SEASABS/TSUpdate Acceptance Test Procedure (2006 onwards)

An outline of previous work, goals and schedule with regards to acceptance testing was outlined in the initial proposal document: (Subject: Project proposal: 2006 "testpack" implementation and design; Database: Time Series Analysis WDB; Author: Frank Masci; Created: 03/03/2006; Doc Ref: FMAI-6MJ8BY).

1. Input Test Data and Management thereof

We currently have five SEASABS groups to test for existing generic functionality in SEASABS/TSUpdate (see Table 1). These groups are categorized according to different periodicities and adjustment methods, i.e: monthly/concurrent, monthly/forward-factor, quarterly/concurrent and quarterly/forward-factor, with an additional group(s) for inclusion of other "ad hoc" features. Every effort has been made to include all of the following properties across these groups: large extremes, additive outliers, trend breaks, seasonal breaks, Easter, Father's day and trading day effects, seasonality, non seasonal (periodic) behaviour, indirect vs. direct adjustment, multiplicative vs. additive models and ARIMA forecasting.

The series/groups in Table 1 represent our "base TestPack" for production. Their properties are intended to test, in a broad sense generic functionality existing in SEASABS/TSUpdate production versions up to and including version 2.5 (released in Early Dec 2004). These do not explicitly include properties to test for any new functionality implemented in the next release (i.e. version 2.6 to be released into production in Dec 2006), since the purpose here is to ensure that:

1. *existing generic functionality has not been corrupted during development of the test version.*
2. *all changes to existing generic functionality can be justified via an implemented Service Request (SR).*

Once the test version is released into production and changes to software stabilised, the list in Table 1 can be augmented with new series/groups to test for any new functionality during the next acceptance testing cycle. In other words, the list in Table 1 plus any updates will become the new "base TestPack" for production, e.g. for comparing version 2.6 (production) against version 2.7 (test) and so on. It is encouraged that this list be kept at a managable size unless it can't be avoided, e.g., by replacing existing series and/or groups to include any new (but retaining old) functionality rather than continuously appending to the list.

The original series data in these groups were created by physically copying existing datasets from either the ABSDB or FAME [instructions in Subject: Course Manual; Database: DataMgt Section WDB; Author: Philip Carruthers; Created: 15/05/2000; Doc Ref: PCAS-4KC23A]. New TSLINKS and MAP tables (linking the SEASABS series identifiers to the original data) were also made [instructions in Subject: Course Manual; Database: DataMgt Section WDB; Author: Philip Carruthers; Created: 06/09/1999; Doc Ref: PCAS-4BGAR9]. Furthermore, physically distinct copies of the original series knowledge (as of 25/3/2006) were made for each series. Overall, the purpose is to allow modification of the test series knowledge and publication products without corrupting the existing production environment.

Owner Group: ACC_TEST_SEAS

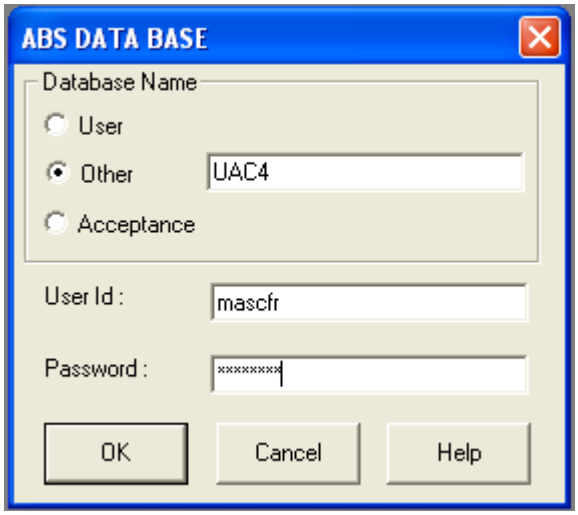
SEASABS Group Name	Number of Series	Source data Location	Origin of data (SEASABS original copy: owngrp.grp)	Special Features/Properties
MONTHLY_CONCURRENT	13 direct	ABSDB new dataset; ID=835504	RETAIL SURVEYS.RETAIL_SEASABS_CONC	Easter Prox., Father's day Prox., split TD, moving TD, LEs, TBs, SBs, ARIMA forecasting
MONTHLY_FORWARDFACT	5 direct	FAMEDB: RBA_ACC_TEST.DB	RBA.MONEYXB	Easter, LEs, TBs, SBs
QUARTERLY_CONCURRENT	2 direct, 1 indirect	ABSDB new dataset; ID=837572	JVOT.LK_JVO_VLD1F_SEAS	Aggregation structure/indirect adjust, LEs, TBs, SBs
QUARTERLY_FORWARDFACT	5 direct	FAMEDB: IGOOD_ACC_TEST.DB	NATIONAL ACCOUNTS.INTGOODS	TD, Easter, LEs, TBs, SBs
BACS_AD_HOC	5 direct	ABSDB new dataset; ID=837606	BUILDING ACTIVITY.BACS_SEASABS_PRELIM	Additive (pre-adj) outliers, non seasonal, high irregularity, additive model, "negative trend"

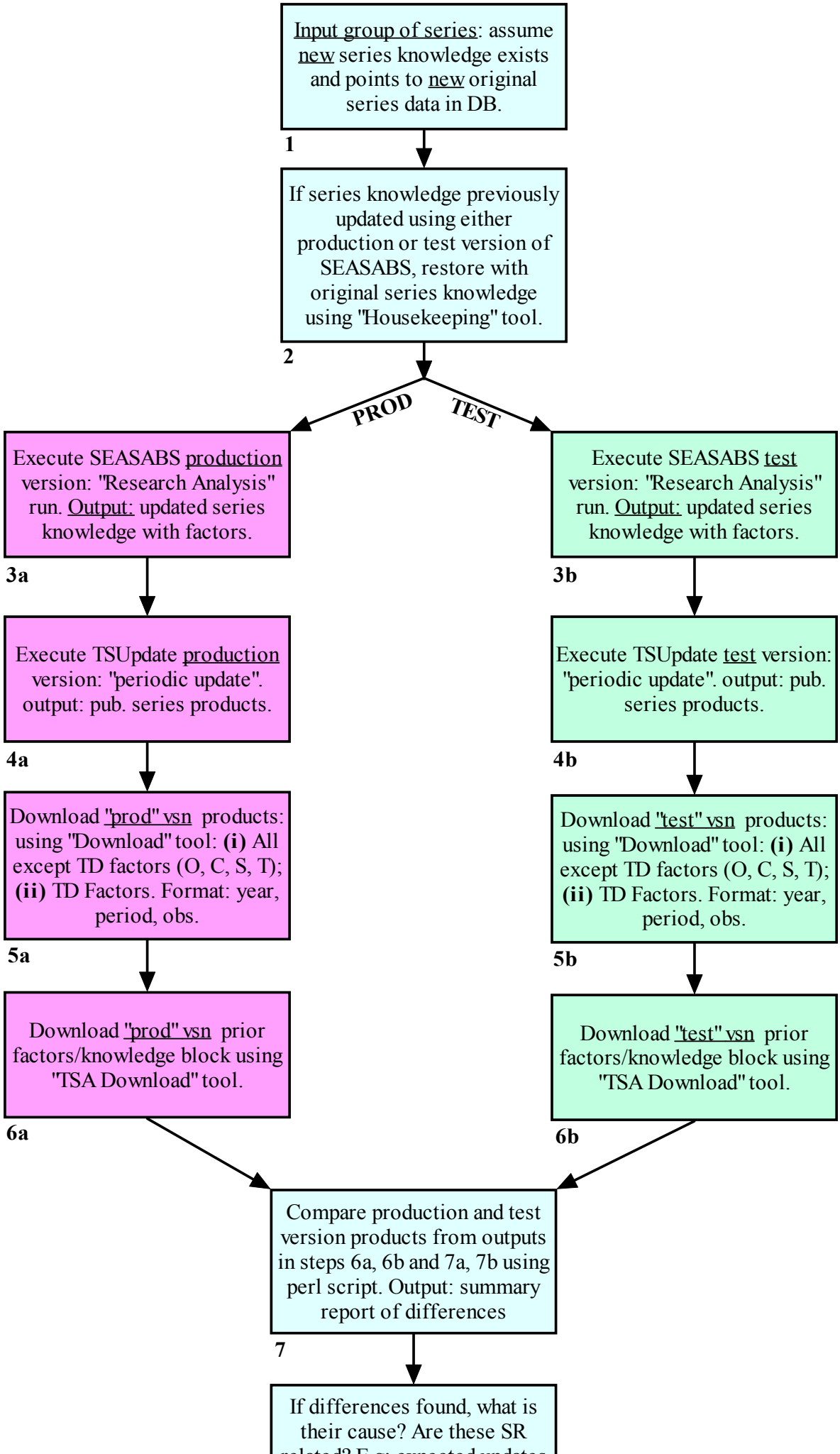
Table 1: TestPack groups for SEASABS/TSUpdate version 2.6

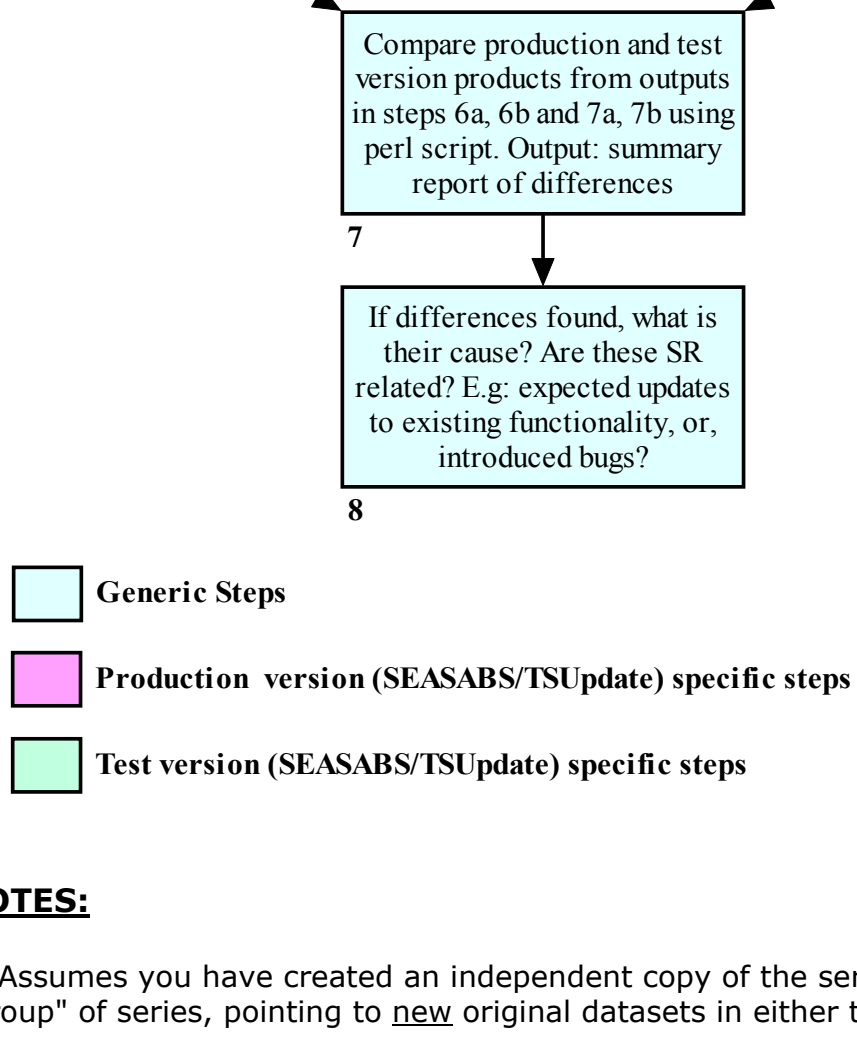
2. Testing Procedure

The flowchart below represents the overall, end-to-end SEASABS/TSUpdate testing procedure. See "**NOTES**" section below for futher details on each step (labelled by numbers beside each box).

The following software tools from the SEASABS suite are used: "Housekeeping", "SEASABS", "TSUpdate", "Download" and "TSA-Download". In all cases, the user must first specify the test database: "UAC4" at the login window before entering their password. For example:




Input group of series: assume new series knowledge exists and points to new original series data in DB.
1
If series knowledge previously updated using either production or test version of SEASABS, restore with original series knowledge using "Housekeeping" tool.
2
PROD
TEST
Execute SEASABS production version: "Research Analysis" run. Output: updated series knowledge with factors.
3a
Execute SEASABS test version: "Research Analysis" run. Output: updated series knowledge with factors.
3b
Execute TSUpdate production version: "periodic update". output: pub. series products.
4a
Execute TSUpdate test version: "periodic update". output: pub. series products.
4b
Download "prod" vsn products: using "Download" tool: (i) All except TD factors (O, C, S, T); (ii) TD Factors. Format: year, period, obs.
5a
Download "test" vsn products: using "Download" tool: (i) All except TD factors (O, C, S, T); (ii) TD Factors. Format: year, period, obs.
5b
Download "prod" vsn prior factors/knowledge block using "TSA Download" tool.
6a
Download "test" vsn prior factors/knowledge block using "TSA Download" tool.
6b
Compare production and test version products from outputs in steps 6a, 6b and 7a, 7b using perl script. Output: summary report of differences
7
If differences found, what is their cause? Are these SR



NOTES:

1. Assumes you have created an independent copy of the series knowledge for a "group" of series, pointing to new original datasets in either the ABSDB or FAME.

2. If there was a previous run of either the production or test version of SEASABS on the test groups (i.e. that modified their series knowledge), then we will want to start with a clean slate in subsequent runs. To restore the knowledge for a group of series to the original version, we use the Housekeeping tool. All copies of the original series are listed under the correponding group with the suffix "_COPY" appended to the group name. To perform the update under Housekeeping: Group Knowledge -> Delete... (group containing your former modified series), then Group Knowledge -> Copy... etc. To be on the safe side, it is always best to assume that the series knowledge has been previously modified, thus warranting a replacement. This step is particularly important since we want to ensure that all input parameters are exactly the same in consequetive runs of the production and test software versions. This will allow any differences in the products can be solely attributed to differences in 'generic' methodology (or inadvertent bugs). The series knowledge from test and production versions are compared in step 8 below. So, if you think you performed an analysis 'inconsistently' for each test run, you will be told about it at the end during the products comparison step.

3a* & 4a. Execution of production versions of SEASABS and TSUpdate (the "periodic update" option) to revise publication products and factors up to the specific reanalysis date that was specified in SEASABS processing.

3b* & 4b. Execution of test versions of SEASABS and TSUpdate (the "periodic update" option) to revise publication products and factors up to the specific reanalysis date that was specified in SEASABS processing.

5a & 5b. Use the "Download" tool to download final products for production and test version runs respectively. The production (i.e. previously validated) version

of "Download" should be used. We will want to perform two downloads, resulting in two separate output text files (i.e. two files from each of the production and test version runs independently). Under the "Download" GUI, the outputs to save are: (i). "Save Output to DOS" -> "All Except Trading day factors (O, C, S, T)" and (ii). "Save Output to DOS" -> "Trading Day Factors". The output format in both cases should be set to "year, period, obs". This is performed at the group level so that all series can be captured.

6a & 6b. Use the "TSA-Download" tool to download the prior-factor blocks (i.e. prior corrections and settings in the series knowledge) for all series in the group for production and test version runs separately. The production (i.e. previously validated) version of "TSA-Download" should be used. We only need to perform one download, resulting in one output text file (from production and test version runs independently). Under the "TSA-Download" GUI: "Save Output to DOS" -> "Original" (or any other component since the priors summary will be identical).

7. Compare production and test version products, i.e. the outputs generated in steps 6a, 6b and 7a, 7b above using the perl script: *acctest_cmpproducts.pl* . This script is located in: "S:\SEASABS\Version2.6_AccTest\" . There are six inputs: two text files from each of steps 5a & 5b, and one text file from each of steps 6a & 6b. This script generates a report (in text format) summarising either all differences found for all series, or, a "lucky" statement that no differences were found. A command-line tutorial with examples can be obtained by executing this script at the DOS command prompt with no command-line options (see Section 3 below). If you cannot get past this stage, it means you don't have a version of "perl" installed.

8. Now comes the difficult step. If differences between production and test version products were found, you will need to trace their cause. Are these expected? In other words, are these due to service requests implemented in the test version, or, are they genuine bugs? To diagnose any differences, it is suggested you first peruse the series knowledge stored from the production and test runs (i.e. as written to the output report file by the script described in 8). If this cannot explain the differences, we suggest you then peruse the input data (originals) and work your way through the X11 tables until you find a discrepancy.

In closing, the suggested order of execution of the above steps is shown in the following box. Step 1 is optional if you have already created your dataset and series knowledge/metadata copies.

Suggested order of above steps:

1 → 2 → 3a → 4a → 5a → 6a → 2 → 3b → 4b → 5b → 6b → 7

3. Tutorial for Products Comparison Script

Below is the command-line usage tutorial for the perl script described in step 7 above. Executing this script on it's own at the DOS command prompt (with no options) generates the following.

```
_____________________________________________________________________
acctest_cmpproducts.pl, Version 1.0: last modified 05-04-2006 by Frank Masci

  Purpose:
  --------
  Compare production and test version SEASABS/TSUpdate products for
  a group of series for acceptance testing. There are six input files
  (as specified in the command-line usage below).

  <InProd1Fname>: [Required] file 1 from "Download" tool on production version
                  series products: i.e. file generated from download option
                  "All Except Trading day factors (O, C, S, T)" with format:
                  "year, period, obs."

  <InProd2Fname>: [Optional] file 2 from "Download" tool on production version
                  products: i.e. file generated from download option
                  "Trading Day Factors" with format: "year, period, obs."

  <InTest1Fname>: [Required] file 1 from "Download" tool on test version
                  series products: i.e. file generated from download option
                  "All Except Trading day factors (O, C, S, T)" with format:
                  "year, period, obs."

  <InTest2Fname>: [Optional] file 2 from "Download" tool on test version
                  products: i.e. file generated from download option
                  "Trading Day Factors" with format: "year, period, obs."

  <InProdKdgeFname>: [Required] file from "TSA-download" tool on production
                     version series knowledge.

  <InTestKdgeFname>: [Required] file from "TSA-download" tool on test
                     version series knowledge.

  A summary of differences and suggested actions on how to resolve them
  are written to an output file specified by the "-o <OutFname>" option.

  Usage:
  ------
  acctest_cmpproducts.pl -a <InProd1Fname>    [Required]
                         -b <InProd2Fname>    [Optional]
                         -c <InTest1Fname>    [Required]
                         -d <InTest2Fname>    [Optional]
                         -e <InProdKdgeFname> [Required]
                         -f <InTestKdgeFname> [Required]
                         -o <OutFname>        [Required]

  Example:
  --------
  Execute the following at the DOS command prompt. Directory paths are
  allowed if your input files do not reside in the execution directory.
  The "-b <...>" and "-d <...>" options can be omitted if your series
  had no Trading Day factors.

  acctest_cmpproducts.pl -a MnthConcSeriesData_prod.txt -b MnthConcTDfact_prod.txt
-c MnthConcSeriesData_test.txt -d MnthConcTDfact_test.txt -e
MnthConcSeriesKdge_prod.txt -f MnthConcSeriesKdge_test.txt -o Results.txt
```