

## **A Brief History of Minerals Management Service Official Protraction Diagrams and Leasing Maps**

The Bureau of Land Management (BLM) developed five unique North American Datum 1927 (NAD 27)-based Outer Continental Shelf (OCS) cadastres when the offshore program was administered by that Agency. The first three cadastres to support OCS oil, gas, sulphur, and salt leasing were:

- Cadastre 1 – Leasing Maps (LM) based on the Louisiana State Plane Coordinate System (SPCS) in a portion of the Central Gulf of Mexico Planning Area.
- Cadastre 2 - LMs based on the Texas SPCS in a portion of the Western Gulf of Mexico Planning Area.
- Cadastre 3 - LMs based on the California SPCS in a portion of the Pacific OCS Region's Channel Islands area.

The BLM believed that since these three States had previously developed LMs defined by their unique SPCSs, maintaining that system offshore in Federal waters would:

- Reduce confusion since some State leases were transferred to the Federal Government.
- Facilitate the resolution of legal issues associated with a common boundary.
- Maintain the status quo for existing litigation.

SPCSs have a major drawback, however. They were designed for use onshore or nearshore, and not offshore on the OCS. Thus, as the offshore program evolved and moved further from the shoreline, the limitations of SPCSs became more apparent. For example, offshore of Louisiana BLM had to use negative coordinates as they proceeded seaward. Further, the obligatory use of different SPCSs for each coastal State compounded computational problems.

To resolve these problems, BLM adopted the military's metric-based Universal Transverse Mercator (UTM) grid system and Official Protraction Diagrams (OPD) as a new foundation for the offshore cadastre. (OPD number designations, however, were based on the United Nations International Map of the World.) This worldwide system, may be used onshore or offshore with equal accuracy, and has a broad zone width. This last feature was desirable since it decreased the total number of zones needed to cover large areas. OPDs based on the UTM projection and grid systems are the foundation for the last two NAD 27 OCS cadastres.

Cadastre 4 is used in those areas of the Gulf of Mexico OCS Region not covered by LMs. However, this cadastre is not a "pure" UTM-based system. In developing this cadastre, BLM made decisions which corrupted the cadastre. Although not recognized at the time, these decisions adversely affect coordinate and areal measurement computations:

- Certain UTM zone boundaries were shifted to eliminate (1) OPDs which depicted relatively few blocks or (2) fractional blocks along one side of a zone boundary.
- Since LMs were based on SPCSs and used English systems of measurement, the English systems of measurement would be used on the OPDs.

Cadastre 5 is used in those areas of the Pacific OCS Region not covered by LMs and in the entirety of the Alaska and Atlantic OCS Regions. Unlike Cadastre 4, this cadastre was not corrupted. It conforms to definitive UTM parameters and uses both metric coordinates and areal measurements. Minerals Management Service (MMS) North American Datum 1983 (NAD 83)-based OPDs offshore of the United States in the Atlantic, the Pacific, Alaska, and the U.S. Virgin Islands also use this UTM cadastre as defined by NAD 83 parameters.

Most OPDs and all LMs were named by the BLM prior to the creation of the MMS in 1982. OPDs adjoining the coastline cover approximately the same area as U.S. Geological Survey (USGS) 1:250,000-scale quadrangle maps. When possible, quadrangle names were adopted for OPD names. (A major difference in the area of coverage between USGS quadrangle maps and MMS/BLM OPDs is that the maps terminate on a latitude/longitude graticule while OPDs terminate on UTM grid lines and zone boundaries.) USGS map names and OPD names for areas adjoining the coastline follow U.S. Board on Geographic Names (USBGN) guidelines.

Further offshore, if the National Oceanic and Atmospheric Administration's (NOAA) National Ocean Service (NOS) had named 1:250,000-scale topographic/bathymetric maps, those names were adopted for OPDs covering the same areas. If there was no name for a topographic/bathymetric map, and/or NOS map, OPDs were named "Unnamed."

Although the MMS has not formally defined an OPD naming procedure, it has been the Agency's practice to rename "Unnamed" OPDs (when necessary) after names approved for undersea features rather than living persons. Generally, the MMS identifies formally approved names (listed in the National Geospatial-Intelligence Agency's (NGA) GeoNet Names Server) and consults with the NOS before adopting a name, thus ensuring USBGN compliance. When the area of an unnamed OPD does not contain named undersea features, the name of an adjacent named OPD may be adopted with the addition of "North," "South," "East," or "West."