

**Final Technical Report submitted to the
National Geological and Geophysical Data Preservation Program (NGGDPP)**

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Award issued to:

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Project Title:

Michigan Geological Survey 2015 Data Preservation program:
Rescuing at-risk unique cores, converting paper mudlog records to digital format,
and inventorying both collections

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Abstract

During USGS FY 2015, the Michigan Geological Survey (MGS), part of Western Michigan University (WMU), completed a project to rescue an at-risk unique core collection, convert a large collection of paper mudlogs to digital format, prepare inventories for both, and to upload these to the NCGDPP National Catalogue. The cores and mudlogs were donated to MGS by private industry and were largely inaccessible prior to this work.

Most of the 9000 feet of cores were drilled through the Niagaran and Trenton/Black River Formations. These formations have produced half the oil ever recovered in Michigan and almost half the gas produced to date. These cores had been contained in cardboard boxes severely deteriorated by water damage and breakage due to crushing. Each box contained multiple layers of thin cores separated only by flat pieces of cardboard and core footages were incompletely marked.

By comparing the core to lithologic descriptions from in-house well reports, we were able to accurately inventory the cores. They were placed in single layers in new secure boxes, and accurately labeled for footages. These cores are now accessible to research and industry use, providing essential raw data available nowhere else about these carbonates systems.

These mudlogs were produced during the past sixty years in Michigan's Lower Peninsula. They represent all subsurface formations to the basement. These logs, made when the wells were first drilled, recorded direct data about rock type, drill penetration rate, types of fluids (gas/oil/water) and well pressure. In this mature Basin, they are some of the most valuable well records because they define zones of by-passed pay. They can also help operators avoid well damage and blow-outs by showing zones of high pressure or lost circulation.

This set of mudlogs is quite valuable to exploration because each is intact with the gas chromatograph, which identifies whether the well showed gas or oil, and recorded the depths of gas shows. Many of the mudlogs previously submitted to the State lacked this critical data.

Having converted these paper logs to high-resolution digital records (300 dpi PDFs), the MGS has made them readily accessible and in the right format for mapping and reservoir modeling.

This project furthers the Survey's long-term goals of preserving and digitizing paper data, making that data publicly accessible, and using it in applied research and education.

Work proposed and completed

Specific project goals were: (1) preserving more than 9,000 feet of cores and rescuing them from further data loss by reassembling the pieces, determining accurate footages, recording footages on the core, placing them in new boxes, and creating an accurate inventory; (2) inventorying and scanning approximately 1500 paper mudlogs acquired

by the Survey; (3) creating metadata records for these two collections as well as their individual components and uploading all data to the NCGDPP catalogue; and (4) further promoting use of these resources by making them publically accessible through the Catalogue and the Survey's website at <http://wmich.edu/geologysurvey/data>.

All those goals were met or exceeded: We preserved 9,200 feet of core through reboxing and inventorying them; we received additionally donated mudlogs after writing the proposal. We incorporated those and actually inventoried and scanned a total of 5741 mudlogs; metadata were created for both collections. Inventories were uploaded to the NCGDPP catalogue and to the MGS's website.

Thank you

We are grateful for the opportunity to be part of this national geological data archive because we strongly believe we must preserve data records from our geological resources. The data we preserve today may well prove to be invaluable tomorrow. We thank the NCGDPP for its leadership and perseverance and for funding this work at the Michigan Geological Survey.