

**Table 5-42. Sandia National Laboratories, California's Estimate of Maximum Operations Alternative Impacts on the Regional Economy**

Economic Measure	Maximum Operations Alternative		
	SNL/CA	Total ROI	Percent of ROI
<b>Estimated Earnings (Income) (\$Millions)</b>			
Wages and Salaries	133.6		
Indirect and Induced	85.5		
<b>TOTAL EARNINGS</b>	219.1	\$108,376.8	0.2
<b>Earnings Multiplier: 1.64 (2002)</b>			
<b>Employment (Number of Workers)</b>			
SNL/CA Workforce <sup>a</sup>	1,931		
Indirect and Induced	1,853		
<b>TOTAL WORKFORCE</b>	3,784	1,455,700	0.3
<b>Employment Multiplier: 1.96 (2002)</b>			

Sources: BEA 2000b, BEA 2002a

<sup>a</sup>Employment would range from 1,657 to 1,931 workers

ROI: region of influence

SNL/CA: Sandia National Laboratories, California

### 5.5.13 ENVIRONMENTAL JUSTICE

The impacts of this alternative on environmental justice resources would be the same as those associated with the No Action Alternative. No disproportionately high and adverse impacts to minority or low-income communities are anticipated for these resource areas. For summary of potential environmental justice impacts under the No Action Alternative see Table 5-15.

## 5.6 ACCIDENTS

This section describes the potential impacts to workers and the public of potential accidents involving SNL/CA facilities and the release of radioactive and/or chemical materials, explosions, and other hazards for all alternatives. As discussed in Section 5.2.12, two accident scenarios were considered for additional analysis: a postulated event initiated by natural phenomena and a postulated material event initiated by unspecified accident.

### 5.6.1 POSTULATED EVENT INITIATED BY NATURAL PHENOMENA

An earthquake is the most likely natural phenomena to initiate an emergency situation onsite. Two possible faults could affect SNL/CA: Greenville and Las Positas. The Tesla and Greenville faults trend northwest-southeast and are the most strongly documented faults near SNL/CA. The location of a possible earthquake on the Greenville fault is based primarily on geologic evidence.

The Greenville fault is the largest fault with the nearest location to SNL/CA, and evidence of its recent activity is more conclusive than in the case of the other faults. The Las Positas fault branches (see Figure 4-4) through the SNL/CA site and pass very close to SNL/CA facilities, and has a total length of about 10 mi. If the Las Positas fault were to be substantiated by future studies as a structure capable of generating moderate earthquakes, the maximum credible earthquake based on this length and the resulting ground motion at the site would be less than is estimated for the Greenville fault. Section 4.4.3.1 provides further details on the seismic characteristics of the area around SNL/CA. Section 5.3.2 discusses impacts associated with geology and soils.

In January 1980, the Livermore Valley experienced two moderate sized earthquakes estimated to be 5.8 and 5.6 on the Richter scale. Over 100 aftershocks followed, with magnitudes up to 4.6. The epicenters were located on the Greenville fault within 11.2 mi of the SNL/CA site.

Substantial earthquake-resistant structural modifications have been made to onsite facilities where hazardous materials are handled and future construction will meet future standards. Therefore, the more likely result of an earthquake would be damage to unsecured equipment that might impact hazardous chemical containers or a fire resulting from damage to electrical equipment or the rupture of onsite gas lines.

Following a major earthquake, typical emergency response actions would be taken, including inspection and damage assessment of facilities, gas lines, water lines, fire alarms, and building areas. Impacts would be the same for all three alternatives.

### 5.6.2 POSTULATED MATERIAL EVENT INITIATED BY UNSPECIFIED ACCIDENT

As a result of review of available documentation, the accident assessment team considered a case of a hydrogen tanker explosion. The potential effects of hydrogen explosions are estimated using trinitrotoluene (TNT) equivalence model. The case examined is an explosion of a refueling tanker truck carrying 40,000 cubic feet (ft<sup>3</sup>). These impacts would be limited to the immediate vicinity of the explosive device and would not impact the offsite public. The potential effects are estimated in Table 5-43. Impacts would be the same for all three alternatives.

### 5.7 COMPARISON OF DATA ANALYZED AND ENVIRONMENTAL CONSEQUENCES AMONG ALTERNATIVES

The SWEA combines the results of several studies to address consequences to the environment and risks associated with the NNSA's operations at SNL/CA. The environmental consequences presented in the SWEA includes the following 13 resource areas (excludes accidents): land use and visual resources, geology and soils, water resources and hydrology, biological and ecological resources, cultural resources, air quality, infrastructure, human health and worker safety, transportation, waste generation, noise, socioeconomics, and environmental justice.

The following section presents the comparison of the consequences by resource area under each alternative in tabular form (Table 5-44).

**Table 5-43. Physical Effects as a Function of Distance for the Postulated Flammable Gas Explosions**

Physical Effects	Distance in Feet	
	40,000 cubic feet (209-pound) TNT	10,000 cubic feet (52-pound) TNT
Peak Pressure	19	12
50 percent survival rate for pressures in excess of 50 psi	46	29
50 percent rate of eardrum rupture and total destruction of buildings for pressures in excess of 10 psi	96	60
Pressures in excess of 2 to 3 psi will cause concrete or cinder blocks to shatter.	282	177
Pressures in excess of 1 psi will cause a house to be demolished.	501	315

Source: Original  
psi: pounds per square inch  
TNT: trinitrotoluene