WATER RESOURCES ASSESSMENT YEMEN

(W R A Y - 4)

HUMAN RESOURCES DEVELOPMENT PLAN

OF THE

GENERAL DEPARTMENT OF HYDROGEOLOGY

VOLUME I : MAIN REPORT

MINISTRY OF OIL AND
MINERAL RESOURCES
GENERAL DEPARTMENT
OF HYDROGEOLOGY

TNO INSTITUTE OF APPLIED
GEOSCIENCE

WATER RESOURCES ASSESSMENT YEMEN

(WRAY-4)

The Republic of Yemen
Ministry of Oil
and Mineral Resources

Kingdom of The Netherlands
Ministry of Foreign Affairs
Directorate General of
International Cooperation

HUMAN RESOURCES DEVELOPMENT PLAN OF THE GENERAL DEPARTMENT OF HYDROGEOLOGY

VOLUME I : MAIN REPORT

Internal Report

by

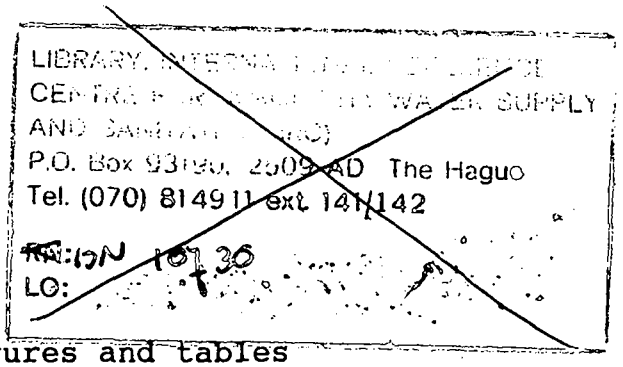
A.J.H. Negenman

January 1993

General Department
of Hydrogeology
Sana'a
Republic of Yemen

TNO Institute of Applied
Geoscience
Delft
The Netherlands

CONTENTS



List of Figures and Tables

1. INTRODUCTION

The main objective of the WRAY-4 project is to lead the General Department of Hydrogeology (GDH) to technical and managerial self-reliance. The WRAY-4 project aims to achieve these objectives by giving advice to the GDH concerning organizational development, institutional strengthening and technical/scientific subjects.

Structurized human resources planning and development is instrumental to a sound organizational development of any organization, especially when the organization is growing.

During its previous phases the WRAY project has trained the staff of the GDH through courses, fellowships and on-the-job training. The training was mainly aimed at developing the technical/scientific capacities of the staff. Besides the technical training also attention was paid to develop supportive skills such as computer use and report writing.

The GDH has undergone a considerable evolvement and organizational change in the last years (1990-1992) by taken in 4 fresh university graduates and 5 technicians. The unification of Yemen led in May 1990 to the integration of another 7 professionals from Aden in the organization of the GDH. A complete list of the GDH staff is given in Annex 1.

It was planned in the WRAY-4 Plan of Operations (Al Udaini and Negenman, 1990) to develop a training plan for the GDH. The initiative and responsibility for the development of the training plan was defined to be in the hands of the GDH management.

The conditions for the development of a structurized training plan were not very favourable in the first months after the start of the project because of the institutional uncertainty of the GDH directly after the unification in May 1990. After the declaration of the formation of the Ministry of Agriculture and Water Resources (MAWR) the GDH was approached to be transferred to this ministry.

After having reached agreement in December 1990 between the Yemeni and the Netherlands governments that the WRAY project would stay for the duration of its present phase in the Ministry of Oil and Mineral Resources, the proper institutional climate was created to start the organizational restructuring of the department. Now the human resources development plan could be developed which was done in different steps during the course of 1991. The involvement of the counterparts in the development of the different parts of the of the human resources development plan created a slower progress in the formulation of the plan then was anticipated. The training needs of the Aden Branch were assessed preliminary and included in the plan. The plan aimed to formulate the individual development needs until 1995.

In the third quarter of 1991 a number of formal courses was started. The bulk of the defined training courses however was executed from June-November 1992. On-the job-training had received ample attention since the beginning of the WRAY programme, but was given a more formal approach then before (assignments) during the WRAY-4 phase.
The implementation of the modules for the Aden staff could formally only start after the approval of the WRAY-4 extension to the southern governorates, which was not obtained before November 1992. On an ad-hoc basis some modules such as English Language and Management Training was performed.

This Main Report describes then in Chapter 2 the methodology followed to define the training modules. Chapter 3 explains and reports about the job requirement analysis performed and the recommendations given for the individual development of each GDH staff member. Chapter 4 lists the defined development modules to be executed in the period 1990-1993. Chapter 5 reports about the progress in implementing the plan until December 1992. Finally Chapter 6 gives an overview of the realized expenditures for the implementation of the training plan.

The Main Report is Volume 1 of a set of 4 volumes which make the Human Resources Development Plan. Volume 2 contains the Employees Personal Histories and is only available at the GDH. Volume 3 contains the Job Descriptions. Volume 4 contains the Individual Development Plans for each GDH staff member and again is only available at the GDH.

The Human Resources Development Report is considered to be an internal report which means that it was prepared to document and support the organizational development of the GDH; it is only available for use within the GDH organization. The distribution outside the GDH is limited to the agencies to which the GDH and the WRAY-4 project have reporting responsibilities and is restricted to Volume 1 and Volume 3.

2. METHODOLOGY

The development of the Human Resources Development plan was preceded by a reorganization of the GDH in March 1991.
A new organizational structure was set up and agreed upon by the MOMR (Figure 1). The organization structure of the GDH was re-defined taking into consideration:

- the results of the Objective Oriented Project Planning workshop held in May 1990 (MDF, 1990);
- the recommendations of the Preliminary Performance Appraisal and Human Resources Survey of the GDH (Gieske, 1991);
- the proposals reported in the Long-term Planning of the National Water Resources Information Centre (Brouwer and Abdul Latif Hassan, 1991) and;
- the inclusion of the Aden Branch.

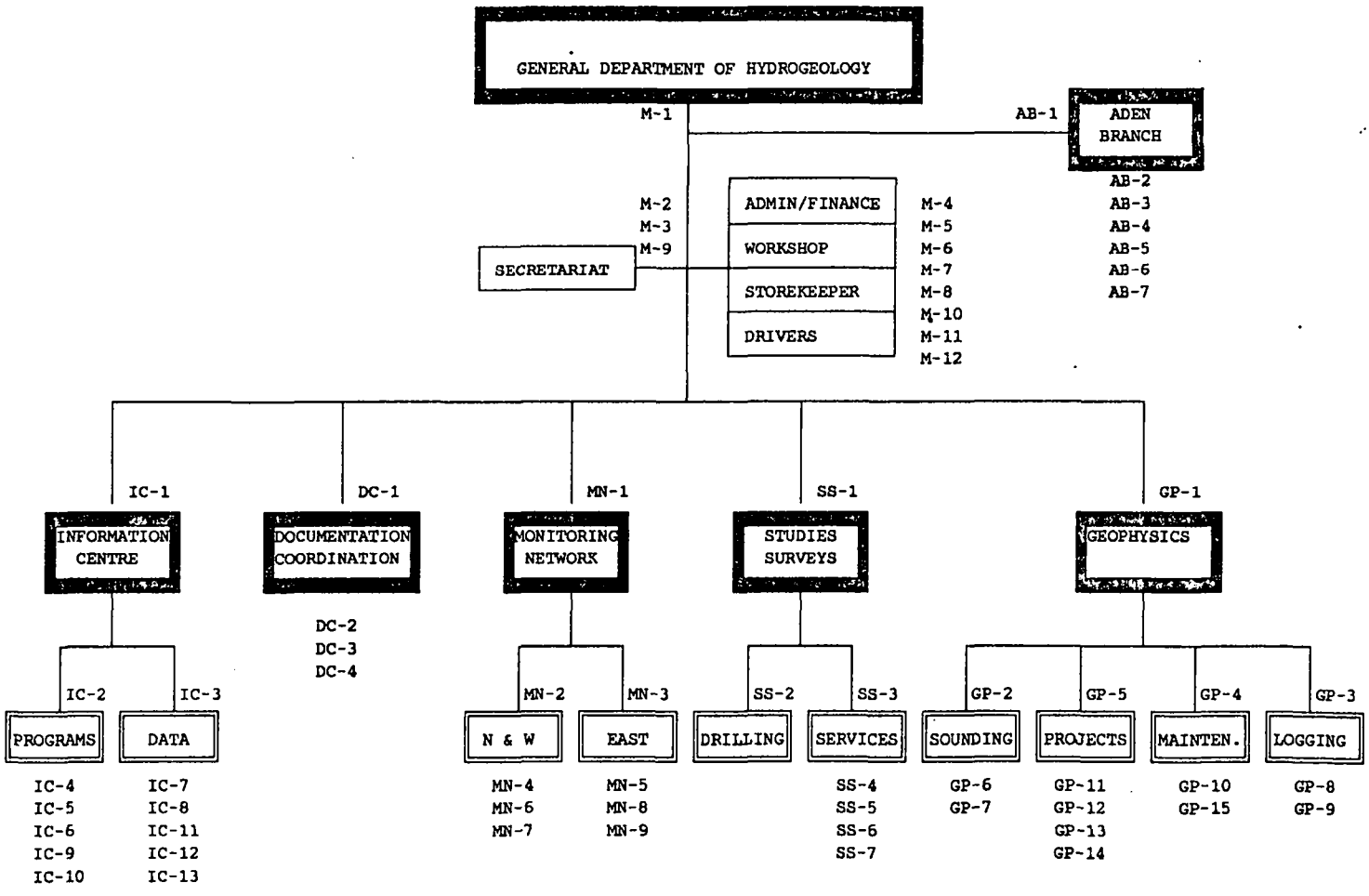


Figure 1 Organization Structure of the GDH since March 1991

The definition of the Human Resources Development plan followed the concept as shown in Figure 2. The first two steps consist in making the Employees Personal Histories and the Job-descriptions.

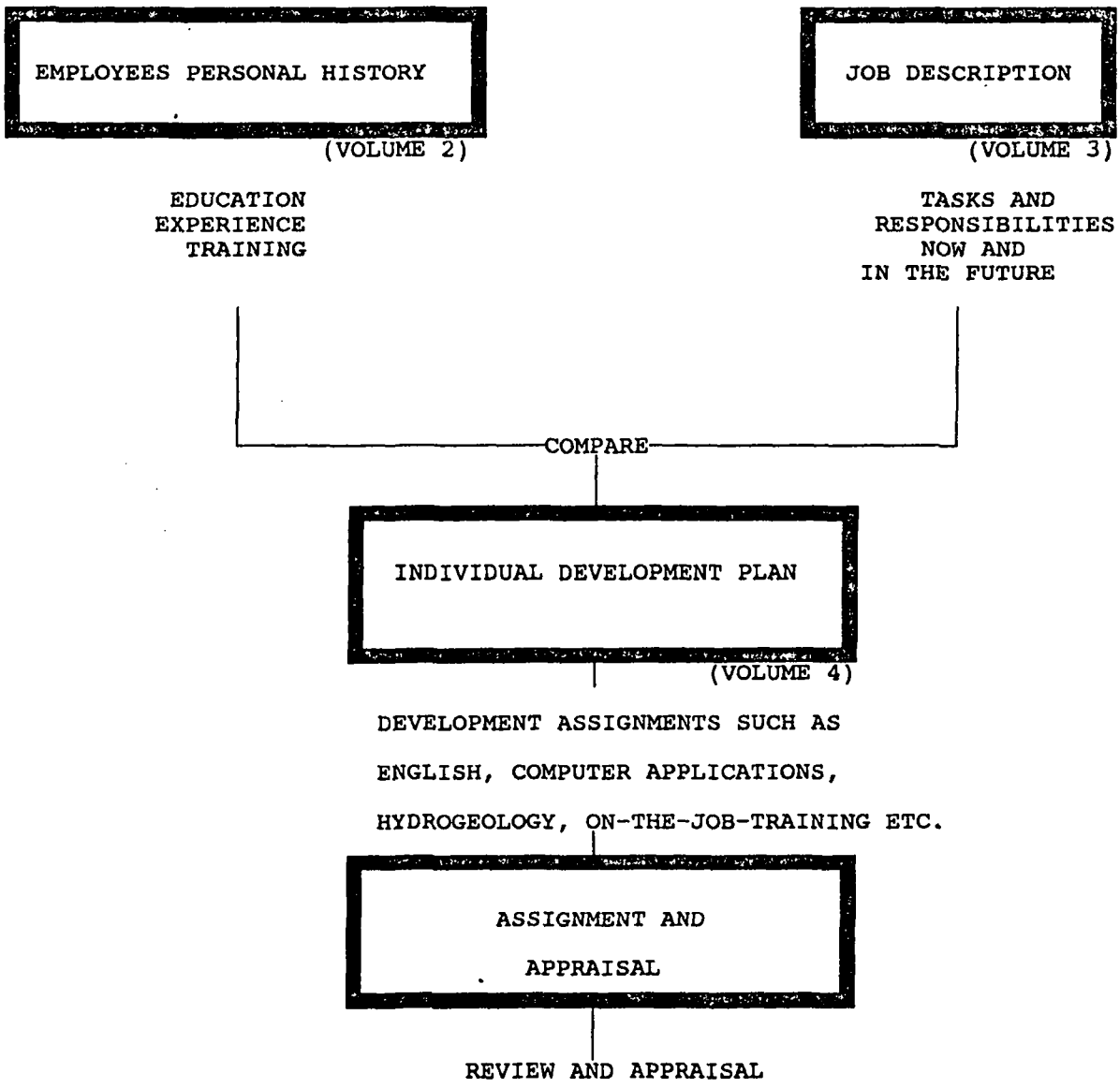


Figure 2 Methodology followed for the definition of the Human Resources Development plan

Also the implementation of the new organization structure required the description of the tasks of each department, which was done by the new appointed department directors with assistance of the WRAY-4 expatriates.

The tasks within each department were subdivided in jobs and for each job a job-description was developed (Figure 3). As the

department's tasks were defined on basis of the responsibilities of each department, the subdivision of these tasks in jobs led to a staffing plan, which could not completely be satisfied with the existing staff due to shortage of staff or lack of skills.

Volume 3 gives the description of the tasks of the different departments and the job-descriptions. It contains the job-descriptions of the actual GDH staff and of the vacancies created by the department's task definition.

Parallel with the exercise of making the job-descriptions, the personal histories of the GDH staff were formally documented according to the questionnaire as shown in Figure 4. The personal histories are filed at the GDH office (Volume 2) and only the GDH General Director and the WRAY-4 CTA have access to these files.

JOB DESCRIPTION MN-1

JOB TITLE	:	Director Monitoring Network
ORGANIZATION	:	GENERAL DEPARTMENT OF HYDROGEOLOGY
DEPARTMENT	:	Monitoring Network
REPORTS TO	:	General Director
SUBORDINATES	:	Section Head East Section Head North and West
REQUIRED QUALIFICATIONS	:	BSc. Hydrogeology
NAME	:	Abdul Aziz Abdullah Ahmed
PURPOSE OF JOB	:	To plan, organize, lead and control the work of the Monitoring Department's staff and to use all available organizational resources to execute the Monitoring Department's stated activities. To develop strategies for the role of the Monitoring Department within the national hydrological monitoring network
JOB TASKS	:	

1. Planning the field work and office activities,
2. Supervising the field and office work implementation,
3. Preparing the field work e.g. equipments, cars, money, etc.,
4. Supervising the completion of Annual Progress Reports,
5. Participate in staff meetings,
6. Chair Monitoring Departments's meetings,
7. Identify department's personnel performance and development needs,
6. Contributing in the field work in case of presence of any technical problem or missing any Hydrogeologist or Technician in the field,
7. Maintain contacts with other agencies concerning planning,operation and maintenance of hydro-meteorological networks.

Figure 3 Example of a job-description

The matching of the person's experience and education as laid down in the Personal Employees History with the required

qualifications as defined in the Job-description indicate the training needs for the person to perform his job satisfactorily.

This matching however needs a detailed analysis to identify the specific items in which the person needs to be trained.
To that purpose a matrix was developed listing all the skills that should be available within an organization such as the GDH. In the matrix these items were marked in which the person has already been trained or has reached a satisfactory performance. The matrices for the different departments are presented in Chapter 3.

MINISTRY OF OIL AND MINERAL RESOURCES - MINERAL EXPLORATION BOARD GENERAL DEPARTMENT OF HYDROGEOLOGY Employee Personal History CONFIDENTIAL Training Record page 1 of 1
Name: Place of birth:
Date of birth: Marital Status: No. of children:
Address: Tel. no:
Present job:
Education:
Language proficiency:
Work experience (Before MOMR/YOMINCO/GDH):
Work experience (MOMR/YOMINCO/GDH):
Training completed by end July 1991: Technical: Managerial/Administrative: English:
Certificates/Licenses/Memberships in Professional Organizations:

Figure 4 Questionnaire to establish personal employees histories

The specific training needs for the person can than be consolidated in his Individual Development Plan, indicating the subjects, training method and time table. Volume 4 comprises the Individual Development Plan for each GDH staff member. Figure 5 gives an example of such a plan.

In Figure 5 EPH stands for Employee's Personal History. Each staff member has a file number. The employee also has a jobcode identification. These two numbers identify the employee and link him/her with his/her assigned job.

The Individual Development Plan considers the career development and required training of the employee until 1995. Concrete training assignments however were only marked for 1992 and 1993, considering the actual support of the WRAY project in the implementation of these training assignments for 1992 and the possibility for support in 1993.

Name:	Abdul Aziz Ahmed			Plan for the years:	92	93	94	95		
EPH:	19	Jobcode:	MN-1	Page:	1		of		1	

DEVELOPMENT OBJECTIVE:	At present holds function of director of department; development towards better functioning as director.

NARRATIVE: (knowledge, skills, qualifications which need to be acquired or improved for current or target job)

Knowledge of management processes need to be acquired.
Knowledge and skills need to be acquired to be able to train younger staff.
Public relations skills.
Knowledge of calculation of rating curves.
Quality control of hydrogeological data which are manipulated need to be upgraded.
Introduction into application of GIS systems

DEVELOPMENT ASSIGNMENTS

Subject/Skill area:	Development Method/Organizat.	Start			Complete		
1.Management processes (planning etc.)	short course			92			92
2.Training of trainers	short course			92			92
3.Rating curves	on-the-job training with introduction of expatriate			92			92
4.Data quality control	short course and on-the-job training by expatriate			93			93
5.Management processes (budgeting etc.)	short course			93			93
6.Introduction GIS systems	short course			93			93
7.Management coaching	coaching by expatriate			92			93

DEVELOPMENT CALENDER 1992

			1		3		2				
J	F	M	A	M	J	J	A	S	O	N	D

Development calender 1993

	4				5			6			
J	F	M	A	M	J	J	A	S	O	N	D

Comments from General Department of Hydrogeology:

Comments from Training Department and concurrence:

Prepared by: A.J.H. Negenman, CTA WRAY-4
Date: 8/01/1992
Revised:

Director General approval: Mohamed Danikh
Date:

Figure 5 Example of an Individual Development Plan

3. ANALYSIS OF JOB REQUIREMENTS AND INDIVIDUAL DEVELOPMENT NEEDS

The basis of the Human Resources Development plan is the analysis of the required skills of a person necessary to perform a certain job in comparison with his available skills and experience.

This analysis has been performed for each individual staff member of the GDH.

A list was developed with all the skills which should be and which are available in the GDH.

This list was completed, checked and agreed upon by the directors of the GDH's departments. Then the directors were asked to mark for each job the skills that should be available, without considering the person presently assigned to the job.

Upon the created matrix was then superimposed the already available skills from the person assigned to the job, leaving these items open in which the person needs training.

Besides the training needs of the person for his present job, a career development was considered until the year 1995, requiring further training.

The following pages present the matrices for each department. In the second headline the jobcodes are indicated and in the third headline the personal file number of the person assigned to the job. If no person is available for a certain job a V (Vacancy) is written.

If the person needs to be trained in a certain topic, in the respective field is written the year (92, 93, 94, 95) in which training should be implemented.

If a certain skill has already been covered by education, training or experience a shaded "x" is written.

The required skills for a job for which exists a vacancy are indicated with a "o"

The marked years and shaded "x's" together indicate the complete set of skills required for a certain job.

The required training modules were documented in the Individual Development Plans (see for an example of an Individual Development Plan Figure 5).

Recommended individual development per job and person
General Management

SKILL	Job-description code and personal record number											
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
	20	29	31	16	V	36	42	45	57	38	37	58
Planning	92											
Budgeting	93			92								
Accounting	93			92								
Organizing	92											
Supervision	92											
Monitoring	93											
Evaluation	93											
English Lang.	x	92	92	92	o		92					
Meetings	92											
Job descript.	92											
Public relat.	x											
Report writing												
Training	92											
WRM	92											
MODFLOW												
Dbase manag.												
WP5.1 English		92										
Wordproc. Arab.	x		92	92								
Spreadsheet				93	o							
DBase IV												
WRIS												
STO												
GIS												
AUTOCAD												
Data archive												
Database oper.												
Quality control												
Data typing												

SKILL	Job-description code and personal record number											
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
	20	29	31	16	V	36	42	45	57	38	37	58
Computer maint.												
Instrumentation												
Remote sensing												
Well logging												
Cores/cuttings												
Drilling												
VES												
EM												
Gravity												
Seismics												
Monitoring												
Well inventory												
Pumping tests												
Chemical sampl.												
Chemical anal.												
Stream flow												
Cross section												
Discharge calc.												
Coll. EPROMS												
Proc. EPROMS												
Inst. OMNIDATA												
Rating curves												
Evapotranspir.												
Isohyps maps												
Isoyete maps												
Office proced.	92	92	92	92	o	92	92					
Vehicle maint.						92		x	x	x	x	x
Store keeping					o							
Field operat.												

Recommended individual development per job and person
National Water Resources Information Centre

SKILL	Job-description code and personal record number												
	IC1	IC2	IC3	IC4	IC5	IC6	IC7	IC8	IC9	IC 10	IC 11	IC 12	IC 13
	7	24	2	28	V	V	V	V	46	V	V	V	V
Planning	92	95	95										
Budgeting	93												
Accounting	93												
Organizing	92	95	95										
Supervision	92	95	95										
Monitoring	93	95	95										
Evaluation	93	95	95										
English Lang.	x	x	x	92	o	o	o	x	92	o	o	o	o
Meetings	92												
Job descript.	92	95	95										
Public relat.	x		x										
Report writing	92	92	92	92	o	o	o	o					
Training	92	92	92										
WRM													
MODFLOW													
Dbase manag.	92	92	92										
WP5.1 English	92	x	92	92	o	o	o	o	92				
Wordproc. Arab.		x	x	92	o	o	o						
Spreadsheet		x	x	92	o	o	o	o	92	o	o	o	o
DBase IV		x	x	92	o	o	o	o					
WRIS		x	x	92	o	o	o	o					
STO		x	x	92	o	o	o	o					
GIS	92	92	92	92			o	o					
AUTOCAD		x	x	92	o								
Data archive	x		x		o	o	o	o					
Database oper.	x	x	x	92	o	o	o	o	92	o			
Quality control	92	93	93	93	o	o	o	o	93				
Data typing		x	x	x	o	o	o	o	92	o	o	o	o

SKILL	Job-description code and personal record number												
	IC1	IC2	IC3	IC4	IC5	IC6	IC7	IC8	IC9	IC 10	IC 11	IC 12	IC 13
	7	24	2	28	V	V	V	V	46	V	V	V	V
Computer maint			91	91									
Instrumentation													
Remote sensing													
Well logging													
Cores/cuttings													
Drilling													
VES													
EM													
Gravity													
Seismics													
Monitoring GWL													
Well inventory													
Pumping tests													
Chemical sampl.													
Chemical anal.													
Stream flow													
Cross section													
Discharge calc.													
Coll. EPROMS													
Proc. EPROMS													
Inst. OMNIDATA													
Rating curves													
Evapotranspir.													
Isohyps maps													
Isoyete maps													
Office proced.													
Vehicle maint.													
Store keeping													
Field operat.													

Recommended individual development per job
Documentation and Coordination Department

SKILL	Job-description code and personal record number					
	DC1	DC2	DC3	DC4	DC5	DC6
	25	V	27	39	59	V
Planning	92					
Budgeting	93					
Accounting	93					
Organizing	92					
Supervision	92	o				
Monitoring	93					
Evaluation	93					
English Lang.	91	o	92	92	92	o
Meetings	92					
Job descript.	92					
Public relat.	x	o				
Report writing	92	o		93		
Training	92					
WRM	92					
MODFLOW						
Dbase manag.						
WP5.1 English	92	o	92	92	92	
Wordproc. Arab.	92	o			92	
Spreadsheet	92	o	92	92	92	
DBase IV						
WRIS						
STO						
GIS		o				
AUTOCAD	92	o				
Data archive	92		92	93	92	o
Database oper.						
Quality control	93	o	93			
Data typing	x	o	x	93		o

SKILL	Job-description code and personal record number					
	DC1	DC2	DC3	DC4	DC5	DC6
	25	V	27	39	59	V
Computer maint						
Instrumentation						
Remote sensing						
Well logging						
Cores/cuttings						
Drilling						
VES						
EM						
Gravity						
Seismics						
Monitoring GWL						
Well inventory						
Pumping tests						
Chemical sampl.						
Chemical anal.						
Stream flow						
Cross section						
Discharge calc.						
Coll. EPROMS						
Proc. EPROMS						
Inst. OMNIDATA						
Rating curves						
Evapotranspir.						
Isohyps maps		o				
Isoyete maps		o				
Office proced.	92	o	92	92		
Vehicle maint.						
Store keeping						
Field operat.						

Recommended individual development per job
Monitoring Department

SKILL	Job-description code and personal record number								
	MN1	MN2	MN3	MN4	MN5	MN6	MN7	MN8	MN9
	19	V	22	23	6	41	9	4	34
Planning	92	o	95	95	95				
Budgeting	93	o	95	95	95				
Accounting	93	o	95	95	95				
Organizing	92	o	95	95	95				
Supervision	92	o	95	95	95				
Monitoring	93	o	95	95	95				
Evaluation	93	o	95	95	95				
English Lang.	91	o	92	91	91	91	91	91	91
Meetings	92	o	95	95	95				
Job descript.	92	o	95	95	95				
Public relat.	92								
Report writing		o	92	92	92				
Training	92	o	92	95	95				
WRM	92	o	94	95	95				
MODFLOW									
Dbase manag.									
WP5.1 English		o		92	92				
Wordproc. Arab.									
Spreadsheet		o		92	92				
DBase IV									
WRIS									
STO			92	92	92	92	92	92	92
GIS	93	o	93	93	93				
AUTOCAD									
Data archive			92	92	92	92	92	92	92
Database oper.									
Quality control	93	o	93	93	93				
Data typing		o							

SKILL	Job-description code and personal record number								
	MN1	MN2	MN3	MN4	MN5	MN6	MN7	MN8	MN9
	19	V	22	23	6	41	9	4	34
Computer maint									
Instrumentation		o		92	92	92	92	92	92
Remote sensing									
Well logging									
Cores/cuttings									
Drilling									
VES									
EM									
Gravity									
Seismics									
Monitoring GWL		o				92	92	92	92
Well inventory									
Pumping tests									
Chemical sampl.									
Chemical anal.									
Stream flow		o			92	92	92	x	92
Cross section		o	92		92	92	92	92	92
Discharge calc.		o			92	92	92		92
Coll. EPROMS		o		92	92	92	92	92	92
Proc. EPROMS		o		92	92	92	92	92	92
Inst. OMNIDATA		o		92	92	92	92	92	92
Rating curves	92	o	92	92	92				
Evapotranspir.		o		92	92				
Isohyps maps		o	93	93	93				
Isoyete maps		o	93	93	93				
Office proced.									
Vehicle maint.									
Store keeping									
Field operat.									

Recommended individual development per job and person
Studies and Surveys Department

SKILL	Job-description code and personal record number						
	SS1	SS2	SS3	SS4	SS5	SS6	SS7
	8	5	21	3	35	47	54
Planning	92	93	93	93		95	
Budgeting	93						
Accounting	93						
Organizing	92	93	93	93		95	
Supervision	92	93	93	93		95	
Monitoring	93	93	93	93			
Evaluation	93						
English Lang.	92	92	x	92	92	92	93
Meetings	92						
Job descript.	92						
Public relat.	x						
Report writing	92	92	92	92		92	93
Training	92		92	92			
WRM	92		91	92		94	93
MODFLOW			91	93		93	
Dbase manag.							
WP5.1 English	92	92	92	92		92	
Wordproc. Arab.	92	92	92	92		92	
Spreadsheet	92	92	x	x	92	92	
DBase IV			92	92			
WRIS							
STO							
GIS				92			
AUTOCAD							
Data archive							
Database oper.							
Quality control	93	93	93	93	93		
Data typing					92	92	

SKILL	Job-description code and personal record number						
	SS1	SS2	SS3	SS4	SS5	SS6	SS7
	8	5	21	3	35	47	54
Computer maint							
Instrumentation							
Remote sensing	x		x	94			
Well logging				93			
Cores/cuttings		x		93	92	93	
Drilling		x		93	92	93	
VES							
EM							
Gravity							
Seismics							
Monitoring GWL		x				92	93
Well inventory		x			92	92	93
Pumping tests	92	92	92	92	92	92	93
Chemical sampl.				x			
Chemical anal.				x			
Stream flow			x		92	92	
Cross section			x		92	92	
Discharge calc.			x				
Coll. EPROMS							
Proc. EPROMS							
Inst. OMNIDATA							
Rating curves	92	92	92	92	92		
Evapotranspir.			93	93			
Isohyps maps			93	93	93		
Isoyete maps			93	93	93		
Office proced.	92						
Vehicle maint.							
Store keeping							
Field operat.							

Recommended individual development per job and person
Geophysics Department

SKILL	Job-description code and personal record number											
	GP1	GP2	GP3	GP4	GP5	GP6	GP7	GP8	GP9	GP10	GP11	GP12
	14	12	V	11	13	40	V	10	32	15	26	33
Planning	92	93	o	93	93							
Budgeting	93											
Accounting	93											
Organizing	92	93	o	93	93							
Supervision	92											
Monitoring	93											
Evaluation	93											
English Lang.	92	92	o	92	92	92	o	92			92	92
Meetings	92											
Job descript.	92											
Public relat.	x											
Report writing	92	92	o	92	92	92						
Training	92											
WRM												
MODFLOW												
Dbase manag.												
WP5.1 English	92	92	o	92	92	92						
Wordproc. Arab.	92	92		92	92	92						
Spreadsheet	92	x	o	x	x	x	o	92			92	92
DBase IV												
WRIS												
STO												
GIS												
AUTOCAD												
Data archive												
Database oper.												
Quality control												
Data typing							o	x			92	92

SKILL	Job-description code and personal record number											
	GP1	GP2	GP3	GP4	GP5	GP6	GP7	GP8	GP9	GP10	GP11	GP12
	14	12	V	11	13	40	V	10	32	15	26	33
Computer maint												
Instrumentation			o	91			o	91				
Remote sensing	93	93			93	93						
Well logging	x		o					x				
Cores/cuttings			o					x				
Drilling			o									
VES	x	x			x	x						
EM	92	92			92	92						
Gravity	92	92			92	92						
Seismics	92	92			92	92						
Monitoring												
Well inventory												
Pumping tests												
Chemical sampl.												
Chemical anal.												
Stream flow												
Cross section												
Discharge calc.												
Coll. EPROMS												
Proc. EPROMS												
Inst. OMNIDATA												
Rating curves												
Evapotranspir.												
Isohyps maps												
Isoyete maps												
Office proced.												
Vehicle maint.												
Store keeping												
Field operat.							o	x	x	x	x	x

SKILL	Job-code and EPH number	
	GP13	GP14
	43	56
Planning		
Budgeting		
Accounting		
Organizing		
Supervision		
Monitoring		
Evaluation		
English Lang.		
Meetings		
Job descript.		
Public relat.		
Report writing	93	93
Training		
WRM		
MODFLOW		
Dbase manag.		
WP5.1 English	92	93
Wordproc. Arab.		
Spreadsheet	93	93
DBase IV		
WRIS		
STO		
GIS		
AUTOCAD		
Data archive		
Database oper.		
Quality control		
Data typing		
Computer maint		

SKILL	Job-code and EPH number	
	GP13	GP14
	43	56
Instrumentation		
Remote sensing		
Well logging		93
Cores/cuttings		
Drilling		
VES	93	93
EM	93	93
Gravity		
Seismics		
Monitoring		
Well inventory		
Pumping tests		
Chemical sampl.		
Chemical anal.		
Stream flow		
Cross section		
Discharge calc.		
Coll. EPROMS		
Proc. EPROMS		
Inst. OMNIDATA		
Rating curves		
Evapotranspir.		
Isohyps maps		
Isoyete maps		
Office proced.		
Vehicle maint.		
Store keeping		
Field operat.	93	93

Recommended individual development per job and person
Aden Branch

SKILL	Job-description code and personal record number								
	AB1	AB2	AB3	AB4	AB5	AB6	AB7	AB8	AB9
	48	49	50	51	52	53	54	V	v
Planning	92								
Budgeting	93								
Accounting	93								
Organizing	92								
Supervision	92								
Monitoring	93								
Evaluation	93								
English Lang.	X	92	92	92	92	92	X	o	o
Meetings	92								
Job descript.	92				92				
Public relat.	X								
Report writing	X	93	93	93	93	93	X		
Training	92		92						
WRM									
MODFLOW									
Dbase manag.								o	
WP5.1 English	93	93	93	93	93	93	93	o	
Wordproc. Arab.	93	93	93	93	93	93	93	o	
Spreadsheet	93	93	93	93	93	93	93	o	
DBase IV								o	
WRIS							93	o	
STO							93	o	
GIS								o	
AUTOCAD									
Data archive								o	
Database oper.								o	
Quality control								o	
Data typing		93	93	93	93	93	93	o	o

SKILL	Job-description code and personal record number								
	AB1	AB2	AB3	AB4	AB5	AB6	AB7	AB8	AB9
	48	49	50	51	52	53	54	V	v
Computer maint									
Instrumentation									
Remote sensing		94	94						
Well logging		95	95						
Cores/cuttings		93	93	93	93				
Drilling									
VES		93	93			93			
EM		94	94						
Gravity									
Seismics									
Monitoring GWL				93	93		93		
Well inventory				93	93				
Pumping tests				93	93				
Chemical sampl.				93	93				
Chemical anal.				93	93				
Stream flow				94	94		93		o
Cross section				94	94		93		o
Discharge calc.				94	94		93		
Coll. EPROMS				94	94		93		
Proc. EPROMS				94	94		93		
Inst. OMNIDATA				94	94		93		
Rating curves				94	94		93		
Evapotranspir.				94	94		93		
Isohyps maps				94	94		x		
Isoyete maps				93	93		x		
Office proced.									
Vehicle maint.									
Store keeping									
Field operat.									o

4. PLANNED DEVELOPMENT MODULES

In Chapter 3 the individual development needs for each GDH staff member were defined. The various skills listed in the matrices were grouped together in such a way that a list of training modules could be elaborated, considering the type of subject to be trained but also trying to keep the number of training modules limited by joining trainees wherever possible.

The elaborated list of training modules was then subject to priorization by the GDH management and the WRAY project, aiming at reaching the most important objectives of the WRAY-4 phase: obtaining technical and management self-reliance.

In this way a list was elaborated of training modules for the period 1991-1993. The project then committed itself to implement the selected training modules for the years 1991 and 1992.

Table 1 gives the planned training modules for the period 1991-1993 and Table 2 the timetable.

The explanation of the numbering for the method is the following:

1. Courses and workshops;
2. Fellowships;
3. On-the-job training via planned work activities;
4. On-the-job coaching

Table 1. Planned Training Modules 1991-1993

No	Module	Method	Intensity and duration	No. part.	Inst./Coach	Period	
						Start	Complete
1	English Language	1	3 days/week, 8 weeks per course level	15	British Council, Sana'a	Sept. 91	Level 10
2	Wordperfect 5.1	1	1.5 hour/day, 6 days per week, 8 weeks	23	Joined training with YEPIC project	February 1992	March 1992
3	LOTUS	1		14	Joined training with YEPIC project	April 1992	May 1992
4	Dbase IV	1		3	Sana'a, Scientific Computer Centre	June 1992	
5	General Management	1	full time, shifts of 2 department direct.	6	Abroad (Region)	June 1992	Oct. 1992
6	General Management	3	special assignments	6	WRAY	Apr. 1990	June 1993
7	General Management	4	specific topics	6	WRAY	Apr. 1990	June 1993
8	Organizational Development and Institution building	1	full time, 3 weeks	2	Management for Development Foundation, Neth.	Sept.1991	Oct. 1991
9	Geophysics, EM/VES	1	full time, 2 weeks in Sana'a	4	TNO Institute of Applied Geoscience	Febr.1992	Febr.1992
10	Introduction in Electronics	1	full time, 2 weeks in Sana'a	7	TNO Institute of Applied Geoscience	Nov. 1992	Nov. 1992
11	Trouble shooting in electronics	3	specific instruments, 1 week	7	TNO Institute of Applied Geoscience	Nov. 1992	Nov. 1992
12	Introduction in ARC-INFO, GIS	1	full time, 2 weeks	4	TNO Institute of Applied Geoscience	Feb. 1992	Feb. 1992
13	Introduction in the use of GIS	1	full time, 1 week	10	TNO Institute of Applied Geoscience	Feb. 1993	Feb. 1993

No	Module	Method	Intensity and duration	No. part.	Inst./Coach	Period	
						Start	Complete
14	ARC-INFO, GIS	3	project implementation	4	WRAY	Feb. 1992	June 1993
15	Introduction in Hydrogeology	1	full time, 8 weeks	3	Region (Jordan)	Sept.1992	Oct.1992
16	Advanced course in Hydrogeology	2	full time, one year	1	IHE, Netherlands	Sept.1992	Sept.1993
17	Introduction database management	1	full time, 1 month	1	Region (Jordan)	Sept.1992	Oct.1992
18	Database management	1	full time, 1 month	1	Region (Jordan)	Sept.1992	Oct.1992
19	Training techniques	1	full time, 2 weeks	9	Region (Jordan)	Aug. 1992	Aug. 1992
20	Training techniques	3	special assignments	9	WRAY	Apr. 1990	June 1992
21	Report writing	1	full time, 2 weeks	23		July 1992	July 1992
22	Report writing	3	special assignments		WRAY	Apr. 1992	June 1993
23	Data processing EPROMS	3	full time, 1 week	6	GDH, Sana'a	Sept.1991	Sept.1991
24	EPROM collection	3		6	GDH, Sana'a	Feb. 1992	May. 1992
25	Maint. mon. equipment	3		6	GDH, Sana'a	Feb. 1992	May. 1992
26	Wadi discharge meas.	3		3	GDH, Sana'a	Feb. 1992	June 1992
27	Rating curves	1		4	WRAY	Apr. 1992	Apr 1992
28	Evapotranspiration	3		2	WRAY/GDH	Jan. 1993	Feb. 1993
29	GW contour maps	3		3	WRAY/GDH	Jan. 1992	Feb. 1993
30	Isohyet maps	3		3	WRAY/GDH	Jan. 1993	Feb. 1993
31	Inst. OMNIDATA	3		6	GDH	Feb. 1992	Mrch.1992
32	Interpr. pumping tests	3		6	WRAY	Jul. 1992	Jul.1992

No	Module	Method	Intensity and duration	No. part.	Inst./Coach	Period	
						Start	Complete
33	AUTOCAD	3		4	GDH	Nov. 1992	Nov.1992
34	Data archives	3		5	GDH	Dec. 1992	Dec. 1992
35	Secretarial services	1		1	YEPIC trainer	May 1992	May 1992
36	Admin./Finance	1	full time, 2 weeks	2	Region		
37	Water Resources Management Planning	1	full time, 1 month	4	WRAY (in the Netherlands during Gulf crisis)	February 1991	March 1991

Table 2. Training Modules Implementation Time-frame 1991-1993

1992												1993					
J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
1	1	1	1	1	1	1	1	1	1	1	1	16	16	16	16	16	16
	2	2	3	3	4	21	5	15	5	16	16	28	28				
	9	24	24	24	5	32	19	16	16	33	34	29	29				
	12	25	25	25	25			17				30	30				
	24	26	26	26	26			18									
	25	31	27	35													
	26																
	31																

The numbers in the table refer to the numbers of the training module in Table 1.

5. PROGRESS UNTIL DECEMBER 1992

5.1 Summary

In the sections 5.2 - 5.5 is given an overview of the training modules which have been implemented until December 1992, grouped according to the methods used:

1. Courses and workshops;
2. Fellowships;
3. On-the-job training via planned activities;
4. On-the-job coaching

The implementation of the training modules involved different trainers and experts from various institutes. The entities involved were:

1. TNO Institute of Applied Geoscience, Delft, The Netherlands;
2. WRAY-4 project expatriates, Sana'a, Yemen;
3. Environmental Quality International, Cairo, Egypt;
4. Management for Development Foundation (MDF), Ede, The Netherlands;
5. British Council Sana'a;
6. YEPIC project;
7. Sana'a University/IHE.

Except for the OD/IS training provided by the MDF, the modules were tailor-made and adapted to the trainees.

5 modules were contracted out to Environmental Quality International, a training institute in Cairo, which showed in the tender for the execution of the 5 modules, a flexible approach with a good contents of the programmes for a very reasonable price. The modules implemented by this institute were successful and the trainees were enthusiastic. The quality of the trainers was good to very good.

Table 3 gives a summary of the number of training modules implemented and the number of trainees. The last column gives an estimate of the hours of exposure (number of hours per event * number of trainees). In total 21 courses and workshops, and 8 on-the-job training events took place with a total number of 159 trainees. The total hours of exposure between trainers and trainees is around 21,000 of which around 9,000 via the courses and 12,000 via the on-the-job training.

Of the planned modules as presented in Chapter 4 except the Dbase IV course, the fellowship at IHE in advanced hydrogeology, the interpretation of pumping tests, AUTOCAD training and the secretarial training were not performed due to various reasons.

The DBase IV course could not be scheduled due to time

constraints, but was partly fulfilled in the database management course in Egypt. The fellowship was postponed due to personal reasons. The interpretation of pumping tests course was postponed to 1993, to work in real field conditions during the Abyan Delta water resources assessment study. The AUTOCAD training was questioned as this tool may be gradually phased out. The secretarial course was postponed because of budget limitations.

Table 3. Number of modules executed and the number of trainees during WRAY-4 until December 1992

Type of Module	Number of events	Number of trainees	Hours of exposure
Courses and workshops	21	121	8,800
Fellowships	none	0	0
On-the-job training via planned activities	7	31	around 12,000
On-the-job coaching	1	7	700
Total	29	159	around 21,000

The objective of the Human Resources Development Plan was to support the GDH in reaching technical and management self-reliance. It is interesting to see how the training modules were exactly spread over the management staff and the professionals involved in the technical activities.

Table 4 gives in column 1 the distribution of the staff in 4 groups, namely: directors, professionals, technicians and supporting staff, and how many of them were trainees (second column). The third column indicates in how many events at least one participant from a group participated.
Finally column 4 gives the average training events per person (number of trainees per group/available staff per group)

It can be concluded that the management staff and the technical professionals took the largest share of the training, and the managers even more then the technical professionals. The ratio of the professionals is a little bit underrated because of the inclusion of the Aden Branch staff into the GDH, without however taking part in the training. The technicians got relatively less attention, as was planned.

Table 4 GDH staff groups and their participation in the implemented training during 1990 through 1992

Staff Group	Available staff	Number of trainees	Modules in which was participated	Ratio
Directors	7	48	15	6-7
Professionals	22	79	21	3-4
Technicians	16	25	9	1-2
Supporting staff	10	4	2	<1
Total	55	156		

5.2 Courses

Subject: Objective Oriented Project Planning
Period: May 1990
Duration: 3 weeks
Trainer: E. Keijne, MDF, The Netherlands
Place: Sana'a, Yemen

Name participant	Department	Function
Mahmood Al-Udaini	Management	General Director
Mohamed Danikh	Surface water	Director
Ali Saad Atrous	Groundwater	Director
Abdul Latif Hassan Saeed	Information Centre	Director
Abdul Rahman Othman	Groundwater	Drilling supervisor
Abdul Hafed Saif	Geophysics	Geophysicist
Mohamed Ahmed Al-Subahi	Geophysics	Geophysicist
Khaled Ashehari	Geophysics	Geophysicist
Saad Saleh	Management	Accountant
Noori Gamal	Geophysics	Director

Subject: Inception Water Resources Management Study Marib Area
Period: November 1990
Duration: 2 days
Trainer: A.J.H. Negenman, WRAY-4
Place: Sana'a, Yemen

Name participant	Department	Function
Abdallah Saleh Saif	Surface water	Hydrogeologist
Ahmed Ali Ashami	Surface water	Hydrogeologist
Anwar Girgira	ERADA	Irrigation engineer
Naji Abu Hattim	ERADA	General Director
Mohamed Danikh	Surface water	Director
Ali Saad Atrous	Groundwater	Director

Subject: Applied Hydrology
Period: February - July 1990
Duration: 6 months
Trainers: Sana'a University/IHE,
Place: Sana'a

Name participant	Department	Function
Abdallah Saleh Saif	Studies and Surveys	Hydrogeologist
Yahia Al Kibsi	Geophysics	Geophysicist

Subject: Applied Hydrology
Period: August 1990 - January 1991
Duration: 6 months
Trainers: Sana'a University/IHE,
Place: Sana'a

Name participant	Department	Function
Ahmed Ali Al-Shami	Monitoring	Hydrogeologist

Subject: Advanced Course in Applied Hydrology
Period: March - September 1991
Duration: 6 months
Trainers: Sana'a University/IHE,
Place: Sana'a

Name participant	Department	Function
Yahia Al-Kibsi	Geophysics	Geophysicist

Subject: Water Resources Management Study Marib Area
Period: February-March 1991
Duration: 1 month
Trainers: H. Gieske and G. Brouwer, WRAY-4
Place: The Netherlands, Oosterwolde/Delft

Name participant	Department	Function
Abdallah Saleh Saif	Studies and Surveys	Hydrogeologist
Ahmed Ali Ashami	Monitoring	Hydrogeologist
Thabet Al-Selwi	ERADA	Hydrogeologist
Fahim Anaam	ERADA	Agricultural engineer

Subject: English Language
Period: September-October 1991
Duration: 2 months
Trainer: British Council
Place: Sana'a, Yemen

Name participant	Department	Function
Noori Gamal	Documentation and Coordination	Director
Sultan M. Ali	Documentation and Coordination	Documentalist
Ahmed A. Rakib Nouman	Monitoring	Technician
Abdulrahman M. Al Jendari	Geophysics	Geophysicist
Amin M. Mahyoub	Monitoring	Hydrogeologist
Abdul Khalek Albarakani	Monitoring	Hydrogeologist
Fedl Abdullah Alhaj	Studies and Surveys	Technician
Lutf S. Abdulah	Management	Assistant
Naser M. Saleh.	Management	Assistant
Mohamed Ali Abdo	Documentation and Coordination	Technician
Ali Kassim	Studies and Surveys	Hydrogeologist
Khalil Gobran M.	Information Centre	Programmer
Fatuma Alsayari	Management	Secretary
Wadi R. Abdo	Adm/Finance	Logistic Officer
M. Sharafadin	Monitoring	Technician

Subject: Introduction in Electronics
Period: 3 - 14 November, 1992
Duration: 2 weeks
Trainer: J. Swenker, TNO Institute of Applied Geoscience
Place: Sana'a, Yemen

Name participant	Department	Function
Abdulrahman M. Al-Jendari	Geophysics	Geophysicist
Aidroos Ahmed Ali	Geophysics	Maintenance
Kennedy Kassim	Geophysics	Hydrogeologist
Khalil Gobran	Information Centre	Programmer
Mohamed Al-Faqi	Geophysics	Logging
Mohammed Al-Baidany	Information Centre	Technician
Nabil Abdul Kadr	Information Centre	Systems Analyst

Subject: Organizational Development and Institutional Strengthening
Period: October 1991
Duration: 1 month
Trainers: MDF, Ede, The Netherlands
Place: Ede, The Netherlands

Name participant	Department	Function
Ali Gabr Alawi	Mineral Exploration Board	Chairman
Mohamed Danikh	GDH Management	General Director

Subject: Introduction GIS/ARC-INFO
Period: February 1992
Duration: 2 weeks
Trainer: J. Vlot, TNO Institute of Applied Geoscience
Place: Sana'a, Yemen

Name participant	Department	Function
Abdul Latif Hassan	Information Centre	Director
Nabil Abdul Kadr	Information Centre	Systems Analyst
Abdul Kadr Ali	Information Centre	Systems Analyst
Khalil Gobran	Information Centre	Programmer
Ali Kassim	Studies and Surveys	Hydrogeologist
Feisal Hazza	Documentation and Coordination	Cartographer

Subject: Electro Magnetics (EM)
Period: February 1992
Duration: 2 weeks
Trainer: J. Meekes, TNO Institute of Applied Geoscience
Place: Sana'a, Yemen

Name participant	Department	Function
Mohamed Al-Subahi	Geophysics	Director
Abdul Hafez	Geophysics	Geophysicist
Yahia Al-Kibsi	Geophysics	Geophysicist
Khaled Ashehari	Geophysics	Geophysicist
Abdulrahman Aljendari	Geophysics	Geophysicist

Subject: Workshop Water Resources Management
Period: July 1992
Duration: 3 weeks
Trainers: H. Gieske, TNO Institute of Applied Geoscience, Abdallah Saif, GDH, Studies and Surveys
Place: Marib, Yemen

Name participant	Department	Function
Jawid Ahmed Al-Jailani	ERADA	Civil Engineer
Abdul-Nasser Sultan Taher	ERADA	Agricultural Engineer
Ahmed Sheikh Salim	ERADA	Agro-economist
Ahmed Mosuad Ali Al-Ariefy	ERADA	Irrigation Engineer
Awanh M. Dawed Ali	ERADA	Geologist
Ali Huassain Soulain	ERADA	Agricultural engineer
Ahmed Ali Al-Shami	GDH, Monitoring Department	Hydrogeologist

Subject: General Management
Period: July - October, 1992 (3 groups)
Duration: 4 weeks
Trainers: Environmental Quality International, Cairo, Egypt
Place: Cairo, Egypt

Name participant	Department	
Ali Saad Atrous	Studies and Surveys	Director
Mohamed Ahmed Al-Subahi	Geophysics	Director
Abdul Aziz Abdullah Ahmed	Monitoring	Director
Mohamed Danikh	Management	General Director
Dr. Abdul Majid Mohammed	Aden Branch	Director
Wadia Rashed	Logistics (MEB)	Director
Abdul Latif Hassan	Information Centre	Director
Ahmed Wahib	Aden Branch (MEB)	Vice Director General
Saad Saleh	Personnel Department (MEB)	Head of Department

Subject: Training of trainers
Period: August, 1992
Duration: 2 weeks
Trainers: Environmental Quality International, Cairo, Egypt
Place: Sana'a, Yemen

Name participant	Department	
Ali Saad Atrous	Studies and Surveys	Director
Mohamed Ahmed Al-Subahi	Geophysics	Director
Abdul Aziz Abdullah Ahmed	Monitoring	Director
Mohamed Danikh	Management	General Director
Dr. Abdul Majid Mohammed	Aden Branch	Director
Noori Gamal	Documentation and Coordination	Director
Abdul Latif Hassan	Information Centre	Director
Ahmed Ali Al-Shami	Monitoring Department	Section Head
Nabil Abdul Kadr	Information Centre	Systems analyst
Ali Abdul Kadr	Information Centre	Systems Analyst
Abdallah Saif	Studies and Surveys	Hydrogeologist
Ali Kassim	Studies and Surveys	Hydrogeologist
Abdul Aziz Mahyoub	Aden Branch	Hydrogeologist
Khalid M. El-Shahari	Geophysics	Geophysicist

Subject: Introduction to Hydrogeology
Period: September - October, 1992
Duration: 2 months
Trainers: Environmental Quality International
Place: Cairo, Egypt

Name participant	Department	Function
Amin Mahyoub	Monitoring Department	Hydrogeologist
Abdul Khalek Al-Barakani	Monitoring Department	Hydrogeologist

Subject: Administration and Finance
Period: October 1992
Duration: 2 weeks
Trainers: Environmental Quality International
Place: Cairo, Egypt

Name participant	Department	Function
Saad Saleh	Personnel (MEB)	Head
Abdou Ali	Finance and Administration	Administrative officer

Subject: Data Base Management
Period: October - November, 1992
Duration: 4 weeks
Trainers: Environmental Quality International
Place: Cairo, Egypt

Name participant	Department	Function
Nabil Abdul Kadr	Information Centre	Systems Analyst
Abdul Kadr Ali	Information Centre	Systems Analyst
Khalil Gobran	Information Centre	Programmer

Subject: Lotus
Period: September 1992
Duration: 4 weeks
Trainers: YEPIC
Place: Sana'a, Yemen

Name participant	Department	Function
Ahmed Abdul Rakib Nouman	Monitoring	Technician
Khalil Gobran	Information Centre	Programmer
Mohamed Al-Baidany	Information Centre	Technician
Noori Gamal	Documentation and Coordination	Director
Ali Kassim	Studies and Surveys	Hydrogeologist
Mohamed Abdo Ali		Technician

Subject: MS-DOS/Introduction WordPerfect 5.1
Period: 1992
Duration: 4 weeks
Trainers: YEPIC
Place: Sana'a, Yemen

Name participant	Department	Function
Mohamed Al-Baidany	Information Centre	Technician
Noori Gamal	Documentation and Coordination	Director
Ali Saad Atrous	Studies and Surveys	Director
Ali Kassim	Studies and Surveys	Hydrogeologist
Omer Taher Faqueer	Studies and Surveys	Hydrogeologist
Mohamed Abdul Kadr	Documentation and Coordination	Technician
Fatima Al-Seyary	Management	Secretary
Amin Mahyoub	Monitoring	Hydrogeologist
Abdul Khalek Al-Barakani	Monitoring	Hydrogeologist
Ahmed Ali Al-Shami	Monitoring	Hydrogeologist
Hassan Muthana	Documentation and Coordination	Technician
Abdul Rahman Al-Jendari	Geophysics	Geophysicist

Subject: Data processing from EPROM's
Period: October - December 1991
Duration: 6 days
Trainers: Abdul Aziz Abdullah Ahmed and Ahmed Ali Al-Shami, GDH, Sana'a
Place: Sana'a, Yemen

Name participant	Department	Function
Ahmed Abdul Rakib Nouman	Monitoring	Technician
Amin Ahmed Mahyoub	Monitoring	Hydrogeologist
Abdul Khalek Al-Barakani	Monitoring	Hydrogeologist
Fuad Al Kabir	Monitoring	Technician
Mohamed Al-Nassiri	Monitoring	Technician

Subject: Isohyets, Evapotranspiration, Rating curves Period: April - October 1992 Duration: 14 days Trainers: Abdul Aziz Abdullah Ahmed, H. Kamphuis, WRAY, Sana'a Place: Sana'a, Yemen		
Name participant	Department	Function
Amin Ahmed Mahyoub	Monitoring	Hydrogeologist
Abdul Khalek Al-Barakani	Monitoring	Hydrogeologist
Ahmed Ali Al-Shami	Monitoring	Hydrogeologist

5.3 Fellowships

One (1) fellowship was planned, namely for Abdallah Saif Saleh, Hydrogeologist from the Studies and Surveys Department.
It was planned to have him following the Advanced Course in Hydrogeology (Diploma Course) at the IHE in Delft in the period September 1992 - September 1993, to be followed, when successful by a MSc programme. Due to personal reasons the candidate postponed his leave with one year.

5.4 On-the-job training via planned activities

Subject: Water Resources Management Study Marib
Period: November 1990 - December 1991
Duration: 13 months
Trainers: H. Gieske and G. Brouwer, WRAY, Sana'a
Place: Sana'a/Marib, Yemen

Name participant	Department	Function
Abdallah Saif Saleh	Studies and Surveys	Hydrogeologist
Thabet Al-Selwi	ERADA	Hydrogeologist

Subject: Human Resources Development Plan
Period: June 1991 - February 1992
Duration: 9 months
Trainer: A.J.H. Negenman, WRAY, Sana'a
Place: Sana'a, Yemen

Name participant	Department	Function
Mohamed Danikh	Management	General Director
Ali Saad Atrous	Studies and Surveys	Director
Noori Gamal	Documentation and Coordination	Director
Abdul Aziz Abdullah Ahmed	Monitoring	Director
Abdul Latif Hassan	Information Centre	Director
Mohamed Ahmed Al-Subahi	Geophysics	Director

Subject: Compilation of annual monitoring network reports
Period: June 1991 - December 1991
Duration: 7 months
Trainers: H. Kamphuis, WRAY, Sana'a
Place: Sana'a, Yemen

Name participant	Department	Function
Abdul Aziz Abdallah	Monitoring	Director
Ahmed Ali Ashami	Monitoring	Hydrogeologist
Amin Mahyoub	Monitoring	Hydrogeologist
Abdul Khalek Al-Barakani	Monitoring	Hydrogeologist

Subject: Operation and Maintenance automatic monitoring stations
Period: June 1991 - December 1992
Duration: 19 months
Trainers: Abdul Aziz Abdallah, Ahmed Ali Al-Shami and H. Kamphuis, GDH/WRAY, Sana'a
Place: Sana'a, Yemen

Name participant	Department	Function
Amin Mahyoub	Monitoring	Hydrogeologist
Abdul Khalek Al-Barakani	Monitoring	Hydrogeologist

Subject: Water Resources Assessment Study Abyan Delta
Period: November 1992 - December 1993
Duration: 14 months
Trainers: Ali Atrous, Ali Kassim, Khaled Ashehari, Abdul Hafez, A.J.H. Negenman, H. Kamphuis, GDH/WRAY/TNO, Sana'a
Place: Sana'a/Abyan, Yemen

Name participant	Department	Function
Mohamed Danikh	Management	General Director
Ali Saad Atrous	Studies and Surveys	Director
Abdul Aziz Mahyoub	Aden Branch	Hydrogeologist
Mohamed Aidroos Alkaf	Aden Branch	Hydrogeologist
Mansour Jafar Ali	Aden Branch	Hydrogeologist
Fahim Salman Alkaf	Aden Branch	Hydrogeologist
Yahia Almahbusi	TS/HWC	Hydrogeologist
Walid Usman	TS/HWC	Hydrogeologist

Subject: Compilation Summary Report Hydrology and Hydrogeology Yemen
Period: May 1992 - December 1993
Duration: 20 months
Trainers: A.J.H. Negenman, J.A.M. van der Gun, WRAY/TNO
Place: Sana'a/Aden, Yemen

Name participant	Department	Function
Dr Abdul Majid Mohamed	Aden Branch	Director
Abdallah Saif	Studies and Surveys	Hydrogeologist
Abdul Aziz Abdallah	Monitoring	Director
Salim Ba Shueib	Aden Branch	Hydrogeologist

Subject: ARC-INFO/GIS project implementation
Period: March 1992 - March 1993
Duration: 2 years
Trainers: P. Visser, WRAY, Sana'a
Place: Sana'a, Yemen

Name participant	Department	Function
Nabil Abdul Kadr	Information Centre	Systems analyst
Khalil Gobran	Information Centre	Systems Analysts
Mohamed Al-Baidany	Information Centre	Technician
Fedl Abdullah Alhaj	Studies and Surveys	Technician
Ahmed Abdul Rakib Nouman	Monitoring	Technician

5.5 On-the-job coaching

Subject: Management
Period: April 1990 -
Duration: continuous
Trainers: A.J.H. Negenman, H. Kamphuis, P. Visser, WRAY-4, Sana'a
Place: Sana'a, Yemen

Name participant	Department	Function
Mohamed Danikh	Management	General Director
Ali Saad Atrous	Studies and Surveys	Director
Abdul Aziz Abdalah	Monitoring	Director
Abdul Latif Hassan	Information Centre	Director
Mohamed Al-Sabahi	Geophysics	Director
Noori Gamal	Documentation and Coordination	Director
Dr Abdul Majid Mohamed	Aden Branch	Director

5.6 Follow-up and further training

Follow-up should be an integral part of any training program.

An assessment of the change in the participants' quality of work, should be conducted.

It is suggested to do this by means of a formal Performance Appraisal. In the beginning of 1993 future objectives and action plans should be defined by the subordinates (staff of the departments) and supervisors (directors of departments).

The outcome should be measured against the set goals after 6 months.

The defenition of the future objectives and the action plans should be based on the current performance of the employee, aiming at reaching a potential performance, taking into consideration the training the employee has received.

The objectives and action plan will be consolidated in the Individual Development Plan for each staff member. A first impact evaluation is scheduled by mid 1993 to assess the effectiveness of the conducted training program until December 1992 on both the behavioral and functional levels.

During 1993 and 1994 the training program will continue with specific attention for the Aden Branch staff. Mini-courses, on-the-job training and further management training will take place. Also fellowships will be implemented. The GDH Sana'a staff will play a major role in training of the Aden Branch staff.

6. EXPENDITURES

The overall amount spent for training was drawn from various WRAY-4 budget codes. This is because training was in many cases combined with other objectives (e.g. conducting studies).

Short mission training experts who visited Yemen spent on code 211.4 (preparation NL), 211.5 (time in Yemen), 215.1 (DSA Yemen) and 213.3 (ticket costs).

Costs for courses conducted by local training institutes (computer training and english language training) were drawn from the training budget code 600. These costs are composed of the course fees only.

Courses abroad (The Netherlands and Egypt) were also drawn from the training budget. These costs are composed of travel costs, DSA and course fees.

Fellowships were not implemented until December 1992.

The on-the-job training and coaching requires the availability of experts. It is estimated that the experts and associate experts have spent around 50% of their time on-the job training. The WRAY-4 CTA spent around 50% of his time on-the-job coaching. The time spent by the WRAY-4 experts on training is drawn from code 211.5 (time in Yemen) plus the sending out costs for expatriates.

Following the above mentioned cost factors, a cost overview has been build up which is given in Table 5. The table is composed of four columns indicating respectively the training event, the costs of the trainer or institute (fees, travel and stay), and the costs of the trainees (travel and stay). The fourth column states miscellaneous costs. The costs of the associate experts were not included.

Table 5. Expenditures on training in WRAY-4 until December 1992 in kNLG (only contribution from Netherlands budget)

Training module	Costs of Trainer	Costs of Trainees	Misc. costs
Objective Oriented Project Planning	35.4		
Workshop Water Resources Management Marib Area (The Netherlands)	52.2	12.1	
Introduction in Electronics	31.4		1.2
English Language	3.5		2.0
Organization Development and Institutional Strengthening	14.4	10.9	
Introduction GIS/ARC-INFO	39.3		0.5
Electromagnetic Methods in Groundwater Exploration	38.3		0.5
Workshop Water Resources Management Marib Area (Marib)	34.2		
General Management	19.0	44.9	
Training of trainers	24.1		
Introduction to Hydrogeology	9.8	13.6	
Administration and Finance	5.0	6.5	
Data Base Management	5.4	15.1	
Lotus	0.5		
MS-DOS/WP 5.1	1.5		
Subtotal Courses	314.0	103.1	4.2
On-the-job training by WRAY-4 experts Negenman Gieske Brouwer	900.0		
Grand Total	1,214.0	103.1	4.2

ANNEX 1

List of GDH personnel per 11/11/1991

DEPARTMENT	FUNCTION	NAME	JOB	EPH
MANAGEMENT				
	GENERAL DIRECTOR	Mohamed Danikh	M-1	20
SECRETARIAT	SECRETARY	Fatuma Al-Seyary	M-2	29
	CLERK	Lutf Saleh Abdallah	M-3	31
	CLERK	Nasser Moh. Alabrad		42
ADMINISTRATION AND FINANCE	ADMINISTRATOR	Abdoh Ali	M-4	16
WORKSHOP	MECHANIC	Rafiq Abdulkadr Saif	M-6	36
TRANSPORT	DRIVER 1	Ali Ali Asheish	M-8	45
	DRIVER 2	Saleh Al Kohl	M-11	37
	DRIVER 3	Mohamed Abdo Saleh	M-9	57
	DRIVER 4	Ahmed Hussein Atia	M-12	58
	DRIVER 5	Saeed Abdul Wally	M-10	38
INFORMATION CENTRE				
	DIRECTOR	Abdul Latif Hassan	IC-1	7
PROGRAMMING SECTION	HEAD OF SECTION	Ali Abdul Kadr	IC-2	24
	PROGRAMMER 1	Khalil Gubran	IC-4	28
DATA SECTION	HEAD OF SECTION	Nabil Abdul Kadr	IC-3	2
	TECHNICIAN	Mohamed Al-Baidany	IC-9	46
DOCUMENTATION AND COORDINATION				
	DIRECTOR	Noori Jamal	DC-1	25
	LIBRARIAN	Mohamed Abdul Kadr	DC-3	27
	TECHNICIAN 1	Hassan Muthana Altezy	DC-4	39
	TECHNICIAN 2	Mahmoud Alkahtani	DC-5	59

DEPARTMENT	FUNCTION	NAME	JOB	EPH
MONITORING DEPARTMENT				
	DIRECTOR	Abdul Aziz Abdalah	MN-1	19
SECTION NORTH AND WEST	HYDROGEOLOGIST 1	Abdul Khalek Albarak.	MN-5	6
	HYDROGEOLOGIST 2	Amin Mahyoub	MN-4	23
	TECHNICIAN 1	Mohamed Sharaf	MN-6	41
	TECHNICIAN 2	Mohamed Nassiri	MN-7	9
SECTION EAST	HEAD OF SECTION	Ahmed Ali Ashami	MN-3	22
	TECHNICIAN 3	Fuad Al Kabir	MN-8	4
	TECHNICIAN 4	Ahmed Abdul Rakib	MN-9	34
STUDIES AND SURVEYS				
	DIRECTOR	Ali Atroos	SS-1	8
HYDROGEOLOGICAL SERVICES	HEAD OF SECTION	Abdallah Saleh Saif	SS-3	21
	HYDROGEOLOGIST 1	Ali Kassim	SS-4	3
	HYDROGEOLOGIST 2	Omer Taher Faqueer	SS-6	47
	HYDROGEOLOGIST 3	Ali Mohamed Al-Kori	SS-7	54
	TECHNICIAN 1	Fedl Abdullah Alhaj	SS-5	35
DRILLING	HEAD OF SECTION	Abdul Rahman Othman	SS-2	5
GEOPHYSICS				
	DIRECTOR	Mohamed Assabahi	GP-1	14
LOCAL SOUNDINGS	HEAD OF SECTION	Abdul Hafez	GP-2	12
	GEOPHYSICIST 1	Yahia Alkibsi	GP-6	40
WELL LOGGING				
	TECHNICIAN 1	Kennedy Kassim	GP-8	10
	ASS. TECHNICIAN 1	Aldahbaly	GP-9	32
MAINTENANCE	HEAD OF SECTION	Aidroos Ahmed Ali	GP-4	11
	ASS. TECHNICIAN 2	Al-Hawshabi	GP-10	15
	ASS. TECHNICIAN 3	Heider Ali Arami	GP-15	55
PROJECTS	HEAD OF SECTION	Khaled Ashehari	GP-5	13
	GEOPHYSICIST 2	Abdulrahman Aljendari	GP-13	43
	GEOPHYSICIST 3	Abdalah Moh. Alnutah	GP-14	56
	TECHNICIAN 2	Feisan Qulam Khader	GP-11	26
	TECHNICIAN 3	Ihab Ahmed Alazazi	GP-12	33

DEPARTMENT	FUNCTION	NAME	JOB	EPH
ADEN BRANCH				
	DIRECTOR	Dr Abdul Majid Moh.	AB-1	48
	HYDROGEOLOGIST 1	Abdul Aziz Mahyoub	AB-2	51
	HYDROGEOLOGIST 2	Mohamed Aidroos Alkaf	AB-3	52
	HYDROGEOLOGIST 3	Fahim Salman Alkaf	AB-4	53
	HYDROGEOLOGIST 4	Mansour Jafar Ali	AB-5	49
	HYDROGEOLOGIST 5	Zaqi Mohamed Shaif	AB-6	50
	HYDROGEOLOGIST 6	Salim Ba Shueib	AB-7	60
Total	55			
PhD, MSc, BSc holders	29			