



COMMON MANAGEMENT SYSTEM STANDARD 10 OPERATIONS INTEGRITY, DESIGN, CONSTRUCTION AND COMMISSIONING

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1. OVERVIEW

This document sets out IGOs standard for operations integrity, design, construction and commissioning.

In overview, IGO will ensure that hazards and risks are identified and appropriately managed and/or mitigated with strategies and controls during the design, construction and commissioning of projects. This includes setting minimum standards for maintaining the integrity of operating assets to prevent unplanned releases of energy or harmful materials.

2. APPLICATION

This standard applies to all IGO operations and sites managed by IGO.

3. ENGINEERING PRACTICES AND SPECIFICATIONS

Sites and functions maintain and use a set of engineering specifications and related documentation that have been approved by the Hierarchy of Appointed Persons (see Section 9). These documents ensure that engineering works meet the requirements of:

- relevant legislation (acts and regulations) including mandatory industry standards, and license to operate requirements
- the IGO Common Management System Standards, Group Health, Safety, Community and Environment (HSEC) Standards and associated procedures
- IGO Group Engineering Standards, Project standards, and specifications
- relevant Australian and New Zealand Standards (AS, NZS and AS/NZS)
- relevant International Standards (ISO)
- Original Equipment Manufacturer (OEM) requirements and guidelines
- Engineering, Operation and Maintenance (EOM) instructions and guidelines

4. PROCESS SAFETY

Process safety and asset management-related objectives and associated key performance indicators (KPIs) are in place to measure the effectiveness of process safety management. Performance against these KPIs is regularly reported to the IGO Executive Leadership Team (ELT), and the Sustainability and Risk Committee.

Sufficient information about facilities and equipment is available to enable personnel to:

- operate and maintain the facilities and equipment within design limits
- identify which equipment is HSEC critical and process critical
- manage risks.

Design data and safe operating limits are documented, understood and available. This information is regularly reviewed for all facilities, plant and equipment.

Proposed changes to safe operating limits are subject to management of change processes.

Breaches of safe operating limits are documented and investigated.

Systems are in place to identify, manage and formally document the activation, operation, maintenance, isolation and deactivation of process safety critical equipment including critical protection systems



required for mechanical and electrical integrity. Proposed changes are subject to management of change processes.

Information relating to process safety hazards and related critical controls is identified, retained and available to operating and maintenance personnel including:

- the site Risk Register listing controls and procedures required to manage activities that have the potential for significant risks or impacts registers of process safety critical equipment and/or critical protection systems
- facility, plant and equipment information files.

Process safety incidents are defined and are reported through the incident management system.

Equipment and services provided by third parties is inspected and controls verified to ensure safe operation and adherence to HSEC performance objectives.

5. NEW PLANT AND EQUIPMENT

IGO will ensure that:

- the design and selection of new plant, equipment and processes includes formal risk assessment and takes into account known and projected HSEC, asset management and lifecycle requirements
- critical protection systems are designed, installed and maintained to meet a specified design intent and failure on demand requirements.

6. MAINTENANCE, INSPECTION AND TESTING

IGO will ensure that:

- each site clearly defines its asset integrity management and maintenance objectives based in risk management. These include objectives related to backlogs, rescheduling of planned shutdowns, critical function or system tests and statutory equipment inspections. Performance against these is regularly measured to ensure that the system is working and to facilitate improvements
- organisational structures for maintenance and asset management are established and responsibilities are clearly documented
- asset integrity management and maintenance systems are generally predictive and cover (but are not limited to covering):
 - plant and equipment, including mobile equipment, winders, conveyor belts, machine guarding, piping and pipelines
 - pressure vessels and equipment pressure safety equipment hoses
 - electrical equipment and systems including electrical protection earthing and lightning protection systems
 - structures, roads, buildings, ventilation systems, hoppers, chutes etc. control and instrumentation systems including remote control equipment safety instrumented systems
 - critical alarming systems
 - fire, gas and flood detection and critical protection systems
- statutory inspections and testing are documented and carried out in accordance with legislative requirements

- each site uses an electronic asset integrity management and maintenance program that is systematic and logical and is applied to both preventive and breakdown work. Assets are listed by unique identifiers. Critical spares are identified. Information to manage the maintenance program is readily available to maintenance planners including an overview of the status of the integrity of assets
- routine preventive maintenance is scheduled and forecast to a predefined cycle, and routine maintenance is completed in accordance with planned requirements. Prepared work order sheets and job plans are used and signed off at completion
- maintenance procedures are developed to manage risks associated with critical or higher risk activities as per the requirements of **IGO Common Management System Standard 11 - Operating and Maintenance Procedures**
- a process is in place to prioritise and schedule additional work requests
- asset maintenance files and histories are maintained, accurate and available for the life of each asset. Registered plant files and histories are maintained as per legislative requirements
- the life cycle management of assets is used to inform the effective acquisition, operation, maintenance and disposal strategies of asset
- asset procurement, operation and disposal practices are documented.

7. DESIGN, CONSTRUCTION AND COMMISSIONING

IGO will ensure that:

- the identification and management of HSEC risks forms an integral part of the lifecycle of all projects: planning, design, approval, procurement, construction and commissioning, maintenance, modification, decommissioning, disposal and closure. Facilities are designed and constructed using technology which considers HSEC and commercial risks
- IGO follows a staged and gated Investment Management System for the delivery, due diligence and decision making in relation to its major investments and medium investments. During the phases of the investment management process, and where appropriate in more detail as studies progress through the phases, the IGO Investment Management System:
 - considers the investment process in its key study or project phases and identifies the required information deliverables for each review and approval gate
 - assesses the work across business and financial, implementation, legal and commercial, and technical perspectives
 - defines the technical design, construction, procurement, commissioning and operating standards and specifications that are to be met
 - requires the establishment of Project HSEC plans and procedures establishing technical integrity, HSEC specifications and quality assurance requirements
 - defines the risk management approach and assessments (e.g. quantified risk assessments, Hazards and Operability Study [HAZOPS], Hazard Identification [HAZIDS] and HSEC reviews) that are to be used
 - requires the integration of operational, maintenance and HSEC expertise into the project/design from the earliest stage of the process and requires the use of an overarching system to coordinate information management and document control

- requires that constructability, operability and maintainability of plant, equipment and systems are reviewed to ensure that HSEC risks are effectively identified and addressed
- requires that learnings from previous projects and current operations be reviewed
- requires that critical equipment, systems, procedures and activities be identified and documented prior to commissioning defines the documentation that is required to be handed over on completion of the project
- requires that a commissioning plan that incorporates HSEC and risk management and defines responsibilities and competencies be documented and approved. The plan is designed to ensure that the facility, plant and equipment conforms to required standards for operability
- is documented.

8. PRE-STARTUP REVIEWS

IGO will ensure that:

- multidisciplinary pre-startup reviews are conducted and documented after significant maintenance work, project work, or the installation of new or modified equipment, to ensure that:
 - the work has been completed in accordance with requirements
 - operating, maintenance and emergency procedures and processes are in place and that associated training has been undertaken
 - the site/facility/equipment is ready to be started up and operated safely, securely and within the licence to operate and operational environmental permits
 - startup, including the energisation of equipment, does not occur until the actions identified for completion prior to startup have been completed.
- The Site Responsible Engineer:
 - determines when a pre-startup review is required
 - determines the processes to follow when a pre-startup review is required and is responsible for signing off the approval to startup.

9. HEIRARCHY OF APPOINTED PERSONS

Without seeking to limit the application of the law, IGO will ensure that:

- general managers or registered managers, as appointed by IGOs Chief Operating Officer (COO), are accountable for the safe operation, asset integrity and commercial success of IGOs individual mine sites
- additionally, the COO will appoint an individual to the role of IGO Asset Manager, or equivalent, which has overall responsibility for engineering practices (non-mining), design, process safety and asset integrity requirements at IGOs existing operations. The IGO Asset Manager ensures that process safety and asset management objectives are included in the Corporate objectives and that actions are included in the corporate improvement plans
- for major construction projects, the COO will appoint an individual to the role of IGO Construction Project Manager, or equivalent, having overall responsibility for engineering practices, design, process safety and asset integrity requirements during



the design, construction and commissioning of new operations or major expansions of existing operations

- general managers or registered managers will appoint engineers with specific discipline competencies and expertise, where required. This includes but is not limited to mechanical, electrical and mining engineers
- appointed engineers are responsible at their sites for:
 - meeting process safety requirements
 - assuring asset integrity
 - statutory compliance
 - approving the practices, specifications and industry codes and standards used
 - approving all engineering designs and procedures
 - ensuring that all engineering management of change requests are approved at the correct authority levels endorsing deviations from specified practices where required
 - appointing Responsible Technical Authorities with specific discipline competencies and expertise, where required.

10. RELATED DOCUMENTS

- IGO Common Management System Standard 11 - Operating and Maintenance Procedures
- IGO Investment Management System