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CALIBRATED CORE-IMAGE DIGITISATION, A PREREQUISITE TO MAKE REAL QUANTITATIVE USE OF CORESLAB IMAGES

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In the early nineties digital image scanning technology matured. The Petroleum Engineering industry took this technique on board, and the prime use thus far has been archiving to replace conventional coreslab photography in white and UV light. New developments in Image Analysis enabled the quantitative use of coreslab images, whereby the calibration of images is essential. Shell International Exploration and Production Rijswijk developed a set-up to digitise and calibrate coreslabs or coreslab photographs. Use is made of the infra-structure currently present at many sites, the standard 35 mm camera is simply replaced by a digital one. The calibration comprises geometric and colour balance normalisation, UV/white light image matching, removal of artefacts like cracks, plug holes and rubbled zones, and the concatenation of core sections into a continuous core 'image' log. The 'image' log is generated in a format ready for loading in third party image interpretation packages for depth matching to wireline logs, for interpretation and for quantitative analysis of for instance thin sand/shale sequences and turbitides, which because of their laminated nature are a challenge to quantitative reservoir evaluation. The availability of this system allows for the incorporation of calibrated, high resolution image information (bed-boundaries, net-pay, dip, shale properties) into formation evaluation practices to arrive at more accurate estimates of formation properties like resistivity, saturation and permeability.

To allow rapid dissemination of the technology to Shell's Operating Units and to core contractors outside Shell, a joint industry project has been started with a company specialised in Image Analysis software. The application, called COREPIX, consists of a high-resolution digital colour camera coupled to a high end PC with a Windows based user interface. Currently testing of the prototype of COREPIX Shell International Exploration and Production Rijswijk is being finalised. It is expected that COREPIX will be commercially available in and outside Shell in the third quarter of 1996.