RAS Gen User Guide
Version 0.7 Beta

VERY IMPORTANT NOTE: PLEASE READ SECTION 4.3.3.4

NOTE: THIS IS A BETA VERSION OF THE DOCUMENTATION. IT IS INCOMPLETE AND CONTAINS SOME ERRORS. IT IS INTENDED FOR THE BETA-TESTERS ONLY!

Contents

1: Introduction

The purpose of this script is to generate scripts to automate the operation of a RAS telescope. Using scripts to automate the imaging process makes better use of your points. For example you save time by setting up an LRGB exposure set BEFORE you even logon to RAS.

It is advised that the user AP configured with the RAS site details. This will allow the user to check object visibility from the RAS observatory site, amongst other things.

There are a couple of RASGen concepts that may be worthy of explanation at this point:

Exposure Set
An Exposure Set is all the parameters required to create an image using a particular filter. Each Exposure Set contains values for such commands as the number of images to take, the exposure time and the filter-wheel position to use.

Command Set
A Command Set is all the parameters required to create an image for a particular object. This can include up to four Exposure Sets; normally one each for L, R, G and B filters, although other combinations are possible. Other parameters include those required for Autoguiding.

Script File
A text file, created by RASGen, that contains one or more Command Sets.

So what can RASGen create? Well here is a relatively simple example. This Script File contains a single Command Set, which itself contains a single Exposure Set. NOTE: This is an example. There really isn't much point switching on Autoguiding for a 10 second Clear filter exposure!

```
#Object:_WDS19255+1948
#Selected_scope:_ARE01
SLEW 19h25m29s,+19d47m54s
AUTOGUIDE start
GUIDEMIN 500
BIN 1
AUTODARK on
FILTER 4
SERIES 1
IMAGEX 10
AUTODARK off
AUTOGUIDE stop
LOGOUT
```

2: Requirements & Caveats

2.1: Requirements

- A copy of AstroPlanner v1.5.1b8 or above. This in turn requires you to have a licenced copy of AstroPlanner v1.5 or above. The reason for this is the v1.5.1b8 is a beta release that is only available to licenced users.

- You understand what AP means.

- You understand what an 'AP Plan' is and how to create one.

- Oh all right! AP means AstroPlanner.

- You understand what an AP script is and how to run one. Note: You do NOT need to understand how the RASGen script works, just how to find it and run it. If this is a problem for you then contact me (see Section 6).

2.2: Caveats

- This script has only been used with the WindowsXP version of AstroPlanner. There is no reason to suppose that Apple users will not be able to use this script – it just ain't been tested.

- This document does NOT explain how to create AP plans.

- RASGen does not support the LOOPSTART and LOOPEND commands.

3: Installation

For the time being it will be assumed that beta-testers know how to do this. This is one heck of an assumption!!! If you have problems please contact me.

The simplest installation procedure to use is the ‘Script Download’ feature available in v1.5.1b1 and above.

4: Usage Instructions

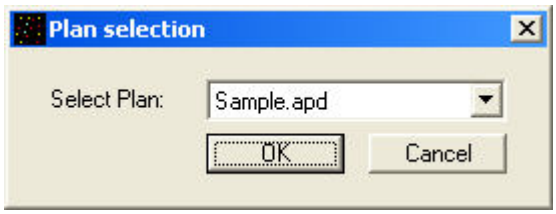
When the script is run, the user (you) is presented with a series of dialogue boxes that guide you through the creation of one or more scripts. All the dialogue boxes contain a 'Cancel' button that should permit the script to be halted at any time.

For the purposes of these instructions AP was set up with a plan containing a set of the binary stars in Vulpecula. There is no particular reason for this other than that is what I happened to be working on at the time I wrote the RASGen script. The plan contains 79 objects, of which 10 are highlighted and 1 is selected.

Summary of script creation:

- 4.1: Plan Selection
- 4.2: Object List Selection
- 4.3: Script Details
- 4.4: Scope Selection
- 4.5: Save As (one or more)
- 4.6: Set Exposure (one or more)
- 4.7: Prefix Selection (if appropriate)
- 4.8: Autoguiding (if appropriate)
- 4.9: The End

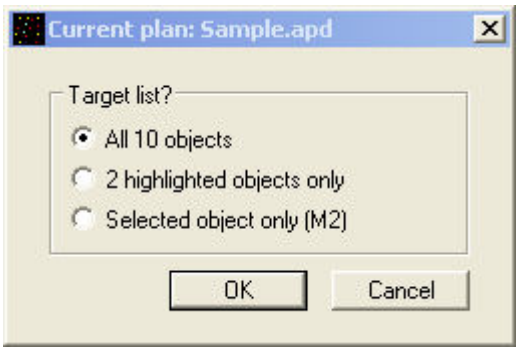
4.1: Plan Selection



This dialogue box allows you to select which of the multiple plans, currently loaded, you wish to use. Having this dialogue box means that you do not have to remember to select the required plan before running RASGen. If there are no plans available then a friendly error message will point this out to you. The dialogue box will not be displayed if only one plan is loaded – not a lot point really!

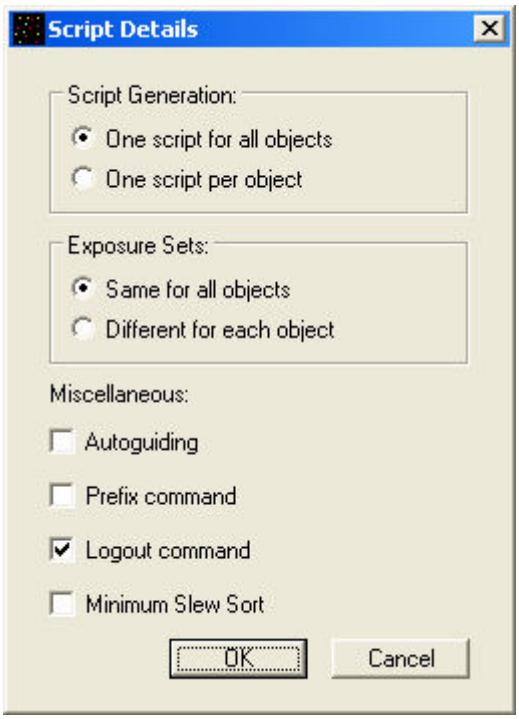
Selecting a plan that contains no objects will result in an error message being displayed. A future version of RAS_Gen will not list 'blank' plans in the Plan Selection dialogue.

4.2: Object List Selection



This dialogue box allows you to select which set of objects, contained within the selected plan, you wish to use. The name of the selected plan is displayed in the dialogue box title bar; in this case ‘Sample.apd’. If there are no highlighted or selected objects, then the appropriate selections will not be displayed.

4.3: Script Details



This dialogue box contains three sections:

4.3.1: Script Generation

This section allows you to decide whether you want to generate one script for ALL your selected objects, or to generate one script for EACH object.

4.3.2: Exposure Sets

This section allows you to decide whether the same exposure parameters should be used for ALL objects, or not.

4.3.3: Miscellaneous

A bunch of options that did not have a home elsewhere!

4.3.3.1: Autoguiding

Do you want the script/s to contain Autoguiding commands, or not.

4.3.3.2: Prefix

Enable the selection of an object name to be used with the PREFIX command. If checked and more than two Name are associated with an object a Prefix Selection dialogue will appear (see 4.7).

4.3.3.3: Logout

If checked the LOGOUT command will be added to the end of each script.

4.3.3.4: Minimum Slew Sort

IMPORTANT NOTE: FOR THIS OPTION TO WORK YOU MUST HAVE A PLAN FILE CALLED "_RPEHLM_Blank.apd" IN THE SAME DIRECTORY AS AstroPlanner.exe. This 'kludge' is needed because the 'MinimumSlewSort' command will only work on Plans, it will NOT work on Tables or other data structures. Paul may or may not fix this is in a future version of AP, until then this is the only way I could think of to have Minimum Slew Sorting without disturbing your Plans.

This option only appears if:

1: The 'All Objects' option in the 'Object List Selection' dialogue (see 4.2) has been selected AND there are three or more objects in the plan.

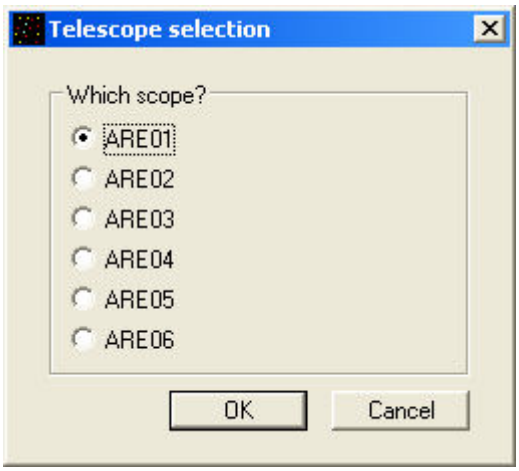
or

2: The 'Highlighted objects only' option in the 'Object List Selection' dialogue (see 4.2) has been selected AND there are three or more highlighted objects in the plan.

Selecting this option will cause RAS_Gen to:

1: Open the _RPEHLM_Blank.apd Plan
2: Populate the Plan from the selected Plan with the required objects
3: Perform the Minimum Slew Sort on the _RPEHLM_Blank.apd Plan
4: Continue RAS_Gen with _RPEHLM_Blank.apd as the selected Plan
5: At the end of RAS_Gen the _RPEHLM_Blank.apd Plan will be closed
6: Reselect the originally selected Plan

4.4: Scope Selection



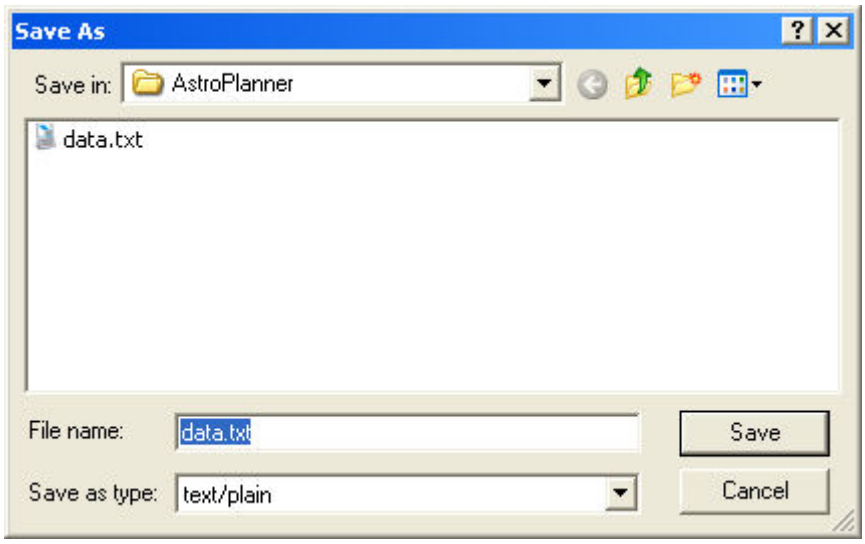
This one is not difficult. It allows you to select which RAS scope the script/s is going to be generated for. This is important to know because not all the scopes have the same filters. Or if they do, the filters may not be in the same position on different scopes. Take the Clear (or Luminance) filter as an example:

Scope	Filter-wheel position
Are01	4
Are02	5
Are03	0 – Clr 4 – Lum
Are04	3
Are05	3
Are06	0 – Lum? 7 – Clr?

ARE06 filter-wheel positions are tentative – awaiting confirmation.

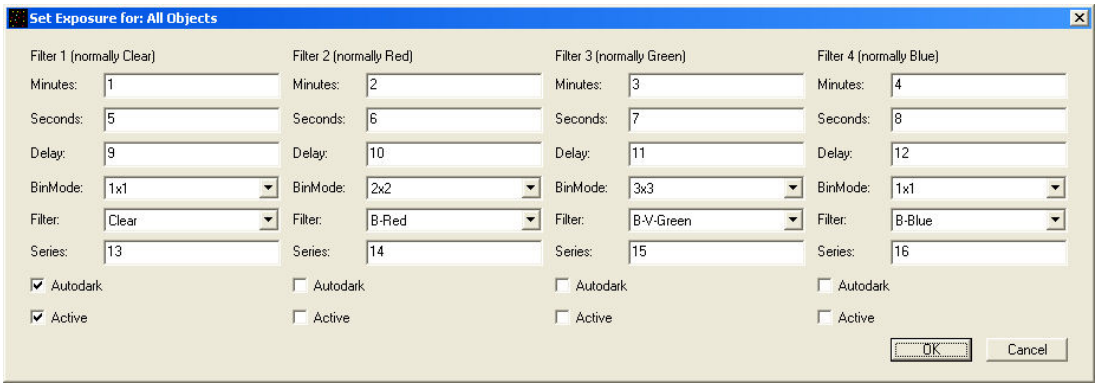
<Need to replace diagram with one containing ARE06>

4.5: Save As



Next we decide where the script is going to be saved and what it will be called. If in 4.3 (Script Details Selection) the 'One script for all objects' option was selected then this file will contain all the scripting command for all the selected objects. If the 'One script per object' option was selected then this dialogue box will appear in order to create a Script File for each selected object.

4.6: Set Exposure



This dialogue is very similar to the 'Set LRGB Colour' dialogue found on the RAS telescope control web pages. At present the most significant missing item is the 'Sets of images' field. The reason for this is that the corresponding 'LOOPSTART' and 'LOOPEND' commands have not yet been implemented in RASGen. These commands should be added in a future release.

The values entered into these fields are persistent. That is they will be 'remembered' from one use of this dialogue to the next. To achieve this, the field values are stored inside the currently selected plan. They are not visible, so don't try looking for them. This means that as long as the plan is saved the values will reappear the next time you use RASGen with the current plan. If that explanation is not clear to you, just use RASGen a few times and it will become apparent (I hope). If not, just ask!

4.6.1: Minutes

The number of minutes for the exposure. The Minutes and Seconds fields are combined to produce the exposure time in seconds in the script file.

4.6.2: Seconds

The number of seconds for the exposure. The Minutes and Seconds fields are combined to produce the exposure time in seconds.

4.6.3: Delay

This is a delay in minutes. To be honest I'm not entirely sure how or why the Delay command is used. A one minute delay (the minimum) allowed seems an awfully long time to wait for the mount to settle after slewing or filter changing, or anything else for that matter! If this value is left at zero, no Delay command is placed in the script.

4.6.4: Bin Mode

The binning mode for this particular exposure set. Available values are ‘1x1’, ‘2x2’ and ‘3x3’. I think all the RAS cameras can support all these binning modes.

4.6.5: Filter

The filter to be used for this exposure set.

4.6.6: Images

The number of images to be taken for this exposure set.

4.6.7: Autodark

If selected a ‘Dark frame’ will be generated and subtracted from the light frame. To be honest, I think that is how this works. I have some clarification from the author of Browser Astronomy, but I haven’t read it yet! L

NOTE: There may be an issue with a time-out problem when using the autodark command. This is currently being tested.

4.6.8: Active

If checked then the parameters set up in this exposure set will be used to generate the appropriate commands in the script file.

4.7: Prefix Selection

For this dialogue box to appear some conditions need to be meet:

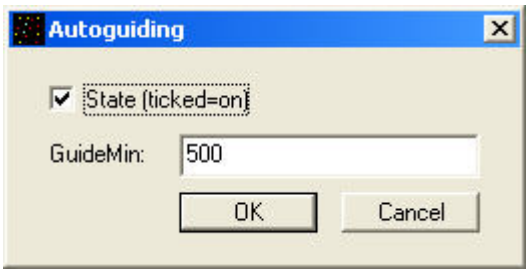
- The 'Prefix' check box in 4.3 (Script Details) must be checked
- The object must have two or more names

This last condition may lead to some confusion because the user is NOT notified of any failure conditions. For example, if the object has no Names associated with it, the PREFIX command will still be in the Script File (because the PREFIX check box is checked) but will have the object ID as its value. Similarly if the object has only one Name, then it will be used without this dialogue box being displayed.

Examples		
Object ID	**Associated Name/s**	**PREFIX**
HR1894	SAO89680, HD203858	SAO89680*[1]
NDC10447	LDS1325	LDS1325*[2]
ACS1345		ACS1345*[2]

*[1] – User selected
*[2] – Automagically selected by the script

4.8: Autoguiding



If the 'Autoguiding' option is selected in 4.3 (Script Details Selection) then this dialogue box will be displayed.

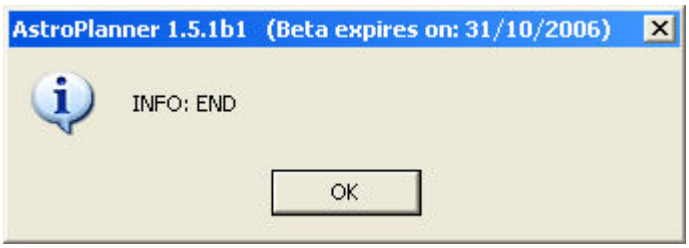
4.8.1: State

This allows you to switch of Autoguiding for this particular command set. Sort of an override for the 'Autoguiding' option in 4.3 (Script Details Selection).

4.8.2: GuideMin

This allows you to set the appropriate dimmest value to use for a guide star. There is not a lot of help available for this command so it is pretty much up to you find a value that works for you – sorry!

4.9: The End



This simply informs you that RASGen has completed. You can go find the generated Script File and play with it.

5: Future Developments

This is a collection of my thoughts together with some suggestions from the beta-testers.

5.1: Mosaic

Generate a set of slew and imaging commands to create a set of mosaic images around the target area. I currently have a working prototype for this. It needs to be tested to ensure that the calculated coordinates for the 'offset' images are correct(ish).

5.2: Timeline

Add comments to the script that estimate (guestimate is more likely<g>) the elapsed time for script execution.

5.3: Meridian/Horizon/Moon proximity checking

OK these are a bit 'blue-sky' at the moment, but should be possible – maybe – I think.

5.4: Summary

A printable summary of the Command set.

5.5: Documentation

Will this ever end!!! ☺

5.6: Code cleaning

Ditto!!!

6: Contact

You want WHAT … technical support … ROFL!!!

Oh, if you insist, drop me a note containing not less than 15,000 words about everything that is wrong with this script to:

dustbin at roundfile dot hades

Or if you prefer:

rpehlm at btinternet dot com

7: History

Date	Version	Description
10Jul2006	0.1	Initial beta release
12Jul2006	0.2	LOGOUT handling added
12Jul2006	0.3	Initial version of PREFIX handling added
		Improved code for ScriptDetails
13Jul2006	0.4	Auto-increment filter during ExposureSet replication (crude)
14Jul2006	0.5	Added Object ID to PREFIX dialogue box title