

Minutes from the meeting with the StanForD-group 2006-04-04

Place:	Skogforsk, Uppsala, Sweden
Present:	Erik Kindlund, John Deere Mika Talola, John Deere Perttu Isosaari, Vansco-Electronics (Mitron) Lars Henriksson, SDC Per Annemalm, Komatsu Halverd Olderlund, Komatsu Jörgen Eriksson, DASA Dan Norman, EcoLog Leif Arvidsson, EcoLog Tapio Räsanen, Metsäteho Samuli Hujo, Metsäteho Nicklas Götz, CC Systems Johan Bruun, Ponsse Teemu Paldanius, Ponsse Jyrki Partanen, Epec Joakim Nygren, Haglöf Jonas Gustafsson, Sveaskog Leif Orth, Södra Ruediger Dehn, DIS Informationssysteme
From Skogforsk:	John Arlinger, Secretary Johan J. Möller, Chairman

§1 Opening of the meeting

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

§2 Clarifications and modifications of variables

PRIORITY OF SUBCON (VAR34)

Variable 34 needs to be updated in order to make it possible to identify all files from a certain sub-contractor/machine independently of client (forest company).

It was therefore decided that var34 (SUBCON) is given the following priorities:

Variable	Prd/pri/prl	Drf	Ktr/stm
Var34_t2 (code)	1	1	1
Var34_t3 (name)	2	2	2
Var34_t4 (address)	2	2	2
Var34_t5 (phone)	2	2	2
Var34_t6 (e-mail)	2	2	2

As this information normally is not changed when changing site it was discussed whether or not this information should be included or not in the apt-file. No consensus was reached as some manufacturer wanted to keep this information in the apt-file. This means that the priority in apt-files is not changed. It was decided that Skogforsk is to study how to handle var34 in apt-files and if necessary propose a solution at the next meeting.

UPDATING CALIBRATION VARIABLES

A Finnish proposal concerning length calibration of but logs was postponed at the last meeting (2005-10-25) as it was discovered that several inconsistencies existed in the definitions of variables 15, 40-49.

It was proposed that var14 and var15 are given priority 4 in all file types.

The following proposed new definitions of calibration variables (new text underlined) were discussed at the meeting:

Var	Name	Type	Data type	Unit	Description
43	NUMDIACL	1	Integer	No	Number of diameter calibrations (<u>suggestion, at least last three calibrations</u>)
43	NUMDIACL	2	Integer	No	Number of diameter calibrations per tree species (<u>suggestion, at least last three calibrations</u>): 1...var111_t1
43	NUMDIACL	3	Integer	No	Number of calibrated diameter positions <u>classes per calibration and tree species (suggested diameters 50,100,150...700)</u> : 1...var43_t2/1...var111_t1
44	DIACALDAT	4	String	Yymmdd-hhmmss	Diameter calibration date: 1...var43_t2/1...var111_t1
45	DIACALRSN	1	String	Free Text	Diameter calibration reason: 1...var43_t2/1...var111_t1
48	CALDIA	1	Integer	Mm	<u>Calibrated diameter positions classes</u> : 1...var43_t3/1...var43_t2/1...var111_t1
49	CORRDIA	1	Integer	Mm	<u>Correction per diameter position class</u> : 1...var43_t3/1...var43_t2/1...var111_t1
40	NMLNGTHCA	1	Integer	No	Number of length calibrations (<u>suggestion, at least last three calibrations</u>)
40	NMLNGTHCA	2	Integer	No	Number of length calibrations per tree species (<u>suggestion, at least last three calibrations</u>): 1...var111_t1
40	NMLNGTHCA	3	Integer	No	Number of calibrated length positions <u>classes per calibration and tree species (at least one point at 500 cm)</u> : 1...var40_t2/1...var111_t1
41	LGHTCALDAT	4	String	Yymmdd-hhmmss	Length calibration date: 1...var40_t2/1...var111_t1
42	LGHTCALRSN	1	String	Free text	Length calibration reason: 1...var40_t2/1...var111_t1
46	CALLNGTH	1	Integer	Cm	<u>Calibrated length positions classes</u> : 1...var40_t3/1...var40_t2/1...var111_t1

Var	Name	Type	Data type	Unit	Description
47	CORRLNGTH	1	Integer	Mm cm	<u>Correction per position class</u> <u>1...var40_t3/1...var40_t2/1...var111_t1</u>
40	NMLNGTHCA	4	Integer	No	<u>Number of length calibrations for butt logs per tree species,</u> <u>use if separate butt log calibration exist in harvester</u> <u>(suggestion, at least last three calibrations):</u> <u>1...var40_t1/1...var111_t1</u>
40	NMLNGTHCA	5	Integer	No	<u>Number of calibrated length positions classes for butt logs</u> <u>per calibration and tree species, use if separate butt log</u> <u>calibration exist in harvester (at least one point at 500 cm,</u> <u>suggestion, at least last three calibrations):</u> 1...var111_t1
46	CALLNGTH	2	Integer	Cm	<u>Calibrated length positions classes for butt logs, use if</u> <u>separate butt log calibration exist in harvester:</u> <u>1...var40_t5/1...var40_t4/1...var111_t1</u>
47	CORRLNGTH	2	Integer	Cm	<u>Correction per length position class for butt logs, use if</u> <u>separate butt log calibration exist in harvester:</u> <u>1...var40_t5/1...var40_t4/1...var111_t1</u>

It was decided to postpone the decision concerning the calibration variables and that Skogforsk will study the following issues:

- In which file types should the variables have a priority (ktr, prd, pri etc)
- Predefined codes for "reasons for calibration" should be suggested
- Simpler structure for registering butt log length calibration according to original Finnish proposal, that is the difference in adjustment comparing to length adjustment of non butt logs
- Handling of species identities in a more efficient way
- Unit to use for var47_t1, suggested mm.
- Variables for storing adjustments when using a regression diameter calibration

§3 New variables

DRF-VARIABLES

Some new drf-variables were suggested in February 2006 by the TSG working group in order to improve the possibilities to analyze the reasons for repair and disturbances.

It was decided to add the following new variables to the drf-file with priority 2:

Var	Name	Type	Data type	Unit	Description
330	SPECTIME	9	String	Text	Identity of spare part used in case of reparation, other identity in case of disturbance: 1...var330_t1 / 1...var211_t2
330	SPECTIME	10	String	Yyyymmdd-hmmss	Time when reparation/disturbance first started: 1...var330_t1 / 1...var211_t2
431	ENGTIME	1	String	Hours	Total engine time, covering total life time of the engine when the file is generated.

GENERAL GHD-VARIABLES

Suggested by Frans De Roos, Cartesia.

It was decided to add the following new variables in order to facilitate the identification of different file types in ghd-files as well as there origin (var460_t9 with priority 2 and var467_t1 with priority 1 in ghd-files):

Var	Name	Type	Data type	Unit	Description
460	GISFILE	9	String	Text	File extension per layer (for example "shp", "mif", "jpg" or "tif") : 1...var460_t1
467	GHDINFO	1	Integer	Code	Specification of where ghd-file was last updated. 0 = not saved in forest machine (that is for example an administrative system at the office), 1 = saved in forest machine

ALARM COORDINATES (CODE IN VAR523)

Suggested by Lars Lodin, Bracke Systems.

Most Swedish forest companies register a specific coordinate as an alarm coordinate for each logging site (harvesting object). The main idea with this coordinate is to enable a quick and accurate response in case of an emergency, for example a serious accident.

It was therefore decided to upgrade var523_t7 with a new code for alarm coordinates of a site/object with priority 3 in oai- and ghd-files:

Var	Name	Type	Data type	Unit	Description
523	COORD	7	integer	code	Code for type of object with position according to coordinates in var523, point of measurement is according to var520_t1: 1 = harvested stem (in stm-file) <u>2 = alarm coordinates (one per harvesting site)</u>

RANDOM SAMPLING OF CONTROL STEMS DURING DARK HOURS

Suggested by Johan Bruun, Ponsse and Jonas Gustafsson, Sveaskog.

Certain harvester operators/forest companies do not want carry out control measurements during the dark hours due to safety regulations and difficult measurement conditions. In order to handle this problem several harvester operators turn off the random selection during the night or decreases the sampling interval. This is not a very good situation! It should therefore be possible to set in the harvester when stems are to be randomly selected, for example 7.00-16.00. This must be logged in the ktr-file.

It was decided to add the following new variables with priority 2 in stm- and ktr-files:

Var	Name	Type	Data type	Unit	Description
361	SAMPLE	7	String	Hhmmss	Earliest time when stem is to be randomly selected, used in order to avoid random selection during the dark hours. This variable must be used in ktr-files if a timer exist for turning off random selection.
361	SAMPLE	8	String	hhmmss	Latest time when stem is to be randomly selected, used in order to avoid random selection during the dark hours. This variable must be used in ktr-files if a timer exist for turning off random selection.

Observe that if this function is used the sampling interval may need to be increased in order to get a sufficient number of sampled stems per day or week.

MULTI TREE HANDLING AND PRODUCTION REPORTING WITHIN STANFORD

Multi tree handling (MTH) means that several trees are felled and accumulated in the harvester head. The trees are thereafter delimbed and cross cut simultaneously in the harvester head. This technique is primarily of interest in dense stands with a large number of small trees. MTH-stems cannot be measured individually with the present techniques used in harvesters.

There are two fundamentally different methods for registration of multi tree handled (MTH) stems in pri-files:

- A. Individual logs and stems are in some way registered in var257/var267
- B. All MHT-stems are registered in separate variables (e.g. variables230, 231 and 246), that is totally exclude from var257/var267.

The ideal solution would be to register data concerning MTH-stems in the same way as "normal" stems in pri-files, that is registering data per tree and log also when the stems are handled together (bundled).

The issue of how to register the MHT-production in StanForD files was first discussed with a specific focus on pri-files in November 2005. There are some fundamental problems if MTH-stems are to be included in prd- and pri-files:

- Logs and stems are not measured individually
- Different species and assortments may be processed together

The number of stems in the pri-file must be known. The number of stems registered in var257 must be equal to var221 (NUMSTEM) in pri-files. To implement a solution where several stems are registered as one stem is not satisfactory as this will mean that the number of stems registered in var257 is not equal to var221 or that var221 will not be equal to the true number of harvested stems.

The present definition of a stem (for example in var221) is:

The sum of the length of all logs from one stem must be larger than the minimum length of all available price matrixes and the diameter at minimum length, from butt end, must be larger than the minimum diameter in all price matrixes, in order to be registered as a stem.

It is not possible to use this definition in the case of multi tree handling as no individual diameter measurements are registered. This means that we probably

should keep MHT-stems totally separate from the "normal harvester production". An additional advantage with this method is that the same variables could be used in both pri- and prd-files. It also does not make the pri-file more complex and we keep fundamentally different measurements/estimations in totally separate variables.

It was decided to add the following new variables with priority 2 in prd and pri-files:

Var	Name	Type	Data type	Unit	Description
230	NUMBNCH	2	Integer	No	Number of occasion that multi tree handling (several stems delimbed and cross cut simultaneously, logs are length measured) is carried out at the site
231	STMSINBNCH	2	Integer	No	Number of multi tree handled stems (several stems delimbed and cross cut simultaneously)
246	BUNCHEDVOL	2	Integer	m3 (ob)	Total volume of multi tree handled stems (several stems delimbed and cross cut simultaneously). The volume is based on the total diameter (diameter measured as if only one stem is processed)
246	BUNCHEDVOL	3	Integer	m3sob	Total volume of multi tree handled stems (several stems delimbed and cross cut simultaneously) as calculated in harvester.
246	BUNCHEDVOL	4	Integer	m3sub	Total volume of multi tree handled stems (several stems delimbed and cross cut simultaneously) as calculated in harvester.

It is not known exactly how the old var230_t1, var231_t1 and var246_t1 were to be used when proposed 2002-03-09. The idea might have been to use them for registering the production of a feller-buncher which was used in combination with a forwarder with a grapple saw. That means that several stems were felled and accumulated in bunches by the strip road and then bucked but not delimbed by a forwarder and finally transported to an industry for debarking and delimbing.

It was decided to update these old variables with priority 2 in prd- and pri-files (new text underlined):

Var	Name	Type	Data type	Unit	Description
230	NUMBNCH	1	integer	No	Number of bunches/tree species: 1...var111_t1 <u>Some type of feller-buncher system used</u>
231	STMSINBNCH	1	Integer	No	Number of stems handled in bunches/tree species: 1...var111_t1 <u>Some type of feller-buncher system used</u>
246	BUNCHEDVOL	1	integer	m3 (stacked)	Total volume (stacked) of bunched wood/tree species: 1...var111_t1 <u>Some type of feller-buncher system used</u>

§4 Apteri

GUIDELINES FOR STANDARDIZATION

A description of how to use oai- and ap1-files in apteri-systems can be found in appendix 1. The meeting decided to only implement variables presently needed in Finland, a quite large number of other variables will be needed if the ap1-file is to be used outside Finland. However it was decided to postpone the implementation of these variables until there is a concrete interest in using the ap1-file outside Finland. These variables are also included in appendix 1.

It was decided that the following basic guidelines should be used for oai- and ap1-files:

- Only assortment specific data is registered in ap1-files.
- All other relevant data is registered in oai-files.
- Some "machine specific" variables are not included in oai- or ap1-files as it is more efficient to set these in the machine.
- With the exception of assortment identities (var121_t2-5 and var32_t2) no variables will be given priorities in both oai- and ap1-files in order to create as simple and transparent structure as possible
- Ap1-files must be used together with an oai-file in order to create a complete apt-file.
- A harvester Apteri should, in case a certain variable is included in oai- or ap1-files, use them as default values, if not included it is suggested that the previously used setting for this variable is used as a default.

NEW VARIABLES

Some new variables specifically to be used in ap1-files were suggested at the StanForD-meeting.

A need for improved possibilities to identify a certain assortment was identified at the last meeting (2005-10-25). It was decided to change the variable numbers back to the original proposal according to the following table (same definitions):

Var	Name	Type	Data type	Description	Priorities
5	MACHINE	5	String	Name and version of program or software application used for creating apt-file from oai- and ap1-files.	apt/3, prd/3 pri/3, stm/3
121	ASST-DESCR	4	String	Time and date when the ap1-file of the assortment was last saved in the data system of the forest company/ price matrix/tree species: 1...var116_t1/1...var111_t1	ap1 / 3, oai / 3 apt / 3, prd / 3 pri / 3, stm / 3
121	ASST-DESCR	5	String	Assortment identification information of the assortment data/ price matrix/tree species: 1...var116_t1/1...var111_t1. User-specified codes.	ap1 / 3, oai / 3 apt / 3, prd / 3 pri / 3, stm / 3

According to the present standard, only values ≥ 0 are allowed in var191_t4. However, negative values have been used in ap1-files (var191_t4). The purpose for using negative values has been to manage the length distributions in a more simple way. The number of short lengths is often a problem and scaling the changes of prices with three different relative values (e.g. 20%, 15% and 10%, respective codes 0, -4 and -5) is a way to control the length distribution.

It was proposed to implement these codes in a new variable var191_t7 only to be used in ap1-files. Observe that the Finnish Apteri software may continue to use var191_t4 as before but this special implementation of var191_t4 will not be included in the standard as it would mean having different definitions of the same variable in different file types.

It was decided to add the following new variable with priority 2 in ap1-files:

Var	Name	Type	Data type	Unit	Description	Priorities
191	SPECLIST	7	Integer	Code	Codes used in ap1-file for adjusting var162, var191_t4 and var190 when creating apt-file based on BASEPRICE (var155) /diameter class/length class/price matrices/tree species: 1...var117_t1/1...var118_t1/1...var116_t1/1...var111_t1 Codes described in appendix	ap1/3,

The codes used in the new var191_t7 (used only in ap1-files) are described below (will be added to StanForD appendix):

Code	Description	Values set in apt-file		
		Var162* Change price matrix, %	Var191 SPECLIST	Var190 MAXLOG
1	No adjustments to var162, var191 or var190 carried out (default if variable not included).			
0	Not desired/low priority. The value of this cell in price matrix (var155 BASEPRICE) is lowered by the percentage value given in settings of Apteri software. Var191_t4 and var190 are set to 0.	20	0	0
-1	Forbidden to buck. The value of this cell in price matrix (var155 BASEPRICE) is lowered by the percentage value given in settings of Apteri software or price is set fixed to 0. Var191_t4 is set to 0. Var190 is set to -1.	90 or 100	0	-1 (forbidden to buck the log even manually)
-2	Only bucking manually allowed. The value of this cell in price matrix (var155 BASEPRICE) is lowered by the percentage value given in settings of the Apteri software or price is set fixed to e.g. 20 or 2. Var191_t4 is set to 0. Var190 is set to -3.	99	0	-3 (only logs bucked manually allowed)
-4	Not desired/low priority. The value of this cell in price matrix (var155 BASEPRICE) is lowered by the percentage value given in settings of the Apteri software. Var191_t4 and var190 is set to 0.	15	0	0
-5	see previous	10	0	0

*The exact levels of decreasing the price in var162 are set in the harvester Apteri.

As the type of volume is not defined when using BASEPRICE (var155) it was decided to update it according to the following table (new text underlined):

Var	Name	Type	Data type	Unit	Description
155	BASEPRICE	1	Integer	Currency	Basic price/price matrix/tree species: 1...var116_t1/1...var111_t1 <u>Price per m3 according to var161_t1.</u> Primarily for use in administrative applications.

Jörgen Eriksson, Dasa, suggested that it should be possible to set a variable in the ap1-file indicating whether the apt-file is to be created based on a BASEPRICE (var155) and var191_t7 (as in Finland today) or based on separate price (var162_t2), limitation and apportionment matrixes. Different variables will be considered mandatory depending on the type of ap1-file. It was therefore suggested that the following new variable is added to the standard with priority 1 in ap1-files:

Var	Name	Type	Data type	Unit	Description
1	FILETYPE	5	Integer	Code	Code describing type of ap1-file, whether the apt-file is created based on the base price or on a price matrix (the differences in priorities described in appendix): 1 = Base price, based on original Finnish apteri 2 = Price matrix

The meeting decided to postpone the implementation of this variable until there is a more a more concrete interest in using ap1-files outside Finland.

ORIGINAL PROPOSAL

It was decided to give the following variables priorities in ap1- and oai-files according to the table below. Observe that only variables from the first Finnish proposal are presently included in the following table, a number of variables might be included if a need for ap1-files arise in other regions.

Var	Name	Type	Description	Ap1	Oai
1	FILETYPE	2	The variable shall assume one of the following values: apt, prd, tid, drf, ...etc	1	1
1	FILETYPE	3	Code page character set, ISO-code	1	1
2	ID	2	The name of the apt-file.		3
3	MCHNNO	1	Machine number.		3
3	MCHNNO	2	Unique machine identity for each company, which is used when using ...		2
5	VARIANT	1	Version/model of bucking computer used for creating file. Format to be ...	3	2
5	VARIANT	2	Version/model of administrative program used for creating file. Format to be ...	3	
6	NATION	1	Country code: numerical code as per Swedish Std. SS-ISO 3166		1
12	DATESAVED	4	Date when the file last was saved.	3	
13	BUIDATE	4	Time and date when the current bucking file (APT-file) was originally created ...	3	
21	SITENO	1	Logging unit number (mandatory in PRD, PRI and DRF files)		3
21	SITENO	2	Marking for cutting		2
21	SITENO	3	Compartment number		2
21	SITENO	4	Lot number		2
21	SITENO	5	Code to express if the logging site is certified or not: 0=not certified 1=certified		3
31	ORG	1	Organization		2
31	ORG	2	Region		2
31	ORG	3	District		2
31	ORG	4	Working team		2
31	ORG	5	Wood pile		2
32	BUYER	1	Buyer		2
32	BUYER	2	Buyer/price matrix/tree species	1	2
33	VENDOR	1	Vendor		3
33	VENDOR	2	Vendor, code		3
33	VENDOR	3	Vendor, name		3
33	VENDOR	4	Vendor, address		3

Var	Name	Type	Description	Ap1	Oai
33	VENDOR	5	Vendor, e-mail		3
33	VENDOR	6	Vendor, phone/fax		3
34	SUBCON	1	Contractor		2
34	SUBCON	2	Contractor, code		2
34	SUBCON	3	Contractor, name		2
34	SUBCON	4	Contractor, address		2
35	CONTRACTNO	1	Contract number		2
111	NUMTREESPC	1	Number of tree species	1	1
116	NUMASST	1	Number of price matrices/tree species	1	1
117	NUMDIACL	1	Number of diameter classes/price matrices/tree species	1	
118	NUMLNTHC	1	Number of length classes/price matrices/tree species:	1	
119	FREEBUCK	1	Code stating if bucking is permissible to any length between min and max ...	1	
120	TREESPEC	1	Name of tree species		2
120	TREESPEC	3	Tree species code(see Swedish appendix) for tree species/tree species		2
121	ASSTDESCR	1	Description of assortment/price matrix/tree species	1	2
121	ASSTDESCR	2	Code/price matrix/tree species	1	2
121	ASSTDESCR	3	Additional identity descr. of price matrix/price matrix/ species:	3	3
121	ASSTDESCR	4	Time and date when the ap1-file of the assortment was last saved in....	3	3
121	ASSTDESCR	5	Assortment identification information of the assortment data/ matrix/species	3	3
122	NUMSTEMTY	1	Number of stem types/tree species		3
123	STEMTYPNU	1	Stem type number/price matrix/tree species	3	
124	STEMTYPDES	1	Description of stem type/stem type/tree species		3
124	STEMTYPDES	2	Code for stem type/stem type/tree species		3
125	NUMPRODGR	1	Number of product groups/tree species		2
126	PRODGRPNNU	1	Product group number/product group/tree species		2
127	PRODDDESCR	1	Description of product /product group/tree species		2
131	DIAGRDLMT	1	Lower diameter limit (last value, var117_t1+1, gives upper diameter limit):	1	
132	LWRLNGTHL	1	Lower length limit of length class (last value, var118_t1+1, gives upper ...	1	
134	OTHERDIA	1	Minimum top diameter/price matrix/tree species	2	
134	OTHERDIA	2	Maximal diameter in the large end of the log per price matrix per tree species	1	
135	OVERSIZE	3	Lower length limit for "cutting window"/price matrix/tree species.	1	
135	OVERSIZE	4	Upper length limit for "cutting window"/price matrix/tree species....	1	
136	BUCKCRIT	1	Code for bucking criterion/price matrix/tree species....	1	
155	BASEPRICE	1	Basic price/price matrix/tree species...	1	
165	POLELOWLIM	1	Lower limit for butt diameter/length class/price matrix/tree species	2	
166	POLEUPLIM	1	Upper limit for butt diameter/length class/price matrix/tree species	2	
167	POLEMEASPT	1	Height above stump of measuring point for butt diameter/matrix/species	2	
190	MAXLOG	1	Type of limitation per price matrix and tree species.	3	
191	SPECLIST	4	Relative number of logs/diameter class/length class/matrices/species	1	
191	SPECLIST	7	Codes used in ap1-file used for adjusting var162, var191_t4 and var190....	3	
192	MAXDEVIAT	2	Maximum deviation in dimension-apportionment bucking/matrix/tree species	2	
196	OVERPROD	1	Action if production target is fulfilled (overproduction according to var190)...	3	
200	OPTNLTXT	1	Variable for inclusion of optional text.		3
200	OPTNLTXT	2	Optional free text for sending information to the machine.		3
500	DBHHT	1	Height above stump of DBH when DBH is a measured value per tree species		3
501	NUMDBHCL	1	Number of dbh classes/tree species		3
502	LOWDBHBRK	1	Lower DBH limit on bark/dbh class/tree species.		3
530	NUMDIAMSEC	1	Number of diameter sections / tree species.		3
531	DIAMSEC	1	Description of diameter section / diameter section / tree species.		3
531	DSEC	2	Code for diameter section / diameter section / tree species		3
531	DSEC	3	Minimum diameter o.b. of diameter section / diameter section / tree species:		3
531	DSEC	4	Minimum length of diameter section / diameter section / tree species		3

Var	Name	Type	Description	Ap1	Oai
531	DSEC	5	Diameter section is used either for commercial volume measurement		3

§5 Items for discussion and information

NEW ESTONIAN PRICE CATEGORY

Suggestion from Sakari Suriniemi, John Deere.

An Estonian function for calculating log volumes exists. The function is called "Nilsons' formula". The basic idea of this function is to calculate a solid volume based on the top diameter of the log.

The definition of this function is:

$$V = (D * D * L * (a1 + a2 * L) + a3 * L * L) / 10000$$

Where:

V = log volume (m3 ub)

L = length of log (dm, with at least one decimal)

D = top diameter of log, measured under bark (cm, with at least one decimal)

a1, a2 and a3 = "conic" coefficients are dependent on tree species

"Conic" coefficients:

Tree species	a1	a2	a3
Pine	0,0799	0,000146	0,0411
Spruce	0,07995	0,00016105	0,04948
Hardwood	0,0783	0,000236	0,045

It was decided to implement a new code 13 in var161_t1 (price category) for the Estonian "Nilson's formula".

It was also decided to implement the following variables in apt-files with priority 2 in order to register the "conic coefficients":

Var	Name	Type	Data type	Unit	Description
161	PRICECAT	2	integer	1/100000000	Coefficient a1, used when calculating volume according to code 13 in var161_t1 per species (see var161_t1 in appendix): 1...var111_t1
		3	Integer	1/100000000	Coefficient a2, used when calculating volume according to code 13 in var161_t1 per species (see var161_t1 in appendix): 1...var111_t1
		4	Integer	1/100000000	Coefficient a3, used when calculating volume according to code 13 in var161_t1 per species (see var161_t1 in appendix): 1...var111_t1

RANDOM SELECTION OF CONTROL STEMS.

Tapio Räsänen, Metsäteho, described their present work concerning random selection of control stems.

Principles for random selection of control and calibration trees

- What is the principle behind the random selection? This issue will be discussed in Finland in May.
- Metsäteho's report on the subject will be distributed during the spring, machine manufacturers are asked to comment the suggestions of the report before publishing
- Machine manufacturers prefer similar methods to be used in Finland and Sweden and users prefer to see similar systems in different machines.

Skogforsk is planning to translate the specification concerning random sampling of control stems into English.

MIXED SPECIES IN PRODUCTION REPORTING

Tapio Räsänen, Metsäteho, presented a question raised by Ari Ronkainen, UPM, concerning how to use mixed-wood for tree species information in StanForD files.

There is a certain need to use 'mixed-wood' (undefined mixed tree species) as tree species information especially for energy wood assortments in bundler prd-files and also in prl-files. Can we define a separate tree species code for mixed-wood (var120)? Are there any restrictions for it due to the handling of tree species in bucking computers (setting the information through buttons)? Mixed-wood should be possible to be used together with other tree species. Now only four tree species codes have been defined in StanForD.

The meeting decided that Skogforsk should study the issue of identifying tree species and present a proposal at the next meeting.

STEM PRICING SYSTEM (SKOGFORSK PROJECT)

Johan J. Möller presented a Skogforsk project where a new pricing method was developed. The price is set based on data from harvester pri-files used together with statistical models for predicting relevant wood and fiber properties.

TIMBER VALUE TRIAL AUTUMN 2006 (VIRKESVÄRDETEST)

Johan J. Möller presented the planned timber value trial which will be carried out during the autumn.

The aim is to investigate how different bucking computers work under practical conditions in order to support:

- manufactures in developing their systems
- users when using and buying systems

The test will be carried out in Tierp (60 km north of Uppsala) where StoraEnso/Bergvik will give Skogforsk access to a suitable stand. It will be carried out from the middle of October to the beginning of December.

The following issues will be covered:

- How do the optimization work (for example value and apportionment bucking)

- Calibration and quality assurance system (random sampling of stems) for the harvesters measuring system
- Communication with other media (caliper, mail, cd, GPS, etc.)
- Administration of data (saving data, backup, identities of harvesting objects)
- Control of length- and diameter measurements and volume calculation
- Functions for quality, log type and sound knot bucking.
- Instructions (manuals) for important functions
- Other important functions implemented

The time table will be:

- Invitation to manufacturers to participate in the trial in April
- A preliminary test plan in May
- Possible to meet Skogforsk and go through the test plan in May-June
- Practical test middle of October to beginning of December

FUTURE FUNDING OF STANFORD

Skogforsk spends approximately 90 days per year on StanForD-issues (excluding research projects). Financial support to Skogforsk from manufacturers since 7 years cover about 220' out of 600' SEK.

All manufacturers are "treated" in the same way today (concerning meetings, support etc). It must be more clearly stated what the paying partners receive and whether they do want to continue with this kind of cooperation. The paying partners 2005 were John Deere, Komatsu, Dasa, CC systems, Ponsse and Vanasco (formerly Mitron). A meeting with the manufacturers is therefore planned to be held this year.

§6 Other issues

No issues were discussed.

§7 Next meeting

Next meeting will take place on Tuesday October 24th, 2006, at Skogforsk in Uppsala, starting at 10.00 a.m. Proposals for the meeting shall be the secretary by hand preferably not later than September 20th 2006.

§8 End of meeting

Johan J Möller (chairman) closed the meeting.

Secretary

John Arlinger

StanForD and Apteri (apt-builder)

DESCRIPTIONS AND DEFINITIONS

Introduction

The objective of this document is to describe the present Finnish Apteri system and how the file types, oai and ap1, are used today. The second and most important objective is to describe a proposal for how to include the Apteri concept in StanForD. The basic idea is to extend the oai- and ap1-files in order to make it possible to use these files in other regions than Finland, this means that certain variable priorities will be different in the proposal when comparing with the present Finnish system as suggested in 2005.

Observe that assortment in this document is defined as one individual price matrix together with all other relevant information (for example limitation and apportionment matrixes). The term assortment is thus not used for describing several different price matrixes together, as it sometimes is used in Sweden.

Background

Apteri is a Finnish software for managing bucking instructions, it is used for distributing assortment specific files from a central information system (normally a forest company system) to a large number of harvesters. Apteri basically means apt-builder and it solves some of the problems related to the use of the present apt-file. The problems with the present apt-files are caused by the fact that data related to sites, to assortments and to machines are mixed into one single file. Keeping these data groups more separate would be an advantage. This means that the apt-file is created in the machine at the point of starting the harvesting at a site. Another problem is that bucking control data and assortment data (matrixes, lengths, diameters etc.) sometimes change often. This fact means that the apt-file has to be updated regularly. Quite commonly it has to be created separately for each individual site. In order to help the operator in this task an easy-to-use software like Apteri is of great use.

The first Apteri version was developed and implemented by UPM in Finland around 1998. Metsäliitto (2003-04) and Metsähallitus have since developed their own versions of this system and Stora Enso (Finland) is planning to implement their version during 2006.

The basic idea of the system is to have separate applications, one at the office side and one at the harvester side. The office application generates general

information concerning the site (oai-file) as well as separate information concerning each assortment (ap1-files). The harvester application will then merge the information (oai and ap1) from the office application and create an apt-file specifically adapted for a certain site (figure 1).

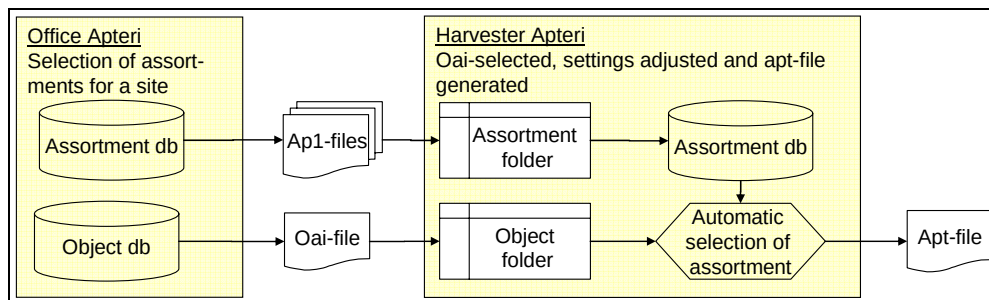


Figure 1. General description of an Apter system.

The harvester manufacturers have developed and implemented their own Apter harvester softwares. There are (as far as the authors know) three basic versions of harvester Apter as Ponsse and Motomit developed their own applications while the other manufacturers developed their application jointly. These Apter softwares can today handle the information sent from all different Finnish forest companies. The manufacturers have thus come to realize that it would be an advantage to standardize the information in the files used by Apter more strictly in order to establish a firm framework for further development in Finland as well as possible use on other markets.

The issue of standardization was raised for the first time at the StanForD-meeting on the 25th of October 2005. The first proposal, which was discussed and decided at two Finnish pre-StanForD-meetings (2005-05-11 and 2005-10-11), was based on the present implementations in Finland. The basic idea with the proposal was to update the present oai-file as well as adding a new ap1-file to StanForD. It was decided (2005-10-25) to organize a meeting in Finland to discuss these proposals in order to clear out a number of questions that had arisen at this StanForD-meeting. A meeting, with representatives from machine manufacturers as well as Metsäliitto and Stora Enso, was thus held in Tampere on the 25th of January 2006 where it was decided to continue the effort of trying to standardize the ap1-file and updating the oai-file.

OFFICE APTERI

The office application generates data concerning the site which is stored in an oai-file. It is thereafter decided which assortments that are going to be used at the site. The assortment data is then stored in one ap1-file per assortment. All files are then sent electronically to the selected harvester, today in Finland using a company specific communication system. The files are today often sent to the harvester using some company specific coded format (e.g. using xml).

HARVESTER APTERI

Below follows a rough description of apt-settings today managed in the harvester Apter.

Program settings:

- Version of bucking computer (var3_t1)

- Folders for storing ap1-, oai- and apt-files (also backup of apt-files)
- Database for assortments (different databases for different companies can be set)

Machine-specific settings:

- Bucking parameters (table 1)
- Setting additional lengths and price reduction percentages in order to use var191_t7 (previously var191_t4) correctly.
- Default grades per tree species (var144_t1)
- Stem types (both in machine setting and in oai-file)
- Grade descriptions (var143_t1)
- Product group numbers and descriptions (var126_t1 and var127_t1), both in machine setting and in oai/ap1-file
- Other machine-specific settings (some of which do not refer to any StanForD variable), for example:
 - Editing of apportionment matrix
 - Limitation matrix in use or not
 - Extra minimum diameter margin (var135_t2??) (%) for logs and pulpwood separately????
 - Price reduction values for manual bucking, for logs (%) and pulpwood (currency) separately
 - Price reduction value for extra diameter class (for minimum diameters less than the set value) %
can be used only for pulpwood, minimum diameter of extra diameter class is set by operator (e.g. 80 mm), price value reduction percentage for extra class is set by operator (e.g. 20 %)
 - "Width of cutting window"
This is set separately for assortments with and without free-bucking (var119_t1). Observe that the cutting window defined in the ap1-fil is used for calculating the position of the cutting window (mid point) while the final width of the cutting window depends on the setting in the machine.
 - Selection of type of var191 SPECLIST, type of distribution matrix
 - Selection of diameter type, under or on bark
- Variables to be left out
 - Some variables can be left out from apt-file. These variables depend on the version of the bucking computer and also the forest company.

Table 1. The following bucking parameters are set in the machine and not in oai or ap1

Name	Var no	Description
APPMETHOD	198_t1	Apportionment method. Codes: No apportionment / Adaptive / Near optimal Observe that it should not be possible to set this to "No apportionment" in Apter.
PRICECAT	161_t1	Price category/price matrix/tree species
VOLUMTYPE	163_t1	Principle for volume calculation/price matrices/tree species.
LNGTHFORCALC	101_t1	Length of stem used in calculation
MEASLNGTH	102_t1	Length of stem measured before estimation
ESTUPLIM	103_t1	Upper tolerance limit for deviation in estimated diameter
ESTLOWLIM	104_t1	Lower tolerance limit for deviation in estimated diameter

The start of a new site (object) in the harvester is from one point of view initiated when the files are sent from the administrative system to the machine. The ap1- and oai-files are transferred to specific predetermined folders by the communication software in the harvester.

The following steps (see also figure 2) are today taken by the operator when creating an apt-file before starting harvesting at a new site:

1. Selection of an oai-file. All assortments in new ap1-files, stored in a specific folder, are automatically imported to a database. The ap1-files are thereafter deleted from this folder. Updated assortments can be saved with the old assortment identification information or they can be saved with a new assortment name. Apter automatically creates the price matrix (var162_t2) based on the baseprice (var155_t1) in the ap1-file. The price matrix can be modified based on the special values of var191_t4 (in the future var191_t7). Apter also sets other parameters to new or updated assortments (some settings have to be done manually as was described earlier).
2. The correct assortment data is then automatically selected from the database based on the assortment identities in the oai-file (var121 type 2, 3, 5 and var32_t2).
3. Grades, colour markings and extra diameter margin (var135_t2) are set for each assortment by the operator. The software automatically suggests grades based on previously used settings if the assortment has been used previously.
Colour marking settings can be done for whole assortment or for specific length/diameter combinations. The extra diameter margin means that the operator can add a diameter margin for each diameter class and assortment.
4. Operator confirms that he wants to create an apt-file and gives it a name.
5. The apt-file can thereafter, if needed, be edited with an administrative software (for example OptiEditor, Silvia or WinApt) before harvesting at the site is started.

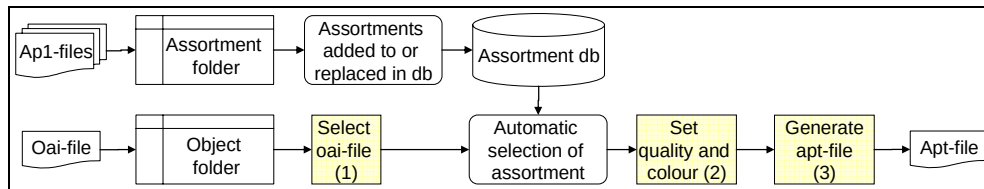


Figure 2. Description of harvester apteri

New standard

GUIDELINES FOR STANDARDIZATION

The following basic guidelines have been followed when proposing a new standard for oai- and ap1-files:

- Only assortment specific data is registered in ap1-files.
- All other relevant data is registered in oai-files.
- Some "machine specific" variables are not included in oai- or ap1-files as it is more efficient to set these in the machine.
- Ap1-files must be used together with an oai-file in order to create a complete apt-file.

Base price, max deviation, stem type definitions, product groups and tree species names exist in both oai- and ap1-files in the original proposal. The present rule in Finland is that oai-data is used in case it exists in both file types. It is suggested that base price and max deviation is not given any priority in oai while stem type definitions and species names are given no priority in ap1-files.

Key variables used for identifying price assortments in an ap1-file are var121_t2, var121_t3, var121_t4, var121_t5 and var32_t2. A guideline has therefore been that with the exception of these identity variables no variables will be given priorities in both file types in order to create as simple and transparent structures as possible.

Another guideline has been that the harvester Apteris should, in case a certain variable is included in oai- or ap1-files, use them as default values. If not included it is suggested that the previously used setting is used as a default value. This would, for example, mean that it would be no problems to continue exclude var161 (PRICECATEGORY) in Finland as long as the harvester Apteris can handle the fact that var161_t1 is missing. It would also mean that it is perfectly okay to choose whether or not to include definitions of relevant grades per price matrix with the ap1-file.

Some updates of the original Finnish proposal is needed as there are some differences between the present Finnish implementations and the needs when implemented in other countries. All apt-variables missing in the suggested oai- and ap1-file are listed in appendix 1.

A major difference which will have several implications is the fact that Finland only use the volume unit m3sob (solid on bark) while many other countries

uses several different units, often under bark. This means for example that bark parameters have to be added as well as definitions of diameter measurements. It also means that BASEPRICE (var155) is not sufficient. The harvester Apteris assumes that the correct unit for all assortment is m3sob.

The definition of BASEPRICE must also be improved. It should probably be clearly stated that it should be dependent on var161_t1 (price category) as described in the next section.

NEW AND UPDATED VARIABLES

Some new variables specifically to be used in ap1-files were suggested at the StanForD-meeting 2005-10-25.

A new variable was regarded to be needed for presenting name and version of the Apteris-program that is used for creating apt-files from oai- and ap1-files (var5_t5).

The present timber assortment identification information in var121 was not enough for all monitoring needs. Types 1-3 have been reserved for specifying and describing different timber assortments of the forest company. However, the assortment data (prices, values of var191 ...) changes continuously, there can be different versions of the assortment in use at the same time. It is also possible that some changes to the assortment data are made in the harvesters by the operators. Therefore some further identification information for the different versions of the assortments is needed.

It was thus decided to implement a variable (var121_t4) with the time and date when the assortment data was changed and saved in the data system of the company (e.g. database). It is to be registered in oai- or ap1-files as well as in apt-, prd-, pri- and stm-files.

Time and date of the change of the assortment is not the only way of managing the versions. Company-specific codes or free text can also be used. This information can come e.g. companies may have their version management based on running version numbers and the matrices can have an expiry date. All the different ways of managing the versions can be difficult to formulate into the old variables. Therefore a new type var121_t5 for using user specific codes was suggested.

It was thus decided to implement the following new variables (var121_t4, var121_t5 and var5_t5, observe that the variable numbers have been changed since the meeting 2005-10-26):

Var	Name	Type	Data type	Unit	Description	Priorities
5	MACHINE	5	String	Text	Name and version of program or software application used for creating apt-file from oai- and ap1-files.	apt/3, prd/3 pri/3, stm/3
121	ASST-DESCR	4	string	Yyyy-mmdd-hhmm-ss	Time and date when the ap1-file of the assortment was last saved in the data system of the forest company/ price matrix/tree species: 1...var116_t1/1...var111_t1	apt / 3, oai / 3 apt / 3, prd / 3 pri / 3, stm / 3
121	ASST-DESCR	5	integer	Code	Assortment identification information of the assortment data/ price matrix/tree species: 1...var116_t1/1...var111_t1. User-specified codes.	apt / 3, oai / 3 apt / 3, prd / 3 pri / 3, stm / 3

According to the present standard, only values ≥ 0 are allowed in var191_t4. However, negative values have been used in ap1-files (var191_t4). The purpose for using negative values is to manage the length distributions in a more simple way (there are also some historical reasons related to the fact that the first versions of ap1-files were developed already in 1998). The number of short lengths is often a problem and scaling the changes of prices with three different relative values (e.g. 20%, 15% and 10%, respective codes 0, -4 and -5) is a way to control the length distribution.

The meeting in Tampere (2006-01-25) agreed on proposing to implement these codes in a new variable var191_t7 at the next StanForD-meeting. Observe that the Finnish Apter software may continue to use var191_t4 as before but this special implementation of var191_t4 will not be included in the standard as it would mean having different definitions of the same variable in different file types.

The proposed definition of var191_t7:

Var	Name	Type	Data type	Unit	Description	Priorities
191	SPECLIST	7	Integer	Code	Codes used in ap1-file for adjusting var162, var191_t4 and var190 when creating apt-file based on BASEPRICE (var155) /diameter class/length class/price matrices/tree species: 1...var117_t1/1...var118_t1/1...var116_t1/1...var111_t1 Codes described in appendix	ap1/3,

The meaning of codes in the new var191_t7 (used in ap1-files) is described below (will be added to StanForD appendix):

Described in minutes (§ 4 Apter):

Jörgen Eriksson, Dasa, has pointed out that it should be possible to set a variable in the ap1-file indicating whether the apt-file is to be created based on a BASEPRICE (var155) and var191_t7 or based on separate price (var162_t2), limitation and apportionment matrixes. Different variables will be considered mandatory depending on the type of ap1-file. It is therefore suggested that the following new variable is added to the standard with priority 1 in ap1-files:

Var	Name	Type	Data type	Unit	Description
1	FILETYPE	5	Integer	Code	Code describing type of ap1-file, whether the apt-file is created based on the base price or on a price matrix (the differences in priorities described in appendix): 1 = Base price, based on original Finnish apteri 2 = Price matrix

As the type of volume is not defined when using BASEPRICE (var155) it is suggested that it is updated according to the following table (new text underlined):

Var	Name	Type	Data type	Unit	Description
155	BASEPRICE	1	Integer	Currency	Basic price/price matrix/tree species: 1...var116_t1/1...var111_t1

Var	Name	Type	Data type	Unit	Description
					Price per m3 according to var161_t1. Primarily for use in administrative applications.

ORIGINAL PROPOSAL

Proposed priorities for ap1- and oai-files (observe that only variables from the first Finnish proposal are presently included in the following table, a number of variables described in the next section also must be included):

Described in minutes (§ 4 Apteri):

ADDITIONAL PROPOSAL

The following tables describe apt-variables, not included in the original Finnish proposal above, that are probably necessary if the Apteri system is to be used more widely. These variables need to be discussed.

Apt-variables in Apteri-oai

VarNr	Name	Unit	Description	Apt
1_t4	FILETYPE	Code	System for measurement: meter (SI/Imperial)	3
35_t2	CONTRACTNO	Text	Contract number in the Swedish VIOL-system	2
105_t1	GRADESYS	Code	1 = Random grades, 2 = Permissible grade/grade combinations,	2
113_t4	BARKPAR		Latitude used in bark function	1
149_t1	FUNCMODE	Code	Type of function used when calculating sound knot limit/cylinder.	3
660_t1-t2	STANDAGE	Year	The mean age of the stand.	3
112_t1-t2	NUMBARKPAR	Integer	Number of bark parameters/species:	2
113_t1-t7	BARKPAR		Bark parameters/species	2
114_t2	NUMPAR	Integer	Number of parameters/species:	3
114_t1	TAPERCORR	Integer	Taper correction/parameter/species	
147_t1	SOUNDCONST		Constant for determining the limit for sound knots/species	3
148_t1-t3	SOUNDFACT		Factor for determining the limit for sound knots/species	3
141_t2	GRADE	integer	Type of grade which extension is determined by a special function /species:	3
142_t1	NUMGRADUSD	Integer	Number of grades used/species: (If the code for the highest grade used is 8 in var141_t1, variable 142 is set to 4, even if code is not used.)	2
143_t1	GRADDESIG	Text	Grade description/grade/species	2
144_t1	INITGRAD	Integer	Default grade/species when starting to process stem in harvester:	3

Apt-variables in ap1

VarNr	Name	Unit	Description	Apt
135_t1	OVERSIZE	Cm	Additional length margin, can not be a negative number /length class/price matrix/species:	3
135_t2	OVERSIZE	Mm	Extra diameter margin (in addition to general/diameter class/price matrix/species:	3
136_t2	BUCKCRIT	Code	Code for apportionment bucking /price matrix/species: Allowed/Not allowed	2
137_t1	BUCKPRI	Integer	Code of log types/price matrix/species:	3
145_t1	TOPTOLER	Cm	Tolerance of grade break, top/price matrix/species:	2

Appendix 1

VarNr	Name	Unit	Description	Apt
146_t1	BUTTTOLER	Cm	Tolerance of grade break, butt/price matrix/species:	2
161_t1	PRICECAT	Code	Price category/price matrix/species where 1 = price/m3 (small-end diameter); 2 = price/m3 (solid); etc	1
162_t2	PRICELIST	Currency	Price/diameter class/length class/price matrices/species:	1
163_t1	VOLUMETYPE	Code	Principle for volume calculation/price matrices/species: Bucked length, cm (default Finland)/ Required length as per var132/ Bucked random lengths, dm	2
163_t2	VOLUMETYPE	Cm	Module start for volume-based length/price matrices/species	2
163_t3	VOLUMETYPE	Cm	Module step/price matrices/species:	2
164_t1	DIAMTYPE	Code	Principle for registered diameter/price matrices/species: Bucked length / Required length as per var132 / Bucked random lengths, dm	2
164_t4	DIAMTYPE	Cm	Distance from log top/price matrix/species: 1...var116_t1/1...var111_t1	2
190_t2	MAXLOG	Limit	Limit according to datatype 1, specified for all cells in all price matrixes for all species. 1...var117_t1/1...var118_t1/1...var116_t1/1...var111_t1 Allowed special values: No limit/Forbidden to buck the log even manually/etc	2
191_t1	SPECLIST	per mille	Relative number of logs/diameter class/length class/price matrix/species:	2
191_t2	SPECLIST	per mille	Relative volume of logs/diameter class/length class/price matrix/species.	2
191_t6	SPECLIST	%	Percentage of volume/diameter class/length class/price matrix/species:	3
192_t1	MAXDEVIAT	Currency	Maximum deviation in apportionment bucking/price matrix/species:	3
192_t5	MAXDEVIAT	per mille	Maximum deviation in apportionment bucking/price matrix/species:	2
197_t1	FROMMATRIX	Code	From matrix: Code 0 = No, 1 = Yes Price matrix for optimal alternative/ price matrix for alternative price matrix/species:	2
141_t1	GRADE	Integer	Grade/price matrix/species.	2
151_t1	MARKING	Integer	Marking/price matrices/species:	2**
151_t2	MARKING	Integer	Marking of logs cut with apportionment bucking pulpwood/price matrix/species:	3**
152_t1	LOGMARK	Integer	Log marking/diameter class/length class/price matrices/species:	2**

** Presently set in harvester Apter, probably not to be included in oai- or ap1-file