

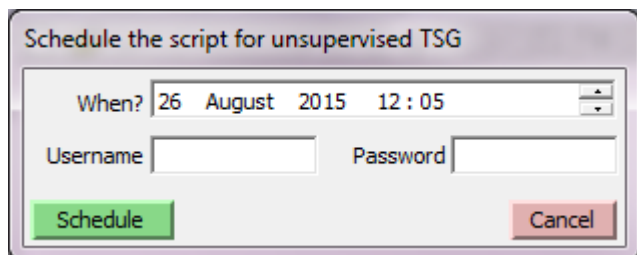
Headless mode

TSG's "headless" or unsupervised mode is about running TSG without any windows. TSG runs invisibly in the background, taking instruction from a script. It understands a few specific tasks, e.g., download from database, update dataset, run copy-processing, run downsampling. A log file is created alongside the script file.¹ The log file records what was done and is worth a look.

We introduced headless mode a few years ago so that we could offer scheduled database upload & download, and have TSG provide the business end of the NVCL TSG-dataset download service. As it was controlled by a scheduling dialog in TSG or behind the scenes by NVCL software, its workings were unknown to most TSG users. However it has now been expanded with new tasks. It still has a HyLogging focus but is starting to include support for a more general production-oriented workflow.

Invocation

The easiest way to invoke headless mode is via **File -> Special -> Schedule a script for unsupervised TSG**. You will be prompted to select a script file, then you will get a scheduler dialog like the one below. (*Alternatively, just drag & drop a script file onto TSG and you will be taken straight to this dialog.*) Set the time that you'd like it to be run and type in your Windows login's username and password. (Don't worry, these credentials aren't leaked.) Click **Schedule** and you'll get a message box telling you if the job was accepted or not. After that you can exit TSG and even log off. Just leave your computer turned on.



For the brave at heart

More conventionally, headless mode is invoked by running TSG with the command-line switch **/script=scriptfile**.

Say there's a script-file `c:\mystuff\testscript.txt` and the TSG executable is installed as `C:\Users\fixthis\AppData\Local\The Spectral Geologist\tsgeol8.exe`.

1. Click the Windows "Start" button and begin typing the text "command prompt" in the text box labelled "Search programs and files". Select the tool when Windows finds it. Alternatively, you should find the command-prompt tool in Start -> Applications. Either way, you now have a DOS command prompt. (Handle it carefully because it could make your hair go grey.)
2. Type in the following line (*one line*) at the command prompt, after adjusting the path to work for you:

```
"C:\Users\fixthis\AppData\Local\The Spectral Geologist\tsgeol8.exe"  
/script=c:\mystuff\testscript.txt
```

Mind the quotes. If that line doesn't work then you probably don't have the correct TSG path. Right-click your TSG desktop icon and look at "properties" to find out where TSG is actually installed.

¹ If this isn't the first time the script was run and a log file is there already, another log file is created. The log files are numbered.

Script file

A TSG headless-mode script file is a plain text file. Here's an example:

```
multioptions vswir nodive nofield
multifile c:\00me\swift\0t\; c:\00me\swift\topical\ddh*.tsg

task_begin
operation copyproc
update_items all
cproc_options scalars layout
cproc_template C:\00me\swift\seddy\14993_DD88MS1_Mt_Sedgwick_tsg.tsg
task_end

task_begin
operation downsamp
downsamp_config C:\00me\swift\downsampj50.cfg
output_dir c:\00me\0ds
dstolerate scalar
task_end
```

Here's some idle chatter before we get stuck in...

There's no special header at the start to identify the file as a "headless TSG script file" but of course the file is full of special tokens and things. Blank lines are ignored. A line starting with "#" or ";" is treated as a comment and ignored. A long line must not be split with a (typed in) carriage-return. Case is ignored.

Remember that this is TSG, which is... mature, so you must (as always) give it old-fashioned ASCII (ANSI) text files and not Unicode ones. It can be almost impossible to tell the difference just by looking but there are clues. A Unicode text file uses about twice the disk space of an ASCII one, and a smart text editor like Notepad++ will show you what you have if you know where to look. If you have a script file that TSG chokes on then it might be Unicode. Open it in Notepad++ and look in the "Encoding" menu. It ought to have "Encode in ANSI" selected. If it doesn't, select "Convert to ANSI" and save.

Overall format

```
MULTI_SPEC
TASK_SPEC
TASK_SPEC
...
TASK_SPEC
```

MULTI_SPEC is optional.

There must be at least one TASK_SPEC. Insofar as it *can* be common at this time, it is common to have just one.

MULTI_SPEC

```
MULTIOPTIONS space-delimited options
MULTIFILE semicolon-delimited items
```

The two MULTI_SPEC lines are optional. This system is used to get the script's tasks to run on several TSG datasets (one at a time). It's new (in a relative sense). In the past, each task (except the database-download task) required a TSG_DATASET line specifying the dataset to use. That mechanism is still in place but is *overridden* by the MULTI_SPEC system (if MULTI_SPEC is used).

MULTIFILE

MULTIFILE has one or more items. If there's more than one then use semi-colons to delimit them. In the future I might open up what an "item" can be, but currently it's:

- a path\filename,
- a path\filename with bits of the filename “wild-carded”, or
- a path (preferably ending with ‘\’).

If you know exactly which TSG datasets you want to batch-process then you can enumerate all of their filenames here (a rather long line) if you are so inclined. Most of us would rather use wildcard specs or whole directories, along with MULTIOPTIONS to restrict matches.

Last notes on MULTIFILE:

- Provide full paths that start from a drive letter (e.g., d:\) or a network drive spec (e.g., \\clay-nm\pete\). Headless TSG probably won’t understand relative paths.
- There’s no need to restrict wildcard matching to *.tsg. Feel free to use *.* Presently the headless system only acts on .TSG files that are found.
- path*.* is equivalent to path\

MULTIOPTIONS

MULTIOPTIONS is mostly used to restrict the multifile wildcard search and to moderate the files passed on from the search for processing, but it can moderate all multi-spec activity². It takes one or more space-delimited keywords:

- **NOSEARCH** Do not “find” anything; pass on the MULTIFILE items as they are. (There might be a use for this one day. Presently there isn’t.)
- **NODIVE** Do not search down subdirectories.
- **VSWIR** Do not accept any TIR (thermal) datasets that are found. (SWIR and VNIR are equivalent keywords.)
- **TIR** Only accept TIR datasets.
- **NOASSOC** Instruct tasks not to open primary+associated. They must just open the single dataset they’re given. (Not all tasks care about this.)
Note: NOASSOC even affects task behaviour when the MULTIFILE system isn’t used.
- **NOCORE** Do not accept a dataset that has the basic core-logging scalars.
- **NOFIELD** Do not accept a dataset that doesn’t have the basic core-logging scalars. (Maybe you can exclude AUX datasets like this.)
- **TESTROCKS** Only find TestRocks datasets.

Keep in mind that NOASSOC is a special, general option.

Think about what files you have and what you want to do with them. For example, if you have a bunch of VSWIR+TIR datasets and you want to run an UPDATE task on all of them, my recommendation is to leave NOASSOC unmentioned (i.e., assoc open left active) and include the VSWIR option to stop the TIR datasets from being “found” individually. The UPDATE task knows how to open primary+assoc dataset pairs. Given a primary VSWIR dataset, it will also open (and update) the associated TIR dataset (provided there is one). If you did *not* include the MULTIOPTIONS VSWIR filter, you’d end up putting everything through twice. A dataset pair would be opened as VSWIR+TIR when the VSWIR file was “found”, and again as TIR+VSWIR when the TIR file was “found”.

TASK_SPEC

```
TASK_BEGIN
OPERATION task-name
Task-specific lines
TASK_END
```

² For example, if you enumerate a dozen individual TSG files (no wildcards) in MULTIFILE and use MULTIOPTIONS VSWIR then any TIR files amongst your dozen will be rejected.

That's the generic form of a task spec. Currently (2017) there are nine different tasks and their contents vary.

UPLOAD

```
TASK_BEGIN
OPERATION UPLOAD
CONNECTION_STRING database URL
USERNAME database login
PASSWORD database login
DATABASE_TYPE currently ORACLE (the default) or SQLSERVER
DUTOLERATE space-delimited options
TSG_DATASET path+filename of .TSG file (overridden by MULTI_SPEC)
RENAME override for stored user-friendly dataset name
HOLENAME override for stored drillhole name
HYLOGGER override for stored HyLogger name
PUBLISHED YES or NO
TASK_END
```

This is the NVCL database upload task. It currently honours the `NOASSOC` option so wotchit. `NOASSOC` is probably something that you don't normally want to use here.

- The `DATABASE_TYPE` line is optional.
- If `MULTI_SPEC` is in use then all lines from `DUTOLERATE` onwards are optional and in fact any `TSG_DATASET`, `RENAME` and `HOLENAME` lines are ignored. If `MULTI_SPEC` is not in use then `TSG_DATASET` must be given. It is recommended that you consider taking control of `PUBLISHED` (otherwise the dataset's "published" setting will be used).
- `DUTOLERATE` is optional. If not given then TSG won't tolerate any of the problems listed below. If given, it takes one or more space-separated keywords that relax certain aspects of quality control:
 - `LSLOST` Allow the upload of a dataset that currently has no attached linescan raster but whose internal tracking shows that it once did.
 - `PROFLOST` Allow the upload of a dataset that currently has no attached profilometer file but whose internal tracking shows that it once did.
 - `LSBAD` Allow the upload of a dataset whose attached linescan raster's internal tray / section metadata tables are faulty and unusable.
 - `TRAYPICS` Allow the upload of a dataset that doesn't have accompanying tray pictures.
 - `WFS` Allow the upload of a dataset that doesn't have a recorded borehole WFS for identifying its stuff in the elusive borehole database.
 - `UTSA` Allow the upload of a dataset that doesn't have user-level TSA scalars. (For a dataset pair, *both* datasets ought to have user TSA scalars.)

Example

```
task_begin
operation upload
connection_string oratest1-cdc.it.csiro.au:1534/HYLOGNR.it.csiro.au
username yournamehere
password asifiddoat
dutolerate traypic wfs utsa
tsg_dataset C:\00me\swift\BEU162 HyLogger-1\BEU-162_tsg.tsg
rename BEU-162
```

holename beu-162
hylogger NA or Unknown
task_end

DOWNLOAD

```
TASK_BEGIN
OPERATION DOWNLOAD
CONNECTION_STRING database URL
USERNAME database login
PASSWORD database login
DATABASE_TYPE currently ORACLE (the default) or SQLSERVER
OUTPUT_DIR directory where the TSG dataset is to end up
UUID unique ID of dataset to download
MATCH_STRING all or part of the user-friendly name of the dataset to download
SPECTRA download spectra – YES or NO (NO gives a scalars-only dataset)
LINESCAN download linescan raster attachment – YES or NO
PROFILOMETER download profilometer attachment – YES or NO
TRAYPICS download tray pictures – YES or NO
MOSPIC download mosaic picture – YES or NO
MAPPICS download map pictures – YES or NO
TASK_END
```

This is the NVCL database download task. It is fiercely independent – it ignores the NOASSOC option and currently doesn't take part in the MULTI_SPEC system.

- The **DATABASE_TYPE** line is optional.
- A path must be given in **OUTPUT_DIR**. Subdirectories will be created as required.
- Either **UUID** or **MATCH_STRING** must be given to identify the dataset to be downloaded. (Giving both is unacceptable.) **UUID** is better as it identifies the dataset unambiguously. If **MATCH_STRING** is given then the database is searched on the user-friendly dataset name field (which might not be unique) and the first match is taken.
- The remaining options (**SPECTRA**, **LINESCAN**, **PROFILOMETER**, **TRAYPICS**, **MOSPIC**, **MAPPICS**) are for controlling which dataset components are downloaded. They are all set to YES (on) by default.

Example

```
Task_begin
Operation download
Connection_string ncrisdb1-mi.vm.csiro.au/hylognr.ncrisdb1-mi.vm.csiro.au
Database_type oracle
Username meagain
Password stillnotgivingit
Uuid 6dd70215-fe38-457c-be42-3b165fd98c7
Output_dir C:\00me\swift\dataout
Task_end
```

UPDATE

```
TASK_BEGIN
OPERATION UPDATE
TSG_DATASET path+filename of .TSG file (overridden by MULTI_SPEC)
UPDATE_ITEMS space-delimited options
```

TASK_END

This is the dataset update task. It honours the NOASSOC option and takes part in the MULTI_SPEC system.

- If MULTI_SPEC is in use then TSG_DATASET is ignored, otherwise it must be given.
- If UPDATE_ITEMS is given then it can include one or more of the following space-delimited options. (If not given it defaults to ALL.)
 - **FORMAT** Update the dataset format if necessary.
 - **STASAS** Recalculate System SWIR TSA scalars if necessary.
 - **STSAV** Recalculate System VNIR TSA scalars if necessary.
 - **STSAT** Recalculate System TIR TSA scalars if necessary.
 - **UTSAS** Recalculate User SWIR TSA scalars if necessary.
 - **UTSAV** Recalculate User VNIR TSA scalars if necessary.
 - **UTSAT** Recalculate User TIR TSA scalars if necessary.
 - **CLSS** If necessary, recalculate any CLS scalars that are based on the SWIR TSA reference library.
 - **CLST** If necessary, recalculate any CLS scalars that are based on the TIR TSA reference library.
 - **PREFS** If the TSG setting “On dataset open, check spec calc settings against defaults” in Settings -> System is on, reset the dataset’s basic spec-calc settings to the system defaults and recalculate any affected scalars.
 - **ALL** (Default.) Equivalent to FORMAT STASAS STSAV STSAT UTSAS UTSAV UTSAT CLSS CLST PREFS.

For a TSA or CLS item, “if necessary” is when the corresponding TSA version has moved on since the dataset’s scalars were last calculated. This generally means that the TSA reference library concerned has changed. This can affect plots and, although it tries, TSG won’t resolve all possible issues. For example, if the dataset has any scatter-screen plots that go through a class or set scope based on a TSA class / set then they will probably get knocked around by the change and you ought to revisit them interactively at some point.

Example

```
MULTIOPTIONS noassoc
multifile c:\00me\swift\*. *
task_begin
operation update
update_items all
task_end
```

COPYPROC

```
TASK_BEGIN
OPERATION COPYPROC
TSG_DATASET path+filename of .TSG file (overridden by MULTI_SPEC)
UPDATE_ITEMS space-delimited options
CPROC_TEMPLATE path+filename of .TSG template file
CPROC_OPTIONS space-delimited options
TASK_END
```

This is the copy-processing task. It honours the NOASSOC option and takes part in the MULTI_SPEC system.

- If MULTI_SPEC is in use then TSG_DATASET is ignored, otherwise it must be given.

- No, I didn't make a copy-and-paste blunder on this particular occasion. The `COPYPROC` task spec includes an optional `UPDATE_ITEMS` line and can (first) do dataset updating just like the `UPDATE` task. See above for a description of `UPDATE_ITEMS`.
- The `CPROC_TEMPLATE` line must be given. Here you give the path+filename of the template TSG dataset – the one that has the scalars and / or plot layouts that you would like to copy-process. Now did you know – only the template dataset's `.TSG` file and (if layout copying is to be done) `.INI` plot-layout files need to be around on the disk? Its `.BIP`, `_CRAS.BIP` and `_HIRES.DAT` are not required. Another thing – these days templates can come in associated VSWIR & TIR pairs, like regular datasets. TSG knows how to deal with that automatically. Just keep both `.TSG` files of the pair together.
- If `CPROC_OPTIONS` is given then it can include one or more of the following space-delimited options. (If not given it defaults to `ALL`.)
 - **TSA** Take the template dataset's TSA settings and, if different, recalculate the current dataset's user-TSA scalars.
 - **SCALARS** Copy-process *all* of the template dataset's calculable and compatible scalars.
 - **LAYOUT** Adopt all of the template dataset's layout files. (This is done after the copy-processing of scalars.)
 - **ALL** (Default.) Equivalent to `TSA SCALARS LAYOUT`

If `MULTI_SPEC` is in use then all matched datasets are copy-processed in the same way, using the same template dataset.

Example

```
MULTIOPTIONS swir nodive
multifile c:\00me\swift\0t\*. *
task_begin
operation copyproc
update_items all
cproc_options scalars layout
cproc_template C:\00me\swift\0j\testrocks_tsg.tsg
task_end
```

DownSAMP

```
TASK_BEGIN
OPERATION DownSAMP
TSG_DATASET path+filename of .TSG file (overridden by MULTI_SPEC)
DownSAMP_CONFIG path+filename of .TSG template file
OUTPUT_DIR directory where the downsampling results end up
DSTOLERATE space-delimited options
TASK_END
```

This is the downsampling task. It *ignores* the `NOASSOC` option but takes part in the `MULTI_SPEC` system.

- If `MULTI_SPEC` is in use then `TSG_DATASET` is ignored, otherwise it must be given. Presently the Downsampling module only deals with one TSG dataset at a time (“primary dataset” philosophy) and has no awareness of primary+assoc dataset pairs. So `NOASSOC` is ignored and your `MULTI_SPEC` filtering deserves a fleeting moment's thought.

- A downsampler configuration file must be given in **Downsamp_Config**. You can *obtain* a configuration file by setting up an interactive downsampler session and clicking “Save a downsampler configuration template” in the last page of the wizard. See page 179 of the “what’s new” notes.
- If you like, provide a directory for the downsampled files in **Output_Dir**. Normally they get saved alongside the input datasets. This mechanism lets you collect them elsewhere. It can be handy in a specialised multi-file downsampling run where you’d like all the results to be collected in one place.
- The optional **Dstolerate** line has one or more space-delimited options that relax TSG’s fussiness when loading the configuration file for one of your datasets. You can tell TSG to tolerate a load problem in any of the first five (now virtual) downsampler wizard pages: The option keywords are:
 - **PAGE1** Selection of the scalar to downsample on, downsampling method, etc. I can’t imagine *why* you would want to allow this page to fail, but give the option anyway.
 - **PAGE2** Selection of mask, class & weight scalars, and items to downsample (spectra, scalars, linescan). Think twice about allowing this page to fail. A linescan issue (template wants linescan downsampling but dataset doesn’t have it) will actually get tagged to the linescan page.
 - **SPEC** The minimalist page with spectral downsampling options.
 - **SCALAR** Scalar selection and handling. This is the one most likely to “fail”. The configuration file includes a complete list of scalars to downsample and it is considered “failure” if *any* of them cannot be found in the current dataset. Perhaps you are willing to go with the subset that’s matched?
 - **LINESCAN** Linescan downsampling options. This page will fail if the configuration file calls for linescan downsampling but the current dataset doesn’t have linescan.

Example

```
MULTIOPTIONS swir nodive
multifile c:\00me\swift\0t\*. *
task_begin
operation downsamp
downsamp_config C:\00me\swift\downsample.cfg
output_dir c:\00me\0ds
dstolerate scalar
task_end
```

TESTROX

```
TASK_BEGIN
OPERATION TESTROX
TSG_DATASET path+filename of .TSG file (overridden by MULTI_SPEC)
TESTROCKS_JOB space-delimited options
BKREM nothing, GLOBAL or LOCAL
REPORT_FILE path+filename of report file to generate
TASK_END
```


This task is about reporting on HyLogger wavelength calibration by finding absorption positions of some TestRocks³ items. It *ignores* the NOASSOC option but takes part in the MULTI_SPEC system.

It is only for Vis-SWIR datasets; ideally contemporary TestRocks measurements that include a mylar-on-teflon item.

Update

In the past the only datasets handled were HyLogger 2 / 3 TestRocks measurements imported with a 4mm or 8mm pixel size, and HyLogger 1 TestRocks measurements with a 10mm pixel size. In March 2018 the method for locating target items was changed and the task was opened up to **all** Vis-SWIR datasets (not just TestRocks ones). If your dataset includes one or more of the target items (mylar, pyrophyllite, kaolinite, talc) then it can make sense to try the TESTROX task on it.

- If MULTI_SPEC is in use then **TSG_DATASET** is ignored, otherwise it must be given. This task is best run on a collection of TestRocks datasets, however, so MULTI_SPEC is strongly recommended and your MULTIOPTIONS should include these tokens (NOASSOC thrown in for good measure):
MULTIOPTIONS TESTROCKS VSWIR NOASSOC
- **TESTROCKS_JOB** is mandatory and has no default. One or more of the following space-delimited tokens must be given:
 - **MYLAR** Calculate an average spectrum over the mylar-on-teflon item and report the positions of 7 expected absorptions. An absorption position is found (in the average spectrum) by first looking for a local minimum in the immediate neighbourhood (plus or minus 2 channels) of where the feature is *expected* to be. If a local minimum *is* found then its position is refined by a parabola fit on the 3 channels around the minimum. If an expected feature is not found then its position is reported as 0.
 - **PYRO** Calculate an average spectrum over the pyrophyllite item and report the positions of 6 expected absorptions.
 - **KAOLIN** Calculate an average spectrum over the kaolinite item and report the positions of 3 expected absorptions.
 - **TALC** Calculate an average spectrum over the talc item and report the positions of 11 expected absorptions.
- **BKREM** is optional. It allows you to specify that continuum removal should be done before absorptions are sought. If left out (the default) then the job is done in reflectance space, otherwise you may select one of the following:
 - **GLOBAL** An average spectrum is calculated from the dataset's hull-quotient spectra (instead of reflectance spectra).
 - **LOCAL** An average spectrum is calculated from reflectance spectra, as normal, but a local hull quotient is attempted for each expected feature. (This is an experimental option.)
- **REPORT_FILE** is mandatory. It takes the full filename of the report that you would like the task to put together. Take care – if the file already exists then new entries will be *appended*. The task puts together a CSV table. There's one row for each dataset that was processed. The first column has the name of the HyLogger that measured the dataset, the second has the scan date and the third has the filename. After that there's one column for each expected feature, for each TestRocks item specified in TESTROCKS_JOB.

³ For those who aren't familiar with the HyLogger world, "Testrocks" is a small panel of known rocks that the HyLogger operator normally measures every day.

Example

```
MULTIOPTIONS swir noassoc testrocks
multifile c:\00me\swift\*.*
task_begin
operation testrox
testrox_job mylar pyro kaolin talc
bkrem local
report_file c:\00me\swift\0rep.csv
task_end
```

WVLCAL

```
TASK_BEGIN
OPERATION WVLCAL
TSG_DATASET path+filename of .TSG dataset (overridden by MULTI_SPEC)
HWCOPT nothing, K2206 (default), K2160, Q8625, Q12625, A9200
REPORT_FILE path+filename of report file to generate
TASK_END
```

This does an empirical wavelength check by finding kaolinite- or quartz-rich samples in the dataset and reporting the position (mean and standard deviation) of a nominated kaolin or quartz absorption. It *ignores* the `NOASSOC` option but takes part in the `MULTI_SPEC` system. Kaolin checking is only for Vis-SWIR datasets, and quartz for TIR. It uses the dataset's TSA results to select suitable samples to check: user TSA results if present, otherwise system TSA. TSA 7.05 results (September 2015 or later) are preferred as they include the "TNorm" TSA scalar, which helps in sample selection. For this reason you might consider running an `UPDATE` task before `WVLCAL`.

For kaolin it has four tries at sample selection and gets on with wavelength checking after the first successful try (at least 1 sample accepted): Kaolinite WX (well crystallised) singletons; WX mixtures; PX (poorly crystallised) singletons; PX mixtures. In the mixture tries, samples are not considered if their minor component is from the "white-mica", "smectite" or "other-AIOH" group. In all tries, samples are not considered if their $SRSS \geq 300$ or $TNorm < 0.15$ (or just $SRSS \geq 250$ if there is no TNorm scalar).

A kaolinite sample's elusive 2206nm (or 2160nm) absorption wavelength is unearthed by feature extraction.

For quartz it has two tries at sample selection: quartz singletons preferably, or quartz mixtures if there are no singletons. Quartz' characteristic 8625nm "absorption" is sought. (Alternatively, you can have it try the lesser 12625nm quartz feature or the 9200nm apatite feature.)

- If `MULTI_SPEC` is in use then `TSG_DATASET` is ignored, otherwise it must be given. `MULTI_SPEC` is recommended and your `MULTIOPTIONS` should include these tokens (`NOASSOC` thrown in for good measure):
`MULTIOPTIONS VSWIR NOASSOC` for kaolin or `MULTIOPTIONS TIR NOASSOC` for quartz
- `HWCOPT` is optional. The task normally reports on the 2206nm kaolin absorption and expects a `VSWIR` dataset. One may instead use the **K2160** token (viz "`HWCOPT K2160`") to report on the 2160nm `VSWIR` kaolin absorption, or the **Q8625** token to report on the **8625nm** quartz feature in a `TIR` dataset. There are two other experimental `TIR` options: `Q12625` for the lesser 12625nm quartz feature or `A9200` for the 9200nm apatite feature. Apatite is rare though.
- `REPORT_FILE` is mandatory. It takes the full filename of the report that you would like the task to put together. Take care – if the file already exists then new entries will be

appended. The task puts together a CSV table. There's one row for each dataset that was processed. Columns: The name of the HyLogger that measured the dataset, scan date; dataset filename; absorption-wavelength mean; absorption-wavelength standard deviation; number of samples used; sample type (e.g., Pure WX). The first two columns will show "n/a" for non-HyLogging datasets. If none of the sample-selection tries were successful then the dataset's results will be zero and the last column will show "not found".

Examples

```
MULTIOPTIONS swir noassoc
multifile c:\00me\swift\*.*
task_begin
operation wvcal
report_file c:\00me\swift\0kcrep.csv
hwcopt k2206
task_end
```

```
MULTIOPTIONS tir noassoc
multifile c:\00me\swift\*.*
task_begin
operation wvcal
report_file c:\00me\swift\0q12crep.csv
hwcopt q12625
task_end
```

TPOLYCAL

```
TASK_BEGIN
OPERATION TPOLYCAL
TSG_DATASET path+filename of .TSG dataset (overridden by MULTI_SPEC)
REPORT_FILE path+filename of report file to generate
TASK_END
```

This does an empirical wavelength check by finding polystyrene samples in the dataset and reporting the positions (mean and standard deviation) of 8 polystyrene TIR transmission absorptions. It *ignores* the NOASSOC option but takes part in the MULTI_SPEC system.

The 8 polystyrene absorptions are nominally at these wavelengths (nm): 6245, 6698, 8661, 9353, 9724, 11028, 11875, 13228. The last one is particularly wide with a poorly-defined minimum so take its result with a pinch of halite.

It is only for TIR datasets that include some measurements of a suitable polystyrene sample, e.g., a polystyrene-on-gold puck or a home-made sample consisting of polystyrene *film* on a good reflector (e.g., aluminium). It first uses a correlation match against an internal standard polystyrene transmission spectrum to locate candidate spectra in the dataset. Having found one or more, it determines the wavelengths of the 8 absorptions using built-in profile scalars. (A traditional 3-channel fit to the absorption's lowest 3 points is used for the first 7 features and "extrapolated bisection" is used for the wide 8th feature.) The wavelength mean and standard deviation are reported for each feature.

- If MULTI_SPEC is in use then **TSG_DATASET** is ignored, otherwise it must be given. MULTI_SPEC is recommended and your MULTIOPTIONS should include these tokens (NOASSOC thrown in for good measure):
MULTIOPTIONS TIR NOASSOC

- **REPORT_FILE** is mandatory. It takes the full filename of the report that you would like the task to put together. Take care – if the file already exists then new entries will be *appended*. The task puts together a CSV table. There’s one row for each dataset that was processed. Columns: The name of the HyLogger that measured the dataset, scan date; dataset filename; eight sets of [absorption-wavelength mean, absorption-wavelength standard deviation]; number of samples used. The first two columns will show “n/a” for non-HyLogging datasets. If no suitable polystyrene spectra were found then the dataset’s results will be zero.

Example

```
MULTIOPTIONS tir noassoc
multifile c:\00me\swift\*.*
task_begin
operation tpolycal
report_file c:\00me\swift\0tpolyrep.csv
task_end
```

852LASER

```
TASK_BEGIN
OPERATION 852LASER
TSG_DATASET path+filename of .TSG dataset (overridden by MULTI_SPEC)
TASK_END
```

This is for Vis-SWIR HyLogging datasets only. We use an 852nm laser to keep tight control over the HyLogger2/3’s SWIR spectrometer’s rotation speed. (The SWIR spectrometer actually “sees” down to this wavelength.) Although we take measures to inhibit it, a small fraction of the laser beam sometimes bounces back off the lenses and beam splitter, and finds its way into the VNIR spectrometer. So it can get *added* to the radiance seen by the VNIR spectrometer. When something about as bright as Teflon (our transfer standard) is measured then the little laser bump is normally ratioed out in the reflectance, but it can have a showing in dark reflectance spectra.

It is not common but this correction can fix it. Spectra are fixed *in place*, and that alone is a caution to run the job only if you need to.

It is for Vis-SWIR datasets only. It ignores the **NOASSOC** option but takes part in the **MULTI_SPEC** system. If **MULTI_SPEC** is used then **TSG_DATASET** is ignored, otherwise it must be given. If **MULTI_SPEC** is used then **MULTIOPTIONS** should include these tokens (**NOASSOC** thrown in for good measure): **MULTIOPTIONS VSWIR NOASSOC**. The **NOFIELD** option is recommended too.

Example

```
MULTIOPTIONS swir nofield
multifile c:\00me\swift\*.*
task_begin
operation 852laser
task_end
```

TPICGEN

```
TASK_BEGIN
OPERATION TPICGEN
TSG_DATASET path+filename of .TSG dataset (overridden by MULTI_SPEC)
```

BRANDING *picture title (80 chars), "plain" pictures only (def: HyLogging Systems)*
LOGO_FILE *left-logo-icon path (def: built-in CSIRO icon)*
LOGO_RIGHT *N or Y, to use "LOGO_FILE" for the right logo too (def: N for CSIRO icon)*
MINDEPTH *starting depth (trays before it are skipped) (def: dataset start)*
MAXDEPTH *end depth (trays after it are skipped) (def: dataset end)*
WIDTHTRIMPC *extra image width trimming in percent (def: 0)*
OUT_PIXPERM *output resolution in pixels-per-core-metre (def: 2000)*
RESAMP_METH *NN (nearest neighbour), LINEAR, CUBIC, LANCZOS or SUPER (def)*
SUBDIR *subdirectory to create (alongside dataset files) for the pictures (def: none)*
FILENAME_EX *HOLEID and/or DEPTH ("decorations" for the output filenames) (def: none)*
FILE_FORMAT *JPEG, BMP or PNG (def: JPEG)*
JPQUAL *quality factor for JPEG output, 1..100 (def: 75)*
PIC_TYPE *PLAIN, SCREEN or STICKS (def: PLAIN)*
STICK_PER *TRAY, SECTION or INTERVAL (type of image stick, def: TRAY)*
STICKSPAN *stick length in metres, interval stick output only (def: 1)*
STICK_HORIZ *N or Y, to render image sticks horizontally instead of vertically (def: N)*
MASK_SCLR *mask-scalar name, used for an image overlay (def: none)*
MASK_COLOUR *colour index for mask overlay (def: 3 and good luck changing it)*
MASK_SOLID *N or Y, to draw the mask overlay solid instead of semi-transparent (def: N)*
WHITE_BKGND *N or Y, to give the pictures a white background instead of black (def: N)*
TASK_END

This task generates tray pictures for a HyLogging dataset. It honours the **NOASSOC** option and takes part in the **MULTI_SPEC** system. If **MULTI_SPEC** is used then **TSG_DATASET** is ignored, otherwise it must be given. If **MULTI_SPEC** is used then **MULTIOPTIONS** should include the **NOFIELD** token, and the **SWIR** token is *highly recommended* to prevent the thing from doing two passes (one for the Vis-SWIR datasets and another for the TIR ones). Indeed the only reason not to include the **NOASSOC** option as well is if you are using **SCREEN** for **PIC_TYPE** and have a mix of Vis-SWIR and TIR scalars plotted in the Tray screen.

So then, I recommend **MULTIOPTIONS swir nofield noassoc** or occasionally **MULTIOPTIONS swir nofield**.

This task has a vast collection of settings. They correspond with the fields that you see in the interactive tray-picture generation dialog and won't get further mention here. (See the vast "What's new in TSG" document for more info.)

Example

```

MULTIOPTIONS swir noassoc nofield
multifile C:\00me\swift\*.*
task_begin
operation tpicgen
subdir 1msticks
out_pixperm 3000
widthtrimpc 7.5
jpqual 80
pic_type sticks
stick_per interval
stickspan 1
stick_horiz y
mindepth 100
maxdepth 150
task_end

```