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BOOK REVIEWS

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Learning about rift basins

The East Greenland Rift: A Film and Workbook Training Package. Geofilms Ltd., 1991. Price £380 (exc. VAT & p&p); £28 (exc. VAT & p&p) for academic orders.

The East Greenland Rift: A Film and Workbook Training Package, is produced by Geofilms for BP Exploration. It documents the structural and stratigraphic style of one of the world's best exposed rift basins which, because of the logistical problems of undertaking field work, few of us are able to examine in person. This training package gives us a chance to experience the impressive geology of the area in four half-hour video programmes and has a strong underlying theme of basin and play fairway analysis.

The East Greenland Rift 'package' consists of two volumes. Volume I: The Workbook, is the text part of the package and contains an introduction, a programme by programme breakdown of the video and practical material in some 150 pages. Volume II: Films and Tutor Notes, comprises two videos, each containing two programmes and summary tutor notes, with answers for some of the exercises and questions posed in the programmes.

Both volumes are in a ring bound format and are well presented. The text is easy to follow and clearly divided into 'chapters' covering each of the programmes. The text is easy to read and the figures generally clear, although some of the figures lack full legends. The videos themselves are excellent and extremely well filmed. One is left in no doubt that the exposure is both excellent and large-scale. The BP geologists do an excellent job in guiding us through the geology; one wonders if they have been on an acting course! With each programme, there are ample summaries of the information provided (both in the workbook and on video), and there is a close integration between the video and workbook material. This integration is emphasized by the incorporation of comments telling the person(s) watching the video to go to specific sections and by large red stop signs at the end of each section. Personally, I found this broke the flow of the material and could be rather irritating at times.

Programme 1: Basin Development, introduces the East Greenland Rift in terms of its geographical and tectonic setting. The tectono-stratigraphic evolution of the area is presented in terms of three phases of sedimentation: late Permian carbonates, Triassic continental clastics and Jurassic submarine fans. Major vertical and lateral facies variations within these phases of sedimentation are outlined, with particular emphasis on relationships to major fault zones. In fact, tectonic control is to some degree over-emphasized at the expense of sea-level and sediment flux controls. The end of this programme relates the Mesozoic and Tertiary development of the area to the wider context of the opening of the North Atlantic.

Programme 2: Permian Carbonates, examines the varied carbonate facies developed in the late Permian. Through systematic examination of exposures and photomicrographs, facies models for restricted lagoonal and barrier carbonates, and open marine reefal carbonates are developed. The controls on the spatial and temporal distribution of the carbonates facies are addressed, but again emphasis is placed on a tectonic control without discussion of other possible causal mechanisms. Despite this, the programme presents a good overview of shallow water carbonate depositional environments. The end of the programme is devoted to an examination of the reefs and their associated flank facies as a hydrocarbon play. Aspects of the reservoir, topseal, source and migration pathway are discussed. The workbook material associated with this programme ends with a seismic exercise on the Permian of the Barents Shelf.

Programme 3: Mesozoic Clastics, is divided into two sections: The first section deals with mainly non-marine sediments of the Triassic and the second section deals with Jurassic to Early Cretaceous marine clastics. Both sections are centred around the construction of a chronostratigraphic diagram summarizing the facies relationships across the basin. Questions are posed at frequent intervals in the programme to highlight key points in the basin evolution. Although these are intended to help the person(s) watching the video interact with the programme, the stop-start nature of the presentation is distracting. At the end of the second section, the workbook contains an exercise on the hydrocarbon potential of the Mesozoic of East Greenland. Personally, I found this programme the most difficult to follow, with a host of lithostratigraphic names and a large number of localities to remember. Some of the questions asked are difficult to answer given the data presented in the video and some of the chronostratigraphic relationships also appear difficult to construct from the exposures shown. However, summaries of the stratigraphic development and inferences as to some of the controls are presented at the end of each section.

Programme 4: Half Grabens, introduces the geometry of half graben and the relationships between basin structure and the sedimentary fill. The programme starts with an outline of the structure of the half graben in Wollaston Forland through the use of a series of traverses across the area. This section illustrates some of the variation both across the half graben and longitudinally along the basin. In general the panoramic views are clear, but in some cases more annotation on the video would help in relating the commentary to the views. The cross-sectional geometry of the half graben is summarized in relation to planar and listric fault geometries from sandbox models. This section of the programme ends with a review of the along-strike changes in the half graben geometry as one moves from a major fault segment towards a terrace (transfer zone). The second part of the programme documents the variation in the syn-rift sediments through examination of a number of exposures situated progressively further away from the border fault zone. This section is summarized by the development of a facies model for turbidite deposition in rift basins and construction of simple cross-sections illustrating the stacking patterns of the sedimentary systems. Programme 4 also includes two exercises based on seismic lines from the North Viking graben and Jeanne d'Arc basin.

In summary, this is a well produced package which I would strongly recommend. The material could be used at different levels of experience and in a wide range of basin analysis, structural, sedimentological and energy resources courses. It is reasonably priced (especially for academics) considering the amount of material that is contained within the package. It is certainly much cheaper than going to East Greenland. However, there is nothing like seeing those field relationships for yourself!

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Understanding more about the Earth

Brown, G., Hawkesworth, C. and Wilson, C. (editors) 1992. *Understanding the Earth: A New Synthesis*. Cambridge University Press, U.K. Price £70.00 (hardback), £24.95 (softback) ($44.95 softback).

This is an important book, likely to be regarded as a classic for years to come. However, readers and students expecting simply an updated version of the original '*Understanding the Earth*', published in 1971, may well be disappointed. The original book was designed as a reader to support the Open University Foundation Course, then in its infancy. I have a copy of the second edition, published in 1972 following the phenomenal success of the first. It contains 27 short, readable chapters, with an average length of 13 pages, and starting with a basic account of rocks and minerals. I bought it as a first year undergraduate, and found it a useful and accessible aid to my course at