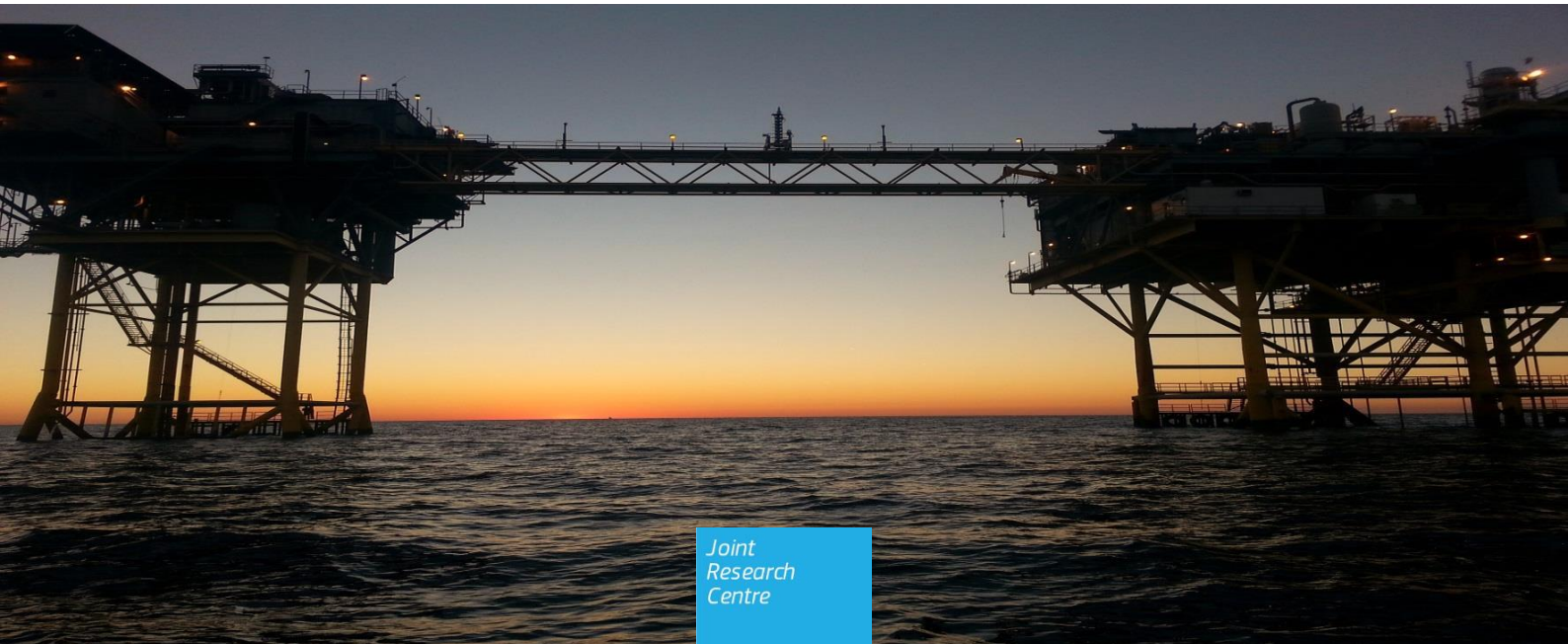
European Commission

Guidelines for competent authority response and investigation of offshore incidents

Walker, S., Kingston, J., Tarantola, S.

2019



Joint Research Centre

This publication is a report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policymaking process. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication.

Contact information
Name: Stefano Tarantola
Address: European Commission, Joint Research Centre, via E. Fermi 2749, I - 21027 Ispra, Italy
Email: stefano.tarantola@ec.europa.eu
Tel.: +39 0332 789928

EU Science Hub
https://ec.europa.eu/jrc

JRC116652

PDF ISBN 978-92-76-04000-2 doi:10.2760/293765

Luxembourg: Publications Office of the European Union, 2019

© European Union, 2019

The reuse policy of the European Commission is implemented by Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Reuse is authorised, provided the source of the document is acknowledged and its original meaning or message is not distorted. The European Commission shall not be liable for any consequence stemming from the reuse. For any use or reproduction of photos or other material that is not owned by the EU, permission must be sought directly from the copyright holders.

All content © European Union, 2019, except: cover page. Source: [Pixabay.com]

How to cite this report: Walker, S., Kingston, J., Tarantola, S., *Guidelines for competent authority response and investigation of offshore incidents*, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-04000-2, doi:10.2760/293765, JRC116652.

Contents

Authors

Steve Walker (Independent Consultant, London, United Kingdom)

John Kingston (Independent Consultant, John Kingston Limited, Stottesdon, United Kingdom)

Stefano Tarantola (European Commission, Joint Research Centre, Ispra, Italy)

Abstract

Discussions with Member States' representatives at the European Union Offshore Authorities Group (EUOAG) have identified the need for sharing good practice concerning Competent Authority investigations to ensure better consistency of approaches.

The JRC has therefore developed these guidelines for Competent Authority response and investigation of offshore incidents, based on its experience of undertaking advisory support for a number of Competent Authorities on inspection- and investigation-related issues, and the training course which it ran for Competent Authorities – in collaboration with the Romanian Regulatory Competent Authority for Offshore Oil Operations at the Black Sea (ACROPO) – in February 2019 in Bucharest, Romania.

This guidance document is primarily aimed at those Member States with less mature offshore industries and investigation procedures, and should provide a common understanding about Competent Authority investigation responsibilities.

1 Introduction

The blowout on the Deepwater Horizon drilling rig on April 20th 2010, whilst drilling the Macondo well in the Gulf of Mexico, significantly raised worldwide awareness of the risks involved in offshore oil & gas operations. In addition to the tragic loss of eleven lives, the blowout released nearly 5 million barrels of oil into the waters of the Gulf, and is considered to be the world's largest accidental oil spill from offshore operations.

In order to ensure a high level of safety in the European offshore oil & gas industry, the European Parliament and Council subsequently published Directive 2013/30/EU on safety of offshore oil and gas operations (OSD), amending Directive 2004/35, obliging Member States to introduce implementing legislation covering wide-ranging requirements for safety and environmental protection during offshore oil & gas operations. Key obligations included the creation of national Competent Authorities to regulate such aspects for offshore oil & gas installations in their waters. Under the Directive, a fundamental role of a Competent Authority (CA) is to oversee compliance by operators and owners, including by inspections, investigations and enforcement actions.

Discussions with Member States' representatives from the European Union Offshore Authorities Group (EUOAG) have identified the need for sharing good practise concerning Competent Authority investigations to ensure better consistency of approaches. Although a workshop entitled "*Offshore Accident Investigation and Reporting*" was organised in 2015 jointly by the JRC and the Department of Labour Inspection of Cyprus[1], considerable changes have taken place since then, both relating to the set-up of new CAs with little experience in investigation activities, and to the publication of a guidance document[2] on Commission Implementing Regulation 1112/2014.

JRC has therefore developed these guidelines[3] for Competent Authority investigations of offshore incidents, based on its experience of undertaking advisory support for a number of Competent Authorities on inspection- and investigation-related issues, and the presentations at the 2015 workshop. The guidance is primarily aimed at those EUOAG Member States with less mature offshore industries and investigation procedures, and should provide a common understanding about Competent Authority investigation responsibilities. These guidelines build on existing practises and approaches from EUOAG members.

[1] See Training and workshop section on the website of the Virtual Centre of Offshore Safety expertise (ViCOS) - https://euoag.jrc.ec.europa.eu/vicos/

[2] See Guidance Documents section of the EUOAG website - https://euoag.jrc.ec.europa.eu/node/11

[3] These guidelines are complementary to two other sets of guidelines developed and published by the JRC – *Guidelines for Inspection of Offshore Installations* (JRC 112738) and *Guidelines for the Assessment of Reports of Major Hazards* (JRC 107405)

The differences between EUOAG CAs, including their differing organisational structures and responsibilities, the variations in their working arrangements with other national authorities, different national legal systems, and (particularly) variations in relationships between CAs and their respective police/enforcement authorities, preclude the development of detailed and comprehensive pan-EUOAG guidelines on CA investigation procedures and practises[4]. There is no single "template" for an EUOAG CA investigation. However, there will be a number of common aspects within all CAs investigation processes, so these guidelines are structured to cover the following aspects:

- The requirements of Directive 2013/30/EU in relation to CA investigations;
- The purpose of CA investigations;
- The selection of incidents for CA investigation;
- The preparation for CA investigations;
- Practical advice on how to conduct a CA investigation;
- The use of appropriate analytical investigation methods/techniques;
- Additional considerations when investigating high profile incidents;
- Concluding a CA investigation.

[4] These described variations do not affect CAs inspection and RoMH assessment activities as much, which is reflected in the different level of detail in the previous JRC guidelines (Footnote 3).

2 The requirements of Directive 2013/30/EU and the purpose of Competent Authority investigation

The requirements for CA investigation activities are defined in various Articles of Directive 2013/30/EU:

- **Article 8(1)(b)** describes the range of functions that CAs are responsible for, and these include "overseeing compliance by operators and owners with this Directive, including inspections, ***investigations*** and enforcement actions";.
- **Article 9(c)** then requires CAs to establish policies, process and procedures for overseeing compliance "*including inspection,* ***investigation*** *and enforcement actions*";
- **Article 26(1)** requires Member States to "initiate thorough ***investigations*** of major accidents occurring in their jurisdiction".

Apart from the specific requirement of MSs to investigate "major accidents"[5], the Directive does not prescribe how CAs should undertake their investigation activities. This provides Member States' CAs with considerable flexibility about the range of offshore incidents they are empowered, or can choose, to investigate, and how such investigations (including their scope, depth, style, etc.) can be carried out[6]. However, the OSD clearly envisages that investigations are part of a CA's effective oversight[7] of operators and owners working in their waters, so the overall context of CA investigation work is clearly as part of securing compliance with the major hazard aspects of the Directive.

As mentioned in the Introduction, EUOAG CAs have differing structures, responsibilities and ways of working, which means that the approach to CA investigations will vary. For those CAs where other public authorities could be involved with their offshore incident investigation, it is crucial that joint ways of working are agreed and adopted, and OSD **Annex III 2(1) (d)** emphasises that:

> "[…] ***where the competent authority is comprised of more than one body***, (the CA shall prepare) […] a formal agreement establishing the necessary mechanisms for joint operation of the competent authority, including senior management oversight and monitoring and reviews, […] ***joint investigation***, internal communications and reports to be published jointly externally".

A Competent Authority's building block for investigation activities, whether undertaken just by the CA itself or in conjunction with other public bodies, will be the OSD Article 9(c) "policy, process and procedures".

BUT – What added value or purpose does a Competent Authority investigation bring, as operators/owners are also likely to be undertaking investigations of their own offshore incidents?

[5] "Major accident" as defined in OSD Article 2(19).

[6] Interestingly, the OSD does not even specify that it has to be the MS's CA who should undertake the Article 26(1) major accident investigation, although the general consensus is that the CA is the most appropriate body to do this.

[7] Further details on the context of CA effective oversight /compliance activities are given in Section 3 of the JRC *Guidelines for Inspection of Offshore Installations* (JRC 112738).

In a similar way to the fact that operators/owners will have their own internal layers of safety/environmental assurance which are in addition to whatever regulatory "inspections" are carried out by the CA, so operators/owners will have their own levels of internal incident investigation regardless of whether the CA deems it necessary to undertake a formal, separate regulatory investigation itself. The reasons for operators/owners conducting their own investigations include:

- Investigation is an essential part of any Safety & Environmental Management System, part of the Plan-Do-Check-Act cycle of management control. As such, operator/owners will need to specify their incident investigation policy and procedures within the RoMHs for their installations, which CAs assess and accept under the terms of the OSD before the installation can operate. Offshore installation operators and owners therefore need to have a robust and appropriate investigation process as part of their legal obligations arising from Article 3(1) of the OSD.
- Investigation enables operators/owners to identify any remedial action from an incident and then take action to prevent any recurrence. This could include changes to processes, changes to hardware, or improvements in competence.
- Investigation provides a mechanism for the operator/owner to learn wider lessons from incidents as part of continuous improvement, to be taken into account at installation, company or even industry-wide level.
- Investigation can provide the operator/owner's senior management with intelligence upon which to monitor and review health, safety and environmental performance, and provides information about whether the organisation is complying with its legal obligations.
- Investigation after a significant incident demonstrates good company values to its workforce and stakeholders.
- Investigation will also provide necessary information for company insurers.

It is important to recognise that an investigation carried out by a CA will be different from that undertaken by an operator/owner for the same incident, as CAs investigate offshore incidents for different purposes. Although there could be some similarities in parts of the investigation process, the CA investigation is not a simple duplication of the work done by the operator/owner, as the CA will have different goals. The immediate purposes of a CA investigation will include:

- To establish, ***objectively and independently***, the facts surrounding the incident. The independent nature of a CA investigation is one of the key factors which distinguishes it from the investigation carried out by, or on behalf of, the operator/owner;
- To objectively analyse the facts to identify both the immediate causes and any deeper, underlying causes of the incident;
- To objectively assess what remedial action needs to be taken by the operator/owner to:
    a) prevent a recurrence; and
    b) to address any underlying causes;

- To arrive at an opinion about whether any breach of legislation within the CA's jurisdiction has occurred, and by whom;
- To determine the range of enforcement actions which are appropriate, and then to initiate such actions;
- To prepare an independent, competent and appropriate investigation report.

CA investigations will need to facilitate a comprehensive analysis of the reasons for the incident, in order to ensure that any remedial actions (including enforcement) will properly reflect the incident causation. Therefore, CA investigation will need to go beyond identifying the more obvious, **immediate causes** (such as "*wrong valve opened*") to explore the hierarchy of causation which includes the **underlying causes** (i.e. the less obvious system or organisational reasons for the adverse event, such as "*valve marking unclear and the permit to work was vague*") and then the **root causes** (i.e. the failures from which the other failures grew, often remote in time and space from the actual adverse incident itself, e.g. "*a lack of monitoring and oversight of the company permit to work systems, a failure to implement company training systems, and poor safety culture*"). The CA remedial actions can then properly focus on resolving the fundamental causes of the incident rather than just rectifying superficial issues.

The causes of offshore incidents will inevitable vary widely. However, experience[8] has shown that certain broad categories are particularly relevant in offshore incidents. These include:

- Inadequate hazard analysis and risk assessment;
- Missing or inadequate operating procedures;
- Inadequate or poorly implemented maintenance systems;
- Sub-standard supervision and communication;
- Inadequacies in permit-to-work systems;
- Competence and training issues;
- Equipment failure with a wide range of technical causes.

The causes of offshore incidents almost inevitably involve some level of human error, but it is essential that causation goes beyond simplistic blaming the operator for a mistake, and instead addresses the whole range of human factors which are so fundamental for managing major hazard industries.

The term "*error*" can encapsulate a wide range of human behaviour, and only by fully analysing this can the appropriate root causes be established:

- Unintended Actions – Lapses or errors, such as omissions, whilst undertaking a familiar job. These are unlikely to be eliminated by training, thus the opportunity of this type of error having significant consequences should be designed out;
- Mistakes – Errors of judgement, where a person does the wrong thing, believing it to be the correct action. Ensuring adequate training and levels of competence is the key element;

[8] HSL Research Paper FP/09/21 "Underlying Causes of Offshore Incidents". www.hse.gov.uk/offshore/offshore-incidents.pdf

- Routine violations – Deliberate deviations from a rule or procedure which, over time, have become the normal way of working for that individual or group of workers. These violations are often done with good intentions ("getting the job done"), but raise issues such as safety culture, supervision arrangements and auditing;
- Exceptional violations – These occur in rare situations, such as an emergency, when the operator has to take actions to deal with unpredicted circumstances. Competence and training are key elements;
- Situational violations – Violations brought about by factors relating to the work environment. For instance, ergonomic issues such as poorly marked or located valves leading to wrong isolation;
- Malicious violations – such as vandalism.

3 Selection of incidents for CA investigation

The Competent Authority's investigation process will start as soon as it is informed of an offshore incident within its MS jurisdiction. There are a variety of both formal and informal ways by which a CA will learn about an offshore incident:

1. Reporting under Commission Implementing Regulation (EU) No. 1112/2014[9]

   This Implementing Regulation (IR) takes forward Annex IX of Directive 2013/30/EU, and requires operators/owners to submit a report to the Competent Authority within 10 days of certain events occurring on, or associated with, their installations. The purpose of the IR is to provide CAs with advance warning of deteriorating conditions of Safety and Environmental Critical Elements (SECEs) on offshore installations within their jurisdiction and to enable comparison of the performance of individual operators/owners and the industry, both within and between Member States. Therefore, whilst the IR was not devised primarily as an incident "notification" mechanism, it is one of the formal ways by which CAs will find out about potentially significant incidents associated with offshore installations within their waters. Although the 10-day notification period indicates that incidents may not be reported as a matter of urgency, it at least provides a "backstop" incident notification system to CAs. The details requested in the IR report require the operator/owner to have already undertaken a level of investigation themselves, so the IR report forms contain significant details about the incident itself[10].

2. Notification under Directive 2013/30/EU itself

   Art 19(9) of Directive 2013/30/EU requires operators/owners to notify the CA without delay, and within 24 hours, when "*an activity […] poses an immediate danger to human health or significantly increases the risk of a major accident.*" Similarly, OSD Art 30(1) requires operators/owners to notify "[…] *without delay the relevant authorities of a major accident or of a situation where there is an immediate risk of a major accident […]*" Therefore, although the information coming from these two overlapping notification requirements in the Directive will be much less detailed than reports under the Implementing Regulation, their immediacy ensures that this mechanism ought to be the prime way whereby CAs learn about significant offshore incidents.

3. Notification under Directive 92/91/EEC

   Directive 92/91/EEC, concerning the minimum requirements for improving the safety and health protection of workers in the mineral-extracting industries through drilling, also provides requirements for the reporting of some offshore incidents. Article 3.4 of this Directive requires employers to "*without delay, report any serious and/or fatal occupational accidents and situations of serious danger to the competent authorities*." Although the scope of Directive 92/91/EEC is somewhat different from that of the OSD (i.e., it does not cover environmental issues, and has a wider coverage of purely occupational accidents) it does provide another reporting mechanism. Given that Directive 92/91/EEC considerably predates the OSD, in some

[9] Available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R1112

[10] Non-binding guidance on the IR is contained in the "Guidance document on Commission Implementing Regulation (EU) No 1112/2014). See https://euoag.jrc.ec.europa.eu/node/11

Member States it is administered by different public authorities to the CAs set up via the OSD. In such cases, it is essential that the various bodies cooperate to enable sharing of reports under 92/91/EEC and to coordinate investigation activity, if relevant.

Notification by other means

There are a number of other, less formal, ways whereby CAs will learn about the occurrence of a significant incident offshore in the absence of a report from the operator/owner/employer. These include:

- Media reports, for instance when an on-going incident is developing or when an investigative journalist brings a previously non-reported "historical" incident to light;
- Via the CA confidential reporting mechanisms for safety and environmental concerns;
- From other authorities, such as coastguards or aviation authorities.

Whatever the route of such offshore incident reports, once the CA becomes aware of the circumstances it will need to make an informed decision whether to investigate it or not, regardless of whether operators/owners have undertaken their own investigation.

Apart from a bona fide "major accident" as defined in Article 2, where CAs have no alternative but to instigate a thorough investigation, the OSD is not prescriptive about what incidents Competent Authorities must investigate. It is therefore within the discretion of each CA to decide what "non-major accident" incidents to investigate. It is recommended that each CA details the factors which will be taken into account when making such a decision within their investigation policy/process/procedures, bearing in mind that such decisions may subsequently need to be justified under public or stakeholder scrutiny. Consequently, the reasons which influenced the decision whether to investigate a particular incident or not ought to be clearly recorded, should involve suitable specialists (if relevant), and should be made in a timely manner.

The flowchart in Figure 3.1 describes a suggested investigation decision-making process for CAs. Other factors could, of course, be added should a CA wish, and the "*Consider Investigation*" conclusion box could include the consideration of the availability of sufficient CA resources.

Once a decision to investigate has been made by the CA, the type and depth of the investigation to be undertaken will need to be defined. Once again, the OSD is silent on how any investigation should be performed, so a range of investigation options are available to CAs, which include:

a) *A full CA formal investigation, with immediate response and offshore presence*, with the potential for the CA to exercise its full enforcement powers if necessary;

b) *A full CA investigation similar to a), but with no immediate offshore visit*. This may be appropriate for incidents which are less serious and lower profile, which could await the next planned offshore visit if that is reasonably soon after the incident;

c) *An intermediate CA investigation*, with objectives directed at ensuring remedial actions and learning lessons, rather than full exercise of CA enforcement powers such as prosecution;

d) *A monitoring investigation*, reviewing the operator/owner's own investigation before deciding on further CA involvement.

It will be important that CAs have a clear process for deciding which type of investigation will be adopted, and ensure that all those involved are aware of that decision.

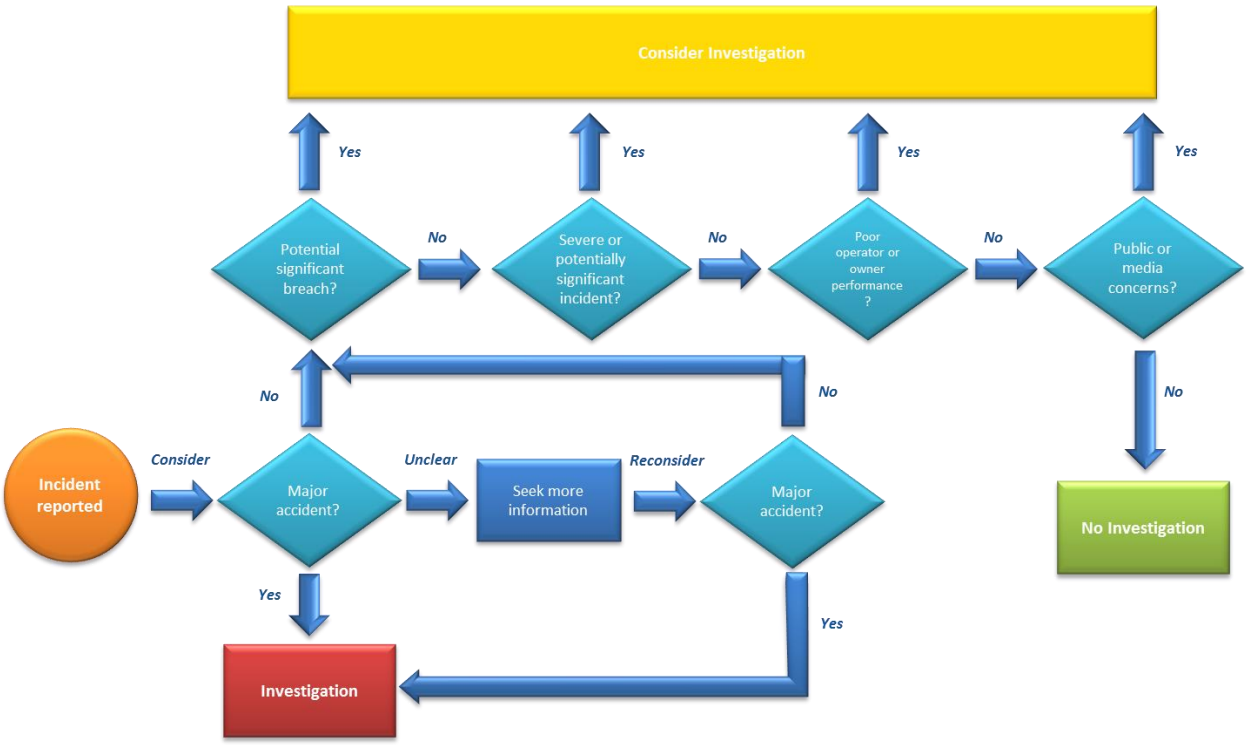


Figure 3 1 Flowchart of investigation decision-making process

There may be occasions in which offshore incidents which are reportable to the CA may also involve other Authorities. This will vary between Member States, depending upon factors such as the domestic legislative requirements, the legal powers and scope of the CA, and existing allocation of legal and oversight responsibilities between public authorities.

It is highly likely that Aviation Authorities will be involved in investigating helicopter accidents on or near installations, with Marine Authorities also being involved for vessel collision or near-miss incidents near installations. Some CA jurisdictions also require Police Authority investigation when prosecution action may be appropriate (e.g. fatalities).

If such other Authorities are likely to be involved in an offshore investigation, it is essential that the Competent Authority establishes good working relationships with them beforehand, and agree clear joint working procedures which reflect the objectives of the OSD to integrate regulatory functions relating to offshore installations into national offshore CAs, even though those CAs may draw on resources from one or more national bodies.

The establishment of an agreed Memorandum of Understanding (MoU) between all the national authorities who could be involved in an offshore investigation is highly

recommended, with periodic “desk-top” exercises to ensure that those arrangements will work efficiently and professionally when called into action.

4 Investigation preparation

A Competent Authority investigation can be complex, involve considerable resources and people, and last a long time. Its management is therefore crucial, and should follow normal project management principles and arrangements, and these arrangements should be detailed in the CAs investigation procedures.

Once a CA has decided to investigate a particular offshore incident, the scope and initial objectives of the investigation should be defined by a Senior Manager and an Investigation Leader should be appointed. Although some smaller and less mature CAs may initially seek to rely upon staff from other public bodies (such as Labour or Environmental regulators, or specialist consultants), it is difficult to imagine the Investigation Leader (i.e. the investigation's "Project Manager") as not being a member of the CA.

Experience has shown that CAs can maximise the use of their resources and time offshore by maximising their preparation onshore. The investigation preparation phase starts with the collection of all possibly available details about the incident. Offshore incidents are dynamic events, therefore following the initial "report" more information may become available as conditions of any casualties change, the operator/owner investigation identifies more information, and any recovery/remedial work progresses on the installation. It is therefore recommended that the operator/owner is contacted regularly for updates about the incident. The CA should also analyse its records for that particular installation and/or the operator/owner to identify relevant information, such as RoMH requirements, previous incident and inspection history, assessment of overall performance, etc. This sort of data gathering could easily be undertaken by support staff.

Based on this initial information and the investigation scope and objectives, the Investigation Leader should assess the resources required, select the investigation team members and secure any necessary specialist support.

Investigation team selection should take into account the competence of potential team members and their specialist knowledge, and this should include any team members who do not belong to the CA itself. It is good practice to have at least two CA personnel in the team – often this can be sufficient in case of a straightforward incident.

A meeting of the investigation team before any offshore visit is considered essential. For those Member States where other public authorities (for instance, Police, Coastguard, or Labour Inspectorates) could be involved with investigating the incident, the relevant personnel from those other authorities should also be included in the pre-investigation meeting. This expectation should be reflected in the previously agreed joint working arrangements which the CA has in place.

The purpose of the pre-investigation meeting is to:

- Agree/finalise the investigation scope and its objectives (which could, of course, be further modified as the investigation proceeds);
- Ensure that all investigation team members, especially those who are not from the CA, are fully aware of the CA investigation policy/process/procedures;
- Agree investigation team member responsibilities/tasks and lines of command;
- Provide team members with familiarisation of process, layout, P&IDs, offshore management structure, systems, etc.;

- Devise an initial investigation plan, from available information, including the list of key witnesses to interview (and in what order), what key process data will be needed and what documentation is likely to be important;
- Assess any health & safety risks for the investigation team;
- Address any competency issues within the investigation team;
- Ensure that all team members are aware of any restrictions in their powers as part of the CA investigation team, and the limits of their jurisdiction.

INVESTIGATION COMPETENCE ISSUES

Competent Authorities should to establish minimum investigation competency requirements for their staff and develop their staff to meet those requirements. Typical requirements include:

- Knowledge of the CA investigation policy, process and procedures;
- Good communication skills – active listening, emotional intelligence, etc.;
- Awareness of relevant legal requirements;
- Familiarity with offshore processes and standards, or ability to quickly understand;
- Ability to use/understand analytical investigation tools;
- Ability to work as part of a project team in a stressful environment;
- Experience in legal processes – statement taking, evidence collection protocols, etc. As each Member State will have different legal systems, it is recommended that CA inspectors (and others who may be called to be part of a CA investigation team) receive briefing/training from their Police or Court Authorities on the exact evidence collection processes which are required.

Those CAs who are likely to rely on persons from outside their own resources (consultants, other national regulators, etc.) will need to anticipate these competency requirements when setting up those arrangements, so that any training needs for those third parties can be identified and addressed.

Assuming that the investigation will require an offshore visit, it would be appropriate for the CA Investigation Leader to contact the installation's OIM after the Investigation Team meeting to check on availability of key witnesses (shift/rota issues) and documentation, and to arrange logistics such as travel offshore (by boat, helicopter, etc.), availability of overnight accommodation on the installation, travel arrangements after the offshore trip, etc.

Competent Authorities' standard equipment specifications for offshore inspection visits should be appropriate for offshore investigation visits as well. Typical contents would include inspector personal protective equipment (PPE) - such as safety helmet, hearing/eye protection, gloves, safety boots - offshore clothing, overnight wash bag, etc. A range of evidence equipment will need to be assembled for use when required offshore, such a sample tins, securing tags, statement forms, and evidence bags (all developed in liaison with the police/court authorities, if required), and any necessary laptops, cameras and chargers. Information such as the installation RoMH, copies of national legislation and any national or international standards which could be relevant to the incident could also be helpful.

Finally, one last issue which CAs may wish to consider during the investigation preparation stage is the following: are there any issues of prior CA involvement with that particular

installation which could potentially become significant during the investigation? These are inevitably sensitive issues, but it is preferable to have thought about them in advance rather than at the completion of an investigation where an operator/owner could criticise or shift blame back onto the CA or question the objectivity of the CA investigation. For instance, if one inspector has had considerable, long-term involvement in the regulatory decisions for an installation which has now suffered a significant major accident, it could be sensible to involve a different inspector in the investigation team to ensure that the CA investigation is transparently objective.

In any event, retrospective analysis to see how the CA's processes and procedures have been implemented for an installation involved in a major incident, in order to capture any lessons for the CA, is normal good practise. It is expected that CAs will have agreed processes to respond to such issues.

Preparing for the investigation of an offshore incident which is still ongoing is more complicated. These additional factors are considered in detail in Section 8.

5 Practical considerations when conducting an investigation offshore

Immediately after arrival on the platform, the CA investigation team should follow the normal installation safety briefing process and offshore administration arrangements for cabin allocation, muster stations, etc. This is especially important when the team includes persons from other authorities, such as the Police Authorities or Labour Inspectorates, who may have never been on an offshore installation.

Experience has shown that it is then beneficial for the team to meet with the Offshore Installation Manager (OIM). The CA Investigation Leader should clearly explain the purpose of the investigation, its scope and objectives, the legal basis upon which it is being undertaken, and the role of the various team members. The OIM can then give the team an overview of the incident and update them about the current progress of the operator/owner's own investigation.

Although the CA may already have a provisional list of installation personnel they want to meet (from their analysis during the investigation preparation phase), this should be discussed with the OIM and any other key witnesses identified.

A preliminary "agenda" for the installation investigation can then be agreed, with an indicative timetable for interviews, etc. (although there will inevitably need to be flexibility). Any necessary permits, such as for the use of cameras or entry into hazardous areas, should be arranged and a familiarisation tour of the installation undertaken if necessary for any of the team members. The Investigation Leader should also ensure that the team is allocated secure, private working space within the installation, as far as facilities allow.

The OIM may suggest that the operator/owner and the CA offshore investigations are undertaken jointly, for instance to minimise disruption to the on-going installation activities by having joint interviews with relevant members of the installation workforce. CAs should be wary about accepting such an arrangement. It challenges the independence of the CA investigation, and the workforce may also be intimidated if their interviews with the CA are held in front of their employers' representatives.

It is important that the workforce on the installation are also informed at an early stage. After the initial meeting with the OIM, it is recommended that the CA investigation team meet with representatives of the offshore workforce to explain the purpose of their visit, discuss the scope and objectives of the investigation, give any necessary reassurance about confidentiality and CA independence, and commit to meeting the workforce representatives again as the conclusion of the offshore investigation.

POINTS TO REMEMBER OFFSHORE

- The purpose of the CA investigation is to objectively and independently establish the facts about the incident and its causation;
- Keep to your overall investigation scope and objectives – no mission creep!
- You may need to take enforcement action as a result of your investigation, so there has to be an element of formality in your approach;
- People may be upset, stressed or worried – bear that in mind with your approach;
- Record investigation decisions.

After the initial meetings and workforce consultation, the offshore investigation can start in earnest. Again, there is no standard template for how such investigations should proceed, but it is sensible for the investigation team to first visit the scene of the incident, ensure they understand the process (via P&ID explanation and walk-through if necessary), and study any information volunteered by the OIM, such as photos, logs, maintenance records, copies of permits associated with the circumstances of the incident, etc.

The investigation team should then meet with individuals on the installation who could give relevant information to help identify the range of causes of the incident – these would of course include those who actually witnessed the incident, those who were directly involved with the build up to the incident itself, and those who could give essential background information. The investigation team should have already decided on a sequence of interviews, and it is usual to start with the actual witnesses to the incident or those who could give the most direct account of the situation, before continuing up the management chain of command.

When interviewing personnel offshore, CA investigation team members need to be sensitive to concerns from those workers. Given that the operator/owner's own investigation team may have already interviewed all personnel, they may be unclear about who the CA staff are working for, and may not be aware of the powers and independence of the CA nor the purpose of its investigations. Offshore workers could also be upset due to concerns for fellow colleagues who were injured in the incident, worried about whether they will be blamed for the incident themselves, and unsure whether their discussions with the regulatory authorities will be kept confidential. Therefore, CA investigators need to be emotionally intelligent[11] to these common concerns, spend time allying any fears and explain the interview process in order to maximise the cooperation they receive.

Having explained the interview process and introduced all the participants, it is usual for the investigators to allow the individual to describe their "story" in their own way. During this initial phase of the interview, investigators take informal notes. It is then for the interviewer to clarify and explore the information, and try to arrive at a definitive and clear version of the relevant information which that individual can provide.

However, different EUOAG CAs have different powers – some are able to "demand" that interviewees provide a written, legal document or "statement" and sign as to its accuracy, whereas other CAs do not have such comprehensive powers and may have to rely on others, such as their police authorities. Therefore, CA investigation teams will need to be absolutely clear about any limit to their powers of obtaining "evidence", and this should be addressed within the CA's investigation process and procedures. However, the optimum approach should allow CA investigators to obtain a written, signed account from each witness[12] about what they know. By having that, CAs can demonstrate that they have done as much as they could to ensure that the information upon which they base their investigation is accurate and verifiable, and therefore any investigation conclusions are robust. Should the CA

[11] This is a key competence for CA investigators/inspectors. Training in interviewing techniques and approaches may be available from other Labour Inspectorates or Police Authorities.

[12] Although one approach is simply to ask the individual being interviewed to draft their own version of the "events", experience shows that a more comprehensive and relevant record of the information can be obtained when the written document is initially drafted by the CA inspector via a questions and answers technique, with the individual being given the opportunity to amend any part of the written document before signing as to its accuracy. Tape recording of interviews is another option.

progress to formal enforcement action, a formal statement may also be a key part of the legal basis for taking such action.

There may be situations where there is the potential for persons being interviewed to have themselves committed a crime by breaching the Member State's offshore safety and environmental protection legislation. This will be rare, and consideration should always be given to the human error issues which are discussed in Section 2. However, CAs should seek advice from their legal advisors or police authorities for the correct interviewing procedures to adopt on such occasions.

The CA offshore investigation will amass information from a number of sources. Capturing information from offshore personnel via formal or informal "statements" is covered above, but other information will be captured directly by members of the CA investigation team - measurements, photos, note of discussions, etc. - and it is recommended that CAs have a process of recording this type of information in official CA notebooks for consistency and transparency. There could also be a range of other information/ evidence which may need to be secured as part of the CA investigation, ranging from paper documentation, information from computer systems, visual evidence such as photos, CCTV and videos, etc., and "hard" evidence such as equipment and samples.

For the integrity of a CA investigation, it is crucial that such evidence is collected under robust procedures, so that it is correctly identified in the first place, kept secure and undamaged, and transparently prevents any unauthorised alteration or tampering. Common practises include:

- For **documentation**, use transparent, tamper-proof evidence bags, with the provider giving supporting identification. The bag label should include such information as a unique reference number, description of document, date obtained, location, who provided it, and a signature of the provider.
- With **information** contained in computer systems, IT specialists may be able to take an "image" of computer hard drives, although this may only be warranted in complex cases. Otherwise, printouts or downloads to CD/flash drives may be adequate, with digital material obtained in a form that cannot be modified (e.g., pdf).
- For **hardware**, this would depend on the size and weight of the equipment concerned. CAs should preferably have the power to seize and dismantle equipment, or at least direct that something must be left undisturbed until further investigations can be carried out. Robust label tags can be used to identify hardware, with a unique reference number, description of equipment, date obtained, location, who provided it, and a signature of the provider. Where such equipment has to be removed from the installation, for instance to undergo further tests under the control of the CA, then there should be a transparent chain of evidence continuity to ensure that it is not tampered with or damaged in transit.
- If it is necessary to take material **samples** (for example, the contents of fluid lines), these should be in sealed, leak-proof sample containers appropriately and uniquely identified. It is recommended that three samples are taken - one for analysis, one as an untouched reference, and one for the operator/owner.

For most CAs, the evidence secured during investigations could eventually be used as part of the formal enforcement activity, even prosecution, thus the method by which evidence is

secured, recorded and handled will need to follow the appropriate legal procedures for that Member State. Once again, CAs should ask for assistance from their legal advisors or police authorities for the correct procedures to adopt on such occasions.

EVIDENCE COLLECTION SUMMARY

- Use formal "notebooks" to record site information;
- Be clear about your CA powers to obtain "evidence";
- If you obtain evidence voluntarily, record this fact. If you obtain evidence under your formal powers, make sure you follow your procedures;
- "Bag, tag or label"!!
- Catalogue exhibits, and cross-reference in statements;
- Consider any issues of relating to the chain of evidence continuity.

Investigation is a dynamic activity, so the CA Investigation Leader will need to ensure that his team has the opportunity to regularly feedback to each other about progress with the initial lines of inquiry. It may be helpful in some cases for the investigation team to briefly use an appropriate analytical investigation technique (see Section 6) whilst offshore to help assess the information being obtained and to identify significant gaps and lines of inquiry.

The CA Investigation Leader will need to keep the investigation flexible as new (and possibly unexpected) information becomes available whilst offshore, and will also need to formally capture additional lines of inquiry which can only be pursued when the investigation team is back onshore, for instance, with the operator/owner senior management.

The more members of the team there are, the more important it is to factor in regular team meetings – even just during a coffee break – to keep everyone in touch with progress.

At the conclusion of this initial phase of the investigation offshore, the CA Investigation Leader should review with team members that all necessary "perishable" information has been safely recorded or secured, and come to the conclusion with his team about whether any immediate CA enforcement activity is required before leaving the installation.

The CA Investigation Leader should then review the status and progress of CA investigation with the OIM and offshore Management Team, explain any proposed enforcement action at this stage, and inform the OIM about any proposed continuation of investigation onshore and/or CA action. A separate meeting should also be held with employee representatives, to explain progress so far and the next steps.

6 Analytical investigation techniques

Section 5 focused on collection of information. However, to become an actual investigation that information needs to be evaluated and analysed to identify the **immediate**, **underlying** and **root causes** of the incident. The process is iterative, identifying, gathering and analysing more data until such a conclusion becomes possible.

As a consequence, it is most efficient to start analyses early with few data, and develop them as more data become available.

BUT – How do CA investigators perform such an analysis of offshore incidents which often have complex causation?

In the initial stages of a CA investigation, expert judgement based upon the experiences of those in the investigation team can help considerably. However, more formal processes will, almost inevitably, be required as part of a "quality" (competent) investigation to help investigators interpret and dissect the mass of detail that becomes available.

A formal approach will also help to identify gaps in the information obtained so far, to reveal the investigators assumptions, and to demonstrate consistency and thoroughness.

A wide variety of analytical investigation techniques are available. They allow investigators to achieve clarity about the events, their causes, what is known and where the information gaps are. Such methodical approaches lend robustness to the investigation and its conclusions. Structured analytical approaches also help the investigation team focus on their own decision-making, whilst at the same time enabling a shared understanding within an investigation team which provides continuity and facilitates review. On the other hand, such techniques do require extra work (although that is something that diminishes as investigators become more experienced in their use) and can produce complicated output.

Analytical investigation techniques can be split into a number of broad categories:

- Analysis of **sequence.** A prime example is *ECFA+ (Events and Conditional Factors Analysis)*, which is a method for creating concise descriptions of incidents. It has the advantage of being straightforward to use and is relatively easy for novices to pick up the technique quickly. Investigators can use ECFA+ to help them organise facts about what happened and to spot gaps in their data, to deal with issues of "*what, how, who and when*" and to help structure further investigation and data gathering. The process is easy to communicate both within a team and outside, and therefore helps demonstrate reasoning and progress.
- Analysis of **barriers and controls**. Many methods incorporate this type of analysis within root cause identification, and one particular example is *ETBA (Energy Trace and Barrier analysis)*, which is provides a method to meticulously trace unwanted energy transfers in order to identify all the barriers and controls, both present and absent. By focusing on safeguarding standards, it provides a method for identifying why barriers and controls were ineffective or absent.
- Analysis of **possibilities**, the most common one being *Fault Tree Analysis (FTA)*. These are often particularly helpful when evidence is not conclusive or where the causes

are obscure. Again, a reasonably straightforward technique to understand and practice.

- Analysis of **underlying causes**. There are a variety of methods such as *Control Change Cause Analysis (3CA), Management Oversight & Risk Tree (MORT)*, and *HSG65*. These generally facilitate a multi-level analysis of the reasons from events to management of safety, often using pre-set questions to drive the analysis.

Not all types of analytical techniques will be appropriate for a particular investigation or investigation team. It is crucial that the investigators using a particular technique are comfortable and competent with it. The method must also be suitable for the context of the incident and the goals of the investigative task. Some of the techniques, such as MORT and HSG65, have the advantages of being able to be applied in different intensities, ranging from covering just parts of the investigation through to the entire incident. Hence, the help that those techniques could provide range from a quick review of the investigation right through to an extensive analysis.

Some investigation analytical techniques will be available from open sources[13], and hence free, whereas others will be proprietary commercial packages. It is suggested that CAs consider the full range of techniques which are available, perhaps obtaining some "taster" training/experience to help decide which ones could meet their needs. The examples quoted above provide a broad range which may be helpful to consider in the first instance. Further information can be found in the paper "*Investigation Tools in Context*" published by the Noordwijk Risk Initiative Foundation[14].

[13] MORT, ECFA+ and 3CA can all be accessed free via http://www.nri.eu.com/publications.html

[14] "Investigative Tools in Context" Rudolf Frei, John Kingston, Floor Koornneef and Philippe Schallier, Noordwijk Risk Initiative Foundation, http://www.nri.eu.com/Tools~final.pdf

7 Concluding an investigation

The length and complexity of a Competent Authority's investigation can vary considerably. Investigation of relatively straightforward incidents can often be concluded by just one offshore visit, whereas others will need further investigation with the operator/owner at onshore facilities, and maybe return visits offshore as the CA's analysis of causation continues. Some incidents may require CAs to seek external specialist support, whereas others will be well within the existing technical competence of the CA staff. Certain incidents may also require forensic examination of equipment or IT systems, which can often be outsourced to national technical institutions, universities or commercial laboratories.

Consequently, CAs should expect the time and resources for their investigations to likewise vary considerably, with some capable of being concluded quickly, yet with others taking months or, in the case of the investigation of high profile major incidents, even years before the CA will be able to conclude all of its related actions.

The management of the ongoing CA investigation process therefore becomes a fundamental issue. These guidelines stressed that investigations should be undertaken along standard project management lines, so the Investigation Leader will have a "Project Manager" role to ensure the investigation team continues with progress and delivery of the investigation objectives after the offshore investigation phase has been completed. Keeping a diary to record progress each day can be a helpful practice for the Investigation Leader to aid regular reflection of what has been achieved and what is outstanding. Regular investigation progress reviews will also add benefit in order to:

- Monitor pace of the investigation;
- Continually assess resource allocation;
- Advise on, and accept/change, investigation lines of enquiry;
- Decide to curtail investigation, e.g. when no material breach of legislation are identified, any breaches are disproportionate to prove, or sufficient work has been done to achieve aims of the investigation;
- Record key decisions.

The timeline for a typical CA investigation process is summarised in Figure 7.1, with the actual times reflecting a significant and complex investigation. Investigation of simpler incidents could be concluded earlier, but the philosophy of a number of phases as shown in the figure, covering both the investigation process itself and its linked (and parallel) enforcement/remedial process, will still be applicable.

Depending on the size/complexity of the CA investigation, evidence can become extensive, so evidence management issues must be addressed within the CA investigation process. It is recommended that CAs implement a robust evidence logging system and associated database, and use it for all investigations – independently of the size of the investigation. Documentary evidence may be under tamper-proof seals, so should only be disturbed under transparent controls to take working copies and duplicate files. The CAs secure evidence storage and evidence audit trail arrangements should satisfy that Member State's own Court/Police procedures, including any evidence stored offsite with 3rd party investigators.

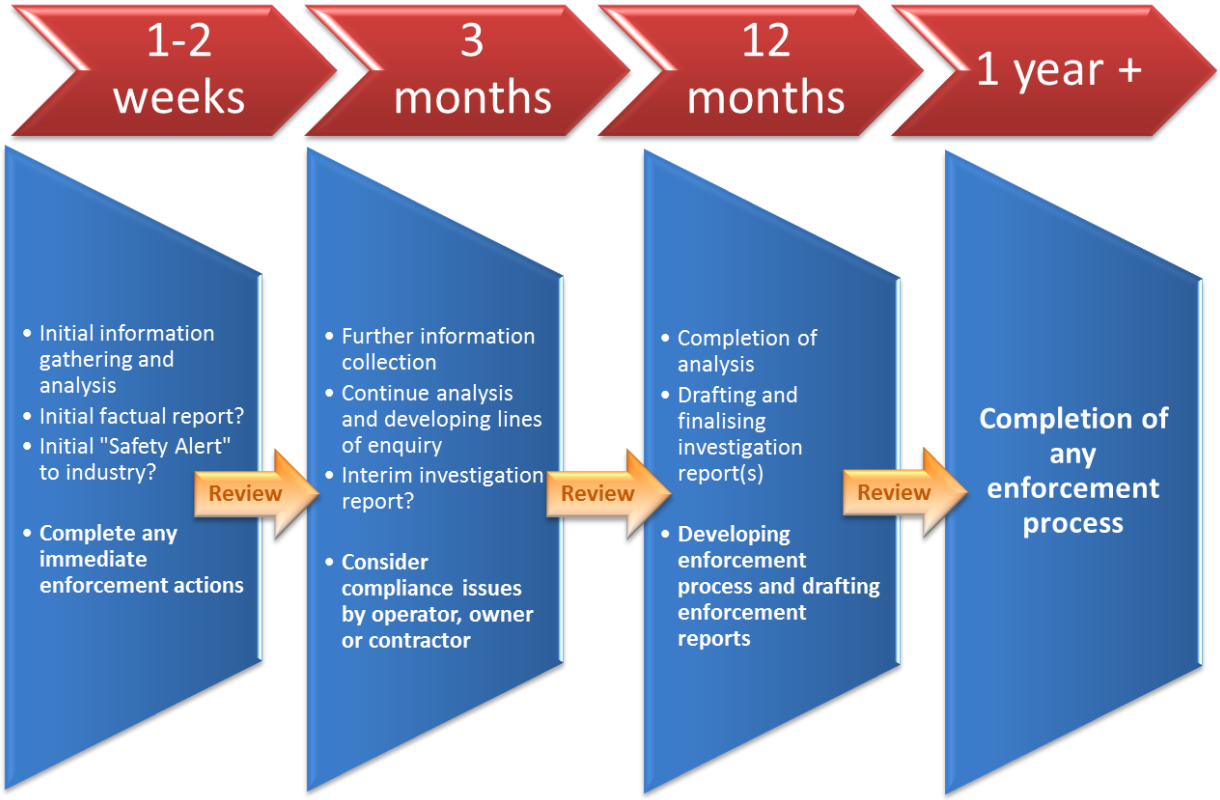


Figure 7 1 Timeline to conclusion for a typical CA investigation process

Most CA investigations can be managed as part of the CA's normal operational line management process, and the role of the CA senior management in the investigation process should be clear within the authority's procedures. For instance:

- What is the role of CA Senior Management in "approving" investigation reports and proposed enforcement actions?
- Does this cover all incident investigations or only certain categories, such as fatalities and major accidents?
- What is their role in ensuring any "prior involvement" considerations (see Section 4) are captured and taken forward?

Each CA will need to establish its own policy. In addition, high profile major incidents may warrant the creation of a higher level Investigation Board (for instance, including persons outside the CA itself such as its parent Government Department) to provide strategic direction/management.

As the investigation nears its conclusion, CAs should also consider the use of Peer Reviews. For instance, Technical Peer Reviews of any particularly challenging or contentious issues proposed for the Investigation Report could further demonstrate the independence and competence of the CA investigation and ensure the investigation findings are as robust as possible. Similarly, an Overall Peer Review of high profile investigations could independently

identify weaknesses for further consideration by the investigation team before the investigation is concluded.

One of the more obvious outputs from a CA investigation is the investigation report. However, the mandated requirements in the OSD about the style/content of CA investigation reports for external audiences are very limited. Article 26(2) of Directive 2013/30/EU only requires a "*summary of the findings*" of the CA investigation of any major accident to be sent to the European Commission, either at the conclusion of the investigation or conclusion of legal proceedings "as appropriate".

Member States are also required to make a "non-confidential" version of the findings publicly available, which can be a relatively short document[15]. In addition, Article 24(1) of Directive 2013/30/EU and Annex II to Implementing Regulation 1112/2014 require a report by the Competent Authority, but this is just a summary of the operator/owner submitted information, normalised to provide "easy cross-border comparison of data", and therefore does not rely upon any information from CA's own investigation. Neither does the Member States' Annual Report to the Commission (drafted in accordance with Article 25(1) of the Directive), which merely includes the Article 24(1) incident data and simple numbers of CA investigations carried out in the year. These arrangements are summarised in Figure 7.2[16].

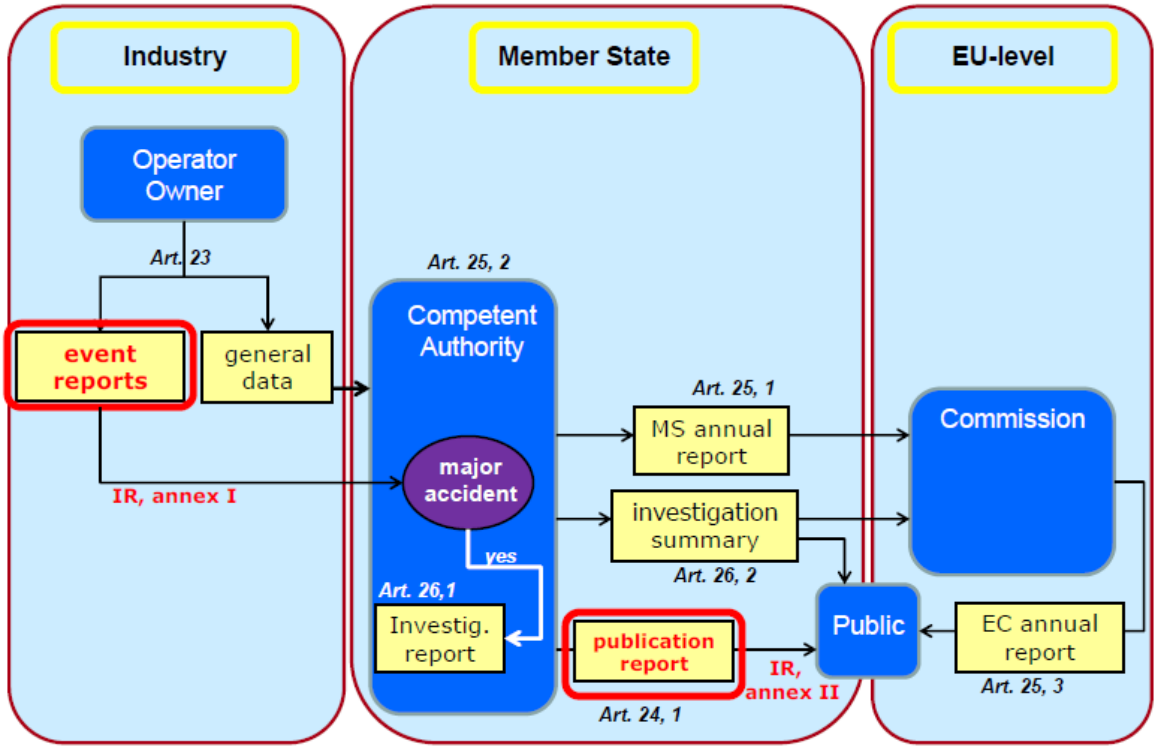


Figure 7 2 Accident reporting and investigation requirements according to Directive 2013/30/EU

[15] For examples of such non-confidential findings documents, see http://www.hse.gov.uk/osdr/reporting/osdr-reports-major-incidents.htm. Types of "confidential" information which need to be omitted would include the personal details of those involved and commercially sensitive information such as detailed description of the reservoir characteristics or proprietary equipment details.

[16] This figure is from the Guidance Document on Commission Implementing Regulation (EU) No 1112/2014. https://euoag.jrc.ec.europa.eu/node/11

CA internal investigation reports are not mandated by Directive 2013/30/EU. So, their content and layout is left to the discretion of each Competent Authority and should reflect the purpose they will be used for, and to a great extent that will depend upon the level of the CA enforcement responsibilities/powers. For instance, if the Competent Authority needs to refer issues to their Police Authority to take forward any higher levels of enforcement such as prosecution, then the structure and contents of the CA investigation report will need to meet the needs of the Police and the prosecution process.

A SUGGESTED BROAD OUTLINE FOR A CA INVESTIGATION REPORT

- Summary;
- Introduction (Brief details of the installation, how the investigation was carried out, etc.);
- A description of what happened;
- The immediate and underlying causes of the incident;
- Identification of any non-compliances/breaches of legislation;
- Details of remedial action taken or required;
- Consideration of formal enforcement actions;
- Wider lessons for CA and/or the industry.

Competent Authorities have clear responsibilities under Directive 2013/30/EU for overseeing operator/owner compliance (including taking enforcement action), therefore part of the conclusion of the CA investigation process should include the selection of any appropriate enforcement options. The term "enforcement" is not defined in the Directive, but it can encapsulate a range of actions as part of the CA overseeing compliance role. These options include:

- "**Findings" or letters** to operators/owners, for instance setting out the conclusions of the investigation and requiring certain actions to be taken to address the root causes of the incident and any potential breaches in legislation;
- A **directed Review of the installation RoMH** (taking into account Article 12(7) of the Directive), an approach which could be particularly relevant where issues discovered in the CA investigation related to fundamental risk assessment inadequacies or covered a number of different but interlinked issues;
- Formal procedures to require **specific improvements;**
- Formal procedures to cease/**prohibit certain operations**;
- **Replace the operator**, via the process of CA informing Licensing Authority, as per Article 6(4) of the Directive;
- Instigation of **prosecution** of the operator/owner, contractors, designer, supplier, individuals, etc.

The Competent Authority should use a transparent system for enforcement decision-making, and such enforcement considerations are dealt with in more depth in the JRC *Guidelines for the Inspection of Offshore Installations*. Figure 7.3 provides a summary of

such enforcement expectations based upon an assessment of the risk and compliance gaps between the circumstances discovered by the CA investigation and good practice.

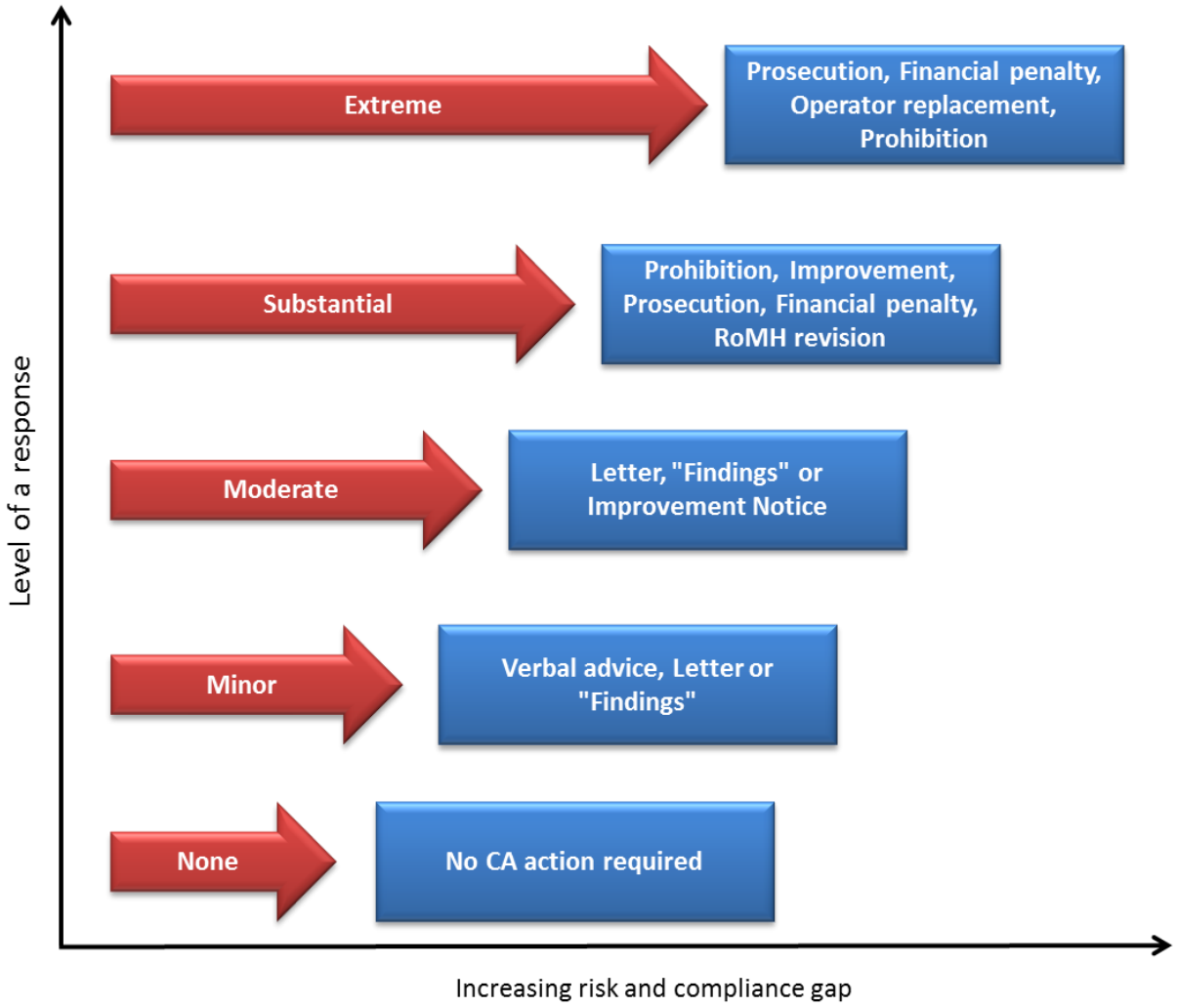


Figure 7 3 Enforcement expectations with respect to level of findings of CA investigations

Another aspect of the conclusion of any CA investigation is to consider whether any other non-enforcement actions may be appropriate. These could include:

- Changing CA oversight/inspection plans for that installation or for other installations of that operator/owner in the light of issues raised by the investigation;
- Amending priorities within the CA oversight strategy to address, on an industry-wide basis, issues of wider concern raised during the investigation;
- Other lessons for the CA with respect to their oversight activities (there could be overlap with any “prior-role” inquiries);
- Preparing CA guidance for industry on issues raised by the investigation, ranging from “safety alert” messages on CA websites to more formal guidance or industry-wide advice;
- Sharing wider learnings from the investigation with the MS tripartite body;
- Discussing learnings/experience with EUOAG and industry bodies.

8 Additional practical considerations when investigating major offshore incidents

So far, these guidelines have assumed that the incident has been resolved and the installation is back to a safe, steady state by the time the Competent Authority starts its investigation. The investigation can therefore commence at the CA's timetable and in a calm and measured environment. This is the norm. However, there will be, on very rare occasions, severe on-going incidents which will inevitably require CA investigation, yet the first priority of the Competent Authority will be its involvement in the response and recovery phase. Examples of these extreme "major accidents" include the Elgin blow-out in the UK in 2012 and Deepwater Horizon in the USA in 2010. Such major incidents make any CA investigation more complex and different factors need to be taken into account.

What distinguishes these major offshore incidents is their high profile and the complexity of the necessary CA response. Very soon after such an event occurs, it will be obvious that a CA investigation will be required, but the Competent Authority will also be having to immediately respond with its partners in the Member States' External Emergency Response Plan to address any (primarily) environmental issues, and also amplifying its oversight of the installation because of the inevitable significant changes which will be required (well kill activity, relief well drilling, material changes, etc.). Because of the inevitable high levels of interest and concern following such events, the CA activities, including the commencement of its investigation, will be conducted within a stressful, pressurised working environment for the Competent Authority (and others) and in the glare of publicity and political interest. Such events can also be very traumatic should there be a high level of casualties or significant oil pollution. Experience of such events, albeit very rare, has shown that they can be exceptionally challenging for those within the CA.

Such events are typified by an intense period of frenetic activity by the CA, and then a very long and complex investigation phase within an environment of heightened scrutiny of both the CA itself and the associated effectiveness of the Member State offshore regulatory regime. It will be a resource intensive period, and the more CAs can try to anticipate the demands on them during such events, the easier it will be. Making early decisions on long term resourcing issues (such as taking personnel "off line" to concentrate on the investigation) is recommended.

The initial stages of CA response and investigation can overwhelm normal management spans of control, so consider what command structure is most appropriate for the CA during such periods. One option which has been used is the **Strategic (Gold) – Tactical (Silver) – Operational (Bronze) levels of command**:

- **Gold** command will be remote from any immediate response or investigation activity, to enable it to take strategic decisions and undertake senior political briefing, media and stakeholder engagement, etc. It will inevitably be at least the Head of the CA level, but for smaller CAs it may be appropriate for it to be a small high-level group chaired by the Head of the parent Government Department.
- **Silver** command is at the forefront of the day-to-day operational and investigation decisions, the CA figurehead within the External Emergency Response arrangements. It will report to Gold and set the tactical direction of the CA response, but will be screened from the higher level political and media pressures to concentrate on managing the developing situation. For smaller CAs, this could be the Head of the CA.

Silver command could be the designated CA Investigation Leader, although that responsibility could be given to a Bronze command level.

- There can be several **Bronze** commands, all reporting to Silver, and each responsible for specific aspects of taking forward the CA response or investigation.

There will inevitably be demands on the CA to provide particularly close oversight whilst the operator/owner retrieves control of such high profiles situations, some linked to existing CA roles such as responding to well operation notifications for well kills or relief well drilling, but also stakeholder pressure to provide assurance that the operator/owner is complying with its RoMH during the recovery phase. Linked to this, issues of previous CA prior involvement will need to be addressed, therefore one option would be to create two distinct project teams with a "firewall" between them:

- A CA **recovery team**, which will include the CA inspectors/specialists who are familiar with the installation because of their recent involvement with its regulation activities;
- A CA **investigation team** which comprises CA personnel who have had no recent prior involvement with the installation and can therefore demonstrate complete independence during the resultant investigation process.

For such very high profile and significant incidents (particularly when there are fatalities), it is highly likely that national police authorities will become involved. This may lead to two separate investigations, one under Police powers and the other by the CA under OSD Article 26(1), with each investigation, albeit covering the same facts, having a very different character. Police authorities will have little technical knowledge and will tend to look for individual "criminals". Conversely, CAs are as interested in taking action to prevent a recurrence and to learn lessons for the future as they are in attributing guilt, and will therefore concentrate on failures in management systems, and will be mindful that they will need to continue to deal with the company afterwards. These tensions are best overcome by establishing exemplary relationships between the CA and the Police authorities, based on a clear understanding of each other's roles and responsibilities, and securing mutually agreed methods of working.

COMPETENT AUTHORITY AIDE MEMOIRE FOR MAJOR INCIDENT RESPONSE & INVESTIGATION

- Major incidents can happen anytime! So, prepare in detail for such an event by identifying the worse-case scenario in your waters, plan your CA response to that, and practice it!
- Your Investigation Policy/Process/Procedures should take into account the demands on the CA during the "response" phase.
- Establish what Command and Control arrangements you will put into place during such major offshore incidents.
- Pre-plan as much as possible - "grab bags", check lists, aide memoires, contact lists etc.
- Assess potential 3rd party support you'll need, and secure call-off contracts.
- Put communication arrangements in place for liaison with the media and your range of stakeholders
- Sufficient "back office" support will be vital for media response, developing lines for politicians, administrative and IT support. Consider how this could be achieved at short notice
- Consider the implications of long term resourcing for the investigation, such as taking staff "off-line", providing deputies for periods of leave, cover for the "day job" etc.
- Work on achieving excellent relationships with your External Emergency Response Plan partners, and their understanding of your investigation role/responsibilities
- Similarly, work on achieving excellent relationships with your Police and other enforcement authorities and establish agreed ways of working during the investigation of such major offshore incidents
- Practise your arrangements and assess your preparedness with in-house exercises and involvement during industry and External Emergency Response Plan exercises.
- Ensure that your own staff health & safety considerations will be adequate during such events:
    - Risk assessments
    - Competency/training
    - Ability to follow operator procedures
    - Fatigue identification and management
    - Counselling facilities
    - PPE

9 Conclusions

Throughout, these guidelines have acknowledged that there is no universal template for how EU Competent Authorities operate, as EUOAG members have a variety of organisational structures and responsibilities, variations in working relationships with other national authorities, and differing legal systems.

However, the building blocks of a Competent Authority investigation of an offshore incident, as described in Sections 3–7 and summarised in Figure 9.1, will provided a common approach which can be adapted to suit the variety of EU Competent Authorities.

Figure 9 1 The investigation process

These investigation guidelines are primarily aimed at those Competent Authorities with limited experience of offshore incident investigation and who may have less developed or less established investigation procedures. More mature Competent Authorities should also find these guidelines of relevance, and they are recommended to review their existing investigation and incident response processes and procedures against the suggestions provided in these guidelines.

Section 8 covers the different, but strongly linked, topic of CA involvement in the response and recovery phase for extremely significant offshore incidents prior to being able to commence a formal CA investigation. It is based on experiences of responding to such very rare events, and will be relevant to all EUOAG Competent Authorities.

In particular, the aide memoire (Page 28) can be used as checklist for Competent Authorities to quickly assess their own preparedness for such events.

References

Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/EC: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1554802296136&uri=CELEX:32013L0030

Commission Implementing Regulation No. 1112/2014 of 13 October 2014 determining a common format for sharing of information on major hazard indicators by the operators and owners of offshore oil and gas installations and a common format for the publication of the information on major hazard indicators by the Member States: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R1112

Guidance Document on Commission Implementing Regulation (EU) No.1112/2014 of 13 October 2014 determining a common format for the sharing of information on major hazard indicators by operators and owners of offshore oil and gas installations & a common format for the publication of information on major hazard indicators by the Member States https://euoag.jrc.ec.europa.eu/files/attachments/2015_11_25_implementing_regulation_guidance_document_final.pdf

Council Directive 92/91/EEC of 3 November 1992 concerning the minimum requirements for improving the safety and health protection of workers in the mineral- extracting industries through drilling (eleventh individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC)
https://eur-lex.europa.eu/legal-content/GA/TXT/?uri=CELEX:31992L0091

Walker, S., Konstantinidou, M., Contini, S., Zhovtyak, E., Tarantola, S., *Guidelines for the Assessment of Reports on Major Hazards based on the requirements of Directive 2013/30/EU - Summary and highlights of the JRC training course under the Virtual Centre of Offshore Safety Expertise*, EUR 28693 EN, Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-70670-7, doi:10.2760/608404, JRC107405

Walker, S. and Tarantola, S., *Guidelines for inspections of offshore installations*, EUR 29304 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-90949-8, doi:10.2760/478247, JRC112738

Rudolf Frei, John Kingston, Floor Koornneef and Philippe Schallier, *Investigation tools in context* - Noordwijk Risk Initiative Foundation: http://www.nri.eu.com/Tools~final.pdf

European Union Offshore Oil & Gas Authorities Group (EUOAG) official website:
https://euoag.jrc.ec.europa.eu/

Virtual Centre of Offshore Safety expertise (ViCOS) website:
https://euoag.jrc.ec.europa.eu/vicos/

List of abbreviations and definitions

3CA	Control Change Cause Analysis
CA	Competent Authority
ECFA+	Events and Conditional Factors Analysis
ETBA	Energy Trace and Barrier Analysis
EUOAG	European Union Offshore Oil & Gas Authorities Group
FTA	Fault Tree Analysis
IR	Implementing Regulation
MORT	Management Oversight & Risk Tree
MoU	Memorandum of Understanding
MS	Member State
OIM	Offshore Installation Manager
OSD	Offshore Safety Directive (Directive 2013/30/EU of the European Parliament and the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/EC)
PPE	Personal Protective Equipment
RoMH	Report on Major Hazards
SECE	Safety and Environmental Critical Elements
SEMS	Safety and Environmental Management System
ViCOS	Virtual Centre of Offshore Safety expertise

List of figures

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you at: https://europa.eu/european-union/contact_en

On the phone or by email

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),

- at the following standard number: +32 22999696, or

- by electronic mail via: https://europa.eu/european-union/contact_en

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website at: https://europa.eu/european-union/index_en

EU publications
You can download or order free and priced EU publications from EU Bookshop at: https://publications.europa.eu/en/publications. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see https://europa.eu/european-union/contact_en).

KJ-02-19-327-EN-N

The European Commission's science and knowledge service

Joint Research Centre

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.

EU Science Hub

ec.europa.eu/jrc

@EU_ScienceHub

EU Science Hub - Joint Research Centre

Joint Research Centre

EU Science Hub

Publications Office

doi:10.2760/293765

ISBN 978-92-76-04000-2