



**POLICY FOR E&P DATA  
ASSIMILATION, DISCLOSURE,  
SHARING, ACCESSIBILITY &  
DISSEMINATION  
THROUGH  
NATIONAL DATA REPOSITORY  
(NDR)  
AT**

**DGH, India**

**Directorate General of Hydrocarbons**

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# **Policy for E&P, Data Assimilation, Disclosure, Sharing, Accessibility & Dissemination through National Data Repository (NDR) at Directorate General of Hydrocarbons (DGH), India**

## **CHAPTER – I**

### **1.1 Background**

The history of Exploration & Production (E&P) for oil & gas activities in India dates back to 19<sup>th</sup> century when the first well was drilled at ‘Digboi’ field in Assam in the year 1889. For several decades, the activities remained confined to North-Eastern part, particularly Assam. India became aware and realized the importance of oil after independence. The first oil discovery in independent India was made by Assam Oil Company Limited (AOC) in 1953 in Nahorkatiya followed by Moran in 1956 both in upper Assam. With the intention of intensifying and spreading exploration to various parts of the country, a separate Oil and Natural Gas Directorate, was setup in the year 1955, the status of which was subsequently changed to Oil and Natural Gas Commission (ONGC) in October 1959. ONGC systematically started geophysical surveys in the areas considered prospective on the basis of global analogy. Subsequently, thrust was given for surveys and drilling in other sedimentary basins. The first oil was discovered at ‘Cambay’ followed by giant oil discovery in Ankleshwar in Gujarat in 1960.

Offshore exploration in the country was initiated with the experimental seismic survey in 1962 in Gulf of Cambay and later in western offshore. Detailed seismic surveys in western offshore resulted in a discovery of large structure in Bombay Offshore in the year 1972-73. Encouraged by this discovery, exploration was furthered in the entire Western Offshore and Eastern Offshore areas. This led to large discoveries both in western and eastern offshore. Later exploration works spread over to other parts of the country generating a huge amount of E&P data through geo-scientific surveys and drilling. Availability of data was further supplemented by the efforts of private sector E&P companies via the global bidding route under Pre- New Exploration and Licensing Police (Pre-NELP) and NELP offers and discovered field round since 1990s. All these companies generated huge amount of E&P data to make the entire E&P data available for commercial exploitation, research & development and academic purpose, a National Data Repository (NDR) has been setup at DGH.

### **1.2 E&P data**

E&P operations in India have generated voluminous data in terms of geo-scientific surveys, exploratory and development drilling and well data along with other type of data as indicated in the detailed scope of data to be held within NDR. In broad terms, the quantum of E&P data populated so far in NDR is as under:

- Gravity & magnetic surveys 0.515 Million LKM
- 2D seismic 1.670 Million LKM
- 3D seismic 0.587 Million Sq.Km.

- Exploratory wells 4500 nos.
- Development wells 2500 nos.
- Well Logs 65292 nos.

Other E&P Data:

- Aero Gravity Magnetic Surveys
- Magnetic Telluric / CSEM
- Production Data
- Reservoir Data
- CBM related Data
- Gas Hydrate Data
- Geochemical Data

## **CHAPTER – II**

### **2.1 Objective:**

The objective of this policy is to assimilate, preserve and regulate the E&P data generated by various companies over the last several decades and held within the National Data Repository (NDR) in order to enable systematic disclosure, sharing and dissemination and to standardize the norms for accessibility within the overall provisions of the Oilfields (Regulations and Development Act 1948) and the Petroleum and Natural Gas Rules 1959, Government policies and other guidelines as may be applicable.

The policy framework has been divided in three separate Chapters as under:

**CHAPTER – III: Data Assimilation by NDR**

**CHAPTER – IV: Data Availability, Disclosure and Timelines**

**CHAPTER – V: Data Dissemination through NDR**

### **2.2 Directorate General of Hydrocarbons (DGH) – the designated agency**

In exercise of powers conferred by section 8 of the Oilfields (Regulation & Development) Act 1948 read with Rule 32 of Petroleum and Natural Gas (P&NG) Rules 1959, Central Government vide Gazette Notification No.G.S.R. 507 (E) dated 28<sup>th</sup> August, 2006, has designated DGH as an authority or agency to exercise powers and functions of the Central Government including powers and functions to ask for and maintain in readily retrievable form, all geo-scientific data, reports and information from licensee or lessee and store and preserve data and samples pertaining to petroleum exploration, drilling, production and connected operations.

### **2.3 Establishment of National Data Repository (NDR)**

The mammoth volume of data collected by E&P companies and other agencies over more than six decades of activities was hitherto lying scattered at different work centers of ONGC, OIL and DGH or held by the operating companies. This necessitated an establishment of a system at national level that could assimilate, preserve and upkeep the vast amount of data which could be organized and regulated for use in future exploration & development, besides use by R&D and other educational Institutes. With this objective, Govt. of India initiated the establishment of National Data Repository (NDR), vide OM No. 23012/2/2013-ONG-I (FTS-24191) dated 28.02.2014, which has been set up under the aegis of Directorate General of Hydrocarbons (DGH) in Noida. NDR is a government sponsored project with state of the art facilities and infrastructure to create E&P data bank for preservation, upkeep and dissemination of data so as to enable its systematic use for future exploration and development. DGH being the agency of the Central Government will be responsible for creation, setting up and operation of NDR.

## **CHAPTER – III: Data Assimilation by NDR**

### **3.1 Definition and scope of Data**

For the purpose of this policy, data means all information obtained as a result of Petroleum Operations under any contract, license, lease, agreement, permit, any other arrangement and/or acquired by DGH/Govt. including but not limited to Geological, Geophysical data with navigation, geochemical, petro physical, well logs, maps, magnetic tapes, cores, cuttings, reservoir and production data as well as all interpretative and derivative data including reports, analysis, interpretations and evaluation prepared in respect of petroleum operations.

The scope of data to be held within NDR is given in **Appendix-A**.

### **3.2 Proprietary data**

For the purpose of this policy, proprietary data means and includes interpretation data (Horizon, Faults, Attributes, Maps etc.), Interpretation Reports, AVO/Inversion, Well Completion Report, Formation Evaluation Report, special studies reports (NMR, DMR, FMI, Special Core analysis) and any other data as may be classified by DGH as proprietary data.

### **3.3 Ownership of data**

All data held in NDR shall be the property of Government of India with DGH as its custodian.

### **3.4 Data submission to NDR**

The contractor/operator/ licensee/lessee/permit holder/E&P entity/Non-E&P Entity shall as soon as available but not later than three months after acquisition/processing/interpretation or any value addition at each stage, as the case may be, shall compulsorily provide to the Government designated agency i.e. DGH, free of cost, all data obtained as a result of petroleum operations under the license, lease, permit, contract or any other agreement. Augmentation of NDR shall be a continuous process wherein all the data is compulsorily acquired on a perpetual basis from all E&P and non E&P entities.

#### **3.4.1 Media of Data submission**

The data must be submitted in latest media such as 3592 cartridges or LTO-4, LTO-5, and LTO-6 or hard disk or any other higher media as may be decided by NDR/DGH.

#### **3.4.2 Interpretation Data submission**

All interpretation work in its entirety shall be delivered to NDR/DGH in two separate packages:

- ❖ **The first package** shall contain a backup of the interpretation project in workstation format (e.g. Open works, Petrel, SMT etc.) the name of the interpretation software and version number and any other relevant information that will enable NDR to restore the project shall also be included.
- ❖ **The second package** shall contain ASCII exported files of Horizons, Faults, Volume grids, Map grids, export of logs in LAS format and seismic lines/cube in SEG Y format, project coordinate reference system and any other relevant information that will enable NDR to import the product of interpretation to any interpretation software shall also be included.
- ❖ The submission shall be accompanied by an interpretation report that lists all interpretation assumptions, conventions, standard horizons names and events used for picking.

### **3.4.3 Data transmittal and description**

The data parcel must be accompanied by:

- Data Transmittal (data listing) summary
- Detailed Description of contents

Data shall be organized within the media to clearly identify the seismic data products (e.g. Seismic, Navigation and supporting documentation for field and processed data). The label on the media must describe the data it contains. All media shall be securely packed using protective packing materials. NDR will not accept any hardcopy submission of reports etc.

## **3.5 Data quality control summary**

### **3.5.1 Indexing and completeness**

Operators shall ensure that data parcel is complete and correctly indexed. If transmittal does not match the data items the data parcel will be returned to the data sender. For Seismic related data all components must be cross checked with each other (i.e. each seismic file must have the respective navigation data and acquisition and processing report).

### **3.5.2 Data consistency and integrity**

Once the data is copied in NDR and if any inconsistency is detected between header and data parcel information, the parcel shall be returned. The information present in the header will be checked for data consistency and integrity.

### **3.5.3 Data quality**

- The challenge of data quality is due to multi operator multi platform data
- Data base of NDR ensures the usability of various types of data for all available IIWS platform
- The Visualization part of NDR Software ensures that the data is loaded correctly in the system
- Position of data loaded in NDR is ensured by interactive GIS map integrated with NDR Software
- Pre and Post loading QC is checked by DGH and NDR Contractor.

### **3.6 Format of Data Submission**

Data must be submitted in the international standard format along with the data submission format of NDR as per **Appendix-B**. The data header should be in compliance with latest SEG standards. Data must be QC checked before submission to NDR.

### **3.7 Submission of value added data**

Field data/Raw data can be bought from NDR by any user or investor for any value addition including processing. However any agency purchasing raw data should agree & give an undertaking that after processing & value addition of data, a copy of all final outputs will be submitted to NDR/DGH, free of charge within three months of completion of the project.

NDR will not share these value added data as selling right will remain with the agency for a period of five years from the date of submission of data to NDR but NDR can use these data for visualization to anyone. NDR shall be entitled to sell these data after the aforesaid period of five years.

### **3.8 Place of submission**

All the data in prescribed formats are to be submitted at DGH office in Noida unless required otherwise.



## CHAPTER – IV: Data Availability, Disclosure and Timelines

### 4.1 Target users of Data

Any Commercial entity, students from Government Recognized Indian/Foreign Universities, Private Universities, Govt. Recognized Research Institutes and/or any other user authorized by DGH can view the data available in NDR after registering on NDR web portal.

### 4.2 DGH/NDR to have right of disclosure

The policy is designed to ensure compulsory submission of data at NDR and its easy widespread dissemination, sharing and analysis.

The NDR/DGH shall have the right to disclose/visualize and sell any or all data including proprietary data, to any person or legal entity, as per timelines indicated in **Appendix-C**. However, if in the opinion of the DGH, disclosure of such data shall help and promote exploration and production activities in India, DGH shall disclose such data anytime before the specified timelines with the consent of the contractor or licensee, lessee or the permit holder, as the case may be. In case of conflict on the question as to whether any particular data is of proprietary nature, DG, DGH shall be sole authority to decide the matter.

## CHAPTER – V: Data Dissemination through NDR

### 5.1 Data access policy

Data access shall be available to the registered users through web portal on 10'x10' grid. Any user/investor after online registration at NDR portal can visualize the seismic data remotely in the form of image files, preview of well logs, listing of log files & availability of other reports on interactive GSI map.

### 5.2 Visualization & Sharing of data with E&P and Non-E&P users /investors

**5.2.1** E & P users / investors will be allowed to see data in physical data rooms located at NDR, DGH after scheduling an appointment with NDR. The investor should request NDR for loading & visualization of data through Email. **Any user on each occasion can view Data up to 30 sectors** (One sector is equal to an area bound by one grid of 10'x10') for offshore, 20 sectors for shallow offshore area and 10 sectors for onshore area. For visualizing data for more than 30/ 20 sectors or for other area/sector, investor should book another appointment on the web portal of NDR. However, DGH may notify for smaller grid, if data is available.

**5.2.2** Maximum 4 persons per company per work station will be allowed to visit data rooms. The end users will be allowed to save interpretation project up to their booking date. They will be allowed to take maximum 05 snapshots per project.

**5.2.3** The Charges for data room per day per work station shall be as under:

- a. For first three days – USD 250 per day
- b. Fourth Day – USD 500
- c. Fifth Day onwards – USD 1250 per day

**5.2.4** The Indian companies will make the payment in equivalent INR at RBI reference rate prevailing previous working day of date of payment.

**5.2.5** No resale of data is permitted by the entity with whom the data has been shared under the policy. Copy of the report generated as a result of value addition by the entity after getting data from NDR shall be submitted to NDR as per the defined timelines.

### 5.3 Sharing of data with recognized Indian/Foreign Universities & Academia

**5.3.1** Recognized Indian/Foreign Universities / Educational Institutions will be provided data after uploading the signed and duly stamped scanned copy of Confidentiality Agreement (CA) by the Head of the Department.

**5.3.2** A Limited data up to 50 sq. km. area will be provided free of cost for promoting research. If the data requested is of more than 50 Sq. Km then the standard data charges will be applicable for whole of the volume.

**5.3.3** Data will be given free of cost to the meritorious students after proper certification by concerned Head of Department. Head of Department may consider following criteria for recommending the students for free data access for e.g.:

- i. Academic/professional achievement of the student at Graduation/Post Graduation/Doctoral level.
- ii. Nature/Level of Research work/project to be undertaken by the student.
- iii. Institutional infrastructure support being provided by the institution for such project/research work.
- iv. Anticipated outcome/benefit of research. The project should be directly/indirectly helpful to the hydrocarbon exploration.

**5.3.4** The institute must share the study reports with DGH free of cost within three months of completion of project.

**5.3.5** The institute shall not use the data any under circumstance for any commercial objective however it shall be free to advise any E&P investor who has procured the data on fully commercial basis.

#### **5.4 Sharing of data with Government Institution(s)**

**5.4.1** In order to promote Research & Development, Government Research Institutes will be allowed to visualize free of cost all available data in physical data room for three days on the basis of their project requirement.

**5.4.2** Visualization beyond three days will be charged as per the standard data room charges applicable to E&P operators. All the E & P Data of one sector may be shared with the institutes free of cost.

**5.4.3** E & P Data for more than one sector may be shared with the Institutions on discounted price (50% of existing rates), after signing of a confidentiality agreement. The institute must share the study reports with DGH free of cost within three months of completion of project.

**5.4.4** The institute shall not use the data under any under circumstance for any commercial objective. However it shall be free to advise any E&P investor who has procured the data on fully commercial basis.

#### **5.5 Online delivery**

Small data especially well data (Log data, Well header), Seismic 2D processed stack data & Reports will be delivered instantly online after receiving payment.

## **5.6 Offline delivery**

Seismic raw data and pre & post stack 2D/3D seismic (including Angle Stack, raw/processed gathers) will be supplied invariably offline in the media selected by user/investor.

## **5.7 Ordering data**

Flow chart for ordering data through NDR web portal is placed as **Appendix- D**.

## **5.8 Payment**

Payment shall be accepted through a secured Gateway through Credit/Debit Card, Net Banking/Bank Transfer, or any other online payment channel.

## **5.9 Removal of difficulties**

If any difficulty arises in giving effect to the provisions of this policy, the decision of the Government shall prevail.

## **5.10 Abbreviations**

Abbreviations used in the Policy are expanded in **Appendix – E**.

## **5.11 E&P Data Pricing**

NDR is fully operational to disseminate various types of geo-scientific and other E&P data generated in the country over the years. The processed data pertaining to NOCs, Private operators and JVs has already been populated. Being a dynamic process, more data would continue to be populated as and when gathered. Dissemination of data would be in various forms as detailed in this policy. Apart from access of data through visualization and sharing with recognized Indian / Foreign universities, academia and Institutions, the data would be made available for sale to Indian and foreign E&P companies and other end user for carrying out E&P operations in India on commercial considerations, in particular for aiding exploration.

While finalizing pricing list it is to keep in view the fact that pricing of data has to be such that it is promotional in nature and does not restrict its purchase by prospective bidders/genuine end users. The pricing of various E&P data will be very nominal.

DGH is authorized to determine and notify prices of various E&P data items, to be sold by NDR to E&P operators, Institutions and Academia from time to time.

## The Scope of Data held/to be held within NDR

Data set	Data Description
<b>Seismic</b>	
Field Data	Raw Data (2D & 3D), Navigation & SPS files
Prestack Data	Geometry Merged Gather, Pre stack Time Migration Gather, DMO Gather, PSDM Gather, Decon Gather
Post stack Data	Stack Data ( DMO stack, Raw/Final PSTM stack, PSDM Stack, PSDM stacked to Time, PP & PS stack, Post Stack Migration, Angle stack), Inversion & AVO data.
Reports	Acquisition, Processing, Interpretation Reports, Observer Logs, Gravity & Magnetic Reports,
Others	Basin information/Docket, Horizon & Faults, Velocity, Reservoir Modeling data, Cultural & well header data
<b>Gravity Magnetic</b>	
Gravity & Magnetic	Ground Gravity & Magnetic Data , Gravity Magnetic reports,
Aero Gravity Magnetic	Air borne Gravity & Magnetic survey Reports
Magnetic telluric /CSEM	Magnetic telluric reports, CSEM(Survey data including Section/Map/Reports)
<b>Well Data</b>	
Drilling	Drilling Reports,
Geology	Geological Reports, Lithology Reports, Stratigraphy, Biostratigraphy, FDP & DOC, Petrographic reports, Mud logs, Litho logs, Paleontological, Sedimentological and Paleontology reports
Rock & Core	Conventional Core Analysis, Special Core Analysis (SCAL), Core Photos, Side Wall core,

Petro physics	Petro physical reports, Formation Evaluation reports, Well Log interpretation reports, MDT/RDT/RFT reports
Test, Fluid and Pressure	Formation Pressure, Well Tests, Fluid Analysis Reports, PVT Analysis, Well testing reports (conventional or DST)
Well Log	Wire-line Logs, LWD / MWD logs and special & advance Log (NMR/DMR/FMI/DSI/RT Scanner, Cased hole logs (CBL/USIT/CAST/CHN/CHFR/CHDT/RMT/RST), Production logs, Log Images (PDF/PDS/TIFF), Log Prints
Well Path	Well deviation & placement reports
Well Seismic	VSP, Check shot survey
Well	Well Proposal, Geo technical order, Well Completion Reports, Geochemical reports, Well end reports ,Production History ,Work over History ,Reservoir Study Reports, etc
Production Data	Production data of oil and gas reported by the oil companies operating on the Indian onshore & offshore area.
Reservoir Data	PVT Analysis Report & Data Related to Static & Dynamic Reservoir Modeling, Reservoir study report
Geochemical Data	Geochemical survey Report
CBM Data	Corehole summary and location, Master Log, Deviation survey data, Drilling Casing and Mud details, Proximate analysis, Elemental analysis, Petrographic analysis of coal, Gas desorption studies, Ultimate analysis, Core description, Composite well log, Geo-physical logs, Rock Quality Description Studies, Petro-Physical studies
Any other Data	Any other data related to E&P business as and when defined by DGH

## Format of Data Submission

S. No	Data Type	Format
1	Field/Raw Data	SEGD, SEGY
2	Navigation Data	UKOOA format for offshore data, SPS format for onland data
3	Seismic processed data (Stack/Gather) with navigation	SEGY
4	Velocity	SEGY or ASCII
5	Horizon/Faults	ASCII
6	Gravity & Magnetic Data	ASCII
7	Well Log data	LAS, DLIS, LIS, PDS, ASCII, PDF
8	Well Seismic Data (VSP)	VSP data in SEGY, Check shots in ASCII, SEGY
9	Reservoir Data	ASCII
10	Production Data	ASCII
11	Reports	PDF/ MS Word
12	Any other format as may be decided by the NDR/DGH	

## Time lines for Data availability, visualization, disclosure and sale

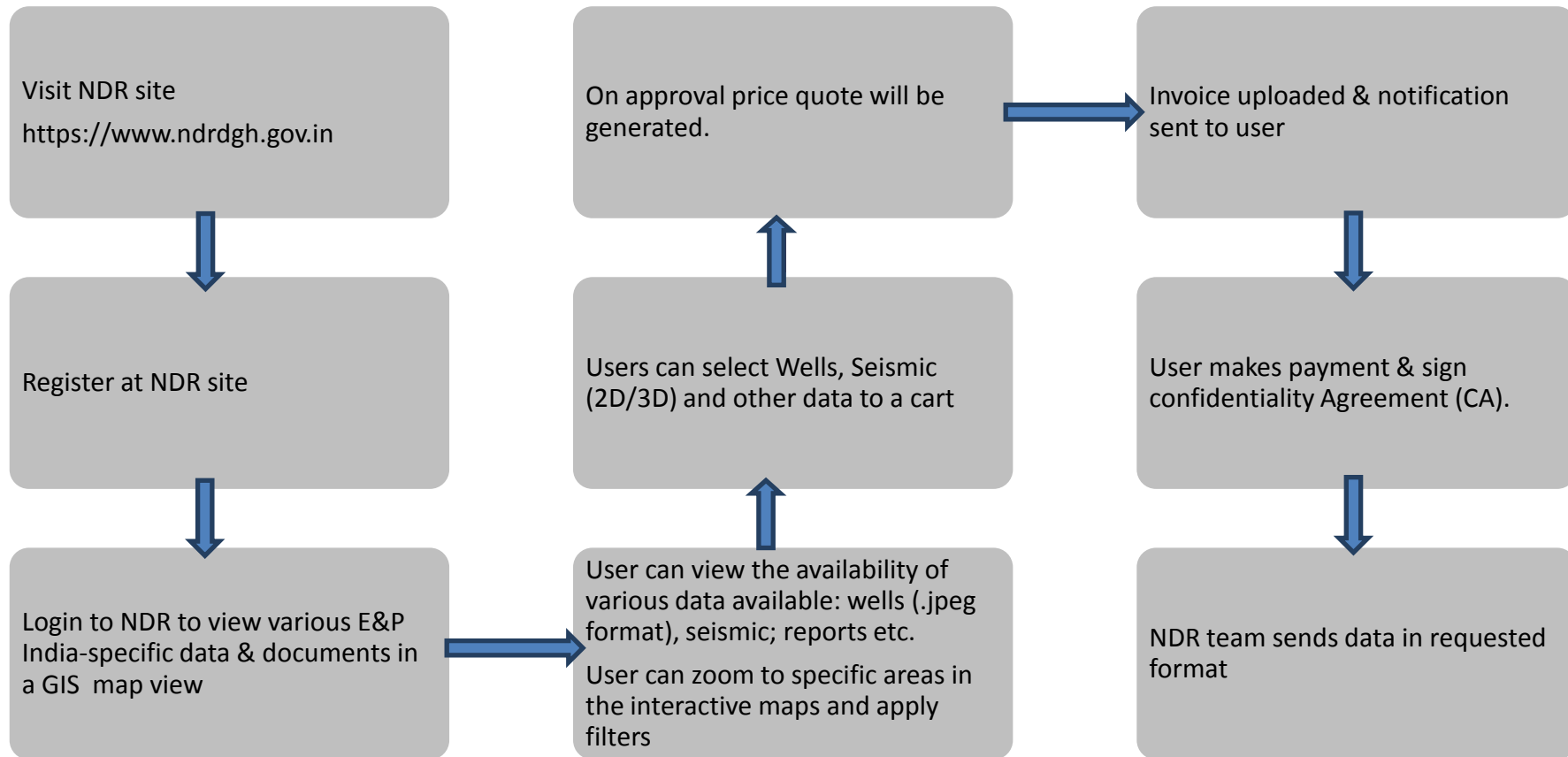
Type of Blocks	Type of Data	Timeline		
		For Visualization	For sale	
Relinquished: Pre NELP, NELP Blocks, PEL /ML of Nomination blocks, CBM Blocks	All E&P Data	As soon as available	Any time after relinquishment	
Active: Pre NELP, NELP Blocks, PEL /ML of Nomination blocks, CBM Blocks and Blocks to be awarded / Shale Gas project/Gas Hydrate Project	Geophysical Survey	Seismic field data along with Navigation	As soon as available	36 months after the date of acquisition
		Pre-Stack		
		Post Stack		
		Reprocessed data		
		Geochemical Survey		
		Gravity Magnetic Survey		
		Acquisition & Processing reports (Seismic, GM, CSEM, Geochemical Survey)		
		Interpretation reports (Seismic, GM, CSEM, Geochemical Survey)	36 months from the date of completion of interpretation project	36 months from the date of completion of interpretation project
	Well Data	Well header	As soon as available	Free of cost
		Well Completion Report	As soon as available	As soon as available
		Geochemical Report	As soon as available	As soon as available
		Well Log & deviation data	As soon as available	18 months from date of completion of study
		FER, Petrophysical reports, Well log interpretation report		
		Special study report (NMR, DMR, FMI, Special core analysis)		
Well Seismic (VSP)				
Conventional Core Analysis, Special Core Analysis (SCAL), Core Photos, Side Wall core etc				
Formation Pressure, Well Tests, Fluid Analysis Reports, PVT Analysis, Well testing reports (MDT, RDT, RF, DST)				
Geological Reports				



Active: Pre NELP, NELP Blocks, PEL /ML of Nomination blocks, CBM Blocks and Blocks to be awarded / Shale Gas project/Gas Hydrate Project	Geological Data	Lithology Reports	As soon as available	18 months from date of completion of study
		Stratigraphy Reports		
		Biostratigraphy Reports		
		Petrographic Reports		
		Mud logs		
		Litho logs		
		Paleontological Reports		
		Sedimentological Reports		
	Paleontology reports			
Reservoir& Production Data	PVT Analysis Report , Data Related to Static & Dynamic Reservoir Modelling, Reservoir study report Production data of oil and gas reported by the oil companies operating on the Indian onshore & offshore area	As soon as available	Not for sale	
Regional /Speculative Survey/ Multi Client Survey	Acquired through Speculative Survey/ multi- client Surveys	As soon as available in NDR	Sale will be governed by the individual contracts.	
Regional /Specific data	Acquired through DGH/Govt sponsored projects/ National Seismic programme and all Such other projects	As soon as available in NDR	Available for sale.	
Sensitive data	Data as identified by MOD/Security Agencies	As per Guidelines of MOD/Security Agencies.		

- In case of active blocks, all data information, reports obtained or prepared by, for or on behalf of the operator will be shared/sold by DGH with the written consent of the operator.

DATA ORDERING FLOW CHART



**Abbreviations used in the text of the policy.**

Pre-NELP	Pre -New Exploration Licensing Policy
NELP	New Exploration Licensing Policy
OALP	Open Acreage Licensing Policy
HELP	Hydrocarbon Exploration and Licensing Policy
PEL	Petroleum Exploration License
ML	Mining Lease
Metadata	Metadata describes the history of the data within the repository
CBM	Coal Bed Methane
NGHP	National Gas Hydrate Programme
FDP	Field Development Plan
DOC	Declaration of Commerciality
SCAL	Special Core Analysis
MDT	Modular Dynamic Test
RDT	Reservoir Dynamic Test
RFT	Reservoir Fluid Test
DST	Drill Stem Test
NMR	Nuclear Magnetic Resonance
DMR	Density Magnetic Resonance
FMI	Formation Micro Imager
DSI	Dipole Sonic Imager
CBL	Cement Bond Log
USIT	Ultra Sonic Imaging Tools
CAST	Circumferential Acoustic Scanning Tool
CHFR	Cased Hole Formation Resistivity
CHDT	Cased Hole Density Tool
CHN	Cased Hole Neutron
RST	Reservoir Saturation Tool
RMT	Reservoir Monitoring Tool
CSEM	Controlled Source Electro Magnetic
UKOOA	U.K. Offshore Operators Association
SPS	Shell Processing Support Format