

Diving contractor's 'Permit to Dive'



12.6 Request for Permit to Dive

NO DIVING OPERATIONS ARE TO BE CARRIED OUT PRIOR TO THE PERMIT BEING COMPLETED IN FULL

Date: 21.06.08 Time: 11.15 Job No: DIVE No 2 Client: IYAN SALVAGE

Site/Location: UB38 ENGLISH CHANNEL

Job Description: ESTABLISH MAIN SHOT TO WORK SITE

DIVING SUPERVISOR:

A Diving Project Plan has been prepared and there is a copy on site?
A Risk Assessment has been prepared and there is a copy on site?

YES/NO
YES/NO

Diving Supervisor's Name: (Print) Signature: *M.J. Shaw*

Contact Numbers:

CLIENT REPRESENTATIVE RESPONSIBLE FOR PERMITS AND ISOLATIONS

Vessels/Work Site Permit to Work Ref No: NORMA

The Client's Representative will:

1. Ensure the 'A' Flag is displayed at all times during the Dive Operation.
2. Ensure the vessel/worksite staff monitor the VHF/Radio channel: at all times informing the Diving Supervisor of any changes or potential risks that might occur.
3. Take steps to eliminate ALL hazards to divers from propellers, inlets, outlets, localised shipping, pumps, machinery, movements etc.
4. Liaise with the Diving Supervisor regarding all operations.

Precautions Taken:

1. Switch off the V.S.P. From the bridge.
2. " " " the emergency isolation.
- 3.
- 4.
- 5.



I declare that all of the aforementioned requirements have been carried out. Precautions have been taken and these safety arrangements will be maintained for the duration of the Diving Operation.

Name: (Print) Signature: *[Signature]*

Contact Tel No's:

COMPLETION

Diving Supervisor: (Print) Signature: Date:

Client Rep Name: (Print) Signature: Date:

Position:

THE DOCK MASTER HAS BEEN INFORMED? YES/NO

Post Incident 'Permit to Dive' checklists

MV Norma Permit to Dive

INSTRUCTIONS FOR DIVING OPERATIONS Bridge

- **Control-switch on fore steering panel with the sign:**
 - **MAIN / OFF / BACK UP**
- **SWITCH THE CONTROL SWITCH TO OFF, put it in the middle**
- **Inform officer on duty in engine room to switch off VSP**
- **Ask confirmation from officer on duty in engine room that VSP's are off**
- **Push both 'Emergency Stop' buttons on the fore steering panel (yellow cover, red button). Put Isolation cover over the buttons**
- **Push both 'Emergency Stop' buttons on the aft steering panel (yellow cover, red button) Put Isolation cover over the buttons**
- **Inform all ships/authorities about diving operations**
- **Put 'Diver in Water'-flag**
- **Confirm divers that diving operations can start**
- **Only master and 1st mate have permission to start up VSP's after confirmation from divers that all diving operations are suspended.**

The following signatures signify that all of the above instructions are in place

Signed on behalf of MV Norma Name: _____ Function: _____

Date: __ - __ - ____ Time: _____

Signed on behalf of Northern Divers Name: _____ Function: _____

Date: __ - __ - ____ Time: _____

Completion of the works:

Signed on behalf of MV Norma Name: _____ Function: _____

Date: __ - __ - ____ Time: _____

Signed on behalf of Northern Divers Name: _____ Function: _____

Date: __ - __ - ____ Time: _____

MV Norma Permit to Dive

INSTRUCTIONS FOR DIVING OPERATIONS, Engine room

- Request from bridge to switch off VSP's for diving operations
- Push RED stop button for Aft VSP
- Push RED stop button for fore VSP
- Make visual inspection of both VSP's and make sure they do NOT turn
- Confirm to the bridge that VSP's are switched off
- Restart of the VSP's only on command of the Master or 1st Mate

NO EXCEPTIONS TO THIS PROCEDURE !!!

The following signatures signify that all of the above instructions are in place

Signed on behalf of MV Norma Name: _____ Function: _____

Date: __ - __ - ____ Time: _____

Signed on behalf of Northern Divers Name: _____ Function: _____

Date: __ - __ - ____ Time: _____

Completion of the works:

Signed on behalf of MV Norma Name: _____ Function: _____

Date: __ - __ - ____ Time: _____

Signed on behalf of Northern Divers Name: _____ Function: _____

Date: __ - __ - ____ Time: _____

Vessel's employment history since 2005

From	To	Operation
01.08.05	25.09.05	Laid Up
26.09.05	31.11.05	Wreck removal
01.12.05	22.07.06	Wreck removal
23.07.06	24.08.06	Laid up
25.08.06	19.09.06	Bunker removal
20.09.06	16.12.06	Laid up
17.12.06	24.12.06	Demolition work
25.12.06	27.10.07	Laid up
28.10.07	13.11.07	Jetty removal
14.11.07	16.06.08	Laid up

Extract of the ISM Code - Interim certification

14 INTERIM CERTIFICATION

14.1 An Interim Document of Compliance may be issued to facilitate initial implementation of this Code when:

- .1** a Company is newly established; or
- .2** new ship types are to be added to an existing Document of Compliance.

following verification that the Company has a safety management system that meets the objectives of paragraph 1.2.3 of this Code, provided the Company demonstrates plans to implement a safety management system meeting the full requirements of this Code within the period of validity of the Interim Document of Compliance. Such an Interim Document of Compliance should be issued for a period not exceeding 12 months by the Administration or by an organization recognized by the Administration or, at the request of the Administration, by another Contracting Government. A copy of the Interim Document of Compliance should be placed on board in order that the master of the ship, if so requested, may produce it for verification by the Administration or by an organization recognized by the Administration or for the purposes of the control referred to in regulation IX/6.2 of the Convention. The copy of the Document is not required to be authenticated or certified.

14.2 An Interim Safety Management Certificate may be issued:

- .1** to new ships on delivery;
- .2** when a Company takes on responsibility for the operation of a ship which is new to the Company; or
- .3** when a ship changes flag.

Such an Interim Safety Management Certificate should be issued for a period not exceeding 6 months by the Administration or an organization recognized by the Administration or, at the request of the Administration, by another Contracting Government.

14.3 An Administration or, at the request of the Administration, another Contracting Government may, in special cases, extend the validity of an Interim Safety Management Certificate for a further period which should not exceed 6 months from the date of expiry.

14.4 An Interim Safety Management Certificate may be issued following verification that:

- .1** the Document of Compliance, or the Interim Document of Compliance, is relevant to the ship concerned;

- .2 the safety management system provided by the Company for the ship concerned includes key elements of this Code and has been assessed during the audit for issuance of the Document of Compliance or demonstrated for issuance of the Interim Document of Compliance;
- .3 the Company has planned the audit of the ship within three months;
- .4 the master and officers are familiar with the safety management system and the planned arrangements for its implementation;
- .5 instructions, which have been identified as being essential, are provided prior to sailing; and
- .6 relevant information on the safety management system has been given in a working language or languages understood by the ship's personnel.

* Refer to the Revised Guidelines on implementation of the International Safety Management (ISM) Code by Administrations, adopted by the Organization by resolution A.913(22).

Extract of the approved code of practice for
commercial diving projects inland/inshore

Clients and others

Regulation 4

Regulation 4

Every person who to any extent is responsible for, has control over or is engaged in a diving project or whose acts or omissions could adversely affect the health and safety of persons engaged in such a project, shall take such measures as it is reasonable for a person in his position to take to ensure that these Regulations are complied with.

ACOP 4

26 The actions and activities of other people can affect the safety of the dive team even though they are not members of the team, and therefore they may have responsibilities for ensuring that the Regulations are complied with for those matters under their control. These people include:

- (a) the client who has placed a contract with a diving contractor to deliver a diving project. The client may be the owner of a site where diving work is going to take place, or the owner's agent, or a contractor acting on behalf of the owner or agent. If the owner or agent appoints an on-site representative, he or she should be satisfied that that person is competent for the task;
- (b) the principal contractor carrying out work for the client and overseeing the work of the diving contractor;
- (c) a consultant acting for the client, owner, contractor or agent;
- (d) a master of a vessel or floating structure from which diving is to take place who controls the vessel or floating structure and who has overall responsibility for the safety of the vessel or floating structure and all personnel on it;
- (e) any other person whose actions or activities may affect the safety of the diving project.

27 These people should consider carefully the actions required of them to comply with the Diving Regulations. They should, where appropriate:

- (a) take reasonable steps to ensure that any diving contractor selected is capable of complying with the Diving Regulations;
- (b) make available to the diving contractor the results of any risk assessments undertaken by other persons under other statutory legislation that could affect the health and safety of the dive team;
- (c) agree to provide facilities and extend all reasonable support to the supervisor or diving contractor in the event of an emergency. The diving project plan should reflect this;

- (d) consider whether any known underwater or above-water items of plant under their control may cause a hazard to the dive team. Such items may include locks, weirs, water intakes or discharge points causing suction or turbulence, and ship propellers. The diving contractor should be informed of the location and nature of such hazards. They should also provide the diving contractor, in good time, with details of any changes to this information occurring before or during the course of the diving project;
- (e) consider whether other activities in the vicinity may affect the safety of the diving project; for example, they may need to arrange for the suspension of loading or unloading of vessels, piling work or demolition activities;
- (f) ensure that they have a formal control system in place to cover diving activities, for example, a permit-to-work system;
- (g) provide the diving contractor with details of any possible substance likely to be encountered by the dive team that would be a hazard to their health, for example sewage or chemicals. This information should be provided in writing and in sufficient time to allow the diving contractor to carry out the relevant risk assessment and, if necessary, to take appropriate action;
- (h) keep the supervisor informed of any changes that may affect the supervisor's diving operation in so far as they have control over or knowledge of such changes; for example, vessel movement in a harbour or on a river, so that diving can be suspended if the diving site is, or may be, endangered.

28 Other groups of people, for example harbour masters, may have authority over the dive under Regulations other than the Diving Regulations.

29 The duty under this regulation extends to diving contractors, supervisors, divers and people involved in the diving project whether directly or indirectly, for example crane operators, lorry drivers, and maintenance personnel. They should ensure that their tasks and how they undertake them do not affect the safety of the dive team.

Diving project plan and risk assessment

Regulation 6

Regulation 6(2)

- (2) *The diving contractor shall -*
- (a) *ensure that, before the commencement of the diving project, a diving project plan is prepared in respect of that project in accordance with regulation 8 and that the plan is thereafter updated as necessary during the continuance of the project;*
 - (b) *before the commencement of any diving operation -*
 - (i) *appoint a person to supervise that operation in accordance with regulation 9;*
 - (ii) *make a written record of that appointment; and*
 - (iii) *ensure that that person is supplied with a copy of any part of the diving project plan which relates to that operation;*
 - (c) *as soon as possible after the appointment of a supervisor, provide that supervisor with a written record of his appointment.*

Regulation 8

Regulation 8(1),(3)

- (1) *The diving project plan shall be based on an assessment of the risks to the health and safety of any person taking part in the diving project and shall consist of a record of the outcome of the planning carried out in accordance with regulation 6(1) including all such information and instructions as are necessary to give advice to and to regulate the behaviour of those so taking part to ensure, so far as is reasonably practicable, their health and safety.*
- (3) *The diving project plan shall identify each diving operation which makes up the diving project and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one person.*

ACOP 6(2),8(1),(3)

34 The diving contractor is responsible for ensuring that a risk assessment is carried out and a diving project plan prepared.

Risk assessment

35 A risk assessment must be carried out to identify site-specific hazards and their risks.

36 As a matter of safe working practice, the project risk assessment should be reviewed at regular intervals, even if the risk is minimal, to ensure that the risk assessment is still adequate and does not need to be revised.

37 A risk assessment made under the Diving Regulations will cover, in part, the obligation to make an assessment under the Management of Health and Safety at Work Regulations 1992. There will be no need to repeat those aspects of the assessment, so long as they remain valid, in any other assessment that is carried out. However, all significant risks not covered by the diving project assessment (including risks to members of the public arising from the diving project/diving activities) must be covered by the risk assessment carried out under the Management of Health and Safety at Work Regulations 1992 or in any assessment required to be carried out under other specific regulations.

Diving project plan

38 Based on this information, the diving project plan must state how the hazards identified and risks assessed will be controlled. The diving project plan may include a diving contractor's standard operating rules, including generic risk assessments. All documents should show the date upon which they were prepared. The diving project plan should record the outcome of the planning carried out in preparing the risk assessment including all information and instructions which, so far as is reasonably practicable, are necessary to protect the health and safety of all those taking part in the diving project. It should also explain when and how reviews of the plan, the dive site and the specific risk assessments should be conducted. The results of the review will only need to be recorded if there has been a significant change.

39 The diving project plan must cover the general principles of the diving techniques to be used as well as the needs of the particular operation. It must also provide contingency procedures for any foreseeable emergency, including retrieving injured and/or unconscious divers from the water.

40 Each supervisor must be given a copy of that part of the diving project plan relevant to the diving operation that he or she will be supervising.

41 Some examples of hazards and risks are given in paragraphs 42-72. However, this is not a complete list of all hazards or all measures needed to control risk and in special circumstances, or if certain contingencies arise, more stringent safeguards may be needed.

General

Diving methods

42 Diving methods and equipment should be determined as part of the risk assessment.

43 Diving using surface-supplied breathing apparatus is the preferred method of carrying out diving operations under this Code because it is considered to be the safest method of diving for the vast majority of diving operations covered.

44 The diving contractor should ensure as a minimum that:

- (a) the diver wears a full face mask which should be fitted with either an oral nasal or a mouthpiece;

ADC Safety Alert 03/08



SAFETY ALERT

ADC Safety Alert 3/08:

27th September 2008

Very Near Miss Incident Involving a Divers Umbilical

The Introduction:

The diving contractor was involved in a salvage operation that was being carried out in UK territorial waters. The diving operation formed part of a larger recovery activity requiring the use of a specialist, Voith propelled salvage vessel fitted with heavy lift marine crane. The surface support team, comprising specialist salvage crew and vessel operators, predominantly of European origin, were working alongside the diving contractor on the salvage vessel.

The Near Miss Incident:

At the start of the salvage operation a heavy down line / working line was required to be positioned to replace the thin temporary line used to mark the wreck, this would then enable a secure line to be secured to a fixed point on the wreck which would be used for the duration of the works. The dive was planned to be carried out during a slack water period and to facilitate this final preparations were completed on deck.

The diving supervisor approached the Master of the Vessel on the bridge to seek permission to commence diving when the tide turned. A Permit to Dive form used by the contractor was presented to the Master for confirmation that all machinery was isolated and that diving was cleared to commence. The Master checked and isolated the controls on the bridge and signed the permit returning it to the diving supervisor.

As soon as the tidal conditions were considered to be suitable the diver entered the water. Soon after commencing his descent along a temporary down line the diver informed the supervisor that he needed slack on his umbilical. Slack was provided, but the diver continued to struggle to overcome the pulling on the umbilical and requested further slack. Over the communications the supervisor proposed terminating the dive to await a change in the tidal condition, believing the tidal flow to be the primary cause of the problem, whilst attempting to respond the diver reported he was in difficulty and soon after communications were lost.

The Outcome:

Unbeknown to the Supervisor or the diver immediately prior to the event, the Voith propulsion unit adjacent to the diver, despite being isolated on the bridge – as confirmed by the signed Dive Permit - was in fact still operating, and the divers umbilical had been progressively drawn into the thrusters and become entangled. Once the supervisor was aware what was occurring he contacted the bridge and the emergency shut down of the engines was completed.

In this instance the very alert diver managed to grab hold of the umbilical leading to surface, switched to bail out supply and cut his own umbilical before making an ascent to

The Association of Diving Contractors

The Association represents diving contractors who are involved with inland or inshore diving operations in the UK and Ireland.

the surface where he was rendered assistance by the support team and recovered safely to the deck.

Observation:

This was a very near miss incident that could have had a very different outcome had it not been for the experience of the diver or the actions taken by the supervisor.

The diving contractor had correctly attempted to implement suitable controls to ensure that diving was safe to proceed by using a well developed Permit to Dive system. Despite these efforts, there appeared to be a significant breakdown in the level of control applied to the operating machinery on the salvage vessel.

During the post incident investigation it was confirmed that whilst the action on the bridge isolated the steering, a separate verbal communication between the bridge and the engine room was required to actually shut down the propulsion system.

Lessons:

The vessel operator has a clear responsibility to ensure that, prior to signing a Permit confirming that the shutdown of machinery has occurred, has actually been achieved.

Diving supervisors whilst able to ask the appropriate questions, may not be technically able to make physical checks, and as a result are reliant on the competence and vigilance of the more experienced vessel crew and most importantly the Master or Chief Engineer of the Vessel.

Whenever possible, the isolations of key operating machinery should result in a physical lock and tag out procedure the master control for which should be held by the supervisor whilst diving is underway.

This is not the first time an incident of this type has occurred. Until such times as the Association, in consultation with other specialist groups, is able to develop and circulate clear recommendations and if appropriate, guidance for Diving Contractors and Ship Operators to adopted in an effort to mitigate or eliminate the potential machinery isolations, a high level of checking should be put in place when Permit to Dive Systems are being used on vessels. In addition a high level of vigilance should be adopted by those tending the divers umbilical.

Roger O'Kane

Secretary.

If you have an incident or accident and have learnt lessons as a result, please advise the ADC Secretary so that the information can be compiled to remove specific reference to persons or organisation and distributed to all other members to mitigate the potential for similar incidents to occur elsewhere.

The Association of Diving Contractors

The Association represents diving contractors who are involved with inland or inshore diving operations in the UK and Ireland.

MAIB Safety Flyer

FLYER TO THE SHIPPING INDUSTRY Hazardous Incident - *Norma* - 21 June 2008

Figure 1 On 21 June 2008, *Norma*, a Belgium registered self-propelled crane barge (**Figure 1**) was assisting in a salvage operation to remove a wreck in the Dover Strait. By 1000, the vessel's anchors were holding her in position, and the master instructed the OOW to switch off the vessel's Voith Schneider propellers. At 1115, the master signed the diving contractor's 'permit to dive' request, on which he verified that the vessel's engines were stopped and isolated. In fact, the propellers were still rotating. The OOW had turned the steering control switch to 'off' which only disabled the control of the pitch of the propeller blades; he did not instruct the duty engineer to stop the electric motors.



Norma

The diver (**Figure 2**) entered the water and, during his descent to a depth of about 20m, the umbilical containing his air supply and communication links was set towards the aft propeller by the tidal stream. The umbilical, along with a polypropylene rope the diver was carrying, then became entangled in the propeller and the diver was pulled rapidly towards its rotating blades. Although spinning, the diver managed to switch to the air supply provided by his 'bail-out' bottle.

Figure 2



Diver

Figure 3



Voith Schneider propeller

The umbilical was also pulled from *Norma's* aft deck and severed. The diving supervisor immediately contacted the bridge and the master quickly determined from the engine room that the propeller units were still running. The electric motors were stopped with the diver only about 3 metres away from the propeller (**Figure 3**). The diver then managed to free himself from the entangled mass of umbilical cord and rope and make his way to the surface, where he was safely recovered.

The Lessons

Loss of life or serious injury was only prevented by the rapid actions taken to stop the propellers, and the quick thinking of the diver, in what must have been an extremely harrowing situation. However, the incident was entirely preventable, and it is important that lessons are learned. These include:

- **During diving operations, it is essential that both ships and diving contractors have procedures in place to establish and maintain a safe working environment, regardless of the scale or purpose of the operation.**
- **Although diving contractors usually have a sound appreciation of the generic risks involved when working in the vicinity of merchant vessels, the responsibility for ensuring that appropriate shipboard control measures are taken rests with a vessel's crew.**
- **The operation of machinery which poses a risk to divers should be prevented by physical barriers such as the removal of fuses whenever possible.**
- **A master should authorise the commencement of diving operations only when he is satisfied that the required control measures have been taken and all key ship's personnel, such as the chief engineer, have been informed.**
- **Crew must be fully familiar with the operation of critical machinery that may pose a risk to divers.**

Further details on the accident and the subsequent investigation can be found in the MAIB's investigation report, which is posted on its website:

www.maib.gov.uk

Alternatively, a copy of the report will be sent on request, free of charge.

Marine Accident Investigation Branch

Carlton House

Carlton Place

Southampton, SO15 2DZ

Telephone 023 8039 5500

Email: maib@dft.gsi.gov.uk