North Sea Transition Authority

North Sea Transition Authority

On a journey to provide quality data

David Lecore

Head of Data Services and Compliance

03 October 2024

NSTA: Our role

North Sea Transition Authority

We regulate and influence the oil, gas, offshore hydrogen and carbon storage industries.

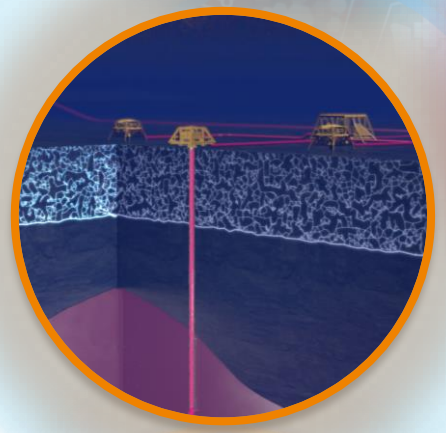
We help **drive North Sea energy transition**, realising the significant potential of the UK Continental Shelf as a critical energy and carbon abatement resource.

We hold industry to account on **halving upstream emissions by 2030**.

Emissions Reduction

Regulating for emissions reduction

Driving electrification and zero routine flaring and venting



Accelerating the Energy Transition

Carbon storage and offshore hydrogen licensing

Providing open access data

Decommissioning and repurposing

Energy Security

Helping meet UK energy demand

Oil and gas production, stewardship and storage

NSTA – Successful delivery

North Sea Transition Authority

160 tracked and measured successes since 2021

Accelerating the energy transition

carbon storage licences following world's first large scale licensing round

in decommissioning cost savings through NSTA stewardship

Energy production and security

money saved for industry through NSTA stewardship

barrels of oil and gas unlocked due to NSTA stewardship

Emissions reduction

lifetime emissions avoided through NSTA interventions

reduction in total upstream emissions between 2018 and 2022

Cross cutting

of industry data made publicly available on our online portal. NSTA digital excellence recognised with 3 awards in July 2024.

Total time saved for industry through fast track consents process

offshore oil & gas, CCUS, wind and decom project opportunities advertised on Pathfinder, linking integrated supply chain and operators & developers

The foundations for digital change

North Sea Transition Authority

The Mandate
The Wood Review (2014)

The Powers
The Energy Act 2016 (& 2023)
The Petroleum Act 1998

The Team
Digital, Data & Policy

The Early Action
Open data, NDR, website & access to data

The Early Outcomes
Improved compliance, benchmarking & data quality

The Strategic Vision
Digital Strategy (2020 - 2025)

The NSTA became a catalyst for digital change

NSTA Digital Strategy

North Sea Transition Authority

To create value for the NSTA, industry and stakeholders by delivering digital, data and technology excellence

Five pillars

- People, skills & culture
- Transform access to information
- Analytics & intelligence
- Collaborate, partner & assure
- Influence & promote

500m
API hits

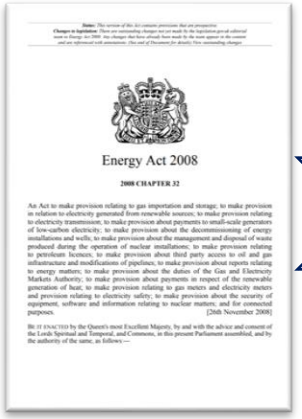
96%
Data in the public domain

1PB
Data held

~500m spatial server requests

CS Licence Information Powers

North Sea Transition Authority


Energy Act 2008

2008 CHAPTER 32

Nov '12

Jul '13

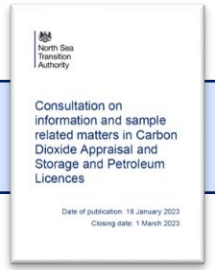
First two CS licences awarded by Secretary of State

Nov '16

OGA/NSTA becomes licensing authority for offshore carbon storage

Jan '18

First CS licence awarded by the OGA/NSTA


North Sea Transition Authority

Consultation on information and sample related matters in Carbon Dioxide Appraisal and Storage and Petroleum Licences

Date of publication: 18 January 2023

Closing date: 1 March 2023

Jan '23

Consultation on the principle of CS data powers for NSTA

May '23

Information and samples powers included in the Energy Bill

Dec '23


Energy Act 2023

2023 CHAPTER 52

Relevant powers in the Energy Act 2023 come into force

Jan '24

Road-test on retention regulations

Apr '24

Consultation on disclosure regulations

New powers in the Energy Act 2023

Retention (section 108) — **AWAITING REGS**

- Information and samples need to be retained by licensees
- No obligation to create information and samples

Reporting (section 112) — **IN FORCE**

- Reporting of information to the NSTA
- Requested through a routine or ad-hoc reporting notice
- Guidance: form and manner

AWAITING REGS

Disclosure (section 113, schedule 7)

- Reported information and samples may be disclosed
- What and when will be disclosed to be set out in regulations

IN FORCE

Information and Samples Plans (ISPs, sections 109-110)

- ISPs are required at certain licence events
- Ensuring information and samples are transferred or reported

IN FORCE

Information and Samples Coordinators (ISCs, section 111)

- Designated point of contact for information and samples in a company
- Monitors the company's compliance

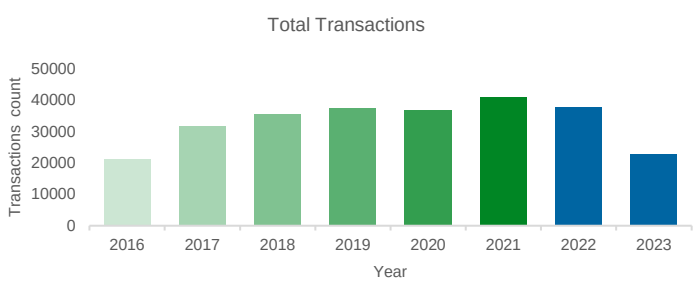
Our Digital Services

North Sea Transition Authority

UK Energy Portal

Transactional services

NSTA, DESNZ, OPRED, MMO and HSE applications. These support the consenting, licensing and monitoring of North Sea activities



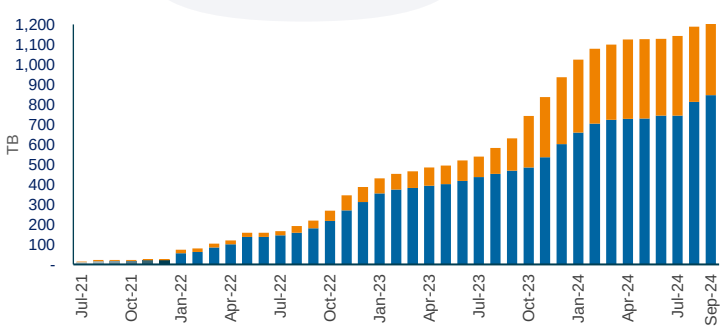
National Data Repository

Industry petroleum related data

Current collection stands at 1.2PB+

Metadata fix for >99K files (11% total)

Improves access to and reuse of data

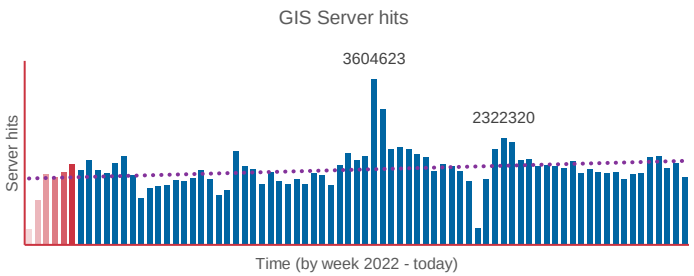


Digital services

GIS/BI – ESRI, SAFE FME, MS PowerBI, SAP BO & Python

Core IT – MS 365 E5, work from anywhere (2016) & mobile/laptops

Open Data/website – Umbraco, ESRI & MS



North Sea Transition Authority

Data Sources

…of interest to Data Scientists

…not previously easily accessed

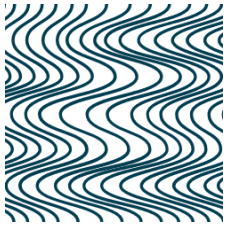
Systems of Record

North Sea Transition Authority

Wellbore

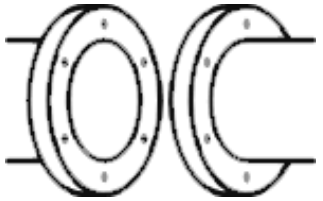
- Wellbore header information was, and still is, available via a ‘Public Wellbore Search’
- Wellbore header data is now held in the NSTA Data Warehouse and can be access now via API, maps and downloads
- Quality (correctness and completeness) much improved
- Still many issues with the data set

Seismic Survey



- NSTA is **not** the consenting authority for seismic surveys
- Until 2018 there was no obligation to routinely report data
- NSTA’s predecessors had ‘hence’ not maintained a set of survey headers until the launch of NDR v1 (2019)
- We now have a renewed focused on seismic data due to current regulations requiring reporting and the increased reuse

Infrastructure



- NSTA is the consenting authority for Pipeline Works Authorisations (but not for installations)
- There was never a ‘disclosed digital version’ of the pipeline / installation information
- NSTA inherited a dataset 4 years ago and have been gradually improving the data quality

Actual Data

North Sea Transition Authority

- Wellbore data (reports, logs etc.) is accessed via the NDR
- NSTA established the NDR in 2019
- Prior to this first incarnation of the NDR, those companies not a member of the predecessor organisation would not have had access
- The NDR data can now be accessed by all
- Introduced requirement to meet long standing, but previously unenforced data standards

- The new NDR (2021) allows greater volumes of data to be loaded, including seismic field and processed data
- Data reporting is self-service
- Rules mean that files that say they are SEG-Y, are indeed files that conform to the SEG standard

- Monthly production data, per production unit (think field) has been available for some time
- Rules introduced in a revised system in 2016 meant repeated monthly errors were passed back to the operator
- Fields that have ceased since 2018 report their daily production per well, per day, for the entire life of the field
- Fields that ceased before 2018 have their data reported on request
- We have data for 114 fields

North Sea Transition Authority

Data Challenges

Potential barriers for a Data Scientist

Form and Manner

North Sea Transition Authority

The NDR has ‘Form and Manner’ guidance. It states, for example, what file formats are acceptable

North Sea Transition Authority

Information Reporting

Form and Manner of NDR Information

Date of publication November 2023

File Extensions

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

Table 2. NDR Compliant file extensions for reportable information sets out the file extensions that are r
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

5. Wellbore Information

Specific wellbore information reporting requirements

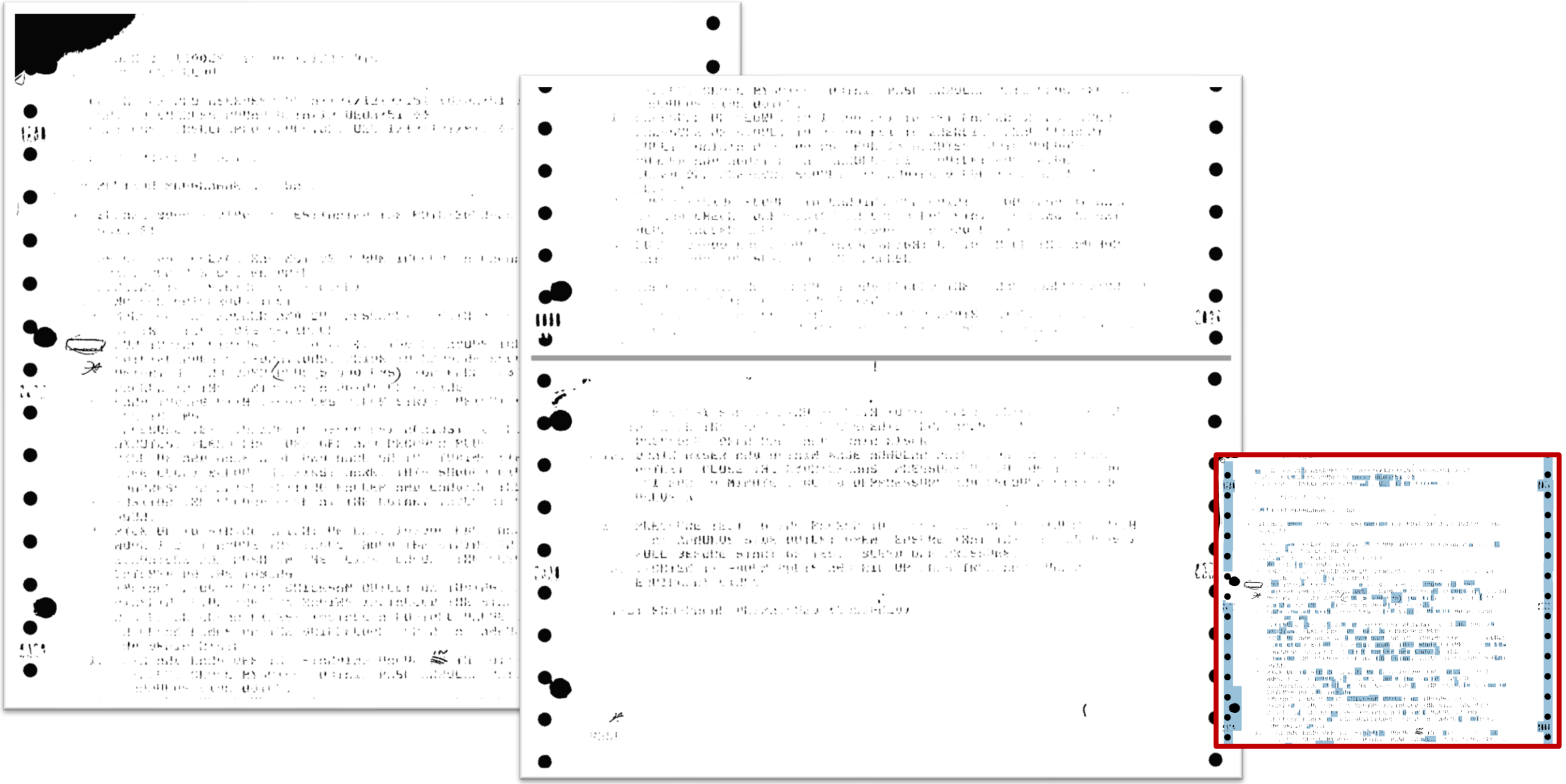
The effective reuse of information that is obtained from the NDR is dependent on information being aligned to standard formats. Those formats of well information that may be reported to the NDR are set out in *Table 3. NDR compliant wellbore data formats*.
This is to apply generally to information of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

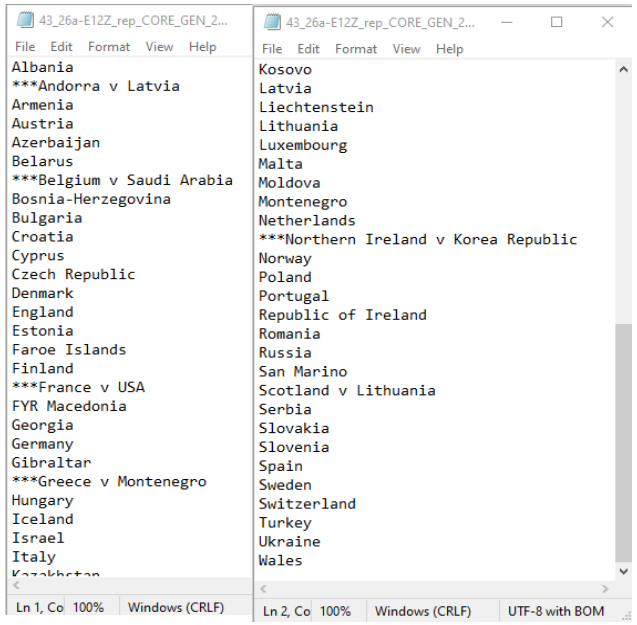
Form and Manner

North Sea Transition Authority

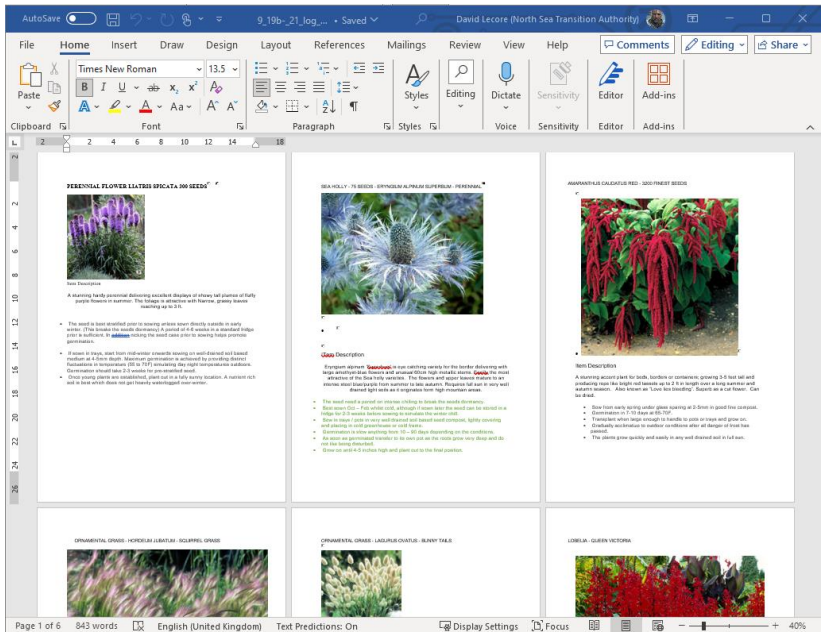


Correctness

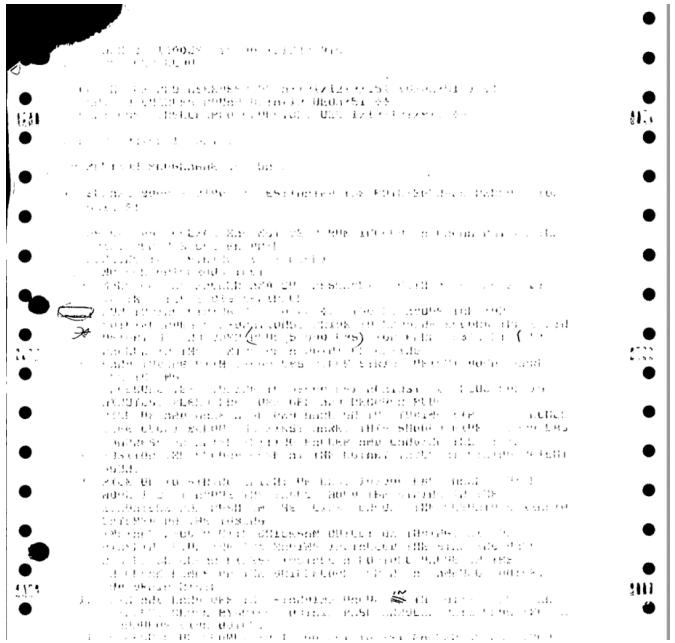
North Sea Transition Authority



.txt file



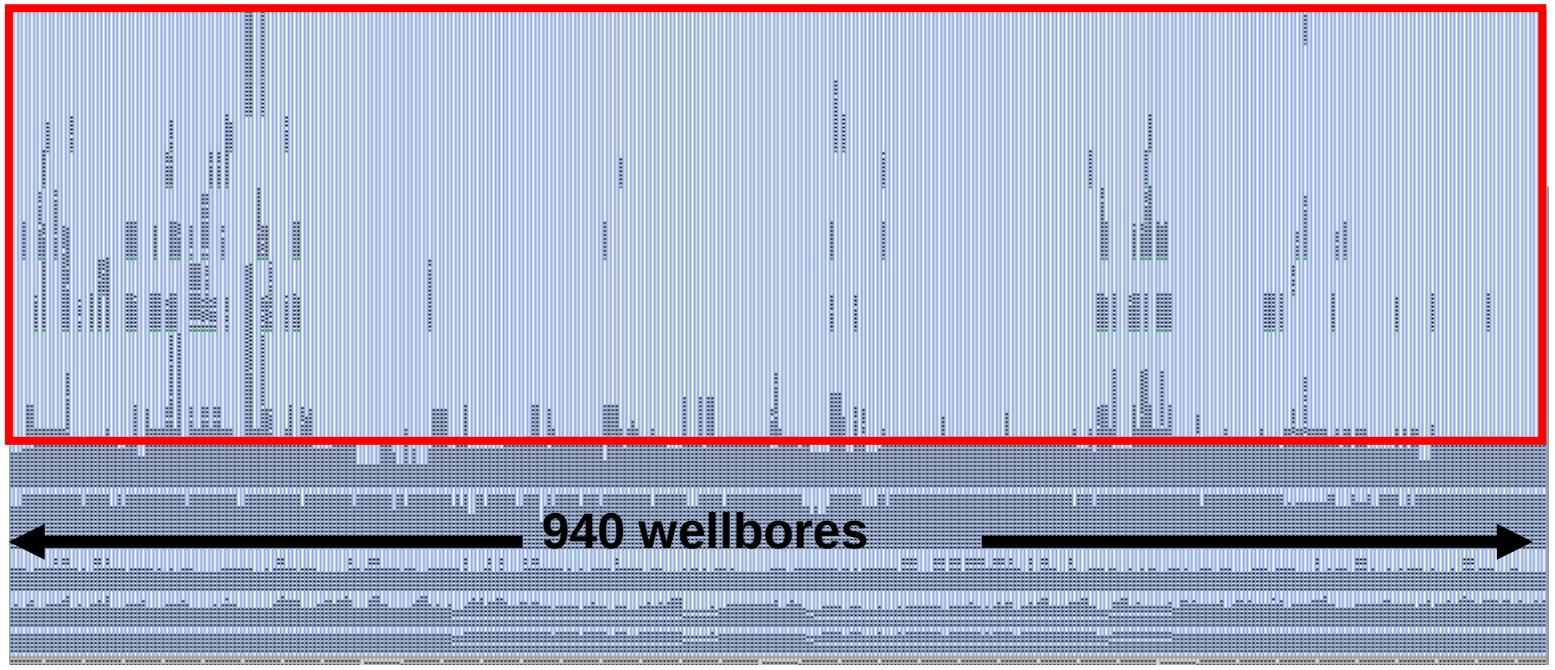
.doc file



.pdf file

Completeness

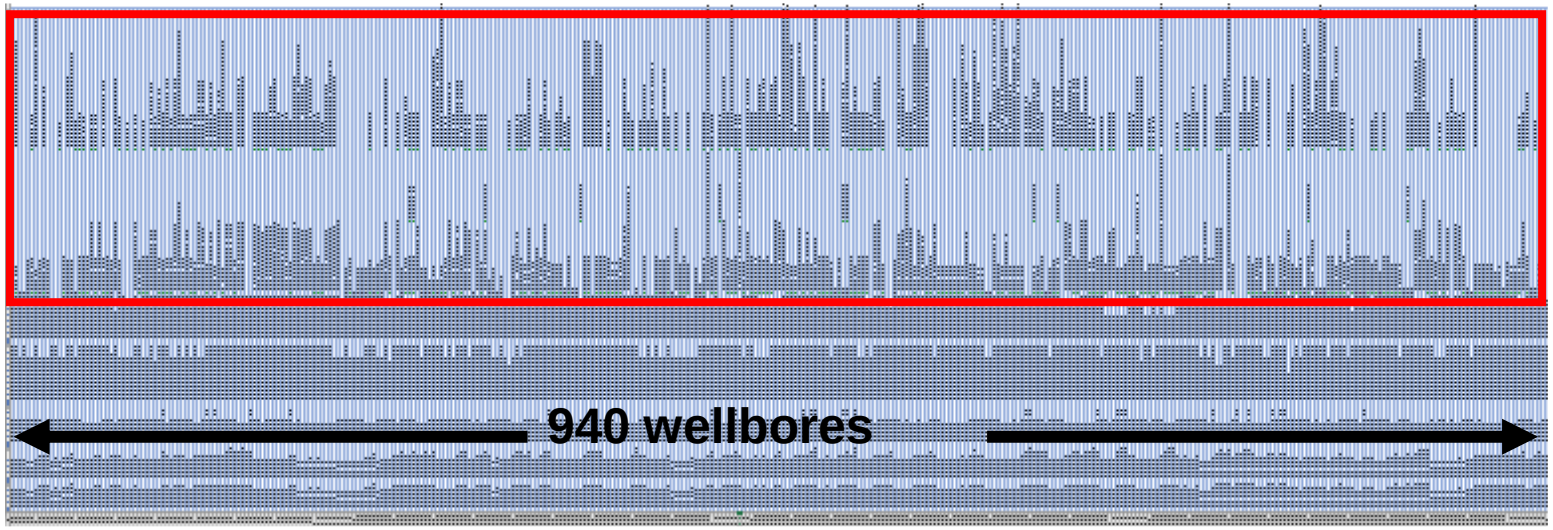
North Sea Transition Authority



Some data sets are more complete than others

Abandonment data

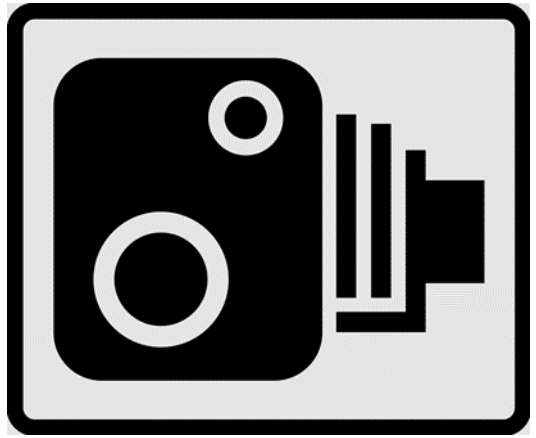
Deviation data



Illustrative Statistics

North Sea Transition Authority

- **Form and Manner:** 100,000 NDR items said they were a particular ‘file type’ yet they were not. Now corrected
- **Correctness:** ‘Responsibility’ for a wellbore: >1200 changes – 10% of wellbores
- **Correctness:** 1000s of errors removed from infrastructure data – locations, classification, status, responsibility
- **Correctness / Completeness**: Analysis of CNS wells (5673) suggests we are missing 80,000 ‘tags’ – which would be a 27% increase if applied
- **Completeness:** 87,357 items loaded to 6370 ‘pre-2018’ wellbores since July 2021
- **Completeness:** March 2021 – 3020 of 5223 (58%) Abandoned wells had no abandonment data loaded. By March 24 we had 5723 abandoned wellbores with 73% having some data
- **Completeness:** 76K SEG-Y files loaded since July 2021 (New NDR go live) – almost doubling the number loaded in the previous 12 years



North Sea Transition Authority

Key points to take away

Potential barriers for a Data Scientist

Conclusion

North Sea Transition Authority

- I have provided some high-level details, but also – deliberately - got into the weeds a little
- I don’t need to tell a roomful of data scientists that data quality is important
- I’d like you to know that at the NSTA, we appreciate the importance of good quality, usable, data and are working hard on ensuring mistakes of the past are corrected and, importantly, we don’t continue to make the same mistakes again
- We steward and influence the industries we serve to do the same
- Remember: as well as being data consumers, we are all data creators – so please be part of the solution, and not part of the problem

- If you have used NSTA data and have a story to tell (good or bad), please do talk to me and / or contact me

North Sea Transition Authority

Thank you

…for the opportunity to present