Final Technical Report

Prepared for the
National Geological and Geophysical Data Preservation Program

Digitizing Documents and Creating Metadata for the Tennessee Geological Survey's Coal Mine Maps Collection from July 1, 2015 to June 30, 2016

United States Geological Survey
Award No. G15AP00100

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September 28, 2016

Abstract

For FY2015 the National Geological and Geophysical Data Preservation Program awarded the Tennessee Geological Survey funds to continue the process of producing metadata records for the National Digital Catalog and to continue the conversion of its paper records into digital format. The proposed work consisted of compiling the metadata records and converting to a digital format 150 maps in the Coal Mine Maps Collection. By the end of the project period a total of 174 maps were scanned and their records were added to the current metadatabase for this collection. The updated metadata file was uploaded into the United States Geological Survey's National Digital Catalog in August 2016. All of the digital files are safely stored, duplicated, and are now available for distribution as either high resolution Tagged Image Format files or Portable Document Format files.

Introduction

The importance of cataloging Tennessee Geological Survey (TGS) collections and digitizing the documents in them continues to increase as potential users expect to have the ability to remotely query collection records and to acquire a document in a useful electronic format. Although a slow and somewhat tedious process, the value added to the mission of TGS cannot be overstated. We consider it a goal worth striving for because the outcome helps ensure the preservation of historic documents, as well as decrease the staff time and the expense required to fulfill requests for information contained in these collections. Through the financial assistance provided by the U.S. Geological Survey (USGS) National Geologic and Geophysical Data Preservation Program (NGGDPP) TGS continues to make steps towards accomplishing that goal.

Work Completed

The proposed objective of this year's project was to create the metadata records and convert to a digital format 150 coal maps from the Coal Mine Map Collection located in the Tennessee Geological Survey's Knoxville Field Office. This year's project concentrated on the 15 minute quadrangle coal compilation map portion of the Coal Mine Map Collection. These maps were produced in the 1950's and consist of a compilation of coal geology information for mineable coal seams on a 15 minute quadrangle base outline at a scale of 1:24,000. These maps are drawn on "onion skin" tracing paper with coal information consisting of: (1) underground and surface coal mine locations and outlines; (2) locations of coal exploration drill holes with seam data; and (3) locations of measured coal sections with seam information. Most of the maps measured approximately 40 by 50 inches and many are in delicate condition due to their age.

The coal maps were digitized on a large format scanner at 400 dpi resolution, in either grayscale or RGB color, and saved as uncompressed Tagged Image Format files. Due to the fragile nature of many of the 60 year old coal maps, a Mylar sleeve was obtained to protect the maps during the scanning process. When necessary, free software called GIMP (GNU Image Manipulation

Program), was used to crop, rotate, and digitally enhance the scanned maps. The digital scan files were organized and identified according to the 15 minute quadrangle number designation and coal seam name. The scans were converted to Portable Document Format files to reduce the file sizes and make them easier to distribute. Multiple copies of the digital files are stored on hard drives at separate locations with plans to move them to a secure server hosted by the Tennessee Department of Environment and Conservation.

The final outcome of this project resulted in the scanning and compiling the metadata records for 174 coal mine maps. This surpassed the proposed objective of 150 maps. The updated metadata file for the Coal Mine Map Collection was created in Microsoft Excel and saved in .csv file format using the pipe (|) record delimiter character as a field separator for seamless uploading. The file was successfully uploaded into the USGS National Digital Catalog.

To date the NGGDPP has provided support for TGS to convert to a digital format and create searchable metadata records for over 95% of the items in the Coal Mine Map Collection. A suite of newly acquired coal mine maps will require this effort to continue, and is why we have not reached our goal of 100%. But acquiring more coal mine maps is welcomed, because we are the only state agency responsible for their preservation.

Finally, in addition to converting maps in the Coal Mine Map Collection into a digital format and creating metadata for them, the following results were realized by completing this project:

(1) We continued to assess and better organize the material in the collection;

(2) Our in-house Coal Mine Map Collection Excel database includes additional fields of information that are not included as part of the National Digital Catalog metadatabase. Our expanded database is designed to assist TGS staff with searching and sorting of records, as well as, specifying the storage location of each document in the collection;

(3) Our expanded database is also designed to feed directly into geographic information system software (ArcMap) projects that help to portray the geographic location and to query the documents in the collection.

Tennessee Geological Survey Staff Participation

Geologist Barry Miller in TGS's Knoxville Field Office was responsible for scanning, image processing, and creating the metadata records for the maps in the Coal Mine Map Collection. Chief Geologist Dr. Peter Lemiszki in TGS's Knoxville Field Office reviewed and made final revisions to the Coal Mine Map Collection metadatabase and used the NGGDPP dashboard website to upload the file into the USGS National Digital Catalog.