BetaTHERM Sensors
TEMPERATURE SOLUTIONS

ESA/ SCC QUALIFICATION REPORT FOR

NTC THERMISTOR PART TYPES:

ESA/SCC 4006/013 & 4006/014

APPENDIX W

MRB Decisions / Actions
NCCS. 2IEBET101

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To: Mr. John Howley, NETC, Enterprise Ireland.

CC: Ian Pimm, ESA Representative, ESTEC, The Netherlands.
Pat Lyons, Design Engineer, Betatherm Ireland , Ltd.

From: Mr Jude Neylon, Chief Inspector, Betatherm Ireland. Ltd.

Re: **MRB Decisions /Actions – NCCS 2IEBET101**

Date: 20 th November 2001

MRB Decisions/Actions- NCCS 2IEBET101

Background

Following from the analysis of the causes of the Non Conformance –NCCS 2IEBET 101, the following Corrective Actions were agreed and will be implemented into the Process Identification Document.

Corrective Action:

It has been agreed to test the stability of each batch of material 7 by means of Burn In. A batch of Glass Bead Thermistors are to be subjected to Burn In , 125C / 2mW for 168 Hours.

A minimum of 40 pieces to be calibrated before and after the Burn In the drift to be calculated.

A drift limit of Mean + 3 Standard Deviation is considered to be the the cut off limit. From the best of the trial lots Mean + 3 Standard Deviation is 0.15 %

Material Lots with a drift average greater than 0.15% are deemed to be reject and are not used for Hi-Rel production. This is because it is likely that lots with drift greater than 0.15 % at Burn In will have drift in excess 0f 0.20 % after 1,000 Hour Life Test.

A new Manufacturing Procedure has been developed to control this task and is titled

MFG 11-90-00 "Screening & Stability check of Hi –Rel Glass Beads

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This procedure applies only to material 7.

Summary of proposed MFG 11-90-00.

Manufacture a 50 glass beads from new material mil lot.

Calibrate 40 parts at 25 C.
Burn In 40 parts @ 125 C/ 2m/W for 168 Hours.

Calibrate 40 parts at 25 C after Burn In.

Calculate % drift.

Accept or reject lot based on criteria of average drift of 0.15 %

Background to Accept / Reject Criteria:

Following from the analysis of the Material 7 Life Test, 3 different lots of material 7 parts were burnt in for 2,000 hours. The data from these 3 lots and the Qualification Lot was used to determine the nature of the correlation between Drift after 168 Hour Burn In and Drift after 1,000 Hour and 2,000 Hour Life Test.

The data can be summarised as follows.

Lot No.	% Drift after 168 Hours	% Drift after 1,000 Hours	% Drift after 2,000 Hours	Sample Size
Qual Lot	0.15	0.62	0.81	20
Lot B	0.24	0.86	0.97	40
Lot C	0.03	0.06	0.08	40
Lot E	0.15	0.63	0.70	40

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Based on the above data anf the trial lots the GO / NO GO limit of 0.15% was rcached.

PID Modification:

Following from this change to the Manufacturing Process, the Process Identification Document (P.I.D.) is changed in the following sections.

MFG 11-90-00	New MFG for Process Check on Drift / Stability.
P.I.D. Section 4.4	Stability Check to be added after **" (i) Encapsulation "**
P.I.D. Section 5.1	Add MFG 11-90-00 to List of Specifications.
Flow Chart III	Add MFG 11-90-00