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Open-file Report - 606
Structural contour maps of the base of the Santa Fe Group and two Neogene stratigraphic surfaces in the northern Española Basin, New Mexico

Daniel J. Koning

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KEYWORDS
   Theme: Española Basin; elevation contours; structural contours; Santa Fe Group; Upper Miocene through Lower Pliocene volcanic rocks; middle Santa Fe Group; Jemez Mountains volcanic field; Chamita Formation; top of bedrock; base of middle Santa Fe Group
   Place: Northern Española Basin, Rio Grande rift, northern New Mexico

DESCRIPTION
Purpose:
Characterize the three-dimensional structure of the subsurface geology of the northern Española Basin by making structural contour maps of three stratigraphic surfaces. The three contoured stratigraphic surfaces are the: (1) top of the uppermost bedrock unit (which may be Oligocene volcanic flows, Mesozoic strata, Paleozoic strata, or Proterozoic crystalline rocks, depending on location); (2) base of the middle Santa Fe Group; and (3) base of an amalgamated package of Upper Miocene through Lower Pleistocene volcanic and volcaniclastic rocks belonging to the Jemez Mountains volcanic field. Polygons showing estimated vertical errors of the contours are shown. Useful data from USGS Professional Paper 1761 are also included.

Products:
(1) ArcGIS map package that includes a MXD file called OFR_606_StructuralContours and geodatabase called NorthernEspanolaBasinStructuralContours.gdb. Three map packages are offered that are in versions 10.7, 10.6, and 10.5.

The geodatabase contains two feature datasets: one is called DataFromUSGSProfessionalPaper1761 and the other is called NorthBasin_StructuralContourMap. The first feature dataset contains data from USGS Professional Paper 1761 that was integral to the product (provided courtesy of V.J.S. (Tien) Grauch of the USGS). The second feature dataset contains the structural contours of the three stratigraphic surfaces, vertical error polygons pertaining to the structural contours, structural contours and mapped traces of important fault lines, and generic points.

(2) PDF file of a 46-page manuscript explaining the setting, purpose, methodology, and results of the contouring effort. This manuscript contains two tables, three figures, and cited references. The PDF version of these files is 1.6 (Acrobat 7.x).

(3) PDF files of four plates showing the following structural contours: top of the bedrock, base of the middle Santa Fe Group, base of Upper Miocene-Lower Pleistocene volcanic rocks, and superimposed top-of-bedrock and base-of-middle-Santa-Fe-Group contours. Scale 1:50,000. The PDF version of these files is 1.6 (Acrobat 7.x).

ArcGIS geodatabase information:

The geodatabase delivered in this project was originally in GeMS (Geologic Mapping Schema). The IsoValueLine feature class of GeMS was duplicated into three separate feature classes: IsoValueLine_BaseOfMiddleSantaFeGroup_Ft, IsoValueLine_TopOfBedrock_Ft, and IsoValueLines_BottomOfVolcanics_Ft. The ContactsAndFaults feature class of the GeMS schema only includes faults, and thus was renamed simply Faults. The GenericPoints feature class was retained to show useful geographic locations and two places where Grauch et al. (2009) estimated depth to bedrock on the Rio de Truchas seismic reflcation line. The OverlayPolys feature class of the GeMS schema was duplicated and the resulting feature classes labeled: ErrorPolygon_BottomOfMiddleSantaFeGroup, ErrorPolygon_BottomOfVolcanics, and ErrorPolygon_TopOfBedrock. The MapExtent feature class of the GeMS schema was duplicated and the resulting feature classes labeled: Extent_BaseOfMiddleSantaFeGroup, Extent_BaseOfVolcanics, and Extent_TopOfBedrock. The following feature classes were removed from the original GeMS schema: CartographicLines, DataSourcePolys, GenericSamples, GeochronPoints, OrientationPoints, and Stations. Because they may be useful for the user, the following blank feature classes from GeMS was retained: GeologicLines, IsoValueLines, MapUnitPoints, MapUnitPolys, and OverlayPolys. but they contain The following feature class datasets were removed: CorrelationOfMapUnits and CrossSectionA

Status of the Data
> The data represent a complete product characterizing the geometry of the Santa Fe Group in the northern Española Basin. New wells or exploration drill holes, release of existing proprietary seismic reflection data, or generation of new geophysical data (including seismic reflection or refraction) could generate minor to major changes to the surface. Additional derivative products are forthcoming.

Time period for which the data are relevant
> The data are not time-dependent and are current through 2018. New wells and exploration drill holes could generate minor changes to the surface.

Public Information
> *Who created the data:* Daniel J. Koning (New Mexico Bureau of Geology) interpreted the elevations and geometry of the three stratigraphic surfaces using the data sources listed above.
> *Date and time:* Generation of the structural contours occurred in August through November 7 of 2018. The contours were inspected by Intera, Inc., in November of

2018, who suggested edits to Dan Koning. Dan Koning made the edits in November 30, 2019.

Constraints on accessing and using the data

Access constraints: None.

Use constraints: Users are requested to acknowledge the author (Daniel J. Koning), the Open-file Report reference (OFR-606), and the New Mexico Bureau of Geology and Mineral Resources in any public use of these data.

Details about this document

Who completed this document:

Daniel J. Koning
New Mexico Bureau of Geology & Mineral Resources
New Mexico Tech
801 Leroy Place
Socorro, NM 87801
dan.koning@nmt.edu 575-835-6950

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