INL/EXT-16-40695

INL Seismic Monitoring Report: January 1, 2013 – December 31, 2013

S. J. Payne, B. M. Bockholt, J. M. Hodges, and R. G. Berg

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SUMMARY

During 2013, the Idaho National Laboratory (INL) recorded 14,011 independent triggers and 7,355 triggers were manmade blasts and distant, regional, and local earthquakes. Within the region, the INL Seismic Monitoring program located 2,085 earthquakes and 150 man-made blasts. Near and within the 161-km radius of INL, 38 of these earthquakes had small to moderate size magnitudes that ranged from 3.0 to 4.2. Residents near 19 of the M>3.0 earthquakes reported ground shaking affects of these earthquakes to the U.S. Geological Survey. Also, five new seismic stations with broadband seismometers and accelerometers were installed near INL facility areas. These new stations were installed to collect earthquake data that can be used in future INL probabilistic seismic hazard analyses to reduce uncertainties of ground motion models.

In 2013, 1,013 earthquakes were located within the 161-km radius of INL and three occurred within the eastern Snake River Plain (ESRP). The earthquakes included three swarms and a mainshock-aftershock sequence. The earthquakes were located northwest of the INL in the Basin and Range regions of Idaho and Montana and southeast of the ESRP in the Basin and Range region along the Idaho-Wyoming border. A swarm of >180 earthquakes occurred at Driggs, Idaho; the largest events had local magnitudes (M_L) of 2.8 and 3.1 and were felt by residents. A less intense swarm of 64 earthquakes was located west of Jackson, Wyoming along the Idaho-Wyoming border. The largest event was a M_W 3.8 that was felt by local residents. Southeast of Pocatello, Idaho an earthquake of M_L 4.2 was followed by 18 aftershocks that included a M_L 3.6. Both earthquakes were felt by residents near the epicenters.

Three earthquakes occurred within the ESRP and three other earthquakes were located at the northwest edge of the ESRP. The coda magnitude (M_c) 1.3 earthquake was located in the center of ESRP north of the Great Rift and at a depth of 45 km. To the west, an earthquake of M_c 0.7 was located at a depth of 37 km and at the northwestern end of the Great Rift. Four earthquakes, M_c 0.0, M_c 1.3, M_c 1.8, and M_c 1.1 were located north of the INL along the edge of the ESRP. The M_c 0.0 and 1.1 earthquakes were located just within the ESRP at depths less than 6 km.

ACKNOWLEDGEMENTS

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ACRONYMS

ANL	Argonne National Laboratory
ATR	Advanced Test Reactor
CFA	Central Facilities Area
COM	Craters of the Moon National Monument and Preserve
DAAS	Data Acquisition/Analysis System
DOE	U.S. Department of Energy
DSL	Digital Subscriber Line
EFS	Experimental Field Station
ESRP	Eastern Snake River Plain
GPS	Global Positioning System
ICPP	Idaho Chemical Processing Plant
IF	Idaho Falls
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IP	Internet Protocol
IRC	INL Research Center
LOFT	Loss of Fluid Test
LTA	Long Term Average
MFC	Materials and Fuels Complex
M_c	Coda Magnitude
M_L	Local Magnitude
M_s	Surface-wave Magnitude
M_W	Moment Magnitude
NEIC	National Earthquake Information Center
NRF	Naval Reactor Facility

OFS	Old Fire Station
PBF	Power Burst Facility
PBO	Plate Boundary Observatory
PDCC	Portable Data Collection Center
PSHA	Probabilistic Seismic Hazard Analysis
P-Wave	Compression Wave
REC	Research and Education Campus
RMS	Root Mean Square
RWMC	Radioactive and Waste Management Complex
SEED	Standard for the Exchange of Earthquake Data
SMA	Strong Motion Accelerograph
SMC	Special Manufacturing Complex
SSCs	Structures, Systems, and Components
STA	Short Term Average
S-Wave	Shear Wave
TAN	Test Area North
TG	Teledyne Geotech
TRA	Test Reactor Area
USGS	United States Geological Survey

INL Seismic Monitoring Report: January 1, 2013 to December 31, 2013

1. Introduction

The INL Seismic Monitoring Program provides the Idaho National Laboratory (INL) with earthquake data and staff expertise to support the requirements set forth by Presidential executive orders, U.S. Department of Energy (DOE) directives, orders and standards, and the Nuclear Regulatory Commission for seismic safety. Seismic monitoring is required by DOE Order 420.1C "Facility Safety" (DOE, 2012). The program supports safety of: Structures, Systems, and Components (SSCs); workers and the public; and operations for INL nuclear facilities and waste management activities. The program supports safety of operations through continuous monitoring of earthquake activity, the incorporation of earthquake data into INL probabilistic seismic hazard analyses (PSHAs), the development of INL seismic design criteria, and early warning of volcanic-related earthquakes as an indicator of potential volcanic activity near INL. For example, five new seismic stations were installed in 2013 at INL facility areas to record local earthquakes that can be used in future PSHAs to assess near surface site effects and other parameters that characterize ground motion models.

The INL Seismic Monitoring Program operates 32 permanent seismic stations for the purpose of determining the time, location, and size of earthquakes occurring in the vicinity of the INL. The seismic data are compiled to develop an historical database that defines the spatial distributions, earthquake magnitudes, and frequencies of earthquakes. The INL seismic network has stations that are located on the INL, within the eastern Snake River Plain (ESRP), and in the surrounding mountains or Basin and Range regions. INL seismic stations are located near sources of future earthquakes including Quaternary normal faults, volcanic rift zones, and the ESRP (Figure 1). Additionally, Global Positioning System (GPS) receivers are co-located at 16 seismic stations for the purpose of determining rates of crustal deformation. GPS velocity gradients are used to identify regions with higher crustal deformation rates (such as Yellowstone Caldera in Wyoming) relative to regions with lower deformation rates (e.g., Snake River Plain, Idaho). Regions with high deformation rates generally have higher rates of earthquakes.

The INL Seismic Monitoring Program also operates 30 sites that have strong motion accelerographs (SMAs) or three-component accelerometers for the purpose of recording strong ground motions from local moderate or major earthquakes. Ten SMAs are located in INL buildings to determine the response of these buildings to ground motions in the event of a large earthquake. Seven SMAs at "free-field" sites (not within buildings) located at INL facility areas are used to determine levels of ground shaking for either rock or soil conditions. Two other sites have SMAs and eleven sites have three-component accelerometers, all of which are co-located at INL seismic stations to record acceleration data and assess ground motions from small to large magnitude normal faulting earthquakes.

This report covers the earthquake activity from January 1, 2013 through December 31, 2013 and is a continuation of previous annual reports on earthquake activity in ESRP within and near the INL and adjacent Basin and Range regions. The INL has accumulated 41 years of earthquake data (1972-2013). This report discusses seismic station, SMA, and continuous GPS instrumentation used to record the earthquake data and how these data are analyzed. It also discusses earthquake activity that has occurred around the local region and within a 161-km (or 100-mile) radius of the INL from the center point of 43° 39.00' N, 112° 47.00' W (Figure 1).

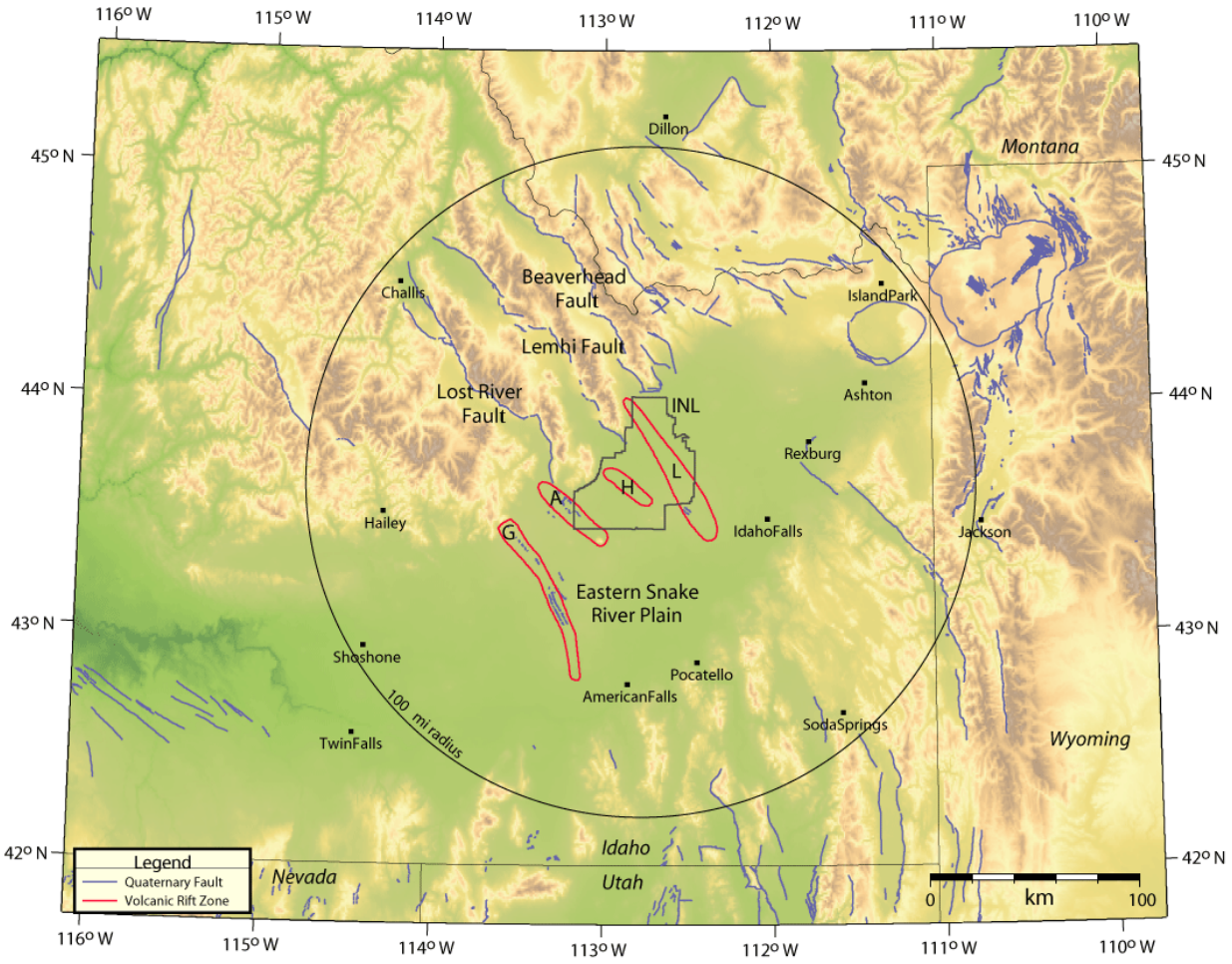

Figure 1. Map shows locations of the earthquake reporting area within a 161-km (or 100-mile) radius around the INL, Quaternary faults, and volcanic rift zones: G – Great Rift, A – Arco, H – Howe-East Butte, and L – Lava Ridge-Hell's Half Acre.

2. Instrumentation

The INL Seismic Monitoring program acquires earthquake data from a network of seismic stations and SMAs which is recorded on the program's Data Acquisition/Analysis System (DAAS). INL operates a seismic network of 32 stations and records data from nearby seismic stations operated by other agencies. The INL seismic network has had various configurations of seismic stations since 1972 and that history is discussed in Section A-1 (Appendix A). Section 2.1 covers the current configuration of seismic stations that operated in 2013 and the associated instrumentation including GPS receivers (Section 2.3). The INL also operates 30 sites with SMAs and three-component accelerometers. SMAs were first installed in the 1970's at INL and their facility locations have evolved over time based on the needs of facility operations as discussed in Section A-2 (Appendix A). Section 2.2 discusses the instrumentation at SMA sites and accelerometers co-located at seismic stations that operated in 2013. Earthquake data are transmitted from seismic stations and some SMA sites to the DAAS, which is located in Idaho Falls, Idaho (Section 2.4).

2.1 Seismic Station Network

During 2013, the INL Seismic Monitoring Program operated 32 permanent seismic stations and monitored up to 24 seismic stations from other nearby seismic networks (Figure 2). Five new seismic stations were installed in September of 2013 at sites on INL. These new seismic stations were installed to record local and regional earthquakes that can be used in future PSHAs to assess near surface site effects and other parameters that characterize site-specific ground motion models at INL facility areas (Payne et al., 2012a). Table 1 lists the name, location, date of installation, and instrumentation for all of the seismic stations owned and operated by the INL Seismic Monitoring Program. Table 2 lists the name, location, and operation dates of seismic stations owned by other agencies. The INL recorded seismic data from these other seismic stations to improve the quality of earthquake locations within the 161-km radius of INL.

For monitoring continuous earthquake data, an INL seismic station is composed of a seismometer, data logger, digital radio, and DC power sources. Seismic stations have one to three seismometers. Some stations have a single, vertically oriented short-period seismometer whereas other stations have a three-component broadband seismometer with a vertical and two orthogonal horizontal components. Stations with three sensors have a short-period vertical seismometer and two short period, orthogonally oriented horizontal seismometers (Table 1). INL seismic stations have seismometers installed in surface vaults that are on rock or soil deposits. Some stations have seismometers installed in rock at the base of 18-m or greater boreholes. Seismic signals from the seismometers are digitized using a data logger at the station. The instrumentation at the seismic stations is powered by batteries, solar panels, and at some locations, small wind generators. Since INL seismic stations are remotely located, digitized seismic signals are relayed by digital radios or internet Digital Subscriber Line (DSL) links to the DAAS computers located in Idaho Falls (Section A-3 in Appendix A). The DSL sites in Arco, Idaho, Howe, Idaho, and at Gray's Lake near Wayan, Idaho each have a computer that provides data to the data acquisition computer in Idaho Falls via the internet.

2.1.1 Instrumentation at Short Period Seismic Stations

Instrumentation for short-period INL seismic stations consists of one or two types of short period seismometers with a DAQSystems NetDAS digital data logger. Single-component short-period seismic stations have vertically oriented seismometers that are a Mark Products model L-4C, Teledyne Geotech (TG) model S-13, or TG model S-13 Jr. seismometer. Some short-period seismic stations have two Teledyne Geotech model S-13 horizontal seismometers located in surface vaults along with the vertically-oriented seismometer. All seismic stations located within the ESRP have their vertical short period seismometer located at the base of the 18-m or greater borehole to help dampen wind and cultural noise. Short period seismometers at stations outside of the ESRP are buried within 3 m of the ground surface.

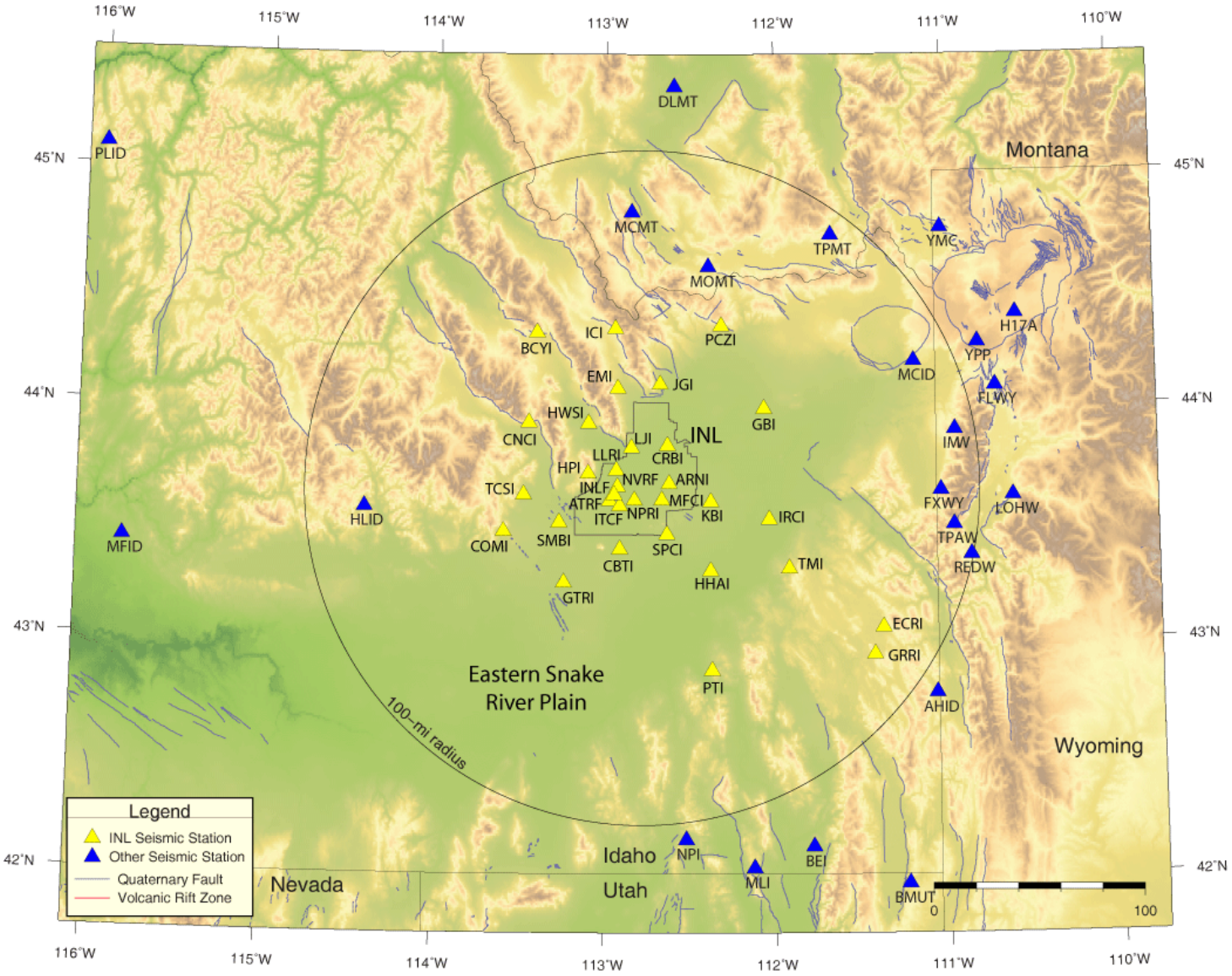

Figure 2. Map shows the locations of INL seismic stations and stations monitored by INL that are operated by other institutions. Stations BMO and BWO6 are not shown (see Table 2 for locations).

Table 1. Seismic stations operated by INL in 2013.

Code	Station Name	Types of Sensors	Latitude North (º)	Longitude West (º)	Elevation (m)	Date Installed (Month/Year)
ARNI	Argonne North, Idaho	Borehole Vertical Seismometer; GPS Receiver	43.6667	112.6235	1533	09/1990
ATRF	Advanced Test Reactor, Idaho	Three-component Broadband Seismometer; Three-component Accelerometer	43.5952	112.9724	1502	09/2013
BCYI	Bear Canyon, Idaho	Vertical Seismometer; Three-component Accelerometers; GPS Receiver	44.3108	113.4052	2194	05/1992
CBTI	Cedar Butte, Idaho	Borehole Vertical Seismometer	43.3875	112.9115	1734	07/1986
COMI	Craters of the Moon, Idaho	Three-component Seismometers; Strong-Motion Accelerograph	43.4618	113.5938	1890	03/1992
CNCI	Crows Nest Canyon, Idaho	Vertical (Short-period) Seismometer; Three-component Broadband Seismometer	43.9283	113.4522	1914	05/1992
CRBI	Circular Butte, Idaho	Borehole Vertical Seismometer; GPS Receiver	43.8303	112.6345	1520	11/1987
ECRI	Eagle Creek, Idaho	Vertical Seismometer	43.0535	111.3705	2086	08/1994
EMI	Eightmile Canyon, Idaho	Vertical Seismometer; GPS Receiver	44.0742	112.9262	1963	04/1992
GBI	Big Grassy Butte, Idaho	Borehole Vertical Seismometer; GPS Receiver	43.9875	112.0633	1541	10/1981
GRRI	Grays Range, Idaho	Vertical Seismometer; Three-component Accelerometer; GPS Receiver	42.9380	111.4217	2207	08/1994
GTRI	Great Rift, Idaho	Borehole Vertical Seismometer; GPS Receiver[1]	43.2440	113.2410	1522	05/1992
HHAI	Hell's Half Acre, Idaho	Borehole Vertical Seismometer	43.2950	112.3795	1371	06/1992

Table 1. Continued.

Code	Station Name	Types of Sensors	Latitude North (º)	Longitude West (º)	Elevation (m)	Date Installed (Month/Year)
HPI	Howe Peak, Idaho	Vertical Seismometer; GPS Receiver	43.7113	113.0983	2597	10/1972
HWFI	Howe Fault, Idaho	Three-component Seismometers; Three-component Accelerometer; GPS Receiver	43.9257	113.0973	1743	10/1999
ICI	Italian Canyon, Idaho	Vertical Seismometer; GPS Receiver	44.3293	112.9412	2463	04/1992
INLF	INEL-1 Drill Site, Idaho	Three-component Broadband Seismometer; Three-component Accelerometer	43.6206	112.9466	1476	08/2013
IRCI	INL Research Center, Idaho	Low-gain Three-component Seismometers	43.5153	112.0333	1442	11/1988
ITCF	Idaho Nuclear and Engineering Technology Complex, Idaho	Three-component Broadband Seismometer; Three-component Accelerometer	43.5716	112. 9148	1490	09/2013
JGI	Juniper Gulch, Idaho	Three-component Seismometer	44.0927	112.6768	1657	11/1979
KBI	Kettle Butte, Idaho	Borehole Vertical Seismometer	43.5907	112.3767	1678	05/1992
LJI	Lemhi Junction, Idaho	Vertical Seismometer	43.8208	112.8440	1643	05/1990
LLRI	Little Lost River, Idaho	Three-component Seismometer; GPS Receiver	43.7230	112.9330	1476	05/1990
MFCF	Materials and Fuels Complex, Idaho	Three-component Broadband Seismometer; Three-component Accelerometer	43.5966	112.6653	1583	09/2013
NPRI	New Production Reactor, Idaho	Three-component Short-period and Broadband Seismometers; Three-component Accelerometer; GPS Receiver	43.5975	112.8272	1495	09/1990
NVRF	Naval Reactors Facility, Idaho	Three-component Broadband Seismometer; Three-component Accelerometer	43.6541	112.9279	1489	09/2013

Table 1. Continued.

Code	Station Name	Types of Sensors	Latitude North (º)	Longitude West (º)	Elevation (m)	Date Installed (Month/Year)
PTI	Pocatello, Idaho	Vertical Seismometer; Three-component Accelerometer; GPS Receiver	42.8703	112.3702	1670	10/1984
PZCI	Patelzick Creek, Idaho	Vertical Seismometer; GPS Receiver	44.3410	112.3172	2073	12/1991
SMBI	Sixmile Butte, Idaho	Borehole Vertical Seismometer	43.5022	113.2677	1716	05/1992
SPCI	Split Crater, Idaho	Three-component Seismometer; Three-component Accelerometer	43.4500	112.6370	1553	06/1992
TCSI	Telchick Spring, Idaho	Vertical Seismometer; GPS Receiver	43.6193	113.4783	1731	05/1992
TMI	Taylor Mountain, Idaho	Three-component Seismometer; GPS Receiver	43.3057	111.9182	2179	10/1972
1. - GPS instrumentation is owned by the Plate Boundary Observatory under the EarthScope Science Program.						

Table 2. Agencies and stations from which INL receives data shares.

Code	Station Name	Latitude North (º)	Longitude West (º)	Elevation (m)
National Earthquake Information Center, Golden, Colorado				
AHID	Auburn, Idaho	42.7653	111.1003	1960
BMO	Baker City, Oregon	44.8525	117.3060	1154
BW06	Boulder, Wyoming	42.7667	109.5582	2224
DLMT	Dillon, MT	45.3625	112.5964	1569
FLWY	Flagg Ranch, WY	44.0827	110.6993	2078
FXWY	Fox Creek, WY	43.6381	111.0268	2254
HLID	Hailey, Idaho	43.5625	114.4063	1498
IMW	Indian Meadows, Wyoming	43.8970	110.9392	2646
LOHW	Long Hollow, Wyoming	43.6123	110.6037	2121
MFID	Camas Ranch, Mayfield, ID	43.4151	115.8278	1302
PLID	Pearl Lake, ID	45.0877	116.0002	2164
REDW	Red Top Meadow, Wyoming	43.3642	110.8518	2322
TPAW	Teton Pass, Wyoming	43.4902	110.9507	2512
University of Utah, Salt Lake City, Utah				
BEI	Bear River Range, Idaho	42.1167	111.7823	1859
BMUT	Black Mountain, Utah	41.9582	111.2342	2243
H17A	Transportable Array Site	44.3951	110.5762	2400
MCID	Moose Creek, Idaho	44.1903	111.1827	2149
MLI	Malad Range, Idaho	42.0268	112.1255	1896
NPI	North Pocatello, Idaho	42.1473	112.5183	1640
YMC	Maple Creek, Wyoming	44.7593	111.0062	2073
YPP	Pitchstone Plateau, Wyoming	44.2710	110.8045	2707
Montana Bureau of Mines and Geology, Butte, Montana				
MCMT	McKenzie Canyon, Montana	44.8277	112.8488	2323
MOMT	Monida, Montana	44.5933	112.3943	2220
TPMT	Teepee Creek, Montana	44.7298	111.6657	2518

The DAQSystems NetDAS data logger has an embedded LINUX computer with a GPS clock and Symmetric Research 24-bit digitizer. The NetDAS data logger has from 22 to 24 bits of data resolution over ± 20 volts for a four-channel unit or ± 10 volts for an eight-channel unit. Four-channel units (NetDAS-CH4) are located at seismic stations that have one or three seismometers; eight channel units (NetDAS-CH8) are at seismic stations that have one or three seismometers and three-component accelerometers. The NetDAS digitizes data at the seismic station and time stamps the data with accuracies of ± 0.001 seconds. The seismic signals are transmitted by FreeWave Technologies DGR115 900 MHz Wireless Modem radios. These radios use standard IP (Internet Protocol) networking features that are included in their embedded LINUX operating system. The short period seismic stations transmit their signals to other stations that serve as relay stations. The relay sites transmit multiple seismic signals to the DSL sites at Arco, Howe, and Gray's Lake (Figure A-1 in Appendix A).

2.1.2 Instrumentation at Broadband Seismic Stations

Five new seismic stations installed in 2013 and two existing seismic stations have three-component broadband seismometers connected to digital data loggers. Six stations (ATRF, ITCF, INLF, MFCF, NPRI, and NVRF) each have the Nanometrics Trillium T120-PA broadband seismometer and one station (CNCI) has the Guralp CMG-3T three-component broadband seismometer. Each of the three-component broadband seismometers is connected to the Kinemetrics Quanterra Q330 digital data logger. The Quanterra Q330 has six or three channels, a 24-bit digitizer, GPS receiver, and low-power consumption. A Kinementrics Baler PB44 is connected to the Quanterra and is used for data storage at the seismic station and data transmitting. The broadband seismometers and data loggers are housed in a vault-like enclosure which is covered by native soils to dampen wind noise and minimize temperature fluctuations. Seismic stations, CNCI, ITCF, INLF, MFCF, NPRI, and NVRF, have their vaults on rock, and the vault at the ATRF broadband station is on shallow soil (possibly less than <20 ft). FreeWave Technologies DGR115 900 MHz Wireless Modem radios transmit seismic signals from seismic stations CNCI and NPRI. Sierra Wireless, AirLink series cell modems transmit seismic signals from ATRF, ITCF, INLF, MFCF, and NVRF. The broadband seismic signals are transmitted to relay stations or directly to the DSL sites in Arco or Howe (Figure A-1 in Appendix A).

2.2 Strong Motion Accelerographs

During 2013, the INL Seismic Monitoring Program operated 30 sites with SMAs and three-component accelerometers co-located at INL seismic stations. Table 3 lists the location, code, and date of installation of the accelerometer sites. In September of 2013, five new free-field accelerometer sites were installed at INL facility areas. Three-component accelerometers were co-located in the vaults housing the broadband seismic stations, ATRF, ITCF, INLF, MFCF, and NVRF. Along with the five new free-field sites, 19 SMAs operated in INL buildings or at free-field sites on INL (Figure 3). Seven seismic stations housed SMAs (NPRI and COMI) or three-component accelerometers (BCYI, GRRI, HWSI, PTI, and SPCI) (Tables 1 and 3). During 2013, earthquake data were not recorded on any SMAs located within INL facilities.

Instrumentation for the 30 accelerometer sites includes one of two types of data loggers with the Applied MEMs Inc. model SF2500A or SF3000L tri-axial accelerometer. Three-component MEMs accelerometers co-located at a short period station seismic are connected to the DAQSystems NetDAS digital data logger. MEMs accelerometers co-located with a broadband station are connected to the Quanterra Q330 digital data logger. The accelerometer sites and some SMAs at free-field sites are transmitted by FreeWave Technologies DGR115 900 MHz Wireless Modem radios or Sierra Wireless, AirLink series cell modems. The acceleration data are transmitted to relay stations or directly to the DSL sites at Arco, Howe, or Gray's Lake which are then transmitted via the internet to the data acquisition computer in Idaho Falls (Figure A-1 in Appendix A).

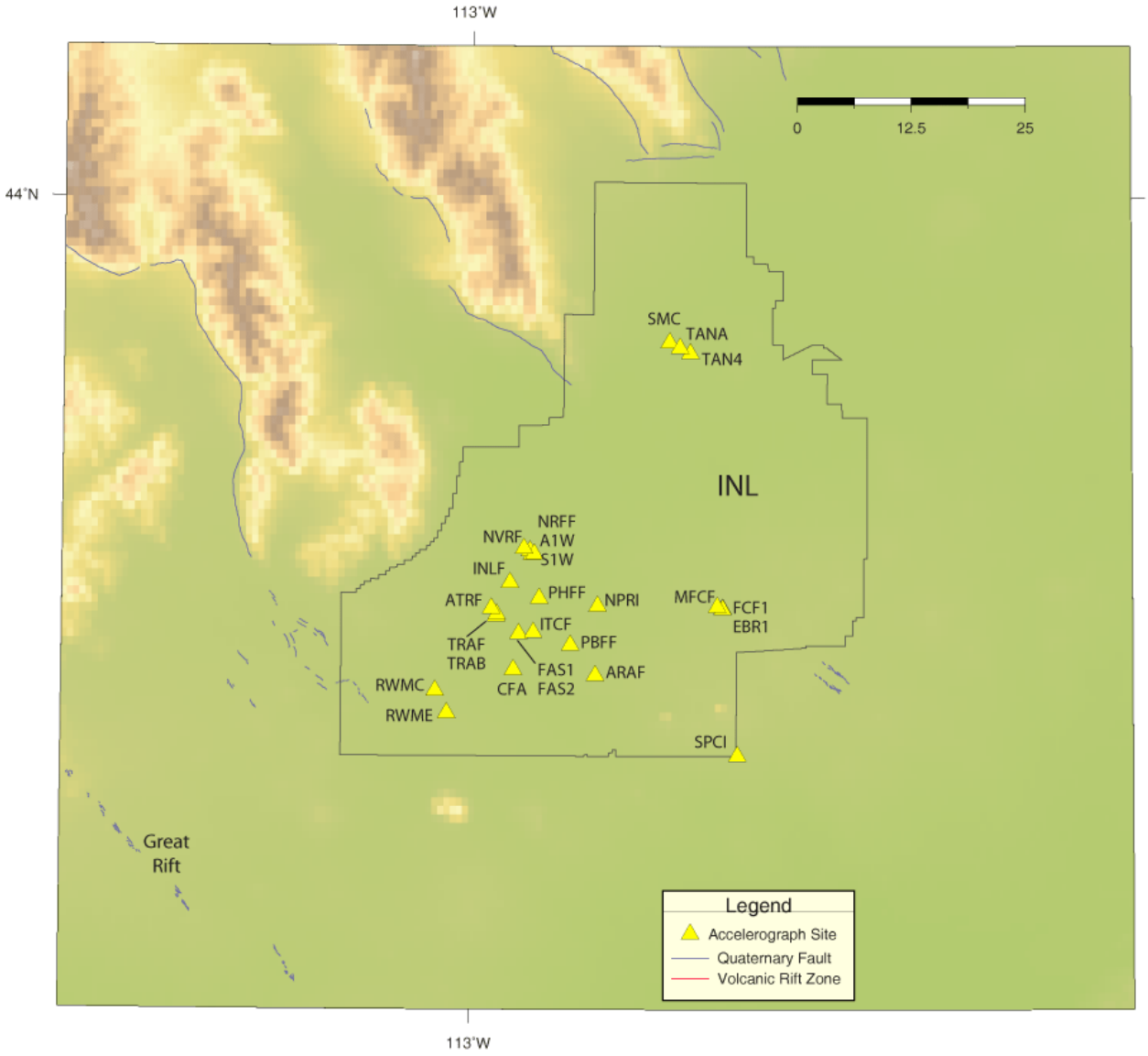

Figure 3. Map shows locations of strong motion accelerograph (SMA) and accelerometer sites at INL.

Table 3. Strong-motion accelerographs and seismic stations with accelerometers operating in 2013.

INL Location or Seismic Station	Building Number	Location	Site Code	Year Installed
ATR	TRA-602	Free-field	TRAF	2003
ATR	TRA-670	Basement	TRAB	1996
ATRF	NA	Free-field	ATRF	2013
BCYI	NA	Free-field	BCYI	2002
CFA	CFA-1607	Free-field	CFA	1996
COMI	NA	Free-field	COMF	2008
EFS	EFS	Free-field	PHFF	2010
GRRI	NA	Free-field	GRRI	2002
HWSI	NA	Free-field	HWSI	2002
INEL-1	NA	Free-field	INLF	2013
INTEC	ICPP-666	Second Floor	FAS1	1984
INTEC	ICPP-666	Second Basement	FAS2	1984
INTEC	NA	Free-field	ITCF	2013
MFC	ANL-767	Basement	EBR1	1973
MFC	ANL-768	Basement	FCF1	1973
MFC	NA	Free-field	MFCF	2013
NRF	NRF-768	Free-field	NRFF	1996
NRF	NRF-A1W	First Floor	A1W	1983
NRF	NRF-S1W	First Floor	S1W	1983
NRF	NA	Free-field	NVRF	2013
PBF	NA	Free-field	PBFF	2005
PBF	NA	Free-field	ARAF	2005
PTI	NA	Free-field	PTI	2003
RWMC	NA	Free-field	RWMC	1997
RWMC	NA	Free-field	RWME	2005
REC	IF-602	First Floor	IRC	1983
TAN	NA	Free-field	TANA	2007
TAN	TAN-601	First Floor	TAN4	2008
TAN	SMC	First Floor	SMC	2007
SPCI	NA	Free-field	SPCI	2003

NA – Not within a building.
Acronyms: ANL – Argonne National Laboratory; ATR – Advanced Test Reactor; CFA – Central Facilities Area; COMI – Craters of the Moon seismic station (Table 1); ICPP – Idaho Chemical Processing Plant; EFS – Experimental Field Station; IF – Idaho Falls; INTEC – Idaho Nuclear Technology and Engineering Center; MFC – Materials and Fuels Complex; NRF – Naval Reactors Facility; PBF – Power Burst Facility; RWMC – Radioactive and Waste Management Complex; SMC – Special Manufacturing Complex; TAN – Test Area North; TRA – Test Reactor Area.

The SMAs are the DAQSystems NetDAS digital data logger that has an Applied MEMS SiFlex model SF2500A or SF3000L tri-axial accelerometer mounted within the unit. Each MEMs accelerometer component of an SMA is set to trigger and record to a compact flash when ground motions exceed ~0.005 g except for the SMA in the basement of ATR (TRA2) which is set to less than 0.005 g. The SMA record lengths are set for 30 s of pre- and post-trigger thresholds. The tri-axial accelerometers have two horizontal components oriented in an orthogonal manner, generally aligned in the north-south and east-west directions. SMAs housed within secure buildings at INL do not have internet access and therefore the earthquake data are recorded to compact flash disks that are later retrieved using a laptop computer.

2.3 Continuous GPS Stations

The INL Seismic Monitoring Program has a geodetic network for the purpose of monitoring crustal deformation in support of INL seismic hazards assessments. The network consists of 16 GPS receivers and antennas co-located with INL seismic stations. Table 4 lists the codes, stations, and date of installation of INL GPS sites. As part of the Plate Boundary Observatory (PBO) under the EarthScope Science Program, there are currently 19 other continuous GPS sites near the Snake River Plain (Figure 4). One of these GPS receivers is co-located at INL seismic station (GTRI). In addition to continuously operating GPS sites, INL personnel periodically collect GPS phase data at nearby campaign GPS sites on INL, in the ESRP, and in the surrounding Basin and Range region.

An INL continuous GPS station consists of a Trimble NetRS GPS receiver connected to a Trimble L1/L2 dual frequency choke ring antenna. The antenna is attached to a 2.4 m steel rod that is drilled into a rock outcrop to a depth of about 1 m. The NetRS receivers continuously collect GPS phase data (positions of 20 satellites) at 30 seconds intervals. The GPS phase data along with seismic station data are relayed to the DSL sites at Arco, How, or Gray's Lake using digital radios, and they are then accessible via Internet. The phase data are downloaded daily from the Internet and archived by UNAVCO,™ a non-profit university-governed consortium.

GPS phase data collected by INL's continuous sites or any campaign sites are provided to Dr. Robert King at the Massachusetts Institute of Technology for processing. Dr. King has processed all of INL's GPS phase data acquired up to 2013. He combines INL GPS data with other data in the region to produce horizontal GPS velocity fields that cover the ESRP and surrounding Basin and Range and fields that encompasses the Pacific Northwest.

GPS data are used to investigate active crustal deformation that is on the order of millimeters of movement per year within the ESRP, the surrounding Basin and Range, and Yellowstone Caldera. GPS data help distinguish regions of high velocity gradients (or strain rates) having more frequent damaging earthquakes (e.g., Yellowstone – Hebgen Lake, Montana) from regions of low velocity gradients (e.g., eastern Snake River Plain). The regional spatial patterns of GPS data also help constrain the fundamental geodynamic processes that drive active continental deformation in the western United States. Locally, the horizontal GPS velocities indicate the Basin and Range is rapidly extending at a rate greater than the very slowly deforming Snake River Plain, which is thought to explain its relative low seismicity (e.g., Payne et al. 2012b; Payne et al., 2013).

2.4 Seismic Data Acquisition and Analysis System

The INL Seismic Monitoring office is located in the INL Research Center (IRC) building at the Research and Education Campus (REC) in Idaho Falls. The office houses the DAAS, which has evolved since 1991 (see Section A-4; Appendix A). The DAAS is currently composed of five computers. The first computer performs data acquisition using the software package, EARTHWORM, a second computer is used to analyze earthquakes with the software package, SEISAN (see Section 3), and a third computer is used to serve an internal web site. The fourth computer runs the program SWARM which displays digital seismograms on up to four monitors. The fifth computer is a dedicated repository (or Vault) that routinely

backups files on the acquisition and analysis computers and archives all digital earthquake data after analysis.

EARTHWORM performs two primary functions that include signal discrimination for possible earthquakes and data sharing with other seismic networks. EARTHWORM constantly monitors seismic signals from seismic stations by evaluating the amplitude ratios of the short-term average (STA) divided by the long-term average (LTA) or STA/LTA. This involves comparing the short-term root-mean square (RMS) average (1-s window) of the seismic data to a longer-term RMS average, which is the background noise or voltage level determined over a time interval of 20 s. The program determines that an earthquake has occurred when the STA/LTA ratios for several stations exceed a threshold value.

The earthquake detection module in EARTHWORM is configured to trigger on earthquakes detected by several stations within a subnet. Subnets contain several stations that are likely to detect the same local earthquake. All INL seismic stations usually detect local earthquakes of magnitude 1.5. Subnets are specified for stations in close proximity to each other and their relationship to known earthquake sources. For the ESRP though, a subnet was created for detection of small magnitude ($M<0.5$) microearthquakes.

When an earthquake is detected by EARTHWORM, seismograms are saved in a trigger file on the acquisition computer's disk. The trigger file is labeled with a sequential number based on the date and time of the trigger. The analysis computer pulls trigger files from the acquisition computer and puts them into a directory for analysis by a seismologist using SEISAN. The trigger files are entered into the SEISAN database. Each seismogram has 30 s of pre-event data and 20 s of post-event data stored within the trigger file. The pre- and post-event durations ensure the entire earthquake waveform is recorded. In some instances, earthquakes have low-amplitudes, emergent compression (P) waves with larger amplitude shear (S) waves. When this occurs EARTHWORM may trigger on the S-waves instead of the P-waves, thus, saving 30 s of pre-event time allows recording of the P-waves also.

The EARTHWORM software also allows data sharing of seismic stations in near real time over the Internet. INL uses EARTHWORM data shares to transmit data from the Arco, Howe, and Gray's Lake DSL sites to Idaho Falls, and to acquire seismic station data from other networks and to provide INL seismic station data to other networks. The INL provides data from various seismic stations to the University of Utah, Montana Bureau of Mines and Geology, and National Earthquake Information Center (NEIC), which in return provide data to INL (Table 2). EARTHWORM triggers on and records seismic data from INL and these other agencies. Analyzing earthquake data from these other seismic stations in SEISAN expands the azimuth coverage of stations surrounding an earthquake which results in reduced uncertainties of earthquake locations and magnitudes within the 161-km radius of INL.

Table 4. Continuous GPS sites co-located with INL seismic stations.

Code	Station Name	Latitude North (º)	Longitude West (º)	Elevation (m)	Year Installed
ARNG	Argonne North, Idaho	43.6667	112.6235	1533	2005
BCYI	Bear Canyon, Idaho	44.3108	113.4052	2194	2003
CRBG	Circular Butte, Idaho	43.8303	112.6345	1520	2007[1]
EMIG	Eightmile Canyon, Idaho	44.0742	112.9262	1963	2005
GBIG	Big Grassy Butte, Idaho	43.9875	112.0633	1541	2007[1]
GRRG	Grays Range, Idaho	42.9380	111.4217	2207	2007[1]
GTRG	Great Rift, Idaho	43.2440	113.2410	1522	1998[2]
HPIG	Howe Peak, Idaho	43.7113	113.0983	2597	2005
HWFG	Howe Fault, Idaho	43.9257	113.0973	1743	2007[1]
ICIG	Italian Canyon, Idaho	44.3293	112.9412	2463	2007
LLRG	Little Lost River, Idaho	43.7230	112.9330	1476	2009
NPRG	New Production Reactor, Idaho	43.5975	112.8272	1495	2009
PTIG	Pocatello, Idaho	42.8703	112.3702	1670	2007[1]
PZCG	Patelzick Creek, Idaho	44.3410	112.3172	2073	2007[1]
TCSG	Telchick Spring, Idaho	43.6193	113.4783	1731	2005
TMIG	Taylor Mountain, Idaho	43.3057	111.9182	2179	2007[1]

1. Although hardware was installed for the GPS receiver in 2007, the receiver began acquiring phase data in 2008.
2. Co-located at INL's seismic station GTRI, but operated by the Plate Boundary Observatory under the EarthScope Science Program.

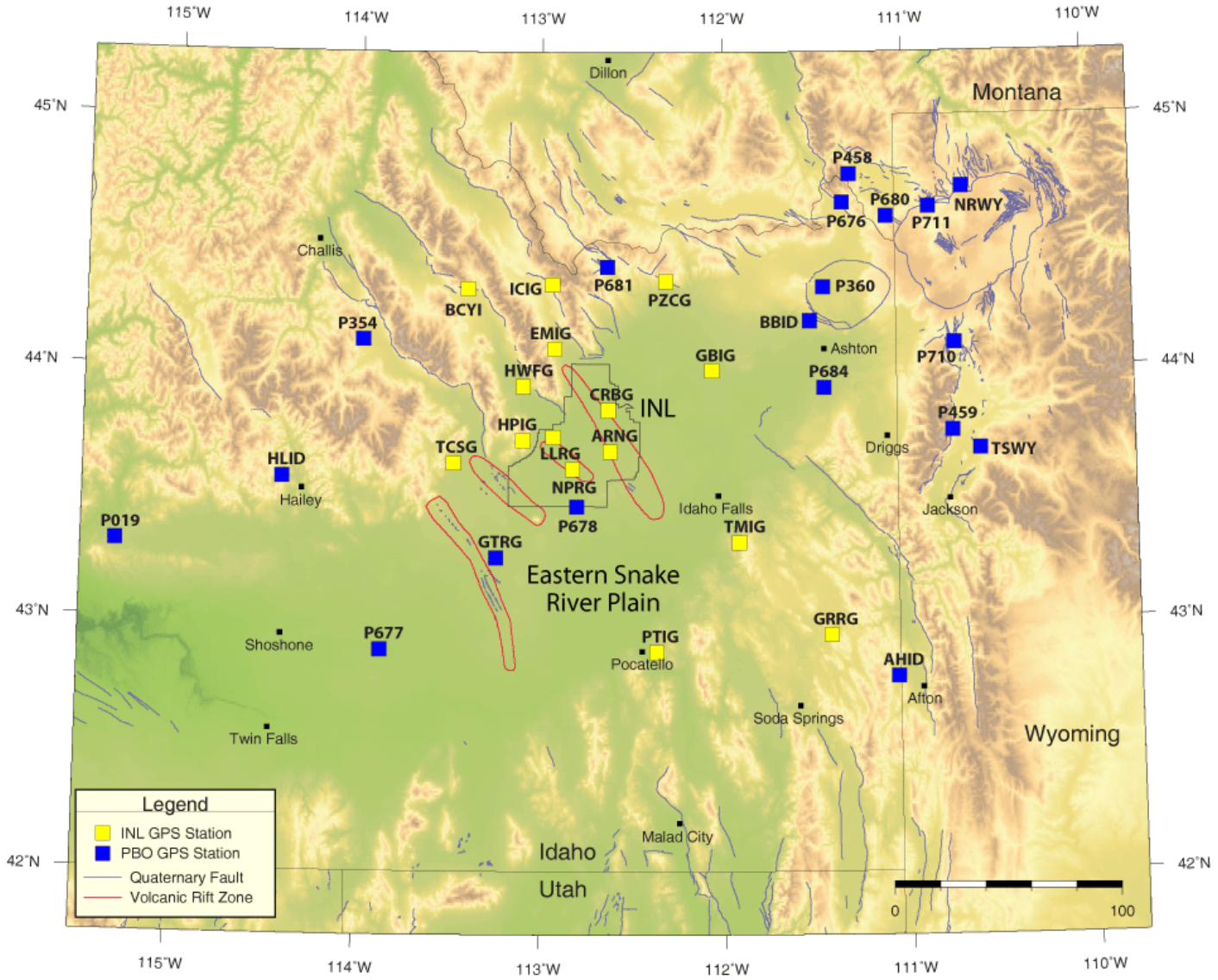

Figure 4. Map shows locations of continuous GPS stations co-located at INL seismic stations and those operated by the Plate Boundary Observatory (PBO) under the EarthScope Science Program. See Figure 1 for names of normal faults and volcanic rift zones.

3. Earthquake Analysis

Digital seismograms are analyzed using the SEISAN program to determine the earthquake's location, magnitude, peak ground accelerations, and instrument responses. SEISAN displays multiple seismograms on a computer screen with corresponding time codes having accuracy of ± 0.001 s. P- and S-wave arrival times in the seismograms are selected at an accuracy of up to ± 0.01 s. Durations and amplitudes of seismic signals are selected, corrected using instrument responses, and then used to calculate earthquake magnitudes. The arrival times, durations, and amplitudes measured for an earthquake are saved in a computer file directly from the SEISAN program.

Earthquakes are located using the HYPOINVERSE-2000 program (Section 3.1) and two methods may be used to calculate the final magnitude of an earthquake depending on its size (Section 3.2). The locations and magnitudes of the earthquakes are plotted on maps to assess seismically active regions near the INL. When available from a large magnitude earthquake, amplitudes of accelerograms can be measured using the SEISAN program then processed using a separate program to determine peak horizontal and vertical accelerations (Section 3.3). Instrument responses of the data logger and sensors at seismic stations and SMAs are now routinely determined and integrated into the SEISAN database (Section 3.4). Finally, INL discriminates manmade blasts from earthquakes (Section 3.5) and has a detection threshold of nearly magnitude 0.0 within the ESRP (Section 3.6).

3.1 Location Method

The HYPOINVERSE-2000 location program (Klein, 2002) is used to determine locations for all local earthquakes recorded. Phase data files (arrival times of the earthquake) from the output of SEISAN are input into the HYPOINVERSE-2000 program. Stable locations are usually obtained from about seven to ten arrival times (P- and S-waves combined) for recorded events that are not surrounded by INL seismic stations (Zollweg and Sprenke, 1995). Within the INL network, stable locations can be obtained with a minimum of six arrival times. Because of the density and sensitivity of the INL seismic network, the majority of earthquakes located within the 161-km radius have a minimum of six arrival times. However, some earthquakes are located with fewer than six arrival times and, thus, their locations are less accurate. Seismic stations from other agencies monitored by the INL provide coverage outside the INL network and phase arrivals from these stations supplement phase data from INL stations in an attempt to reduce location errors. Other notable parameters used in the HYPOINVERSE-2000 program are the starting focal depth, set to 5 km, and the distance cutoff for arrival weighting, set to 50 km.

Four P-wave velocity models are used in the HYPOINVERSE-2000 program depending on the location of the earthquakes (Table 5). The "ESRP" velocity model is used for locating earthquakes that occur within the ESRP and including the mountainous terrain along the Idaho-Wyoming border and southeast Idaho (Olsen et al., 1979; Sparlin et al., 1979; Braile and Smith, 1979; and Ackerman, 1979). The "INL ESRP" velocity model is used to locate earthquakes that occur on the ESRP and are near or within the INL Site boundaries. This model was developed from Sparlin et al. (1982) and Braile et al. (1982) and checked with respect to a few microearthquakes located within the ESRP (Jackson et al., 1989). The "BPEAK" velocity model is used for locating earthquakes that occur in the Borah Peak aftershock area and the mountainous terrain northwest of the Plain (Richins et al., 1987). Finally, the "SMT" velocity model is used to locate earthquake in southwestern Montana (Stickney, 1997). For all velocity models, a P-wave velocity to S-wave velocity ratio of 1.75 is used (Bones, 1978; Greensfelder and Kovach, 1982; and Richins et al., 1987).

3.2 Magnitude Methods

In SEISAN, magnitudes are determined using two methods 1) coda magnitudes using signal duration of digital seismograms, and 2) local magnitudes using amplitudes from digital seismograms. A coda magnitude (M_c) is calculated for an earthquake using several signal durations measured from the seismograms of different seismic stations. A local magnitude (M_L) is calculated using the largest

Table 5. P-wave velocity models used in location programs.

Velocity Model Code	Velocity (km/sec)	Depth to Top of Layer (km)	Layer Thickness (km)	References
ESRP	4.90	0.00	2.00	Olsen et al., 1979; Sparlin et al., 1979; Braile & Smith, 1979; Ackerman, 1979.
	6.00	2.00	15.00	
	6.70	17.00	23.00	
	7.90	40.00	Half-space	
INL ESRP	3.30	0.00	1.00	Sparlin et al., 1982; Braile et al., 1982; Jackson et al., 1989.
	4.90	1.00	2.00	
	5.30	3.00	2.00	
	6.15	5.00	2.00	
	6.53	7.00	10.00	
	6.80	17.00	23.00	
	8.00	40.00	Half-space	
BPEAK	4.75	0.00	1.64	Richins et al., 1987.
	5.59	1.64	5.31	
	6.16	6.95	11.05	
	6.80	18.00	22.00	
	8.00	40.00	Half-space	
SMT	5.52	0.00	5.86	Stickney, 1997.
	6.12	5.86	12.78	
	6.74	18.64	20.05	
	8.00	38.69	Half-space	

peak-to-peak trace amplitude measured from digital waveforms and the Richter magnitude equation. If a magnitude cannot be determined for a local earthquake, then magnitudes determined by other seismic networks may be used including, for example, the University of Utah, Montana Bureau of Mines and Geology, NEIC, Boise State University, and the U.S. Bureau of Reclamation. The summary list of earthquakes in Appendix C lists the type of magnitude calculated and what institution reported the magnitude.

3.2.1 Coda Magnitudes

A coda magnitude is determined by measuring the duration of an earthquake's seismic waves as identified on a vertical component seismogram in SEISAN. In SEISAN when the P-wave arrival time is selected, the earthquake's signal duration can be automatically selected by SEISAN or manually selected by a seismologist at INL. The duration is measured at the start of the earthquake signature (P-wave arrival) to the end of the coda, where the signal fades into the background noise of the trace. The durations are measured for each station where the earthquake's signal can be clearly identified. The following expression from Arabasz et al. (1979) is used to calculate the coda magnitude for each seismic station's duration measured:

$$M_c = -3.13 + 2.74 \log \tau + 0.0012 \Delta \qquad [1]$$

Where:

τ = Total signal duration recorded at the station in seconds;

Δ = Epicentral distance from the station in km.

The final coda magnitude is determined from the mean of coda magnitudes calculated for each station. The HYPOINVERSE-2000 program uses Equation (1) to estimate the mean coda magnitude along with the location.

3.2.2 Local Magnitudes

A local magnitude is determined by measuring the amplitudes of a synthetic Wood-Anderson seismogram digitally for the horizontal components generated in SEISAN. SEISAN allows the seismologist to generate synthetic Wood-Anderson seismograms from shear waves recorded on the horizontal components of accelerometers and seismometers at INL seismic stations. SEISAN calculates synthetic Wood-Anderson seismograms at a magnification of 2800 using the instrument response information for accelerometers and seismometers contained in Appendix C.

For each horizontal component at a station and for multiple stations, the seismologist manually measures or allows SEISAN to automatically measure the largest peak-to-peak amplitude (or A) in millimeters from the synthetic Wood-Anderson seismogram. Once measured, the local magnitude is calculated for each component using the Richter magnitude scale. Richter (1958) defined the local magnitude scale from the following equation:

$$M_L = \text{Log } A - \text{Log } A_o \qquad [2]$$

Where:

A = Recorded maximum trace amplitude from the zero-line measured in millimeters on a standard, Wood-Anderson seismogram;

A_o = Maximum trace amplitude from the zero-line in millimeters for a selected standard earthquake.

The Richter magnitude scale was developed for a standard earthquake of magnitude 3.0 at 100 km for A_o = 0.001 mm and amplitude of 1.0 mm measured on the standard seismogram. Dr. Richter constructed a table of magnitudes based on distance and -Log A_o for maximum trace amplitudes recorded on the standard Wood-Anderson seismogram.

SEISAN has a program that uses equation [2] and measured amplitude of each synthetic Wood-Anderson horizontal seismogram to calculate local magnitude. SEISAN uses the distance of the seismic station from the earthquake's epicenter and one-half the peak-to-peak amplitude to determine local magnitude using Richter's table. Typically, the earthquake is located using the HYPOINVERSE-2000 program first to estimate distances from the epicenter to seismic stations, then amplitudes are measured secondly so these distances can be used in the magnitude calculation.

3.3 Peak Accelerations

Peak horizontal and vertical accelerations are determined from accelerograms using the SEISAN program. SEISAN displays the horizontal and vertical accelerograms for some free-field SMAs located at the INL and accelerometers co-located with the seismic stations. The SEISAN program allows the user to correct the accelerograms by removing the instrument responses (Section 3.4). A separate program is then used to measure the largest zero-to-peak acceleration amplitude from the corrected acceleration time history.

3.4 Instrument Response

Instrument responses of seismic stations and SMAs are regularly determined and maintained for use in SEISAN. The sensitivity and frequency response of the sensor and data logger are used in SEISAN to convert the measured counts of ground motion amplitude to the desired units for acceleration, velocity, and displacement. The instrument responses are held in SEISAN's "*GSE*" formatted files in the SEISAN database, and INL currently uses GSE 2.0 format. The "*GSE2*" response files contain the poles and zeros and system gain of the sensor and data logger. Instrument responses are calculated using two approaches depending on whether a seismic station has broadband seismometers, short-period seismometers, or accelerometers, or is an SMA site.

The first approach applies to seismic stations with broadband seismometers. The five new seismic stations (ATRF, ITCF, INLF, MFCF, and NVRF) and the NPRI and CNCI stations with broadband seismometers have response files that are generated using IRIS's Portable Data Collection Center (PDCC) program. PDCC has a library that contains the manufacturer's data for the Nanometrics and Guralp broadband seismometers and the Quanterra Q330 data logger. PDCC is used as a way to store instrument metadata and instrument responses in a file called a "*Dataless Seed*". The file is in the SEED or Standard for the Exchange of Earthquake Data format, which is a common format used by seismic networks to share earthquake data and store instrument responses. The response files from the *Dataless Seed* file are converted to SEISAN's *GSE2* format for each broadband seismometer component.

The second approach is used for short-period seismic stations with and without accelerometers, SMAs, and accelerometers co-located at broadband stations. Field measurements are made on the data logger at the seismic station or SMA site to quantify the sensitivities. At short-period seismic stations, sensitivities are measured on the DAQSystems NetDAS for each short-period seismometer or each accelerometer component. For the seismometers, GSE2 files are generated using the measured sensitivities along with the filter coefficients of the NetDAS digitizers (Bockholt, 2016) combined with those of the short-period seismometer. For SMAs or seismic stations with accelerometers, *GSE2* files are generated using the measured sensitivities and the poles and zeros of the NetDAS digitizers. Finally for accelerometers at broadband seismic stations, sensitivities of each accelerometer component are made on the Quanterra Q330 data logger. These sensitivities and two zeros are used when generating the *GSE2* files.

3.5 Location and Depth Quality

Comparisons between earthquake locations determined by the INL and locations determined by other temporary networks or NEIC have been used to approximate locations errors of earthquake epicenters (Jackson et al., 1993a). This method is very general and yields an approximation of the quality of the INL

earthquake locations. Zollweg and Sprenke (1995) evaluated the parameters chosen for the HYPOINVERSE-2000 program used by INL and the locations produced for the INL station geometry. They determined that the parameters chosen yield good location results despite the poor coverage in azimuth of earthquakes outside the network. An evaluation of the difference between actual and computed locations showed that HYPOINVERSE-2000 location error was less than 0.25 km for test events located by the INL seismic stations. A more detailed discussion of location uncertainty is in Section A-5 (Appendix A).

The HYPOINVERSE-2000 location program also calculates depth to the hypocenter. Focal depths calculated by this program have large uncertainties for many of the earthquakes recorded by the INL seismic network for two reasons: 1) the station spacing is typically greater than twice the focal depth of the earthquake recorded; and 2) earthquakes occur outside of the network resulting in poor station coverage. To calculate accurate focal depths, the earthquake ideally should occur within the seismic network and at a distance equal to or less than it's focal depth, or have S-arrivals from one or more stations within a distance of 1.4 focal depths of the epicenter (Gomberg et al., 1990). Although focal depths are listed in Appendix C, they should be interpreted within the context of the limitations discussed in this section unless otherwise discussed in another section about specific earthquakes.

3.6 Data Completeness

Local earthquakes are easily discriminated from other seismic data such as local mine blasts, air blasts (or sonic booms), and distant (worldwide) and regional earthquakes occurring far outside of the INL seismic network. For example, man-made blasts are easily discriminated from earthquakes on the basis of waveform characteristics, the time the event occurred, and the location and depth of the event. The NEIC earthquake website lists are regularly inspected to confirm consistency with the INL earthquake catalog for magnitudes 2.5 and greater. Typically, local mine operators provide lists of blasting times when requested by INL seismologists.

Detection threshold can provide a measure of completeness for the INL earthquake catalog. It is defined as the magnitude level at which the seismic network will nearly always detect and locate an earthquake. Zollweg and Sprenke (1995) evaluated the detection threshold of the INL seismic network by plotting the cumulative number of earthquakes as a function of magnitude to determine the lowest magnitude point that the curve begins to flatten. Zollweg and Sprenke (1995) determined the detection threshold to be a magnitude 1.3, anywhere within a 161-km (100-mile) radius around INL. Their conclusion was based on a plot of 1360 earthquakes for an 18-month period. Since the seismic stations are all located within 90 km of the center of INL, they suggested that the detection threshold is magnitude 0.8 within the network on the ESRP. The analysis of Zollweg and Sprenke (1995) suggests that the INL earthquake catalog is complete for magnitudes above 1.3 within a 161-km (100-mile) radius of INL and may be complete for magnitudes as low as 0.8 within the network. Ongoing hardware and software upgrades of INL seismic instrumentation and for the current DAAS have increased detection sensitivities to nearly magnitude 0.0, which allow recording of small magnitude microearthquakes within ESRP.

4. 2013 Earthquake Activity

During 2013, INL recorded 14,011 independent triggers from earthquakes and blasts that occurred in the local region, in the western United States, and worldwide. Of these triggers, 7,355 included blasts and distant, regional, and local earthquakes. Within the local region, INL located 2,085 earthquakes and 150 confirmed and possible man-made blasts. Near and within the 161-km (or 100-mile) radius of INL, 38 earthquakes had small to moderate size magnitudes (M) that ranged from 3.0 to 4.2. Nineteen of the M>3.0 earthquakes were reported felt to the U.S. Geological Survey (USGS). Of the 1,013 earthquakes that occurred within the 161-km radius of INL, three occurred within the ESRP.

4.1 Regional Earthquakes

Outside of the 161-km radius of INL, 25 earthquakes from magnitude 3.0 to 3.9 occurred in central Idaho, southern Montana, western Wyoming, and the Idaho-Wyoming border (Figure 5). Twelve of the earthquakes were reported as felt by local residents to the USGS "*Did You Feel It*" web site (Appendix B).

Five of these earthquakes were located in central Idaho and southern Montana. On July 1, 2013, an M_L 3.4 earthquake occurred and was located northeast of Challis, Idaho, but was not felt (Figure 5). On August 21, 2013, an M_L 3.4 earthquake occurred and was located northeast of Dillon, Montana (Figure 5) and was felt by six residents (Figure B-4b, Appendix B). Three earthquakes of M_c 3.3, 3.1, and 3.0 occurred on June 6, November 20, and December 23, 2013, respectively. All three earthquakes were located near the southern end of the Madison fault, which is north of Island Park, Idaho (Figure 5). The M_c 3.1 and 3.0 earthquakes were each felt by five local residents (Figures B-7a and B-9a, respectively).

From March to November, twelve earthquakes were located in the Yellowstone Plateau in northwestern Wyoming (Figure 5). Seven of the twelve earthquakes occurred in September from the 10th to 24th. Earthquake magnitudes ranged from 3.0 to 3.6. The M_L 3.3 earthquake on March 31, 2013 was felt by three local residents (Figure B-1b). The M_L 3.4 and M_L 3.6 earthquakes that occurred on September 15, 2013 were each felt by 15 and 9 local residents, respectively (Figures B-4b and B-5a, respectively).

Nine earthquakes occurred south of Jackson, Wyoming and near the Idaho-Wyoming border. Three earthquakes of M_L 3.2, 3.6, and 3.9 occurred on December 8, 2013 and were located southeast of Jackson, Wyoming (Figure 5). The M_L 3.6 and 3.9 earthquakes were felt by 8 and 22 local residents, respectively (Figure B-8). To the south, one earthquake with M_L 3.1 occurred on June 20, 2013 and was felt by 15 nearby residents (Figure B-3b). Four earthquakes were located southwest of Afton, Wyoming and along the Idaho-Wyoming border (Figure 5). The largest of the four earthquakes occurred on March 1, 2013, had a moment magnitude (M_W) 3.9, and was reported felt by 16 nearby residents (Figure B-1a). The next largest earthquake occurring on May 16, 2013 with a M_W 3.6 was felt by 50 local residents (Figure B-3a). The greater number of reports for the M_W 3.6 is likely due to the closer proximity of earthquake to Afton, Wyoming whereas the M_W 3.9 earthquake was further to the south of Afton. Earthquakes of M_L 3.0 and 3.1 occurred on November 29, 2013 and were located between the M_W 3.6 and 3.9 events (Figure 5). Only the M_L 3.1 earthquake was felt by three local residents (Figure B-7b). Finally, one earthquake with M_L 3.1 occurred on July 28, 2013 and was located south of Soda Springs, Idaho (Figure 5), but was not felt by residents nearby.

4.2 Earthquakes within 161-km Radius of INL

During 2013, 1,013 earthquakes occurred within 161-km radius of INL and thirteen of these events had magnitudes from 3.0 to 4.2 (Appendix C). Seven earthquakes were felt by local residents. The earthquakes included three swarms and a mainshock-aftershock sequence. The earthquakes within 161-km radius were located northwest of the INL in the Basin and Range regions of Idaho and Montana and southeast of the ESRP in the Basin and Range region along the Idaho-Wyoming border (Figure 6).

Scattered earthquakes occurred along the Lost River, Lemhi, and Beaverhead faults and a swarm of earthquakes occurred in the Beaverhead Mountains near the Idaho-Montana border (Figure 6). On July 18, 2013, an earthquake of M_c 3.3 was located east of Stanley, Idaho within the 161-km radius of INL, but was not felt. In May, a swarm of 62 earthquakes occurred in the Beaverhead Mountains near the Idaho-Montana border (Figure 6). The swarm included five earthquakes with magnitudes of M_c 3.0 (two), M_c 3.2, M_c 3.3, and M_c 3.4 (Figure 5) that occurred May 21st to 23rd during the time period with the greatest number of earthquakes. None of the magnitude 3.0 or greater earthquakes was felt by nearby residents. The swarm continued with infrequent events until December. Further east of this swarm near the southern end of the Madison fault and within the 161-km radius of INL (Figure 6), a M_c 3.0 earthquake occurred on August 28, 2013. This earthquake was located west of the three earthquakes that were located near the southern end of the Madison fault and was not felt by residents nearby (Figure 5).

Two earthquake swarms and a mainshock-aftershock sequence occurred southeast of the ESRP along the Idaho-Wyoming border. A swarm of >180 earthquakes occurred at Driggs, Idaho. The swarm began with some earthquakes occurring in January and June but intensified with more than 160 events in November and December. Two of the larger earthquakes were felt by local residents in Driggs, which occurred on December 29, 2013 and December 30, 2013 and had magnitudes of M_L 2.8 and 3.1, respectively (Figures B-9b and B-10, respectively). A less intense swarm of earthquakes occurred in July and ended in October and was located west of Jackson, Wyoming along the border with Idaho (Figure 6). The largest event in the swarm was a M_W 3.8 that occurred on October 19, 2013 within the 161-km radius of INL (Figure 5) and was felt by 16 local residents (Figure B-5b). The swarm included 64 events with >20 occurring on October 19, 2013.

To the south of the July-October swarm, two earthquakes of M_L 3.3 and 3.9 occurred on October 19, 2013 and November 17, 2013, respectively (Figure 5). The October and November events were each felt by nine local residents (Figure B-6). Finally, southeast of Pocatello, Idaho on May 6, 2013 an earthquake of M_L 4.2 was followed by 18 aftershocks that included a M_L 3.6 (Figure 5). The M_L 4.2 earthquake was felt by 139 residents due to its proximity to many nearby towns (Figure B-2a). The M_L 3.6 event was reported felt by only 13 residents likely because it occurred 7 minutes after the M_L 4.2 and many residents likely did not distinguish between the two events (Figure B-2b).

Three earthquakes occurred within the ESRP and three other earthquakes were located at the northwest edge of the ESRP (Figure 6). On January 31, 2013 a M_c 1.3 earthquake was located in the center of ESRP north of the Great Rift and at a depth of 45 km. To the west, an earthquake of M_c 0.7 occurred on February 19, 2013 and was located at a depth of 37 km and at the northwestern end of the Great Rift at its juncture with the mountains. Four earthquakes, M_c 0.0, M_c 1.3, M_c 1.8, and M_c 1.1, occurred on May 1, May 9, July 1, and September 9, 2013, respectively, and were located north of the INL along the edge of the ESRP. The M_c 0.0 and 1.1 earthquakes were located just within the ESRP.

5. Earthquakes from 1972 to 2013

The earthquakes in 2013 were located in areas around and within the ESRP that have been active in previous years. Figure 7 shows that the majority of 2013 earthquakes occur in the Basin and Range Province regions surrounding the ESRP. Even though 87 microearthquakes ($M \leq 2.2$) have occurred within the ESRP, monitoring by the INL seismic network indicates that at present the ESRP is relatively seismically inactive when compared to surrounding Basin and Range Province (see also Jackson et al., 1993b). Ongoing activity of 30 events (2007-2013) within and near the Great Rift suggests possible association with volcanic processes. Nearly 2,200 years ago, volcanic activity occurred along the entire 80-km length of the Great Rift (Kuntz et al., 2002).

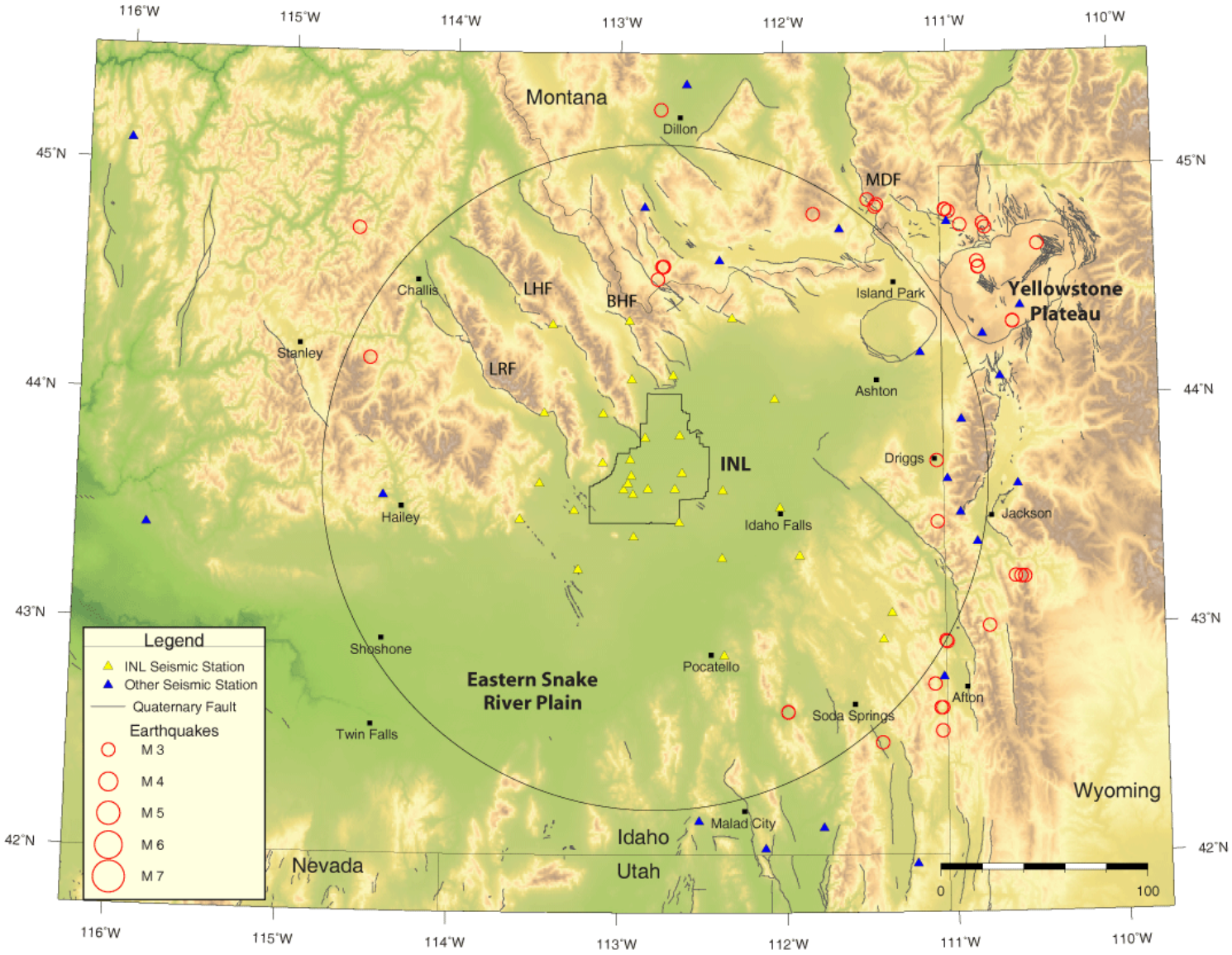

Figure 5. Map of earthquakes with magnitudes greater than 3.0 occurring during 2013. Normal fault abbreviations include: BHF – Beaverhead; LHF – Lemhi; LRF – Lost River; and MDF – Madison.

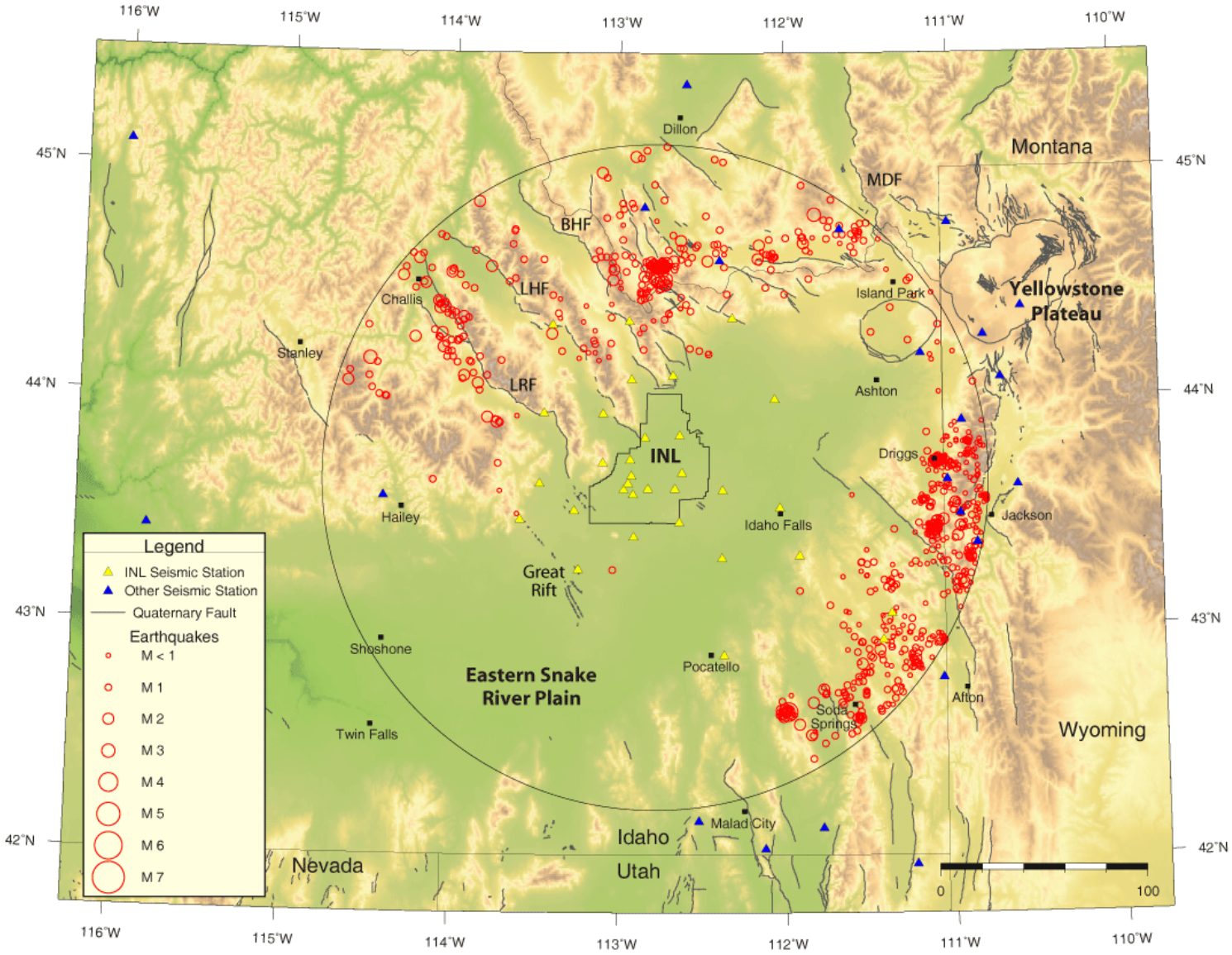

Figure 6. Map of epicenters of earthquakes within the 161-km radius around the INL from January 1, 2013 to December 31, 2013. Normal fault abbreviations include: BHF – Beaverhead; LHF – Lemhi; LRF – Lost River; and MDF – Madison.

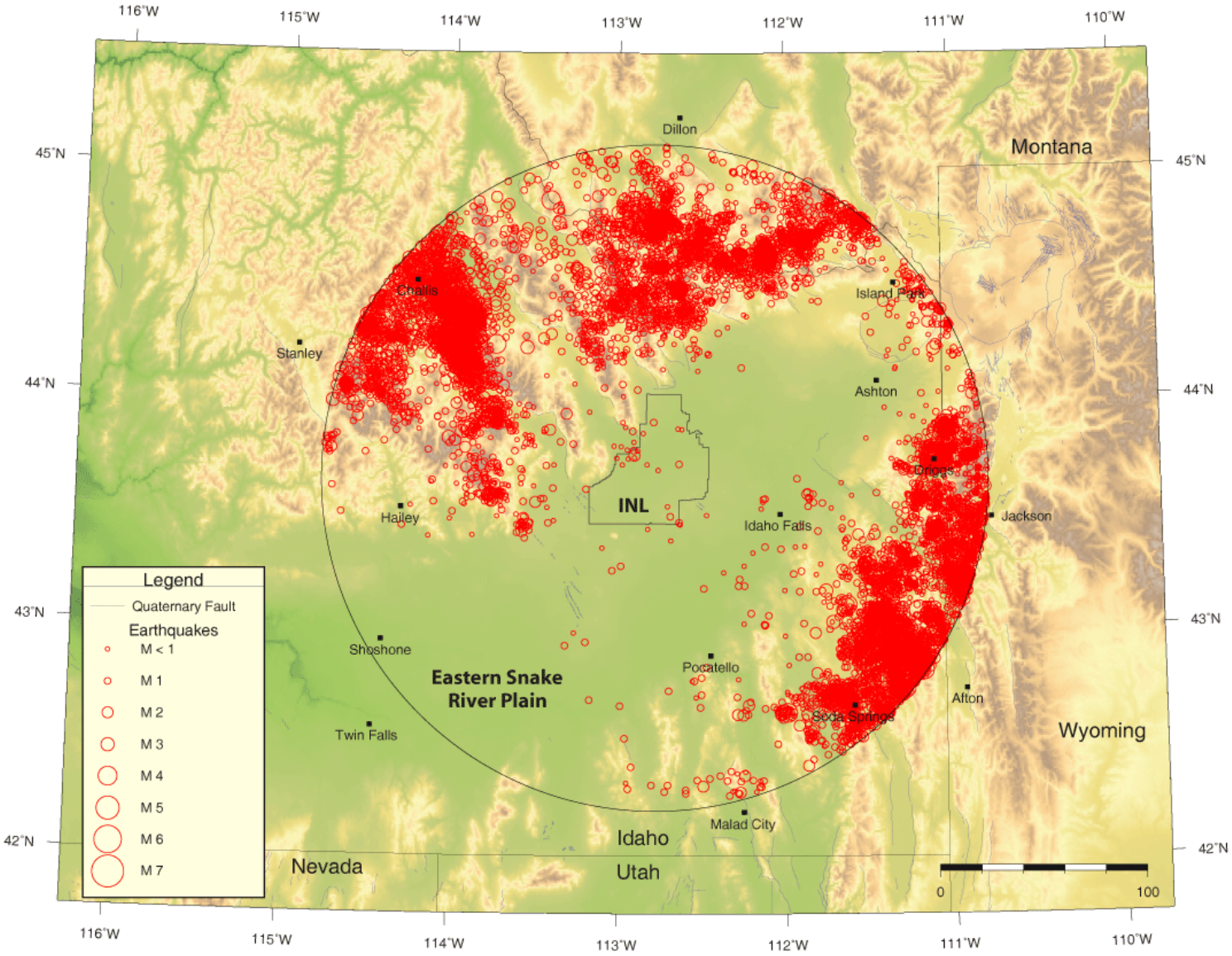

Figure 7. Map of epicenters of earthquakes from 1972 to 2013 within the 161-km (100 mile) radius around the INL.

6. References

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Appendix A

Seismic Network Information

A-1. INL Seismic Network History

The INL seismic network has evolved from a single analog station to its current configuration of 32 digital seismic stations. The INL Seismic Monitoring Program also records data from seismic stations owned and operated by other seismic networks. The INL seismic network began with a single station in 1971 and expanded to three stations by October of 1972. In 1977, the INL began monitoring a station operated by BYU-Idaho in Rexburg, Idaho. The INL installed two additional stations in 1979 and from 1979 to 1985, the INL monitored earthquake activity using six seismic stations. In 1985, the INL installed a simulated Wood-Anderson system to improve the capabilities of measuring magnitudes of local earthquakes ($3.0 < M < 5.0$). During 1986, the INL began receiving seismic data from a station located in Pocatello, Idaho and operated by the University of Utah in Salt Lake City, Utah. Also in 1986, the INL began receiving data from a station located near Palisades Reservoir, Idaho that is operated by BYU-Idaho. A seismic station within the INL boundaries was added to the INL seismic network in 1987.

From 1990 to 1994, INL seismic network underwent a major expansion of seismic stations. During 1990, four seismic stations were installed within the INL boundaries. From 1991 to 1992, thirteen new stations were installed in support of construction and operation of the proposed New Production Reactor at INL. Shallow boreholes (<18 m) were drilled for seismic stations located within the ESRP. Also, monitoring of BYU-Idaho seismic station near Palisades Reservoir was terminated in 1991 to accommodate the addition of the new INL seismic stations. In 1994, two new INL seismic stations were installed near Gray's Lake, Idaho.

Several changes occurred to seismic stations from 1999 to 2003. During 1999, the INL Howe Scarp, Idaho (HWSI) seismic station was relocated further east to a new location now referred to as the Howe Fault, Idaho or HWFI because of a lawsuit filed against the Bureau of Land Management. With the implementation of the "EARTHWORM" computer software in 2000, up to 14 stations from several nearby networks were being recorded in real-time along with the INL seismic stations. During 2001-2003, analog seismic instruments at all INL seismic stations were replaced with digital instruments. In 2003, the University of Utah transferred ownership of the Pocatello, Idaho (PTI) seismic station to the INL Seismic Monitoring Program at which time a digital seismic station was installed. With addition of the PTI station, INL has operated 27 seismic stations from 2003 through 2012.

In 2013, five new seismic stations were installed on INL near facility areas. The stations included: Advanced Test Reactor, Idaho (ATRF), Idaho Nuclear Technology and Engineering Center, Idaho (ITCF), INEL-1 Drill Site, Idaho (INLF), Materials and Fuels Complex, Idaho (MFCF), and Naval Reactors Facility, Idaho (NVRF). The stations were installed with broadband seismometers to record regional earthquakes with magnitudes from 3 to 5 that can be used in future INL seismic hazard analyses to characterize ground motion models. With the addition of these five stations, the INL operated 32 seismic stations.

A-2. INL Strong Motion Accelerograph History

The INL has a network of SMA and three-component accelerometer sites that has undergone changes in site locations. Prior to 1978, the original network had eleven SMAs that included three SMAs installed within buildings at the Idaho Nuclear Technology and Engineering Center (INTEC) (formerly referred to

as Idaho Chemical Processing Plant - ICPP), two located within the Materials and Fuels Complex (MFC) facilities (formerly referred to as Argonne National Laboratory – ANL), three installed within the Power Burst Facility (PBF), two located within buildings at the Advanced Test Reactor (ATR) (formerly referred to as Test Reactor Area – TRA), and one located at the Old Fire Station (OFS). From 1978 to 1979, four SMAs were installed at Test Area North (TAN) within the Containment Test facility (formerly referred to as Loss of Fluid Test – LOFT facility). Just prior to the October 1983 surface-wave magnitude (M_S) 7.3 Borah Peak, Idaho earthquake, one SMA was installed at the IRC, which is now part of the REC in Idaho Falls, Idaho. Following the 1983 earthquake, two SMAs were installed within buildings at the Naval Reactor Facility (NRF). In 1984, two additional SMAs were placed within buildings at INTEC. During 1990, one SMA was installed at the Central Facilities Area (CFA). A digital SMA was co-located with an analog SMA at MFC in 1993. In 1996, two free-field SMA sites were installed, one at NRF and the other at PBF. In 1997, one SMA was installed as a free-field site at the Radioactive Waste Management Complex (RWMC). In 2003, the SMAs were upgraded to digital NetDAS SMAs. At that time, one NetDAS digital SMA replaced two SMAs co-located at Building ANL-767 (Kinemetrics analog SMA-1 and digital SSA-2 accelerographs). The SMA on the crane beam at PBF-620 was not upgraded, but removed due to decommissioning activities.

Over the years, several SMAs have been relocated because buildings have been decommissioned and demolished. In 1995, the SMA at OFS was moved to a storage building directly behind the fire station because the fire station was decommissioned. In 1997, when the storage building was demolished, this SMA was relocated to the Experimental Field Station (EFS). In 1996, the Containment Test facilities, or LOFT facilities, were decommissioned. Three of the SMAs from LOFT were moved to the TAN Hot Shop and one was placed at the TAN Air Monitoring building. In 1997, the SMA at CFA was relocated to CFA-1607 Refueling Building. In 2004, the TAN Air Monitoring building was demolished so the SMA was removed and was reinstalled in 2005 as a free-field near the TAN Hot Shop. In 2004, the PBF building was demolished and the three SMAs were removed. The SMAs were reinstalled in 2005 as free-field sites near PBF and RWMC. In 2006, four SMAs at TAN were removed due to demolition of the TAN Hot Shop. In 2007, two of these SMAs were reinstalled; one was installed at the Special Manufacturing Complex (SMC) and the other at a free-field site east of SMC. In 2008, two SMAs were removed as a result of building demolition activities. One SMA at INTEC in building CPP-668 and one at ATR were removed. These SMAs were reinstalled at TAN and the New Production Reactor seismic station, NPRI. During 2009, two SMAs were removed at INTEC from building CPP-601 as a result of building demolition activities. In 2010, the SMA at CFA, called EFSF, was uninstalled, moved to the nearby pump house, and renamed to PHFF.

Three-component accelerometers and SMAs were added to some of the seismic stations. In 2002, accelerometers were added to four seismic stations: Bear Canyon (BCYI), Gray's Range (GRRI), NPRI, and HWFI. In 2003, accelerometers were added to seismic stations Telchick Spring, Idaho (TCSI), Split Crater (SPCI), and PTI. In 2004, the accelerometer at TCSI was uninstalled. In 2008, a free-field SMA was installed at the Craters of the Moon (COMF) seismic station. In 2013, five new free-field sites were installed near INL facility areas, including ATR, INTEC, NRF, and MFC, and at the 3-km deep INEL-1 drill hole. Three-component accelerometers were co-located with broadband seismometers at sites, ATRF, ITCF, INLF, MFCF, and NVRF. The five stations were added to record earthquakes that can be used to assess parameters of ground motion models for future seismic hazard analyses. During 2013, the INL operated a total of 30 sites with acceleration recording capabilities.

A-3. INL Seismic Network Telemetry

Digital radios, Internet, or DSL links transmit seismic data from INL seismic stations and free-field SMAs to the IRC. Some seismic stations are used as relay links to transmit several seismic stations to a DSL drop point or directly to the IRC. Figure A-1 shows the telemetry configuration during 2013.

A-4. Evolution of INL Seismic Data Acquisition and Analysis Computer System

INL began recording earthquake data on the DAAS June 8, 1991 using the USGS's CUSP processing software. Since 2001, significant upgrades have been made to the DAAS as a result of computer hardware and software advances. The USGS's CUSP data acquisition and analysis software supported use of the TIMIT program, which was used to analyze earthquake data from June 1991 to November 2002. The USGS CUSP and TIMT software packages were replaced in 2002 with the earthquake analysis

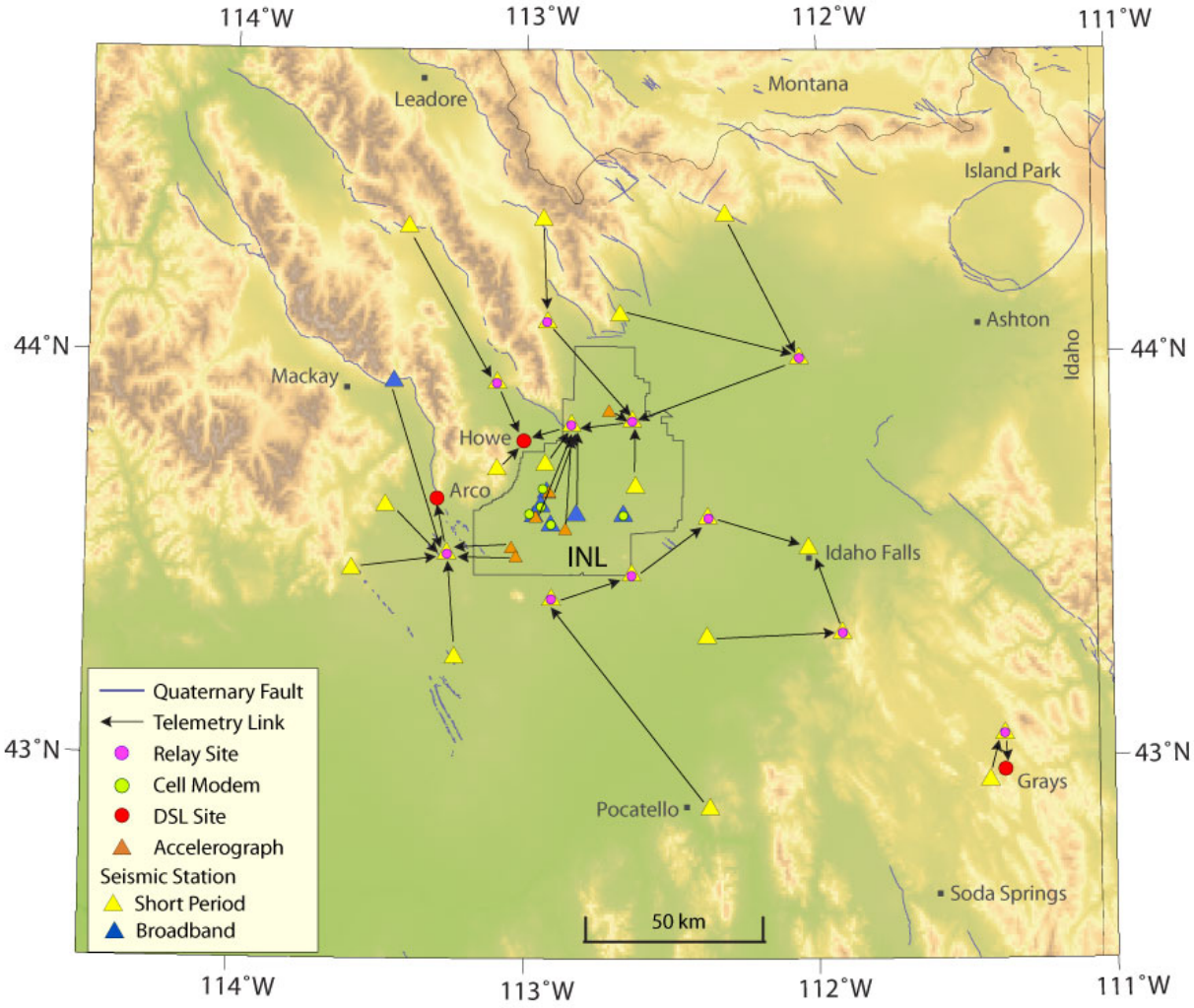


Figure A-1. Telemetry configuration of INL seismic stations and free-field SMAs during 2013.

program SEISAN (developed by the University of Bergen, Norway) and the USGS's EARTHWORM processing software in 2003. As of December 2002, earthquake data are analyzed using the SEISAN program and is still in use today. Use of the SEISAN and EARTHWORM programs facilitate the upgrades of seismic stations and SMAs to currently available digital data loggers and sensors, which enables concurrent waveform analyses of both velocity and acceleration data.

A-5. 1995 Evaluation of INL Seismic Network Location Quality

In 1995, the State of Idaho at that time requested that Zollweg and Sprenke (1995) perform an independent assessment of the INL Seismic Monitoring Program. Zollweg and Sprenke (1995) evaluated the location accuracy of the INL seismic network by two methods: 1) directly comparing INL locations to well-located earthquakes; and 2) indirectly by evaluating the network bias or non-random error through varying independent permutations (or combinations) of recording stations.

For the first method, twenty-two earthquakes having high-quality locations determined from a temporary seismic network installed near Challis, Idaho from July 1, 1992 to July 12, 1992 (by Boise State University) were compared to INL locations for these earthquakes. The earthquakes were located about 120 km from the center of INL, had varying magnitudes ranging from 1.9 to 4.5, and had absolute errors less than 1 km. The epicenters determined by INL seismic stations for these events differed by 1.6 to 11.5 km with an average of 7.1 km. The differences in locations were dependent on magnitude, with the smaller magnitude earthquakes tending to have greater differences in locations (Zollweg and Sprenke, 1995). These results are similar to the earlier estimates of an error radius of 5 km for a comparison to high-quality locations of the aftershocks from the M_s 7.3 October 28, 1983 earthquake (Jackson et al., 1993a). However it is noted that this estimate for an error radius was based on having five stations in the INL seismic network at that time. The closest station to the aftershocks was at a distance of 50 km or more.

The second method used by Zollweg and Sprenke (1995) evaluates the network bias. Unless all earthquakes are located using exactly the same groups of stations and phases (P- and S-wave arrivals), the relative locations will be affected by a non-random error or network bias. The network bias is important for the smaller earthquakes that make up the majority of the events in a catalog since fewer stations usually record smaller earthquakes. Five earthquakes located northwest of the INL seismic network and ranging in magnitude from 1.8 to 3.8 were used in the analysis. Because INL operated 26 seismic stations at the time of the assessment, there were millions of possible combinations of recording stations. Zollweg and Sprenke (1995) chose to vary the combination of the ten most influential phase arrivals for the permutation analysis. The locations for most of the permutations clustered about radii ranging from 6.5 to 11 km. For the magnitude 3.8 earthquake, 8% of the permutations resulted in a linear band extending 100 km. Zollweg and Sprenke (1995) suggested that earthquakes located with fewer S-wave arrival times have less well-constrained locations. Some of the larger earthquakes, like the magnitude 3.8 earthquake, have fewer S-wave arrival times because the signals saturate the instrumentation and onset of the S- wave is indistinguishable from the P-waves. Earthquakes with more than three S-wave-arrival times resulted in better-constrained locations.

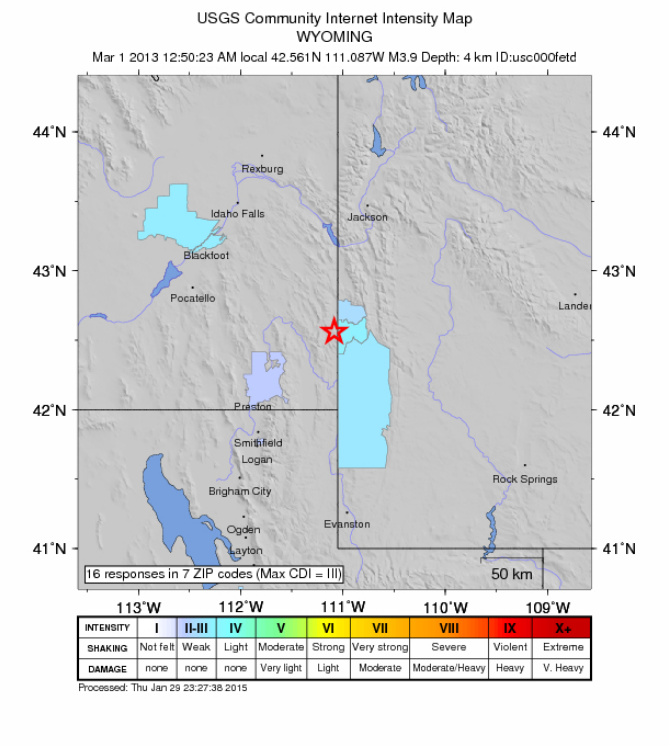
Appendix B

Earthquake Intensity Maps

The USGS with the cooperation of various regional seismic networks provide a web page where people who experience an earthquake can go online and share information about its effects to help create a map of shaking intensities and damage. The "*Community Internet Intensity Maps*" contribute toward the quick assessment of the scope of an earthquake emergency and provide valuable data for earthquake research (U.S. Geological Survey, 2016). The website is called "*Did You Feel It?*" and is the place where a person can enter their ZIP Code and answer a list of questions about what they felt and what damage occurred.

Maps in Figures B-1 to B-10 show the responses from local residents for 19 earthquakes that were felt during 2013 (see Section 4). The earthquakes are identified in the figure caption by the date that corresponds to the time (hour and minute) in UTC. The maps were downloaded from the USGS "*Did You Feel It?*" website and thus are labeled at the top with the date that corresponds to the local time when the earthquake occurred (U.S. Geological Survey, 2016). The earthquakes are shown in chronological order.

a)



b)

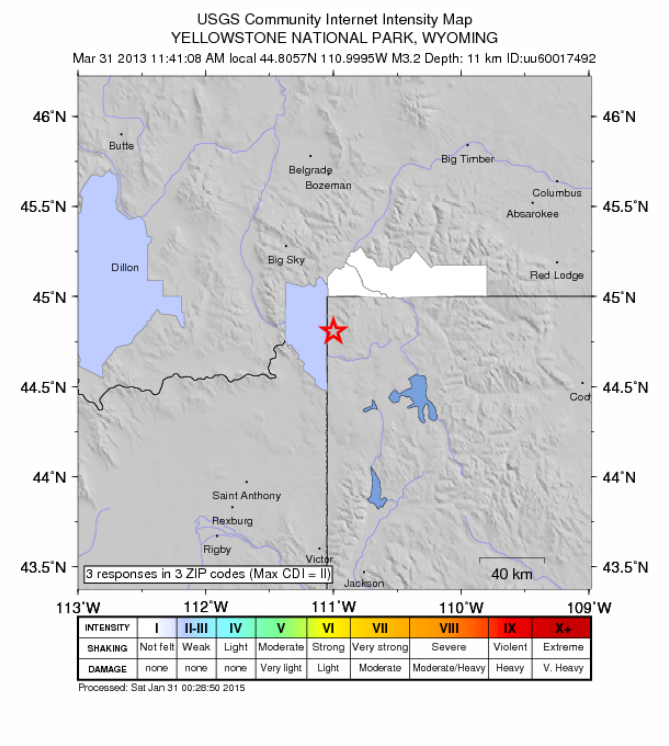
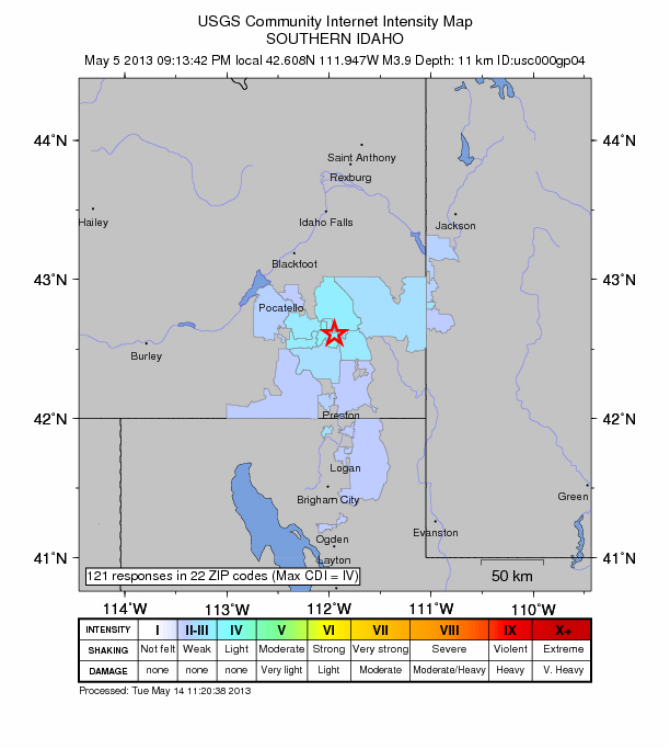


Figure B-1. Intensity maps for: a) March 1, 2013 (07:50 UTC) M_W 3.9 earthquake; and b) March 31, 2013 (17:41 UTC) M_L 3.2 earthquake (U.S. Geological Survey, 2016).

a)



b)

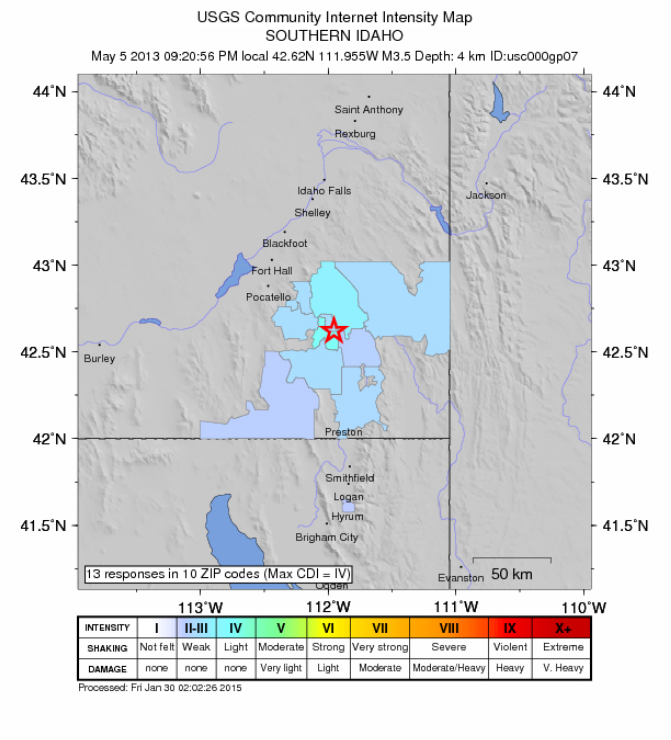
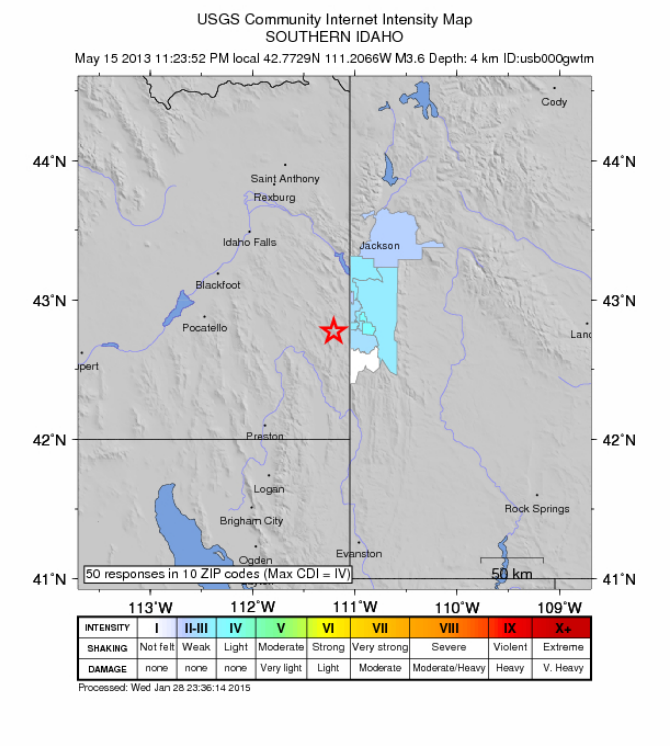


Figure B-2. Intensity maps for: a) May 6, 2013 (03:13 UTC) M_W 3.9 earthquake; and b) May 6, 2013 (03:20 UTC) M_L 3.5 earthquake (U.S. Geological Survey, 2016).

a)



b)

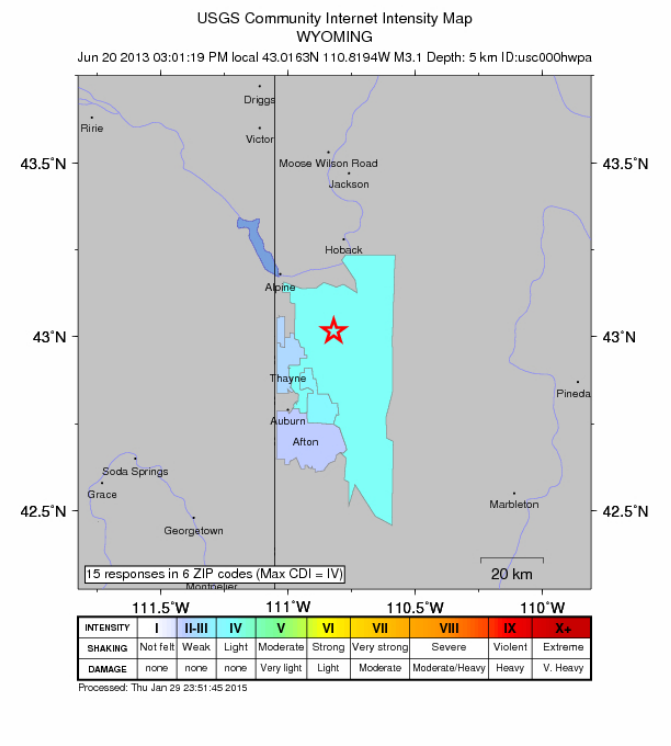
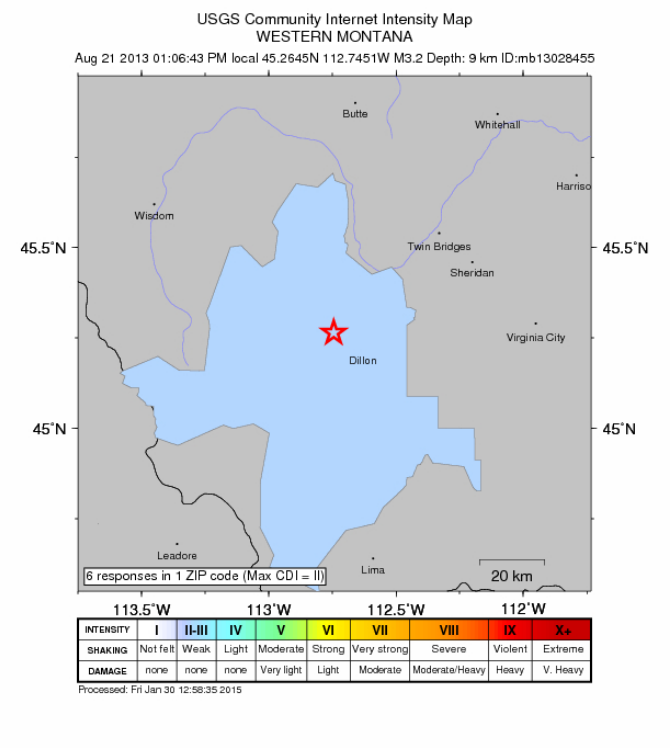


Figure B-3. Intensity maps for: a) May 16, 2013 (05:23 UTC) M_W 3.6 earthquake; and b) June 20, 2013 (21:01 UTC) M_L 3.1 earthquake (U.S. Geological Survey, 2016).

a)



b)

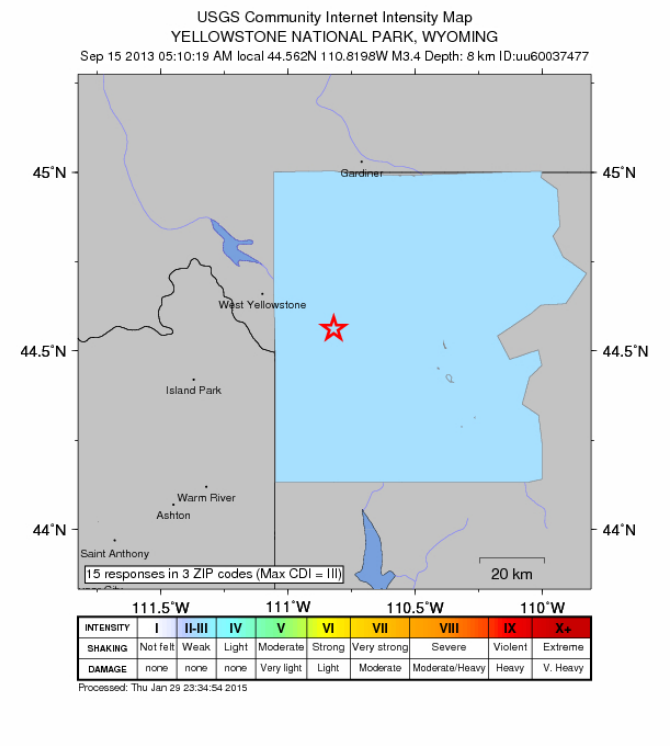
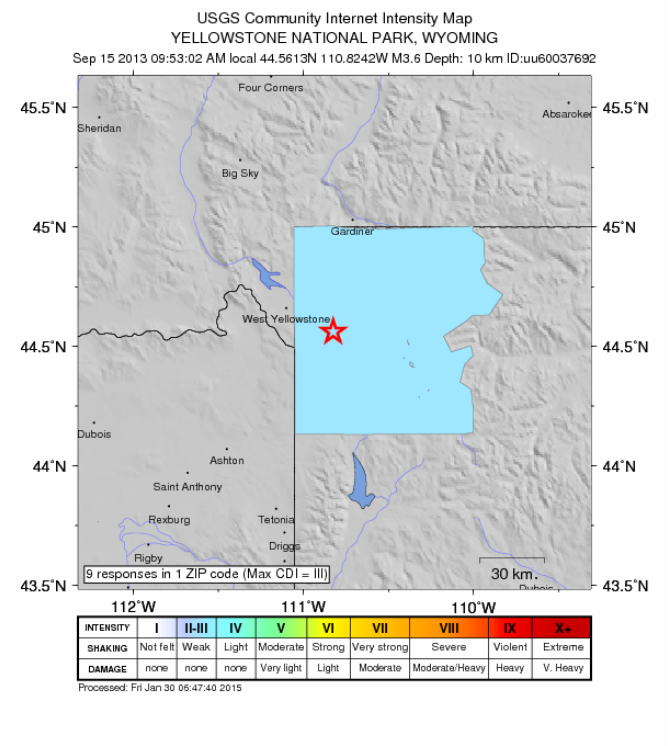


Figure B-4. Intensity maps for: a) August 21, 2013 (19:06 UTC) M_L 3.3 earthquake; and b) September 15, 2013 (11:10 UTC) M_L 3.4 earthquake (U.S. Geological Survey, 2016).

a)



b)

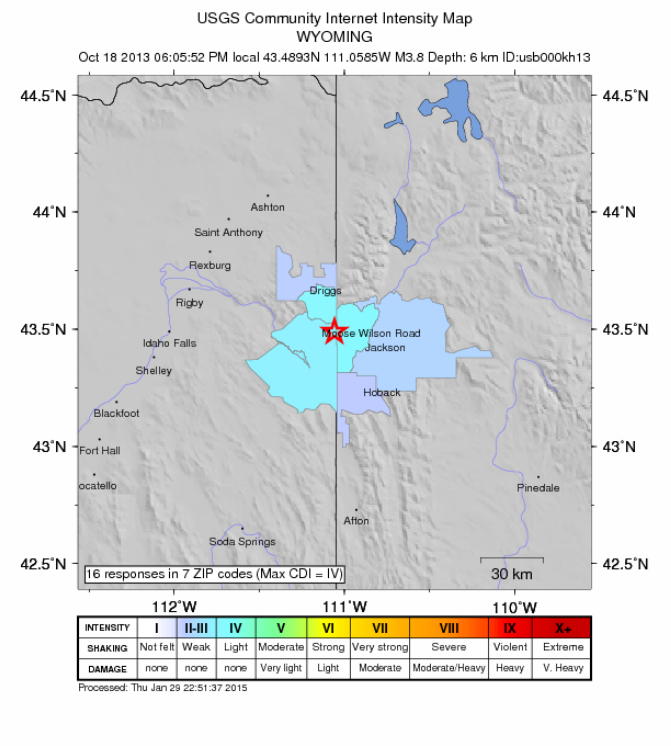
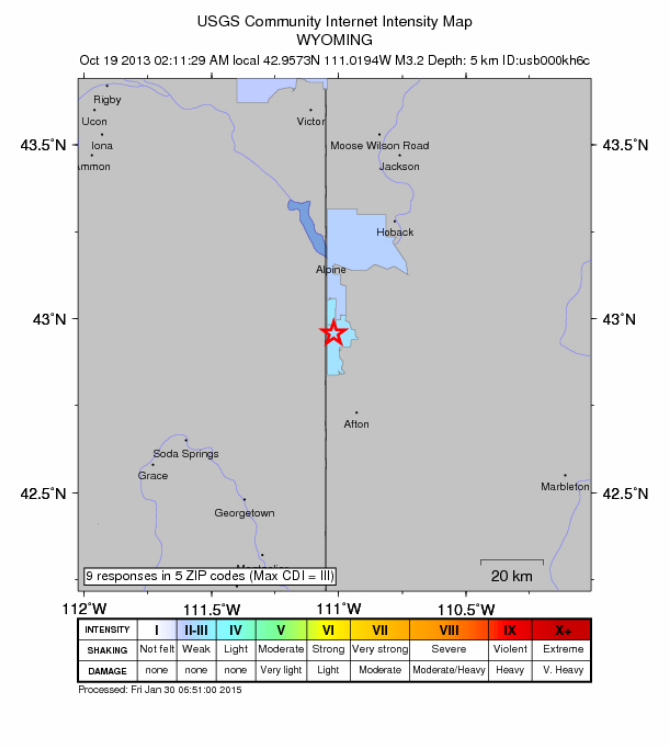


Figure B-5. Intensity maps for: a) September 15, 2013 (15:53 UTC) M_L 3.6 earthquake; and b) October 19, 2013 (00:05 UTC) M_W 3.8 earthquake (U.S. Geological Survey, 2016).

a)



b)

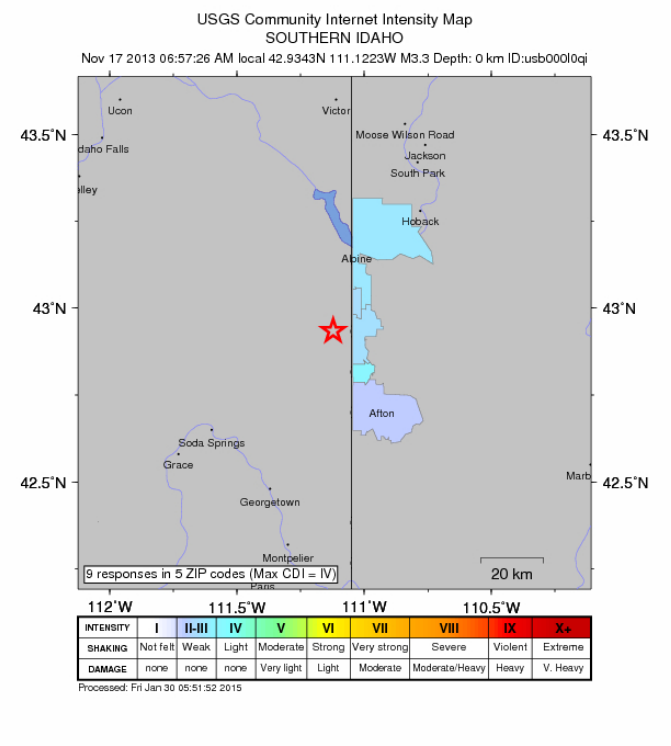
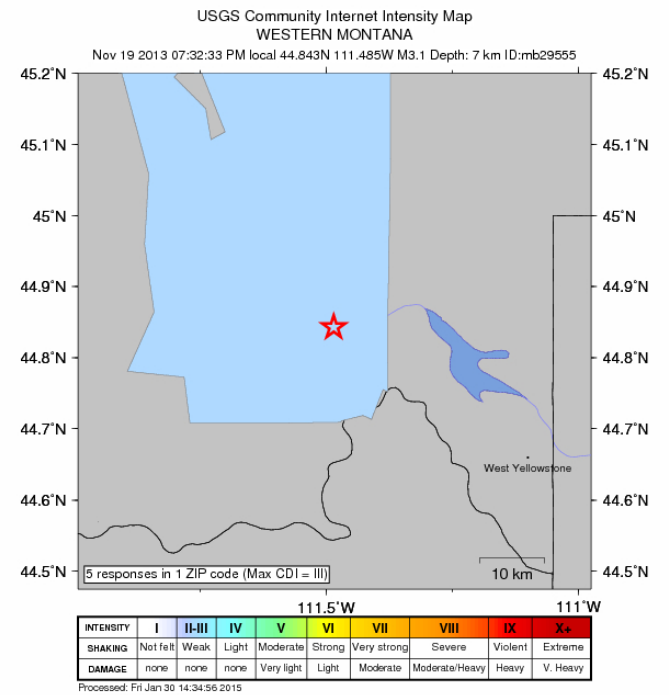


Figure B-6. Intensity maps for: a) October 19, 2013 (08:11 UTC) M_L 3.3 earthquake; and b) November 17, 2013 (13:57 UTC) M_L 3.3 earthquake (U.S. Geological Survey, 2016).

a)



b)

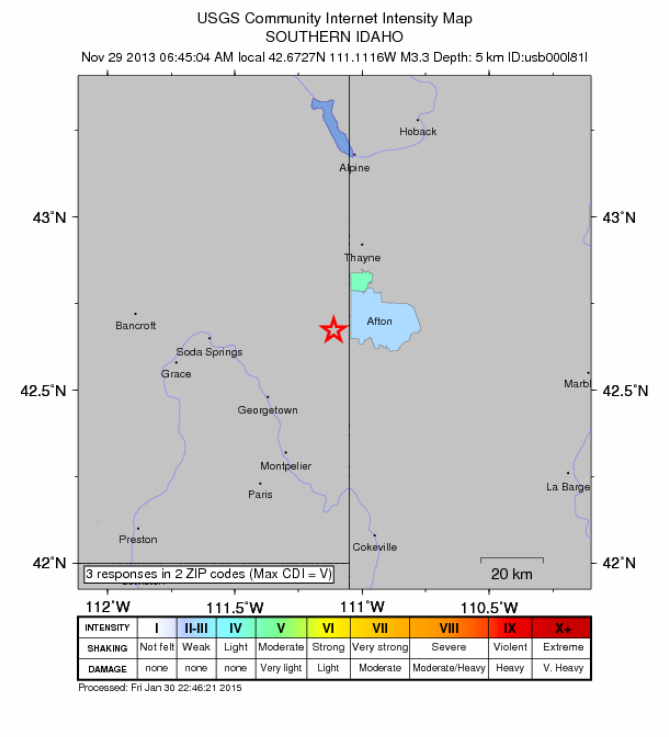
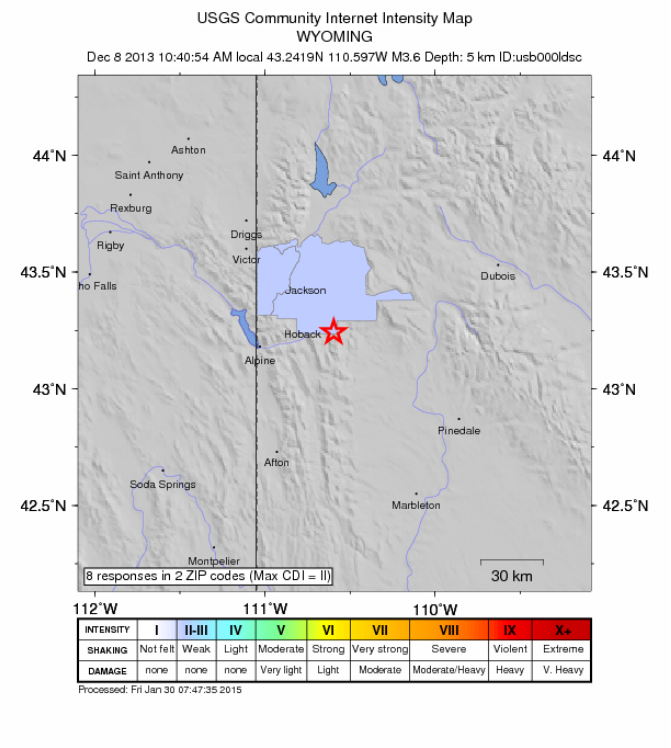


Figure B-7. Intensity maps for: a) November 20, 2013 (02:32 UTC) M_c 3.1 earthquake; and b) November 29, 2013 (13:45 UTC) M_L 3.1 earthquake (U.S. Geological Survey, 2016).

a)



b)

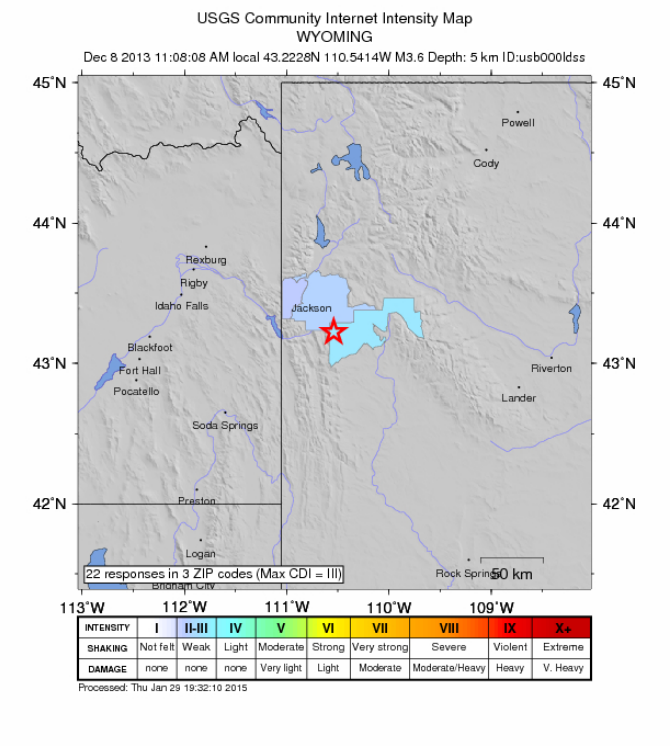
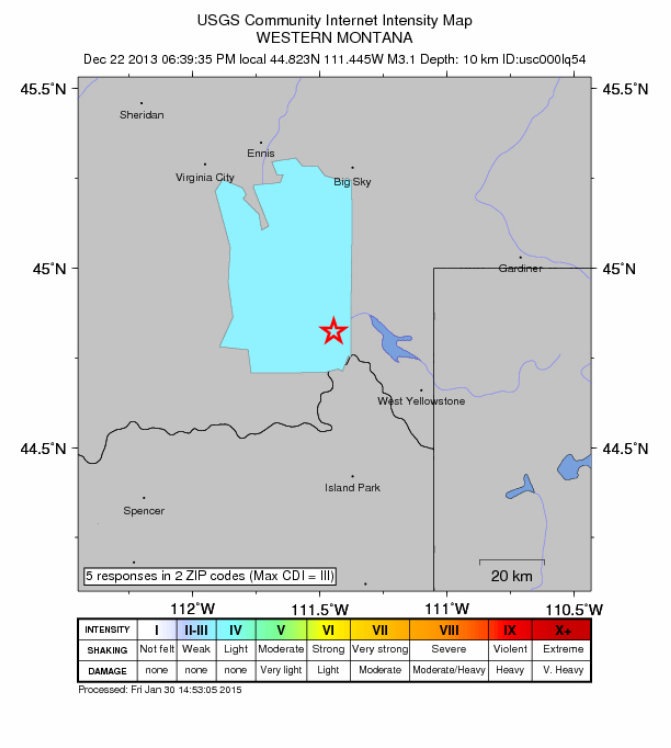


Figure B-8. Intensity maps for: a) December 8, 2013 (17:40 UTC) M_L 3.6 earthquake; and b) December 8, 2013 (18:08 UTC) M_L 3.9 earthquake (U.S. Geological Survey, 2016).

a)



b)

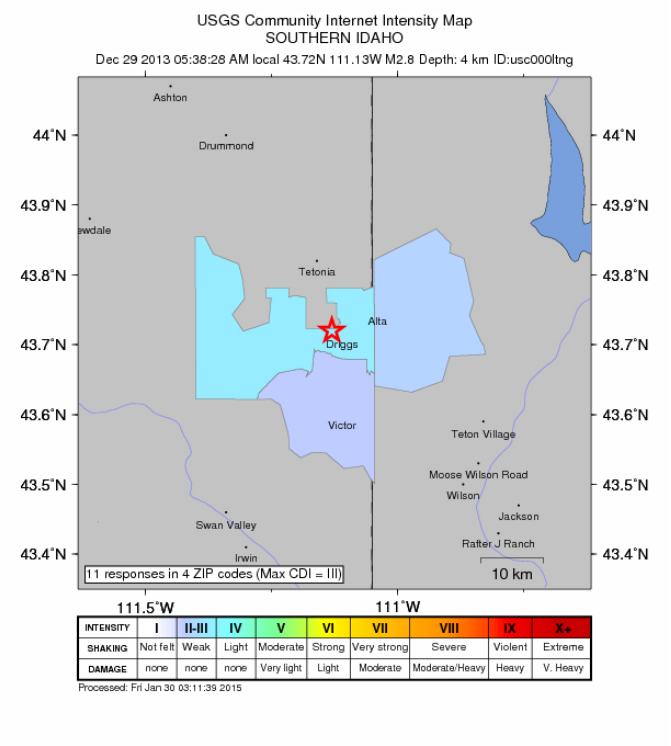


Figure B-9. Intensity maps for: a) December 23, 2013 (01:39 UTC) M_L 2.8 earthquake; and b) December 30, 2013 (00:38 UTC) M_L 2.8 earthquake (U.S. Geological Survey, 2016).

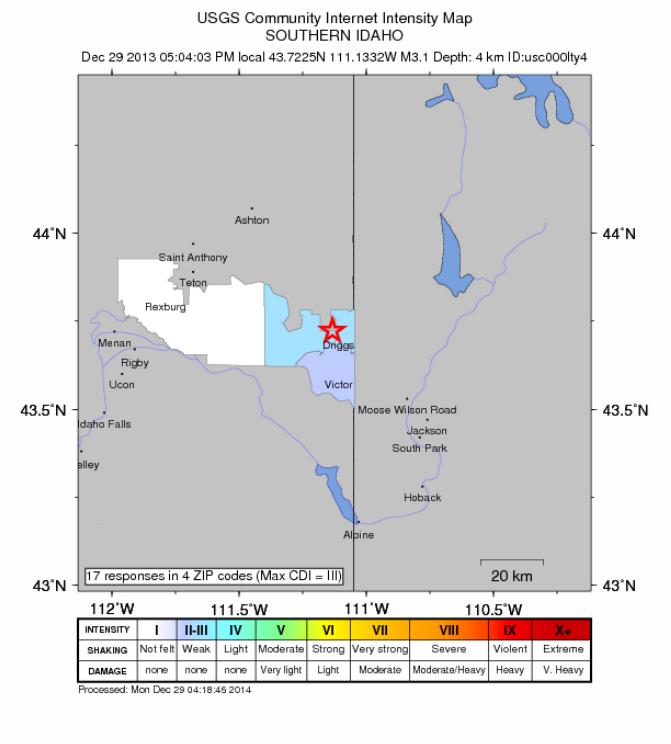


Figure B-10. Intensity maps for December 30, 2013 (00:40 UTC) M_L 3.1 earthquake (U.S. Geological Survey, 2016).

Appendix C

2013 Earthquake List

The summary list of earthquakes includes those located within a 161-km (100-mile) radius of the INL centered at 43.0° 39.00' N, 112° 47.00' W. Table C-1 provides an explanation of the headings listed in Table C-2 for the earthquake list.

Table C-1. Explanation of the earthquake summary table headings.

Heading	Example	Explanation
ORIGIN	1/2/2013 00:36:13.6	Date of the earthquake: month/day/year; origin time of the earthquake: hour, minute, and second in UTC
LAT N	43.3002	Latitude of epicenter in degrees North
LONG W	-110.9658	Longitude of epicenter in degrees West
MAG-	1.4	Magnitude of the earthquake. NM signifies that no magnitude was determined for this earthquake.
TYPE	ML IE	Type of magnitude reported and reporting agency. Magnitude types: Coda magnitude (Mc); Local magnitude (ML); Moment magnitude (Mw); and Body wave magnitude (mb). Reporting agencies include: Idaho National Laboratory (IE); NEIC (US); University of Utah (UU); and Montana Bureau of Mines and Geology (MB); Wyoming (WY). NM with a magnitude of 0.00 indicates that no magnitude was calculated as a result of multiple earthquakes, which obscures the coda of the first event or the record length was insufficient to include the full coda of the earthquake.
DIST	152.0	Distance in km from center of INL at: 43° 39.00' N, 112° 47.00' W.
Z	1.06	Calculated focal depth in km. Not all earthquakes have appropriate seismic station geometry for calculating a reliable focal depth, thus the errors (ERZ) are typically large.
NO	9	Number of station readings used in locating the earthquake with weights above 0.1. P- and S-wave arrival times for the same station are regarded as two readings.
GAP	160	Largest azimuthal separation in degrees between stations.
DMIN	11.5	Distance in km from the epicenter to the nearest station.
RMS	0.04	Root mean square error of arrival time residuals in second using all weights as calculated by: $RMS=SQRT(\Sigma W_i*R_i^2/N)$ Where: SQRT is the square root; ΣW_i*R_i is the sum of the time residuals for the i^{th} arrival times the weight assigned to that arrival time; and N is the number of residuals.
ERH	0.7	Standard horizontal error of the epicenter in km.
ERZ	1.6	Standard vertical error of the focal depth in km.

Table C-2. Earthquakes located within 161-km radius of INL in 2013.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
1/2/2013	00:36:13.6	43.3002	-110.9658	1.4 ML IE	152.0	1.06	9	160	11.5	0.04	0.7	1.6
1/2/2013	05:51:14.4	43.3807	-111.0978	1.1 Mc IE	139.4	3.74	10	175	17.0	0.04	0.9	6.6
1/3/2013	04:44:32.3	43.7410	-111.0918	0.3 ML IE	136.6	3.54	6	238	21.2	0.04	2.9	11.3
1/3/2013	11:07:58.5	45.0268	-112.3755	1.3 Mc MB	156.6	1.09	7	144	41.1	0.02	1.2	3.9
1/4/2013	00:09:03.1	44.4780	-112.1163	1.7 Mc IE	106.5	4.74	20	106	22.1	0.03	0.3	0.6
1/4/2013	06:09:42.2	43.6770	-111.1420	0.5 ML IE	132.3	3.13	9	211	25.9	0.02	1.0	11.2
1/4/2013	07:04:04.0	42.8995	-111.5100	1.1 ML IE	132.8	6.72	12	114	36.7	0.07	0.5	3.9
1/4/2013	07:04:19.5	42.8965	-111.4427	2.4 Mc IE	137.3	7.98	9	181	31.6	0.04	0.8	2.4
1/4/2013	07:44:05.5	44.0325	-114.4967	1.3 Mc IE	144.2	3.23	9	192	52.7	0.05	1.5	3.9
1/4/2013	14:07:04.3	42.8858	-111.5777	1.4 ML IE	129.6	5.28	14	161	41.3	0.04	0.4	5.6
1/4/2013	14:45:37.4	44.6115	-112.5630	1.8 Mc MB	108.4	8.65	11	99	13.5	0.02	0.6	3.3
1/5/2013	02:34:17.4	43.8388	-110.8957	0.5 ML IE	153.4	0.01	10	143	7.3	0.06	0.8	1.5
1/5/2013	04:52:30.0	43.7113	-111.0160	0.5 ML IE	142.6	2.49	8	179	21.5	0.05	0.9	12.4
1/5/2013	15:10:40.9	45.0940	-112.7162	1.3 Mc MB	160.7	2.51	6	164	31.3	0.07	2.4	4.2
1/8/2013	20:23:07.6	44.6033	-112.1617	2.3 Mc MB	117.1	5.26	14	91	18.5	0.03	0.6	0.9
1/11/2013	19:57:41.8	43.2792	-111.5485	1.2 ML IE	108.0	16.69	18	123	29.0	0.10	0.4	0.6
1/12/2013	03:32:39.4	43.5338	-111.1262	1.1 ML IE	134.3	9.24	8	188	15.0	0.08	1.0	2.6
1/12/2013	04:29:18.4	43.5178	-111.1405	1.4 ML IE	133.4	11.61	15	87	15.7	0.04	0.4	1.4
1/12/2013	05:17:16.5	43.5180	-111.1315	1.2 ML IE	134.1	8.70	7	230	15.0	0.01	1.1	2.3
1/12/2013	06:13:29.8	42.9405	-111.1978	0.8 ML IE	150.9	11.71	7	125	18.3	0.08	0.8	2.9
1/12/2013	23:58:54.5	44.6208	-112.0913	1.1 Mc MB	121.3	3.61	5	138	24.3	0.02	1.1	2.1
1/13/2013	15:12:56.2	44.6630	-112.1565	2.6 Mc MB	123.3	8.64	19	105	38.0	0.12	0.4	1.3
1/13/2013	15:59:32.9	44.1462	-113.9852	1.3 Mc IE	111.2	2.50	13	220	49.1	0.06	0.8	3.8
1/14/2013	22:54:58.7	42.6677	-111.6720	1.0 ML IE	141.8	4.99	7	113	48.1	0.06	0.7	12.3
1/17/2013	22:33:22.9	44.3395	-112.7302	1.1 Mc MB	76.8	14.14	7	136	16.9	0.05	0.7	2.7
1/18/2013	05:28:11.7	44.2880	-114.1235	1.4 Mc IE	128.8	6.53	9	250	57.4	0.05	2.2	6.0
1/18/2013	10:28:41.9	43.7060	-111.1693	0.4 Mc IE	130.2	2.54	9	214	13.7	0.08	1.2	10.9
1/18/2013	13:11:21.7	42.6798	-111.6395	0.9 ML IE	142.4	4.80	9	94	33.8	0.05	0.6	6.9
1/19/2013	00:24:00.6	43.2108	-110.9585	0.6 ML IE	155.5	6.17	8	211	18.9	0.06	1.2	4.0
1/19/2013	02:26:01.9	44.7028	-114.0935	1.5 Mc IE	157.1	5.13	6	225	70.0	0.01	2.2	10.5
1/19/2013	05:00:04.6	44.6940	-114.0645	1.6 ML IE	154.9	5.11	5	247	67.5	0.02	2.2	12.3
1/19/2013	16:01:01.2	42.8953	-111.6375	0.6 ML IE	125.2	7.19	8	160	18.2	0.11	0.9	3.5
1/19/2013	17:52:40.5	43.1583	-111.4697	0.9 Mc IE	119.6	11.22	8	248	14.2	0.02	1.9	1.3
1/19/2013	22:44:23.8	42.5407	-111.5855	1.3 ML IE	157.2	6.82	12	98	46.1	0.04	0.4	4.0
1/20/2013	01:14:02.9	43.1598	-111.3745	1.1 ML IE	126.4	6.72	11	194	11.8	0.05	0.8	2.1
1/20/2013	10:55:50.2	43.1483	-110.9880	0.5 Mc IE	155.7	5.89	9	164	26.2	0.07	1.4	6.0
1/21/2013	02:23:28.9	44.8203	-112.9800	1.7 Mc IE	131.1	5.49	14	175	10.4	0.05	0.7	0.6
1/21/2013	14:38:00.4	44.6970	-111.8915	1.4 Mc MB	136.6	9.04	10	114	18.3	0.02	0.5	2.5
1/22/2013	05:05:16.8	42.7307	-111.7820	0.7 ML IE	130.7	3.24	10	108	49.2	0.03	0.4	12.0
1/23/2013	00:30:44.5	43.7380	-111.0548	0.6 ML IE	139.6	1.78	12	181	11.3	0.06	1.0	1.9
1/24/2013	20:07:44.4	44.0903	-113.9430	2.1 Mc IE	105.3	6.99	12	207	43.3	0.09	0.8	14.8
1/27/2013	09:18:44.3	42.9163	-111.1548	1.0 ML IE	155.3	3.11	10	136	17.4	0.10	0.5	12.6
1/27/2013	18:29:25.4	43.3678	-111.1232	1.3 ML IE	137.8	10.86	9	163	22.0	0.08	0.6	2.9
1/29/2013	12:23:33.7	44.1602	-113.1270	0.6 ML IE	63.1	4.35	10	172	18.7	0.08	0.6	1.6
1/29/2013	19:37:07.8	44.2580	-114.0970	1.4 Mc IE	125.2	3.91	9	245	55.5	0.06	0.9	2.9
1/31/2013	15:45:03.1	43.2443	-113.0368	1.3 Mc IE	49.6	45.00	9	143	16.6	0.09	1.0	0.9
2/1/2013	06:15:38.1	43.9170	-113.6187	0.8 ML IE	73.5	6.33	11	204	13.5	0.09	0.9	0.7
2/2/2013	14:45:32.4	43.3122	-110.9175	1.8 Mc IE	155.5	3.18	14	151	7.7	0.06	0.6	3.3
2/2/2013	15:11:54.9	43.3015	-110.8985	2.2 Mc IE	157.2	6.25	11	162	7.7	0.04	0.7	1.3
2/2/2013	15:15:43.4	43.3055	-110.9053	1.7 ML IE	156.6	5.80	14	112	7.7	0.05	0.6	1.1

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
2/2/2013	15:32:15.2	43.2970	-110.8943	2.1 ML IE	157.7	5.80	13	117	8.0	0.06	0.8	1.2
2/2/2013	16:18:03.6	43.3397	-110.8987	1.1 ML IE	156.2	2.90	8	139	4.6	0.02	0.8	2.8
2/3/2013	09:41:36.6	44.4708	-114.2450	1.3 Mc IE	148.5	1.32	7	241	69.2	0.05	1.6	3.4
2/3/2013	12:21:42.3	43.3002	-110.9070	1.1 ML IE	156.6	4.65	9	160	8.2	0.08	0.8	1.9
2/3/2013	13:01:03.0	43.3205	-110.8863	1.4 ML IE	157.7	4.29	12	161	5.4	0.05	0.6	1.1
2/3/2013	15:44:54.7	43.2938	-110.9025	1.0 ML IE	157.2	4.96	7	162	8.7	0.05	0.9	1.9
2/3/2013	22:42:53.0	44.5250	-114.3202	2.2 Mc MB	156.9	9.12	7	137	76.7	0.05	0.8	2.2
2/4/2013	02:27:32.1	43.9947	-114.4082	1.4 Mc IE	136.2	7.25	8	247	48.0	0.07	1.1	13.7
2/4/2013	08:32:27.8	44.6542	-112.5405	1.3 Mc MB	113.4	6.42	7	171	13.4	0.06	1.4	9.4
2/4/2013	10:42:10.5	44.5607	-114.3025	1.6 Mc IE	158.3	1.78	10	250	76.7	0.11	1.2	4.6
2/5/2013	02:06:28.5	44.1755	-113.0652	0.4 Mc IE	62.7	4.98	10	90	15.8	0.09	0.5	1.0
2/6/2013	13:19:50.4	44.1610	-111.1155	0.2 Mc IE	145.4	13.37	6	148	6.3	0.05	1.3	3.2
2/6/2013	15:00:41.5	43.2985	-111.0777	1.3 ML IE	143.3	2.77	11	154	19.6	0.06	0.5	11.4
2/11/2013	11:22:40.1	44.4493	-112.0028	1.1 Mc MB	108.7	6.26	9	112	35.0	0.05	0.5	13.0
2/12/2013	14:01:59.0	44.6225	-112.1093	1.2 Mc 1.	120.9	12.91	11	95	22.9	0.03	0.4	1.1
2/14/2013	18:35:16.8	42.6655	-111.8417	2.0 ML IE	133.6	4.25	16	99	45.8	0.07	0.3	9.8
2/16/2013	05:11:28.3	43.0008	-111.3077	0.9 ML IE	139.7	4.84	10	104	7.8	0.07	0.6	2.9
2/16/2013	16:25:18.8	42.9365	-111.4770	1.3 ML IE	132.4	0.02	12	261	4.5	0.05	0.9	0.5
2/18/2013	12:55:05.8	44.4047	-113.0537	0.6 ML IE	86.7	6.87	12	129	12.3	0.05	0.4	0.7
2/19/2013	11:16:25.7	43.4897	-113.6150	0.7 ML IE	69.5	37.17	6	224	3.5	0.09	1.8	1.3
2/19/2013	23:46:38.1	43.5370	-110.9843	2.0 Mc IE	145.7	0.02	19	133	5.9	0.12	0.4	0.5
2/19/2013	23:57:55.8	43.5387	-110.9775	1.5 ML IE	146.2	0.02	13	132	5.8	0.11	0.8	0.8
2/20/2013	15:57:35.2	44.3505	-114.0195	1.1 Mc IE	126.1	5.39	8	219	49.2	0.03	0.9	4.0
2/22/2013	13:04:05.3	44.7477	-111.6628	1.2 Mc MB	151.4	6.26	10	217	2.0	0.02	2.0	0.4
2/23/2013	05:39:08.6	44.3650	-112.7023	1.5 Mc MB	79.8	6.27	28	83	19.4	0.06	0.2	0.6
2/23/2013	05:45:18.0	44.3638	-112.7023	1.0 Mc MB	79.7	4.67	18	83	19.4	0.07	0.4	0.8
2/23/2013	05:50:53.7	44.3600	-112.6983	0.9 ML IE	79.3	4.92	14	83	19.7	0.05	0.4	0.9
2/25/2013	19:15:50.7	44.6280	-112.0773	1.6 Mc MB	122.6	5.95	12	139	25.5	0.04	0.6	11.5
2/26/2013	12:22:26.3	44.2418	-114.0225	1.1 Mc IE	119.3	6.95	10	237	49.9	0.03	1.1	12.8
2/28/2013	16:52:30.4	42.6550	-111.3745	0.8 Mc IE	159.3	2.63	6	293	25.6	0.03	2.5	12.1
3/1/2013	00:57:17.3	43.4897	-110.8413	0.9 Mc IE	157.8	3.85	4	230	14.2	0.27	7.3	24.5
3/1/2013	04:28:55.4	44.6393	-111.8720	1.2 Mc MB	132.0	0.04	12	132	19.2	0.04	0.4	1.0
3/2/2013	18:22:05.2	43.2003	-111.3883	0.9 Mc IE	123.5	2.50	6	216	16.4	0.14	1.3	16.8
3/2/2013	21:10:04.7	43.5388	-111.1388	1.1 ML IE	133.3	8.44	7	251	14.3	0.02	2.0	1.8
3/2/2013	21:12:31.7	43.5587	-111.1507	0.8 Mc IE	132.1	11.28	6	277	13.3	0.07	0.9	1.8
3/2/2013	22:46:19.5	44.5282	-113.9728	1.6 Mc IE	136.4	9.67	4	282	51.3	0.31	10.8	26.9
3/2/2013	23:34:14.5	43.3437	-110.8388	0.1 Mc IE	160.8	6.90	4	357	2.3	0.00	12.5	1.1
3/3/2013	12:14:29.8	44.2785	-112.8800	0.3 Mc IE	70.3	4.76	8	89	7.5	0.01	0.5	0.7
3/5/2013	07:30:40.9	43.4478	-111.0895	0.9 Mc IE	138.6	2.83	7	257	12.2	0.38	3.3	32.4
3/5/2013	10:00:06.8	43.2157	-111.3180	0.4 Mc IE	128.0	5.00	4	320	41.2	0.06	2.9	13.1
3/6/2013	21:43:37.2	42.8583	-111.1365	0.6 ML IE	160.1	9.82	8	136	10.8	0.03	0.6	1.6
3/7/2013	11:37:21.2	43.3292	-111.1233	1.8 Mc IE	138.8	2.53	15	144	22.3	0.06	0.4	10.9
3/9/2013	03:42:32.2	44.5870	-112.5852	1.5 Mc MB	105.4	4.06	8	124	15.2	0.05	1.8	3.5
3/9/2013	18:40:22.9	43.5250	-111.0112	0.9 ML IE	143.7	4.05	8	227	6.2	0.06	1.3	3.6
3/12/2013	06:55:46.8	44.0027	-114.4517	1.1 Mc IE	139.8	5.18	10	279	49.0	0.02	6.1	10.1
3/12/2013	07:49:50.2	44.1055	-114.6343	1.1 Mc IE	157.1	0.02	6	273	63.1	0.02	8.3	9.5
3/14/2013	00:46:54.1	43.2290	-111.3532	1.6 Mc IE	124.8	3.15	23	89	19.5	0.10	0.4	6.6
3/14/2013	03:01:48.9	42.8393	-111.2440	1.4 ML IE	154.1	12.33	9	184	14.3	0.09	0.9	1.2
3/14/2013	03:07:03.0	42.8465	-111.2292	0.6 ML IE	154.6	12.30	8	173	13.9	0.12	0.7	1.3
3/17/2013	13:59:04.0	44.0837	-114.5147	1.7 ML IE	147.3	6.81	8	262	58.6	0.08	1.7	5.1
3/20/2013	04:49:10.4	42.7198	-111.4035	1.0 ML IE	152.6	7.18	8	279	24.3	0.03	1.4	3.1

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
3/20/2013	20:36:32.2	44.8258	-112.9177	1.8 ML IE	131.2	5.90	10	167	5.4	0.06	0.7	0.3
3/21/2013	01:10:57.7	42.8525	-111.2335	2.1 Mc IE	153.9	9.33	15	100	14.6	0.07	0.4	1.1
3/21/2013	05:27:30.7	44.7218	-113.6432	1.4 Mc MB	137.6	2.89	7	233	64.0	0.02	1.8	4.4
3/21/2013	05:34:16.7	44.7297	-113.6427	1.7 ML IE	138.4	1.46	9	233	63.8	0.05	1.5	2.4
3/21/2013	10:38:52.9	42.8482	-111.2367	1.2 ML IE	154.0	9.94	8	175	14.5	0.08	0.8	2.1
3/21/2013	23:17:58.0	43.2765	-111.5515	1.1 ML IE	107.9	3.64	8	231	28.8	0.07	1.5	11.3
3/22/2013	00:03:25.8	43.2683	-111.5173	1.7 ML IE	110.8	2.50	16	71	26.7	0.11	0.4	14.4
3/22/2013	00:44:28.9	43.2195	-111.5193	0.5 ML IE	112.9	5.02	4	254	22.1	0.05	2.3	11.1
3/22/2013	23:00:12.6	43.5462	-111.1735	1.8 ML IE	130.4	8.89	11	188	15.6	0.06	0.7	2.0
3/23/2013	00:47:03.8	43.5542	-111.1965	0.7 Mc IE	128.5	5.22	5	288	16.6	0.05	3.0	12.8
3/26/2013	03:27:19.4	44.5042	-112.7532	2.6 Mc IE	95.1	0.01	19	110	24.5	0.18	0.6	1.9
3/26/2013	05:02:10.7	43.7783	-110.8113	0.0 Mc IE	159.5	5.00	4	268	23.3	1.64	15.6	98.9
3/26/2013	05:06:50.9	44.4960	-112.7043	1.6 Mc IE	94.3	5.01	4	194	38.6	0.02	1.3	11.5
3/26/2013	14:38:53.4	43.6963	-110.8478	0.5 Mc IE	156.1	2.01	6	229	15.8	0.05	1.5	13.1
3/27/2013	04:45:15.7	42.5292	-111.6158	1.1 Mc IE	156.7	4.81	3	264	49.8	0.15	2.5	17.6
3/28/2013	05:08:39.8	43.5328	-111.1915	0.6 Mc IE	129.1	4.82	7	284	17.7	0.08	1.0	4.6
3/28/2013	07:44:35.3	44.3028	-112.8590	1.7 Mc IE	72.9	5.14	4	235	27.5	0.16	8.2	13.0
3/28/2013	19:41:45.0	43.8873	-113.7212	1.5 ML IE	80.0	1.30	17	150	22.1	0.08	0.5	2.9
3/29/2013	05:29:50.6	43.8895	-110.8193	0.2 Mc IE	160.3	9.44	6	187	9.7	0.08	3.0	4.2
3/29/2013	11:09:38.6	42.6273	-111.4382	1.6 ML IE	157.8	4.96	6	230	31.6	0.02	1.3	9.6
3/30/2013	07:11:51.8	42.8953	-111.2025	0.8 Mc IE	153.3	10.52	8	136	16.7	0.05	0.5	2.1
3/30/2013	08:55:15.3	43.6730	-110.8488	0.6 Mc IE	156.0	3.93	4	212	14.9	0.05	5.7	11.9
3/30/2013	10:18:43.6	44.2355	-111.0772	0.8 Mc IE	151.6	4.56	4	239	9.8	0.11	4.7	14.8
3/31/2013	14:32:48.4	44.7910	-112.4782	1.9 Mc IE	129.2	6.31	3	176	29.6	0.10	1.4	15.2
3/31/2013	22:03:54.5	43.6517	-111.0482	0.6 Mc IE	139.9	18.22	4	338	2.3	0.10	14.9	1.5
4/1/2013	19:52:13.2	43.3427	-111.0895	0.5 Mc IE	141.1	5.83	5	285	19.4	0.02	1.4	7.4
4/3/2013	09:27:23.8	44.9788	-113.1103	2.6 Mc IE	150.1	2.07	8	282	119.8	0.24	12.9	13.9
4/4/2013	01:52:48.6	43.3117	-110.8925	0.7 Mc IE	157.4	5.69	7	310	6.5	0.12	1.2	1.4
4/4/2013	02:03:20.8	44.6028	-112.0763	1.6 Mc IE	120.1	5.00	4	133	34.8	0.15	1.2	17.8
4/4/2013	10:26:13.8	43.7590	-111.1490	1.1 Mc IE	132.2	5.02	4	319	33.9	0.04	1.4	13.0
4/5/2013	17:44:05.4	43.2248	-110.8955	1.9 ML IE	159.9	14.54	7	186	15.7	0.15	1.7	3.9
4/5/2013	19:19:34.0	43.2308	-110.9412	0.8 Mc IE	156.2	8.86	7	163	16.3	0.09	1.1	2.1
4/5/2013	21:11:03.3	43.4525	-110.9278	0.9 Mc IE	151.4	18.68	4	282	4.6	0.00	1.4	1.7
4/7/2013	04:08:27.1	43.3000	-110.8997	1.0 Mc IE	157.2	19.09	6	311	21.5	0.06	1.4	2.1
4/7/2013	04:08:36.7	43.2672	-110.8708	0.3 Mc IE	160.4	5.09	4	315	25.6	0.27	3.4	19.1
4/7/2013	04:27:32.4	44.2465	-111.2555	1.1 Mc IE	139.4	4.89	4	268	48.1	0.28	2.2	26.6
4/8/2013	08:56:20.3	43.6473	-110.8507	0.5 Mc IE	155.8	5.12	4	275	14.3	0.15	4.3	16.8
4/8/2013	22:47:36.8	43.5518	-111.1638	1.5 Mc IE	131.1	9.12	5	298	14.6	0.03	1.2	1.6
4/9/2013	15:18:41.6	44.6362	-113.8808	1.7 ML IE	140.5	7.08	13	210	52.3	0.04	1.4	2.2
4/11/2013	13:50:13.9	43.5473	-111.1922	0.9 Mc IE	128.9	4.95	5	286	16.7	0.03	2.7	12.2
4/12/2013	17:25:20.3	43.5448	-111.1818	1.1 Mc IE	129.8	3.17	4	279	16.3	0.12	2.2	13.4
4/14/2013	17:55:01.9	42.9000	-111.2347	1.3 Mc IE	150.8	4.82	5	143	15.8	0.03	1.4	12.6
4/15/2013	02:19:16.6	44.9245	-111.8983	1.5 Mc IE	158.4	5.00	4	258	28.4	0.29	10.6	18.8
4/15/2013	03:11:11.7	43.8450	-111.1520	1.2 Mc IE	133.1	5.01	4	323	42.6	0.06	1.4	13.4
4/15/2013	07:07:26.6	43.5568	-111.1722	1.7 ML IE	130.4	11.04	7	283	14.8	0.06	1.0	1.9
4/15/2013	07:31:58.0	43.6513	-110.8497	0.7 Mc IE	155.9	5.09	5	276	14.4	0.14	4.1	16.1
4/15/2013	09:01:01.5	43.6112	-111.0208	0.5 Mc IE	142.2	10.19	4	194	3.0	0.06	13.3	1.5
4/15/2013	09:51:20.2	43.6548	-110.8460	0.8 Mc IE	156.2	5.09	5	278	14.7	0.12	3.7	15.1
4/15/2013	10:39:49.9	42.8193	-111.2502	1.2 Mc IE	155.0	17.77	5	198	13.6	0.04	1.2	3.4
4/15/2013	16:58:37.2	43.2368	-111.5535	0.7 ML IE	109.6	4.92	8	250	25.2	0.08	1.1	12.4
4/16/2013	21:31:04.2	43.6153	-111.0278	1.0 Mc IE	141.6	17.92	4	208	2.5	0.02	12.6	1.4

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
4/17/2013	21:40:10.1	42.7083	-111.6953	1.1 Mc IE	137.1	5.05	4	321	49.1	0.26	2.6	25.2
4/18/2013	15:49:51.8	44.3145	-111.0755	1.1 Mc IE	155.6	4.34	4	250	16.2	0.05	2.9	12.8
4/19/2013	10:28:50.8	44.7092	-111.6468	1.1 Mc IE	148.8	1.64	4	180	2.7	0.08	14.1	11.8
4/20/2013	08:01:53.4	43.6420	-110.8918	0.8 Mc IE	152.5	15.27	6	266	10.9	0.07	9.6	7.1
4/20/2013	14:46:35.6	43.6200	-111.0325	0.8 Mc IE	141.2	19.19	4	220	2.1	0.05	13.2	1.4
4/22/2013	04:49:52.7	44.4383	-111.2173	0.9 Mc IE	153.0	5.60	7	319	27.7	0.13	4.8	14.9
4/22/2013	09:51:05.3	43.2662	-111.2000	0.9 Mc IE	135.0	4.87	4	342	30.2	0.30	5.4	27.6
4/22/2013	09:54:17.1	44.8463	-112.9845	1.2 Mc IE	134.1	2.50	4	250	10.9	0.56	19.8	33.0
4/22/2013	17:12:37.6	42.6347	-112.0073	2.4 ML IE	129.4	7.08	18	116	39.6	0.05	0.3	1.8
4/23/2013	01:05:03.3	42.6077	-112.0482	0.9 Mc IE	130.4	4.90	3	178	39.3	0.03	3.5	12.0
4/23/2013	08:59:11.2	43.1540	-111.9180	1.3 Mc IE	89.2	4.96	5	310	45.9	0.02	1.5	12.4
4/24/2013	06:18:45.2	44.6953	-111.8953	1.5 Mc IE	136.2	5.24	4	289	18.6	0.19	11.6	13.4
4/25/2013	04:41:49.2	43.6150	-111.0840	0.4 Mc IE	137.1	8.98	4	290	5.3	0.01	1.7	1.1
4/25/2013	06:40:41.3	44.1945	-113.1908	0.8 Mc IE	68.8	2.51	4	217	21.5	0.15	1.2	17.2
4/26/2013	11:18:41.0	43.6303	-110.8693	1.1 Mc IE	154.3	4.37	5	187	16.9	0.15	3.1	15.3
4/27/2013	06:49:19.9	44.0203	-111.0752	0.8 Mc IE	143.3	4.88	3	327	17.5	0.05	3.3	12.8
4/27/2013	10:24:23.0	44.4902	-112.8685	1.8 Mc IE	93.7	7.94	4	186	39.4	0.01	1.2	12.3
4/27/2013	11:44:09.0	43.4655	-110.8507	0.8 Mc IE	157.4	4.77	5	217	8.5	0.05	6.5	11.2
4/27/2013	22:41:28.9	44.6117	-113.0845	1.9 Mc IE	109.7	7.38	5	179	30.4	0.12	1.3	15.7
4/28/2013	07:33:48.6	44.5772	-112.8022	2.3 Mc IE	103.2	5.01	8	151	28.1	0.12	1.1	16.1
4/29/2013	07:06:59.7	43.1898	-110.9938	1.1 Mc IE	153.6	7.03	8	324	22.4	0.07	1.2	4.0
5/1/2013	02:33:52.4	44.1930	-112.4653	0.0 Mc IE	65.6	5.18	4	182	20.3	0.16	8.9	15.7
5/1/2013	13:42:53.2	44.6892	-111.7452	1.5 Mc IE	142.3	5.35	4	350	109.0	0.18	15.7	11.2
5/1/2013	21:45:04.3	42.9722	-111.1925	1.4 Mc IE	149.4	4.64	4	231	24.2	0.07	2.9	13.5
5/3/2013	00:30:11.9	44.2147	-114.0680	2.1 Mc IE	120.8	4.90	4	281	58.7	0.07	7.1	11.8
5/3/2013	06:05:30.4	43.5845	-111.1238	0.7 Mc IE	134.1	10.52	8	274	9.8	0.06	0.9	1.4
5/5/2013	06:00:33.8	42.8160	-111.2452	0.8 Mc IE	155.6	5.11	4	272	13.1	0.02	3.6	12.1
5/5/2013	13:23:12.0	43.3400	-110.8750	1.2 Mc IE	158.1	10.38	7	303	3.1	0.08	0.9	0.8
5/5/2013	14:21:43.1	43.3625	-110.8688	1.1 ML IE	158.0	18.40	6	298	15.7	0.12	1.5	1.2
5/6/2013	03:13:43.3	42.6248	-111.9928	4.0 ML IE	130.9	9.27	19	115	41.2	0.08	0.3	1.4
5/6/2013	03:20:13.3	43.4957	-110.8615	0.8 Mc IE	156.1	4.96	6	216	7.2	0.05	6.6	11.1
5/6/2013	03:20:57.5	42.6245	-111.9918	3.5 ML NE	131.0	2.23	15	122	41.3	0.07	0.4	13.7
5/6/2013	03:27:52.4	42.6305	-111.9903	2.0 Mc IE	130.4	7.70	9	121	40.9	0.09	0.5	1.4
5/6/2013	03:31:59.7	42.6315	-111.9842	1.6 ML IE	130.6	2.55	6	121	41.3	0.05	0.6	13.0
5/6/2013	03:48:41.8	42.6343	-112.0107	1.6 ML IE	129.3	5.53	7	123	39.4	0.14	0.7	2.2
5/6/2013	03:59:27.0	42.6977	-111.9738	0.9 Mc IE	124.7	2.93	4	218	37.7	0.07	4.1	14.0
5/6/2013	06:18:46.1	42.6373	-112.0120	2.5 ML IE	128.9	7.36	15	117	39.1	0.06	0.3	1.8
5/6/2013	06:23:24.2	42.6343	-111.9897	1.8 ML IE	130.1	5.08	8	121	40.7	0.07	0.5	2.4
5/6/2013	07:13:20.4	43.1490	-111.4982	1.2 Mc IE	118.0	2.14	6	259	14.9	0.03	2.4	12.7
5/6/2013	11:07:34.0	42.6342	-111.9993	1.5 Mc IE	129.7	7.94	6	172	40.1	0.07	0.9	2.7
5/6/2013	11:32:37.8	42.5702	-111.9232	2.0 Mc IE	139.0	14.54	7	201	62.6	0.10	5.0	11.3
5/6/2013	12:31:27.3	44.4497	-112.3508	1.9 Mc IE	95.5	5.40	4	134	16.3	0.23	2.7	5.7
5/6/2013	13:19:47.1	42.6243	-112.0227	1.5 Mc IE	129.8	9.59	11	176	39.4	0.20	0.9	1.7
5/6/2013	14:12:28.9	44.5720	-112.7470	2.8 ML US	102.6	5.99	12	126	28.1	0.06	0.4	13.0
5/6/2013	14:16:22.9	44.4515	-112.8602	1.1 Mc IE	89.4	0.02	4	185	40.3	0.26	2.8	5.8
5/6/2013	14:17:26.5	44.4903	-112.7232	2.4 ML IE	93.6	6.96	10	252	24.9	0.36	2.6	18.5
5/6/2013	14:21:45.5	44.4567	-112.8432	1.2 Mc IE	89.9	7.90	3	185	38.8	0.03	1.3	12.6
5/6/2013	15:51:27.2	42.6040	-112.0285	1.5 Mc IE	131.6	4.78	4	180	40.7	0.03	5.7	10.5
5/6/2013	16:24:49.5	44.5118	-113.0435	2.2 ML IE	98.1	7.08	14	147	21.8	0.29	1.1	12.4
5/6/2013	19:38:50.5	44.4307	-112.8503	1.9 Mc IE	87.0	0.08	3	191	40.5	0.21	2.2	5.3
5/6/2013	22:29:08.0	44.5520	-112.7580	1.9 Mc IE	100.4	5.95	13	128	29.2	0.39	1.7	34.6

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
5/6/2013	22:35:42.9	44.4517	-112.8722	1.3 Mc IE	89.5	0.04	3	183	41.1	0.09	1.6	3.6
5/6/2013	23:20:38.6	44.5617	-112.7508	2.0 Mc IE	101.5	6.12	7	127	28.5	0.13	1.0	16.1
5/7/2013	09:16:02.8	44.4243	-112.8745	1.9 Mc IE	86.5	40.19	8	144	11.8	0.12	1.9	4.2
5/7/2013	09:18:43.5	44.6125	-112.9265	1.9 Mc IE	107.7	3.60	8	184	31.5	0.24	7.1	2.6
5/7/2013	09:24:56.3	43.2818	-111.0625	1.3 ML IE	145.1	14.35	10	180	19.3	0.11	0.8	1.2
5/7/2013	09:46:09.5	44.5683	-112.7465	2.8 ML IE	102.2	6.95	18	126	29.9	0.22	0.8	19.3
5/7/2013	10:50:26.2	44.5740	-112.7557	2.1 ML IE	102.8	6.81	12	127	29.1	0.25	1.3	4.7
5/7/2013	11:30:06.7	44.4990	-112.7923	1.9 Mc IE	94.5	5.71	11	324	22.3	0.19	1.9	2.6
5/7/2013	11:39:03.3	44.5947	-112.6733	2.2 Mc IE	105.5	18.37	9	173	85.5	0.07	0.9	13.9
5/7/2013	18:11:24.9	42.6168	-112.0298	2.0 Mc IE	130.2	10.65	13	129	39.6	0.07	0.4	0.9
5/8/2013	02:23:14.8	44.4592	-112.8740	1.1 Mc IE	90.3	5.00	3	181	40.9	0.23	2.9	8.5
5/8/2013	03:47:08.5	42.6195	-112.0183	2.0 ML IE	130.4	6.40	12	127	40.1	0.08	0.3	2.3
5/8/2013	10:07:38.1	44.1952	-114.0190	1.4 Mc IE	116.3	5.26	4	277	54.2	0.07	7.2	11.6
5/8/2013	10:36:11.6	44.5012	-113.6747	1.6 Mc IE	118.6	6.24	5	256	66.1	0.01	7.5	10.0
5/8/2013	10:38:42.3	44.4507	-112.8743	1.6 Mc IE	89.4	5.00	3	184	41.3	0.25	2.9	13.6
5/8/2013	11:19:31.1	42.6298	-112.0003	1.8 Mc IE	130.1	5.00	3	173	40.4	0.02	1.6	12.1
5/8/2013	14:43:03.4	42.6158	-112.0225	0.9 Mc IE	130.6	4.98	3	183	40.1	0.06	1.3	12.6
5/8/2013	18:22:36.4	42.6037	-112.0195	2.1 Mc IE	131.9	17.13	5	157	64.7	0.06	0.7	13.5
5/9/2013	09:54:07.2	44.2017	-112.5192	1.3 Mc IE	64.9	5.38	3	173	22.4	0.06	7.4	13.1
5/9/2013	10:57:33.2	44.6118	-113.1187	1.7 Mc IE	110.3	5.10	6	186	32.1	0.12	5.0	14.5
5/9/2013	15:27:37.5	44.4240	-112.8722	1.3 Mc IE	86.4	2.80	3	191	42.4	0.02	6.3	10.2
5/9/2013	17:32:00.9	43.7667	-110.8632	0.6 Mc IE	155.2	10.31	6	151	15.7	0.01	0.5	2.8
5/9/2013	18:26:54.1	44.4037	-112.5988	1.7 Mc IE	85.1	0.01	4	339	28.5	0.30	14.6	8.3
5/9/2013	19:51:26.6	44.5555	-111.3800	0.8 Mc IE	150.8	5.03	5	350	43.5	0.36	14.2	29.5
5/9/2013	23:23:34.4	44.5773	-112.7975	1.9 Mc IE	103.2	7.20	4	180	28.1	0.05	0.9	13.0
5/10/2013	01:46:33.8	43.5867	-110.8295	0.3 ML IE	157.8	5.10	6	255	14.5	0.05	3.5	12.7
5/10/2013	04:56:42.2	44.5878	-112.8125	2.3 Mc IE	104.4	6.18	6	170	30.5	0.00	2.9	6.7
5/10/2013	06:02:28.6	42.6123	-111.9522	0.8 Mc IE	133.8	5.09	5	323	71.9	0.25	14.1	16.1
5/12/2013	04:39:04.7	42.6325	-111.9853	1.8 Mc IE	130.5	2.28	4	233	41.1	0.03	3.7	12.8
5/12/2013	10:34:31.9	43.5133	-110.8547	0.9 Mc IE	156.4	6.21	4	224	8.2	0.16	9.1	14.9
5/12/2013	17:56:28.8	43.2090	-110.9688	1.6 ML IE	154.8	21.44	9	162	31.3	0.11	1.0	2.6
5/14/2013	21:34:42.2	44.0635	-114.6402	2.0 Mc IE	156.2	8.34	4	257	58.8	0.08	2.2	3.3
5/19/2013	09:22:47.7	42.7820	-111.2703	0.7 Mc IE	156.3	5.10	4	290	14.0	0.04	3.5	12.5
5/20/2013	22:21:32.4	43.0028	-111.6627	1.7 Mc IE	115.9	5.00	9	187	24.5	0.08	0.5	10.4
5/21/2013	08:10:38.9	43.7855	-111.0100	0.5 Mc IE	143.6	7.55	4	199	13.6	0.00	11.7	4.4
5/21/2013	08:34:18.4	44.5678	-112.7520	3.5 ML IE	102.1	5.86	19	127	28.5	0.14	0.4	14.4
5/21/2013	08:44:03.0	44.5188	-112.7945	2.1 Mc IE	96.7	2.01	9	323	50.5	0.13	5.7	11.9
5/21/2013	09:55:10.2	44.5667	-112.7732	2.0 Mc IE	102.0	5.02	4	131	29.6	0.42	4.7	32.1
5/21/2013	10:01:01.4	44.5057	-112.7337	2.6 Mc IE	95.3	0.01	20	133	25.6	0.61	1.1	2.2
5/21/2013	10:06:40.9	44.5630	-112.8552	1.7 Mc IE	101.7	6.94	8	169	29.4	0.15	1.5	17.7
5/21/2013	10:49:16.6	44.5867	-112.7185	2.5 Mc IE	104.3	13.28	13	138	25.7	0.04	0.9	1.2
5/21/2013	11:02:25.6	44.5692	-112.7735	1.8 Mc IE	102.3	7.00	7	184	29.3	0.09	0.9	14.4
5/21/2013	11:08:34.4	44.5865	-113.0467	1.8 Mc IE	106.3	4.97	4	206	31.0	0.27	7.8	20.5
5/21/2013	11:14:14.6	44.5723	-112.7303	1.4 Mc IE	102.7	5.00	4	130	26.8	0.18	1.1	19.3
5/21/2013	11:20:37.0	44.5765	-112.7445	3.2 Mc MB	103.1	10.61	19	125	27.9	0.12	0.5	2.2
5/21/2013	11:40:18.4	44.5688	-112.7215	1.4 Mc IE	102.3	5.00	3	131	26.1	0.16	1.5	6.8
5/21/2013	11:56:49.6	44.5915	-112.8427	1.9 Mc IE	104.8	5.84	4	253	35.6	0.48	5.8	42.1
5/21/2013	12:17:26.7	44.5393	-112.7758	1.7 Mc IE	98.9	5.52	4	313	72.9	0.09	6.6	12.4
5/21/2013	12:34:12.3	44.5768	-112.7388	1.7 Mc IE	103.2	5.01	4	132	27.4	0.13	1.1	16.7
5/21/2013	12:52:36.4	43.5287	-111.0135	0.5 Mc IE	143.5	2.35	6	211	6.6	0.10	0.8	12.1
5/21/2013	13:13:55.3	44.5683	-112.7420	2.3 Mc IE	102.2	6.16	18	125	27.8	0.07	0.4	11.4

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
5/21/2013	13:33:21.9	44.5777	-112.7445	1.5 Mc IE	103.2	4.07	5	134	27.9	0.09	4.6	11.2
5/21/2013	14:00:41.6	44.4353	-112.6305	1.6 Mc IE	88.2	1.79	6	168	25.7	0.00	2.3	2.4
5/21/2013	15:00:15.8	44.5523	-112.7722	1.9 Mc IE	100.4	6.08	6	148	30.4	0.02	0.9	12.7
5/21/2013	15:23:33.2	44.5625	-112.7815	2.0 Mc IE	101.5	4.86	7	198	30.0	0.10	4.6	11.9
5/21/2013	20:09:31.3	44.5160	-111.8567	1.6 Mc IE	121.6	4.73	4	338	64.8	0.13	7.0	14.8
5/21/2013	23:39:34.0	44.5737	-112.8238	1.9 Mc IE	102.8	3.81	5	201	28.3	0.01	2.7	2.1
5/22/2013	08:33:00.2	44.5667	-112.7420	2.7 ML IE	102.0	7.52	17	125	27.8	0.08	0.4	6.4
5/22/2013	08:37:29.9	44.5688	-112.7410	3.0 Mc MB	102.3	9.92	17	125	27.7	0.06	0.4	3.0
5/22/2013	09:20:09.1	44.4842	-112.7515	2.5 Mc IE	92.8	0.03	10	166	22.9	0.18	1.3	3.1
5/22/2013	09:29:30.2	44.5755	-112.8077	1.9 Mc IE	103.0	7.11	6	204	28.2	0.05	2.3	13.3
5/22/2013	09:32:17.2	44.5677	-113.7840	2.7 Mc IE	129.8	0.04	4	295	72.1	0.48	16.9	13.0
5/22/2013	09:45:60.0	44.5670	-112.7447	2.0 Mc IE	102.1	2.44	4	134	28.0	0.00	0.8	2.7
5/22/2013	09:49:36.6	44.5703	-112.7655	1.9 Mc IE	102.4	4.88	6	140	29.3	0.00	0.6	1.8
5/22/2013	10:49:27.4	44.5715	-112.7423	1.8 Mc IE	102.6	8.31	5	133	27.7	0.05	1.0	11.1
5/22/2013	11:23:00.0	44.5692	-112.7388	1.8 Mc IE	102.3	4.99	3	132	27.5	0.02	0.8	10.1
5/22/2013	13:17:21.0	44.5665	-112.7387	1.5 Mc IE	102.0	2.09	3	132	27.5	0.06	1.0	12.1
5/22/2013	15:57:54.5	44.3418	-113.9172	1.7 Mc IE	119.1	7.15	4	212	59.1	0.11	1.7	15.5
5/22/2013	16:12:34.5	44.6185	-112.9715	1.9 Mc IE	108.8	3.18	3	204	32.2	0.07	10.4	1.8
5/22/2013	17:18:48.5	44.2768	-113.4137	2.0 Mc IE	86.2	9.10	4	303	75.9	0.00	3.1	1.8
5/22/2013	20:02:41.1	42.5205	-111.7172	1.3 Mc IE	152.7	5.14	4	177	45.2	0.19	5.5	19.5
5/23/2013	05:51:48.0	44.2360	-113.0540	1.1 Mc IE	68.7	4.78	4	321	65.9	0.15	9.4	9.1
5/23/2013	06:04:57.2	44.5720	-112.7575	1.9 Mc IE	102.6	2.57	6	137	29.3	0.04	2.0	2.6
5/23/2013	06:16:56.8	44.5175	-112.7175	2.1 Mc IE	96.7	5.86	6	210	37.4	0.05	2.0	13.1
5/23/2013	07:38:06.1	44.5920	-112.7198	0.0 Mc IE	104.9	4.73	4	163	25.9	0.00	4.4	6.7
5/23/2013	08:02:22.6	44.5593	-112.7747	2.0 Mc IE	101.2	6.63	6	182	28.8	0.10	1.6	13.8
5/23/2013	08:06:47.0	44.5588	-112.6720	1.3 Mc IE	101.5	2.97	3	141	22.4	0.02	1.2	10.8
5/23/2013	11:45:58.1	44.4838	-112.8173	1.5 Mc IE	92.8	6.95	5	190	19.8	0.01	8.9	12.5
5/23/2013	11:57:21.4	44.5007	-112.7703	2.3 Mc IE	94.7	5.00	6	135	91.3	0.63	2.8	13.3
5/23/2013	12:08:52.1	44.6837	-112.6318	2.1 Mc IE	115.6	7.76	5	163	21.4	0.01	0.7	9.7
5/23/2013	12:48:20.3	44.3872	-114.0603	2.3 Mc IE	131.2	2.87	5	225	95.7	0.02	3.5	8.9
5/23/2013	17:30:15.3	44.5692	-112.7348	3.0 ML MB	102.3	10.95	18	123	27.2	0.11	0.4	2.4
5/23/2013	17:31:22.1	44.5150	-112.7715	3.4 ML MB	96.2	6.05	15	256	24.7	0.13	1.2	0.6
5/23/2013	17:34:22.1	44.5255	-112.8533	2.2 Mc IE	97.6	7.54	7	331	22.9	0.14	2.5	15.2
5/23/2013	17:45:37.1	44.6022	-113.1503	1.5 Mc IE	109.9	5.01	4	227	34.6	0.22	9.7	7.1
5/23/2013	18:40:41.7	44.5607	-112.7342	1.5 Mc IE	101.4	3.09	3	131	27.2	0.08	1.5	11.8
5/23/2013	21:31:54.1	44.5615	-112.7387	1.6 Mc IE	101.5	5.95	3	131	27.6	0.05	1.4	13.2
5/23/2013	23:49:14.4	44.5655	-112.7378	1.4 Mc IE	101.9	5.01	4	129	27.5	0.05	1.2	13.1
5/24/2013	20:35:13.9	44.5835	-112.9097	1.4 Mc IE	104.3	17.23	3	184	27.6	0.04	12.4	1.6
5/25/2013	10:27:03.6	42.6415	-111.4473	0.9 Mc IE	156.1	3.75	6	313	31.6	0.03	1.3	12.6
5/25/2013	13:52:40.0	44.5822	-112.8110	1.6 Mc IE	103.7	5.28	4	204	27.4	0.11	3.3	4.0
5/25/2013	16:53:05.6	44.5858	-112.7278	1.4 Mc IE	104.2	5.00	4	123	26.5	0.18	1.3	19.3
5/26/2013	05:34:45.5	44.5657	-112.8045	1.6 Mc IE	101.9	4.99	4	223	29.3	0.04	4.4	11.6
5/26/2013	06:49:48.7	44.5570	-112.7247	1.3 Mc IE	101.0	5.00	5	134	26.5	0.12	1.2	16.1
5/26/2013	07:36:01.4	44.5728	-112.6652	1.2 Mc IE	103.1	6.10	4	143	21.6	0.10	1.4	15.1
5/26/2013	12:46:21.2	42.8358	-111.2188	1.0 ML IE	156.0	12.98	5	205	12.5	0.01	1.5	3.4
5/26/2013	13:46:07.6	44.5822	-112.7480	1.6 Mc IE	103.8	6.05	4	122	28.1	0.05	1.4	13.3
5/26/2013	18:11:02.4	43.6738	-111.0962	0.4 Mc IE	136.0	3.81	5	335	6.9	0.15	9.4	11.7
5/26/2013	22:41:08.0	44.5690	-112.7112	1.6 Mc IE	102.4	5.11	5	205	30.8	0.04	4.2	11.0
5/27/2013	08:22:13.8	42.8790	-111.2178	1.1 Mc IE	153.3	13.66	8	186	15.9	0.17	1.0	1.0
5/27/2013	19:19:29.1	44.7823	-113.0823	1.4 Mc IE	128.2	4.97	4	183	19.1	0.13	9.1	7.5
5/28/2013	15:57:16.9	42.6342	-112.0298	2.0 Mc IE	128.5	11.12	13	127	38.3	0.09	0.3	0.9

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
5/28/2013	22:38:57.7	43.5942	-111.1150	1.0 Mc IE	134.7	12.53	7	275	8.6	0.11	1.0	1.3
5/29/2013	07:53:17.8	43.3295	-110.9212	0.8 Mc IE	154.7	10.01	8	291	6.7	0.17	1.2	1.4
5/29/2013	09:58:43.1	44.5935	-112.4690	2.0 Mc IE	107.9	15.52	6	158	5.9	0.01	1.5	1.4
5/29/2013	18:16:34.2	43.7362	-111.0412	0.7 Mc IE	140.7	2.27	8	211	11.0	0.10	0.7	12.5
5/30/2013	08:22:56.3	43.2217	-111.5180	0.9 Mc IE	112.9	4.98	6	253	22.2	0.19	2.3	20.0
5/31/2013	03:33:24.8	44.3435	-113.3633	0.8 Mc IE	90.1	12.01	6	289	4.9	0.00	3.0	1.8
6/1/2013	09:25:45.1	44.5740	-112.6995	0.0 Mc IE	103.0	0.06	9	173	30.6	0.09	0.9	4.9
6/1/2013	16:35:55.1	43.5965	-111.0170	0.5 Mc IE	142.6	13.22	4	196	4.7	0.06	13.4	1.6
6/2/2013	06:12:45.7	43.8842	-110.9818	0.3 Mc IE	147.3	15.33	6	239	3.7	0.04	2.6	1.2
6/3/2013	07:42:12.8	42.8297	-111.2473	0.5 Mc IE	154.5	12.21	5	191	14.0	0.01	2.6	3.0
6/4/2013	03:55:27.4	44.0577	-113.8593	2.0 Mc IE	97.7	7.02	14	193	35.7	0.09	0.5	14.2
6/4/2013	22:16:15.6	42.8738	-111.4353	1.4 Mc IE	139.3	0.02	7	255	7.2	0.18	6.3	1.7
6/5/2013	06:36:28.2	43.6985	-111.0468	0.9 Mc IE	140.1	10.88	4	215	6.9	0.01	4.4	3.6
6/5/2013	10:25:06.4	43.7358	-111.0463	0.7 Mc IE	140.3	2.35	6	214	11.0	0.07	1.5	11.4
6/5/2013	10:27:08.6	43.7383	-111.0428	0.7 Mc IE	140.6	2.08	6	212	11.2	0.05	2.0	13.1
6/5/2013	10:34:50.4	44.5967	-112.7455	1.0 Mc IE	105.4	4.89	5	107	26.9	0.09	4.4	11.0
6/5/2013	11:35:25.1	43.6960	-110.9602	0.7 Mc IE	147.0	4.70	4	174	8.4	0.03	5.5	9.4
6/5/2013	12:23:27.5	43.6912	-111.0582	1.1 Mc IE	139.1	8.93	5	357	6.4	0.02	11.6	0.8
6/5/2013	12:25:25.2	43.7075	-110.9778	0.7 Mc IE	145.6	2.68	6	160	8.7	0.09	1.0	10.8
6/5/2013	12:48:12.5	43.6808	-110.9592	0.5 Mc IE	147.1	4.68	5	175	7.2	0.05	5.5	10.1
6/5/2013	12:51:04.6	43.6818	-110.9723	1.1 Mc IE	146.0	6.14	5	241	6.5	0.02	2.4	1.7
6/5/2013	12:51:49.7	43.6888	-111.0102	0.5 Mc IE	143.0	8.64	7	179	5.8	0.19	2.7	2.3
6/5/2013	12:59:15.6	43.6963	-110.9958	1.1 Mc IE	144.2	7.93	5	264	6.9	0.01	2.0	2.3
6/5/2013	13:11:11.9	43.6833	-111.0283	0.9 Mc IE	141.5	9.51	6	198	5.0	0.07	2.8	1.2
6/5/2013	13:41:04.1	43.6995	-110.9900	1.0 Mc IE	144.6	6.85	6	166	7.4	0.05	2.0	2.5
6/5/2013	14:56:59.9	43.7122	-111.0043	0.8 Mc IE	143.5	6.74	6	275	8.4	0.04	1.0	1.6
6/6/2013	04:26:14.8	44.5757	-112.7472	1.8 Mc IE	103.0	5.01	6	103	28.1	0.09	0.8	14.6
6/6/2013	04:26:15.0	44.5425	-112.7268	1.9 Mc IE	99.4	5.83	4	192	27.0	0.02	1.3	12.7
6/6/2013	04:55:43.1	43.2500	-111.0073	1.2 Mc IE	150.4	4.99	5	320	27.1	0.07	1.4	11.5
6/6/2013	22:20:56.3	42.6070	-111.9692	1.1 Mc IE	133.6	4.99	4	212	65.7	0.02	1.3	12.3
6/7/2013	04:02:22.8	42.7333	-111.3185	0.9 Mc IE	156.7	4.90	4	262	18.2	0.05	2.1	11.4
6/7/2013	14:20:00.7	44.5652	-112.7315	2.1 Mc IE	101.9	5.03	8	113	27.0	0.06	0.5	13.2
6/8/2013	10:03:34.9	42.7232	-111.7808	2.1 ML IE	131.4	5.22	15	88	37.8	0.08	0.5	5.4
6/8/2013	10:10:57.5	42.9578	-111.2010	0.0 Mc IE	149.6	9.15	6	125	17.4	0.03	0.9	4.0
6/8/2013	10:15:23.1	42.9422	-111.2313	0.9 Mc IE	148.5	2.49	5	167	16.8	0.08	1.2	13.8
6/11/2013	05:42:12.6	44.4437	-113.4073	1.5 Mc IE	101.5	12.96	4	221	14.8	0.00	3.3	1.8
6/13/2013	08:00:26.4	43.5613	-110.8070	1.2 Mc IE	159.8	3.23	7	120	14.0	0.16	0.5	14.6
6/13/2013	13:58:29.9	42.9655	-111.3372	0.8 Mc IE	139.8	9.06	6	206	7.5	0.03	1.7	3.3
6/13/2013	22:19:31.0	44.7730	-111.7610	1.9 Mc IE	149.2	9.36	4	207	8.9	0.01	0.8	2.5
6/14/2013	13:09:38.4	43.5032	-110.9963	1.0 Mc IE	145.2	9.82	7	208	15.2	0.06	0.6	2.5
6/16/2013	16:39:26.7	43.3605	-110.8330	0.7 Mc IE	160.9	12.45	6	286	1.5	0.02	3.5	1.2
6/17/2013	02:14:49.8	44.3257	-113.9827	1.0 Mc IE	122.1	7.45	6	215	46.1	0.07	0.8	13.8
6/17/2013	06:06:29.3	44.3030	-113.9678	1.6 Mc IE	119.6	7.59	4	212	44.9	0.09	3.5	14.3
6/17/2013	10:03:09.7	44.3873	-112.6345	0.0 Mc IE	82.9	5.04	4	194	29.8	0.10	4.5	13.0
6/17/2013	17:24:26.2	43.0937	-111.1720	0.6 Mc IE	144.4	5.09	4	217	16.8	0.01	4.1	10.0
6/18/2013	07:23:51.4	43.4155	-111.1490	0.7 Mc IE	134.6	3.98	6	278	18.1	0.04	1.6	10.5
6/18/2013	15:02:20.1	42.6843	-111.3573	1.2 Mc IE	158.0	5.00	5	208	22.9	0.01	1.9	11.8
6/18/2013	15:30:02.8	42.6123	-111.6250	1.4 Mc IE	149.0	3.42	8	145	46.2	0.03	0.7	11.2
6/19/2013	07:11:27.4	42.9273	-111.5487	1.9 Mc IE	128.4	8.20	10	268	10.4	0.06	1.3	1.0
6/19/2013	08:05:31.8	44.3647	-113.3740	1.5 Mc IE	92.5	24.35	4	195	6.5	0.00	1.5	1.6
6/19/2013	17:41:03.4	43.7462	-110.9125	1.1 Mc IE	151.1	7.67	7	135	15.1	0.03	0.6	4.0

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
6/20/2013	05:35:30.5	43.7003	-111.1003	1.1 Mc IE	135.7	8.24	7	203	9.1	0.07	1.3	2.3
6/20/2013	14:01:07.3	44.3835	-114.0943	2.0 Mc IE	133.1	5.14	5	227	55.5	0.18	3.6	9.9
6/21/2013	04:50:46.3	42.9253	-111.5612	0.0 NoMag	127.8	6.28	4	292	11.5	0.00	2.8	5.1
6/21/2013	04:51:19.6	42.9305	-111.5527	1.0 Mc IE	127.9	6.09	4	291	10.7	0.01	2.8	4.8
6/22/2013	22:42:55.7	44.1717	-114.0490	1.5 Mc IE	117.0	6.46	4	208	55.0	0.00	1.7	5.0
6/22/2013	23:58:58.1	43.4202	-111.3512	1.1 Mc IE	118.5	5.00	5	309	33.3	0.04	1.4	12.9
6/23/2013	07:52:23.7	44.4270	-113.3633	0.9 ML IE	98.2	12.27	9	207	13.3	0.06	1.6	1.1
6/23/2013	22:09:34.1	44.1997	-113.3493	1.2 Mc IE	76.2	4.81	5	145	13.1	0.05	6.8	7.8
6/25/2013	09:14:41.1	43.2757	-111.1225	0.8 Mc IE	140.6	5.00	6	304	24.0	0.05	1.5	12.0
6/25/2013	15:30:16.8	43.3795	-111.0410	0.5 Mc IE	144.0	9.63	6	266	14.3	0.07	0.9	1.7
6/26/2013	14:23:14.9	42.6728	-112.0277	1.1 Mc IE	124.8	2.50	5	122	35.6	0.29	2.4	26.9
6/26/2013	14:36:09.2	44.5168	-111.2403	1.3 Mc IE	156.7	1.28	5	244	36.6	0.01	3.1	1.4
6/26/2013	17:14:59.3	43.2203	-110.9270	0.8 Mc IE	157.6	2.87	4	327	16.9	0.01	4.2	11.8
6/26/2013	19:33:12.4	43.2650	-111.3650	0.6 Mc IE	122.4	4.99	5	211	23.5	0.03	1.0	10.3
6/27/2013	00:05:23.4	44.5700	-112.7872	1.2 Mc IE	102.3	1.07	5	120	29.1	0.01	0.8	6.2
6/27/2013	04:01:20.4	43.2662	-111.2528	0.6 Mc IE	130.9	4.55	5	201	25.5	0.08	2.1	11.5
6/27/2013	13:30:07.5	44.3487	-113.0510	1.0 Mc IE	80.6	9.83	5	114	9.0	0.03	0.8	2.5
6/27/2013	14:59:39.0	43.2303	-110.9315	1.3 Mc IE	156.9	4.59	7	211	16.0	0.02	0.9	7.1
6/27/2013	20:33:29.1	43.5700	-111.1845	0.7 Mc IE	129.3	8.55	7	258	14.8	0.09	0.9	2.3
6/28/2013	08:37:53.6	43.8052	-111.0520	0.7 Mc IE	140.5	8.22	6	228	13.7	0.05	2.0	1.7
6/28/2013	17:33:43.8	44.8603	-111.7162	1.7 Mc IE	159.3	5.15	5	241	15.0	0.01	2.3	1.4
6/29/2013	01:17:33.6	44.7070	-111.5502	1.5 Mc IE	153.4	3.04	4	225	9.5	0.29	19.7	18.5
6/29/2013	06:01:27.2	44.1942	-114.0422	1.4 Mc IE	117.8	6.75	6	210	52.5	0.10	1.5	6.2
6/29/2013	11:53:05.9	44.3335	-113.9488	1.6 Mc IE	120.5	7.31	6	213	43.4	0.04	1.2	12.9
6/30/2013	06:51:49.1	44.3333	-113.9488	1.4 Mc IE	120.5	6.97	6	213	43.4	0.10	0.9	15.0
6/30/2013	16:14:19.7	42.7587	-111.3438	1.5 Mc IE	153.3	2.52	7	256	19.9	0.08	0.9	13.4
6/30/2013	16:24:58.5	42.7240	-111.3593	1.1 Mc IE	154.9	14.27	7	249	21.7	0.05	1.3	0.9
6/30/2013	20:51:27.3	44.4933	-114.1842	2.1 Mc IE	146.2	12.06	7	240	65.3	0.20	1.8	2.6
7/1/2013	00:03:52.8	44.1828	-111.1242	0.0 Mc IE	145.8	28.69	4	321	35.8	0.81	42.8	53.8
7/1/2013	05:24:02.0	42.8910	-111.2410	0.4 Mc IE	150.9	4.98	5	150	15.6	0.07	0.7	11.5
7/1/2013	20:50:37.4	42.4215	-111.8403	1.6 Mc IE	156.8	8.57	5	300	66.9	0.21	3.1	6.4
7/1/2013	21:41:28.9	44.2115	-112.5777	1.8 ML IE	64.6	0.02	10	88	25.3	0.10	0.6	1.5
7/2/2013	21:03:17.4	43.4002	-111.1515	1.8 ML IE	134.7	7.05	6	281	19.1	0.03	3.1	11.0
7/2/2013	21:08:33.5	43.4025	-111.1285	2.7 ML IE	136.5	10.26	9	276	17.4	0.06	1.8	3.1
7/3/2013	19:45:58.6	45.0505	-112.9065	2.0 Mc IE	156.1	5.03	6	212	25.2	0.00	3.1	2.0
7/3/2013	21:30:26.3	42.8595	-111.4878	1.4 Mc IE	137.1	0.02	14	217	10.3	0.28	1.0	0.9
7/4/2013	02:35:14.1	43.4362	-110.9550	2.1 ML IE	149.6	8.53	8	212	6.0	0.09	2.2	1.0
7/5/2013	06:46:53.1	43.4773	-110.8875	1.4 Mc IE	154.3	11.49	13	111	5.3	0.14	0.5	0.7
7/6/2013	02:03:01.0	43.5242	-110.9080	1.1 Mc IE	152.0	9.21	8	155	5.1	0.06	0.7	1.5
7/6/2013	03:23:08.8	43.5132	-110.9115	0.9 Mc IE	151.8	11.07	10	97	4.1	0.07	0.5	1.1
7/7/2013	07:22:26.4	44.4153	-114.1010	2.9 ML IE	135.6	9.92	12	126	75.0	0.07	0.8	1.1
7/7/2013	13:43:08.1	42.8492	-111.4275	1.5 Mc IE	141.6	1.70	4	304	9.9	0.04	9.7	13.0
7/7/2013	14:14:50.1	44.4162	-114.0997	1.6 Mc IE	135.6	6.94	5	229	75.0	0.03	0.8	12.7
7/7/2013	14:24:22.7	44.1702	-114.0113	1.5 Mc IE	114.3	11.65	6	205	52.3	0.06	1.8	7.2
7/7/2013	17:49:41.4	42.9262	-111.4593	1.0 Mc IE	134.2	1.17	9	266	3.4	0.10	1.3	0.6
7/9/2013	06:24:11.6	44.6543	-111.5978	1.1 Mc IE	146.5	4.80	4	181	10.0	0.18	19.0	17.1
7/10/2013	05:58:52.1	43.5718	-110.9248	0.7 Mc IE	150.2	2.32	7	118	9.3	0.08	0.7	13.8
7/10/2013	15:35:58.8	42.6982	-111.6540	1.5 ML IE	140.1	5.64	9	135	32.7	0.06	0.7	4.3
7/10/2013	20:02:10.0	42.9903	-111.3685	0.6 Mc IE	136.2	14.25	6	142	7.0	0.06	1.7	0.4
7/12/2013	02:00:33.0	43.3168	-110.9957	0.9 Mc IE	149.2	2.56	5	290	12.7	0.06	3.2	11.1
7/12/2013	03:06:37.3	44.6418	-112.7063	1.3 Mc IE	110.5	8.60	7	130	23.5	0.06	1.1	12.5

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
7/12/2013	23:36:55.7	44.3988	-114.0960	1.8 Mc IE	134.2	18.26	5	227	73.4	0.05	0.8	13.3
7/13/2013	00:11:32.7	44.3605	-114.0448	1.7 ML IE	128.4	3.67	14	106	67.5	0.10	1.2	3.7
7/14/2013	11:31:50.3	44.6670	-112.4277	1.0 Mc IE	116.7	8.67	4	171	8.6	0.00	2.2	2.6
7/14/2013	12:39:07.8	44.7412	-111.7347	1.9 Mc IE	147.5	6.79	6	226	87.8	0.06	1.3	2.0
7/14/2013	17:23:48.6	44.7697	-111.7247	1.9 Mc IE	150.5	8.57	9	190	56.6	0.07	1.2	2.8
7/15/2013	16:38:25.3	43.1738	-111.3493	0.9 Mc IE	127.6	2.50	6	194	13.5	0.09	1.3	13.6
7/15/2013	17:03:15.4	43.1878	-111.3710	1.2 Mc IE	125.3	5.39	6	118	14.9	0.06	1.6	12.0
7/16/2013	13:35:08.1	42.9513	-111.5970	1.1 Mc IE	123.7	3.54	4	269	21.7	0.03	8.6	12.0
7/16/2013	21:36:06.1	45.0768	-112.8378	1.8 Mc IE	158.8	16.10	9	172	37.0	0.23	8.5	19.9
7/17/2013	04:18:12.6	42.9957	-111.4248	0.6 Mc IE	132.0	9.21	7	217	6.4	0.07	1.2	2.2
7/17/2013	12:33:16.6	43.4105	-111.1240	1.4 Mc IE	136.7	3.28	6	199	16.6	0.01	1.5	10.3
7/17/2013	13:03:11.7	43.4205	-111.1055	0.5 Mc IE	137.9	11.68	6	267	14.7	0.04	1.0	2.5
7/17/2013	13:37:21.4	43.4178	-111.1170	1.2 Mc IE	137.1	0.03	7	211	15.7	0.16	1.0	2.7
7/17/2013	13:42:18.7	43.4187	-111.1012	2.4 ML IE	138.3	6.73	21	77	14.5	0.04	0.3	2.1
7/17/2013	13:47:22.5	43.4890	-110.9598	0.5 Mc IE	148.3	19.69	4	292	0.8	0.04	12.9	1.4
7/17/2013	13:49:20.2	43.4195	-111.1292	0.9 Mc IE	136.1	9.52	5	316	16.5	0.11	1.4	4.4
7/17/2013	17:26:25.7	43.4077	-111.1447	0.6 Mc IE	135.1	2.32	6	275	18.2	0.06	1.3	13.1
7/17/2013	19:45:25.9	43.4162	-111.0920	1.8 Mc IE	139.1	7.55	9	112	20.4	0.09	0.6	5.7
7/17/2013	20:04:26.7	43.4913	-110.9672	0.9 Mc IE	147.7	19.47	4	309	1.3	0.02	12.6	1.1
7/17/2013	22:13:06.7	43.4322	-111.1003	0.9 Mc IE	138.1	2.09	7	264	13.7	0.22	1.6	22.2
7/18/2013	04:49:08.8	43.4165	-111.0980	0.9 Mc IE	138.6	4.73	4	267	14.5	0.02	1.5	10.4
7/18/2013	06:20:09.4	44.1602	-114.5113	3.3 Mc MB	149.9	5.22	18	108	66.9	0.06	0.6	1.7
7/18/2013	06:36:03.0	43.4172	-111.1192	2.0 Mc IE	136.9	5.97	13	197	15.9	0.07	0.7	3.2
7/18/2013	06:39:58.4	43.4253	-111.1087	1.3 Mc IE	137.6	2.46	10	132	14.7	0.12	0.5	14.9
7/18/2013	08:37:44.1	43.4208	-111.0945	1.5 Mc IE	138.8	8.29	7	152	14.0	0.09	0.7	2.8
7/18/2013	10:27:49.5	43.4185	-111.0922	1.5 Mc IE	139.0	8.57	11	103	13.9	0.07	0.5	2.6
7/18/2013	11:20:32.8	43.4093	-111.1287	0.9 Mc IE	136.3	0.03	6	272	17.0	0.11	3.1	3.8
7/18/2013	13:43:29.1	43.4195	-111.0980	2.1 ML IE	138.5	9.08	13	146	14.3	0.06	0.5	1.2
7/18/2013	16:56:31.5	43.4077	-111.1350	0.9 Mc IE	135.9	4.36	6	274	17.5	0.14	2.2	10.9
7/18/2013	19:09:37.3	43.4277	-111.1093	0.3 Mc IE	137.4	11.14	5	266	14.6	0.06	1.1	4.0
7/18/2013	22:25:46.5	42.5762	-111.5787	1.4 Mc IE	154.5	5.00	9	237	42.2	0.17	1.4	16.2
7/18/2013	22:27:23.2	42.6037	-111.5557	1.1 Mc IE	153.3	5.01	5	231	41.4	0.08	1.2	13.0
7/19/2013	00:50:12.2	42.6547	-111.5690	1.0 Mc IE	148.3	5.50	7	219	33.7	0.04	1.3	3.7
7/19/2013	06:16:60.0	43.4852	-110.9575	0.3 Mc IE	148.5	19.99	4	257	0.8	0.04	12.9	1.4
7/19/2013	11:29:41.4	43.4188	-111.1078	0.3 Mc IE	137.8	11.87	6	269	15.0	0.06	1.1	2.6
7/19/2013	14:43:10.1	43.4058	-111.1470	0.6 Mc IE	134.9	6.32	7	279	18.4	0.06	1.8	6.2
7/19/2013	14:49:29.5	42.5965	-111.5638	2.0 ML IE	153.5	9.21	14	95	39.7	0.07	0.5	1.4
7/19/2013	14:58:58.1	42.5993	-111.5658	1.8 Mc IE	153.2	9.81	10	123	42.4	0.04	0.4	1.3
7/19/2013	15:01:04.7	42.6037	-111.5665	1.8 Mc IE	152.8	2.61	8	152	39.0	0.09	0.9	13.6
7/19/2013	15:02:52.8	42.8355	-111.5498	2.3 Mc IE	135.0	7.29	5	289	15.5	0.00	7.6	1.7
7/19/2013	15:09:50.3	42.6257	-111.5603	1.3 Mc IE	151.2	5.05	5	272	40.8	0.04	2.2	11.7
7/19/2013	15:18:26.8	42.5922	-111.5663	1.3 Mc IE	153.8	5.03	4	183	42.8	0.22	1.4	21.7
7/19/2013	15:22:55.4	42.6077	-111.5773	1.6 Mc IE	151.8	5.02	4	277	52.3	0.04	0.9	13.0
7/19/2013	18:36:22.3	42.5985	-111.5935	1.7 Mc IE	151.8	4.99	9	231	40.3	0.20	2.3	15.9
7/19/2013	18:38:01.1	42.6072	-111.5708	1.6 Mc IE	152.2	4.99	5	151	42.4	0.08	0.9	13.0
7/19/2013	19:45:59.2	44.6947	-111.9957	1.2 Mc IE	132.2	9.62	5	190	26.4	0.03	2.2	2.2
7/20/2013	08:04:34.0	43.4017	-111.1483	0.7 Mc IE	134.9	3.31	7	276	18.8	0.04	1.8	11.0
7/20/2013	15:43:20.6	43.4215	-111.0963	0.8 Mc IE	138.6	7.26	8	152	14.0	0.15	0.7	4.0
7/20/2013	21:19:44.4	44.2465	-113.1570	1.0 Mc IE	72.8	8.93	5	131	19.5	0.05	1.5	12.6
7/20/2013	22:49:00.2	44.2325	-113.1502	1.5 Mc IE	71.2	5.69	9	85	22.1	0.02	0.4	0.9
7/21/2013	10:20:34.8	43.4197	-111.1138	0.9 Mc IE	137.3	2.51	8	168	15.4	0.22	0.8	19.5

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
7/21/2013	15:21:03.2	43.7438	-110.9223	0.8 Mc IE	150.3	4.18	5	189	14.5	0.02	2.8	9.6
7/21/2013	15:21:56.6	43.7412	-110.9130	0.5 Mc IE	151.0	4.29	5	193	14.7	0.03	2.8	10.0
7/24/2013	01:00:36.2	43.8133	-110.8942	1.0 Mc IE	153.2	5.80	8	123	10.0	0.10	0.8	2.6
7/24/2013	19:45:18.2	43.5337	-110.8748	0.1 Mc IE	154.6	2.87	5	164	7.8	0.07	0.7	10.6
7/25/2013	15:54:17.2	45.0432	-112.8712	1.5 Mc IE	155.2	0.02	4	327	24.0	0.13	7.3	5.5
7/26/2013	02:19:04.5	44.4692	-112.8282	0.6 Mc IE	91.2	6.79	4	143	18.0	0.11	1.2	15.5
7/26/2013	08:56:25.7	44.4087	-114.0598	1.1 Mc IE	132.6	7.34	5	226	53.3	0.05	0.9	13.1
7/27/2013	16:19:29.1	43.8878	-113.7402	2.0 Mc IE	81.5	4.89	7	245	23.6	0.12	1.3	1.6
7/27/2013	16:28:22.9	43.8897	-113.7287	1.6 Mc IE	80.6	6.34	7	242	22.7	0.10	1.2	1.1
7/27/2013	17:05:20.7	43.8993	-113.7522	1.2 Mc IE	82.8	7.11	8	156	24.3	0.12	1.2	15.8
7/28/2013	15:49:11.0	42.6567	-111.3983	0.8 Mc IE	157.7	13.58	5	267	27.2	0.00	6.8	1.1
7/28/2013	17:35:10.2	44.1583	-113.7183	1.2 Mc IE	94.0	2.99	7	263	30.2	0.30	8.1	3.7
7/29/2013	14:04:45.0	42.4882	-111.7708	1.7 Mc IE	153.3	5.00	4	150	59.0	0.11	1.0	14.6
7/29/2013	23:24:37.9	43.1688	-111.3997	1.0 Mc IE	124.1	15.39	5	181	13.0	0.10	13.8	4.3
7/31/2013	10:13:22.6	43.0307	-111.2505	1.7 Mc IE	142.0	1.85	8	196	10.1	0.10	1.1	3.3
7/31/2013	11:06:37.2	44.3043	-114.5212	1.5 Mc IE	157.2	1.24	6	302	82.9	0.08	7.1	7.8
8/3/2013	00:15:31.1	44.5795	-112.7853	1.0 Mc IE	103.4	1.25	4	145	28.0	0.21	1.2	21.3
8/3/2013	08:18:11.2	44.5403	-114.0252	2.5 ML US	140.3	1.21	11	234	82.0	0.06	0.9	2.8
8/4/2013	12:31:40.6	44.6872	-112.0942	1.4 Mc IE	127.8	7.49	7	194	26.0	0.06	1.2	13.3
8/7/2013	05:48:11.0	44.5735	-112.7688	1.0 Mc IE	102.8	6.40	6	141	28.9	0.04	0.8	12.8
8/12/2013	04:16:48.5	44.6290	-112.4188	1.7 Mc IE	112.7	5.94	14	88	4.4	0.08	0.6	1.0
8/12/2013	04:36:31.8	44.5058	-111.2583	1.2 Mc IE	154.8	4.69	7	326	35.6	0.32	12.3	25.1
8/12/2013	06:34:47.5	44.6683	-112.4085	1.1 Mc IE	117.2	0.31	5	178	8.4	0.39	8.3	15.7
8/13/2013	04:58:50.5	42.9325	-111.4007	0.8 Mc IE	137.6	3.91	5	164	1.8	0.05	4.1	5.5
8/13/2013	05:08:16.1	42.9495	-111.3667	0.7 Mc IE	138.8	2.61	5	122	4.7	0.28	2.9	19.7
8/13/2013	06:26:49.0	42.5380	-111.8337	0.9 Mc IE	145.8	6.25	6	169	57.4	0.25	1.3	5.1
8/13/2013	16:44:51.4	45.0373	-112.4253	1.2 Mc IE	156.9	0.31	4	197	38.6	0.05	1.4	13.1
8/19/2013	11:42:25.8	44.2403	-113.9860	1.7 Mc IE	116.8	7.03	15	285	47.0	0.29	2.0	2.8
8/20/2013	01:35:59.5	44.0922	-113.8038	1.4 Mc IE	95.6	7.09	9	278	33.6	0.24	2.2	9.5
8/21/2013	07:10:36.1	44.6627	-112.5293	1.6 Mc IE	114.5	6.05	9	128	13.2	0.19	0.6	10.5
8/21/2013	16:42:17.5	44.4022	-114.0903	1.6 Mc IE	134.1	1.35	7	152	55.6	0.06	1.2	2.3
8/21/2013	17:17:32.2	44.3993	-114.0627	1.4 Mc IE	132.2	0.07	6	276	53.3	0.06	3.6	4.1
8/22/2013	09:34:53.0	43.1923	-111.3797	1.1 Mc IE	124.5	5.05	6	229	15.4	0.12	2.0	13.7
8/22/2013	16:15:26.8	44.0268	-113.8487	1.0 Mc IE	95.4	6.45	5	300	33.7	0.14	7.0	14.6
8/23/2013	03:11:47.1	43.1788	-111.3438	1.2 Mc IE	127.8	1.09	8	127	14.1	0.35	1.6	4.8
8/23/2013	06:08:55.2	43.4210	-110.8637	0.5 Mc IE	157.1	12.94	6	147	6.6	0.30	1.6	4.0
8/23/2013	07:16:42.1	43.4568	-110.8620	1.1 Mc IE	156.6	2.11	7	125	8.1	0.16	0.7	17.8
8/23/2013	07:30:51.2	42.9507	-111.1325	0.0 Mc IE	154.8	9.48	9	142	20.8	0.10	0.7	4.2
8/23/2013	14:52:09.0	43.6333	-114.1200	1.5 Mc IE	107.8	6.34	7	310	63.0	0.18	3.9	9.5
8/26/2013	02:12:08.1	44.6193	-114.2005	1.8 Mc IE	156.5	2.29	5	296	72.0	0.11	7.8	14.2
8/26/2013	04:59:37.4	43.1933	-110.9430	1.3 Mc IE	157.4	7.96	6	217	20.2	0.18	3.0	8.1
8/27/2013	07:55:21.5	43.5008	-110.8477	0.5 Mc IE	157.1	2.50	6	125	8.4	0.11	0.6	11.9
8/27/2013	16:12:18.2	42.7113	-111.6633	1.8 Mc IE	138.5	5.02	6	187	32.0	0.06	1.1	11.6
8/27/2013	22:18:55.3	43.0893	-111.7395	1.1 Mc IE	105.1	4.93	6	317	30.3	0.52	5.8	43.4
8/28/2013	09:01:46.4	44.2078	-112.8552	1.0 ML IE	62.3	0.13	12	204	15.1	0.04	1.0	1.8
8/28/2013	13:46:36.8	42.9285	-111.3747	0.8 Mc IE	139.6	13.43	7	158	4.0	0.05	1.8	2.7
8/28/2013	17:53:54.3	44.7965	-111.8197	3.0 Mc MB	148.9	4.83	13	136	14.3	0.09	0.5	0.6
8/29/2013	08:21:42.8	44.7063	-112.6787	1.3 Mc IE	117.8	16.53	5	114	19.1	0.01	0.7	0.9
8/29/2013	21:13:00.0	42.6880	-111.6278	1.1 Mc IE	142.4	4.12	8	132	32.5	0.13	0.9	15.4
8/30/2013	01:40:23.9	43.2067	-111.3720	0.9 Mc IE	124.4	4.86	6	300	45.6	0.08	1.2	14.2
8/30/2013	05:15:32.3	43.6120	-111.1197	1.2 Mc IE	134.2	0.04	9	243	8.0	0.20	1.2	1.1

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
8/30/2013	07:26:49.3	44.1015	-113.8845	1.8 Mc IE	101.8	1.50	13	257	39.7	0.07	0.7	1.6
8/30/2013	07:29:21.6	44.5903	-112.7968	1.5 Mc IE	104.6	7.88	11	128	26.7	0.26	1.2	6.4
8/30/2013	13:56:09.3	44.5702	-112.7402	1.2 Mc IE	102.4	0.16	5	127	27.6	0.12	1.0	9.5
8/30/2013	19:00:16.7	42.8352	-111.2250	1.2 Mc IE	155.6	6.08	9	179	12.8	0.09	0.9	4.5
8/31/2013	01:22:29.1	44.4955	-114.1927	1.5 Mc IE	146.9	20.27	6	201	66.0	0.17	1.1	17.9
8/31/2013	09:22:04.8	43.2805	-111.2278	1.1 Mc IE	132.3	4.98	7	209	31.8	0.13	1.3	15.3
8/31/2013	12:00:34.4	44.8448	-112.9287	1.1 Mc IE	133.4	4.46	8	171	6.6	0.11	1.0	1.2
9/1/2013	13:41:14.0	44.2760	-114.0758	2.4 Mc IE	124.9	0.04	10	115	53.7	0.21	1.2	11.0
9/1/2013	13:57:05.6	44.2535	-114.0893	1.8 Mc IE	124.5	1.25	8	196	55.0	0.35	10.0	22.0
9/2/2013	01:00:45.5	43.4243	-111.1097	0.8 Mc IE	137.5	2.43	5	314	22.0	0.18	1.7	19.7
9/2/2013	16:31:25.9	44.3482	-113.9497	2.3 Mc IE	121.6	6.96	9	279	43.6	0.03	2.7	12.7
9/2/2013	20:42:57.0	44.0618	-110.8665	1.2 Mc IE	160.7	8.46	4	140	13.6	0.01	1.2	5.2
9/3/2013	00:50:13.2	43.5832	-111.0507	1.1 Mc IE	140.0	9.05	8	163	6.4	0.02	0.6	0.6
9/3/2013	06:47:19.5	44.2493	-113.9742	1.9 Mc IE	116.5	0.34	7	283	45.9	0.22	3.4	5.1
9/3/2013	12:52:17.8	44.1532	-113.9117	1.1 Mc IE	106.5	4.40	5	285	44.1	0.03	5.5	9.5
9/3/2013	23:04:49.8	43.1310	-111.0622	1.0 Mc IE	150.8	5.07	5	201	26.5	0.10	2.2	13.3
9/3/2013	23:19:19.6	43.4393	-111.0830	0.6 Mc IE	139.3	5.35	6	257	12.1	0.30	7.8	20.9
9/7/2013	21:46:28.0	44.5985	-113.4648	1.1 Mc IE	118.8	14.68	7	219	32.3	0.25	10.1	2.6
9/8/2013	05:52:14.3	43.0780	-111.3455	0.6 Mc IE	132.7	1.97	6	166	3.4	0.21	10.1	15.1
9/8/2013	06:33:16.9	44.6960	-111.8302	0.8 Mc IE	139.1	12.33	5	119	13.6	0.01	0.9	2.0
9/9/2013	07:08:37.9	44.1873	-112.4612	1.1 Mc IE	65.1	5.58	7	203	38.8	0.13	0.9	13.0
9/9/2013	12:36:04.2	43.1603	-110.9863	1.0 Mc IE	155.3	4.57	7	332	25.0	0.40	5.0	29.3
9/10/2013	12:18:51.0	44.2292	-114.0522	1.3 Mc IE	120.5	6.63	6	160	52.4	0.15	1.3	4.9
9/10/2013	15:38:24.8	44.5557	-114.0140	1.4 Mc IE	140.9	5.06	7	279	55.6	0.17	2.7	7.0
9/10/2013	23:00:09.0	42.8287	-111.4073	0.4 Mc IE	144.3	2.42	5	250	12.2	0.18	2.0	19.0
9/12/2013	21:22:21.2	42.8238	-111.4967	0.8 Mc IE	139.1	2.50	5	280	14.1	0.09	11.7	13.2
9/14/2013	02:36:22.6	44.4690	-112.7638	1.3 Mc IE	91.1	10.61	9	99	21.0	0.04	0.5	2.0
9/14/2013	21:58:18.6	42.9118	-111.3748	0.4 Mc IE	140.7	2.51	5	183	4.8	0.04	2.0	10.1
9/15/2013	02:26:56.8	42.9417	-111.3007	0.8 Mc IE	143.8	5.08	4	128	9.9	0.14	3.1	16.0
9/15/2013	05:34:56.7	42.7417	-111.6423	1.2 Mc IE	137.1	5.04	8	121	28.3	0.25	1.4	18.4
9/15/2013	06:18:37.3	42.9650	-111.0805	0.5 Mc IE	157.7	12.66	6	163	22.2	0.03	0.9	3.4
9/15/2013	09:50:05.9	43.0580	-111.3592	0.5 Mc IE	132.8	5.19	4	168	1.1	0.00	5.7	2.6
9/16/2013	01:19:24.7	44.6135	-112.0875	1.5 Mc IE	120.8	10.76	11	163	24.5	0.12	0.6	1.8
9/16/2013	05:43:53.9	43.7392	-110.9073	0.3 Mc IE	151.5	4.65	5	258	14.8	0.05	3.4	12.8
9/16/2013	13:56:22.4	43.7402	-110.9138	0.7 Mc IE	150.9	3.19	7	135	14.5	0.05	0.4	9.4
9/16/2013	16:06:56.7	43.7970	-110.9005	0.6 Mc IE	152.5	2.64	7	145	11.5	0.07	0.5	11.7
9/16/2013	19:03:31.9	43.7938	-110.8943	0.6 Mc IE	152.9	3.33	4	147	12.0	0.01	0.5	10.7
9/17/2013	02:47:54.6	43.7663	-110.8988	0.3 Mc IE	152.3	2.50	5	137	14.9	0.10	0.6	14.9
9/17/2013	06:45:45.6	44.7192	-111.5470	1.0 Mc IE	154.6	3.77	4	165	9.5	0.15	2.5	5.1
9/17/2013	07:48:45.2	42.7090	-111.3127	1.0 Mc IE	158.8	3.03	6	283	18.5	0.10	1.2	11.8
9/17/2013	08:27:11.3	43.8023	-110.9065	1.0 Mc IE	152.1	3.42	8	109	10.8	0.09	0.8	8.3
9/18/2013	01:26:47.4	44.5905	-112.1565	1.4 Mc IE	116.0	13.94	11	105	18.9	0.12	0.6	1.6
9/18/2013	04:35:34.7	43.7960	-110.8332	0.3 Mc IE	157.9	4.86	4	233	14.1	0.05	2.7	12.6
9/18/2013	05:35:25.6	43.7913	-110.8468	0.3 Mc IE	156.7	2.49	6	227	13.9	0.22	2.3	22.0
9/18/2013	08:37:29.1	43.7978	-110.9002	1.1 Mc IE	152.5	2.96	7	184	11.5	0.03	1.4	9.1
9/18/2013	08:39:32.3	43.7823	-110.8288	0.7 Mc IE	158.1	4.96	4	231	15.5	0.14	3.0	15.2
9/18/2013	16:49:55.5	43.7300	-110.8550	0.6 Mc IE	155.6	2.46	6	217	17.2	0.19	1.6	19.9
9/18/2013	19:49:29.7	43.8708	-111.0008	0.6 Mc IE	145.5	4.33	4	234	5.8	0.11	9.8	11.8
9/18/2013	23:41:48.4	44.6018	-112.6313	1.1 Mc IE	106.6	17.08	6	128	18.8	0.06	0.7	1.1
9/19/2013	00:46:42.3	43.7958	-110.9045	0.5 Mc IE	152.2	3.66	5	142	11.6	0.05	0.6	9.3
9/19/2013	05:04:50.2	43.8005	-110.8967	0.9 Mc IE	152.8	2.38	10	122	11.3	0.08	0.7	10.7

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
9/19/2013	05:10:56.6	43.7062	-110.9132	0.7 Mc IE	150.8	17.19	5	241	11.9	0.01	2.3	1.6
9/19/2013	11:52:56.9	44.6102	-112.0642	1.6 Mc IE	121.3	0.32	5	160	26.3	0.02	1.0	2.5
9/19/2013	14:56:33.1	42.6880	-111.6312	1.4 Mc IE	142.2	0.08	6	132	44.3	0.32	1.6	20.4
9/19/2013	15:00:20.6	43.3692	-111.0617	0.2 Mc IE	142.6	5.25	5	273	16.2	0.09	3.3	13.7
9/19/2013	18:25:58.4	43.5858	-110.8525	0.8 Mc IE	155.9	7.66	7	136	13.3	0.35	1.4	6.7
9/19/2013	18:39:11.5	43.7973	-110.9130	0.6 Mc IE	151.5	2.52	5	142	11.3	0.04	0.8	12.0
9/19/2013	18:57:42.2	43.7975	-110.9123	0.5 Mc IE	151.6	2.44	5	141	11.3	0.03	0.8	12.1
9/20/2013	00:13:14.7	43.8245	-111.0352	0.4 Mc IE	142.1	4.52	4	225	11.1	0.04	6.4	11.3
9/20/2013	00:56:24.9	43.7975	-110.9057	0.6 Mc IE	152.1	2.75	7	143	11.4	0.05	0.5	10.8
9/20/2013	02:51:21.9	43.7520	-110.8938	0.5 Mc IE	152.6	8.30	6	148	16.6	0.13	1.1	4.6
9/20/2013	08:40:06.2	44.6135	-112.0577	1.5 Mc IE	121.9	5.01	8	114	26.8	0.16	0.9	18.0
9/20/2013	11:20:56.4	42.9705	-111.2707	0.4 Mc IE	144.1	5.01	6	111	12.3	0.06	0.7	6.9
9/20/2013	17:39:16.1	43.7942	-110.8992	0.2 Mc IE	152.6	2.23	4	145	11.9	0.03	0.5	12.7
9/20/2013	18:17:23.5	43.8078	-110.9753	0.4 Mc IE	146.6	2.09	4	183	10.3	0.03	12.4	12.8
9/21/2013	13:13:13.7	43.7992	-110.9080	0.7 Mc IE	151.9	2.04	8	142	11.2	0.11	0.8	15.5
9/21/2013	16:18:49.4	43.7990	-110.9098	0.2 Mc IE	151.8	2.47	5	141	11.1	0.01	0.8	12.1
9/21/2013	19:01:04.5	43.7953	-110.9032	0.5 Mc IE	152.3	2.50	6	143	11.7	0.08	0.6	13.0
9/21/2013	20:23:31.7	43.8023	-110.9128	0.0 Mc IE	151.6	2.53	4	142	10.7	0.02	0.7	11.7
9/22/2013	03:38:47.8	42.9933	-111.2550	1.0 Mc IE	143.8	2.49	8	268	11.5	0.08	1.4	13.6
9/22/2013	03:40:11.2	42.9518	-111.3678	0.1 Mc IE	138.6	2.31	6	127	4.7	0.15	1.7	17.5
9/22/2013	03:43:22.1	42.9680	-111.2627	0.4 Mc IE	144.8	6.83	5	112	12.9	0.06	1.1	5.8
9/22/2013	08:00:12.4	43.4840	-110.9445	0.4 Mc IE	149.6	3.23	5	174	0.8	0.02	8.9	1.6
9/22/2013	19:28:15.6	44.6845	-111.5730	0.8 Mc IE	150.3	0.03	4	204	8.9	0.13	12.5	10.7
9/22/2013	19:33:19.1	44.6703	-111.6618	0.5 Mc IE	144.6	4.55	4	146	6.6	0.25	16.3	15.6
9/22/2013	19:41:44.5	43.3322	-111.5178	0.8 Mc IE	108.2	18.34	5	175	71.6	0.08	2.3	14.1
9/22/2013	20:30:27.1	44.7213	-111.5672	1.1 Mc IE	153.8	4.78	6	233	7.9	0.11	2.5	1.4
9/24/2013	08:17:17.3	43.8035	-110.9008	1.3 Mc IE	152.5	2.50	7	178	21.0	0.06	0.6	12.8
9/24/2013	10:53:20.9	43.4012	-110.8357	0.6 Mc IE	159.8	4.02	5	159	4.5	0.11	1.1	5.2
9/25/2013	05:52:45.3	43.7977	-110.9075	0.6 Mc IE	151.9	2.50	6	141	11.3	0.09	0.9	13.5
9/26/2013	01:16:12.7	44.2128	-113.2202	1.3 Mc IE	71.8	1.07	4	188	18.3	0.01	1.0	1.9
9/26/2013	01:52:56.1	43.7518	-110.9065	0.4 Mc IE	151.6	12.87	4	133	15.9	0.00	0.7	3.4
9/26/2013	06:07:27.2	44.6215	-114.2600	1.8 Mc IE	160.1	8.80	7	153	76.3	0.32	2.8	6.7
9/26/2013	12:17:45.2	43.7980	-110.9023	0.8 Mc IE	152.4	2.49	8	145	11.4	0.09	0.6	12.3
9/26/2013	14:17:44.9	43.7652	-110.9087	0.0 Mc IE	151.5	12.38	4	136	14.9	0.01	0.6	3.5
9/26/2013	20:49:49.1	43.2688	-111.1593	0.9 Mc IE	138.0	13.73	8	208	27.0	0.08	0.9	1.4
9/26/2013	22:08:21.3	42.8213	-111.2107	1.7 Mc IE	157.5	10.83	10	184	11.0	0.06	1.0	2.5
9/26/2013	22:14:37.9	42.8122	-111.1967	0.7 Mc IE	159.0	12.95	6	210	9.4	0.04	1.3	2.4
9/27/2013	00:13:07.2	42.8287	-111.2088	1.4 Mc IE	157.1	4.55	8	177	11.3	0.12	1.0	8.8
9/27/2013	01:14:35.8	43.5988	-110.8417	0.9 Mc IE	156.7	4.88	5	195	14.9	0.05	2.3	11.9
9/27/2013	02:23:25.0	43.8043	-110.9157	1.0 Mc IE	151.3	5.03	6	144	10.5	0.12	1.3	7.7
9/27/2013	04:40:39.1	43.4188	-110.9587	0.3 Mc IE	149.6	7.60	7	223	8.0	0.09	2.0	1.0
9/27/2013	05:46:06.2	43.7972	-110.8977	0.2 Mc IE	152.7	2.72	5	146	11.6	0.02	0.7	11.5
9/27/2013	11:20:15.2	43.7997	-110.8988	0.6 Mc IE	152.7	4.03	6	147	11.3	0.03	0.5	6.0
9/27/2013	11:53:11.1	43.8015	-110.9740	0.0 Mc IE	146.7	2.49	4	180	11.0	0.29	27.0	24.4
9/27/2013	19:03:03.9	43.4448	-111.1348	0.7 Mc IE	135.1	4.11	7	266	15.7	0.06	2.0	11.2
9/27/2013	19:48:49.9	43.4408	-111.1440	0.6 Mc IE	134.4	4.01	5	267	16.6	0.06	2.0	11.6
9/27/2013	23:01:10.9	42.8683	-111.5007	1.1 Mc IE	135.6	2.15	7	272	10.1	0.23	1.6	22.2
9/28/2013	07:06:30.1	43.8012	-110.9017	0.8 Mc IE	152.4	2.05	9	123	11.1	0.07	0.6	13.9
9/28/2013	11:43:48.6	43.9087	-113.8000	2.2 ML IE	86.7	1.77	25	234	28.0	0.08	0.6	0.7
9/28/2013	21:39:11.6	44.3278	-113.2213	0.9 Mc IE	83.2	5.80	4	124	14.8	0.01	0.9	1.2
9/29/2013	23:24:15.7	44.2890	-113.1518	0.8 Mc IE	77.0	10.06	6	152	20.4	0.07	1.3	7.2

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
9/30/2013	03:11:10.8	43.5893	-110.9898	0.8 Mc IE	144.8	2.18	5	203	11.5	0.08	0.8	14.0
9/30/2013	08:02:38.2	43.2187	-111.0410	0.8 Mc IE	148.9	13.08	6	193	22.2	0.09	1.2	4.3
9/30/2013	09:33:00.1	43.8502	-110.9732	0.3 Mc IE	147.4	2.80	4	196	5.9	0.01	0.8	9.4
10/1/2013	08:44:28.2	43.2218	-111.0443	0.8 Mc IE	148.5	9.44	9	191	22.1	0.10	0.8	3.2
10/1/2013	09:29:47.1	44.7405	-111.5707	1.4 Mc IE	155.2	6.95	6	251	7.6	0.00	2.0	1.9
10/1/2013	16:48:35.6	43.3405	-110.8685	0.4 Mc IE	158.6	6.34	5	310	2.8	0.08	11.4	4.5
10/2/2013	13:21:33.6	42.6290	-112.0005	2.3 Mc IE	130.2	8.61	29	116	40.4	0.06	0.2	0.9
10/2/2013	15:01:30.9	44.3722	-114.0238	1.3 Mc IE	127.8	4.35	5	162	49.8	0.00	3.2	6.1
10/4/2013	03:39:24.0	43.6620	-110.9188	0.8 Mc IE	150.3	2.67	7	105	9.1	0.08	0.7	11.1
10/8/2013	09:23:01.6	44.6375	-112.1395	0.9 Mc IE	121.3	4.01	4	227	20.8	0.00	2.7	2.4
10/8/2013	21:17:29.4	42.8237	-111.3795	0.7 Mc IE	146.4	10.29	4	256	23.7	0.00	2.4	3.6
10/9/2013	00:24:03.9	43.0392	-111.2987	0.5 Mc IE	138.2	5.00	4	177	6.1	0.05	4.6	8.8
10/9/2013	05:35:01.3	44.6375	-113.1268	1.2 Mc IE	113.2	5.00	4	194	30.5	0.08	4.3	13.1
10/10/2013	06:32:28.8	43.1613	-111.3655	0.5 Mc IE	127.0	13.88	4	131	12.0	0.11	2.2	3.7
10/10/2013	14:57:04.2	42.7235	-111.6067	0.8 Mc IE	140.6	5.21	6	256	41.4	0.28	3.6	22.7
10/11/2013	11:12:12.8	43.3847	-111.1248	0.2 Mc IE	137.2	5.54	5	279	18.3	0.31	5.6	26.9
10/11/2013	17:13:50.8	42.9800	-111.4107	0.6 Mc IE	133.9	2.44	4	190	4.7	0.33	21.1	23.7
10/12/2013	20:14:09.2	43.5352	-110.9698	0.4 Mc IE	146.9	8.77	6	177	5.2	0.02	0.6	1.8
10/14/2013	07:14:38.9	44.2823	-111.4807	1.0 Mc IE	125.9	5.00	6	321	25.9	0.23	2.9	20.1
10/14/2013	15:22:42.3	42.6557	-111.6630	1.4 Mc IE	143.3	5.00	6	136	37.1	0.05	1.0	12.4
10/14/2013	22:41:29.1	43.8218	-111.0277	0.0 Mc IE	142.6	4.34	4	221	11.0	0.02	6.4	10.9
10/16/2013	03:11:15.0	44.7212	-111.9138	1.3 Mc IE	137.9	11.40	6	167	19.7	0.01	1.6	3.2
10/16/2013	10:21:35.8	43.1882	-110.9765	1.2 Mc IE	155.0	5.03	5	324	21.8	0.02	1.6	11.4
10/16/2013	10:28:25.2	43.1483	-110.9243	0.8 Mc IE	160.5	4.44	6	339	24.5	0.11	3.8	13.8
10/16/2013	16:19:14.8	42.9747	-111.3302	1.3 Mc IE	139.7	8.50	8	123	8.5	0.07	0.8	1.3
10/16/2013	17:30:15.4	43.8035	-110.9327	0.6 Mc IE	150.0	2.61	5	185	10.4	0.09	2.1	11.3
10/16/2013	22:24:23.5	43.1828	-110.9012	0.7 Mc IE	160.9	18.52	6	224	20.3	0.11	1.5	3.1
10/16/2013	23:55:47.7	43.1445	-111.0363	0.6 Mc IE	152.2	5.09	6	329	28.5	0.18	2.8	19.4
10/18/2013	02:05:11.7	44.8512	-113.8650	2.0 Mc IE	159.1	12.30	7	257	70.3	0.14	2.5	1.3
10/18/2013	16:39:57.1	43.4222	-110.9430	0.5 Mc IE	150.8	8.70	8	214	7.6	0.07	0.6	0.9
10/18/2013	23:39:43.9	43.4623	-111.0553	2.0 ML IE	141.1	10.46	12	143	9.0	0.06	0.5	1.3
10/18/2013	23:40:20.9	43.4480	-111.1010	0.8 Mc IE	137.7	11.63	8	168	13.0	0.11	0.7	2.4
10/19/2013	00:05:51.5	43.4523	-111.0928	3.8 Mw US	138.3	10.77	13	147	12.2	0.06	0.5	1.2
10/19/2013	00:14:27.7	43.5490	-110.7992	0.1 Mc IE	160.5	5.72	6	253	13.9	0.14	5.1	16.0
10/19/2013	00:14:47.2	43.5617	-110.8303	0.0 NoMag	157.9	4.89	6	246	12.6	0.01	3.5	12.0
10/19/2013	00:27:16.5	43.4898	-110.9638	0.1 Mc IE	148.0	17.82	4	256	1.1	0.03	12.7	1.5
10/19/2013	00:30:06.9	43.4415	-111.0820	1.2 Mc IE	139.3	7.84	7	143	11.9	0.07	0.6	2.9
10/19/2013	00:30:07.1	43.5483	-110.7993	1.1 Mc IE	160.5	5.79	6	253	13.8	0.21	6.5	19.8
10/19/2013	00:51:06.5	43.5650	-110.7942	0.1 Mc IE	160.8	5.40	6	258	15.1	0.25	6.2	23.0
10/19/2013	00:57:53.6	43.4465	-111.1493	0.5 Mc IE	133.9	5.05	5	273	16.8	0.05	2.4	12.3
10/19/2013	01:03:07.5	43.4380	-111.1372	0.6 Mc IE	135.0	5.00	7	268	16.2	0.18	4.1	15.3
10/19/2013	01:05:56.9	43.4437	-111.0932	0.3 Mc IE	138.4	10.72	9	259	12.6	0.11	1.0	1.5
10/19/2013	01:28:24.6	43.4455	-111.1148	1.1 Mc IE	136.7	10.13	7	306	14.2	0.08	1.8	2.0
10/19/2013	01:43:50.2	43.4437	-111.0930	0.5 Mc IE	138.4	11.32	5	308	12.6	0.01	1.2	1.5
10/19/2013	02:00:40.1	43.4378	-111.1373	0.8 Mc IE	135.0	4.30	5	313	16.2	0.02	1.6	7.6
10/19/2013	02:07:57.5	43.4475	-111.0885	0.7 Mc IE	138.7	11.68	8	307	12.1	0.03	1.1	1.2
10/19/2013	02:29:17.9	43.4490	-111.0873	0.6 Mc IE	138.8	11.67	7	306	12.0	0.03	2.4	1.9
10/19/2013	02:43:06.3	43.4435	-111.0968	0.7 Mc IE	138.1	10.86	7	308	12.9	0.01	2.2	2.4
10/19/2013	03:07:07.4	43.4685	-111.0855	0.5 Mc IE	138.6	2.47	5	296	11.2	0.15	1.7	15.8
10/19/2013	03:13:14.3	43.5373	-111.2280	0.8 Mc IE	126.1	4.82	5	307	19.7	0.19	3.1	15.8
10/19/2013	03:39:19.8	43.4455	-111.1185	1.0 Mc IE	136.4	8.89	8	307	14.5	0.08	1.7	2.4

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
10/19/2013	03:51:13.5	43.4225	-111.1105	0.3 Mc IE	137.5	5.95	5	315	15.0	0.03	3.2	8.5
10/19/2013	04:00:40.1	43.4253	-111.0790	0.5 Mc IE	139.9	11.72	5	309	12.6	0.03	1.2	1.5
10/19/2013	04:12:43.3	43.4497	-111.0882	0.5 Mc IE	138.7	11.83	6	306	12.0	0.03	2.3	2.1
10/19/2013	05:57:59.0	43.4425	-111.0943	0.3 Mc IE	138.3	11.48	5	309	12.8	0.02	1.2	1.5
10/19/2013	06:53:28.8	43.4420	-111.1415	0.4 Mc IE	134.6	3.58	6	272	16.3	0.06	1.3	9.7
10/19/2013	08:04:10.7	42.9343	-111.0603	0.0 NoMag	160.8	1.07	6	185	19.1	0.23	1.8	9.7
10/19/2013	09:41:41.5	42.9312	-111.0623	0.3 Mc IE	160.9	5.05	5	164	18.7	0.08	1.3	11.4
10/19/2013	10:30:44.2	43.4315	-111.1430	0.9 Mc IE	134.7	3.53	5	270	16.9	0.04	3.1	10.1
10/19/2013	10:45:24.2	43.4402	-111.1477	0.3 Mc IE	134.1	5.05	5	274	16.9	0.04	2.3	12.2
10/19/2013	11:05:03.0	43.4297	-111.1723	0.8 Mc IE	132.4	4.56	5	274	19.2	0.10	4.0	10.0
10/19/2013	11:54:08.2	43.4370	-111.1445	0.5 Mc IE	134.5	5.05	5	274	16.8	0.05	2.3	12.2
10/19/2013	12:01:10.1	42.9672	-111.0955	0.9 Mc IE	156.5	5.04	5	266	24.4	0.25	2.6	18.1
10/19/2013	20:06:23.4	43.5150	-110.9312	0.7 Mc IE	150.2	16.17	6	121	3.2	0.14	1.6	1.5
10/19/2013	22:06:29.2	43.5553	-110.7932	0.7 Mc IE	160.9	5.47	6	256	14.7	0.26	6.7	23.7
10/19/2013	23:52:57.7	43.4655	-111.1110	0.4 Mc IE	136.6	11.61	5	310	13.3	0.02	1.2	1.5
10/20/2013	03:18:20.1	43.4827	-110.9603	0.6 Mc IE	148.3	17.36	4	300	1.1	0.02	12.6	1.3
10/20/2013	04:27:56.8	43.5600	-110.8203	0.1 Mc IE	158.7	5.36	6	249	13.1	0.14	5.0	16.2
10/20/2013	09:26:45.7	44.5163	-112.8447	1.1 Mc IE	96.5	4.46	6	230	22.2	0.02	1.9	2.2
10/20/2013	11:34:00.6	43.4390	-111.1470	0.7 Mc IE	134.2	5.06	5	274	16.9	0.06	2.4	12.7
10/20/2013	11:36:08.5	43.4482	-111.1185	0.7 Mc IE	136.3	2.49	7	266	14.4	0.15	1.4	15.9
10/20/2013	12:46:11.5	43.4465	-111.1260	0.6 Mc IE	135.7	10.31	8	264	15.0	0.06	1.5	2.4
10/20/2013	13:51:49.9	43.4380	-111.1468	0.7 Mc IE	134.3	5.47	5	274	16.9	0.07	2.8	12.7
10/20/2013	15:08:03.8	43.4638	-111.0715	0.7 Mc IE	139.8	2.62	6	250	10.2	0.21	2.9	17.5
10/20/2013	15:34:36.4	42.9345	-111.0660	0.7 Mc IE	160.4	2.30	6	169	19.0	0.15	1.3	17.8
10/20/2013	17:55:17.6	43.5997	-111.0428	0.6 Mc IE	140.5	21.08	4	359	14.3	0.06	13.6	1.3
10/20/2013	19:52:58.9	42.8148	-111.2962	1.0 Mc IE	152.3	2.48	6	210	16.9	0.13	1.1	16.0
10/22/2013	05:21:20.0	44.3965	-113.2055	0.6 Mc IE	89.7	0.93	4	171	18.5	0.00	1.6	2.3
10/22/2013	22:19:52.1	44.3895	-111.3620	1.1 Mc IE	140.5	25.58	3	359	26.4	0.11	15.7	1.8
10/23/2013	01:50:30.9	44.3337	-112.7957	0.7 Mc IE	76.1	9.83	6	121	11.6	0.09	0.9	2.6
10/23/2013	07:42:50.5	43.6130	-111.0717	0.7 Mc IE	138.1	12.01	7	206	4.6	0.13	3.6	0.9
10/23/2013	12:38:58.8	42.9348	-111.0823	2.2 Mc IE	159.2	4.12	15	169	26.9	0.21	2.1	9.1
10/23/2013	16:06:17.8	43.4330	-110.8817	0.4 Mc IE	155.5	12.68	7	157	8.2	0.07	0.5	1.0
10/23/2013	19:35:11.3	44.4525	-111.1125	0.9 Mc IE	160.8	4.89	4	310	29.7	0.04	3.1	12.4
10/24/2013	11:53:26.5	42.9363	-111.0598	1.6 Mc IE	160.8	4.56	6	245	28.5	0.05	2.2	10.0
10/24/2013	11:57:34.8	42.9470	-111.0708	1.1 Mc IE	159.4	4.93	6	275	27.2	0.06	1.5	12.0
10/24/2013	13:48:54.3	43.5517	-110.7960	0.1 Mc IE	160.7	5.36	5	255	14.2	0.21	5.8	20.4
10/24/2013	21:15:40.1	42.7835	-111.5443	0.0 NoMag	139.3	2.50	5	240	19.9	0.08	1.8	13.6
10/25/2013	06:53:05.4	42.9303	-111.0740	0.6 Mc IE	160.1	4.98	4	167	18.5	0.04	1.0	10.4
10/25/2013	11:36:52.9	43.5353	-110.8113	0.0 Mc IE	159.7	5.89	5	246	12.3	0.15	6.3	16.6
10/25/2013	13:16:33.5	43.4958	-110.9687	0.3 Mc IE	147.5	17.27	4	231	1.6	0.01	12.5	1.4
10/25/2013	20:23:00.4	42.7762	-111.5748	1.1 Mc IE	138.1	4.66	5	244	21.9	0.11	2.4	13.5
10/26/2013	10:43:45.2	44.7568	-111.5403	1.9 Mc IE	158.2	9.25	10	261	10.4	0.16	3.0	1.9
10/26/2013	21:42:46.9	44.6877	-111.5710	1.1 Mc IE	150.7	4.72	5	206	8.8	0.09	6.8	10.5
10/26/2013	23:06:06.8	43.4398	-111.1445	1.1 Mc IE	134.4	2.52	6	274	16.6	0.03	0.9	12.7
10/27/2013	02:13:05.4	43.5068	-110.9355	0.6 Mc IE	150.0	1.57	5	214	2.2	0.09	7.4	9.2
10/27/2013	12:51:56.3	43.5607	-110.8077	0.3 Mc IE	159.7	4.96	5	253	14.0	0.08	3.5	13.5
10/27/2013	12:57:47.1	43.5543	-110.8095	0.5 Mc IE	159.6	5.09	6	251	13.5	0.13	4.5	16.0
10/28/2013	08:21:46.5	43.5627	-110.8040	0.3 Mc IE	160.0	5.11	5	254	14.3	0.11	3.9	15.0
10/28/2013	10:44:14.0	43.2007	-111.4160	1.7 Mc IE	121.4	2.47	11	225	16.8	0.11	1.3	14.6
10/28/2013	12:34:39.7	43.4558	-111.0875	0.2 Mc IE	138.6	5.47	4	255	11.7	0.12	4.0	12.3
10/28/2013	16:19:56.0	44.5027	-112.9995	0.6 Mc IE	96.4	6.06	5	141	19.8	0.07	1.0	2.4

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
10/29/2013	10:42:30.2	42.9517	-111.0678	0.4 Mc IE	159.3	4.92	5	275	27.2	0.01	1.3	11.7
10/29/2013	11:58:42.9	43.4042	-111.1472	0.8 Mc IE	135.0	5.31	7	280	18.6	0.07	2.7	12.5
10/29/2013	21:15:50.1	42.7063	-111.7642	1.2 Mc IE	133.7	4.97	7	317	38.0	0.19	13.9	16.0
10/30/2013	21:20:02.2	42.7128	-111.6653	0.6 Mc IE	138.3	5.05	5	310	32.0	0.19	3.6	17.9
10/31/2013	16:13:53.1	43.4427	-111.1392	0.4 Mc IE	134.8	5.07	5	272	16.1	0.06	2.5	12.4
11/1/2013	08:38:10.8	43.5410	-110.7970	0.3 Mc IE	160.8	5.10	6	252	13.7	0.21	5.7	20.9
11/1/2013	22:39:14.4	43.4480	-111.1128	1.0 Mc IE	136.8	8.46	8	178	13.9	0.11	2.0	4.6
11/2/2013	04:37:27.7	42.6540	-111.4105	1.1 Mc IE	157.2	11.98	7	225	28.3	0.11	1.3	0.9
11/2/2013	11:24:21.6	43.7242	-111.0292	0.2 Mc IE	141.6	2.00	6	202	9.6	0.16	1.1	18.5
11/3/2013	13:32:52.4	44.7087	-111.6842	1.2 Mc IE	146.9	15.20	8	161	2.8	0.07	1.0	0.6
11/3/2013	15:56:36.4	43.7342	-110.8682	0.7 Mc IE	154.6	4.81	4	251	16.7	0.07	3.8	13.2
11/4/2013	01:32:39.1	44.6503	-112.3673	1.8 Mc IE	116.1	5.02	6	142	34.6	0.07	0.7	13.7
11/4/2013	03:04:44.0	44.5978	-113.5880	1.0 Mc IE	123.5	5.00	5	255	35.1	0.10	4.8	14.9
11/4/2013	10:01:18.6	44.6222	-112.3683	0.9 Mc IE	113.1	3.11	6	218	3.8	0.08	1.6	0.7
11/4/2013	10:21:33.5	44.6282	-111.5793	1.2 Mc IE	145.3	4.73	5	177	13.2	0.25	17.0	15.8
11/4/2013	11:46:14.5	43.1847	-110.9380	2.1 Mc IE	158.1	9.66	17	167	20.9	0.06	0.7	1.2
11/4/2013	15:14:32.6	44.6880	-111.4278	0.9 Mc IE	158.3	4.90	5	214	19.4	0.23	9.1	20.1
11/5/2013	00:20:58.8	44.6802	-111.5173	1.8 Mc IE	152.9	0.05	11	215	13.0	0.29	6.2	11.6
11/5/2013	06:45:31.3	43.0043	-111.5715	0.7 Mc IE	121.7	6.13	5	263	14.3	0.04	3.7	3.0
11/6/2013	04:18:54.3	44.6310	-111.8452	0.8 Mc IE	132.4	3.63	4	274	18.0	0.21	18.3	6.3
11/6/2013	04:36:48.7	44.4708	-113.8875	1.2 Mc IE	127.1	5.00	4	324	42.3	0.29	23.5	27.0
11/6/2013	05:04:25.3	43.1705	-110.9617	0.5 Mc IE	156.8	5.03	5	248	35.5	0.04	2.2	11.5
11/6/2013	09:25:13.8	43.4348	-111.1440	0.5 Mc IE	134.6	4.81	6	274	16.8	0.05	2.2	12.5
11/6/2013	13:56:14.1	44.7320	-112.3958	1.1 Mc IE	124.3	12.93	4	235	15.4	0.00	2.9	1.8
11/6/2013	18:45:01.0	43.4488	-111.1140	0.2 Mc IE	136.7	5.14	5	264	14.0	0.07	2.9	12.1
11/7/2013	05:23:10.5	44.6520	-112.6340	1.4 Mc IE	112.1	8.18	6	172	20.1	0.24	3.1	2.8
11/7/2013	07:23:15.1	44.5423	-114.0228	1.3 Mc IE	140.4	4.90	6	278	55.5	0.22	3.2	8.4
11/7/2013	08:07:37.7	43.4305	-111.1277	0.6 Mc IE	135.9	5.10	5	271	15.8	0.06	2.6	12.4
11/7/2013	10:44:05.8	42.8937	-111.3005	1.0 Mc IE	146.8	2.36	9	213	18.6	0.12	1.7	15.5
11/7/2013	13:01:08.8	42.8805	-111.3217	0.6 Mc IE	146.2	4.89	4	224	19.6	0.08	2.7	10.6
11/8/2013	22:25:14.1	44.7210	-111.5433	0.9 Mc IE	154.9	1.52	4	236	9.7	0.17	18.2	6.0
11/8/2013	23:46:52.8	44.7118	-111.5922	1.2 Mc IE	151.7	3.81	4	221	6.2	0.00	4.3	4.4
11/9/2013	03:03:30.6	44.1955	-110.9860	0.9 Mc IE	156.5	13.28	6	210	15.7	0.01	0.7	2.2
11/9/2013	21:36:59.4	43.1445	-110.9672	0.7 Mc IE	157.4	2.42	7	174	26.0	0.19	2.2	19.7
11/11/2013	06:44:58.8	44.0747	-113.9528	1.7 Mc IE	105.2	0.04	12	276	43.3	0.27	3.8	8.5
11/12/2013	02:02:45.1	44.4765	-112.9962	0.9 Mc IE	93.5	3.49	4	148	16.9	0.00	0.8	2.5
11/12/2013	06:42:29.3	44.8612	-112.7325	1.5 Mc IE	134.8	7.89	6	288	66.5	0.13	12.9	2.1
11/12/2013	09:35:53.6	43.4277	-110.9030	0.9 Mc IE	153.9	2.39	5	181	8.0	0.17	4.0	17.3
11/12/2013	10:49:38.2	43.3807	-110.9890	1.2 Mc IE	148.1	11.26	9	166	11.3	0.03	1.5	1.6
11/12/2013	19:47:36.0	43.2783	-111.4762	1.1 Mc IE	113.5	5.11	6	213	26.4	0.04	1.5	12.0
11/12/2013	21:37:15.7	42.7717	-111.5685	0.9 Mc IE	138.8	4.36	4	294	35.2	0.05	7.8	11.7
11/13/2013	14:10:37.6	44.9587	-113.0820	1.1 Mc IE	147.5	7.42	4	200	23.5	0.03	1.4	12.6
11/13/2013	14:45:45.5	43.3205	-111.1647	0.9 Mc IE	135.9	12.59	9	165	25.6	0.12	0.8	2.6
11/13/2013	22:25:44.4	42.7525	-111.6028	0.9 Mc IE	138.4	5.00	4	302	25.4	0.23	13.6	13.4
11/14/2013	04:26:56.0	44.6723	-111.8882	2.2 Mc MB	134.4	5.36	21	104	18.8	0.04	0.4	0.9
11/14/2013	22:13:56.5	42.7550	-111.5737	1.2 Mc IE	139.9	4.24	4	296	37.1	0.04	8.0	11.7
11/16/2013	17:28:46.9	42.9275	-111.0898	1.2 Mc IE	159.1	4.98	4	162	18.0	0.07	1.0	11.0
11/18/2013	03:21:38.9	42.7017	-111.7708	1.8 Mc IE	133.8	6.60	9	210	51.0	0.09	1.0	2.5
11/18/2013	12:10:50.7	43.7183	-111.0662	0.9 Mc IE	138.6	7.35	6	190	9.4	0.06	1.5	1.9
11/18/2013	20:26:59.9	42.9375	-111.1468	1.9 Mc IE	154.6	2.25	8	191	19.5	0.25	4.8	12.7
11/18/2013	22:05:03.2	44.6862	-112.9835	1.1 Mc IE	116.4	6.62	3	175	19.0	0.21	9.4	18.0

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
11/18/2013	22:32:26.1	42.8388	-111.5680	0.8 Mc IE	133.7	2.48	6	146	16.3	0.08	2.6	13.3
11/19/2013	07:48:49.0	44.6010	-114.2223	2.2 Mc MB	156.4	0.16	18	144	72.6	0.16	1.2	5.0
11/19/2013	08:49:15.5	43.7252	-111.0905	1.1 Mc IE	136.7	2.09	8	196	10.9	0.13	1.4	16.4
11/19/2013	20:14:57.4	44.3758	-112.5730	1.1 Mc IE	82.5	6.70	4	123	20.8	0.21	1.2	21.5
11/20/2013	04:39:45.9	44.7570	-111.5032	1.4 Mc IE	160.1	0.37	5	257	13.2	0.14	6.4	10.1
11/20/2013	04:45:50.2	42.7052	-111.5303	1.1 Mc IE	146.3	5.02	10	207	35.8	0.05	0.8	10.6
11/20/2013	05:27:11.5	42.6973	-111.5282	1.1 Mc IE	147.1	5.05	6	300	35.8	0.04	1.6	10.9
11/20/2013	11:38:05.2	43.5733	-111.6028	0.8 Mc IE	95.6	5.00	5	287	47.1	0.15	2.1	17.6
11/20/2013	17:22:57.8	43.2813	-111.0377	1.1 Mc IE	147.0	14.13	6	170	24.3	0.07	1.6	1.2
11/20/2013	21:31:53.9	42.7967	-111.5083	1.1 Mc IE	140.4	2.49	6	170	17.2	0.04	1.1	12.3
11/21/2013	20:20:50.8	42.7143	-111.5267	0.7 Mc IE	145.8	5.02	4	298	26.3	0.09	2.9	13.2
11/22/2013	09:11:22.0	42.9203	-111.1068	0.6 Mc IE	158.4	7.11	5	156	17.2	0.04	0.9	6.6
11/22/2013	11:08:07.9	44.5325	-112.8273	1.1 Mc IE	98.2	0.04	6	141	24.3	0.27	1.6	12.3
11/22/2013	13:23:39.0	42.7143	-111.5272	1.6 Mc IE	145.8	1.37	18	93	26.3	0.07	0.4	1.6
11/22/2013	19:50:42.5	44.6773	-111.8813	0.9 Mc IE	135.1	0.04	4	148	18.1	0.28	2.2	4.3
11/22/2013	22:09:19.1	42.7972	-111.5060	1.1 Mc IE	140.6	3.64	5	286	17.1	0.04	5.8	9.2
11/24/2013	02:32:05.3	44.7695	-112.7808	0.9 Mc IE	124.5	2.59	6	170	8.4	0.01	2.8	2.9
11/24/2013	09:55:57.6	43.3932	-111.0992	1.0 Mc IE	139.0	9.60	5	273	16.1	0.00	6.6	5.2
11/25/2013	02:57:34.9	44.5685	-112.3675	1.3 Mc IE	107.5	2.80	4	196	3.5	0.00	2.3	0.9
11/25/2013	19:10:08.4	43.2157	-111.6605	0.7 Mc IE	102.9	5.15	4	270	29.7	0.13	5.5	13.4
11/27/2013	00:44:39.4	43.5245	-110.8495	0.6 Mc IE	156.7	5.30	5	229	9.0	0.13	7.1	15.0
11/27/2013	04:15:01.3	43.0208	-111.3862	0.2 Mc IE	133.1	14.73	6	239	3.8	0.07	0.9	0.7
11/27/2013	21:53:54.3	44.6210	-112.6082	1.4 Mc IE	108.9	6.38	6	139	17.3	0.07	0.8	12.0
11/28/2013	01:55:58.0	43.7245	-111.1042	0.1 Mc IE	135.5	3.59	6	240	11.4	0.05	3.0	9.4
11/28/2013	12:01:16.5	43.7252	-111.1052	0.5 Mc IE	135.5	2.71	5	240	11.6	0.02	1.8	11.6
11/29/2013	00:07:14.3	43.7228	-111.0795	1.2 Mc IE	137.5	4.73	7	193	10.3	0.10	1.3	3.2
11/29/2013	20:46:20.0	43.7222	-111.0832	1.1 Mc IE	137.2	0.09	8	195	10.4	0.09	1.0	1.5
11/30/2013	14:32:33.1	44.5155	-113.6378	1.6 Mc IE	118.1	7.58	6	253	29.3	0.04	3.7	12.0
11/30/2013	20:10:33.9	43.7225	-111.0795	0.8 Mc IE	137.5	4.44	7	194	10.3	0.10	1.2	3.4
12/1/2013	07:18:34.5	43.7228	-111.0983	0.6 Mc IE	136.0	2.26	8	198	11.0	0.08	1.5	12.2
12/1/2013	20:21:14.5	44.3650	-113.9993	1.0 Mc IE	125.8	5.06	4	283	47.8	0.16	5.6	12.2
12/1/2013	21:47:45.8	43.7168	-111.0865	0.5 Mc IE	136.9	6.33	9	196	10.0	0.12	1.1	2.3
12/2/2013	02:46:32.3	43.7198	-111.0740	0.5 Mc IE	137.9	5.70	9	193	9.8	0.09	1.2	1.9
12/2/2013	05:57:55.1	43.7138	-111.0680	1.7 Mc IE	138.4	6.42	17	120	9.0	0.16	0.7	1.9
12/3/2013	10:48:39.0	43.7250	-111.0700	0.5 Mc IE	138.3	0.06	7	191	10.3	0.07	1.0	1.4
12/3/2013	11:21:42.2	43.7247	-111.1102	0.5 Mc IE	135.1	2.87	6	242	11.7	0.04	1.9	10.2
12/3/2013	15:17:16.1	44.7958	-113.0055	1.2 Mc IE	128.7	5.22	6	223	12.9	0.09	6.1	13.3
12/3/2013	16:41:36.7	44.7505	-112.9832	0.8 Mc IE	123.5	0.02	6	196	13.7	0.26	5.3	1.9
12/4/2013	02:23:05.2	43.7248	-111.1193	0.8 Mc IE	134.3	2.73	6	245	12.2	0.02	2.0	10.9
12/4/2013	02:29:34.9	44.5487	-112.9622	1.8 Mc IE	101.0	4.98	9	142	24.4	0.05	0.6	0.9
12/4/2013	10:38:57.7	43.4057	-110.8597	1.1 Mc IE	157.8	8.03	9	163	4.9	0.20	1.4	1.2
12/4/2013	16:05:21.7	43.7218	-111.0982	0.5 Mc IE	136.0	5.34	6	238	10.9	0.01	3.4	3.7
12/4/2013	16:05:45.6	43.7257	-111.1037	0.9 Mc IE	135.6	2.69	6	240	11.5	0.09	2.4	11.5
12/4/2013	16:47:30.5	43.7245	-111.1070	1.0 Mc IE	135.3	2.97	9	241	11.6	0.06	2.3	10.3
12/4/2013	17:16:40.5	43.7227	-111.0802	1.3 Mc IE	137.5	0.03	9	195	10.3	0.10	1.2	0.9
12/4/2013	17:58:40.8	43.7272	-111.1062	0.8 Mc IE	135.4	2.26	5	241	11.8	0.10	3.0	13.5
12/4/2013	21:05:20.0	43.7232	-111.1073	0.6 Mc IE	135.3	4.71	6	201	11.5	0.02	1.3	4.4
12/4/2013	22:19:22.1	42.7962	-111.5265	1.2 Mc IE	139.4	2.61	8	183	17.9	0.08	0.9	12.5
12/5/2013	09:09:14.1	43.7245	-111.0572	1.0 Mc IE	139.3	0.06	9	185	9.9	0.13	1.7	0.8
12/5/2013	16:32:45.2	43.7277	-111.1142	1.0 Mc IE	134.8	4.88	5	243	23.5	0.11	3.4	13.4
12/5/2013	17:39:42.5	42.9805	-111.6287	0.9 Mc IE	119.6	5.33	4	256	49.4	0.20	10.5	11.3

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
12/6/2013	00:02:29.5	42.9080	-111.3740	1.8 Mc IE	141.0	6.51	9	174	16.2	0.06	0.8	2.5
12/6/2013	01:36:55.5	43.7213	-111.0662	1.0 Mc IE	138.6	0.34	8	189	9.8	0.08	1.4	0.8
12/6/2013	01:48:25.9	43.7287	-111.0770	1.1 Mc IE	137.8	2.23	7	193	10.8	0.13	2.5	14.1
12/6/2013	06:36:44.9	43.7270	-111.0972	0.9 Mc IE	136.1	0.40	7	238	11.4	0.10	9.0	6.5
12/6/2013	07:15:17.9	43.9957	-114.4155	1.7 Mc IE	136.8	3.75	7	306	77.7	0.03	4.3	10.2
12/6/2013	18:38:38.8	44.9265	-112.7900	1.0 Mc IE	142.0	3.49	5	161	11.9	0.07	1.1	2.2
12/7/2013	17:08:19.1	44.1742	-113.8483	1.7 Mc IE	103.5	7.05	7	279	38.5	0.14	1.9	17.0
12/7/2013	23:19:40.1	44.1495	-113.9012	1.0 Mc IE	105.6	4.89	4	301	43.5	0.01	4.7	9.2
12/8/2013	22:17:24.0	43.2908	-110.8902	0.9 Mc IE	158.2	4.06	5	207	8.5	0.16	5.9	13.4
12/8/2013	23:01:10.3	43.1652	-110.9555	0.6 Mc IE	157.5	5.20	5	334	23.5	0.06	3.0	13.1
12/8/2013	23:47:36.3	42.8538	-111.2593	0.7 Mc IE	152.1	12.01	4	179	16.2	0.00	2.3	3.4
12/9/2013	06:02:10.6	44.2413	-113.9797	1.4 Mc IE	116.4	7.17	12	253	46.5	0.15	0.9	7.2
12/9/2013	16:03:06.3	43.3922	-110.9720	2.4 Mc IE	149.1	4.80	5	154	10.3	0.06	3.2	12.8
12/10/2013	02:12:08.2	43.4063	-111.2278	0.7 Mc IE	128.6	10.70	11	118	30.4	0.19	0.6	2.1
12/11/2013	11:13:04.9	44.5552	-114.1475	1.9 Mc IE	148.5	0.02	14	265	65.0	0.21	2.8	3.2
12/11/2013	13:28:16.5	43.5875	-113.7190	0.5 Mc IE	75.8	12.40	8	285	19.8	0.14	1.1	1.4
12/12/2013	03:33:48.6	43.7077	-113.7323	1.1 Mc IE	76.8	1.22	13	224	22.7	0.12	0.9	1.7
12/12/2013	22:16:47.2	42.7580	-111.5470	1.4 Mc IE	141.2	3.84	4	353	35.9	0.02	7.3	11.7
12/14/2013	04:33:48.3	44.5577	-112.0835	1.3 Mc IE	115.5	5.76	5	290	122.2	0.08	8.6	11.5
12/14/2013	06:21:04.3	43.4373	-110.9435	1.1 Mc IE	150.5	23.42	4	349	5.9	0.19	20.2	1.9
12/14/2013	14:08:32.0	44.5577	-113.0363	2.0 Mc IE	103.0	0.16	7	158	26.5	0.10	0.8	8.8
12/14/2013	14:30:46.7	44.5600	-113.0420	1.8 Mc IE	103.3	0.02	6	160	26.9	0.17	1.1	4.4
12/14/2013	18:57:00.2	43.4268	-110.9238	0.6 Mc IE	152.2	9.52	4	358	7.4	0.14	16.8	1.3
12/15/2013	10:25:47.5	44.6143	-113.0355	1.4 Mc IE	109.2	3.64	16	169	27.9	0.24	0.5	1.1
12/16/2013	12:47:46.2	43.0622	-111.6438	0.4 Mc IE	113.1	2.22	7	171	22.3	0.13	0.8	16.4
12/16/2013	14:18:07.2	44.2573	-113.9492	1.4 Mc IE	115.4	6.93	17	281	43.8	0.17	0.7	7.6
12/16/2013	16:45:52.2	43.7177	-111.0827	0.4 Mc IE	137.2	2.25	8	198	9.9	0.08	0.8	11.8
12/16/2013	22:12:17.7	42.7535	-111.6025	0.5 Mc IE	138.4	3.46	8	297	25.3	0.13	1.2	13.7
12/17/2013	13:34:23.0	43.7168	-111.0092	0.2 Mc IE	143.2	3.05	8	156	8.9	0.08	2.0	7.6
12/17/2013	22:26:51.7	42.7913	-111.5403	1.1 Mc IE	139.0	9.98	11	188	19.0	0.05	0.5	1.5
12/18/2013	09:07:32.3	43.2460	-110.9778	0.5 Mc IE	152.8	16.32	11	153	16.5	0.11	0.8	0.8
12/19/2013	01:36:42.4	43.7132	-111.0995	0.3 Mc IE	135.9	5.85	8	199	10.2	0.07	1.4	1.4
12/19/2013	03:29:38.1	43.7180	-111.0753	0.8 Mc IE	137.8	5.97	10	193	9.7	0.11	1.1	1.9
12/19/2013	09:39:58.6	43.7168	-111.1043	0.6 Mc IE	135.5	4.20	10	201	10.7	0.11	1.0	3.1
12/20/2013	05:01:21.5	43.0593	-111.6283	0.6 Mc IE	114.3	12.87	8	268	21.0	0.10	1.1	1.0
12/20/2013	09:08:02.4	43.7143	-111.0980	0.6 Mc IE	136.0	2.93	12	199	10.2	0.13	1.1	6.4
12/20/2013	10:01:43.6	43.7142	-111.0837	0.5 Mc IE	137.1	5.68	9	196	9.6	0.07	1.0	1.7
12/20/2013	11:30:08.9	43.7110	-111.0708	0.5 Mc IE	138.2	6.29	9	193	8.8	0.10	1.1	1.7
12/20/2013	12:16:45.8	43.7238	-111.0727	0.8 Mc IE	138.1	2.06	13	152	10.2	0.11	0.8	15.8
12/20/2013	12:39:58.1	43.7290	-111.0685	0.8 Mc IE	138.4	5.61	12	189	10.6	0.11	0.9	2.0
12/20/2013	13:39:43.7	43.7195	-111.0970	0.3 Mc IE	136.1	2.18	8	243	10.7	0.06	1.5	12.1
12/20/2013	20:25:19.5	44.4808	-113.9420	1.1 Mc IE	131.0	7.70	8	278	46.8	0.07	0.9	1.4
12/21/2013	06:22:56.9	44.1435	-114.4687	1.4 Mc IE	146.1	6.80	11	125	84.9	0.21	1.1	2.2
12/22/2013	01:07:20.1	42.7860	-111.4048	0.8 Mc IE	147.5	6.87	10	261	16.9	0.13	1.0	2.5
12/22/2013	01:58:26.0	44.1698	-113.2462	0.8 Mc IE	68.8	0.19	4	189	20.2	0.02	0.8	2.1
12/22/2013	06:04:27.8	43.7167	-111.0902	1.3 Mc IE	136.6	4.61	11	197	10.1	0.09	1.0	2.5
12/23/2013	05:21:01.6	44.6495	-112.6147	1.3 Mc IE	112.0	15.78	15	81	18.6	0.09	0.3	0.5
12/23/2013	09:09:48.0	43.0773	-110.9630	0.8 Mc IE	160.6	12.64	8	183	32.9	0.10	0.9	3.4
12/23/2013	13:09:52.5	44.1017	-113.8872	1.7 Mc IE	102.0	7.16	19	244	39.8	0.16	0.6	3.1
12/24/2013	02:07:45.9	42.6375	-111.4433	1.0 Mc IE	156.7	9.89	9	157	31.5	0.11	0.6	1.0
12/24/2013	08:40:06.9	44.1945	-113.1498	0.8 Mc IE	67.3	1.72	7	163	22.3	0.19	0.8	20.0

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
12/24/2013	21:08:27.8	42.8422	-111.2920	0.6 Mc IE	150.7	13.41	4	198	15.0	0.05	1.3	1.6
12/25/2013	06:16:46.8	44.4373	-112.8243	1.1 Mc IE	87.7	6.08	12	106	15.2	0.11	0.5	0.7
12/25/2013	11:02:57.5	43.7230	-111.1168	1.0 Mc IE	134.5	2.00	11	203	11.9	0.17	1.2	19.1
12/25/2013	21:17:07.6	43.7203	-111.0730	2.0 Mc IE	138.0	2.26	18	119	9.9	0.13	0.8	12.1
12/25/2013	22:02:24.9	43.7122	-111.0907	0.9 Mc IE	136.6	5.29	9	198	9.7	0.12	1.1	2.2
12/26/2013	05:38:18.0	44.5762	-112.6858	0.9 Mc IE	103.3	4.32	10	92	23.2	0.18	0.7	2.0
12/26/2013	07:53:38.9	42.8775	-111.2523	0.8 Mc IE	151.1	10.47	9	161	15.4	0.06	0.6	1.8
12/26/2013	07:58:03.5	42.8777	-111.2560	1.0 Mc IE	150.8	10.62	10	163	15.1	0.08	0.6	1.9
12/26/2013	12:33:26.8	42.8658	-111.2628	0.4 Mc IE	151.1	13.34	6	173	15.2	0.11	0.6	1.7
12/26/2013	13:41:43.6	43.7153	-111.0823	0.6 Mc IE	137.3	4.65	9	196	9.7	0.17	1.4	2.8
12/26/2013	13:54:57.5	43.7172	-111.0918	0.7 Mc IE	136.5	0.02	10	198	10.2	0.10	1.0	0.8
12/26/2013	23:43:19.4	43.7137	-111.1102	1.9 ML IE	135.0	4.77	17	142	10.8	0.13	0.7	2.5
12/26/2013	23:45:54.6	43.7135	-111.0968	0.6 Mc IE	136.1	6.97	7	199	10.1	0.09	1.0	2.0
12/26/2013	23:52:21.3	43.0308	-111.4002	2.5 ML IE	131.6	8.96	23	90	3.5	0.15	0.4	0.6
12/27/2013	00:12:04.1	43.7150	-111.0868	2.2 Mc IE	136.9	5.08	16	154	9.8	0.08	0.7	1.7
12/27/2013	01:13:08.1	43.7245	-111.1783	0.9 Mc IE	129.6	2.45	7	257	15.5	0.09	2.9	13.4
12/27/2013	05:54:52.5	43.7127	-111.0105	0.6 Mc IE	143.0	3.76	7	156	8.4	0.18	1.3	5.3
12/27/2013	06:22:58.5	43.7215	-111.0620	0.8 Mc IE	138.9	0.06	10	188	9.7	0.14	1.2	0.9
12/27/2013	07:10:29.5	43.7202	-111.0918	0.8 Mc IE	136.5	0.20	10	198	10.5	0.09	1.0	0.8
12/27/2013	07:11:36.0	43.7250	-111.0680	0.8 Mc IE	138.5	0.03	10	189	10.2	0.11	1.1	0.8
12/27/2013	07:15:36.3	43.7225	-111.0682	1.0 Mc IE	138.4	0.29	10	191	9.9	0.12	1.1	0.9
12/27/2013	07:19:10.7	43.7248	-111.0535	1.6 Mc IE	139.6	1.14	13	122	9.9	0.12	0.7	1.1
12/27/2013	07:30:20.5	43.7380	-111.0847	0.9 Mc IE	137.2	3.10	6	357	12.0	0.03	11.5	6.3
12/27/2013	07:44:41.4	43.7310	-111.1000	0.9 Mc IE	135.9	2.02	6	355	11.9	0.07	6.5	13.6
12/27/2013	07:55:49.0	43.7185	-111.0953	0.8 Mc IE	136.2	2.34	7	198	10.5	0.11	1.2	11.4
12/27/2013	08:19:31.4	43.7223	-111.1012	0.8 Mc IE	135.8	0.06	6	199	11.1	0.23	7.9	1.3
12/27/2013	09:11:05.3	43.7438	-111.0830	0.9 Mc IE	137.4	1.96	5	357	12.6	0.05	11.7	10.7
12/27/2013	09:19:29.2	43.7458	-111.0820	0.7 Mc IE	137.5	2.32	5	357	12.8	0.08	12.7	11.5
12/27/2013	10:23:00.5	43.7223	-111.0735	0.8 Mc IE	138.0	6.07	4	360	10.1	0.02	12.6	1.9
12/27/2013	14:48:31.1	43.7173	-111.1152	1.0 Mc IE	134.6	2.21	7	247	11.3	0.09	1.6	13.1
12/27/2013	15:24:09.3	43.7173	-111.0998	0.8 Mc IE	135.9	0.05	6	199	10.6	0.09	4.4	1.0
12/27/2013	18:02:25.1	43.7182	-111.0998	1.2 Mc IE	135.9	2.09	6	199	10.7	0.11	2.1	15.7
12/27/2013	18:11:46.1	43.7080	-111.0582	0.9 Mc IE	139.2	6.81	4	189	8.2	0.08	12.8	1.8
12/27/2013	19:07:10.2	43.7170	-111.1040	1.1 Mc IE	135.5	2.39	9	201	10.7	0.11	1.3	11.8
12/27/2013	20:36:16.4	43.7192	-111.1035	1.0 Mc IE	135.6	2.47	7	200	10.9	0.12	2.1	12.1
12/27/2013	21:23:59.1	43.7408	-111.0852	1.0 Mc IE	137.2	2.23	5	357	12.3	0.08	9.6	10.4
12/27/2013	23:22:58.7	43.7175	-111.1162	0.8 Mc IE	134.5	2.72	5	247	11.4	0.09	1.8	12.7
12/27/2013	23:28:42.5	43.7418	-111.0963	0.7 Mc IE	136.3	2.24	4	360	12.8	0.20	20.8	18.9
12/27/2013	23:28:50.0	43.7257	-111.0720	0.8 Mc IE	138.1	2.44	4	192	10.4	0.07	8.9	8.4
12/27/2013	23:49:27.7	43.4473	-111.2045	1.2 Mc IE	129.5	4.47	5	286	21.1	0.07	1.9	13.6
12/28/2013	04:57:35.5	43.7200	-111.1102	0.8 Mc IE	135.0	2.27	6	246	11.3	0.07	1.4	12.8
12/28/2013	05:36:03.5	44.2557	-114.2412	2.1 Mc MB	135.0	4.77	14	295	67.0	0.09	1.6	3.8
12/28/2013	07:46:14.4	43.7165	-111.0898	0.9 Mc IE	136.7	4.52	9	197	10.1	0.11	1.1	2.9
12/28/2013	08:35:39.4	43.7157	-111.0965	0.9 Mc IE	136.1	3.86	10	199	10.3	0.09	1.1	3.7
12/28/2013	10:40:16.5	43.7243	-111.0838	0.6 Mc IE	137.2	0.03	9	195	10.6	0.14	1.2	0.7
12/28/2013	12:26:07.7	43.7107	-111.0740	0.8 Mc IE	137.9	6.24	10	194	8.9	0.12	1.0	1.6
12/28/2013	13:40:38.1	43.7412	-110.9498	0.9 Mc IE	148.1	2.49	7	154	13.0	0.24	1.4	21.5
12/28/2013	14:21:44.0	43.7152	-111.0912	0.7 Mc IE	136.5	5.52	10	198	10.0	0.08	1.0	2.0
12/28/2013	14:55:50.7	43.7212	-111.1055	1.7 Mc IE	135.4	2.54	15	107	11.2	0.12	0.8	8.6
12/28/2013	15:09:27.8	43.0440	-111.4245	0.8 Mc IE	129.1	4.50	9	207	4.5	0.12	0.7	1.0
12/28/2013	19:30:37.1	43.7062	-111.1002	0.0 NoMag	135.8	8.13	8	201	9.6	0.14	2.0	1.5

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
12/28/2013	21:59:55.7	43.7175	-111.0963	0.9 Mc IE	136.1	4.11	9	199	10.4	0.10	1.0	3.3
12/28/2013	22:28:05.5	43.7200	-111.0893	2.2 Mc IE	136.7	0.30	18	113	10.4	0.05	0.4	0.6
12/28/2013	22:43:45.7	43.7182	-111.0905	1.0 Mc IE	136.6	1.91	9	198	10.3	0.08	0.8	1.4
12/28/2013	23:08:31.7	43.7195	-111.0815	0.8 Mc IE	137.3	0.15	10	195	10.1	0.12	1.1	0.9
12/29/2013	00:38:05.8	43.7215	-111.0825	2.8 ML MB	137.3	0.05	16	117	10.3	0.11	0.7	0.6
12/29/2013	01:29:42.9	43.7113	-111.0877	0.6 Mc IE	136.8	6.75	7	197	9.5	0.05	1.0	1.7
12/29/2013	02:11:40.4	43.7185	-111.0867	0.9 Mc IE	136.9	4.60	11	196	10.1	0.09	1.0	2.6
12/29/2013	04:46:10.4	43.7048	-111.1300	0.7 Mc IE	133.4	2.49	7	207	11.1	0.18	2.6	18.3
12/29/2013	05:38:51.2	43.7193	-111.0897	0.8 Mc IE	136.7	2.16	10	196	10.4	0.10	1.0	13.5
12/29/2013	08:46:04.9	43.7145	-111.0892	2.5 ML US	136.7	5.50	25	112	9.9	0.10	0.4	1.4
12/29/2013	08:58:56.4	43.7157	-111.1020	0.8 Mc IE	135.7	2.19	9	201	10.5	0.06	0.9	11.6
12/29/2013	09:07:12.0	43.7170	-111.0808	0.8 Mc IE	137.4	5.67	9	195	9.8	0.07	0.9	1.7
12/29/2013	10:08:02.9	43.7203	-111.0722	2.1 Mc IE	138.1	0.31	16	119	9.8	0.11	0.6	0.6
12/29/2013	10:16:28.4	43.7170	-111.0905	0.8 Mc IE	136.6	2.25	11	137	10.2	0.11	1.1	11.9
12/29/2013	10:39:47.8	43.7228	-111.0833	1.6 Mc IE	137.2	4.28	14	154	10.5	0.12	0.8	2.5
12/29/2013	10:53:44.5	43.7587	-110.8735	0.8 Mc IE	154.3	10.20	9	156	18.2	0.06	0.6	2.3
12/29/2013	11:30:20.9	43.7222	-111.0865	0.8 Mc IE	136.9	4.81	9	196	10.5	0.08	1.0	2.4
12/29/2013	12:07:12.9	43.7205	-111.0990	0.6 Mc IE	135.9	2.84	9	199	10.8	0.06	1.0	6.6
12/29/2013	12:33:40.6	43.7168	-111.0973	0.8 Mc IE	136.1	0.89	10	199	10.4	0.12	0.9	1.4
12/29/2013	12:38:29.2	43.7192	-111.0988	2.8 ML MB	135.9	3.80	26	109	10.7	0.11	0.5	2.9
12/29/2013	13:41:28.6	43.7200	-111.0860	1.8 ML IE	137.0	6.22	15	154	10.3	0.09	0.7	1.6
12/29/2013	14:05:53.2	43.7223	-111.0778	1.7 Mc IE	137.7	3.78	14	133	10.2	0.11	0.8	3.2
12/29/2013	14:11:19.9	43.7165	-111.0978	0.9 Mc IE	136.0	4.13	9	199	10.4	0.05	0.9	2.8
12/29/2013	14:16:24.7	43.7128	-111.0918	2.0 Mc IE	136.5	4.74	7	198	9.8	0.03	1.8	2.5
12/29/2013	14:33:10.0	43.7018	-111.1322	0.8 Mc IE	133.2	2.92	8	160	11.1	0.12	2.3	11.5
12/29/2013	14:40:01.6	43.7127	-111.0715	0.8 Mc IE	138.1	6.34	9	193	9.0	0.11	1.1	1.8
12/29/2013	14:45:07.5	43.7127	-111.1130	0.9 ML IE	134.8	2.00	7	203	10.8	0.10	2.6	14.9
12/29/2013	14:58:23.9	43.7225	-111.0923	0.8 Mc IE	136.5	0.66	9	197	10.8	0.10	0.9	1.3
12/29/2013	14:59:28.9	43.7125	-111.0927	0.8 Mc IE	136.4	4.22	10	198	9.8	0.07	0.9	2.7
12/29/2013	15:10:48.3	43.7160	-111.0138	0.7 Mc IE	142.8	6.60	9	159	8.7	0.19	1.2	2.2
12/29/2013	16:10:22.7	44.6653	-113.6535	1.9 Mc IE	132.7	6.67	11	238	44.1	0.18	1.9	4.1
12/29/2013	17:11:51.9	43.7213	-111.0747	0.8 Mc IE	137.9	5.08	9	193	10.0	0.09	1.0	2.0
12/29/2013	17:58:13.8	43.7213	-111.0895	0.8 Mc IE	136.7	3.24	10	196	10.5	0.12	1.1	5.8
12/29/2013	18:10:41.0	43.7212	-111.1213	1.6 Mc IE	134.2	3.47	11	141	12.0	0.11	0.8	5.1
12/29/2013	18:19:28.2	43.7178	-111.0998	0.6 Mc IE	135.9	2.09	7	199	10.6	0.11	3.9	15.3
12/29/2013	18:22:55.9	43.7217	-111.0892	0.8 Mc IE	136.7	1.77	9	196	10.5	0.13	0.9	1.5
12/29/2013	18:29:20.6	43.7198	-111.0993	0.6 Mc IE	135.9	3.63	9	199	10.8	0.10	1.0	4.2
12/29/2013	19:10:34.4	43.7250	-111.0552	0.8 Mc IE	139.5	6.15	8	183	9.9	0.06	0.9	1.8
12/29/2013	19:15:33.6	43.7183	-111.0992	2.5 Mc IE	135.9	4.80	15	108	10.6	0.10	0.4	2.2
12/29/2013	19:21:14.5	43.7205	-111.0948	0.8 Mc IE	136.3	3.65	7	198	10.7	0.12	1.1	5.3
12/29/2013	19:27:21.2	43.7165	-111.0955	2.5 Mc IE	136.2	5.00	13	110	10.3	0.08	0.4	2.1
12/29/2013	22:45:54.6	43.7262	-111.0852	0.9 Mc IE	137.1	1.97	10	195	10.9	0.12	0.7	1.3
12/29/2013	22:48:20.6	43.7217	-111.0765	1.7 Mc IE	137.8	5.06	11	133	10.1	0.12	0.9	2.3
12/29/2013	23:09:22.7	43.7203	-111.0788	1.4 Mc IE	137.6	1.92	11	134	10.0	0.14	0.8	1.4
12/30/2013	00:04:04.3	43.7182	-111.0930	3.1 ML US	136.4	5.62	23	111	10.4	0.10	0.4	1.5
12/30/2013	00:08:58.7	43.7168	-111.0885	1.6 Mc IE	136.8	4.70	12	113	10.1	0.08	0.8	2.2
12/30/2013	00:17:44.1	43.7202	-111.0985	0.5 Mc IE	136.0	2.36	9	199	10.8	0.12	1.0	12.0
12/30/2013	02:46:14.1	43.7137	-111.0447	0.7 Mc IE	140.3	6.81	7	179	8.5	0.09	1.2	1.5
12/30/2013	03:00:13.2	43.7203	-111.0758	0.8 Mc IE	137.8	5.55	10	193	10.0	0.10	1.0	1.9
12/30/2013	04:35:00.8	43.7178	-111.0887	1.0 Mc IE	136.8	4.46	10	196	10.2	0.11	0.9	2.7
12/30/2013	05:29:31.6	43.7082	-111.0767	0.7 Mc IE	137.7	7.15	9	195	8.7	0.08	1.0	1.4

Table C-2. Continued.

ORIGIN	TIME	LAT N	LONG W	MAG-TYP	DIST	Z	NO	GAP	DMIN	RMS	ERH	ERZ
12/30/2013	05:41:26.5	43.7168	-111.0990	2.1 Mc IE	135.9	3.46	18	108	10.5	0.10	0.6	3.5
12/30/2013	06:29:54.2	43.7150	-111.0830	0.8 Mc IE	137.2	2.27	9	196	9.7	0.11	1.1	11.2
12/30/2013	07:11:39.6	43.7205	-111.0888	0.8 Mc IE	136.8	2.80	9	196	10.4	0.09	1.0	6.8
12/30/2013	07:48:15.1	43.7142	-111.1000	1.9 Mc IE	135.8	2.10	8	156	10.3	0.04	1.8	12.9
12/30/2013	09:49:03.4	43.7235	-111.0860	0.8 Mc IE	137.0	0.05	10	195	10.6	0.15	1.1	0.8
12/30/2013	10:03:42.5	43.7142	-111.0565	0.9 Mc IE	139.3	4.26	9	186	8.8	0.13	1.5	2.6
12/30/2013	10:34:22.5	43.7170	-111.0930	1.0 Mc IE	136.4	0.17	12	155	10.3	0.09	0.8	0.7
12/30/2013	10:44:26.3	43.7173	-111.0895	2.1 Mc IE	136.7	1.81	17	154	10.1	0.09	0.5	0.9
12/30/2013	10:54:21.9	43.7167	-111.0850	0.8 Mc IE	137.0	3.77	10	196	9.9	0.11	1.0	3.7
12/30/2013	11:22:24.0	43.7175	-111.0897	0.8 Mc IE	136.7	2.32	10	196	10.2	0.13	1.0	12.3
12/30/2013	11:37:43.4	43.7200	-111.0728	2.1 Mc IE	138.0	5.29	14	119	9.8	0.11	0.6	1.8
12/30/2013	12:11:28.1	43.8112	-110.8338	0.9 Mc IE	158.0	10.56	11	163	24.7	0.09	0.7	2.6
12/30/2013	12:54:51.2	43.7147	-111.0798	0.8 Mc IE	137.4	4.07	10	195	9.5	0.14	1.1	3.3
12/30/2013	13:10:44.1	43.7167	-111.0868	1.0 Mc IE	136.9	4.91	11	196	10.0	0.08	0.9	2.4
12/30/2013	13:23:32.6	42.5253	-111.8528	2.6 ML MB	146.2	9.27	19	110	57.2	0.19	0.4	1.4
12/30/2013	13:25:55.6	42.5220	-111.8428	1.9 ML IE	147.0	7.18	8	115	59.7	0.12	0.5	2.7
12/30/2013	15:08:42.7	43.7120	-111.0848	1.0 Mc IE	137.0	6.77	9	196	9.4	0.10	0.9	1.5
12/30/2013	15:10:55.1	43.7197	-111.0767	1.0 Mc IE	137.7	2.14	11	193	9.9	0.12	0.9	14.0
12/30/2013	15:15:40.7	43.7145	-111.0883	0.8 Mc IE	136.8	2.06	9	197	9.8	0.11	1.0	15.5
12/30/2013	16:03:27.4	43.7203	-111.0632	1.7 Mc IE	138.8	0.22	15	151	9.6	0.11	0.8	0.6
12/30/2013	16:10:33.7	43.7207	-111.0947	0.9 Mc IE	136.3	2.26	10	198	10.7	0.09	0.9	12.0
12/30/2013	16:43:36.0	43.7240	-111.0767	1.2 Mc IE	137.8	0.15	14	193	10.3	0.12	0.6	0.7
12/30/2013	17:40:31.2	43.7207	-111.0850	1.0 Mc IE	137.1	2.36	8	196	10.3	0.13	1.3	13.5
12/30/2013	17:46:13.1	43.7072	-111.0373	0.6 Mc IE	140.8	8.90	6	175	7.7	0.08	1.3	1.9
12/30/2013	18:09:17.5	43.7208	-111.0842	0.6 Mc IE	137.1	4.40	11	195	10.3	0.12	1.0	3.2
12/30/2013	23:28:46.0	43.7227	-111.0705	1.2 ML IE	138.2	0.03	10	192	10.0	0.11	0.7	0.8
12/31/2013	01:25:18.4	43.7150	-111.0452	0.2 Mc IE	140.2	6.44	6	212	8.7	0.07	2.7	1.7
12/31/2013	01:52:54.4	43.7183	-111.0815	0.9 Mc IE	137.3	2.84	12	195	9.9	0.12	1.0	6.6
12/31/2013	02:04:47.7	43.7207	-111.0617	0.9 Mc IE	138.9	6.66	9	188	9.6	0.07	1.1	1.5
12/31/2013	02:38:12.9	43.7238	-111.0927	2.1 ML IE	136.5	0.66	18	112	10.9	0.10	0.5	0.9
12/31/2013	02:54:26.0	43.7238	-111.0845	1.0 Mc IE	137.1	0.40	11	195	10.6	0.11	0.9	0.7
12/31/2013	03:26:08.0	43.7202	-111.0613	1.2 Mc IE	139.0	0.03	11	187	9.5	0.15	1.0	0.7
12/31/2013	04:38:17.8	42.7223	-111.3422	2.2 Mc IE	156.1	7.11	14	109	20.4	0.07	0.6	3.0
12/31/2013	05:56:36.2	43.7205	-111.0805	0.9 Mc IE	137.4	2.24	12	195	10.1	0.11	1.0	12.6
12/31/2013	06:29:33.2	43.7238	-111.0945	2.6 Mc IE	136.3	2.23	9	198	11.0	0.09	2.4	13.0
12/31/2013	06:32:06.9	43.7178	-111.0535	0.5 Mc IE	139.6	6.62	9	183	9.1	0.10	1.3	1.5
12/31/2013	07:41:31.9	43.7193	-111.1008	0.9 Mc IE	135.8	2.10	11	199	10.8	0.17	1.0	18.8
12/31/2013	08:03:07.5	43.7213	-111.0760	0.9 Mc IE	137.8	4.92	12	193	10.0	0.12	0.9	2.3
12/31/2013	09:59:47.7	43.7200	-111.0707	0.8 Mc IE	138.2	0.82	13	132	9.8	0.12	0.7	0.5
12/31/2013	10:04:56.7	43.7210	-111.0930	2.2 Mc IE	136.4	2.03	20	111	10.6	0.11	0.4	15.6
12/31/2013	15:45:48.1	43.7215	-111.0878	1.2 ML IE	136.8	3.50	12	196	10.5	0.15	1.0	4.9
12/31/2013	15:48:18.9	43.7210	-111.0740	0.7 Mc IE	137.9	3.69	8	193	10.0	0.06	0.9	3.3
12/31/2013	16:53:02.2	43.7115	-111.0507	0.6 Mc IE	139.8	9.40	9	183	8.4	0.07	1.1	1.1
12/31/2013	17:35:22.5	43.7255	-111.0940	0.9 Mc IE	136.4	2.00	12	197	11.1	0.13	1.0	16.6
12/31/2013	23:39:05.9	43.7228	-111.0945	0.9 Mc IE	136.3	3.14	12	198	10.9	0.13	1.0	5.8