

ESI Goal Determination

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ESI Goal (ESIG) Determination

$$\text{ESI} = \left\{ \frac{200,000[(\text{ES}_{\text{event1}}) + (\text{ES}_{\text{event2}}) + (\text{ES}_{\text{eventn}}) \dots]}{\text{(hours worked)}} \right\}$$

200,000 => Normalization factor the differing size of sites.

ES => Electrical Severity of an event using the EFCOG tool.

Hours Worked => Same hours used to calculate OSHA
Recordable Case Rate (RCR)

ESI Goal (ESIG) Determination

Assume a maximum of one reportable event/month with a calculated electrical severity (ES) of 330 (medium).

Includes a dry hand 120V shock event.

Assume lowest monthly hours reported for the previous year.

ESI Goal (ESIG) Determination

As an example, for the BEA contract at the Idaho National Laboratory (INL)

The lowest number of hours reported for a month in FY07 was 435,816.

This results in a goal of:

$$\text{ESIG} = \left\{ \frac{200,000 (330)}{(435,816)} \right\} = 151$$

Occurrence Investigation Checklist

Electrical Hazard Factor

- Was the worker exposed to an electrical hazard?
 - IF the answer is NO do not evaluate using the tool
- What waveform of electrical energy?
 - 60 Hz, AC Power (Class 1.x)
 - AC Power, not 60 Hz (Class 2.x AC)
 - DC Power (Class 2.x DC)
 - Capacitors (Class 3.x)
 - Batteries (Class 4.x)
 - Radio Frequency (Class 5.x)

Continued...

- ❑ What was the voltage?
{1.x, 2.x AC, 2.x DC, 3.x}
- ❑ What size was the system transformer that fed the electrical hazard?
{1.x (<240 V)}
- ❑ What was the current?
{2.x AC (<50 V), 2.x DC (>100 V), 5.x}
- ❑ What was the power?
{2.x AC (<50 V), 2.x DC (<100 V), 4.x}
- ❑ What was the energy?
{3.x}
- ❑ What was the frequency?
{5.x}

Environment Factor

- Was the exposed worker working indoors or outdoors?
- Was water, snow, or other conductive liquids involved?
- Was the worker adequately protected from the environment, pertaining to the electrical hazard?

Shock Proximity Factor

- How close did the worker get to the exposed live part?
- Was the worker protected by dielectrics?
- What class of dielectrics?
- Were the dielectrics inspected and tested?
 - Was there a date stamped on the dielectrics?
 - What was the date?
- Were the dielectrics adequately cleaned, maintained, and stored?

Arc Flash Proximity Factor

- Was an arc flash hazard analysis performed?
 - What was the arc flash boundary?
- Was the worker wearing arc flash PPE?
- What PPE was the worker wearing?
- What was the calorie rating?
- Was the PPE cleaned, maintained, and stored properly in accordance with the manufacturer's instructions?

Thermal Proximity Factor

{2.x AC (<50 V & >1000 W), 2.x DC (<100V & >1000 W), 3.x (<100 V & >100 J), 4.x (<100 V & > 1000 W)}

- Did a conductive media come into contact with an energized source?
- If yes, was the worker in contact with the conductive media, while it was in contact with an energized source?
- If yes, was the worker protected from the thermal burn hazard and how?

Injury Factor

Was the worker shocked?

IF yes...

Did the worker's heart go into fibrillation?

Was an ECG performed?

Was the worker burned?

To what degree?

Was the worker permanently disabled?

Was the worker killed?