OB preparation guidelines for HAWK-I/GRAAL Science Verification observations

This memo provides a short description of the requirements for the preparation of OBs for Science Verification (SV) **only**.

SV observations will be performed only in AOF Tip-Tilt Star (TTS) free mode, which implies the use of the four lasers only. Because the lasers by design follow the telescope movements, the TTS-free mode provides 100% sky coverage. Therefore, there are no particular restrictions on the maximum allowed offsets beyond those imposed by the VLT guide star (e.g. for No AO HAWK-I observations).

When designing TTS-free observations the users should follow the same guidelines for no AO observations in terms of sky subtraction strategy (e.g. on-target dithering or off-target offsets) and target centring (e.g. placing the science target in one of the four quadrants).

The TTS-free mode is offered in combination with either standard imaging (i.e DIT_{MIN}=1.6762s, and readout mode = Non Destructive) or Fast Phot (i.e. DIT_{MIN} depends upon the selected detectors windowing and readout mode = Double Read Reset Read).

Basic instructions:

- OBs must be prepared with the latest version of P2PP (3.4.3). Instructions related to the P2PP installation can be found here. Users should refer to the P2PP User Manual for a general overview of the P2PP and generic instructions on the preparation of OBs and scheduling containers.
- Exposure time can be defined with the current HAWK-I ETC and by using the desired image quality as input parameter.
- Users are expected to be already familiar with the HAWK-I User Manual, as well as with the HAWK-I Templates Reference Guide specific to no AO observations.

Specific instruction for SV:

The use of AOF TTS-free mode imposes requirements on the choice of the acquisition template, and (to some extent) on the choice of the observing template.

As described in the table below, there are 2 new acquisition templates specifically designed to use the AOF, while the observing templates are the same as for the No AO mode. As it is the case for the No AO observations,

the Fast Phot mode can only be performed by using the dedicated observing template (HAWKI_img_obs_FastPhot)

TTS-free Mode	Acquisition Template	Observing Template
Standard Imaging	HAWKI_img_acq_LGS_Preset	HAWKI_img_obs_AutoJitter HAWKI_img_obs_AutoJitterOffset HAWKI_img_obs_FixedSkyOffset HAWKI_img_obs_GenericOffset
Fast Photometry	HAWKI_img_acq_LGS_FastPhot	HAWKI_img_obs_FastPhot

IMPORTANT: users must set the *Instrument Mode* to **AO_IMG** in the selected acquisition and observing template(s).
Note that when "*Instrument Mode*"=AO_IMG, an exposure flagged as object "O" through the template parameter "Observation type list, O/S" is taken with AO loops closed, while sky exposures ("S") are performed in open loops.
A detailed description of all other observing template parameters can be found in the [HAWK-I Templates Reference Guide](#) specific to no AO observations.

Finally, users are encouraged to prepare the OBs with a SV-dedicated new release of the GuideCam tool, which provides valuable help for preparing the acquisition, HAWK-I compliant finding charts, and for checking offsets for target centring both during the acquisition, and for observing exposures in general.
The new version of the tool and its related tutorial can be downloaded from the [SV web page](#).

Should you have remaining doubts or questions, please do not hesitate to contact the [User Support Department](#). We will be happy to help you.