

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/02 | 10:41:26.1 | + - 0.93 | 51.750N | 7.740E | 15.6 | 3.3 | 159 | 1G | | 7 | 4 | 222 | 2.3ML | CLZ | BGR | I |
| 1998/10/02 | 10:41:25.9 | | 51.647N | 7.744E | | | | 1G | | | | | 2.0ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 10:41:33.9 | 1.2 | TA | | 40.1 | 235.2 | ML 2.0 |
| | e Sg E | 10:41:39.9 | 2.5 | | | | | |
| GSH | e Pg Z | 10:41:50.6 | 1.2 | | 1.8 | 139.0 | 223.8 | ML 2.2 |
| | e Sg N | 10:42:08.4 | 2.8 | | | | | |
| CLZ | e Pg Z | 10:41:57.2 | 0.4 | | 4.4 | 182.3 | 82.2 | ML 2.3 |
| | e Sg N | 10:42:18.3 | 0.3 | | | | | |
| MOX | e Sg E | 10:42:51.0 | 1.6 | | | 292.1 | 110.9 | ML 2.3 |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|-----|-----------|---------|-----------|-----------|------------|--------------|-----|--------------|----------|
| 1998/10/02 | 23:46:33.1 | | 47.720N | 7.640E | | | | 2G | | | 17 | | 1.5ML | | STR | |
| 1998/10/02 | 23:46:33.2 | + - 0.43 | 47.729N | 7.576E | 7.7 | 4.6 | 105 | 2 | + - 0.0 | 13 | | 238 | 2.1ML | | LDG | L |
| 1998/10/02 | 23:46:33.0 | | 47.746N | 7.631E | | | | 10 | | 16 | 9 | | 1.8ML | | SED | |
| 1998/10/02 | 23:46:33.2 | | 47.724N | 7.657E | | | | 11 | | 27 | 14 | 101 | 1.8ML | | LEDBW | L |

Sierentz/F, NW of Loerrach/Upper Rhine Graben

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|------|--------|------------|------|-----|-----|-------|-------|--------|
| END | i Pg + | 23:46:35.5 | 0.2 | T | | 6.1 | 99.4 | |
| | i Sg | 23:46:37.3 | 0.4 | T | | | | |
| BBS | i Pg + | 23:46:38.8 | 0.1 | T | | 30.9 | 201.1 | |
| | Sg | 23:46:42.1 | -0.6 | T | | | | |
| FELD | i Pg + | 23:46:39.0 | 0.2 | T | | 31.0 | 56.7 | |
| | Sg | 23:46:43.0 | 0.3 | T | | | | |
| KIZ | i Pg + | 23:46:39.0 | -0.0 | T | | 32.3 | 37.0 | ML 1.3 |
| | e Sg | 23:46:43.0 | 0.0 | T | | | | |
| BFO | e Pg Z | 23:46:47.4 | -0.2 | | 7.6 | 83.9 | 36.3 | |
| | e Sg N | 23:46:57.3 | -0.1 | | 5.7 | | | |
| GUT | e Pg + | 23:46:52.5 | -0.3 | T | | 115.3 | 69.9 | ML 1.8 |
| | Sn | 23:47:04.8 | -2.2 | T | | | | |
| | e Sg | 23:47:06.8 | 0.5 | T | | | | |
| LBG | SmS | 23:47:07.4 | -1.6 | T | | | | |
| | Pg | 23:46:55.5 | -0.6 | | | 134.3 | 38.5 | ML 1.6 |
| | Sg | 23:47:11.4 | -0.3 | T | | | | |
| BEU | e Pg - | 23:47:00.7 | 0.0 | T | | 161.7 | 53.1 | ML 1.7 |
| | i Sg | 23:47:20.0 | 0.5 | T | | | | |
| UBR | Sg | 23:47:26.0 | 0.2 | | | 183.5 | 90.6 | ML 1.8 |
| HDH | Sg | 23:47:34.1 | 0.3 | T | | 211.9 | 62.2 | ML 1.9 |
| SIND | Pg | 23:47:11.6 | -0.7 | T | | 230.7 | 37.7 | ML 1.8 |
| | Sg | 23:47:38.1 | -1.1 | T | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/03 | 15:37:30.7 | +- 1.49 | 51.650N | 7.840E | 16.7 | 6.7 | 17 | 1G | | 6 | 3 | 285 | 2.3ML | | SZGRF | I |
| 1998/10/03 | 15:37:29.5 | +- 0.85 | 51.690N | 7.840E | 12.2 | 4.4 | 172 | 1G | | 8 | 4 | 237 | 2.3ML | GSH | BGR | I |
| 1998/10/03 | 15:37:29.9 | | 51.647N | 7.744E | | | | 1G | | | | | 2.1ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 15:37:37.9 | 1.2 | TA | | 40.1 | 235.2 | ML 2.1 |
| | e Sg N | 15:37:43.7 | 2.3 | | | | | |
| GSH | e Pg Z | 15:37:54.2 | 0.8 | | 8.4 | 139.0 | 223.8 | ML 2.3 |
| | e Sg N | 15:38:12.2 | 2.6 | | | | | |
| TNS | e Pg Z | 15:37:57.6 | -0.4 | | 6.8 | 165.9 | 162.4 | ML 2.2 |
| | e Sg N | 15:38:17.3 | 0.0 | | | | | |
| MOX | e Pg Z | 15:38:18.1 | -1.3 | | 3.1 | 292.1 | 110.9 | ML 2.4 |
| | e Sn N | 15:38:40.6 | -2.4 | | | | | |
| | e Sg E | 15:38:53.0 | -0.4 | | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/03 | 23:26:51.0 | +- 1.50 | 51.710N | 7.900E | 17.8 | 7.8 | 16 | 1G | | 6 | 3 | 290 | 1.9ML | | SZGRF | I |
| 1998/10/03 | 23:26:49.8 | +- 1.12 | 51.720N | 7.920E | 13.3 | 4.4 | 0 | 1G | | 7 | 4 | 237 | 2.0ML | GSH | BGR | I |
| 1998/10/03 | 23:26:49.4 | | 51.688N | 7.839E | | | | 1G | | | | | 1.6ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg + Z | 23:26:59.0 | 1.5 | TA | | 48.0 | 235.3 | ML 1.6 |
| | e Sg E | 23:27:05.1 | 2.0 | | | | | |
| GSH | e Pg Z | 23:27:15.5 | 1.2 | | 5.0 | 146.8 | 224.5 | ML 2.0 |
| | e Sg N | 23:27:34.1 | 2.7 | | | | | |
| TNS | e Pg Z | 23:27:19.4 | 1.4 | | 2.0 | 168.4 | 165.1 | ML 2.0 |
| | e Sg N | 23:27:38.2 | 0.7 | | | | | |
| MOX | e Sg N | 23:28:11.1 | -0.5 | | | 287.7 | 112.3 | ML 2.0 |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/05 | 02:24:18.1 | +- 0.56 | 51.630N | 7.820E | 8.9 | 4.4 | 158 | 1G | | 7 | 4 | 200 | 2.0ML | GSH | BGR | I |
| 1998/10/05 | 02:24:19.5 | +- 0.56 | 51.610N | 7.750E | 8.9 | 4.4 | 159 | 1G | | 8 | 4 | 200 | 2.0ML | | SZGRF | I |
| 1998/10/05 | 02:24:17.2 | | 51.647N | 7.744E | | | | 1G | | | | | 1.9ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|------|-------|--------|
| BUG | i Pg - Z | 02:24:25.2 | 1.2 | TA | | 40.1 | 235.2 | ML 1.9 |
| | e Sg E | 02:24:30.8 | 2.2 | | | | | |

| | | | | | | | | | | | | |
|-----|---|----|---|------------|-----|-----|--|--|-------|-------|----|-----|
| GSH | e | Pg | Z | 02:24:41.5 | 0.7 | | | | 139.0 | 223.8 | ML | 2.0 |
| | e | Sg | E | 02:24:59.4 | 2.5 | | | | | | | |
| TNS | e | Pg | Z | 02:24:46.2 | 0.8 | | | | 165.9 | 162.4 | ML | 2.0 |
| | e | Sg | E | 02:25:05.4 | 0.8 | | | | | | | |
| CLZ | e | Pn | Z | 02:24:46.7 | 0.3 | 1.3 | | | 182.3 | 82.2 | ML | 2.2 |
| | e | Pg | Z | 02:24:48.5 | 0.4 | | | | | | | |
| | e | Sg | E | 02:25:12.4 | 3.1 | | | | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|------------------------|-------------------|--------|----------------|---------------|--------|--------|----|-----------|-------|----------|----------|------------|--------------|------------|------------|----------|
| 1998/10/05 | 12:39:28.0 | | 50.410N | 6.792E | | | | 10G | | | 9 | | 2.2ML | STR | NEIC | |
| Less reliable solution | | | | | | | | | | | | | | | | |
| 1998/10/05 | 12:39:27.7 | | 50.200N | 6.640E | | | | 0G | | 6 | 3 | 254 | 2.1ML | TNS | BGR | B |

Kyllburg, N of Bitburg/Eifel

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|--------|------------|------|-----|-----|-------|-------|--------|
| GSH | e Pg Z | 12:39:38.1 | -0.2 | T | 4.4 | 62.5 | 342.8 | ML 1.8 |
| | e Sg Z | 12:39:46.3 | 0.7 | T | 2.2 | | | |
| TNS | e Pg E | 12:39:50.1 | 0.6 | T | 4.2 | 128.6 | 88.2 | ML 2.1 |
| | e Sg E | 12:40:04.6 | 0.1 | T | 2.3 | | | |
| BUG | e Pg Z | 12:39:51.7 | -0.6 | T | 4.4 | 144.8 | 17.5 | ML 2.3 |
| | e Sg E | 12:40:09.0 | -0.2 | T | 2.2 | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/05 | 23:11:45.3 | +/- 0.53 | 51.670N | 7.910E | 11.1 | 3.3 | 164 | 1G | | 9 | 5 | 202 | 2.2ML | GSH | BGR | I |
| 1998/10/05 | 23:11:46.3 | +/- 0.52 | 51.620N | 7.930E | 7.8 | 4.4 | 161 | 1G | | 8 | 4 | 194 | 2.2ML | | SZGRF | I |
| 1998/10/05 | 23:11:43.8 | | 51.688N | 7.839E | | | | 1G | | | | | 1.9ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|------|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 23:11:53.4 | 1.5 | TA | | 48.0 | 235.3 | ML 1.9 |
| | e Sg E | 23:12:00.7 | 3.2 | | | | | |
| GSH | e Pg Z | 23:12:09.9 | 1.2 | | | 146.8 | 224.5 | ML 2.2 |
| | e Sg E | 23:12:29.0 | 3.3 | | | | | |
| TNS | e Pg Z | 23:12:11.8 | -0.6 | | | 168.4 | 165.1 | ML 2.1 |
| | e Sg E | 23:12:31.5 | -0.4 | | | | | |
| CLZ | e Pn Z | 23:12:12.7 | 0.6 | | 1.5 | 175.2 | 83.4 | ML 2.2 |
| | e Pg Z | 23:12:13.9 | 0.4 | | | | | |
| | e Sg E | 23:12:35.4 | 1.6 | | | | | |
| MOX | e (Sg) | 23:13:06.0 | 0.0 | | | 287.7 | 112.3 | |
| GRFO | e Sg E | 23:13:16.5 | -0.3 | | 2.1 | 325.6 | 131.7 | |
| CLL | e Sg E | 23:13:27.5 | 0.9 | | 1.6 | 359.9 | 94.7 | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/07 | 11:16:32.8 | +- 1.47 | 51.620N | 7.800E | 17.8 | 7.8 | 18 | 1G | | 6 | 3 | 281 | 2.0ML | | SZGRF | I |
| 1998/10/07 | 11:16:31.0 | | 51.647N | 7.744E | | | | 1G | | | | | 1.9ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 11:16:39.0 | 1.2 | TA | | 40.1 | 235.2 | ML 1.9 |
| | e Sg E | 11:16:44.6 | 2.2 | | | | | |
| GSH | e Pg Z | 11:16:55.5 | 1.0 | | | 139.0 | 223.8 | ML 2.0 |
| | e Sg E | 11:17:13.5 | 2.8 | | | | | |
| TNS | e Pg Z | 11:16:59.7 | 0.6 | | | 165.9 | 162.4 | ML 2.0 |
| | e Sg E | 11:17:18.5 | 0.1 | | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/07 | 16:00:11.1 | +- 1.50 | 51.670N | 7.850E | 16.7 | 7.8 | 16 | 1G | | 6 | 3 | 287 | 2.2ML | | SZGRF | I |
| 1998/10/07 | 16:00:11.8 | +- 0.54 | 51.620N | 7.790E | 7.8 | 3.3 | 160 | 1G | | 10 | 6 | 199 | 2.1ML | TNS | BGR | I |
| 1998/10/07 | 16:00:10.5 | | 51.647N | 7.744E | | | | 1G | | | | | 2.0ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 16:00:18.5 | 1.2 | TA | | 40.1 | 235.2 | ML 2.0 |
| | e Sg N | 16:00:24.3 | 2.4 | | | | | |
| GSH | e Pg Z | 16:00:35.0 | 0.9 | | 6.1 | 139.0 | 223.8 | ML 2.2 |
| | e Sg N | 16:00:52.1 | 1.9 | 3.8 | | | | |
| TNS | e Pg Z | 16:00:39.2 | 0.6 | | 4.5 | 165.9 | 162.4 | ML 2.1 |
| | e Sg N | 16:00:58.4 | 0.5 | 2.6 | | | | |
| CLZ | e Pg Z | 16:00:42.2 | 0.8 | | 3.2 | 182.3 | 82.2 | ML 2.3 |
| | e Sg N | 16:01:03.9 | 1.4 | 5.3 | | | | |
| WLF | e Pg Z | 16:00:53.1 | 0.7 | | 3.0 | 247.3 | 207.6 | |
| MOX | e Pg Z | 16:01:00.5 | 0.5 | | 1.8 | 292.1 | 110.9 | ML 2.3 |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/07 | 16:03:48.7 | +- 1.50 | 51.660N | 7.760E | 17.8 | 7.8 | 14 | 1G | | 6 | 3 | 288 | 2.0ML | | SZGRF | I |
| 1998/10/07 | 16:03:46.9 | | 51.647N | 7.744E | | | | 1G | | | | | 1.9ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 16:03:54.9 | 1.2 | TA | | 40.1 | 235.2 | ML 1.9 |
| | e Sg E | 16:04:00.4 | 2.1 | | | | | |
| GSH | e Pg Z | 16:04:11.5 | 1.0 | | | 139.0 | 223.8 | ML 1.9 |
| | e Sg E | 16:04:29.9 | 3.3 | | | | | |

| | | | | | | | | | | | | |
|-----|---|----|---|------------|-----|--|--|--|-------|-------|----|-----|
| TNS | e | Pg | Z | 16:04:16.5 | 1.5 | | | | 165.9 | 162.4 | ML | 1.9 |
| | e | Sg | E | 16:04:35.9 | 1.6 | | | | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/07 | 19:58:18.1 | +- 0.59 | 51.690N | 7.920E | 8.9 | 4.4 | 159 | 1G | | 8 | 4 | 204 | 2.1ML | GSH | BGR | I |
| 1998/10/07 | 19:58:17.0 | | 51.688N | 7.839E | | | | 1G | | | | | 1.8ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg + Z | 19:58:26.6 | 1.5 | TA | | 48.0 | 235.3 | ML 1.8 |
| | e Sg N | 19:58:33.7 | 3.0 | | 1.8 | | | |
| GSH | e Pg Z | 19:58:42.9 | 1.0 | | 3.9 | 146.8 | 224.5 | ML 2.1 |
| | e Sg N | 19:59:01.5 | 2.5 | 2.2 | | | | |
| TNS | e Pg Z | 19:58:47.1 | 1.6 | | 2.1 | 168.4 | 165.1 | ML 2.0 |
| | e Sg N | 19:59:05.4 | 0.3 | 4.1 | | | | |
| CLZ | e Pg Z | 19:58:47.1 | 0.4 | | 3.7 | 175.2 | 83.4 | ML 2.2 |
| | e Sg E | 19:59:06.9 | -0.2 | 2.1 | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/08 | 00:02:35.2 | +- 0.62 | 51.750N | 7.930E | 7.8 | 3.3 | 166 | 1G | | 10 | 6 | 212 | 2.1ML | GSH | BGR | I |
| 1998/10/08 | 00:02:36.5 | +- 1.48 | 51.680N | 7.990E | 17.8 | 7.8 | 21 | 1G | | 6 | 3 | 286 | 2.1ML | | SZGRF | I |
| 1998/10/08 | 00:02:35.0 | | 51.693N | 7.851E | | | | 1G | | | | | 1.9ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|------|----------|------------|------|-----|------|-------|-------|--------|
| BUG | i Pg - Z | 00:02:44.8 | 1.5 | TA | | 49.0 | 235.3 | ML 1.9 |
| | e Sg E | 00:02:53.2 | 4.2 | | | | | |
| GSH | e Pg Z | 00:03:00.9 | 0.9 | | | 147.8 | 224.6 | ML 2.1 |
| | e Sg E | 00:03:20.4 | 3.2 | | | | | |
| TNS | e Pg Z | 00:03:04.2 | 0.6 | | | 168.8 | 165.4 | ML 2.0 |
| | e Sg N | 00:03:23.0 | -0.2 | | | | | |
| CLZ | e Pg Z | 00:03:04.8 | 0.3 | | 43.2 | 174.3 | 83.6 | ML 2.2 |
| | e Sg N | 00:03:23.0 | -1.8 | 2.6 | | | | |
| MOX | e Sg N | 00:03:56.1 | -1.0 | | 3.1 | 287.2 | 112.5 | ML 2.2 |
| GRFO | e Sg N | 00:04:09.3 | 1.4 | | 1.3 | 325.4 | 131.9 | ML 2.7 |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/08 | 18:23:48.2 | +- 0.56 | 51.640N | 7.840E | 8.9 | 4.4 | 159 | 1G | | 8 | 4 | 200 | 2.3ML | | SZGRF | I |
| 1998/10/08 | 18:23:47.8 | +- 0.60 | 51.680N | 7.790E | 8.9 | 4.4 | 156 | 1G | | 8 | 4 | 209 | 2.3ML | GSH | BGR | I |
| 1998/10/08 | 18:23:47.1 | | 51.647N | 7.744E | | | | 1G | | | | | 2.1ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 18:23:55.1 | 1.2 | TA | 9.1 | 40.1 | 235.2 | ML 2.1 |
| | e Sg N | 18:24:01.0 | 2.4 | | | | | |
| GSH | e Pg Z | 18:24:11.4 | 0.7 | | 5.7 | 139.0 | 223.8 | ML 2.3 |
| | e Sg N | 18:24:29.6 | 2.8 | | | | | |
| TNS | e Pg N | 18:24:16.3 | 1.1 | | 2.9 | 165.9 | 162.4 | ML 2.2 |
| | e Sg N | 18:24:36.0 | 1.5 | | | | | |
| CLZ | e Pn Z | 18:24:16.7 | 0.5 | | 1.5 | 182.3 | 82.2 | |
| | e Pg Z | 18:24:18.6 | 0.6 | | | | | |
| | e Sg E | 18:24:38.4 | -0.8 | | | | | |
| MOX | e Sg | 18:25:15.7 | 5.1 | | | 292.1 | 110.9 | |
| CLL | e Sg | 18:25:37.0 | 5.3 | | | 366.1 | 93.9 | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/08 | 18:59:20.5 | + - 0.73 | 51.720N | 7.930E | 10.0 | 5.6 | 159 | 1G | | 7 | 5 | 208 | 2.2ML | GSH | BGR | I |
| 1998/10/08 | 18:59:21.2 | + - 0.57 | 51.680N | 7.920E | 8.9 | 3.3 | 159 | 1G | | 8 | 4 | 203 | 2.1ML | | SZGRF | I |
| 1998/10/08 | 18:59:19.6 | | 51.688N | 7.839E | | | | 1G | | | | | 1.8ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg + Z | 18:59:29.4 | 1.7 | TA | | 48.0 | 235.3 | ML 1.8 |
| | e Sg E | 18:59:36.1 | 2.8 | | | | | |
| GSH | e Pg Z | 18:59:45.8 | 1.3 | | | 146.8 | 224.5 | ML 2.2 |
| | e Sg E | 19:00:04.0 | 2.4 | | | | | |
| TNS | e Pg Z | 18:59:48.4 | 0.2 | | | 168.4 | 165.1 | ML 2.1 |
| | e Sg N | 19:00:08.4 | 0.7 | | | | | |
| CLZ | e Pg Z | 18:59:48.9 | -0.4 | | | 175.2 | 83.4 | ML 2.1 |
| | e Sg N | 19:00:09.4 | -0.2 | | | | | |
| WLF | e Sg E | 19:00:35.4 | 3.2 | | 2.0 | 254.4 | 208.5 | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/10 | 18:01:23.0 | + - 0.72 | 51.650N | 7.790E | 10.0 | 8.9 | 0 | 1G | | 5 | 4 | 204 | 2.3ML | TNS | BGR | I |
| 1998/10/10 | 18:01:24.0 | + - 0.56 | 51.630N | 7.810E | 8.9 | 3.3 | 160 | 1G | | 8 | 4 | 200 | 2.4ML | | SZGRF | I |
| 1998/10/10 | 18:01:22.4 | | 51.647N | 7.744E | | | | 1G | | | | | 2.2ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 18:01:30.4 | 1.2 | TA | | 40.1 | 235.2 | ML 2.2 |
| | e Sg E | 18:01:36.4 | 2.5 | | | | | |
| GSH | e Pg Z | 18:01:46.8 | 0.9 | | | 139.0 | 223.8 | ML 2.4 |
| | e Sg N | 18:02:04.8 | 2.7 | | | | | |

| | | | | | | | | | | | | |
|-----|---|----|---|------------|------|--|--|--|-------|-------|----|-----|
| TNS | e | Pg | Z | 18:01:50.1 | -0.5 | | | | 165.9 | 162.4 | ML | 2.3 |
| | e | Sg | N | 18:02:10.4 | 0.6 | | | | | | | |
| CLZ | e | Pn | Z | 18:01:51.9 | 0.3 | | | | 182.3 | 82.2 | ML | 2.7 |
| | e | Pg | Z | 18:01:53.5 | 0.2 | | | | | | | |
| | e | Sg | N | 18:02:14.7 | 0.2 | | | | | | | |
| MOX | e | Pg | | 18:02:13.1 | 1.2 | | | | 292.1 | 110.9 | | |
| | e | Sg | | 18:02:51.3 | 5.4 | | | | | | | |
| CLL | e | Sg | | 18:03:11.0 | 4.0 | | | | 366.1 | 93.9 | | |
| BRG | e | Sg | | 18:03:31.2 | 3.2 | | | | 439.7 | 98.9 | | |

| Date | Origin | Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|------------|------------|------|--------|---------|---------|--------|--------|-----|-------|-------|------|------|-----|-------|-----|--------|---------|
| 1998/10/11 | 07:38:12.7 | +- | 0.90 | 47.100N | 12.620E | 15.6 | 7.8 | 156 | 10G | | 9 | 4 | 272 | 2.0ML | WET | BGR | L? |

Western Hohe Tauern/A

| Sta | Phase | | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|------|-------|----|------|------------|------|-----|-------|-------|--------|
| SCE | i | Pg | - | 07:38:19.6 | -4.9 | | 69.2 | 264.7 | |
| FUR | e | Sg | N | 07:38:58.5 | 1.3 | T | 155.3 | 320.0 | ML 2.3 |
| GEC2 | e | Pn | Z | 07:38:45.3 | 1.1 | T | 2.2 | 210.1 | 22.1 |
| | e | Sg | E | 07:39:13.5 | 0.7 | T | | | ML 1.8 |
| WET | e | Pn | Z | 07:38:46.0 | -0.4 | T | 2.6 | 228.1 | 4.7 |
| | e | Pg | Z | 07:38:48.8 | -2.6 | T | 1.6 | | ML 2.0 |
| | e | Sg | N | 07:39:15.1 | -2.8 | T | | | |
| BFO | e | Pn | Z | 07:38:59.9 | -1.2 | T | 1.2 | 348.8 | 294.7 |
| | e | Pg | Z | 07:39:10.6 | -1.3 | T | 1.2 | | |
| | e | Sg | N | 07:39:53.2 | 0.8 | T | | | |

| Date | Origin | Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|------------|------------|------|--------|---------|--------|--------|--------|-----|-------|-------|------|------|-----|-------|-----|--------|---------|
| 1998/10/11 | 23:32:16.1 | +- | 0.92 | 51.760N | 7.060E | 10.0 | 5.6 | 140 | 1G | | 8 | 4 | 243 | 2.0ML | | SZGRF | I |
| 1998/10/11 | 23:32:17.0 | | | 51.655N | 6.982E | | | | 1G | | | | | 1.8ML | | RUB | I |

Dorsten, N of Bottrop

| Sta | Phase | | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|-------|----|------|------------|------|-----|-------|-------|--------|
| BUG | i | Pg | - | 23:32:23.2 | 0.9 | TA | 31.0 | 140.1 | ML 1.8 |
| | e | Sg | E | 23:32:28.0 | 2.1 | | | | |
| GSH | e | Pg | Z | 23:32:36.1 | 0.4 | | 110.4 | 202.7 | ML 2.1 |
| | e | Sg | E | 23:32:51.1 | 2.6 | | | | |
| TNS | e | Pg | Z | 23:32:48.3 | -0.8 | | 189.5 | 146.6 | |
| | e | Sg | E | 23:33:11.8 | 0.6 | | | | |
| CLZ | e | Pg | Z | 23:32:52.6 | -4.1 | | 234.3 | 83.6 | |
| | e | Sg | N | 23:33:21.5 | -2.4 | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|------------|-------------|---------|---------|--------|--------|--------|-----|-------|--------|------|------|-----|-------|-----|--------|---------|
| 1998/10/12 | 06:52:05.8 | +- 0.18 | 47.166N | 6.223E | 4.2 | 2.4 | 131 | 2 | +- 0.0 | 26 | | 134 | 2.4ML | | LDG | L |

SE of Besancon/F

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|------------|-------------|---------|---------|--------|--------|--------|-----|-------|-------|------|------|-----|-------|-----|--------|---------|
| 1998/10/12 | 07:03:45.2 | +- 0.74 | 51.650N | 7.790E | 11.1 | 4.4 | 155 | 1G | | 7 | 4 | 217 | 2.2ML | TNS | BGR | I |
| 1998/10/12 | 07:03:44.1 | | 51.647N | 7.744E | | | | 1G | | | | | 2.1ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 07:03:52.1 | 1.2 | TA | | 40.1 | 235.2 | ML 2.1 |
| GSH | e Pg Z | 07:04:08.9 | 1.2 | | 3.9 | 139.0 | 223.8 | ML 2.2 |
| | e Sg E | 07:04:26.6 | 2.8 | | | | | |
| TNS | e Pg Z | 07:04:13.0 | 0.8 | | 2.6 | 165.9 | 162.4 | ML 2.2 |
| | e Sg N | 07:04:31.6 | 0.1 | | | | | |
| CLZ | e Pg Z | 07:04:15.2 | 0.2 | | 4.2 | 182.3 | 82.2 | ML 2.3 |
| | e Sg N | 07:04:36.4 | 0.2 | | | | | |
| MOX | e Sg N | 07:05:09.3 | 1.8 | | | 292.1 | 110.9 | ML 2.4 |
| BRG | e Sg | 07:05:51.6 | 1.9 | | | 439.7 | 98.9 | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|------------|-------------|---------|---------|--------|--------|--------|-----|-------|-------|------|------|-----|-------|-----|--------|---------|
| 1998/10/12 | 12:25:34.5 | +- 1.70 | 47.090N | 7.210E | 17.0 | 8.0 | 349 | 5G | | 12 | 8 | 262 | 2.2ML | | LEDBW | L |

Biel/CH, Bieler See

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|------|--------|------------|-------|-----|-----|-------|------|--------|
| BBS | e Pg - | 12:25:42.5 | -0.1 | T | | 47.4 | 28.4 | |
| | e Sg | 12:25:47.8 | -0.3 | T | | | | |
| FELD | e Pg | 12:25:52.0 | -0.5 | T | | 105.8 | 34.0 | |
| | e Sg | 12:26:06.0 | 1.2 | T | | | | |
| KIZ | e Pg | 12:25:52.7 | -0.5 | T | | 110.0 | 28.6 | ML 2.3 |
| | e Sg | 12:26:06.6 | 0.6 | T | | | | |
| BFO | e Pg Z | 12:26:01.3 | -0.6 | | 2.3 | 161.3 | 30.9 | |
| | e Sg E | 12:26:17.2 | -3.4 | | | | | |
| GUT | Pn | 12:25:44.9 | -18.0 | | | 179.7 | 52.0 | ML 2.0 |
| | Sg | 12:26:25.1 | -0.8 | T | | | | |
| UBR | Pg | 12:26:38.8 | 25.7 | | | 227.8 | 72.2 | ML 2.1 |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|------------|-------------|---------|---------|--------|--------|--------|----|-------|-------|------|------|-----|-------|-----|--------|---------|
| 1998/10/13 | 10:15:41.1 | +- 0.74 | 49.510N | 6.610E | 12.2 | 5.6 | 66 | 1G | | 6 | 3 | 217 | 2.0ML | | SZGRF | I |

Merzig, NW of Saarbruecken, Luxembourg-French-German border

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|--------|------------|------|-----|-----|-------|-------|--------|
| GSH | e Pg Z | 10:16:03.6 | -0.9 | T | | 137.4 | 353.1 | ML 2.0 |
| | e Sg E | 10:16:19.9 | -0.5 | T | | | | |
| TNS | e Pg Z | 10:16:06.6 | -0.5 | T | | 153.7 | 58.3 | ML 2.0 |
| | e Sg E | 10:16:25.2 | 0.1 | T | | | | |
| BFO | e Pg Z | 10:16:11.2 | -0.7 | T | | 181.6 | 135.6 | |
| | e Sg N | 10:16:32.1 | -0.9 | T | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/15 | 16:24:18.3 | +/- 0.71 | 51.650N | 7.760E | 10.0 | 6.7 | 153 | 1G | | 7 | 5 | 206 | 2.4ML | GSH | BGR | I |
| 1998/10/15 | 16:24:18.8 | +/- 0.55 | 51.610N | 7.810E | 8.9 | 4.4 | 160 | 1G | | 8 | 4 | 197 | 2.4ML | | SZGRF | I |
| 1998/10/15 | 16:24:16.8 | | 51.647N | 7.744E | | | | 1G | | | | | 2.2ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 16:24:24.8 | 1.2 | TA | | 40.1 | 235.2 | ML 2.2 |
| | e Sg E | 16:24:30.6 | 2.4 | | | | | |
| GSH | e Pg Z | 16:24:41.4 | 1.1 | | | 139.0 | 223.8 | ML 2.4 |
| | e Sg E | 16:24:59.1 | 2.6 | | | | | |
| TNS | e Pn Z | 16:24:44.6 | 0.6 | | | 165.9 | 162.4 | ML 2.3 |
| | e Pg Z | 16:24:45.8 | 0.8 | | | | | |
| | e Sg E | 16:25:04.2 | -0.0 | | | | | |
| CLZ | e Pg Z | 16:24:48.6 | 0.9 | | | 182.3 | 82.2 | ML 2.4 |
| | e Sg N | 16:25:09.2 | 0.3 | | | | | |
| WLF | e Sg N | 16:25:29.4 | 2.0 | | | 247.3 | 207.6 | |
| MOX | e Pg | 16:25:08.4 | 2.1 | | | 292.1 | 110.9 | |
| | e Sg | 16:25:47.7 | 7.4 | | | | | |
| CLL | e Sg | 16:26:05.0 | 3.6 | | | 366.1 | 93.9 | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/17 | 05:45:12.0 | +/- 0.54 | 51.600N | 7.780E | 8.9 | 4.4 | 160 | 1G | | 8 | 4 | 196 | 2.1ML | | SZGRF | I |
| 1998/10/17 | 05:45:09.7 | | 51.647N | 7.744E | | | | 1G | | | | | 1.8ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 05:45:17.7 | 1.2 | TA | | 40.1 | 235.2 | ML 1.8 |
| | e Sg E | 05:45:23.6 | 2.4 | | | | | |
| GSH | e Pg Z | 05:45:34.1 | 0.8 | | | 139.0 | 223.8 | |
| | e Sg N | 05:45:51.9 | 2.5 | | | | | |
| TNS | e Pg Z | 05:45:38.8 | 1.0 | | | 165.9 | 162.4 | ML 2.1 |
| | e Sg E | 05:45:57.2 | 0.1 | | | | | |

| | | | | | | | | | | | | |
|-----|------|---|------------|-----|--|--|--|--|-------|------|----|-----|
| CLZ | e Pg | Z | 05:45:41.3 | 0.7 | | | | | 182.3 | 82.2 | ML | 2.3 |
| | e Sg | N | 05:46:03.7 | 1.9 | | | | | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/19 | 06:32:53.5 | +- 0.57 | 51.630N | 7.790E | 8.9 | 4.4 | 159 | 1G | | 8 | 4 | 201 | 2.2ML | | SZGRF | I |
| 1998/10/19 | 06:32:53.1 | +- 0.72 | 51.660N | 7.760E | 10.0 | 5.6 | 165 | 1G | | 7 | 4 | 208 | 2.2ML | GSH | BGR | I |
| 1998/10/19 | 06:32:51.5 | | 51.647N | 7.744E | | | | 1G | | | | | 2.1ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 06:32:59.5 | 1.2 | TA | | 40.1 | 235.2 | ML 2.1 |
| | e Sg E | 06:33:05.4 | 2.5 | | | | | |
| GSH | e Pg Z | 06:33:16.3 | 1.2 | | | 139.0 | 223.8 | ML 2.2 |
| | e Sg E | 06:33:33.9 | 2.7 | | | | | |
| TNS | e Pg Z | 06:33:20.3 | 0.7 | | | 165.9 | 162.4 | ML 2.2 |
| | e Sg N | 06:33:40.7 | 1.8 | | | | | |
| CLZ | e Pn Z | 06:33:22.7 | 2.0 | | | 182.3 | 82.2 | ML 2.4 |
| | e Pg Z | 06:33:23.2 | 0.8 | | | | | |
| | e Sg N | 06:33:44.5 | 0.9 | | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/19 | 13:12:25.5 | +- 0.55 | 51.610N | 7.770E | 8.9 | 4.4 | 160 | 1G | | 8 | 4 | 199 | 2.1ML | | SZGRF | I |
| 1998/10/19 | 13:12:23.9 | +- 1.09 | 51.700N | 7.760E | 30.0 | 6.7 | 151 | 1G | | 6 | 4 | 214 | 2.2ML | BUG | BGR | I |
| 1998/10/19 | 13:12:23.0 | | 51.647N | 7.744E | | | | 1G | | | | | 2.0ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 13:12:31.0 | 1.2 | TA | | 40.1 | 235.2 | ML 2.0 |
| | e Sg E | 13:12:36.9 | 2.5 | | | | | |
| GSH | e Pg Z | 13:12:47.6 | 1.1 | | | 139.0 | 223.8 | ML 2.0 |
| | e Sg E | 13:13:05.5 | 2.7 | | | | | |
| TNS | e Pn Z | 13:12:51.4 | 1.3 | | | 165.9 | 162.4 | ML 2.0 |
| | e Pg Z | 13:12:52.3 | 1.2 | | | | | |
| | e Sg N | 13:13:10.9 | 0.5 | | | | | |
| CLZ | e Pn Z | 13:12:53.5 | 1.3 | | | 182.3 | 82.2 | ML 2.2 |
| | e Pg Z | 13:12:54.5 | 0.6 | | | | | |
| | e Sg E | 13:13:17.8 | 2.7 | | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/20 | 03:33:52.7 | +- 1.45 | 51.600N | 7.810E | 18.9 | 7.8 | 19 | 1G | | 6 | 3 | 278 | 2.1ML | | SZGRF | I |
| 1998/10/20 | 03:33:50.8 | | 51.647N | 7.744E | | | | 1G | | | | | 2.0ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 03:33:58.8 | 1.2 | TA | | 40.1 | 235.2 | ML 2.0 |
| | e Sg E | 03:34:04.6 | 2.3 | | | | | |
| GSH | e Pg Z | 03:34:15.0 | 0.7 | | | 139.0 | 223.8 | ML 2.1 |
| | e Sg N | 03:34:33.1 | 2.6 | | | | | |
| TNS | e Pg Z | 03:34:19.6 | 0.6 | | | 165.9 | 162.4 | ML 2.1 |
| | e Sg E | 03:34:37.5 | -0.7 | | | | | |
| MOX | e Pg | 03:34:42.1 | 1.8 | | | 292.1 | 110.9 | |
| | e Sg | 03:35:17.8 | 3.5 | | | | | |

| Date | Origin | Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|------|--------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/20 | 23:16:57.9 | +- | 1.48 | 51.640N | 7.820E | 16.7 | 6.7 | 17 | 1G | | 6 | 3 | 284 | 2.3ML | | SZGRF | I |
| 1998/10/20 | 23:16:58.3 | +- | 0.67 | 51.650N | 7.760E | 10.0 | 4.4 | 165 | 1G | | 9 | 6 | 218 | 2.3ML | BUG | BGR | I |
| 1998/10/20 | 23:16:56.6 | | | 51.647N | 7.744E | | | | 1G | | | | | 2.2ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 23:17:04.6 | 1.2 | TA | | 40.1 | 235.2 | ML 2.2 |
| | e Sg E | 23:17:10.5 | 2.5 | | | | | |
| GSH | e Pg Z | 23:17:21.2 | 1.0 | | | 139.0 | 223.8 | ML 2.3 |
| | e Sg E | 23:17:38.9 | 2.6 | | | | | |
| TNS | e Pg Z | 23:17:25.2 | 0.5 | | | 165.9 | 162.4 | ML 2.3 |
| | e Sg N | 23:17:45.3 | 1.3 | | | | | |
| MOX | e Pn Z | 23:17:41.3 | 2.1 | | | 292.1 | 110.9 | |
| | e Sg | 23:18:22.3 | 2.2 | | | | | |
| CLL | e (Pg) Z | 23:18:00.5 | 1.8 | | | 366.1 | 93.9 | |
| | e Sg | 23:18:46.0 | 4.8 | | | | | |
| BFO | e (Pn) Z | 23:17:50.6 | 1.8 | | | 371.2 | 173.3 | |

| Date | Origin | Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|------|--------|----------------|---------------|--------|--------|----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/21 | 20:24:21.8 | +- | 1.46 | 51.610N | 7.770E | 16.7 | 6.7 | 17 | 1G | | 6 | 3 | 280 | 2.0ML | | SZGRF | I |
| 1998/10/21 | 20:24:19.5 | | | 51.647N | 7.744E | | | | 1G | | | | | 1.8ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 20:24:27.5 | 1.2 | TA | | 40.1 | 235.2 | ML 1.8 |
| | e Sg E | 20:24:33.3 | 2.3 | | | | | |
| GSH | e Pg Z | 20:24:44.2 | 1.1 | | | 139.0 | 223.8 | ML 1.9 |
| | e Sg N | 20:25:01.2 | 2.0 | | | | | |
| TNS | e Pg Z | 20:24:48.4 | 0.8 | | | 165.9 | 162.4 | ML 2.0 |
| | e Sg N | 20:25:07.4 | 0.5 | | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/22 | 22:42:33.3 | +- 0.59 | 51.650N | 7.730E | 10.0 | 4.4 | 157 | 1G | | 9 | 5 | 208 | 2.6ML | | SZGRF | I |
| 1998/10/22 | 22:42:31.0 | +- 0.83 | 51.780N | 7.730E | 11.1 | 5.6 | 163 | 1G | | 10 | 7 | 253 | 2.6ML | TNS | BGR | I |
| 1998/10/22 | 22:42:31.1 | | 51.647N | 7.744E | | | | 1G | | | | | 2.5ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|------|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 22:42:39.1 | 1.2 | TA | | 40.1 | 235.2 | ML 2.5 |
| | e Sg E | 22:42:45.0 | 2.4 | | | | | |
| GSH | e Pg Z | 22:42:55.4 | 0.8 | | | 139.0 | 223.8 | ML 2.7 |
| | e Sg E | 22:43:14.4 | 3.6 | | | | | |
| TNS | e Pg Z | 22:42:59.7 | 0.5 | | | 165.9 | 162.4 | ML 2.6 |
| | e Sg N | 22:43:22.2 | 3.7 | | | | | |
| CLZ | e Pg E | 22:43:02.7 | 0.7 | | | 182.3 | 82.2 | |
| | e Sg E | 22:43:26.6 | 3.4 | | | | | |
| WLF | e Pn Z | 22:43:10.0 | 1.8 | | | 247.3 | 207.6 | |
| | e Pg Z | 22:43:12.7 | -0.3 | | | | | |
| MOX | e Pn | 22:43:15.7 | 2.0 | | | 292.1 | 110.9 | |
| | e (Pg) Z | 22:43:22.0 | 1.4 | | | | | |
| | i Sg | 22:43:58.6 | 4.0 | | | | | |
| GRFO | e Pn Z | 22:43:19.8 | 1.8 | | | 327.6 | 130.2 | |
| CLL | i Pg | 22:43:34.9 | 1.8 | | | 366.1 | 93.9 | |
| | e Sg | 22:44:20.0 | 4.3 | | | | | |
| | e Pn Z | 22:43:24.2 | 0.9 | | | | | |
| BFO | e Pn Z | 22:43:24.2 | 0.9 | | | 371.2 | 173.3 | |
| BRG | e Sg | 22:44:34.0 | -2.7 | | | 439.7 | 98.9 | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/23 | 01:00:26.2 | +- 1.15 | 51.690N | 7.700E | 14.5 | 5.6 | 176 | 1G | | 7 | 4 | 244 | 2.0ML | | SZGRF | I |
| 1998/10/23 | 01:00:24.3 | | 51.647N | 7.744E | | | | 1G | | | | | 1.8ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 01:00:32.3 | 1.2 | TA | | 40.1 | 235.2 | ML 1.8 |
| | e Sg E | 01:00:37.8 | 2.1 | | | | | |
| GSH | e Pg Z | 01:00:48.8 | 0.9 | | | 139.0 | 223.8 | ML 2.0 |
| | e Sg E | 01:01:07.6 | 3.6 | | | | | |
| TNS | e Pg Z | 01:00:53.6 | 1.2 | | | 165.9 | 162.4 | ML 2.1 |
| | e Sg N | 01:01:14.6 | 2.9 | | | | | |
| MOX | e Sg N | 01:01:51.8 | 4.0 | | | 292.1 | 110.9 | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|---------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/24 | 06:20:20.0 | +- 0.72 | 51.650N | 7.760E | 10.0 | 5.6 | 166 | 1G | | 7 | 4 | 206 | 2.1ML | | SZGRF | I |
| 1998/10/24 | 06:20:19.3 | +- 0.61 | 51.600N | 7.840E | 8.9 | 5.6 | 168 | 1G | | 9 | 6 | 194 | 2.1ML | TNS | BGR | I |
| 1998/10/24 | 06:20:18.1 | | 51.647N | 7.744E | | | | 1G | | | | | 1.9ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|------|-----|-------|-------|--------|
| BUG | i Pg - Z | 06:20:26.1 | 1.2 | TA | | 40.1 | 235.2 | ML 1.9 |
| | e Sg E | 06:20:32.1 | 2.6 | | | | | |
| GSH | e Pg Z | 06:20:42.8 | 1.1 | | | 139.0 | 223.8 | ML 2.2 |
| | e Sg E | 06:21:00.5 | 2.7 | | | | | |
| TNS | e Pg Z | 06:20:46.9 | 0.7 | | 3.5 | 165.9 | 162.4 | ML 2.1 |
| | e Sg E | 06:21:04.6 | -0.9 | | | | | |
| CLZ | e Pg Z | 06:20:49.2 | 0.2 | 10.0 | | 182.3 | 82.2 | |
| WLF | e Sg E | 06:21:28.3 | -0.4 | | | | | |
| MOX | i (Pg) | 06:21:09.4 | 1.8 | | | 292.1 | 110.9 | |
| | e Sg | 06:21:46.6 | 5.0 | | | | | |
| BFO | e Pn Z | 06:21:11.2 | 0.9 | | | 371.2 | 173.3 | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/24 | 16:47:00.3 | + - 1.02 | 51.680N | 7.810E | 12.2 | 5.6 | 2 | 1G | | 8 | 5 | 256 | 2.5ML | | SZGRF | I |
| 1998/10/24 | 16:47:01.5 | + - 0.48 | 51.550N | 7.810E | 8.9 | 4.4 | 165 | 1G | | 13 | 8 | 200 | 2.4ML | GSH | BGR | I |
| 1998/10/24 | 16:46:59.2 | | 51.652N | 7.755E | | | | 1G | | | | | 2.4ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|------|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 16:47:07.4 | 1.2 | TA | | 41.0 | 235.2 | ML 2.4 |
| | e Sg E | 16:47:13.5 | 2.5 | | | | | |
| GSH | e Pg Z | 16:47:23.8 | 0.9 | | 6.5 | 139.9 | 223.9 | ML 2.4 |
| | e Sg E | 16:47:41.0 | 1.8 | | | | | |
| TNS | e Pn Z | 16:47:27.1 | 0.7 | | 2.0 | 166.2 | 162.8 | ML 2.4 |
| | e Pg Z | 16:47:28.0 | 0.6 | | | | | |
| | e Sg E | 16:47:46.1 | -0.6 | | | | | |
| WLF | e Pg Z | 16:47:41.4 | 0.1 | | 1.8 | 248.2 | 207.7 | |
| | e Sg E | 16:48:08.4 | -1.8 | | | | | |
| MOX | i (Pg) | 16:47:50.7 | 2.1 | | | 291.6 | 111.1 | |
| GRA1 | e Pn Z | 16:47:48.1 | 2.0 | | | 327.3 | 130.4 | |
| GRFO | e Pn N | 16:47:48.4 | 2.3 | | 1.0 | 327.3 | 130.4 | |
| CLL | e Pg Z | 16:48:01.1 | 0.0 | | 2.2 | 365.3 | 94.0 | |
| | e Sg N | 16:48:44.7 | 1.1 | | | | | |
| BFO | e Pn Z | 16:47:52.7 | 1.3 | | 3.0 | 371.7 | 173.4 | |
| BRG | e Pn Z | 16:48:02.7 | 3.0 | | 1.9 | 439.0 | 99.0 | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|-----------------|----------------|---------------|-------------|------------|-----------|-----------|-------|-----------|----------|------------|--------------|-----|--------------|----------|
| 1998/10/26 | 00:52:27.1 | + - 0.98 | 49.150N | 6.840E | 14.5 | 5.6 | 68 | 1G | | 5 | 3 | 220 | 2.0ML | TNS | BGR | I |
| 1998/10/26 | 00:52:27.0 | + - 1.30 | 49.180N | 6.810E | 28.0 | 6.0 | 91 | 1G | | 12 | 7 | 207 | 2.1ML | | LEDBW | I |

Merlebach/F, SW of Saarbruecken, French-German border region

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|------|--------|------------|------|-----|-----|-------|-------|--------|
| RUP | e Pg - | 00:52:37.6 | 0.3 | T | | 60.7 | 17.2 | |
| | e PmP | 00:52:39.7 | -1.7 | T | | | | |
| ABH | e Pg - | 00:52:43.1 | 0.1 | T | | 94.4 | 34.0 | |
| | e Sg | 00:52:56.3 | 2.3 | T | | | | |
| BFO | e Pg Z | 00:52:51.2 | -0.6 | | 4.7 | 146.1 | 129.7 | ML 2.0 |
| | e Sg N | 00:53:08.1 | -0.7 | | | | | |
| LBG | Sg | 00:53:11.1 | -0.4 | T | | 155.9 | 110.8 | ML 2.1 |
| TNS | e Pg Z | 00:52:54.7 | -0.3 | | 1.6 | 165.2 | 44.8 | ML 2.0 |
| | e Sg N | 00:53:14.9 | 0.7 | | | | | |
| FELD | e Pn + | 00:52:54.5 | -0.1 | T | | 169.5 | 148.3 | |
| | e Sn | 00:53:12.4 | -1.8 | T | | | | |
| GSH | e Sg E | 00:53:18.8 | 1.5 | | | 175.9 | 350.0 | |
| BEU | Sg | 00:53:24.7 | 0.0 | | | 201.7 | 108.2 | ML 2.2 |
| SIND | Sg | 00:53:24.0 | -1.2 | | | 203.7 | 83.7 | ML 2.2 |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/26 | 13:09:28.9 | +/- 1.59 | 51.640N | 7.820E | 16.7 | 6.7 | 18 | 1G | | 6 | 3 | 284 | 2.2ML | GSH | BGR | I |
| 1998/10/26 | 13:09:28.1 | | 51.647N | 7.744E | | | | 1G | | | | | 2.1ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 13:09:36.1 | 1.2 | TA | | 40.1 | 235.2 | ML 2.1 |
| | e Sg E | 13:09:42.1 | 2.5 | | | | | |
| GSH | e Pg Z | 13:09:52.9 | 1.2 | | 3.1 | 139.0 | 223.8 | ML 2.2 |
| | e Sg N | 13:10:09.5 | 1.7 | | | | | |
| TNS | e Pg Z | 13:09:57.1 | 0.9 | | 2.6 | 165.9 | 162.4 | ML 2.1 |
| | e Sg E | 13:10:15.6 | 0.1 | | | | | |

| Date | Origin Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|----------|----------------|---------------|--------|--------|-----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/28 | 05:20:41.7 | +/- 1.50 | 51.650N | 7.740E | 17.8 | 7.8 | 14 | 1G | | 6 | 3 | 287 | 2.5ML | | SZGRF | I |
| 1998/10/28 | 05:20:42.6 | +/- 0.67 | 51.560N | 7.730E | 7.8 | 3.3 | 177 | 1G | | 13 | 6 | 221 | 2.4ML | TNS | BGR | I |
| 1998/10/28 | 05:20:40.4 | | 51.632N | 7.708E | | | | 1G | | | | | 2.3ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|--------|------------|------|-----|-----|-------|-------|--------|
| BUG | e Pg Z | 05:20:47.8 | 1.1 | TA | | 37.1 | 235.2 | ML 2.3 |
| | e Sg E | 05:20:53.2 | 2.2 | | | | | |
| GSH | e Pg Z | 05:21:04.6 | 1.1 | | 4.2 | 136.0 | 223.5 | ML 2.5 |
| | e Sg N | 05:21:21.4 | 2.1 | | | | | |
| TNS | e Pg Z | 05:21:09.2 | 0.8 | | 3.8 | 165.0 | 161.4 | ML 2.4 |
| | e Sg N | 05:21:27.7 | 0.1 | | | | | |

| | | | | | | | | | | |
|-----|---|----|---|------------|------|-----|-------|-------|----|-----|
| WLF | e | Pn | Z | 05:21:18.2 | 1.0 | 1.5 | 244.7 | 207.2 | | |
| | e | Pg | Z | 05:21:22.2 | 0.3 | 2.6 | | | | |
| | e | Sg | E | 05:21:49.9 | -0.5 | | | | | |
| MOX | e | Pg | E | 05:21:32.0 | 1.8 | 1.8 | 293.8 | 110.4 | ML | 2.7 |
| | e | Sg | Z | 05:22:05.8 | 1.5 | | | | | |
| BFO | e | Pn | Z | 05:21:33.7 | 1.3 | 1.7 | 369.8 | 172.9 | | |
| | e | Sn | E | 05:22:10.6 | 0.7 | | | | | |
| BRG | e | Sg | | 05:22:52.6 | 5.9 | | 441.9 | 98.6 | | |

| Date | Origin | Time | OT_err | Lat | Long | Smajor | Sminor | Az | Depth | D_err | Ndef | Nsta | Gap | Mag | Ref | Source | Ev_type |
|-------------------|-------------------|------|--------|----------------|---------------|--------|--------|----|-----------|-------|------|------|-----|--------------|-----|------------|----------|
| 1998/10/28 | 23:03:41.9 | +- | 1.50 | 51.670N | 7.820E | 17.8 | 7.8 | 15 | 1G | | 6 | 3 | 288 | 2.2ML | | SZGRF | I |
| 1998/10/28 | 23:03:40.9 | | | 51.647N | 7.744E | | | | 1G | | | | | 1.9ML | | RUB | I |

Hamm/Westfalen, Ruhr Coal Mining District

| Sta | Phase | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|----------|------------|------|-----|-----|-------|-------|--------|
| BUG | i Pg - Z | 23:03:48.9 | 1.2 | TA | | 40.1 | 235.2 | ML 1.9 |
| | e Sg E | 23:03:54.6 | 2.2 | | | | | |
| GSH | e Pg Z | 23:04:05.6 | 1.2 | | | 139.0 | 223.8 | ML 2.2 |
| | e Sg E | 23:04:24.2 | 3.6 | | | | | |
| TNS | e Pg Z | 23:04:09.4 | 0.4 | | | 165.9 | 162.4 | |
| | e Sg E | 23:04:29.3 | 1.0 | | | | | |
| MOX | i (Pg) | 23:04:26.4 | -4.0 | | | 292.1 | 110.9 | |
| | e Sg | 23:05:07.2 | 2.8 | | | | | |

Unassociated arrivals

| Sta | Phase | Date | Time | TRes | Def | S/N | Dist | EvAz | Mag |
|-----|--------|------------|------------|------|-----|-----|------|------|-----|
| BRG | e Sg | 1998/10/02 | 02:58:57.0 | | | | | | |
| BRG | i Pg | 1998/10/03 | 15:21:09.7 | | | | | | |
| BRG | i Sg | 1998/10/03 | 15:21:37.1 | | | | | | |
| BRG | e Sg | 1998/10/03 | 19:04:04.0 | | | | | | |
| CLL | e Sg | 1998/10/04 | 20:39:02.0 | | | | | | |
| BRG | e Sg | 1998/10/04 | 23:37:14.8 | | | | | | |
| BRG | e Sg | 1998/10/05 | 02:11:37.4 | | | | | | |
| CLL | e Sg | 1998/10/05 | 09:33:20.0 | | | | | | |
| CLL | e (Sg) | 1998/10/05 | 09:57:41.0 | | | | | | |
| BRG | e Sg | 1998/10/05 | 09:57:54.0 | | | | | | |
| BRG | e Sg | 1998/10/06 | 00:47:11.7 | | | | | | |
| BRG | e Sg | 1998/10/06 | 01:42:47.8 | | | | | | |
| BRG | e Sg | 1998/10/07 | 14:02:27.4 | | | | | | |
| BRG | e Sg | 1998/10/09 | 03:06:59.0 | | | | | | |
| BRG | i Sg | 1998/10/09 | 06:36:44.5 | | | | | | |
| BRG | e Sg | 1998/10/10 | 19:03:21.8 | | | | | | |
| BFO | e Sg | 1998/10/12 | 06:53:04.5 | | | | | | |
| BRG | e Sg | 1998/10/12 | 07:13:36.5 | | | | | | |
| CLL | i (Sg) | 1998/10/16 | 04:17:37.3 | | | | | | |
| CLL | e Sg | 1998/10/16 | 18:09:03.0 | | | | | | |
| CLL | e Sg | 1998/10/16 | 22:06:17.0 | | | | | | |
| BRG | e Sg | 1998/10/18 | 05:30:22.3 | | | | | | |

| | | | |
|-----|---|------|-----------------------|
| CLL | e | Sg | 1998/10/19 16:02:40.0 |
| CLL | i | Sg | 1998/10/19 20:32:35.0 |
| MOX | e | Sg | 1998/10/22 19:34:07.4 |
| BRG | e | Sg | 1998/10/24 00:07:01.8 |
| CLL | e | Sg | 1998/10/24 04:17:21.0 |
| CLL | e | Sg | 1998/10/27 02:24:44.0 |
| CLL | e | Sg | 1998/10/27 23:45:22.0 |
| CLL | e | Sg | 1998/10/28 05:04:50.0 |
| CLL | i | (Sg) | 1998/10/31 16:38:34.9 |