BIG ORANGE XVIII: COLLISION IN EKOFISK FIELD

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One of life's enduring lessons is encapsulated by the saying 'we learn by our mistakes'. We all make mistakes and generally we do learn from them. Companies should be no different. However, there is evidence that the offshore industry continues to fail to learn from its own direct mistakes or near misses, and also does not learn from the 'mistakes' of others. The *Big Orange XVIII* collision in the Ekofisk field in June 2009 is one such event and is a lesson that we should all learn from.

At the Standard Club, we have identified through our Member Risk Reviews and condition surveys that significant numbers of companies do not have:

- effective accident or near-miss analysis
- effective past incident follow-up
- effective internal audits

If effective accident analyses and/or near-miss analyses are not carried out and followed by effective internal audits, then lessons will not be learnt.

In addition, the club has identified that complacency and lack of leadership is often an issue in major incidents. This is mentioned in *The Human Element – a guide to human behaviour in the shipping industry*, which was recently published by the MCA (Maritime and Coastguard Agency www.mca.gov.uk) and to which the club contributed. These were issues prevailing in the *Big Orange* incident.

The Norwegian Petroleum Safety Authority (PSA) published a comprehensive report in October 2009 about the collision of the well service ship *Big Orange XVIII* with the Ekofisk 2/4-W platform.

The Ekofisk field is a group of offshore units located within the Norwegian continental shelf.

DESCRIPTION OF EVENTS

The ship was engaged to carry out a well stimulation operation in the Ekofisk field off the Norwegian coast. The ship was approaching a collection of Ekofisk facilities when the ship collided with one of these facilities whilst its propulsion systems were reportedly 'out of control'. Fortunately no-one was hurt either on board the ship or the facilities, but the potential loss of life and damage was enormous.

The bridge was manned by the second officer (who had just joined the ship five days previously) and the master.

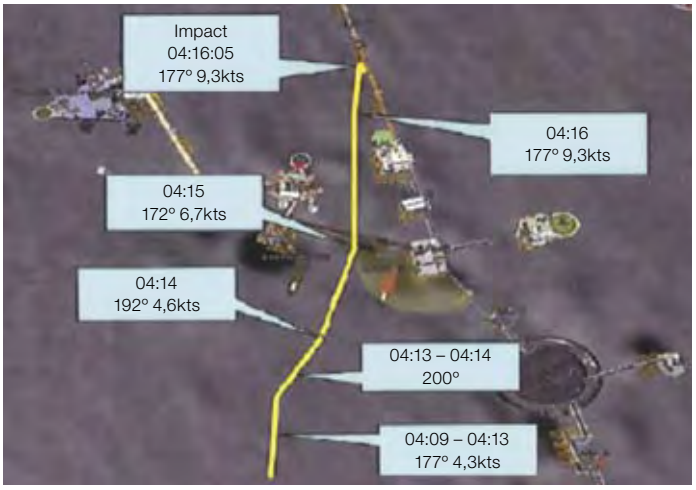
Timeline

03.40 hrs	*Big Orange XVIII* called by Ekofisk radar control to prepare for well stimulation.
04.00	Master on the bridge and takes over 'the con' (is in command of the ship). Ekofisk contacted to allow permission to enter the 500m safety zone. The steering gear mode was changed from 'auto pilot' to manual steering.
04.02	The telephone on the bridge rings with an outside call from the charterer's representative on the installation. The master resets the steering back to auto pilot mode, leaves the steering position and goes to the radio room to answer the telephone call. The radio room is separate to the bridge. The brief call lasted for about 30 seconds and the master returned to the steering position. However, he did not reactivate the manual steering. The ship continued in auto pilot.
04.06-08	The ship is at this point proceeding at 8.4 knots
04.11	The ship is given permission to enter the 500m safety zone.
04.13	The ship is still in auto pilot mode. The master reduces speed on the main engines but is now aware that the ship is not responding to manual helm movements and to thruster instructions. (Note: when the steering is operated in auto pilot mode, manual steering is obviously ineffective and with this ship's particular set-up, the azimuth thrusters could not be operated in manual mode unless the steering was in manual).
04.14-15	The *Big Orange XVIII* is now inside the safety zone and passes under the Ekofisk 2/4-X passenger bridge. The master tries to stop the ship by reversing the azimuth thrusters through 180 degrees.
04.16	Out of control, the *Big Orange XVIII* passes Ekofisk 2/4-FTP and *COSL Rigmar* (accommodation unit) at nearly 7 knots and between 4 to 10m. Master informs Ekofisk radar that the ship had lost power (this was not in fact correct).
04.17	*Big Orange XVIII* collides with the Ekofisk 2/4-W water injection facility at 9.7 knots.
	After the incident, the ship was eventually able to move off under its own power and steering.

Significant material damage was caused to the Ekofisk 2/4-W injection facility.

Even though there were no injuries or pollution, the PSA classified the collision as a major accident because the facilities' integrity was endangered and there were potential multiple personal injuries on the other facilities.

The potential consequences resulting from the size and speed of the ship could have resulted in a collision energy that was six times higher than the facilities were constructed to withstand.



The course of Big Orange XVIII based on radar plot from Ekofisk Radar and AIS

Damage to Ekofisk 2/4's load-bearing structure, conductor and riser (source: ConocoPhillips)

POTENTIAL CONSEQUENCES

The potential consequences resulting from the size and speed of the ship could have resulted in a collision energy that was six times higher than the facilities were constructed to withstand. The jack-up accommodation unit *COSL Rigmar* has the capacity to accommodate up to 290 personnel and the report considers it unlikely to have withstood an impact collision at the speed at which the *Big Orange XVII* was travelling.

The facility Ekofisk 2/4-Q, which had 120 personnel on board would have sustained extensive damage. The 8-inch gas pipeline running from the Ekofisk 2/4-C to 2/4-13 units could have been damaged, resulting in fire and gas explosions with loss of life.

It was by pure chance, and nothing more, that the ship hit an unmanned unit with only material damage to the ship and unit. The ship as can be seen from the attached photo sailed through the field and could have impacted any one of the nearby installations. The potential for loss of life was considerable.

PROBABLE VIOLATIONS OF PSA REGULATIONS

- field operator had not complied with requirements to monitor activity within the 500m safety zone. Speed restrictions within the safety zone were not complied with
- proposed measures following a similar collision in 2005 had not been fully implemented, namely:
  - informing shipping companies of field measures to be implemented
  - implementing the safety zone entry requirements

IMPROVEMENT RECOMMENDATIONS (OBSERVATIONS WHERE FLAWS WERE IDENTIFIED WITHOUT SUFFICIENT PROOF TO CONFIRM VIOLATION OF REGULATORY REQUIREMENTS)

- field operator's safety management system relating to the entering of vessels was not sufficiently complied with

OTHER COMMENTS

- division of responsibility/assignment of duties on the ship's bridge were insufficient
- the second officer's competence was not ensured
- the second officer was new to the role and had not received the required training in accordance with the shipping company's own guidelines (or to normally accepted ISM familiarisation procedures)
- the ship did not comply with the hours of work/rest regulations
- the following guidelines and regulations were not complied with: Norwegian Safety at Sea Act, IMO ISM Code, STCW regulation, NWEA (North West European Area) guidelines for the safe management of offshore vessels.

Ekofisk 2/W4-W

LESSONS LEARNT

Reference was made in the report specifically to two earlier similar incidents in 2004 and in 2005, which if the lessons learnt had been taken on board may have prevented this incident from occurring.

The first involved a ship that collided with a drilling facility, where the officer of the watch (OOW) had not entirely complied with the 500m safety zone checklist before entering the 500m zone. The auto pilot was not deactivated before entering the safety zone. The OOW was convinced that the auto pilot was deactivated.

The second incident in 2005 related to a supply ship colliding with a unit in the same field. The field operator's internal investigation recommended several measures, including checking the use of the auto pilot prior to entering the 500m safety zone.

The NWEA guidelines, good practice and common sense dictate that a stringent procedure, using a formal checklist, should be carried out before the ship enters the 500m safety zone. The club has also seen significant claims arising from the failure to carry out checks before entering the 500m safety zone and not adhering to field and company procedures. These have included:

- failure to test DP (dynamic positioning) systems before entering
- failure to properly investigate DP and manoeuvring system alarms
- failure to ensure all manoeuvring systems are tested
- failure to test steering systems
- failure to reduce to a safe speed
- failure to ensure sufficient and adequately trained/familiarised personnel are on the bridge
- failure to ensure command and control of the bridge has been formally agreed

All companies should reinforce their safety zone entry procedures and ensure that they are diligently followed. The additional lesson learnt is that time and resources should be provided so that personnel can be fully familiarised with the equipment they are operating. A number of major incidents have resulted from personnel not being familiar with the equipment being used.

This incident was 'third time unlucky', it should not have happened; everyone should learn from their own and other people's mistakes.

All photos have been taken from the PSA report available on its website.