,000 therms/year.

Per CEQA, Appendix F, (Energy Conservation), any project would have a significant impact if energy consumption is wasteful, inefficient and unnecessary. Considering that SNL would be mainly involved in research activity including material manufacturing, the proposed project would have less than significant impact on power or natural gas consumptions.

b. Communications systems? **No Impact**

This project will not substantially affect communications systems.

c. Local or regional water treatment or distribution facilities? **No Impact**

Per the submitted CEQA Appendix H, there will not be a substantial change in demand for municipal water services. Also, per the DOE's 10/7/02 letter to the District, approximately 100 gallons of wastewater would be disposed of weekly from the proposed project. The wastewater would be directed to an existing Liquid Effluent Control System (LECS) serving the CRF. The LECS consists of retention tanks where potentially contaminated laboratory wastewater from the whole site is routed. The contents of the tanks are sampled and analyzed for metals and pH before being discharged to the site's sanitary sewer system.

d. Sewer or septic tanks? **No Impact**

Per the submitted CEQA Appendix H, there will not be a substantial change in demand for municipal sewage services.

e. Storm water drainage? **No Impact**

Per the submitted CEQA Appendix H, there will not be a change or alteration of existing drainage patterns.

f. Solid waste disposal? **No Impact**

A project would have significant impact if it is served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs or does not comply with federal, state, or local statutes and regulations related to solid waste.

Per the DOE's 10/7/02 letter to the District, approximately 600,000 pounds of solid glass would be generated annually from operations. An estimated 200,000 pounds would be reused as the recycled components of the raw feed material. The remaining 400,000 pounds would be transported off-site for recycling by a commercial recycler. No substantial alteration to solid waste disposal services is required and no impact to solid waste disposal is expected.

g. Local or regional water supplies? **No Impact**

Per the submitted CEQA Appendix H, there will not be a substantial change in demand for municipal water services.

13. Aesthetics. Would the proposal:

a. Affect a scenic vista or scenic highway? **No Impact**

No scenic vistas or scenic highways are located at or in the vicinity of the project site. The proposed project will not have any adverse affect on a scenic vista or scenic highway.

b. Have a demonstrable negative aesthetic effect? **No Impact**

The proposed project modifications to existing facilities and installation of new equipment will not alter the visual effect of the facility. The proposed project will not have demonstrable negative aesthetic effects.

c. Create light or glare? **No Impact**

The proposed project will require a limited amount of additional lighting to provide for safe operations at night. This additional lighting will be located in the tanker truck unloading area. The proposed project will not increase lighting and reflective surfaces to a noticeable degree since the project site is located in an industrial area and there are no residential uses in the immediate area.

14. Cultural Resources. Would the proposal:

a. Disturb paleontological resources? **No Impact**

Per the submitted CEQA Appendix H, the closest known cultural resource sites in the surrounding area are located along Arroyo Mocho approximately two miles south of Sandia (Cultural Resources Overview, 1990). These sites are presumed to be prehistoric. There are no known cultural resources at Sandia. No paleontological resources have been identified at the project site, so the proposed project is not expected to disturb any paleontological resources.

b. Disturb archaeological resources? **No Impact**

Per the submitted CEQA Appendix H, the closest known cultural resource sites in the surrounding area are located along Arroyo Mocho approximately two miles south of Sandia (Cultural Resources Overview, 1990). These sites are presumed to be prehistoric. There are no known cultural resources at Sandia. No paleontological resources have been identified at the project site, so the proposed project is not expected to disturb any archaeological resources.

c. Affect historical resources? **No Impact**

In order to be of general historical significance, a facility must be at least 50 years old. The CRF is about 21 years old and therefore does not qualify as an historic property.

d. Have the potential to cause a physical change which would affect unique ethnic cultural values? **No Impact**

The proposed project does not have the potential to cause a physical change which would affect unique ethnic cultural values, since there are no unique ethnic cultural values affected by the project site.

e. Restrict existing religious or sacred uses within the potential impact area? **No Impact**

No religious or sacred uses have been identified within the potential impact area of the proposed project site. The proposed project will not restrict existing religious or sacred uses within the potential impact area.

15. Recreation. Would the proposal:

a. Increase the demand for neighborhood or regional parks or other recreational facilities? **No Impact**

The proposed project will not increase the demand for neighborhood or regional parks or other recreational facilities since the project site does not involve any residential uses.

b. Affect existing recreational opportunities? **No Impact**

The proposed project will not affect existing recreational opportunities since the project site does not involve any recreational uses.

16. Mandatory Findings of Significance.

a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? **No Impact**

Per the DOE's 10/7/02 letter to the District, for biological resources, there will not be any direct affect on wildlife, habitat, or plant community because all work will be done within an existing building. For the California history or pre-history portion of this question, an historic building survey was conducted at SNL/CA in 2001. The building survey evaluated 70 buildings, including the CRF. No structures at the California site were found to be historically significant. None were determined to be important in history or pre-history.

b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? **No Impact**

Per the DOE's 10/7/02 letter to the District, the proposed project would not have a significant impact on short-term or long-term environmental goals.

c. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.) **No Impact**

Per the DOE's 10/7/02 letter to the District, the proposed project would not add significantly to the level of industrial development at or in the vicinity of the site, as the Glass Lab will be located in an existing building located in a developed area of the Sandia site.

Future projects at Sandia National Laboratories include:

(1) The Distributed Information Systems Laboratory (DISL) which is essentially a facility for research, development, deployment, and use of new distributed and distance computing technologies to benefit the US Department of Energy's Stockpile Stewardship Program, and

(2) LIGA (an acronym from the German words for lithography, electroplating, and molding) uses X-rays synchrotron radiation to create non-conducting molds, which are subsequently filled with metal by means of electrode position. LIGA also can be used for casting ceramics, plastics or other polymers.

d. Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly? **Less than Significant Impact**

Substantial adverse effects are not expected to result due to this project.