

Minutes from the meeting with the StanForD-group 2010-04-13

Place:	Skogforsk, Uppsala, Sweden
Present	
Manufacturing members:	Lars-Erik Andersson, Rottne Mikael Eliasson, LogMax Joonas Kaarnametsä, John Deere Erik Kindlund, John Deere Teemu Paldanaius, Ponsse Niclas Eriksson, Komatsu Forest
Others:	Jonas Gustafsson, Sveaskog Per Knutsson, Logica Lars Henriksson, SDC Joakim Nygren, Haglöf Camilla Rolig Schölin, Triona Tapio Räsänen, Metsäteho Juha-Antti Sorsa, Metsäteho Timo Melkas, Metsäteho Jean Plamondon, Feric (phone)
Skogforsk:	John Arlinger, Secretary Johan J. Möller, Chairman Nazmul Bhuiyan

§1 Opening of the meeting

Johan J. Möller opened the meeting. The proposed agenda was accepted.

§2 Clarifications and modifications of variables

STEM DATA FOR MTH IN PRI

Proposal from Skogforsk, 2010-03-26.

DBH (code 721 and 722) and species (code 3) are needed when doing volume calculations based on MTH in pri. Suggested that this is to be pointed out in appendix for var266_t2 and var266_t3.

It was decided that the appendix for var266_t2 (multi tree processing) is updated:

The following tree data must be included in a pri-file: 3, 510, 512, 513, 721

It was decided that the appendix for var266_t3 (multi tree felling) is updated:

The following tree data must be included in a pri-file: 3, 510, 512, 722

It was also decided that it should be pointed out that DBH (code 721) or some future reference diameter should be included per MTH stem in order to make it possible to do volume calculations in a receiving system.

Skogforsk will analyse the possibilities to include a variable for a reference diameter and possibly propose new stem codes for the next meeting.

The following preliminary proposal was written after the meeting:

Today the only measured diameter registered for MTH stems is DBH in pri-files. However in most cases this is an extrapolated diameter since the harvester head normally measures the first diameter some dm below 120 cm (height from the stump). This means that we actually base volume calculations on an estimated diameter. It would be better if we also register the actually measured diameter of MTH stems.

It is suggested that we add a new code 723 to var266_t1-3 for the first measured diameter used when predicting MTH DBH in var266_t2 and t3:

Code	Description
723	Diameter used for predicting DBH in multi tree harvesting. Normally the first measured diameter. The diameter is measured at distance from stump according to var500_t3.

It is also suggested that a new var500_t3 is added to the pri file:

Var	Name	Type	Data type	Unit	Description
500	DBHHEIGHT	3	Integer	cm	Height from stump to the diameter used for predicting DBH in multi tree harvesting. Normally the first measured diameter. The diameter is registered in var266_t1-t3 code 723.

MANUAL CUT CODES

Proposal from Skogforsk and John Deere, 2010-03-26.

Manual codes in var300_t1 and var256 (code 300) is today defined as follows :

Automatic/Operator selected cross cut: 1...var290_t1

0 = Automatic bucking	1 = decay	2 = damage
3 = crook	4 = sweep	5 = grade break
6 = pulpwood grade	7 = top break	9 = miscellaneous

If the log is bucked outside the normal "cutting window" (Swedish "kapfönster") 50 should be added to the code.
If the quality change after the bucking 100 should be added

It was suggested that we make it possible to also add 200 to the manual code in order to indicate that the log is unclassified (un-registered). This code has actually been used by JohnDeere and Timberjack for a long time. It was decided to add the following text (underlined) to the variable descriptions:

If the log is bucked outside the normal "cutting window" (Swedish "kapfönster") 50 should be added to the code.
If the quality change after the bucking 100 should be added. If the log is unclassified 200 may be added to the

code.

This typically happens with last log from the stem when the operator manually feeds the pulp part to some length and just cuts it. Depending on the apt, those logs will be unregistered because of being under the min diameter or over the max length.

An additional code was also proposed by Niclas Eriksson, Komatsu (2010-03-31). Komatsu is using the following code. It was decided to that it is added to var300_t1 and var256 (log code 300) :

10 – Spinning (“Slirkap” in Swedish)

Used to indicate that harvester head cannot feed any further (feed rollers are spinning) and last log is cut. This a special type of automatic code that indicates that value optimization is temporarily de-activated. Observe that this is not an operator selected code.

Joonas Kaarnametsä and Teemu Paldanius pointed out that better definitions of the different codes are need, this is especially important for StanForD 2010.

ENCODING IN APPENDIX (VAR1_T3)

Proposal by Halvard Olderlund, Komatsu (2010-03-29)

It was decided that the description of var1_t3 is updated with a Japanese codepage in order to handle Japanese characters.

The following new encoding is therefore to be added to the appendix:

ISO-2022-JP Japanese encoding with variable size typically using either 8 or 16 bits per character (Double Byte Character Set).

§3 Multi tree harvesting (MTH)

STEMS PER OPERATOR AND SPECIES IN PRD

Proposal from Joonas Kaarnametsä, JohnDeere (2010-01-11)

There have been requests regarding multi tree harvesting (MTH) production reporting in prd-file. Production should be reported per tree species, per operator, or both.

Variables 230 and 231 are suitable for this purpose, but the present variables for multi tree processing are basically just sums for all species, which is insufficient.

It was therefore decided that the following six new variables are added to the prd-file with priority 3:

Var no	Name	Type	Data type	Unit	Prio	Description
230	NUM-BUNCH	6	Integer	Pieces	3	Number of stem bunches in multi tree felling (not processed) /operator/tree species:1...var211_t2/1...var111_t1 Some type of feller-buncher system used.

Var no	Name	Type	Data type	Unit	Prio	Description
						Species dependent on first stem in stem bunch.
		7	Integer	Pieces	2	Number of multi tree processed stem bunches per tree species: 1...var111_t1 Species dependent on first stem in stem bunch.
		8	Integer	Pieces	2	Number of multi tree processed stem bunches per operator and tree species: 1...var211_t2/1...var111_t1 Species dependent on first stem in stem bunch.
231	STMSIN-BNCH	6	integer	pieces	3	Number of stems in stem bunches in multi tree felling (not processed) per operator and tree species: 1...var211_t2/1...var111_t1 Some type of feller-buncher system used. Species dependent on first stem in stem bunch.
		7	Integer	Pieces	2	Number of multi tree processed stems (several stems delimbed and cross cut simultaneously) per tree species: 1...var111_t1 Species dependent on first stem in stem bunch.
		8	integer	pieces	2	Number of multi tree processed stems (several stems delimbed and cross cut simultaneously) per operator and tree species: 1...var211_t2/1...var111_t1 Species dependent on first stem in stem bunch.

AVERAGE DBH IN PRD

Proposal from Teemu Paldanius, Ponsse (2010-03-24)

Average DBH in multi tree harvesting seems to be important information for contractors and forest companies in Finland. Estimated DBH of the first stem in a stem bunch is now included in the pri-file. However, there is no information about DBH in the prd-file.

It would be a benefit to introduce two new variables for average estimated DBH per tree species in the prd-file for both multi tree processed and multi tree felled stems. It should be stated in the description that DBH is estimated according to diameter of first stem of the bunch at the moment of felling cut. Species is also based on the first stem.

It was decided to include the following new variables with priority 3 in prd-files:

Var no	Name	Type	Unit	
246	BUNCHED-PROD	11	Mm	Estimated average DBH of first felled stem in a bunch in case of Multi tree felling/tree species: 1...var111_t1 Species is also based on first stem.
246		12	Mm	Estimated average DBH of first felled stem in a bunch in case of Multi tree processing/tree species: 1...var111_t1 Species is also based on first stem.

SKOGFORSK MTH-PROJECT (VOLUME ESTIMATIONS)

Nazmul Bhuiyan presented the recently started project for evaluating methods for estimating multi tree harvested volumes based on pri-files. Tests on different harvesters in different parts of Sweden will be carried out. Nazmul presented a first version of software for calculating MTH volumes based on pri-files from several different harvesters.

The project goal is to:

- 1) analyze pri-data from MTH and develop a software for analyzing and calculating MTH volume.
- 2) do practical tests with 2-3 machines and test tree counting, DBH/ reference diameter measuring, volume calculation based on single stems, tree speices/ DBH variation (compare first stem-other).

The first test seems to be very promising. The project will be finished before end of 2010.

COMMENTS FROM METSÄTEHO

Tapio Räsänen presented some aspects related to MTH assortment definitions and how the assortments could be handled in apt, ap1 and oai files. The questions have been discussed in the Finnish StanForD group in October 2009 and presented first time in the previous StanForD meeting.

One of the questions is that if the MTH stem should be counted also based on the MTH assortment or stem type (how the stems are cut and delimbed). One way of MTH stem grouping could be next:

1. felled, not delimbed stems
2. felled, delimbed stems
3. single tree processed stems
4. stems of which pulpwood logs are cut from the butt end and tops are delimbed and used as energy wood
5. stems of which pulpwood logs are cut from the butt end and tops are used as energy wood without delimbing

MTH assortments are today given basically the same way as other timber assortments. A special selectable MTH stem quality is used to control the selection of the assortment at least in Ponsse. A question has been raised if there should be a new variable in standard for defining if the assortment can be used for multi tree harvesting or not. The values of this code-based variable could be for example 0 = 'not a MTH assortment' and 1 = 'MTH assortment'. The need for this kind of variable was discussed. It is probably not needed for

keeping the MTH volumes separated, at least in the data structure of StanForD 2010. However, in the present standard it might be useful to inform the harvester operator about which ones really are MTH assortments.

Requirements for the diameter and length values of MTH assortments was also discussed. The idea is that very small values would be given for MTH assortments.

No decisions were taken concerning definitions of MTH settings for apt and apt1 files, because it was seen that the questions should be handled together with other MTH specifications in StanForD 2010. It was decided that Tapio specifies the needs of the Finnish users concerning these issues before the next StanForD 2010 meeting.

§4 Calculated harvester volume in ktr

Proposal concerning new volume type based harvester measurements from John Deere was withdrawn before meeting.

§5 Maintenance codes in Operational monitoring

Proposal from Joonas Kaarnametsa, JohnDeere (2010-02-18)

The following codes for maintenance exist today:

Name	Description	Code
Other maintenance / miscellaneous	Not defined	1000
Control and calibration	Control measurement and length/diameter calibration	1100
Saw maintenance	Changing saw chain or saw bar	1200
Refilling and lubrication	Lubrication of machine or refilling of fuel/fungicides/colors etc	1300

John Deere has received feedback from customers that their drf usage would be more effective if they could describe maintenance activities in more detail.

It was therefore decided that the following four new MAINTENANCE codes are to be added to variable 330 type 3 (SPECTIME):

- Code 1500 = Periodic maintenance
For example maintenance every 250, 500, 1000, 1500, 2000 and 4000 hours, according to uptime maintenance planner.
- Code 1400 = Preventive maintenance
Daily check list, weekly inspection, hoses position, check hydraulic pressure etc.
Could in the future be based on notifications from machine condition monitoring system.
- Code 1600 = Machine wash
- Code 1700 = Out of fuel, waiting for refueling. For example used if refueling is dependent on separate refueling truck.

Comments from John Deere and secretary:

It may seem to be confusing to have both *Out of fuel* (code 1700) and *Refilling of fuel/fungicide/color etc* (code 1300) however the difference actually is as it is stated (out-of-fuel versus refueling). In some countries larger companies work on euca fields with, say, a dozen machines. All those machines are maintained (repaired, refueled, washed etc) by a single truck which drives from one machine to another. Consequently, there might be waiting times such as *Out of fuel* for some machines when they are waiting for the maintenance patrol to arrive.

Preventive vs periodic maintenance might be a bit problematic since a periodic maintenance from my point of view also is preventive. As is common in operational monitoring a clear instruction to the operators is always needed.

§6 Updating ghd-file

Proposal based on questions from Lars Sundqvist, Holmen Skog, 2010-11-18

SCALEABLE RENDERING

It would be an advantage to be able to set if a certain layer is only to be presented below a certain scale. For example only showing an orto photo when using a scale lower than 1:30000.

It was decided to include the following new variables with maximum and minimum scale per layer with priority 2 in ghd-files:

Var no	Name	Type	Data type	Unit	Description
460		14	Long integer	Scale 1:X	Max scale per layer : 1...var460_t1 Example, if value is 10000 then max scale for showing present layer is 1:10 000
460		15	Long integer	Scale 1:X	Min scale per layer : 1...var460_t1 Example, if value is 1500 then min scale for showing present layer is 1:1500

LABELS

Holmen has a need for being able to present specific text fields in the user interface instead of a symbol.

It was decided that it is added to the description of var462_t1 that all applications must be able to present this information in the GIS map and that it ought to be possible to also present this information defined by var462_t3 in the GIS map.

NAMING OF LAYERS

It would be good to have the possibility to set a name of each layer presented in the user interface of th GIS application instead of the file name.

It was decided to include the following new variable with priority 2 in ghd-files:

Var no	Name	Type	Data type	Unit	Description
460		13	String	Free text	Name of gis-layer to be used in user interface instead of file name in var460_t2: 1...var460_t1

NEW LINE STYLE HASH-LINE

A new line style sometimes used for power lines or rail way tracks . It was decided that a new code 5 in var465_t4 indicating hash-line is included in the standard.

Example hash line:



NEW FILL STYLE HALFTRANSPARENTSOLIDFILL

It was finally decided that a new code 11 in var465_t6 indicating “HalfTransparentSolidFill” is to be included in the standard.

§7 German “sales length” in pri

Proposal from Teemu Paldanius, Ponsse (2010-02-11)

Adding information of “Sales length” to the PRI file has been under discussion already twice in Stanford group. Decision has been postponed at both times. Following extracts are from final minutes of Stanford group meetings

Stanford meeting 2006-10-24:

“GERMAN "SALES LENGTH" IN PRI-FILE

“Sales length” has a quite long history in Germany and comes from days when the wood was cut manually. It used all over the German wood market and is included in the HKS-law. The HKS rules relates to saw logs and long wood. It confirms that the buyer of the wood gets an extra length which is added to the sales length for free.

That means that only the volume within the “sales length” will be paid for. The extra length can vary. It is often 10cm, but more and more other lengths are negotiated in wood trade. That is the reason why you can not calculate the sales length from cut length.

So KWF would like to add the "sales length" to the PRI-file. Harvesters that conforms to HKS can enter both the sale length and extra length, meaning that the sales length is known in the machine. The extra length will be added to the sales length to get the cut length to produce the logs.

The meeting decided to postpone this suggestion to the next meeting.”

Stanford meeting 2007-03-27

“GERMAN "SALES LENGTH" IN PRI-FILE

Klaus Klugmann presented the ideas behind sales length. The issue was also discussed at the last meeting. The conclusion was that it would probably be good if Frank Gleibs at Wahlers

Forsttechnik (Ponsse's German seller) took a direct contact with Ponsse in Finland in order to write a complete formal proposal concerning registration of sales length."

It was discussed that variable 132 type 1 (LWRLNGTHLMT) should have priority 1 instead of priority 3 in PRI file in order to solve this issue. However, it is not enough. To find out "sales length" from the real length there should also be information of additional length margin and cutting window (var135_t1, var135_t3, var135_t4). Variable 135 has no priority in the PRI file at the moment. A simpler solution would be to add a new code for length class information to var256_t1 and the data in the var257.

It was decided after a quite long discussion to include the following new log code in var256_t1 (LOGCODE):

Code	Description
302	<u>Length class to which the log is registered, cm. Length classes are defined in var132_t1. Observe that this length is also dependent on var135, type 1, 3 and 5. In case of unclassified logs fixed lengths according to var244 (type 6-8) to be used.</u>

Also decided that the definition of code 301 is to be updated:

Code	Description
301	<u>Physical</u> length, cm

An example

Assortment X has length classes 200, 300 and 400

Length classes (132_t1)	200	300	400
Additional length margin (135_t1)	10	10	10
Lower length limit (135_t3)	0	0	0
Upper length limit (135_t3)	5	5	5

Physical length of the log is 414. It is registered to length class 400::

Var	Type		
256	1	301	302
257	1	414	400

§8 Items for discussion and information

SWEDISH DRF-REQUIREMENTS

Recommendations from TSG (Technical cooperation group with Swedish representatives from forest companies and contractors coordinated by Skogforsk) concerning drf-files was presented by the secretary. The recommendations are presented in appendix 1.

BIO-ENERGY CALCULATIONS (SKOGFORSK)

Johan J Möller presented the ongoing work to develop a calculation module for estimating available forest fuel volumes (branches, tops, needles, stumps) after harvesting. In the project Skogforsk have:

1. Developed a prototype program which read pri and calculate forest fuel volumes.

2. Made a practical tests with the system with good results by using functions and harvester data
3. Developed a calculation module for company/ administration tools which read pri/hpr and present result in hpr messages for each tree

The project will be finished by the summer of 2010.

§9 StanForD 2010

PROGRESS DURING LAST 6 MONTHS

JM presented the main activities in StanForD 2010 the last months. According to the original time table the project are about 6 months late and will preliminary be finished by the end of 2010.

- Progress during last 6 months.
 - Completed preliminary structure of all messages
 - Completed preliminary schemas of the most messages (not forwarder instruction and forwarder quality control)
 - New structure and message for: Object Geographical Information (ogi) (2 messages one instruction and one reporting), machine operational monitoring (mom), forwarder instruction, forwarder quality control
 - Updating hpr
 - MTH stems included in single tree structure
 - Unclassified logs in ordinary structure
 - Others
 - StanForD shall recommend an envelope tool for sending including encrypting and compression, it shall not be necessary.

Create country settings for allowed modifications in machine for spi, pin and oin. We also shall create suggested default spi for different countries.

PRELIMINARY IDEAS INVENTORY DATA IN STANFORD 20101

Secretary presented preliminary ideas related to the possibility of including inventory data in StanForD2010 (appendix 2).

§10 Other issues

No other issues where discussed.

§11 Next meeting

Next meeting will take place on Tuesday the 9th of November 2010, at Skogforsk in Uppsala, starting at 10.00 a.m. Proposals for the meeting shall be the secretary by hand preferably not later than October 20st 2009.

§13 End of meeting

Johan J Möller (chairman) closed the meeting.

Secretary

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den 31 augusti 2009

TSG recommendation

Operational monitoring variables

Version 1.1

- 1.1 Variables 316 t8, t9 added
- Variables 448 t9, t10 added

Objective

TSG has specified and financed a national database for operational monitoring data (.drf) which will be administrated by Logica. We want to make all manufacturers aware of our needs since this database will taken into use during 2009. The variables described below should be included in all drf-files from all manufacturers.

Basic requirements

The drf-files must fulfill the following basic requirements in order to be included in the database:

- Follow StanForD
- Be time oriented (variable 315_t4 = 0)
- Filter times (variable 315_t1, 315_t2 och 315_t3) must be:
Down time: 15 min
Main work time: 2 min
Short down time: 30 s

Files not following these requirements will be excluded from database.

Variables only generated in harvesters are not needed in files from forwarders and vice versa. It can sometimes be difficult to register base machine data if control system and head has been separately mounted on base machine from other manufacturer. In these cases these base machine variables should be analyzed and if possible solved in order to get relevant results from the database.

Var	Name	Type	Data type	Unit	Description
3	MCHNNO	1	string	text	Machine number
		2	string	text	Unique machine identity for each company, which is used when using the harvester to measure for payment
		3	integer	code	Code describing type of machine: 1=harvester (default if variable is missing), 2=forwarder, 3=harwarder, machine which handles both harvesting and forwarding 10 = bundler, 20 = scarifier, 99=other
		5	string	text	Machine manufacturer. Free text that describes the machine manufacturer.
		6	string	text	Machine model. Free text that describes the model of the machine.
5	VARIANT	1	String	text	Model variant for the bucking computer
12	SAVEDATE	4	String		Date when file is saved
23	SITEINFO	1	String	Text/ code	Harvesting method
		2	String	Text	Harvesting method
211	OPERATOR	2	integer	int	Number of operators
223	NUMSTMOP	1	Integer	int	Number of harvested stems/operator
228	NUMLOAD	2	Integer	int	Number of loads/operator
231	STMSINBNCH	3	Integer	No	Number of multi tree handled stems per operator
246	BUNCHEDVOL	6	Integer	m³sob	Total volume of multi tree handled stems as calculated in harvester per operator.
		7	integer	m³sub	Total volume of multi tree handled stems as calculated in harvester per operator.
249	TOTALVOL	1	Integer	m³sub	Total vol/operator/species
		2	Integer	m³sob	Total vol/operator/species
258	DISTANCE	2	Integer	Km	Covered distance/operator:
315	GTIME	1	Long integer	Sec	Down-filter-time, maximum time allowed for a down time, if down time is longer it will be recorded in var317. Default value is 900 s (15 min). The value rules the

Var	Name	Type	Data type	Unit	Description
					data in var316_t3, code 3 .
		2	Long integer	Sec	Run-filter-time, Run times (var316_t3, code 3, 10-13) has to be longer than this to be registered. Default value is 120 s (2 min). This means e.g. that a run time shorter than this will be considered to be of the same type of time as the previously registered time.
		3	Long integer	Sec	Minimum-filter-time: Smallest considered time unit. If any time (run time or down time) is shorter it is considered non-existing. Default value is 15 s. This means for example that a down time shorter than this is included in the E0-time, if longer it will not be included in the E0-time.
		4	integer	Code	Drf-file is time or object oriented 0=time oriented (covers all activities within time interval) 1=object oriented (covers all activities within specific harvesting object)
316	RUNTIME	2	Integer	No	Number of times per operator 1...var211_t2
		3	Integer	code	Type of time (codes described in appendix): 1...var316_t2/1...var211_t2 1= Total time 2= E0 3= E(t) due to var315_t1, also called effective time 4= Engine 5= Loader/linkage 6= Harvesting unit 10 = Processing time due to var315_t1 11 = Terrain travel due to var315_t1 12 = Other work due to var315_t1 13 = Road travel time due to var315_t1 It is permitted to register the same type of time for the same operator several times or register one summed time per type and operator.
		5	Long integer	Sec	Run time: 1...var316_t2 / 1...var211_t2
		8	Integer	L	Fuel consumption: 1...var316_t2 / 1...var211_t2
		9	Integer	Km	Covered distance: 1...var316_t2 / 1...var211_t2
317	IRTIME	2	Integer	No	Number of down times per operator: 1...var211_t2
		3	Integer	Code	Type of down times (codes described in appendix) 1...var317_t2 / 1...var211_t2 10 = Repair time 11 = Waiting for repair time 12 = Maintenance 13 = Trailer time 14 = Disturbance It is permitted to register the same type of time for the same operator several times or one summed time per type and operator.
		5	Long integer	Sec	Down time: 1...var317_t2 / 1...var211_t2
318	WORKTIME	2	Integer	No	Number of work times (for operating machine) per operator: 1...var211_t2
		6	Long integer	Sec	Total (summed) work time for operating machine per operator (sum of all times registered in var318_t4), including meal breaks: 1...var318_t5 / 1...var211_t2
319	EXTRATIME	2	Integer	number	Number of times per operator: 1...var211
		3	Integer	Code	Type of time (codes described in appendix): 1...var319_t2 / 1...var211_t2 1 = Meal break It is permitted to register the same type of time for the same operator several times or the summed time per type and operator.
		5	Long integer	Sec	Extra time: 1...var319_t2 / 1...var211_t2
320	SHORTIR	1	Integer	No	Number of time intervals for registering short down times. Short down times are <var315_t1 and >var315_t3, meaning that they are included in E(t) (var316_3, code 3) but excluded from E0 (var316_3, code 2)
		2	Long	Sec	Lower time limits for registering short down times / time interval, normally 60

Var	Name	Type	Data type	Unit	Description
			integer		seconds: 1...var320_t1
		3	Integer	no.	Number of short down times / time interval: 1...var320_t1
327	LOGTIME	2	Integer	No	Number of times for logging in or out per operator: 1...var211
		3	Integer	Code	Type of time 1...var327_t2 / 1...var211_t2 1= Start time when logging into the system, 2= End timer when logging out of the system
		4	String	yyyymmdd hhmmss	Start / end time: /1...var327_t2 / 1...var211_t2
330	SPECTIME	1	integer	Number	Number of specified times per operator: 1...var211
		2	Integer	Code	Type of specified time (10 = Repair, 12 = Maintenance, 14 = Disturbance): 1...var330_t1 / 1...var211_t2
		3	Integer	Code	Type of disturbance, maintenance or unit repaired (codes in appendix): 1...var330_t1 / 1...var211_t2
		4	Long integer	Sec	Specified time, the sum of this variable is equal to code 10, code 12 and code 14 in var317: 1...var330_t1 / 1...var211_t2
		8	String	Text	Time when reparation/maintenance/disturbance first started: 1...var330_t1 / 1...var211_t2
		11	integer	hours	Total engine time (covering total life time of the engine when the file is generated) when reparation/maintenance/disturbance first started: 1...var330_t1 / 1...var211_t2
430	FUEL	3		0.1l/h	Average fuel consumption over lifetime of machine
		4		L	Fuel consumption per operator, that is the fuel consumption during the time covered by the drf-file: 1...var211_t2
431	ENGTIME	1	String	Hours	Total engine time, covering total life time of the engine when the file is generated.
448	FRWPROD	1		M3sub	Total forwarded volume solid under bark
		2		M3sob	Total forwarded volume solid on bark
		3		M3sub	Total forwarded volume solid under bark per operator
		9		No	Total number of forwarded loads
		10		No	Total number of forwarded loads per operator