



LGS-AO: Starlist Processing

Author	Date	Comment
Jlyke	03 June 2007	Original
mkassis	03 June 2007	Added steps 4 & 5, modified step 3
mkassis	6 Aug 2009	Added steps 7-11 to document LCH starlist submission procedures
jlyke	04 Nov 2009	Revised procedure to reflect process_list changes

Background: LGS-AO observers submit starlists to Keck at least 3 days before their observations so that we can send the targets to Space Command. The LGS-AO software and Space Command each require a specific starlist format.

Procedure:

1. Open a web browser and go to <http://www/software/starListPage/StarListsPage.php>.
2. Download the starlist for the UT date of the observing night and note the filename (should be something like 000024.dat). If there are multiple starlists, you need to use your favorite editor to combine the multiple lists into one.
3. Log in to HQ machine as kics
4. Move the downloaded starlist into ~kics/starlists
5. cd ~kics/starlists
6. Run "process_list downloaded_file yymmdd",
(e.g. process_list 000024.dat 070609) See Appendix 1 for the processing details. One or two files are e-mailed to Al Conrad; Hien Tran; Jim Lyke; Marc Kassis; Randy Campbell; a 2nd or 3rd email is sent to spacemail@keck.hawaii.edu
 - a. SAs:
 - i. lgs070609.lst as attachment
 - ii. lgs070609.notup as attachment if targets are unobservable
 - b. spacemail:
 - i. 2x PRM files as output by process_clearinghouse
7. Forward the 1 or 2 emails originally sent to the SAs to the observers. If observers respond by the Space Command deadline, fine. If not, fine.
8. Check e-mail and save files attached to e-mail "Laser Clearinghouse starlist files for J-Day XXX (YYYYMMDD)." Check formatting on files: number of targets; check J-Day, etc. JDate Calculator web link: <http://www-air.larc.nasa.gov/tools/jday.htm>
9. 72 hours **minimum** forward files to SBMs (Space Battle Managers: at JSpOC 1SPCS@vandenberg.af.mil). See Appendix 6 for example e-mail text.
10. (optional) Call to confirm receipt of files. Do this 15 min after submission.



Notes:

Code is located in two locations:

1. /home/kics/starlists/util/
2. /home/k2ao/IDL/lgsao/

Contents of /home/kics/starlists/090717/

000024.dat	lgs070609.norename	lgs070609_sc.lst
lgs070609.log	lgs070609.orig	lgs070609_sc.txt
lgs070609.lst	lgs070609.pre_flagmove	tych070609.lst
lgs070609.lst.edit	lgs070609.txt	tych070609_v10.lst

000296.dat*

000296.dat~*

PRM_KECK LGS_generated 20090714(UTC)_for J-Day 198 (20090717)_AZ-EL.txt

PRM_KECK LGS_generated 20090714(UTC)_for J-Day 198 (20090717)_RA-DEC.txt

lgs090717.log

lgs090717.lst

lgs090717.lst.edit

lgs090717.nochange

lgs090717.norename

lgs090717.orig*

lgs090717.pre_flagmove

lgs090717.txt*

lgs090717_sc.lst

lgs090717_sc.txt

old_000295.dat*

tempaz.txt

tempra.txt

tych080724.lst

tych080724_v10.lst



Appendix:

1) process_list processing details:

1. moves files from previous iterations of process_list to /home/kics/starlists/yymmdd/old/
2. starts a logfile (lgsymmdd.log)
3. cp .dat file to lgsymmdd.orig
4. calls scopy:
 - a. cp .orig file to .txt
 - b. dos2unix .orig file to .lst
5. calls move_lgsflag:
 - a. "lgs=1" flag moved to end of line
6. calls detab.pl lgsymmdd.lst
 - a. changes tabs to spaces
 - b. removes proper motions
 - c. removes differential rates
7. changes "*" to "+" and "?" to "_" via sed
8. mv .lst to .norename
9. calls rename_tt.pl lgsymmdd.norename > lgsymmdd.lst
 - a. changes all tt stars to "ttXXX" where XXX is a number starting at 000
10. calls checkForDup lgsymmdd.lst
 - a. looks for duplicate target names and exits if found
11. check for b-v flags
12. calls tycho_local dd mm yyyy
 - a. uses /home/kics/starlists/master_tycho_list_v10 to find 21 engineering stars
 - b. if lgs targets plus engineering stars are greater than maxtargs (101) exits, else prepends the eng stars to the .lst file
13. calls spacecom dd mm yyyy
 - a. strips off tt stars
 - b. adds zenith
 - c. calculates if targets are observable
14. calls rm_notup.pl yymmdd
 - a. strips unobservable targets from lgsymmdd_sc.* and lgsymmdd.lst
15. calls process_clearinghouse lgsymmdd_sc.txt
 - a. email is sent to spacemail with PRM files attached
16. cp .lst up to /kroot/starlists/laser/
17. send mail to laser SAs with attachment of lgsymmdd.lst
18. if rm_notup.pl stripped any targets, sends those targets in separate attachment for observers

2) process_clearinghouse code that is a wrapper for IDL code. See appendix three and four for header information on the IDL code.



```
#!/bin/csh -f
#
# CSH Wrapper for the process_clearinghouse.pro function. Process
# clearinghouse reads and processes the *.sc files so that targets
# are properly formatted for the space command clearinghouse program.
# It will generate two files.
source ~kics/starlists/misc/idl60_setup
setenv LM_LICENSE_FILE /sol/apps/flexlm/licenses/license.apua

set DIR = $PWD
set DCODE = `pwd | sed -e 's/.*starlists\\//'^
set NIGHTLY = `echo $DCODE | sed -e "s/(..\\)(..\\)(..\\)/1^2^3/"^
if ( $1 == "" ) then
  echo "USAGE: process_spiral lgslst_sc.txt"
  exit -1
endif

idl <<here
.r process_clearinghouse
pcboth, '$1'
here
```



3) Header for process clearinghouse IDL pro file. The script is found in /home/k2ao/IDL/lgsao under the k2oa account.

```
*****
; NAME:
;   PROCESS_CLEARINGHOUSE
;
; PURPOSE:
;   Take the output from process_list and creates a file
;   that may be sent to the Laser Clearing house.
;   The goal is to put the starlist in a format that
;   is accepted by the "Spiral 3" software used by
;   LCH to list the open windows for observing.
;   Removes the non-lgs targets.
;
;
; CALLING SEQUENCE:
;   process_clearinghouse, starlist, utdate
;
; INPUTS:
;   starlist - the starlist as output from process_list.
;             This starlist has the filename like lgs090717_sc.txt
;             AZ-EL targets must appear before the RA-Dec targets
;             in this starlist.
;   utdate   - UTdate for the observations
;
;
; OUTPUTS:
;   outfile - properly formatted starlist for LCH
;             If the outfile already exists, the old outfile is moved to a
;             file with the same name + a suffix of the version number.
;             A new version number increase each time the software is run.
;
;             Two examples of outfiles are the following:
;             PRM_KECK LGS_generated 20090714(UTC)_for J-Day 198 (20090717)_AZ-EL.txt
;             - contains only the zenith position for the laser in Az-El format.
;             PRM_KECK LGS_generated 20090714(UTC)_for J-Day 198 (20090717)_RA-DEC.txt
;             - contains the coords for all observer targets in RA-Dec formats.
;
; OPTIONAL INPUT KEYWORDS:
;   COORDFLAG=coordflag so that we know to process either RA-DEC or AZ-EL
;   AZLIST = target list for AZ-EL coordinates.
;
; EXAMPLE:
;   process_clearinghouse lgs090717_sc.txt 090717
;
; ERROR HANDLING:
;
; RESTRICTIONS:
;
; NOTES:
;
; PROCEDURES USED:
```



```
; month_convert
```

```
;
```

```
; MODIFICATION HISTORY:
```

```
; 2008 Sep 01 MK Original Version
```

```
; 2008 Sep 30 MK Updated with formatting and content changes specified by CM
```

```
; Created left_justify function
```

```
; 2008 Oct 02 MK Updated with formatting and content changes specified by CM
```

```
; 2008 Oct 06 MK Updated with formatting and content changes specified by CM
```

```
; 2009 Jul 14 MK Updated with more documentation.
```

```
; 2009 Jul 22 MK Added ability to use more AZ-EL targs with a new file.
```

```
*****
```



4) Header for pcboth IDL pro file. The script is found in /home/k2ao/IDL/lgsao under the k2oa account.

```
*****
;
; NAME:
;   PCBOTH
;
; PURPOSE:
;   Take the output from process_list and creates a file
;   that may be sent to the Laser Clearing house.
;   This is a wrapper script for process_clearinghouse which
;   which does all the work for formatting. This script
;   runs process_clearinghouse twice: once for the RA-DEC
;   coords and a second time for the AZ-EL coords. The files
;   generated by process_clearinghouse are then e-mailed
;   by this script to people on the spacemail distribution
;   list available in MSoffice.
;
;
; CALLING SEQUENCE:
;   pcboth, starlist
;
; INPUTS:
;   starlist - the starlist as output from process_list.
;   This starlist has the filename like lgs090717_sc.txt
;
; OUTPUTS:
;   outfile - (see process_clearinghouse.pro)
;
;
; OPTIONAL INPUT KEYWORDS:
;
; EXAMPLE:
;   pcboth starlist
;
; ERROR HANDLING:
;
; RESTRICTIONS:
;
; NOTES:
;
; PROCEDURES USED:
;   process_clearinghouse
;
; MODIFICATION HISTORY:
;   2008 Sep 01 MK Original Version
;   2009 Jul 14 MK Updated with more documentation.
*****
```



- 5) Sample email for PI starlist confirmation: Items in **Bold** are variables. The starlist should be included as an attachment.

Subject: Please check [this|these] list(s)

Hello **PI_name & collaborators**,

Regarding your laser run **this Thursday** night, please double check the attached list to be sure that all of your target names appear. This list is an exact copy of what will be sent to Space Command to seek approval for the night.

There is no need to check the numbers, just please be sure that all your target names appear. Ignore targets 1 through **38**, which are calibration stars. **Please note one object from your list (WD 0141-675) will not be observable on July 17 2009 UT from Keck II and has been removed.**

Thank you for your help in double checking this step in the pre-observing process.

Sincerely,
Chrissy

- 6) Example e-mail sent to SBMs for starlist approval. Attach three files,
a) AZ-EL PRM
b) RA-DEC PRM
c) original starlist (*_sc.txt)

To: 1SPCS@vandenberg.af.mil
Subject: Keck PRM for JD **198**

Aloha SBMs,

Keck Observatory's Laser Clearinghouse request for **July 17** Zulu is attached. It includes **one** az/el target (zenith) and **71** RA/dec targets. The original starlist is attached as well.

Have a good night!

Thank you,
Chrissy