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# Pipeline Tasks Reference Manual

*Release unknown*

**pipeline team**

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## PIPELINE TASKS

<b>1</b>	<b>pipeline.h.cli</b>	<b>2</b>
1.1	pipeline.h.cli.cli . . . . .	3
1.2	pipeline.h.cli.h_applycal . . . . .	3
1.3	pipeline.h.cli.h_export_calstate . . . . .	3
1.4	pipeline.h.cli.h_exportdata . . . . .	3
1.5	pipeline.h.cli.h_import_calstate . . . . .	3
1.6	pipeline.h.cli.h_importdata . . . . .	3
1.7	pipeline.h.cli.h_init . . . . .	3
1.8	pipeline.h.cli.h_mssplit . . . . .	3
1.9	pipeline.h.cli.h_restoredata . . . . .	3
1.10	pipeline.h.cli.h_resume . . . . .	3
1.11	pipeline.h.cli.h_save . . . . .	3
1.12	pipeline.h.cli.h_show_calstate . . . . .	3
1.13	pipeline.h.cli.h_tsyscal . . . . .	3
1.14	pipeline.h.cli.h_weblog . . . . .	3
1.15	pipeline.h.cli.utils . . . . .	3
<b>2</b>	<b>pipeline.hif.cli</b>	<b>5</b>
2.1	pipeline.hif.cli.hif_analyzealpha . . . . .	6
2.2	pipeline.hif.cli.hif_antpos . . . . .	6
2.3	pipeline.hif.cli.hif_applycal . . . . .	6
2.4	pipeline.hif.cli.hif_bandpass . . . . .	6
2.5	pipeline.hif.cli.hif_checkproductsizes . . . . .	6
2.6	pipeline.hif.cli.hif_correctedampflag . . . . .	6
2.7	pipeline.hif.cli.hif_editimlist . . . . .	6
2.8	pipeline.hif.cli.hif_findcont . . . . .	6
2.9	pipeline.hif.cli.hif_gaincal . . . . .	6
2.10	pipeline.hif.cli.hif_lowgainflag . . . . .	6
2.11	pipeline.hif.cli.hif_makecutoutimages . . . . .	6
2.12	pipeline.hif.cli.hif_makeimages . . . . .	6
2.13	pipeline.hif.cli.hif_makeimlist . . . . .	6
2.14	pipeline.hif.cli.hif_makermsimages . . . . .	6
2.15	pipeline.hif.cli.hif_mstransform . . . . .	6
2.16	pipeline.hif.cli.hif_rawflagchans . . . . .	6
2.17	pipeline.hif.cli.hif_refant . . . . .	6
2.18	pipeline.hif.cli.hif_selfcal . . . . .	6
2.19	pipeline.hif.cli.hif_setjy . . . . .	6
2.20	pipeline.hif.cli.hif_setmodels . . . . .	6
2.21	pipeline.hif.cli.hif_transformimagedata . . . . .	6
2.22	pipeline.hif.cli.hif_uvcontsub . . . . .	6

<b>3</b>	<b>pipeline.hifa.cli</b>	<b>7</b>
3.1	pipeline.hifa.cli.hifa_antpos . . . . .	10
3.2	pipeline.hifa.cli.hifa_bandpass . . . . .	10
3.3	pipeline.hifa.cli.hifa_bandpassflag . . . . .	10
3.4	pipeline.hifa.cli.hifa_bpsolint . . . . .	10
3.5	pipeline.hifa.cli.hifa_diffgaincal . . . . .	10
3.6	pipeline.hifa.cli.hifa_exportdata . . . . .	10
3.7	pipeline.hifa.cli.hifa_flagdata . . . . .	10
3.8	pipeline.hifa.cli.hifa_flagtargets . . . . .	10
3.9	pipeline.hifa.cli.hifa_fluxcalflag . . . . .	10
3.10	pipeline.hifa.cli.hifa_gaincalsnr . . . . .	10
3.11	pipeline.hifa.cli.hifa_gfluxscale . . . . .	10
3.12	pipeline.hifa.cli.hifa_gfluxscaleflag . . . . .	10
3.13	pipeline.hifa.cli.hifa_imageprecheck . . . . .	10
3.14	pipeline.hifa.cli.hifa_importdata . . . . .	10
3.15	pipeline.hifa.cli.hifa_lock_refant . . . . .	10
3.16	pipeline.hifa.cli.hifa_polcal . . . . .	10
3.17	pipeline.hifa.cli.hifa_polcalflag . . . . .	10
3.18	pipeline.hifa.cli.hifa_renorm . . . . .	10
3.19	pipeline.hifa.cli.hifa_restoredata . . . . .	10
3.20	pipeline.hifa.cli.hifa_session_refant . . . . .	10
3.21	pipeline.hifa.cli.hifa_spwphaseup . . . . .	10
3.22	pipeline.hifa.cli.hifa_targetflag . . . . .	10
3.23	pipeline.hifa.cli.hifa_timegaincal . . . . .	10
3.24	pipeline.hifa.cli.hifa_tsysflag . . . . .	10
3.25	pipeline.hifa.cli.hifa_tsysflagcontamination . . . . .	10
3.26	pipeline.hifa.cli.hifa_unlock_refant . . . . .	10
3.27	pipeline.hifa.cli.hifa_wvrgcal . . . . .	10
3.28	pipeline.hifa.cli.hifa_wvrgcalflag . . . . .	10
<b>4</b>	<b>pipeline.hifv.cli</b>	<b>11</b>
4.1	pipeline.hifv.cli.hifv_analyzestokescubes . . . . .	14
4.2	pipeline.hifv.cli.hifv_applycals . . . . .	14
4.3	pipeline.hifv.cli.hifv_checkflag . . . . .	14
4.4	pipeline.hifv.cli.hifv_circfeedpolcal . . . . .	14
4.5	pipeline.hifv.cli.hifv_exportdata . . . . .	14
4.6	pipeline.hifv.cli.hifv_exportvlassdata . . . . .	14
4.7	pipeline.hifv.cli.hifv_finalcals . . . . .	14
4.8	pipeline.hifv.cli.hifv_fixpointing . . . . .	14
4.9	pipeline.hifv.cli.hifv_flagcal . . . . .	14
4.10	pipeline.hifv.cli.hifv_flagdata . . . . .	14
4.11	pipeline.hifv.cli.hifv_flagtargetsdata . . . . .	14
4.12	pipeline.hifv.cli.hifv_fluxboot . . . . .	14
4.13	pipeline.hifv.cli.hifv_gaincurves . . . . .	14
4.14	pipeline.hifv.cli.hifv_hanning . . . . .	14
4.15	pipeline.hifv.cli.hifv_importdata . . . . .	14
4.16	pipeline.hifv.cli.hifv_mstransform . . . . .	14
4.17	pipeline.hifv.cli.hifv_opcal . . . . .	14
4.18	pipeline.hifv.cli.hifv_pbcor . . . . .	14
4.19	pipeline.hifv.cli.hifv_plotsummary . . . . .	14
4.20	pipeline.hifv.cli.hifv_priorcals . . . . .	14
4.21	pipeline.hifv.cli.hifv_restoredata . . . . .	14
4.22	pipeline.hifv.cli.hifv_restorepims . . . . .	14
4.23	pipeline.hifv.cli.hifv_rqcal . . . . .	14

4.24	pipeline.hifv.cli.hifv_selfcal . . . . .	14
4.25	pipeline.hifv.cli.hifv_semiFinalBPdcals . . . . .	14
4.26	pipeline.hifv.cli.hifv_solint . . . . .	14
4.27	pipeline.hifv.cli.hifv_statwt . . . . .	14
4.28	pipeline.hifv.cli.hifv_swpowcal . . . . .	14
4.29	pipeline.hifv.cli.hifv_syspower . . . . .	14
4.30	pipeline.hifv.cli.hifv_targetflag . . . . .	14
4.31	pipeline.hifv.cli.hifv_tecmaps . . . . .	14
4.32	pipeline.hifv.cli.hifv_testBPdcals . . . . .	14
4.33	pipeline.hifv.cli.hifv_vlasetjy . . . . .	14
4.34	pipeline.hifv.cli.hifv_vlassmasking . . . . .	14
<b>5</b>	<b>pipeline.hsd.cli</b>	<b>15</b>
5.1	pipeline.hsd.cli.hsd_applycal . . . . .	15
5.2	pipeline.hsd.cli.hsd_atmcor . . . . .	15
5.3	pipeline.hsd.cli.hsd_baseline . . . . .	15
5.4	pipeline.hsd.cli.hsd_blflag . . . . .	15
5.5	pipeline.hsd.cli.hsd_exportdata . . . . .	16
5.6	pipeline.hsd.cli.hsd_flagdata . . . . .	16
5.7	pipeline.hsd.cli.hsd_imaging . . . . .	16
5.8	pipeline.hsd.cli.hsd_importdata . . . . .	16
5.9	pipeline.hsd.cli.hsd_k2jycal . . . . .	16
5.10	pipeline.hsd.cli.hsd_restoredata . . . . .	16
5.11	pipeline.hsd.cli.hsd_skycal . . . . .	16
5.12	pipeline.hsd.cli.hsd_tsysflag . . . . .	16
<b>6</b>	<b>pipeline.hsdn.cli</b>	<b>17</b>
6.1	pipeline.hsdn.cli.hsdn_exportdata . . . . .	17
6.2	pipeline.hsdn.cli.hsdn_importdata . . . . .	17
6.3	pipeline.hsdn.cli.hsdn_restoredata . . . . .	17
<b>7</b>	<b>Indices and tables</b>	<b>18</b>
	<b>Python Module Index</b>	<b>19</b>
	<b>Index</b>	<b>21</b>

<i>pipeline.h.cli</i>	Generic Tasks
<i>pipeline.hif.cli</i>	Interferometry Generic Tasks
<i>pipeline.hifa.cli</i>	Interferometry ALMA Tasks
<i>pipeline.hifv.cli</i>	Interferometry VLA Tasks
<i>pipeline.hsd.cli</i>	ALMA Single Dish Tasks
<i>pipeline.hsdn.cli</i>	Nobeyama Tasks

## PIPELINE.H.CLI

## Generic Tasks

<i>cli</i>	
<i>h_applycal</i> ([vis, field, intent, spw, ...])	Apply the calibration(s) to the data
<i>h_export_calstate</i> ([filename, state])	Save the pipeline calibration state to disk
<i>h_exportdata</i> ([vis, session, ...])	Prepare interferometry data for export
<i>h_import_calstate</i> (filename)	Import a calibration state from disk
<i>h_importdata</i> ([vis, session, asis, ...])	Imports data into the interferometry pipeline
<i>h_init</i> ([loglevel, plotlevel, weblog])	Initialize the pipeline
<i>h_mssplit</i> ([vis, outputvis, field, intent, ...])	Select data from calibrated MS(s) to form new MS(s) for imaging
<i>h_restoredata</i> ([vis, session, products_dir, ...])	Restore flags and calibration state from a pipeline run
<i>h_resume</i> ([filename])	Restore a saved pipeline state
<i>h_save</i> ([filename])	Save the pipeline state to disk
<i>h_show_calstate</i> ()	Show the current pipeline calibration state
<i>h_tsyscal</i> ([vis, caltable, chantol])	Derive a Tsys calibration table
<i>h_weblog</i> ([relpath])	Open the pipeline weblog in a browser
<i>utils</i>	

- 1.1 pipeline.h.cli.cli
- 1.2 pipeline.h.cli.h\_applycal
- 1.3 pipeline.h.cli.h\_export\_calstate
- 1.4 pipeline.h.cli.h\_exportdata
- 1.5 pipeline.h.cli.h\_import\_calstate
- 1.6 pipeline.h.cli.h\_importdata
- 1.7 pipeline.h.cli.h\_init
- 1.8 pipeline.h.cli.h\_mssplit
- 1.9 pipeline.h.cli.h\_restoredata
- 1.10 pipeline.h.cli.h\_resume
- 1.11 pipeline.h.cli.h\_save
- 1.12 pipeline.h.cli.h\_show\_calstate
- 1.13 pipeline.h.cli.h\_tsyscal
- 1.14 pipeline.h.cli.h\_weblog
- 1.15 pipeline.h.cli.utils

#### Functions

<i>cli_wrapper</i>	Wrap pipeline task CLI functions to handle the extra 'pipelinemode' argument.
<i>execute_task</i>	
<i>get_context</i>	
<i>get_heuristic</i>	
<i>get_ms</i>	
<i>get_output_dir</i>	

### 1.15.1 pipeline.h.cli.utils.cli\_wrapper

**cli\_wrapper**(*func: Callable*)

Wrap pipeline task CLI functions to handle the extra ‘pipelinemode’ argument.

PIPE-1884: this decorator function removes the “pipelinemode” argument from pipeline CLI task calls, which commonly exists in archival casa\_pipescript.py/casa\_pipestorescript.py scripts generated by old pipeline versions before PIPE-1686.

### 1.15.2 pipeline.h.cli.utils.execute\_task

**execute\_task**(*context, casa\_task, casa\_args*)

### 1.15.3 pipeline.h.cli.utils.get\_context

**get\_context**()

### 1.15.4 pipeline.h.cli.utils.get\_heuristic

**get\_heuristic**(*arg*)

### 1.15.5 pipeline.h.cli.utils.get\_ms

**get\_ms**(*vis*)

### 1.15.6 pipeline.h.cli.utils.get\_output\_dir

**get\_output\_dir**()



## PIPELINE.HIF.CLI

### Interferometry Generic Tasks

<i>hif_analyzealpha</i> ([vis, image, alphafile, ...])	Extract spectral index from intensity peak in VLA/VLASS images
<i>hif_antpos</i> ([vis, caltable, hm_antpos, ...])	Derive an antenna position calibration table
<i>hif_applycal</i> ([vis, field, intent, spw, ...])	Apply the calibration(s) to the data
<i>hif_bandpass</i> ([vis, caltable, field, intent, ...])	Compute bandpass calibration solutions
<i>hif_checkproductsize</i> ([vis, maxcubesize, ...])	Check imaging product size
<i>hif_correctedampflag</i> ([vis, intent, field, ...])	Flag corrected - model amplitudes based on calibrators.
<i>hif_editimlist</i> ([imagenam, ...])	Add to a list of images to be produced with <i>hif_makeimages</i> ()
<i>hif_findcont</i> ([vis, target_list, ...])	Find continuum frequency ranges
<i>hif_gaincal</i> ([vis, caltable, field, intent, ...])	Determine temporal gains from calibrator observations
<i>hif_lowgainflag</i> ([vis, intent, spw, refant, ...])	Flag antennas with low or high gain
<i>hif_makecutoutimages</i> ([vis, offsetblc, offsettrc])	Cutout central 1 sq.
<i>hif_makeimages</i> ([vis, target_list, ...])	Compute clean map
<i>hif_makeimlist</i> ([vis, imagenam, intent, ...])	Compute list of clean images to be produced
<i>hif_makermsimages</i> ([vis])	Create RMS images for VLASS data.
<i>hif_mstransform</i> ([vis, outputvis, field, ...])	Create new MeasurementSets for science target imaging
<i>hif_rawflagchans</i> ([vis, spw, intent, ...])	Flag deviant baseline/channels in raw data
<i>hif_refant</i> ([vis, field, spw, intent, ...])	Select the best reference antennas
<i>hif_selfcal</i> ([vis, field, spw, confil, ...])	Determine and apply self-calibration with the science target data
<i>hif_setjy</i> ([vis, field, intent, spw, model, ...])	Fill the model column with calibrated visibilities
<i>hif_setmodels</i> ([vis, reference, refintent, ...])	Set calibrator source models
<i>hif_transformimagedata</i> ([vis, outputvis, ...])	Extract fields for the desired VLASS image to a new MS and reset weights if desired
<i>hif_uvcontsub</i> ([vis, field, intent, spw, ...])	Fit and subtract continuum from the data

- 2.1 pipeline.hif.cli.hif\_analyzealpha
- 2.2 pipeline.hif.cli.hif\_antpos
- 2.3 pipeline.hif.cli.hif\_applycal
- 2.4 pipeline.hif.cli.hif\_bandpass
- 2.5 pipeline.hif.cli.hif\_checkproductsizes
- 2.6 pipeline.hif.cli.hif\_correctedampflag
- 2.7 pipeline.hif.cli.hif\_editimlist
- 2.8 pipeline.hif.cli.hif\_findcont
- 2.9 pipeline.hif.cli.hif\_gaincal
- 2.10 pipeline.hif.cli.hif\_lowgainflag
- 2.11 pipeline.hif.cli.hif\_makecutoutimages
- 2.12 pipeline.hif.cli.hif\_makeimages
- 2.13 pipeline.hif.cli.hif\_makeimlist
- 2.14 pipeline.hif.cli.hif\_makermsimages
- 2.15 pipeline.hif.cli.hif\_mstransform
- 2.16 pipeline.hif.cli.hif\_rawflagchans
- 2.17 pipeline.hif.cli.hif\_refant
- 2.18 pipeline.hif.cli.hif\_selfcal
- 2.19 pipeline.hif.cli.hif\_setjy
- 2.20 pipeline.hif.cli.hif\_setmodels
- 2.21 pipeline.hif.cli.hif\_transformimagedata
- 2.22 pipeline.hif.cli.hif\_uvcontsub

**PIPELINE.HIFA.CLI**

Interferometry ALMA Tasks

<i>hifa_antpos</i> ([vis, caltable, hm_antpos, ...])	Derive an antenna position calibration table
<i>hifa_bandpass</i> ([vis, caltable, field, ...])	Compute bandpass calibration solutions
<i>hifa_bandpassflag</i> ([vis, caltable, intent, ...])	Bandpass calibration flagging
<i>hifa_bpsolint</i> ([vis, field, intent, spw, ...])	Compute optimal bandpass calibration solution intervals
<i>hifa_diffgaincal</i> ([vis])	Derive SpW phase offsets from differential gain calibrator.
<i>hifa_exportdata</i> ([vis, session, ...])	Prepare interferometry data for export
<i>hifa_flagdata</i> ([vis, autocorr, shadow, ...])	Do metadata based flagging of a list of MeasurementSets.
<i>hifa_flagtargets</i> ([vis, template, ...])	Do science target flagging
<i>hifa_fluxcalflag</i> ([vis, field, intent, spw, ...])	Locate and flag line regions in solar system flux calibrators
<i>hifa_gaincalsnr</i> ([vis, field, intent, spw, ...])	Compute gaincal signal-to-noise ratios per spw
<i>hifa_gfluxscale</i> ([vis, reference, transfer, ...])	Derive flux density scales from standard calibrators
<i>hifa_gfluxscaleflag</i> ([vis, intent, ...])	Flag the flux, diffgain, phase calibrators and check source
<i>hifa_imageprecheck</i> ([vis, ...])	Calculates the best Briggs robust parameter to achieve sensitivity and angular resolution goals.
<i>hifa_importdata</i> ([vis, session, asis, ...])	Imports data into the interferometry pipeline
<i>hifa_lock_refant</i> ([vis])	Lock reference antenna list
<i>hifa_polcal</i> ([vis, minpacov, solint_chavg, ...])	Derive instrumental polarization calibration for ALMA.
<i>hifa_polcalflag</i> ([vis])	Flag polarization calibrators
<i>hifa_renorm</i> ([vis, createcaltable, ...])	ALMA renormalization task
<i>hifa_restoreddata</i> ([vis, session, ...])	Restore flagged and calibration interferometry data from a pipeline run
<i>hifa_session_refant</i> ([vis, phase_threshold])	Select best reference antenna for session(s)
<i>hifa_spwphaseup</i> ([vis, caltable, field, ...])	Compute phase calibration spw map and per spw phase offsets
<i>hifa_targetflag</i> ([vis])	Flag target source outliers
<i>hifa_timegaincal</i> ([vis, calamptable, ...])	Determine temporal gains from calibrator observations
<i>hifa_tsysflag</i> ([vis, caltable, flag_nmedian, ...])	Flag deviant system temperatures for ALMA interferometry measurements.
<i>hifa_tsysflagcontamination</i> ([vis, caltable, ...])	Flag line contamination in ALMA interferometric Tsys caltables
<i>hifa_unlock_refant</i> ([vis])	Unlock reference antenna list
<i>hifa_wvrgcal</i> ([vis, caltable, offsetstable, ...])	Generate a gain table based on Water Vapor Radiometer data, and calculate a QA score based on its effect on the interferometric data.
<i>hifa_wvrgcalflag</i> ([vis, caltable, ...])	Generate a gain table based on Water Vapor Radiometer data, interpolating over antennas with bad radiometers.



- 3.1 pipeline.hifa.cli.hifa\_antpos
- 3.2 pipeline.hifa.cli.hifa\_bandpass
- 3.3 pipeline.hifa.cli.hifa\_bandpassflag
- 3.4 pipeline.hifa.cli.hifa\_bpsolint
- 3.5 pipeline.hifa.cli.hifa\_diffgaincal
- 3.6 pipeline.hifa.cli.hifa\_exportdata
- 3.7 pipeline.hifa.cli.hifa\_flagdata
- 3.8 pipeline.hifa.cli.hifa\_flagtargets
- 3.9 pipeline.hifa.cli.hifa\_fluxcalflag
- 3.10 pipeline.hifa.cli.hifa\_gaincalsnr
- 3.11 pipeline.hifa.cli.hifa\_gfluxscale
- 3.12 pipeline.hifa.cli.hifa\_gfluxscaleflag
- 3.13 pipeline.hifa.cli.hifa\_imageprecheck
- 3.14 pipeline.hifa.cli.hifa\_importdata
- 3.15 pipeline.hifa.cli.hifa\_lock\_refant
- 3.16 pipeline.hifa.cli.hifa\_polcal
- 3.17 pipeline.hifa.cli.hifa\_polcalflag
- 3.18 pipeline.hifa.cli.hifa\_renorm
- 3.19 pipeline.hifa.cli.hifa\_restoredata
- 3.20 pipeline.hifa.cli.hifa\_session\_refant
- 3.21 pipeline.hifa.cli.hifa\_spwphaseup
- 3.22 pipeline.hifa.cli.hifa\_targetflag
- 3.23 pipeline.hifa.cli.hifa\_timegaincal
- 3.24 pipeline.hifa.cli.hifa\_tsysflag
- 3.25 pipeline.hifa.cli.hifa\_tsysflagcontamination
- 3.26 pipeline.hifa.cli.hifa\_unlock\_refant

## PIPELINE.HIFV.CLI

### Interferometry VLA Tasks

<i>hifv_analyzestokes</i> ([vis])	Characterize stokes IQUV flux densities as a function of frequency for VLASS Coarse Cube (CC) images.
<i>hifv_applycals</i> ([vis, field, intent, spw, ...])	Apply calibration tables to input MeasurementSets.
<i>hifv_checkflag</i> ([vis, checkflagmode, ...])	Run RFI flagging using flagdata in various modes.
<i>hifv_circfeedpolcal</i> ([vis, Dterm_solint, ...])	Perform polarization calibration for VLA circular feeds.
<i>hifv_exportdata</i> ([vis, session, ...])	Prepare and export interferometry and imaging data.
<i>hifv_exportvlassdata</i> ([vis])	Export Image data from QL, SE, and Coarse Cube modes of VLASS Survey.
<i>hifv_finalcals</i> ([vis, weakbp, refantignore, ...])	Compute final gain calibration tables.
<i>hifv_fixpointing</i> ([vis])	Base fixpointing task
<i>hifv_flagcal</i> ([vis, caltable, clipminmax])	Flagcal task.
<i>hifv_flagdata</i> ([vis, autocorr, shadow, scan, ...])	Do basic deterministic flagging of a list of MeasurementSets.
<i>hifv_flagtargetsdata</i> ([vis, template, ...])	Apply a flagtemplate to target data prior to running imaging pipeline tasks.
<i>hifv_fluxboot</i> ([vis, caltable, fitorder, ...])	Fluxboot
<i>hifv_gaincurves</i> ([vis, caltable])	Runs gencal in gc mode.
<i>hifv_hanning</i> ([vis, maser_detection])	Hanning smoothing on a dataset.
<i>hifv_importdata</i> ([vis, session, asis, ...])	Imports data into the VLA pipeline.
<i>hifv_mstransform</i> ([vis, outputvis, ...])	Create new MeasurementSets for science target imaging
<i>hifv_opcal</i> ([vis, caltable])	Runs gencal in opac mode.
<i>hifv_pbcor</i> ([vis])	Apply primary beam correction to VLA and VLASS images.
<i>hifv_plotsummary</i> ([vis])	Create pipeline summary plots.
<i>hifv_priorcals</i> ([vis, show_tec_maps, ...])	Runs gaincurves, opacities, requantizer gains, antenna position corrections, tec_maps, switched power.
<i>hifv_restoredata</i> ([vis, session, ...])	Restore flagged and calibration interferometry data from a pipeline run.
<i>hifv_restorepims</i> ([vis, reimaging_resources])	Restore VLASS SE per-image measurement set data, re-setting flagging, weights, and applying self-calibration.
<i>hifv_rqcal</i> ([vis, caltable])	Runs gencal in rq mode.
<i>hifv_selfcal</i> ([vis, refantignore, combine, ...])	Perform phase-only self-calibration, per scan row, on VLASS SE images.
<i>hifv_semiFinalBPdcals</i> ([vis, weakbp, ...])	Runs a second delay and bandpass calibration and applies to calibrators to setup for RFI flagging.
<i>hifv_solint</i> ([vis, limit_short_solint, ...])	Determines different solution intervals.
<i>hifv_statwt</i> ([vis, datacolumn, ...])	Compute statistical weights and write them to measurement set.

continues on next page

Table 1 – continued from previous page

<i>hifv_swpowcal</i> ([vis, caltable, spw])	Runs gencal in swpow mode.
<i>hifv_syspower</i> ([vis, clip_sp_template, ...])	Determine amount of gain compression affecting VLA data below Ku-band.
<i>hifv_targetflag</i> ([vis, intents])	Targetflag
<i>hifv_tecmaps</i> ([vis])	Base tecmaps task
<i>hifv_testBPdcal</i> s([vis, weakbp, ...])	Runs initial delay and bandpass calibration to setup for RFI flagging.
<i>hifv_vlasetjy</i> ([vis, field, intent, spw, ...])	Sets flux density scale and fills calibrator model to measurement set.
<i>hifv_vlassmasking</i> ([vis, vlass_ql_database, ...])	Create clean masks for VLASS Single Epoch (SE) images.





**4.1 pipeline.hifv.cli.hifv\_analyzestokescubes**

**4.2 pipeline.hifv.cli.hifv\_applycals**

**4.3 pipeline.hifv.cli.hifv\_checkflag**

**4.4 pipeline.hifv.cli.hifv\_circfeedpolcal**

**4.5 pipeline.hifv.cli.hifv\_exportdata**

**4.6 pipeline.hifv.cli.hifv\_exportvlassdata**

**4.7 pipeline.hifv.cli.hifv\_finalcals**

**4.8 pipeline.hifv.cli.hifv\_fixpointing**

**4.9 pipeline.hifv.cli.hifv\_flagcal**

**4.10 pipeline.hifv.cli.hifv\_flagdata**

**4.11 pipeline.hifv.cli.hifv\_flagtargetsdata**

**4.12 pipeline.hifv.cli.hifv\_fluxboot**

**4.13 pipeline.hifv.cli.hifv\_gaincurves**

**4.14 pipeline.hifv.cli.hifv\_hanning**

**4.15 pipeline.hifv.cli.hifv\_importdata**

**4.16 pipeline.hifv.cli.hifv\_mstransform**

**4.17 pipeline.hifv.cli.hifv\_opcal**

**4.18 pipeline.hifv.cli.hifv\_pbcor**

**4.19 pipeline.hifv.cli.hifv\_plotsummary**

**4.20 pipeline.hifv.cli.hifv\_priorcals**

**4.21 pipeline.hifv.cli.hifv\_restoredata**

**4.22 pipeline.hifv.cli.hifv\_restorepims**

**4.23 pipeline.hifv.cli.hifv\_rqcal**

**4.24 pipeline.hifv.cli.hifv\_selfcal**

**4.25 pipeline.hifv.cli.hifv\_solveFinalBPdcals**

**4.26 pipeline.hifv.cli.hifv\_solint**

## PIPELINE.HSD.CLI

### ALMA Single Dish Tasks

<i>hsd_applycal</i> ([vis, field, intent, spw, ...])	Apply the calibration(s) to the data.
<i>hsd_atmcor</i> ([atmtype, dtem_dh, h0, infiles, ...])	Apply offline ATM correction to the data.
<i>hsd_baseline</i> ([fitfunc, fitorder, ...])	Detect and validate spectral lines, subtract baseline by masking detected lines.
<i>hsd_blflag</i> ([iteration, edge, flag_tsys, ...])	Flag spectra based on predefined criteria of single dish pipeline.
<i>hsd_exportdata</i> ([pprfile, targetimages, ...])	Prepare single dish data for export.
<i>hsd_flagdata</i> ([vis, autocorr, shadow, scan, ...])	Do basic flagging of a list of MeasurementSets.
<i>hsd_imaging</i> ([mode, restfreq, infiles, ...])	Generate single dish images.
<i>hsd_importdata</i> ([vis, session, ...])	Imports data into the single dish pipeline.
<i>hsd_k2jycal</i> ([dbservice, endpoint, refile, ...])	Derive Kelvin to Jy calibration tables.
<i>hsd_restoredata</i> ([vis, session, ...])	Restore flagged and calibration single dish data from a pipeline run.
<i>hsd_skycal</i> ([calmode, fraction, noff, width, ...])	Calibrate data.
<i>hsd_tsysflag</i> ([vis, caltable, flag_nmedian, ...])	Flag deviant system temperature measurements.

### 5.1 pipeline.hsd.cli.hsd\_applycal

### 5.2 pipeline.hsd.cli.hsd\_atmcor

### 5.3 pipeline.hsd.cli.hsd\_baseline

### 5.4 pipeline.hsd.cli.hsd\_blflag

Created on 2013/06/23

@author: kana

**5.5 pipeline.hsd.cli.hsd\_exportdata**

**5.6 pipeline.hsd.cli.hsd\_flagdata**

**5.7 pipeline.hsd.cli.hsd\_imaging**

**5.8 pipeline.hsd.cli.hsd\_importdata**

**5.9 pipeline.hsd.cli.hsd\_k2jycal**

**5.10 pipeline.hsd.cli.hsd\_restoredata**

**5.11 pipeline.hsd.cli.hsd\_skycal**

**5.12 pipeline.hsd.cli.hsd\_tsysflag**

## PIPELINE.HSDN.CLI

Nobeyama Tasks

<i>hsdn_exportdata</i> ([pprfile, targetimages, ...])	Prepare single dish data for export.
<i>hsdn_importdata</i> ([vis, session, ...])	Imports Nobeyama data into the single dish pipeline.
<i>hsdn_restoredata</i> ([vis, caltable, reffile, ...])	Restore flagged and calibration single dish data from a pipeline run.

### 6.1 pipeline.hsdn.cli.hsdn\_exportdata

### 6.2 pipeline.hsdn.cli.hsdn\_importdata

### 6.3 pipeline.hsdn.cli.hsdn\_restoredata

## INDICES AND TABLES

- `genindex`
- `modindex`
- `search`

## PYTHON MODULE INDEX

### p

pipeline.h.cli, 2  
pipeline.h.cli.cli, 3  
pipeline.h.cli.h\_applycal, 3  
pipeline.h.cli.h\_export\_calstate, 3  
pipeline.h.cli.h\_exportdata, 3  
pipeline.h.cli.h\_import\_calstate, 3  
pipeline.h.cli.h\_importdata, 3  
pipeline.h.cli.h\_init, 3  
pipeline.h.cli.h\_mssplit, 3  
pipeline.h.cli.h\_restoredata, 3  
pipeline.h.cli.h\_resume, 3  
pipeline.h.cli.h\_save, 3  
pipeline.h.cli.h\_show\_calstate, 3  
pipeline.h.cli.h\_tsyscal, 3  
pipeline.h.cli.h\_weblog, 3  
pipeline.h.cli.utils, 3  
pipeline.hif.cli, 5  
pipeline.hif.cli.hif\_analyzealpha, 6  
pipeline.hif.cli.hif\_antpos, 6  
pipeline.hif.cli.hif\_applycal, 6  
pipeline.hif.cli.hif\_bandpass, 6  
pipeline.hif.cli.hif\_checkproductsizes, 6  
pipeline.hif.cli.hif\_correctedampflag, 6  
pipeline.hif.cli.hif\_editimlist, 6  
pipeline.hif.cli.hif\_findcont, 6  
pipeline.hif.cli.hif\_gaincal, 6  
pipeline.hif.cli.hif\_lowgainflag, 6  
pipeline.hif.cli.hif\_makecutoutimages, 6  
pipeline.hif.cli.hif\_makeimages, 6  
pipeline.hif.cli.hif\_makeimlist, 6  
pipeline.hif.cli.hif\_makermsimages, 6  
pipeline.hif.cli.hif\_mstransform, 6  
pipeline.hif.cli.hif\_rawflagchans, 6  
pipeline.hif.cli.hif\_refant, 6  
pipeline.hif.cli.hif\_selfcal, 6  
pipeline.hif.cli.hif\_setjy, 6  
pipeline.hif.cli.hif\_setmodels, 6  
pipeline.hif.cli.hif\_transformimagedata, 6  
pipeline.hif.cli.hif\_uvcontsub, 6  
pipeline.hifa.cli, 7  
pipeline.hifa.cli.hifa\_antpos, 10  
pipeline.hifa.cli.hifa\_bandpass, 10  
pipeline.hifa.cli.hifa\_bandpassflag, 10  
pipeline.hifa.cli.hifa\_bpsolint, 10  
pipeline.hifa.cli.hifa\_diffgaincal, 10  
pipeline.hifa.cli.hifa\_exportdata, 10  
pipeline.hifa.cli.hifa\_flagdata, 10  
pipeline.hifa.cli.hifa\_flagtargets, 10  
pipeline.hifa.cli.hifa\_fluxcalflag, 10  
pipeline.hifa.cli.hifa\_gaincalsnr, 10  
pipeline.hifa.cli.hifa\_gfluxscale, 10  
pipeline.hifa.cli.hifa\_gfluxscaleflag, 10  
pipeline.hifa.cli.hifa\_imageprecheck, 10  
pipeline.hifa.cli.hifa\_importdata, 10  
pipeline.hifa.cli.hifa\_lock\_refant, 10  
pipeline.hifa.cli.hifa\_polcal, 10  
pipeline.hifa.cli.hifa\_polcalflag, 10  
pipeline.hifa.cli.hifa\_renorm, 10  
pipeline.hifa.cli.hifa\_restoredata, 10  
pipeline.hifa.cli.hifa\_session\_refant, 10  
pipeline.hifa.cli.hifa\_spwphaseup, 10  
pipeline.hifa.cli.hifa\_targetflag, 10  
pipeline.hifa.cli.hifa\_timegaincal, 10  
pipeline.hifa.cli.hifa\_tsysflag, 10  
pipeline.hifa.cli.hifa\_tsysflagcontamination, 10  
pipeline.hifa.cli.hifa\_unlock\_refant, 10  
pipeline.hifa.cli.hifa\_wvrgcal, 10  
pipeline.hifa.cli.hifa\_wvrgcalflag, 10  
pipeline.hifv.cli, 11  
pipeline.hifv.cli.hifv\_analyzestokes, 14  
pipeline.hifv.cli.hifv\_applycals, 14  
pipeline.hifv.cli.hifv\_checkflag, 14  
pipeline.hifv.cli.hifv\_circfeedpolcal, 14  
pipeline.hifv.cli.hifv\_exportdata, 14  
pipeline.hifv.cli.hifv\_exportvlassdata, 14  
pipeline.hifv.cli.hifv\_finalcals, 14  
pipeline.hifv.cli.hifv\_fixpointing, 14  
pipeline.hifv.cli.hifv\_flagcal, 14  
pipeline.hifv.cli.hifv\_flagdata, 14  
pipeline.hifv.cli.hifv\_flagtargetsdata, 14  
pipeline.hifv.cli.hifv\_fluxboot, 14  
pipeline.hifv.cli.hifv\_gaincurves, 14

`pipeline.hifv.cli.hifv_hanning`, 14  
`pipeline.hifv.cli.hifv_importdata`, 14  
`pipeline.hifv.cli.hifv_mstransform`, 14  
`pipeline.hifv.cli.hifv_opcal`, 14  
`pipeline.hifv.cli.hifv_pbcors`, 14  
`pipeline.hifv.cli.hifv_plotsummary`, 14  
`pipeline.hifv.cli.hifv_priorcals`, 14  
`pipeline.hifv.cli.hifv_restoredata`, 14  
`pipeline.hifv.cli.hifv_restorepims`, 14  
`pipeline.hifv.cli.hifv_rqcal`, 14  
`pipeline.hifv.cli.hifv_selfcal`, 14  
`pipeline.hifv.cli.hifv_semiFinalBPdcals`, 14  
`pipeline.hifv.cli.hifv_solint`, 14  
`pipeline.hifv.cli.hifv_statwt`, 14  
`pipeline.hifv.cli.hifv_swpowcal`, 14  
`pipeline.hifv.cli.hifv_syspower`, 14  
`pipeline.hifv.cli.hifv_targetflag`, 14  
`pipeline.hifv.cli.hifv_tecmaps`, 14  
`pipeline.hifv.cli.hifv_testBPdcals`, 14  
`pipeline.hifv.cli.hifv_vlasetjy`, 14  
`pipeline.hifv.cli.hifv_vlassmasking`, 14  
`pipeline.hsd.cli`, 15  
`pipeline.hsd.cli.hsd_applycal`, 15  
`pipeline.hsd.cli.hsd_atmcor`, 15  
`pipeline.hsd.cli.hsd_baseline`, 15  
`pipeline.hsd.cli.hsd_blflag`, 15  
`pipeline.hsd.cli.hsd_exportdata`, 16  
`pipeline.hsd.cli.hsd_flagdata`, 16  
`pipeline.hsd.cli.hsd_imaging`, 16  
`pipeline.hsd.cli.hsd_importdata`, 16  
`pipeline.hsd.cli.hsd_k2jycal`, 16  
`pipeline.hsd.cli.hsd_restoredata`, 16  
`pipeline.hsd.cli.hsd_skycal`, 16  
`pipeline.hsd.cli.hsd_tsysflag`, 16  
`pipeline.hsdn.cli`, 17  
`pipeline.hsdn.cli.hsdn_exportdata`, 17  
`pipeline.hsdn.cli.hsdn_importdata`, 17  
`pipeline.hsdn.cli.hsdn_restoredata`, 17



## C

`cli_wrapper()` (in module `pipeline.h.cli.utils`), 4

## E

`execute_task()` (in module `pipeline.h.cli.utils`), 4

## G

`get_context()` (in module `pipeline.h.cli.utils`), 4

`get_heuristic()` (in module `pipeline.h.cli.utils`), 4

`get_ms()` (in module `pipeline.h.cli.utils`), 4

`get_output_dir()` (in module `pipeline.h.cli.utils`), 4

## M

module

- `pipeline.h.cli`, 2
- `pipeline.h.cli.cli`, 3
- `pipeline.h.cli.h_applycal`, 3
- `pipeline.h.cli.h_export_calstate`, 3
- `pipeline.h.cli.h_exportdata`, 3
- `pipeline.h.cli.h_import_calstate`, 3
- `pipeline.h.cli.h_importdata`, 3
- `pipeline.h.cli.h_init`, 3
- `pipeline.h.cli.h_mssplit`, 3
- `pipeline.h.cli.h_restoredata`, 3
- `pipeline.h.cli.h_resume`, 3
- `pipeline.h.cli.h_save`, 3
- `pipeline.h.cli.h_show_calstate`, 3
- `pipeline.h.cli.h_tsyscal`, 3
- `pipeline.h.cli.h_weblog`, 3
- `pipeline.h.cli.utils`, 3
- `pipeline.hif.cli`, 5
- `pipeline.hif.cli.hif_analyzealpha`, 6
- `pipeline.hif.cli.hif_antpos`, 6
- `pipeline.hif.cli.hif_applycal`, 6
- `pipeline.hif.cli.hif_bandpass`, 6
- `pipeline.hif.cli.hif_checkproductsizes`, 6
- `pipeline.hif.cli.hif_correctedampflag`, 6
- `pipeline.hif.cli.hif_editimlist`, 6
- `pipeline.hif.cli.hif_findcont`, 6
- `pipeline.hif.cli.hif_gaincal`, 6
- `pipeline.hif.cli.hif_lowgainflag`, 6

`pipeline.hif.cli.hif_makecutoutimages`, 6

`pipeline.hif.cli.hif_makeimages`, 6

`pipeline.hif.cli.hif_makeimlist`, 6

`pipeline.hif.cli.hif_makermssimages`, 6

`pipeline.hif.cli.hif_mstransform`, 6

`pipeline.hif.cli.hif_rawflagchans`, 6

`pipeline.hif.cli.hif_refant`, 6

`pipeline.hif.cli.hif_selfcal`, 6

`pipeline.hif.cli.hif_setjy`, 6

`pipeline.hif.cli.hif_setmodels`, 6

`pipeline.hif.cli.hif_transformimagedata`,  
6

`pipeline.hif.cli.hif_uvcontsub`, 6

`pipeline.hifa.cli`, 7

`pipeline.hifa.cli.hifa_antpos`, 10

`pipeline.hifa.cli.hifa_bandpass`, 10

`pipeline.hifa.cli.hifa_bandpassflag`, 10

`pipeline.hifa.cli.hifa_bpsolint`, 10

`pipeline.hifa.cli.hifa_diffgaincal`, 10

`pipeline.hifa.cli.hifa_exportdata`, 10

`pipeline.hifa.cli.hifa_flagdata`, 10

`pipeline.hifa.cli.hifa_flagtargets`, 10

`pipeline.hifa.cli.hifa_fluxcalflag`, 10

`pipeline.hifa.cli.hifa_gaincalsnr`, 10

`pipeline.hifa.cli.hifa_gfluxscale`, 10

`pipeline.hifa.cli.hifa_gfluxscaleflag`, 10

`pipeline.hifa.cli.hifa_imageprecheck`, 10

`pipeline.hifa.cli.hifa_importdata`, 10

`pipeline.hifa.cli.hifa_lock_refant`, 10

`pipeline.hifa.cli.hifa_polcal`, 10

`pipeline.hifa.cli.hifa_polcalflag`, 10

`pipeline.hifa.cli.hifa_renorm`, 10

`pipeline.hifa.cli.hifa_restoredata`, 10

`pipeline.hifa.cli.hifa_session_refant`, 10

`pipeline.hifa.cli.hifa_spwphaseup`, 10

`pipeline.hifa.cli.hifa_targetflag`, 10

`pipeline.hifa.cli.hifa_tsysgaincal`, 10

`pipeline.hifa.cli.hifa_tsysflag`, 10

`pipeline.hifa.cli.hifa_tsysflagcontamination`,  
10

`pipeline.hifa.cli.hifa_unlock_refant`, 10

`pipeline.hifa.cli.hifa_wvrscal`, 10

pipeline.hifa.cli.hifa\_wvrgcalflag, 10  
 pipeline.hifv.cli, 11  
 pipeline.hifv.cli.hifv\_analyzestokes, 14  
 pipeline.hifv.cli.hifv\_applycals, 14  
 pipeline.hifv.cli.hifv\_checkflag, 14  
 pipeline.hifv.cli.hifv\_circfeedpolcal, 14  
 pipeline.hifv.cli.hifv\_exportdata, 14  
 pipeline.hifv.cli.hifv\_exportvlassdata, 14  
 pipeline.hifv.cli.hifv\_finalcals, 14  
 pipeline.hifv.cli.hifv\_fixpointing, 14  
 pipeline.hifv.cli.hifv\_flagcal, 14  
 pipeline.hifv.cli.hifv\_flagdata, 14  
 pipeline.hifv.cli.hifv\_flagtargetdata, 14  
 pipeline.hifv.cli.hifv\_fluxboot, 14  
 pipeline.hifv.cli.hifv\_gaincurves, 14  
 pipeline.hifv.cli.hifv\_hanning, 14  
 pipeline.hifv.cli.hifv\_importdata, 14  
 pipeline.hifv.cli.hifv\_mstransform, 14  
 pipeline.hifv.cli.hifv\_opcal, 14  
 pipeline.hifv.cli.hifv\_pbc, 14  
 pipeline.hifv.cli.hifv\_plotsummary, 14  
 pipeline.hifv.cli.hifv\_priorcals, 14  
 pipeline.hifv.cli.hifv\_restoredata, 14  
 pipeline.hifv.cli.hifv\_restorepims, 14  
 pipeline.hifv.cli.hifv\_rqcal, 14  
 pipeline.hifv.cli.hifv\_selfcal, 14  
 pipeline.hifv.cli.hifv\_semiFinalBPdcal, 14  
 pipeline.hifv.cli.hifv\_solint, 14  
 pipeline.hifv.cli.hifv\_statwt, 14  
 pipeline.hifv.cli.hifv\_swpowcal, 14  
 pipeline.hifv.cli.hifv\_syspower, 14  
 pipeline.hifv.cli.hifv\_targetflag, 14  
 pipeline.hifv.cli.hifv\_tecmaps, 14  
 pipeline.hifv.cli.hifv\_testBPdcal, 14  
 pipeline.hifv.cli.hifv\_vlasetjy, 14  
 pipeline.hifv.cli.hifv\_vlassmasking, 14  
 pipeline.hsd.cli, 15  
 pipeline.hsd.cli.hsd\_applycal, 15  
 pipeline.hsd.cli.hsd\_atmcor, 15  
 pipeline.hsd.cli.hsd\_baseline, 15  
 pipeline.hsd.cli.hsd\_blflag, 15  
 pipeline.hsd.cli.hsd\_exportdata, 16  
 pipeline.hsd.cli.hsd\_flagdata, 16  
 pipeline.hsd.cli.hsd\_imaging, 16  
 pipeline.hsd.cli.hsd\_importdata, 16  
 pipeline.hsd.cli.hsd\_k2jycal, 16  
 pipeline.hsd.cli.hsd\_restoredata, 16  
 pipeline.hsd.cli.hsd\_skycal, 16  
 pipeline.hsd.cli.hsd\_tsysflag, 16  
 pipeline.hsdn.cli, 17

pipeline.hsdn.cli.hsdn\_exportdata, 17  
 pipeline.hsdn.cli.hsdn\_importdata, 17  
 pipeline.hsdn.cli.hsdn\_restoredata, 17

## P

pipeline.h.cli  
     module, 2  
 pipeline.h.cli.cli  
     module, 3  
 pipeline.h.cli.h\_applycal  
     module, 3  
 pipeline.h.cli.h\_export\_calstate  
     module, 3  
 pipeline.h.cli.h\_exportdata  
     module, 3  
 pipeline.h.cli.h\_import\_calstate  
     module, 3  
 pipeline.h.cli.h\_importdata  
     module, 3  
 pipeline.h.cli.h\_init  
     module, 3  
 pipeline.h.cli.h\_mssplit  
     module, 3  
 pipeline.h.cli.h\_restoredata  
     module, 3  
 pipeline.h.cli.h\_resume  
     module, 3  
 pipeline.h.cli.h\_save  
     module, 3  
 pipeline.h.cli.h\_show\_calstate  
     module, 3  
 pipeline.h.cli.h\_tsyscal  
     module, 3  
 pipeline.h.cli.h\_weblog  
     module, 3  
 pipeline.h.cli.utils  
     module, 3  
 pipeline.hif.cli  
     module, 5  
 pipeline.hif.cli.hif\_analyzealpha  
     module, 6  
 pipeline.hif.cli.hif\_antpos  
     module, 6  
 pipeline.hif.cli.hif\_applycal  
     module, 6  
 pipeline.hif.cli.hif\_bandpass  
     module, 6  
 pipeline.hif.cli.hif\_checkproductsizes  
     module, 6  
 pipeline.hif.cli.hif\_correctedampflag  
     module, 6  
 pipeline.hif.cli.hif\_editimlist  
     module, 6  
 pipeline.hif.cli.hif\_findcont

module, 6	module, 10
pipeline.hif.cli.hif_gaincal	pipeline.hifa.cli.hifa_imageprecheck
module, 6	module, 10
pipeline.hif.cli.hif_lowgainflag	pipeline.hifa.cli.hifa_importdata
module, 6	module, 10
pipeline.hif.cli.hif_makecutoutimages	pipeline.hifa.cli.hifa_lock_refant
module, 6	module, 10
pipeline.hif.cli.hif_makeimages	pipeline.hifa.cli.hifa_polcal
module, 6	module, 10
pipeline.hif.cli.hif_makeimlist	pipeline.hifa.cli.hifa_polcalflag
module, 6	module, 10
pipeline.hif.cli.hif_makermsimages	pipeline.hifa.cli.hifa_renorm
module, 6	module, 10
pipeline.hif.cli.hif_mstransform	pipeline.hifa.cli.hifa_restoredata
module, 6	module, 10
pipeline.hif.cli.hif_rawflagchans	pipeline.hifa.cli.hifa_session_refant
module, 6	module, 10
pipeline.hif.cli.hif_refant	pipeline.hifa.cli.hifa_spwphaseup
module, 6	module, 10
pipeline.hif.cli.hif_selfcal	pipeline.hifa.cli.hifa_targetflag
module, 6	module, 10
pipeline.hif.cli.hif_setjy	pipeline.hifa.cli.hifa_timegaincal
module, 6	module, 10
pipeline.hif.cli.hif_setmodels	pipeline.hifa.cli.hifa_tsysflag
module, 6	module, 10
pipeline.hif.cli.hif_transformimagedata	pipeline.hifa.cli.hifa_tsysflagcontamination
module, 6	module, 10
pipeline.hif.cli.hif_uvcontsub	pipeline.hifa.cli.hifa_unlock_refant
module, 6	module, 10
pipeline.hifa.cli	pipeline.hifa.cli.hifa_wvrgcal
module, 7	module, 10
pipeline.hifa.cli.hifa_antpos	pipeline.hifa.cli.hifa_wvrgcalflag
module, 10	module, 10
pipeline.hifa.cli.hifa_bandpass	pipeline.hifv.cli
module, 10	module, 11
pipeline.hifa.cli.hifa_bandpassflag	pipeline.hifv.cli.hifv_analyzestokes
module, 10	module, 14
pipeline.hifa.cli.hifa_bpsolint	pipeline.hifv.cli.hifv_applycals
module, 10	module, 14
pipeline.hifa.cli.hifa_diffgaincal	pipeline.hifv.cli.hifv_checkflag
module, 10	module, 14
pipeline.hifa.cli.hifa_exportdata	pipeline.hifv.cli.hifv_circfeedpolcal
module, 10	module, 14
pipeline.hifa.cli.hifa_flagdata	pipeline.hifv.cli.hifv_exportdata
module, 10	module, 14
pipeline.hifa.cli.hifa_flagtargets	pipeline.hifv.cli.hifv_exportvlassdata
module, 10	module, 14
pipeline.hifa.cli.hifa_fluxcalflag	pipeline.hifv.cli.hifv_finalcals
module, 10	module, 14
pipeline.hifa.cli.hifa_gaincalsnr	pipeline.hifv.cli.hifv_fixpointing
module, 10	module, 14
pipeline.hifa.cli.hifa_gfluxscale	pipeline.hifv.cli.hifv_flagcal
module, 10	module, 14
pipeline.hifa.cli.hifa_gfluxscaleflag	pipeline.hifv.cli.hifv_flagdata

module, 14  
 pipeline.hifv.cli.hifv\_flagtargetsdata  
   module, 14  
 pipeline.hifv.cli.hifv\_fluxboot  
   module, 14  
 pipeline.hifv.cli.hifv\_gaincurves  
   module, 14  
 pipeline.hifv.cli.hifv\_hanning  
   module, 14  
 pipeline.hifv.cli.hifv\_importdata  
   module, 14  
 pipeline.hifv.cli.hifv\_mstransform  
   module, 14  
 pipeline.hifv.cli.hifv\_opcal  
   module, 14  
 pipeline.hifv.cli.hifv\_pbcor  
   module, 14  
 pipeline.hifv.cli.hifv\_plotsummary  
   module, 14  
 pipeline.hifv.cli.hifv\_priorcals  
   module, 14  
 pipeline.hifv.cli.hifv\_restoredata  
   module, 14  
 pipeline.hifv.cli.hifv\_restorepims  
   module, 14  
 pipeline.hifv.cli.hifv\_rqcal  
   module, 14  
 pipeline.hifv.cli.hifv\_selfcal  
   module, 14  
 pipeline.hifv.cli.hifv\_semiFinalBPdcals  
   module, 14  
 pipeline.hifv.cli.hifv\_solint  
   module, 14  
 pipeline.hifv.cli.hifv\_statwt  
   module, 14  
 pipeline.hifv.cli.hifv\_swpowcal  
   module, 14  
 pipeline.hifv.cli.hifv\_syspower  
   module, 14  
 pipeline.hifv.cli.hifv\_targetflag  
   module, 14  
 pipeline.hifv.cli.hifv\_tecmaps  
   module, 14  
 pipeline.hifv.cli.hifv\_testBPdcals  
   module, 14  
 pipeline.hifv.cli.hifv\_vlasetjy  
   module, 14  
 pipeline.hifv.cli.hifv\_vlassmasking  
   module, 14  
 pipeline.hsd.cli  
   module, 15  
 pipeline.hsd.cli.hsd\_applycal  
   module, 15  
 pipeline.hsd.cli.hsd\_atmcor

module, 15  
 pipeline.hsd.cli.hsd\_baseline  
   module, 15  
 pipeline.hsd.cli.hsd\_blflag  
   module, 15  
 pipeline.hsd.cli.hsd\_exportdata  
   module, 16  
 pipeline.hsd.cli.hsd\_flagdata  
   module, 16  
 pipeline.hsd.cli.hsd\_imaging  
   module, 16  
 pipeline.hsd.cli.hsd\_importdata  
   module, 16  
 pipeline.hsd.cli.hsd\_k2jycal  
   module, 16  
 pipeline.hsd.cli.hsd\_restoredata  
   module, 16  
 pipeline.hsd.cli.hsd\_skycal  
   module, 16  
 pipeline.hsd.cli.hsd\_tsysflag  
   module, 16  
 pipeline.hsdn.cli  
   module, 17  
 pipeline.hsdn.cli.hsdn\_exportdata  
   module, 17  
 pipeline.hsdn.cli.hsdn\_importdata  
   module, 17  
 pipeline.hsdn.cli.hsdn\_restoredata  
   module, 17