External Format Definitions

RINEX:

```
(A20                 )(A16               A4 )                        ANT # / TYPE
```

ANTEX:

```
(A16               A4 )(A20                 )                        TYPE / SERIAL NO
```

SINEX:

```
*-------------------------------------------------------------------------------
+SITE/ANTENNA
*SITE PT SOLN T DATA_START__ DATA_END____ DESCRIPTION_________ S/N__
 ...                                      (A16              A4 ) (A5 )
*-------------------------------------------------------------------------------
+SITE/GPS_PHASE_CENTER
*                            UP____ NORTH_ EAST__ UP____ NORTH_ EAST__
*DESCRIPTION_________ S/N__ L1->ARP(M)___________ L2->ARP(M)___________
 (A16              A4 ) (A5 )        ......                ......         (model)
```

External Format Definitions

RINEX:

```
(A20                 )(A16             A4 )                        ANT # / TYPE
```

ANTEX:

```
(A16             A4 )(A20                 )                        TYPE / SERIAL NO
```

SINEX:

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*-------------------------------------------------------------------------------
+SITE/ANTENNA
*SITE PT SOLN T DATA_START__ DATA_END____ DESCRIPTION_________ S/N__
 ...                                     (A16              A4 ) (A5 )
*-------------------------------------------------------------------------------
+SITE/GPS_PHASE_CENTER
*                            UP____ NORTH_ EAST__ UP____ NORTH_ EAST__
*DESCRIPTION_________ S/N__ L1->ARP(M)___________ L2->ARP(M)___________
 (A16              A4 ) (A5 )        ......                ......         (model)
```

Just by chance:

LEIAR25.R3 LEIT – VALE: 10190012 and SUN6: 08490012

Handling within Bernese

Station information file:

```
TYPE 002: STATION INFORMATION
-----------------------------

STATION NAME      ... ANTENNA TYPE          ANTENNA SERIAL NBR    ANT #   ...
****************  ... ********************  ********************  ******  ...
...                   (A16             A4 )  (A20                )  (I6  )  ...
```

- `ANTENNA TYPE` and `ANTENNA SERIAL NBR` are used to
  - to verify the RINEX header
  - to search for the record in the ANTEX file
- `ANT #` is used for all internal processing
  needs to be uniq for all individually calibrated antennas
- when writing a SINEX file, the `ANT #` is used to search for the related `ANTENNA SERIAL NBR` and the last five characters are extracted

Option 1

use an alternative `ANT #` in the station information file

Pro and cons:

+ correct `A20` antenna series numbers in RINEX and ANTEX
+ Bernese uses for correct individual PCV-corrections
− both stations will have the same `S/N` value in the SINEX file

Option 2

alternative `ANTENNA SERIAL NBR` in the station information file

Pro and cons:

- ◦ RINEX files can stay with the original entries
  RINEX header is verified by the RINEX inconsistency file
- – ANTEX must be changed to the `ANTENNA SERIAL NBR`
- \+ Bernese uses for correct individual PCV-corrections
- ◦ stations may be distinguished in the SINEX file
  but based on the alternative `ANTENNA SERIAL NBR`

Option 3

extent the S/N field in SINEX to 20 characters

Pro and cons:

+ make all exchange format consistent

```
*-------------------------------------------------------------------------------
+SITE/ANTENNA
*SITE PT SOLN T DATA_START__ DATA_END____ DESCRIPTION_________ S/N_________________
 ...                                      (A16             A4 ) (A20               )
```

– exceeds the 80–character standard by 3 characters

– what about the PHASE_CENTER–block?

```
*-------------------------------------------------------------------------------
+SITE/GPS_PHASE_CENTER
*                            UP____ NORTH_ EAST__ UP____ NORTH_ EAST__
*DESCRIPTION_________ S/N__ L1->ARP(M)__________ L2->ARP(M)__________
 (A16             A4 ) (A5 )        ......               ......        EPNC
 (A16             A4 ) (A5 )        ......               ......        IGS08_1708
```

Option 3

extent the S/N field in SINEX to 20 characters

Pro and cons:

+ make all exchange format consistent

```
*-------------------------------------------------------------------------------
+SITE/ANTENNA
*SITE PT SOLN T DATA_START__ DATA_END____ DESCRIPTION_________ S/N_________________
 ...                                      (A16             A4 ) (A20                 )
```

– inconsistent with S/N field for the receivers

```
*-------------------------------------------------------------------------------
+SITE/RECEIVER
*SITE PT SOLN T DATA_START__ DATA_END____ DESCRIPTION_________ S/N__ FIRMWARE___
```

– needs a format change behind the EUREF community

Option 4

as option 1 but with modified PHASE_CENTER–block

Pro and cons:

+ can be written by a proposed patch for Bernese

```
*-------------------------------------------------------------------------------
+SITE/ANTENNA
*SITE PT SOLN T DATA_START__ DATA_END____ DESCRIPTION_________ S/N__
 ...                                      (A16             A4 ) (A5 )
```

```
*-------------------------------------------------------------------------------
+SITE/GPS_PHASE_CENTER
*                            UP____ NORTH_ EAST__ UP____ NORTH_ EAST__
*DESCRIPTION_________ S/N__ L1->ARP(M)_____ L2->ARP(M)_____
 (A16             A4 ) (A5 )      ......           ......        EPNC_site
 (A16             A4 ) (A5 )      ......           ......        IGS08_1708
```

– as long as the SINEX file is read according to the format description both antennas cannot be distinguished

– EPN–specific solution but does not solve the problem in general

We have to decide

1. alternative `ANT #` in the station information file
2. alternative `ANTENNA SERIAL NBR` in the station information file
3. extent the `S/N` field in SINEX to 20 characters
4. as option 1; but entexded antenna model description by the station name