

1 INTRODUCTION

Bane NOR has it's own system for storing and maintaining ultrasonic test data.

This document describes the format in which ultrasonic test data has to be delivered to Bane NOR for use in it's maintenance system.

2 DATAFORMAT

2.1 Data

Bane NOR will have a websolution for importing ultrasonic testdata to it's maintenance system.

The import will consist of a CSV-file for testsegments, a CSV-file for suspects and a ZIP-file for B-Scans/pictures.

The first line of the CVS-file has to include the column-headers. Datarecords will be read from line number 2 until the first line that is empty or where the first column doesn't have a value.

NULL-values (unspecified value) must be indicated by the use of NULL (without quotes):

12345;Text1;NULL;

2.1.1 Testsegment

The Testsegment is a record of the segment that has been tested.

CSV-file:

Id;SegmentId;StartTestDate;EndTestDate;Operator;Testunit;CustRep;StartKm;EndKm;Comment;

The testsegment-element has the following columns and constraints:

Column: Id
Datatype: Text
Description: Globally unique id for a tested segment.

Column: SegmentId
Datatype: Integer
Description: References Id in the Segment-table.

Column: StartTestDate
Datatype: Text
Description: Date and time for the start of the test. Format: DD.MM.YYYY HH24:MI:SS

Column: EndTestDate
Datatype: Text
Description: Date and time for the end of the test. Format: DD.MM.YYYY HH24:MI:SS

Column: Operator
Datatype: Text
Description: Name of ultrasonic testunit operator.

Column: Testunit

Datatype: Text
Description: Name/id of ultrasonic testunit.

Column: CustRep
Datatype: Text
Description: Name of customer representative.

Column: StartKm
Datatype: Double
Description: Start of test (kilometervalue).

Column: EndKm
Datatype: Double
Description: End of test (kilometervalue).

Column: Comment
Datatype: Text
Description: Additional text.

2.1.2 Suspect

The Suspect is a record of the suspects found along a Testsegment.

CSV-file:

```
Id;TestSegmentId;SegmentId;Timestamp;TrackNum;ProbeId;RailId;PriorityId;Flawlength;  
Startdepth;Enddepth;Flawsize;Km;MarkerLocation;NearestMarker;MarkerDistance;PaintOn  
Track;Latitude;Longitude;UICcode;ScanFilename;AnalysisId;AnalysisDate;AnalysisOpera  
tor;Comment;
```

The suspect-element has the following columns and constraints:

Column: Id
Datatype: Text
Description: Globally unique id for a suspect.

Column: TestSegmentId
Datatype: Text
Description: References Id in the Testsegment-table.

Column: SegmentId
Datatype: Integer
Description: References Id in the Segment-table.

Column: Timestamp
Datatype: Text
Description: Date and time for the suspect. Format: DD.MM.YYYY HH24:MI:SS

Column: TrackNum
Datatype: Text
Description: References Id in the TrackNum-table.

Column: Probeld
Datatype: Integer
Description: Type of probe. References Id in the Probe-table.

Column: RailId
Datatype: Integer
Description: References Id in the Rail-table.

Column: PriorityId
Datatype: Integer
Description: References Id in the Priority-table.

Column: Flawlength
Datatype: Integer
Description: Value in millimeter.

Column: Startdepth
Datatype: Integer
Description: Value in millimeter.

Column: Enddepth
Datatype: Integer
Description: Value in millimeter.

Column: Flawsize
Datatype: Integer
Description: Value as percentage.

Column: Km
Datatype: Double
Description: Suspect location in kilometervalue.

Column: MarkerLocation
Datatype: Double
Description: Reference point location in kilometervalue.

Column: NearestMarker
Datatype: Text
Description: Type of reference point (bridge, S&C, kilometerpost, signal....)

Column: MarkerDistance
Datatype: Double
Description: Distance in meter between suspect and reference point.

Column: PaintOnTrack
Datatype: Integer
Description: Values: 0=FALSE, 1=TRUE.

Column: Latitude
Datatype: Double
Description: GPS latitude value.

Column: Longitude
Datatype: Double
Description: GPS longitude value.

Column: UICcode
Datatype: Integer

Description: Expected rail defect code according to UIC leaflet 712.

Column: ScanFilename

Datatype: Text

Description: Filename of the suspect's B-scan.

Column: AnalysisId

Datatype: Integer

Description: Optional. Id of the analysis done on the suspect.

Column: AnalysisDate

Datatype: Text

Description: Date and time for the suspectanalysis. Format: DD.MM.YYYY HH24:MI:SS

Column: AnalysisBy

Datatype: Text

Description: Name of analyzing operator.

Column: Comment

Datatype: Text

Description: Additional text.

2.2 Valuelists

The websolution provides valuelists/reference tables to be used in Suspects and Testsegments. The following valuelists exists:

- Segment
- Priority
- Probe
- Rail
- TrackNum

2.2.1 Valuelists format

Last changedate: 12.04.2016		
Priority		
Id	Value	
4	0	
5	1	
6	2a	
7	2b	
829	4	
Rail		
Id	Value	
8	H	Right
9	V	Left
22	B	Both
Probe		
Id	Value	
10	0-deg	
11	70-deg center forward	
12	70-deg center backward	
13	70-deg satelite forward	
14	70-deg satelite backward	
15	35-deg bolthole forward	
16	35-deg bolthole backward	
17	VSH-probe	
54	Combination	

Valuelists format continued

Segment		
Id	Value	Name
10001	0010	Oslo S
10002	0020	Lodalen
10003	0030	Alnabru skiftestasjon
61713	0040	Loenga
10004	0210	(Oslo S) - Aker
10005	0220	(Aker) - (Lillestrøm)
10006	0230	(Lillestrøm) - (Eidsvoll)
10007	0240	(Grefsen) - (Alnabru) godsspor
10008	0250	(Grefsen) - (Alnabru) godsspor
10009	0270	(Oslo S) - Gardermoen(GMB)
10010	0280	(Gardermoen) - Eidsvoll
10011	0300	(Lillestrøm) - Kongsvinger
10012	0310	(Kongsvinger) – Riksgrensen
10013	0400	(Kongsvinger) - (Elverum)
10014	0510	(Oslo S/Loenga) - (Alnabru skiftestasjon) godsspor
10015	0540	(Oslo S) - Ski
72564	0542	Utbygging Follobanen Oslo S - Østfoldbanen Vestre linje
72565	0545	Utbygging Follobanen (Oslo S) - (Ski)
10016	0550	(Ski) - Moss
10017	0560	(Moss) - Sarpsborg
10018	0570	(Sarpsborg) - Kornsjø
10019	0580	(Ski) - (Sarpsborg) østre linje
10020	0610	(Oslo S) - Grefsen
10021	0620	(Grefsen) - Roa
10022	0630	(Roa) - Eina
10023	0640	(Eina) - Gjøvik
10024	0670	(Roa) - Hønefoss
10025	0680	(Eina) - Dokka
10026	0700	(Eidsvoll) - Hamar
72566	0705	Utbygging dobbeltsporsparcell Eidsvoll-Hamar
10027	0710	(Hamar) - Fåberg
10028	0720	(Fåberg) - Vinstra
10029	0721	(Vinstra) - Dombås
10030	0800	(Dombås) - Åndalsnes
10031	0900	(Hamar) - Elverum
10032	0910	(Elverum) - Koppang
10033	0920	(Koppang) - Tynset
10034	1000	(Tynset) - Røros
10035	1010	(Røros) - Haltdalen
10036	1011	(Haltdalen) - (Støren)
10037	1100	(Dombås) - Hjerlinn
10038	1110	(Hjerlinn) - Oppdal
10039	1111	(Oppdal) - (Støren)

10040	1120	Støren - Trondheim
10041	1130	(Stavne) - (Leangen)
10042	1200	(Trondheim) - Hell
10043	1210	(Hell) - Storlien gr.
10044	1300	(Hell) - Steinkjer
10045	1301	(Skogn) - Fiborgtangen
10046	1302	(Verdal) - Verdal industriområde
10047	1310	(Steinkjer) - Grong
10048	1320	(Grong) - Majavatn
10049	1321	(Majavatn) - Mosjøen
10050	1330	(Mosjøen) - (Bjerka)
10051	1340	Bjerka - Lønsdal
10052	1341	(Lønsdal) - Fauske
10053	1350	(Fauske) - Bodø
10054	1360	(Grong) - Namsos
10055	1400	(Oslo S) - Lysaker
10056	1404	Skøyen - Lysaker Askerbanen
10057	1410	(Lysaker) – Asker
10058	1414	Lysaker - Asker Askerbanen
10059	1420	(Asker) - Gulskogen
10060	1450	Filipstad stasjon
10061	1460	(Asker) - Spikkestad
10062	1510	(Drammen) - Larvik
65992	1520	(Larvik) - (Eidanger)
10063	1550	(Skoppum) - Horten (NEDLAGT)
10064	1560	(Eidanger) - Brevik
10065	1600	(Gulskogen) - Hokksund
10066	1610	(Hokksund) - (Hønefoss)
10067	1630	(Hønefoss) - Bergmoen snupl.
10068	1650	(Hokksund) - (Kongsberg)
10069	1660	Kongsberg - Nordagutu
10070	1680	(Hønefoss) - (Trolldalen)
10071	1700	(Kongsberg) - Rollag
10072	1710	(Rollag) - Rødborg
10073	1800	(Hjuksebø) - Tinnoset
10074	1820	(Nordagutu) - (Skien)
10075	1830	Skien - Eidanger
10076	2000	(Nordagutu) - Nelaug
10077	2120	(Nelaug) - Kristiansand
10078	2130	(Kristiansand) - Egersund
10079	2160	(Nelaug) - Arendal
10080	2161	(Nelaug) - Simonstad
10081	2162	(Neslandsvatn) - Sannidal
10082	2220	(Egersund) - Stavanger
10083	2250	(Sira) - Flekkefjord
10084	2260	(Ganddal) - Ålgård
65993	2270	Ganddal godsterminal

10085	2301	Trolldalen - Ål
10086	2310	(Ål) - (Haugastøl)
10087	2311	Haugastøl - Finse
10088	2312	(Finse) - Reimegrend
10089	2313	(Myrdal) - Flåm
10090	2320	(Reimegrend) - Voss
10091	2330	(Voss) - Dale
10092	2331	(Voss) - Palmafoss
10093	2340	(Dale) - Bergen
10094	2341	Minde - (Bergen)
10095	2342	Tunestveit - Midttun
10096	2343	Havnebane Vest (Bergen) - Dokken
10097	2344	Havnebane Nord (Bergen) - Koengen
10098	2400	Narvik havn - Vassijaure
61714	8888	Teststrekning
72569	9220	Utbygging Klepp - Stavanger
72570	9510	Utbygging Farriseidet

TrackNum		
Tracktype	TracktypeCode	Norwegian
Main Track	MT	Hovedspor
Main Track Right	MTR	Høyre hovedspor
Main Track Left	MTL	Venstre hovedspor
Through Track	TT	Togspor
Siding	ST	Sidespor
Passing	PT	Overkjøringsspor/Øvrige spor

From 2015 the use of TrackNum has changed.

Valid tracknum's now consists of tracktype and tracknumber (<tracktype>-<tracknumber>)

2.3 Defects

The websolution will also provide a list of all defects, both those based on suspects and those found without the use of a testunit. The defect-id will be generated by Bane NOR's maintainancesystem.

2.4 Pictures

For adding pictures of suspects there will be a page in the websolution for uploading a zip-file containing the pictures. Each picture has to be delivered in JPG-format. Pictures are mapped to the suspect by filename, and the filename has to start with the suspectId followed by an underscore-character ("_"):

```
<suspectID>_1.jpg
<suspectID>_2.jpg
...
<suspectID>_n.jpg
```

2.5 *Datamodel for import*

This datamodel shows the referencetables for Suspect, the referencetable for TestSegment, and the connection between Suspect and TestSegment.

