

Fire Department Response to Solar Thermal Power Plants

The following solar thermal power plants were surveyed for fire department response:

- SEGS I and II, Daggett, San Bernardino County, operational since 1984, (Cogentrix Solar Services)
- SEGS III-VII, Kramer Junction, San Bernardino County, operational since 1989, (NextEra Energy)
- SEGS VIII and IX, Harper Dry Lake, San Bernardino County, operational since 1989, (NextEra Energy)

The following types of incidents were surveyed:

1. Plan reviews
2. Hazmat and fire inspections
3. Emergency Response including medical, fire, rescue, and hazardous materials incidents

Survey Results:**1. Plan Review by the San Bernardino County Fire Department:****SEGS III-VII Kramer Junction**

Waterline plan reviewed in 11/07, file 26688

Alarm plan approved 8/11/09, file 30483

Alarm plan currently in plan check, file 31003 (@ Victorville office)

Alarm Notification plan currently in plan check, file 31004 (@ Victorville office)

SEGS VII & IX Harper Dry Lake

Aboveground Tank approved 5/5/09, file 29308

2. Inspections, plan reviews, enforcement activities, and follow ups by the San Bernardino County Fire Department (SBCFD):

SEGS I & II: 10 inspections were conducted since 2008, totaling 24 hours of SBCFD time.

SEGS III-VII: 48 inspections were conducted since 2003, totaling 128 hours of SBCFD time.

SEGS VIII & IX: 29 inspections were conducted since 2004, totaling 105 hours of SBCFD time.

3. Emergency response including fire, rescue, medical, and hazardous materials incidents:

According to SBCFD's records, approximately 30 incidents occurred since 1998 that required the SBCFD (and other fire stations through mutual aid agreements) to respond to the three solar power plant sites. These include fires, fire alarm activations, injuries, medical emergencies, hazardous materials spills, complaints/calls from the public, and false alarms.

According to Richard Frymyer, the SEGS I & II general manager, only three incidents in the life of the plants ever required emergency services:

1. Feb 25, 1999: An HTF fire occurred in the HTF tanks. This was a major fire and the fire department was called upon. The HTF was allowed to burn itself out which took about 2 days. There were no injuries, but extensive damage.
2. Feb 28, 2000: An employee had a suspected heart attack (which was actually caused by drinking a whole bottle of hot sauce), and an ambulance responded from the fire department.
3. May 15-17, 2010: An HTF spill of about 60 gallons occurred in the solar field. The facility personnel cleaned it up on May 15th and reported it to San Bernardino County on the next business day, May 17th. When receiving the report the dispatcher misunderstood the report and sent out a 911 call indicating a spill is in progress. The whole fire department showed up on scene.

According to information received from the Glen King, the environmental manager for SEGS III through IX, the following five incidents were the only ones he can recall in the life of these plants that required fire department response:

1. 1998: A plant employee was performing repairs and received electrical shock when his wrench touched across electrical cables. He suffered burns on arm and neck and was air lifted to a hospital.
2. February 2002: An employee working on a pump lost two fingers in an accident and an ambulance was called to transport him to a hospital.
3. August 2002: The fire department hazmat unit was called to assist the plant personnel with a hazmat incident at SEGS III – VII. A temporary sulfuric acid (93%) storage tank at their water treatment facility had a faulty hose that broke and leaked sulfuric acid into a building where other chemicals were stored. It mixed with water and other chemicals and therefore required the fire department's help in clean up.

4. 2007: The fire department was called upon when 30,000 gallons of HTF spilled at SEGS VII.
5. Feb 2009: The fire department responded to a concerned citizen's call when they had a flex hose failure at SEGS VIII and a vapor cloud ignited. The fire department was not needed as plant staff had the situation under control.

Summary:

Relying on the data received from the SBCFD for the past 10 years, the department responded to about 30 incidents and emergencies at the nine solar units, including one major fire, two hazardous materials spills, and two medical emergencies. During the same period the SBCFD conducted approximately 90 inspections and visits for enforcement actions/plan reviews, totaling about 260 hours of personnel time.