**Afram Plains Development Organisation (APDO)**

Activities

APDO undertake village level pump and borehole maintenance, hygiene and sanitation education, community development and improvement of primary education. They supervised the siting and drilling of 17 boreholes by Geomechanik during January-March 2000. APDO should be consulted during the planning stage of water supply projects in the area as they form the main interface between drilling organisations and local communities. During field visits, the BGS hydrogeologist was accompanied by APDO technical staff. The use of bailer tests, drawdown – recovery tests using a Whale pump system, site location using a GPS were demonstrated to APDO staff. A GPS and a set of 1:50 000 scale topographic maps were supplied to APDO staff to enable accurate location of boreholes and villages and production of regional base maps.

Water resources staff

Afram Plains Development Organisation, Donkorkrom and Tease.

Mr A Y O Modoc, Project Manager APDO, Donkorkrom office tel/FAX No. 0848 22029, Tease office tel: 0803 610316, home tel 0848 22078

Alima, Deputy Project Manager, APDO

Mr Carlos Kuranteng, Senior Technical Supervisor APDO

Richard Detsa-Akornor, Technical Supervisor, APDO

Dissemination by BGS to APDO

At a half-day seminar at Tease the BGS hydrogeologist presented visit findings, making use of rock samples collected and equipment used to provide a practical hands-on session. The procedures used on site and results obtained were discussed within the context of the groundwater resources development project at Oju/Obi in south-eastern Nigeria. The simplified groundwater development potential map for that area was described. The applications of groundwater resource development to other aspects of APDO’s operations in the area, such as hygiene, sanitation and primary education, were fully discussed with the Chairman (Mr Modoc) and staff.

**Community Water Supply and Sanitation Division (CWSD)**

The CWSD, developed out of the GWSC, advocate use of a national standard borehole design. They recommend drilling to at least 10m below the initial water struck level. In certain areas an airlifted discharge of 10 l/m is acceptable but CWSD recommend 30l/m minimum. Boreholes should be constructed using 5” (127mm) internal diameter components. CWSD request sight of contracts between NGO’s and drilling companies to ensure correct borehole design. A database for the Volta Region is held and they are preparing similar ones for Eastern and Grater Accra regions.

Community Water and Sanitation Division (CWSD), Head Office, Private Mail Bag, Kotoka International Airport, Accra. Tel: 402432, FAX: 233-21-779475, e-mail cwsd@ncs.com.gh

Edwin D Arthur, Zonal Hydrogeologist, Tel 022-402863, 027 595452

**DANIDA**

DANIDA have been associated with development of the water sector in Ghana for a number of years, through the Water Research Institute and others. Mr Kurt Klitten (Co-ordinator of the DANIDA Water Sector Development Programme) wishes to see a detailed hydrogeological investigation of the Afram plains. He has proposed that DANIDA fund drilling of up to 5 exploration boreholes when BGS undertake detailed studies as part of the ongoing KaR project. He has shown interest in the DfID funded work of BGS in Nigeria as well as BGS’s view of the capacity of Geomechanik. Logging equipment loaned to the WRI from a project in India by DANIDA is proposed for use in the Afram Plains. This borehole logging equipment is manufactured by Robertsons Research and maybe capable of digital recording but there is no manual. BGS hold a set of similar equipment for which operation manuals are available.

Royal Danish Embassy, 67, Dr Isert Road, North Ridge, P.O.Box CT 596, Accra. Tel 233-21-221385/226972/301861/301940, FAX: 233-21-228061, e-mail accamb@accamb.um.dk

Mr Kurt Klitten, Counsellor (Co-ordinator, Danida Water Sector Development Programme), Tel residence: 021 224103, mobile: 024 320804

**DfID**

During a visit to the DfID office at the BHC this study and the associated KAR project were discussed with the Second Secretary Development (Mr Desmond Wood) and the Projects officer (Mr Owusu Mensah Abunyewa). The results of work undertaken in Nigeria, Tanzania and Zambia were outlined in relation to the water supply problems in the Afram Plains.

British High Commission, Osu Link, off Gamel Abdul Nasser Avenue, P.O. Box GP296, Accra, Ghana. Tel (233-21) 221665/7010650, FAX: (233-21) 7010655. Development Section, DfID,

Mr Desmond L Woode, 2nd Secretary (Development), e-mail dl-woode@dfid.gov.uk

Mr Owusu Mensah Abunyewa, Projects Officer, e-mail [0m-abunyewa@dfid.gov.uk](mailto:0m-abunyewa@dfid.gov.uk)

**Geomechanik**

As Prakla Seismo, Geomechanik have operated within Ghana since before 1984. A range of different capacity drilling rigs is available there. Although most of the work undertaken uses the down the hole hammer drilling system, the resident manager (Mr Gunter Lenz), expressed willingness to undertake coring for the BGS detailed hydrogeological study (January-March 2001). Following the visit of the BGS hydrogeologist to the drilling sites the following comments emerged:- The impact of excessive dust produced during drilling upon vehicles, plant, staff health and the sampling regime is cause for concern as is the failure of the rear left jacking ram and its effect upon borehole verticality. Future boreholes should be completed at an internal diameter of 5” (127mm) in accordance with CWSD advice but until the terms of the present contract can be changed the stocks of 4” casing and screen held would continue to be used. Geomechanik need to create an effective database.

Geomechanik Bohrgesellschaft mbH, Fafraha-Dodowa Road, Accra, P O Box 1899, Mamprobi, Accra, Tel: 766921, FAX No. 766922, e-mail geomecgh@ghana.com

Mr Gunter Lenz, Resident Manager

Mr Quarm, Hydrogeologist

**Ghana Geological Survey Department**

Geological understanding of the Voltaian sediments of the Afram Plains within the Geological Survey Department is limited to the studies of Junner and Hirst (1946) and Annan-Yorke and Cudjoe (1971) and some unreported work undertaken by Dr E K Barantuoh. The Director wants to participate in survey programmes undertaken. Enthusiastic discussions were had with his staff.

Geological Survey Department, No.6, Seventh Avenue, Adavraka, P.O. Box M80, Accra, Ghana. Tel:228093/79, Fax: 233-21-228063, e-mail ghgeosur@ghana.com

Charles Edward Oduro, Director, Tel direct: 226490

Dr E K Brantuoh, Deputy Director (Administration), Tel Direct: 228845

**Land Survey Department**

A set of 23 1:50 000 topographic maps for the Afram Plains area were purchased as base maps for APDO. These maps are based on 1973-74 aerial photography of the area which is not presently available according to the catalogue (Appendix 7). Also purchased were two 1:125,000 topographic maps of part of the Volta dam region adjacent to the Afram Plains prior to flooding. Also purchased were a set of 1:500,000 road maps for WaterAid for use to locate projects. No 1:250,000 scale topographic maps of the area are available. (Appendix 7).

**Geology Department, Legon University, Accra**

Although not working directly in the Afram Plains, the University has expertise in the interpretation of satellite data and hydrogeology. They have 15 undergraduate geology students per year and an MSc in hydrogeology. Currently, they are trying to link their students with the Geological Survey to create geological maps. The head of department expressed interest in attaching students to the project to undertake degree level mapping projects.

Geology Department, University of Ghana, P.O. Box LG58, Legon, Accra. Tel (021)500300

Mawuli Akoto, senior Lecturer/Seismologist, Head of Department, e-mail makoto@ug.edu.gh

B Baneoeng-Yakubo, structural geologist/hydrogeologist,

**Pronet**

Pronet, an NGO consultancy, are fully funded by WaterAid. The Pronet chairman, Mr R. Bannerman, regarded as the most experienced hydrogeologist in Ghana, has previously worked for Geomechanik. Staff from Pronet accompanied the BGS hydrogeologist to the Afram Plains, providing transport to the area and introduction to members of APDO. The hydrogeology of the Afram Plains area was discussed with Mr Bannerman in Accra and with Pronet staff in the field.

**Technic-Eau**

Technic-Eau Drilling, PO Box 2495, Koforidua, Eastern Region, Ghana. Tel/fax: (233) 81 23702, Cell: 020 811 3943, email: water@ghana.com

Stephan Rodrigue, Managing Director and geologist

Laurent Berube, Director, LB Hydro-Frac, PO Box 1586 Koforidua, Eastern Region, Ghana. Phone: (233) 081 24355, Mobile: (233) 027 532697, Fax: (233) 081 23617

Sasha Belanger, Director and geological engineer, Forages Technic-Eau, Togo Sarl, BP 1918 Lome Togo. Tel/fax: (228) 262005, Cell: (228) 045321, Email: forteceau@netcom.tg

Coomlan Abahounsignin, geophysical engineer. 041 BP 078 Cotonou, Benin. Mobile: 00229 96 0687, email: abahounsignin@yahoo.fr

Undertake geophysical surveys – resistivity and WM34

Borehole down hole geophysical logging

Borehole drilling and construction

Hydrogeological investigations

**Water Resources Research Institute**

WRI employ 5 hydrogeologists and has knowledge of hydrogeological conditions throughout Ghana. A library of research reports contains little information on the Afram Plains. The new Water Commission set up in Ghana may take over the function of databasing research and project reports. Funds allocated by DANIDA for monitoring of groundwater levels over the past three years are reportedly not spent due to the non-allocation of matching funds by the Government of Ghana.

Water Research Institute, P O Box M32, Accra, Ghana. Tel 275351, 775352, 779514-5, FAX No. 233 021 777170, e-mail WRI@ghana.com

B K Kortatsi, e-mail [Kertatsi@hotmail.com](mailto:Kertatsi@hotmail.com)

**WaterAid**

WaterAid are the main interface between DfID and local NGOs in the water sector in Ghana. They fully fund the activities of Pronet and the APDO. The WaterAid country representative and staff facilitated the visit of the BGS hydrogeologist to Accra and the Afram Plains. The results of a joint WaterAid/BGS project in Oju/Obi in Nigeria, and visits to WaterAid projects in Zambia and Tanzania were discussed at meetings with WaterAid, Geomechanik, DANIDA, CWSD, BHC/DfID and WaterAid/Pronet staff. The WaterAid representative was present at all meetings. Equipment and maps listed in Appendix 6 were given to WaterAid and APDO.

WaterAid, P O Box 16185, Airport, Accra, Ghana, Tel 228206/302576, FAX No. 302756

Mr Gordon Mumbo, Country Representative, e-mail wateraid@africaonline.com.gh

**World Vision**

World Vision plan to drill 70 boreholes within the Afram Plains during the 1999-2000 dry season. World Vision have their own hydrogeologists, based in Kumasi, with an in-house siting and drilling capacity. A visit to Kumasi was not possible. However, the drilling unit was observed and comprises an Atlas Copco Aquadrill Rotamec 50 drilling rig and an Atlas Copco 400 HP XRH 350 compressor, both mounted DAF 1800 trucks.