

SAMPEX 6-second Intensities - Data Quality Flag Overview

Data quality flags are interpreted as follows:

- 1) if ALL quality flags for an instrument = 0 (good), then the data is in calibration.
- 2) if ANY quality flag = 1 (bad), then there are two possibilities:
 - a) data (counts or fluxes) set to FILL
 - b) data is included but is not in calibration
- 3) if several quality flags are set = 1, then the data will be set to FILL unless the only flags set are those that are associated with out-of calibration conditions.

The tables in the following appendices list the flags and conditions for setting the flags for each instrument for both flux and count rate data files.

Most of the flags are self explanatory; however, a general flag has been included called the "*significant event*" flag. This refers to periods when the instrument data is out of calibration for miscellaneous reasons not covered in the other flags, which refer mostly to routine events on the spacecraft. Examples of significant event flags are:

- spacecraft safehold operation (all instruments affected)
- times when the spacecraft attitude control system memory allocation in the spacecraft data system was filled (all instruments affected)
- times when the HILT closable cover was being cycled; times when the HILT isobutane system was being tested, or was turned off to conserve expendables (HILT affected), or after the HILT isobutane supply was exhausted. NOTE: the HILT isobutane supply was exhausted on November `15, 1995.
- times when the MAST or PET logic was commanded into special operating states which affected the calibration temporarily; or when the MAST/PET low voltage power supply was operating out of regulation (either MAST and/or PET affected)

LICA data quality flags

There are two categories of data quality flags for each instrument, those associated with 30-second averaged counts and fluxes and those associated with polar averaged counts and fluxes.

LICA 6 Second Average Data quality flags			
No.	Data quality flag Name	Flagging Conditions	Action taken if flag = 1
1	LICA_OFF	Set = 1 when LICA is off during any portion of the 30 second averaging interval; Set = 0 when LICA is on for the entire 30 second averaging interval.	Counts and fluxes are set to FILL.
2	LICA_IFC	Set = 1 when LICA IFC is active during any portion of the 30 second averaging interval; Set = 0 when LICA IFC is inactive for the entire 30 second averaging interval.	Counts and fluxes are set to FILL.
3	LICA_BHV	Set = 1 when LICA HV is out of calibration at any time during 30 second averaging interval as indicated in the file LEICA_BAD_HV.DAT; Set = 0 otherwise.	Counts and fluxes are set to FILL.
4	LICA_SSD_SAT	Set = 1 when $(SSD1+SSD1+SSD3+SSD4) > 1.0E4/\text{sec}$ at any time during 30 second averaging interval; Set = 0 otherwise.	Data have been included but are out of calibration.
5	LICA_MCP_SAT	Set = 1 when START MCP rate $> 1.0E4/\text{sec}$ at any time during 30 second averaging interval; Set = 0 otherwise.	Data have been included but are out of calibration.
6	LICA_SIG	Set = 1 when LICA is affected by significant event at any time during 30 second averaging interval; Set = 0 otherwise.	Counts and fluxes are set to FILL.

LICA Polar Cap Data quality flags			
No.	Data quality flag Name	Flagging Conditions	Action taken if flag = 1
1	POLE_SSD_SAT	Set = 1 if <i>any</i> 30 second averaged (SSD1+SSD1+SSD3+SSD4) count during polar pass interval has its associated saturation flag set; Set = 0 otherwise.	Data have been included but are out of calibration.
1	POLE_MCP_SAT	Set = 1 if <i>any</i> 30 second averaged START count during polar pass interval has its associated saturation flag set; Set = 0 otherwise.	Data have been included but are out of calibration.
3	LICA_PARTIAL	Set = 1 if <i>any</i> of LICA_OFF, LICA_IFC, LICA_SIG or LICA_BHV flags were set during part, but not all of the polar pass accumulation period. Set = 0 otherwise.	Data are in calibration, but some data were excluded.
4	LICA_BAD	Set = 1 if <i>any</i> combination of LICA_OFF, LICA_IFC, LICA_SIG or LICA_BHV flags being set caused no accumulation of data during the entire polar pass interval. Set = 0 otherwise.	Counts and fluxes are set to FILL.

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HILT data quality flags

There are two categories of data quality flags for each instrument, those associated with 6-second averaged counts and fluxes and those associated with polar averaged counts and fluxes.

HILT 6 Second Average Data quality flags			
No.	Data quality flag Name	Flagging Conditions	Action taken if flag = 1
1	HILT_OFF	Set = 1 when HILT is off at any time during 30 second averaging interval. Set = 0 when HILT is on for the entire 30 second averaging interval.	Counts and fluxes are set to FILL.
1	HILT_IFC	Set = 1 when HILT IFC is active at any time during 30 second averaging interval, Set = 0 when HILT IFC is inactive for the entire 30 second averaging interval.	Counts and fluxes are set to FILL.
3	HILT_HE1_SAT	Set = 1 when HILT HE1 rate deadtime is >90% or if background or calibration uncertainties are large; Set = 0 otherwise.	Data have been included but are out of calibration.
4	HILT_HE2_SAT	Set = 1 when HILT HE2 rate deadtime is >90% or if background or calibration uncertainties are large; Set = 0 otherwise.	Data have been included but are out of calibration.
5	HILT_HZ1_SAT	Set = 1 when HILT HZ1 rate deadtime is >90% or if background or calibration uncertainties are large; Set = 0 otherwise.	Data have been included but are out of calibration.
6	HILT_HZ2_SAT	Set = 1 when HILT HZ2 rate deadtime is >90% or if background or calibration uncertainties are large; Set = 0 otherwise.	Data have been included but are out of calibration.

7	HILT_SIG	Set = 1 when HILT is affected by significant event at any time during 30 second averaging interval; Set 0 otherwise.	Counts and fluxes are set to FILL.
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HILT Polar Cap Data quality flags			
No.	Data quality flag Name	Flagging Conditions	Action taken if flag = 1
1	POLE_HE1_SAT	Set = 1 if <i>any</i> 30 second averaged HE1 count during polar pass interval has its associated saturation flag set; Set = 0 otherwise.	Data have been included but are out of calibration.
1	POLE_HE1_SAT	Set = 1 if <i>any</i> 30 second averaged HE1 count during polar pass interval has its associated saturation flag set; Set = 0 otherwise.	Data have been included but are out of calibration.
3	POLE_HZ1_SAT	Set = 1 if <i>any</i> 30 second averaged HZ1 count during polar pass interval has its associated saturation flag set; Set = 0 otherwise.	Data have been included but are out of calibration.
4	POLE_HZ1_SAT	Set = 1 if <i>any</i> 30 second averaged HZ1 count during polar pass interval has its associated saturation flag set; Set = 0 otherwise.	Data have been included but are out of calibration.
5	HILT_PARTIAL	Set = 1 if <i>any</i> of HILT_OFF, HILT_IFC or HILT_SIG flags were set during part, but not all of the polar pass accumulation period. Set = 0 otherwise.	Data are in calibration, but some data were excluded.
6	HILT_BAD	Set = 1 if <i>any</i> combination of HILT_OFF, HILT_IFC or HILT_SIG flags being set caused no accumulation of data during the entire polar pass interval. Set = 0 otherwise.	Counts and fluxes are set to FILL.

MAST data quality flags

There are two categories of data quality flags for each instrument, those associated with 6-second averaged counts and fluxes and those associated with polar averaged counts and fluxes.

MAST 6 Second Average Data quality flags			
No.	Data quality flag Name	Flagging Conditions	Action taken if flag = 1
1	MAST_OFF	Set = 1 if is off during any portion of the 30 second averaging interval; Set = 0 when is on for the entire 30 second averaging interval.	Counts and fluxes are set to FILL.
1	MAST_IFC	Set = 1 if IFC is active during any portion of the 30 second averaging interval; Set = 0 when IFC is inactive for the entire 30 second averaging interval.	Counts and fluxes are set to FILL.
3	MAST_SIG	Set = 1 when is affected by significant event at any time during 30 second averaging interval; Set = 0 otherwise.	Counts and fluxes are set to FILL.
4	MAST_ADC_SAT	Set = 1 when ADCOR rate > 1.0E4/sec at any time during 30 second averaging interval; Set = 0 otherwise.	Data have been included but are out of calibration.

MAST Polar Cap Data quality flags			
No.	Data quality flag Name	Flagging Conditions	Action taken if flag = 1
1	POLE_ADC_SAT	Set = 1 if <i>any</i> 30 second averaged ADCOR count during polar pass interval has its associated saturation flag set; Set = 0 otherwise.	Data have been included but are out of calibration.
1	MAST_PARTIAL	Set = 1 if <i>any</i> of MAST_OFF, MAST_IFC, or MAST_SIG flags were set during part, but not all of the polar pass accumulation period. Set = 0 otherwise.	Data are in calibration, but some data were excluded.
3	MAST_BAD	Set = 1 if <i>any</i> combination of MAST_OFF, MAST_IFC or MAST_SIG flags being set caused no accumulation of data during the entire polar pass interval. Set = 0 otherwise.	Counts and fluxes are set to FILL.

PET data quality flags

There are two categories of data quality flags for each instrument, those associated with 6-second averaged counts and fluxes and those associated with polar averaged counts and fluxes.

PET 6 Second Average Data quality flags			
No.	Data quality flag Name	Flagging Conditions	Action taken if flag = 1
1	PET_OFF	Set = 1 if PET is off during any portion of the 30 second averaging interval; Set = 0 when PET is on for the entire 30 second averaging interval.	Counts and fluxes are set to FILL.
1	PET_IFC	Set = 1 if PET IFC is active during any portion of the 30 second averaging interval; Set = 0 when PET IFC is inactive for the entire 30 second averaging interval.	Counts and fluxes are set to FILL.
3	PET_SIG	Set = 1 when PET is affected by significant event at any time during the 30 second averaging interval; Set = 0 otherwise.	Counts and fluxes are set to FILL.
4	PET_P1HI_SAT	Set = 1 when PET P1HI rate > 1.0E4/sec at any time during the 30 second averaging interval; Set = 0 otherwise.	Data have been included but are out of calibration.

PET Polar Cap Data quality flags			
No.	Data quality flag Name	Flagging Conditions	Action taken if flag = 1
1	POLE_P1HI_SAT	Set = 1 if <i>any</i> 30 second averaged P1HI count during polar pass interval has its associated saturation flag set; Set = 0 otherwise.	Data have been included but are out of calibration.
1	PET_PARTIAL	Set = 1 if <i>any</i> of PET_OFF, PET_IFC, or PET_SIG flags were set during part, but not all of the polar pass accumulation period. Set = 0 otherwise.	Data are in calibration, but some data were excluded.
3	PET_BAD	Set = 1 if <i>any</i> combination of PET_OFF, PET_IFC or PET_SIG flags being set caused no accumulation of data during the entire polar pass interval. Set = 0 otherwise.	Counts and fluxes are set to FILL.