Verification Scheme and the Independent Verifier
10th EUOAG meeting, 10 June 2015

Conference Centre Albert Borschette, Brussels
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## Agenda

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Introduction
## Pre-reading material

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<td>DNV GL Oil &amp; Gas Brochure</td>
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<td>DNV GL Regulatory Outlook Report</td>
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<td>DNV GL Position Paper - Enhancing offshore safety and environmental performance</td>
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<td>DNV GL Recommended Practice on identification and management of environmental barriers (NOTE: Draft version – final version to be issued mid June 2015)</td>
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OUR PURPOSE

TO SAFEGUARD
LIFE, PROPERTY
AND THE ENVIRONMENT
Global reach – local competence

150+ years

400 offices

100 countries

16,000 employees
Organization

MARITIME

OIL & GAS

ENERGY

BUSINESS ASSURANCE

SOFTWARE

MARINE CYBERNETICS

RESEARCH & INNOVATION
What we verify & the customer deliverables

Projects & Assets,
Materials & components for O&G industry

Fixed & floating offshore installations (excl classification)
Process plants & refineries
LNG & Gas facilities
Drilling & well systems
Submarine & onshore pipelines
Subsea facilities etc
Plan projects & process elements

Deliverables e.g. report, statement, certificate
Verification, Certification, Classification

**Verification**
Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled.

**Certification**
Third-party issue of a statement, based on a decision following review, that fulfilment of specified requirements has been demonstrated related to products, processes or systems.

**Classification:**
Classification implies a process of verifying ships/MOUs standards against a set of requirements laid down in the rules established by a recognized Class Society.
Verification Services

Customized services to **assess the compliance of designs, plans, facilities, operations and processes** with agreed requirements of owners, authorities and other stakeholders regarding safety, environmental protection, integrity and functionality.

Verification services can be **delivered in all phases of the lifecycle of an installation**: concept, FEED, design, construction, in-service and de-commissioning.

The scope of work is **ultimately decided by the customer**.

Delivery is a report or a statement.
Certification is also verification, but taken one step further...

The work is carried out by an independent third party.

In order for DNV GL to offer and deliver a certification service, the scope of verification needs to be described in a publicly available document ("certification scheme") such as a DNV GL Service Specification or regulation or a nationally or internationally recognized standard which stipulates certification requirements.

The scope of work for certification is ultimately decided by DNV GL.

Delivery is a certificate.
Service Specifications

DNV- OSS- 300  Risk Based Verification  April 2012
DNV- OSS- 301  Verification and Certification of Submarine Pipelines  January 2014
DNV- OSS- 302  Offshore Riser Systems  April 2012
DNV- OSS- 304  Risk Based Verification of Offshore Structures  April 2012
DNV- OSS- 306  Verification of Subsea Facilities  April 2012
DNV- OSS- 307  Verification of Process Facilities  April 2012
DNV- OSS- 308  Verification of Lifting Appliances for the Oil and Gas Industry  April 2012
DNV- OSS- 312  Certification of Tidal and Wave Energy Converters  April 2012
DNV- OSS- 313  Pipe Mill and Coating Yard - Qualification  October 2011
DNV- DSS- 314  Verification of Hydrocarbon Refining and Petrochemical Facilities  April 2012
DNV- DSS- 315  Verification of Onshore LNG and Gas Facilities  April 2012
DNV- DSS- 316  Verification of Onshore Pipelines  January 2014
DNV GL’s service documents

**Offshore Service Specifications:** Provide principles and procedures and present the scope and extent of DNV GL’s services.

**Offshore Standards:** Provide technical requirements and acceptance criteria, and are issued as neutral technical standards to enable their use by national authorities, as international codes and as company or project specifications without reference to DNV GL’s services.

**Recommended Practices:** Provide guidance based on proven technology and give DNV GL’s interpretation of safe engineering practice for general use by the industry.
Verification Scheme and the Independent Verifier
Current Danish Offshore Safety Legislation

(pre-reading material)
Danish Offshore Safety Legislation

- **Law**: Provides a framework and gives power to the Minister.

- **Executive Orders (EO)**: Usually purposive rules that specify what should be achieved and not how.

- **Guidelines**: How compliance with regulations may be obtained.

- **Recognised Standards, Company Specifications, Good industry practice, NORSOK**: Mandatory. Passed by parliament. Violation can be penalized.

- **Executive orders by Minister**: Mandatory. Violation can be penalized.
The Danish Offshore Safety Act - Objective

- The **objective** of the act is to maintain a **high level of health and safety** on offshore installations that reflects the **technical and social development** in society, as well as to establish a **framework** that **enables** the oil companies **independently** to manage health and safety issues offshore.

- The goal is to keep the **health and safety standards** in the Danish part of the North Sea **among the highest** in the North Sea countries.
Summary

- The operator can choose to perform “self-control” through his management system for health and safety
- Or the operator can choose independent verification by a third party
- In any case, there is a few elements that are subject to mandatory verification/assessment by an independent third party – these are:
  - Evacuation analysis (EO No. 729 of 3rd July 2009 §21)
  - Load carrying structures (EO No. 729 of 3rd July 2009 §36)
  - Pressure Equipment (EO No. 1482 of 14th December 2010, §8) Control Class A+B (PED Cat. III and IV) verification by accredited testing / inspection body:
    - Design and fabrication to be covered by Verification Statement after modification or significant repair
    - Installations to be verified prior to start-up – “Installation Control”
Summary (cont.)

- It is the responsibility of the operator to identify recognised norms and standards that are important to health and safety and implement them in the management system.

- Independent verification of the fact that an offshore installation fulfil the requirements of the Offshore Safety Act can partially replace the operator’s management system.

- If the operator chooses the independent verification model, it must be documented by a certificate issued by the expert who has carried out the independent verification that the installation/equipment in question fulfils the existing requirements in the legislation, including recognised norms and standards as defined in the operator’s management system.

- Such verification shall be made by experts recognised by the supervisory body.
Independent 3\textsuperscript{rd} party verification
- Experience from Denmark
Verification of Safety Barriers

Major Accident

Detect
E.g. fire & gas detection, control systems

Prevent
E.g. design, maintenance, procedures, competence

Mitigate
E.g. drainage, fire protection

Emergency response
E.g. escape, evacuation
Statement of Conformity (SoC) vs Certificate of Conformity (CoC)
Independent 3rd Party Verification - Purpose

- To allow the operator of an asset to satisfy and document the legislative requirements by use of a Certificate of Conformity

- To ensure adherence to relevant national and EU legislation, recognized international norms and standards, guidelines and possibly company standards – to safeguard the barrier integrity

- Reduced and managed risk, increasing the likelihood of successful development projects and safe operations in-service

- Easier to document independency to stakeholders and public than with self-control by operator
Preparation of the Verification Scheme

- Overall verification scheme activities are typically proposed by the operator and mutually agreed (contract)

- Verification scheme will fulfil minimum expectations from the authority

- Detailed verification scheme activities are prepared by DNV GL and summarized in a Project Quality Plan (PQP)

- The PQP is prepared by experienced and qualified DNV GL personnel (multi-disciplinary)

- The PQP is subject to an internal verification process, signed by the Project Manager and finally approved by the Project Sponsor

- Final PQP is subject to approval by the operator incl. ad hoc revisions
## Typical Performance Standards

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<td>HVAC and Natural Ventilation</td>
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<td>Open Drain / Control of Spills</td>
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7. **Performance Standard Details on Integrity**
8. **Performance Standard Details on Survivability**
9. **Performance Standard Details on Management**
10. **Identification of Safety Critical Equipment (SCE)**
Verification scheme principals (DNV-OSS-300)

<table>
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<th>Medium risk: majority of assets</th>
<th>Risk to the asset is higher than average</th>
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<td>Low</td>
<td>Medium</td>
<td>High</td>
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- **Design**: Degree of novelty
- **Contractor experienced**: Degree of experienced
- **Environment conditions**: Degree of harshness
- **Completion schedule**: Degree of time pressure
- **Other challenges?**
- **Consequences of failure**: Low, Medium, High

- **Audit**
- **Review**
  - I = For information only
  - R1 = Review of principles and general aspects
  - R2 = Comprehensive
  - R3 = Independent calculations
- **Surveillance**
  - S1 = Surveillance on a visit basis, e.g. once per week or sample review 10-20%.
  - S2 = Surveillance frequency minimum once per day or review of 50-60%
  - S3 = Surveillance frequency minimum once per shift or review of 100% of items
DNV GL’s Typical Development Project Verification Scheme Activities

- **Design Verification:**
  - Risk Assessment (QRA, FES etc.)
  - Jackets incl. independent analysis
  - Topside Facilities
  - Pipelines and Risers

- **Fabrication Survey:**
  - Steel making
  - Tubulars
  - Line pipe incl. components
  - Pipeline and Risers
  - Jacket and Topside Module

- **Procurement (Vendor Supply):**
  - Design Verification
  - Manufacturing Survey
  - PED & ATEX certification (as applicable)

- **Installation Survey:**
  - Jackets
  - Topside Modules
  - Pipelines and Risers

- **Hook-Up and Commissioning:**
  - Topside Facilities
  - Pipelines and Risers
DNV GL’s Typical In-service Verification Scheme Activities

- Verification of repair, modifications and replacements (RMR):
  - Design verification
  - Fabrication survey
  - Installation, hook-up and commissioning survey

- Annual surveys covering:
  - Barrier management incl. maintenance activities for process- and utility equipment
  - Inspection of structures above and below water
  - Inspection of pipelines and risers

- Issuance of Recommendations and Memoranda

- Issuance of CoC incl. re-certification (5 yearly)
Verification of repairs, modifications and replacements (RMR)

- Risk based approach defines IV involvement:
  - Focus on the important issues where the risk is high, and/or the benefit is greatest
  - Predictable and adaptable
  - Transparent
  - Efficient

- Activities comprise:
  - Verification of detailed design incl. issuance of Design Verification Letter (DVL)
  - Survey during fabrication of critical materials/components incl. issuance of Product Verification Statement (PVS)
  - Survey during installation, hook-up and commissioning phases incl. issuance of Offshore Verification Statement (OVS)
  - Final RMR reporting incl. CoC confirmation
Verification of detailed design
Design Verification - Verification of Health and Safety Report

- **HSR Package:**
  Documentation of Operators Safety Management

- **Quantitative Risk Analysis (QRA)**
  - Main risk document
  - Addressing Major Hazards
    - Process (Leak, Ignition, Fire, Explosion)
    - Transportation (Helicopter)
    - Ship Impact
    - Escape and Evacuation
  - ALARP assessments (risk reduction efforts)
  - Safety Critical Equipment (Identification, Sufficiency, Reliability)

- **Supplementing Assessments and Topics**
  - Occupational Hazards
  - Noise / Vibration / Chemicals / Dangerous substances
  - Other Hazards
  - Health issues / Accommodation
Design Verification - Structural

- Design basis/design premises
- Concept drawings
- In-place analysis, including dynamic response
- Fatigue analysis for relevant parts
- Temporary phases
- Accidental loads
- Detailed design of nodes etc. not covered by the in-place analysis
- Appendix comprising main part of computer listing
- Design of members subjected to fatigue
- Fire and blast walls

- Structural design drawings
- Weight Control
  - Weight Report, load list and load certificates
  - Load Plans
Design Verification - Process Safety

- Process Flow Diagrams
- P&ID’s
- Line list
- Emergency Shutdown System Cause & Effect Diagrams
- Blow down and relief calculations
- Piping Stress and Flexibility Analysis
- Pipe supports (drawings and calculations or evaluation)
- Platform Arrangements
- General Safety, walkways, ladders, stairs, etc.
- Escape Routes and Fire and Safety Plans
Design Verification - Fire and Gas Detection & Fire Protection

- Fire & Explosion Strategy (FES)
- Fire and Gas Detector Layout
- Fusible Plug Layout
- Fire Zone Layout
- Fire and Gas System Cause & Effect Diagrams
- Active and Passive Fire Protection
- Deluge capacity calculations
Design Verification - Instrumentation and Electrical Safety

- Area Classification
- Functional Design Specification (ESD, F&G, PA)
- Instrument Hook-Up (ESDV, BDV)
- Key Single Line Diagrams
- Single Line Diagrams
- Documentation on selection and setting of protective relays
- Prospective Short Circuit Study
- Discrimination Study
- Electrical Load Calculations on Emergency/UPS Systems
- Separation of Main- and Emergency Power Systems
- Design and Protection of Emergency Equipment
- Cable Routing Specifying Separation Where Required
Design Verification - Instrumentation and Electrical Safety (cont.)

- Cable Sizing
- Block Diagrams (F&G, ESD, Scada, PA)
- Signal list with description of field devise, type of Ex protection (and the relevant type of Zener barrier) and system association (F&G, ESD, Scada)
- Catalogue of the type of IS circuits used including full back-up documentation
- Description of overall shut down levels
- List of Ex equipment with certificate reference (can be reviewed during survey)
- Cable schedules with fire properties and certificate reference (can be reviewed during survey)
- Typical instrument hook-up
- Earthing and Bonding Principles
- Navigation Aids (platform safety aspects)
Survey during fabrication
Fabrication survey typically includes

- Contractor's QA manual
- Quality/inspection and surveillance plans
- Compliance with design verification and company specifications
- Welding procedure qualification records
- Welding procedure specifications
- Welder's performance test records
- Welding consumables, handling procedure
- NDT procedures
- NDT personnel qualification records
- Fabrication procedures for heat treatment, coating application, fire installation/application procedures
- Fire wall type approval certificates for walls, penetrations and doors
Fabrication survey typically includes (cont.)

- Special piping parts
- Special construction/installation procedures
- Procedures for dimensional control
- Certificates of materials and components
- IVB release statements (e.g. PVS) for equipment as required, with list of outstanding points if applicable
- Manufacturer's certificates for other equipment
- Pressure testing of piping systems
- Corrosion protection
- Weight report and load plans
Software Factory Acceptance Test (FAT)

- Active Protection Layers such as ESD, HIPPS and/or F&G systems and similar are based on the programmable logical controllers (PLCs) which offers necessary flexibility but on cost of increasing complexity.

- PLCs consisting of corresponding software and hardware platform on which the software is executed. Typical offshore installation can have several thousand I/O signals which puts constrains on how the software is handled.

- There are many opportunities for making mistakes and the testing is the only way of assurance that the functions will behave as expected.

- As minimum, following tests are performed:
  - Testing for correct functional requirements (typically using design verified C&ED)
  - Testing system performance, scalability, usability
  - Checking that new code has not affected the existing code

- The test documentation, requirements, test results, software revisions etc. are recorded in DNV GL’s reporting “Product Verification Statement” (PVS)) which summarise all essential information and specifies any condition, restriction or other essential information for use during offshore activities.
Certification of temporary equipment (e.g. for well test)

- Design verification
- Manufacturing survey
- Issuance of Certificate of Conformity
- Annual re-certification
- The CoC follows the equipment offshore to document compliance
Offshore verification activities
Offshore survey

- Survey of planned preventive maintenance activities
- Survey of repair, modification and replacement activities
- Survey during offshore construction activities (e.g. welding activities)
- Survey during installation activities
- Survey during hook-up and commissioning
- Final survey incl. issuance of Offshore Verification Statement (OVS)
- Final “Installation Control” of pressurized equipment (accredited service)
- Reporting incl. endorsement of as-built documentation
- Approval of Work Orders in operators electronic data system (e.g. SAP)
Annual Survey Topside Facilities (ASTF)
Annual Survey Topside Facilities (ASTF)

Based on the SLTIP – a tailor made and installation specific Superior Long Term Inspection Programme covering all safety critical barriers

Activities typically comprise verification of:

- Well integrity
- Topside structural integrity (steel protection, deluge/PFP)
- Pressure containing integrity
- Electrical systems integrity
- Safety systems integrity
- Cranes and lifting equipment integrity
- Weight Control

Covering all safety critical elements...
Annual Survey Topside Facilities (ASTF)

- ESD (ESDV, BDV etc.)
- F&G (F&G detector system, Fire Fighting system, Firewater pumps, etc.)
- Electrical System. (Emergency switchboard, Emergency lighting, UPS etc.)
- Communication (PA/GA system, Ex. Telephones, Line of Sight etc.)
- Mechanical Safety / Structural Safety
- Process Systems
- General Safety (escape routes etc.)
- Lifting appliances (cranes, slings etc.)
Annual Survey Topside Facilities (ASTF)

- Preparation
  - Superior Long Term Inspection Program (SLTIP)
  - Offshore observations (during last year’s surveys)
  - Notification letter to client prior to the ASTF campaign
Annual Survey Topside Facilities (ASTF)

- **Onshore audit/review**
  - Interview of key personnel
  - Review of planned preventive maintenance (PPM) for Safety Critical Elements
  - Review of backlogs (PPM)
  - Review of inspection programmes for pressure vessels and piping systems
  - Well service equipment
  - Review of C&ED’s (ESD, F&G)
  - Review of P&ID’s (Process, Utility)
  - Shutdown analysis (ESD, F&G)
  - Follow-up on findings from last year’s ASTF
  - Offshore program based on SLTIP and onshore/offshore observations
  - ASTF Report (preliminary draft)
Annual Survey Topside Facilities (ASTF)

- **Offshore audit**
  - Presenting offshore program for platform manager and staff
  - Review of inhibit and software revision logs (ESD and F&G)
  - Functional testing of the pre-selected systems, e.g:
    - Test of ESD transmitters and equipment
    - Test of F&G Detectors
    - Test of navigation aids, communication systems, emergency lights etc.
    - Test of fire water pumps
    - Test of diesel emergency generator
    - Full scale deluge test, water mist systems etc.

- **Visual inspection**
  - Line walk of process systems according to selected P&ID’s
  - Visual inspection of electrical switchboards, cabinets, draw out units, etc.
  - General safety survey

- Close out meeting incl. conclusion with platform manager and staff
Annual Survey Topside Facilities (ASTF)

- **Final Reporting**
  - Findings during ASTF
  - Memoranda
  - Recommendations
  - Conclusion (confirmation of CoC validity)
Annual Survey of Structures and Pipelines
Annual Survey of Structures and Pipelines

- Overall purpose
  - Survey is performed to verify compliance between design and operation

- Detailed inspection is performed by operator and his sub-contractors

- Independent Verification typically includes
  - Verification of Long Term Inspection Plans
  - Verification of Inspection activities
  - Verification of Inspection results
Annual Inspection of Structures above and below water

- **Below water**
  - Divers
  - ROV (Remote Operated Vehicles)

- **Above water**
  - NDE technicians
  - Rope access personnel
Annual Inspection of Structures above and below water

- Failure modes
  - Corrosion / Wall thickness
  - Dents
  - Coating
  - Missing members
  - Fatigue cracks
  - Marine growth (below water)
  - Scour (below water)
  - Cathodic protection (below water)
Annual Pipeline Inspection – External inspection

- Failure modes
  - Free spans
  - Upheaval Buckling
  - Coating / Cathodic Protection

External inspection performed using ROV (Remote Operated Vehicles)
Annual Pipeline Inspection – Internal Inspection

- Corrosion monitoring
  - Sampling Frequency (level of confidence)
  - Chemical composition (e.g. CO$_2$, H$_2$S, water)
  - Process parameters (e.g. P, T, flow)
  - Metal Content (loss of Wall thickness)

- Intelligent pigging
  - Geometrical measurements (dents)
  - Metal-loss/corrosion detection
Typical DNV GL involvement in Annual Inspection Campaigns

- Verification of Scope of Work (SOW)
  - The scope is verified acc. to the Long Term Inspection Plans

- Verification of contractors Project Quality Assurance Manuals (PQAM)
  - PQAM is verified acc. to the operators inspection procedures and the SOW

- Verification of inspection personnel and functional test of inspection equipment (mobilisation survey)

- Participation in Offshore campaigns
  - Audit based survey to conclude that procedures and manual are followed

- Onshore follow-up of findings on daily basis
  - Findings are evaluated if it is critical for integrity or safety

- Verification of inspection results
  - Contractor issues a complete package of inspection results, and this is verified acc. to the Scope of work
Structure lifetime extension

- Jacket and topside lifetime extension
  - ISO 19902 sec. 24.4
    - An extension of the design service life can be accepted without a full assessment if inspection of the structure shows that time-dependent degradation (i.e. fatigue and corrosion) has not become significant and the there have been no changes to the design criteria.
  - Annual inspection of structure above and below water
  - Verification of the design analyses based on actual inspection results.
    - Corrosion of primary steel
    - Scour around jacket members
Pipeline lifetime extension

- Pipeline lifetime extension
  - Internal and external inspection
  - Verification of design analyses based on actual inspection results.
    - Corrosion
    - Dents
    - Upheaval buckling features
    - Free spans and exposures
    - Deterioration of seals
    - Degradation of materials
Reporting & Communication
Reporting

- Design Verification Letter (DVL)
- Product Verification Statement (PVS)
- Survey Report (SR)
- Offshore Verification Statement (OVS)
- Certificate for Pressure Vessel Installation Control
- Crane Report and Certificate CG11
- Recommendation
- Memorandum
- Statement of Conformity (SoC)
- Certificate of Conformity (CoC)
Recommendations and Memoranda

Findings are given three different levels of concern:

1. Those impairing the overall safety, integrity and fitness of the installation or parts thereof and/or the persons onboard.

2. Those which are found to present a hazard for the persons onboard due to deterioration and/or damage, and those where documents are missing for completing a matter.

3. Those which are found starting to deteriorate or those which are found to have minor defects.

- Level 1 and 2: Recommendation
- Level 3: Memorandum

- A recommendation forms part of the certificate and may be given for immediate action with restriction in use or with a given time limit.

- A memorandum is information regarding a deviation of level 3 above and may be given for matters which the IV finds important enough to have stated in a separate form as a reminder.
Example of recommendation issued to operator

Reference is made to DNV GL Survey Report OEEDK-201519985.

In connection with full scale deluge test on Platform ABC of fire case 1A, 2A and 2B the following observations were made:

1) Lack of drainage capacity for export pumps ABC-P-3650, -3660 and -3670, located on cellar deck. Water over-flowing the dam edges.

2) Lack of drainage capacity process area, level 2 and 3. Deluge water running down the sides of the module at wall sides and door openings. Drain system did not consume the deluge water with the risk of increasing an emergency situation in case of a pool fire situation.

Further reference is made to ISO 12345 Chapter 4 §12.4 and §12.5.
The power of the Independent Verifier

Who determines the need for immediate remedial / corrective action?

- The IV has no legal authority
- The IV can not suspend the operators licence or approval to operate

So what can the IV do?

- The power of the IV is that it can withdraw the CoC if and when the operator refuse or fail to take proper action on a recommendation
- If the CoC is revoked the operator fails to comply with the legislative requirements, and the basis for the operators approval to operate will disappear
Communication

- The flow of communication is normally directly between the independent verifier and the operator

- Overall status on certificates, assets, projects, risk etc. is communicated to operator incl. top management via DNV GL’s online presentation tools, e.g.:
  - Oil & Gas Customer Portal
  - Verifi™ – Verification Scheme Dashboard

- Monthly reporting to operator on recommendations and memoranda status
DNV GL Customer Portal
Verifi™ – Verification Scheme Dashboard
Conditions for the Independent Verifier
OSD 2013/30/EU
Annex V
Selection of the independent verifier

1. Member States shall require the operator or owner to ensure the following conditions are fulfilled with regard to the verifier’s independence from the operator and the owner:

- (a) the function does **not** require the independent verifier to consider any aspect of a safety and environmental critical element or any part of an installation or a well or a well design in which the verifier was previously involved prior to the verification activity or where his or her objectivity might be compromised;

- (b) the independent verifier is sufficiently independent of a management system which has, or has had, any responsibility for any aspect of a component covered by the scheme for independent verification or well examination so as to ensure objectivity in carrying out his or her functions under the scheme.
Design of schemes for independent verification

2. Member States shall require the operator or the owner to ensure that, in respect of the scheme for independent verification relating to an installation or a well, the following conditions are fulfilled:

- (a) the independent verifier has suitable technical competence, including where necessary, suitably qualified and experienced personnel in adequate numbers who fulfil the requirements of point 1 of this Annex;

- (b) tasks under the scheme for independent verification are appropriately allocated by the independent verifier to personnel qualified to undertake them;

- (c) suitable arrangements are in place for the flow of information between the operator or owner and the independent verifier;

- (d) the independent verifier is given suitable authority to be able to carry out the functions effectively.

3. Material changes shall be referred to the independent verifier for further verification in accordance with the scheme for independent verification, and the outcomes of such further verification shall be communicated to the competent authority, if requested.
Established to support competence building in general and the different training/competence schemes/guidelines

- Discipline based competence
- Ensure relevant technical competence in local market
- Documentation of competence globally
- Verification Hubs approving local competence
- DNV GL actively works with Knowledge Management to reduce the loss or degradation of capabilities, experiences and skills
- Succession Planning
- DNV GL Knowledge Booster Programme
- Knowledge sharing facilitation

**How can the Competent Authorities regulate this to ensure IV’s qualifications and experience?**
Thank you for your attention !
Discussion
Feel free to contact us any time

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