

*Technical Note*

## CHARACTERISTICS OF IMPORTANT IRANIAN EARTHQUAKES IN 2008

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### ABSTRACT

During this year, 150 earthquakes with magnitude greater than 4 occurred in Iran. In addition; more than 331 accelerograms were recorded by the accelerographs of the Iran Strong Motion Network, operated by the Building and Housing Research Center. Among these, the Qeshm Island earthquake of 10th Sep. 2008, with Mw6.1 was the greatest one. The main shock of this earthquake triggered 11 accelerographs. Its maximum PGA was about 597 Cm/s/s that were registered by Tomban Station. The strong motion and seismological data of important accelerograms are listed in the appendix table.

**Keywords:** Accelerogram; accelerograph; earthquake; strong motion; peak ground acceleration

### 1. INTRODUCTION

Earthquakes as a physical process are characterized by their frequency content, the geological and tectonic structures of the seismogenic region, seismic magnitude, focal depth, distance from the source to site and site conditions of the recording location. Due to the aforementioned parameters, seismic records are site specific, even in cases of events with the same magnitude. The strong motion records are fundamental for dynamic research in earthquake engineering and essential for the following studies, regarding the structural behavior during strong earthquakes. For this purpose, the Building and Housing Research Center (BHRC) maintains a network of strong motion accelerographs.

Iran Strong Motion Network (ISMN) started its activities in 1973 at the former Planning and Budget Organization. In 1981, the ISMN was transferred to BHRC and a new phase of its activities began. Until 1992, the ISMN had 274 analog accelerographs. At the time of publication of this journal, ISMN consisted of 1093 digital and 15 analogue accelerographs. At the end of 2008, the data bank of ISMN had about 7200 records (3 components).

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## 2. STRONG MOTION DATA IN 2008

During this year, 150 earthquakes with magnitudes of more than 4 occurred in Iran (Figures 1 and 2). In addition; more than 331 accelerograms were recorded by the accelerographs of the Iran Strong Motion Network, operated by the Building and Housing Research Center (Figure 3). Among these, the Qeshm Island earthquake of 10th Sep. 2008, with Mw6.1 was the greatest one. The main shock of this earthquake triggered 11 accelerographs. Its maximum PGA was about 597 Cm/s/s that were registered by Tomban Station. The strong motion and seismological data of important accelerograms are listed in the appendix table.

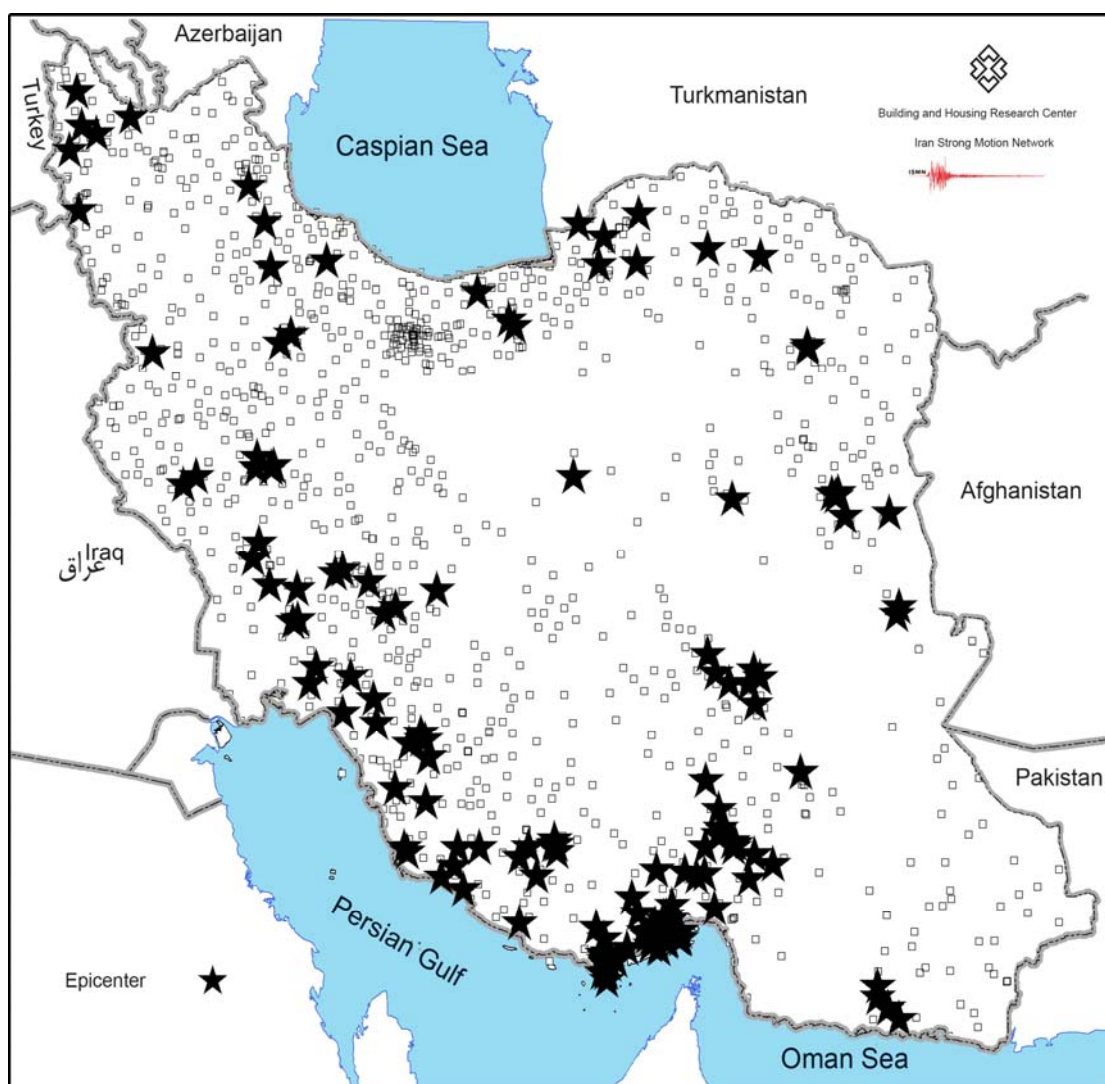


Figure 1. The epicentre of earthquakes with magnitude  $> 4$  that occurred in Iran

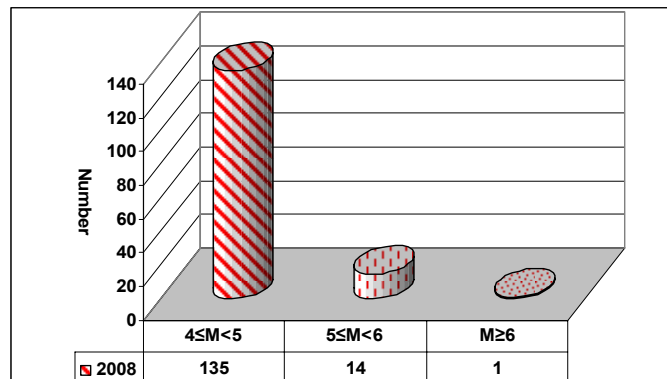


Figure 2. The earthquake numbers separated by magnitude

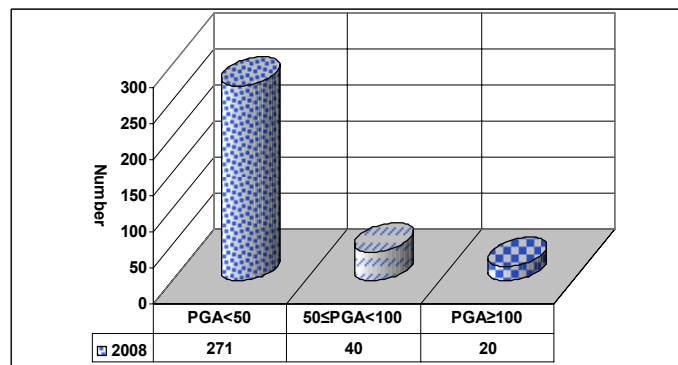


Figure 3. Peak ground accelerations recorded in 2008

### 3. IMPORTANT EARTHQUAKES IN 2008

Iran has diverse geological conditions with different characteristic faults and usually the earthquakes have manifold characteristics. In the following paragraphs we shall talk about important earthquakes that have occurred in 2008.

During January-December 2008, more than 150 earthquakes with different magnitude occurred in Iran (135 Earthquakes with magnitudes than 4 to 5, fourteen earthquakes with magnitude than 5 to 6 and one earthquake with a magnitude of more than 6). During this year, 331 accelerograms were recorded in Iran (271 accelerograms have PGA, between 10 and 50Cm/s<sup>2</sup>, 40 accelerograms with PGA 50 and 100Cm/s<sup>2</sup> and 20 accelerograms have PGA of more than 100Cm/s<sup>2</sup>). Maximum Ground acceleration (598Cm/s<sup>2</sup>) was recorded in Tomban Station (Qheshm Island). The characteristics of important earthquakes reported thus far are given as below;

#### 3.1 Sedeh Earthquake of March 9<sup>th</sup>, 2008

On March 9, 2008 at 03:51:01 (UTC), an earthquake with M14.9 (BHRC), M5.1 (IGTU), M15.0 (IIEES), M4.9 (NEIC), mb5.0 (CSEM) occurred near Sedeh (Southern Khorasan

province) in East of Iran. Sedeh, Birjand and Tighdar accelerograph stations (BHRC) recorded this event (Figure 4). The maximum peak acceleration was about 568  $\text{Cm/s}^2$  that were recorded in Sedeh Station (Table 1). The epicenter of this event was located in 33.36N, 59.35E (BHRC), 33.26N, 59.19E (IGTU), 33.30N, 59.19E (IEES) and 33.35N, 59.39E (NEIC), 33.26N, 59.30E (EMSC).

Table 1: Parameters of Sedeh Earthquake

Station: Kolor	N Record: 4552/03	ts-tp: 1.7 second	Vs30: 1180m/s
Parameters	Components		
	L	V	T
PGA ( $\text{Cm/s}^2$ )	423	447	568
PGV ( $\text{Cm/s}$ )	14.2	8.5	21.6
PGD ( $\text{Cm}$ )	0.51	0.21	1.06
Duration (second)	1.88	1.72	1.35
Sensor direction (degrees)	240	-	330

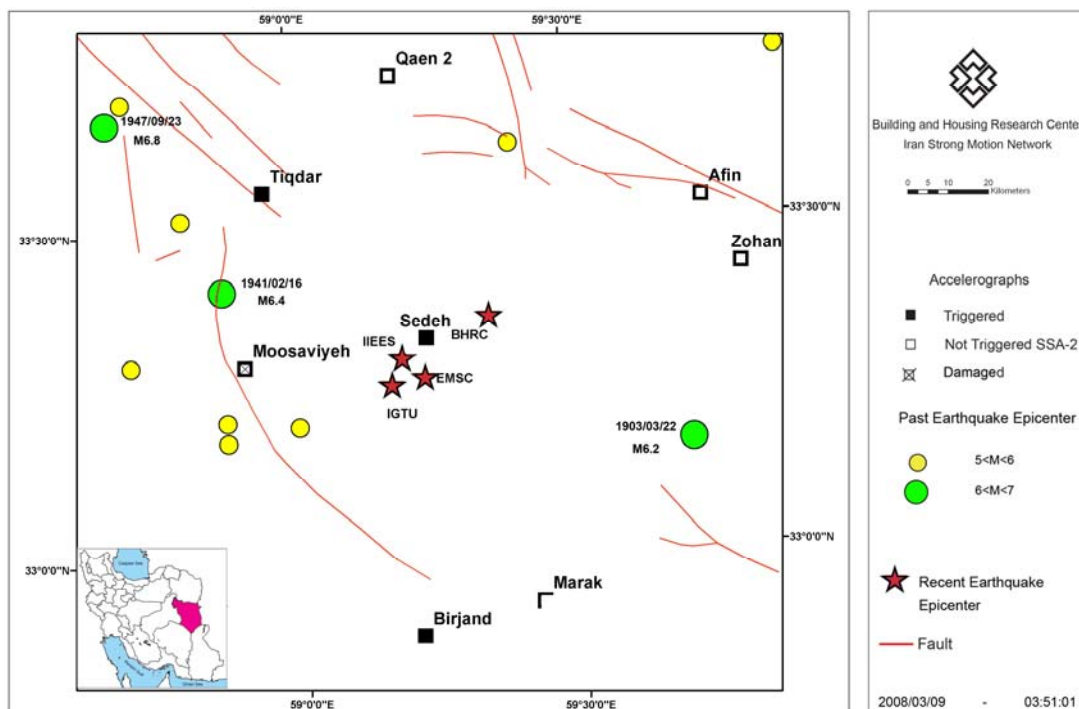


Figure 4. The location map of Sedeh Earthquake and triggered accelerographs

3.2 Kolor Earthquake of March 23<sup>rd</sup>, 2008

On March 23rd, 2008 at 12:11:31(UTC), an earthquake with M5.0 (IGUT), M4.7 (IIEES), M4.8 (NEIC) and mb4.8 (EMSC), occurred near Kolor town, North West of Iran. This event was recorded by four sets of digital accelerographs (Figure 5) of Iran Strong Motion Network (ISMN).The maximum peak acceleration was recorded in Kolor Station (171Cm/s<sup>2</sup>) (Table 2).The epicenter of this event has been located at 37.31N, 48.51 (IGUT), 37.46N, 48.52E (IIEES), 37.36N, 48.57E (NEIC)and 37.38N, 48.69E (EMSC).

Table 2: Parameters of Kolor Earthquake

Station: Kolor	N Record:4561	ts-tp: 2.2 second	Vs30: 860 m/s
Parameters	Components		
	L	V	T
PGA (Cm/s <sup>2</sup> )	167	54	171
PGV (Cm/s)	2.8	0.7	2.1
PGD (Cm)	0.09	0.02	0.05
Duration (second)	4.81	6.21	3.43
Sensor direction (degrees)	0	-	90

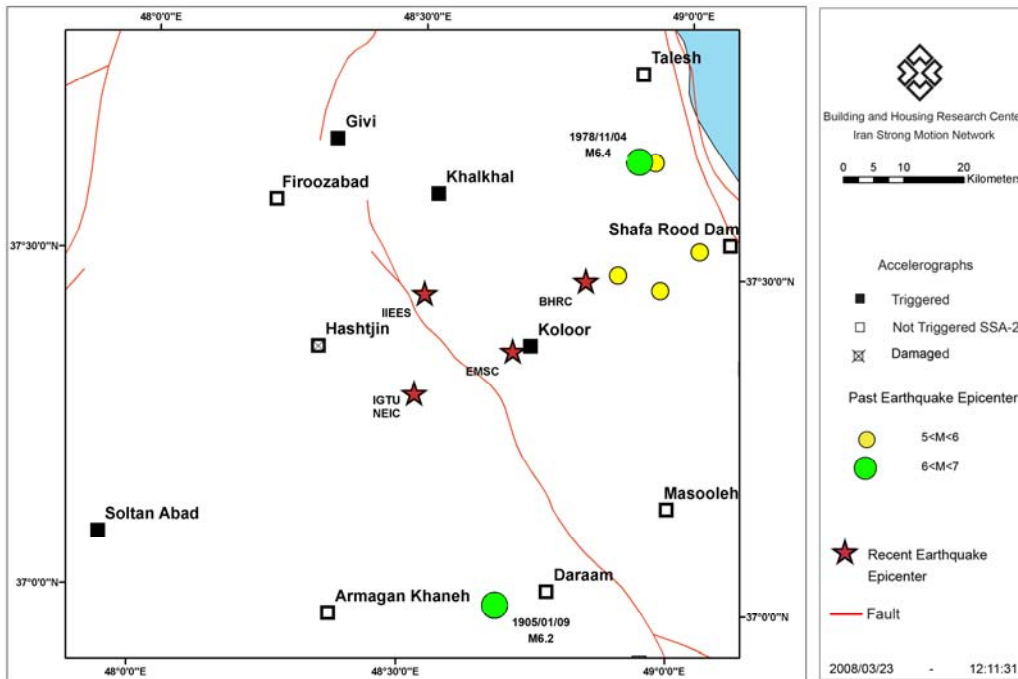


Figure 5. The location map of Kolor Earthquake and triggered accelerographs

### 3.3 Dobaran Earthquake of May 5th, 2008

On May 5<sup>th</sup>, 2008 at 21:57:55 (UTC), an earthquake with M5.3 (IGUT), M15.1 (IIEES), M5.3 (NEIC) and mb5.3 (EMSC), occurred near Doobaran town (Fars Province), South of Iran. This event was recorded by three sets of digital accelerographs (Figure 6) of Iran Strong Motion Network (ISMN). The maximum peak acceleration was recorded in Doobaran Station (130  $\text{Cm/s}^2$ ) (Table 3). The epicenter of this event has been located at 28.27N, 54.10 (IGUT), 28.37N, 54.05E (IIEES), 28.43N, 58.08E (NEIC) and 28.44N, 54.03E (EMSC).

Table 3: Parameters of Doobaran Earthquake

Station: Dobaran	N Record: 4573	ts-tp: 1.8 second	Vs30: 1363 m/s
Parameters	Components		
	L	V	T
PGA ( $\text{Cm/s}^2$ )	100	130	114
PGV ( $\text{Cm/s}$ )	5.0	2.5	5.1
PGD ( $\text{Cm}$ )	0.51	0.28	0.38
Duration ( <i>second</i> )	9.71	5.17	7.42
Sensor direction ( <i>degrees</i> )	0	-	90

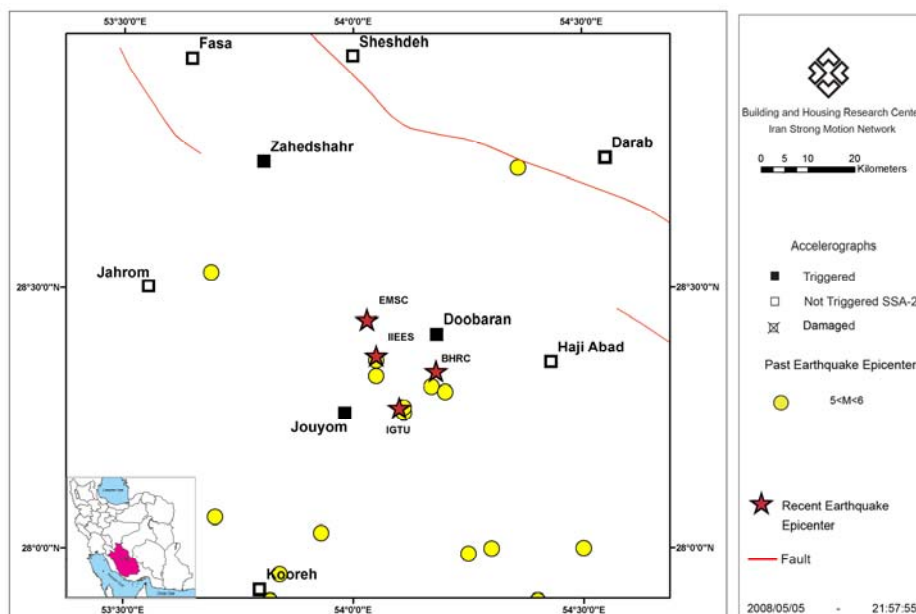


Figure 6. The location map of Doobaran Earthquake and triggered accelerographs

3.4 Soltaniyeh Earthquake of May 27<sup>th</sup>, 2008

On May 27<sup>th</sup>, 2008 at 06:18:08 (UTC), an earthquake with M5.3 (IGUT), M15.4 (IIEES), M5.3 (NEIC) and Mw4.9 (EMSC), occurred in the north-west of Soltaniyeh town (Zanjan Province). This event was recorded by 10 sets of digital accelerographs (SSA-2 and Guralp) of Iran Strong Ground Motion Network (Figure 7, Table 4). The maximum peak acceleration was recorded in Sirdan station (91 Cm/s<sup>2</sup>). The epicenter of this event has been located at 36.65N, 48.66 (IGUT), 36.59N, 48.74E (IIEES), 36.47N, 48.71E (NEIC) and 36.59N, 48.69E (EMSC).

Table 4: Parameters of Soltaniyeh Earthquake

Station: Soltaniyeh	N Record: 4602	ts-tp: 2.7 second	Vs30: 466 m/s
Parameters	Components		
	L	V	T
PGA (Cm/s <sup>2</sup> )	59	28	51
PGV (Cm/s)	3.0	0.5	2.5
PGD (Cm)	0.39	0.08	0.31
Duration (second)	10.79	12.67	11.05
Sensor direction (degrees)	0	-	90

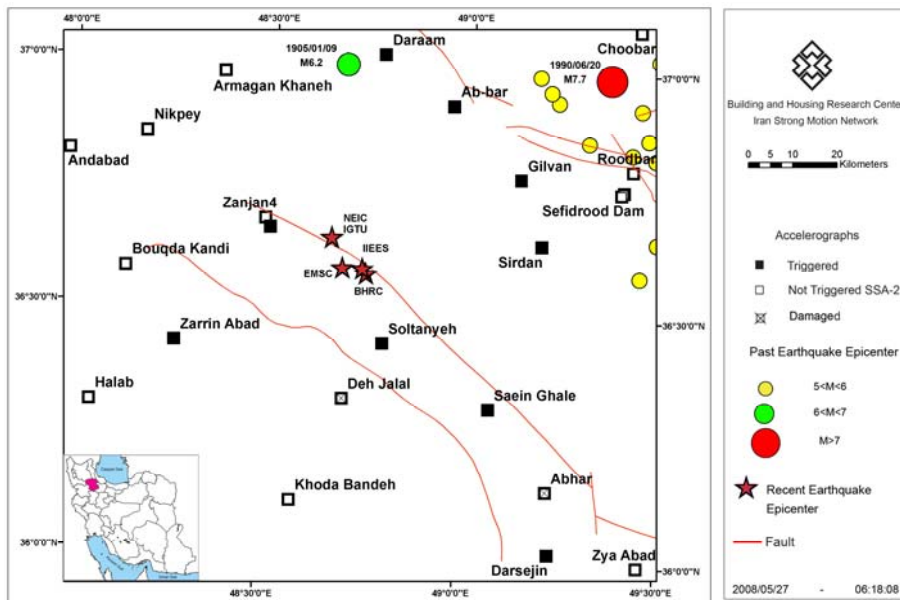


Figure 7. The location map of Soltaniyeh Earthquake and triggered accelerographs

### 3.5 Kadkan Earthquake of July 3rd, 2008

On July 3, 2008 at 23:10:06 (UTC), an earthquake with Mw5.2 (BHRC), M5.2 (IGUT), M4.8 (IIEES) and M5.1 (NEIC), occurred near Kadkan town (Khorasan Razavi Province). This event was recorded by four sets of digital accelerographs (Figure 8) of Iran Strong Motion Network (ISMN). The maximum peak acceleration was recorded in Kadkan Station (Table 5). The epicenter of this event has been located at 35.65N, 58.56E (BHRC), 35.53N, 58.81(IGUT), 35.32N, 58.23E (IIEES) and 35.63N, 58.67E (NEIC).

Table 5: Parameters of Kadkan Earthquake

Station: Kadkan	N Record: 4613	ts-tp: 4.24 second	Vs30:571 m/s
Parameters	Components		
	L	V	T
PGA ( $Cm/s^2$ )	49	28	51
PGV ( $Cm/s$ )	2.6	1.4	2.1
PGD ( $Cm$ )	0.23	0.11	0.18
Duration ( <i>second</i> )	7.77	9.32	7.17
Sensor direction ( <i>degrees</i> )	180	-	270

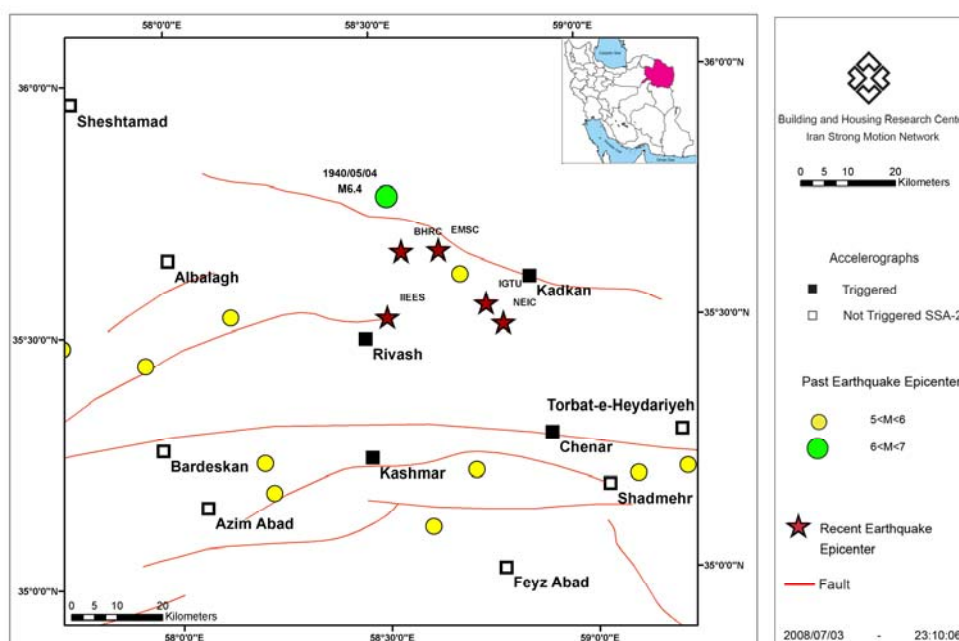


Figure 8. The location map of Kadkan Earthquake and triggered accelerographs



3.6 Moosiyani (Iran-Iraq Border Region) Earthquake of August 27<sup>th</sup>, 2008

On the 27<sup>th</sup> of August, 2008 at 21:52:38 (UTC), an earthquake with the magnitude of M5.7 (IGUT), M15.6 (IIEES) and M5.7 (NEIC), occurred in Iraq, near the Iran-Iraq border in the vicinity of Moosiyani town in Ilam province. This event was recorded by 9 sets of digital accelerographs of Iran Strong Motion Network (ISMN), installed in Moosiyani, Dehloran, Dasht-e-Abbas, Shoosh, Alhaee, Abdolkhan, Ahvaz, Hoveyze and Bostan (Figure 9). The maximum peak acceleration of about 0.5 g was recorded in Moosiyani Station (Table 6). The epicenter of this event has been located at 32.30N, 47.42E (BHRC), 32.33N, 47.35E (IGUT), 32.36N, 47.35E (IIEES) and 32.44 N, 47.41 E (NEIC).

Table 6: Parameters of Moosiyani Earthquake

Station: Mosiyan	N Record: 4646	ts-tp: 3.1 second	Vs30: -m/s
Parameters	Components		
	L	V	T
PGA ( $Cm/s^2$ )	468	129	546
PGV ( $Cm/s$ )	22.1	5.4	27.6
PGD ( $Cm$ )	1.69	0.43	2.43
Duration (second)	4.55	7.13	3.21
Sensor direction (degrees)	117	-	207

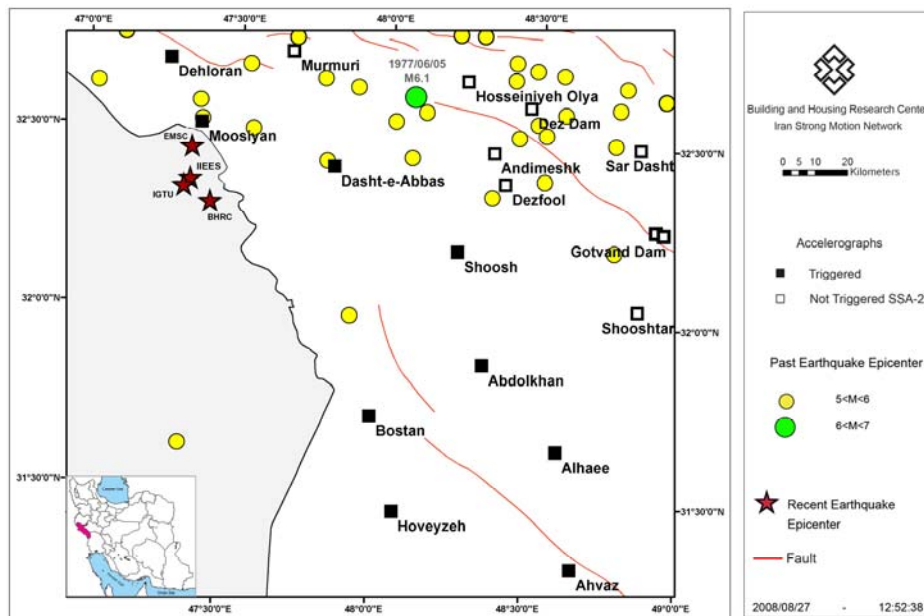


Figure 9. The location map of Moosiyani Earthquake and triggered accelerographs

### 3.7 Zenoos Earthquake of September 2<sup>nd</sup>, 2008

On 2<sup>nd</sup> September, 2008 at 20:00:56 (UTC), an earthquake with a magnitude of Mw4.9 (BHRC), M5.3 (IGUT), M4.8 (IIEES) and M5.0 (NEIC), occurred near Zenoos in Eastern Azarbaijan Province. This event was recorded by 9 sets of digital accelerographs of Iran Strong Motion Network (ISMN), installed in Jolfa, Douzal, Kharvanagh, Zenoos, Yekan kahriz, Amand, Marand, Zanjireh and Tassoj (Figure 10). The maximum peak acceleration was recorded in Zenoos Station (97 Cm/s<sup>2</sup>) (Table 7). The epicenter of this event has been located at 38.68N, 45.82E (BHRC), 38.73N, 45.69E (IGUT), 38.94N, 45.80E (IIEES) and 38.87N, 45.78E (NEIC).

Table 7: Parameters of Zenoos Earthquake

Station: Zenoos	N Record: 6446	ts-tp: 1.75 second	Vs30: – m/s
Parameters	Components		
	L	V	T
PGA (Cm/s <sup>2</sup> )	79	64	97
PGV (Cm/s)	3.0	1.5	3.2
PGD (Cm)	0.27	0.11	0.25
Duration (second)	6.08	6.5	5.75
Sensor direction (degrees)	58	-	148

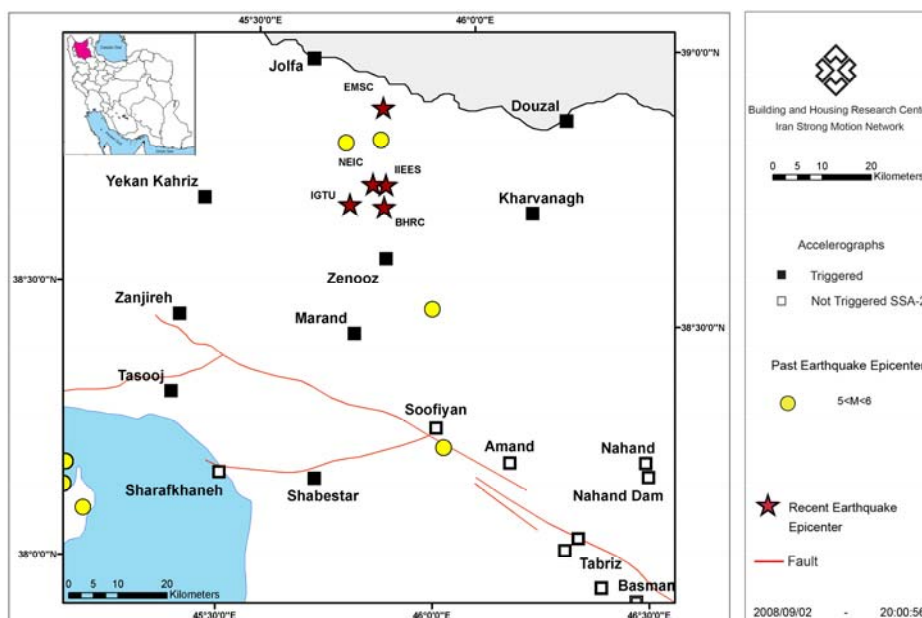


Figure 10. The location map of Zenoos Earthquake and triggered accelerographs

3.8 Qeshm Island Earthquake of September 10<sup>th</sup>, 2008

On September 10th, 2008 at 11:00:39 UTC (15:30:40 local time) a moderate earthquake with a magnitude of Mw6.0 occurred in Qeshm Island region in Hormozgan Province. This event was recorded by 11 sets of accelerograph (Figure 11) stations of ISMN (Suza, Tabl, Tomban, Hasan Langi, Bandar-e-Khamir, Kuhestak, Kahoorestan, Minab, Fork, Sirik and Chah Moslem) and the maximum uncorrected PGA of about 597  $Cm/s^2$  has been recorded in Tomban station (Table 8). BHRC estimated the epicenter on 55.81E, 26.83N and the magnitude of this event to be Mw6.0 and MI6.1 using the available data. This event was also located at the coordinates of 27.04N and 55.94E by Institute of Geophysics of Tehran University (IGTU).

Table 8: Parameters of Qheshm Island Earthquake

Station: Tomban	N Record: 4686/03	ts-tp: 1.24 second	Vs30: 778 m/s
Parameters	Components		
	L	V	T
PGA ( $Cm/s^2$ )	597	314	571
PGV ( $Cm/s$ )	38.7	1.5	3.2
PGD ( $Cm$ )	0.27	0.11	0.25
Duration (second)	6.08	6.5	5.75
Sensor direction (degrees)	0	-	90

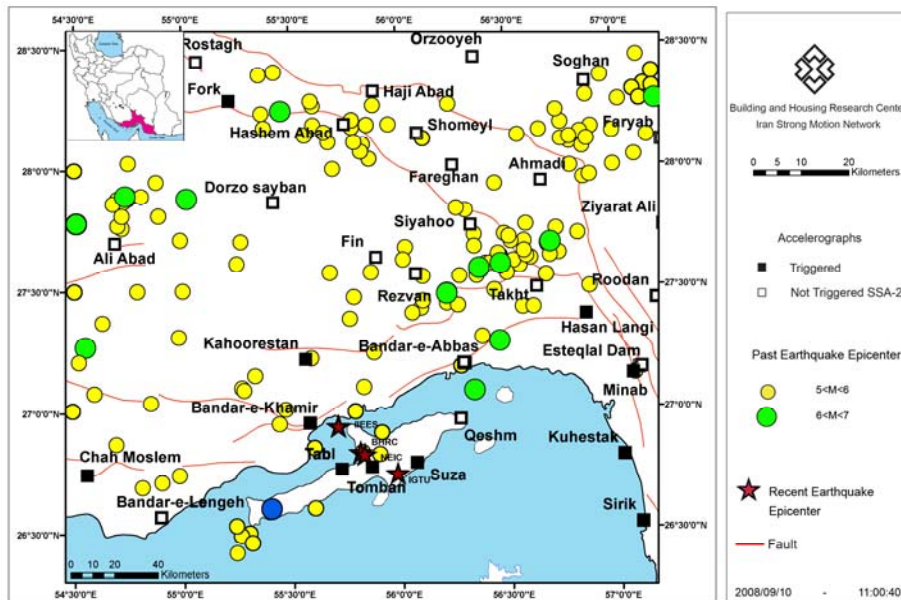


Figure 11. The location map of Qeshm Earthquake and triggered accelerographs

### 3.9 Abad Earthquake of October 24<sup>th</sup>, 2008

On October 24th, 2008 at 14:10:31 (UTC), an earthquake with  $M_{IIEES}$  4.5 and  $m_b$  4.9 (NEIC), occurred near Abad village (Bushehr Province), south of Iran. This event was recorded by 5 sets of digital accelerographs (Figure 12) of Iran Strong Ground Motion Network (ISMN). The maximum peak acceleration was  $469 \text{ Cm/s}^2$  recorded in Abad Station (Table 9). The epicenter of this event has been located at 29.08N, 51.27E (NEIC) and 29.1N, 51.4E (IIEES).

Table 9: Parameters of Abad Earthquake

Station: Abad	N Record: 4714/01	ts-tp: 1.8 second	Vs30: 482 m/s
Parameters	Components		
	L	V	T
PGA ( $\text{Cm/s}^2$ )	227	167	469
PGV ( $\text{Cm/s}$ )	5.3	3.8	9.8
PGD ( $\text{Cm}$ )	0.34	0.44	0.73
Duration (second)	5.03	5.05	3.81
Sensor direction (degrees)	0	-	90

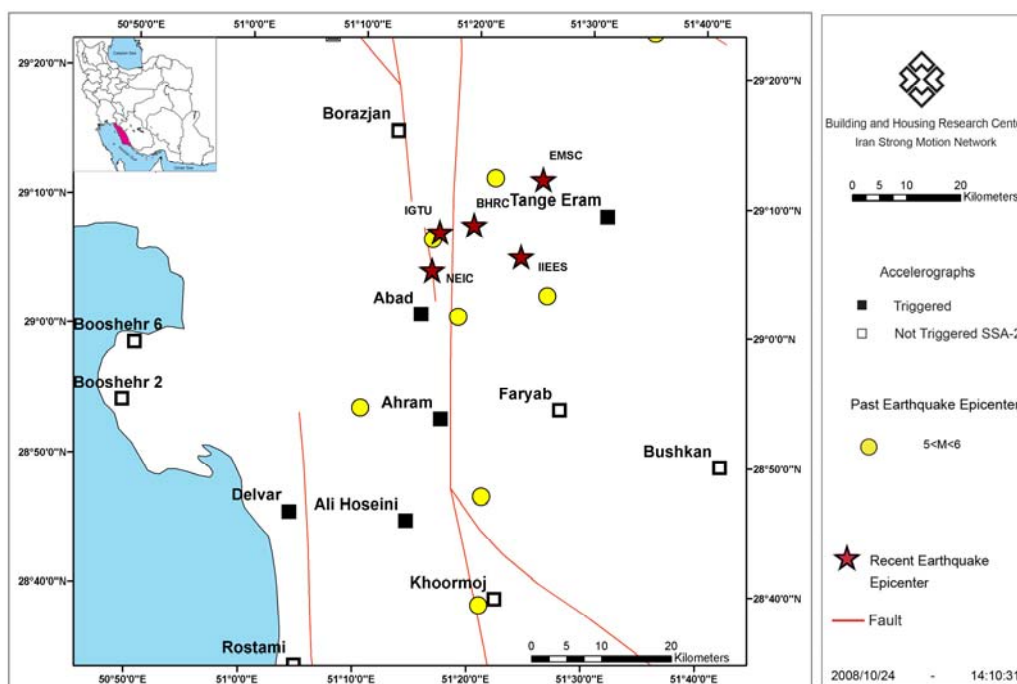


Figure 12. The location map of Abad Earthquake and triggered accelerographs

## REFERENCES

1. Building & Housing Research Center ([www.bhrc.ac.ir](http://www.bhrc.ac.ir)).
2. Geophysics Institute University of Tehran (<http://irsc.ut.ac.ir>).
3. International Institute of Earthquake of Engineering and Seismology ([www.iiies.ac.ir](http://www.iiies.ac.ir)).
4. National Earthquake Information Center-NEIC(<http://earthquake.usgs.gov/regional/neic>)
5. European Mediterranean Seismological Center ([www.emsc-csem.org](http://www.emsc-csem.org)).

## APPENDIX: TABLE

The characteristic of accelerogram with PGA more than 0.05 Cm/s/s

Station	Record No.	Coordinate		U.P.G.A (Cm/s/s)	Origin Time		Epicenter		Magnitude	Ref.
		N	E		Y-M-D	h:m:s	N	E		
Chalan Choolan	4545	33.659	48.913	54	2008/01/09	20:54:27	33.47	48.88	Mn3.5	IGTU
							33.61	49.06	Ml3.4	IIEES
Balaadeh	4653	29.291	51.935	74	2008/01/16	01:42:02	30.47	51.04	Mn2.2	IGTU
Kooreh	4547/03	27.921	53.797	66	2008/02/07	18:55:27	27.65	53.72	Mn3.7	IGTU
							27.66	53.47	Ml3.7	IIEES
Kooreh	4547/05	27.921	53.797	124	2008/02/07	20:15:27	27.84	53.74	Mn4.2	IGTU
							27.74	53.55	Ml4.3	IIEES
Kooreh	4547/08	27.921	53.797	87	2008/02/08	15:49:16	28.26	53.60	Mn3.7	IGTU
							27.93	53.72	Ml3.7	IIEES
Tasooj	4559	38.314	45.361	66	2008/02/16	07:04:36	38.34	45.13	Mn4.2	IGTU
							38.44	45.16	Ml4.0	IIEES
Chalan Choolan	4554/01	33.659	48.913	96	2008/02/20	01:13:45	33.64	48.89	MN4.0	IGTU
							33.75	48.90	Ml3.8	IIEES
Fork	4555/01	28.284	55.221	74	2008/02/28	08:46:59	28.39	55.30	Mn3.4	IGTU
							28.37	55.31	Ml3.5	IIEES
Fork	4555/02	28.284	55.221	51	2008/02/28	10:42:12	28.29	55.28	Mn3.8	IGTU
							28.28	55.25	Ml3.8	IIEES
Sedeh	4552/02	33.328	59.236	113	2008/03/09	03:44:03	33.26	59.18	Mn3.2	IGTU
Sedeh	4552/03	33.328	59.236	568	2008/03/09	03:51:01	33.36	59.35	Mw5.1, Ml4.9	BHRC
							33.26	59.17	Mn5.1	IGTU
							33.30	59.19	Ml5.0	IIEES
							33.35	59.39	mb4.9	NEIC
Ardal	4564	32.003	50.660	87	2008/03/21	13:10:28	32.05	50.60	Mw4.1	BHRC
							32.09	50.69	MN4.0	IGTU
							32.01	50.75	Ml4.0	IIEES
Kolor	4561	37.388	48.723	171	2008/03/23	12:11:31	37.49	48.82	Mw4.8	BHRC
							37.31	48.51	MN5.0	IGTU
							37.46	48.52	Ml4.7	IIEES
Sedeh	4611/03	33.328	59.236	62	2008/04/10	12:57:20	33.30	59.14	MN3.0	IGTU
Chaghalvandi	4584	33.656	48.558	55	2008/05/01	00:15:25	34.03	48.65	Mw4.9	BHRC
							33.86	48.61	Mn4.7	IGTU
							34.06	48.68	Ml4.7	IIEES

Station	Record No.	Coordinate		U.P.G.A (Cm/s/s)	Origin Time		Epicenter		Magnitude	Ref.
		N	E		Y-M-D	h:m:s	N	E		
Khark	4589	29.259	50.329	68	2008/05/02	21:29:20	29.48	50.77	Mn2.9	IGTU
							29.60	50.51	Ml3.0	IIEES
Doobaran1	4573	28.411	54.182	130	2008/05/05	21:57:55	28.34	54.18	Mw5.3	BHRC
							28.27	54.10	Mn5.3	IGTU
							28.37	54.05	Ml5.1	IIEES
							28.43	54.08	M5.3	NEIC
Doobaran1	4644/03	28.411	54.182	51	2008/05/14	13:04:18	28.27	53.97	MN4.0	IGTU
							28.16	54.12	Ml4.0	IIEES
							28.20	54.09	mb4.0	NEIC
Sirdan	4607	36.648	49.191	91	2008/05/27	06:18:08	36.58	48.75	Mw5.0, Ml5.6	BHRC
Soltanyeh	4602	36.438	48.799	59			36.65	48.66	Mn5.3	IGTU
Ab-bar1	4604	36.925	48.954	89			36.59	48.74	Ml5.4	IIEES
Gilvan	4600	36.781	49.132	55			36.47	48.71	M4.9	NEIC
Zanjan3	4605	36.664	48.504	51						
Horjand	4780/01	30.675	57.154	93			2008/05/27	17:07:21	30.69	57.21
Sar Dasht	4623	32.501	48.833	69	2008/06/03	09:21:52	30.50	57.07	Ml4.0	IIEES
							32.41	48.64	Mn4.6	IGTU
							32.47	48.95	Ml4.5	IIEES
Sedeh	4641	33.328	59.236	75	2008/06/27	14:58:16	32.36	48.60	mb4.8	NEIC
							33.31	59.15	Mn4.2	IGTU
Ahmadi	4616	27.938	56.665	80	2008/06/29	18:00:43	33.35	59.24	mb4.0	NEIC
							27.79	56.46	Mn4.1	IGTU
Kadkan	4613	35.590	58.869	51	2008/07/03	23:10:06	28.10	56.36	Ml4.2	IIEES
							35.65	58.56	Mw5.2	BHRC
							35.53	58.81	Mn5.2	IGTU
							35.52	58.52	Ml4.8	IIEES
Marzdaran	4670	36.153	60.526	158	2008/07/27	12:52:23	35.63	58.67	M5.1	NEIC
							36.03	60.45	Mn1.9	IGTU
Moosiyah	4646	32.518	47.379	546	2008/08/27	21:52:38	32.30	47.42	Mw5.8	BHRC
							32.34	47.33	Mn5.7	IGTU
							32.36	47.35	Ml5.4	IIEES
							32.31	47.37		NEIC
Hosseiniyeh Olya	4647	32.671	48.253	52	2008/08/29	08:58:39	32.56	48.59	MN4.0	IGTU
									Ml3.9	IIEES

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Station	Record No.	Coordinate		U.P.G.A (Cm/s/s)	Origin Time		Epicenter		Magnitude	Ref.
		N	E		Y-M-D	h:m:s	N	E		
Zenoos	4662	38.585	45.834	97	2008/09/02	20:00:56	38.68	45.82	Mw4.9	BHRC
							38.68	45.74	Mn5.2	IGTU
Kharvanagh	4660	38.688	46.166	53			38.72	45.82	Ml4.8	IIEES
							38.87	45.78	mb5.0	NEIC
Moosiyah	4667/01	32.518	47.379	209	2008/09/03	22:43:15	32.50	47.38	Ml4.9	IIEES
							32.43	47.36	mb5.3	NEIC
Tomban	4686/03	26.766	55.863	597	2008/09/10	11:00:40	26.83	55.81	Mw6.0, Ml6.1	BHRC
							26.74	55.98	Mn6.0	IGTU
Tabl	4675/01	26.758	55.725	89			26.94	55.71	mb6.2	IIEES
Suza	4678/01	26.782	56.070	168			26.82	55.83	Mw6.1	NEIC
Tomban	4686/05	26.766	55.863	57	2008/09/10	11:08:47	26.67	55.93	Mn4.7	IGTU
							26.93	55.73	Ml4.7	IIEES
Tomban	4686/10	26.766	55.863	287	2008/09/10	11:33:15	26.76	55.84	Mn4.5	IGTU
							26.92	55.71	Ml4.3	IIEES
							26.92	55.71	mb4.7	NEIC
Tomban	4686/19	26.766	55.863	278	2008/09/11	02:16:09	26.96	55.93	Mw5.1, Ml4.8	BHRC
							26.60	55.72	Mn4.9	IGTU
							26.97	55.66		IIEES
							26.88	55.78	mb5.2	NEIC
Jirandeh	4699	36.702	49.795	125	2008/09/13	19:24:13	36.79	49.72	Mn4.2	IGTU
							36.76	49.80	Ml4.2	IIEES
Qeshm	4688/01	26.962	56.275	154	2008/09/17	17:43:52	26.99	56.15	Mw5.2, Ml4.9	BHRC
							27.20	56.07	MN5.0	IGTU
							27.20	55.95	Ml4.9	IIEES
							26.95	55.99	mb5.2	NEIC
Qeshm	4688/03	26.962	56.275	180	2008/09/17	18:41:52	27.01	56.17	Mn4.3	IGTU
							26.90	56.20	mb4.6	NEIC

Station	Record No.	Coordinate		U.P.G.A (Cm/s/s)	Origin Time		Epicenter		Magnitude	Ref.
		N	E		Y-M-D	h:m:s	N	E		
							27.23	55.92	Ml4.4	IIEES
Aghajari	4755/01	30.700	49.829	146	2008/09/25	15:32:08	30.64	49.73	Mn4.4	IGTU
							30.61	49.72	Ml4.3	IIEES
							30.58	49.71	mb4.3	NEIC
Kavaneh	4713	34.973	46.983	52	2008/09/30	06:35:19				
Abad	4714/01	29.022	51.256	469	2008/10/24	14:10:31	29.14	51.33	Mw4.6	BHRC
							29.13	51.28	Mn4.6	IGTU
							29.10	51.40	Ml4.5	IIEES
							29.08	51.27	mb4.9	NEIC
Chalan Choolan	4716/02	33.659	48.913	88	2008/10/29	10:30:00	33.62	48.59	Mn4.1	IGTU
							33.72	48.85	Ml4.1	IIEES
Bandar-e-Lengeh	4715/06	26.568	54.895	57	2008/11/11	15:38:56	26.68	54.87	Ml4.6	IIEES
									mb4.9	NEIC
Shonbeh	4760	28.398	51.761	52	2008/11/14	15:51:34				
Sedeh	4727/02	33.328	59.236	61	2008/11/18	11:20:39	33.27	59.17	Mn4.2	IGTU
							33.34	59.13	Ml4.0	IIEES
Marivan	4730	35.521	46.182	70	2008/12/01	10:18:39	35.48	46.23	Mw4.5	BHRC
							35.36	46.18	Mn4.7	IGTU
							35.45	46.34	Ml4.1	IIEES
							35.44	46.11	M5.0	NEIC
Tomban	4764/08	26.766	55.863	150	2008/12/07	13:36:21	27.00	55.90	Mw5.4	BHRC
							26.95	55.99	Mn5.6	IGTU
							26.99	55.80	mb5.6, Ml5.2	IIEES
							26.96	55.87	mb5.4	NEIC
Tomban	4764/09	26.766	55.863	73	2008/12/08	14:41:43	27.06	55.95	Mw5.1	BHRC
							26.89	55.81	Mn5.2	IGTU
							26.92	55.85	mb5.5	IIEES
							26.92	55.85	M5.4	NEIC
Tomban	4764/10	26.766	55.863	165	2008/12/09	15:09:23	26.91	55.92	Mw4.7	BHRC
							26.75	55.70	Mn5.1	IGTU
Suza	4739/02	26.782	56.070	59			26.80	55.68	Ml5.0	IIEES
							26.80	55.68	M5.1	NEIC
Kooreh	4745	27.921	53.797	141	2008/12/10	10:30:28	27.93	53.83	Mn3.2	IGTU