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These data accompany:
Preliminary Map P.3775, *Precambrian geology, Pecors–Whiskey Area*.

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Miscellaneous Release—Data 305

Geological, Geochemical and Geophysical Data from the Elliot Lake Area, Southern and Superior Provinces, Ontario

by R.M. Easton

This publication can be downloaded from
http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD305

This release contains field photographs, whole-rock chemistry, isotope geochemistry, assay, geochronology, magnetic susceptibility and scintillometer data collected as part of the Pecors–Whiskey mapping project (Project Unit 09-004) and the East Bull Lake–Agnew intrusions compilation project (Project Unit 07-002), which were collected between June 2008 and December 2012. This release consists of 395 photographs (as *.jpg* files), 10 Microsoft® Excel® 2003 (*.xls*) workbooks and 16 documents (portable document format (*.pdf*) files). These data augment Preliminary Map P.3775, *Precambrian Geology, Pecors–Whiskey Area*; the marginal notes and the geological legend from the map are also provided.

Data are organized into 5 folders:

1. Geology
2. Geochemistry and Geochronology
3. Geophysics
4. Photographs
5. Presentations

1. Geology. This folder contains 4 portable document format (*.pdf*) files.

SFW 6240-10 2009.pdf is the *Summary of Field Work* article (Easton 2009a) published in 2009 in Ontario Geological Survey Open File Report 6240 highlighting the results of the first year of this project.

SFW 6260-08 2010.pdf is the *Summary of Field Work* article (Easton 2010) published in 2010 in Ontario Geological Survey Open File Report 6260.

P3775 Legend.pdf is the legend for Ontario Geological Survey Preliminary Map P.3775, *Precambrian Geology, Pecors–Whiskey Area*. Material in the geochemical files and the photograph captions file are cross-referenced to map codes in the legend.

P3775 Marginal Notes.pdf provides additional information on the study area using a version of the marginal notes, with 5 figures, from Preliminary Map P.3775.

2. Geochemistry and Geochronology. This folder contains 8 Microsoft® Excel® (*.xls*) files and 3 portable document format (*.pdf)* files.

MRD 305 Chemistry and Assay.xls consists of 5 worksheets.

"Whole-rock" worksheet contains whole-rock geochemical data for 190 samples, including analytical duplicates, collected between 2009 and 2012 as part of this study. All analyses were conducted at the Geoscience Laboratories (Geo Labs), Ontario Geological Survey, Sudbury. Sample location information is given in Universal Transverse Mercator (UTM) co-ordinates, Zone 17, North American Datum 1983 (NAD83).

"Assay" worksheet contains assay data for 15 samples collected from the study area by the author between 2009 and 2011. All analyses were conducted at the Geo Labs, Ontario Geological Survey, Sudbury. Sample location information is given in UTM co-ordinates, Zone 17, NAD83.

"Assay U" worksheet contains assay data for 2 radioactive samples collected from the Main Conglomerate Bed of the Matinenda Formation that were analyzed by instrumental neutron activation analysis (INAA) at Activation Laboratories (Actlabs) in Ancaster, Ontario. These samples were not analyzed at Geo Labs due to their radioactive content. Sample location information is given in UTM co-ordinates, Zone 17, NAD83.

"Matinenda lit" worksheet contains whole-rock geochemical data from the Matinenda Formation from the literature, mainly *from* Fralick, Miall and Abdel-Rahman (1986).

"LGC data" worksheet contains whole-rock geochemical data from the PETROCH database for the study area, mainly *from* Jensen (1994). Location information is given in UTM co-ordinates, Zone 17, in NAD27 and/or NAD83.

Additional geochemical data for Archean rocks from the Pecors–Whiskey area can be found in Easton and Sykora (2007).

MRD 305 Nd-Sm Data.xls consists of 3 worksheets related to 10 samples submitted for Nd/Sm isotopic analysis at the Isotope Geochemistry and Geochronology Research Centre at Carleton University, Ottawa.

"Nd-Sm" worksheet contains the calculated Nd-Sm values for the samples.

"Sm-Nd Data" worksheet contains all the data for the samples.

"2 sigma errors" worksheet calculates the 2-sigma (95% confidence) errors for the samples.

MRD 305 Map P3775 geochronology.xls contains details on the geochronology points displayed on Preliminary Map P.3775, *Precambrian Geology, Pecors–Whiskey* Area (Easton 2013).

MRD 305 Map P3596 geochronology.xls contains details on the geochronology points displayed on Preliminary Map P.3596, *Geological Compilation, East Bull Lake and Agnew Intrusions* (Easton et al. 2011).

MRD 305 Sample 09RME-0129 U-Pb Table.xls contains 3 worksheets for U/Pb laser ablation inductively coupled mass spectrometric (LA-ICP–MS) data for detrital zircon sample 09RME-0129 from the Stinson Member of the Matinenda Formation.

"U-Pb data" contains the analytical data.

"Prob Plot" contains probability density plots of the data.

"Concordia Plot" is a Concordia plot of the data.

MRD 305 Sample 09RME-0342 U-Pb Table.xls contains 3 worksheets for U/Pb (LA-ICP–MS) data for detrital zircon sample 09RME-0342 from the Ryan Member of the Matinenda Formation.

"U-Pb data" contains the analytical data.

"Prob Plot" contains probability density plots of the data.

"Concordia Plot" is a Concordia plot of the data.

MRD 305 Sample 09RME-0343 U-Pb Table.xls contains 3 worksheets for U/Pb (LA-ICP–MS) data for detrital zircon sample 09RME-0343 from the Ryan Member of the Matinenda Formation.

"U-Pb data" contains the analytical data.

"Prob Plot" contains probability density plots of the data.

"Concordia Plot" is a Concordia plot of the data.

MRD 305 Sample 09RME-0344 U-Pb Table.xls contains 3 worksheets for U/Pb (LA-ICP–MS) data for detrital zircon sample 09RME-0344 from the Ryan Member of the Matinenda Formation.

"U-Pb data" contains the analytical data.

"Prob Plot" contains probability density plots of the data.

"Concordia Plot" is a Concordia plot of the data.

MRD 305 LA-ICP-MS Geochronology Report.pdf summarizes the results of geochronological analyses of 4 detrital zircon samples from the Matinenda Formation. In addition, it also reports on 3 samples that were submitted for analysis, but which yielded no material suitable for geochronologic analysis: sample 09RME-0081 collected from an Archean volcaniclastic sandstone collected from Highway 108; sample 09RME-0285 collected from a lamprophyre dike cutting the McKim Formation; and sample 12RME-0373 collected from an east-trending dike cutting a Nipissing gabbro on Highway 639.

The raw data summarized in this report are provided in tables: *MRD 305 09RME-0129 U-Pb Table.xls*, *MRD 305 09RME-0342 U-Pb Table.xls*, *MRD 305 09RME-0343 U-Pb Table.xls* and *MRD 305 09RME-0344 U-Pb Table.xls*.

MRD 305 TIMS concordia sample 09RME-0202.pdf is a Concordia plot for geochronology sample 09RME-0202, a felsic volcanic collected from the Whiskey Lake greenstone belt analyzed by U/Pb thermal ionization mass spectrometry (TIMS) at the Jack Satterly Geochronology Laboratory at the University of Toronto. This age was reported in Easton (2010).

MRD 305 TIMS concordia sample 10RME-1519.pdf is a Concordia plot for geochronology sample 10RME-1519, a high uranium–thorium granite analyzed by U/Pb thermal ionization mass spectrometry (TIMS) at the Jack Satterly Geochronology Laboratory at the University of Toronto. This age has not been reported previously; however, Nd/Sm isotopic analysis on this sample is provided in *MRD 305 Nd-Sm Data.xls*.

3. Geophysics. This folder contains 2 Microsoft® Excel® (*.xls*) files.

MRD 305 Magnetic Susceptibility Data.xls contains 2 worksheets.

"Mag-Sus Data" worksheet provides magnetic susceptibility data from the study area collected between 2008 and 2011 (these data were also published by Muir 2013). Measurements were collected using an Exploranium® KT-9 magnetic susceptibility meter. Magnetic susceptibility is defined as the degree to which a substance can be magnetized, and in this case, is expressed as the ratio of the intensity of magnetization (k) to the ratio of the Earth's magnetic field to magnetic field induced by the susceptibility meter. The readings (k) are expressed as 10^{-3} times the SI unit for susceptibility and are dimensionless. The minimum value that can be recorded by the meter is 0.01×10^{-3} SI units; the largest value is 999×10^{-3} SI units. Sample location information is given in UTM co-ordinates, Zone 17, NAD83.

"Pick Lists, Notes" worksheet provides additional information about the pick-lists for fields ("Geological Province", "UTM Zone", "Rock Type", "Dike Swarms" and "Metamorphic Grade") used in the other worksheets.

MRD 305 Scintillometer Data.xls contains 6 worksheets.

"Pecors-Whiskey" worksheet contains scintillometer data from the study area collected between 2008 and 2012, as well as regional data used in previously published articles (Easton 2009a, 2010).

"Baldwin" worksheet contains scintillometer data from Baldwin Township, which were previously published by Easton (2007).

"Porter" worksheet contains scintillometer data from Porter and Vernon townships, which were previously published by Easton (2006).

"Sudbury" worksheet includes scintillometer data from Proterozoic rocks from the Sudbury area.

"Calibrations" worksheet includes data related to calibrating the various scintillometers currently used by the Ontario Geological Survey.

"Pick Lists, Notes" worksheet provides additional information about the pick-lists for fields ("Geological Province", "UTM Zone", "Rock Type", "Dike Swarms", "Metamorphic Grade") used in the workbook.

Unless otherwise indicated, all data were recorded using an Exploranium® GR-130 MiniSpec gamma-ray spectrometer, serial number 4885, calibrated on February 22, 2006, using an NaI crystal and software version 501GEO. The instrument was stabilized daily, and data were recorded using the assay mode with a 5-minute count time. Quoted accuracy is 0.1% K, 0.4 ppm U, and 0.7 ppm Th for a sample with 2% K, 2 ppm U and 8 ppm Th. Sample location information is given in UTM co-ordinates, Zone 17, NAD83. Easton (2009b) provides precision and reproducibility data for the instrument.

4. Photographs. This folder contains 395 field photographs (as *.jpg* files) taken between 2008 and 2011 as part of the mapping project and 1 portable document format *(.pdf*) file.

MRD 305 Photo Captions.pdf provides the photo description and location information. Photo file names for the *.jpg* files are based on station location, e.g., 09RME-0028-5 is photograph number 5, from station RME-0028 in 2009. Station location information is given in UTM co-ordinates, Zone 17, NAD83.

5. Presentations. This folder contains 8 portable document format *(.pdf*) files for 1 poster and 4 oral presentations on the Pecors–Whiskey mapping project; also included are 3 abstracts related to the oral presentations.

NEOMMS 2010 Easton poster.pdf : A poster presented at the Ontario Exploration and Geoscience Symposium in Sudbury in December 2009 and the Northeast Ontario Mines and Minerals Symposium in April 2010.

NEOMMS 2010 Easton talk.pdf and *NEOMMS 2010 Easton abstract.pdf*: The first talk (with accompanying abstract) was presented at the Northeastern Ontario Mines and Minerals Symposium in April 2010. This first talk summarizes the preliminary results of the mapping program.

ILSG May 2011 Easton and Heaman talk.pdf and *ILSG May 2011 Easton and Heaman abstract.pdf* : The second talk (with accompanying abstract) was presented at the 57th Annual Institute on Lake Superior Geology meeting in Ashland, Wisconsin in May 2011. It highlights the results of detrital zircon work conducted on the Matinenda Formation.
GSA Oct 2011 Easton and Heaman talk.pdf is a shortened version of this talk, which was presented at the Geological Society of America Annual Meeting in Minneapolis, Minnesota, in October 2011.

ILSG May 2012 Easton Matinenda talk.pdf and *ILSG May 2012 Easton Matinenda abstract.pdf*: The third talk (with accompanying abstract) was presented at the 58th Annual Institute on Lake Superior Geology meeting in Thunder Bay, Ontario, in May 2012. It highlights the results of Nd/Sm isotopic work conducted on the Matinenda Formation, which is consistent with the detrital zircon results presented in *ILSG May 2011 Easton and Heaman talk.pdf*.

Associated Publications. Four (4) associated publications are also available.

Easton, R.M. 2009. Compilation mapping, Pecors–Whiskey Lake area, Superior and Southern provinces; *in* Summary of Field Work and Other Activities, 2009, Ontario Geological Survey, Open File Report 6240, p.10-1 to 10-21.
www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=OFR6240

——— 2010. Compilation mapping, Pecors–Whiskey Lake area, Superior and Southern provinces; *in* Summary of Field Work and Other Activities, 2010, Ontario Geological Survey, Open File Report 6260, p.8-1 to 8-12.
www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=OFR6260

——— 2013. Precambrian geology, Pecors–Whiskey area; Ontario Geological Survey, Preliminary Map P.3775, scale 1:20 000.
www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=P3775

Easton, R.M., Josey, S.D., Murphy, E.I. and James, R.S. 2011. Geological compilation, East Bull Lake and Agnew intrusions; Ontario Geological Survey, Preliminary Map P.3596, scale 1:50 000.
http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=P3596

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Easton, R.M. 2006. Geological, geochemical and geophysical data from the Porter and Vernon townships area, Southern Province, Ontario; Ontario Geological Survey, Miscellaneous Release—Data 197.

——— 2007. Geological, geochemical and geophysical data from the Baldwin Township mapping project, Southern Province, Ontario; Ontario Geological Survey, Miscellaneous Release—Data 212.

——— 2009a. Compilation mapping, Pecors–Whiskey Lake area, Superior and Southern provinces; *in* Summary of Field Work and Other Activities, 2009, Ontario Geological Survey, Open File Report 6240, p.10-1 to 10-21.

——— 2009b. Characterization of rock units in the Grenville and Southern provinces by *in-situ* geophysical measurements and geochemistry; *in* Summary of Field Work and Other Activities, 2009, Ontario Geological Survey, Open File Report 6240, p.9-1 to 9-4.

——— 2010. Compilation mapping, Pecors–Whiskey Lake area, Superior and Southern provinces; *in* Summary of Field Work and Other Activities, 2010, Ontario Geological Survey, Open File Report 6260, p.8-1 to 8-12.

Easton, R.M., Josey, S.D., Murphy, E.I. and James, R.S. 2011. Geological compilation, East Bull Lake and Agnew intrusions; Ontario Geological Survey, Preliminary Map P.3596, scale 1:50 000.

Easton, R.M. and Sykora, L.A., compilers. 2007. Geochemical data from the East Bull Lake and Agnew intrusions, and the Whiskey Lake and Ompa Lake greenstone belts, districts of Algoma and Sudbury; Ontario Geological Survey, Miscellaneous Release—Data 223.

Fralick, P.W., Miall, A.D. and Abdel-Rahman, A.-F.M. 1986. Ontario Geoscience Research Grant Program No. 136: Rock geochemistry as a placer exploration tool in the southeastern District of Algoma; Ontario Geological Survey, Open File Report 5576, 83p.

Jensen, L.S. 1994. Geology of the Whiskey Lake greenstone belt (west half), districts of Sault Ste. Marie and Sudbury; Ontario Geological Survey, Open File Report 5883, 101p.

Muir, T.L., compiler. 2013. Ontario Precambrian bedrock magnetic susceptibility geodatabase for 2001 to 2012; Ontario Geological Survey, Miscellaneous Release—Data 273 – Revised.