

Minutes from the meeting with the StanForD-group 2003-10-28

Place:	Skogforsk, Uppsala, Sweden
Present:	Jari Korhonen, Ponsse Jyrki Partanen, Ponsse Anders Emmoth, Ponsse Ola Söderlund, Partek Per Lindberg, Partek Joakim Nygren, Haglöf Anders Hansson, SCA Perttu Isosaari, Mitron Tapio Räsänen, Metsäteho Markus Wallmyr, CC Systems Leif Johansson, Timberjack Sakari Suuriniemi, Timberjack Mika J Talola, Timberjack Leif Orth, Södra Jörgen Eriksson, ESE-Technique Stefan Falk, Rottne Lennart Sanderyd, SDC
From Skogforsk:	John Arlinger, Secretary Jan Sondell, Chairman Johan J Möller

§1 Opening of the meeting

Jan Sondell opened the meeting. The proposed agenda was accepted.

§2 Clarifications of variables

CLARIFICATION OF BARK VARIABLES

Based on a suggestion from Ola Söderlund, Partek.

Different bark reduction parameters are used in Germany (var112_t2, var113_t2 and var113_t3) and Sweden (var112_t1 and var113_t1). Four hard coded deduction values 10, 20, 30 and 40 mm are used in Germany. A diameter interval is attached to each deduction value. Depending on the diameter at each position along the stem, one of the four deduction values is valid. The deduction is equal to the double bark thickness, for example

deduction 10 mm is equal to 5 mm bark at each side of the log. The diameter break (var113_t2) is the bottom of the class.

In Germany the deduction is fixed but the interval can be changed.

Example:

Deduction (mm) "Hardcoded" (var113_t2)	Diameter break (mm) Example. (var113_t3)
40	>=600
30	<600 >=400
20	<400 >=200
10	<200 >=0

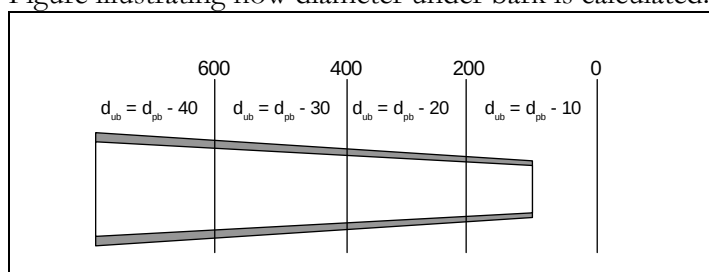
The example above would result in the following variables:

112 2 4 4 4~

113 2 600 400 200 0 600 400 200 0 600 400 200 0~

113 3 4000 3000 2000 1000 4000 3000 2000 1000 4000 3000 2000 1000~

Figure illustrating how diameter under bark is calculated:



The following updates of the descriptions were decided (new text is underlined):

Var	Name	Type	Data type	Unit	Description
113	BARK- PAR	2	Integer	mm	<u>Lower diameter limits/breaks</u> /tree species: 1...var112_t2/1...var111 (based on German requirements)
113	BARK- PAR	3	Integer	0.01 mm	Deduction for <u>double bark thickness</u> /tree species: 1...var112_t2/1...var111 (based on German requirements)

ADDITIONAL CLARIFICATIONS

Updating priorities

The following changes of priorities were decided:

Var no	Type	Name	File types	Old prio.	New prio.
32	2	BUYER	Pri	3	2
256	2	LOGCODE	Pri	1	4
500	1	DBHHT	Pri	3	1
211	1	OPERATOR	Prd, drf, ktr	2, 2, 3	4

Clarification and modifications

The following updates of the descriptions were decided (new text is underlined):

Var	Name	Type	Data type	Description
211	OPERATOR	2		Number of operators

	<u>NUMOP</u>			
212	<u>DRIVER-NAME</u> <u>OPERATOR</u>	1	integer	The name of the <u>operator</u> : 1...var211_t2
300	<u>FORCEDBRK</u> <u>FORCEDCUT</u>	1	Integer	Automatic/Operator selected <u>cross cut</u> : 1...var290

It was decided to exclude the following log codes from the *StanForD Appendix* as they were implemented for use at measuring stations at sawmills and not in harvesters:

Log code	Description
701	Number of knot bumps per log.
702	Reason for down grading. This code should be interpreted with the help of var256_t2. Possible codes for 702 in variable 257 are 0 = No problems, 1-50 = Reason for down grading according to var256_t2. Add 50 if the observation leads to rejection of the log.

§3 New variables

NEW VARIABLES FOR FUEL (VAR430)

Based on a suggestion from Ola Söderlund, Partek.

All current types (1, 2, 3) of var430 have the unit 0.1 l/h where 'h' probably is referring to the "engine running time". There might be other relevant fuel consumption figures than the ones currently included in the standard (e.g. litres per load). A more atomic unit (litres) could make it more natural and easier to achieve those figures. Decimals are to be stored in "1000 variables".

The text in the description for type 1 "from the start to finish of a site that is the fuel consumption during the time covered by the drf-file" is somewhat peculiar. The values in a drf-file may not cover the total time from the start of the site since a drf-file may be saved before the site is finished. A text like "the fuel consumption during the time covered by the drf-file (from the start of the site or last reset, to the time when the drf-file is saved" is more accurate.

Following changes and new variables were decided, the new var430_t4 and var430_t5 are given priority 3 in the drf-file (new variables and new text is underlined):

Var	Name	Type	Data type	Unit	Description
430	FUEL	1	integer	0.1 l/h	Average fuel consumption for a site per operator (from start to finish of a site , that is the fuel consumption during the time covered by the drf-file): 1...var211 <u>"h" refers to engine running time</u>
430	FUEL	2	integer	0.1 l/h	Average fuel consumption for the a site (from start to finish of a site , that is the fuel consumption during the time covered by the drf-file)- <u>"h" refers to engine running time</u>
430	FUEL	3	integer	0.1 l/h	Average fuel consumption (over the lifetime of a machine). <u>"h" refers to engine running time</u>
<u>430</u>	<u>FUEL</u>	<u>4</u>	<u>integer</u>	<u>L</u>	<u>Fuel consumption for a site per operator, that is the fuel consumption during the time covered by the drf-file</u> <u>1...var211</u>
<u>430</u>	<u>FUEL</u>	<u>5</u>	<u>integer</u>	<u>L</u>	<u>Fuel consumption (over the lifetime of a machine)</u>

NEW VARIABLE FOR AVERAGE DBH

Based on a suggestion from Ola Söderlund, Partek.

In Germany the average breast height diameter of felled trees are often used as a basis for payment.

It was therefore decided to introduce the following new variable with priority 3 in prd-files.

Var	Name	Type	Data type	Unit	Description
507	AVRGDBH	1	Integer	mm	Arithmetic mean breast height diameter o.b. of the felled trees/tree species: 1..var111

NEW VARIABLE AVERAGE STEM LENGTH

Based on a suggestion from Ola Söderlund, Partek.

In Germany the average length of felled trees are often used as a basis for payment. Length is defined as the distance between from root cut up to the last cut. The description of the proposal was modified after the meeting.

It was therefore decided to introduce the following new variable with priority 3 in prd-files.

Var	Name	Type	Data type	Unit	Description
234	METRE-RUN	5	Long int	cm	Total processed length of the felled trees (from root cut up to the last cut, including unclassified logs)/tree species: 1..var111

NEW VARIABLE FOR GERMAN DIAMETER CLASS NAMES

Based on a suggestion from Ola Söderlund, Partek.

Germany normally uses price category 2 (on bark) for pulpwood assortments and price category 7 (under bark) for all timber assortments. The timber assortments have fixed midpoint diameter classes and the produced logs are sorted accordingly. Each fixed midpoint diameter class also has a fixed name according to the table below. Since these names are commonly used it would be an advantage if the standard supports use of diameter class names also.

Midpoint diameter classes table:

Midpoint Diameter	0	100	150	170	200	250	300	350	400	500	600
Name	L0	L1a	L1b1	L1b2	L2a	L2b	L3a	L3b	L4	L5	L6

It was therefore decided to introduce the following new variable with priority 3 in apt-, prd- and pri-files.

Var	Name	Type	Data type	Unit	Description
131	DIACLDES	2	String	Text	Diameter class name (free descriptive text)/diameter class/price matrix/tree species: 1..var117/1..var116/1..var111 Primarily for use in Germany which have fixed names for some diameter classes.

Example illustrating new var131_t2:

131 1 0 100 150 170 200 250 300 350 400 500 600 999~
 131 2 L0 L1a L1b1 L2a L2b L3a L3b L4 L5 L6~

NEW VARIABLE FOR VARIANT

Based on a suggestion from Jörgen Eriksson, ESE-Technique.

There are some problems or weaknesses with variable 5 as it is defined today. Today, type 1 (var5_t1) must be used by the administrative program when creating an apt-file, however it can also be used by the bucking application when creating for example prd-files. This inevitably means slightly varying implementations of var5_t1. In order to avoid this, a new variable (var5_t3) was suggested which is only to be used by administrative programs, thus var5_t1 is only to be used by the bucking application in the harvester. This means that var5_t1 is not to be included in apt-file.

It was therefore decided to update var5_t1 and var5_t2 as well as to introduce a new var5_t3 according to the following table (new text underlined):

Var	Name	Type	Data type	Unit	Description
5	VARIANT	1	String	Text	Version/model variant for the of bucking computer used for creating file. Format for variant to be m v.n, where m is the make and v.n the version number. A catalogue is to be produced of all variant designations.
5	VARIANT	2	String	Text	Version/model of administrative program <u>used for creating file</u> . Format for variant to be m v.n, where m is the name of the software and v.n the version number.
<u>5</u>	<u>VARIANT</u>	<u>3</u>	<u>String</u>	<u>Text</u>	<u>Version/model of bucking computer as designated by administrative program when creating apt-file.</u>

The following changes of priorities for variable 5 were decided:

Var	Name	Type	Old priority apt-file	New priority apt-file	Old priority prd/pri-file	New priority prd/pri-file
5	VARIANT	1	1	-	3	2
5	VARIANT	2	2	1	3	3
5	VARIANT	3	-	2	-	3

It was also decided that ESE-technique and CC-Systems shall decide on a standardized format to be used in var5_t3. This format will be included in the *StanForD Appendix*.

§4 More detailed information per dbh-class

Based on a suggestion from Tuomo Vuorenpää and Tapio Räsänen.

Variables 500-504 in StanForD are used for recording the DBH-distribution at a logging site. These variables are also used for recording the volumes per assortment and DBH-class. There are various possibilities to use this type of data, one example is to analyze the average stem size per DBH-class. Another application is to look at certain assortments percentage of certain DBH-classes. This may help in locating certain operations, for example harvesting of certain log qualities, to certain areas and stand types.

The current standard does not, however, give support for deeper data mining. It would, for example, be an advantage to be able calculate tree form and classify different wood procurement areas and stands without doing any field measurements.

It was therefore suggested that it should be possible to register the processed length as well as the number of logs per DBH-class and assortment in the prd-file. These new variables could, for example, be used for calculating:

- stem form per dbh-classes
- average stem length (excluding top and butt pieces) per dbh-class
- average log lengths (per assortment) per dbh-class

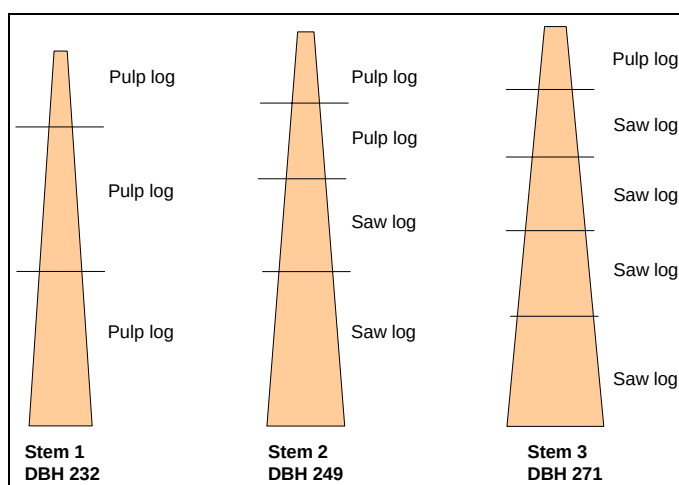
This would mean that by reading the information from prd we would get a lot of the information that today is only available in stm- or pri-files. There is a need for this type of “accumulated” information that would be easily available from each and every site, without timely data transfers or extra operations.

The meeting therefore decided to introduce the following new variable with priority 3 in prd-files.

Var	Name	Type	Data type	Unit	Description
503	NUM-STEMDB	3	Int	No	Number of logs, including unclassified logs/DBH-class/tree species: 1..var501/1..var111
503	NUM-STEMDB	4	Int	No	Number of logs/DBH class/price matrix/tree species: 1..var501/1...var116/1..var111
508	LEN-LOGDB	1	Int	Cm	Processed length up to last cut (meter run) including unclassified logs/DBH-class/tree species: 1..var501/1..var111
508	LEN-LOGDB	2	Int	Cm	Processed length up to last cut (meter run)/DBH-class/price matrix /tree species: 1..var501/1...var116/1..var111

Example describing implementation of var503.

The figure illustrates an example of how three different stems (same species) were bucked into twelve logs.



The resulting data as it is to be registered in the prd-file is described in the table. Only one species, two price matrixes and three DBH-classes are used.

Var	Type	Name	Description	Data from example
111	1	NUMTREESPC	Number of tree species	1
116	1	NUMASST	Number of price matrices/tree species: 1...var111	2
121	1	ASSTDESCR	Description of assortment/price matrix/tree species: 1...var116/1...var111	"SawLog" "PulpLog"
501	1	NUMDBHCL	Number of dbh classes/tree species: 1...var111	3
502	1	LOWDBHBRK	Lower DBH limit on bark/dbh class/tree species: 1...var501/1...var111	220 240 260
503	1	NUMSTEMDB	Number of stems/DBH class/tree species: 1...var501/1...var111	1 1 1
	2		Number of stems/DBH class/price matrix/tree species: 1...var501/1...var116/1...var111	0 1 1 1 1 1
	3		Number of logs, including unclassified logs/DBH-class/tree species: 1..var501/1..var111	3 4 5
	4		Number of logs/DBH class/price matrix/tree species: 1..var501/1...var116/1..var111	0 2 4 3 2 1

§5 Changes to main document

It was decided to update the following text in the “Main document” (new text is underlined):

Page 1, section 1:

The ~~extension~~ base name shall be three ~~may be up to eight~~ characters long while there is no limit concerning the length of the base name of StanForD-files. ~~and the extension three characters long~~

Page 1, section 3:

The following rules apply to delimiters:

- *There must be at least one space (and no LF) between the variable number and the type.*
- *There must be at least one space between the type and the data field. If the data field is alphanumeric, it must start with a LF. This means that there must be both a space and a LF between a type and a alphanumeric data field.*
- *Text strings in an alphanumeric data field are separated by LFs.*
- *Integers in numeric data fields are separated by one or more spaces or LFs.*

The end character is the tilde ~ (ASCII 126). This may be preceded by one or more spaces after numeric data fields.

~~An important principle of the standard is that present variables shall contain data~~ Variables in a StanForD-file shall contain data. in other case they should not be included in the file content.

When updating the standard aggregated or summed variables should not be added if these are possible to calculate based on variables already existing in the standard.

Page 2, section 2:

ABBREVIATIONS

The following abbreviations are used in all standard documents:

When writing an abbreviation for variable number, lowercase letters are used and, a space or underscore e.g. variable 35, type 2 is written var35 t2 or var35 _t2

The abbreviation for file types are always written using lowercase letters, e.g. stm-file, apt-file

The name of a variable is always written using uppercase letters, e.g. CONTACTNO

§6 Proposal concerning unclassified logs

Historically over or under sized (that is unclassified) logs were stored in variable var243 (BUTTVOL) or var244 (OUTSPECVOL). A major problem with these old variables is that we do not have any knowledge concerning the diameter and length distribution of the unclassified logs. It is, for example, very difficult to analyze whether the unclassified volume is caused by incorrect handling by the operator or if it is due to errors in the apt-file. This issue has been discussed continuously at StanForD-meetings since April 2001 (appendix 1).

The objective of the unclassified matrix is to register all dimensions of logs (manually) produced where the quality and dimensions (too short or too long or under- or oversized) are not found by the computer in any of the normal commercial matrixes included in the apt-file.

It was therefore decided to introduce the following new variable with priority 1 in prd-files:

Var	Name	Type	Data type	Unit	Description
244	OUT-SPEC-VOL	5	Int	Code	Diameter class type in "Unclassified matrix": 1...var111 Codes: 0=Diameter classes are under bark, 1=Diameter classes are on bark.
	OUT-SPEC-VOL	6	Long int	No	Number of "unclassified logs" per fixed diameter and length classes, as well as species: 1...13/ 1...12/ 1...var111 Diameter classes interpreted according to VarAAA_t2 (under bark or on bark) Fixed diameter classes:0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600+ Fixed length classes:0, 10, 50, 100, 200, 300, 400, 500, 600, 700, 800, 900+
	OUT-SPEC-VOL	7	Long int	m3 sub	Volume of "unclassified logs" solid under bark per fixed diameter and length classes, as well as species: 1...13/ 1...12/ 1...var111 Diameter classes interpreted according to VarAAA_t2 (under bark or on bark) Fixed diameter classes:0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600+ Fixed length classes:0, 10, 50, 100, 200, 300, 400, 500, 600, 700, 800, 900+
	OUT-SPEC-VOL	8	Long int	m3 sob	Volume of "unclassified logs" solid on bark per fixed diameter and length classes, as well as species: 1...13/ 1...12/ 1...var111 Diameter classes interpreted according to VarAAA_t2 (under bark or on bark) Fixed diameter classes:0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600+ Fixed length classes:0, 10, 50, 100, 200, 300, 400, 500, 600, 700, 800, 900+

§7 Proposal concerning variables for monitoring

John Arlinger presented the final proposal for a new monitoring system based on an updated drf-file. A separate document (*Operational monitoring of forest machines under working condition, John Arlinger et al.*) describes how the monitoring system is to be implemented. It is of great importance that the manufacturers do communicate with the StanForD-secretary when implementing the system as this is a new and totally untested system for monitoring. There will, in other words, probably be changes to the system/implementation as problems most likely will arise when implementing it.

Tapio Räsänen, Metsäteho, described the Finnish situation. Some kinds of adaptations of the monitoring system may be needed in the future due to the needs of Finnish entrepreneurs as their need might differ slightly from some forest companies. This is a sensitive question and will be considered in a special working group in Finland (hopefully started up in early January 2004). There may also be some differences with the time concepts compared to those described in the document (by Arlinger et al.). The variables described below should, in other words, be considered as semi-preliminary in the respect that they may be updated or changed in the near future based on discussions in Finland as well as problems arising during implementation.

All new StanForD variables included in the drf-file are described below (first and second table). They had priority 1 in drf-files with a few exceptions. Updated priorities for identity and production variables are presented in the third table.

Observe that the unit for var316_t5, var317_t5, var318_t6, var319_t5, var330_t3 and var330_t8 was changed after the meeting from hour to second. The following variables (priority 3) were also added after a suggestion from Timberjack: var316_t6, var317_t6, var318_t7, var319_t6, var330_t4 and var330_t9.

It was decided to add, change and update the following monitoring variables with the minutes (new or updated variables are underlined):

Var	Name	Type	Data type	Unit	Description
315	GTIME	1	Long integer	Sec	<u>Down-filter-time</u> , 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 data in var316_t3, code 3.
		<u>2</u>	<u>Long integer</u>	<u>Sec</u>	<u>Run-filter-time</u> , 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.
		<u>3</u>	<u>Long integer</u>	<u>Sec</u>	<u>Minimum-filter-time</u> : 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.

Var	Name	Type	Data type	Unit	Description
316	RUNTIME	1	Integer	No	Number of times
		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.
		4	String	Text	Description of times: 1...var316_t2 / 1...var211_t2
		5	Long integer	sec	Run time: 1...var316_t2 / 1...var211_t2
		6	string	Hhhh-mmss	Run time: 1...var316_t2 / 1...var211_t2
		7	Integer	No	Number of occasions when times has been registered in var316_t5: 1...var316_t2 / 1...var211_t2 Primarily of interest when summed times are registered in 316_t5 in order to calculate mean values.
317	IRTIME	1	Integer	No	Number of down times
		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.
		4	String	Text	Description of down time: 1...var317_t2 / 1...var211_t2
		5	Long integer	sec	Down time: 1...var317_t2 / 1...var211_t2
		6	string	Hhhh-mmss	Down time: 1...var316_t2 / 1...var211_t2
		7	integer	No	Number of occasions when times has been registered in var317_t5: 1...var317_t2 / 1...var211_t2 Primarily of interest when summed times are registered in 317_t5
318	WORKTIME	1	integer	No	Number of work times (for operating machine)
		2	Integer	No	Number of work times per operator: 1...var211_t2
		3	Integer	code	Type of work time for operating machine, including meal breaks. Overlapping between operators not allowed. 1...var318_t2 / 1...var211_t2 1= Start time

Var	Name	Type	Data type	Unit	Description
					2= End timer
		4	String	yyyy mmdd hhmm ss	Start / end of work time: 1...var318_t2 / 1...var211_t2
		5	Integer	No	Number of total work times: 1...var211_t2
		6	Long integer	<u>Sec</u>	Total work time for operating machine, including meal breaks: 1...var318_t5 / 1...var211_t2
		7	<u>string</u>	Hhhh-mmss	Total work time for operating machine, including meal breaks: 1...var318_t5 / 1...var211_t2
319	EXTRATIME	1	Integer	number	The number of times
		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.
		4	String	Text	Description: 1...var319_t2 / 1...var211_t2
		5	Long integer	<u>sec</u>	Extra time: 1...var319_t2 / 1...var211_t2
		6	<u>string</u>	Hhhh-mmss	Extra time: 1...var319_t2 / 1...var211_t2
		7	<u>Integer</u>	No	Number of occasions when times has been registered in var319_t6: 1...var319_t2 / 1...var211_t2 Primarily of interest when summed times are registered in 319_t5
320	SHORTIR	1	<u>Integer</u>	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	<u>Long integer</u>	<u>Sec</u>	Lower time limits for registering short down times / time interval, normally 60 seconds: 1...var320_t1
		3	<u>Integer</u>	no.	Number of short down times / time interval: 1...var320_t1
327	LOGTIME	1	<u>Integer</u>	No	Number of times for logging in or out
		2	<u>Integer</u>	No	Number of times for logging in or out per operator: 1...var211
		3	<u>Integer</u>	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	<u>String</u>	yyyy mmdd hhmm ss	Start / end time: /1...var327_t2 / 1...var211_t2
328	TOTWRKTI	1	Integer	No	Number of working time (normally paid time for employee)
		2	integer	No	Number of working time (normally paid time for employee) per operator: 1...var211
		3	<u>integer</u>	code	Type of total working time (normally paid time for

Var	Name	Type	Data type	Unit	Description
					employee), including time away from machine and meal breaks. Overlapping between operators allowed. /1...var328 t2 / 1...var211 t2 1= Start time 2= End timer
		4	String	yyyy mmdd hhmm ss	Start / end time: 1...var328 t2 / 1...var211 t2

It was decided to add the following new monitoring variables (new or updated variables are underlined):

Var	Name	Type	Data type	Unit	Description
330	<u>SPECTIME</u>	<u>1</u>	<u>integer</u>	<u>Number</u>	Number of repair times per operator: 1...var211
		2	<u>integer</u>	<u>Code</u>	Type of unit repaired (codes in appendix): 1...var330 t1 / 1...var211 t2
		3	<u>Long integer</u>	<u>Sec</u>	Repair time, the sum of this variable is equal to code 10 in var317: 1...var330 t1 / 1...var211 t2
		4	<u>string</u>	<u>Hhhh-mmss</u>	Repair time, the sum of this variable is equal to code 10 in var317: 1...var330 t1 / 1...var211 t2
		5	<u>String</u>	<u>Text</u>	Description of repairs (free text): 1...var330 t1 / 1...var211 t2
		6	<u>integer</u>	<u>Number</u>	Number of disturbance times per operator: 1...var211
		7	<u>integer</u>	<u>Code</u>	Type of disturbance (codes in appendix): 1...var330 t5 / 1...var211 t2
		8	<u>Long integer</u>	<u>Sec</u>	Time for disturbance, the sum of this variable is equal to code 14 in var317: 1...var330 t5 / 1...var211 t2
		9	<u>string</u>	<u>hhhh-mmss</u>	Time for disturbance, the sum of this variable is equal to code 14 in var317: 1...var330 t5 / 1...var211 t2
		10	<u>String</u>	<u>Text</u>	Description of disturbances (free text): 1...var330 t5 / 1...var211 t2

It was decided to change priorities of the following variables in the drf-file:

Var	Name	Type	Old prio	New prio
5	VARIANT	1	0	3
21	SITENO	1	1	2
21	SITENO	5	3	0
31	ORG	1	0	3
35	CONTRACT-NO	1	0	3
35	CONTRACT-NO	2	0	3
211	NUMOP	2	3	2
212	OPERATOR	2	0	2

§8 Items for discussion and information

PRODUCTION FILE FOR FORWARDER

John Arlinger informed about ideas concerning how to implement a new file format for reporting forwarder production (appendix 2).

The issue of what file type to use was discussed. It was decided that a new type of file specifically for recording forwarder production is to be called prl-file.

A first draft proposal of new variables needed is presented in the table below:

Var	Name	Type	Unit	Description
P1	NUMPILE	1	No	Number of piles in prl-file
P2	PILEDESC	1	Text	Pile name (free descriptive text): 1...P1_t1
P2		2	Dgrs	Latitude
P2		3	Dgrs	Longitude
P2		4	Masl	Altitude
P2		5	Code	Description of exposure per pile: 1...P1_t1 1 = pile exposed to sun, 2 = pile not exposed to sun
P3	PILESORT	1	No	No of assortments per pile: 1...P1_t1
P3		2	Text	Assortment codes per pile: 1...P1_t3 / 1...P1_t1
L1	NUMLOADCOD	1	Int	Number of load codes in varL2_t1
L2	LOADCODE	1	Code	Codes set for registered data in varL3, all loads follow the definition in this variable:1..varL1_t1
L3	LOADDATA	1	Int	Measurement data for each load: 1...var265_t1/1...var221_t1.

It was also decided that a final proposal for a prl-file will be presented at the next meeting.

HARVESTING DIRECTIVES AND GIS APPLICATION

John Arlinger informed about ideas concerning how to implement a new format for harvesting directives. A working group consisting of representatives from CC-systems, ForeCare, Berget and Sveaskog has been set up. A seminar with representatives from all major Swedish forest companies was also held in September. The plan is to have a final proposal ready for the next StanForD-meeting.

TEST WITH PRI-FILES

Johan J Möller informed about a test with the new updated pri file. The project was carried out together with ESE-technique, Södra and SDC. The test went well, however SDC has so far not been able to analyse the files.

The status of implementation of the new pri-file is as follows:

Manufacturer	Status
Ponsse	Completed
DASA	Completed
Timberjack	December 2003
Motomit	During 2004
Valmet	During 2004

DEMAND ON DATA TRANSMISSION

Jan Sondell informed about a demand specification concerning data transmissions from forest machines. The document is being written by Skogforsk and SDC.

DEFINITION OF STEMS

Johan J Möller presented how the different manufacturers presently define a stem. A proposal for a standardized definition of a stem will be presented by Skogforsk at the next meeting.

Skogforsk's basic idea is to use two different definitions:

1. A stem must contain at least one log with a length larger than the minimum length of all available price matrixes
2. A stem must contain at least one valid log according to available price matrixes

A stem with only one unclassified log that is shorter than the minimum length of all available price matrixes shall never be registered. The volume from such stem shall never be registered in any kind of production file (pri or prd).

A preliminary proposal is presented in the following table:

Var	Name	Type	Data type	Description
221	NUM-STEMS	1	integer	Number of processed (harvested) stems. <u>A stem must contain at least one log with a length larger than minimum length of all available price matrixes.</u>
		2	integer	Total number of trees harvested on a site after the start date (STARTDATE, var16_t4). Never reset during harvesting at a specific site. Used for checking that all files have been included when calculating the total production of a site. <u>A stem must contain at least one log with a length larger than minimum length of all available price matrixes.</u>
		3	integer	Number of processed (harvested) stems. <u>A stem must contain at least one valid log according to available price matrixes</u>
244	OUT-SPEC	All		<u>Volume from stem with only one unclassified log that is shorter than minimum length of all price matrixes shall not be included.</u>
249	TOTAL-VOL	1	integer	Total solid volume (including volumes in var243 and var244) /operator/tree species: 1..var211/1..var111 <u>Volume from stem with only one unclassified log that is shorter than minimum length of all price matrixes shall not be included.</u>

§9 Information about control of harvester measurements

Johan J Möller informed the meeting about the ongoing project concerning how to implement a certification system for harvester measurements. A final proposal will be presented at the next meeting, developed jointly by Skogforsk and Metsäteho.

§10 Next meeting

Next meeting will take place on Tuesday March 30th, 2004, at Skogforsk in Uppsala, starting at 10.00 a.m. Proposals for the meeting shall be the secretary by hand not later than February 15th 2003.

§11 End of meeting

Jan Sondell (chairman) closed the meeting.

Secretary

John Arlinger



John Arlinger
Jan Sondell
Johan J Möller

2003-10-28

How to manage and report unclassified logs in prd-files

Background

Historically over or under sized (that is unclassified) logs were stored in variable var243 (BUTTVOL) or var244 (OUTSPECVOL). A major problem with these two old variables is that we do not have any knowledge concerning the diameter and length distribution of the unclassified logs. It is, for example, very difficult to analyze whether the unclassified volume is caused by incorrect handling by the operator or if it is due to errors in the apt-file.

The issue of how to implement a new standardized matrix for unclassified logs has been discussed at several meetings. Jan Sondell originally brought up the issue. Below follows extracts from the minutes of these meetings:

- 2001-04-02, §7. A proposal for default limits for a matrix for unclassified timber was discussed (appendix 1). The unclassified timber can be defined in a price matrix and by using var136 with a new code 4 the matrix will not be included in the calculation of value when bucking the stem.
- 2001-10-22, §8. In the meeting of April 2001 it was said in §7 “The unclassified timber can be defined in a price matrix”. After discussion it was decided, “If and when the unclassified timber is used it should be defined with the format of a price matrix with the length and diameter classes decided in April 2001”.
- Meeting 2002-04-08, §7. Based on a question from Metsäteho, Jan Sondell presented the idea behind a matrix for unclassified timber. The meeting decided to recommend that this matrix is always included in the apt-file when the file is created in an administrative program.
- Meeting 2002-10-28, §10. Jan Sondell informed about handling of unclassified logs.
- Meeting 2003-04-08, §7. The meeting decided that the matrix for unclassified logs should be “hard coded” in var244 (OKCLASS/UNSPEC) and that a proposal will be presented by Skogforsk at the next meeting.

Variables for unclassified matrix

The objective of the unclassified matrix is to catch all dimensions of logs (manually) produced where the quality and dimensions (too short or too long or under- or oversized) are not found by the computer in any of the normal matrixes included in the apt-file (var116). Unclassified logs are, in other words, outside the maximum or minimum limits (dimension and quality) of all assortments that are to be produced.

The final proposal (as implemented in October 2003) was written by Jari Korhonen, Ponsse and slightly modified by Skogforsk.

The basic idea behind the proposal was that unclassified timber should not be handled as a normal assortment because a "normal assortments" has too much information that is not needed for unclassified logs. The previous proposals were based on the idea of handling the unclassified timber as a "normal assortments" tagged with code 4 in var136.

The main points, from Ponsse, concerning how to handle a new matrix from was:

- Only one matrix per tree species
- Only to be used for handling unclassified timber, totally separate from "normal assortments".
- Diameter classes can be under bark (Sweden) or on bark (Finland). This is defined like variable 133: 0=under bark, 1=on bark.
- Volume can be registered solid under bark and solid on bark.
- Number of logs can be registered.
- Fixed diameter and length classes identical for all species.

Variables for storing the hard coded matrix for unclassified logs (fixed diameter and length classes) implemented:

Var	Name	Type	Data type	Unit	Description
244	OUT-SPEC-VOL	5	Int	Code	Diameter class type in "Unclassified matrix": 1...var111 Codes: 0=Diameter classes are under bark, 1=Diameter classes are on bark .
	OUT-SPEC-VOL	6	Long int	No	Number of "unclassified logs" per fixed diameter and length classes, as well as species: 1...13/ 1...12/ 1...var111 Diameter classes interpreted according to VarAAA_t2 (under bark or on bark) Fixed diameter classes:0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600+ Fixed length classes:0, 10, 50, 100, 200, 300, 400, 500, 600, 700, 800, 900+
	OUT-SPEC-VOL	7	Long int	m3 sub	Volume of "unclassified logs" solid under bark per fixed diameter and length classes, as well as species: 1...13/ 1...12/ 1...var111 Diameter classes interpreted according to VarAAA_t2 (under bark or on bark) Fixed diameter classes:0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600+ Fixed length classes:0, 10, 50, 100, 200, 300, 400, 500, 600, 700, 800, 900+
	OUT-SPEC-VOL	8	Long int	m3 sob	Volume of "unclassified logs" solid on bark per fixed diameter and length classes, as well as species: 1...13/ 1...12/ 1...var111 Diameter classes interpreted according to VarAAA_t2 (under bark or on bark) Fixed diameter classes:0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600+ Fixed length classes:0, 10, 50, 100, 200, 300, 400, 500, 600, 700, 800, 900+

Problems

ALLOWED UNDERSIZED LOGS

In some cases undersized top logs of pulpwood is allowed within the ordinary assortment. These pieces must not be handled as unclassified. Instead it is easy to introduce a smaller diameter class in the ordinary pulpwood matrix in the apt-file, but without any prize. Of course the manufacturer must adjust the program so that it first tries to place an undersized log in an ordinary matrix and if it do not fit put it into the unclassified matrix.

PRESENTATION OR NOT OF UNCLASSIFIED VOLUME?

In some cases the harvester employer do not want the unclassified timber to be shown in the production report. Therefore it ought to be possible to exclude these volumes from the prd-file.

The volumes in the unclassified matrix is excluded in variable TOTMERCVOL (var241) and included in variable TOTALVOL (var249).

Example

The standardized matrix for unclassified logs have the following diameter and length classes:

Top diameter, mm	0	50	100	150	200	250	300	350	400	450	500	550	600+
Length, cm													
0							A	A	A	A	A	A	A
10													
50						B	B	B	B	B	B	B	
100						B	B	B	B	B	B	B	
200													
300													
400													
500	C	C											
600	C	C											
700	C	C											
800													
900+													

For example logs registered in the following areas (A, B or C) shows that the harvester probably:

- A = adjusted many wide butt end cuts
- B = cut short pieces of the stem due to root rot
- C = had poor control of length measuring or that there were many top breakages

Maximal length should be set to 10000 cm and minimum length to 0 cm.

Maximal diameter should be set to 10000 mm and minimum diameter to 0 mm.

The unclassified matrix should be available for all tree species. This means that there should be as many unclassified matrixes as there are tree species in the apt-file.

A new StanForD-file for reporting forwarder production.

DO WE NEED A NEW TYPE OF PRODUCTION FILE FOR FORWARDERS? PRL-, PRI- OR PRD-FILES?

Background

An increasing number of manufacturers are installing PC-computers and GPS-receivers in forwarders. This means that there are new possibilities to generate StanForD-files like drf- and prd-files from forwarders. Production files from forwarders are of great interest to many organizations/companies since information concerning available volumes of wood at the landing is very important for planning the wood flow from forest to industry.

There are two major problems with the present prd-file from a forwarder perspective:

1. Almost 50% of the variables in the prd-file are useless for forwarders
2. It is not possible to include production data concerning several landings/piles on one site within the present structure without a major update of the file type.

A new type of production file is therefore suggested. This file should only be used by forwarders. A suggested name for the new type is prl-file (**p**roduction **l**oad). It may of course be possible to add the information presented here into the prd- or pri-file if it is deemed unnecessary to implement a new file type.

The authors believe that we would get a simpler and more easily understood structure if we implement a new file type, however if it is decided not to add another file type to the standard it is probably better to include the proposed variables to the pri-file as their structure is more or less identical.

This document contains minimum requirements on the information sent in the form of a production file from the forwarder. It also briefly describes a possible data structure. The suggestions below are to be seen as a basis for discussion and not as a final proposal to the StanForD-group.

Observe that the term *pile* is used to describe a pile, at roadside, containing one or more assortments (that is price matrixes) destined for the same industry. A *landing* is defined as a limited area where the logs are stored in piles before transportation from forest to the industry. Several piles are normally stored at one landing. It is, at least in Sweden, quite common to use several different landings within the same harvesting site/object as well as storing the same

assortments in different piles at different landings. It is in other words necessary to register the volumes per pile in order to be able to plan the logistical operations between forest and industry.

Present prd-file

There are today 215 standardized variables that can be included in the prd-file, excluding variables with priority 4. At least 85 (perhaps up to 102) of these variables can only be generated by harvesters and not by forwarders. This is due to the fact that most of these variables are based on information originating directly from the measuring devices of the harvester head. It is, for example, assumed that only a harvester, and not a forwarder, can keep track of stems (eg DBH) or stem types, number of logs, diameter and length of logs.

Approximately 25 variables in the prd-file originate directly from the apt-fil and 13 variables can only be generated by a forwarder. The forwarder variables have all been added to the standard quite recently.

Is it possible for a forwarder to keep track of all assortments (price matrixes)? Probably not in Sweden, if they are not color-marked, since logs belonging to different price matrixes often have the same dimensions and are delivered to the same customer in one batch. However this is probably not necessary since all assortments that are mixed into one pile will be destined for the same industry, meaning they are all considered as one unit when leaving the forest. Already today several forwarders have simple functions for registering what species and assortment is unloaded or loaded.

Data from other StanForD-files

To minimize registration errors as well as making the registration for the operator simple it is probably necessary that the forwarder to utilize information in the apt-file (as well as oai, prd or pri). It must, in the forwarder, be possible to read site identities, price matrix codes, types of volumes etc. directly from the apt/prd-file used by the harvester and use this information when recording data in the prl-file.

It may also be of interest to read a pri/prd-file from the harvester on the same site in order to compare and possibly correct the transported volumes with the harvested volumes. If a pri-file is used it may also be possible for the operator to estimate the date of harvesting with a reasonably high precision if the harvesting date and coordinates of each stem is registered in the pri-files.

A new prl-file

Data that probably should be included in a prl-file:

- Identity variables as in pri- and prd-files (for Sweden, see Swedish appendix)
- Density
- Production (mass and volume) specified per:
 - load
 - operator

- 0 pile
 - 0 species
 - 0 product group
 - 0 perhaps price matrix
- Date and time of unloading
- Date and time of harvesting (estimation)
- Pile identity and coordinates
- Pile status:
 - 0 empty, unloading for the first time
 - 0 existing but not filled, unloading continues
 - 0 filled up but not finished, unloading not possible
 - 0 completely finished, no more unloading
- Pile exposure:
 - 0 exposed to sun, sunny
 - 0 not exposed to sun, shaded
- Calibration of scale

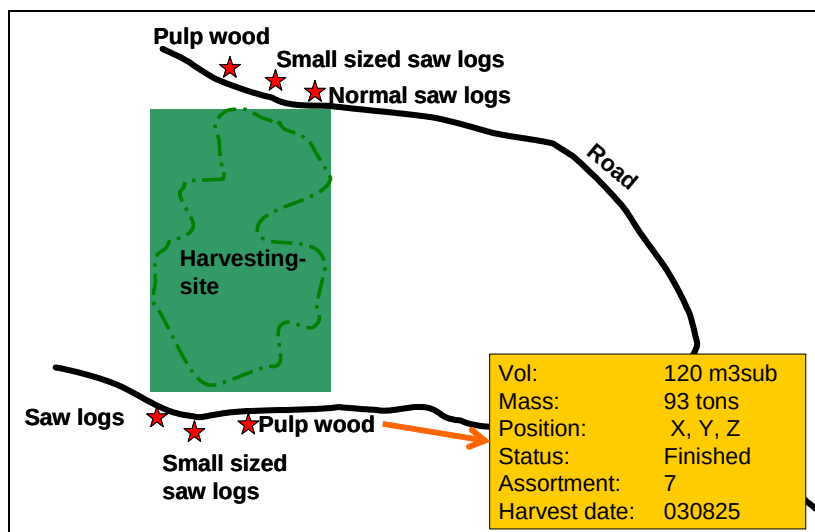


Figure 1. Example illustrating relevant data for a pile with pulp wood logs at one of two landings.

Observe that several piles at roadside containing the same assortments can exist within the same harvesting object. Pile is here defined as a unit of logs located at the roadside where all logs in a pile are to be transported together to one industry.

The issue of pile status is somewhat complex due to the fact that the forwarder does not know when and how the logs are transported by truck from the forest to the industry. Meaning that a certain pile is registered as full while the pile might have been emptied by the time this information reach the administrative system at the office. In order to solve this problem the administrative system must have quite precise knowledge about the activities of the trucks.

Structure of prl-file

The production data could be stored using the same principles as the pri-file. That means that we store information concerning each individual load and assortment (table 2).

Table 1. Example illustrating the structure for forwarding variables

VarNo	Name	Type	Data									
L1	NUMLOAD-COD	1	7									
L2	LOAD-CODE	1	2	1	402	450	760	762	30	10	11	20
			<u>Load No</u>	<u>Assort no</u>	<u>Vol</u>	<u>Mass</u>	<u>Crd X</u>	<u>Crd Y</u>	<u>LoadTime</u>	<u>Pile</u>	<u>Pile Status</u>	<u>Harvdate</u>
L3	LOAD-DATA	1	1	3	9	7200	218	554	...12:32:10	1	1	030501
			1	2	3	2400	219	554	...12:33:30	2	1	030501
			2	7	13	10400	220	556	...12:45:40	3	4	030501
			3	3	12	9600	230	540	...13:09:40	1	2	030502

Figure 2. Example illustrating what the data in table 1 would look like in the actual StanForD-file

```
YY5 1 7~ YY6 1 X1 X2 X3 X4 X5 X6 X7 X8~YY6 3 LoadNo Assort Buyer Vol Mass CrdX
CrdY Time~ YY7 1 1 301 135 9 7200 218 554 12:32:10 1 222 133 3 2400 219 554 12:33:30
2 701 133 13 10400 220 556 12:45:40 3 301 135 12 9600 230 540 13:09:40~
```

It will probably also be necessary to implement a new variable where the coordinates of each pile is given as well as the assortments to be included in the pile (table 2).

Table 2. Suggested new variables for storing pile information

Var no	Name	Type	Data type	Unit	Description
P1	NUMPILE	1	Integer	No	Number of piles in prl-file
P2	PILEDESC	1	String	Text	Pile name (free descriptive text): 1...P1_t1
		2	Integer	Dgrs	Latitude, integer as 0.00001 degrees, stored according to var521_t1, var521_t2 and var520_t1: 1...P1_t1
		3	Integer	Dgrs	Longitude, integer as 0.00001 degrees, stored according to var521_t1, var521_t2 and var520_t1: 1...P1_t1
		4	Integer	Masl	Altitude, meters above sea level, stored according to var521_t1, var521_t2 and var520_t: 1...P1_t1
		5	Integer	Code	Description of exposure per pile: 1...P1_t1 1 = pile exposed to sun, sunny 2 = pile not exposed to sun, shaded
P3	PILESORT	1	Integer	No	No of assortments per pile: 1...P1_t1
		2	String	Text	Assortment codes per pile: 1...P1_t3 / 1...P1_t1

Discussion

As mentioned previously it may be of interest to utilize the production file from the harvester (pri or prd) in order to adjust the volumes reported by the

forwarder. However, we do have a problem if put too much trust into those figures (for example volumes per assortment as recorded by the harvester) since there tends to exist a certain flow of volumes between different assortments during forwarding. The harvester operator may for example register a certain log as a saw log while the forwarder operator, being able to see some “hidden” damages to the log, decides to unload the log in the pulp wood pile at roadside. Systematic flows, as described above, between different assortments are common in Sweden today.

It is, as mentioned in the beginning of this document, recommended that we either include the presented new variables in a new file type called prl or in the present pri-file. The main reason for suggesting that we include these variables in the pri-file, rather than in the prd-file, is that the new variables (L1-L3) are following the same structure as the log and tree variables in the pri-file. If we decide to use the pri-file we do need to implement var3_t3 (MCHNNO) in the pri-file to distinguish between a harvester and forwarder file.