



BUNDESAMT FÜR
SEESCHIFFFAHRT
UND
HYDROGRAPHIE

SEG Y data

Geophysical site investigation (GeophysU)

Geological report (GeoB)

Conventions for naming and header assignment of SEG Y data

O23 «Site Investigation and Approval Advisory Subsoil»

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Naming Conventions

The naming of the preprocessed and processed data and profiles, respectively, must be consistent across the entire project data set and must provide at least the following information:

- Investigation area
- Profile number
- Profiles must be named according to their category (inline, crossline, diagonal, test)
- Run indication (A, B, C, ...)
- Infill indication (1, 2, 3, ...) – if applicable
- System (SBP, MCS)

The exact form of naming is left to the contractor of the geophysical site investigation, but must be described within the project documents. The contractor of the geological report must adhere to the described naming convention.

Additionally, data records must fulfill the following suffix requirements according to their processing status (profile data only).

Sub bottom profiler data:

Processing level	Suffix
Nav merge (georeferenced and preprocessed)	*_preproc
Processed	*_proc
Depth converted	*_depth

Multi channel seismic data:

Processing level	Suffix
Nav merge / binned (prestack)	*_preproc
QC poststack	*_QCstack
Processed poststack (unmigrated)	*_stack
processed poststack migrated	*_migstack
poststack depth converted (unmigrated)	*_stack_depth
poststack migrated depth converted	*_migstack_depth

General Header Information

Header assignment must be in accordance with SEG-Y Rev2.0 (Society of Exploration Geophysicists, 2017).

The following deviations from the standard must be considered:

- MCS prestack: The trace header positions 53-56 and 57-60 are to be occupied with the midpoint coordinates. The header positions 69-70 are understood as scalar, which is applied to all offset specifications. Milliseconds of recording time has to be stored in header position 169-170.
- MCS poststack: In the case of multi-channel seismic poststack data, deviations from the standard occur at header positions 17-20, 53-60, 73-80, 81-88 and 105-106. For time-domain data special attention should be paid to the assignment of header positions 105-106, where the picked seafloor travel times (after travel time correction for bathymetric alignment) have to be stored.
- SBP: The trace header position 169-170 is to be occupied with milliseconds of seconds recorded. For processed time-domain data special attention should be paid to the assignment of header positions 105-106, where the picked seafloor travel times (after travel time correction for bathymetric alignment) have to be stored.

At least the header entries listed below must be stored with the corresponding information. Additional headers have to be set reasonably and should be maintained according to the data processing steps. Unknown or unspecified header values must be indexed by 0.

Deviations are only possible after consultation with the client and with appropriate documentation.

Accuracies:

Coordinates and offsets [m] have to be stored with an accuracy of 2 decimal places.

Time data according to trace header bytes 95-114 must be stored with an accuracy of at least two decimal places.

Delay recording time (byte location 109-110):

Value by which a trace must be shifted to obtain the "real" travel time. If incomplete travel times (e.g. due to a delayed source triggering or recording delay) have already been corrected by the corresponding values during processing (e.g. bulk shift correction), 0 must be entered. If the trace has to be corrected by a certain time value during import into an interpretation software, this value has to be entered here.

Header Assignment for Multi Channel Seismic Data (MCS-Prestack)

Text Header (ASCII):

3200-byte Textural File Header	
Cols 01-40	Cols 41-80
C 1 Client: Bundesamt für Seeschifffahrt und Hydrographie	
C 2 Project: <i>Reference number (Aktenzeichen)</i>	
C 3 Contractor: <i>Name of contractor</i>	
C 4 Survey vessel: <i>Name of survey vessel (Owner)</i>	
C 5 Line:	Area: e.g. N16A
C 6 Observer:	
C 7 Start date of data acquisition: <i>DD.MM.YYYY</i>	
C 8 Sample interval [us]:	Samples/Trace:
C 9 Data format: z.B. <i>Single Prec. IEEE Floating Pnt</i>	Byte order: <i>big-/little-endian</i>
C10 Source: <i>Manufacturer and type of seismic source, shooting mode and energy settings</i>	
C11 Survey speed o.g. [kn]:	Source towing depth [m]:
C12 Shooting interval [s or m]:	Shooting energy: <i>in Joule</i>
C13 Recording system: <i>Manufacturer and type of the recording system</i>	
C14 Streamer system: <i>Manufacturer and type of the streamer system</i>	
C15 Near offset channel – far offset channel: e.g. 1-96	
C16 Spread [m]: <i>Min. offset – max. offset</i>	Group spacing [m]:
C17 Hydrophones per group:	Hydrophone spacing [m]:
C18 Streamer depth leveling approach: <i>Flat tow, deep tow, slanted tow; no bird use/bird use</i>	
C19 Streamer target depth [m]:	Recording Delay [ms]:
C20	
C21 Map projection [EPSG-Code]: 25832	Coordinate units: m
C22	
C23 Processing level: <i>please choose: nav merge and binned</i>	
C24 Processing: ... <i>please note applied processing steps...</i>	
C25 Processing: ... <i>please note applied processing steps...</i>	
C26 Processing: ... <i>please note applied processing steps...</i>	

C27	
C28 SEG-Y Rev2.0 (2017)	
C29 Header location 53-56: X Mid-point of trace (32-bit Signed Integer, size 4)	
C30 Header location 57-60: Y Mid-point of trace (32-bit Signed Integer, size 4)	
C31 Header location 69-70: Scalar to be applied to elev., depths AND offsets	
C32 Header location 69-70: 16-bit Signed Integer, size 2	
C33 Header locations 169-170: Millisecond of second data recorded	
C34 Header locations 169-170: 16-bit Signed Integer, size 2	
C35in case of further deviations from the standard, please note here....	
C36	
C37	
C38	
C39	
C40 End Textual Header	

Trace Header:

Byte-Location	Type	Size	Description
1-4	32-bit Signed Integer	4	Trace seq. no. within line
5-8	32-bit Signed Integer	4	Trace seq. within SEG-Y file
9-12	32-bit Signed Integer	4	Original field record
13-16	32-bit Signed Integer	4	Channel no.
17-20	32-bit Signed Integer	4	Shot point no.
21-24	32-bit Signed Integer	4	CMP ensemble no.
25-28	32-bit Signed Integer	4	Ensemble seq. no. – each ensemble starts with trace number one
29-30	16-bit Signed Integer	2	Trace ident. Code [1]
37-40	32-bit Signed Integer	4	Distance shot to receiver (may be –ve)
49-52	32-bit Signed Integer	4	Source depth below surface (+ve)
53-56	32-bit Signed Integer	4	X Mid-point of trace
57-60	32-bit Signed Integer	4	Y Mid-point of trace
69-70	16-bit Signed Integer	2	Scalar to be applied to all elevations,

			depths and offsets specified in trace header bytes 37-68 *
71-72	16-bit Signed Integer	2	Scalar to be applied to all coordinates *
73-76	32-bit Signed Integer	4	Shot X coordinate
77-80	32-bit Signed Integer	4	Shot Y coordinate
81-84	32-bit Signed Integer	4	Receiver group X coordinate
85-88	32-bit Signed Integer	4	Receiver group Y coordinate
89-90	16-bit Signed Integer	2	Coordinate units [1]
109-110	16-bit Signed Integer	2	Delay recording time [ms]
115-116	16-bit Signed Integer	2	Number of samples for the trace
117-118	16-bit Signed Integer	2	Sample interval for the trace [us]
157-158	16-bit Signed Integer	2	Year data recorded
159-160	16-bit Signed Integer	2	Day of year data recorded
161-162	16-bit Signed Integer	2	Hour of day (24h day)
163-164	16-bit Signed Integer	2	Minute of hour data recorded
165-166	16-bit Signed Integer	2	Second of minute data recorded
167-168	16-bit Signed Integer	2	Time basis code: UTC [4]
169-170	16-bit Signed Integer	2	Millisecond of second data recorded
181-184	32-bit Signed Integer	4	CMP X coordinate
185-188	32-bit Signed Integer	4	CMP Y coordinate
215-216	16-bit Signed Integer	2	Scalar to be applied to times specified in trace header bytes 95-114 *

* Scalar = 1, ± 10 , ± 100 , ± 1000 or ± 10000 . If positive, scalar is used as a multiplier; if negative, scalar is used as a divisor. A value of zero is assumed to be a scalar value of 1.

The accuracy of the trace header values must be at least two decimal places.

Header Assignment for Multi Channel Seismic Data (MCS-Poststack)

Text Header (ASCII):

3200-byte Textural File Header	
Cols 01-40	Cols 41-80
C 1 Client: Bundesamt für Seeschifffahrt und Hydrographie	
C 2 Project: <i>Reference number (Aktenzeichen)</i>	
C 3 Contractor: <i>Name of contractor</i>	
C 4 Survey vessel: <i>Name of survey vessel (Owner)</i>	
C 5 Line:	Area: e.g. N16A
C 6 Observer:	
C 7 Start date of data acquisition: <i>DD.MM.YYYY</i>	
C 8 Sample interval [us]:	Samples/Trace:
C 9 Data format: z.B. <i>Single Prec. IEEE Floating Pnt</i>	Byte order: <i>big-/little-endian</i>
C10 Source: <i>Manufacturer and type of seismic source, shooting mode and energy settings</i>	
C11 Survey speed o.g. [kn]:	Source towing depth [m]:
C12 Shooting interval [s or m]:	Shooting energy: <i>Joule</i>
C13 Recording system: <i>Manufacturer and type of the recording system</i>	
C14 Streamer system: <i>Manufacturer and type of the streamer system</i>	
C15 Near offset channel – far offset channel: e.g. 1-96	
C16 Spread [m]: <i>Min. offset – max. offset</i>	Group spacing [m]:
C17 Hydrophones per group:	Hydrophone spacing [m]:
C18 Streamer depth leveling approach: <i>Flat tow, deep tow, slanted tow; no bird use/brid use</i>	
C19 Streamer target depth [m]:	
C20	
C21 Map projection [EPSG-Code]: 25832	Coordinate units: m
C22	
C23 Processing level: <i>please choose: QC poststack, processed poststack, processed poststack migrated, poststack depth converted, poststack migrated depth converted</i>	
C24 Processing: <i>...please note applied processing steps...</i>	

C25 Processing: ... <i>please note applied processing steps</i> ...
C26 Processing: ... <i>please note applied processing steps</i> ...
C27 Processing: ... <i>please note applied processing steps</i> ...
C28 Processing: ... <i>please note applied processing steps</i> ...
C29
C30 SEG-Y Rev2.0 (2017)
C34 Header location 105-106: Seafloor travel time [ms] (16-bit Sign. Int., size 2)
C35 ... <i>in case of further deviations from the standard, please note here</i> ...
C36
C37
C38
C39
C40 End Textual Header

Trace Header:

Byte-Location	Type	Size	Description
21-24	32-bit Signed Integer	4	CMP ensemble no.
29-30	16-bit Signed Integer	2	Trace ident. Code [1]
33-34	16-bit Signed Integer	2	Fold
71-72	16-bit Signed Integer	2	Scalar to be applied to all coordinates *
89-90	16-bit Signed Integer	2	Coordinate units [1]
103-104	16-bit Signed Integer	2	Total travel time correction [ms]
105-106	16-bit Signed Integer	2	Final seafloor travel time [ms] **
109-110	16-bit Signed Integer	2	Delay recording time [ms]
115-116	16-bit Signed Integer	2	Number of samples for the trace
117-118	16-bit Signed Integer	2	Sample interval for the trace [us]
181-184	32-bit Signed Integer	4	CMP X coordinate
185-188	32-bit Signed Integer	4	CMP Y coordinate
215-216	16-bit Signed Integer	2	Scalar to be applied to times specified in trace header bytes 95-114 *

* Scalar = 1, ± 10 , ± 100 , ± 1000 or ± 10000 . If positive, scalar is used as a multiplier; if negative, scalar is used as a divisor. A value of zero is assumed to be a scalar value of 1.

The accuracy of the trace header values must be at least two decimal places.

** Seafloor travel time after travel time correction. For time-domain data only.

Header Assignment for Sub Bottom Profiler Data (SBP)

Text Header (ASCII):

3200-byte Textural File Header	
Cols 01-40	Cols 41-80
C 1 Client: Bundesamt für Seeschifffahrt und Hydrographie	
C 2 Project: <i>Reference number (Aktenzeichen)</i>	
C 3 Contractor: <i>Name of contractor</i>	
C 4 Survey vessel: <i>Name of survey vessel (Owner)</i>	
C 5 Line:	Area: e.g. N16A
C 6 Observer:	
C 7 Start date of data acquisition: <i>DD.MM.YYYY</i>	
C 8 Sample interval [us]:	Samples/Trace:
C 9 Data format: z.B. <i>Single Prec. IEEE Floating Pnt</i>	Byte order: <i>big-/little-endian</i>
C10 System: <i>Manufacturer and type of system</i>	
C11 Survey speed o.g. [kn]:	Source depth [m]:
C12 Ping rate [Hz]:	Secondary low frequency [kHz]:
C13 Pulse type: e.g. <i>Single Pulse</i>	Recording Delay [ms]:
C14	
C15	
C16	
C17	
C18	
C19	
C20	
C21 Map projection [EPSG-Code]: 25832	Coordinate units: m
C22	
C23 Processing level: <i>please choose: nav merge, processed, depth converted</i>	
C24 Processing: ... <i>please note applied processing steps...</i>	
C25 Processing: ... <i>please note applied processing steps...</i>	

C26 Processing: ... <i>please note applied processing steps...</i>	
C27	
C28 SEG-Y Rev2.0 (2017)	
C29 Header location 105-106: Seafloor travel time [ms] (16-bit Sign. Int., size 2)	
C30 Header location 169-170: Millisecond of second data recorded	
C31 Header location 169-170: 16-bit Signed Integer, size 2	
C32 ... <i>in case of further deviations from the standard, please note here...</i>	
C33	
C34	
C35	
C36	
C37	
C38	
C39	
C40 End Textual Header	

Trace Header:

Byte-Location	Type	Size	Description
1-4	32-bit Signed Integer	4	Trace seq. no. within line
5-8	32-bit Signed Integer	4	Trace seq. within SEG-Y file
9-12	32-bit Signed Integer	4	Original field record
17-20	32-bit Signed Integer	4	Shot point no.
29-30	16-bit Signed Integer	2	Trace ident. Code [1]
49-52	32-bit Signed Integer	4	Source depth below surface (+ve)
69-70	16-bit Signed Integer	2	Scalar to be applied to all elevations and depths specified in trace header bytes 41-68 *
71-72	16-bit Signed Integer	2	Scalar to be applied to all coordinates *
73-76	32-bit Signed Integer	4	Shot X coordinate
77-80	32-bit Signed Integer	4	Shot Y coordinate
89-90	16-bit Signed Integer	2	Coordinate units [1]
103-104	16-bit Signed Integer	2	Total travel time correction [ms]
105-106	16-bit Signed Integer	2	Final seafloor travel time [ms] **

109-110	16-bit Signed Integer	2	Delay recording time [ms]
115-116	16-bit Signed Integer	2	Number of samples for the trace
117-118	16-bit Signed Integer	2	Sample interval for the trace [us]
157-158	16-bit Signed Integer	2	Year data recorded
159-160	16-bit Signed Integer	2	Day of year data recorded
161-162	16-bit Signed Integer	2	Hour of day (24h day)
163-164	16-bit Signed Integer	2	Minute of hour data recorded
165-166	16-bit Signed Integer	2	Second of minute data recorded
167-168	16-bit Signed Integer	2	Time basis code: UTC [4]
169-170	16-bit Signed Integer	2	Millisecond of second data recorded
215-216	16-bit Signed Integer	2	Scalar to be applied to times specified in trace header bytes 95-114 *

* Scalar = 1, ± 10 , ± 100 , ± 1000 or ± 10000 . If positive, scalar is used as a multiplier; if negative, scalar is used as a divisor. A value of zero is assumed to be a scalar value of 1.
The accuracy of the trace header values must be at least two decimal places.

** Seafloor travel time after travel time correction. For processed time-domain data only.