

# Engineering in Antarctica

## Remote Digital Camera

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Regular photographs at remote unmanned sites in Antarctica are beneficial to many scientific and operational investigations. In an uninhabited region such as Antarctica, instruments are often required to operate without manual intervention for long periods. Designed by engineers at the British Antarctic Survey, the remote time-lapse digital photograph recording system shown here was constructed for two immediate applications but the same or similar systems could be used in many places in the warmer areas of the Antarctic.

Internal environmental control enables the camera to operate down to  $-35^{\circ}\text{C}$  and to continue operating through a three month period without solar or wind energy. The power source for the system consists of solar panels, a wind generator and batteries acting as a reservoir. Time stamped colour images of  $1600 \times 1280$  pixels on a 2.24 megapixel camera are taken and compressed to JPEG images for storage onto a low temperature memory card. Current capacities of available memory cards allow five good resolution images to be taken per day for up to two years. Automatic exposure allows pictures to be taken down to very low light levels.

Annually, the inner camera box is replaced and the older unit is returned to the design engineer for servicing and data retrieval.

By reprogramming the look up table on the memory card during servicing, the camera can take pictures at any hour. Photograph quantity and timing is specified for each month of the year.

One camera has been sited at Signy base to study sea ice formations and coverage. This has replaced the previous sea ice camera which required expensive traditional chemical processing of the photographic black and white film.

The second system has been installed much further south at Mars Oasis to record snow depth.



New camera (nearest) alongside old at Signy. Rock filled gabions provide anchorage for the structures.



System at Mars Oasis. Wind generator, solar panels, camera and battery boxes can all be seen.