FREEPORT-McMoRan

Department of Health & Safety Guidelines	GUIDELINES NO.	FCX - 10
	REVISION NO.	
	SUPERSEDE	
FATIGUE MANAGEMENT	TASK CLASSIFICATION	Highly Critical / Critical / Non-Critical
APPROVAL DATE – 10/11/2010	ORIGINAL DATE – 11/17/2009	RELEVANT SOPS –

1. PURPOSE and SCOPE

The purpose of this standard is to establish general guidelines and criteria for a Fatigue Management Plan specific to the operational needs of FCX operating sites, acknowledging that there may be a wide range of variables that affect the operational activity of different FCX entities regarding fatigue considerations. This guideline will apply to all FCX Operations and FCX Contractors.

2. PERFORMANCE GUIDELINES

2.1. Each operating site will establish a systematic approach to identifying, assessing and controlling risk factors associated with fatigue.

2.2. Each operating site will develop a site-specific written Fatigue Risk Management Plan (see Model Plan in Attachment 4.1) that includes the following information:

2.2.1. Identification of the potential sources of risk associated with fatigue.

2.2.2. An assessment of the level of risk associated with these risk factors.

2.2.3. Identification of appropriate risk treatments to address the identified risk factors including time frames and accountabilities for implementation.

2.2.4. Evaluation of the effectiveness of these risk treatments, once they have been implemented.

2.3. Each operating site will develop a comprehensive education awareness process that includes:

2.3.1. Fatigue awareness training program for all employees, and be included in Annual Refresher Training Program or refreshed as a specific topic annually.

2.3.2. Fatigue awareness training will be conducted during orientation training for all new employees.

2.3.3. Where relevant, spouses of employees should be encouraged to participate in appropriate fatigue management training programs to raise the awareness of family members regarding the effects of shift work and fatigue. Off the Job training programs may be utilized.

2.4. Training will be the responsibility of each site Safety Manager who will insure that

2.4.1. Selected site personnel have been trained in the FCX Train the Trainer program.

2.4.2. The FCX Fatigue Management Training Program is utilized for all employee training, including use for selected occupations that may have a greater potential for fatigue, and in Annual Refresher Training.

2.5. Each site will establish appropriate parameters for maximum working hours as follows:

2.5.1. Attachment 4.2 is an ANSI/API standard adopted as a safe practice. Maximum working hours should be established by each operating site utilizing Attachment 4.2 as a minimum standard.

2.5.2. Each operating site will comply with the appropriate Federal/State regulatory requirements pertaining to work hours if these requirements exceed the ANSI/API standard.

2.5.3. Exceptions to the maximum hours worked will be addressed by establishing the appropriate management approval levels for the exceptions stated in Attachment 4.2:

2.6. Investigations of accidents, property damage, and near-miss accidents will consider potential fatigue factors in the process of determining causal factors during the accident investigation process.

2.7. The Fatigue Management Plan of each operating site will be audited and should have an internal review annually. It is suggested that the site internal audit review include the following considerations:

2.7.1. Percent of employees trained in fatigue management.

2.7.2. Listing of all work exceptions to the established standard and the approvals required.

2.7.3. Listing of all accidents where fatigue has been determined to be a causal factor.

2.7.4. Other training or communication issues relating to fatigue that may be of interest to management.

3. DEFINITIONS

Terms defined relevant to this standard are:

3.1. Fatigue – the temporary loss of power to respond that is induced in a sensory receptor or motor end organ by continued stimulation. Signs of fatigue include tiredness even after sleep, psychological disturbances, loss of energy and inability to concentrate.

3.2. Fatigue Management – a systematic approach to effectively control the risks of fatigue.

3.3. FCX Fatigue Management Training Program – training developed by DOHS in conjunction with Circadian and revised periodically as appropriate.

3.4. FCX Train-the-Trainer Program – designed by DOHS in conjunction with Circadian to insure consistency of training and to insure the competency of Fatigue Management Trainers.

4. ATTACHMENTS

4.1. Fatigue Risk Management Model

4.2. ANSI/API 755 – Adopted as a Best Practice for FCX Operations

Attachment 4.1:

FATIGUE RISK MANAGEMENT MODEL

The Fatigue Risk Management Model includes five main steps:

1. Awareness program and/or training package to educate shift workers and their spouses/partners/families (where appropriate) in the physical and mental stress of shift work and working at altitude.
2. Identification of major potential sources of risk associated with fatigue.
3. An assessment of the level of risk associated with these factors.
4. Identification of appropriate risk treatments to address these risks including time frames and accountabilities for implementation.
5. Evaluation of effectiveness of these risk treatments once they have been implemented.

Each step is described in more detail below:

Step 1 - Awareness Program

The first step in any risk management process is to gain an understanding of the extent of the problem being experienced by extended work shifts, particularly for shift workers.

Training and education should ensure all employees, contractors and managers understand the meaning of fatigue and have the knowledge and skills to practice effective fatigue management.

Training should be structured and programmed to meet the needs of all employees.

While individual behavior outside of work can have a considerable influence on fatigue, it does not reduce the employer's obligation to address the issue consistently with the principles of risk management.

Step 2 - Identifying the sources of risk associated fatigue

Identify the source by using a systematic approach to the identification of all risk factors that have the potential to contribute to an employee or group of employees experiencing fatigue.

It is essential that employees and occupational health & safety personnel are consulted as part of this process. Risk factors can be identified through:

- Findings from accident or incident investigations
- Discussions with employees
- Employee surveys or questionnaires
- Walk through inspections
- Audit results

The following table outlines a list of possible risk factors that may be associated with occurrences of fatigue.

Risk Factors that contribute to and increase the risk of fatigue

The Environment	Continual noise exposure
	Continual vibration from equipment
	Less oxygen levels (Altitude)
	Extreme changes of temperature
	Inadequate external stimulation
	Working in isolation
	No means of early identification
	Poor ventilation
	Movement of vehicles
The Task	Physically or mentally over or under demanding
	Shift work, including extended shifts
	Call outs of On-Call Personnel
	Safety critical tasks
	Requires sustained high levels of concentration
	Involves operation of machinery or mobile plant
	Repetitive
	Boring, monotonous or under challenging tasks
	Duration of jobs or long hours
The Person	Sustained wakefulness
	Other - family, social or financial
	Recent illness or injury
	Other work or job away from work

Step 3 - Assessing the level of risk

Risk Assessment considers the likelihood that injury or harm to a person's health can occur as well as damage to company equipment / services.

This Risk Assessment can be done using the Freeport-McMoRan Risk Assessment Matrix for each risk factor identified in Step 2 and incorporating into the Fatigue Risk Management Plan.

Step 4 - Identifying and implementing risk treatments to address identified risks

Upon completion of the risk assessment process, it will now be possible to identify priorities for developing risk treatments. Risk treatments should be developed for each risk identified and incorporated into the Fatigue Risk Management Plan.

Strategies would be:

- Implementation of a Roster Policy
- Assessment of all rosters to determine their potential of work related fatigue
- Mandatory training of Fatigue Management strategies

- Implementation of a “Napping” policy where operational requirements permit this to be a practical option
- Assessing alertness of employees through objective means prior to commencement of shift
- Reporting method for the inappropriate noise levels in accommodation units

Step 5 - Evaluation of the effectiveness of risk treatments

The Risk Management Plan should be reviewed periodically where risk treatments have been implemented and evaluated to ensure they are effective in managing fatigue risk and are not creating other issues.

The evaluation process will involve:

- Compliance audit Plan
- Safety Representatives to carry out periodic inspections
- Management safety tours or inspections
- Direct feedback from employees, Supervisors, Superintendents Safety personnel

Review statistical accident data, if sufficient records exist, to allow this to be a meaningful analysis.

Attachment 4.2

ANSI/API 755-Best Practice Guide for Maximum Work Hours

Table 1—Hours of Service Guidelines for 8-, 10-, and 12-hour Shifts

Operational Situation	12-Hour Shift	10-Hour Shift	8-Hour Shift
Maximum Consecutive Shifts (Day or Night) In a Work set			
a) Normal Operations	7 shifts	9 shifts	10 shifts
b) Outages	14 shifts	14 shifts	19 shifts
Minimum time off after a work set			
a) Normal Operations	36 hours	36 hours	36 hours
• Work set 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
Extended Shifts			
a) Unscheduled maximum shift	18 hours	16 hours	16 hours
b) Time off after shift			
• 10 to 16 hour shift	N/A	N/A	8 hours
• 12 to 16 hour shift	N/A	8 hours	N/A
• 14 to 16 hour shift	8 hours	8 hours	N/A
• >16 to 18 hour shift	10 hours	N/A	N/A
Maximum Number of Extended Shifts per Work set	1	1 for 14 hour shift or 2 for 12 hour shifts or for 3 or more 12 hour shifts, follow 12 hour normal operations guidelines above	2 if greater than12 hours in duration; extended shifts must be non-consecutive. If >2, follow 12 hour normal operations above

The hours of service limits should include the following general requirements:

For normal operations and outages, holdover periods should not exceed two hours and, where possible, occur at the end of the day shift.

Startups and planned shut-downs (including partial)-the startup and shutdown of a process- is a critical time in operations and due consideration should be provided so safety critical personnel are well rested and fit for duty.

Extended shifts shall occur only when necessary to avoid an open safety critical position or accomplish an unplanned safety critical task.

The decision to work an extended shift shall be managed through an established management process per 4.8.5.