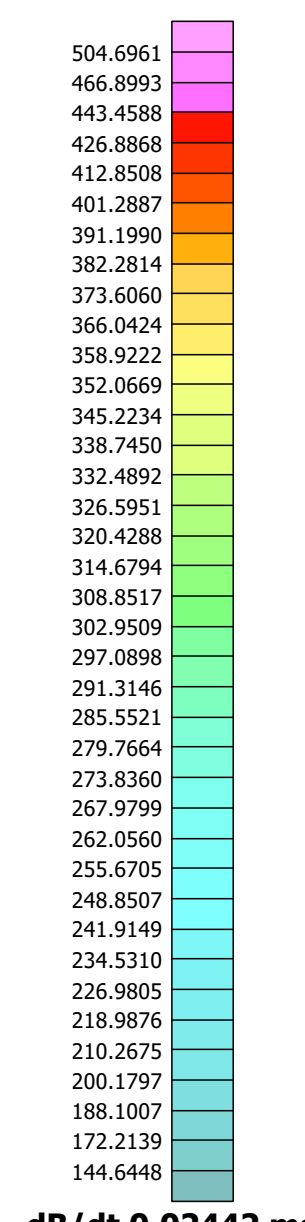
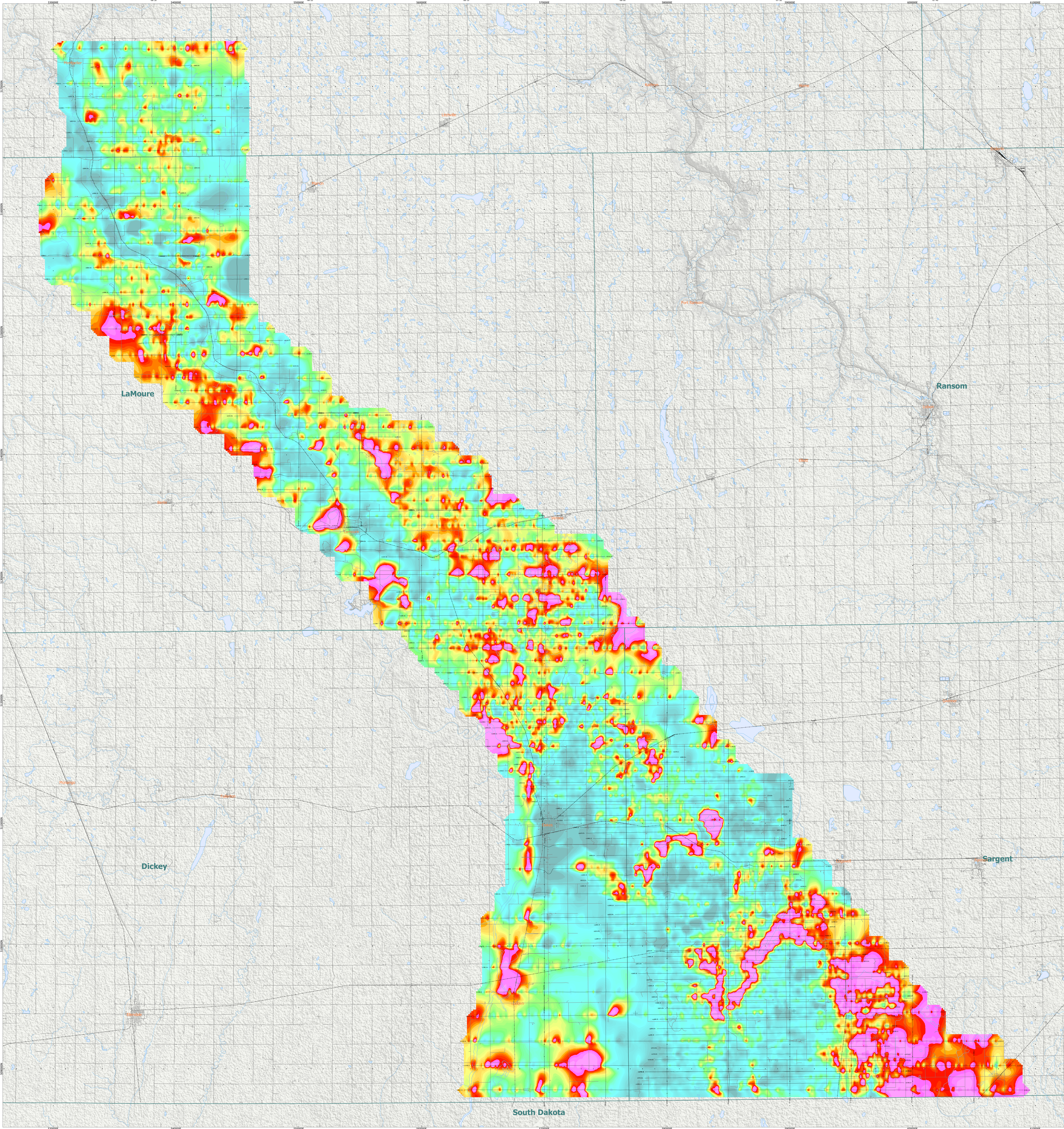




SURVEY OPERATIONS:
 Survey Date: 2019
 Survey Line: Spiritwood, South
 Aircraft: Aeromaster A350B
 Survey Line Spacing: 100,000.000 meters
 Survey Line Direction: N 90° E / N 270° E
 Tilt Line Spacing: 100.000 meters
 Tilt Line Direction: 0.0° E / N 100° E
 Average Aircraft Tilt: 0.000 degrees
 DTI Transmitter Loop: Toward an average terrain clearance of 20 meters below the helicopter
 Magnetometer Sensor: Toward an average terrain clearance of 20 meters below the helicopter

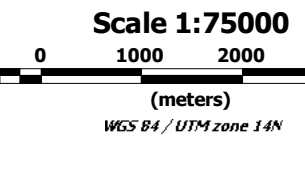
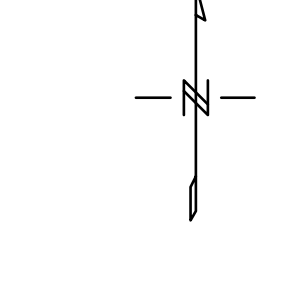
SYSTEMS:
 Geometrics: Time Domain Electromagnetic System (TDEM)
 Geometrics: B21
 Geometrics: Z-Cell
 Geometrics: Coil Diameter: 1.1 meters
 Geometrics: Coil Current: 1.0 A
 Geometrics: Coil Frequency: 144,000 Hz
 Geometrics: Transmitter: TDEM
 Geometrics: Receiver: R10
 Geometrics: High Sensitivity Custom Magnetometer Sensor
 Magnetometer: 0.02 nT at 10 nT resolution
 Magnetometer: 100 nT resolution

PROJECTION:
 Projection: Universal Transverse Mercator
 Central Meridian: 99°W (Zone 14N)
 Central Scale Factor: 0.9996
 False Easting/Offset: 500,000.00m
 Major Axis: 6378137
 Inverse Flattening: 298.2572



dB/dt 0.02442 ms
 $\rho(A^2m^{-4})$

TOPOGRAPHIC LEGEND:
 Roads
 Railroads
 Streams / Rivers
 Canals
 Lakes / Ponds

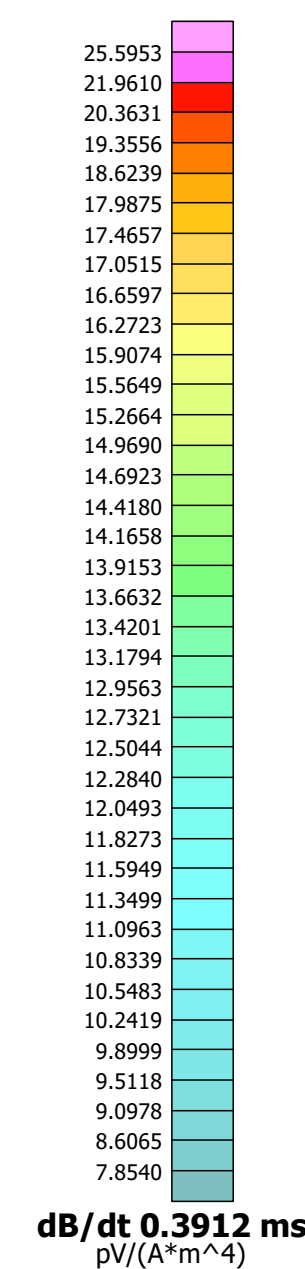
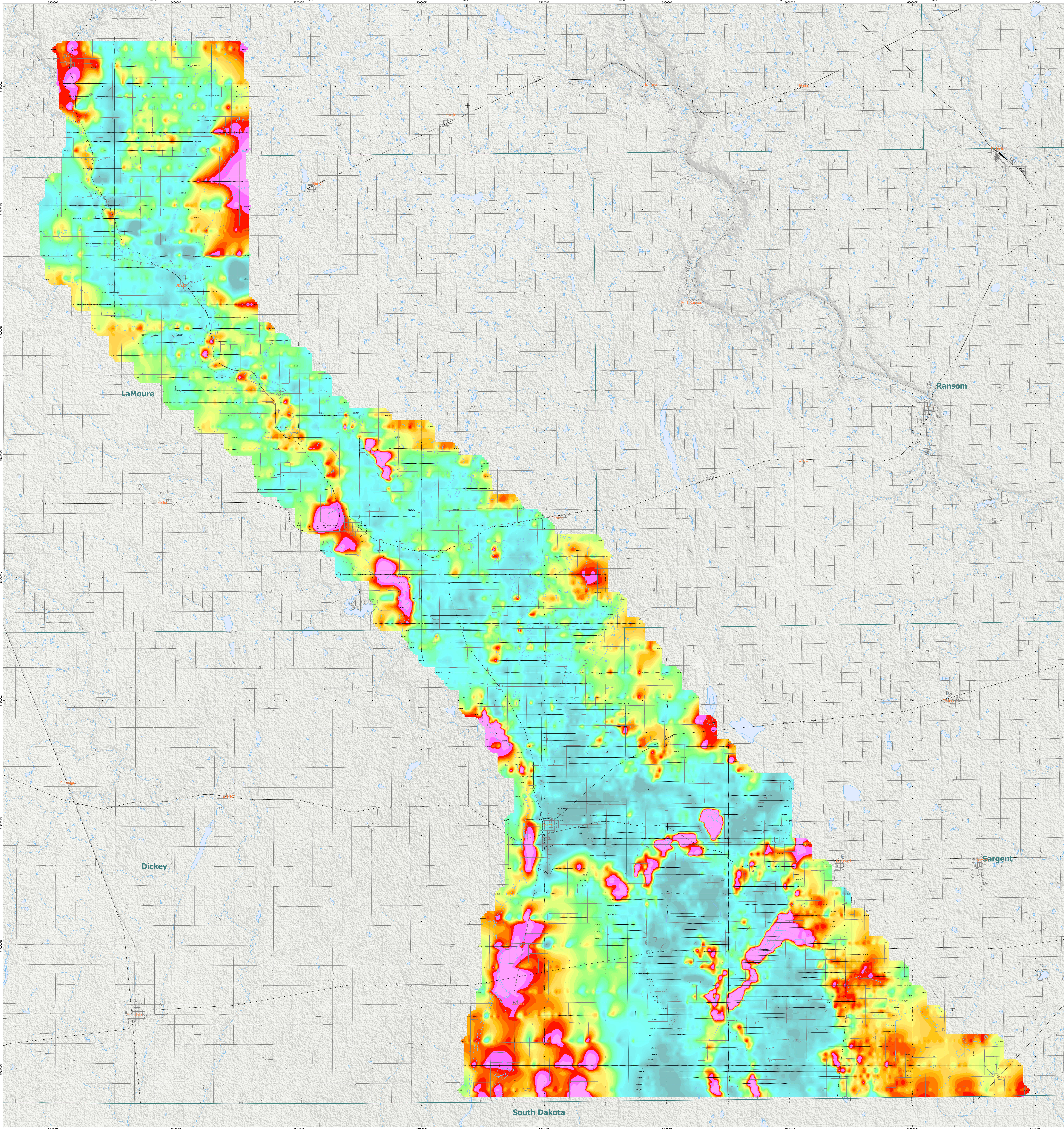


The topographic data has been derived from North Dakota GIS Web Data Portal (<https://opendata.nd.gov/>)
 Base data derived from the Department of Natural Resources (<http://dnr.nd.gov/>)
 Base data derived from the Department of Natural Resources (<http://dnr.nd.gov/>)

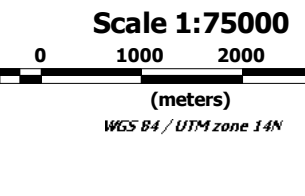


SURVEY OPERATIONS:
 Survey Date: 2019
 Survey Line: Spiritwood, Nevada
 Aircraft: Aeromaster A350B3
 Survey Line Spacing: 100,000,000 meters
 Survey Line Direction: N 90° E / N 270° E
 Tilt Line Spacing: 1000 meters
 Tilt Line Direction: 0.0° E / N 100° E
 Average Aircraft Tilt: Clearance 60 meters
 DTI Transmitter Loop: Toward an average terrain clearance of 20 meters below the helicopter
 Magnetometer Sensor: Toward an average terrain clearance of 20 meters below the helicopter

SYSTEMS:
 Geometrics: Time Domain Electromagnetic System (TDEM)
 Geometrics: B211 Geometrics
 Z-Cell Diameter: 1.2m
 Transmitter: Coil Current: 12.1 Meters
 Coil Current: 146,000 A
 Transmitter: Mini-Tower Transmitter, Super-Helix 7.1 m, Base Frequency 30 Hz
 Geometrics: High-Sensitivity Custom Magnetometer Sensor
 Magnetometer: 0.02 nT at 10 m separation
 MAP PROJECTIONS:
 Projection: Universal Transverse Mercator
 Central Meridian: 99°W (Zone 14N)
 Central Scale Factor: 0.9996
 False Easting/Offset: 500,000/0m
 Major Axis: 6378137
 Inverse Flattening: 298.25722



TOPOGRAPHIC LEGEND:
 Roads
 Railroads
 Streams / Rivers
 Contours
 Lakes / Ponds



North Dakota State Water Commission
 Spiritwood-South Project
 Spiritwood, North Dakota
 Geotech VTEM System
 VTEM dB/dt Z Component
 Channel 35, Time Gate 0.3912 ms

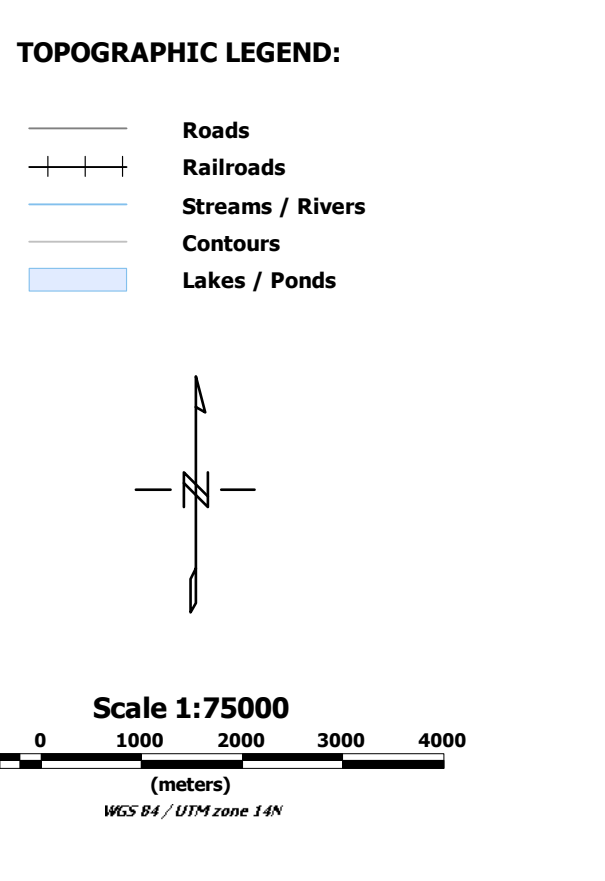
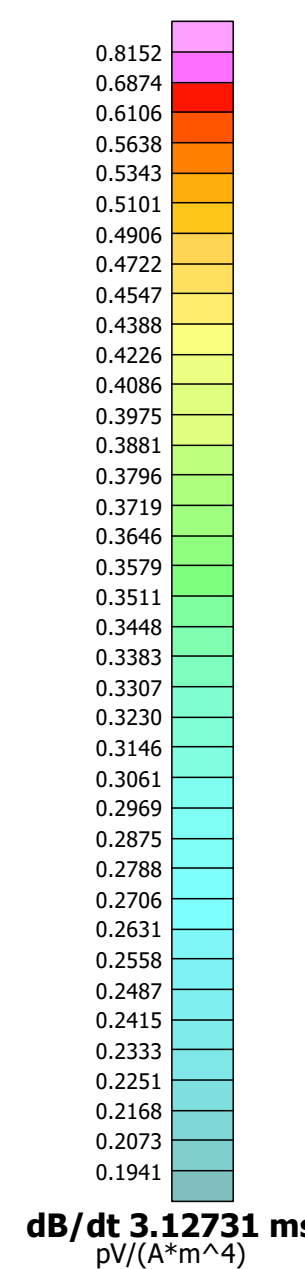
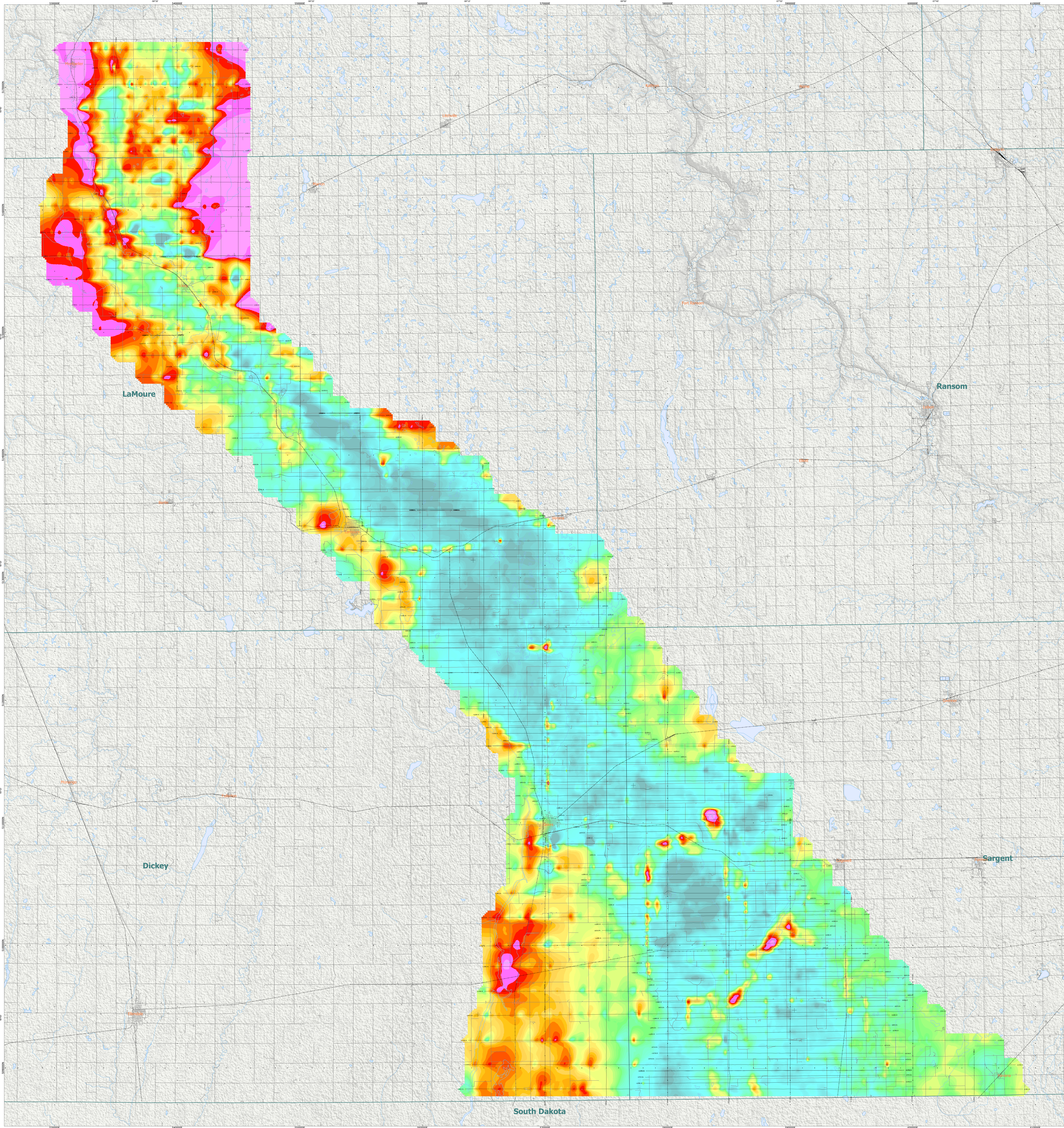
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 Aurora, Ontario, Canada L4G 4C4
 www.geotech.ca
 June 2019

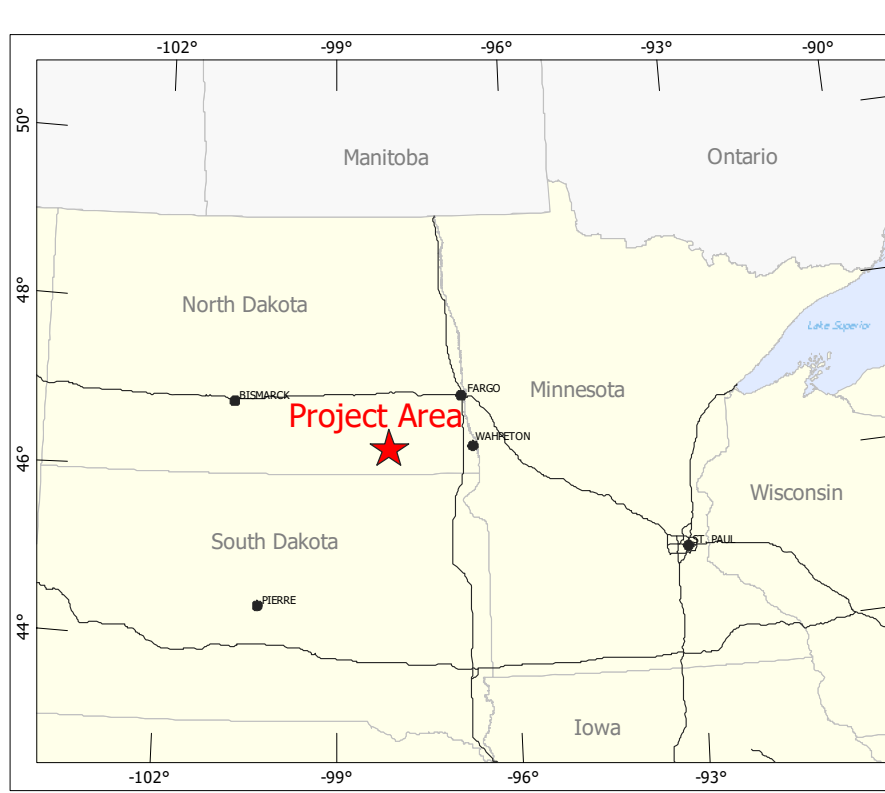


SURVEY OPERATIONS:
 Survey Date: 2019
 Survey Line: Spiritwood, North Dakota
 Aircraft: Aeromaster A350B-B3
 Survey Line Spacing: 100,000,000 meters
 Survey Line Direction: N 90° E / N 270° E
 Tilt Line Spacing: 1000 meters
 Tilt Line Direction: 0° 0' E / N 100° E
 Average Aircraft Tilt: Clearance 40 meters
 DTI Transmitter Loop: Towed at an average terrain clearance of 20 meters below the helicopter
 Magnetometer Sensor: Towed at an average terrain clearance of 20 meters below the helicopter

SYSTEMS:
 Geometrics 8075 Core Geomatics
 Z-Cor Diagnostics 1.2m
 Transmitter: Core Channel 12.1 MHz
 Diode Power: 145,000 dB
 Transmitter: Mini-Turn Transducer, Range: 1000 7.1 mV, Base Frequency: 30 Hz
 Geometrics High Sensitivity Coaxial Magnetometer Sensor
 High Resolution: 0.02 nT at 10 m/sec

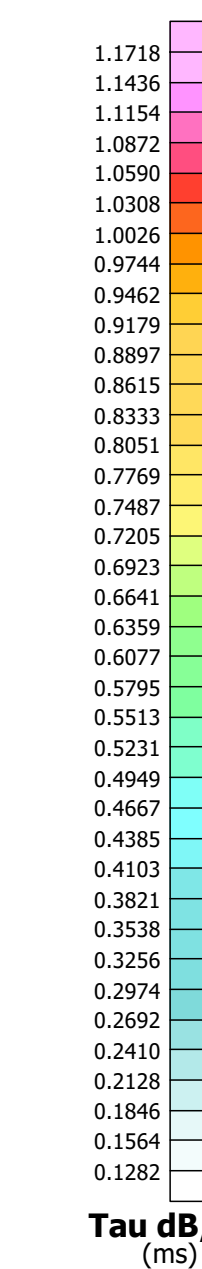
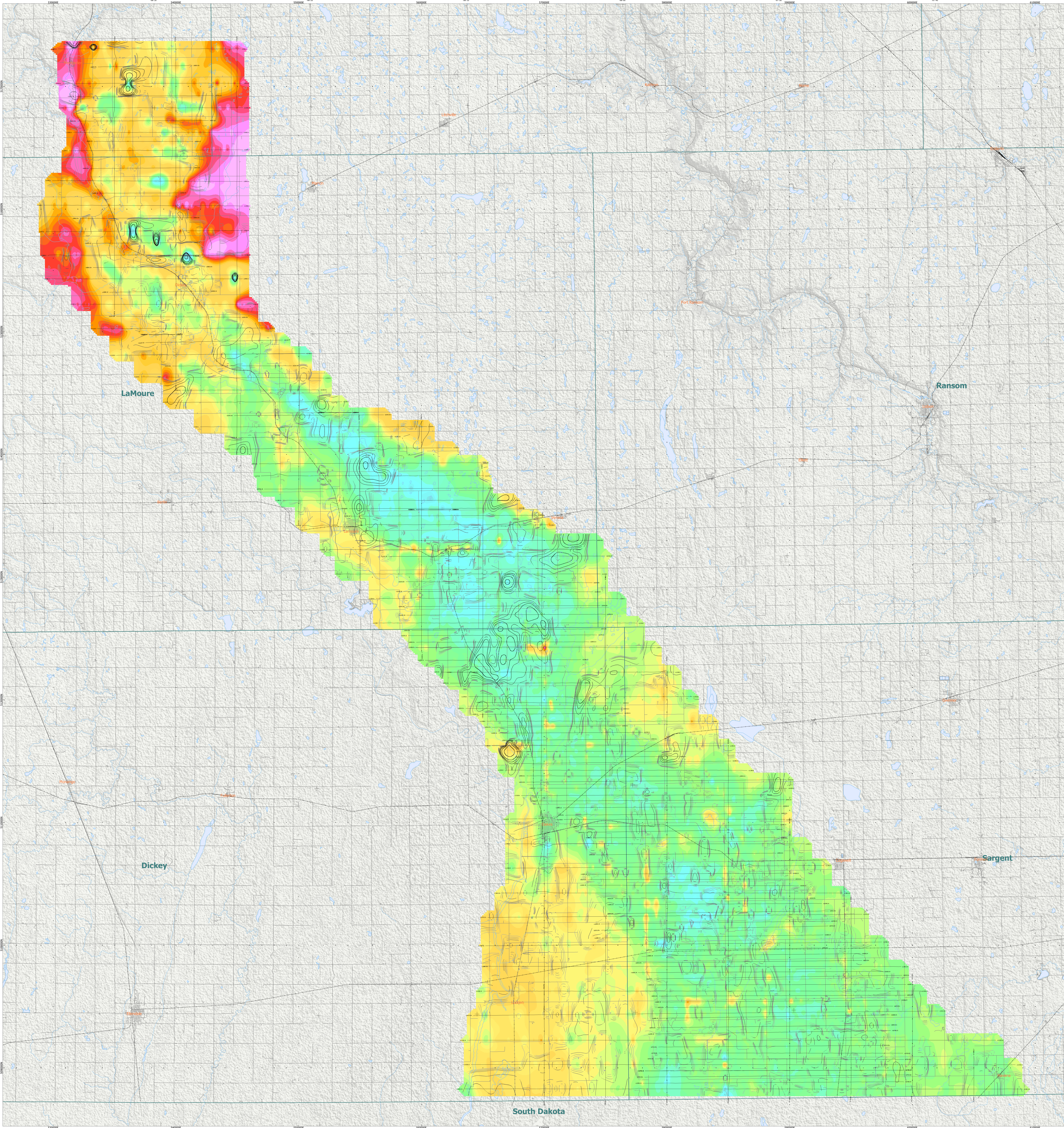
MAP PROJECTIONS:
 Datum: NAD83
 Projection: Universal Transverse Mercator
 Central Meridian: 99° 00' 00" W
 Central Scale Factor: 0.9996
 False Easting/Offset: 500,000.00 m
 Major Axis: 6378137
 Inverse Flattening: 298.2572



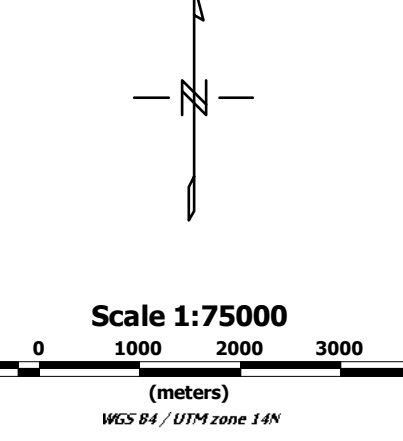


SURVEY OPERATIONS:
 Survey Date: 2019
 Survey Date: September, 2019
 Aircraft: Airspeeder 6375S B3
 Survey Line Spacing: 500, 100, 2000 metres
 Survey Line Direction: N 90° E / N 270° E
 Tilt Line Operator: 9370 RPM
 Tilt Line Direction: N 0° E / N 180° E
 Average Aircraft Terrain Clearance: 40 metres
 DTI Transmitter Loop: Toward an average terrain clearance of 20 metres below the helicopter
 Average Aircraft Terrain Clearance: 20 metres below the helicopter

INSTRUMENTS:
 Geometrics: Triac Ocean Electromagnetic System (OTIS)
 Geometrics: 8251 - Geometry
 2 Coil Diameter: 1.2m
 Transmitter: Loop Diameter: 1.71 Metres
 Dipole Moment: 14,218 A.m
 Transmitter: 1000 Watt Transceiver, Power: 100W, 7.1 mHz, Base Frequency: 20 Hz
 Geometrics: High Sensitivity Custom Magnetometer
 High Resolution: 0.02 nT at 10 m separation
 MAP PROJECT: 125A
 System: NAD83
 Projection: Universal Transverse Mercator
 Central Meridian: 97°W (Zone 14)
 Central Scale Factor: 0.9996
 False Easting/Northing: 500,000/0m
 Major Axis: 6378137
 Inverse Flattening: 298.25722



TOPOGRAPHIC LEGEND:
 Roads
 Railroads
 Streams / Rivers
 Contours
 Lakes / Ponds



The geophysical data have been derived from North Dakota GIS. No Data From: (http://ndgis.gov)
 ND State Water Commission
 Spiritwood-South Project
 Spiritwood, North Dakota

North Dakota State Water Commission
 Spiritwood-South Project
 Spiritwood, North Dakota

Geotech VTEM System
 dB/dt Z Calculated Time Constant (Tau) with
 Calculated Vertical Derivative contours

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 June 2019

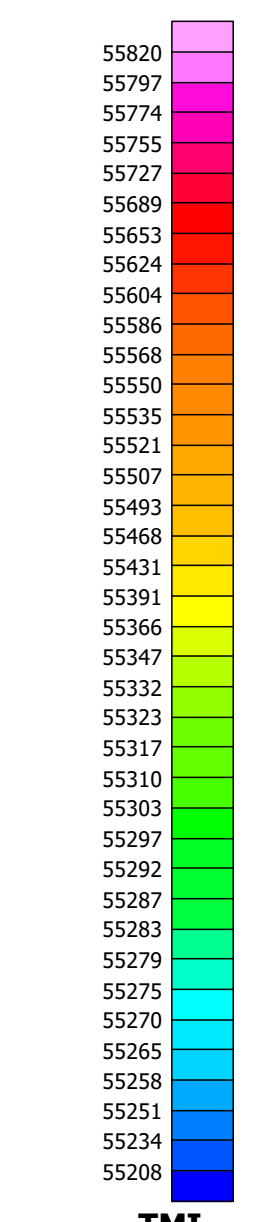
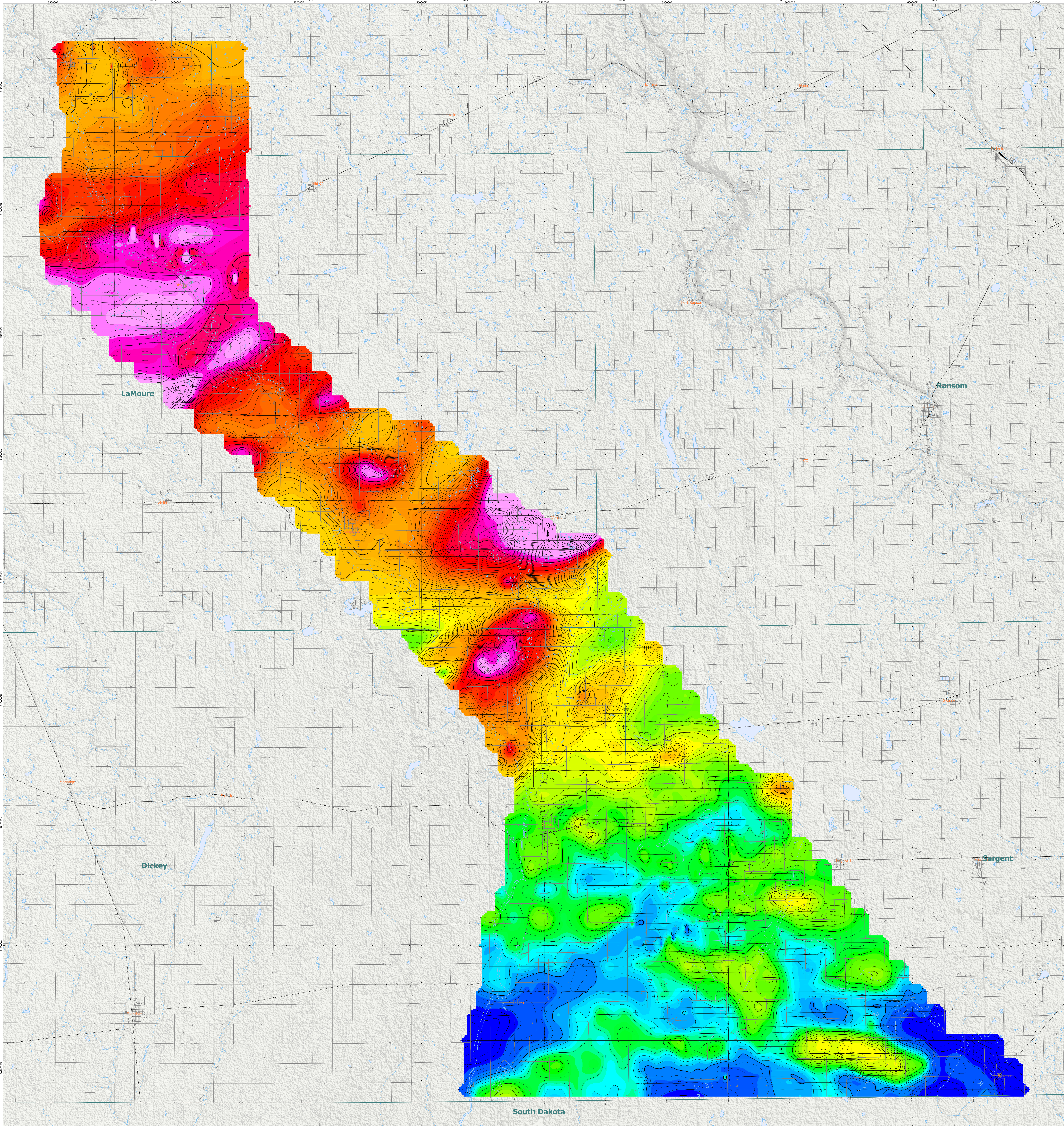


SURVEY OPERATIONS:
Survey Date: 2019
Survey Date: September, Nevada
Aircraft: Aerosonde A350B
Survey Line Spacing: 100,000,000 meters
Survey Line Direction: N 90° E / N 270° E
Tie Line Spacing: 1000 meters
Tie Line Direction: N 0° E / N 180° E
Average Aircraft Terrain Clearance: 60 meters
DTI Transmitter Loop: Towed at an average terrain clearance of 20 meters below the helicopter
Magnetometer Sensor: Towed at an average terrain clearance of 20 meters below the helicopter

SOFTWARE:
Data Processing: Time Domain Electromagnetic System (TDEM)

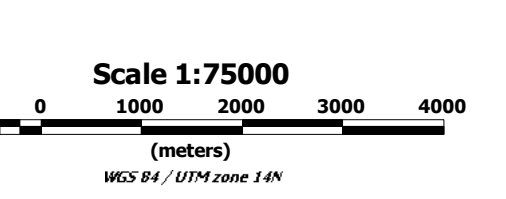
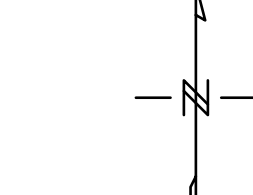
CONTROLS:
Control Point: 120
2-Cell Dimensions: 1.2m
Transmitter Coil: Diameter 12.1 Meters
Coil Current: 145,000 A
Transmitter: Mast Top / Transmitter Support Height: 7.1 m, Base Frequency: 30 Hz
Geometric High Sensitivity Control Program: Sensor
High Sensitivity: 0.02 nT at 10 ampere-turns
MAG PROTECT 170A
Sensor: RESOLVE

PROJECTION: Universal Transverse Mercator
Central Meridian: 99°W (Zone 14N)
Central Scale Factor: 0.9996
False Easting/Heighting: 500,000/0m
Major Axis: 6378137
Inverse Flattening: 298.2572



THE CONTOUR INTERVALS:
10 nT
50 nT
100 nT

TOPOGRAPHIC LEGEND:
Roads
Railroads
Streams / Rivers
Canals
Lakes / Ponds



The topographic data base was derived from North Dakota GIS Web Data Portal (<https://gis.nd.gov/>)
All other data were derived from the following sources:
Data were derived from the following sources:
Data were derived from the following sources:

North Dakota State Water Commission
Spiritwood-South Project
Spiritwood, North Dakota
Geotech VTEM System
Total Magnetic Intensity (TMI)

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www.geotech.ca
June 2019