



# Operation Change Request

OCR No: 003

Issue: A

Title: IN-FLIGHT MEASUREMENT OF CHANNEL 8 NON-LINEARITY.

Description of Request: Additional measurement of the non-linearity (XNL) of the channel 8 detector is required for accurate calibration. XNL will be measured using the detectors' dark signal, so no use of the WLS is made. Measurement will require the use of 60 (sixty) dark current states, similar to the 'standard' 5 dark states, only different in PET. Ten to fourteen orbits (one day) of these measurements are required, preferably close after decontamination. This measurement will claim all available states to ensure accuracy. Measurements should be executed in April 2003 after the execution of the missing SODAP measurements.

Originator: Q.L. Kleipool / SRON

Date of Issue: 26 Feb 2003

Signature:

Assessment of SSAG (necessary for requests by scientists):

The in-flight characterisation of the non-linearity in channel 8 was discussed at last SSAG meeting and the implementation of dedicated measurements were recommended. When executing the measurement, any interference with validation campaigns has to be excluded.

SSAG:

H. Bovensmann

Date:

4.3.2003

Signature:

Classification of OCR: D

OCR Analysis (incl. Implementation Option):

The measurements require to define 60 new states. These states are identical, from a scanner control point of view, to the currently existing dark current states. The PETs and integration times are set such the times provided with the OCR are obtained. State IDs for the 60 new states are all IDs except the presently existing 5 dcc states, dcchm, sos01, sos02, adc01 and limb01. This ensures that t/l 63 can run in each orbit and, if required, also a Sun occultation t/l. The total number of CTI tables to re-configure the instrument still has to be elaborated once the implementation option is accepted. It is expected that the number is so high that one orbit has to be reserved for CTI uploads.

The 60 non-linearity states will be embedded in two non-linearity timelines (set 09, t/l 44 and 53) as described in the request. The total duration of both timelines is estimated to be 1039 sec. Thus they fit into the eclipse time window. The non-linearity timelines will start about 200 sec after eclipse start and end 1039 sec later.

A realistic estimated implementation date is early May (if state and timeline definition could proceed quickly, an on-board upload end of April would also be possible).

Note:

- a) Since this OCR represents a massive deviation from the nominal operation environment, we still have to discuss with ESOC/ENVISAT that the approach described here is feasible.
- b) The high number of MCMDs to be issued in CTI upload increases the risk for the MCMD check error to occur again.

SOST: M. Gottwald

(ESA, Industry if necessary)

Date: 17/03/03

Signature: e-mail 17/03/03

Approval of Proposed Implementation:

Originator Approval:

Q. Kleipool

Date: 2003-03-18

Signature: e-mail 2003-03-18

SSAG Approval:

H. Bovensmann

Date: 2003-03-17

Signature: e-mail 2003-03-17

Decision / Approval:

The OCR shall be implemented as described in the OCR Analysis.

The following comments (from the e-mail, H. Bovensmann, 2003-03-17) shall be considered:

Nevertheless it is very important that the state and timeline settings will be very carefully checked by SOST and SRON before on-board implementation. In addition it has to be checked if external stray-light can be a problem and the orbit phase for execution has to be optimised.

DLR Approval:

Ch. Chlebek

(if necessary NIVR, SPEC)

Date:2003-03-18

Signature: e-mail 2003-03-18

Implementation by SOST :

- States: onboard configuration (60 new states of dark current type) of parameter tables (CTI\_seq\_nonlin) generated and CTI-files (244 off) transferred to FOCC for execution of measurements in orbits 6091 to 6109 (April 30<sup>th</sup>/May 1<sup>st</sup>).
- Timelines: two eclipse timelines in new set 09 defined (t/l 44 & 53) and transferred to FOCC for execution in orbits 6091 to 6109. Schedule alternates between both timelines in consecutive orbits.

Each orbit between 6091 and 6109 executes either timelines 63 & 44 or 63 & 53. No other measurements are planned in these orbits.

SOST: E.Krieg  
M.Gottwald

Date: 2003-04-04

Signature: e-mail 2003-04-04