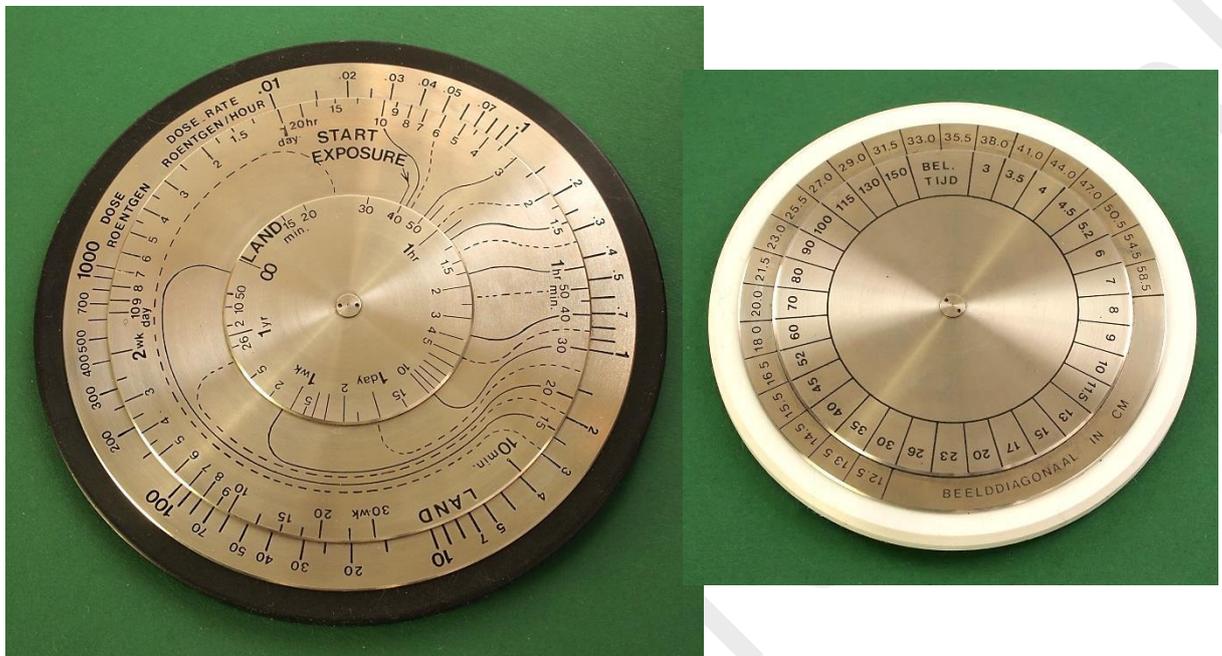


## Nr. xx: Tribute show prototypes

Owner: David Rance

Pictures<sup>1</sup>:



### Purpose of the slide rules:

These calculators, professionally made to the highest standards, were “specially commissioned” by a Dutch engineer, *Dr. Ir. Ing. J.W. van Beek*, in the 1970s. He had them made so that they could become lasting tributes to the much-loved originals he had personally used.

### Dimensions:

- **Bases:** Ø 5½ inch (black) and Ø 4¼ inch (white)
- **Rules:** Ø 5 inch (left) and Ø 3¾ inch (right)
- **Cursors:** none – not needed

### Material:

- **Bases:** solid coloured PVC mounting disc
- **Rules:** stainless steel discs photographically etched in black
- **Finishing:** bottom of bases covered with non-slip green baize  
etched stainless steel finely polished

### Layout and scales:

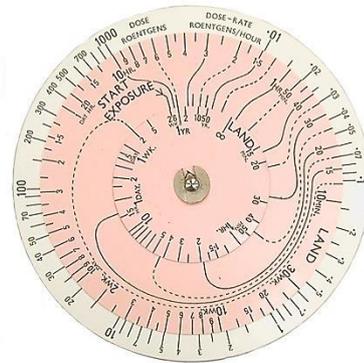
- **Radiation Dosage Calculator for Contamination Over Land (black base):**
  - Single non-standard scale on each of the three discs (only the intermediate and inner discs rotate)
  - Fixed outer (0.01 - 1000) scale for the exposure rate in roentgens/hour
  - Rotating intermediate (10 minutes - 30 weeks) scale is for reading off past or future dosage rates (in roentgens/hour) at the time of monitoring
  - Rotating inner (0 minutes – 50 years) scale for setting the start of the exposure time for a given monitoring reading and consequently reading off the total dosage of radiation exposure (in roentgens/hour)

<sup>1</sup> Courtesy of the Otto van Poelje “photo lab”.

- **Dark-Room Exposure Time Calculator (white base):**
  - Single non-standard scale on each disc (only the inner disc rotates)
  - Fixed outer (12.5 - 58.5) scale for the diagonal length in cm of photographic paper
  - Rotating inner (3 - 150) scale for the exposure time in seconds

**Designer of the Radiation Dosage Calculator for Contamination Over Land:**

The original design for the calculator was by American William Orr in 1951. Given its subject matter many makers were commissioned by national governments to make it under licence. For example, the stainless steel tribute version is identical (size, use of fonts, scales and scale annotations, etc) with the plastic Blundell Rules Ltd (BRL) *Radiac<sup>2</sup> Calculator No 1* made in the UK in the late 1950s. However, unlike the BRL version, the stainless steel intermediate and inner discs are not also reversible for calculating radiation exposure from nuclear fission products detonated over sea.



**Designer of the Dark-Room Exposure Time Calculator:**

The design cannot be attributed to an individual. The original version was “home-grown” from dark room developing notes and experiences. Usually working out the optimum exposure time for each different enlargement size from the same negative was largely done by “trial-and-error”. This was irksome and potentially costly. The calculator was a breakthrough. Now, once a successful print was made (e.g. a contact print) and the noted exposure time lined up with the size of photographic paper used, the calculator showed the optimum exposure times for that negative for other (larger or smaller) photographic paper sizes.

**Manufacturer:**

The *Technical University of Delft (TUD)*, The Netherlands has a world-wide academic reputation. In the 1970s the TUD had, as part of the Mechanical Engineering faculty, a central workshop specialising in making prototypes for various research or academic needs. The rich spectrum of skills available from the workshop included instrument makers allied to the Precision Engineering section. However, all the skilled professionals working in the workshop were university employees rather than students. At this time Van Beek was an associate of the TUD. As a favour to him the two prototypes were made in-house. Production of the stainless steel discs and the main construction work was done by central workshop instrument makers. On both calculators the stainless steel discs rotate almost frictionless or as if they were: “floating on air”. The high-quality photographic etching work was undertaken by an instrument maker specialising in this technique: *Frans van Rongen*.

**Remarks:**

The Radiation Dosage Calculator prototype is a tribute to Van Beek’s work as an NBC<sup>3</sup> officer in the Dutch army during military service. The second Exposure Time prototype is a tribute to the time when Van Beek was a keen certified portrait photographer. In November 2011, after hearing about my collection, Van Beek decided the best way his tribute show prototypes could continue to be appreciated was if they became part of my collection. I am now the lucky “custodian” of these two magnificent and unique calculators.

<sup>2</sup> Term RADIAC is derived from: Radio-Activity Detection, Identification and Computation.

<sup>3</sup> Abbreviation NBC stood for: Nuclear, Biological and Chemical warfare.