**Is Safety during Dredging Operations Important?**

Safety at sea applies to all vessels and personnel working in the maritime sector. Safety also extends to the protection of the marine environment, waterborne global trade and consequently in all these aspects to the dredging industry. Safety on dredging vessels and during dredging operations embraces an overall approach towards ensuring the safety and health of personnel, the safety of the ships and the quality of the environment.

This attention to safety means that international dredging contractors adhere to applicable maritime regulations and participate in regular audits conducted by trained company employees, as well as external audits by certifying authorities throughout the world. Safety standards are applied during every phase of a dredging project, paying close attention to the safety of ships, crews and all other personnel as well as marine life. Ships, operations and offices must comply with the strictest of international standards regarding Quality, Health, Safety and Environment (QHSE), such as ISO 9001:2008 for the execution of quality assurance; ISO 14001:2004 for the execution of environmental protection; SCC and OHSAS 18001:2007 for the execution of occupational health and safety; ISM for the execution of safety at sea and marine-environmental protection; and ISPS for the execution of security on vessels.

**How did Safety Standards become Codified?**

Since the maritime sector has always been an international industry, it has always drawn cross-border attention. The International Convention for the Safety of Life at Sea (SOLAS) is an international maritime safety treaty. The SOLAS Convention in its successive forms is generally regarded as the most important of all international treaties concerning the safety of merchant ships. The first version of the treaty was passed in 1914 in response to the sinking of the RMS Titanic. It prescribed the numbers of lifeboats and other emergency equipment along with safety procedures, including continuous radio watches. Today, most nations realise that the best way of improving safety is to develop international regulations to which all seafaring nations agree.

**What is the role of the International Maritime Organization?**

In 1959 when the International Maritime Organization (IMO) came into existence it immediately adopted a new version of the International Convention for the Safety of Life at Sea (SOLAS). Thereafter the IMO developed and adopted international collision regulations and global standards for seafarers (COLREG), as well as international conventions and codes relating to search and rescue, the facilitation of international maritime traffic, load lines, the carriage of dangerous goods and tonnage measurement.

Another convention under the IMO is MARPOL 73/78, the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978. (“MARPOL 73/78” is an abbreviation for Pollution and 73/78 for the years 1973 and 1978.) MARPOL is the main international convention covering prevention of pollution of the marine environment by ships from routine operations or accidental causes and has been updated by several amendments over the course of time, most recently in 2005.

**What are some of the national and international safety regulatory agencies?**

The standards of quality, safety and environmental awareness are often defined by the list of ISO/SCC/OHSAS/ISM and ISPS certificates for which a company has been certified. ISO codes originate from the International Organization for Standards which provides a wide range of certification for safety and quality. For instance, ISO 9001:2008 covers issues such as the execution of Quality Assurance, Quality Management Systems and Requirements. ISO 14001:2004 regulates the execution of Environmental Protection, Environmental Management Systems and Requirements with guidance for use.

**What is the SCC?**

SCC (Safety Checklist Contractors) is an organisation, which created a Safety Checklist for Contractors and verifies that companies and their employees have implemented a safety management system. The SCC certification process has similarities to the ISO 9000:2008
system and audits. SCC also supports management systems and audits, such as ISO 14001:2004 and OHSAS 18001:2007.

**What is the ISPS Code?**
The International Ship and Port Facility Security (ISPS) Code is an amendment to the Safety of Life at Sea (SOLAS) Convention (1974/1988) on minimum security arrangements for ships, ports and government agencies. It came into force in 2004, and prescribes responsibilities to governments, shipping companies, shipboard personnel, and port/facility personnel to “detect security threats and take preventative measures against security incidents affecting ships or port facilities used in international trade covers the execution of security on vessels”.

**What is the role of the International Organization for Standardization?**
ISO standards are developed according to the principles of voluntary, industry-wide consensus. The views of all interest groups are taken into account: manufacturers, vendors and users, consumer groups, testing laboratories, governments, engineering professions and research organisations with the aim to find global solutions which satisfy industries and customers worldwide. International standardisation is thus market driven and based on voluntary involvement of all interests in the market-place.

In a practical sense, the need for a standard is usually voiced by an industry sector, which communicates this need to a national member body. This member body then proposes the new work item to ISO as a whole. Once the need for an International Standard has been recognised and formally agreed, the first phase involves definition of the technical scope of the future standard. This phase is usually carried out in working groups which comprise technical experts from countries interested in the subject matter. Once agreement has been reached on which technical aspects are to be covered in the standard, a second phase is entered during which countries negotiate the detailed specifications within the standard.

The final phase consists of the formal approval of the resulting draft International Standard (the acceptance criteria stipulate approval by two-thirds of the ISO members that have participated actively in the standards development process and approval by 75% of all members that vote), following which the agreed text is published as an ISO International Standard.

**How was OHSAS created?**
OHSAS 18001:2007 was created through a concerted effort from a number of the world’s leading national standards bodies, certification bodies, and specialist consultancies. A main driver for this was to try to remove confusion in the workplace from the proliferation of certifiable OH&S specifications. The participants ranged from organisations from Ireland, Australia, South Africa, the U.S., U.K., Spain, Malaysia and many other respected international groups.

OHSAS 18001:2007 helps an organisation systematically minimise the risk of incidents and work-related illnesses through a planning and managing program known as Occupational Health and Safety Management System (OHSMS). The internationally recognised standard OHSAS 18001:2007 works within an organisation’s existing management system to introduce a systematic approach to occupational health and safety, assessing workplace hazards and implementing preventative measures as part of daily operations. Certification to OHSAS 18001:2007 can help an organisation more easily achieve compliance with both current and future occupational health and safety laws. OHSAS 18001:2007 can also help an organisation systematically minimise the risk of accidents and work-related illnesses.

Through OHSAS 18001:2007, Occupational Health and Safety Management Systems requirements have been developed to be compatible with the ISO 9001:2008 (Quality) and ISO 14001:2004 (Environmental) management systems standards, in order to facilitate the integration of quality, environmental and occupational health and safety management systems by organisations. The (OHSAS) specification gives requirements for an occupational health and safety (OH&S) management system, to enable an organisation to control its OH&S risks and improve its performance. It does not state specific OH&S performance criteria, nor does it give detailed specifications for the design of a management system.

**What is the ISM code?**
After some very serious incidents occurred in the late 1980s, in which human error including management faults were identified as contributing factors, the IMO adopted Guidelines on Management for the Safe Operation of Ships and for Pollution Prevention. In 1995 the Guidelines on implementation of the International Safety Management (ISM) Code by Administrations were adopted by the IMO. The Guidelines have regularly been revised (2001/2009). The Guidelines recognise the existing international instruments as the most important means of preventing maritime casualties and pollution of the sea and include sections on management as well as safety and environment.

The ISM Code was made mandatory in 1998 through the International Convention for the Safety of Life at Sea (SOLAS). The ISM Code establishes an international standard for the safe management and operation of ships and for the implementation of a safety management system (SMS). Effective implementation of the ISM Code aims to
stimulate pro-active and conscious compliance with external rules to create a self-regulation of safety and the development of a ‘safety culture’. A safety culture should involve each and every employee, from top management to workers, on board ships and on shore, to feel responsible for safety and performance and to take actions that manifest this. Every company is expected “to designate a person or persons ashore having direct access to the highest level of management”.

**How do dredging contractors approach the issue of Safety?**

Generally, Safety policies are divided into four categories: health and human resources, quality assessment, environment and security of vessels. All major international dredging contractors abide by the recognised standard international codes and have established systems for avoiding unnecessary risk and limiting the number of injuries and incidents. These programmes require a major effort from management and staff as well as a commitment to investments in training and workshops in order to bring complete awareness to both management and the work floor. The aim is to reduce lost-time incidents and to limit the frequency of accidents, which leads to a more efficient operation and lower risks for employees.

They usually focus on a specific working method, safety rule or job planning. Toolbox talks may be organised when new activities are being undertaken on projects or when working methods have been adapted or altered. However, such talks are best held more often, even without changes to working methods or activities. Issues that may arise regularly at Toolbox talks are PPE, working with pipelines, chemicals, lifeboats, excavations, mooring lines and just about every aspect of a dredging operation.

**What is PPE?**

Personal Protective Equipment (PPE) is a crucial part of worker safety and can include face shields, safety glasses, hard hats, and safety shoes. Additional PPE may also include high-visibility vests, high-visibility fleeces, and raincoats and trousers. This type of equipment has become standard for the dredging industry and has accounted for a significant reduction in accidents and incidents that could endanger a worker. In each case the type of PPE to be used is determined through a risk assessment.

**How do dredging contractors ensure compliance with Safety regulations?**

Ongoing efforts are being examined all the time as dredging companies are always seeking better working methods and increased teamwork, also between client and (sub)contractors. Compliance audits are one method. Depending on the particular operation a dredging project can expect to be audited by an external entity usually appointed by the client. For instance, an Occupational Safety and Health Suitability Audit, Occupational Safety and Health Compliance Audit and/or a Site Safety Survey Report might take place. Also ISM/ISPS audits may be undertaken. In addition, depending on the size of the operation, a QHSE...
staff member may conduct several hundred project inductions, hundreds of pre-start meetings at the start of new shifts; and regularly scheduled toolbox meetings which address a particular topic or a topic related to an incident that may have just taken place. Standard training as well as external trainings for First Responders and drills as per ISM requirements may be performed.

If appropriate, Hazard Identification (HAZID) meetings may be held. HAZID is a formal and systematic examination of the planned work activities and the HAZID technique is used to identify the potential occurrence of hazardous events and their impact on people, property or the environment, or operational challenges and their impact on process efficiency or productivity. The technique is based on the premise that a hazard will not be realised if the process is always operated within its design and planned intent. HAZID may identify controls to reduce potential risks and hazards such as interference with third parties, onshore and marine; neighbouring blasting operations; and manoeuvring with floating equipment.

What are the main challenges about Safety facing dredging contractors?

For many industries where heavy machinery is being used, safety, health and environment have steadily gained more attention. Often jobs are undertaken with many subcontractors with their specialised areas of expertise. Ensuring that all personnel working on a job, from both the contractor and subcontractors, are well trained and informed has become a crucial challenge in the safe execution of a project.

To maintain and continually improve levels of quality assurance, safety, health and environment, modern dredging companies have implemented training programmes aimed at teamwork and communication. These safety programmes try to ensure that workers are aware of how to avoid risky situations and how to protect themselves and their co-workers. On-the-job safety demands constant training and coaching of all personnel to improve risk awareness. The ultimate goal of contractors is to eliminate, or at least limit, incidents and accidents.

Why does Safety remain such an urgent and important issue?

With every new job and every new set of employees, the safety situation needs to be re-assessed and thus implementing safety measures is an ongoing activity. The application of thorough training, compliance with internationally recognised standards and constant vigilance regarding Quality Assurance and Health, Safety and Environment (QA-HSE) has resulted in less downtime, fewer accidents, healthier employees, improved performance and the delivery of quality projects. A win-win for client and contractors, employers and employees.

For further reading and information


www.imo.org/OurWork/HumanElement/SafetyManagement/Pages/Default.aspx

www.iso.org

This brochure is presented by the International Association of Dredging Companies whose members offer the highest quality and professionalism in dredging and maritime construction. The information presented here is part of an on-going effort to support clients and others in understanding the fundamental principles of dredging and maritime construction.