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# Acquisition and Processing of a Crustal Refraction Profile across the Queen Charlotte Islands and Hecate Strait

(DSS Contract File No. 05SU 23235-3-1089)

Final Report

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## ABSTRACT

The stated objective of the scientific work was "to determine crust/lithosphere structure (1) of the Queen Charlotte transform fault zone; (2) below the Queen Charlotte Islands; and (3) below Hecate Strait by conducting an onshore-offshore seismic refraction experiment using ocean bottom seismographs, land-based seismographs and explosive sources."

To meet this objective, 11 land-based seismographs, 8 across northern Moresby Island and 3 on islands or the mainland at the eastern side of Hecate Strait; and 6 ocean bottom seismographs, 2 west of northern Moresby Island and 4 across Hecate Strait, were deployed. Twelve explosive charges of 540 kg each and 20 charges of 60 kg each were detonated along a 110 km line extending westward from 20 km off northern Moresby Island. The field program was carried out from August 2-14, 1983.

This report summarizes the tectonic setting, previous seismic studies, the field program and data characteristics. Seismic sections of shots recorded by the 17 seismographs show that all receivers recorded excellent arrivals except the 4 OBSs deployed in Hecate Strait. For these instruments, background noise level at the time of shooting was very high and precluded any obvious correlation of seismic phases. Nevertheless, the project was carried out successfully as planned and the stated objectives were met.

## RÉSUMÉ

Les objectifs fixés des travaux scientifiques consistaient à «déterminer la structure de la croûte et de la lithosphère (1) de la zone de la faille transformante de la Reine-Charlotte, (2) au-dessous des îles de la Reine-Charlotte et (3) au-dessous du détroit d'Hecate en effectuant des expériences de sismique-réfraction à terre et au large à l'aide de sismographes disposés sur le fond de l'océan et à terre et à l'aide de sources explosives».

À cet effet, 11 sismographes terrestres, soit 8 d'un bout à l'autre du nord de l'île Moresby et 3 sur des îles ou sur le continent à l'extrémité orientale du détroit d'Hecate, et 6 sismographes sur le fond de l'océan, soit 2 à l'ouest du nord de l'île Moresby et 4 d'un bout à l'autre du détroit d'Hecate, ont été déployés. Douze charges explosives de 540 kg chacune et 20 charges de 60 kg chacune ont été mises à feu le long d'une ligne de 110 km s'étendant vers l'ouest à partir de 20 km au large du nord de l'île Moresby. Le programme sur le terrain a été exécuté du 2 au 14 août 1983.

Ce rapport résume le cadre tectonique, les précédentes études sismiques, le programme sur le terrain et les caractéristiques des données. Les sections sismiques des tirs enregistrées par les 17 sismographes indiquent que tous les récepteurs ont enregistré d'excellentes arrivées, à l'exception des 4 sismographes déployés au fond de l'océan dans le détroit d'Hecate. Pour ces instruments, le niveau du bruit de fond au moment du tir était très élevé et a empêché toute corrélation évidente des phases sismiques. Néanmoins, le projet a été exécuté avec succès comme prévu et les objectifs fixés ont été atteints.

## INTRODUCTION

The plate tectonic regime off Canada's west coast is very complex, has been, and is continuing to be the focus of study by many scientists. Keen and Hyndman (1979) have provided a review of the geotectonics of the western Canada margin. Subsequently a series of important contributions have been made to our understanding of the tectonic development of the Queen Charlotte Islands-Hecate Strait region and of the seismotectonics of the region; only those points of particular relevance will be summarized.

Yorath and Chase (1981) have developed a model for the tectonic evolution of the Queen Charlotte Islands-Hecate Strait-western mainland area. In this development, they point out that the region is underlain by two allochthonous terranes - Alexander and Wrangellia - which drifted northward, collided and amalgamated along a suture zone about 130 Ma ago, causing plutonic uplift in the vicinity of the Coast Mountains. Subsequently, as the region moved over a mantle hot spot, rifting and crustal extension developed in the Queen Charlotte Basin; these processes together with subsequent cooling generated a deep basin. Yorath and Hyndman (1983) augmented this hypothesis, suggesting that beginning 6 Ma ago, oblique underthrusting commenced along the margin, resulting in flexural uplift of the western part of the Queen Charlotte Islands and associated subsidence in Hecate Strait and Queen Charlotte Sound.

Plate tectonic models suggest present right-lateral motion at a rate of 5.5 cm/yr along the Queen Charlotte Fault Zone (Riddihough, 1977). The global plate motion analysis of Minster and Jordan (1978) and the focal mechanisms in Alaska (Perez and Jacob, 1980) show a difference of $10^{\circ}$-$20^{\circ}$ between the Pacific-North America plate motion vector and strike of the fault along the Queen Charlotte Islands. Only two well-defined fault plane solutions exist in

the region (Rogers, 1983). The solution for the 1949 earthquake indicates a strike consistent with that of the local fault strike but the horizontal motion vector is significantly different (15°) from the estimates of Minster and Jordan (1978). The implication is that there is convergence, perpendicular to the strike of the Queen Charlotte fault, that was not taken up during the rupture and must be taken up some other way. On the other hand the 1970 earthquake has a combined strike-slip and thrust mechanism which is consistent with the predicted Pacific/America motion, but the strike of the fault plane is about 10° different from the probable trend of the Queen Charlotte fault. Hyndman and Ellis (1981) suggested an underthrust model, subsequently refined by Hyndman et al. (1982), for the Queen Charlotte Fault Zone. In the refined model transcurrent faulting occurs in the oceanic lithosphere beneath the continental margin. As the plate is subducted, at intervals in time the faulting must jump seaward to remain near the edge of the continental crust.

Previous seismic studies on the region of the Queen Charlotte Islands are limited. A comprehensive study, and one comparable in part to the present study was presented by Horn et al. (1984). They reported on an onshore-offshore refraction experiment at the southern end of Moresby Island with the objective of defining the seismic structure from the deep ocean, across the fault zone and onto the islands. They provide a good model for the ocean and fault zone segments but the data did not extend eastward far enough to obtain structure beneath the islands or into Hecate Strait. Thus the only model for crustal structure is the simple model of Johnson et al. (1972) based on an inadequate data set. Forsyth et al. (1974) included interpretation of data recorded eastward from Prince Rupert from a shotpoint on Graham Island. The data are sparse but the interpretation may be relevant to the eastern part of our study area.

This report summarizes the field program and provides adequate documentation to enable a complete interpretation of the data. The principal product is the data itself and these are included in digital magnetic tapes prepared in the standard format and submitted to the Earth Physics Branch. These tapes are available from the Earth Physics Branch for the cost of the tapes and computer copying. To illustrate the data quality, record sections of common receiver gathers are presented.

## THE FIELD PROGRAM

The onshore-offshore seismic refraction program was carried out by the University of British Columbia (UBC) from August 2-14, 1983 with field assistance from the Division of Seismology and Geomagnetism, Earth Physics Branch (EPB) and the Pacific Geoscience Centre. The research vessel CSS Parizeau was made available for the two-week operation by the Department of Fisheries and Oceans through the West Coast Research Ship Scheduling Committee. The location and plan of the experiment are shown in Figure 1.

Eleven land-based seismographs (LBS) were deployed, 8 across northern Moresby Island and 3 on islands or the mainland at the eastern side of Hecate Strait. Six EPB digital recording "Backpack" LBSs occupied the eastern sites plus three sites on Moresby Island. The remaining sites on Moresby Island were occupied by four digital recording UBC "Microcorder" LBSs and one UBC FM analog tape recording system. One vertical component sensor was used at each site. Velocity sensitivity curves for the three types of LBS stations are shown in Figures A1, A2 and A3 of Appendix 1.

Six UBC ocean bottom seismographs (OBS) were deployed, two just west of northern Moresby Island and four across Hecate Strait. The OBSs record the output from one vertical and one horizontal component geophones and one

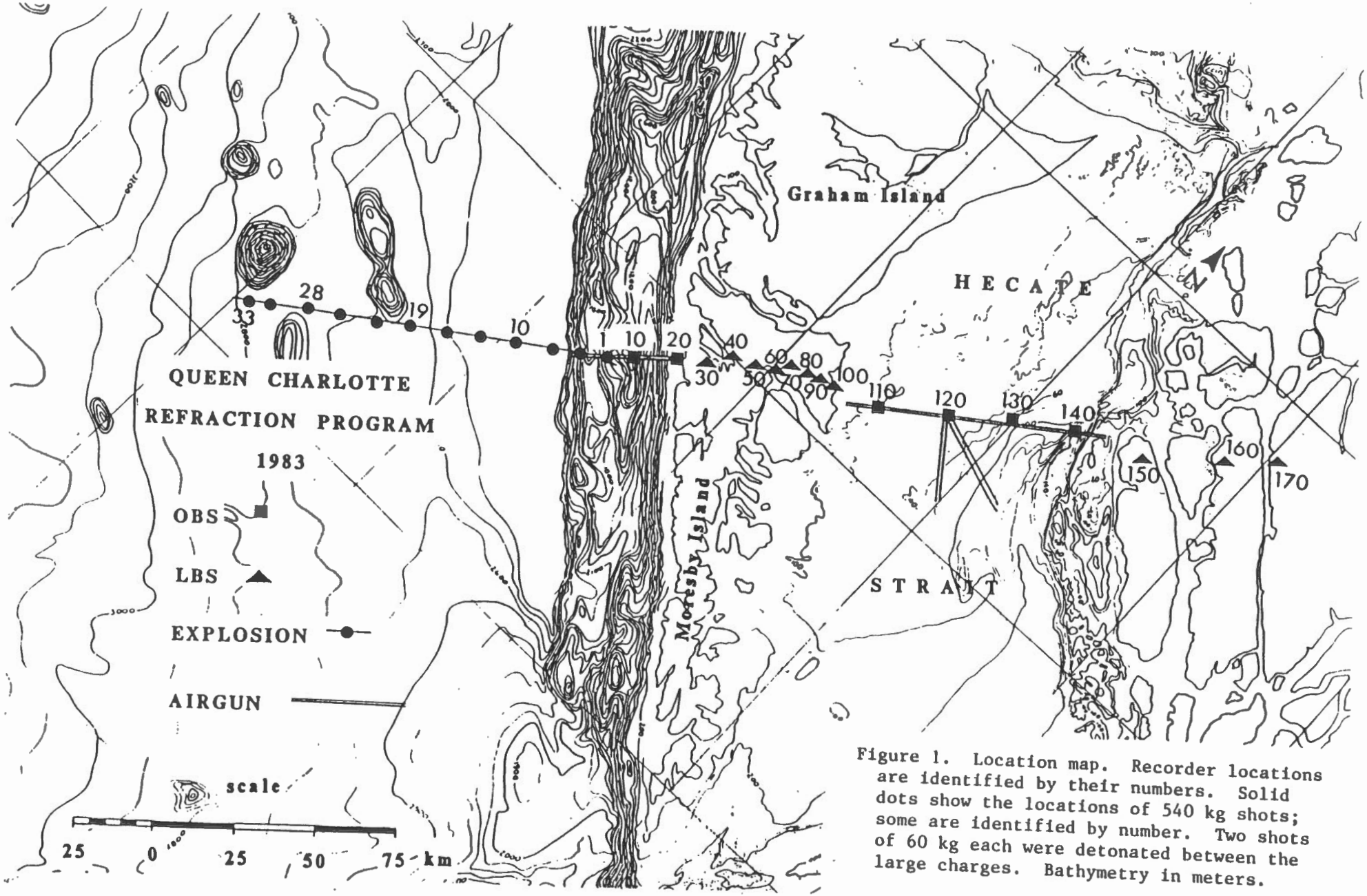


Figure 1. Location map. Recorder locations are identified by their numbers. Solid dots show the locations of 540 kg shots; some are identified by number. Two shots of 60 kg each were detonated between the large charges. Bathymetry in meters.

hydrophone plus a time code on a slow speed, direct recording cassette tape recorder. A general velocity sensitivity curve for the geophone channels of the OBSs is given in Figure A4 of Appendix 1.

Site locations and elevations for the LBSs were determined from topographic maps at a scale of 1:50,000 or larger. For the OBSs, latitudes and longitudes were derived from readings of the ship's principal navigation system, Loran C, at the time of deployment. Elevation (depth) of the OBSs were determined from the ship's depth sounding system recorded on an EPC line scan recorder. Table 1 lists the geographical coordinates and elevations for all receivers.

Twelve explosive charges of 540 kg each and 20 charges of 60 kg each were detonated along a 100 km profile extending westward from 20 km off northern Moresby Island. Nitropel, the trade name of C.I.L.'s pelleted TNT explosive was used to make up the charges. For each large charge, 3 steel drums ( 45 gallon) which had been welded together were filled with Nitropel; for the 60 kg charges, standard-size galvanized outdoor garbage containers were filled with Nitropel. Detonation was by a timed fuse assembly using Reinforced Primacord and C.I.L.'s Procore Primers.

Origin times and depths of the shots were determined from the ship's speed and ditch time plus direct water waves arrivals and bottom reflections received by a hydrophone trailed behind the ship and/or a deck geophone, both of which were recorded with the WWVB time code and a one second pulse on a 4-channel FM tape recorder. A two-channel chart recorder monitored the deck geophone and WWVB signal. Appendix 2 provides details of shot origin time and depth calculations. Locations of the shots were determined from the ship's Loran C navigation system. Water depth was recorded continuously through the ship's depth sounding system on an EPC line scan recorder. Table 2 lists all the relevant shot information.

Table 1

Locations and Elevations of the 17 Seismograph Stations

| RECEIVER NUMBER | RECEIVER TYPE | LOCATION N Latitude (degrees) | LOCATION W Longitude (degrees) | ELEVATION (m) |
|---|---|---|---|---|
| 10 | OBS W1 | 52.8006 | 132.4921 | -931 |
| 20 | OBS W2 | 52.8828 | 132.3496 | -458 |
| 30 | EMR | 52.9388 | 132.2076 | 4 |
| 40 | EMR | 52.9916 | 132.1371 | 4 |
| 50 | MCR | 53.0418 | 132.0301 | 15 |
| 60 | EMR | 53.0615 | 131.9817 | 31 |
| 70 | MCR | 53.1077 | 131.9419 | 61 |
| 80 | MCR | 53.0958 | 131.8524 | 213 |
| 90 | FM ANALOG | 53.1225 | 131.7845 | 106 |
| 100 | MCR | 53.1358 | 131.7125 | 5 |
| 110 | OBS E1 | 53.2005 | 131.4616 | -22 |
| 120 | OBS E2 | 53.3002 | 131.2342 | -32 |
| 130 | OBS E3 | 53.4060 | 130.9579 | -105 |
| 140 | OBS E4 | 53.5153 | 130.7155 | -162 |
| 150 | EMR | 53.5662 | 130.3563 | 8 |
| 160 | EMR | 53.7159 | 130.0872 | 5 |
| 170 | EMR | 53.8179 | 129.8996 | 5 |

Table 2

Shot point information for the 33 explosive charges. The letter B at the end of an entry indicates that the origin time was calculated using the oscillation period of the explosion bubble pulse.

| SHOT | SIZE (kg) | ORIGIN TIME (P.D.T) (day hr:min:sec) | SHOT DEPTH (m) | SHOT LOCATION N. Lat (degrees) | W. Long (degrees) | WATER DEPTH (m) |
|---|---|---|---|---|---|---|
| 1 | 540 | 220 09:59:08.177 | 126. | 52.7580 | 132.5916 | 566. B |
| 2 | 60 | 220 10:20:19.931 | 135. | 52.7409 | 132.6355 | 752. B |
| 3 | 60 | 220 10:39:59.258 | 120. | 52.7248 | 132.6736 | 1755. B |
| 4 | 540 | 220 10:59:09.069 | 109. | 52.7105 | 132.7086 | 1922. B |
| 5 | 60 | 220 11:20:25.784 | 149. | 52.6926 | 132.7492 | 2877. B |
| 6 | 60 | 220 11:40:12.917 | 94. | 52.6762 | 132.7865 | 2915. |
| 7 | 540 | 220 11:59:54.415 | 94. | 52.6590 | 132.8275 | 2920. |
| 8 | 60 | 220 12:20:16.444 | 104. | 52.6422 | 132.8664 | 2928. |
| 9 | 60 | 220 12:39:56.452 | 108. | 52.6253 | 132.9061 | 2928. |
| 10 | 540 | 220 12:59:49.799 | 53. | 52.6071 | 132.9479 | 2920. |
| 11 | 60 | 220 13:20:35.831 | 133. | 52.5895 | 132.9891 | 2920. |
| 12 | 60 | 220 13:40:00.114 | 144. | 52.5711 | 133.0332 | 2913. |
| 13 | 540 | 220 14:00:09.327 | 139. | 52.5522 | 133.0779 | 2906. |
| 14 | 60 | 220 14:20:05.549 | 84. | 52.5342 | 133.1199 | 2890. |
| 15 | 60 | 220 14:40:14.465 | 84. | 52.5151 | 133.1649 | 2883. |
| 16 | 540 | 220 15:00:09.198 | 128. | 52.4948 | 133.2134 | 2845. |
| 17 | 60 | 221 09:20:50.759 | 12. | 52.4764 | 133.2539 | 2812. |
| 18 | 60 | 221 09:39:40.122 | 97. | 52.4591 | 133.2948 | 2742. |
| 19 | 540 | 221 09:59:51.819 | 102. | 52.4406 | 133.3385 | 2697. |
| 20 | 60 | 221 10:19:52.015 | 65. | 52.4221 | 133.3846 | 2693. |
| 21 | 60 | 221 10:39:41.591 | 102. | 52.4084 | 133.4164 | 2705. |
| 22 | 540 | 221 11:00:03.620 | 149. | 52.3880 | 133.4652 | 2753. |
| 23 | 60 | 221 11:19:50.138 | 106. | 52.3672 | 133.5105 | 2749. |
| 24 | 60 | 221 11:39:39.218 | 89. | 52.3509 | 133.5499 | 2742. B |
| 25 | 540 | 221 12:00:08.544 | 142. | 52.3302 | 133.6003 | 2749. |
| 26 | 60 | 221 12:19:45.508 | 93. | 52.3122 | 133.6395 | 2757. |
| 27 | 60 | 221 12:39:40.439 | 90. | 52.2878 | 133.6974 | 2764. |
| 28 | 540 | 221 12:59:58.570 | 116. | 52.2718 | 133.7368 | 2780. |
| 29 | 60 | 221 13:19:42.022 | 87. | 52.2508 | 133.7856 | 2794. |
| 31 | 540 | 221 14:00:10.228 | 154. | 52.2035 | 133.8960 | 2786. |
| 32 | 60 | 221 14:20:04.273 | 127. | 52.1865 | 133.9318 | 2809. |
| 33 | 540 | 221 14:39:53.973 | 105. | 52.1663 | 133.9810 | 2831. |

## DATA REDUCTION AND CHARACTERISTICS

Data recorded on digital cassettes of the EPB Backpack systems were transformed to 9-track tape by personnel of the Division of Seismology and Geomagnetism and forwarded to UBC. Digital cassettes recorded on the UBC Microcorders were transferred to 9-track tape at the University. For the reel-to-reel tapes of the one UBC FM analog recorder and all DR analog cassette tapes of the OBSs, our PDP 11/34-based analog-to-digital conversion and editing facility was used to convert the seismic data. All data have been converted to a 60 Hz sampling rate with variations in analog tape speeds taken into account.

The seismographs which are presented as time series on digital magnetic tape were recorded on the 4 different seismograph types, each with its own characteristic gain and frequency response, as shown in Appendix 1. Conversion of the data to a common ground velocity requires the application of a numerical factor to each time series. Each record header (see Table 3) listed on the magnetic tape (Tape 3, Files 158-174; see Table 4) gives a specific "GAIN" in DB. In addition, Appendix 3 provides a compact listing of the information in all headers and shows "Receiver Gain" in both DB (as listed on tape) and digital units where

$$\text{GAIN(DIG.U)} = 10^{\frac{\text{GAIN(DB)}}{20}}$$

Different calibration procedures have been used for each seismograph system, so it is necessary to determine the individual numerical factors for the conversion. This is sketched below for each of the 4 systems. Note that the hydrophone output cannot be converted to ground velocity because of the nature of the pressure-sensitive transducer.

NOTE: The description and calculation of the numerical factors are incomplete at the time of preparation of this report. The information will be forwarded as soon as it is complete.

## TAPE INFORMATION

Three digital tapes contain all the explosion seismic data recorded under the terms of this contract.

### General Tape Specifications

1. IBM floating point format
2. unlabelled
3. tape density is 1600 bpi
4. block size is 4800 bytes
5. logical record length is 80 bytes
6. tapes written by the UBC Amdahl 360 V/8 (IBM equivalent main frame computer)

### Record Header Description

10 card images per header card:

1. title of experiment
2. line, date, shot time (PDT), shot size
3. shot location, shot number, shot latitude and longitude
4. shot elevation, shot depth, receiver elevation
5. coded receiver number, receiver latitude and longitude
6. seismometer type, peak frequency, and seismometer orientation. The orientation may be either VERT or HOR
7. recorder type, sampling frequency, instrument gain setting
8. event identification including receiver number, shot number and component

e.g. _10_11 : receiver number 10 (010), ordered from west to east; shot number 1 (01); and component 1 (1), where components are 1 = vertical, 2 = horizontal, 3 = hydrophone, 4 = vertical low gain (for FM), and 5 = horizontal low gain (for FM)

9. shot-to-receiver distance and time of first sample relative to shot origin time
10. time of first sample (PDT)

The subroutine WRITIT used to produce the 10 card-image headers and one example from the 1983 experiment are shown in Table 3. Appendix 3 contains a list of header information for all shot-receiver combinations. Individual identification is provided by "EVENT I.D.". The "RECORD NO." corresponds to the order in which files were written on tape. Three tapes were required to contain the 757 record numbers.

Data Tape Characteristics

1. Sampling frequency is 60 Hz
2. Each digitized seismogram plus 3 word header is 7200 samples (~120 s of data)
3. 3 word header (as in "8. event identification" above)
   1st word - receiver number (010)
   2nd word - shot number (01)
   3rd word - component (1)
4. Data are written in the format (5E16.6). One seismogram (included in 1 file) is thus 1440 card images or 24 blocks.

The arrangement of the data sets, followed by the record headers, (10 card images for each record no.) on the 3 tapes is given in Table 4.

## SEISMIC SECTIONS

Common receiver gathers (i.e. all shots recorded at a specific receiver) are displayed in reduced record section form in Appendix 4. No digital processing or corrections of any kind have been applied; the sections show raw data. Amplitudes are trace normalized - the maximum amplitude for an individual trace has a constant plotted displacement from its equilibrium value. On a few individual traces of some sections, a noise spike has caused low seismic amplitudes to be plotted.

Receivers 10 and 20, the two OBSs deployed west of the Queen Charlotte

Table 3

Example of a 10-line header and listing of subroutine WRITIT

used to produce the header.

Header Example:

```
TITLE - QUEEN CHARLOTTE ISLAND REFRACTION PROJECT 1983
LINE -    1  DATE - 220D 83Y     SHOT TIME -  9HR 59MIN  8.177S  SIZE -  540KG
SHOT LOCATION -     1  SHOT NUMB -  1  LAT -  52.7580DEG  LONG - 132.5916DEG
SHOT ELEVATION -     0M    SHOT DEPTH - 126M    RECEIVER ELEVATION - -931M
RECEIVER LOCATION - NUMB  10  LAT -  52.8006DEG  LONG - 132.4921DEG
SEISMOMETER TYPE - GEOSPACE HS1              FREQUENCY - 4.5 HZ  ORIENT - VERT
RECORDER TYPE - UBC ANALOG OBS             SAMPLING FREQ. 60HZ  GAIN 95.0 DB
 10 11
UBC CALCULATED: SHOT/RECEIVER DIST -   8.220  START TIME AFTER SHOT :  -5.062S
TIME OF DATA FIRST SAMPLE      9HR 59MIN  3.115S
```

Subroutine WRITIT:

```
      SUBROUTINE WRITIT(ISHOT,IRCVR,JHR,JMIN,TFS,DIST,STIME,F,IUNIT,SSFREQ)
      INTEGER*4 ILINE(35),IDAY(35),IYEAR(35),IHOUR(35),IMIN(35),
     1          ISIZE(35),ILOC(35),INUMB(35),ISE(35),ISD(35),
     2          IRE(200),JTRACE(200),HOR/' HOR'/,HYD/' HYD'/,
     3          IORIEN,JJJ,SNAME(5),RNAME(6),VERT/'VERT'/,
     4          H LO/'H LO'/,V LO/'V LO'/
      REAL*8 DIST,F
      REAL*4 FLDNAM(200),SEC(35),ALAT(200),ALONG(200),BLAT(200),
     1       BLONG(200),SSFREQ
      INTEGER CNTR(27)
      INTEGER*2 LEN
      COMMON /COM1/ SEC,FLDNAM
      COMMON /COM2/ ILINE,IDAY,IHOUR,IMIN,ISIZE,INUMB,ISE,ISD
      COMMON /COM3/ IRE,JTRACE,IYEAR,ILOC,SNAME,RNAME
      COMMON /COM4/ ALAT,ALONG,BLAT,BLONG
      COMMON /COM5/ JJJ,IORIEN
      LEN=3
      IORIEN=VERT
      IF(JJJ.EQ.2)IORIEN=HOR
      IF(JJJ.EQ.3)IORIEN=HYD
      IF(JJJ.EQ.4)IORIEN=V LO
      IF(JJJ.EQ.5)IORIEN=H LO
      IL=1
```

... continued

Table 3 (cont.)

```
      WRITE(IUNIT,800)
      WRITE(IUNIT,801)IL,IDAY(ISHOT),IYEAR(ISHOT),
     1IHOUR(ISHOT),IMIN(ISHOT),SEC(ISHOT),ISIZE(ISHOT)
      WRITE(IUNIT,802)ILOC(ISHOT),ISHOT,ALAT(ISHOT),ALONG(ISHOT)
      WRITE(IUNIT,803)ISE(ISHOT),ISD(ISHOT),IRE(IRCVR)
      WRITE(IUNIT,804)JTRACE(IRCVR),BLAT(IRCVR),BLONG(IRCVR)
      WRITE(IUNIT,805)(SNAME(K),K=1,5),SSFREQ,IORIEN
      WRITE(IUNIT,806)(RNAME(K),K=1,6),F
      WRITE(IUNIT,807)JTRACE(IRCVR),ISHOT,JJJ
      WRITE(IUNIT,808)DIST,STIME
      WRITE(IUNIT,809)JHR,JMIN,TFS
C
C      WRITE A TAPEMARK
C
C      CALL CNTRL('WTM',LEN,IUNIT,CNTR)
C
800   FORMAT('  TITLE - QUEEN CHARLOTTE ISLAND REFRACTION PROJECT 1983 ')
801   FORMAT('  LINE - ',I3,1X,' DATE - ',I3,'D ',I2,'Y    SHOT TIME - ',
     1I2,'HR ',I2,'MIN ',F6.3,'S  SIZE - ',I4,'KG')
802   FORMAT('  SHOT LOCATION - ',A4,'  SHOT NUMB - ',I2,'  LAT - ',
     1F8.4,'DEG  LONG - ',F8.4,'DEG')
803   FORMAT('  SHOT ELEVATION - ',I4,'M   SHOT DEPTH - ',I3,
     1'M   RECEIVER ELEVATION - ',I4,'M')
804   FORMAT('  RECEIVER LOCATION - NUMB ',I3,'  LAT - ',F8.4,'DEG  ',
     1'LONG - ',F8.4,'DEG')
805   FORMAT('  SEISMOMETER TYPE - ',5A4,'    FREQUENCY - ',
     1F3.1,' HZ  ORIENT - ',A4)
806   FORMAT('  RECORDER TYPE - ',6A4,' SAMPLING FREQ.',
     1' 60HZ  GAIN ',F4.1,' DB')
807   FORMAT('  ',I3,I2,I1)
808   FORMAT('  UBC CALCULATED: SHOT/RECEIVER DIST -',F8.3,
     1'  START TIME AFTER SHOT : ',F7.3,'S')
809   FORMAT('  TIME OF DATA FIRST SAMPLE    ',I2,'HR ',I2,'MIN ',
     1F6.3,'S')
      RETURN
      END
```

Table 4

ARRANGEMENT OF REFRACTION DATA ON TAPES

Queen Charlotte Islands Refraction Project 1983

TAPE 1 (Files 1 to 300)

300 files, corresponding to record numbers 1-300 (one event per file). Each file is 24 blocks in length, occupies 2.32 m of tape, and is formatted at 4800 bytes per block, with logical record length equal to 80 bytes.

Total tape length is 696.32 m, with 7200 data blocks.

TAPE 2 (Files 1 to 300)

300 files, corresponding to record numbers 301-600.

Format parameters and comments as for Tape 1.

TAPE 3 (Files 1 to 174)

157 files, corresponding to record numbers 601-757.

Format parameters and comments as for Tape 1.

These are followed by 17 files, one per receiver, containing the record headers in the order of the events recorded on the data tapes. They are formatted at 4800 bytes per block, with a logical record length of 80 bytes.

| FILE | BLOCK COUNT | BLOCK SIZE (bytes) | RCVR NO. | FILE | BLOCK COUNT | BLOCK SIZE (bytes) | RCVR NO. |
|---|---|---|---|---|---|---|---|
| 158 | 16 | 4800 | 010 | 167 | 6 | 4800 | 100 |
| 159 | 16 | 4800 | 020 | 168 | 6 | 4800 | 110 |
| 160 | 6 | 4800 | 030 | 169 | 6 | 4800 | 120 |
| 161 | 6 | 4800 | 040 | 170 | 6 | 4800 | 130 |
| 162 | 5 | 4800 | 050 | 171 | 6 | 4800 | 140 |
| 163 | 6 | 4800 | 060 | 172 | 4 | 4800 | 150 |
| 164 | 6 | 4800 | 070 | 173 | 4 | 4800 | 160 |
| 165 | 6 | 4800 | 080 | 174 | 4 | 4800 | 170 |
| 166 | 22 | 4800 | 090 | | | | |

Total tape length is 378.17 m, with 3899 data blocks.

Islands, generally show good arrivals for all shots, although beyond 95 km P on the RCVR 020 section, arrivals are not clear. Trace 10091 of RCVR 010 section is an example of low plotted seismic amplitude due to a noise spike (~5.5 s).

Receivers 030 through 080 and 100, digital recording Backpacks and Microcorders deployed across Moresby Island, show excellent signal-to-noise ratios for all shots. Our experiment plan only anticipated recording the 540 kg charges and the first few 60 kg charges at these LBSs. The quality recording of all shots thus provides a larger data base. Receiver 090, the single FM analog system shows somewhat noisier data and the smaller shots are not obviously well recorded. However, most of these low amplitude traces are due to noise spikes on the traces so subsequent editing and filtering should improve the section.

Receivers 110 through 140, the 4 OBSs deployed across Hecate Strait, represent the largest disappointment of the project. Only those traces corresponding to the 540 kg shots have been plotted (all data are on tape). Even so, only one of the 12 traces on the section for RCVR 110 (vertical component) shows a clear seismic arrival. The background noise is swamping any seismic signal on almost every trace of the 4 vertical component sections and 2 hydrophone sections (RCVR 110 and 130 HYD). The hydrophone sections may be marginally better. The poor data is not an OBS instrument problem because all 4 OBSs show clear arrivals on analog playbacks of 32 litre airgun shots, carried out as a separate experiment from the explosion program. We appear to have been rather unlucky in having a high background noise level during the period of shooting. However, some data processing should improve the quality of the sections. For example, on some traces the frequency content of the noise may be significantly different from that of the signal.

At receivers 150 to 170, Backpack systems deployed east of Hecate Strait, both the 540 kg and 60 kg charges were reasonably well recorded during the first half of the explosion profile. As the source-receiver distances increased, the data quality decreased so that only seismograms from the large charges have been plotted (all data are included on the digital tapes). Of particular interest are the first arrivals, marked with arrowheads, between reduced times of 7 and 5 seconds. The apparent velocity for this phase across these sections is greater than 8.7 km/s. Assuming a true mantle velocity in the order of 8.1 to 8.2 km/s, such a high apparent velocity for the geometry of the profile is consistent with a refractor dipping at a significant angle from west to east. Some thoughtful modelling will clearly be required.

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# APPENDIX 1

## Velocity Sensitivity Curves for Seismographs Used in 1983 Queen Charlotte Refraction Experiment

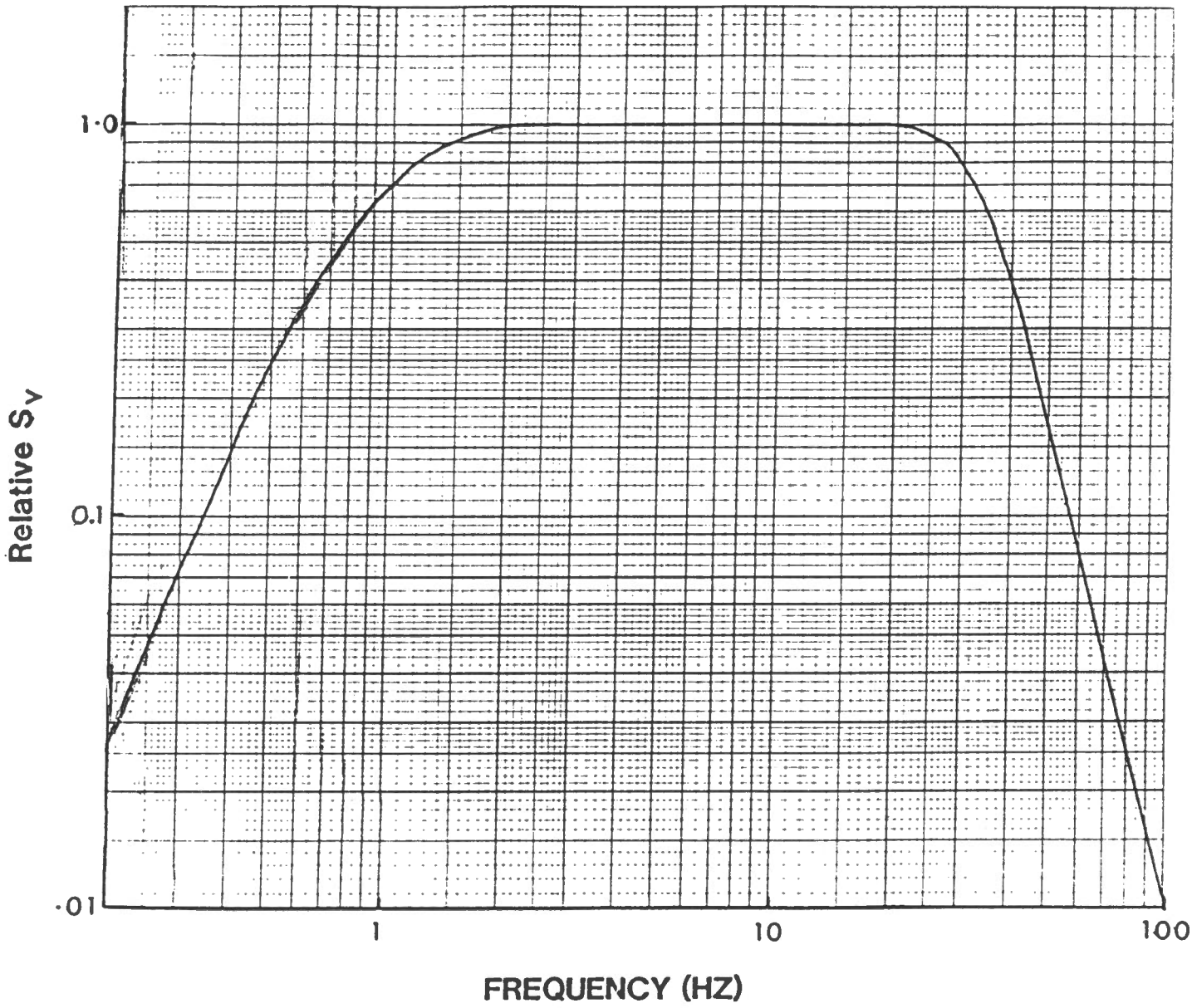



Fig. A1 Relative velocity sensitivity for EPB Backpack system with high cut filter at 32 Hz. Ground velocity (nm/s) = trace amplitude (inches) x $10^3$/ (scale factor).

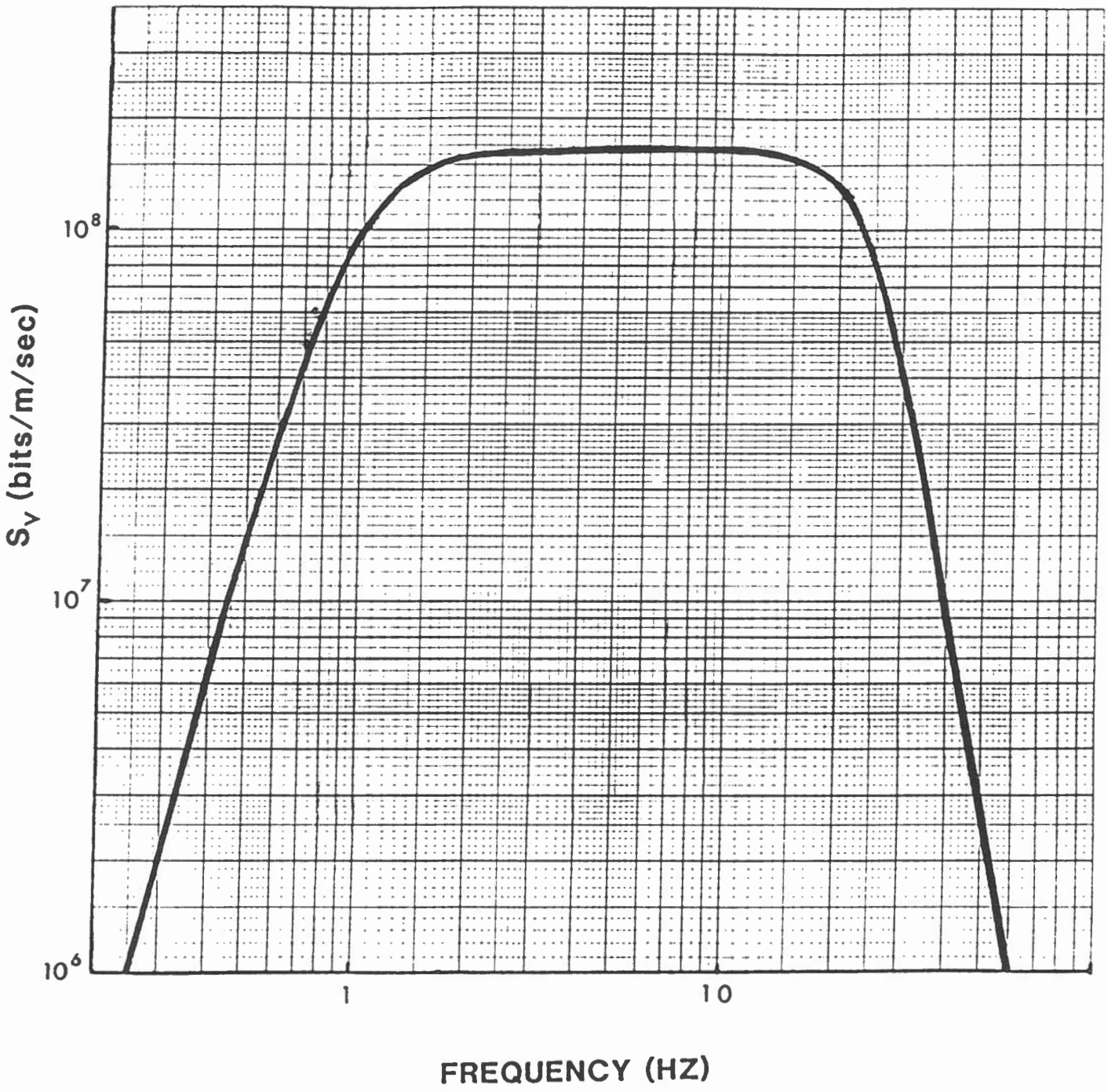



Fig. A2 Velocity sensitivity of Teledyne Geotech MCR-600 systems with Mark Products L-4C seismometers. Gain 72 db; filter settings 0.8-25 Hz; sample rate 150/sec.

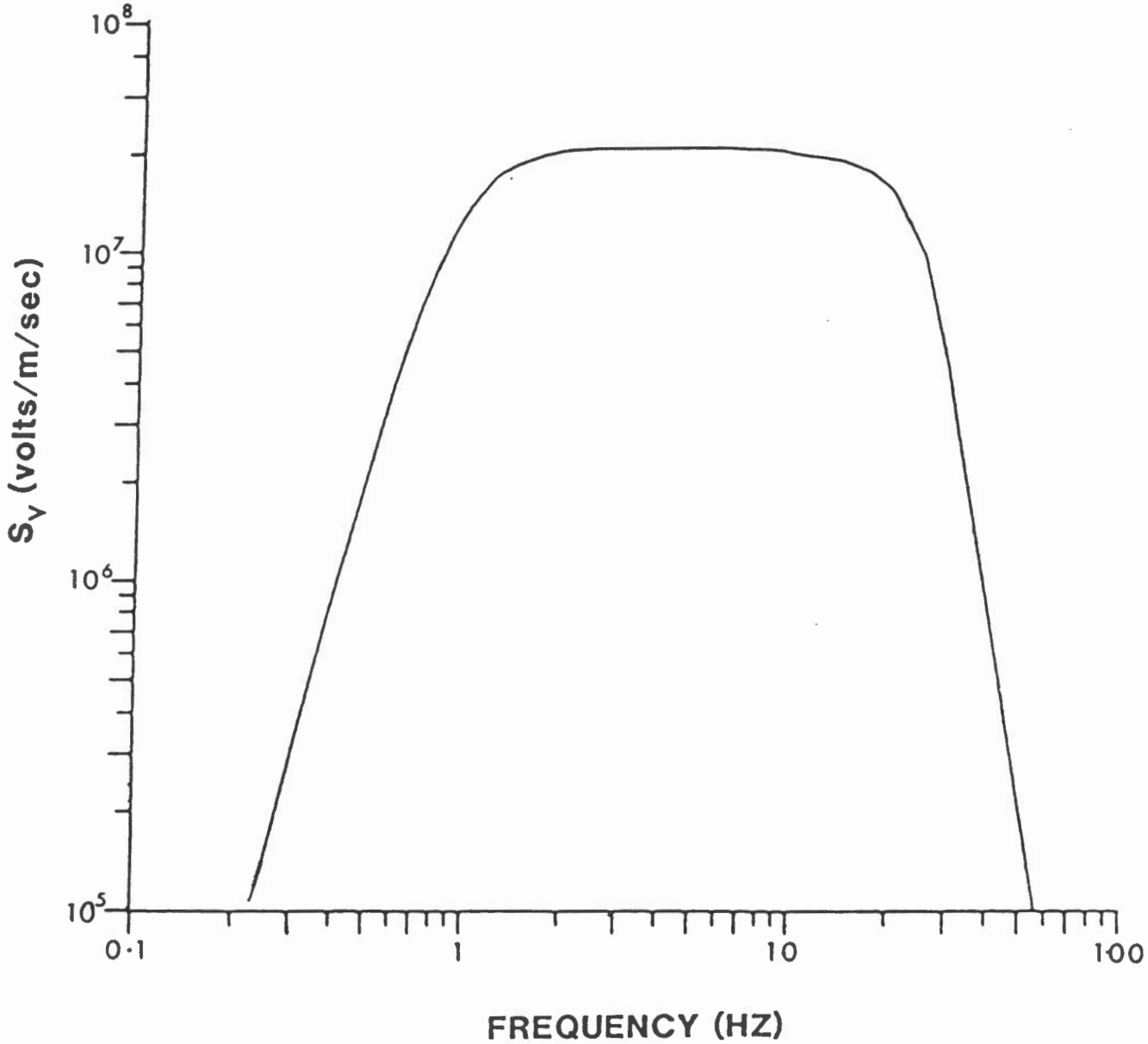



Fig. A3 Velocity sensitivity of UBC FM systems with Willmore Mk II seismometer. Gain 106 db; filter settings 0.8-100 Hz.

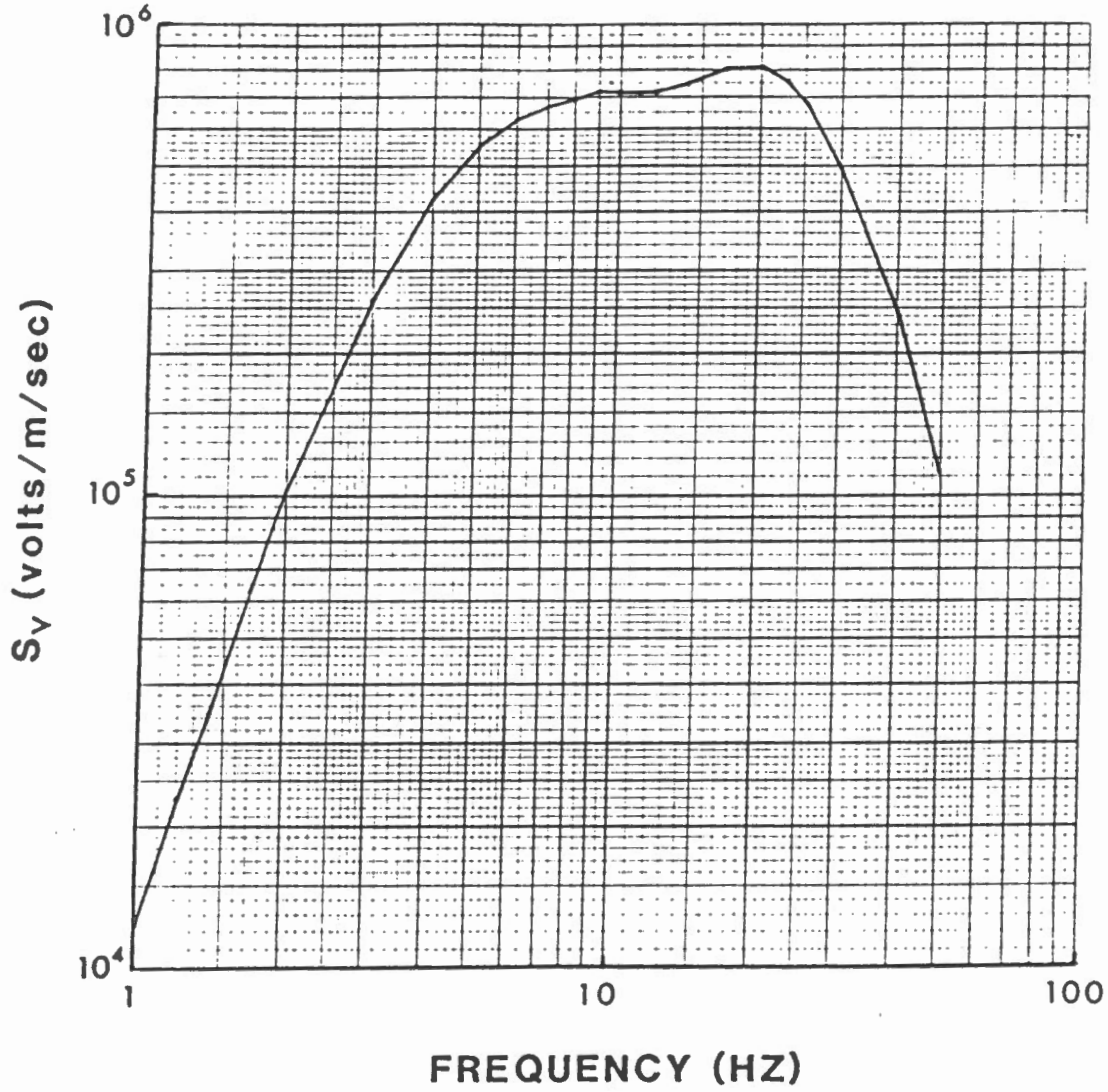



Fig. A4 Velocity sensitivity of OBS systems for output amplitudes less than 2.0 volts. (The response of the playback system is included).
Table A1 provides corrections applicable to each OBS for this velocity sensitivity curve.

TABLE A1

OBV VELOCITY SENSITIVITY CORRECTIONS

(The following corrections are applicable to the velocity sensitivity curve of Fig. A4)

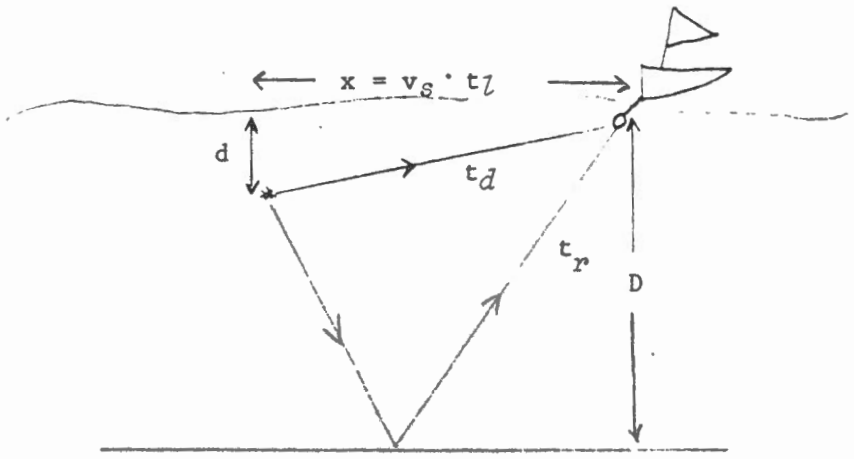
| OBS | Receiver Number | Zcorr (dB) | Hcorr (dB) |
|---|---|---|---|
| W1 | 10 | 0.0 | +0.5 |
| W2 | 20 | -4.5 | -3.8 |
| E1 | 110 | -1.5 | -1.2 |
| E2 | 120 | -0.6 | 0.0 |
| E3 | 130 | -4.5 | -3.9 |
| E4 | 140 | -1.9 | -0.3 |

APPENDIX 2

Shot Origin Time and Depth Calculations

Two methods were used to estimate the detonation times of the time fused explosions. The first method relies on the geometry of the ship, shot, and ocean bottom, and the second on measuring the period of the oscillating gas bubble produced by the explosion.

The geometrical method, first described in Horn (1982), can be used when the ocean floor beneath the shot is flat and horizontal (see figure below).




The time lag between the drop time and the direct water wave arrival, i.e. the ditch time $t_l$, and the ship's average ground speed, $v_s$, over the ditch time were measured allowing an estimate of the ship-shot distance x. The depth of the water, D, was estimated using echo sounding equipment assuming a water velocity of $v_w$ = 1.49 km/sec. By trailing a geophone immediately behind the ship and recording the hydrophone output along with WWVB time code the arrival times of the direct water wave, $t_d$, and the bottom reflected water wave, $t_r$, were obtained. As Horn (1982) gives, the shot depth, d, can then be expressed to second order as:

$$d = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \qquad (1)$$

where $a = 4D^2$

$b = 8xD^2 - x^3$

$c = 8x^2D^2 - 16D^3x + 8xD^2v_w\Delta t - 2x^3D$

$\Delta t = t_r - t_d$ and

$v_w = 1.49$ km/sec

Knowing d, the origin time, $t_0$, is given by:

$$t_0 = \frac{t_d - \sqrt{d_r^2 - x^2}}{v_w} \qquad (2)$$

The geometrical method was used for final origin time estimates when the ocean floor topography beneath the shot profile was flat. Above the Queen Charlotte terrace this flat assumption was not valid and another approach was attempted.

The bubble pulse method, used over the terrace, relies on measuring the period, $\tau_b$, of the first oscillation of the gas bubble produced by the explosion. $\tau_b$ is a function of the shot depth d since the hydrostatic pressure opposing the expansion of the gas bubble depends on depth. Work by Strutt (Lord Rayleigh) in 1917, and Willis (1941) resulted in the Rayleigh-Willis bubble formula:

$$\tau_b = \frac{2.13\ W^{1/3}}{(d+10)^{5/6}}$$

d = shot depth

W = energy of explosion expressed as explosive weight (kilograms) in TNT equivalents.

Errors in this method arise because the Rayleigh-Willis formula assumes a spherically expanding bubble at a constant depth. In reality, due to the

non-spherical symmetry of the explosion, and the rise of the bubble as it oscillates, this method is not as accurate as equation (1). The bubble pulse method does not rely, however, on the ocean bottom topography.

The shot depths for the Queen Charlotte 1983 experiment were estimated by both methods and except for shots over the terrace the agreement between the two sets of results was good. The bubble pulse method was used to estimate final origin times for shots over the terrace and the geometrical method was used for final origin time estimates over the flat-bottomed ocean with one exception. The origin time for shot 24 was estimated using the bubble pulse method because the arrival time of the reflected water wave could not be picked accurately. See Table 2 for a list of shot information.

APPENDIX 3

Listing of Record Header Information

in Compact Form

*In the following listing, the order of columns is:*

1 - shot number

2 - record number (corresponding to order of events on tape)

3 - event I.D., comprised of receiver number (I3), shot number (I2), and component number (I1).

e.g. _10_11 is receiver 10 (010)
shot 1 (01)
component 1 (1)

Components are: 1 = vertical
2 = horizontal
3 = hydrophone
4 = vertical lo (for FM)
5 = horizontal lo (for FM)

4 - time of first sample (HR MIN SEC) in P.D.T.

5 - time of first sample with respect to shot time (TFS negative precedes shot)

6 - shot/receiver distance in km.

7 - receiver gain (i) in decibels
(ii) in digital units

8 - gain factor, presently standardized to equal 1.

9 - shot size in kilograms.

RECORD HEADERS TO BE WRITTEN ON UNIT 7. NLINES = 1, NO. OF SHOT/RECEIVER PAIRS PER LINE = 757

| SHOT NO. | RECORD NO. | EVENT I.D. | TIME OF FIRST SAMPLE (P.D.T.) | (AFTER SHOT) | SHOT/RCVR DIST | RCVR GAIN (DB) | (DIG.U) | GAIN FACTOR | SHOT SIZE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 10 11 | 9 59 3.115 | -5.062 | 8.220 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 2 | 2 | 10 21 | 10 20 14.815 | -5.116 | 11.739 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 3 | 3 | 10 31 | 10 39 56.057 | -3.201 | 14.876 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 4 | 4 | 10 41 | 10 59 6.007 | -3.062 | 17.726 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 5 | 5 | 10 51 | 11 20 23.550 | -2.234 | 21.117 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 6 | 6 | 10 61 | 11 40 9.492 | -3.425 | 24.230 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 7 | 7 | 10 71 | 11 59 53.568 | -0.847 | 27.600 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 8 | 8 | 10 81 | 12 20 12.526 | -3.918 | 30.828 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 9 | 9 | 10 91 | 12 39 53.843 | -2.609 | 34.108 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 10 | 10 | 10101 | 12 59 48.377 | -1.422 | 37.590 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 11 | 11 | 10111 | 13 20 33.152 | -2.679 | 41.001 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 12 | 12 | 10121 | 13 39 57.219 | -2.895 | 44.623 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 13 | 13 | 10131 | 14 0 10.978 | 1.651 | 48.312 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 14 | 14 | 10141 | 14 20 8.995 | 3.446 | 51.796 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 15 | 15 | 10151 | 14 40 10.512 | -3.953 | 55.517 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 16 | 16 | 10161 | 15 0 14.321 | 5.123 | 59.510 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 17 | 17 | 10171 | 9 20 49.068 | -1.691 | 62.939 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 18 | 18 | 10181 | 9 39 37.801 | -2.321 | 66.319 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 19 | 19 | 10191 | 9 59 58.702 | 6.883 | 69.934 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 20 | 20 | 10201 | 10 19 49.027 | -2.988 | 73.683 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 21 | 21 | 10211 | 10 39 34.644 | -6.947 | 76.330 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 22 | 22 | 10221 | 11 0 11.253 | 7.633 | 80.352 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 23 | 23 | 10231 | 11 19 48.145 | -1.993 | 84.208 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 24 | 24 | 10241 | 11 39 37.837 | -1.381 | 87.446 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 25 | 25 | 10251 | 12 0 18.962 | 10.418 | 91.581 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 26 | 26 | 10261 | 12 19 45.221 | -0.287 | 94.920 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 27 | 27 | 10271 | 12 39 43.072 | 2.633 | 99.713 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 28 | 28 | 10281 | 13 0 5.988 | 7.418 | 102.936 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 29 | 29 | 10291 | 13 19 50.423 | 8.401 | 107.006 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 31 | 30 | 10311 | 14 0 24.915 | 14.687 | 116.203 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 32 | 31 | 10321 | 14 20 21.407 | 17.134 | 119.295 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 33 | 32 | 10331 | 14 40 4.482 | 10.509 | 123.341 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 1 | 33 | 10 12 | 9 59 3.120 | -5.057 | 8.220 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 2 | 34 | 10 22 | 10 20 14.820 | -5.111 | 11.739 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 3 | 35 | 10 32 | 10 39 56.062 | -3.196 | 14.876 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 4 | 36 | 10 42 | 10 59 6.012 | -3.057 | 17.726 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 5 | 37 | 10 52 | 11 20 23.555 | -2.229 | 21.117 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 6 | 38 | 10 62 | 11 40 9.497 | -3.420 | 24.230 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 7 | 39 | 10 72 | 11 59 53.573 | -0.842 | 27.600 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 8 | 40 | 10 82 | 12 20 12.531 | -3.913 | 30.828 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 9 | 41 | 10 92 | 12 39 53.848 | -2.604 | 34.108 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 10 | 42 | 10102 | 12 59 48.382 | -1.417 | 37.590 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 11 | 43 | 10112 | 13 20 33.157 | -2.674 | 41.001 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 12 | 44 | 10122 | 13 39 57.224 | -2.890 | 44.623 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 13 | 45 | 10132 | 14 0 10.983 | 1.656 | 48.312 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 14 | 46 | 10142 | 14 20 9.000 | 3.451 | 51.796 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 15 | 47 | 10152 | 14 40 10.517 | -3.948 | 55.517 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 16 | 48 | 10162 | 15 0 14.326 | 5.128 | 59.510 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 17 | 49 | 10172 | 9 20 49.073 | -1.686 | 62.939 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 18 | 50 | 10182 | 9 39 37.806 | -2.316 | 66.319 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 19 | 51 | 10192 | 9 59 58.707 | 6.888 | 69.934 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 20 | 52 | 10202 | 10 19 49.032 | -2.983 | 73.683 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 21 | 53 | 10212 | 10 39 34.649 | -6.942 | 76.330 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 22 | 54 | 10222 | 11 0 11.258 | 7.638 | 80.352 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 23 | 55 | 10232 | 11 19 48.150 | -1.988 | 84.208 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | 56 | 10242 | 11 | 39 | 37.842 | -1.376 | 87.446 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 25 | 57 | 10252 | 12 | 0 | 18.967 | 10.423 | 91.581 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 26 | 58 | 10262 | 12 | 19 | 45.226 | -0.282 | 94.920 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 27 | 59 | 10272 | 12 | 39 | 43.077 | 2.638 | 99.713 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 28 | 60 | 10282 | 13 | 0 | 5.993 | 7.423 | 102.936 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 29 | 61 | 10292 | 13 | 19 | 50.428 | 8.406 | 107.006 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 31 | 62 | 10312 | 14 | 0 | 24.920 | 14.692 | 116.203 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 32 | 63 | 10322 | 14 | 20 | 21.412 | 17.139 | 119.295 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 33 | 64 | 10332 | 14 | 40 | 4.487 | 10.514 | 123.341 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 1 | 65 | 10 13 | 9 | 59 | 3.130 | -5.047 | 8.220 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 2 | 66 | 10 23 | 10 | 20 | 14.830 | -5.101 | 11.739 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 3 | 67 | 10 33 | 10 | 39 | 56.072 | -3.186 | 14.876 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 4 | 68 | 10 43 | 10 | 59 | 6.022 | -3.047 | 17.726 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 5 | 69 | 10 53 | 11 | 20 | 23.565 | -2.219 | 21.117 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 6 | 70 | 10 63 | 11 | 40 | 9.507 | -3.410 | 24.230 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 7 | 71 | 10 73 | 11 | 59 | 53.583 | -0.832 | 27.600 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 8 | 72 | 10 83 | 12 | 20 | 12.541 | -3.903 | 30.828 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 9 | 73 | 10 93 | 12 | 39 | 53.858 | -2.594 | 34.108 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 10 | 74 | 10103 | 12 | 59 | 48.392 | -1.407 | 37.590 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 11 | 75 | 10113 | 13 | 20 | 33.167 | -2.664 | 41.001 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 12 | 76 | 10123 | 13 | 39 | 57.234 | -2.880 | 44.623 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 13 | 77 | 10133 | 14 | 0 | 10.993 | 1.666 | 48.312 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 14 | 78 | 10143 | 14 | 20 | 9.010 | 3.461 | 51.796 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 15 | 79 | 10153 | 14 | 40 | 10.527 | -3.938 | 55.517 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 16 | 80 | 10163 | 15 | 0 | 14.336 | 5.138 | 59.510 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 17 | 81 | 10173 | 9 | 20 | 49.083 | -1.676 | 62.939 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 18 | 82 | 10183 | 9 | 39 | 37.816 | -2.306 | 66.319 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 19 | 83 | 10193 | 9 | 59 | 58.717 | 6.898 | 69.934 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 20 | 84 | 10203 | 10 | 19 | 49.042 | -2.973 | 73.683 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 21 | 85 | 10213 | 10 | 39 | 34.659 | -6.932 | 76.330 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 22 | 86 | 10223 | 11 | 0 | 11.268 | 7.648 | 80.352 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 23 | 87 | 10233 | 11 | 19 | 48.160 | -1.978 | 84.208 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 24 | 88 | 10243 | 11 | 39 | 37.852 | -1.366 | 87.446 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 25 | 89 | 10253 | 12 | 0 | 18.977 | 10.433 | 91.581 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 26 | 90 | 10263 | 12 | 19 | 45.236 | -0.272 | 94.920 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 27 | 91 | 10273 | 12 | 39 | 43.087 | 2.648 | 99.713 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 28 | 92 | 10283 | 13 | 0 | 6.003 | 7.433 | 102.936 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 29 | 93 | 10293 | 13 | 19 | 50.438 | 8.416 | 107.006 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 31 | 94 | 10313 | 14 | 0 | 24.930 | 14.702 | 116.203 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 32 | 95 | 10323 | 14 | 20 | 21.422 | 17.149 | 119.295 | 95.0 | 56234.1325 | 0.10000E+01 | 60 |
| 33 | 96 | 10333 | 14 | 40 | 4.497 | 10.524 | 123.341 | 95.0 | 56234.1325 | 0.10000E+01 | 540 |
| 1 | 97 | 20 11 | 9 | 59 | 5.904 | -2.273 | 21.426 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 2 | 98 | 20 21 | 10 | 20 | 19.378 | -0.553 | 24.920 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 3 | 99 | 20 31 | 10 | 39 | 57.710 | -1.548 | 28.048 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 4 | 100 | 20 41 | 10 | 59 | 11.176 | 2.107 | 30.889 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 5 | 101 | 20 51 | 11 | 20 | 27.142 | 1.358 | 34.277 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 6 | 102 | 20 61 | 11 | 40 | 11.299 | -1.618 | 37.388 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 7 | 103 | 20 71 | 11 | 59 | 55.714 | 1.299 | 40.752 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 8 | 104 | 20 81 | 12 | 20 | 8.980 | -7.464 | 43.978 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 9 | 105 | 20 91 | 12 | 39 | 53.579 | -2.873 | 47.254 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 10 | 106 | 20101 | 12 | 59 | 51.620 | 1.821 | 50.734 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 11 | 107 | 20111 | 13 | 20 | 27.752 | -8.079 | 54.142 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 12 | 108 | 20121 | 13 | 39 | 57.143 | -2.971 | 57.760 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 13 | 109 | 20131 | 14 | 0 | 13.092 | 3.765 | 61.446 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 14 | 110 | 20141 | 14 | 20 | 2.133 | -3.416 | 64.928 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 15 | 111 | 20151 | 14 | 40 | 8.615 | -5.850 | 68.646 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 16 | 112 | 20161 | 15 | 0 | 14.814 | 5.616 | 72.636 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 17 | 113 | 20171 | 9 | 20 | 52.413 | 1.654 | 76.067 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 18 | 114 | 20181 | 9 | 39 | 40.121 | -0.001 | 79.444 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 19 | 115 | 20191 | 9 | 59 | 58.486 | 6.667 | 83.057 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 116 | 20201 | 10 | 19 | 56.585 | 4.570 | 86.801 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 21 | 117 | 20211 | 10 | 39 | 40.568 | -1.023 | 89.447 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 22 | 118 | 20221 | 11 | 0 | 11.125 | 7.505 | 93.468 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 23 | 119 | 20231 | 11 | 19 | 50.799 | 0.661 | 97.324 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 24 | 120 | 20241 | 11 | 39 | 36.473 | -2.745 | 100.561 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 25 | 121 | 20251 | 12 | 0 | 11.156 | 2.612 | 104.692 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 26 | 122 | 20261 | 12 | 19 | 40.255 | -5.253 | 108.033 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 27 | 123 | 20271 | 12 | 39 | 40.196 | -0.243 | 112.823 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 28 | 124 | 20281 | 12 | 59 | 55.594 | -2.976 | 116.044 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 29 | 125 | 20291 | 13 | 19 | 53.377 | 11.355 | 120.113 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 31 | 126 | 20311 | 14 | 0 | 18.750 | 8.522 | 129.307 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 32 | 127 | 20321 | 14 | 20 | 14.782 | 10.509 | 132.401 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 33 | 128 | 20331 | 14 | 40 | 1.231 | 7.258 | 136.443 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 1 | 129 | 20 12 | 9 | 59 | 5.921 | -2.256 | 21.426 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 2 | 130 | 20 22 | 10 | 20 | 19.395 | -0.536 | 24.920 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 3 | 131 | 20 32 | 10 | 39 | 57.727 | -1.531 | 28.048 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 4 | 132 | 20 42 | 10 | 59 | 11.193 | 2.124 | 30.889 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 5 | 133 | 20 52 | 11 | 20 | 27.159 | 1.375 | 34.277 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 6 | 134 | 20 62 | 11 | 40 | 11.316 | -1.601 | 37.388 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 7 | 135 | 20 72 | 11 | 59 | 55.731 | 1.316 | 40.752 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 8 | 136 | 20 82 | 12 | 20 | 8.997 | -7.447 | 43.978 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 9 | 137 | 20 92 | 12 | 39 | 53.596 | -2.856 | 47.254 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 10 | 138 | 20102 | 12 | 59 | 51.637 | 1.838 | 50.734 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 11 | 139 | 20112 | 13 | 20 | 27.769 | -8.062 | 54.142 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 12 | 140 | 20122 | 13 | 39 | 57.160 | -2.954 | 57.760 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 13 | 141 | 20132 | 14 | 0 | 13.109 | 3.782 | 61.446 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 14 | 142 | 20142 | 14 | 20 | 2.150 | -3.399 | 64.928 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 15 | 143 | 20152 | 14 | 40 | 8.632 | -5.833 | 68.646 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 16 | 144 | 20162 | 15 | 0 | 14.831 | 5.633 | 72.636 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 17 | 145 | 20172 | 9 | 20 | 52.430 | 1.671 | 76.067 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 18 | 146 | 20182 | 9 | 39 | 40.138 | 0.016 | 79.444 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 19 | 147 | 20192 | 9 | 59 | 58.503 | 6.684 | 83.057 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 20 | 148 | 20202 | 10 | 19 | 56.602 | 4.587 | 86.801 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 21 | 149 | 20212 | 10 | 39 | 40.585 | -1.006 | 89.447 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 22 | 150 | 20222 | 11 | 0 | 11.142 | 7.522 | 93.468 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 23 | 151 | 20232 | 11 | 19 | 50.816 | 0.678 | 97.324 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 24 | 152 | 20242 | 11 | 39 | 36.490 | -2.728 | 100.561 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 25 | 153 | 20252 | 12 | 0 | 11.173 | 2.629 | 104.692 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 26 | 154 | 20262 | 12 | 19 | 40.272 | -5.236 | 108.033 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 27 | 155 | 20272 | 12 | 39 | 40.213 | -0.226 | 112.823 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 28 | 156 | 20282 | 12 | 59 | 55.611 | -2.959 | 116.044 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 29 | 157 | 20292 | 13 | 19 | 53.394 | 11.372 | 120.113 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 31 | 158 | 20312 | 14 | 0 | 18.767 | 8.539 | 129.307 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 32 | 159 | 20322 | 14 | 20 | 14.799 | 10.526 | 132.401 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 33 | 160 | 20332 | 14 | 40 | 1.248 | 7.275 | 136.443 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 1 | 161 | 20 13 | 9 | 59 | 5.929 | -2.248 | 21.426 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 2 | 162 | 20 23 | 10 | 20 | 19.403 | -0.528 | 24.920 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 3 | 163 | 20 33 | 10 | 39 | 57.735 | -1.523 | 28.048 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 4 | 164 | 20 43 | 10 | 59 | 11.201 | 2.132 | 30.889 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 5 | 165 | 20 53 | 11 | 20 | 27.167 | 1.383 | 34.277 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 6 | 166 | 20 63 | 11 | 40 | 11.324 | -1.593 | 37.388 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 7 | 167 | 20 73 | 11 | 59 | 55.739 | 1.324 | 40.752 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 8 | 168 | 20 83 | 12 | 20 | 9.005 | -7.439 | 43.978 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 9 | 169 | 20 93 | 12 | 39 | 53.604 | -2.848 | 47.254 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 10 | 170 | 20103 | 12 | 59 | 51.645 | 1.846 | 50.734 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 11 | 171 | 20113 | 13 | 20 | 27.777 | -8.054 | 54.142 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 12 | 172 | 20123 | 13 | 39 | 57.168 | -2.946 | 57.760 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 13 | 173 | 20133 | 14 | 0 | 13.117 | 3.790 | 61.446 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 14 | 174 | 20143 | 14 | 20 | 2.158 | -3.391 | 64.928 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 15 | 175 | 20153 | 14 | 40 | 8.640 | -5.825 | 68.646 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | [illegible] | [illegible] | 14.839 | 5.641 | 72.636 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 17 | 177 | 20173 | 9 | 20 | 52.438 | 1.679 | 76.067 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 18 | 178 | 20183 | 9 | 39 | 40.146 | 0.024 | 79.444 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 19 | 179 | 20193 | 9 | 59 | 58.511 | 6.692 | 83.057 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 20 | 180 | 20203 | 10 | 19 | 56.610 | 4.595 | 86.801 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 21 | 181 | 20213 | 10 | 39 | 40.593 | -0.998 | 89.447 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 22 | 182 | 20223 | 11 | 0 | 11.150 | 7.530 | 93.468 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 23 | 183 | 20233 | 11 | 19 | 50.824 | 0.686 | 97.324 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 24 | 184 | 20243 | 11 | 39 | 36.498 | -2.720 | 100.561 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 25 | 185 | 20253 | 12 | 0 | 11.181 | 2.637 | 104.692 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 26 | 186 | 20263 | 12 | 19 | 40.280 | -5.228 | 108.033 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 27 | 187 | 20273 | 12 | 39 | 40.221 | -0.218 | 112.823 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 28 | 188 | 20283 | 12 | 59 | 55.619 | -2.951 | 116.044 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 29 | 189 | 20293 | 13 | 19 | 53.402 | 11.380 | 120.113 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 31 | 190 | 20313 | 14 | 0 | 18.775 | 8.547 | 129.307 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 32 | 191 | 20323 | 14 | 20 | 14.807 | 10.534 | 132.401 | 91.5 | 37583.7404 | 0.10000E+01 | 60 |
| 33 | 192 | 20333 | 14 | 40 | 1.256 | 7.283 | 136.443 | 91.5 | 37583.7404 | 0.10000E+01 | 540 |
| 1 | 193 | 30 11 | 9 | 58 | 59.053 | -9.124 | 32.775 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 2 | 194 | 30 21 | 10 | 19 | 59.110 | -20.821 | 36.283 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 3 | 195 | 30 31 | 10 | 39 | 49.115 | -10.143 | 39.417 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 4 | 196 | 30 41 | 10 | 58 | 59.069 | -10.000 | 42.262 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 5 | 197 | 30 51 | 11 | 19 | 59.125 | -26.659 | 45.653 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 6 | 198 | 30 61 | 11 | 39 | 59.104 | -13.813 | 48.766 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 7 | 199 | 30 71 | 11 | 59 | 49.111 | -5.304 | 52.133 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 8 | 200 | 30 81 | 12 | 19 | 59.114 | -17.330 | 55.360 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 9 | 201 | 30 91 | 12 | 39 | 49.119 | -7.333 | 58.639 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 10 | 202 | 30101 | 12 | 59 | 44.123 | -5.676 | 62.120 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 11 | 203 | 30111 | 13 | 19 | 59.128 | -36.703 | 65.529 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 12 | 204 | 30121 | 13 | 39 | 54.103 | -6.011 | 69.149 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 13 | 205 | 30131 | 13 | 59 | 59.107 | -10.220 | 72.837 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 14 | 206 | 30141 | 14 | 19 | 59.112 | -6.437 | 76.319 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 15 | 207 | 30151 | 14 | 39 | 59.117 | -15.348 | 80.038 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 16 | 208 | 30161 | 14 | 59 | 59.121 | -10.077 | 84.029 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 17 | 209 | 30171 | 9 | 19 | 59.102 | -51.657 | 87.460 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 18 | 210 | 30181 | 9 | 39 | 34.106 | -6.016 | 90.838 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 19 | 211 | 30191 | 9 | 59 | 49.111 | -2.708 | 94.452 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 20 | 212 | 30201 | 10 | 19 | 49.089 | -2.926 | 98.197 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 21 | 213 | 30211 | 10 | 39 | 39.094 | -2.497 | 100.844 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 22 | 214 | 30221 | 10 | 59 | 59.100 | -4.520 | 104.865 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 23 | 215 | 30231 | 11 | 19 | 49.101 | -1.037 | 108.721 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 24 | 216 | 30241 | 11 | 39 | 39.105 | -0.113 | 111.958 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 25 | 217 | 30251 | 11 | 59 | 59.111 | -9.433 | 116.091 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 26 | 218 | 30261 | 12 | 19 | 44.089 | -1.419 | 119.431 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 27 | 219 | 30271 | 12 | 39 | 44.096 | 3.657 | 124.222 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 28 | 220 | 30281 | 12 | 59 | 59.098 | 0.528 | 127.443 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 29 | 221 | 30291 | 13 | 19 | 44.103 | 2.081 | 131.512 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 31 | 222 | 30311 | 13 | 59 | 59.109 | -11.119 | 140.707 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 32 | 223 | 30321 | 14 | 19 | 59.088 | -5.185 | 143.801 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 33 | 224 | 30331 | 14 | 39 | 59.092 | 5.119 | 147.844 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 1 | 225 | 40 11 | 9 | 58 | 59.043 | -9.134 | 40.154 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 2 | 226 | 40 21 | 10 | 19 | 59.098 | -20.833 | 43.645 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 3 | 227 | 40 31 | 10 | 39 | 49.099 | -10.159 | 46.771 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 4 | 228 | 40 41 | 10 | 58 | 59.050 | -10.019 | 49.608 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 5 | 229 | 40 51 | 11 | 19 | 59.105 | -26.679 | 52.994 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 6 | 230 | 40 61 | 11 | 39 | 59.084 | -13.833 | 56.102 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 7 | 231 | 40 71 | 11 | 59 | 49.091 | -5.324 | 59.463 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 8 | 232 | 40 81 | 12 | 19 | 59.096 | -17.348 | 62.686 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 9 | 233 | 40 91 | 12 | 39 | 49.096 | -7.356 | 65.960 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 10 | 234 | 40101 | 12 | 59 | 44.097 | -5.702 | 69.438 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 11 | 235 | 40111 | 13 | 19 | 59.094 | -36.737 | 72.843 | 0.0 | 1.0000 | 0.10000E+01 | 60 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 236 | 40121 | 13 | 39 | 54.095 | -6.019 | 76.457 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 13 | 237 | 40131 | 13 | 59 | 59.096 | -10.231 | 80.141 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 14 | 238 | 40141 | 14 | 19 | 59.097 | -6.452 | 83.621 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 15 | 239 | 40151 | 14 | 39 | 59.098 | -15.367 | 87.336 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 16 | 240 | 40161 | 14 | 59 | 59.102 | -10.096 | 91.323 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 17 | 241 | 40171 | 9 | 19 | 59.105 | -51.654 | 94.753 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 18 | 242 | 40181 | 9 | 39 | 39.083 | -1.039 | 98.128 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 19 | 243 | 40191 | 9 | 59 | 49.090 | -2.729 | 101.739 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 20 | 244 | 40201 | 10 | 19 | 49.095 | -2.920 | 105.480 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 21 | 245 | 40211 | 10 | 39 | 39.093 | -2.498 | 108.125 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 22 | 246 | 40221 | 10 | 59 | 59.093 | -4.527 | 112.142 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 23 | 247 | 40231 | 11 | 19 | 49.094 | -1.044 | 115.999 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 24 | 248 | 40241 | 11 | 39 | 39.095 | -0.123 | 119.233 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 25 | 249 | 40251 | 11 | 59 | 59.096 | -9.448 | 123.362 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 26 | 250 | 40261 | 12 | 19 | 49.097 | 3.589 | 126.703 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 27 | 251 | 40271 | 12 | 39 | 44.098 | 3.659 | 131.491 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 28 | 252 | 40281 | 12 | 59 | 59.102 | 0.532 | 134.708 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 29 | 253 | 40291 | 13 | 19 | 59.081 | 17.059 | 138.776 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 31 | 254 | 40311 | 13 | 59 | 59.093 | -11.135 | 147.967 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 32 | 255 | 40321 | 14 | 19 | 59.094 | -5.179 | 151.061 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 33 | 256 | 40331 | 14 | 39 | 59.092 | 5.119 | 155.102 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 1 | 257 | 50 11 | 9 | 59 | 1.115 | -7.062 | 49.246 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 2 | 258 | 50 21 | 10 | 20 | 5.916 | -14.015 | 52.740 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 3 | 259 | 50 31 | 10 | 39 | 44.316 | -14.942 | 55.867 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 4 | 260 | 50 41 | 10 | 59 | 1.117 | -7.952 | 58.705 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 5 | 261 | 50 51 | 11 | 20 | 27.518 | 1.734 | 62.091 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 6 | 262 | 50 61 | 11 | 40 | 5.919 | -6.998 | 65.200 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 7 | 263 | 50 71 | 11 | 59 | 44.320 | -10.095 | 68.561 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 8 | 264 | 50 81 | 12 | 20 | 5.920 | -10.524 | 71.784 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 9 | 265 | 50 91 | 12 | 40 | 5.921 | 9.469 | 75.058 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 10 | 266 | 50101 | 12 | 59 | 44.322 | -5.477 | 78.536 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 11 | 267 | 50111 | 13 | 20 | 27.523 | -8.308 | 81.941 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 12 | 268 | 50121 | 13 | 40 | 5.923 | 5.809 | 85.555 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 13 | 269 | 50131 | 14 | 0 | 5.924 | -3.403 | 89.239 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 14 | 270 | 50141 | 14 | 20 | 5.925 | 0.376 | 92.718 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 15 | 271 | 50151 | 14 | 40 | 5.926 | -8.539 | 96.433 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 19 | 272 | 50191 | 10 | 0 | 5.852 | 14.033 | 110.835 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 20 | 273 | 50201 | 10 | 19 | 44.252 | -7.763 | 114.575 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 21 | 274 | 50211 | 10 | 39 | 44.253 | 2.662 | 117.220 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 22 | 275 | 50221 | 11 | 0 | 5.853 | 2.233 | 121.237 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 23 | 276 | 50231 | 11 | 19 | 44.253 | -5.885 | 125.094 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 24 | 277 | 50241 | 11 | 39 | 44.253 | 5.035 | 128.327 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 25 | 278 | 50251 | 12 | 0 | 5.854 | -2.690 | 132.456 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 26 | 279 | 50261 | 12 | 19 | 44.254 | -1.254 | 135.796 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 27 | 280 | 50271 | 12 | 39 | 44.254 | 3.815 | 140.584 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 28 | 281 | 50281 | 13 | 0 | 5.854 | 7.284 | 143.801 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 29 | 282 | 50291 | 13 | 19 | 44.255 | 2.233 | 147.868 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 31 | 283 | 50311 | 14 | 0 | 27.455 | 17.227 | 157.058 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 32 | 284 | 50321 | 14 | 20 | 5.855 | 1.582 | 160.153 | 84.0 | 15848.9319 | 0.10000E+01 | 60 |
| 33 | 285 | 50331 | 14 | 40 | 5.856 | 11.883 | 164.192 | 84.0 | 15848.9319 | 0.10000E+01 | 540 |
| 1 | 286 | 60 11 | 9 | 58 | 59.050 | -9.127 | 53.145 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 2 | 287 | 60 21 | 10 | 19 | 59.094 | -20.837 | 56.643 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 3 | 288 | 60 31 | 10 | 39 | 59.093 | -0.165 | 59.770 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 4 | 289 | 60 41 | 10 | 59 | 4.086 | -4.983 | 62.610 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 5 | 290 | 60 51 | 11 | 19 | 59.083 | -26.701 | 65.997 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 6 | 291 | 60 61 | 11 | 39 | 59.084 | -13.833 | 69.107 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 7 | 292 | 60 71 | 11 | 59 | 49.083 | -5.332 | 72.469 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 8 | 293 | 60 81 | 12 | 19 | 59.083 | -17.361 | 75.693 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 9 | 294 | 60 91 | 12 | 39 | 54.084 | -2.368 | 78.967 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 10 | 295 | 60101 | 12 | 59 | 44.082 | -5.717 | 82.445 | 0.0 | 1.0000 | 0.10000E+01 | 540 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 296 | 60111 | 13 | 19 | 59.082 | -36.749 | 85.851 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 12 | 297 | 60121 | 13 | 39 | 59.084 | -1.030 | 89.466 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 13 | 298 | 60131 | 13 | 59 | 59.085 | -10.242 | 93.150 | 0.0 | 1.0000 0.10000E+01 | 540 |
| 14 | 299 | 60141 | 14 | 19 | 59.082 | -6.467 | 96.629 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 15 | 300 | 60151 | 14 | 39 | 59.082 | -15.383 | 100.345 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 16 | 301 | 60161 | 14 | 59 | 59.082 | -10.116 | 104.332 | 0.0 | 1.0000 0.10000E+01 | 540 |
| 17 | 302 | 60171 | 9 | 19 | 59.069 | -51.690 | 107.762 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 18 | 303 | 60181 | 9 | 39 | 39.077 | -1.045 | 111.137 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 19 | 304 | 60191 | 9 | 59 | 54.078 | 2.259 | 114.748 | 0.0 | 1.0000 0.10000E+01 | 540 |
| 20 | 305 | 60201 | 10 | 19 | 54.079 | 2.064 | 118.488 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 21 | 306 | 60211 | 10 | 39 | 44.116 | 2.525 | 121.133 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 22 | 307 | 60221 | 10 | 59 | 59.081 | -4.539 | 125.151 | 0.0 | 1.0000 0.10000E+01 | 540 |
| 23 | 308 | 60231 | 11 | 19 | 49.122 | -1.016 | 129.007 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 24 | 309 | 60241 | 11 | 39 | 39.130 | -0.088 | 132.241 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 25 | 310 | 60251 | 11 | 59 | 59.094 | -9.450 | 136.370 | 0.0 | 1.0000 0.10000E+01 | 540 |
| 26 | 311 | 60261 | 12 | 19 | 49.105 | 3.597 | 139.710 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 27 | 312 | 60271 | 12 | 39 | 44.113 | 3.674 | 144.498 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 28 | 313 | 60281 | 12 | 59 | 59.077 | 0.507 | 147.716 | 0.0 | 1.0000 0.10000E+01 | 540 |
| 29 | 314 | 60291 | 13 | 19 | 44.115 | 2.093 | 151.783 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 31 | 315 | 60311 | 13 | 59 | 59.080 | -11.148 | 160.974 | 0.0 | 1.0000 0.10000E+01 | 540 |
| 32 | 316 | 60321 | 14 | 19 | 59.122 | -5.151 | 164.068 | 0.0 | 1.0000 0.10000E+01 | 60 |
| 33 | 317 | 60331 | 14 | 39 | 59.130 | 5.157 | 168.108 | 0.0 | 1.0000 0.10000E+01 | 540 |
| 1 | 318 | 70 11 | 9 | 59 | 1.013 | -7.164 | 58.508 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 2 | 319 | 70 21 | 10 | 20 | 5.813 | -14.118 | 61.986 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 3 | 320 | 70 31 | 10 | 40 | 5.812 | 6.554 | 65.103 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 4 | 321 | 70 41 | 10 | 59 | 1.012 | -8.057 | 67.932 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 5 | 322 | 70 51 | 11 | 20 | 27.411 | 1.627 | 71.311 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 6 | 323 | 70 61 | 11 | 40 | 5.811 | -7.106 | 74.414 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 7 | 324 | 70 71 | 11 | 59 | 44.210 | -10.205 | 77.767 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 8 | 325 | 70 81 | 12 | 20 | 27.410 | 10.966 | 80.984 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 9 | 326 | 70 91 | 12 | 40 | 5.810 | 9.358 | 84.251 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 10 | 327 | 70101 | 12 | 59 | 44.209 | -5.590 | 87.723 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 11 | 328 | 70111 | 13 | 20 | 27.409 | -8.422 | 91.122 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 12 | 329 | 70121 | 13 | 40 | 5.808 | 5.694 | 94.730 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 13 | 330 | 70131 | 14 | 0 | 5.808 | -3.519 | 98.407 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 14 | 331 | 70141 | 14 | 20 | 5.807 | 0.258 | 101.882 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 15 | 332 | 70151 | 14 | 40 | 5.807 | -8.658 | 105.591 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 16 | 333 | 70161 | 15 | 0 | 5.806 | -3.392 | 109.572 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 17 | 334 | 70171 | 9 | 20 | 27.382 | -23.377 | 113.000 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 18 | 335 | 70181 | 9 | 39 | 44.181 | 4.059 | 116.371 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 19 | 336 | 70191 | 10 | 0 | 5.781 | 13.962 | 119.977 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 20 | 337 | 70201 | 10 | 20 | 5.781 | 13.766 | 123.710 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 21 | 338 | 70211 | 10 | 39 | 44.180 | 2.589 | 126.352 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 22 | 339 | 70221 | 11 | 0 | 5.780 | 2.160 | 130.365 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 23 | 340 | 70231 | 11 | 20 | 5.779 | 15.641 | 134.220 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 24 | 341 | 70241 | 11 | 39 | 44.179 | 4.961 | 137.450 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 25 | 342 | 70251 | 12 | 0 | 5.778 | -2.766 | 141.573 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 26 | 343 | 70261 | 12 | 19 | 44.178 | -1.330 | 144.912 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 27 | 344 | 70271 | 12 | 39 | 44.177 | 3.738 | 149.695 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 28 | 345 | 70281 | 13 | 0 | 5.777 | 7.207 | 152.909 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 29 | 346 | 70291 | 13 | 19 | 44.177 | 2.155 | 156.973 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 31 | 347 | 70311 | 14 | 0 | 27.376 | 17.148 | 166.157 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 32 | 348 | 70321 | 14 | 20 | 5.775 | 1.502 | 169.251 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 33 | 349 | 70331 | 14 | 40 | 5.775 | 11.802 | 173.287 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 1 | 350 | 80 11 | 9 | 59 | 0.971 | -7.206 | 62.326 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 2 | 351 | 80 21 | 10 | 20 | 5.770 | -14.161 | 65.836 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 3 | 352 | 80 31 | 10 | 40 | 5.769 | 6.511 | 68.971 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 4 | 353 | 80 41 | 10 | 59 | 0.968 | -8.101 | 71.817 | 78.0 | 7943.2823 0.10000E+01 | 540 |
| 5 | 354 | 80 51 | 11 | 20 | 27.367 | 1.583 | 75.208 | 78.0 | 7943.2823 0.10000E+01 | 60 |
| 6 | 355 | 80 61 | 11 | 40 | 5.766 | -7.151 | 78.321 | 72.0 | 3981.0717 0.10000E+01 | 60 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 356 | 80 71 | 11 | 59 | 44.165 | -10.250 | 81.688 | 72.0 | 3981.0717 | 0.10000E+01 | 540 |
| 8 | 357 | 80 81 | 12 | 20 | 27.364 | 10.920 | 84.916 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 9 | 358 | 80 91 | 12 | 40 | 5.763 | 9.311 | 88.194 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 10 | 359 | 80101 | 12 | 59 | 44.162 | -5.637 | 91.675 | 72.0 | 3981.0717 | 0.10000E+01 | 540 |
| 11 | 360 | 80111 | 13 | 20 | 27.362 | -8.469 | 95.084 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 12 | 361 | 80121 | 13 | 40 | 5.761 | 5.647 | 98.704 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 13 | 362 | 80131 | 14 | 0 | 5.760 | -3.567 | 102.391 | 72.0 | 3981.0717 | 0.10000E+01 | 540 |
| 14 | 363 | 80141 | 14 | 20 | 5.760 | 0.211 | 105.873 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 15 | 364 | 80151 | 14 | 40 | 27.359 | 12.894 | 109.592 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 16 | 365 | 80161 | 15 | 0 | 5.758 | -3.440 | 113.583 | 72.0 | 3981.0717 | 0.10000E+01 | 540 |
| 17 | 366 | 80171 | 9 | 20 | 27.321 | -23.438 | 117.013 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 18 | 367 | 80181 | 9 | 39 | 44.121 | 3.999 | 120.391 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 19 | 368 | 80191 | 10 | 0 | 5.720 | 13.901 | 124.005 | 72.0 | 3981.0717 | 0.10000E+01 | 540 |
| 20 | 369 | 80201 | 10 | 19 | 44.119 | -7.896 | 127.749 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 21 | 370 | 80211 | 10 | 39 | 44.119 | 2.528 | 130.395 | 72.0 | 3981.0717 | 0.10000E+01 | 60 |
| 22 | 371 | 80221 | 11 | 0 | 5.718 | 2.098 | 134.415 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 23 | 372 | 80231 | 11 | 20 | 5.717 | 15.579 | 138.272 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 24 | 373 | 80241 | 11 | 39 | 44.117 | 4.899 | 141.508 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 25 | 374 | 80251 | 12 | 0 | 27.316 | 18.772 | 145.640 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 26 | 375 | 80261 | 12 | 19 | 44.115 | -1.393 | 148.981 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 27 | 376 | 80271 | 12 | 39 | 44.115 | 3.676 | 153.771 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 28 | 377 | 80281 | 13 | 0 | 5.714 | 7.144 | 156.991 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 29 | 378 | 80291 | 13 | 19 | 44.113 | 2.091 | 161.060 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 31 | 379 | 80311 | 14 | 0 | 27.312 | 17.084 | 170.254 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 32 | 380 | 80321 | 14 | 20 | 5.711 | 1.438 | 173.348 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 33 | 381 | 80331 | 14 | 40 | 5.711 | 11.738 | 177.390 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 1 | 382 | 90 11 | 9 | 59 | 15.958 | 7.781 | 67.748 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 2 | 383 | 90 21 | 10 | 20 | 26.741 | 6.810 | 71.260 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 3 | 384 | 90 31 | 10 | 40 | 8.158 | 8.900 | 74.395 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 4 | 385 | 90 41 | 10 | 59 | 16.183 | 7.114 | 77.242 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 5 | 386 | 90 51 | 11 | 20 | 30.383 | 4.599 | 80.633 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 6 | 387 | 90 61 | 11 | 40 | 19.175 | 6.258 | 83.746 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 7 | 388 | 90 71 | 12 | 0 | 2.733 | 8.318 | 87.114 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 8 | 389 | 90 81 | 12 | 20 | 23.883 | 7.439 | 90.342 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 9 | 390 | 90 91 | 12 | 40 | 3.575 | 7.123 | 93.620 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 10 | 391 | 90101 | 12 | 59 | 58.366 | 8.567 | 97.101 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 11 | 392 | 90111 | 13 | 20 | 41.825 | 5.994 | 100.511 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 12 | 393 | 90121 | 13 | 40 | 9.300 | 9.186 | 104.131 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 13 | 394 | 90131 | 13 | 59 | 44.658 | -24.669 | 107.818 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 14 | 395 | 90141 | 14 | 19 | 22.966 | -42.583 | 111.301 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 15 | 396 | 90151 | 14 | 39 | 34.491 | -39.974 | 115.019 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 16 | 397 | 90161 | 15 | 0 | 20.825 | 11.627 | 119.011 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 17 | 398 | 90171 | 9 | 21 | 4.183 | 13.424 | 122.441 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 18 | 399 | 90181 | 9 | 39 | 51.266 | 11.144 | 125.819 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 19 | 400 | 90191 | 10 | 0 | 4.858 | 13.039 | 129.433 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 20 | 401 | 90201 | 10 | 20 | 0.866 | 8.851 | 133.178 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 21 | 402 | 90211 | 10 | 39 | 20.416 | -21.175 | 135.824 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 22 | 403 | 90221 | 11 | 0 | 16.150 | 12.530 | 139.844 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 23 | 404 | 90231 | 11 | 20 | 2.200 | 12.062 | 143.701 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 24 | 405 | 90241 | 11 | 39 | 49.950 | 10.732 | 146.938 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 25 | 406 | 90251 | 12 | 0 | 21.900 | 13.356 | 151.070 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 26 | 407 | 90261 | 12 | 19 | 59.466 | 13.958 | 154.410 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 27 | 408 | 90271 | 12 | 39 | 54.783 | 14.344 | 159.201 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 28 | 409 | 90281 | 13 | 0 | 13.391 | 14.821 | 162.421 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 29 | 410 | 90291 | 13 | 19 | 55.875 | 13.853 | 166.490 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 31 | 411 | 90311 | 14 | 0 | 23.816 | 13.588 | 175.684 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 32 | 412 | 90321 | 14 | 20 | 11.325 | 7.052 | 178.778 | 88.0 | 25118.8643 | 0.10000E+01 | 60 |
| 33 | 413 | 90331 | 14 | 39 | 57.275 | 3.302 | 182.820 | 88.0 | 25118.8643 | 0.10000E+01 | 540 |
| 1 | 414 | 90 12 | 9 | 59 | 15.958 | 7.781 | 67.748 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 2 | 415 | 90 22 | 10 | 20 | 26.741 | 6.810 | 71.260 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 416 | 90 32 | 10 | 40 | 8.158 | 8.900 | 74.395 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 4 | 417 | 90 42 | 10 | 59 | 16.183 | 7.114 | 77.242 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 5 | 418 | 90 52 | 11 | 20 | 30.383 | 4.599 | 80.633 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 6 | 419 | 90 62 | 11 | 40 | 19.175 | 6.258 | 83.746 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 7 | 420 | 90 72 | 12 | 0 | 2.733 | 8.318 | 87.114 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 8 | 421 | 90 82 | 12 | 20 | 23.883 | 7.439 | 90.342 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 9 | 422 | 90 92 | 12 | 40 | 3.575 | 7.123 | 93.620 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 10 | 423 | 90102 | 12 | 59 | 58.366 | 8.567 | 97.101 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 11 | 424 | 90112 | 13 | 20 | 41.825 | 5.994 | 100.511 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 12 | 425 | 90122 | 13 | 40 | 9.300 | 9.186 | 104.131 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 13 | 426 | 90132 | 13 | 59 | 44.658 | -24.669 | 107.818 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 14 | 427 | 90142 | 14 | 19 | 22.966 | -42.583 | 111.301 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 15 | 428 | 90152 | 14 | 39 | 34.491 | -39.974 | 115.019 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 16 | 429 | 90162 | 15 | 0 | 20.825 | 11.627 | 119.011 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 17 | 430 | 90172 | 9 | 21 | 4.183 | 13.424 | 122.441 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 18 | 431 | 90182 | 9 | 39 | 51.266 | 11.144 | 125.819 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 19 | 432 | 90192 | 10 | 0 | 4.858 | 13.039 | 129.433 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 20 | 433 | 90202 | 10 | 20 | 0.866 | 8.851 | 133.178 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 21 | 434 | 90212 | 10 | 39 | 20.416 | -21.175 | 135.824 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 22 | 435 | 90222 | 11 | 0 | 16.150 | 12.530 | 139.844 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 23 | 436 | 90232 | 11 | 20 | 2.200 | 12.062 | 143.701 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 24 | 437 | 90242 | 11 | 39 | 49.950 | 10.732 | 146.938 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 25 | 438 | 90252 | 12 | 0 | 21.900 | 13.356 | 151.070 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 26 | 439 | 90262 | 12 | 19 | 59.466 | 13.958 | 154.410 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 27 | 440 | 90272 | 12 | 39 | 54.783 | 14.344 | 159.201 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 28 | 441 | 90282 | 13 | 0 | 13.391 | 14.821 | 162.421 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 29 | 442 | 90292 | 13 | 19 | 55.875 | 13.853 | 166.490 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 31 | 443 | 90312 | 14 | 0 | 23.816 | 13.588 | 175.684 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 32 | 444 | 90322 | 14 | 20 | 11.325 | 7.052 | 178.778 | 76.0 | 6309.5734 | 0.10000E+01 | 60 |
| 33 | 445 | 90332 | 14 | 39 | 57.275 | 3.302 | 182.820 | 76.0 | 6309.5734 | 0.10000E+01 | 540 |
| 1 | 446 | 90 14 | 9 | 59 | 15.958 | 7.781 | 67.748 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 2 | 447 | 90 24 | 10 | 20 | 26.741 | 6.810 | 71.260 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 3 | 448 | 90 34 | 10 | 40 | 8.158 | 8.900 | 74.395 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 4 | 449 | 90 44 | 10 | 59 | 16.183 | 7.114 | 77.242 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 5 | 450 | 90 54 | 11 | 20 | 30.383 | 4.599 | 80.633 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 6 | 451 | 90 64 | 11 | 40 | 19.175 | 6.258 | 83.746 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 7 | 452 | 90 74 | 12 | 0 | 2.733 | 8.318 | 87.114 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 8 | 453 | 90 84 | 12 | 20 | 23.883 | 7.439 | 90.342 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 9 | 454 | 90 94 | 12 | 40 | 3.575 | 7.123 | 93.620 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 10 | 455 | 90104 | 12 | 59 | 58.366 | 8.567 | 97.101 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 11 | 456 | 90114 | 13 | 20 | 41.825 | 5.994 | 100.511 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 12 | 457 | 90124 | 13 | 40 | 9.300 | 9.186 | 104.131 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 13 | 458 | 90134 | 13 | 59 | 44.658 | -24.669 | 107.818 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 14 | 459 | 90144 | 14 | 19 | 22.966 | -42.583 | 111.301 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 15 | 460 | 90154 | 14 | 39 | 34.491 | -39.974 | 115.019 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 16 | 461 | 90164 | 15 | 0 | 20.825 | 11.627 | 119.011 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 17 | 462 | 90174 | 9 | 21 | 4.183 | 13.424 | 122.441 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 18 | 463 | 90184 | 9 | 39 | 51.266 | 11.144 | 125.819 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 19 | 464 | 90194 | 10 | 0 | 4.858 | 13.039 | 129.433 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 20 | 465 | 90204 | 10 | 20 | 0.866 | 8.851 | 133.178 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 21 | 466 | 90214 | 10 | 39 | 20.416 | -21.175 | 135.824 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 22 | 467 | 90224 | 11 | 0 | 16.150 | 12.530 | 139.844 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 23 | 468 | 90234 | 11 | 20 | 2.200 | 12.062 | 143.701 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 24 | 469 | 90244 | 11 | 39 | 49.950 | 10.732 | 146.938 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 25 | 470 | 90254 | 12 | 0 | 21.900 | 13.356 | 151.070 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 26 | 471 | 90264 | 12 | 19 | 59.466 | 13.958 | 154.410 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 27 | 472 | 90274 | 12 | 39 | 54.783 | 14.344 | 159.201 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 28 | 473 | 90284 | 13 | 0 | 13.391 | 14.821 | 162.421 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 29 | 474 | 90294 | 13 | 19 | 55.875 | 13.853 | 166.490 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 31 | 475 | 90314 | 14 | 0 | 23.816 | 13.588 | 175.684 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 476 | 90324 | 14 | 20 | 11.325 | 7.052 | 178.778 | 70.0 | 3162.2777 | 0.10000E+01 | 60 |
| 33 | 477 | 90334 | 14 | 39 | 57.275 | 3.302 | 182.820 | 70.0 | 3162.2777 | 0.10000E+01 | 540 |
| 1 | 478 | 90 15 | 9 | 59 | 15.958 | 7.781 | 67.748 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 2 | 479 | 90 25 | 10 | 20 | 26.741 | 6.810 | 71.260 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 3 | 480 | 90 35 | 10 | 40 | 8.158 | 8.900 | 74.395 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 4 | 481 | 90 45 | 10 | 59 | 16.183 | 7.114 | 77.242 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 5 | 482 | 90 55 | 11 | 20 | 30.383 | 4.599 | 80.633 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 6 | 483 | 90 65 | 11 | 40 | 19.175 | 6.258 | 83.746 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 7 | 484 | 90 75 | 12 | 0 | 2.733 | 8.318 | 87.114 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 8 | 485 | 90 85 | 12 | 20 | 23.883 | 7.439 | 90.342 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 9 | 486 | 90 95 | 12 | 40 | 3.575 | 7.123 | 93.620 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 10 | 487 | 90105 | 12 | 59 | 58.366 | 8.567 | 97.101 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 11 | 488 | 90115 | 13 | 20 | 41.825 | 5.994 | 100.511 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 12 | 489 | 90125 | 13 | 40 | 9.300 | 9.186 | 104.131 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 13 | 490 | 90135 | 13 | 59 | 44.658 | -24.669 | 107.818 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 14 | 491 | 90145 | 14 | 19 | 22.966 | -42.583 | 111.301 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 15 | 492 | 90155 | 14 | 39 | 34.491 | -39.974 | 115.019 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 16 | 493 | 90165 | 15 | 0 | 20.825 | 11.627 | 119.011 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 17 | 494 | 90175 | 9 | 21 | 4.183 | 13.424 | 122.441 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 18 | 495 | 90185 | 9 | 39 | 51.266 | 11.144 | 125.819 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 19 | 496 | 90195 | 10 | 0 | 4.858 | 13.039 | 129.433 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 20 | 497 | 90205 | 10 | 20 | 0.866 | 8.851 | 133.178 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 21 | 498 | 90215 | 10 | 39 | 20.416 | -21.175 | 135.824 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 22 | 499 | 90225 | 11 | 0 | 16.150 | 12.530 | 139.844 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 23 | 500 | 90235 | 11 | 20 | 2.200 | 12.062 | 143.701 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 24 | 501 | 90245 | 11 | 39 | 49.950 | 10.732 | 146.938 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 25 | 502 | 90255 | 12 | 0 | 21.900 | 13.356 | 151.070 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 26 | 503 | 90265 | 12 | 19 | 59.466 | 13.958 | 154.410 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 27 | 504 | 90275 | 12 | 39 | 54.783 | 14.344 | 159.201 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 28 | 505 | 90285 | 13 | 0 | 13.391 | 14.821 | 162.421 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 29 | 506 | 90295 | 13 | 19 | 55.875 | 13.853 | 166.490 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 31 | 507 | 90315 | 14 | 0 | 23.816 | 13.588 | 175.684 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 32 | 508 | 90325 | 14 | 20 | 11.325 | 7.052 | 178.778 | 58.0 | 794.3282 | 0.10000E+01 | 60 |
| 33 | 509 | 90335 | 14 | 39 | 57.275 | 3.302 | 182.820 | 58.0 | 794.3282 | 0.10000E+01 | 540 |
| 1 | 510 | 100 11 | 9 | 59 | 1.050 | -7.127 | 72.525 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 2 | 511 | 100 21 | 10 | 20 | 5.850 | -14.081 | 76.042 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 3 | 512 | 100 31 | 10 | 40 | 5.850 | 6.592 | 79.179 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 4 | 513 | 100 41 | 10 | 59 | 1.050 | -8.019 | 82.028 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 5 | 514 | 100 51 | 11 | 20 | 27.450 | 1.666 | 85.419 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 6 | 515 | 100 61 | 11 | 40 | 5.850 | -7.067 | 88.533 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 7 | 516 | 100 71 | 11 | 59 | 44.250 | -10.165 | 91.902 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 8 | 517 | 100 81 | 12 | 20 | 5.850 | -10.594 | 95.131 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 9 | 518 | 100 91 | 12 | 39 | 44.250 | -12.202 | 98.410 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 10 | 519 | 100101 | 12 | 59 | 44.250 | -5.549 | 101.892 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 11 | 520 | 100111 | 13 | 20 | 5.850 | -29.981 | 105.303 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 12 | 521 | 100121 | 13 | 40 | 5.850 | 5.736 | 108.924 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 13 | 522 | 100131 | 14 | 0 | 5.850 | -3.477 | 112.613 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 14 | 523 | 100141 | 14 | 20 | 5.850 | 0.301 | 116.097 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 15 | 524 | 100151 | 14 | 40 | 5.850 | -8.615 | 119.816 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 16 | 525 | 100161 | 15 | 0 | 5.850 | -3.348 | 123.809 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 17 | 526 | 100171 | 9 | 20 | 27.459 | -23.300 | 127.239 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 18 | 527 | 100181 | 9 | 39 | 44.259 | 4.137 | 130.619 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 19 | 528 | 100191 | 10 | 0 | 5.859 | 14.040 | 134.233 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 20 | 529 | 100201 | 10 | 20 | 5.860 | 13.845 | 137.980 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 21 | 530 | 100211 | 10 | 39 | 44.260 | 2.669 | 140.627 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 22 | 531 | 100221 | 11 | 0 | 5.860 | 2.240 | 144.649 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 23 | 532 | 100231 | 11 | 20 | 5.860 | 15.722 | 148.505 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 24 | 533 | 100241 | 11 | 39 | 44.261 | 5.043 | 151.743 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 25 | 534 | 100251 | 12 | 0 | 27.461 | 18.917 | 155.876 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 26 | 535 | 100261 | 12 | 19 | 44.261 | -1.247 | 159.216 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 | 536 | 100271 | 12 | 39 | 44.261 | 3.822 | 164.008 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 28 | 537 | 100281 | 13 | 0 | 5.862 | 7.292 | 167.230 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 29 | 538 | 100291 | 13 | 19 | 44.262 | 2.240 | 171.300 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 31 | 539 | 100311 | 14 | 0 | 27.462 | 17.234 | 180.496 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 32 | 540 | 100321 | 14 | 20 | 5.863 | 1.590 | 183.589 | 78.0 | 7943.2823 | 0.10000E+01 | 60 |
| 33 | 541 | 100331 | 14 | 40 | 5.863 | 11.890 | 187.633 | 78.0 | 7943.2823 | 0.10000E+01 | 540 |
| 1 | 542 | 110 11 | 9 | 59 | 10.410 | 2.233 | 90.478 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 4 | 543 | 110 41 | 10 | 59 | 11.493 | 2.424 | 99.986 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 7 | 544 | 110 71 | 11 | 59 | 56.344 | 1.929 | 109.855 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 10 | 545 | 110101 | 12 | 59 | 59.227 | 9.428 | 119.843 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 13 | 546 | 110131 | 14 | 0 | 22.252 | 12.925 | 130.565 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 16 | 547 | 110161 | 15 | 0 | 22.819 | 13.621 | 141.762 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 19 | 548 | 110191 | 10 | 0 | 1.733 | 9.914 | 152.185 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 22 | 549 | 110221 | 11 | 0 | 18.017 | 14.397 | 162.605 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 25 | 550 | 110251 | 12 | 0 | 23.417 | 14.873 | 173.834 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 28 | 551 | 110281 | 13 | 0 | 15.009 | 16.439 | 185.189 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 31 | 552 | 110311 | 14 | 0 | 26.176 | 15.948 | 198.456 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 33 | 553 | 110331 | 14 | 40 | 9.093 | 15.120 | 205.593 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 1 | 554 | 110 12 | 9 | 59 | 10.434 | 2.257 | 90.478 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 4 | 555 | 110 42 | 10 | 59 | 11.517 | 2.448 | 99.986 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 7 | 556 | 110 72 | 11 | 59 | 56.368 | 1.953 | 109.855 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 10 | 557 | 110102 | 12 | 59 | 59.251 | 9.452 | 119.843 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 13 | 558 | 110132 | 14 | 0 | 22.276 | 12.949 | 130.565 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 16 | 559 | 110162 | 15 | 0 | 22.843 | 13.645 | 141.762 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 19 | 560 | 110192 | 10 | 0 | 1.757 | 9.938 | 152.185 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 22 | 561 | 110222 | 11 | 0 | 18.041 | 14.421 | 162.605 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 25 | 562 | 110252 | 12 | 0 | 23.441 | 14.897 | 173.834 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 28 | 563 | 110282 | 13 | 0 | 15.033 | 16.463 | 185.189 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 31 | 564 | 110312 | 14 | 0 | 26.200 | 15.972 | 198.456 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 33 | 565 | 110332 | 14 | 40 | 9.117 | 15.144 | 205.593 | 94.8 | 54954.1067 | 0.10000E+01 | 540 |
| 1 | 566 | 110 13 | 9 | 59 | 10.471 | 2.294 | 90.478 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 4 | 567 | 110 43 | 10 | 59 | 11.554 | 2.485 | 99.986 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 7 | 568 | 110 73 | 11 | 59 | 56.405 | 1.990 | 109.855 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 10 | 569 | 110103 | 12 | 59 | 59.288 | 9.489 | 119.843 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 13 | 570 | 110133 | 14 | 0 | 22.313 | 12.986 | 130.565 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 16 | 571 | 110163 | 15 | 0 | 22.880 | 13.682 | 141.762 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 19 | 572 | 110193 | 10 | 0 | 1.794 | 9.975 | 152.185 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 22 | 573 | 110223 | 11 | 0 | 18.078 | 14.458 | 162.605 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 25 | 574 | 110253 | 12 | 0 | 23.478 | 14.934 | 173.834 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 28 | 575 | 110283 | 13 | 0 | 15.070 | 16.500 | 185.189 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 31 | 576 | 110313 | 14 | 0 | 26.237 | 16.009 | 198.456 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 33 | 577 | 110333 | 14 | 40 | 9.154 | 15.181 | 205.593 | 95.2 | 57543.9735 | 0.10000E+01 | 540 |
| 1 | 578 | 120 11 | 9 | 59 | 18.263 | 10.086 | 109.246 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 4 | 579 | 120 41 | 10 | 59 | 21.339 | 12.270 | 118.755 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 7 | 580 | 120 71 | 12 | 0 | 7.749 | 13.334 | 128.626 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 10 | 581 | 120101 | 13 | 0 | 3.476 | 13.677 | 138.615 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 13 | 582 | 120131 | 14 | 0 | 6.836 | -2.491 | 149.338 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 16 | 583 | 120161 | 15 | 0 | 21.955 | 12.757 | 160.536 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 19 | 584 | 120191 | 10 | 0 | 7.380 | 15.561 | 170.960 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 22 | 585 | 120221 | 11 | 0 | 19.282 | 15.662 | 181.379 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 25 | 586 | 120251 | 12 | 0 | 24.259 | 15.715 | 192.608 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 28 | 587 | 120281 | 13 | 0 | 25.868 | 27.298 | 203.963 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 31 | 588 | 120311 | 14 | 0 | 24.812 | 14.584 | 217.230 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 33 | 589 | 120331 | 14 | 40 | 11.338 | 17.365 | 224.368 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 1 | 590 | 120 12 | 9 | 59 | 18.269 | 10.092 | 109.246 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 4 | 591 | 120 42 | 10 | 59 | 21.345 | 12.276 | 118.755 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 7 | 592 | 120 72 | 12 | 0 | 7.755 | 13.340 | 128.626 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 10 | 593 | 120102 | 13 | 0 | 3.482 | 13.683 | 138.615 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 13 | 594 | 120132 | 14 | 0 | 6.842 | -2.485 | 149.338 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 16 | 595 | 120162 | 15 | 0 | 21.961 | 12.763 | 160.536 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 596 | 120192 | 10 | 0 | 7.386 | 15.567 | 170.960 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 22 | 597 | 120222 | 11 | 0 | 19.288 | 15.668 | 181.379 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 25 | 598 | 120252 | 12 | 0 | 24.265 | 15.721 | 192.608 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 28 | 599 | 120282 | 13 | 0 | 25.874 | 27.304 | 203.963 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 31 | 600 | 120312 | 14 | 0 | 24.818 | 14.590 | 217.230 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 33 | 601 | 120332 | 14 | 40 | 11.344 | 17.371 | 224.368 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 1 | 602 | 120 13 | 9 | 59 | 18.279 | 10.102 | 109.246 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 4 | 603 | 120 43 | 10 | 59 | 21.355 | 12.286 | 118.755 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 7 | 604 | 120 73 | 12 | 0 | 7.765 | 13.350 | 128.626 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 10 | 605 | 120103 | 13 | 0 | 3.492 | 13.693 | 138.615 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 13 | 606 | 120133 | 14 | 0 | 6.852 | -2.475 | 149.338 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 16 | 607 | 120163 | 15 | 0 | 21.971 | 12.773 | 160.536 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 19 | 608 | 120193 | 10 | 0 | 7.396 | 15.577 | 170.960 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 22 | 609 | 120223 | 11 | 0 | 19.298 | 15.678 | 181.379 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 25 | 610 | 120253 | 12 | 0 | 24.275 | 15.731 | 192.608 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 28 | 611 | 120283 | 13 | 0 | 25.884 | 27.314 | 203.963 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 31 | 612 | 120313 | 14 | 0 | 24.828 | 14.600 | 217.230 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 33 | 613 | 120333 | 14 | 40 | 11.354 | 17.381 | 224.368 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 1 | 614 | 130 11 | 9 | 59 | 22.767 | 14.590 | 131.091 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 4 | 615 | 130 41 | 10 | 59 | 3.065 | -6.004 | 140.599 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 7 | 616 | 130 71 | 12 | 0 | 4.788 | 10.373 | 150.471 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 10 | 617 | 130101 | 12 | 59 | 10.894 | -38.905 | 160.460 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 13 | 618 | 130131 | 14 | 0 | 27.134 | 17.807 | 171.182 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 16 | 619 | 130161 | 15 | 0 | 26.624 | 17.426 | 182.380 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 19 | 620 | 130191 | 10 | 0 | 8.530 | 16.711 | 192.804 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 22 | 621 | 130221 | 11 | 0 | 19.720 | 16.100 | 203.223 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 25 | 622 | 130251 | 12 | 0 | 21.301 | 12.757 | 214.452 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 28 | 623 | 130281 | 13 | 0 | 14.191 | 15.621 | 225.807 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 31 | 624 | 130311 | 14 | 0 | 27.122 | 16.894 | 239.075 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 33 | 625 | 130331 | 14 | 40 | 9.271 | 15.298 | 246.212 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 1 | 626 | 130 12 | 9 | 59 | 22.775 | 14.598 | 131.091 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 4 | 627 | 130 42 | 10 | 59 | 3.073 | -5.996 | 140.599 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 7 | 628 | 130 72 | 12 | 0 | 4.796 | 10.381 | 150.471 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 10 | 629 | 130102 | 12 | 59 | 10.902 | -38.897 | 160.460 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 13 | 630 | 130132 | 14 | 0 | 27.142 | 17.815 | 171.182 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 16 | 631 | 130162 | 15 | 0 | 26.632 | 17.434 | 182.380 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 19 | 632 | 130192 | 10 | 0 | 8.538 | 16.719 | 192.804 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 22 | 633 | 130222 | 11 | 0 | 19.728 | 16.108 | 203.223 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 25 | 634 | 130252 | 12 | 0 | 21.309 | 12.765 | 214.452 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 28 | 635 | 130282 | 13 | 0 | 14.199 | 15.629 | 225.807 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 31 | 636 | 130312 | 14 | 0 | 27.130 | 16.902 | 239.075 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 33 | 637 | 130332 | 14 | 40 | 9.279 | 15.306 | 246.212 | 92.0 | 39810.7171 | 0.10000E+01 | 540 |
| 1 | 638 | 130 13 | 9 | 59 | 22.774 | 14.597 | 131.091 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 4 | 639 | 130 43 | 10 | 59 | 3.072 | -5.997 | 140.599 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 7 | 640 | 130 73 | 12 | 0 | 4.795 | 10.380 | 150.471 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 10 | 641 | 130103 | 12 | 59 | 10.901 | -38.898 | 160.460 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 13 | 642 | 130133 | 14 | 0 | 27.141 | 17.814 | 171.182 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 16 | 643 | 130163 | 15 | 0 | 26.631 | 17.433 | 182.380 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 19 | 644 | 130193 | 10 | 0 | 8.537 | 16.718 | 192.804 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 22 | 645 | 130223 | 11 | 0 | 19.727 | 16.107 | 203.223 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 25 | 646 | 130253 | 12 | 0 | 21.308 | 12.764 | 214.452 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 28 | 647 | 130283 | 13 | 0 | 14.198 | 15.628 | 225.807 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 31 | 648 | 130313 | 14 | 0 | 27.129 | 16.901 | 239.075 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 33 | 649 | 130333 | 14 | 40 | 9.278 | 15.305 | 246.212 | 92.5 | 42169.6503 | 0.10000E+01 | 540 |
| 1 | 650 | 140 11 | 9 | 59 | 23.922 | 15.745 | 151.218 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 4 | 651 | 140 41 | 10 | 59 | 25.940 | 16.871 | 160.725 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 7 | 652 | 140 71 | 12 | 0 | 7.824 | 13.409 | 170.598 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 10 | 653 | 140101 | 13 | 0 | 10.425 | 20.626 | 180.588 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 13 | 654 | 140131 | 14 | 0 | 24.794 | 15.467 | 191.311 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 16 | 655 | 140161 | 15 | 0 | 26.962 | 17.764 | 202.509 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 656 | 140191 | 10 | 0 | 7.484 | 15.665 | 212.933 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 22 | 657 | 140221 | 11 | 0 | 20.918 | 17.298 | 223.351 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 25 | 658 | 140251 | 12 | 0 | 23.511 | 14.967 | 234.580 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 28 | 659 | 140281 | 13 | 0 | 16.928 | 18.358 | 245.934 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 31 | 660 | 140311 | 14 | 0 | 28.630 | 18.402 | 259.202 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 33 | 661 | 140331 | 14 | 40 | 10.489 | 16.516 | 266.339 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 1 | 662 | 140 12 | 9 | 59 | 23.926 | 15.749 | 151.218 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 4 | 663 | 140 42 | 10 | 59 | 25.944 | 16.875 | 160.725 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 7 | 664 | 140 72 | 12 | 0 | 7.828 | 13.413 | 170.598 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 10 | 665 | 140102 | 13 | 0 | 10.429 | 20.630 | 180.588 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 13 | 666 | 140132 | 14 | 0 | 24.798 | 15.471 | 191.311 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 16 | 667 | 140162 | 15 | 0 | 26.966 | 17.768 | 202.509 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 19 | 668 | 140192 | 10 | 0 | 7.488 | 15.669 | 212.933 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 22 | 669 | 140222 | 11 | 0 | 20.922 | 17.302 | 223.351 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 25 | 670 | 140252 | 12 | 0 | 23.515 | 14.971 | 234.580 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 28 | 671 | 140282 | 13 | 0 | 16.932 | 18.362 | 245.934 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 31 | 672 | 140312 | 14 | 0 | 28.634 | 18.406 | 259.202 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 33 | 673 | 140332 | 14 | 40 | 10.493 | 16.520 | 266.339 | 96.0 | 63095.7344 | 0.10000E+01 | 540 |
| 1 | 674 | 140 13 | 9 | 59 | 23.926 | 15.749 | 151.218 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 4 | 675 | 140 43 | 10 | 59 | 25.944 | 16.875 | 160.725 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 7 | 676 | 140 73 | 12 | 0 | 7.828 | 13.413 | 170.598 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 10 | 677 | 140103 | 13 | 0 | 10.429 | 20.630 | 180.588 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 13 | 678 | 140133 | 14 | 0 | 24.798 | 15.471 | 191.311 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 16 | 679 | 140163 | 15 | 0 | 26.966 | 17.768 | 202.509 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 19 | 680 | 140193 | 10 | 0 | 7.488 | 15.669 | 212.933 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 22 | 681 | 140223 | 11 | 0 | 20.922 | 17.302 | 223.351 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 25 | 682 | 140253 | 12 | 0 | 23.515 | 14.971 | 234.580 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 28 | 683 | 140283 | 13 | 0 | 16.932 | 18.362 | 245.934 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 31 | 684 | 140313 | 14 | 0 | 28.634 | 18.406 | 259.202 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 33 | 685 | 140333 | 14 | 40 | 10.493 | 16.520 | 266.339 | 95.5 | 59566.2144 | 0.10000E+01 | 540 |
| 1 | 686 | 150 11 | 9 | 59 | 19.109 | 10.932 | 174.472 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 2 | 687 | 150 21 | 10 | 19 | 59.113 | -20.818 | 177.994 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 3 | 688 | 150 31 | 10 | 39 | 59.113 | -0.145 | 181.127 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 4 | 689 | 150 41 | 10 | 59 | 19.113 | 10.044 | 183.976 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 5 | 690 | 150 51 | 11 | 19 | 59.111 | -26.673 | 187.360 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 6 | 691 | 150 61 | 11 | 39 | 59.109 | -13.808 | 190.467 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 7 | 692 | 150 71 | 11 | 59 | 59.129 | 4.714 | 193.834 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 8 | 693 | 150 81 | 12 | 19 | 59.123 | -17.321 | 197.059 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 9 | 694 | 150 91 | 12 | 39 | 59.118 | 2.666 | 200.336 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 10 | 695 | 150101 | 12 | 59 | 54.109 | 4.310 | 203.813 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 11 | 696 | 150111 | 13 | 19 | 59.127 | -36.704 | 207.220 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 12 | 697 | 150121 | 13 | 39 | 59.114 | -1.000 | 210.841 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 13 | 698 | 150131 | 13 | 59 | 59.131 | -10.196 | 214.529 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 14 | 699 | 150141 | 14 | 19 | 59.123 | -6.426 | 218.010 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 15 | 700 | 150151 | 14 | 39 | 59.113 | -15.352 | 221.728 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 16 | 701 | 150161 | 14 | 59 | 59.130 | -10.068 | 225.720 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 17 | 702 | 150171 | 9 | 19 | 59.128 | -51.631 | 229.144 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 18 | 703 | 150181 | 9 | 39 | 59.108 | 18.986 | 232.523 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 19 | 704 | 150191 | 9 | 59 | 49.114 | -2.705 | 236.137 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 20 | 705 | 150201 | 10 | 19 | 59.118 | 7.103 | 239.887 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 22 | 706 | 150221 | 10 | 59 | 59.118 | -4.502 | 246.556 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
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| 31 | 709 | 150311 | 13 | 59 | 59.130 | -11.098 | 282.398 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
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| 4 | 713 | 160 41 | 10 | 59 | 19.113 | 10.044 | 207.804 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 5 | 714 | 160 51 | 11 | 19 | 59.108 | -26.676 | 211.192 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 6 | 715 | 160 61 | 11 | 39 | 59.127 | -13.790 | 214.304 | 0.0 | 1.0000 | 0.10000E+01 | 60 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 7 | 716 | 160 71 | 11 59 59.121 | 4.706 | 217.673 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 8 | 717 | 160 81 | 12 19 59.121 | -17.323 | 220.901 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 9 | 718 | 160 91 | 12 39 59.129 | 2.677 | 224.180 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 10 | 719 | 160101 | 12 59 59.121 | 9.322 | 227.661 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 11 | 720 | 160111 | 13 19 59.119 | -36.712 | 231.071 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 12 | 721 | 160121 | 13 39 59.124 | -0.990 | 234.693 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 13 | 722 | 160131 | 13 59 59.127 | -10.200 | 238.382 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 14 | 723 | 160141 | 14 19 59.108 | -6.441 | 241.866 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 15 | 724 | 160151 | 14 39 59.132 | -15.333 | 245.586 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 16 | 725 | 160161 | 14 59 59.108 | -10.090 | 249.579 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 17 | 726 | 160171 | 9 19 59.110 | -51.649 | 253.007 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
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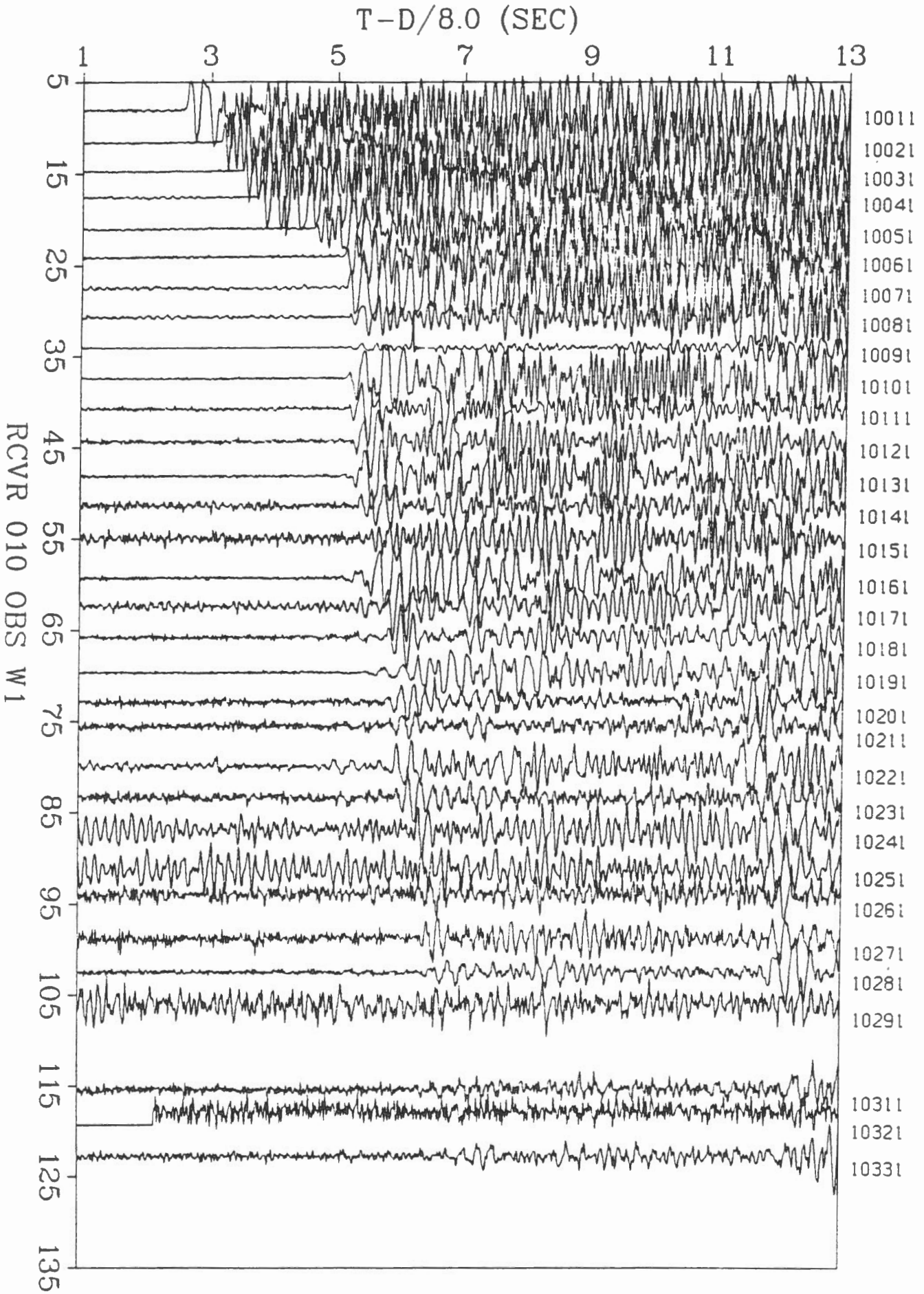
| 19 | 728 | 160191 | 9 59 59.115 | 7.296 | 260.002 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 20 | 729 | 160201 | 10 19 59.119 | 7.104 | 263.752 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 22 | 730 | 160221 | 10 59 59.110 | -4.510 | 270.422 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 25 | 731 | 160251 | 11 59 59.113 | -9.431 | 281.650 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 28 | 732 | 160281 | 12 59 59.119 | 0.549 | 293.005 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 31 | 733 | 160311 | 13 59 59.124 | -11.104 | 306.273 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 1 | 734 | 170 11 | 9 59 24.116 | 15.939 | 214.797 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 2 | 735 | 170 21 | 10 19 59.121 | -20.810 | 218.317 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 3 | 736 | 170 31 | 10 39 59.125 | -0.133 | 221.454 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 4 | 737 | 170 41 | 10 59 24.131 | 15.062 | 224.305 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 5 | 738 | 170 51 | 11 19 59.109 | -26.675 | 227.695 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 6 | 739 | 170 61 | 11 39 59.114 | -13.803 | 230.807 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 7 | 740 | 170 71 | 11 59 59.119 | 4.704 | 234.177 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 8 | 741 | 170 81 | 12 19 59.123 | -17.321 | 237.405 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 9 | 742 | 170 91 | 12 39 59.129 | 2.677 | 240.686 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 10 | 743 | 170101 | 12 59 59.108 | 9.309 | 244.167 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 11 | 744 | 170111 | 13 19 59.115 | -36.716 | 247.578 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 12 | 745 | 170121 | 13 39 59.120 | -0.994 | 251.200 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 13 | 746 | 170131 | 13 59 59.121 | -10.206 | 254.890 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 14 | 747 | 170141 | 14 19 59.125 | -6.424 | 258.373 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 15 | 748 | 170151 | 14 39 59.131 | -15.334 | 262.094 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 16 | 749 | 170161 | 14 59 59.109 | -10.089 | 266.087 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 17 | 750 | 170171 | 9 19 59.114 | -51.645 | 269.516 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 18 | 751 | 170181 | 9 39 59.119 | 18.997 | 272.896 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 19 | 752 | 170191 | 9 59 59.123 | 7.304 | 276.512 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 20 | 753 | 170201 | 10 19 59.129 | 7.114 | 280.260 | 0.0 | 1.0000 | 0.10000E+01 | 60 |
| 22 | 754 | 170221 | 10 59 59.121 | -4.499 | 286.930 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 25 | 755 | 170251 | 11 59 59.125 | -9.419 | 298.159 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 28 | 756 | 170281 | 12 59 59.131 | 0.561 | 309.514 | 0.0 | 1.0000 | 0.10000E+01 | 540 |
| 31 | 757 | 170311 | 13 59 59.109 | -11.119 | 322.781 | 0.0 | 1.0000 | 0.10000E+01 | 540 |

# APPENDIX 4

## Common Receiver Gather Record Sections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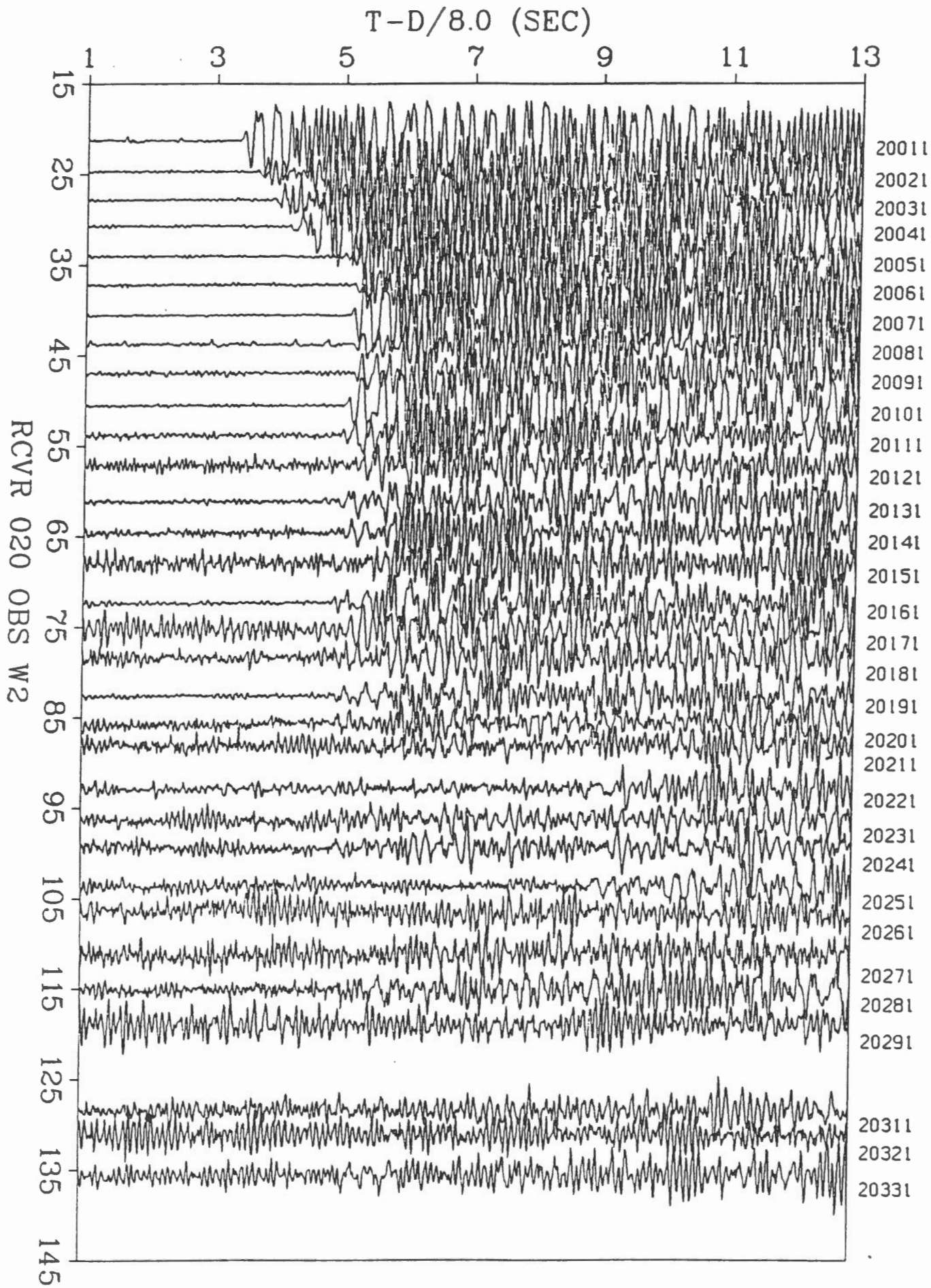
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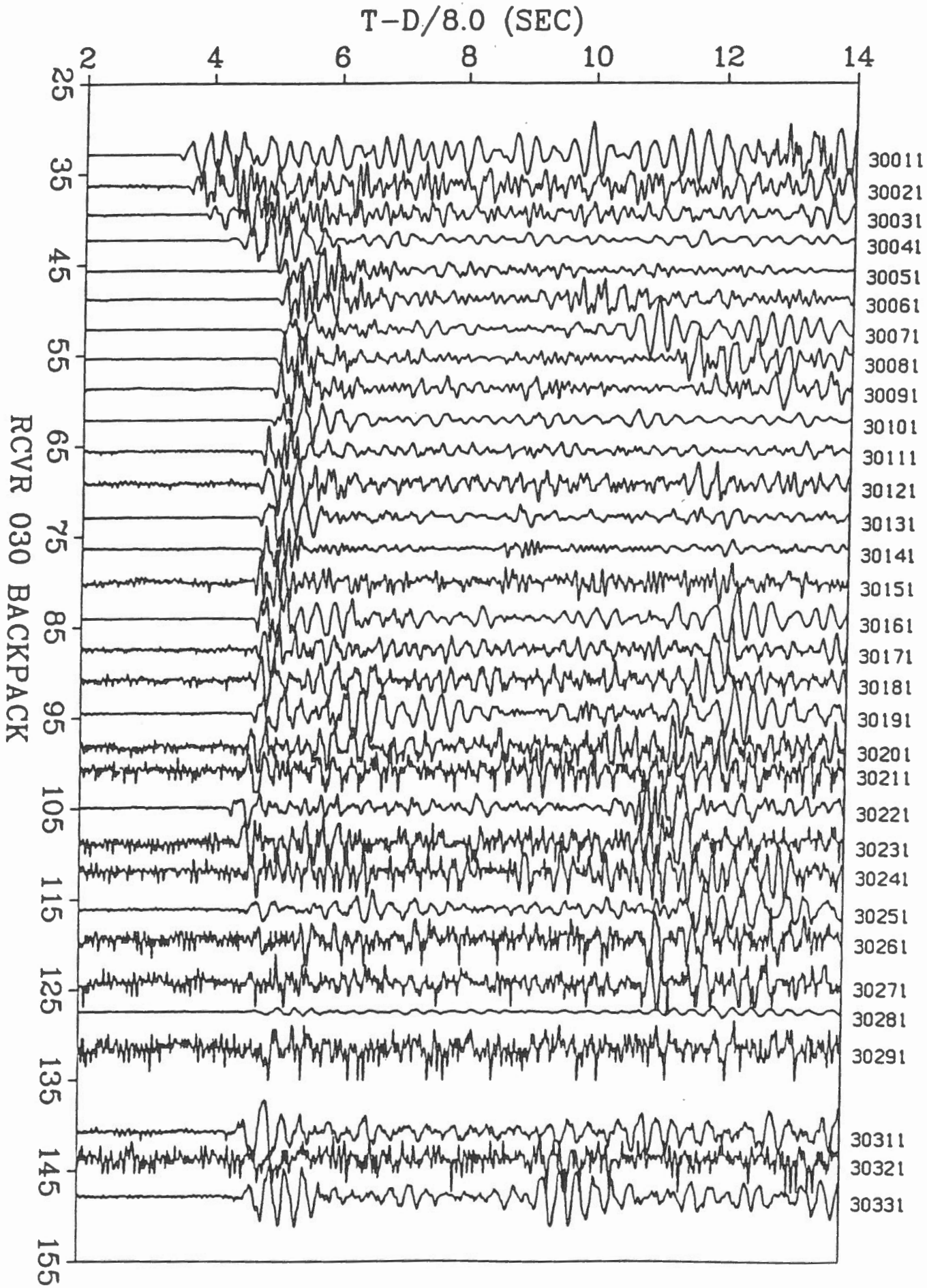
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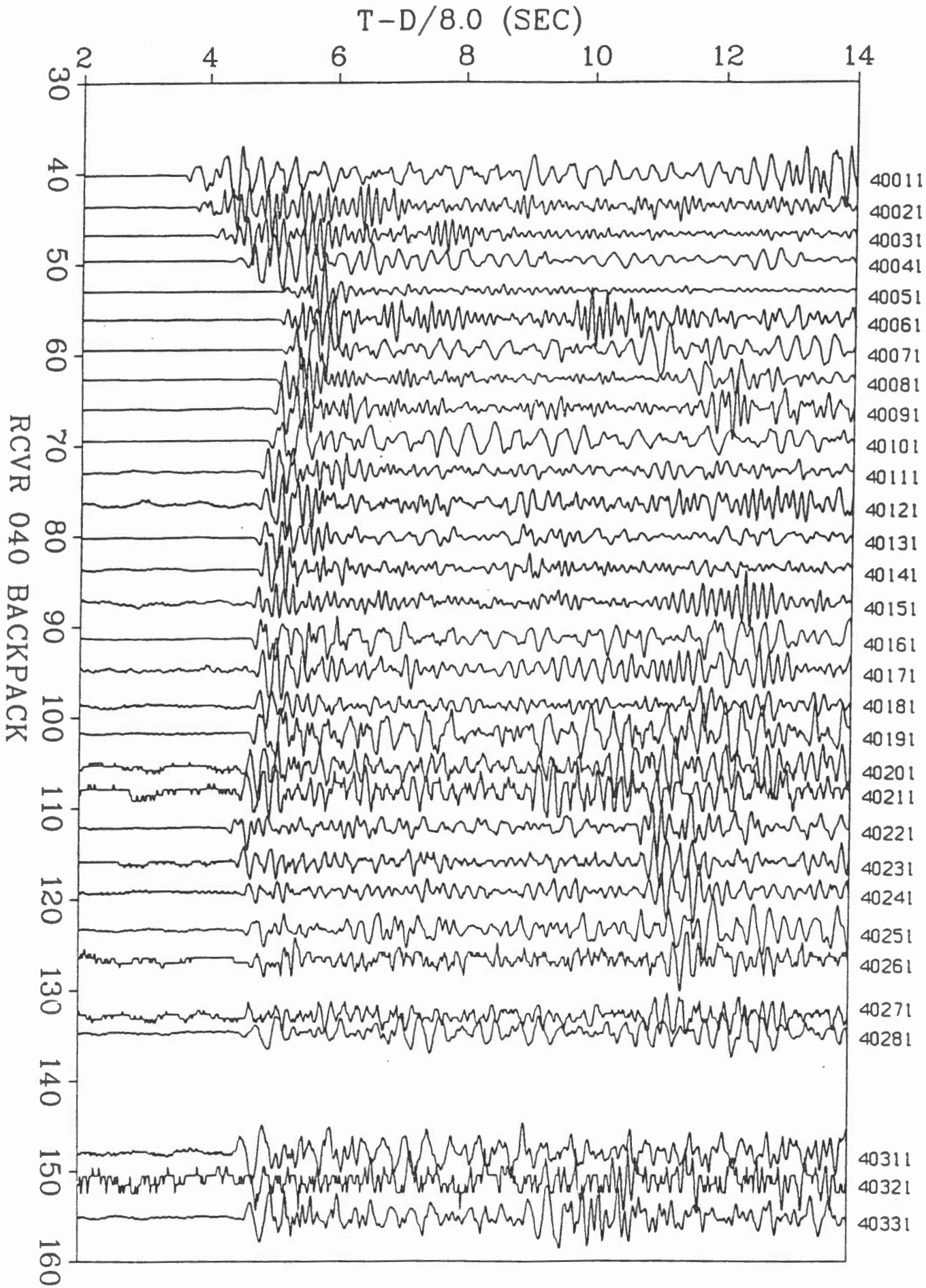
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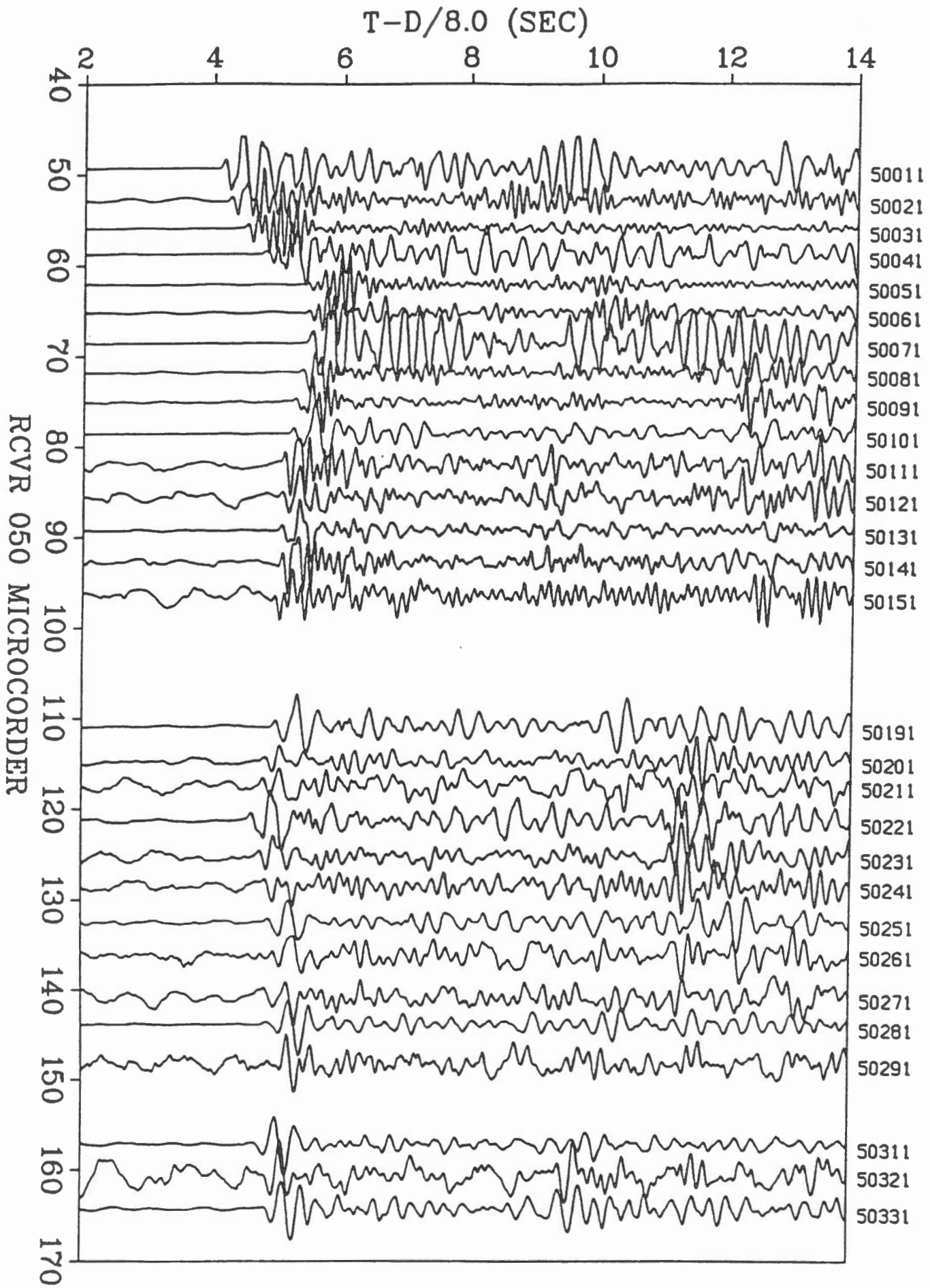
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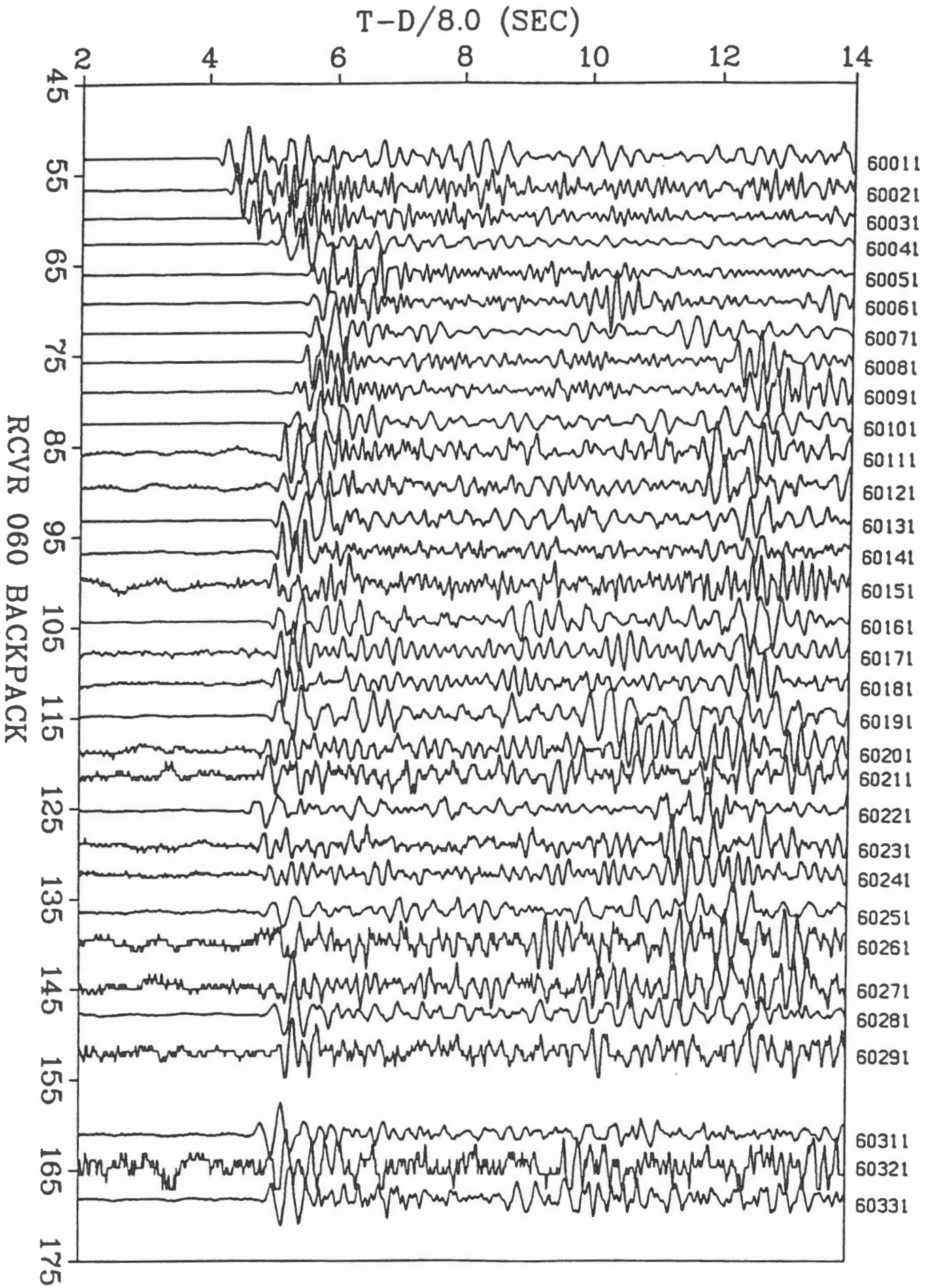
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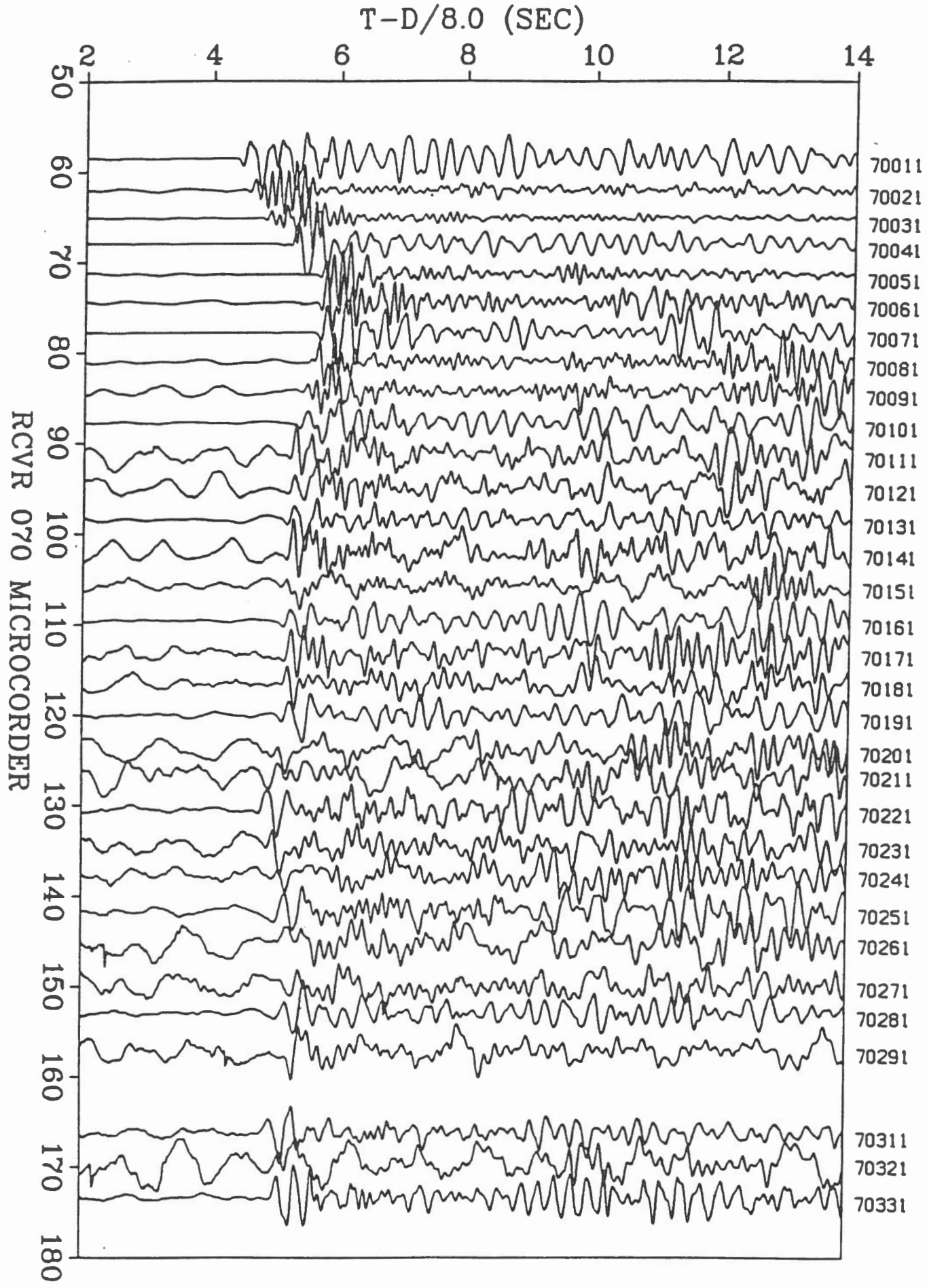
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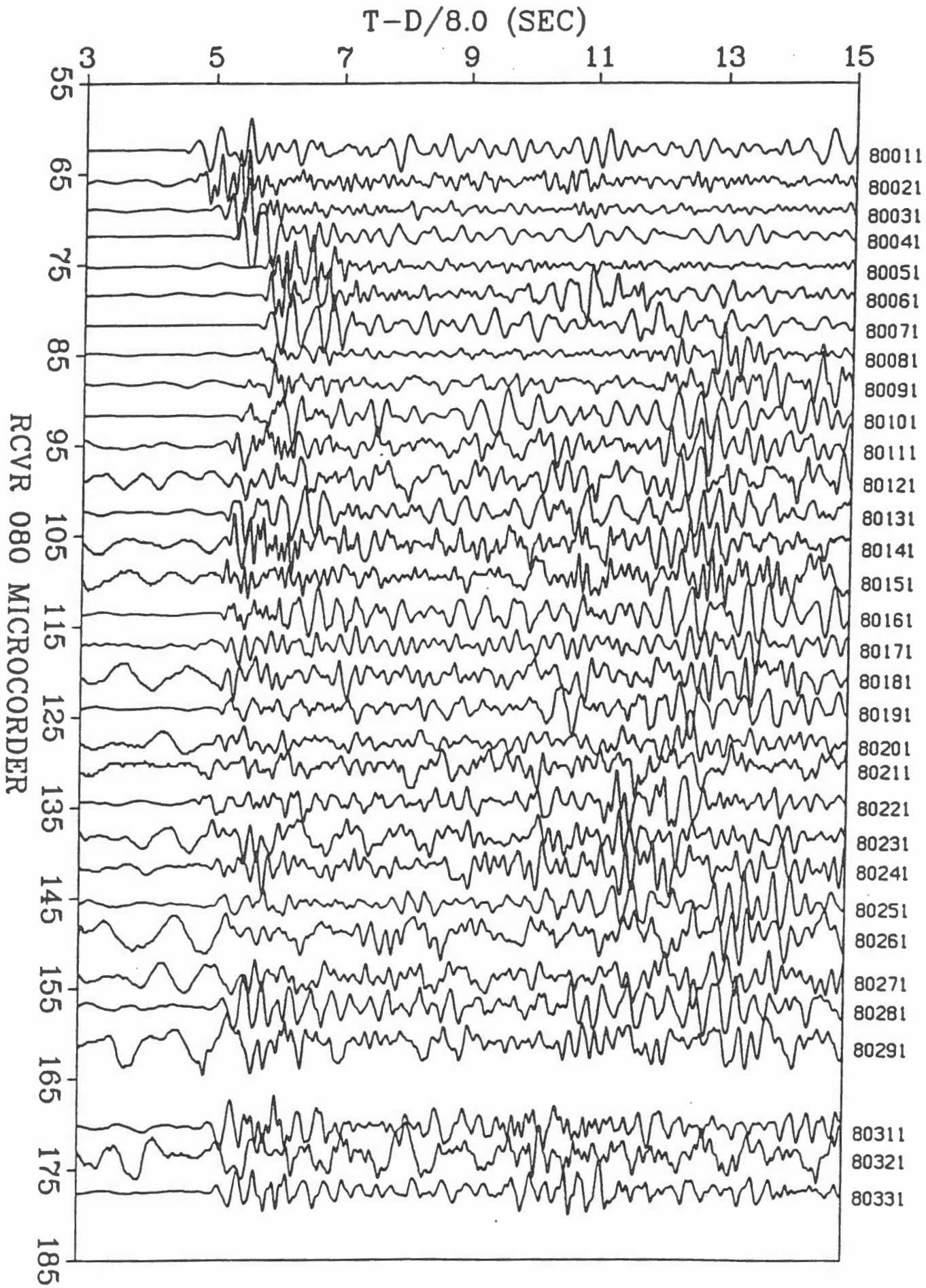
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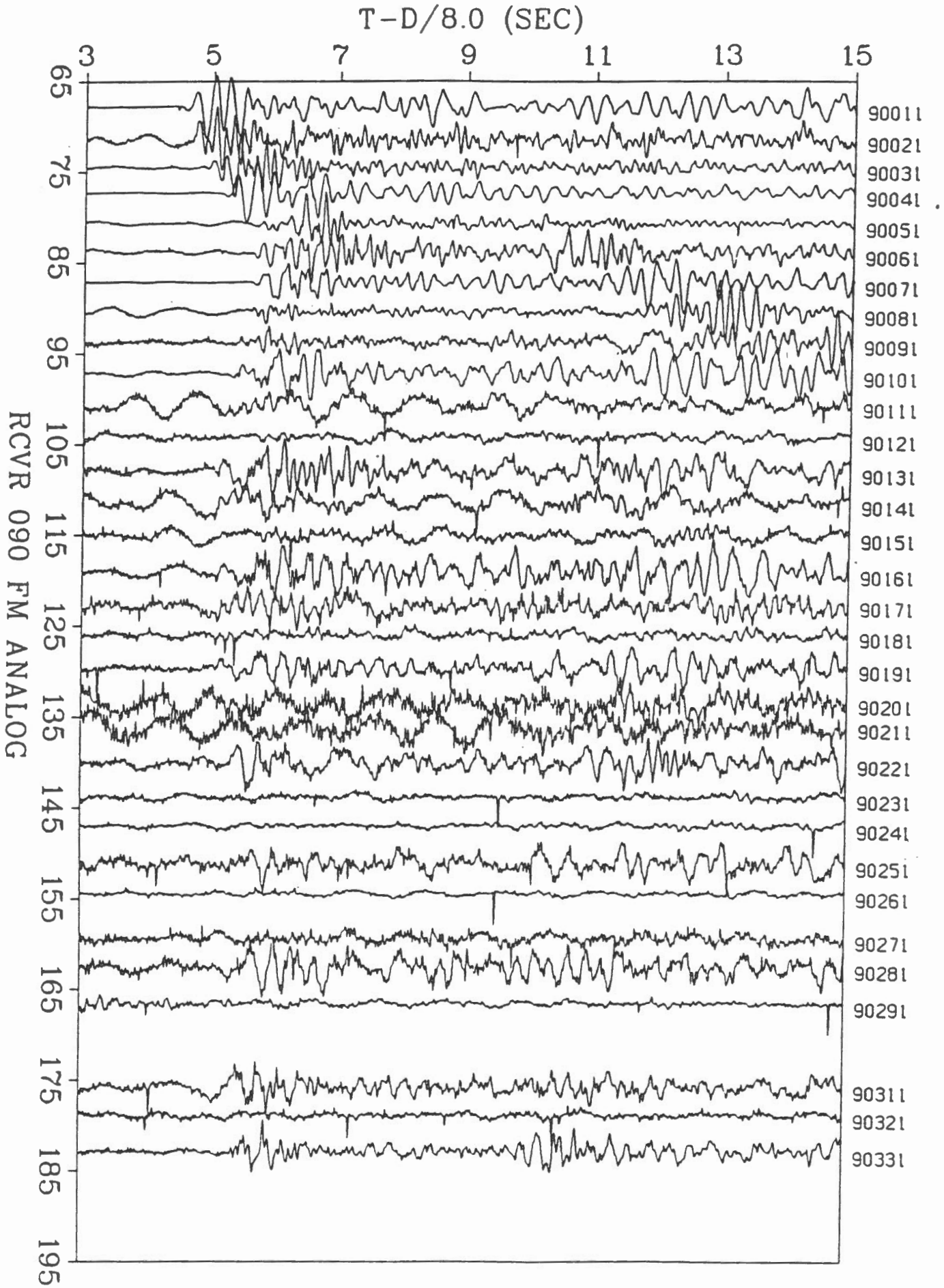
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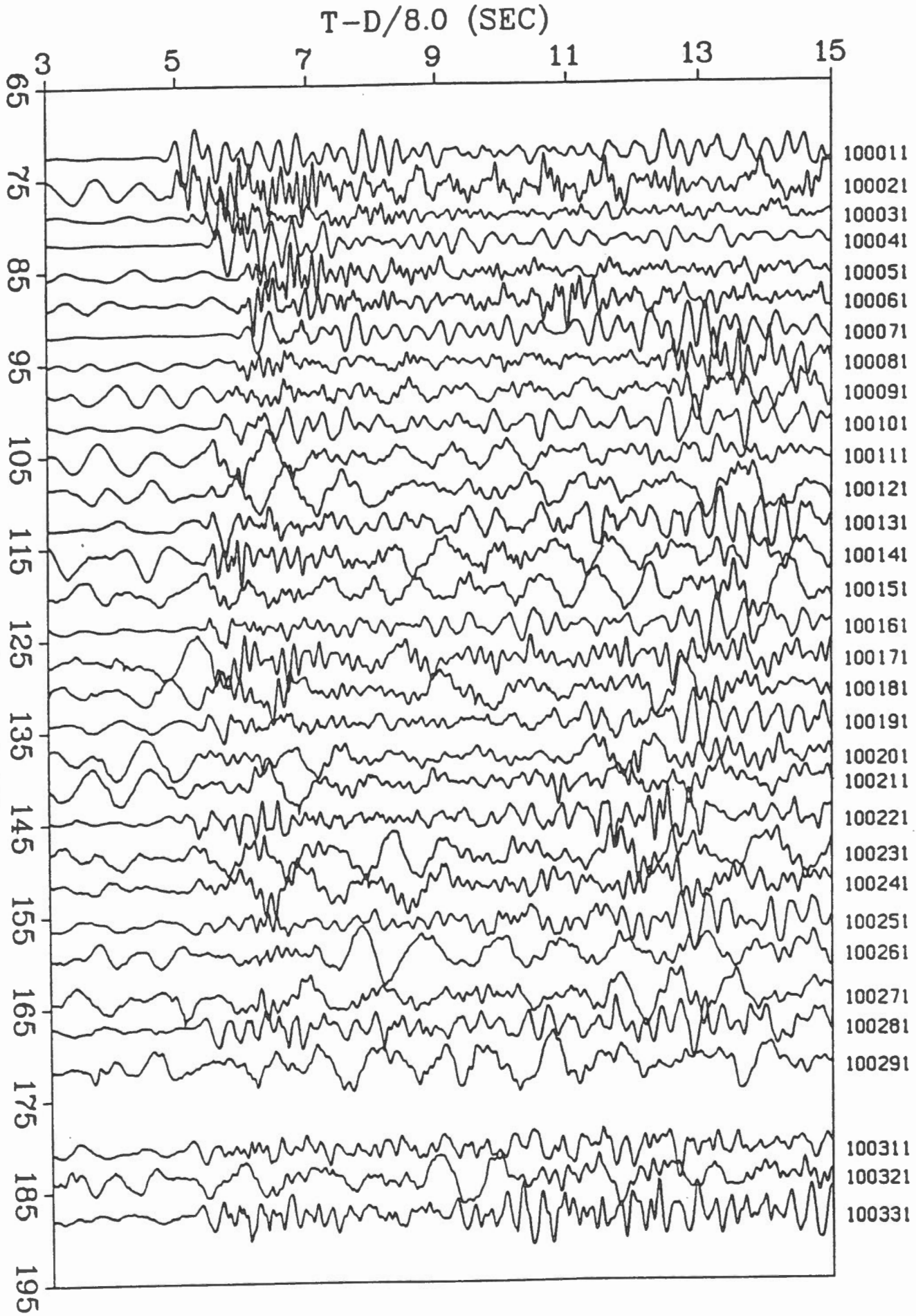
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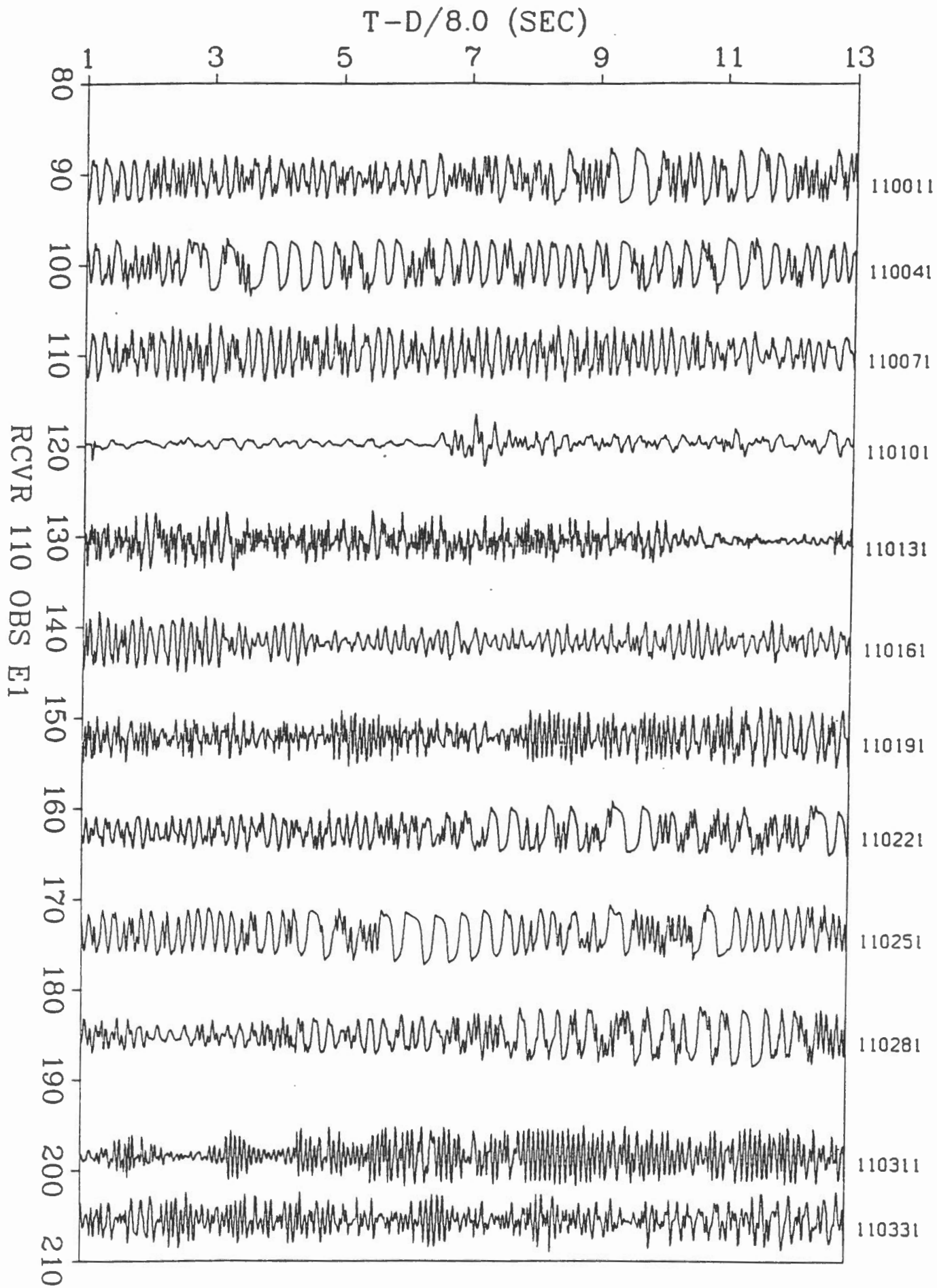
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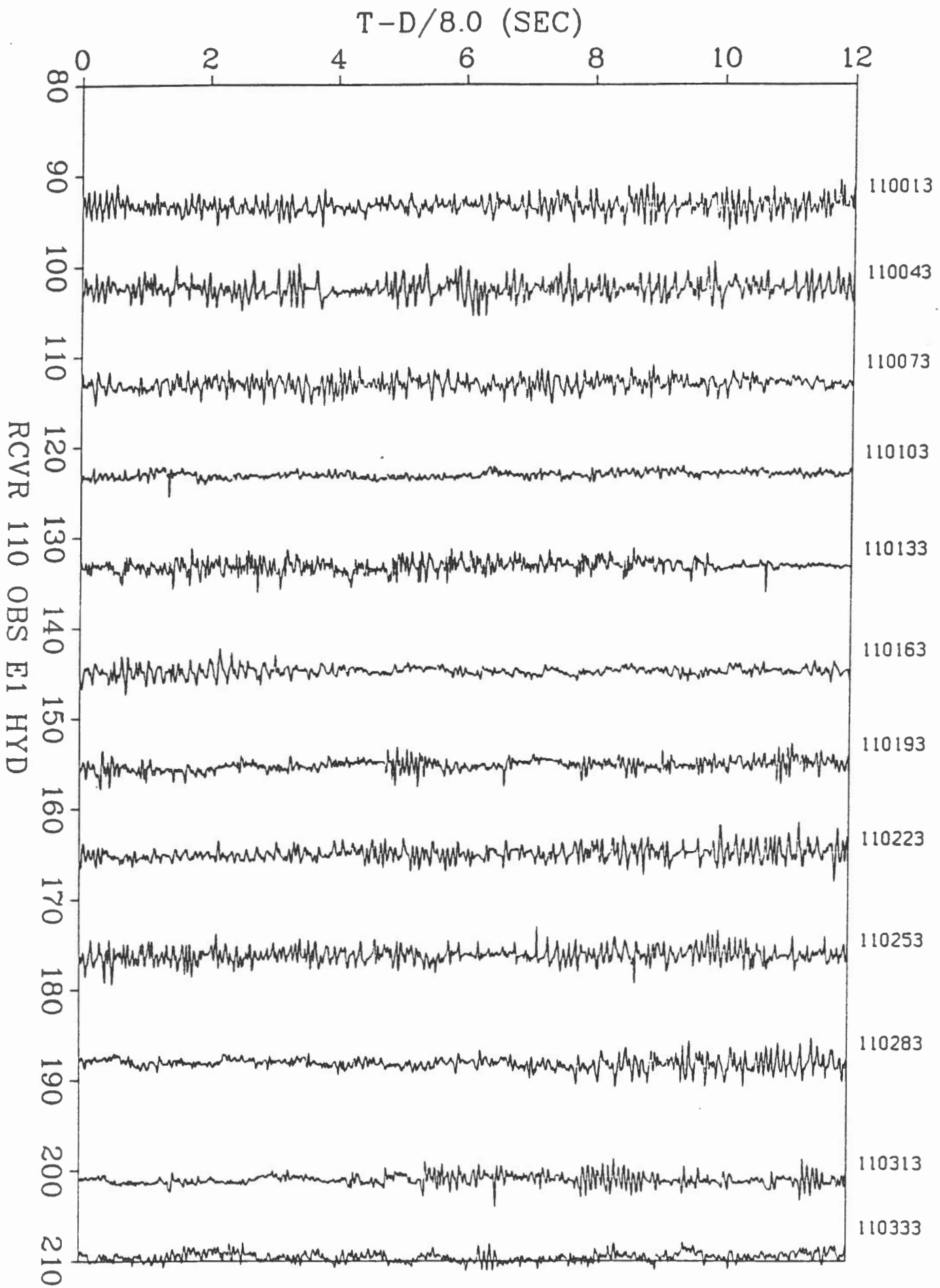
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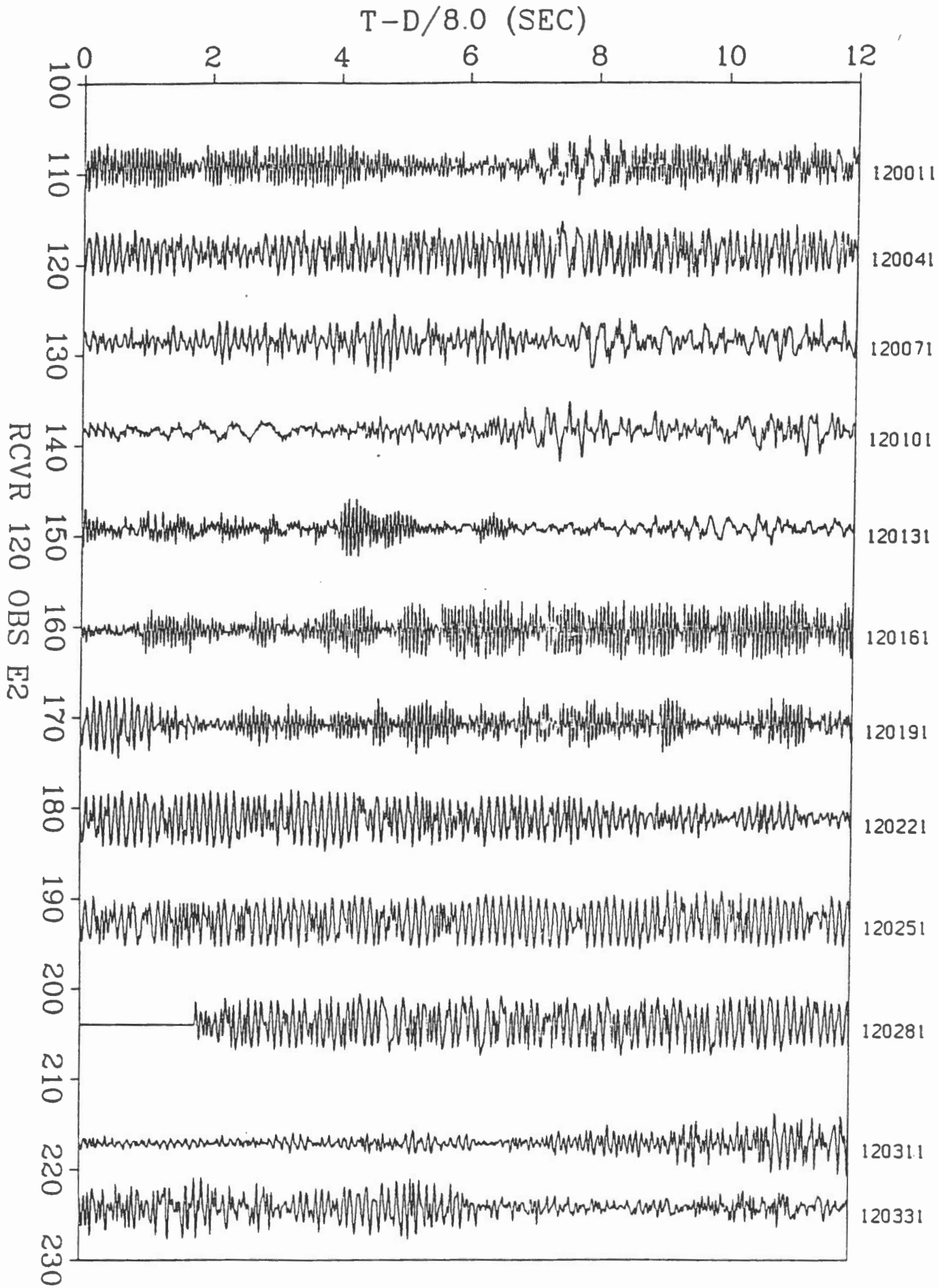
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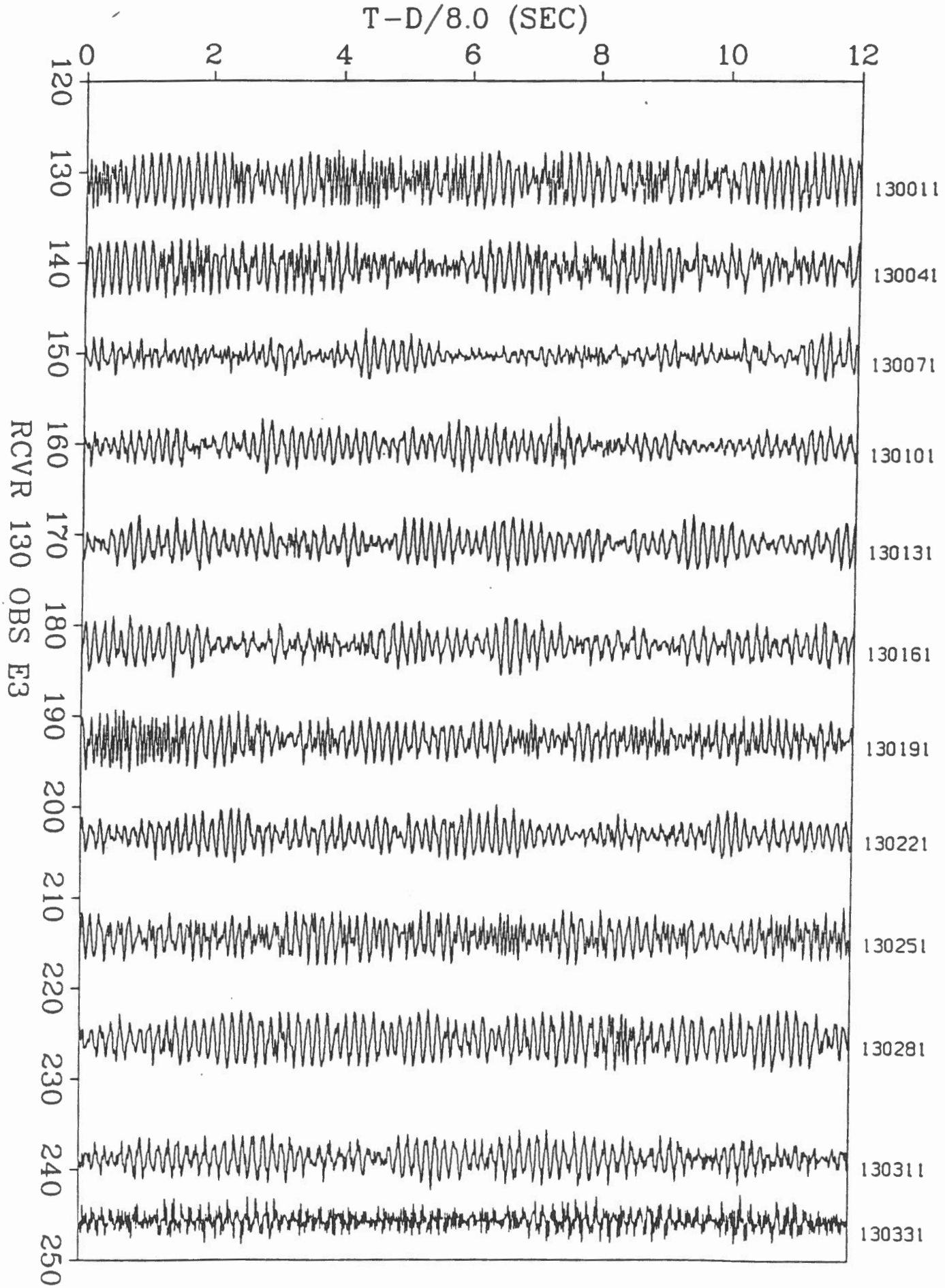
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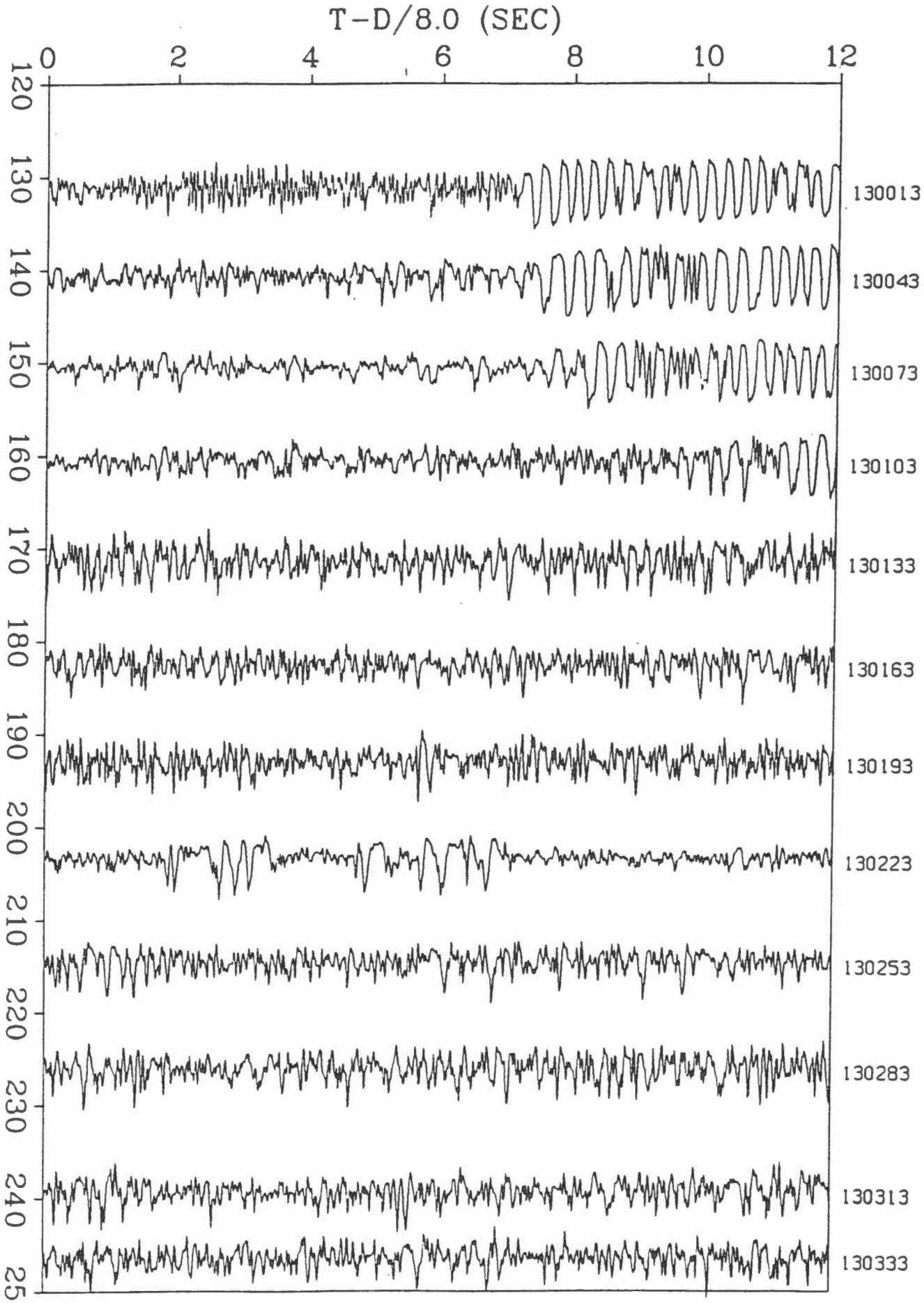
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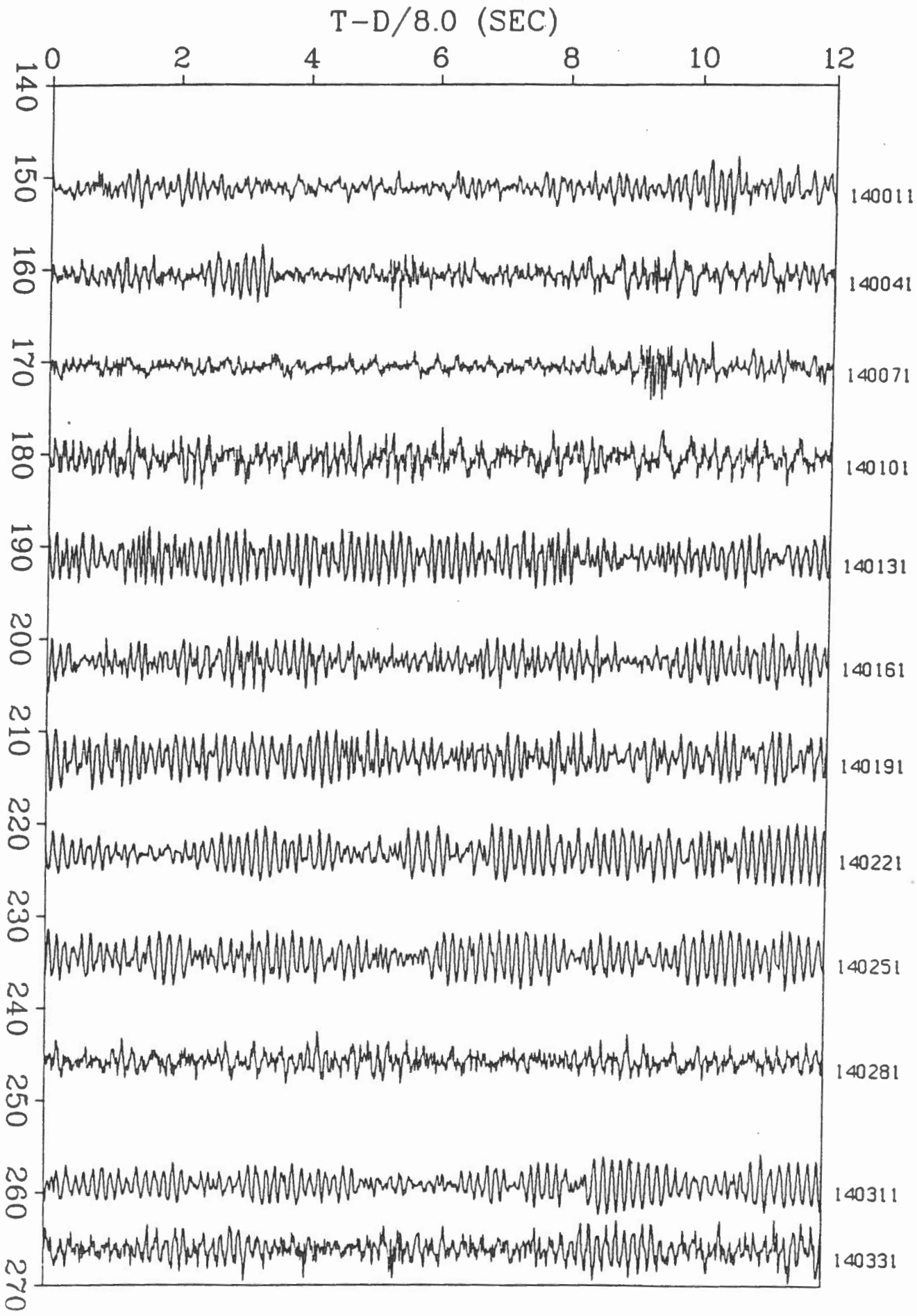
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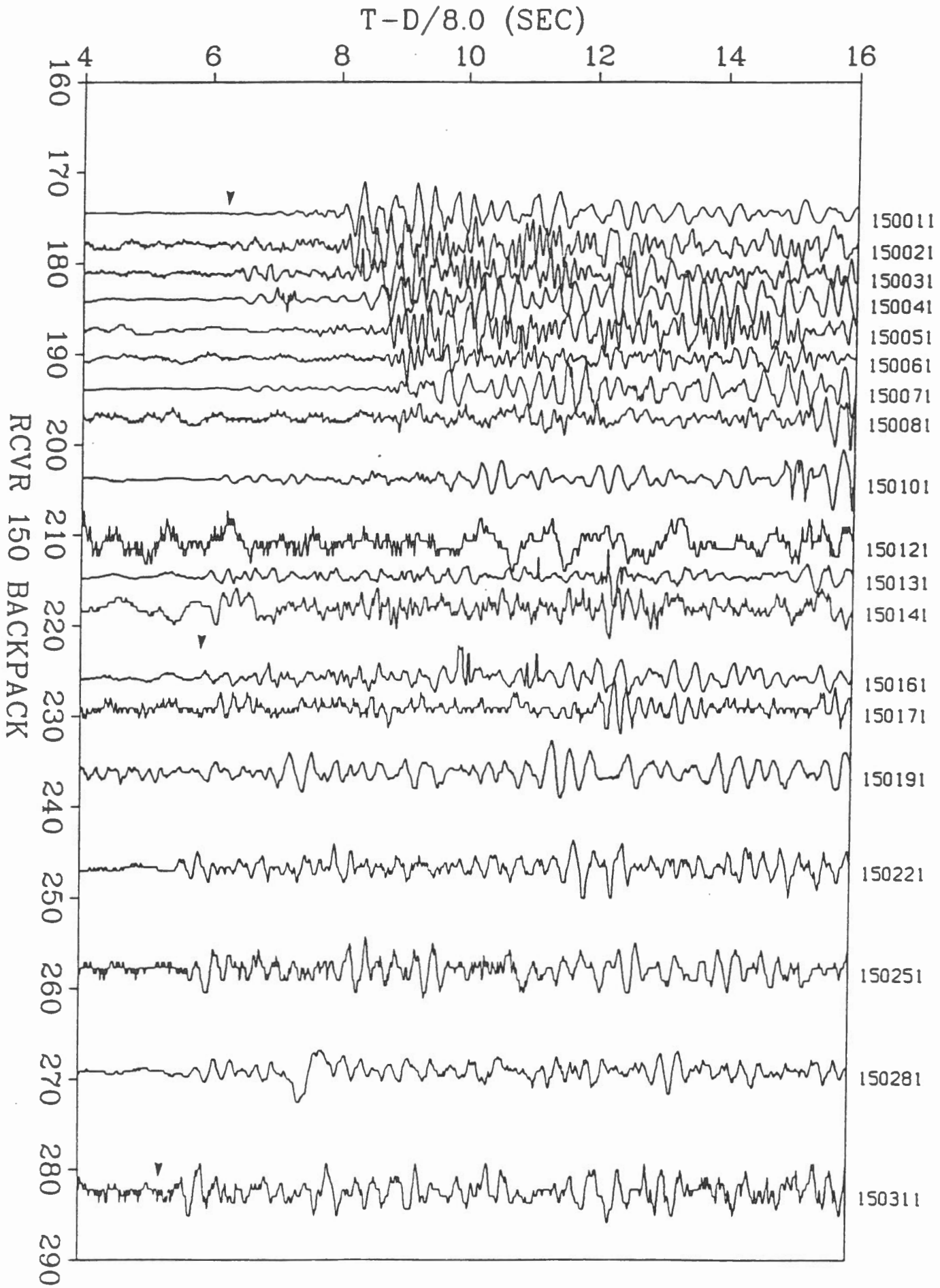
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RCVR 150 BACKPACK
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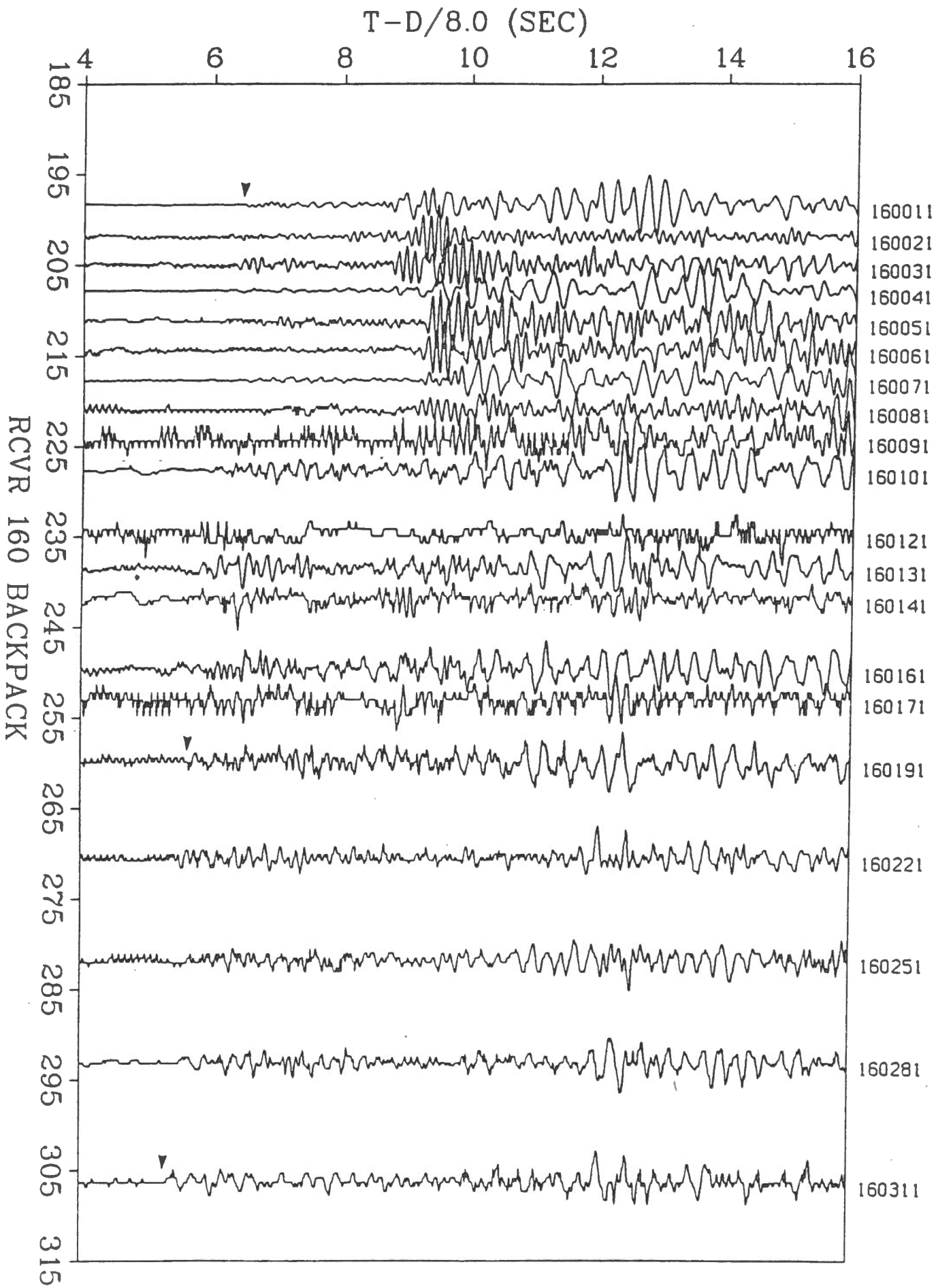
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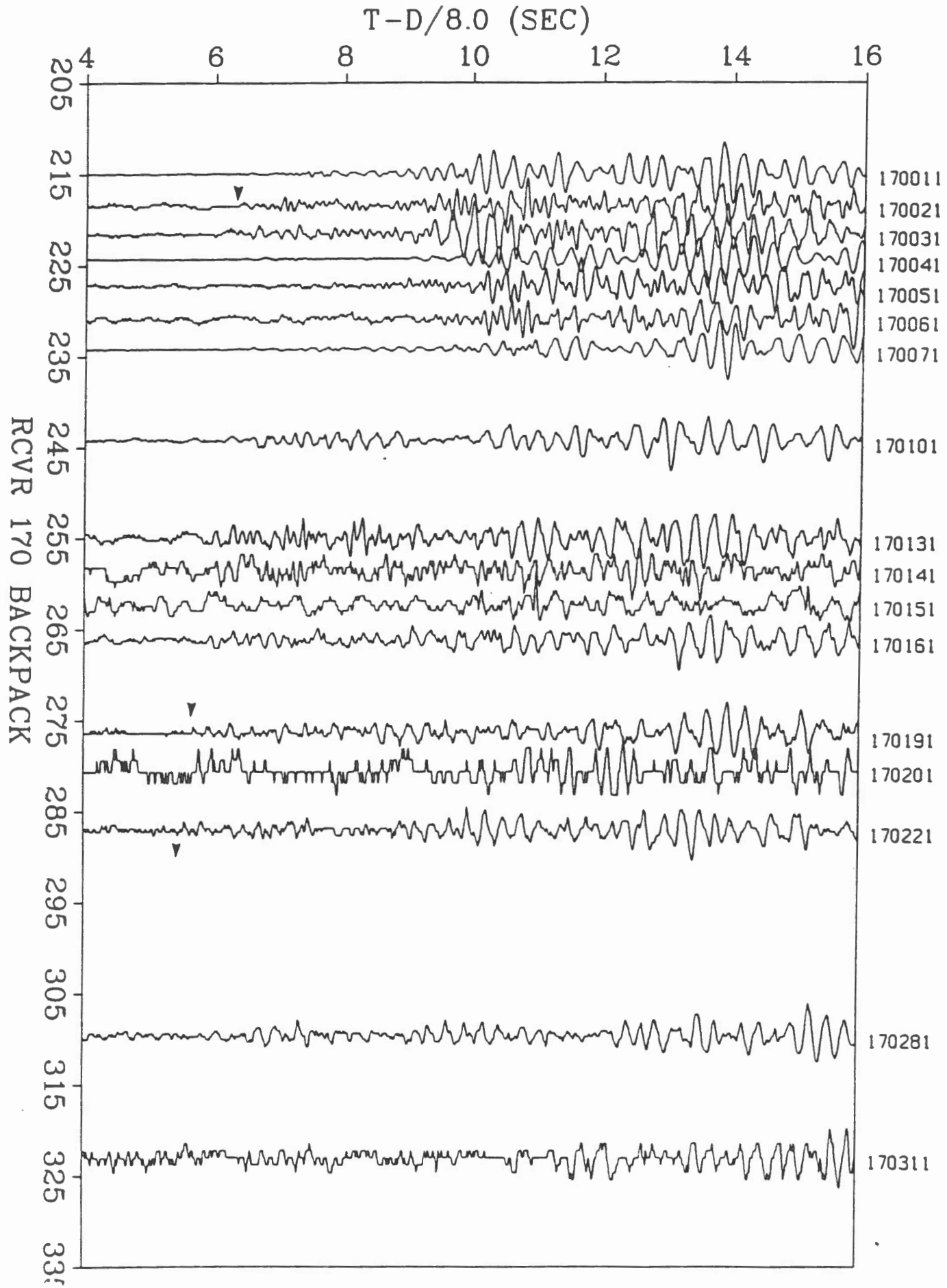
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