

# Requirements and Procedures to import MOC images from ISIS to SOCET Set (© BAE)

## I) Processing system requirements

### A) Platform/Compiler

Sun Solaris 2.6 (SunOS 5.6) machine  
Sun Workshop C compiler v5.0

### B) SOCET Set

SOCET Set v4.3.1  
SOCET Set Dev Kit

Our software/procedures for MOC stereo processing currently supports SOCET Set v4.3.1. Rather than write our own sensor model, we are using the Generic Pushbroom Sensor model available in the SOCET Set Dev Kit.

### C) ISIS

You will need to install the following components of the current release of ISIS:

ISIS Base Kit  
ISIS Dev Kit  
Mars Global Surveyor Data Kit

### D) Download the following ISIS data file and TAE procedure files, not part of the standard release

sample\_moc\_processing.pdf  
mars\_socet.def.2  
to8bit.pdf

*NOTE: The above \*.pdf files are plain text files, not Adobe Acrobat documents*

### E) The following programs/procedures are needed for import of MOC images to SOCET Set. However, because they contain proprietary information, they are available upon request to SOCET Set users:

moc2socet.c  
moc\_update\_sup.c  
moc\_update\_sup.pdf  
moc\_update\_sup.mak  
get\_naif\_matrices.c  
get\_mounting\_angles.c

## II) Installation of ISIS MOC to SOCET import software

A) To compile moc2socet.c, at the unix prompt enter:

```
cc -o moc2socet moc2socet.c
```

(moc2socet.c has all subroutines internal to the program)

B) To compile moc\_update\_sup.c, at the unix prompt enter:

```
make -f moc_update_sup.mak
```

(moc\_update\_sup.c also calls external subroutines  
get\_naif\_matrices.c and get\_mounting\_angles.c)

C) Place moc2socet, moc\_update\_sup and moc\_update\_sup.pdf in  
/usr/geoset/vendor/bin (this path should already be in the path list for  
SOCET Set) moc2socet and moc\_update\_sup (with no extension),  
are the resulting executable files from compilation.

D) So that TAE will "see" moc\_update\_sup, add the following line to  
/usr/geoset/.cshrc

```
setenv USERTAEBIN /usr/geoset/vendor/bin
```

### III) SOCET Set preparation steps

A) Update internal database files for planetary work

To prepare for MOC (or planetary) stereo processing the following  
SOCET Set internal database files need updating. These files are  
found in /usr/geoset/internal\_dbs/GEODETIC. (Upon request, we  
can provide our version of these files to facilities that have  
purchased SOCET Set.) For MOC processing, we use the  
IAU2000 definition for Mars.

```
datum.dat  
ellipsoid.dat  
geodetic.dat  
geodetic.doc
```

B) Add the desired location of the SOCET Set images to file  
/usr/geoset/internal\_dbs/DEVICE/location.list

C) Create SOCET Set project

You are now ready to create your SOCET Set project. For MOC processing, we create our projects in Geographic coordinates, and select the datum for Mars.

#### **IV) ISIS processing steps**

##### A) Process a PDS MOC image in ISIS through moclev1

TAE procedure file `sample_moc_processing.pdf` contains comments to explain the processing we do when preparing a MOC image *for stereo processing in SOCET Set*. If desired this procedure file can be run in TAE to process image `e0503287` through `moclev1`.

Also needed for preparation of MOC images is Mars definition file `mars_socet.def.2`. This Mars definition file is used to override ISIS system defaults, and the demonstration of its use is contained in `sample_moc_processing.pdf`

##### B) Convert the ISIS moclev1 image to 8-bit

The output of `moclev1` is a 32-bit image, while SOCET Set generally works with 8-bit images. To convert the ISIS lev1 MOC image to 8-bit, run procedure `to8bit.pdf` - this procedure can only be run in TAE.

(When tutoring `to8bit`, you will see an 'orange' parameter. This parameter is essentially min/max endpoints to stretch the 32-bit data to 8-bit. One way to get these values, is to run ISIS program 'qview' to display the image. Once the image is displayed, selecting `file->view` on the image display window will invoke a 'view options' menu. Select 'manual stretch' to change the min/max stretch values, (but to see the stretch results you must select 'ok' which exits the menu). To try another stretch pair, you must go back into `file -> view,...` When you are happy with the stretch, set `orange(1)=Minimum stretch value` and `orange(2)=Maximum used in qview.`)

#### **V) Import ISIS Moc image to Socet Set**

You are now ready to import the 8-bit MOC image. Program `moc2socet` is a 'wrapper' that creates temporary files and executes all needed programs/procedures for import, and is run on the command line. Among standard ISIS routines and SOCET Set commands, `moc2socet` will invoke `moc_update_sup`, which creates the Generic Pushbroom support file. (`moc_update_sup` is an ISIS program)

To get "help" for running moc2socet, simply type moc2socet at the unix prompt, and return (without entering arguments). Doing so will give the following:

Run moc2socet as follows:  
moc2socet moc\_cube project img\_location

where:

moc\_cube = the MOC ISIS cube to be imported to SOCET set,  
that was run through moclev1 and converted to 8-bit

project = SOCET SET project name to import images under

img\_location = The logical location of the SOCET images as  
shown in the FIRST COLUMN of file  
/usr/geoset/internal\_dbs/DEVICE/location.list

## VI) Notes about moc\_update\_sup

moc\_update\_sup also outputs a \*.table file (where \*=moc image name). It was output for debugging purposes, but is left in the code for now. When running moc2socet (and therefore moc\_update\_sup), you might get the following messages:

1) "Cannot Generate Support File: Camera pointing not available in SPICE C-kernel"

If you get this message, the image cannot be imported to SOCET Set because of SPICE gaps

2) "Incomplete Table of Mounting Angles: Camera pointing not available in SPICE C-kernel"

If you get this message, the Generic Pushbroom support file was generated successfully, however, the table of mounting angles exceeds the range of the image, and may have encountered a SPICE gap. Because the table is not essential for MOC processing, this message can be ignored.