Tests Results for HAWAII SCIENCE Device

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- Tests performed in August 1998 just before RGO close down

- Performed in test cryostat using new fanout board, new differential preamp and test cryostat

- Fanout board LED used for testing

- Tests performed with following voltage values:-

VRESET = 0.95V
Voffset = 3.30V
ICTL = 2.50 V

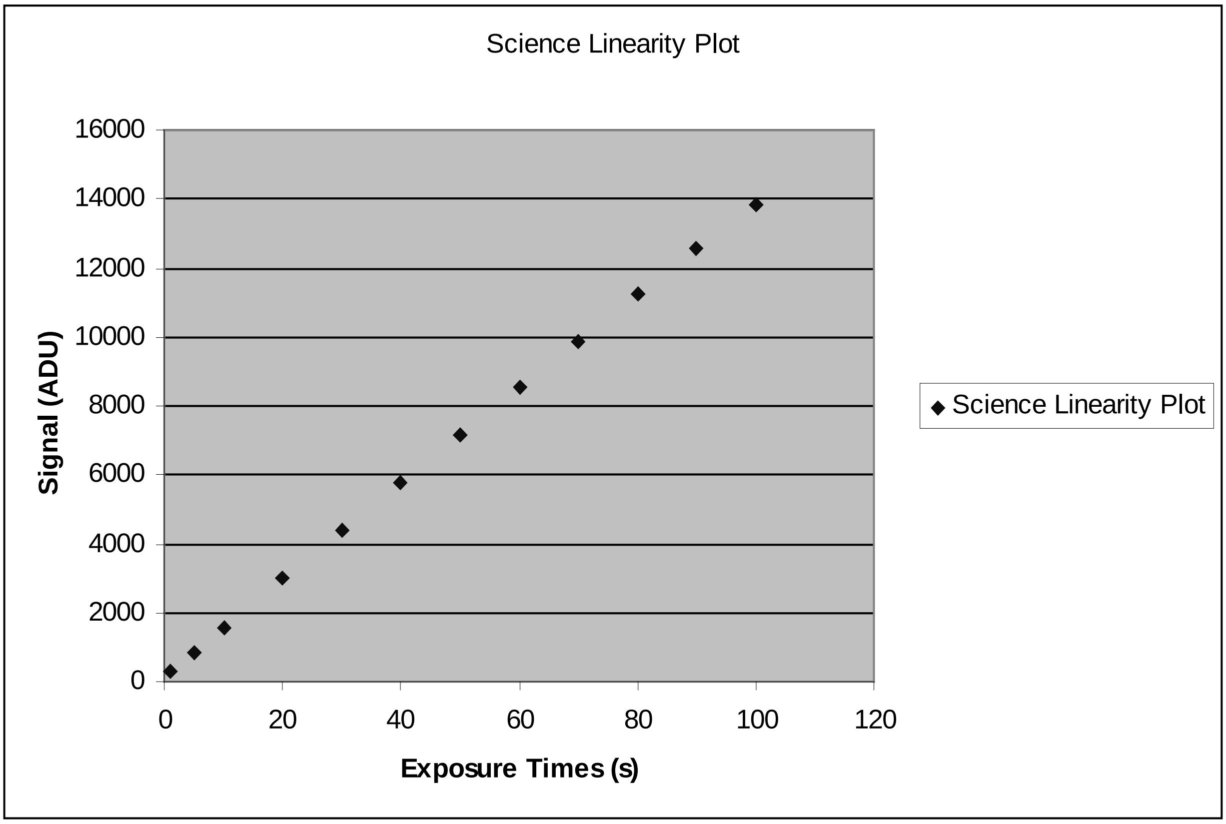
- All other voltages as per Rockwell data sheet.

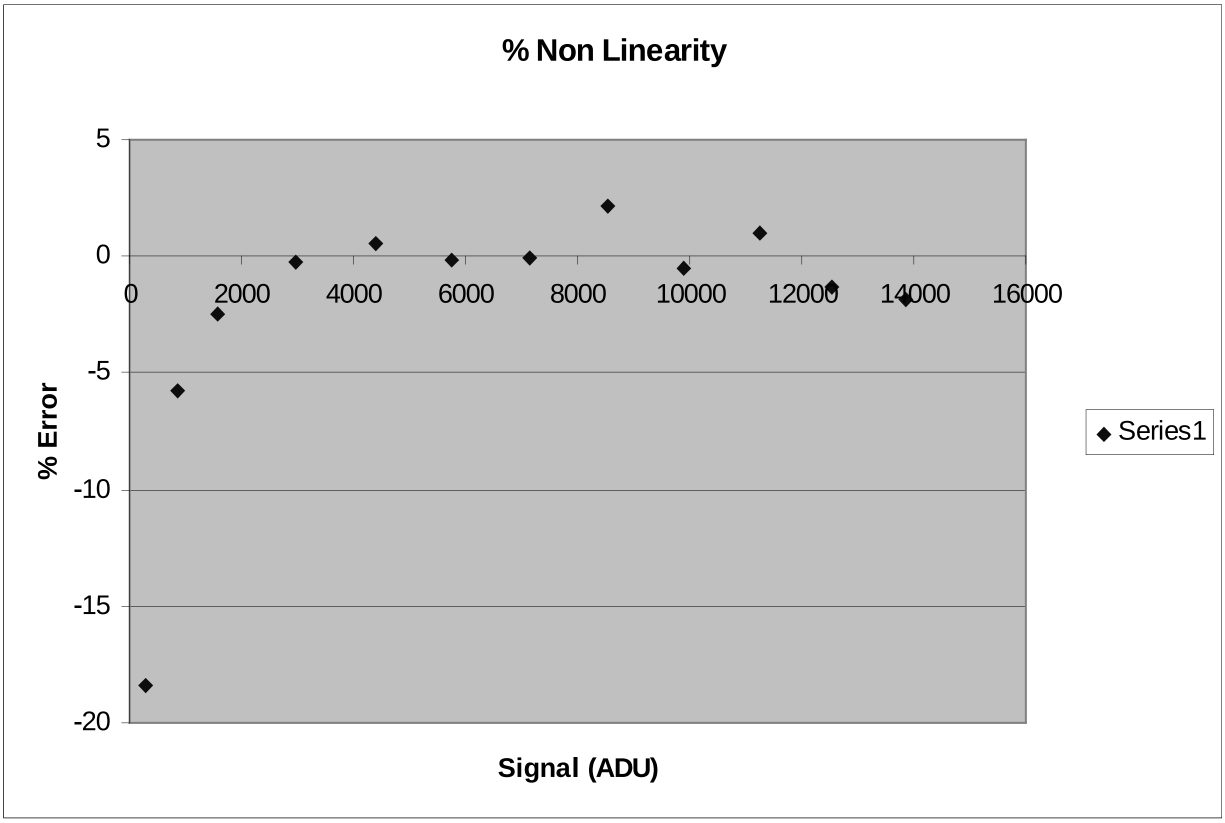
- Tests performed using Quadrant 1 of detector – (bottom left looking at following images)

- All results here pertain to that but all other outputs have been tested briefly to show that they have similar gains etc.

- Dark current has been measured at approx <5e/s but this has been hard to achieve with the test cryostat – major baffling will be required for the INGRID cryostat

HAWAII SCIENCE Array – Linearity Plots
RGO fanout board, new preamp cct, test cryostat
Used fanout board LED for testing

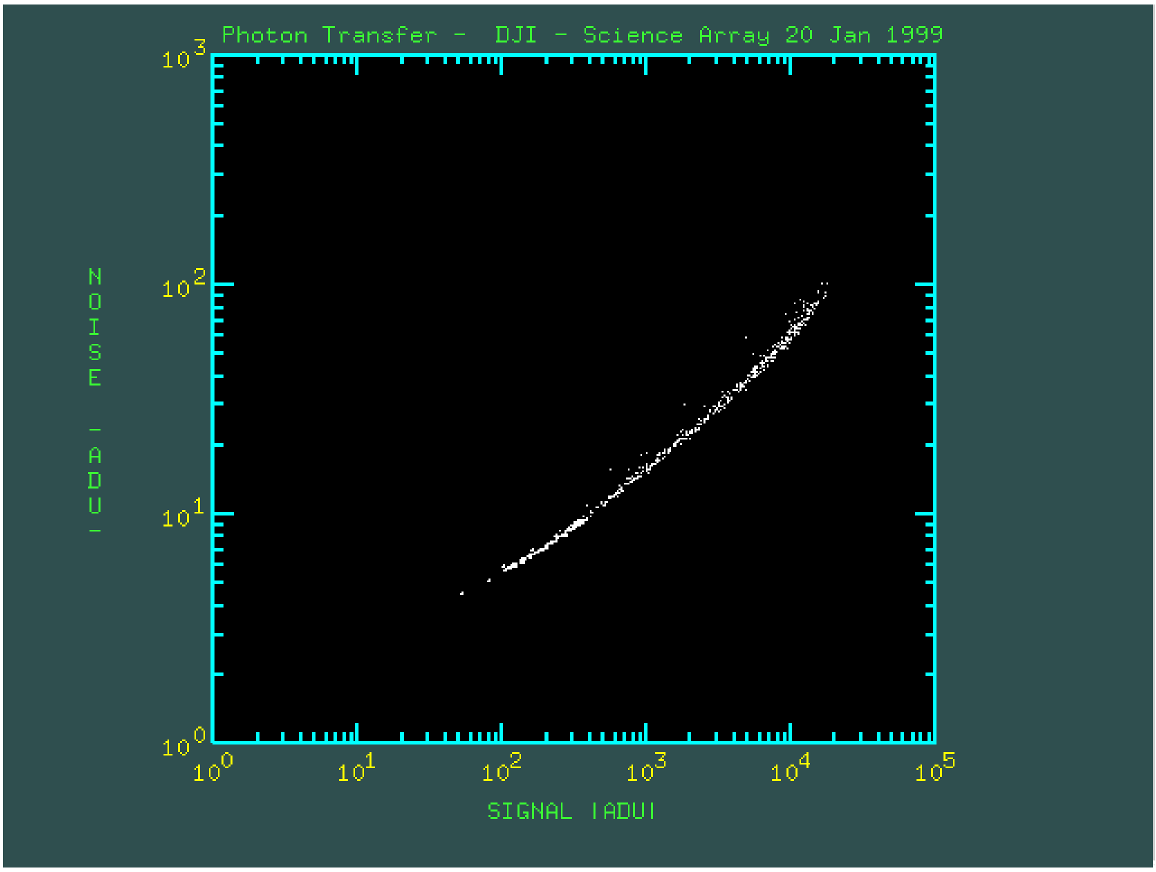




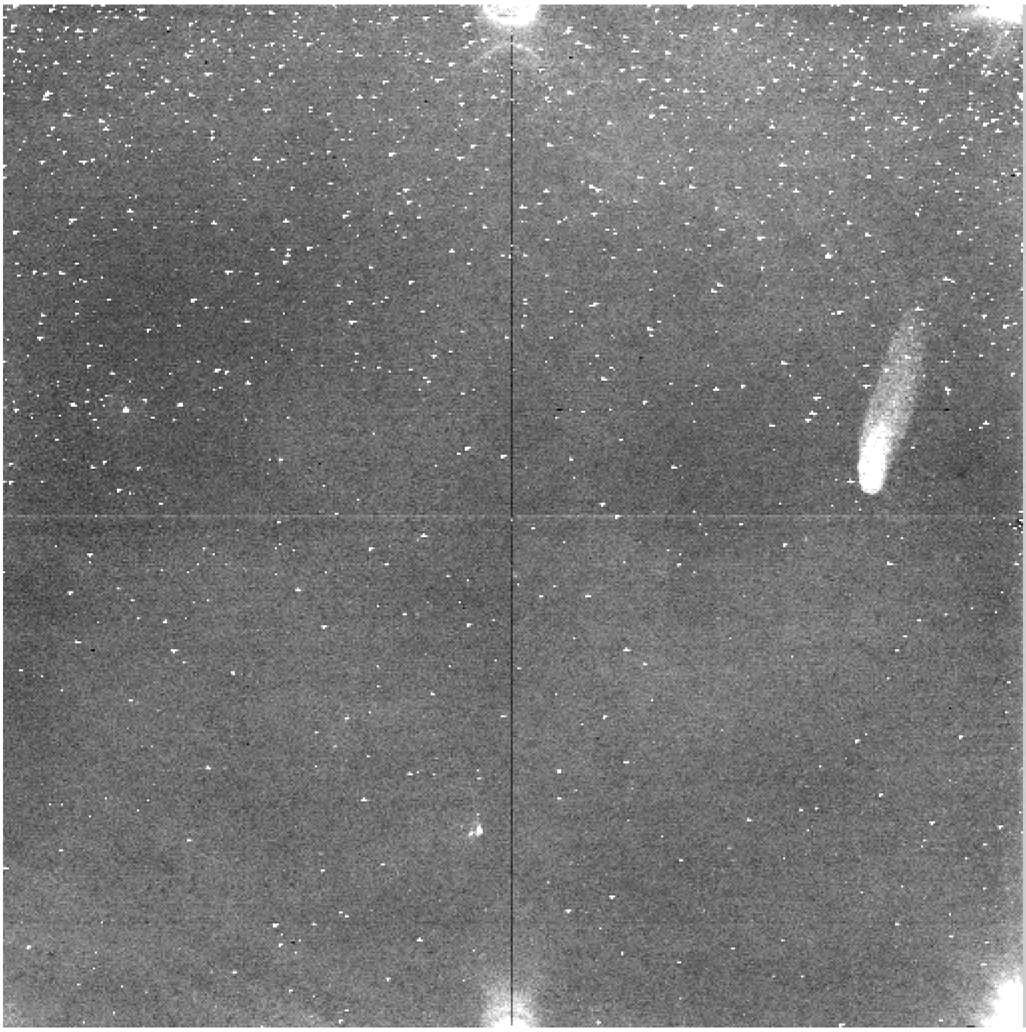
Photon Transfer Curve for HAWAII SCIENCE array
RGO fanout board, new preamp, test cryostat – used internal LED for plots

Gain = 3.5 e/ADU (+/-20%)

Noise = 10e for single reset/read/read bias frame
calculated by doing stddev(image) then dividing the by sqrt(2) then multiplying by gain
It is probably over-estimated as there is some dark current noise in there as well!!!

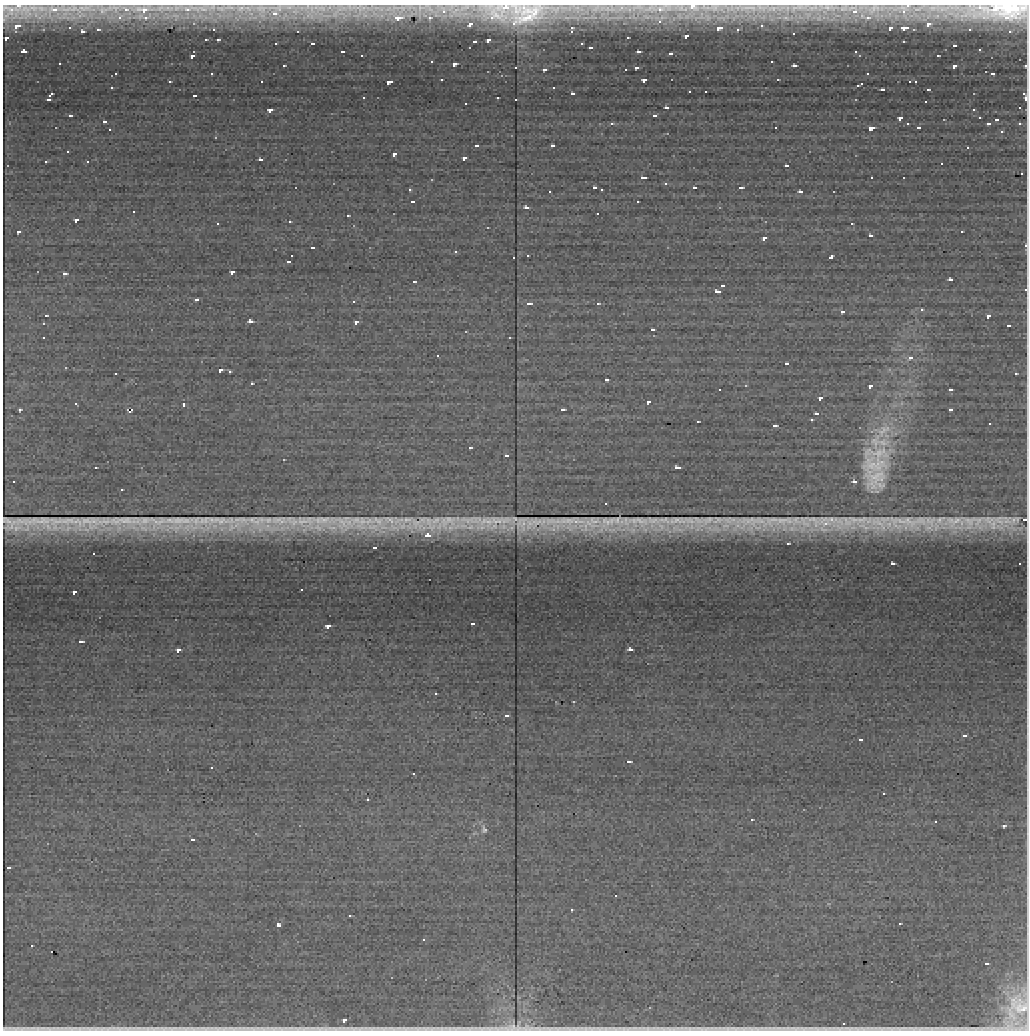


<u>MNDR 4 100 s DARK frame HAWAII SCIENCE array</u>
<u>Test cryostat, RGO fanout board, new preamp board</u>



MNDR 1 HAWAII SCIENCE Device BIAS Image
Test Cryostat, RGO fanout board, new preamp design

- Some low level pickup seen
- “Finger mark” on array – as delivered from Rockwell
- Low level FET glow seen



MNDR 7 HAWAII SCIENCE Array Bias Image
Test Cryostat, RGO fanout board, RGO preamp board

- Can clearly see the glow from the on board FET source followers in each quadrant even though these have been bypassed and both their DRAIN and SOURCES are directly connected to ground.

- Can also see "shading effect" up the bias image quadrants – much reduced level since new clocking scheme running.
- Can also see some coupling between quadrants – "negative level effect with tail"