

A stylized graphic of a globe, composed of several overlapping, light blue curved lines that form a grid-like pattern, representing latitude and longitude. It is positioned on the left side of the slide.

P6 Geodatabase GIS Data Model

OGP Seismic Bin Grid Task Force

Why develop a Seismic Bin Grid GIS Data Model?

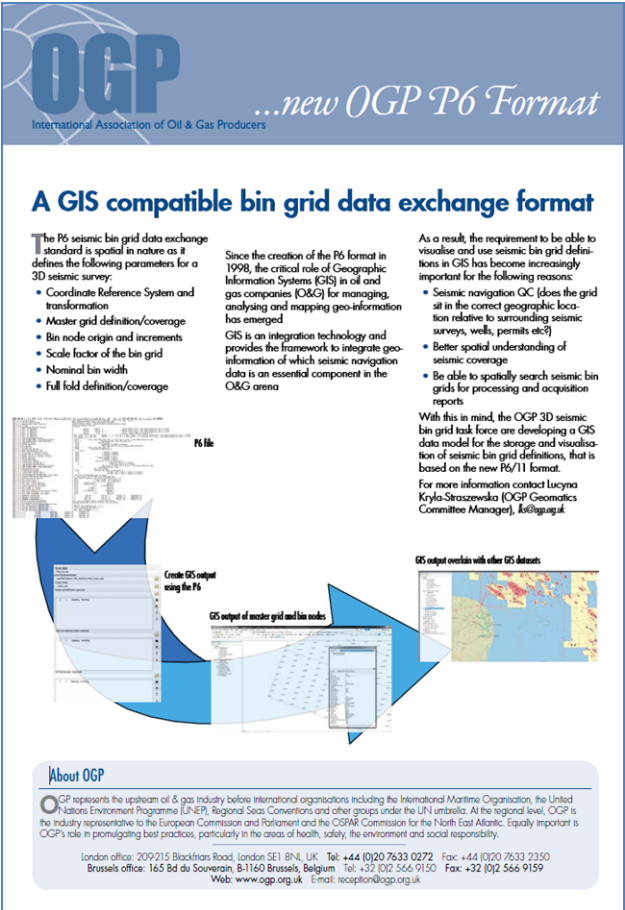
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The P6 seismic bin grid standard is spatial in nature as it defines the following parameters for a 3D seismic survey:

1. Coordinate reference system
2. Master grid, total, full fold, null fold coverage definitions
3. Bin node origin and increments
4. Scale factor of bin grid
5. Nominal bin width

Being able to visualise and use the bin grid in GIS has become increasingly important for the following reasons:

1. Seismic navigation QC (does the grid sit in the correct geographic location relative to surrounding seismic surveys, wells, permits etc?)
2. Better spatial understanding of seismic coverage
3. Be able to spatially search seismic bin grids for processing and acquisition reports



The flyer is titled "OGP ...new OGP P6 Format" and "International Association of Oil & Gas Producers". It features a blue header with the OGP logo. The main title is "A GIS compatible bin grid data exchange format". The text explains that the P6 seismic bin grid data exchange standard is spatial in nature and defines parameters for a 3D seismic survey. It lists the following parameters: Coordinate Reference System and transformation, Master grid definition/coverage, Bin node origin and increments, Scale factor of the bin grid, Nominal bin width, and Full fold definition/coverage. It also mentions that since the creation of the P6 format in 1998, the critical role of Geographic Information Systems (GIS) in oil and gas companies (O&G) for managing, analysing and mapping geo-information has emerged. GIS is an integration technology and provides the framework to integrate geo-information of which seismic navigation data is an essential component in the O&G arena. As a result, the requirement to be able to visualise and use seismic bin grid definitions in GIS has become increasingly important for the following reasons: Seismic navigation QC (does the grid sit in the correct geographic location relative to surrounding seismic surveys, wells, permits etc?), Better spatial understanding of seismic coverage, and Be able to spatially search seismic bin grids for processing and acquisition reports. With this in mind, the OGP 3D seismic bin grid task force are developing a GIS data model for the storage and visualisation of seismic bin grid definitions, that is based on the new P6/11 format. For more information contact Lucyna Kryla-Szyszkowska (OGP Geomatics Committee Manager), lsk@ogp.org.uk. The flyer includes a diagram showing the workflow: "P6 file" -> "Create GIS output using the P6" -> "GIS output of master grid and bin nodes" -> "GIS output overlain with other GIS datasets". At the bottom, there is an "About OGP" section with contact information for London and Brussels offices.

OGP ...new OGP P6 Format
International Association of Oil & Gas Producers

A GIS compatible bin grid data exchange format

The P6 seismic bin grid data exchange standard is spatial in nature as it defines the following parameters for a 3D seismic survey:

- Coordinate Reference System and transformation
- Master grid definition/coverage
- Bin node origin and increments
- Scale factor of the bin grid
- Nominal bin width
- Full fold definition/coverage

Since the creation of the P6 format in 1998, the critical role of Geographic Information Systems (GIS) in oil and gas companies (O&G) for managing, analysing and mapping geo-information has emerged.

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As a result, the requirement to be able to visualise and use seismic bin grid definitions in GIS has become increasingly important for the following reasons:

- Seismic navigation QC (does the grid sit in the correct geographic location relative to surrounding seismic surveys, wells, permits etc?)
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- Be able to spatially search seismic bin grids for processing and acquisition reports

With this in mind, the OGP 3D seismic bin grid task force are developing a GIS data model for the storage and visualisation of seismic bin grid definitions, that is based on the new P6/11 format.

For more information contact Lucyna Kryla-Szyszkowska (OGP Geomatics Committee Manager), lsk@ogp.org.uk.

About OGP

OGP represents the upstream oil & gas industry before international organisations including the International Maritime Organisation, the United Nations Environment Programme (UNEP), Regional Seas Conventions and other groups under the UN umbrella. At the regional level, OGP is the industry representative to the European Commission and Parliament and the OSPAR Commission for the North East Atlantic. Equally important is OGP's role in promoting best practices, particularly in the areas of health, safety, the environment and social responsibility.

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P6 GIS Flyer released by the OGP Geomatics Committee

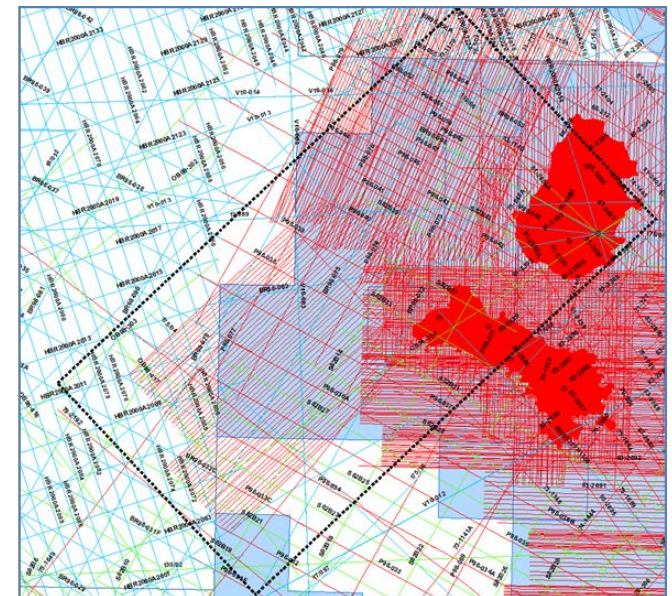
Overview of P6 GIS Geodatabase Data Model

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The value that spatial context brings is obvious...

```
H0100 3D-Survey Name      ArcGIS10.0 VEL p698.py MASTER GRID-
H0200 Bin Grid Descriptor  GCS_WGS_1984
H0300 Geodetic Datum Name  GCS_WGS_1984
H0400 Ellipsoid-Axis_Invt Flat 002 WGS_1984_UTM_Zone_52S
H0500 Projection Method    32752
H0510 Projection Zone Name 129 D 0' 00"E
H0530 Lon of 'CM' (das E/W) 1 Meter
H0600 Descr of Linear Units 1 degree
H0700 Descr of Angular Units 1.0000
H0800 Bin Grid Origin (Io Jo) 387512.38 8914548.23
H0900 Bin Grid Origin (E N) 1.0000
H1000 Scale Factor at (I,J) 1.0000
H1100 Nom Bin Width on I axis 12.5000
H1100 Nom Bin Width on J axis 12.5000
H1200 Grid Bear J axis (das) 34830 0.573
H1300 Bin Node Increment I axis 1.000
H1300 Bin Node Increment J axis 1.000
H1400 Coords (I,J,E,N) Node 1 630.0000 1150.0000 392353.66 8930189.92
H1400 Coords (I,J,E,N) Node 2 630.0000 3150.0000 387369.53 8954688.05
H1400 Coords (I,J,E,N) Node 3 2034.0000 3150.0000 404567.22 8958186.91
H2100 Revision by RL Sunrise_Grid 2012-05-16
H2100 MASTER GRID DEFINITION:
H2100 Coords (I,J,E,N) Node 1 630.0000 1150.0000 392353.66 8930189.92
H2100 Coords (I,J,E,N) Node 2 630.0000 3150.0000 387369.53 8954688.05
H2100 Coords (I,J,E,N) Node 3 2034.0000 3150.0000 404567.22 8958186.91
H2100 Coords (I,J,E,N) Node 4 2034.0000 1150.0000 409551.35 8933688.78
```

VS.



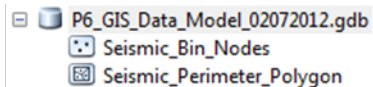
Overview of P6 GIS Geodatabase Data Model



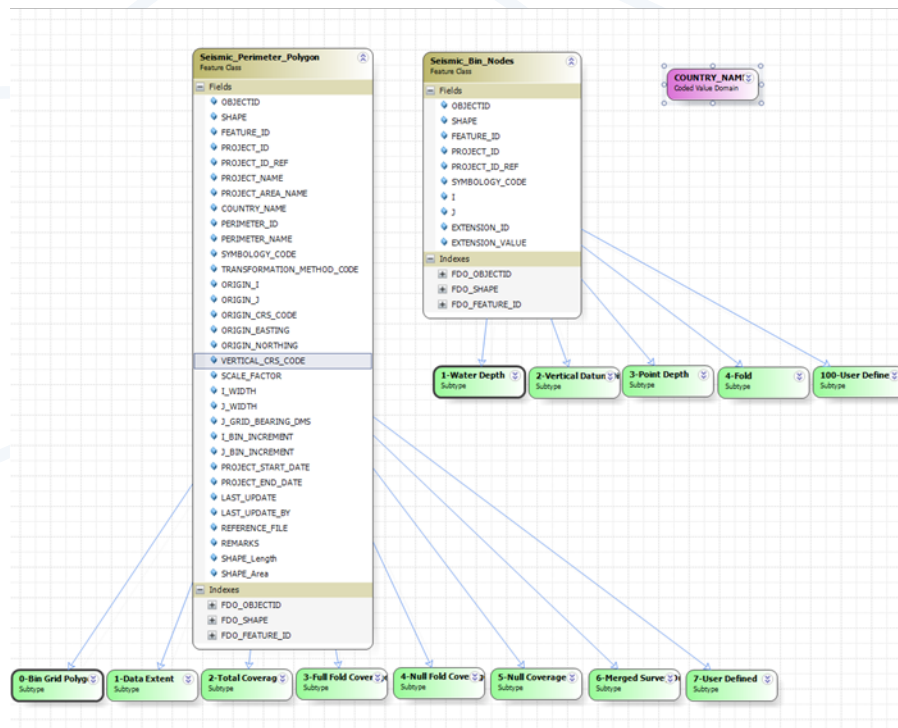
- **The principles behind the P6 data model are:**
 - Utilise the Seabed Survey Data Model (SSDM) design principles
 - Keep it simple by using only two feature classes i.e. seismic perimeter polygon FC (polygon) and a bin nodes FC (points)
 - Feature classes to contain relatively simple tables that hold the main information carried in a traditional bin grid definition i.e. P6/98 or P6/11
- **Data model created to work in conjunction with the P6/11 format**
- **Material provided includes:**
 - Seismic bin grid (P6) file geodatabase template
 - ArcGIS symbology stylesheet
 - Data dictionary
 - Guidance note describing the P6 GIS data model
 - Example Dataset

P6 GIS Geodatabase Data Model Schema – P6/98

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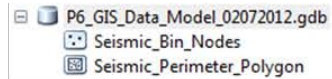
Perimeter_Polygon Bin Nodes (Points)



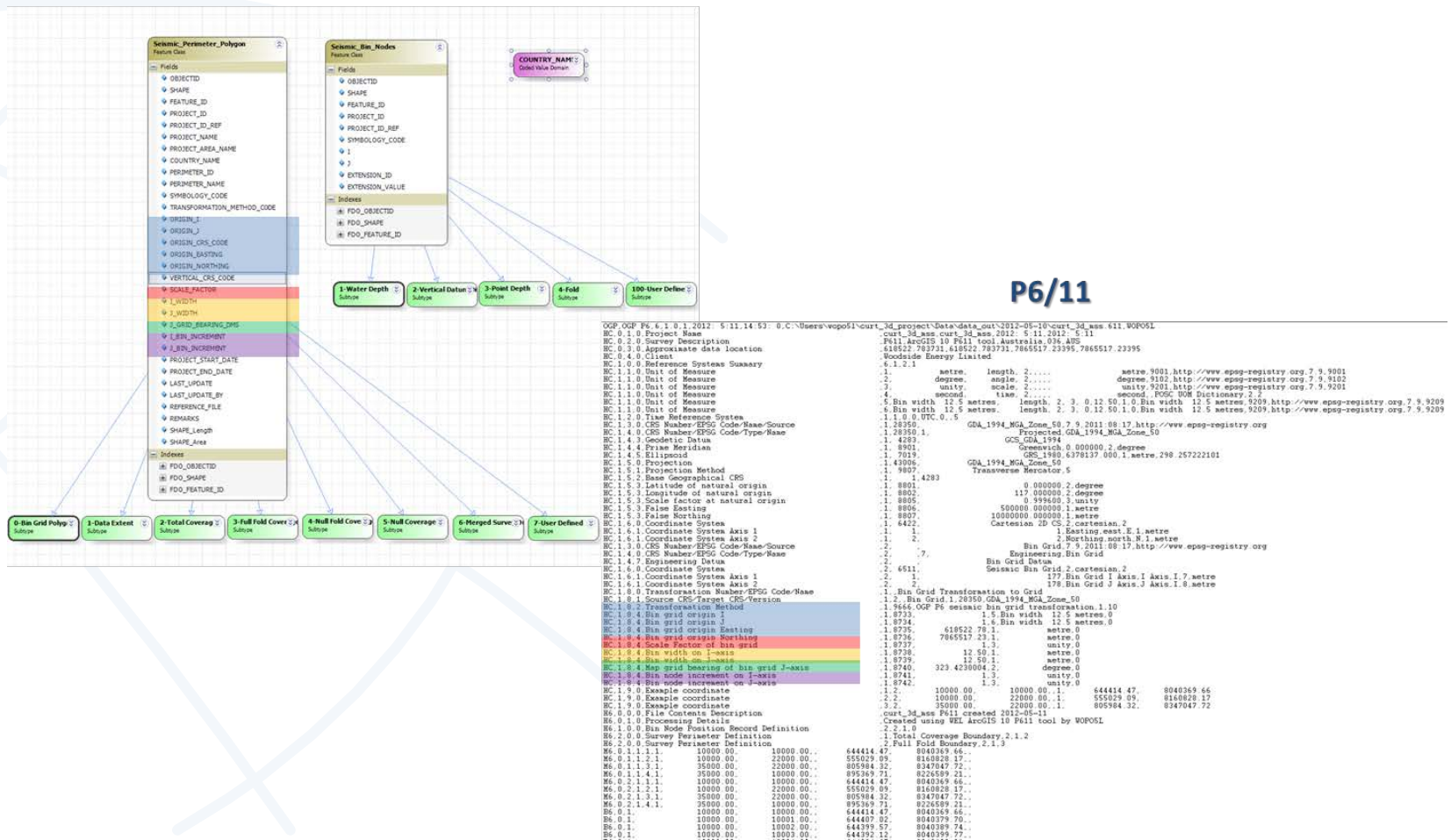
H0100	3D Survey Name	Sunrise_Grid			
H0200	Bin Grid Descriptor	ArcGIS10.0_WEL p698.py MASTER GRID			
H0300	Geodetic Datum Name	GCS_WGS_1984			
H0400	Ellipsoid-Axis_Inv Flat	GCS_WGS_1984_378137.000 298.2572236			
H0500	Projection Method	002_WGS_1984_UTM_Zone_52S			
H0510	Projection Zone Name	32752			
H0530	Lon of CM (dms E/W)	129 0 0.000E			
H0600	Descr of Linear Units	1 Meter			Meter
H0700	Descr of Angular Units	1 degree			Degree
H0800	Bin Grid Origin (I o J o)	1.0000	1.0000		
H0900	Bin Grid Origin (E N)	387512.38	8914548.23		
H1000	Scale Factor at (I, J)	1.000000000000	1.0000	1.0000	
H1100	Nom Bin Width on I axis	12.5000			
H1100	Nom Bin Width on J axis	12.5000			
H1200	Grid Bear J axis (dms)	34830 0.573			
H1300	Bin Node Increment I axis	1.000			
H1300	Bin Node Increment J axis	1.000			
H1400	Coords (I, J, E, N) Node 1	630.0000	1150.0000	392353.66	8930189.92
H1400	Coords (I, J, E, N) Node 2	630.0000	3150.0000	387369.53	8954688.05
H1400	Coords (I, J, E, N) Node 3	2034.0000	3150.0000	404567.22	8958186.91
H2100	Revision by RL:	Sunrise_Grid			2012-05-16
H2100	MASTER GRID DEFINITION:				
H2100	Coords (I, J, E, N) Node 1	630.0000	1150.0000	392353.66	8930189.92
H2100	Coords (I, J, E, N) Node 2	630.0000	3150.0000	387369.53	8954688.05
H2100	Coords (I, J, E, N) Node 3	2034.0000	3150.0000	404567.22	8958186.91
H2100	Coords (I, J, E, N) Node 4	2034.0000	1150.0000	409551.35	8933688.78

P6 GIS Geodatabase Data Model Schema – P6/11

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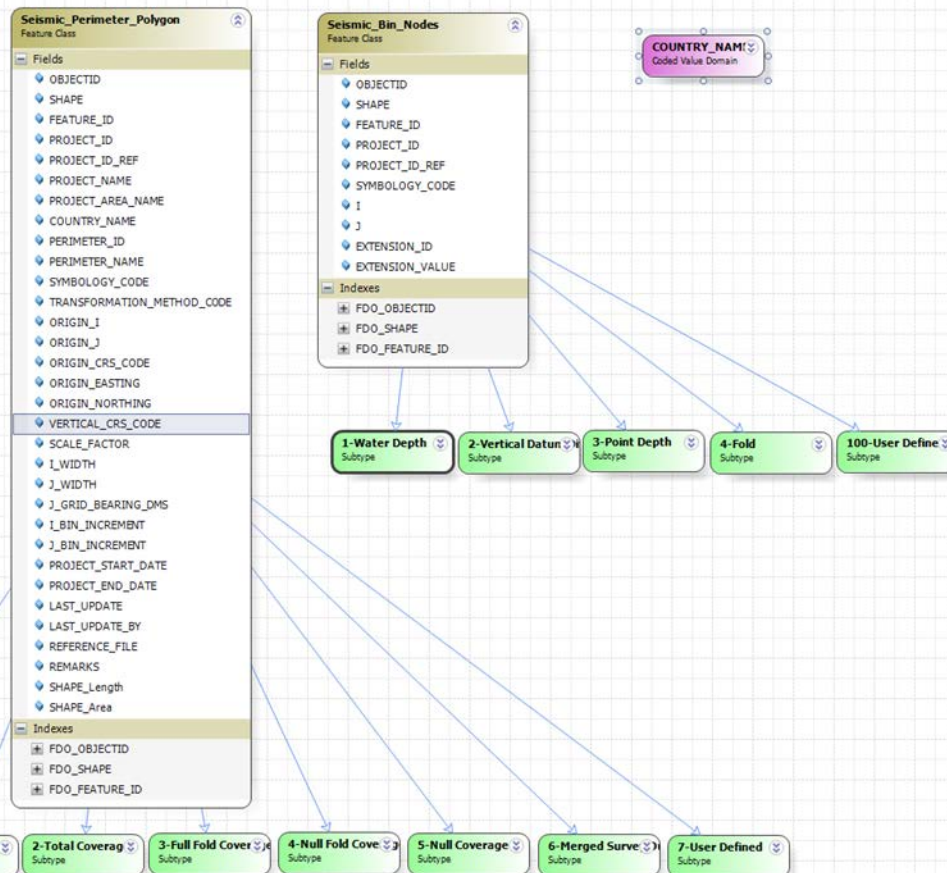
Perimeter_Polygon Bin Nodes (Points)



P6 GIS Geodatabase Data Model Data Dictionary

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Perimeter Polygon Bin Nodes (Points)



[Click here for XLS
Data Dictionary](#)



Microsoft Office
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P6 GIS Data Model ArcGIS Symbology Stylesheet

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An ArcGIS symbology stylesheet has been provided to symbolise bin grid polygons and nodes in ArcMap. Symbology will likely be integrated with the SSDM symbology to create an OGP symbology stylehseet for all OGP GIS data models.

The image displays two screenshots of the ArcGIS interface, specifically the Style Manager and the Feature Class Properties dialog box, illustrating the symbology settings for OGP data models.

Top Screenshot (OGP3305 Bin Grid Polygon):

- Style Manager:** The 'Name' column lists 'OGP3305 Bin Grid Polygon' under the 'Category' 'Seismic Perimeter Polygon'. The 'Tags' column shows 'simple'.
- Feature Class Properties:** The 'Subtype Field' is 'PERIMETER_ID'. The 'Default Subtype' is '0-Bin Grid Polygon'. The 'Subtypes' table shows the following data:

Code	Description
0	0-Bin Grid Polygon
1	1-Data Extent
2	2-Total Coverage
3	3-Full Fold Coverage
4	4-Null Fold Coverage
5	5-Null Coverage

Bottom Screenshot (OGP1301 Water Depth):

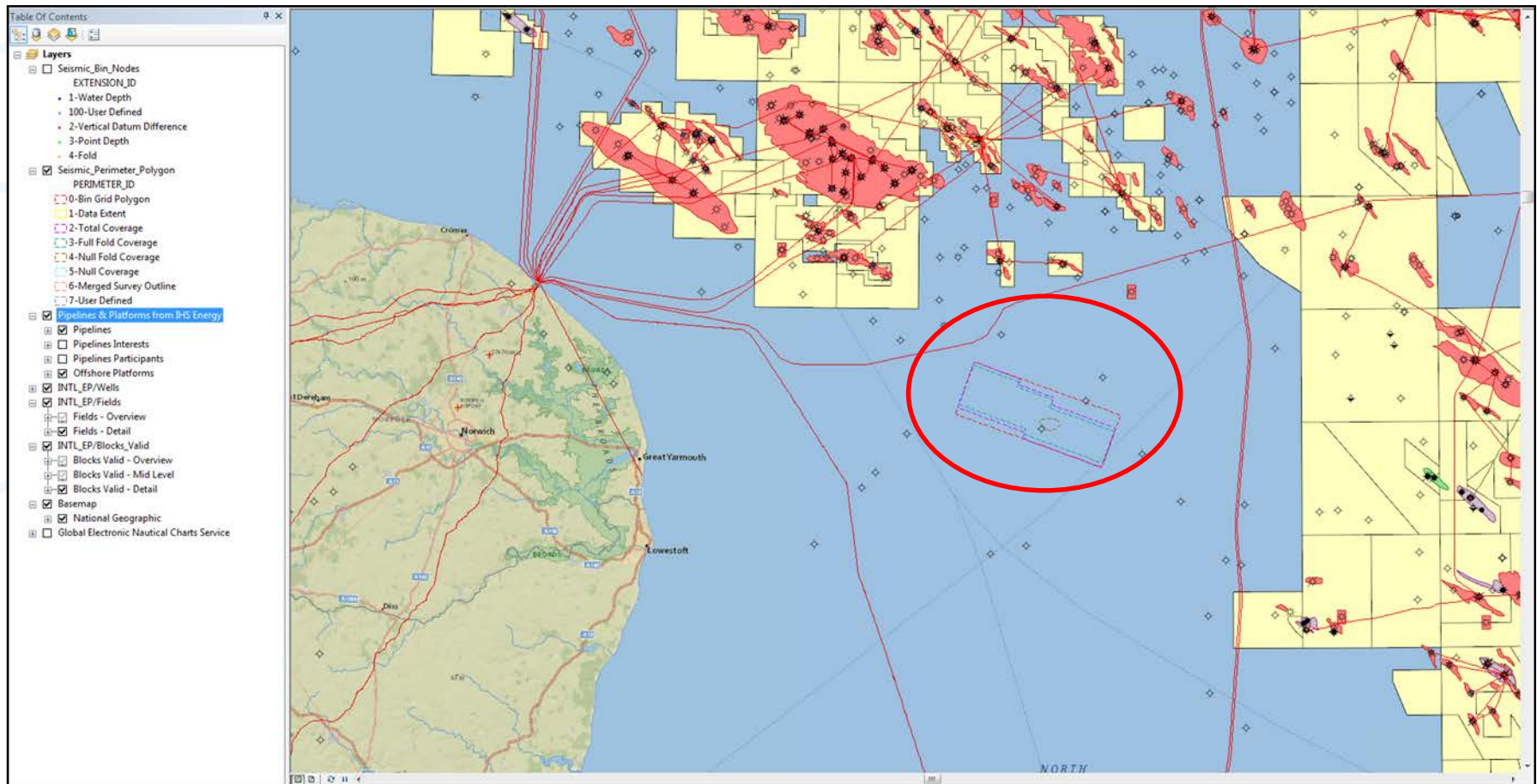
- Style Manager:** The 'Name' column lists 'OGP1301 Water Depth' under the 'Category' 'Seismic Bin Nodes'. The 'Tags' column shows 'blue'.
- Feature Class Properties:** The 'Subtype Field' is 'EXTENSION_ID'. The 'Default Subtype' is '1-Water Depth'. The 'Subtypes' table shows the following data:

Code	Description
1	1-Water Depth
2	2-Vertical Datum Difference
3	3-Point Depth
4	4-Fold
100	100-User Defined

These feature types may be better represented by colour ramp symbology. Further discussion required.

P6/11 Example 1 Loaded to the P6 GIS Data Model

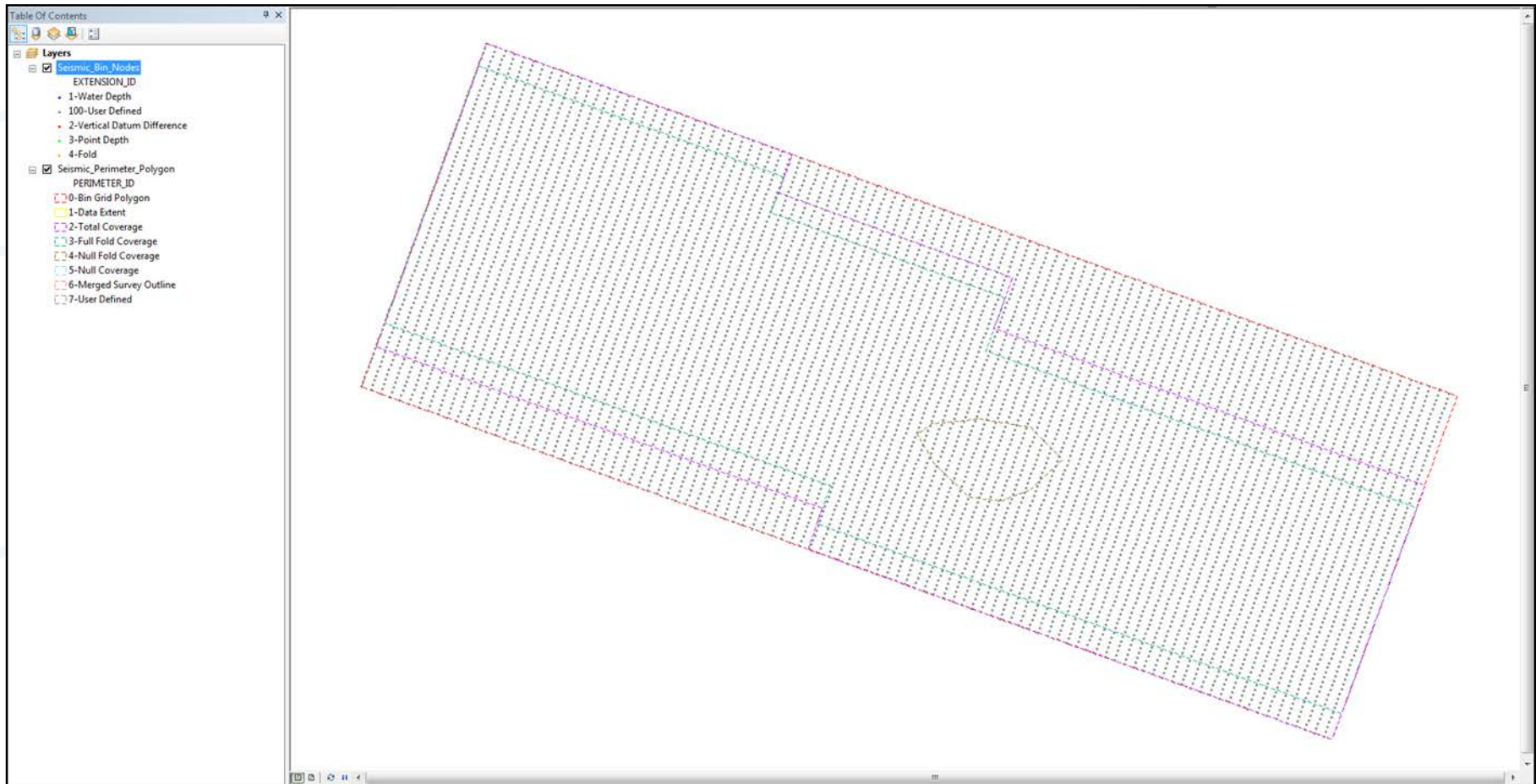
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Example bin grid displayed in ArcGIS along with other E&P data layers

P6/11 Example 1 Loaded to the P6 GIS Data Model

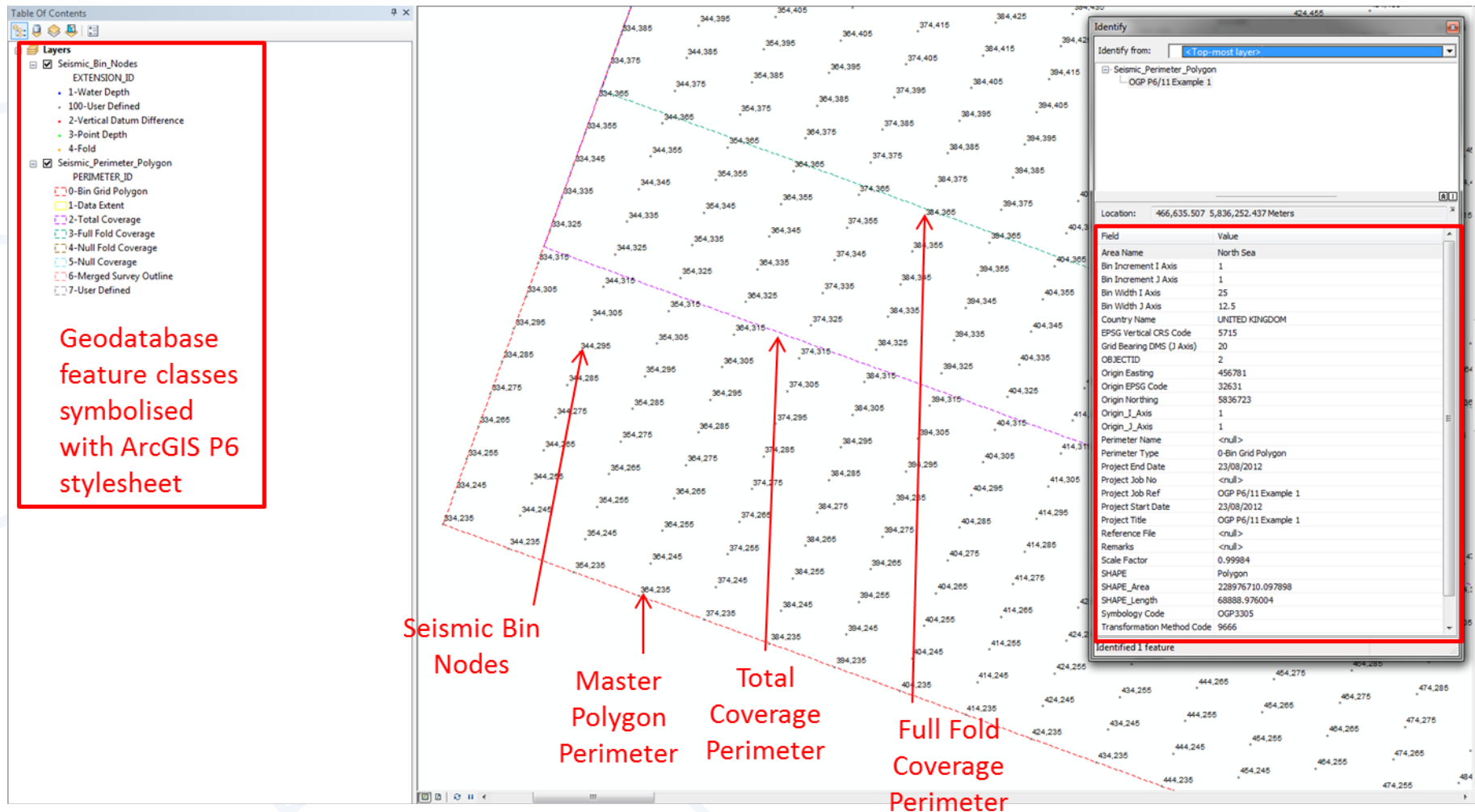
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Example bin grid displayed in ArcGIS displaying bin nodes, total coverage polygon, full fold polygon, null fold polygon etc

P6/11 Example 1 Loaded to the P6 GIS Data Model

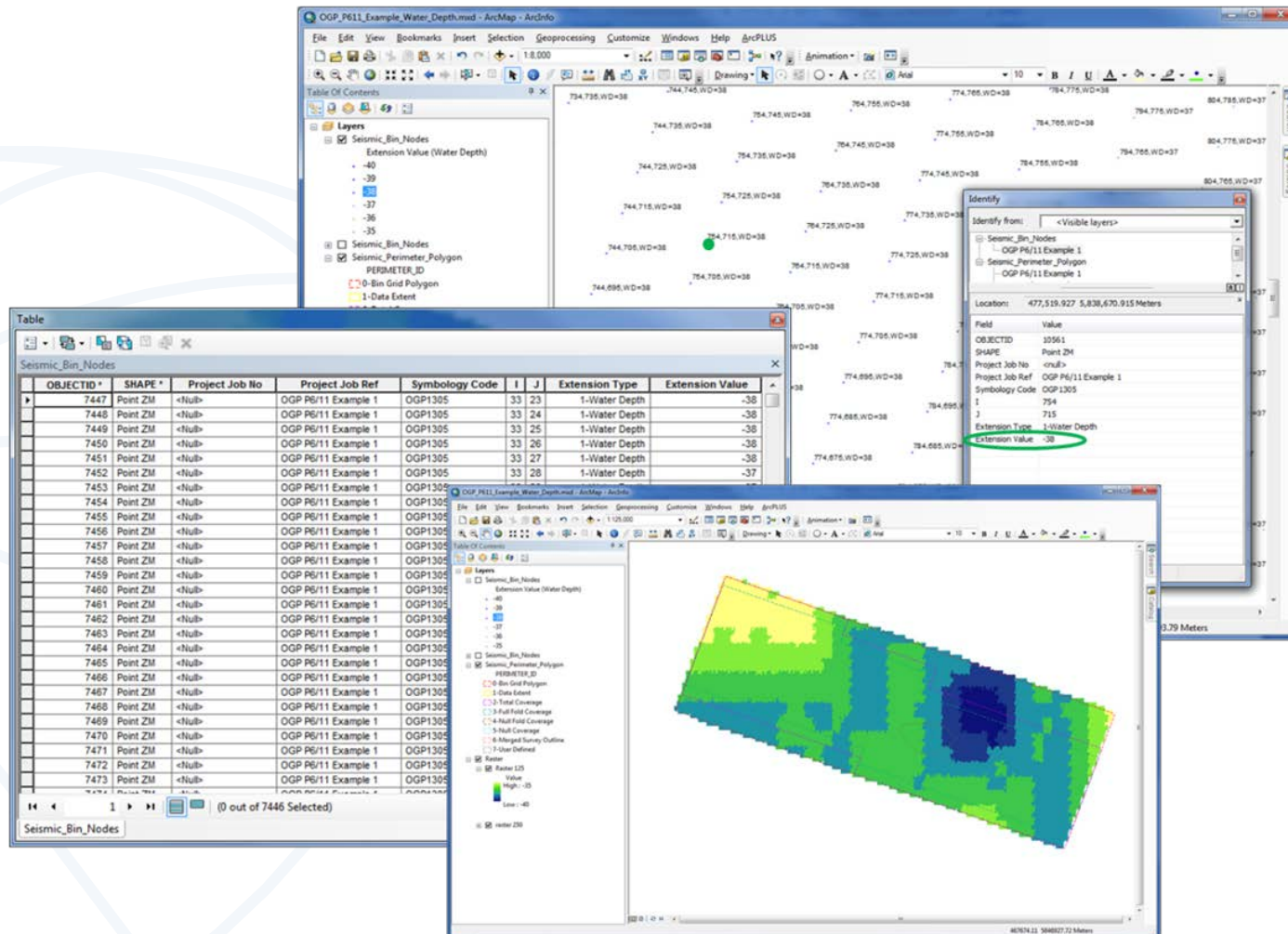
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Example illustrating the populated attribute table for the full fold coverage polygon

P6/11 Example 1 Loaded to the P6 GIS Data Model

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Data model has the ability to store bin node attributes e.g. water depth, fold etc. This enables data to be visualised in GIS as shown above for water depth. GIS tools also enable bathymetry raster surfaces to be generated.

Draft P6 GIS Geodatabase Data Model

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Questions?