

Video of Tag

## Data Product Overview

The TAG Video of the Sample Acquisition Event combines a series of SamCam images (e.g. in jpeg format) into a video file (e.g. mpeg, mpeg-4 or avi).

### Overview

- This product is a video of some 5-30 frames/sec.
- This product depicts the section of asteroid surface being sampled in a sequence of images with a minimum scale measured in mm.
- Currently, this product is not associated with a specific requirement, unless it's MRD-380.
- This product relies on the sequence of SamCam images of the Sampling event acquired between a range to surface between 27 and 0-m.
- The images contributing to this product are acquired during the Sampling event.
- This product will be generated in 2 days time.
- This product is of science and long-term science value.

## Data Product Structure and Organization

The data product consists of a single video file of mpeg or avi format per sampling attempt.

### *Data Format Descriptions*

No header information is included with video. Each of the image files that contribute to the video will possess a full range of header information including

- Date of Observation
- Exposure Start/End/Duration Times
- CCD Temperature
- Object
- Calibration History giving what processing steps have been applied
- Name of Calibration Files used in processing
- Lat/lon of the Imaging Location

### *Detailed Description of data format*

Detailed descriptions of mpeg, mpeg-4 or avi are provided by various reference documents.

## Data Product Generation

*How and by whom is the product generated?*

*What are the input products needed to produce the product?*

The inputs for this video is the SamCam image sequence acquired during the prime or secondary Sampling Event.

These Level 0, 1 or 2 images (any of these levels are possible inputs) are converted to jpeg files.

*Are there format expectations for the input products?*

It is expected that the images are converted to jpeg format

*What algorithms and/or calibration data is used to generate products?*

- Note: algorithm descriptions are to be provided separately
- [on UNIX system]
  - `jpegtoavi -f 32 1024 1024 < $ad/in/jpglists/jpglist_361 > $rq/avi/110516d.avi`
- [on Windows system]
  - JPGVideo 1.05
  - brings up a GUI that guides user through video creation

*Has a specific Science Team Member been assigned to produce this product?*

This product is provisionally assigned to Bashar Rizk, who will reassign it as necessary.

*Will multiple versions of the product be generated?*

Multiple versions of this product are limited to different video formats

## **Observational Requirements**

A sequence of at least 70 SamCam images, spaced every 5-10 seconds up to half a minute before and half a minute after TAG and spaced every 1.6 seconds during the minute surrounding TAG are required to make a TAG video. The images are planned for exposure times around 50 msec, but could be shorter by a factor of 2 or so if a location with a small solar incidence angle is chosen.

*When in the DRM are the observations that make the data product scheduled to be taken?*

During Sampling.

*How long does it take to produce the data product?*

A few minutes

*Is this product used for sample site selection, science value, or long-term science?*

The TAG Video is used for Sample Verification and Long-Term Science

## **Data Product Validation**

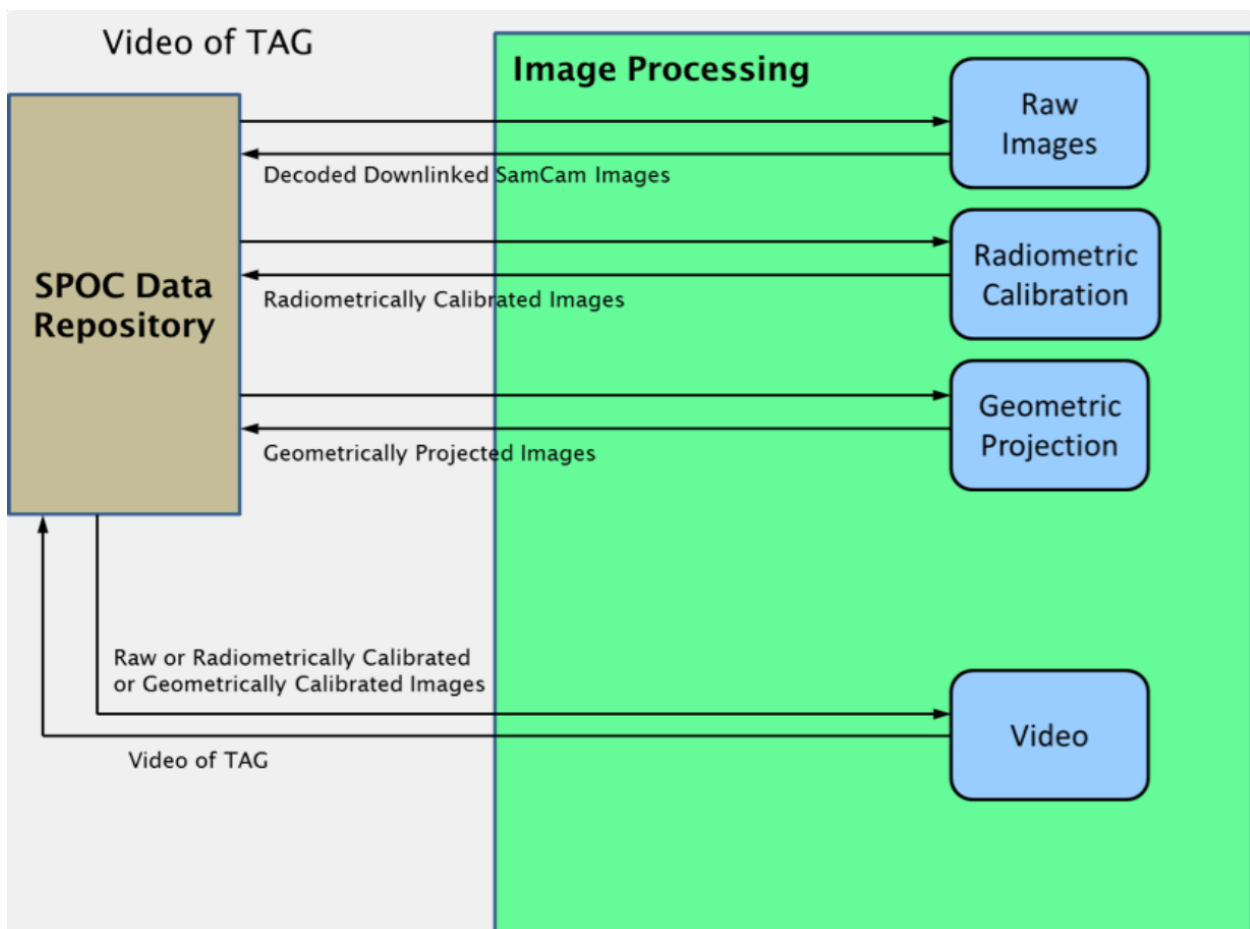
*How will the product be vetted to ensure contents and format are correct?*

At each image processing stage, the individual frames are compared to previous forms of the image in order to verify that intervening reduction steps produced the expected behavior. Once the video is produced, the video frames are compared to the latest form of the individual images in order to verify expected behavior.

## Data Flow

Update Phase B data flow diagrams with more detailed flow diagrams based on the current processing configuration.

See flow diagram below



Sources, destinations, and transfer procedures for data products.

- State the size of an individual data product and the total size of all the data products generated over the course of each mission phase.
- The video formed by the TAG image sequence will be of order 50-500 MB in size depending on the degree of video compression.

- State the time span covered by a product, if applicable, and the rate at which products are generated and delivered.
- It will begin with the SamCam approximately 33 m from the asteroid surface and end some tens of seconds or minutes after the TAG event. Some 150-500 images will be acquired and amalgamated into a video running at 5-30 frames/sec. While the duration of the TAG event during this interval is approximately 7 minutes (5 minutes before and 2 minutes after) in real time, the video will occupy somewhere between 5-100 seconds, depending upon the rate and the number of images.

### Standards used to generate data product

- Time (e.g. times are all converted to UTC)
- OCAMS Instrument clock time (equivalent to S/C time)
- Coordinate System
- None
- Data Storage Conventions (i.e. byte order, compression, machine dependence)
- AVI or MOV format

### Possible Issues

One possible complication is the presence of a bright glint off of one or another part of the TAGSAM arm and head. This glint may scatter so much light into the dark sections of the image (the asteroid surface) as to obscure it with greatly decreased contrast. A more intensive glint correction regime may be required for the images, possibly based on pre-Sampling calibration images of the TAGSAM arm and head with dark space as a background instead of the asteroid surface.