



North Sea
Transition
Authority

Information Reporting

Form and Manner of NDR Information

Date of publication November 2024

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Published by the North Sea Transition Authority

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1. Scope and Purpose

This document provides supplemental information in support of published guidance on the North Sea Transition Authority's ('**NSTA**') requirements for the reporting of Information and Samples that are retained by relevant persons under the Oil and Gas Authority (Offshore Petroleum) (Retention of Information and Samples) Regulations 2018 (the 'Retention Regulations'¹), and subsequently must be reported to the NSTA in accordance with a notice issued under section 34 of the Energy Act 2016 ('the Act') or in accordance with the exercise of other powers under Part 2, Chapter 32 of the Act.

The powers under section 34 commenced in December 2016.

This document also provides supplemental information in support of Petroleum Operations Notice 9 (PON9) for the reporting of data created and acquired before 2018, in accordance with the requirements set out in offshore petroleum licence model clauses.

This document is intended to aid understanding of what specific information must be reported to the UK National Data Repository and the "form and manner" in which the information must be reported.

This document is not a replacement for published guidance, which explains what action is required on the part of the relevant person when reporting information to the NSTA. This document explains how information should be formatted and how the action of reporting is to be carried out.

The NSTA is not bound by this document and where it departs from this document it will explain why. This document is issued in support of the relevant guidance and is not a substitute for any regulation or law and is not legal advice.

This document will be kept under review and may be revised as appropriate in the light of further experience and developing law and practice, and any change to the NSTA's powers and responsibilities.

If the NSTA changes this information in a material way, it will publish a revised document.

2. Introduction and Context

The NSTA Digital Strategy 2020-2025¹ describes how the NSTA will deliver, promote, and influence digital excellence through digitalisation to support the OGA Strategy.

Aiming to be an innovator and a catalyst, the NSTA is helping industry, academia, and the supply chain to use digitalisation to unlock the huge value from data, whilst at the same time providing excellent digital services to its stakeholders in support of regulatory excellence.

The NSTA's ambition is to enable digital services that ensure digital, data and technology work for all.

The requirement for relevant persons to retain petroleum-related Information and Samples (as defined in section 9A(1)(b) of the Petroleum Act 1998), and to report certain of them to the NSTA via the NDR, is explained in Petroleum Operations Notice 9. Such information and samples may be disclosed by the NSTA, at its discretion.

Broadly similar requirements for such retention and disclosure are also set out in the Retention Regulations and the Disclosure Regulations in relation to information and samples in the Energy Act 2016 and supporting guidance documents.

A main aim of these regulatory requirements is to “ensure greater access to the timely and transparent data necessary for a competitive market”.

What is information?

In this document, the term ‘information’ means ‘petroleum-related information’ which is defined in section 27(1) of the Energy Act 2016. The Retention Regulations (and the supporting guidance) set out what categories, and the information and sample types within those categories, that must be retained; these also include those that must be reported.

¹ <https://www.nstauthority.co.uk/media/6270/oga-digital-strategy.pdf>

3. Reporting of Information

Form and Manner

This document sets out the form of and manner in which the NSTA will normally require information to be reported. i.e., what digital format or industry standard (for instance, in the case of certain geophysical datasets) and through which mechanism (e.g., online submission or on physical media such as a portable media storage device).

The costs of reporting information will be for the account of the relevant person(s).

Specified information that has been acquired or created pursuant to an offshore petroleum licence, such as well logs and reports or seismic volumes, is to be reported to the National Data Repository (NDR)

<https://ndr.nstauthority.co.uk>

General or “summary” information about wells should be reported via the Energy Portal.

General or “summary” information about surveys should be reported via the ISC mailbox ISC@nstauthority.co.uk

4. General Reporting Requirements

Coordinate Reference System

Required map projections for data containing projected XY coordinates in reportable information are listed in *Table 1. NDR Compliant Coordinate Reference Systems*.

Note: ETRF89 and ETRS89 are equivalent to WGS84 for these offshore positioning purposes.

Table 1. NDR compliant coordinate reference systems

| Map Projection | Datum | EPSG code | Area of use | Range of use (Degrees) |
|-----------------------|------------------|------------|---|------------------------|
| UTM 31 North | ED50 | 23031-1311 | UKCS offshore | -2, 6, 40, 70 |
| | | 23031-1613 | Norway - offshore South of 62°N | |
| | | 23031-1612 | Norway - offshore North of 62°N | |
| | WGS84 | 32631 | UK - North Sea | |
| UTM 30 North | ED50 | 23030-1311 | UKCS offshore | -5, 6, 40, 70 |
| | | 23030-1613 | Norway - offshore South of 62°N | |
| | | 23030-1612 | Norway - offshore North of 62°N | |
| | WGS84 | 32630 | UK - North Sea | |
| UTM 29 North | ETRF89 ETRS89 | 25829-1149 | Europe, onshore and offshore | -11, -6, 40, 70 |
| | WGS84 | 32629 | UK | |
| UTM 28 North | ETRF89 ETRS89 | 25828-1149 | Europe, onshore and offshore | -17, -12, 40, 70 |
| | WGS84 | 32628 | Greenland. Iceland. Ireland - offshore | |
| UTM 27 North | WGS84 | 32627 | Greenland. Iceland. | -23, -18, 40, 70 |
| TM 0 North | ED50 | 23090-1311 | Offshore United Kingdom - Denmark – Ireland – Netherlands | -6, 5, 50, 63 |
| British National Grid | OSGB 1936 | 27700 | UK Onshore | -7, 3, 49, 61 |

File Extensions

Information that is reported to the NDR must align to the formats described in this document. No other file formats are to be submitted to the NDR.

Table 2. NDR Compliant file extensions for reportable information sets out the file extensions that are required according to the permitted file format.

Table 2. NDR compliant file extensions for reportable information

| File Type | File Extension |
|--|------------------------------------|
| DLIS Digital log data | .dlis |
| LAS Digital log data | .las |
| PDF Portable document format | .pdf |
| ASCII text | .txt |
| CSV comma separated values text file | .csv |
| Tag Image File Format | .tiff (preferred); .tif (accepted) |
| SEG-D seismic data | .segd (preferred); .sgd (accepted) |
| SEG-Y seismic data | .segy (preferred); .sgy (accepted) |
| Seismic raw navigation P format | .p291, .p294 or .p211 |
| Seismic processed navigation P format | .p190, .p184 or .p111 |
| Seismic bin grid navigation P format | .p698, .p611 |
| Seismic OBN node navigation SEG SPS V2.1 | .sps, .rsps, .ssps or .xsps |
| Seismic onshore navigation SEG-P3 | .segp3 |
| Wellbore positioning - P7/2000 | .p72 |
| Velocity DISKOSV98 | .v98 |
| JPEG Images | .jpg |
| PNG Portable network graphics | .png |
| Video MPEG-4 | .mp4 |
| GeoTIFF maps | .geotiff |

5. Wellbore Information

Specific wellbore information reporting requirements

The effective reuse of information that is obtained from the NDR is dependent on information being aligned to standard formats. Those formats of well information that may be reported to the NDR are set out in *Table 3. NDR compliant wellbore data formats*.

This is to apply generally to information of any vintage, regardless of the original format.

Table 3. NDR compliant wellbore data formats

| Data format | Applicable data types | Requirements |
|-------------|------------------------|---|
| PDF | Reports Log images | All modern reportable documents and data are required to be in machine readable digital formats, where “machine readable” means the data format can be easily processed by a computer without human intervention while ensuring no semantic meaning is lost. PDF must not be password protected or encrypted. |
| P7/2000 | Digital deviation data | Complies with IOGP format definition https://www.iogp.org/geomatics/ |
| LAS | Digital log data | Format definition https://www.cwls.org/products/#products-las Header information block must include the Wellbore Registration ID in the “WELL.” section. The Wellbore Registration ID must be a match for the Well ID in WONS, including spaces where appropriate, special characters (/ and -) and no leading or other additional characters. |
| DLIS | Digital log data | Format definition http://w3.energistics.org/rp66/V1/rp66v1.html |
| SEG-Y | Wellbore seismic | Data can be SEG-Y format rev 0, rev 1 or rev 2. SEG-Y data should comply with the requirements of the “SEG-Y Data format requirements” section in this document. |
| JPEG / PNG | Images/photographs | Images/photos must have a minimum resolution of 300 pixels per inch. |
| ASCII, CSV | Supporting information | Should only contain UTF-8 characters. |
| TIFF | Log images | May be reported for wells completed prior to 1 st January 2018. Width cannot exceed 100,000 pixels; length cannot exceed 1,000,000 pixels. Resolution must be between 200 and 2,000 ppi. Orientation must have the value ‘1’ https://www.adobe.io/content/dam/udp/en/open/standards/tiff/TIFF6.pdf |

Wellbore information types, classification and required formats

Classification of wellbore information in the NDR owes itself to the classification systems developed and applied by industry in preceding services. The NSTA intends that the investment to date in developing and adhering to the CS8 system should persist in the NDR. Indeed, the framework will be continuously developed by the NSTA in collaboration with industry representatives and, where appropriate, other users of the NDR service.

Table 4. Wellbore information types and classification sets out the classifications that are required to be assigned to information as it is reported to the NDR, with a summary description for each information type. This table also specifies the required format in which each information type should be reported.

Table 4. Wellbore information types and classification

| Well life cycle phase | Information type | Description of reportable information | Classification tag | Format |
|-----------------------|---|--|---------------------|--------|
| Pre drill | Authority for expenditure, partner consents, etc. | A summary in the Operator's End of Well Report would be adequate. | PRE_PROP PRE_GEN | PDF |
| Pre drill | Geological/well proposals | Providing basic details of well location, seismic structure, basic well evaluation, mud programme and well evaluation plan. May otherwise be included in geological and/or drilling programme. | PRE_PROP | PDF |
| Pre drill | Geological programme | Describing the full structural geological setting, cross sections, stratigraphic column, well evaluation programme – (including coring, logging (wireline/LWD/MWD), mud logging etc.), pore pressure and temperature profiles and other information from geological models, etc. Basic details of contractors, the well operator, and equity partners must also be reported. Alternatively, this may be included in drilling programme. | PRE_GPROG | PDF |
| Pre drill | Drilling/ operations programme | Describing the planned design of the well/wellbore such as drill bit diameters, casing types, shoe depths, kick-off points, deviation, plug depths etc. May be combined with the geological programme above. For non-drilling operations, a similar level of appropriate information for the type of activity is required. | PRE_DPROG | PDF |

| Well life cycle phase | Information type | Description of reportable information | Classification tag | Format |
|-----------------------|--|---|---|---------|
| Pre drill | Site survey | Report on rig site conditions, shallow gas, other hazards, bathymetry for the proposed well. Information arising from 2D shallow seismic surveys must be reported as specified in the geophysics section. | PRE_SITE | PDF |
| Pre drill | Rig positioning report (for mobile unit) | Documents the actual siting of the rig. | PRE_MOVE | PDF |
| Drilling operations | Drilling reports | May be reported as separate reports or included in contractor daily operations reports. Full reports must be reported in addition to any summary included in the end of well report. | DRILL_GEN, DRILL_HSE, DRILL_FLUID | PDF |
| Drilling operations | Definitive deviation survey report | The final, definitive deviation survey as approved by the well operator on behalf of the other licensees, including the finalised deviation survey data used as a positional reference for all the other data that requires positional referencing. | DRILL_DEV | PDF |
| Drilling operations | Definitive deviation survey data | The final, definitive deviation survey as approved by the well operator on behalf of the other licensees, including the finalised deviation survey data used as a positional reference for all the other data that requires positional referencing. | WDD_FILE | P7/2000 |
| Drilling operations | Casing/cementing end of well report | Details of casing and cementing operations during the drilling operations phase. Full reports must be reported in addition to any summary in the operator's end of well report. | DRILL_CEMENT | PDF |
| Drilling operations | Mud contractor end of well report | Full reports must be reported in addition to any summary in the operator's end of well report. | DRILL_GEN | PDF |
| Drilling operations | LWD/MWD end of well report | Full reports must be reported in addition to any summary in the operator's end of well report. | DRILL_MWD | PDF |
| Drilling operations | Well Examiner Reports | Audit report to verify that drilling and other well operations have been carried out in accordance with all plans and safety criteria. | WELL_EXAM | PDF |
| Completion Operations | Completions and Workovers Programme | Reports detailing plans for Completions and Workovers before the operations take place. | COMPL_PROG | PDF |

| Well life cycle phase | Information type | Description of reportable information | Classification tag | Format |
|---|--|--|--|------------------|
| Completion Operations | Completion and Workover Operations Reports | Reports detailing Completions and Workovers after the operations have taken place. Details of well stimulation, hydraulic fracturing and production engineering. | COMPL_HSE, COMPL_DAILY, COMPL_EOJR, WELL_ENG | PDF |
| Data Collection & Interpretation | Mud logging end of well report | Report typically includes expected prognosis, drilling dynamics data, lithology and provisional formation tops, and includes associated logs (formation evaluation, ditch gas, temperature, pressure evaluation, etc.) | GEOL_MUD, LOG_MUD, | PDF PDF, TIFF |
| Data Collection & Interpretation | Digital mud log | Digital record of a borehole derived through examination of rock cuttings brought to the surface by drilling fluids (i.e. drilling mud). | DWL_MUD | LAS, DLIS |
| Data Collection & Interpretation | Mud data file | Digital record of a borehole derived through examination of rock cuttings brought to the surface by drilling fluids (i.e. drilling mud). Legacy records may not be available as LAS or DLIS format (see DWL_MUD). Plain text ASCII or CSV are accepted where data was not originally written to DWL formats. | MUD_FILE | ASCII, CSV |
| Data Collection & Interpretation | Core operations report | Report from the coring contractor. Alternatively, may be included in the Operator's End of Well Report (Conventional or Rotary cut core only). | CORE_GEN | PDF |
| Data Collection & Interpretation | Sidewall Core Reports | All reports on acquisition, analysis and interpretation of Sidewall Core. | CORE_SIDEWALL | PDF |
| Data Collection & Interpretation | Biostratigraphy, palynology, and Palaeontology reports | Typically provided by the contractor. Includes reports on palaeontological and palynological analysis, interpretations and conclusions. Will include zones, species listings and range charts, and includes report from wellsite services, where available. | GEOL_BIO, LOG_BIO | PDF PDF, TIFF |
| Data Collection & Interpretation | Geochemistry report | Typically provided by the contractor. Includes details of methodology, results, and interpretations. | GEOL_CHEM | PDF |
| Data Collection & Interpretation | Conventional core analysis report | Typically provided by the contractor. Details of conventional core analysis activity and results. Includes lithological descriptions, porosity, permeability, saturations, matrix densities. | CORE_CCA | PDF |

| Well life cycle phase | Information type | Description of reportable information | Classification tag | Format |
|---|--|---|---------------------------------|-------------------|
| Data Collection & Interpretation | Core photographs | Core photographs typically referenced using driller's depths. | CORE_PHOTO | PDF, JPEG, or PNG |
| Data Collection & Interpretation | Conventional core analysis data | Digital conventional core analysis data supplied in a digital file, usually as a table. | CCA_FILE | ASCII, CSV |
| Data Collection & Interpretation | Special core analysis (SCAL) report | Special core analysis performed on preserved samples, including relative permeability data, capillary pressure test data, any other contractor derived data and results. | CORE_SCAL, CORE_PERM, SCAL_FILE | PDF |
| Data Collection & Interpretation | Sedimentology, petrography, petrology | Reports detailing rock properties determined by logging and/or facies descriptions of core. | GEOL_SED | PDF |
| Well Testing | Pressure, volume, temperature (PVT) and other fluid analysis | Details of measurement of phase behaviour and pressure/volume /temperature of reservoir fluids, as typically performed on samples from wireline well testing e.g. MDT, or drill stem testing. e.g. MDT, RFT, Flowing and Shut-in Bottom Hole Pressure Surveys. Pressure data during production and injection operations if recorded, and including reference depth information where available (TVD, MD, etc.). Frac Pressure Data (via Leak Off tests). Characterisation of all fluids (water and hydrocarbons) within the hydrocarbon leg and if recorded, within the aquifer leg. Chromatographic data if recorded. | TEST_FLUID, TEST_PLT, TEST_LUM | PDF |
| Well Testing | Well testing reports | Reports arising from drill stem tests, Gauge Reports (Flowing Tubing Wellhead Pressure and Temperature, Shut-In Tubing Wellhead Pressure and Temperature or equivalent). | TEST_GEN, TEST_DST | PDF |
| Well Testing | Well test data | Well Test data in tabulated digital format, including from Distributed Temperature Systems. | TEST_FILE | ASCII, CSV |
| | | | | |

| Well life cycle phase | Information type | Description of reportable information | Classification tag | Format |
|---|--|---|---|----------------------|
| Data Collection & Interpretation | Other bespoke contractor reports (engineering, geological, geophysical, petrophysical) | Other specialist reports provided by various contractors, e.g. Rock Properties (strength, compressibility, stress studies) chemo stratigraphy, goniometry on cores, etc. | GEOL_GEN, CORE_GEN, GEOL_PPHYS, GEOL_DIP | PDF |
| Data Collection & Interpretation | Open hole Wireline data | Digital data arising from all logs run (includes gamma ray, sonic, density and neutron logs). All logs recorded using wireline, slickline, TLC pipe conveyed or coiled tubing tool conveyance methods. | DWL_WIRE | LAS, DLIS |
| Data Collection & Interpretation | Open hole Wireline images | Images arising from all logs run (includes gamma ray, sonic, density and neutron logs). Logs recorded using wireline, slickline, TLC pipe conveyed or coiled tubing tool conveyance methods. | LOG_WIRE | PDF, TIFF, JPEG, PNG |
| Data Collection & Interpretation | Other digital well log data | Digital data arising from log runs that may not align to specific digital well log information types detailed elsewhere in this table. | DWL_OTHER | LAS, DLIS |
| Data Collection & Interpretation | Core data curves | Including core gamma ray. Typically referenced to driller's depths and used to adjust cores to log depths on the composite log. | LOG_CORE | PDF, TIFF |
| Data Collection & Interpretation | Cased hole and tubing wireline | Images and digital data arising from all logs run (includes cement bond logs, perforation logs and slickline logs). | LOG_CASE | PDF, TIFF |
| Data Collection & Interpretation | Well test/ formation test images | Images and reports arising from formation testing tools (e.g. PLT, RFT, TDT, MDT etc.). May include details of samples collected. | LOG_TEST | PDF, TIFF |
| Data Collection & Interpretation | Well test/ formation test logs | Logs arising from formation testing tools e.g. PLT, RFT, TDT, MDT. | DWL_TEST DWL_PROD | LAS, DLIS |
| Data Collection & Interpretation | Composite well logs | Image log with full well header information, showing all primary wellbore measurements, including formation tops, lithologies, chrono stratigraphy, lithostratigraphy, selected log curves, DST intervals (with summary results), cored intervals (depth shifted), sidewall cores, formation tester results, background gas, hydrocarbon shows, casing/liner depths, casing shoe depth, deviation data, measured 2-way times to formation tops. | LOG_COMP | PDF, TIFF |

| Well life cycle phase | Information type | Description of reportable information | Classification tag | Format |
|---|--|---|--|---------------|
| Data Collection & Interpretation | Joined well logs data | Joined set of digital log curves spliced together over full depth range of wellbore. Typically used for correlation purposes it will be the most accurate and complete record of the main log measurements such as sonic, density, neutron and resistivity. Information on the processing of well logs, including a full audit trail, must also be reported. | JWL_FILE | LAS, DLIS |
| Data Collection & Interpretation | Joined well logs audit trail report | Information on the processing of Joined well logs, including a full audit trail, must also be reported. | JWL_AUDIT | PDF |
| Data Collection & Interpretation | Computer processed interpretations (CPI)/ petrophysical data log | Spliced, environmentally corrected log curves for use in petrophysical interpretation. Will normally be specialist curves not normally included in a standard composite log. Associated audit trails should also be reported. | LOG_CPI | PDF, TIFF |
| Data Collection & Interpretation | Borehole seismic reports | Reports obtained as part of VSP profile, offset VSP, Velocity survey etc. | GPHYS_VSP GPHYS_QCVSP GPHYS_CSHOT GPHYS_GEN | PDF |
| Data Collection & Interpretation | Borehole seismic logs | All sonic/velocity and two-way time (TWT) logs including calibrated sonic and density logs and any derived calculations. Obtained as part of VSP profile, offset VSP, Velocity survey etc. | LOG_VEL, LOG_SEIS, | PDF, TIFF |
| Data Collection & Interpretation | Borehole seismic checkshots | Checkshot or Time/Depth data in tabulated digital format. Obtained as part of VSP profile, offset VSP, Velocity survey etc. | CSHOT_FILE VSP_FILE | ASCII, CSV |
| Data Collection & Interpretation | Borehole seismic data | Raw and processed VSP seismic data. Synthetic seismograms obtained as part of VSP profile, offset VSP, Velocity survey etc. Data acquired by Distributed Acoustic Sensing techniques for Vertical Seismic Profiling purposes only. Where used for 4D surveillance, baseline and final DAS datasets only should be reported. Interim datasets are not required. | VSP_SEGY | SEG-Y |

| Well life cycle phase | Information type | Description of reportable information | Classification tag | Format |
|---|---|---|---|------------------|
| Data Collection & Interpretation | Borehole seismic reports | Reports obtained during acquisition, processing and interpretation of array sonic, DSI, waveforms. | GPHYS_SONIC | PDF |
| Data Collection & Interpretation | LWD/MWD log data | Data and measurements collected while drilling. | DWL_MWD | LAS, DLIS |
| Data Collection & Interpretation | LWD/MWD log images | Images collected while drilling. | LOG_MWD | PDF, TIFF |
| Data Collection & Interpretation | Dipmeter and borehole imaging data | Reports and logs from dipmeter, borehole televiewer and images, etc. | GEOL_DIP LOG_DIP | PDF PDF, TIFF |
| Data Collection & Interpretation | Wellsite lithology log | As provided by the wellsite geologist. | LOG_LITH | PDF, TIFF |
| Data Collection & Interpretation | Wellsite core logs | Core descriptions as provided by the wellsite geologist. | LOG_CORE | PDF, TIFF |
| Drilling operations | Operator's drilling end of well report | Also known as the drilling report, end of well report or Drilling Well History. Includes summaries of all contractor activities and is generated at the end of each well lifecycle activity. Multiple reports may exist for a single well / wellbore. Typically includes Daily Drilling Reports, LWD/MWD, mud, mud logging, casing, cementing, surveys etc. plus final well schematic, lessons learned, cementing, mud logging summary, QC reports, well examiner certificate, and barrier pressure test/leak off test summary. | DRILL_EOWR, DRILL_GEN, DRILL_DAILY | PDF |
| Data Collection & Interpretation | Operator's geological end of well reports | Includes final formation tops, stratigraphy, logging summary, coring summary, core depth shifts (driller to logger) where relevant. Samples collected, and fluid descriptions. Perforated intervals. Studies conducted. Formation pressures and gradients from formation pressure logs. May contain petrophysical interpretation with audit trail. For some wells there may be a Well Summary Report containing an executive summary of all aspects of well operations and results. This is not a substitute for detailed geological and operational reporting. | GEOL_GEOW, GEOL_DAILY, WELL_SUMMARY | PDF |

| Well life cycle phase | Information type | Description of reportable information | Classification tag | Format |
|---|---|--|--------------------|-----------|
| Data Collection & Interpretation | Operator's petrophysical end of well report | Petrophysical interpretation with audit trail if not included as part of the geological end of well report. | GEOL_PPHYS | PDF |
| Data Collection & Interpretation | Perforation / reperforation reports and logs | Report on perforating and perforated or reperforated intervals. | LOG_CASE, | PDF, TIFF |
| Data Collection & Interpretation | Other summary chart information | Summary images and charts arising from reports not covered elsewhere in this table. | LOG_SUM | PDF, TIFF |
| Abandonment Operations | Well Abandonment Programme | Reports detailing plans for well abandonment / decommissioning operations (before the operations take place). | ABANDON_PROG | PDF |
| Abandonment Operations | Well Abandonment HSE Notification | Notification of well abandonment / decommissioning operations to HSE. | ABANDON_HSE | PDF |
| Abandonment Operations | Daily Well Abandonment operations reports | Well abandonment/decommissioning daily operations reports. | ABANDON_DAILY | PDF |
| Abandonment Operations | Well Abandonment / Decommissioning End of Job Reports | Reports detailing well abandonment / decommissioning operations after the operations have taken place. Includes details of pressure tests on all barriers put in place as part of the well abandonment process and details of stratigraphy for all flowing formations encountered. | ABANDON_EOJR | PDF |
| Abandonment Operations | Well Abandonment / Decommissioning Cementing Reports | Reports detailing cementing operations during well abandonment / decommissioning. Includes cement evaluation, pressure tests and weight tests on casing cement and isolation plugs. | ABANDON_CEMENT | PDF |
| Abandonment Operations | Abandonment / Decommissioning Logs | Digital well logs generated in Well abandonment / Decommissioning operations including cement evaluation tools and casing imaging tools (e.g. pulsed eddy current). | DWL_ABANDON | LAS, DLIS |
| Abandonment Operations | Abandonment / Decommissioning Logs | Well log images generated in Well abandonment / Decommissioning operations including cement evaluation tools and casing imaging tools (e.g. pulsed eddy current). | LOG_ABANDON | PDF, TIFF |

| Well life cycle phase | Information type | Description of reportable information | Classification tag | Format |
|-------------------------------|------------------------------|--|--------------------|--------|
| Abandonment Operations | Well schematic | The final (or most current) well schematic for the well as included in the drilling programme (as-is and planned) and in the end of well report, as submitted to WONS. Includes details for all plugs, barriers, casing strings and shoes against MD and TVDSS where available. Final Abandonment (AB3) schematic showing casing cut depths relative to the Mudline. | WELL_SCHEM | PDF |
| Abandonment Operations | Seabed clearance certificate | A seabed clearance certificate may be applicable to more than one well. Normally included in the end of well report or abandonment report and also provided to WONS. | ABANDON_SEABED | PDF |

6. Wellbore data classification tags

Detailed descriptions of each classification tag for reportable wellbore information.

Table 5. Data classification tags for wellbore information

| File Type | Classification Tag | Information Type | Description |
|--------------|--------------------|-----------------------------|--|
| REPORT IMAGE | PRE_GEN | Pre-drill reports (general) | Prepared before drilling. Any Pre-Drill report not covered in the other PRE_ C Tags. |
| REPORT IMAGE | PRE_PROP | Well proposal | To present the business case for drilling the well. AFE may be included. |
| REPORT IMAGE | PRE_GPROG | Geological programme | Report detailing the expected geological considerations and aims and how the well design will be influenced by geology. Target information and geological context. |
| REPORT IMAGE | PRE_DPROG | Drilling programme | Report detailing the well design from an engineering and operations perspective. |
| REPORT IMAGE | PRE_SITE | Site survey | Report detailing rig site conditions, shallow gas considerations and location factors such as bathymetry and anchorages. Shallow seismic often included as enclosures. |
| REPORT IMAGE | PRE_MOVE | Rig move, rig positioning | Report detailing the planning and operations of siting the rig accurately on location. |
| REPORT IMAGE | DRILL_GEN | Drilling reports (general) | Reports on any aspect of drilling not covered elsewhere. This section is for Post Drilling activity not covered specifically in other DRILL_ codes. |

| File Type | Classification Tag | Information Type | Description |
|--------------|--------------------|--------------------------------------|---|
| REPORT IMAGE | DRILL_HSE | Drilling HSE notification | Notification of Well Operations to HSE. |
| REPORT IMAGE | DRILL_DAILY | Daily drilling and operations report | Reports produced daily for drilling and/or operations. |
| REPORT IMAGE | DRILL_EOWR | Drilling end of well report | Previously called DRILLING HISTORY this is the Operator End of Well Report for drilling activity. |
| REPORT IMAGE | DRILL_CEMENT | Drilling cementing report | Reports detailing Cementing (in relation to Drilling) operations. |
| REPORT IMAGE | DRILL_FLUID | Drilling fluid report | Reports detailing drilling fluid related operations. |
| REPORT IMAGE | DRILL_DEV | Deviation survey report | Report detailing the deviations in the wellbore trajectory from vertical. Report will contain lists of values which may also be stored digitally. |
| REPORT IMAGE | DRILL_MWD | MWD/LWD end of well report | Contractor report detailing MWD and LWD logging activity and results. |
| REPORT IMAGE | CORE_GEN | Core reports (general) | General core reports from coring operations - Conventional & Rotary Cut Core only. |
| REPORT IMAGE | CORE_CCA | Conventional core analysis report | Report detailing routine or conventional core analysis methodology and results on Conventional or Rotary Cut core samples. |
| REPORT IMAGE | CORE_PHOTO | Core photographs | High resolution photographs of slabbed core samples, usually acquired during conventional core analysis. |
| REPORT IMAGE | CORE_SCAL | Special core analysis report | Report detailing special core analysis methodology and results. |
| REPORT IMAGE | CORE_PERM | Core permeametry report | Detailing acquisition, results and interpretation of core permeability measurements. |
| REPORT IMAGE | CORE_SIDEWALL | Reports for sidewall core | Any reports to do with acquisition, analysis or testing of Sidewall Core. |
| REPORT IMAGE | GEOL_GEN | General geologic reports | General reports on geology or geological analysis & interpretation. |

| File Type | Classification Tag | Information Type | Description |
|--------------|--------------------|--------------------------------------|--|
| REPORT IMAGE | GEOL_DAILY | Daily geology reports | Reports of geological observations, produced daily during drilling. |
| REPORT IMAGE | GEOL_MUD | Mudlogging end of well report | Contractor report detailing mudlogging activity and results. |
| REPORT IMAGE | GEOL_GEOW | Geological end of well report | Report detailing geological operations, results and interpretation. May include the Composite Log as an enclosure. |
| REPORT IMAGE | GEOL_BIO | Biostratigraphy | Analysis and interpretation of fossil organisms to determine rock age and sequence stratigraphy. Will include micropalaeontology and palynology. |
| REPORT IMAGE | GEOL_DIP | Dipmeter | Report detailing dipmeter operations & interpretation, including Image Log analysis. |
| REPORT IMAGE | GEOL_SED | Sedimentology, petrography/petrology | Report detailing sedimentological facies description and interpretation and/or the detailed description and classification of rock type. |
| REPORT IMAGE | GEOL_PPHYS | Petrophysical report | Report detailing rock properties determined by wireline and MWD logging. Details of logging programmes, processing and analysis and results in a geological context. |
| REPORT IMAGE | GEOL_CHEM | Geochemistry report | Report detailing methodology, results and interpretation of any geochemical work undertaken on samples collected. |
| REPORT IMAGE | GPHYS_GEN | General geophysical report | General - geophysics, borehole seismic, velocity surveys not covered elsewhere. |
| REPORT IMAGE | GPHYS_VSP | VSP report | Detailing borehole seismic acquisition, processing and interpretation. |
| REPORT IMAGE | GPHYS_QCVSP | QC report on VSP | Detailing the operations and positioning information for offset VSPs. |
| REPORT IMAGE | GPHYS_CSHOT | Checkshot report | Detailing checkshot velocity analysis operations, time depth listing and results. |
| REPORT IMAGE | GPHYS_SONIC | Array sonic, DSI, waveforms report | Report detailing acquisition, processing and interpretation of array sonic data. |

| File Type | Classification Tag | Information Type | Description |
|--------------|--------------------|--|---|
| REPORT IMAGE | TEST_GEN | Testing reports (general) | Testing reports including well production tests, laboratory tests and downhole measurements not covered elsewhere. |
| REPORT IMAGE | TEST_FLUID | Fluid analysis, RFT | Detailing analysis and interpretation of fluid samples and formation fluid pressure. |
| REPORT IMAGE | TEST_PLT | PLT, TDT report | Detailing PLT and TDT cased hole monitoring of reservoir flow and performance. |
| REPORT IMAGE | TEST_DST | DST report | Detailing well testing through the drill stem for reservoir performance evaluation. |
| REPORT IMAGE | TEST_LUM | Luminescence fingerprinting | Reports detailing acquisition, results & interpretation of luminescence fingerprinting measurements, primarily to differentiate oil-based mud from crude oil in drill cuttings. |
| REPORT IMAGE | COMPL_PROG | Completions / workover programme | Reports detailing plans for Completion and/or Workover operations before activity has taken place. |
| REPORT IMAGE | COMPL_HSE | Completion/ workover HSE notification | Notification of Completion and/or Workover operations to HSE. |
| REPORT IMAGE | COMPL_DAILY | Daily completions / workovers report | Completions and/or Workovers Daily Operations Reports. |
| REPORT IMAGE | COMPL_EOJR | Completion/ workover end of job reports | Detailing Completion and/or Workover Operations after activity has taken place. |
| REPORT IMAGE | ABANDON_PROG | Well abandonment programme | Programme for well abandonment/decommissioning operations produced before the activity takes place. |
| REPORT IMAGE | ABANDON_HSE | Well abandonment HSE notification | Notification of well abandonment/decommissioning operations to HSE. |
| REPORT IMAGE | ABANDON_DAILY | Daily well abandonment/ decommissioning operations reports | Well abandonment/decommissioning Daily Operations Reports. |

| File Type | Classification Tag | Information Type | Description |
|--------------|--------------------|--|---|
| REPORT IMAGE | ABANDON_EOJR | Well abandonment / decommissioning end of job reports | Reports detailing well abandonment/decommissioning operations after activity has taken place. |
| REPORT IMAGE | ABANDON_CEMENT | Well abandonment / decommissioning cementing reports | Reports detailing Cementing operations as part of well abandonment/decommissioning. |
| REPORT IMAGE | ABANDON_SEABED | Well abandonment / decommission seabed clearance certificate | Seabed Clearance Certificate issued after Well Origin is fully Decommissioned (AB3 Status). |
| REPORT IMAGE | WELL_ENG | Well engineering reports (general) | Reports detailing well engineering operations not covered elsewhere. |
| REPORT IMAGE | WELL_SUMMARY | Well summary report | General summary report detailing in brief the operations, geology, data collection, interpretation and well results. |
| REPORT IMAGE | WELL_SCHEM | Well schematic | Well Schematic Diagram. Required at the end of any phase of operations in a well that results in a change of Wellbore Status or Well Origin Status. The most up to date version at any particular time is required. |
| REPORT IMAGE | WELL_EXAM | Drilling well examiner report | Well Examiner Report which may be produced at several stages of the well life cycle such as Drilling, Completions, Workovers and Abandonment. |
| LOG IMAGE | LOG_BIO | Biostratigraphical data log | Summary log or chart detailing the results of biostratigraphical (palaeontological and palynological) analysis. |
| LOG IMAGE | LOG_COMP | Composite log, final well log | Final well log showing well header information, lithology, casing joints, core intervals, geological zones, tops and basic petrophysical logs. |
| LOG IMAGE | LOG_CORE | Core description log, core gamma log | Logs depicting core descriptions and gamma response from core. |
| LOG IMAGE | LOG_CPI | Computer processed interpretation log | CPI generated from wireline or LWD/MWD log data, correlation panels (Not dipmeter). |
| LOG IMAGE | LOG_DIP | Dipmeter, imaging log | Graphical plot of dipmeter results or Imaging Logs. |

| File Type | Classification Tag | Information Type | Description |
|-----------|--------------------|---|--|
| LOG IMAGE | LOG_CASE | Casing and tubing log | Engineering logs including CBL, CCL, perforating and junk catching usually correlated by GR to Surface. |
| LOG IMAGE | LOG_LITH | Lithological log | Log of lithological descriptions. |
| LOG IMAGE | LOG_MUD | Mud log, FEL, PEL | Mud log, Formation Evaluation Log, Pressure Evaluation Log, Gas Detection Log and any other drilling data logs. |
| LOG IMAGE | LOG_MWD | Measurement and/or logging while drilling | Logs recorded by Measurement While Drilling (MWD) or Logging While Drilling (LWD) techniques. |
| LOG IMAGE | LOG_SEIS | Borehole seismic display | Graphical plots of Borehole seismic logs, VSP plots and Synthetic Seismograms. |
| LOG IMAGE | LOG_ABANDON | Abandonment logs, cement evaluation | Logs run during or associated with well abandonment or decommissioning operations including Cement Evaluation Tools. |
| LOG IMAGE | LOG_VEL | Velocity log, seismic calibration log | Velocity Log and Two-Way Travel Time Log. |
| LOG IMAGE | LOG_WIRE | Wireline logs | Logs recorded by sensors on wireline or on coiled tubing not covered elsewhere. |
| LOG IMAGE | LOG_TEST | Test log image | Testing logs run in casing or open hole – e.g. PLT, TDT, RFT, MDT. |
| LOG IMAGE | LOG_SUM | Summary charts | Summary charts not covered elsewhere. |
| DWL FILE | DWL_MUD | Digital mud log data | Mud log, Formation Evaluation Log, Pressure Evaluation Log, Gas Detection Log and any other drilling data logs. |
| DWL FILE | DWL_MWD | Digital MWD/LWD data | Logs recorded by MWD or LWD techniques. |
| DWL FILE | DWL_WIRE | Digital wireline log data | Logs recorded by sensors on wireline or on coiled tubing. |
| DWL FILE | DWL_PROD | Digital production logs | Production logs, TDT and PLT logging data. |
| DWL FILE | DWL_TEST | Digital well test data | Testing logs run in casing or open hole. |

| File Type | Classification Tag | Information Type | Description |
|----------------------|--------------------|---|---|
| DWL FILE | DWL_ABANDON | Digital abandonment logs | Digital Logs run during or associated with well abandonment/decommissioning operations including Cement Evaluation Tools. |
| DWL FILE | DWL_OTHER | Other digital log data | Any other digital log data not covered elsewhere. |
| JWL FILE | JWL_FILE | Joined well log | Composited, environmentally corrected, depth matched joined well log curves. |
| JWL AUDIT | JWL_AUDIT | Joined well log audit | Audit trail document for JWL File. |
| WDD FILE | WDD_FILE | Digital deviation data | Deviation Data stored as a digital file in P7/2000 format ASCII. |
| VSP FILE | VSP_FILE | Digital VSP data | Digital Borehole seismic logs, VSP data and Synthetic Seismograms - non SEG-Y. |
| VSP FILE | VSP_SEGY | Digital VSP SEG-Y data | Digital Borehole seismic logs, VSP data, Synthetic Seismograms in SEG-Y format. |
| WELL DIGITAL CORE | CCA_FILE | Digital conventional core analysis data | Conventional core analysis data supplied in digital, usually as a table. |
| WELL DIGITAL CORE | SCAL_FILE | Digital special core analysis data | Special core analysis data supplied in digital, usually as a table (results not interpretation). |
| WELL DIGITAL SEISMIC | CSHOT_FILE | Digital checkshot data | Checkshot or Time/Depth data in tabulated digital format (not scanned image). |
| WELL DIGITAL TEST | TEST_FILE | Digital well test data | Well Test data in tabulated digital format (not scanned image). |
| WELL DIGITAL MUD | MUD_FILE | Mud data file | Mud log information in digital format, where DWL formats (LAS/DLIS) are not available. |

7. Geophysical Information

Geophysical data reporting requirements

The effective reuse of information that is obtained from the NDR is dependent on information being aligned to standard formats. Those formats of geophysical information that may be reported to the NDR are set out in this section.

Seismic information formats are detailed in *Table 7. NDR compliant seismic survey data formats* (following page). This is to generally apply to information of any vintage, regardless of the original format, however it is acknowledged that in cases of older seismic data there may be little value in upgrading data to later formats. Such data may be reported in older revisions of relevant standards. While certain data can be reported in older revisions, it is still subject to the conditions set out in *Table 7* below.

Required reporting of site surveys data

Information pertaining to Site Surveys is to be reported to the NDR in the formats set out in *Table 6. NDR compliant site survey data formats*.

Table 6. NDR compliant site survey data formats

| Type | Format | Remarks |
|---|-----------------------------|--|
| Reports (Acquisition, processing and interpretation) | PDF | PDF including machine readable text and must not be password protected or encrypted. |
| Sub-bottom profiler data | SEG-Y rev 0, rev 1 or rev 2 | SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document. |
| High resolution seismic data | SEG-Y rev 0, rev 1 or rev 2 | SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document. |
| Processed single or multibeam bathymetric data as x, y, z data | ASCII or GeoTIFF | GeoTIFF standard https://www.ogc.org/docs/is |
| Sidescan Sonar | GeoTIFF | GeoTIFF standard https://www.ogc.org/docs/is |
| Site investigation photos | JPEG | Referenced in the reports. |
| Site investigation videos | MPEG-4 | Referenced in the reports. |
| Hazard maps | GeoTIFF | Referenced in the reports. |

Table 7. NDR compliant seismic survey data formats

| Information type | Remarks | Online upload data formats | Physical media and data formats |
|--|--|---|--|
| Field data: Recorded trace data Or Group formed Or Final field produced | <p>Including auxiliary channels and source signature, where available</p> <p>Where partial processing has occurred during acquisition. Including de-ghosted data</p> | SEG-D rev 2.1, rev 3.0 or rev 3.1. | <p>SEG-D rev 2.1, rev 3.0 or rev 3.1.</p> <p>Single copy to be provided on either 3592 JA/JC tape or USB 3/C storage device.</p> <p>Data supplied on non-tape media must be without encapsulation.</p> <p>Data in earlier SEG-D versions and in SEG-A, B, or C formats can be processed, subject to additional charges for conversion to a compliant format before upload.</p> <p>Conversion of such data to nav-seis merged data in SEG-Y is encouraged.</p> |
| Field data: Final field produced Or Nav-seis merge data | Source /receiver navigation data assigned to CMP positions | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>SEG-Y data must comply with the requirements set out in SEG-Y data: file format mandatory requirements.</p> | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>Single copy to be provided on either 3592 JA/JC tape or USB 3/C storage device.</p> <p>SEG-Y data must comply with the requirements set out in SEG-Y data: file format mandatory requirements in this document.</p> |
| Pre-stack time migrated data | Raw and final PSTM gathers | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>SEG-Y data must comply with the requirements set out in SEG-Y data: file format mandatory requirements in this document.</p> | <p>SEG-Y rev 0, rev 1 or rev 2. Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device.</p> <p>SEG-Y data must comply with the requirements set out in SEG-Y data: file format mandatory requirements in this document.</p> |

| Information type | Remarks | Online upload data formats | Physical media and data formats |
|--|--|---|--|
| Pre-stack depth migrated data | Raw and final Pre-Stack Depth Migration gathers | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>SEG-Y data must comply with the requirements set out in SEG-Y data: file format mandatory requirements in this document.</p> | <p>SEG-Y rev 0, rev 1 or rev 2. Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device.</p> <p>SEG-Y data must comply with the requirements set out in SEG-Y data: file format mandatory requirements in this document.</p> |
| Post stack data | The final migrated stack after full pre-stack processing | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document.</p> | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device.</p> <p>SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document.</p> |
| Final migrated stack | Includes angle and offset stacks | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document.</p> | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device.</p> <p>SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements in this document.</p> |
| Final migrated stack after full pre-stack and post stack processing | Includes post stack time migrated volumes if created | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document.</p> | <p>SEG-Y rev 0, rev 1 or rev 2.</p> <p>Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device.</p> <p>SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document.</p> |

| Information type | Remarks | Online upload data formats | Physical media and data formats |
|--|--|--|---|
| All other post stack depth migrated volumes | If created as part of a PSDM project | SEG-Y rev 0, rev 1 or rev 2. SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document. | SEG-Y rev 0, rev 1 or rev 2. Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device. SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document. |
| Post stack time migrated volumes | The final migrated stack after full pre-stack processing | SEG-Y rev 0, rev 1 or rev 2. SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document. | SEG-Y rev 0, rev 1 or rev 2. Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device. SEG-Y data must comply with the requirements set out in the SEG-Y data: file format mandatory requirements section in this document. |

Required reporting of positional information

Positional information for geophysical surveys is to be reported to the NDR in the formats set out in *Table 8. NDR compatible positional data formats*

Table 8. NDR compatible positional data formats

| Type | Remarks | Online Upload Data Format | Physical Media |
|---|---|---|--|
| Raw navigation | Includes raw navigation, source-receiver navigation, final processed navigation, bathymetry data, and 3D survey bin grids | UKOOA P2/94 ASCII or IOGP P2/11 for offshore surveys or SEG-P3 for onshore surveys. | UKOOA P2/94 ASCII or IOGP P2/11 for offshore surveys or SEG-P3 for on-shore surveys. Single copy to be provided on either 3592 JA/JC tape or USB-3/C device. |
| Processed Navigation and bathymetric / topographic data | | UKOOA P1/90 ASCII or IOGP P1/11 for offshore surveys or SEG-P3 for onshore surveys. SEG SPS Rev 2.1 if applicable. | UKOOA P1/90 ASCII or IOGP P1/11. Single copy to be provided on either 3592 JA/JC tape or USB-3/C device. |
| Projected and Geographic coordinate reference systems for processed data | | UKOOA P6/98 ASCII or IOGP P6/11. | UKOOA P6/98 ASCII or IOGP P6/11. Single copy to be provided on either 3592 JA/JC tape or USB-3/C device. |
| Acquisition, including QC reports and sources / receivers / navigation details | Detailing the acquisition and quality check of seismic surveys, including weekly reports and the final deliverables or outputs from surveys. To include shot point base maps and maps showing the full fold of coverage | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. Single copy to be provided on either 3592 JA/JC tape or USB-3/C device. |
| Field tape listings | Field QC output listing | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. Single copy to be provided on either 3592 JA/JC tape or USB-3/C device. |

| Type | Remarks | Online Upload Data Format | Physical Media |
|--|--|---|--|
| Observer logs | Observer logs | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. Single copy to be provided on either 3592 JA/JC tape or USB-3/C device. |
| Source logs | Source logs | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. Single copy to be provided on either 3592 JA/JC tape or USB-3/C device. |
| Processing reports | Information on processing system and sequence, final products, input data etc. | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. Single copy to be provided on either 3592 JA/JC tape or USB-3/C device. |
| Navigation logs, reports and QC reports | | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. | PDF including machine readable text and must not be password protected or encrypted. CSV ASCII for supporting information. Single copy to be provided on either 3592 JA/JC tape or USB-3/C device. |

Required reporting of sub surface parameter information

Velocity surveys and other sub surface parameter data are to be reported to the NDR in the formats set out in *Table 9. NDR compliant Sub surface parameters data formats.*

Table 9. NDR compliant sub surface parameters data formats (velocity, anisotropy, attenuation etc.)

| Type | Online upload data formats | Physical media form and data formats |
|--|---|--|
| Stacking, migration, anisotropy and water column Velocities | SEG-Y rev 0, rev 1, rev 2 or DISKOSV98 as appropriate to the sampling of the model. | SEG-Y rev 0, rev 1, rev 2 or DISKOSV98 as appropriate to the sampling of the model. |
| Time to depth velocity datasets. | Velocity data must comply with the “Seismic velocity data format requirements” section in this document and if applicable, the SEG-Y data: file format mandatory requirements section in this document. | Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device. |
| Seismic attenuation | | Velocity data must comply with the “Seismic velocity data format requirements” section in this document and if applicable the SEG-Y data: file format mandatory requirements section in this document. |

Required reporting of supporting geophysical information

Ancillary reports that support reportable geophysical survey information are to be reported to the NDR in the formats set out in *Table 10. NDR Compliant supporting geophysical data formats.*

Table 10. NDR compliant supporting geophysical data formats

| Type | Online upload data format | Physical media form and manner |
|------------------------------|---|--|
| Source signature | ASCII files, recorded or modelled far field (with and without source + receiver ghost). | ASCII files recorded or modelled far field (with and without source + receiver ghost). Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device. |
| Transcription reports | | CSV ASCII format. Single copy to be provided on either 3592 JA/JC tape or USB-3/C storage device. |

SEG-Y data: file format mandatory requirements

SEG-Y formats accepted are rev 0 using rev 1 trace header locations, rev 1, rev 2 and newer (<https://library.seg.org/seg-technical-standards>).

The requirements as set out are normally fulfilled automatically in the creation of SEG-Y datasets. As a minimum SEG-Y data being submitted must comply with the following requirements:

1. The data must be the original precision, data that has been reduced to 8 bit and exported as 32 bit will not be accepted.
2. All SEG-Y must be of fixed length traces, i.e. all traces in a file must be the same number of samples and the sample rate must remain constant.
3. All SEG-Y rev 0 and rev 1 datasets must be written as Big Endian ordered data.
4. The information in *Table 11. SEG-Y Binary header - mandatory byte locations* must be present in SEG-Y Binary Header.

Table 11. SEG-Y Binary header – mandatory byte locations

| Byte location | Description |
|---------------|--|
| 3213-3214 | Number of data traces per ensemble, (1 for post stack). |
| 3215-3216 | Number of auxiliary traces per ensemble (0 for post stack). |
| 3217-3218 | Sample interval. Microseconds for time data, meters/feet for depth data. |
| 3221-3222 | Number of samples per data trace. |
| 3225-3226 | Data sample format code. |
| 3227-3228 | Ensemble fold, (1 for post stack). |
| 3229-3230 | Trace sorting code (type of ensemble). |
| 3255-3256 | Measurement system (1 = Meters, 2 = Feet). |
| 3501-3502 | SEG-Y Format Revision Number. |

5. SEG-Y Trace headers - 2D and 3D Post-stack datasets must have CDP/CMP projected XY coordinates for each trace (referencing a CRS included in Table 1 NDR Compliant Coordinate Reference Systems).
6. SEG-Y Trace headers - 2D and 3D Pre-stack datasets pre-binning (un-regularized) must have source and receiver projected XY coordinates for each trace (referencing a CRS included in Table 1 NDR Compliant Coordinate Reference Systems).
7. SEG-Y Trace headers - 2D and 3D Pre-stack datasets post-binning (regularized) must have CDP/CMP Projected XY coordinates for each trace (referencing a CRS included in Table 1 NDR Compliant Coordinate Reference Systems).

SEG-Y data: file format recommendations

1. The EBCDIC (Textual) header should contain the coordinate reference system used for the trace XY headers, either as EPSG codes or a CRS description. This CRS system must be the same as that which is detailed in the processed navigation data.
2. The preferred data sample type is 4-byte IEEE floating-point (SEG format code 5).

3. *Table 12. SEG-Y Trace Header: Recommended byte locations* sets out the recommendation. Alternate locations for information in trace headers are accepted.

Table 12. SEG-Y trace header: recommended byte locations

| Byte location | Description |
|---------------|--|
| 1-4 | Trace sequence number within line. |
| 5-8 | Trace sequence number within SEG-Y file. |
| 13-16 | Channel/Receiver number (if applicable). |
| 17-20 | Source point number (if applicable). |
| 21-24 | Unique ensemble number (CDP, CMP, CRP, CDPLBL etc.) (if applicable). |
| 29-30 | Trace identification code (1 = Time domain, 25 = Depth domain). |
| 37-40 | Offset/Angle header (Pre-stack only). |
| 71-72 | Scalar to be applied to all coordinates (negative = divisor). |
| 73-76 | Map projected X coordinate relating to Source location for unregularised data or trace location for regularised pre-stack and post-stack data. |
| 77-80 | Map projected Y coordinate relating to Source location for unregularised data or trace location for regularised pre-stack and post-stack data. |
| 81-84 | Map projected X coordinate relating to Receiver location for unregularised data. |
| 85-88 | Map projected Y coordinate relating to Receiver location for unregularised data. |
| 89-90 | XY Coordinate units (1 as should be in metres or feet). |
| 103-104 | Total static applied in milliseconds (Zero if none applied). |
| 181-184 | Map projected X coordinate of this trace (alternatives of 73-76 and or 81-84 in post migration data). |
| 185-188 | Map projected Y coordinate of this trace (alternatives of 77-80 and or 85-88 in post migration data). |
| 189-192 | Inline number (if applicable). |
| 193-196 | Crossline number (if applicable). |

4. Textual header (EBCDIC Header) - The recommended information contained in the SEG-Y Textual header as shown in Figure 1 below, the header should contain Geographic coordinate reference systems for the data. Additional information such as processing flow details can be included within spare rows. Merged datasets can have multiple NDR ProjectIDs of the various inputs listed in the Textual header.

Figure 1 EBCDIC Header: Recommended Layout

```

1234567890123456789012345678901234567890123456789012345678901234567890
C01 CLIENT: NAME OF OPERATOR                ; PROCESSED BY:
C02 DATA TYPE: FINAL GATHERS                ;DOMAIN: TIME OR DEPTH ;DATE: JUNE 2014
C03 OGA PROJECTID PREFIX: CCCCYYYYtype
C04 PROJECT NAME:
C05
C06 ACQ BY:                                ;VESSEL:                                ;YEAR: 2012
C07 NUM SOURCES:                            ;VOL:                CU; DEPTH: M; SP INT: M
C08 NUM CABLES:                             ;LENGTH:           M;DEPTH: M; CHANS/CABLE:    ;CHAN SEP: M
C09 SOURCE SEPARATION:                      M;CABLE SEPARATION: M OR AS APPROPRIATE
C10 TRACES/RECORD:                          ;SAMP INT: MS;SAMP/TRACE:
C11
C12 PROCESSING DATE: 2014;
C13 PROCESSING: SEGD READ; NAV SEIS MERGE; .....;
C14 MORE PROCESSING INFORMATION .....
C15 MORE PROCESSING INFORMATION .....
C16 MORE PROCESSING INFORMATION .....
C17 MORE PROCESSING INFORMATION .....
C18 MORE PROCESSING INFORMATION .....
C19 MORE PROCESSING INFORMATION .....
C20 MORE PROCESSING INFORMATION .....
C21 MORE PROCESSING INFORMATION .....
C22 MORE PROCESSING INFORMATION .....
C23 MORE PROCESSING INFORMATION .....
C24 MORE PROCESSING INFORMATION .....
C25 HDR BYTE POSITIONS: NAME BYTE POS LEN; INLINE 189 4; XLINE 193 4
C26 CDPLBL 21 4; CDP-X 181 4; CDP-Y 185 4;
C27
C28 PROJ EPSG CODE: 23031-1311
C29 ELLIPSOID:Int 1924; DATUM: ED50 ; PROJ: UTM; ZONE: 31N
C30
C31 INLINE BIN: 12.5 M ;INCR: 1 ; XLINE BIN: 12.5 M ;INCR: 1
C32 INLINE AXIS: 15.415 ;DEG (CLOCKWISE FROM NORTH)
C33 CROSSLINE AXIS: 105.415 ; DEG (CLOCKWISE FROM NORTH)
C34 ORIGIN IL,XL: , ; X: UNIT ;Y: UNIT
C35 DATA CORNER COORDINATES:
C36 IL XL X Y
C37 IL XL X Y
C38 IL XL X Y
C39 IL XL X Y
C40 END TEXTUAL HEADER

```

SEG-D data: mandatory file format requirements

SEG-D formats accepted are rev 2.1, rev 3.0 or rev 3.1 and newer as defined by the SEG.

(<https://library.seg.org/seg-technical-standards>).

SEG-D data must be supplied with sufficient metadata in the form of observers logs and tape or disk listings to be able to verify the line sequence number or line identifier for each file. If the line sequence number or line identifier is contained within the SEG-D extended or external headers, then information should accompany the data submission to indicate where it can be found.

If the SEG-D channel sets, extended or external headers contain near field hydrophone data, the submission should include an explanation as to how to locate and read the data.

Data supplied on non-tape media must be without encapsulation and must be multiple native acquisition data grouping per file.

Streamer data must have a separate file per sailline and be grouped by source within the file. A sailline should be supplied to the NDR as either one file or less than ten files, where each file has multiple source locations in it. A sailline must not be supplied to the NDR as one file per source location.

Nodal data supplied to the NDR must have each file grouped by recording location or multiple recording locations. Each file must have multiple source records per recording location. Recording location files must not be supplied to the NDR as one file per source location.

If the SEG-D file contains headers or blocks of data that are outside the SEG-D specification, the submission will be rejected.

Data in earlier SEG-D versions and in SEG-A, B, or C formats can be processed, subject to additional charges for conversion, to a compliant format before upload. Conversion of such data to nav-seis merged data in SEG-Y is encouraged

Original data that is marked with 'NTBP' was identified as **Not To Be Processed** at the time of acquisition. Such data would have been reacquired during the original survey acquisition. Under no circumstances should files marked as NTBP be loaded to the NDR.

Reporting data on physical media: mandatory requirements

The NDR User Interface includes workflows that enable all reportable information to be uploaded. These workflows are available to users that have been granted the “Company Data Manager” role by their Company Administrator.

Alternatively, licensees have the option to report licence information on physical media, to be uploaded by the NDR Service Provider. Optional use of such services is chargeable according to the latest schedule of rates.

The most recent version of the upload submission charges is available via the NDR Support Centre here:

<https://support.uk-ndr.co.uk/hc/en-gb/articles/4402396433170>

It is expected that data submitted on physical media will be ordered and structured with meaningful file names, ready to be loaded to the NDR, without the requirement for any pre-conditioning of the data or metadata. Where pre-conditioning is necessary, or insufficient information is provided, the fulfilment of reporting activities may be delayed or media may be returned to the sender without any action having been taken, at the discretion of the NSTA and its agents.

Costs relating to pre-conditioning of reported information that is necessary to meet submission criteria, or return of media to the sender, are to be borne by the submitter or owner of the information. The responsible party will be notified of such costs prior to any work being carried out. The responsible party can, at its discretion, appoint a service provider of its choice to carry out pre-conditioning of reportable information.

For streamer survey datasets, the data is expected and required to be arranged in a logical 2D line or 3D sequence folder directory structure, with a corresponding single UKOOA P1 file per navigation line/sequence.

Files for each line/sequence are to be clearly labelled with line name and/or sequence number.

This requirement is also essential for any data that has previously been transcribed where multiple lines now exist on a single tape.

Figure 2. Example directory structure for streamer survey datasets

| Name | Date modified | Type | Size |
|-----------------|------------------|----------|----------|
| DT941002_000100 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000101 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000102 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000103 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000104 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000105 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000106 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000107 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000108 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000109 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000110 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000111 | 24/09/2021 10:58 | SGD File | 8,459 KB |
| DT941002_000112 | 24/09/2021 10:58 | SGD File | 8,459 KB |

SEG-D field data must be supplied with adequate information to enable the naming convention of each file. SEG-D field data must always be accompanied by appropriately formatted navigation data files.

For Ocean Bottom Seismic datasets (including OBC and OBN), it is required that the field recording sort order will be maintained, and that data on media will be arranged in a logical file structure, for example: /receiver_line/node/sequence/SP.

Any datasets reported on physical media (including tapes and USB or RJ45 connected portable devices etc.) must be labelled with the information listed below, which should also be included on a 'Physical Media Submission Information' form.

<https://support.uk-ndr.co.uk/hc/en-gb/articles/4403099504146-Physical-Media-Data-Submission>

Dataset information, must be clearly described including data format and revision, number of sequences, number of media etc. The form should be submitted digitally as an attachment to the 'Submit a Request' workflow.

1. Data owner
2. NDR service ticket ID reference for on-media reporting
3. Unique survey identifier (NDR9 Code or Project ID)
4. Project or Survey name/alias
5. Survey type: 2D, 3D, 4D, OBN, OBC, VSP, Site survey (as applicable)
6. Date of acquisition or creation of the data set (not date written to media)
7. Data type: e.g., velocities, navigation, seismic
8. Data format and revision: e.g., SEG-D rev 3, SEG-D 2.1, UKOOA P1/90 etc.
9. Processed data description (if applicable) e.g., stack, migration, gather etc.
10. Data range (if applicable)
11. Tape/device number if multiple tapes/devices are submitted (i.e., 1 of 2, 2 of 2)
12. Geographical area: e.g., Quad15, Southern North Sea, West of Shetlands

The submitter will be notified by the NDR Support Team should any information be missing or unclear. If the data has previously been transcribed, the transcription report must also be included.

New Project IDs

Where a new NDR Project ID is to be created, the following information is to be provided:

1. Coordinate Reference System
2. Polygon coordinates (the approximate extent of survey, encompassing all lines).
3. Project "Processing Completion Date"
4. Project type (2D, 3D, 4D, OBN, OBS, Site Survey)
5. Licence(s)
6. Contractor
7. NDR9 code (if available)
8. Brief project description

The NSTA and its agents have no obligation to receive any shipments where advanced notice of their delivery has not been provided.

Advanced notification of any shipments of media should be raised to support@ndr-uk.co.uk

Delivery address for reporting on physical media

Information that is reported on physical media should be addressed to:

NSTA National Data Repository
c/o Moveout Data Seismic Services Ltd
The Stable Block
Lockwood Park
Brewery Drive
Huddersfield
HD4 6EN
United Kingdom

By default, the media submitted to the NDR will not be returned to the submitter.

Once the content has been verified in the NDR, media will be repurposed or sent for managed disposal.

Information will be removed or otherwise made unreadable prior to disposal.

Seismic velocity data: mandatory file format requirements

Velocities should be submitted in the form that they were used in processing the data. See *Table 13. NDR compliant seismic velocity formats* for accepted formats for common velocity data types. Gridded velocity models are to be provided in SEG-Y format.

SEG-Y data must comply with the requirements of the “SEG-Y Data format requirements” section in this document.

Non regularly sampled velocities are to be provided in DISKOSV98 format, as defined in the NPD Yellow book: <https://www.npd.no/globalassets/1-npd/regelverk/forskrifter/en/geophysical-guidelines.pdf>

Table 13. NDR compliant seismic velocity formats

| Velocity data type | Online upload data format |
|---|--|
| RMS Stacking | DISKOSV98 (sparse, and/or non-regular sampling) or SEG-Y (dense regular sampling). |
| RMS migration | DISKOSV98 (sparse, and/or non-regular sampling) or SEG-Y (dense regular sampling). |
| Interval migration – Time or Depth | SEG-Y. |
| Anisotropy components | SEG-Y. |
| Time to depth | DISKOSV98 (sparse, and/or non-regular sampling) or SEG-Y (dense regular sampling). |
| Other velocity datasets | DISKOSV98 (sparse, and/or non-regular sampling) or SEG-Y (dense regular sampling). |

8. Geophysical data classification tags

Classification of seismic information in the NDR builds on the classification systems developed and applied by industry in preceding services.

Geophysical information is to be reported under a project code that is descriptive of the type of geophysical survey information acquired or produced. *Table 14. Geophysical project types and codes* describes the scope of each geophysical project type.

Table 14. Geophysical project types and codes

| Code | Geophysical project type |
|-------------|---|
| seis | Seismic projects - Acquisition, processing, or reprocessing projects. This includes all acquisition types (e.g., 2d,3d,4d) and all data types, supporting information, reports etc. |
| mhaz | Near surface high resolution site survey projects - shallow investigation seismic, shallow boreholes, acoustic, sonar, bathymetry surveys, shallow hazard reports. All data types, supporting information and reports etc. |
| rems | Remote sensing, potential and diffusive field projects - CSEM surveys, stand-alone gravity and/or magnetic surveys, Lidar, satellite observations. All data types, supporting information and reports etc. |
| intp | General studies projects - Projects that combine multiple data sources for multiple spatial locations to report on a larger area than the items covered by the other project type codes. e.g., Reservoir studies, CCS potential studies, Hydrocarbon studies, Basin Studies, Reservoir models, earth models, field reports etc. |

Table 15. *Geophysical information types and classification* sets out the classifications that are required to be assigned to geophysical information as it is reported to the NDR, with a summary description for each type. This table also specifies the required format in which each information type should be reported.

Table 15. Geophysical information types and classification

| Project types | Information type | Classification Tag | File Format |
|-------------------------------|--|------------------------|--------------------------|
| | Seismic Reports | | |
| mhaz, seis, rems | Data acquisition and navigation reports | Report_acquisition | PDF |
| mhaz, seis, rems, intp | Reports on the interpretation of data | Report_interpretation | PDF |
| mhaz, seis, rems, intp | Reports on the processing of data | Report_processing | PDF |
| mhaz, seis | Summary data loading parameters from legacy systems (not user assigned) | Legacy_loading_sheet | PDF |
| mhaz, seis | Other supporting documents and reports | Supporting_information | PDF |
| | Survey Acquisition Information | | |
| mhaz, seis | Navigation data | Navigation | P formats or SEG format |
| mhaz, seis | Seismic field data | Data_acquired | SEG-D |
| mhaz, seis | Seismic field or navigation seismic merge data | Data_acquired | SEG-Y |
| mhaz, seis | Seismic field data - SEG-D and supporting acquisition information | Data_acquired | SEG-D-GZIP |
| mhaz, seis | Raw Navigation data | Raw_Navigation | P2 formats or SEG format |
| mhaz, seis | Processed Navigation data | Final_Navigation | P1 formats |
| mhaz, seis | Rationalised navigation defining the start, end and turning points in 2D lines | Ends_and_Bends | P1 formats |
| mhaz, seis | 3D Binning Grid Navigation data | Binning_grid | P6 formats |

| Project types | Information type | Classification Tag | File Format |
|------------------|--|-----------------------|--------------------|
| rems | Acquisition data | Data_acquired | TXT (ASCII) |
| mhaz | Digital video images - subsea infrastructure etc. | Video | MPEG-4 |
| mhaz, seis | Observer logs created during survey acquisition | Observer_log | PDF |
| mhaz, seis, rems | Source signature | Source_Signature | TXT (ASCII) or PDF |
| mhaz, seis | Plot of acquisition spatial coverage | Coverage_Plot | TXT (ASCII) or PDF |
| mhaz, seis, rems | List of lines included in the survey | Line_listing | TXT (ASCII) |
| mhaz, seis | Supporting data, source signatures, tide measurements etc | Data_supporting | TXT (ASCII) |
| | Pre stack data (Time) | | |
| mhaz, seis | Pre-stack seismic - time domain from intermediate processing step | Gathers_raw_time | SEG-Y |
| mhaz, seis | Final processed pre-stack seismic - time domain | Gathers_final_time | SEG-Y |
| | Pre stack data (Depth) | | |
| mhaz, seis | Pre-stack seismic - depth domain from intermediate processing step | Gathers_raw_depth | SEG-Y |
| mhaz, seis | Final processed pre-stack seismic – depth domain | Gathers_final_depth | SEG-Y |
| | Post stack data (Time) | | |
| mhaz, seis | Final processed stacked seismic - time domain | Final_post_stack_time | SEG-Y |
| mhaz, seis | Intermediate processed stacked seismic - time domain | Post_stack_time | SEG-Y |
| mhaz, seis | Stacked data from limited angle range - time domain | Angle_stack_time | SEG-Y |
| mhaz, seis | Stacked data from limited offset range - time domain | Offset_stack_time | SEG-Y |
| mhaz, seis | Inversion process output - time domain | Inversion_time | SEG-Y |
| mhaz, seis | Velocity profile data - time domain | Velocity_time | SEG-Y or DISKOSv98 |

| Project types | Information type | Classification Tag | File Format |
|------------------------|---|------------------------|-------------------|
| rems | Processed data | Data_processed_time | TXT (ASCII) |
| rems | Processed data spatially referenced | Data_processed_time | GeoTIFF |
| | Post stack data (Depth) | | |
| mhaz, seis | Final processed stacked seismic - depth domain | Final_post_stack_depth | SEG-Y |
| mhaz, seis | Intermediate processed stacked seismic - depth domain | Post_stack_depth | SEG-Y |
| mhaz, seis | Stacked data from limited angle range - depth domain | Angle_stack_depth | SEG-Y |
| mhaz, seis | Stacked data from limited offset range - depth domain | Offset_stack_depth | SEG-Y |
| mhaz, seis | Inversion process output - depth domain | Inversion_depth | SEG-Y |
| mhaz, seis | Velocity profile data - depth domain | Velocity_depth | SEG-Y |
| rems | Processed data | Data_processed_depth | TXT (ASCII) |
| rems | Processed data spatially referenced | Data_processed_depth | GeoTIFF |
| | Other geophysical data | | |
| mhaz, seis | Velocity data | Velocity | DISKOSV98 (ASCII) |
| | Interpretation data | | |
| mhaz, seis, rems, intp | Horizon, fault, grid and other interpretive data | Interpretation_time | TXT (ASCII) |
| mhaz, seis, rems, intp | Spatially referenced horizons and other interpretations | Interpretation_time | GeoTIFF |
| | Interpretation data (Depth) | | |
| mhaz, seis, rems, intp | Horizon, fault, grid and other interpretive data | Interpretation_depth | TXT (ASCII) |
| mhaz, seis, rems, intp | Spatially referenced horizons and other interpretations | Interpretation_depth | GeoTIFF |

9. TAR-SEG-D Specification

For uploading seismic field data

To upload previously non-compliant seismic field data, e.g. SEG-D rev 0 or many SEG-D files per acquisition line, the files can be combined into a gzipped TAR file per acquisition line (unless file size > ~400 Gbyte in which case multiple files per acquisition line or equivalent should be made).

Each TAR-SEG-D file also requires its own supporting information file to be created. This will allow NDR users to easily determine the content of a TAR-SEG-D file prior to download.

The relevant Project must have two supporting information files present to allow NDR users to easily determine the format of the contents of the TAR-SEG-D without having to download them. These are the 'project_info' and 'project_line_listing' files.

The TAR-SEG-D files and respective supporting files must follow the naming convention detailed below and please note that spaces are not permitted in any filenames.

1. **filename.segd.tar.gz**
2. **filename_segd_listing.txt** - one file for each *filename.segd.tar.gz*
3. **surveyname_field_data_project_line_listing.txt** – (one file per project)
4. **surveyname_field_data_project_info.txt** – (one file per project)

Examples of these file names for a survey called TT112D0002 would be:

1. TT112D0002_TOB13-0990P1-033.segd.tar.gz
2. TT112D0002_TOB13-0990P1-033_segd_listing.txt
3. TT112D0002_field_data_project_line_listing.txt
4. TT112D0002_field_data_project_info.txt

All of these files must be present to upload the TAR-SEG-D dataset.

The specification and examples of these files in a TAR-SEG-D dataset are detailed below:

- 1) **filename.segd.tar.gz** - a gzipped TAR file made from multiple SEG-D files, the filename must not contain any spaces. Example command to create a suitable TAR file:

```
tar --numeric-owner -cvzf AH963F0003_AH10106Q.segd.tar.gz AH96-15-0106Q_93714_000*.sgd |
```

or, using pigz software to run the compression in parallel (much faster)

```
tar --use-compress-program="pigz -k --best" --numeric-owner -cvf AH963F0003_AH10106Q.segd.tar.gz AH96-15-0106Q_93714_000*.sgd
```

2) **filename_seg_d_listing.txt** file - For each TAR-SEG-D file is the user must create a matching SEG-D listing file, the naming must match the filename with the “.segd.tar.gz” in the end of the TAR-SEG-D file replaced with “_segd_listing.txt”. The file must contain three sections denoted by leading “## “ and on their own line, the three sections are:

A. “## Header” - Required Header information following the format below: (items in quotes to be replaced with appropriate information)

```
NDR TAR-SEG-D field files for "Survey ID" "Sail-line name"
Produced by "company name"
Date dd-mm-yyyy "DD-MM-YYYY"
Created with tar --numeric-owner -czf
Read using tar -xf
Info "some information on how the file naming relates to the data"
```

B. “## File info” - Listing of all the SEG-D files expected in the TAR-SEG-D file, SEG-D file names must not contain spaces. Each line must contain a minimum of SEG-D filename and the file number (FFID) for that file in the form:

```
Filename.segd FFID: AAAAAA
```

C. “## Tar listing” - Tar listing of all the files in the TAR-SEG-D file created by reading the tar file back with the -t (--list) option, this provides a cross check against the expected list of SEG-D files. It is created from the output of command:

```
tar --full-time -tvf filename.segd.tar.gz
```

Example contents of **filename_seg_d_listing.txt** file

```
## Header
NDR TAR-SEG-D field files for AH963F0003 AH10106Q
Produced by Example Company Name Ltd
Date dd-mm-yyyy 04-08-2021
Created with tar --numeric-owner -czf
Read using tar -xf
Info Individual files in TAR archives are named by linename/linename_ffid.segd (or .sgd)
## File info
AH96-15-0106Q_93714_000007.segd FFID: 106 DATE: 96:111:15:12:11
AH96-15-0106Q_93714_000008.segd FFID: 107 DATE: 96:111:15:12:23
AH96-15-0106Q_93714_000009.segd FFID: 108 DATE: 96:111:15:12:35
AH96-15-0106Q_93714_000010.segd FFID: 109 DATE: 96:111:15:12:47
AH96-15-0106Q_93714_000011.segd FFID: 110 DATE: 96:111:15:12:59
## Tar listing
-rw-r--r-- 1000/1000 15964128 2021-01-21 14:11:21 AH96-15-0106Q_93714_000007.segd
-rw-r--r-- 1000/1000 15964128 2021-01-21 14:11:22 AH96-15-0106Q_93714_000008.segd
-rw-r--r-- 1000/1000 15964128 2021-01-21 14:11:23 AH96-15-0106Q_93714_000009.segd
-rw-r--r-- 1000/1000 15964128 2021-01-21 14:11:24 AH96-15-0106Q_93714_000010.segd
-rw-r--r-- 1000/1000 15964128 2021-01-21 14:11:26 AH96-15-0106Q_93714_000011.segd
```

- 3) **surveyname_field_data_project_line_listing.txt**- A text file containing the spatially related acquisition ordering, that corresponds to the field data files being uploaded to the NDR, e.g. sail-lines. All the lines in the survey are written as one line name per line. The file is required to have one section titled “## Survey line listing” on the first line of the file.

Example contents of **surveyname_field_data_project_line_listing.txt**:

```
## Survey line listing
NDR TAR-SEG-D field files for AH963F0003
Produced by Example Company Name Ltd
Date dd-mm-yyyy 04-08-2021
AH10106Q
AH10108A
AH10116A
```

- 4) **surveyname_field_data_project_info.txt** - one required for each survey, this metadata file details the SEG-D formats used in the survey and the range of field file index (ffid) in each TAR-SEG-D file.

A partially filled template is generated by previewing one of the **filename.segd.tar.gz** files in the NDR upload interface. This populates sections A and B of the file. The file must contain three sections denoted by leading “##” and on their own line, the sections are:

- A. “## Header” - Required Header information following the format below: (items in quotes to be replaced with appropriate information)
- NDR TAR-SEG-D survey file for “NDR9 code”
 - Produced by “company name”
 - Date dd-mm-yyyy “DD-MM-YYYY”
 - Metadata for SEG-D
 - Info “if required, some information on how the file naming relates to the data”
- B. “## SEG-D info” - Metadata extracted from the SEG-D (example of each SEG-D format used in the survey) must contain a minimum of:
1. Number of chanSets
 2. List of all channel sets, with number of traces and samples per channel set
 3. SEG-D data format code and its definition
 4. Manufacturer code
 5. Recording date in YY:DOY:HHH:MM:SS
 6. SEG-D revision number
 7. Base Sample Rate - (from general or extended header)
 8. Number of Samples per trace - either from general or extended header
 9. Record length in ms

C. “## Tar Files” - Line per TAR-SEG-D filename and the field file index (FFID) range for that file in the form:

Filename.segd.tar.gz FFIDmin: AAA FFIDmax: BBB

Example contents of **surveyname_field_data_project_info.txt**:

```
## Header
NDR TAR-SEG-D survey file for AH963F0003
Produced by Example Company Name Ltd
Date dd-mm-yyyy 04-08-2021
Metadata for SEG-D
Info Individual files in TAR archives are named by linename/linename_ffid.segd (or .sgd)
## SEG-D info
SEG-D Revision Number      : 0.0
Manufacturer                : Syntron Inc (34)
Format Code                 : 20 bit binary demultiplexed (8015)
Date / Time (YY:DOY:HH:MM:SS) : 96:111:15:12:35
Date / Time Stamp (s from 1970) : 830013155
File Number                 : 108
Number of General Headers   : 1
Record Length (ms)         : 7168.0
File Base Sample Scan Interval (ms) : 2.0
Number of Scan Types Per Record : 1
Number of Channel Sets Per Scan Type : 7
Number of Channels/Traces In Scan : 1776
Set: 1 streamer no.: 0 scale: -3.00 no. chans: 288 samples: 3584 exp: 0 type: Seismic
Set: 2 streamer no.: 0 scale: -3.00 no. chans: 288 samples: 3584 exp: 0 type: Seismic
Set: 3 streamer no.: 0 scale: -3.00 no. chans: 48 samples: 3584 exp: 0 type: External
Set: 4 streamer no.: 0 scale: -3.00 no. chans: 288 samples: 3584 exp: 0 type: Seismic
Set: 5 streamer no.: 0 scale: -3.00 no. chans: 288 samples: 3584 exp: 0 type: Seismic
Set: 6 streamer no.: 0 scale: -3.00 no. chans: 288 samples: 3584 exp: 0 type: Seismic
Number of Channels In All Scans : 1776
Number of Skew Headers Per Scan Type : 0
Number of Extended Headers      : 19
Number of External Headers      : 78
Number of Manufacturers Headers : 384
Number of Trailer Headers       : 0
Number of Bytes in File         : 15964128
Number of Bytes in All File Headers : 15648 Number 32 byte records: 489
Number of Bytes in Trailer Headers : 0
Source Line Number              : 0
Source Point Number             : 0
Line Name/Number                : AH10106Q
## Tar Files
AH963F0003_AH10106Q.segd.tar.gz FFIDmin: 106 FFIDmax: 210
AH963F0003_AH10108A.segd.tar.gz FFIDmin: 101 FFIDmax: 1009
AH963F0003_AH10116A.segd.tar.gz FFIDmin: 106 FFIDmax: 974
```

10. Definition of Terms

Table 16. Definition of terms

| Term or Abbreviation | Description/Definition |
|-----------------------------|---|
| 2D | Two-dimensional seismic data. |
| 3D | Three-dimensional seismic data. |
| 4D | Four dimensional - 3D seismic data acquired at times over the same area to monitor change. |
| AB3 | The status of a fully abandoned well, where the well origin at the surface has been permanently removed. |
| AFE | Application or Authorization for expenditure. |
| ASCII | American Standard Code for Information Interchange - a standard representing text in digital file format. |
| BGS | British Geological Survey. |
| CBL | Cement bond log. |
| CCL | Casing collar locator. |
| CCS | Carbon Capture and Storage. |
| CDP | Common depth point. |
| CMP | Common mid-point. |
| CPI | Computer processed interpretation. |
| CRP | Common reflection point. |
| CRS | Coordinate Reference System. |
| CS8 | A common standard for wellbore information classification, developed by CDA and industry. |
| CSEM | Controlled source electro-magnetic. |
| CSV | Comma-separated values file format used to store tabular data. |
| DLIS | Digital Log Interchange Standard - structured binary files for well information and logging. |
| DSI | Dipole sonic imager. |
| DST | Drill stem test. |

| Term or Abbreviation | Description/Definition |
|--------------------------------|---|
| EBCDIC | Extended Binary Coded Decimal Interchange Code - an eight-bit character encoding format. |
| Energy Portal | An NSTA/BEIS online gateway to software applications that allow industry to apply for and receive consent for a range of regulated operational activities. |
| EPSG | European Petroleum Survey Group. |
| FEL | Formation Evaluation Log. |
| FFID | Field File ID – a filename given to raw seismic data files during seismic acquisition |
| GeoTIFF | A metadata standard allowing georeferencing information in a file including images and data. |
| HSE | The Health and Safety Executive. |
| IOGP | The International Association of Oil & Gas Producers. |
| JPEG | The Joint Photographic Experts Group - creator of a commonly used method of compression for digital images, especially those produced by digital photography. |
| Licensee | A holder (or former holder) of an offshore petroleum licence. |
| LWD | Logging while drilling. |
| MDT | Modular formation dynamics testing. |
| MER | Maximising economic recovery. |
| MPEG | Standard for media coding, especially audio, video and graphics and transmission and file formats. |
| MWD | Measurement whilst drilling. |
| NSTA | The North Sea Transition Authority. |
| OBC | Ocean bottom cable - seismic surveying apparatus and method using fixed cables to power the apparatus. |
| OBN | Ocean bottom node - seismic surveying apparatus and method using battery-powered cableless receivers. |
| OGA | The Oil and Gas Authority. |
| P format | An umbrella term of the standardised formats for positional data, developed and implemented by UKOOA, for seismic surveys and well trajectories. |
| PDF | Portable Document Format - a standard file format developed by Adobe. |
| PEL | Pressure Evaluation Log. |
| Information and samples | As defined in Section 27 (1) of the Energy Act 2016. |
| PLT | Production log test. |

| Term or Abbreviation | Description/Definition |
|-----------------------------|---|
| PNG | Portable Network Graphics - a raster-graphics file format that supports data compression. |
| PPI | Pixels per inch - the density of pixels within a digital image. |
| ProjectID | NDR Project Identification code – assigned in the NDR as a logical container for reported information. |
| PSDM | Post-stack depth migration. |
| PSTM | Pre-stack time migration. |
| PVT | Pressure, volume, temperature. |
| QC | Quality control. |
| Relevant person | A person listed under 9A(1) (b) of the Petroleum Act 1998. |
| Reporting | the provision of information and/or samples to the NSTA. |
| RFT | Repeat formation testing. |
| SCAL | Special core analysis laboratory. |
| SEG | Society of Exploration Geophysicists. |
| SPS | Shell Processing Support - a format for geophysical positioning data. |
| TDT | Thermal decay time. |
| TIFF | Tag Image File Format – a digital image file format. |
| TLC | Trough logging conditions. |
| TVD | True Vertical Depth. |
| TWT | Two-way time. |
| UKCS | United Kingdom Continental Shelf. |
| UKOOA | UK Offshore Operators Association, former name of the oil & gas trade association, OEUK. |
| UTF-8 | Unicode Transformation Format 8-bit - variable-width character encoding of text in files. |
| VSP | Vertical seismic profile. |
| WONS | Well Operations and Notifications System - Energy Portal application for well consents and notifications. |

11. Version amendments

Table 17. Amendments from the preceding version of this document (November 2023)

| Section | Sub Section | Amendment |
|--------------------------------|--|--|
| 5. Wellbore Information | Table 4. Wellbore information types and classification | New Information Type Mud data file added, to enable digital files that include mud logging data, but were not originally recorded in LAS or DLIS format to be reported as ASCII plain text or CSV formatted files, with the Classification Tag MUD_FILE |
| 5. Wellbore Information | Table 5. Data classification tags for wellbore information | MUD_FILE added as a new Classification Tag for the Information Type Mud data file |
| 5. Wellbore Information | Table 4. Wellbore information types and classification | <p>Edit to Information Type, Core Photographs – to specifically cater for core photographs that are not provided as part of a PDF format Core Analysis Report.</p> <p>Standalone Core Photographs may be provided as PDF, JPEG or PNG file formats with the Classification Tag, CORE_PHOTO.</p> <p>CORE_CCA definition has been edited to remove references to core photographs.</p> |
| 5. Wellbore Information | Table 5. Data classification tags for wellbore information | CORE_PHOTO added as a new Classification Tag for the Information Type Core Photographs |
| 5. Wellbore Information | Table 4. Wellbore information types and classification | Inclusion of previously omitted Information Type Conventional core analysis data . This Information Type has previously been defined in Table 5, however no valid format had been defined in Table 4, meaning it has not been possible to assign CCA_FILE to digital core analysis files. This update enables reporting of such data files in ASCII plain text or CSV format. |
| 5. Wellbore Information | Table 4. Wellbore information types and classification | New Information Type added to differentiate Well Test data files from Well testing reports. Previously, Well Test Data was required to be submitted as PDF; this change enables such data to be reported as ASCII plain text files with the existing Classification Tag TEST_FILE |

12. Contacts

Questions or comments in relation to this document, should be directed to ndr@nstauthority.co.uk



North Sea Transition Authority

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