Fatigue Risk Management System: RP 755

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Background

- **BP Texas City Incident, March 2005**
- **Investigated by Chemical Safety Board**
- **Finding:** “... extended working period clearly has the potential to contribute to a lack of attentiveness, and slowness to identify and respond to process upsets.”
- **Recommendation:** “... API and the United Steel Workers union work together to develop fatigue prevention guidelines that would, at a minimum, limit hours and days of work and address shift work”
- **ANSI Committee first met, July, 2008**
- **Standard published, April, 2010**

This presentation may not necessarily reflect the view or input of any individual member company, other entity, group or individual, or the American Petroleum Institute. Rather it represents the collaborative effort of members represented on the API 755 committee as contained in the final API 755 Standard.
RP 755: Key Concepts

- Fatigue addressed via a comprehensive Fatigue Risk Management System (FRMS)
- FRMS informed by science and recognizes operational issues
- Key stakeholders shall be consulted in developing and implementing the local application of the FRMS
- Culture of fatigue management should be created in which the shared responsibility of mitigating risk is recognized

Scope

- Refineries, petrochemical and chemical operations, natural gas liquefaction plants, and others such as those covered by the OSHA Process Safety Management Standard
- Applies to locations where employees commute to work
- On-site contractors expected to have equivalent programs
- Employees working night or rotating shifts, extended hours/days or call outs
RP 755 Framework

- Staff-Workload Balance
- Employee Training, Education & Communication
- Work Environment
- Individual Risk Assessment & Mitigation
- Incident/Near Miss Investigation
- Hours of Service Guidelines
  - 8, 10 & 12 hour shifts
  - Normal Operations, Outages & Extended Shifts
  - Exception Process
- Periodic Review of FRMS to Achieve Continuous Improvement
RP 755: Elements

- **Staff-Workload Balance**
  - Initial & periodic assessment of staffing levels and workload balance
  - Ensures that hours of service guidelines are feasible
  - Recognizes workload variability across shifts, weeks and months
  - Accounts for planned and unplanned outages
    - Turn-arounds, hurricane recovery and emergency management situations

- **Employee Training, Education & Communication**
  - Employees
  - Family members
    - Awareness only
  - Supervisors
    - Training will focus on recognition and remediation of excess fatigue

- **Work Environment**
  - Key concern – lighting
    - Bright lighting where possible
    - Use indirect lighting to minimize glare and eye strain
RP 755: Elements (con’t)

- **Individual Risk Assessment & Mitigation**
  - Individuals encouraged to be continuously aware of their level of fatigue
  - Programs to identify and address sleep disorders should be offered
  - Supervisors shall have the responsibility and authority to take appropriate steps to ensure fitness for duty per the FRMS

- **Incident/Near Miss Investigation**
  - Investigations of incidents should consider role of fatigue
  - Fatigue-related information collected should include:
    - time of incident
    - shift pattern incl. number of consecutive shifts worked
    - number of hours awake
    - number of hours slept in last 24 hours for individuals involved
### Hours of Service (HoS)

<table>
<thead>
<tr>
<th>Operational Situation</th>
<th>12-Hour Shift</th>
<th>10-Hour Shift</th>
<th>8-Hour Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Consecutive Shifts (Day or Night) In a Workset</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Normal Operations</td>
<td>7 shifts</td>
<td>9 shifts</td>
<td>10 shifts</td>
</tr>
<tr>
<td>b) Outages</td>
<td>14 shifts</td>
<td>14 shifts</td>
<td>19 shifts</td>
</tr>
</tbody>
</table>

| Minimum time off after a workset                       |               |               |              |
| a) Normal Operations                                   | 36 hours      | 36 hours      | 36 hours     |
|   ▪ Workset of 4 or more night shifts                  | 48 hours      | 48 hours      | 48 hours     |
|   ▪ After 84 hours or more regardless of day or night  | 48 hours      | 48 hours      | 48 hours     |
| b) Outages                                             | 36 hours      | 36 hours      | 36 hours     |
## Hours of Service (con’t)
Extended shifts shall occur only to avoid unplanned open shifts or safety critical tasks

<table>
<thead>
<tr>
<th>Operational Situation</th>
<th>12-Hour Shift</th>
<th>10-Hour Shift</th>
<th>8-Hour Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unscheduled maximum shift</td>
<td>18 hours</td>
<td>16 hours</td>
<td>16 hours</td>
</tr>
<tr>
<td>Time off after shift</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 – 16 hour shift</td>
<td>N/A</td>
<td>N/A</td>
<td>8 hours</td>
</tr>
<tr>
<td>12 – 16 hour shift</td>
<td>N/A</td>
<td>8 hours</td>
<td>N/A</td>
</tr>
<tr>
<td>14 – 16 hour shift</td>
<td>8 hours</td>
<td>8 hours</td>
<td>N/A</td>
</tr>
<tr>
<td>&gt;16 – 18 hour shift</td>
<td>10 hours</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum Daily Shift Length</td>
<td>18 hours</td>
<td>16 hours</td>
<td>16 hours</td>
</tr>
<tr>
<td>Maximum Number of Extended Shifts per Workset</td>
<td>1</td>
<td>- 1 for 14 hour shift or - 2 for 12 hour shifts - 3 or more 12 hour shifts, follow 12 hour normal operations guidelines above</td>
<td>extended shifts must be non-consecutive - 2 if greater than 12 hours in duration - If &gt;2, follow 12 hour normal operations above</td>
</tr>
</tbody>
</table>
RP 755: Elements (con’t)

- **Exception Process**
  - Utilized when exceeding HoS or extended shifts
  - Involves immediate supervisor and another management representative
  - Includes documented risk assessment and mitigation plan

- **FRMS should undergo periodic assessments of its effectiveness and identify opportunities for Continuous Improvement**
  - Targets should be set for key parameters of FRMS such as:
    - Percentage overtime
    - Number of open shifts
    - Number of extended shifts
    - Number of exceptions
  - Metrics should be gathered to determine if targets are being met
  - Plans should be developed to close gaps between targets and actual FRMS performance