Regional salt maps (two-way time, depth, isopach and two-way time thickness maps), Phanerozoic and Neoproterozoic basins of Western Australia

by

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Abstract

The Energy Systems Atlas is a collection of new geological map layers designed to help explorers identify each of the essential elements and processes of a petroleum system: source, reservoir, seal, burial, maturation, stratigraphic framework, structure, trap formation and migration. A set of regional depth and isopach maps have been compiled to delineate the lateral extents of subsurface salt formations that have potential sealing capacity to trap hydrocarbons, helium and natural hydrogen and possibly be utilized for manufactured hydrogen storage, and as a seal for carbon dioxide sequestration. The currently known subsurface salts are present in the Canning, Officer, Amadeus, Carnarvon and Bonaparte Basins. Some of these salts have been interpreted and mapped by the Geological Survey of Western Australia (GSWA) based on well intersections and reflection seismic data. The maps cover the southern Canning and Officer Basins, and new maps will be added as new interpretation campaigns conclude.

The geology and a description of the data and methods of all subsurface salt structure maps are outlined in the original GSWA publication, which is given in the attribute tables of the contour versions of each map in the Energy Systems Atlas. GSWA publications are available from the DMIRS eBookshop. Some legacy maps were re-gridded and lightly smoothed using digitized versions of the map data presented in the publications. Subsurface maps do not show updates since the year of publication and do not incorporate newer well and seismic data. Unless otherwise stated, depth maps are given as metres below sea level and are positive downwards, and two-way time (TWT) maps are given as milliseconds referenced from median sea level.

How to access

The Energy Systems Atlas is best accessed using the Western Australian Petroleum and Geothermal Information Management System (WAPIMS). This online interactive mapping system allows data to be viewed and searched together with other datasets. The Energy Systems Atlas subsurface salt structure digital data are also available as free downloads from the Data and Software Centre via Datasets — Statewide spatial datasets — Energy Systems Atlas — Subsurface structure and isopach/thickness maps, as ESRI shapefiles and MapInfo TAB files and as raster grid (.BIL) files.

Recommended reference

Zhan, Y and Thomas, CM 2021, Regional salt maps (two-way time, depth, isopach and two-way time thickness maps), Phanerozoic and Neoproterozoic basins of Western Australia: Geological Survey of Western Australia, digital dataset, <www.dmirs.wa.gov.au/wapims>.