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## 附属資料-1 調査団員氏名

附属資料-1-1 調査団員氏名(B/D 調査時:2000 年 4 月 15 日～5 月 19 日)

- |   |  |
|---|--|
| 1. 須知 雅史 (総括)<br>(財)結核予防会 結核研究所         | <b>Dr. Masashi SUCHI</b> : Leader<br>Chief, Project Development & Management Divn.,<br>Department of International Cooperation,<br>The Research Institute of Tuberculosis,<br>Japan Anti-Tuberculosis Association (JATA) |
| 2. 小林 勤 (計画管理)<br>国際協力事業団 企画・評価部        | <b>Mr. Tsutomu KOBAYASHI</b> : Coordinator<br>Donor Coordination Division,<br>Planning and Evaluation Department.<br>Japan International Cooperation Agency (JICA)   |
| 3. 西村 哲郎 (業務主任/建築計画)<br>(株)久米設計 国際部     | <b>Mr. Tetsuro NISHIMURA</b> : Project Manager<br>Kume Sekkei Co.,Ltd.   |
| 4. 榎本 繁 (建築設計)<br>(株)久米設計 設計部           | <b>Mr. Shigeru ENOMOTO</b> : Architect<br>Kume Sekkei Co.,Ltd.   |
| 5. 横山 大毅 (設備設計)<br>(株)久米設計 設備設計部        | <b>Mr. Hiroki YOKOYAMA</b> : Utility Planner<br>Kume Sekkei Co.,Ltd.   |
| 6. 東條 重孝 (機材計画 I)<br>(株)国際テクノ・センター      | <b>Mr. Shigetaka TOJO</b> : Equipment Planner - I<br>International Techno Center Co., Ltd.   |
| 7. 河端 由香 (機材計画 II)<br>(株)国際テクノ・センター     | <b>Ms. Yuka KAWABATA</b> : Equipment Planner - II<br>International Techno Center Co., Ltd.   |
| 8. 土屋 弘之 (施工調達計画/積算)<br>(株)久米設計 国際部     | <b>Mr. Hiroyuki TSUCHIYA</b> : Cost Planner<br>Kume Sekkei Co.,Ltd.  |
| 9. 高瀬 知哉 (通訳)<br>(財)日本国際協力センター<br>研修管理部 | <b>Mr. Tomoya TAKASE</b> : Interpreter<br>Japan International Cooperation Center (JICE)  |

附属資料-1-2 調査団員氏名(ドラフト説明時:2000 年 8 月 12 日～9 月 1 日)

- |   |  |
|---|--|
| 1. 須知 雅史 (総括)<br>(財)結核予防会 結核研究所         | <b>Dr. Masashi SUCHI</b> : Leader<br>Chief, Project Development & Management Divn.,<br>Department of International Cooperation,<br>The Research Institute of Tuberculosis,<br>Japan Anti-Tuberculosis Association (JATA) |
| 2. 岩城 幸男 (業務調整)<br>国際協力事業団 無償資金協力部      | <b>Mr. Yukio IWAKI</b> : Coordinator<br>Second Project Management Division,<br>Grant Aid Management Department.<br>Japan International Cooperation Agency (JICA)   |
| 3. 西村 哲郎 (業務主任/建築計画)<br>(株)久米設計 国際部     | <b>Mr. Tetsuro NISHIMURA</b> : Project Manager<br>Kume Sekkei Co.,Ltd.   |
| 4. 榎本 繁 (建築設計)<br>(株)久米設計 設計部           | <b>Mr. Shigeru ENOMOTO</b> : Architect<br>Kume Sekkei Co.,Ltd.   |
| 5. 東條 重孝 (機材計画 I)<br>(株)国際テクノ・センター      | <b>Mr. Shigetaka TOJO</b> : Equipment Planner - I<br>International Techno Center Co., Ltd.   |
| 6. 土屋 弘之 (施工調達計画/積算)<br>(株)久米設計 国際部     | <b>Mr. Hiroyuki TSUCHIYA</b> : Cost Planner<br>Kume Sekkei Co.,Ltd.  |
| 7. 高瀬 知哉 (通訳)<br>(財)日本国際協力センター<br>研修管理部 | <b>Mr. Tomoya TAKASE</b> : Interpreter<br>Japan International Cooperation Center (JICE)  |

自社補強: Supplemental Consultant Staff

- |                                  |  |
|----------------------------------|--|
| 8. 明円 孝一 (建築設計)<br>(株)久米設計 設計部   | <b>Mr. Takakazu MYOUE</b> : Facility Designer<br>Kume Sekkei Co., Ltd. |
| 9. 下田 建也 (電気設計)<br>(株)久米設計 設備設計部 | <b>Mr. Takeya SHIMODA</b> : Electric Planner<br>Kume Sekkei Co., Ltd.  |

## 附属資料-2 調査日程

附属資料-2-1 調査日程:B/D 調査(2000 年 4 月 15 日～5 月 19 日:35 日間)

日 順	月日 (曜)	調 査 内 容		
1	4 月 15 日 (土)	13:00 東京発(JL-407 便)、(LH-715 便) コンサルタント団員(西村業務主任、榎本建築計画、横山設備計画、 東條機材計画 I、河端機材計画 II、土屋施工調達計画/積算、高瀬通訳)		
		18:00 フランクフルト着		
2	16 日 (日)	14:20 フランクフルト発(LH-652 便)		
		23:40 サナア着		
3	17 日 (月)	08:00 団内会議/日程打合せ		
		09:00 日本大使館星大使表敬/打合せ		
		10:00 計画開発省(MOPD)Mr.Hisham 次官表敬/打合せ		
		11:00 保健省(MOPH)Mr.Faisal 次官代行表敬/打合せ(インベ`ション・レポ`ート説明他)		
14:00 プロ技協(江上リ`ダ-、渡辺調整員)打合せ				
4	18 日 (火)	09:30 国立結核研究所(NTI)視察/要請背景調査		
		16:00 自然条件調査(敷地測量・地質調査)再委託先打合せ		
		17:00 団内会議		<機材計画調査(アデン)>
5	19 日 (水)	09:00 NTI 活動調査(組織、人員、活動他)		11:30 東條、河端団員 サナア発(IY804)
		16:00 自然条件調査再委託先打合せ		12:14 アデン着 13:30 アデン PHC 協議
6	20 日 (木)	09:00 サナア市内市場見学		09:00 PHC ラボ調査 11:00 マンスーラ PC 調査
7	21 日 (金)	09:00 サナア市内見学		資料整理
		<施設計画調査(アデン)>		
		19:00 榎本/横山/土屋団員 サナア発(IY-854)		
		<要請内容確認調査>		
20:00 アデン着				
8	22 日 (土)	04:30 須知団長、小林職員 サナア着(EK451)		09:00 PHC にて調整 09:30 ブレイカ PC 調査 11:30 シェイク・ヌマ PC 調査
		10:30 日本大使館星大使表敬 11:45 MOPD 表敬		
		12:30 MOPH 表敬 14:30 NTI 視察		15:00 資料整理 17:00 市内代理店調査
		09:00 アデン PHC 所長表敬 10:00 アデン保健局表敬・協議 11:00 PHC 結核担当官協議		
9	23 日 (日)	09:30 須知団長、小林職員、 西村/高瀬団員、JICA 江上リ`ダ-、渡辺調整員 サナア発(IY406)		09:00 PHC にて調整 09:30 ホルマケル HU 調査 11:00 メダン PC 調査
		10:15 アデン着 11:00 アデン保健局 DG 表敬 11:45 メダン PC 視察		
		12:45 マーラ PC 視察 15:00 イ側スタッフと協議		
		07:30 PHC 建設予定地確認 09:00 ホルマケル HU 調査 09:30 共和国病院調査 10:00 メダン PC 調査 10:30 ムーラ PC 調査 11:00 タワーヒ HU 調査 11:30 マンスーラ PC 調査		
14:00 団内会議 15:00 資料整理		15:00 資料整理 17:00 市内代理店調査		
10	24 日 (月)		08:00 団内会議(全員) 09:00 PHC 所長表敬・協議 10:15 アデン保健局 DG 協議 11:10 アデン州知事表敬 12:45 マンスーラ PC 視察	
		13:30 シェイク・ヌマ PC 視察 17:00 団内会議(全員)		
		08:00 団内会議 09:00 自然条件調査契約 09:30 ブレイカ PC 調査 10:30 シェイク・ヌマ PC 調査 11:30 PHC 検査ラボ調査		
		14:00 資料整理 17:00 団内会議(全員)		
11	25 日 (火)	08:45 共和国病院視察 11:15 PHC にて施設内容協議		09:00 共和国病院ラボ調査
		15:00 本館にて施設内容協議		
		09:00 市内建設現場視察		12:00 共和国病院の関連調査
15:00 資料整理		15:00 資料整理		

日 順	月日 (曜)	調 査 内 容		
12	26 日 (水)	08:00 団内会議（機材内容-1） 09:00 PHC にて機材協議 12:00 保健局 DG に報告	08:00 団内会議（機材内容-1） 09:00 建設省アデン事務所に て建築規制等調査	08:00 団内会議(機材-1) 09:00 PHC にて機材協議 12:00 保健局 DG に報告
		15:00 資料整理	15:15 ホテル建設現場視察	15:00 資料整理
13	27 日 (木)	06:00 江上リター、渡辺調整員 アデン発(IY405) 06:00 サナア着 10:00 団内会議（機材内容-2）	10:00 団内会議（機材内容-2） 調査事項まとめ	10:00 団内会議(機材-2) 調査事項まとめ
14	28 日 (金)	19:15 須知団長、小林職員、 西村/東條/河端団員 アデン発(IY651) 20:00 サナア着	施設計画案作成	
15	29 日 (土)	<ミニッツ協議・機材計画調査(サナア)>		<施設計画調査の継続(アデン)>
		09:00 MO PH/JICA プロ技協打合せ 10:00 MOPH 側と施設・機材内容協議 12:00 ミニッツ内容協議	09:00 アデン保健局インフラ関連調査 10:30 マンスーラ区役所建設事情調査 11:00 アデン保健局エンジニア聞取り調査	
		14:00 ミニッツ添付資料作成	13:30 建材関係市場調査	
16	30 日 (日)	09:00 MOPH ミニッツ案協議 11:40 MOPH 保健大臣表敬 12:30 NTI 再確認	09:00 アデン保健局エンジニア打合せ 10:00 アデン電力局、電話局、水道局調査 11:30 電話局マンスーラ事務所打合せ	
		14:00 昼食会（保健大臣主催） 15:45 団内会議（ミニッツ内容）	13:30 水道局にて上下水接続打合せ	
17	5 月 1 日 (月)	祭日（メーデー） 10:00 サナア市内市場視察	08:30 アデン市汚水処理場・給水施設調査 09:30 アデン市内建材市場の視察 13:30 収集資料整理	
18	2 日 (火)	09:00 MOPH ミニッツ訂正/資料収集 11:30 Mr.Faisal 次官代行と協議	09:00 アデン保健局マテナス・ワークショッ 調査 11:00 アデン薬品倉庫視察	
		14:00 昼食会（団長主催）	13:00 資材単価調査	
19	3 日 (水)	08:45 WHO 代表表敬 10:30 MOPD ミニッツ訂正/資料収集 12:10 MOPD 次官ミニッツ署名	09:30 生コンクリート業者調査 09:00 廃棄物処理場調査 10:00 施工体制調査	
		13:45 日本大使館報告	12:00 建設省アデン事務所打合せ	
20	4 日 (木)	02:10 須知団長、小林職員、河端団員 サナア発（LH653） 成田着 5/5 日 20:00 西村/東條団員サナア発(IY360) 20:45 アデン着	調査資料整理	
21	5 日 (金)	<施設・機材計画調査の継続(アデン)> 17:00 団内会議（調査項目と日程調整）		
22	6 日 (土)	09:30 PHC 事務所にて追加調査 11:00 PHC 所長と協議 11:30 アデン高等医療技術学校視察 17:00 家具市場調査		
23	7 日 (日)	09:00 PHC 結核担当官と協議 11:30 アデン保健学校視察	<施工・積算関連調査(サナア・第三国)> 10:30 土屋/横山団員アデン発(IY403) 12:30 サナア着	
		14:00 収集資料翻訳・整理	14:00 プロ技協中間報告 15:30 日本大使館中間報告 18:00 地質調査業者中間打合せ	
24	8 日 (月)	09:00 アデン保健局財務調査 10:30 建設省アデン事務所、積算資料収集 11:30 アデン保健局開発計画局次長面談	02:10 横山団員サナア発(LH653) 成田着 5/9 日 09:00 サナア建材市場調査	
		13:30 アデン保健局長にタイズ調査の 警護依頼	21:30 土屋団員サナア発(SV681) 23:05 ジェッダ着	

日 順	月日 (曜)	調 査 内 容	
25	9 日 (火)	09:00 アデン保健局会計担当、財務調査 10:10 PHC 事務所長と最終協議 17:00 建具金物、衛生陶器の調査	08:30 サウジ鉄鋼会社調査 10:00 サウジ建設会社調査 15:00 建材市場調査
26	10 日 (水)	07:00 ホテル発 10:00 タイズ結核センター調査 14:30 タイズ発 16:30 ホテル着	08:30 サウジ空調設備会社 16:00 ジェッダ発(SV552) 19:30 ドバイ着
27	11 日 (木)	06:00 西村/榎本/東條/高瀬団員 アデン発(IY405) 06:45 サナア着	08:30 ドバイ建設会社調査 13:00 建材市場調査
28	12 日 (金)	08:15 榎本/東條/高瀬団員サナア発(IY506) 08:45 ホデイダ着	09:00 ドバイ市内建設現場訪問 13:00 資料整理
29	13 日 (土)	(西村) 09:00 NTI にて追加調査 11:00 MOPH/JICA にて資料収集 (榎本/東條/高瀬) 09:00 ホデイダ結核センター調査	03:45 ドバイ発(LH633) 08:35 フランクフルト着 20:50 フランクフルト発(JL408) 成田着 5/14 日
30	14 日 (日)	(西村) 09:00 MOPH/JICA にて追加調査 (榎本/東條/高瀬) 13:45 杉 伊 発(IY44) 14:30 サナア着 17:00 コンピューター代理店調査	
31	15 日 (月)	08:30 MOPH 追加調査 09:00 中央公衆衛生研究所(CHL)調査 11:00 ライシーHC 調査 11:55 イラキ HC 調査 15:00 調査項目の整理	
32	16 日 (火)	08:45 建設機械センター視察 10:00 報告書作成 13:00 報告書作成 16:30 設備代理店調査	
33	17 日 (水)	09:00 MOPH 次官に最終報告 10:00 MOPD 次官に最終報告 15:00 日本大使館に最終報告 22:00 地質調査報告書受領	
34	18 日 (木)	02:10 サナア発(LH653) 09:45 フランクフルト着 20:50 フランクフルト発(JL408)	
35	19 日 (金)	14:55 成田着	



附属資料-2-2 調査日程:ドラフト説明(2000年8月12日～9月1日:21日間)

日 順	月 日	曜 日	作業内容						
			官団員		業務主任/ 建築計画 西村 哲郎	建築設計 榎本 繁	機材計画 東條 重孝	施工調達 計画/積算 土屋 弘之	通 訊 高瀬 知哉
			団 長 須知 雅史	業務調整 岩城 幸男					
1	8 /12	土			成田 13:00	フランクフルト 18:00 (JL-407)			
2	13	日			フランクフルト 14:15	サナア 23:35 (LH-652)			
3	14	月			日本大使館表敬、計画開発省表敬 保健省(国家結核対策計画課)にて基本設計概要書の説明、プロ技協と協議				
4	15	火			保健省(国家結核対策計画課)にて基本設計概要書の説明、協議				
5	16	水	成田 フランクフルト (LH-715)		サナア 11:30      アデン 12:15 (IY-804) 保健省アデン事務所に基本設計の説明、協議、及び運営維持管理計画、及び相手国分 担事項説明				
6	17	木	フランクフルト サナア 23:35 (LH-652)		資料整理				
7	18	金	資料整理		アデン 18:15 サナア 19:00 (IY-651)	資料整理	アデン 18:15 サナア 19:00 (IY-651)	資料整理	
8	19	土	日本大使館、 計画開発省、 保健省表敬	成田 フランクフルト (LH-715)	団長に同じ	PHC 事務所へ 基本設計説明	団長に同じ	建築設計に同じ	
9	20	日	保健省にて基 本設計概要書 の協議	フランクフルト 14:15 サナア 23:35 (LH-652)	“	建設省アデン 事務所に建 築申請関係確 認	“	“	
10	21	月	サナア 10:00      アデン 10:45 (IY-812)			マンスーラ区役 所にて建築申 請関係、道路 接続確認	“	現地建設業者 調査	建築設計に同 じ
11	22	火	保健省アデン事務所に基本設計の協議						
12	23	水	ミニッツ案作成			電力、水道、電 話、インフラ関 係役所確認	“	資機材メーカ ー調査	“
13	24	木	アデン 06:00      サナア 06:45 (IY-821)			建設予定地及 び周辺状況配 慮事項の確認	“	資機材代理店 調査	“
14	25	金	資料整理						
15	26	土	保健省にてミニッツ案協議			社会状況配慮 確認(一般施設 調査)	団長に同じ	建築設計に同じ	
16	27	日	保健省にてミニッツ署名 日本大使館報告			施設計画最終 調整、補足資 料の収集	“	“	
17	28	月	サナア 02:10 フランクフルト 09:45 (LH-653) フランクフルト	補足資料の収 集	アデン 20:15 サナア 21:00 (IY-813)	補足資料の収 集	アデン 20:15    サナア 21:00 (IY-813)		
18	29	火	成田 (LH-710)	プロ技協と施設計画、機材計画最終協議 保健省最終確認					
19	30	水			保健省次官報告、計画開発省報告 日本大使館報告				
20	31	木			サナア 02:10      フランクフルト 09:45 (LH-653) フランクフルト 20:50				
21	9/1	金			成田 14:55 (JL-408)				

### 附属資料-3 相手国関係者リスト

## 附属資料-3 相手国関係者リスト

### < イエメン国側関連機関 >

#### 1. 計画開発省 (Ministry of Planning & Development: MOPD)

Mr. Hisham Sharaf Abdallah	国際協力担当次官 ( Deputy Minister )
Ms. Asma Al-Basha,	国際協力次官補 ( Assistant Deputy Minister )
Mr. Khalid Afif	アジア・豪州地域局長 ( Director General, Asian and Australian Countries )
Mr. Ahmed Hussein Jawi	アジア・豪州地域課長 ( Director, Asian and Australian Countries )

#### 2. 保健省 (Ministry of Public Health: MOPH)

Dr. Abdullah Abdul-Wali Nasher	保健大臣 ( Minister )
Dr. Mohamed Gharama Al-Raee	開発計画担当次官(Deputy Minister-Health, Planning and Development)
Prof. Abdul Karim Ali Sheiban	医療サービス・PHC 担当次官(Deputy Minister, Health Services and PHC)
Dr. Faisal M. Al-Gohaly	前・開発計画担当次官代行(Former Acting Deputy Minister, Planning and Development)
Dr. Naif Naser	開発計画局長 (Director General, Planning & Development)
Dr. Mohamed Aid Sahail	PHC 局長(Director General, Primary Health Care)
Dr. Nagiba Abdul-Gani /Ms.	母子保健局長 ( Director General, MCH )
Dr. Amin Noman S.Al-Absi	結核対策課長 ( Director, National TB Control Program)
Dr. Shaher Ali Moh'd Saeed	結核対策課長補佐 ( Assistant Director, NTP)
Mr. Fawzy Barahim	検査室監督者 ( NTP Laboratory Supervisor )
Mr. Ahemad A. Al-Zubair	財務担当 (Financial Administrative, NTP)
Mr. Al-Harazi Hussain H	設計局長、建築家 ( Director General, Building Section, Architect )
Mr. Ali Taher Abdul-Mogni	財務局長 ( Director General, Finance Section )

#### 3. 国立結核研究所 (National Tuberculosis Institute: NTI)

Dr. Abdul Malik Al-Kibssi	所長 ( Director )
Dr. Mohamed M. Al-Khawlany	副所長 ( Deputy Director )
Dr. Issam Al Kherbi	副所長 ( Deputy Director )
Mr. Adnan Al-Akhali	検査ラボ責任者 ( Chief of Laboratory )
Mr.Abdul-Khaleq Abu Taleb	医薬品責任者 ( Chief of Pharmacy)
Mr. Mansour Ali	機材保守責任者 (Chief of Maintenance)
Mr. Fateh Ali Ahamed	財務担当 ( Account, NTI and NTP )
Dr. Mahmud Yeha Mahmoud	サナ市結核調整官(Sanaa City TB Coordinator:GTC)

4. 中央公衆衛生研究所 ( Central Public Health Laboratory / MOPH )
 

Dr. Mohamed Salem Bin Break	所長 ( Director General )
Dr. Abdul Wahhab Saif	副所長(Ass. Director General)
  
5. ライシー診療所 ( Al-Raise Health Center )
 

Mr. Abdulla-Al-Dawlah	診療所長 ( Director )
Dr. Al-Anami	副所長(Deputy Director)
  
6. イラキ診療所 ( Al-Iraqi Health Center)
 

Dr. Abdul Malik Abood	診療所長 ( Director )
-----------------------	-------------------
  
7. アデン州政府事務所 ( Aden Governorate )
 

Mr. Taha Ahmed Ghanem	州知事 ( Governor )
Mr. Abdulla Ibrahim Moh'd	局長 ( Director General )
  
8. アデン州保健局 (Aden Health Office / MOPH)
 

Dr. Al-khader Nasser Laswar	保健局長 ( Director General )
Dr. Mohamed Taha Shamsan	前・保健局長 ( Former Director General )
Dr. Enas Taher Mohammed	人材開発課長(Director, Human Resources Development)
Mr. Ali Saeed Nagi	計画開発局次長(Assistan Director General, Planning and Health Development )
Mr. Muhammad Rodeini	会計課長 ( Chief Accountant, Accounting Section )
Mr. Abdulla Seed	統計担当 ( Statistical Department )
  
9. アデン州 PHC 事務所 ( Aden PHC Office)
 

Dr. Mohamed Abdulla HADI	PHC 所長 ( Director )
Dr. Osama Abdul R. Badeeb	アデン州結核担当官 ( Aden TB Coordinator :GTC)
Dr. Abdul Aziz Adam	アデン州結核担当官補佐 (Assistant GTC)
Mr. Fuad Haddad	検査室責任者 ( Chief of Laboratory Supervisor )
Mr. Nageeb Nasser	検査室補助 ( Medical Assistant )
Mr. Nasser Awad	検査室補助 ( Medical Assistant )
Mr. Labib Tuajeg	検査技師 ( Lab. Technician )
Mr. Fadel Rashad	検査技師 ( Lab. Technician )
Mr. Sadek Saeed	検査員 ( Lab. Staff )
Mr. Galeb Ali	検査員 ( Lab. Staff )
Mr. Naser Mohamed	検査員 ( Lab. Staff )
Ms. Lawahed Mohamed	検査員 ( Lab. Staff )
  
10. ホールマクサル保健ユニット (Kormaksar HU)
 

Ms. Naila Ahmed	検査室責任者 ( Chief of Laboratory )
-----------------	--------------------------------

11. アデン州共和国病院 (Al-Gamhoria / Jumhuriyah Hospital)

Mr. Jamil Abdulrazak Jan	男子結核病棟責任者(Officer in Charge, Male TB Ward)
Mr. Mohamed Abdula Hassan	保健省アデン保守責任者(Director, of Maintenance, MOH Aden Branch)
Mr. Ahmed Saleh Ali	救急センター管理者(Manager, Aden Rescuer Center)

12. メダン診療所 (Medan PC)

Dr. Shukri Ali	診療所長 ( Director )
Dr. Mohamed Mahroos	地区結核担当官 ( DTC, Medan District )
Mr. Hassan Abdul Rassol	検査責任者 ( Chief Specialist )

13. ムーラ診療所 (Maalla PC)

Dr. Mohamed Abdul Halim	診療所長 ( Director )
Dr. Kamel Ahmed Saeed	地区結核担当官 ( DTC, Mualla District )
Mr. Khaled Abdul Baki	検査室責任者 ( Chief of Laboratory )

14. タワーヒ保健ユニット (Tawahi HU)

Dr. Nasser	保健ユニット長 ( Director )
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15. マンスーラ診療所 (Mansoura PC)

Dr. Abdulrab Ahmed Muflihi	診療所長補佐 ( Assistant Director General )
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16. ボレイカ診療所 (Boreiqa PC)

Dr. Ahamed Awad Abood	診療所長 ( Director )
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17. シェイク・オスマン診療所 (Sheikh Othman PC)

Dr. Abdul Galil K	診療所長 ( Director )
Mr. Aid Saeed Kassim	検査員 ( Lab. Staff )

18. アデン州建設・住宅省 (Ministry of Construction & Housing & Civil Planning)

Mr. Saami Abdul Karim	建築局長(Director of Engineering Dept.)
Mr. Mohamed Akil Said	構造設計技師 ( Structure Engineer )
Mr. Muhsin Ali	電気設備技師 ( Electrical Engineer )
Ms. Samia Ahmed Musaid	積算技師 ( Quantity Surveyor )
Mr. Talal Ali Binali	施工管理技師 ( Civil Engineer )

19. アデン水道局 (Nationl Water and Sanitation Corp. Aden : NWSA)

Mr. Hassan Saeed Kassim	給水局次長(Deputy General Manager、 Water Division)
Mr. Ahmed N. Aboteeba	下水局次長(Deputy General Manager、 Sewage Division)

20. アデン電力公社 (Public Electricity Corporation, Aden)

Mr. Aref Abdul Hameed	地域給電課長 ( Distribution Manager )
-----------------------	---------------------------------

21. アデン電話局 (Public Telecommunication Corporation, Aden)  
 Ms. Samira Abdulla Mohamed                      マーラ地区責任者 ( Superintendent Mu'lla Area )
22. マンスーラ電話局 (Telecom Yemen, Al-Mansourah)  
 Mr. Nasser Daaii                                      顧客サービス課長 ( Director of Custom Service )
23. アミン・ナシル高等医療技術学校 ( Dr. Amin Nashil Higher Institute for Health Sciences: HIHS )  
 Dr. Abdul Jabber H. Mohanmed                      学長 ( Dean )
24. アデン保健学校 ( Aden Health Institute: HMI )  
 Mr. Muhammad Saleh                                      学長 ( Principal)
25. タイズ結核センター (Taiz TB Center)  
 Dr. Yassin Radman T. Al-Athwary                      所長 ( Director, GTC Taiz)
26. ホデイダ結核センター ( Hodaidah TB Center)  
 Dr. Mohamed Saif Al-Kobate                      所長 ( General Manager)  
 Dr. Fahad Al-Janad                                      副所長 ( Deputy Manager)  
 Dr. Abdul Wahed Othman                                      医師 ( Medical Doctor)  
 Mr. Abdulhady Al-Wakdy                                      検査技士 ( Lab. Technician)  
 Mr. Mohammed Maqubel                                      検査技士 ( Lab. Technician)
27. 建設機械センター ( General Corporation for Roads and Bridges: GCRB )  
 Mr. Mohamed Al-Ghazaly                                      主任整備技士 ( Chief Engineer)  
 Mr. Abdullah Hubaish                                      ワークショップ部次長 ( Deputy D/G of Workshop)  
 Mr. Mokbel Ameer                                      ワークショップ部指導員 ( Inspector of Workshop)  
 Mr. Abobakr Munasir Humam                                      整備・部長 ( Director General for Mechanic & Store)  
 Mr. Abdul Karim Al-Shamafi                                      整備技士 ( Mechanical Engineer)  
 Mr. Amin Al-Ayami                                      技士 ( Engineer)
28. WHO イエメン事務所 (WHO Yemen Representative Office)  
 Dr. Hashim A. Elzein Elmousaad                      イエメン事務所代表 ( Representative )
29. UNHCR/UNV  
 Ms. Yayoi Suzuki                                      アデン難民キャンプ ( 国連ボランティア )

< 日本側関連機関 >

1. 在イエメン日本国大使館

星 彰

特命全権大使

森 賢二郎

参事官

松田 恒規

一等書記官

山本 英昭

前・一等書記官

山岳 誠

一等書記官

広瀬 真司

派遣員

Mr. Mansour Shamiri

Economic Assistant

Mr. Fuad Abubakr Saeed

Chief Clerk

2. JICA 結核対策プロ技協

江上 由里子

チーフ・アドバイザー

伊達 卓二

調整員

渡辺 勝美

前調整員

藤木 明子

短期派遣専門家（検査技師/QC）

Mr. Wael A. Al-Taweel

現地スタッフ（医療検査技士）

#### 附属資料-4 ミニッツ(基本設計調査時)



MINIUTES OF DISCUSSIONS  
ON THE BASIC DESIGN STUDY  
ON THE PROJECT FOR THE EXPANSION OF TUBERCULOSIS CONTROL IN THE SOUTHERN  
AND EASTERN GOVERNORATES OF THE REPUBLIC OF YEMEN

In response to a request from the Government of the Republic of Yemen (hereinafter referred to as "Yemen"), the Government of Japan decided to conduct a Basic Design Study on the Project for the Expansion of Tuberculosis Control in the Southern and Eastern Governorates of the Republic of Yemen (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Yemen the Basic Design Study Team (hereinafter referred to as "the Team") headed by Dr. Masashi Suchi, Chief, Project Development and Management Division, Department of International Cooperation, The Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association, and is scheduled to stay in the country from April 16 to May 18, 2000.

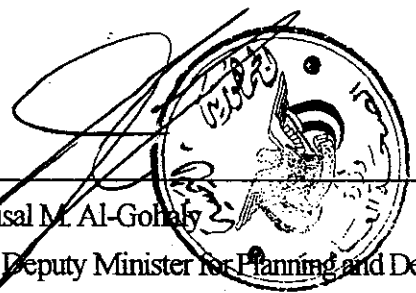
The Team held discussions with the officials concerned in the Government of Yemen and conducted a field survey at the study area.

In the course of discussions and field survey, both parties have confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study report.

Sana'a, May 3, 2000



Dr. Masashi Suchi  
Leader  
Basic Design Study Team  
Japan International Cooperation Agency

  
Mr. Faisal M. Al-Gohaly  
Acting Deputy Minister for Planning and Development  
Ministry of Public Health  
The Republic of Yemen

Mr. Hisham Sharaf Abdalla  
Deputy Minister for International Cooperation  
Ministry of Planning and Development  
The Republic of Yemen

3.5.2000

## ATTACHMENT

### 1. Objective of the Project

The objective of the Project is to expand and improve the National Tuberculosis Control Program in the Southern and Eastern Governorates in Yemen through the establishment of the Aden Tuberculosis Control Center and providing medical equipment to related health facilities in Aden.

### 2. Project Site

2-1 The construction site of the Aden Tuberculosis Control Center is Al Mansoura, Aden Governorate, the Republic of Yemen. The site map is attached in Annex 1.

2-2 The names of related health facilities are described in Annex 1.

### 3. Responsible and Implementing Agency

3-1 The Responsible Agency is Ministry of Public Health in Yemen.

3-2 The Implementing Agency is Health Office in Aden Governorate in coordination with the National Tuberculosis Control Program in Yemen.

### 4. Items requested by the Government of Yemen

After discussions with the Team, the following items were finally requested by the Yemeni side. JICA will assess the appropriateness of the request and will recommend it to the Government of Japan for approval.

4-1 Construction of Building and Procurement of Equipment for Aden Tuberculosis Control Center  
Details of items are listed in Annex 2 and 3.

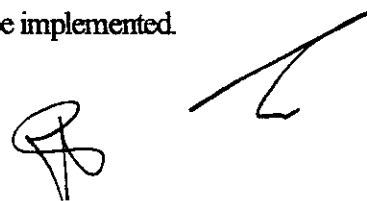
4-2 Procurement of Equipment for Related Health Facilities  
Details of items are listed in Annex 4.

### 5. Japan's Grant Aid Scheme

5-1 The Yemeni side understands the Japan's Grant Aid Scheme explained by the Team, as described in Annex 5.

5-2 The Yemeni side will take the necessary measures, as described in Annex 6, for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented.

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## 6. Schedule of the Study

- 6-1 The consultants will proceed to further studies in Yemen until May 18, 2000.
- 6-2 JICA will prepare the draft report in English and dispatch a mission to Yemen in order to explain its contents in August, 2000.
- 6-3 In case that the contents of the report are accepted in principle by the Government of Yemen, JICA will complete the final report and send it to the Government of Yemen around November, 2000.

## 7. Other relevant issues

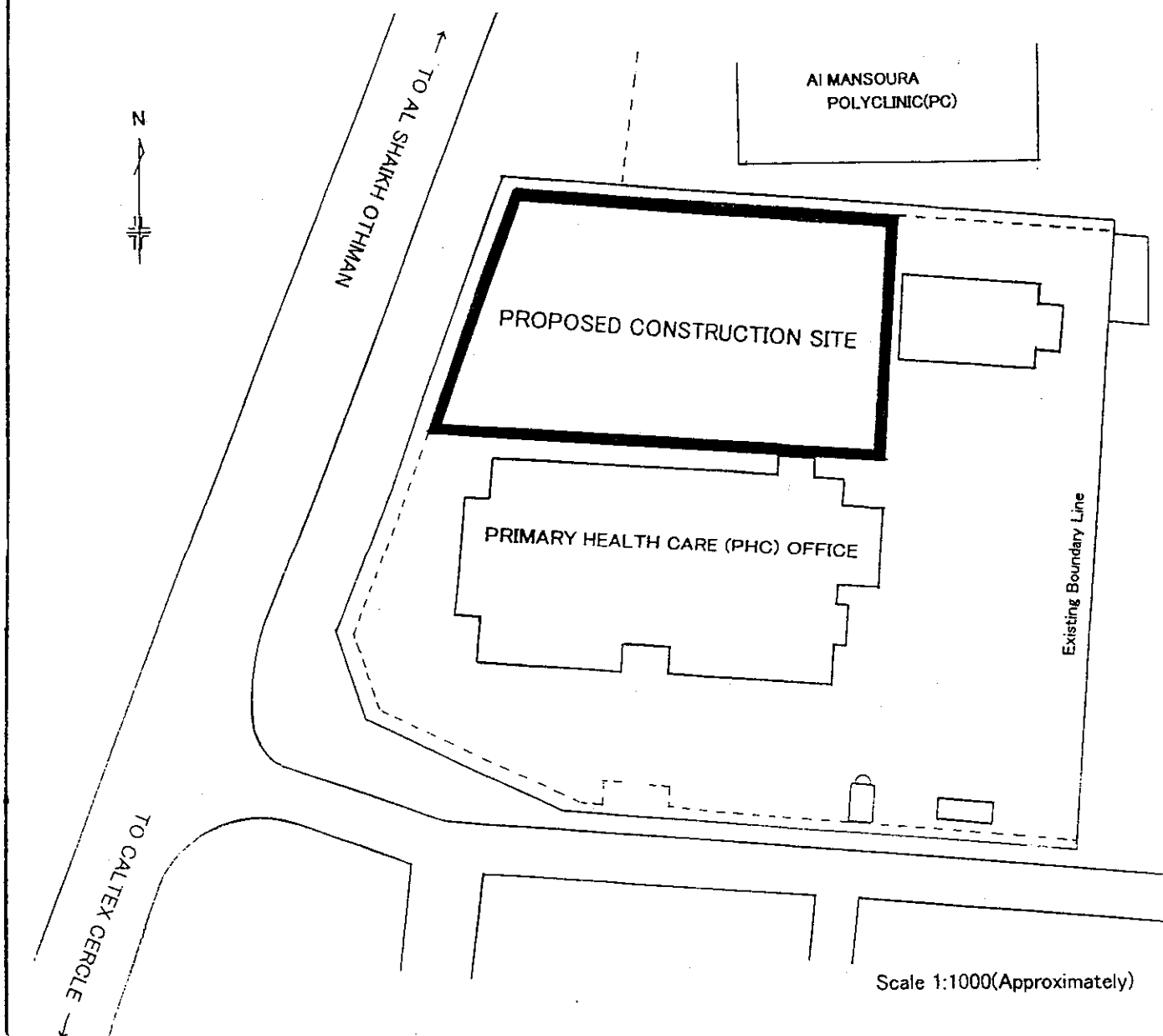
- 7-1 The Government of Yemen and the Team confirmed that functions of the Aden Tuberculosis Control Center will be as follows:
  - (a) Training of health personnel for TB control,
  - (b) Supervision of TB control activities in related health facilities,
  - (c) Reference for quality assurance of sputum smear examination and X-ray examination,
  - (d) Operations research.
- 7-2 The Government of Yemen and the Team agreed on the establishment of a Task Force for execution of the Project.
- 7-3 The Government of Yemen shall allocate, in its fiscal yearly budget, the financing and personnel for maximum operation and maintenance of the facility and equipment.
- 7-4 The Ministry of Public Health, the Government of Yemen shall be responsible for the execution of the Project on the basis of all documents and designs agreed by both Governments.
- 7-5 The Government of Yemen shall complete the following responsibilities before the commencement of the construction;
  - (a) to clear the proposed construction site,
  - (b) to shift existing aerial Electricity and Telephone lines,
  - (c) to make new gate facing on main road,
  - (d) to issue necessary Building Permits.
- 7-6 The Government of Yemen requested the Team to include general furniture in the undertakings by the Government of Japan, and the Team agreed to explain this matter to the Government of Japan.
- 7-7 The Government of Yemen will submit answers to the questionnaire handed by the Team before May 13, 2000.

*a.s.*



## I. Proposed Construction Site

ANNEX-1



## II. Name of Related Health Facilities

1. Medan(Grater) Polyclinic
2. Mualla Polyclinic
3. Mansoura Polyclinic
4. Sheikh Othman Polyclinic
5. Boreiqa Polyclinic
6. Tawahi Health Unit
7. Khormaksar Health Unit
8. Jumhuriyah Hospital

## Requested Rooms for ADEN TB CONTROL CENTER

Departments	Rooms
1) ADMINISTRATION DEPT.	1 Director's Office 2 Administration Room 3 Meeting Room 4 Storage 5 Worker's Room 6 Guard Room 7 Maintenance Room 8 Machine Room
2) EXAMINATION DEPT.	1 Laboratory 2 Preparation Room 3 X-ray Room 4 Dark Room 5 Control Room 6 Labo staff Room 7 X-ray staff Room 8 Waiting Lobby
3) SUPERVISING DEPT.	1 Supervisor's Room 2 Statistics Room
4) TRAINING DEPT.	1 Lecture Room 2 Seminar Room 3 Training Laboratory 4 Training Material Room 5 Library 6 Trainer's Room
5) DORMITORY	1 Reception 2 Single Bed Room (3 rooms) 3 Twin Bed Room (7 rooms) 4 Multi-purpose Room 5 Dining Room 6 Laundry
6) COMMON SPACE	1 Entrance Hall 2 Corridor 3 Restroom 4 Kitchenette

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## Requested Equipment for Aden TB Control Center

Room	Equipment	Qty	Priority
1) ADMINISTRATION DEPT.			
Director's Office	Desktop Computer	2	A
	Printer	2	A
	Typewriter	1	A
	Facsimile	1	B
Administrative Room	Desktop Computer	1	A
	Printer	1	A
Meeting Room	Overhead Projector	1	A
	Screen	1	A
Storage	Medical Refrigerator	1	A
Maintenance Room	Floor Cleaner	2	A
	Maintenance Tools	1	A
2) EXAMINATION DEPT.			
Laboratory	Biological Microscope	4	A
	Safety Cabinet (Clean Bench)	1	A
	Bunsen Burner	3	A
	Autoclave	1	A
	Reagent Cabinet	1	A
	Instrument Cabinet	1	B
	Medical Refrigerator	1	A
	Incubator	1	A
	Centrifuge	1	A
Preparation Room	Hot-Air Oven	1	A
	Inspissator(Coagulator)	1	A
	Pipette Washer(ultra-sound)	1	A
	Water Distiller	1	A
	Analytical Balance	2	A
	Water Bath	1	A
	Glassware	1	A
	Reagent Cabinet	1	A
	Instrument Cabinet	1	B
	Glassware Dryer	1	A
	Refrigerator	1	A

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Room	Equipment	Qty	Priority
X-ray Room	X-ray unit with accessory	1	A
Dark Room	Automatic Film Developer(Roll)	1	A
	Manual Film Developer	1	A
	Dark Room Equipment	1	A
	Instrument Cabinet	1	B
	Refrigerator	1	A
	Pass Box	1	A
Control Room	Film Illuminator	1	A
	RP Film Illuminator	1	A
3) SUPERVISING DEPT.			
Supervisor's Office	Desktop Computer	1	A
	Printer	1	A
Statistics Room	Desktop Computer	1	A
	Printer	1	A
4) TRAINING DEPT.			
Lecture Room	Object Projector	1	A
	Screen	1	A
	Sound System (movable)	1	A
	TV with Console Box	1	A
	Video Recorder/Player	1	A
Training Laboratory	Biological Microscope	8	A
	Microscope with Teaching Head	1	A
	Safety Cabinet	1	A
	Bunsen Burner	4	A
	Reagent Cabinet	1	A
	Instrument Cabinet	1	B
	Autoclave	1	A
Training Material Room	Copy Machine with sorter	1	A
	Film Illuminator (movable)	1	A
	Video Camera	1	B
Others	Bus	1	B
	Mini Bus	1	B
	4WD Vehicle	2	A

page 2/2

M.S.

# Requested Equipment for Related Health Facilities in Aden

Item No.	Name of Equipment	Total Qty	Name of Health Facilities															
			Md		MI		Ma		SO		Br		Tw		Kh		JH	
			Qty	Priority	Qty	Priority	Qty	Priority	Qty	Priority	Qty	Priority	Qty	Priority	Qty	Priority	Qty	Priority
1	Microscope	2													1	B	1	B
2	Motorbike	4	1	A	1	A			1	A	1	A						
3	TeleVideo	5	1	B	1	B	1	B	1	B	1	B						
4	Suction Pump	2															2	A
5	Resuscitator (Ventilator)	4															4	A
6	Refrigerator	8	1	B	1	B	1	B	1	B	1	B	1	B			2	B
7	Air conditioner	7	1	B	1	B	1	B	1	B	1	B	1	B	1	B		

## Related Health Facilities:

**Md** : Medan (Crater) PC

**MI** : Mualla PC

**Ma** : Mansoura PC

**SO** : Sheikh Othman PC

**Br** : Boreiqa PC

**Tw** : Tawahi HU

**Kh** : Khormaksar HU

**JH** : Jumburiyah Hospital



Japan's Grant Aid Scheme

1. Grant Aid Procedures

1) Japan's Grant Aid Program is executed through the following procedures.

Application	(Request made by a recipient country)
Study	( Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

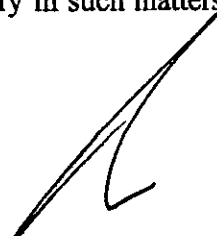
Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

*U. S.*



## 2. Basic Design Study

### 1) Contents of the Study

The aim of the Basic Design Study (hereafter referred to as “the Study”), conducted by JICA on a requested project (hereafter referred to as “the Project”) is to provide a basic document necessary for the appraisal of the Project by the Japanese Government. The contents of the Study are as follows:

- a) Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- b) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- c) Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- d) Preparation of a basic design of the Project
- e) Estimation of the costs of the Project



The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid Project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations in the recipient country through the Minutes of Discussions.

### 2) Selection of Consultants

For the smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA selects (a) firms(s) based on proposals submitted by interested firms. The firm(s) selected carry

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(ies) out the Basic Design Study and write(s) a report, based upon terms of reference set by JICA. The consulting firm(s) used for the Study which is (are) recommended by JICA to the recipient country to also work on the Project(s) implementation after the Exchange of Notes, in order to maintain technical consistency.

### 3. Japan's Grant Aid Scheme

#### 1) What is Grant Aid ?

The Grant Aid Program provides a recipient country with non-reimbursable funds needed to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under the principals in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

#### 2) Exchange of Notes (E/N)

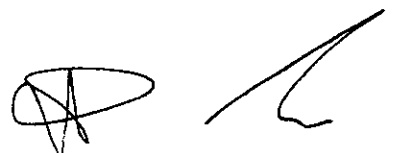
Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant Aid" means the one fiscal year in which the Cabinet approves the Project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed. However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When both Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of the third country.

M. S.

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However the prime contractors, namely, consulting contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

#### 5) Necessity of "Verification"

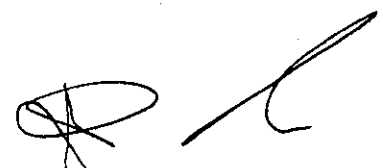
The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

#### 6) Undertakings required of the Government of recipient country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as the following:

- a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.
- b) To provide facilities of the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.
- c) To secure buildings prior to the procurement in case the installation of the equipment.
- d) To ensure prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.
- e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.
- f) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
- g) To bear an advising commission of an authorization to pay (A/P) and payment commissions to the bank, with which the Government of the recipient country opens an account for the Project.

21.5.



7) "Proper Use"

The recipient country is required to maintain and use the facilities constructed and the equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for operation and maintenance of them as well as to bear all the expenses other than those covered by the Grant Aid.

8) "Re-export"

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

9) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

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## Major Undertakings to be taken by Each Government

NO	Items	To be covered by Grant Aid	To be covered by Yemeni side
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the site		●
4	To construct the parking lot	●	
5	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6	To construct the building	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site ( receiving and/or elevated tanks )	●	
	3) Drainage		
	a. The city drainage main ( for storm, sewer and others ) to the site		●
	b. The drainage system ( for toilet sewer, ordinary waste, storm drainage and others ) within the site	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame / panel (MDF) of the building		●
	b. The MDF and the extension after the frame / panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	

4. 5.

10	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		•
12	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		•
13	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		•

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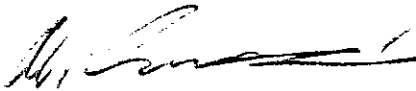
MINUTES OF DISCUSSIONS  
ON THE BASIC DESIGN STUDY  
ON THE PROJECT FOR THE EXPANSION OF TUBERCULOSIS CONTROL IN THE  
SOUTHERN AND EASTERN GOVERNORATES OF THE REPUBLIC OF YEMEN  
(EXPLANATION OF DRAFT REPORT)

In April, 2000 the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for the Expansion of Tuberculosis Control in the Southern and Eastern Governorates of the Republic of Yemen (hereinafter referred to as "the Project") to the Republic of Yemen (hereinafter referred to as "Yemen"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the Study.

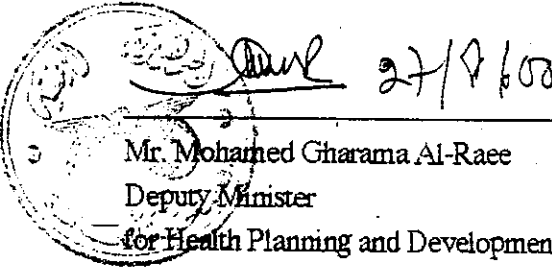
In order to explain and to consult the Yemeni side on the components of the draft report, JICA sent to Yemen the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Dr. Masashi Suchi, Chief, Project Development and Management Division, Department of International Cooperation, The Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association, from August 14 to August 30, 2000.

As a result of discussions, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

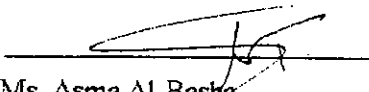
Sana'a, August 27, 2000



Dr. Masashi Suchi  
Leader  
Draft Report Explanation Team  
Japan International Cooperation Agency



Mr. Mohamed Gharama Al-Raei  
Deputy Minister  
for Health Planning and Development  
Ministry of Public Health  
The Republic of Yemen



Ms. Asma Al-Basha  
Assistant Deputy Minister for International Cooperation  
Ministry of Planning and Development  
The Republic of Yemen

## ATTACHMENT

### 1. Components of the Draft Report

The Government of Yemen agreed and accepted in principle the components of the draft report of the Project dated on August 2000, which was delivered to the Ministry of Public Health and the Ministry of Planning and Development and explained by the Team. The finally agreed lists of facilities and equipment are in ANNEX-1 and ANNEX-2.

### 2. Japan's Grant Aid Scheme

The Yemeni side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Yemen as explained by the Team and described in ANNEX-5 and ANNEX-6 of the Minutes of Discussions signed by both parties on May 3, 2000.

### 3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Yemen by December, 2000.

### 4. Other relevant issues

4-1 The Government of Yemen and the Team confirmed that the Aden Tuberculosis Control Center (hereinafter referred to as "ATCC") would have the following functions;

- (a) Training of health personnel for TB control,
- (b) Supervision of TB control activities in related health facilities,
- (c) Reference for quality assurance of sputum smear examinations and X-ray examinations, and
- (d) Operations research.

4-2 The Ministry of Public Health (the Health Planning and Development Sector) shall take the full responsibility of making sure that all the responsibilities of the Government of Yemen in the Project implementation will be fulfilled as scheduled, including securing necessary budgets for the Project.

4-3 A Steering Committee shall be established by the chairmanship of the Planning and Development Sector in the Ministry of Public Health and with representatives of the Ministry of Planning and Development and the Ministry of Finance.

4-4 The Aden Governorate shall take the full responsibility of actually conducting physical works to be born by the Yemeni side, such as connection works of utility lines to ATCC, and establish a Task Force consisting of the Governorate Tuberculosis Coordinator and representatives of the Primary Health Care Department and the Maintenance Department of the Aden Health Office in order to implement such physical works for the Project.

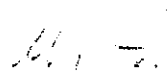
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4-5 Before and during the construction work of ATCC, the Government of Yemen shall make necessary budget allocations to the works specified in the APPENDIX-5 "Scope of Works and Cost" of the draft report and complete the works according to "Time schedule for Yemeni Side Works" in the same appendix. The Government of Yemen understands that completing the required works on schedule is essential for smooth implementation of the Project.

4-6 After the handing-over of ATCC, the Government of Yemen shall allocate sufficient budget for the operation of ATCC estimated in the Section 2-2 "Operation and Maintenance Plan" of the draft report and assign necessary personnel with required capabilities to ATCC as explained in the draft report.

4-7 The Government of Yemen strongly requested air-conditioners for rooms in the dormitory. To respond to the request, the Team explained that it would take the request back to Japan and make a further analysis of its necessity although the Team could not guarantee the inclusion of the requested air-conditioners in the Project.



## Requested Rooms for Aden TB Control Center

Departments	Rooms
1) ADMINISTRATION DEPT.	1. Director's Office 2. Administration Room 3. Meeting Room 4. Storage 5. Maintenance Room 6. Worker's Room 7. Reception 8. Guard Room
2) EXAMINATION DEPT.	1. Reference Laboratory 2. Preparation Room 3. Sterilization Room 4. Ante Room 5. X-ray Room 6. Dark Room 7. Control Room 8. X-ray Technician's Room
3) SUPERVISING DEPT.	1. Supervisor's Room 2. Statistics Room 3. Laboratory Staff Room
4) TRAINING DEPT.	1. Training Laboratory 2. Training Material Room 3. Lecture Room 4. Seminar Room 5. Library 6. Trainer's Room
5) DORMITORY	1. Trainee's Rooms 2. Multi-purpose Room 3. Kitchen / Dining Room 4. Laundry
6) COMMON SPACE	1. Entrance Hall 2. Corridor, Stairs 3. WC 4. Shower Room 5. Pantry 6. Machine Room

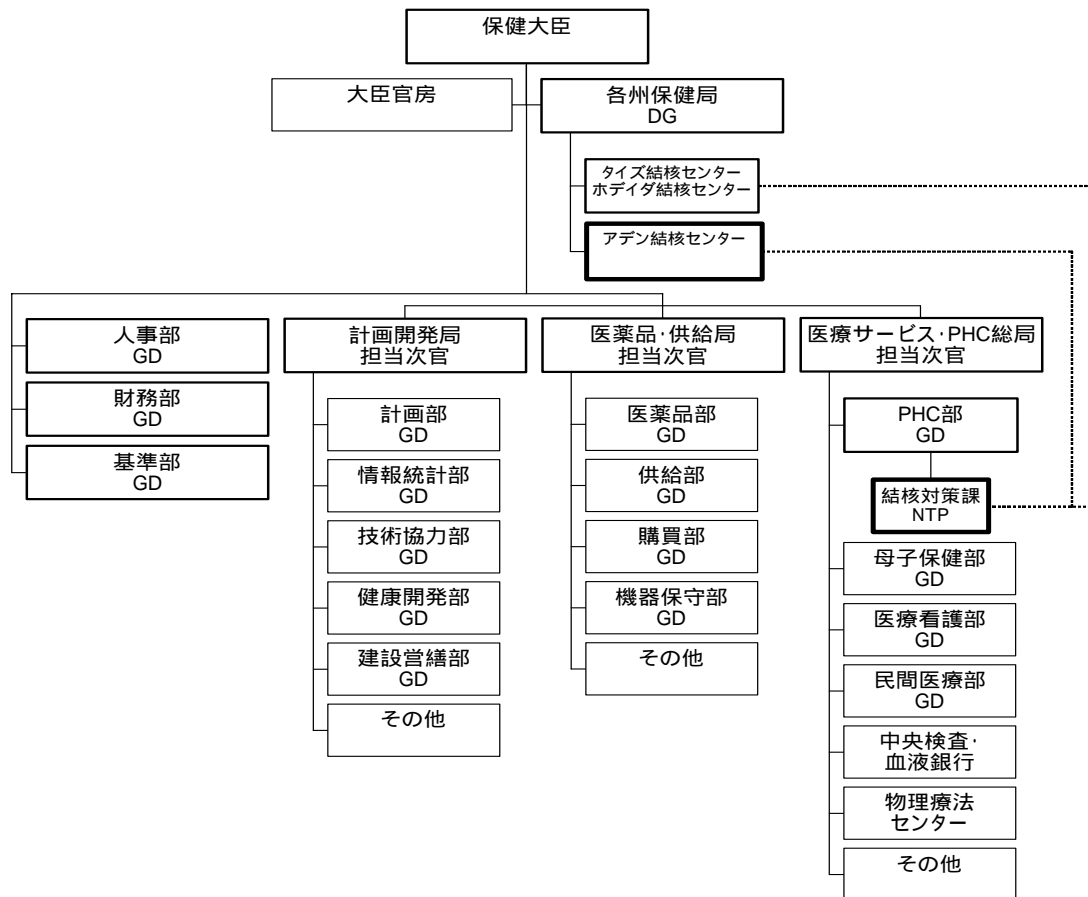
## Requested Equipment for Aden TB Control Center

Room	Equipment	Qty
<b>1) Administration Dept.</b>		
Director's Office	Desk and Chair, Tables and Chairs	1
Administration Room	Desktop Computer	1
	Printer	1
	Desks and Chairs, Cabinets, Lockers,	1
Meeting Room	Overhead Projector	1
	Screen	1
	Tables and Chairs, White Board	1
Medical Storage	Medical Refrigerator	1
	Desks and Chairs, Shelves, Cabinets	1
Maintenance Room	Maintenance Tools	1
	Work Table and Chairs, Shelves, Cabinet, Locker	1
Worker's Room	Floor Cleaner	1
	Floor Polisher	1
	Tables and Chairs, Shelves, Locker	1
Guard Room	Bed	1
<b>2) Examination Dept.</b>		
Reference Laboratory	Biological Microscope	4
	Safety Cabinet	1
	Bunsen Burner	1
	Autoclave	1
	Reagent Cabinet	1
	Medical Refrigerator	1
	Freezer	1
	Incubator	1
	Centrifuge	1
	Water Distiller	1
	Laboratory Tables and Chairs, Instrument Cabinet	1
Preparation Room	Coagulator	1
	Analytical Balance	2
	Water Bath	1
	Glassware	1
	Reagent Cabinet	1
	Refrigerator	1
	Laboratory Table and Chair, Work Table	1
Sterilization Room	Hot-Air Oven	1
	Pipette Washer	1
	Glassware Dryer	1
	Laboratory Table and Chair, Work Table, Instrument Cabinet	1
X-ray Room	X-ray unit with accessory	1

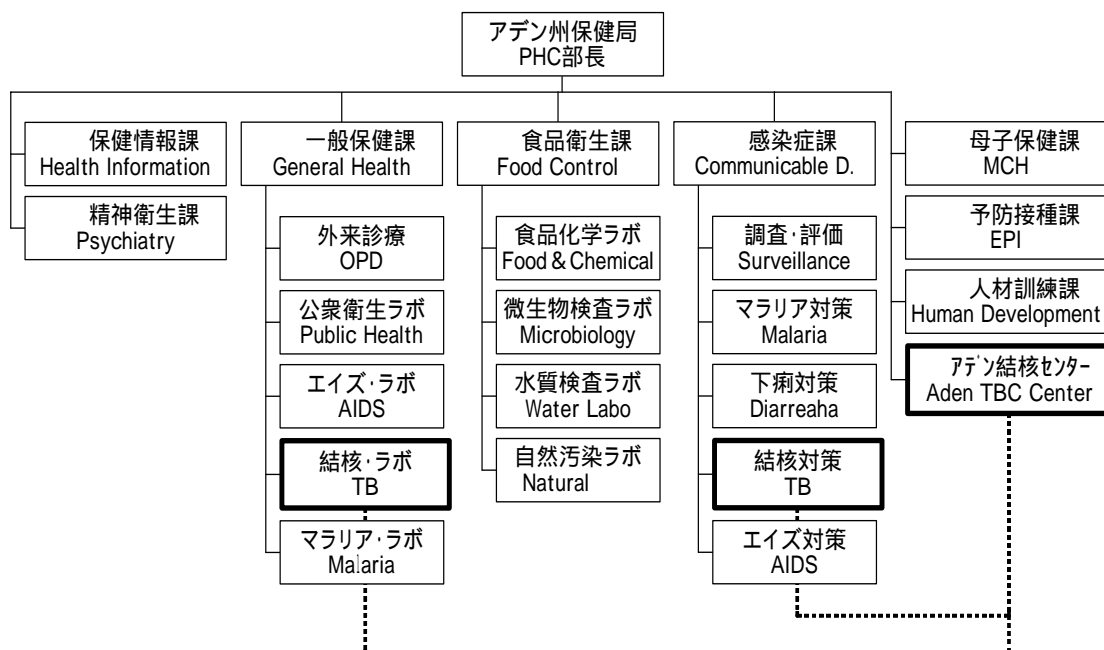
Rooms	Equipment	Qty
Dark Room	Automatic Film Developer	1
	Dark Room Equipment	1
	Pass Box	1
Control Room	Chair	1
X-ray Technician's Room	Film Illuminator	1
	RP Film Illuminator	1
	Desks and Chairs, Cabinet, Locker	1
<b>3) Supervising Dept.</b>		
Supervisor's Office	Desktop Computer	1
	Printer	1
	Desks and Chairs, Cabinet, Lockers	1
Statistics Room	Desktop Computer	1
	Printer	1
	Tables and Chairs	1
Laboratory Staff Room	Desks and Chairs	1
<b>4) Training Dept.</b>		
Training Laboratory	Biological Microscope	8
	Microscope with Teaching Head	1
	Safety Cabinet	1
	Bunsen Burner	2
	Reagent Cabinet	1
	Autoclave	1
	Laboratory Tables and Chairs, Instrument Cabinet	1
Training Material Room	Copy Machine with sorter	1
	Film Illuminator (movable)	1
	Cabinets	1
Lecture Room	Objective Projector	1
	Screen	1
	Sound System (movable)	1
	TV with Console Box	1
	Video Recorder / Player	1
	Tables and Chairs, Cabinets, White Board	1
Seminar Room	Tables and Chairs, White Board	1
Library	Tables and Chairs, Book Shelves	1
Trainer's Room	Desks and Chairs, Tables and Chairs, Locker, Cabinets	1
<b>5) Dormitory</b>		
Trainee's Rooms	Beds, Tables and Chairs, Lockers	1
Multi-purpose Room	Tables and Chairs	1
Kitchen / Dining Room	Tables and Chairs, Cupboard	1
<b>6) Others</b>		
	4WD Vehicle	1

## 附属資料-6 ミニッツ(事業化調査時)

附属資料-6 関連機関の組織図

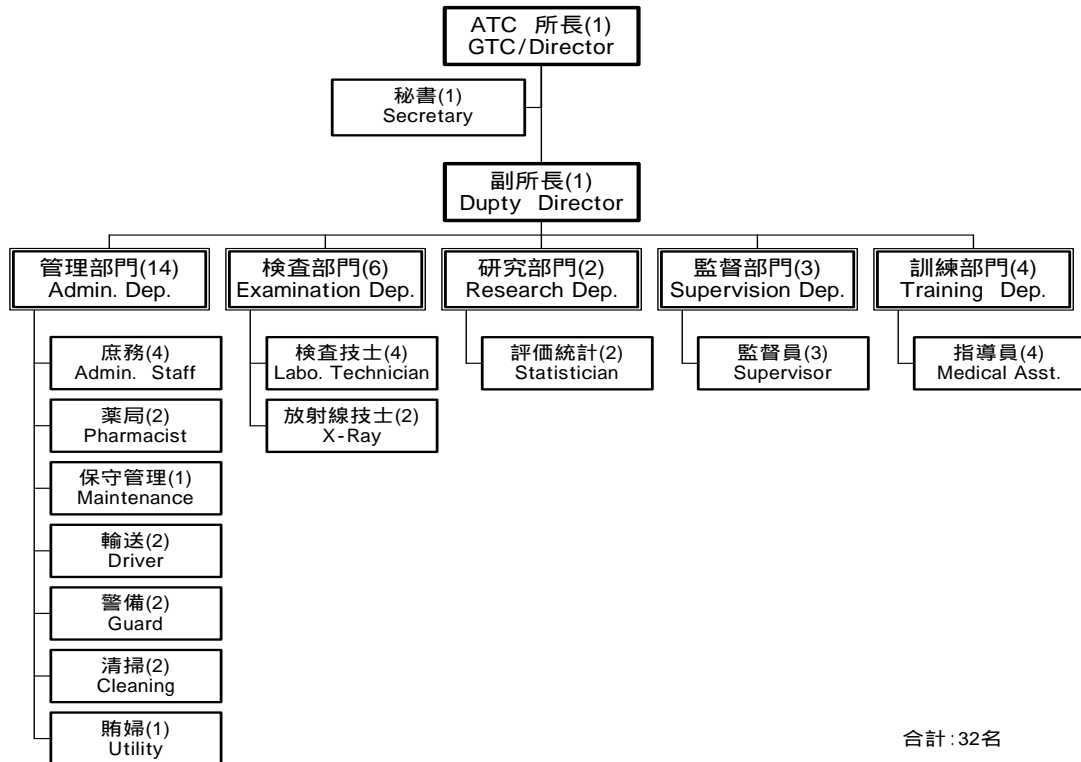


イエメン国保健省の組織図

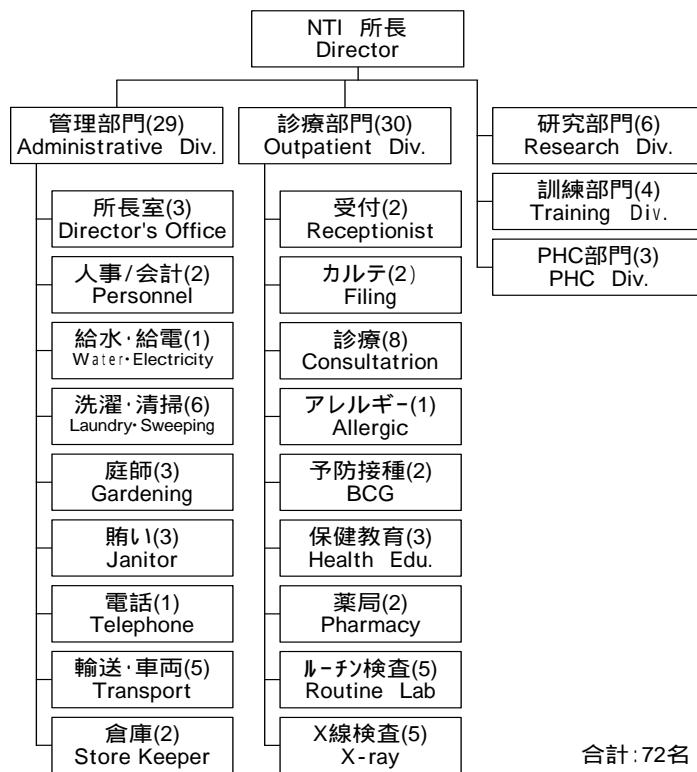


アデン州保健局 PHC 事務所の組織図

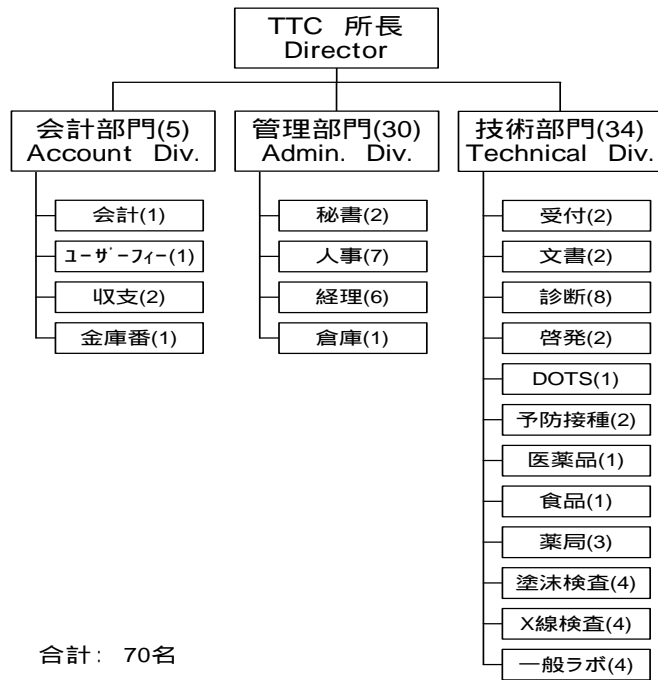




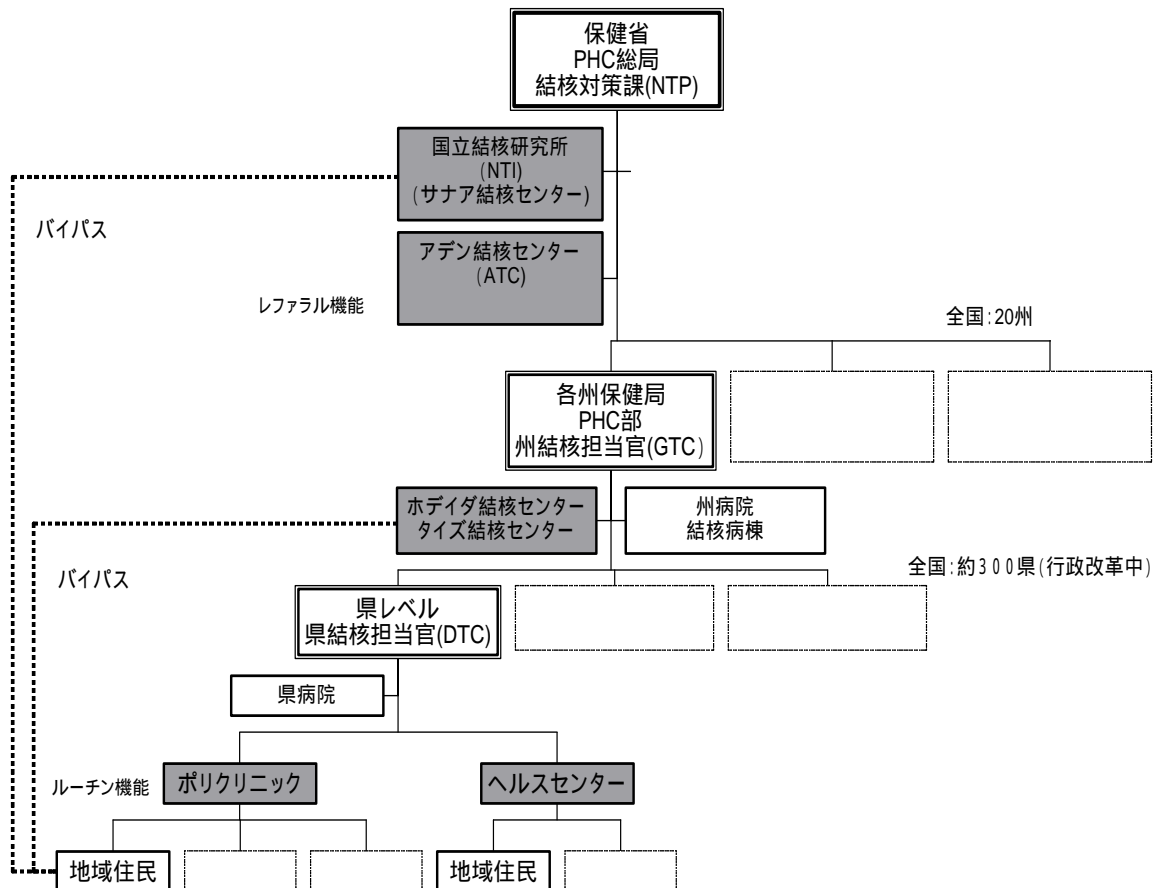
### アデン結核センターの部門構成(案)



### 国立結核研究所 (NTI) の組織図



タイズ結核センターの組織図



イエメン結核対策計画(NTP)の機構図



## 附属資料-7 関連機関の組織図

附属資料-7 職員配備計画

A. 技術職員配備計画

地位	名前	年齢	職務	現職	教育/背景
<b>Director</b>	Dr. Osama A.R. Badeer		General Practitioner	GTC from 1992, PHC	GP Moscow(University of No.3) 1988
<b>Dpty. Director</b>	Dr. Adul Aziz Adam	30	General Practitioner	Asst. GTC, PHC	GP, Aden Medical College, 1998
<b>Pharmacist</b>	Ms. Oiam Als bani	32	Pharmacist	Al Gamuhuria Hosp.	Amin Nasher Institute,
	Mr. Nasher Ahmed	35	Pharmacist	Al Gamuhuria Hosp.	Amin Nasher Institute,
<b>Labo Technician</b>	Mr. Ahmad Ali	35	Labo Technician	Al Gamuhuria Hosp.	Japan, 1994
	Mr. Gamal Saheh	38	Labo Technician	Al Gamuhuria Hosp	Japan, 1992
	Mr. Fouad Hadad	48	Labo Superintendent	PHC	Master Degree, 1985
	Mr. Nasser Saleh	40	Labo Technician	PHC	Aden Medical College,
<b>X-ray Technician</b>	Mr. Nbas Ali	50	X-ray Technician	Al Gamhuria Hosp.	Amin Nasher Institute
	Mr. Hani Fadel	34	X-ray Technician	Daar Saad Polyclinic	Amin Nasher Institute
<b>Statistician</b>	Mr. Ali Zin Ali	54	Statistician	Al skanderia 2000	
	Dr. Mohamed Taher	32	Physician	Physician-NTP	Aden Medical College
<b>Supervisor</b>	Mr. Nageb Nasser	49	Medical Assistant	PHC	Amin Nasher Institute, 1990
	Mr. Fahmi Mohamed	35	Medical Assistant	PHC	Amin Nasher Institute,
	Mr. Safiah Mohamad	60	Medical Assistant	PHC	Amin Nasher Institute,
<b>Trainer</b>	Mr. Nasser A. Saleh	38	Medical Assistant	Amin Nasher Institute	Amin Nasher Institute,
	Mr. Ali Omer Alhed	42	Medical Assistant	DTC, Al Mansura	Amin Nasher Institute
	Mr. Mohamed A. Rhman	48	Medical Assistant	DTC, Al Medan	Amin Nasher Institute
	Mr. Kaled Seef Mohamed	40	Medical Assistant	DTC, Al Bureiqua	Amin Nasher Institute
<b>Others</b>	Mr. Sadek Mohamed Ali		(Dormitory Assistant)	PHC	
<b>Total</b>					

## B 一般職員配備計画

地位	名前	年齢	職務	現職	教育/背景
<b>Accountant</b>	Mr. Abdul Elah	33		Accountant, PHC	
<b>General Admin.</b>	Mr. Fatehe Mohamad	42		Administrator, PHC	
	Mr. Naser Aziz	40		PHC	
	Mr. Galeb Abdulah			Reception, PHC	
<b>Secretary</b>					
<b>Maintenance</b>					
<b>Transport</b>	Mr. Ahmad Awad				
	Mr. Abdulah Mukbel				
<b>Guard</b>	Mr. Borhan Mohamed	50		PHC	
	Mr. Kahlid Mohamed	55		PHC	
<b>Sweeper</b>					
<b>Janitor</b>					
<b>Others</b>	Mr. Nagat Ahmed			Clerk, PHC	
<b>Total</b>					

## C: Exiting Maintenance Staff in PHC Office

Position	Name	Age	Specialty / Existing Post	Educational/Training Background
Building	Mr. Hassan Mahamed Saleh	35	Building	
	Mr. Wael Ahmed Abdoh	22	Mechanical	Vocational Training Certificate
Water/ Plumbing	Mr. Adnan Tabet Mohamed	44	Water and Sanitation	Junior High School
	Mr. Mohamed Noor Aden	38	Water and Sanitation	
Electricity	Mr. Raaid Ismael	40	Electrician	
	Mr. Saad Mohamed Ali	22	Electrician	Vocational Training Certificate

## 附属資料-8 職員配備計画

## 附属資料-8 研修カリキュラム

### 教程-1: 地域結核担当官 (District TB Coordinator (DTC))

第1日目 (土曜) CR: 教室、LB: 実習ラボ

9:00	10:00 登録 / 開会	CR
10:00	10:30 イントロダクション	CR
10:30	11:00 休憩	
11:00	13:30 結核対策方法	CR

第2日目 (日曜)

8:30	10:30 結核対策方法	CR
10:30	11:00 休憩	
11:00	13:30 患者登録	CR

第3日目 (月曜)

8:30	9:30 患者登録	CR
9:30	10:30 偽陽性の対処方法	CR
10:30	11:00 休憩	
11:00	13:30 治療のモニタリング	CR

第4日目 (火曜)

8:30	10:30 患者発見	CR
10:30	11:00 休憩	
11:00	12:00 症例所見	CR
12:00	13:30 治療成績	CR

第5日目 (水曜)

8:30	10:30 治療成績	CR
10:30	11:00 休憩	
11:00	13:30 定期的医薬品の確保	CR

第6日目 (木曜)

8:30	10:00 検査・サービスと監督	LB
10:00	10:30 休憩	
10:30	12:00 保健所の視察	Site
12:00	12:30 閉会	

### 教程-2: ラボラトリー検査技士 (Labo Technicien(LT))

第1日目 (土曜) CR: 教室、LB: 実習ラボ

8:30	10:30 開会: 結核検査の重要性について	CR
10:30	11:00 休憩	
11:00	14:00 講義: 喀痰サンプルの受領・準備方法	LB

第2日目 (日曜)

8:30	10:30 実習: 喀痰サンプルの準備方法	LB
10:30	11:00 休憩	
11:00	14:00 実習・講義: 染色準備と染色方法	LB

第3日目 (月曜)

8:30	10:30 実習: 喀痰サンプルの塗抹	LB
10:30	11:00 休憩	
11:00	14:00 実習: 顕微鏡検査と結果記入方法	LB

第4日目 (火曜)

8:30	10:30 講義: 偽陽性・偽陰性の失敗回避方法	CR
10:30	11:00 休憩	
11:00	14:00 実習: 喀痰塗抹検査の準備と鏡検 - 1	LB

第5日目 (水曜)

8:30	10:30 実習: 喀痰塗抹検査の準備と鏡検 - 2	LB
10:30	11:00 休憩	
11:00	14:00 実習: 喀痰塗抹検査の準備と鏡検 - 3	LB

第6日目 (木曜)

8:30	10:00 講義: 検査統計と検査試薬の注文方法	CR
10:00	10:30 休憩	
10:30	14:00 試験: 理論および鏡検試験	CR/LB
* 鏡検試験では既成スライドを利用する。 * 研修生に必要な検査試薬と消耗品の必要量を試算させる。		



### 教程-3: PHC ワーカー (PHC Health Worker)

#### 第1日目 (土曜)

CR: 教室、LB: 実習ラボ

8:30	9:00 開会	CR
9:00	9:30 結核とDOTS戦略の解説	CR
9:30	10:30 処置カードのファイリング (グループ実習)	CR
10:30	11:00 休憩	
11:00	13:00 治療管理 (グループ実習)	CR

#### 第2日目 (日曜)

8:30	10:30 患者登録 (グループ実習)	CR
10:30	11:00 休憩	
11:00	12:00 保健教育	CR
12:00	13:00 検査室視察	LB

#### 第3日目 (月曜)

8:30	9:30 DOTS室視察	LB
9:30	10:30 報告 (グループ実習)	CR
10:30	11:00 休憩	
11:00	12:30 報告 (グループ実習)	CR
12:30	13:30 研修評価 / 閉会	CR

### 教程-4: QC ワークショップ (Laboratory Quality Control Workshop)

#### 第1日目

CR: 教室

8:30	9:00 開会 / オリエンテーション	CR
9:00	9:45 国家レベル報告	CR
9:45	11:15 各州レベル報告 (3 GTC)	CR
11:15	11:30 休憩	
11:30	13:00 各州レベル報告 (3 GTC)	CR
13:00	14:00 昼食	
14:00	15:00 各州レベル報告 (2 GTC)	CR
15:00	16:30 問題分析: 監督およびQC活動	CR

\* 各州レベルは報告20分と討議10分とする。

#### 第2日目

8:30	9:30 問題分析: 監督・QC活動および期待される解決方法	CR
9:30	11:15 技術的問題: 監督・QC方法	CR
11:15	11:30 休憩	
11:30	13:00 一般検査室との協調および記帳方法	CR
13:00	14:00 昼食	
14:00	16:00 記録・報告システム	CR

#### 第3日目

8:30	10:00 監督チェック・リストの内容	CR
10:00	11:00 ラボ台帳からのデータ収集実習	CR
11:00	11:15 休憩	
11:15	12:30 ケーススタディ: グループ討議	CR
12:30	13:00 行動計画と本ワークショップ評価	CR

## 附属資料-9 研修カリキュラム

## 附属資料-9 研修・会合計画

### A. NTPによるDOTS拡大計画(南部・東部州)

DOT Expansion Plan in the Southern and Eastern Governorates.

DOTS職員必要数(DOTS Staff: Basic Requirement)							県別平均人口
州	県数	DOTS職員				小計	Pop/Ds
Govenorate	Districts	Doctors	DTCs	Lab.T.	PH Wks.	S.Total	(2005年)
1 Aden	8	8	8	8	16	40	78,125
2 Abyan	10	10	10	10	20	50	53,800
3 Dhalea	10	10	10	10	20	50	
4 Lahj	15	15	15	15	30	75	48,800
5 Shabwa	16	16	16	16	32	80	45,875
6 Mahra	8	8	8	8	16	40	8,750
7 Hadramout	29	29	29	29	58	145	32,241
8 Baidha	12	12	12	12	24	60	59,917
小計(Total)	108	108	108	108	216	540	40,306

注) 各県で医師(1)、DTC(1)、検査技士(1)、公衆衛生ワーカー(1)を育成すること。

Each district will have one Doctor, one DTC, one Lab.Ts. and two PHC Workers.

新規DOTS職員訓練—2000年(New Training - 2000)						
州 Governorate	県数 Districts	DOTS職員				小計 S.Total
		Doctors	DTCs	Lab.T.	PH Wks.	
1 Aden	8	5	5	5	10	25
2 Abyan	10	3	3	3	6	15
3 Dhalea	10	3	3	3	6	15
4 Lahj	15	0	0	0	0	0
5 Shabwa	16	13	13	13	26	65
6 Mahra	8	6	6	6	12	30
7 Hadramout	29	23	23	23	46	115
8 Baidha	12	6	6	6	12	30
小計(S.Total)	108	59	59	59	118	295

同一2001年(New Training - 2001)						
州 Governorate	県数 Districts	DOTS職員				小計 S.Total
		Doctors	DTCs	Lab.T.	PH Wks.	
1 Aden	8	3	3	3	6	15
2 Abyan	10	7	7	7	14	35
3 Dhalea	10	7	7	7	14	35
4 Lahj	15	15	15	15	30	75
5 Shabwa	16	3	3	3	6	15
6 Mahra	8	2	2	2	4	10
7 Hadramout	29	6	6	6	12	30
8 Baidha	12	6	6	6	12	30
小計(2001年)		49	49	49	98	245
合計(Total)	108	108	108	108	216	540

再訓練計画(Annual Refresh Training)						
州 Governorate	県数 Districts	DOTS職員				小計 S.Total
		Doctors	DTCs	Lab.T.	PH Wks.	
1 Aden	8	3	3	3	6	15
2 Abyan	10	4	4	4	8	20
3 Dhalea	10	3	3	3	6	15
4 Lahj	15	5	5	5	10	25
5 Shabwa	16	2	2	2	4	10
6 Mahra	8	2	2	2	4	10
7 Hadramout	29	3	3	3	6	15
8 Baidha	12	3	3	3	6	15
Taiz	18	5	5	5	10	25
Ibb	18	5	5	5	10	25
小計(Total)	144	35	35	35	70	175

149,889

129,056

# B. アデン結核予防センター： 研修・会合計画－2001年

ADEN TB CONTROL CENTER: Training and Meeting Plan from 2001

	研修 k - ス / 会合 (Course / Meeting)	人数 (prsns)	日数 (days)	年間回数 (times)	研修人数 (Total prns)	年間計画 (Annual Schedule)												宿泊利用(人・日) (prsn・day)
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	<b>新規研修(DOTS Staff New Trainings )</b>																	
1	New Doctors	12	6	4	48													288
2	New District TB Cordinaters	12	6	4	48													288
3	New Labo. Technicians	6	6	6	36													216
4	New PH Workers	14	3	6	64													252
	<b>再訓練(DOTS Staff Refresh Trainings )</b>																	
5	Refresh for Doctorts	12	2	4	48													96
6	Refresh for District TB Cordinaters	12	2	4	48													96
7	Refresh for Labo. Technician	6	2	4	24													48
8	Refresh for PH Workers	14	2	4	56													112
	<b>PHC関連研修(PHC Related Trainings )</b>																	
9	Village Health Workers	20	2	4	80													160
10	Community Leaders	20	1	4	80													-
11	Health Volunteerss	20	1	4	80													-
12	Communicable Disease Control	(apx. 20)	3	2	(apx. 40)													(apx. 120)
13	Reproductivfe Health	(apx. 20)	3	2	(apx. 40)													(apx. 120)
14	Health Education	(apx. 18)	3	2	(apx. 36)													(apx. 108)
15	Others	(apx. 20)	3	2	(apx. 40)													(apx. 120)
	<b>結核関連会合 ( TB Meeting s )</b>																	
16	Governorate TB Control (GTC) Meeting	25	3	1	-													75
17	District TB Control (DTC) Meeting	30	2	4	-													240
18	YATA Regional Meetings	20	2	2	-													80
19	Internal Weekly Meeting	10	1	48	-													-
20	PHC Monthly Meeting	20	1	12	-													-

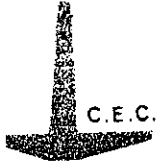
注) 郡数の内訳:

No. of Districts = Aden 8, Lahji 15, Abyan 10, Shabwa 16, Baida 12, Hadramaut 29, Mahra 9, Dhala 9 = Total 108 Districts

年間宿泊利用(人・日) = 1951

1951prsn・day/14bed = 139day / 260day = 53%

## 附属資料-10 研修・会合計画



Consulting Engineering Center  
(Sajdi & Partners)

مركز الاستشارات الهندسية  
(سجدي وشركاه)

Date: 17/5/2000

Ref.: 2000/103

M-S/Kume Sekkei Co., Ltd.  
Tokyo – Japan

Attn. Mr. Tetsuro Nishimura  
Project – Manager

Subject : Site Investigation Report.  
Project : Topographic & Geotechnical Surveys for  
T.C. Control Center / Aden – Yemen.

Dear Sir,

We are pleased to submit this report of geotechnical investigation of the subject project site.

The work was executed in accordance with the agreement signed with you.

Thanking you for your confidence looking forward for further cooperation.

Best Regards,

Eng. Jamal F. Birjas  
Yemen Branch Manager  
C. E. C



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## **1.0 INTRODUCTION.**

### **1.1 Why this Investigation?**

Investigation of the underground conditions at a site is prerequisite to the economical design of the substructure elements. It is also necessary to obtain sufficient information for feasibility and economic studies for a proposed project. Public building officials may require soil data together with the recommendations of the geotechnical consultant prior to the issuance of building permit.

Elimination of the site exploration, which usually ranges from about 0.5 to 1.0 percent of total construction cost only, to find after construction has started that the foundation must be redesigned is certainly false economy.

This is generally recognized, and it is doubtful if any major structures are currently designed without site investigation being undertaken.

According to Bowles J.E., with the scarcity of building sites in urban areas and with considerable urban renewal and the accompanying backfill, often with no quality control, the underground conditions can have significant variation within a few meters in any direction.

For these reasons, an adequate ground subsurface investigation is an essential preliminary to the execution of this important project.

### **1.2 Objectives of Study.**

The objective of the study is to describe, classify and test the soil strata at different locations to determine the surface and subsurface conditions with the mechanical, physical & chemical properties of soil strata in order to investigate the foundations problems to come up with most optimum solution that will sustain the loads with minimum cost.

Another main objective is to make topographic map of the site.





### **1.3 Scope of Work.**

The scope of work consists of the following items to accomplish the objectives of the study.

1. Making visit to site to collect information about present land, surface topography and surface drainage.
2. Drilling two bore holes, at prescribed locations to 20m depth each.
3. Performing the (SPT) test in both holes every 1.0 m.
4. Collecting disturbed & undisturbed samples from all holes.
5. Carrying out laboratory tests on the collected samples to measure the mechanical, physical & chemical properties of soil at the deep holes and the physical properties at the shallow holes
6. Developing conclusions and recommendations for foundation design & construction.
7. Prepare topographic maps for the site along with longitudinal and transverse sections.

## **2.0 SITE AND PROJECT DESCRIPTION.**

### **2.1 Site Description.**

The site under concern is located at the crossing of the main road penetrating Al-Mansourah town in Aden city, and a secondary road in Al-Mansourah. It is empty part of a large plot used as a compound of primary health center that has been occupied in two places with two single story buildings. The empty area allocated for this project is close to the main road of Al-Mansourah.



The area is almost flat, with many wild trees in it and on its periphery.

Two small wooden poles & steel poles exists at the boundary of the plot which are used for electrical cables.

The site can be reached through the secondary road crossing Al-Mansourah main road.

## **2.2 Project Description.**

The project is a two story building ,each story is 1000m<sup>2</sup> which will be used as expansion of national tuberculoses control center. The project is a grant from Japan government to the government of Yemen.

Most probably the building will be concrete structure.

## **2.3 Existing Facilities.**

The site is furnished with all municipal facilities, telephone cables, electrical supply, water manias and waste water network. These facilities exists at the two existing building in the plot and surrounding the specified project area but do not penetrate it. Location plan is attached.

## **3.0 ON-SITE EXPLORATION AND TESTING**

### **3.1 Boring.**

During the period between 24<sup>th</sup> and 26<sup>th</sup> April 2000,we drilled two bore holes at the third points on the diagonal line connecting the west – South corner with the East – north corner.

The location of the holes was predetermined in – situ by the client and our representative.



The bore holes were drilled to a depth of 20m each.

We drilled the holes using the Hollow – Stem Auger of 7 “out side diameter and 3.25” in side diameter. This technique of drilling was advanced up to the sandy gravel layer where it was ineffective to proceed with this, tricon pit percussion with water and GS stabilizing agent were used to the end of boring.

GS was used to prevent the sides of bore hole from collapse under pressure of the under ground water.

Drilling was executed using our ring type (Mobile drill, Model B-34) mounted on Mercedes truck.

### **3.2 Sampling.**

Samples of soil representing all strata were collected in three forms;

- Undisturbed samples: which were taken utilizing the double – split Shelby tube, with sampling length of 45cm, and thin wall cutting edge, that results in min. disturbance of samples. These samples were taken in the cohesive layers,
- Semi-undisturbed samples: these samples were taken as out crop of the SPT sampler. These samples couldn't be considered true undisturbed because the ratio of cutting edge thickness to the open area of sampler is high, which will result in considerable disturbance to the samples, but these samples are good representative for some physical properties of soil such as gradation, Atterberg limits, specific gravity ....etc.
- Disturbed samples : taken as an out crop of the Hollow Stem and percussion drillings .With percussion drilling, large gravel is reduced to ¾” size and the sample is collected by screening and settling the return water carrying soil particles, location of bore holes are shown on the location plan.



### 3.3 Standard Penetration Test (SPT).

During the drilling of bore holes , the drilling tools were removed at regular intervals, then split spoon was inserted. The sampler was first seated 15cm to penetrate any cutting and then driven an additional 30cm with blows of 63.5 kg monkey free falling 760mm. The number of blows required to derive the additional 30cm was recorded as the standard penetration Number (N). The results are tabulated in table (1).

**Table No. (1) :**  
**Standard Penetration Test (S.P.T).**

Depth	BH.1	BH2	Depth	BH.1	BH.2
1.0	11	10	11.0	21	17
2.0	14	9	12.0	18	18
3.0	13	14	13.0	16	17
4.0	18	18	14.0	21	37
5.0	17	14	15.0	34	48
6.0	17	17	16.0	47	60
7.0	16	18	17.0	57	60
8.0	17	19	18.0	60	60
9.0	18	16	19.0	60	60
10.0	14	22	-	-	-

### 3.4 Surveying.

Topographic survey was executed as chain and level survey.

It aims at setting out the main features of the plot with the neighboring buildings and streets.

Relative level of certain points were taken by ordinary level, the levels were related to an arbitrary bench mark with level equal 5.0m a.s.l (arbitrary). It was taken at the tile finish of building B (see attached drawing).

The plot was divided into grids of 10 m X 10m with starting base line 5m away from the edge of Building A.



#### 4.0 LABORATORY TESTING.

Selected soil samples were tested to measure their geotechnical engineering properties, laboratory testing include:

- Natural moisture content (BS 1377);
- Grain size distribution (BS 1377);
- Specific gravity (BS 1377);
- Atterberg limits (Liquid & Plastic) (BS 1377);
- Shear tests (ASTEM D-3080);
- Hydrometer analysis (BS 1377);
- Chemical test (BS 1377);
- Density Test (BS 1377);
- Consolidation Test (BS 1377);
- Permeability Test (BS 1377);

Summary of results of Laboratory tests are presented in table 2,3,4,5.

Table No. (2)

Physical Properties of disturbed &amp; semi disturbed samples.

BH. No.	Sample No.	Depth M	M.C %	% Passing Sieve No.				Hydrometer			Atterberg Limits		SP. Gr.	Shear Parameters		Permeability
				4	10	40	200	Sand %	Silt %	Clay %	L.L	PI		$\phi^\circ$	C KN/m <sup>2</sup>	
	1	0.0 - 0.5	11.3	97.7	90.2	71.3	27.6									
	2	0.5 - 1.0											2.772			
	3	1.0 - 1.5														
	4	1.5 - 2.8	21.3	90.3	87.2	81.6	71.3	28.7	61.4	9.9	36.4	8.3	2.738			
	5	2.8 - 5.0														$83 \times 10^{-7}$
	6	5.0 - 5.5	32.4	97.2	91.2	84.5	75.7									
	7	5.5 - 7.5														
	8	7.5 - 9.5														
	9	9.5 - 12.0									33.8	6.1				
	10	12.0 - 12.5	32.1	94.4	90.1	79.9	70.3	29.7	59.3	11.0			2.744			
	11	12.5 - 15.0									35.3	7.7				
	12	15.0 - 16.3														
	13	16.3 - 17.8	24.7	85.7	73.2	44.9	21.3							37	2.0	$97 \times 10^{-3}$
	14	17.8 - 19.0												34	0.0	
	15	19.0 - 20.0	23.3											34	0.0	

**Table No. (3)**  
**Physical Properties of disturbed & semi disturbed samples.**

BH. No.	Sample No.	Depth M	M.C %	% Passing Sieve No.				Hydrometer			Atterberg Limits		SP. Gr.	Shear Parameters		Permeability
				4	10	40	200	Sand %	Silt %	Clay %	L.L	PI		$\phi^\circ$	C KN/m <sup>2</sup>	
2	1	0.0 - 0.3														
	2	0.0 - 1.5									31.2	5.8				
	3	1.5 - 2.8	20.3	94.4	88.3	80.2	74.7	25.3	65.4	9.3			2.738			
	4	2.8 - 3.5									34.3	7.2				
	5	3.5 - 5.5														
	6	5.5 - 8.5	33.4	90.0	97.2	85.3	73.6									$72 \times 10^{-7}$
	7	8.5 - 11.0									35.1	7.8				
	8	11.0 - 13.0														
	9	13.0 - 15.0	32.8	96.2	91.3	84.2	77.1									
	10	15.0 - 16.0														
	11	16.0 - 17.5														
	12	17.5 - 19.0	24.4	84.4	68.2	33.1	19.6							34	0.0	
	13	19.0 - 20.0												32	1.0	

**Table No. (3):**  
**Physical Properties of undisturbed samples.**

BH No.	Sample No.	Depth %	M.C %	% Passing Sieve No.				Hydrometer			Atterberg Limits	
				4	10	40	200	Sand %	Silt %	Clay %	L.L	PI
1	1	2.5 – 2.95	33.7	94.8	91.2	84.3	74.6				34.8	6.8
	2	8.0 – 8.45	33.9	99.2	97.6	90.3	77.8	22.2	64.8	13.0		
	3	15.5 – 15.95	31.8	91.4	88.2	80.1	70.6				32.1	5.9
2	1	3.5 – 3.95	34.3	99.7	94.9	85.3	76.2	23.8	61.1	15.1		
	2	9.0 – 9.45	33.8	97.3	91.8	81.2	71.6				33.3	7.1
	3	14.0 – 14.45	32.1	94.3	88.8	80.3	74.2	25.8	66.7	7.5		

**Table No. (4):**  
**Mechanical Properties of undisturbed samples.**

BH No.	Sample No.	Depth %	M.C %	% Passing Sieve No.				Bulk dens. KN/cm <sup>3</sup>	Uncom. Compression qu KN/m <sup>2</sup>	Triaxial Shear		Consolidation	
				4	10	40	200			$\phi$	C	E KN/m <sup>3</sup>	Cc
1	1	2.5 – 2.95	33.7	94.8	91.2	84.3	74.6	18.8	79	15	26	19200	0.134
	2	8.0 – 8.45	33.9	99.2	97.6	90.3	77.8	19.1	90				
	3	15.5 – 15.95	31.8	91.4	88.2	80.1	70.6	19.6	54				
2	1	3.5 – 3.95	34.3	99.7	94.9	85.3	76.2	18.7	94	12	31	22100	0.116
	2	9.0 – 9.45	33.8	97.3	91.8	81.2	71.6	18.9	82				
	3	14.0 – 14.45	32.1	94.3	88.8	80.3	74.2	19.1	66				





**Table No. (5):**  
**Chemical Analysis**

Soil				Water			
BH No.	Depth	SO <sub>3</sub> <sup>=</sup> (%)	Cl <sup>-</sup> (%)	BH No.	Depth	SO <sub>3</sub> <sup>=</sup> (PPM)	Cl <sup>-</sup> (PPM)
1	4.0	0.008	0.03	2	7.0	105	2140
2	9.0	0.030	0.090				

## 5.0 GEOLOGY & SUBSURFACE CONDITIONS

Since Cambrian times thick sequences of sedimentary rocks have been deposited forming the upper part of the Arabian shield together with its Precambrian basement. In present geodynamics the Arabian shield is moving northwards separating itself from the large African shield and simultaneously being affected by the large Indian – Australian shield which is drifting eastwards and by this making the Arabian Peninsula dipping slightly towards the eastern Arabian Gulf leading to a present eastern inclination of the Arabian shield is of about 1 to 2 degrees. The southern basement flank of the Arabian shield is geologically formed by older Precambrian rock formations strongly stressed, broken, faulted and fissured with intruded dike swarms up to the subcrustal magma chamber of the lower crust. The intruded volcanic material is forming volcanic piles. Those volcanic piles average more than 1200m in thickness forming the high Yemen lava plateau with alternating flows of basalt interbedded with acid effusive ignimbrites that range in composition from rhyolite to comendite. These basalt flows of the Trap Series rest on shallow marine Mekj-zir sandstone and conglomerates considered in the inner part of the Paleocene and spread in the Pliocene/Pleistocene far into the coastal plain of the Aden region interwedged there with thick quaternary sediments of evaporate and marine. These in confirmation with the preliminary soil investigation might form the upper subsoil layers of the considered site in the Aden Airport area.



In summary quite irregular subsoil conditions of geologically comparatively young origin and this under the influences of ongoing plate tectonic movements may have to be expected.

Close inspection of soil samples retrieved from the two bore holes indicates almost a homogeneous layer of fine damp to dry, gray color fine silty sand up to a depth of 0.4m, this layer comprise the top soft soil.

Underneath this layer a clayey silt layer extends to a depth of 16.0m, this layer is characterized by its stratification of sub layers 1.0 – 3.0m thickness each.

The clay content in each sub layer differs slightly from others, but with general common characteristics such as dark brown Reddish color, stiff formation, low plasticity and medium compressibility and has some pea size gravel.

This layer overly another stratified silty gravel – sand layer which is gray to light brown in color, with very dense formation, very low compressibility.

## 6.0 Carrying capacity of soil

The analysis will consider shallow footing through theoretical and empirical approaches

### Theoretical approach :

**First:** We will consider isolated footing dimensions of  $2.0 \times 2.0\text{m}^2$  at a depth of 1.5m.

The following Terzaghi equation corrected by schultz will be adopted to calculate the safe bearing capacity :

$$Q_{\text{ull}} = \frac{(1 + 0.3 B/L) C N_c + \gamma_1 D_1 N_q + (1 - 0.2 B/L) B \gamma_2}{N \gamma / 2}$$



Where:

Qult	=	Ultimate bearing capacity
B,L	=	Width & Length of footing
$\gamma_1, \gamma_2$	=	Density of soil above & beneath footing respectively
C	=	Cohesion
D	=	Depth of footing
$N_1, N_q, N_\gamma$	=	Factors dependent on angle of internal friction

The controlling stratum is at BH2, with

$$\begin{aligned}\phi &= 12, & C &= 31 \text{ KN/m}^2 \\ N_c &= 10.9, & N_q &= 3.42, & N_\gamma &= 1.22\end{aligned}$$

$$Q_{ult} = 544 \text{ KN/m}^2 \text{ For a factor of safety} = 3$$

$$Q_{all} = 181 \text{ KN/m}^2$$

**Second:** For strip footings with  $B = 1.0\text{m}$  at the same above conditions :

$$\begin{aligned}Q_{ult} &= 439.7 \text{ KN/m}^2 \\ Q_{all} &= 147 \text{ KN/m}^2 \text{ For a factor of safety} = 3\end{aligned}$$

### **Empirical Approach**

From the standard penetration test;

The average uncorrected (SPT vales to a depth = 5B below footing depth; i.e. to a depth = 10mm = 16

Taking into consideration the overburden effect and built up water pressure

$$\text{SPT corrected} = 13$$



Applying the following equation:

$$Q_{all} = (N/F_2)(B+0.3/B)^2$$

Where :

$F_2$	=	A factor dependent on B
$B$	=	Width of footing
$N$	=	Corrected SPT value
$Q_{all}$	=	162 KN/m <sup>2</sup>

## 7.0 SETTLEMENT ANALYSIS

The following equation is applied to calculate the settlement under isolated and strip footings.

$$\Delta H = (C_c + H/1+e_0) \log (P_0 + \Delta P / \Delta P)$$

Where:

$C_c$	=	Compressibility Index
$H$	=	Thickness of affected layer by the applied load
$\Delta P$	=	Average applied load at center of affected layer
$e$	=	Initial voids ratio
$P_0$	=	Over burden stress at center of affected layers.

It we apply a load equal the safe bearing capacity calculated preciously

Then for a 2.5m × 2.5m isolated footing

$$\Delta H = 6.7\text{cm}$$

For strip footing with  $B = 1.0\text{m}$

$$\Delta H = 3.4\text{cm}$$



## 8.0 DYNAMIC & SIESMIC FACTORS.

The clay silt soil has the following Dynamic characteristics.

Poison's ratio $\mu$	=	0.38
Shear modulus (G)	=	7200 KN/m <sup>2</sup>
Compression wave $v_c$	=	143m/sec.
Shear wave	=	61m/sec.

## 9.0 CONCLUSIONS AND RECOMMENDATIONS

1. To enhance the soil strength and minimize the settlement, we recommend to design the building on strip footing.
2. If strip footing are inadequate mainly in the middle area of the building, isolated square or rectangular footing are recommended with width not exceeding 2.5m.
3. To minimize the settlement and increase the soil carrying capacity, we recommend to make soil replacement under the footing. To increase the safe soil capacity to 2.0 Kg/cm<sup>2</sup>, the soil replacement should be 1.5m below footing level, to increase the soil capacity to 1.8Kg/cm<sup>2</sup>, the replacement should be to 1.2 m below bottom level of footings.
4. Although the above figures are within the range of the calculated bearing capacity, but applying these figures without replacement will give high values of settlement, so the replacement is recommended to keep the safe bearing capacity in the range of 1.8 – 2.0Kg/cm<sup>2</sup> with settlement less than 1.5cm.

Also soil replacement will enhance the soil underneath footing against dynamic loading.



5. For soil replacement it is recommended to consider the following factors:
  - The soil used for replacement should be well graded granular material with max. size less than 4" and less than 10% should be passing sieve No. 200.
  - The width of replacement should be at least 30.0 cm outside the edges of footings from all sides.
  - The soil should be placed in layers less than 20.0 cm thickness and compacted to a minimum of 95% of max. dry density obtained in the laboratory.
6. The soil is stiff but can be excavated with simple mechanical equipment such as backhoe.
7. It is not recommended to use the excavated material in back fill operations around footings or directly below tiles.
8. Due to the high concentration of chlorides, we recommend using ordinary Portland cement in amount not less than 425 kg/m<sup>3</sup>.



## 10.0 REFERENCES

1. ASTM 04.08 - Soil and Rock; Dimension Stone; Geosynthetics. 1990.
2. British Standard BS 5930 : 1981. Site Investigations. BSI - London.
3. British Standard 1377 : 1975. Methods of testing soils for civil engineering purposes BSI - London.
4. Tomlinson M. J. Foundation Design and Construction. 4th ed. London.
5. Peck. R, Hanson W, Thornburn. T. Foundation Engineering Willey and Sons. 1980.
6. Wilun and Starzewski Soil Mechanics in Foundation Engineering. London. 1975.
7. Bowles J. Foundation Analysis and Design McGraw Hill. 1982.
8. Tsytoich N. Soil Mechanics. Mir Publishers. Moscow. 1986.



## **11.0 APPENDIX**



## CONSULTING ENGINEERING CENTER



## SOIL CONSISTENCY TEST

JOB : 103/2000

SAMPLE No. : Sample 4

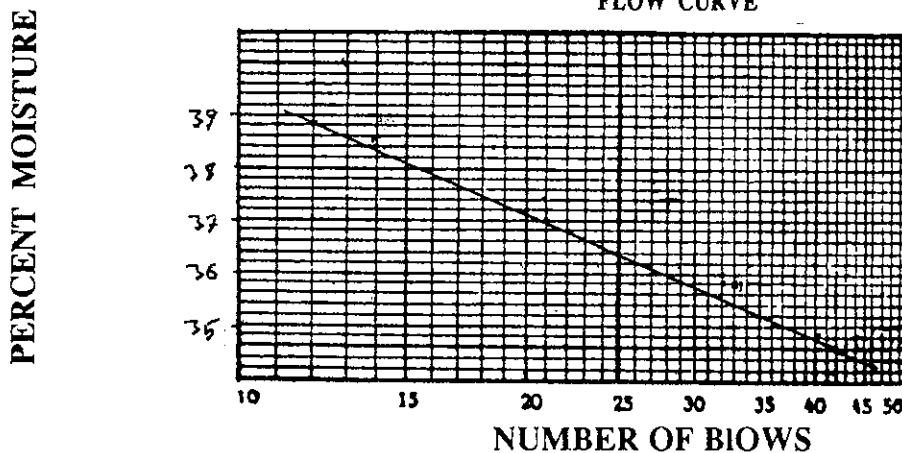
SITE : B. H. 1

Sample Description

## LIQUID LIMIT - PLASTIC - PLASTICITY INDEX

		Plastic Limit		Liquid Limit			
	Trial No.	1	2	1	2	1	2
	Dish No.	40	I	26	7	D	14
	No. of Blows	-	-	12	21	32	40
1	Wt. Dish + Wet Soil gr.	28.90	31.02	47.95	38.13	41.58	46.18
2	Wt. Dish + Dry Soil gr.	28.34	30.33	44.50	33.65	37.76	40.77
3	Wt. of Dish gr.	26.34	27.88	35.61	21.54	27.09	25.23
4	Wt. of Water (1-2) gr.	0.56	0.69	3.45	4.48	3.80	5.41
5	Wt. of Dry Soil (2-3) gr.	2.00	2.45	8.89	12.11	10.67	15.54
6	% Moisture (4/5 X 100)	28.00	28.2	38.8	37.00	35.00	34.80
7	Average Plastic Limit %	28.1					

FLOW CURVE



## SHRINKAGE TEST

1	Shrinkage Dish No.	gr.		8	Vol. Shrinkage Dish (V)	ml	
2	Wt. of Dish + Wet Soil	gr.		9	Vol. Dry Soil (Vo)	ml	
3	Wt. of Dish + Dry Soil	gr.		10	V - Vo = (8 - 9)		
4	Wt. of Dish	gr.		11	$\frac{v - V_0}{W_0} \times 100 = \left( \frac{10}{6} \times 100 \right)$		
5	Wt. of Water (2-3)	gr.					
6	Wt. of Soil (Wo) = (3-4)	gr		12	Shrinkage Limit (7 - 11) %		
7	% Moisture (5/6 x 100)			13	Shrinkage Ratio (6/6)		

Liquid Limit =	36.4	Plastic Limit =	28.1	Plasticity Index =	8.3	Shrinkage Limit =	
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Soil Mechanics Laboratory Testing :

## CONSISTENCY TESTS

Sample No. :

Tested &amp; Computed by : ..... Material Engineer : ..... Q. N. .... Date : .....

## CONSULTING ENGINEERING CENTER

JOB : 103/2000

SAMPLE No. : 9

SITE : B. H. 1



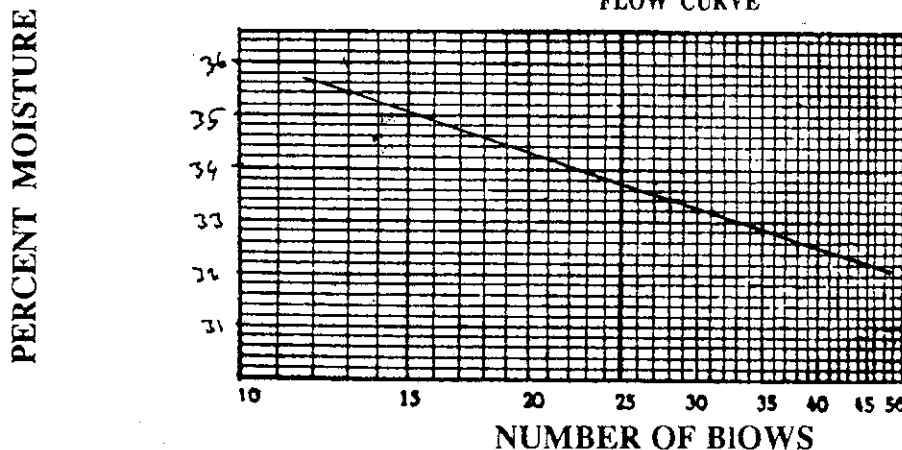
## SOIL CONSISTENCY TEST

Sample Description

## LIQUID LIMIT - PLASTIC - PLASTICITY INDEX

		Plastic Limit		Liquid Limit			
	Trial No.	1	2	1	2	1	2
	Dish No.	15	22	J	Q	12	34
	No. of Blows	-	-	13	23	31	39
1	Wt. Dish + Wet Soil gr.	27.47	33.28	68.23	53.58	43.50	47.48
2	Wt. Dish + Dry Soil gr.	27.09	32.58	60.68	48.89	38.18	40.87
3	Wt. of Dish gr.	25.71	30.07	39.35	35.10	22.16	20.59
4	Wt. of Water (1-2) gr.	0.38	0.70	7.55	4.69	5.32	6.61
5	Wt. of Dry Soil (2-3) gr.	1.38	2.51	21.33	13.79	16.02	20.28
6	% Moisture (4/5 X 100)	27.50	27.90	35.40	34.00	33.20	32.60
7	Average Plastic Limit %	27.7					

FLOW CURVE



## SHRINKAGE TEST

1	Shrinkage Dish No.	gr.		8	Vol. Shrinkage Dish (V)	ml	
2	Wt. of Dish + Wet Soil	gr.		9	Vol. Dry Soil (Vo)	ml	
3	Wt. of Dish + Dry Soil	gr.		10	V - Vo = (8 - 9)		
4	Wt. of Dish	gr.		11	$\frac{v - V_0}{W_0} \times 100 = \left( \frac{10}{6} \times 100 \right)$		
5	Wt. of Water (2-3)	gr.					
6	Wt. of Soil (Wo) = (3-4)	gr		12	Shrinkage Limit (7 - 11) %		
7	% Moisture (5/6 x 100)			13	Shrinkage Ratio (6/6)		

Liquid Limit =	33.8	Plastic Limit =	27.7	Plasticity Index =	6.1	Shrinkage Limit =	
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Soil Mechanics Laboratory Testing :

CONSISTENCY TESTS

Sample No. :

Tested &amp; Computed by : ..... Material Engineer : ..... Q. N. .... Date : .....

# CONSULTING ENGINEERING CENTER

JOB : 103/2000  
 SAMPLE No. : 11  
 SITE : B. H. 1



## SOIL CONSISTENCY TEST

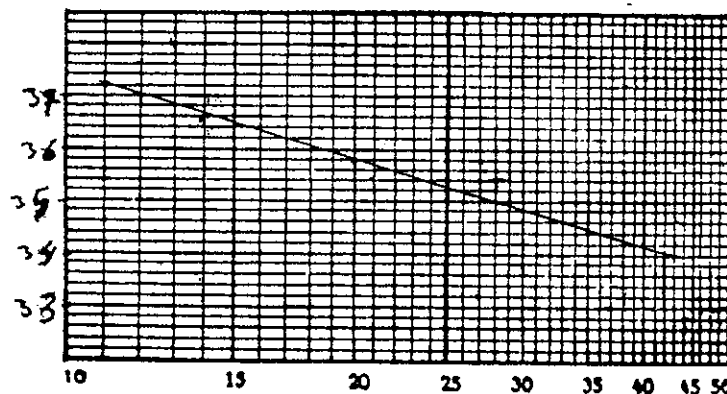
Sample Description

### LIQUID LIMIT - PLASTIC - PLASTICITY INDEX

		Plastic Limit		Liquid Limit			
	Trial No.	1	2	1	2	1	2
	Dish No.	20	Y	A	B	I	2
	No. of Blows	-	-	11	20	29	38
1	Wt. Dish + Wet Soil gr.	23.21	26.81	25.63	38.53	52.64	41.72
2	Wt. Dish + Dry Soil gr.	22.85	26.37	23.07	35.07	46.22	36.51
3	Wt. of Dish gr.	21.54	24.78	16.19	25.41	27.88	21.28
4	Wt. of Water (1-2) gr.	0.36	0.44	2.56	3.46	6.42	5.21
5	Wt. of Dry Soil (2-3) gr.	1.31	1.59	6.88	9.66	18.34	15.23
6	% Moisture (4/5 X 100)	27.50	27.70	37.20	35.80	35.00	34.200
7	Average Plastic Limit %	27.6					

FLOW CURVE

PERCENT MOISTURE



NUMBER OF BLOWS

### SHRINKAGE TEST

1	Shrinkage Dish No.	gr.		8	Vol. Shrinkage Dish (V)	ml	
2	Wt. of Dish + Wet Soil	gr.		9	Vol. Dry Soil (Vo)	ml	
3	Wt. of Dish + Dry Soil	gr.		10	V - Vo = (8 - 9)		
4	Wt. of Dish	gr.		11	$\frac{V - V_0}{W_0} \times 100 = \left( \frac{10}{6} \times 100 \right)$		
5	Wt. of Water (2-3)	gr.					
6	Wt. of Soil (Wo) = (3-4)	gr		12	Shrinkage Limit ( 7 - 11 ) %		
7	% Moisture (5/6 x 100)			13	Shrinkage Ratio (6/6)		

Liquid Limit =	35.3	Plastic Limit =	27.6	Plasticity Index =	7.7	Shrinkage Limit =	
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Soil Mechanics Laboratory Testing :

CONSISTENCY TESTS

Sample No. :

Tested & Computed by : ..... Material Engineer : Q. N ..... Date : .....

# CONSULTING ENGINEERING CENTER



## SOIL CONSISTENCY TEST

JOB : ....2000/103.....

SAMPLE No. : ...4.....

SITE : ....BH2..Depth..2.8...3.5..

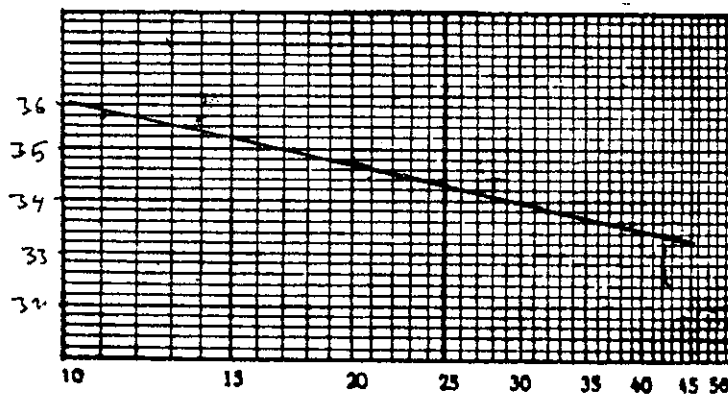
Sample Description

### LIQUID LIMIT - PLASTIC - PLASTICITY INDEX

		Plastic Limit		Liquid Limit			
	Trial No.	1	2	1	2	1	2
	Dish No.	5	6	23	24	28	29
	No. of Blows	-	-	11.00	20.00	31.00	42.00
1	Wt. Dish + Wet Soil gr.	26.20	21.73	60.91	56.08	53.98	42.02
2	Wt. Dish + Dry Soil gr.	25.20	20.68	53.09	49.67	49.39	36.33
3	Wt. of Dish gr.	21.48	16.83	31.12	31.25	35.89	19.29
4	Wt. of Water (1-2) gr.	1.00	1.05	7.82	6.41	4.59	5.69
5	Wt. of Dry Soil (2-3) gr.	3.72	3.85	21.97	18.42	13.50	17.04
6	% Moisture (4/5 X 100)	26.90	27.30	35.60	34.80	34.00	33.40
7	Average Plastic Limit %	27.1					

FLOW CURVE

PERCENT MOISTURE



NUMBER OF BLOWS

### SHRINKAGE TEST

1	Shrinkage Dish No.	gr.	8	Vol. Shrinkage Dish (V)	ml
2	Wt. of Dish + Wet Soil	gr.	9	Vol. Dry Soil (Vo)	ml
3	Wt. of Dish + Dry Soil	gr.	10	V - Vo = (8 - 9)	
4	Wt. of Dish	gr.	11	$\frac{V - V_o}{W_o} \times 100 = \left( \frac{10}{6} \times 100 \right)$	
5	Wt. of Water (2-3)	gr.			
6	Wt. of Soil (Wo) = (3-4)	gr.	12	Shrinkage Limit ( 7 - 11 ) %	
7	% Moisture (5/6 x 100)		13	Shrinkage Ratio (6/6)	

Liquid Limit =	34.3	Plastic Limit =	27.1	Plasticity Index =	7.2	Shrinkage Limit =	
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Soil Mechanics Laboratory Testing :

CONSISTENCY TESTS

Sample No. :

Tested & Computed by : ..... Material Engineer : ....Q.N..... Date : .....

# CONSULTING ENGINEERING CENTER



## SOIL CONSISTENCY TEST

JOB : ...2000/103.....

SAMPLE No. : ...2.....

SITE : Bb2, ...Depth ...9.0...9.45...

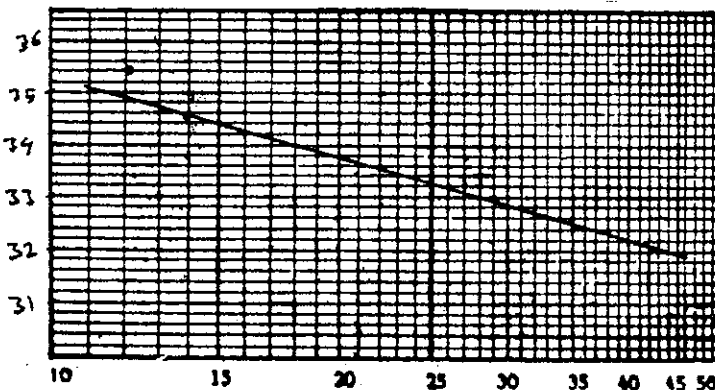
Sample Description

### LIQUID LIMIT - PLASTIC - PLASTICITY INDEX

		Plastic Limit		Liquid Limit			
	Trial No.	1	2	1	2	1	2
	Dish No.	3	4	23	24	D	H
	No. of Blows	-	-	12.00	20.00	28.00	35.00
1	Wt. Dish + Wet Soil gr.	24.19	27.53	51.88	50.29	52.96	48.64
2	Wt. Dish + Dry Soil gr.	23.75	26.82	46.51	45.48	46.54	42.66
3	Wt. of Dish gr.	22.08	24.10	31.12	31.25	27.09	24.32
4	Wt. of Water (1-2) gr.	0.44	0.71	5.37	4.81	6.42	5.98
5	Wt. of Dry Soil (2-3) gr.	1.67	2.72	15.39	14.23	19.45	18.34
6	% Moisture (4/5 X 100)	26.30	26.10	34.90	33.80	33.00	32.60
7	A verage Plastic Limit %	26.2					

FLOW CURVE

PERCENT MOISTURE



NUMBER OF BLOWS

### SHRINKAGE TEST

1	Shrinkge Dish No.	gr.	8	Vol. Shrinkage Dish (V)	ml
2	Wt. of Dish + Wet Soil	gr.	9	Vol. Dry Soil (Vo)	ml
3	Wt. of Dish + Dry Soil	gr.	10	V - Vo = (8 - 9)	
4	Wt. of Dish	gr.	11	$\frac{V - V_o}{W_o} \times 100 = \left( \frac{10}{6} \times 100 \right)$	
5	Wt. of Water (2-3)	gr.			
6	Wt. of Soil (Wo) = (3-4)	gr	12	Strinkage Limit ( 7 - 11 ) %	
7	% Moisture (5/6 x 100)		13	Shrinkage Ratio (6/6)	

Liquid Limit =	33.3	Pastic Limit =	26.2	Plasticity Index =	7.1	Shrinkage Limit =	
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Soil Mechanics Laboratory Testing :

CONSISTENCY TESTS

Sample No. :

Tested & Computed by : ..... Material Engineer : ....Q.N..... Date : .....



## HYDROMETER TEST

KIND OF MATERIAL :  
SAMPLED AT : BH 1  
Sample 4

ITEM No. :  
DATE :  
TESTED BY :

- Hydrometer Type:

% Passing sieve No. 10 = 87.2  
Wt. Of sample = 100

- Readings

Time minuets	Hydrometer Reading Corrected	% Finner	Diameter mm.
10	55	53.9	0.0337
30	50	49.0	0.0205
60	43	42.1	0.0155
1440	31	30.4	0.0035
2880	20	19.6	0.0026
4320	12	11.7	0.0020

% Clay in test = 11.7  
% Clay in Sample = 9.9

Material Eng. Q.N  
CEC



## HYDROMETER TEST

KIND OF MATERIAL :  
SAMPLED AT : BH 1  
Sample 10

ITEM No. :  
DATE :  
TESTED BY :

- **Hydrometer Type:**

% Passing sieve No. 10 = 90.1  
Wt. Of sample = 100 gm

- **Readings**

Time minuets	Hydrometer Reading Corrected	% Finner	Diameter mm.
10	60	58.8	0.0318
30	52	51.0	0.0261
60	45	44.1	0.0152
1440	32	31.4	0.0035
2880	20	19.6	0.0026
4320	13	12.7	0.0021

% Clay in test = 12.7  
% Clay in Sample = 11.0

**Material Eng. Q.N**  
**CEC**



**Sp.Gr. & ABSORPTION OF COARSE  
& FINE AGGREGATE**

**JOB** : 2000/103

**SAMPLE No.** : 2

**DATE** :

**OPERATOR** :

**LOCATION:** BH 1

Sp.Gr. & ABSORPTION OF COARSE AGGREGATE				Result
1	Wt. Of Dry sample (gr.)	(A)	199.9	
2	Wt. Of Saturated surface of dry sample(gr.)	(B)	-	
3	Wt. Of (Flask + Water + Sample) (gr.)	(C)	937.3	
4	Wt. Of (Flask + Water till Mark) (gr.)	(D)	809.5	
5	Sp. Gravity (dry sample) = $A/(B + D) - C$	=		-
6	Sp. Gravity (Sat. surf. dry) = $B/(B + D) - C$	=		-
7	Sp. Gravity (Apparent) = $A/(A + D) - C$	=		2.772
8	% age of water absorption = $(B - A)/A \times 100$			-

Material Eng. Q.N





**Sp.Gr. & ABSORPTION OF COARSE  
& FINE AGGREGATE**

**JOB** : 2000/103  
**DATE** :  
**LOCATION**: BH 1

**SAMPLE No.** :10  
**OPERATOR** :

Sp.Gr. & ABSORPTION OF COARSE AGGREGATE			Result
1	Wt. Of Dry sample (gr.) (A)	200.0	
2	Wt. Of Saturated surface of dry sample(gr.) (B)	-	
3	Wt. Of (Flask + Water + Sample) (gr.) (C)	936.6	
4	Wt. Of (Flask + Water till Mark) (gr.) (D)	809.5	
5	Sp. Gravity (dry sample) = $A/(B + D) - C$ =		-
6	Sp. Gravity (Sat. surf. dry) = $B/(B + D) - C$ =		-
7	Sp. Gravity (Apparent) = $A/(A + D) - C$ =		2.744
8	% age of water absorption = $(B - A)/A \times 100$		-

Material Eng. Q.N



**Sp.Gr. & ABSORPTION OF COARSE  
& FINE AGGREGATE**

**JOB** : 2000/103  
**DATE** :  
**LOCATION:** BH 1

**SAMPLE No.** :4  
**OPERATOR** :

Sp.Gr. & ABSORPTION OF COARSE AGGREGATE			Result
1	Wt. Of Dry sample (gr.) (A)	199.6	
2	Wt. Of Saturated surface of dry sample(gr.) (B)	-	
3	Wt. Of (Flask + Water + Sample) (gr.) (C)	936.2	
4	Wt. Of (Flask + Water till Mark) (gr.) (D)	809.5	
5	Sp. Gravity (dry sample) = $A/(B + D) - C$ =		-
6	Sp. Gravity (Sat. surf. dry) = $B/(B + D) - C$ =		-
7	Sp. Gravity (Apparent) = $A/(A + D) - C$ =		2.738
8	% age of water absorption = $(B - A)/A \times 100$		-

Material Eng. Q.N



**Sp.Gr. & ABSORPTION OF COARSE  
& FINE AGGREGATE**

**JOB** : 2000/103  
**DATE** :  
**LOCATION**: BH 1

**SAMPLE No.** :14  
**OPERATOR** :

Sp.Gr. & ABSORPTION OF COARSE AGGREGATE			Result
1	Wt. Of Dry sample (gr.) (A)	200.4	
2	Wt. Of Saturated surface of dry sample(gr.) (B)	-	
3	Wt. Of (Flask + Water + Sample) (gr.) (C)	940.9	
4	Wt. Of (Flask + Water till Mark) (gr.) (D)	809.5	
5	Sp. Gravity (dry sample) = $A/(B + D) - C$ =		-
6	Sp. Gravity (Sat. surf. dry) = $B/(B + D) - C$ =		-
7	Sp. Gravity (Apparent) = $A/(A + D) - C$ =		2.897
8	% age of water absorption = $(B - A)/A \times 100$		-

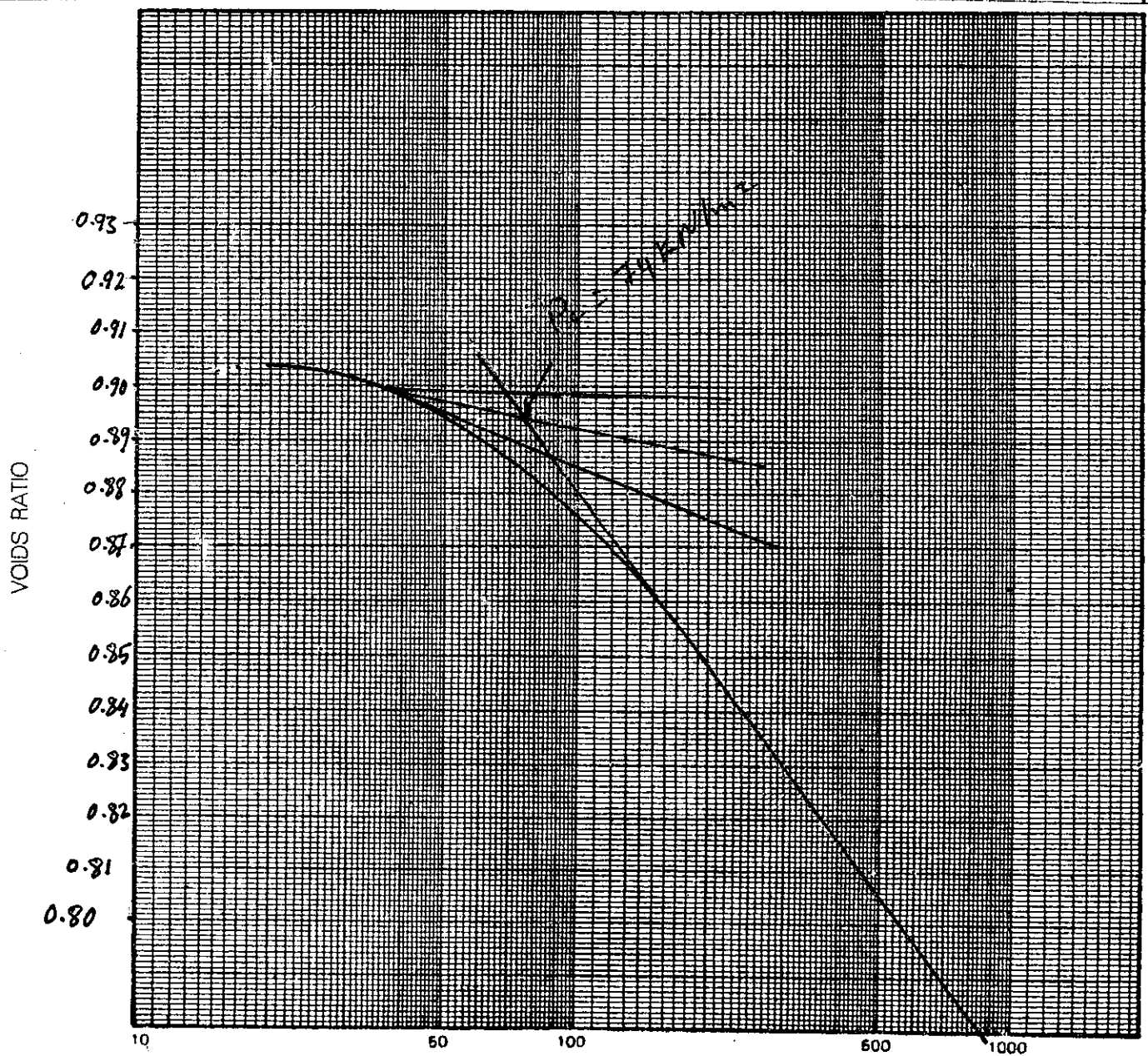
Material Eng. Q.N

# CONSOLIDATION TEST RESULTS

CONTRACT : .....

DATE : .....

Borehole Sample No.	Depth m	Initial Moisture Content %	Initial Bulk Density Kg/m <sup>3</sup>	S. G.	Pressure Range kN/m <sup>2</sup>	Mv m <sup>2</sup> /kN	Cv Log t method mm <sup>2</sup> /s	DESCRIPTION
B.H 2								
sample	3.5-3.8	34.3	1.90	2.699				





### DIRECT SHEAR TEST

Project :

Location : BH 1

Sample 15

Tested by :

Date :

Area of Sample =  $36 \text{ cm}^2$

Ring factor =  $0.205 \text{ KN/div.}$

#### Test Readings:

Normal load

14.5

24.5

34.5

Dial Reading

48

81

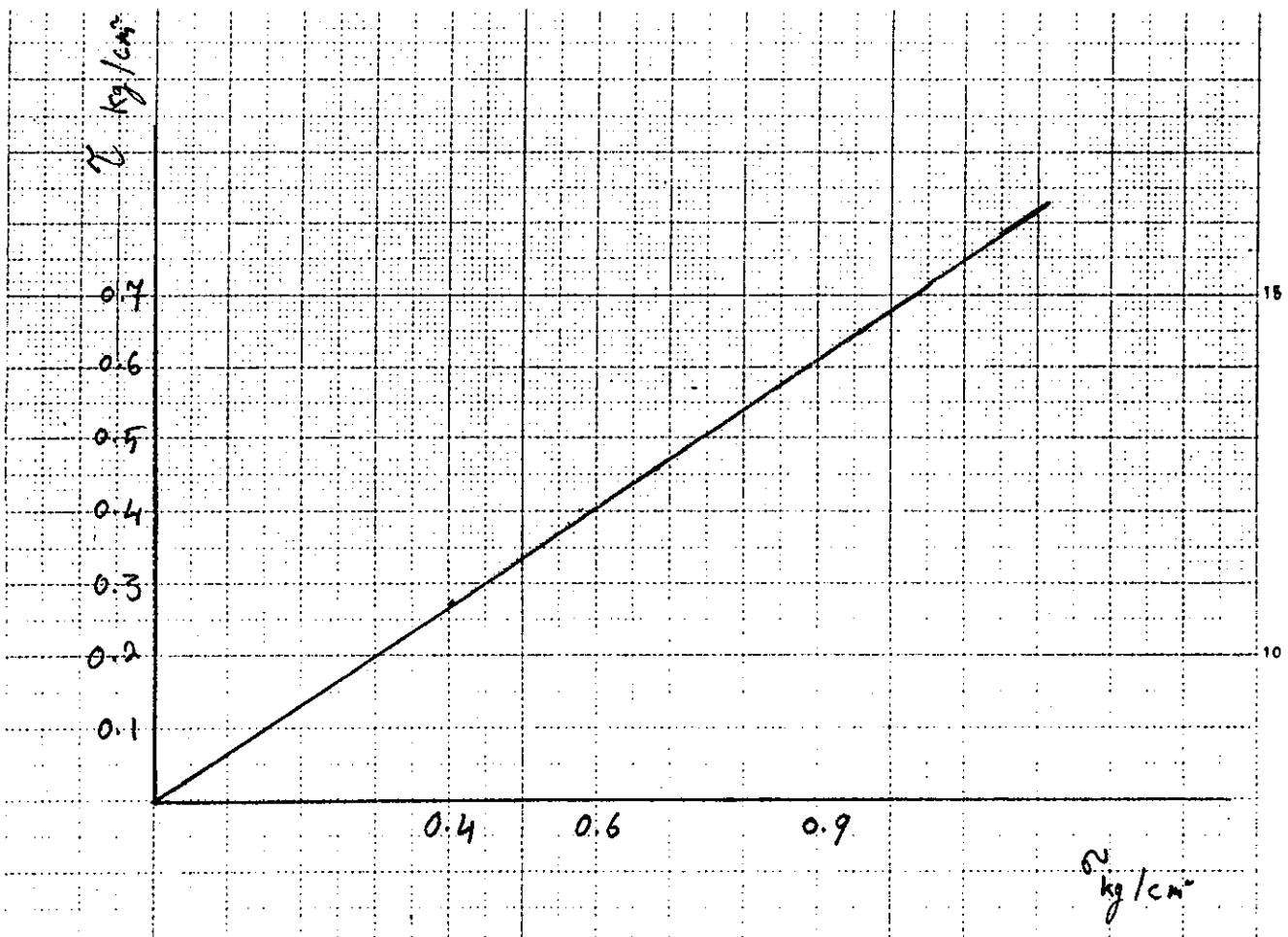
113.5

#### Test Results:-

$\theta = 34^\circ$

$C = 0.0$

$\text{KN/m}^2$





### DIRECT SHEAR TEST

Project :  
Location : BH 1  
Sample 13

Tested by :  
Date :

Area of Sample = 36 cm<sup>2</sup>

Ring factor = 0.205 KN/div.

#### Test Readings:

##### Normal load

14.5

24.5

34.5

##### Dial Reading

46

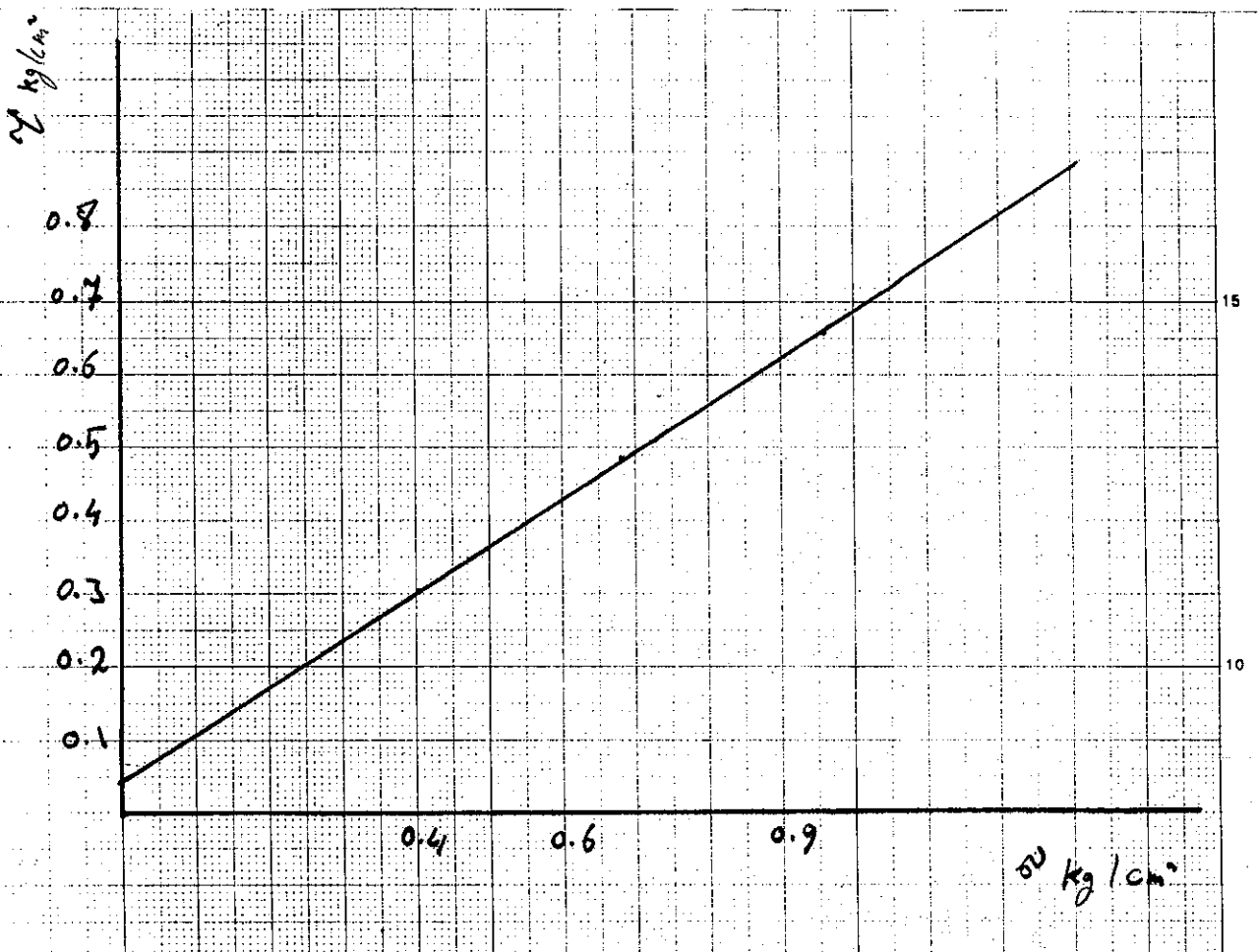
77.5

109

#### Test Results:-

$\theta = 33^\circ$

$C = 4.0$  KN/m<sup>2</sup>





### DIRECT SHEAR TEST

Project :  
Location : BH 1  
Sample 14

Tested by :  
Date :

Area of Sample =  $36 \text{ cm}^2$

Ring factor =  $0.205 \text{ KN/div.}$

#### Test Readings:

##### Normal load

14.5

24.5

34.5

##### Dial Reading

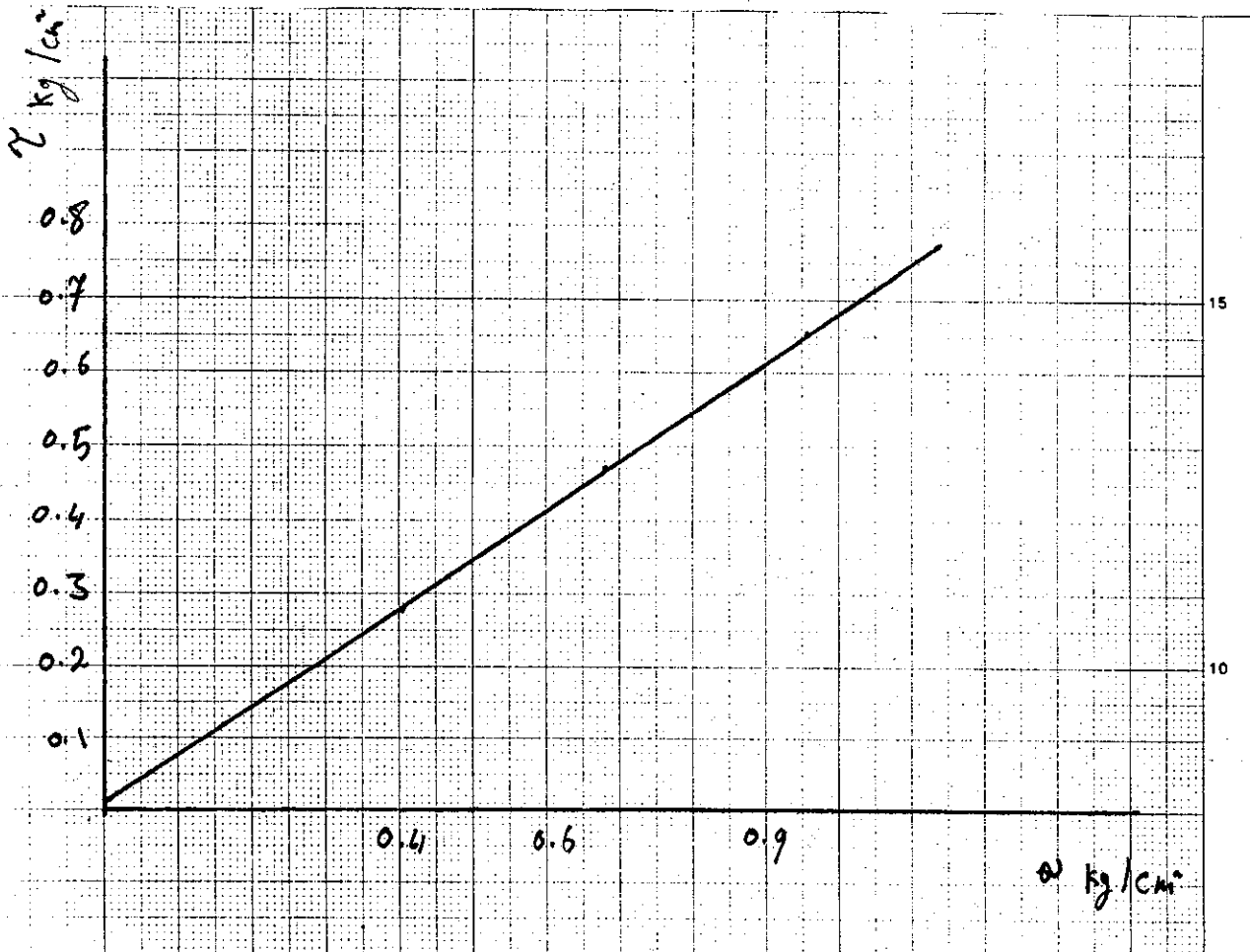
47.5

80.5

113.5

#### Test Results:-

$\theta = 34^\circ$        $C = 1 \text{ KN/m}^2$





### DIRECT SHEAR TEST

Project :  
Location : BH 2  
Sample 13

Tested by :  
Date :

Area of Sample =  $36 \text{ cm}^2$

Ring factor =  $0.205 \text{ KN/div.}$

#### Test Readings:

##### Normal load

14.5

24.5

34.5

##### Dial Reading

44

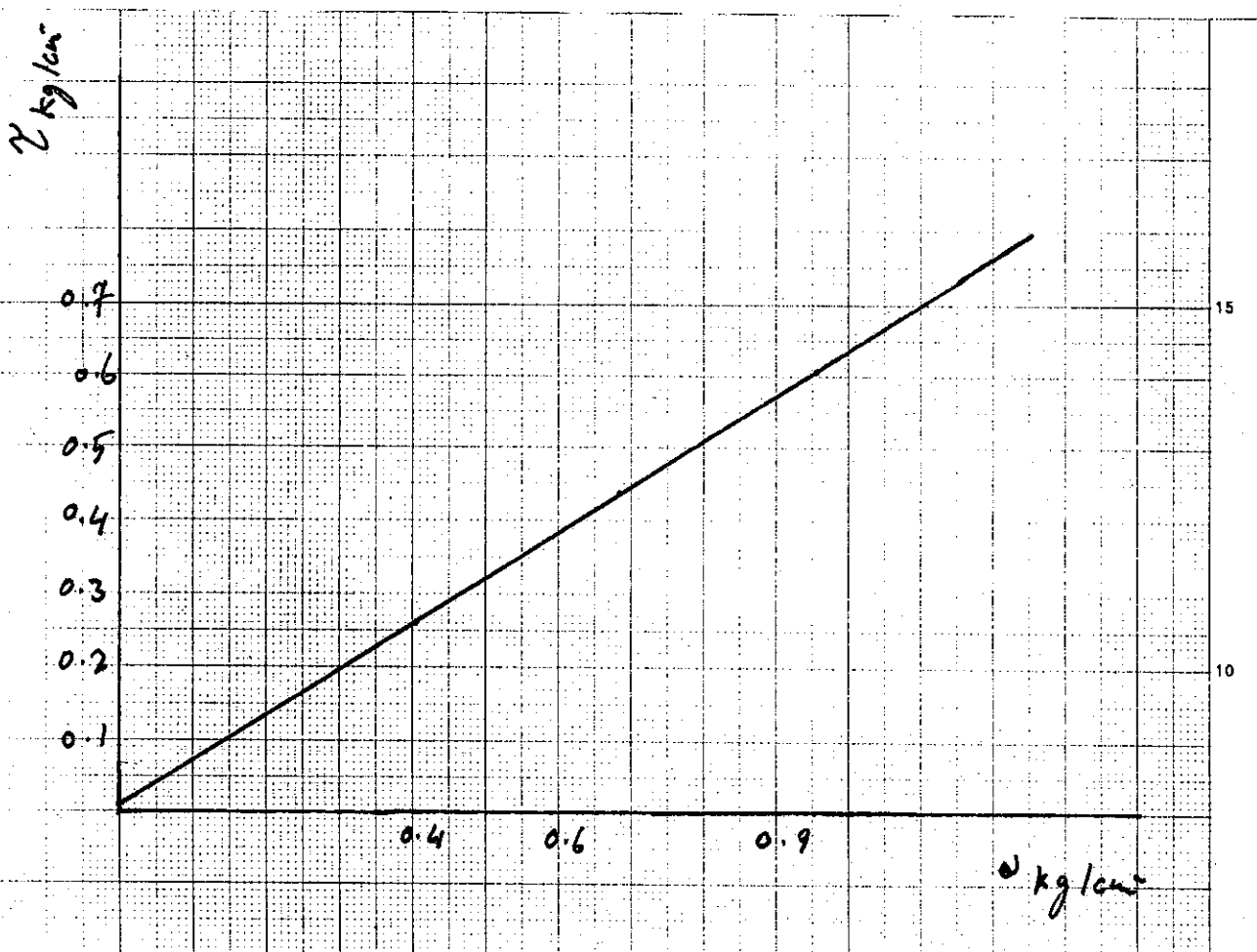
75

105

##### Test Results:-

$\theta = 32^\circ$

$C = 1.0 \text{ KN/m}^2$





BH. NO.: 2

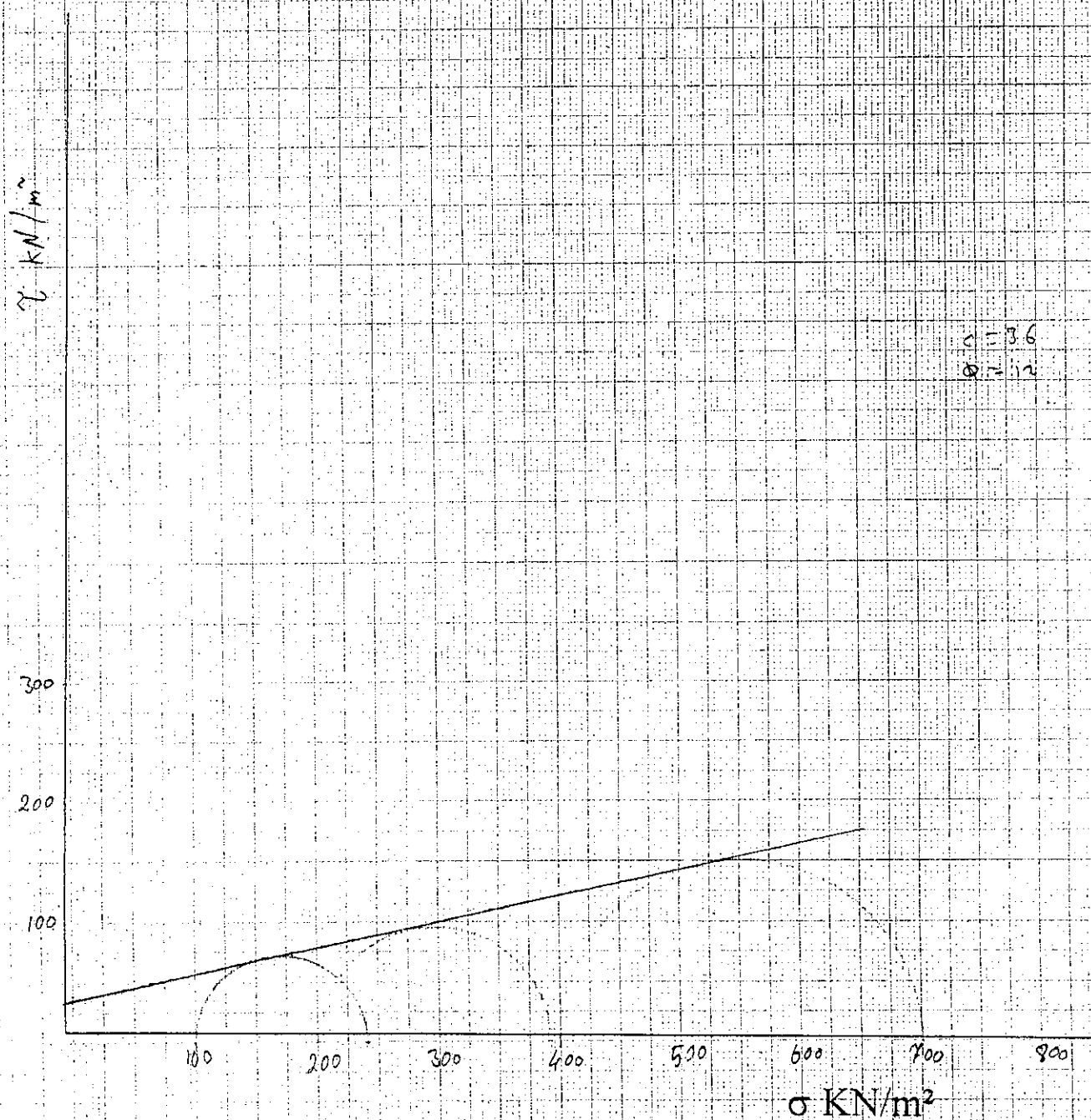
L = 7.0 cm

Depth: 9.0 - 9.45

D = 3.4 cm

Stress ring factor = 0.0025 KN/div

$\sigma_3$ (KN/m <sup>2</sup> )	Final load Reading	Final defor. Reading	$\Delta L$ (mm)	Unit Strain	Corrected area (cm <sup>2</sup> )	Deviator stress (KN/m <sup>2</sup> )
100	56	59.5	3.95	0.035	9.35	141
200	78	63.0	6.30	0.090	9.90	194
400	120	57.4	5.74	0.082	9.82	299



BH NO: 1

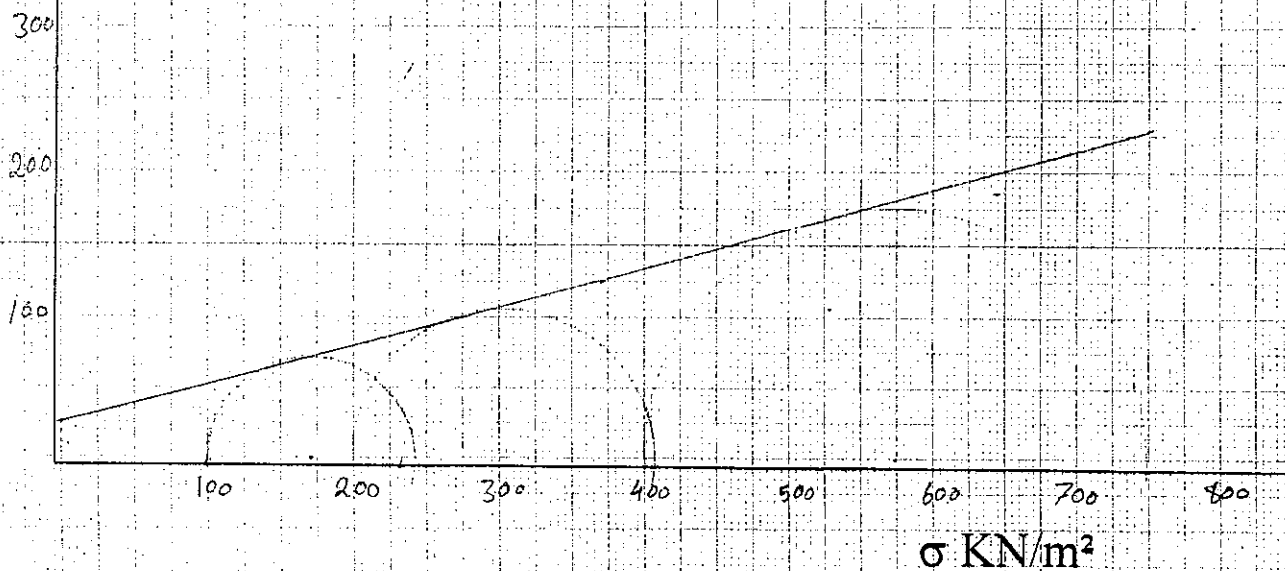
Depth: 2.5 - 2.95

Stress ring factor = 0.0025 KN/div

L = 6.95 cm

D = 3.4 cm

$\sigma_3$ (KN/m <sup>2</sup> )	Final load Reading	Final defor. Reading	$\Delta L$ (mm)	Unit Strain	Corrected area (cm <sup>2</sup> )	Deviator stress (KN/m <sup>2</sup> )
100	55	68.1	6.81	0.013	9.97	138
200	83	61.9	6.19	0.089	9.99	207
400	139	64.6	6.46	0.093	9.92	347





### PERMEABILITY TEST

TYPE OF SOIL : -                      JOB :2000/103  
SAMPLE NO. : (5)                      DATE :  
LOCATION : BH.1

---

• Test method : Falling head method.

• Specimen size :

D = 9.6cm, A = 72.4cm<sup>2</sup>  
L = 13.2cm,  $\gamma$  = gr./cm<sup>3</sup>

• Water flow : Down ward

Total time = 86400 Sec.  
Total discharge (Q) = 2583 mm<sup>3</sup>  
Q = 0.0299 mm<sup>3</sup>/sec.  
Temp. = 20c°  
Rt. = 1  
Difference in head (h) = 165 cm  
  
i = h/i = 12.5  
k = (q/i) × (Rt/A) = 3.3×10<sup>-7</sup> mm/sec.

• REMARKS

Material Eng. Q.N

C. E. C



### PERMEABILITY TEST

TYPE OF SOIL : -                      JOB :2000/103  
SAMPLE NO. : (13)                      DATE :  
LOCATION : BH.1

---

- Test method : Falling head method.

- Specimen size :

$$\begin{array}{llll} D & = & 9.6\text{cm}, A & = & 72.4\text{cm}^2 \\ L & = & 13.2\text{cm}, \gamma & = & \text{gr./cm}^3 \end{array}$$

- Water flow : Down ward

$$\begin{array}{ll} \text{Total time} & = 600 \text{ Sec.} \\ \text{Total discharge (Q)} & = 526710 \text{ mm}^3 \\ Q & = 877.85 \text{ mm}^3/\text{sec.} \\ \text{Temp.} & = 22^\circ\text{C} \\ \text{Rt.} & = 1 \\ \text{Difference in head (h)} & = 165 \text{ cm} \end{array}$$

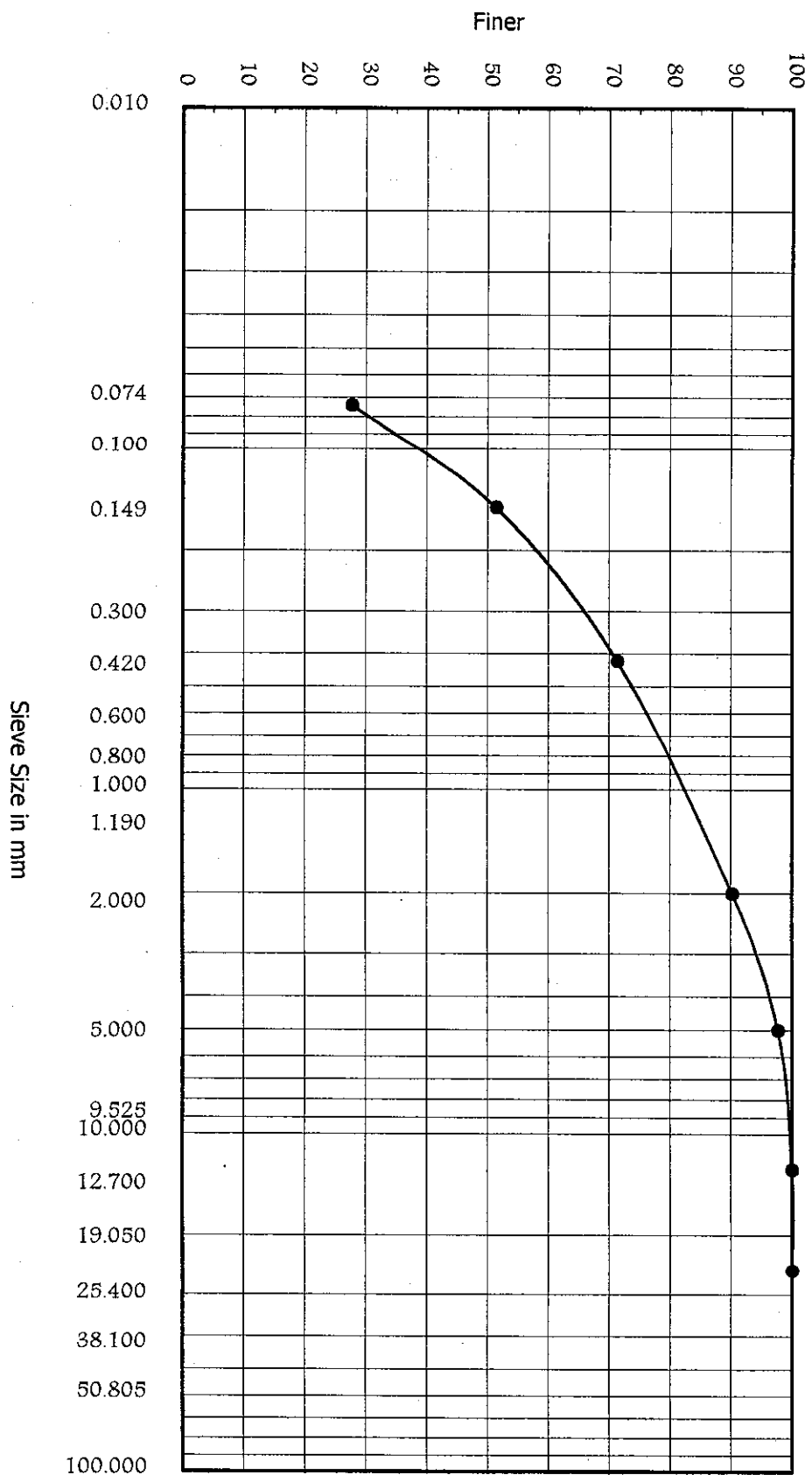
$$i = \frac{h}{L} = 12.5$$

$$k = (q/i) \times (Rt/A) = 9.7 \times 10^{-3} \text{ mm/sec.}$$

- REMARKS

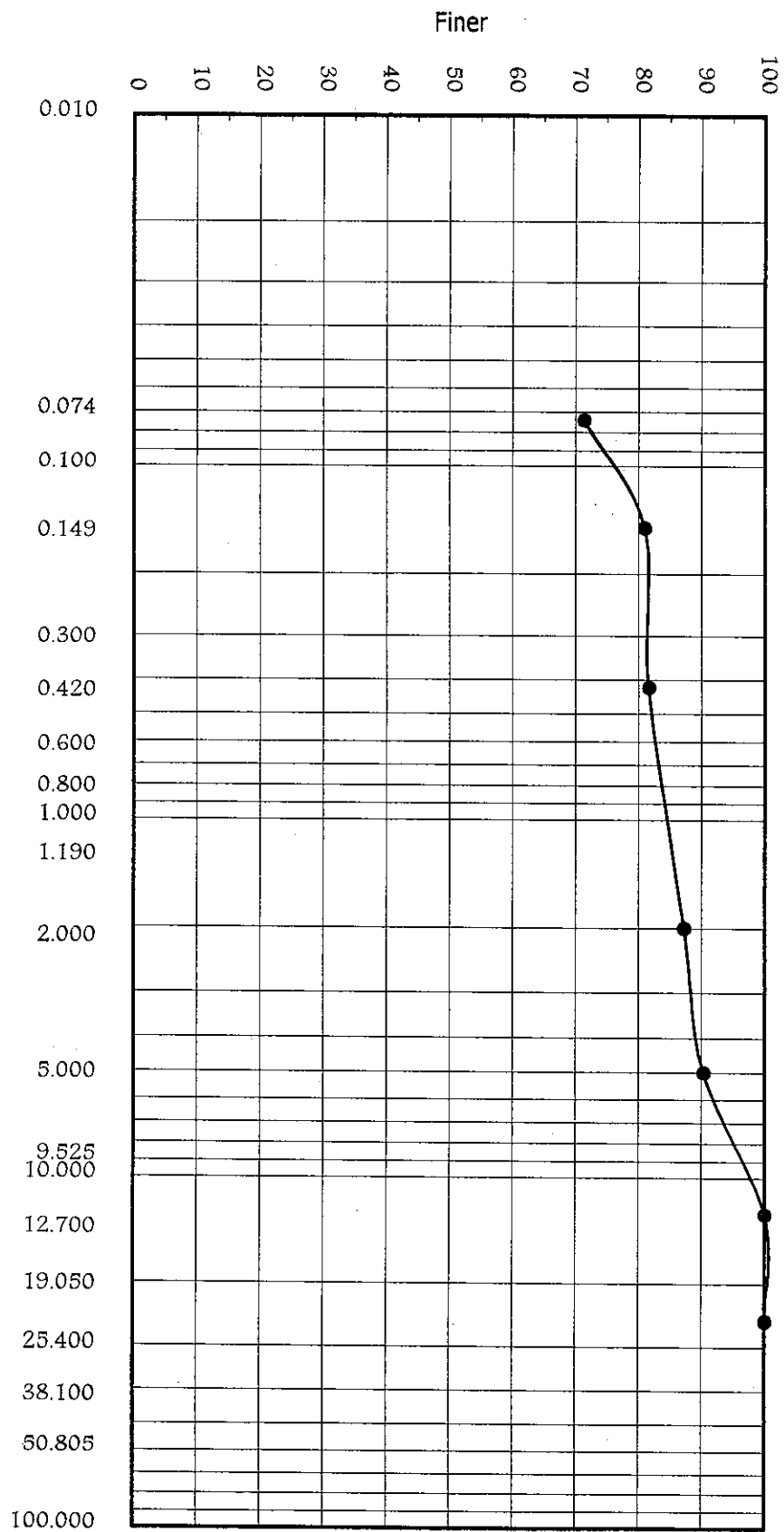
Material Eng. Q.N  
C. E. C

Graphical Representation of Soil Gradation  
 Bore Hole no BH -1 (Depth 0.0 m to 0.5 m)  
 Location: Al-Mansora



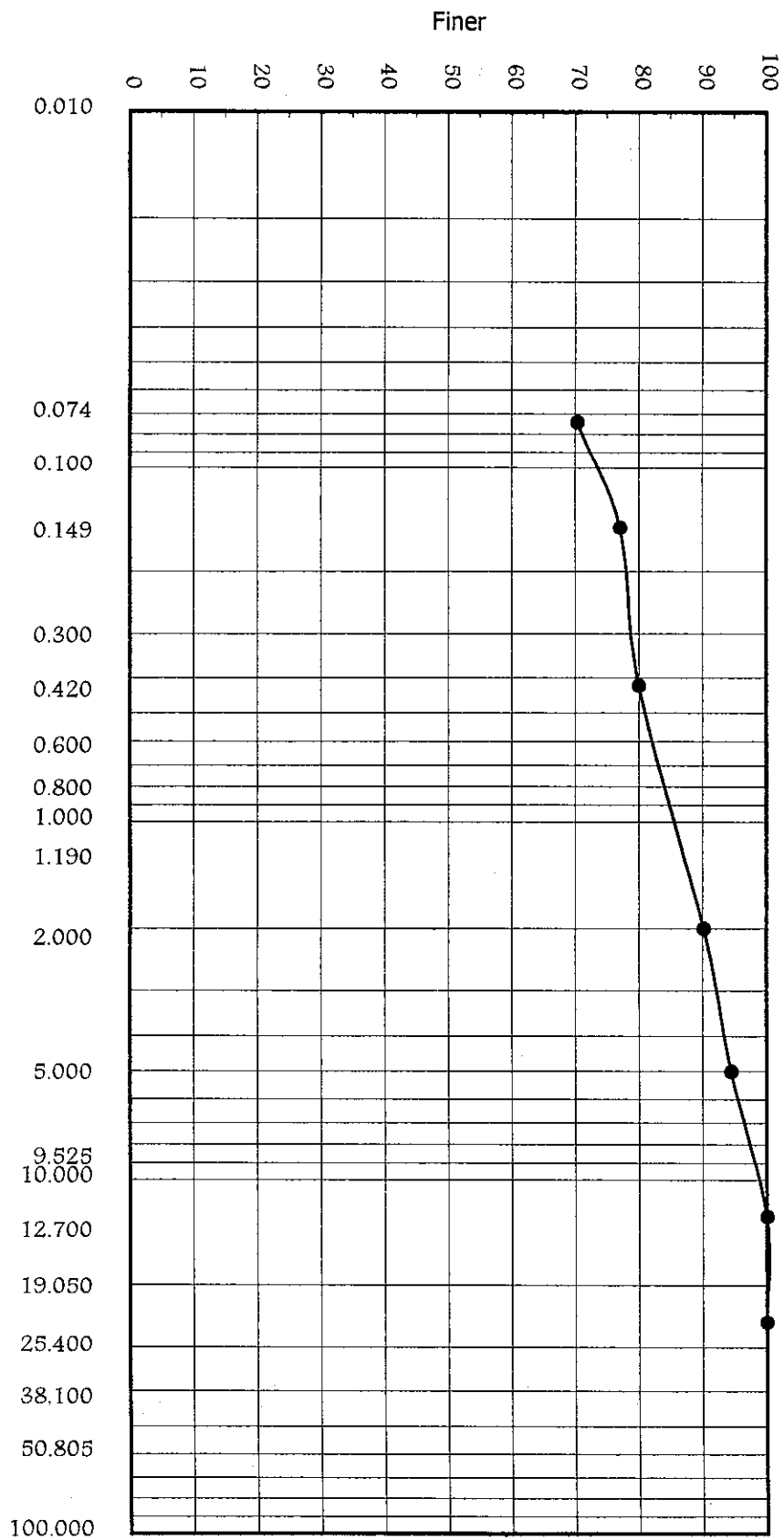
CLAY/SILT	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE

Graphical Representation of Soil Gradation  
 Bore Hole no BH -1 (Depth 1.5 m to 2.8 m)  
 Location: Al-Mansora



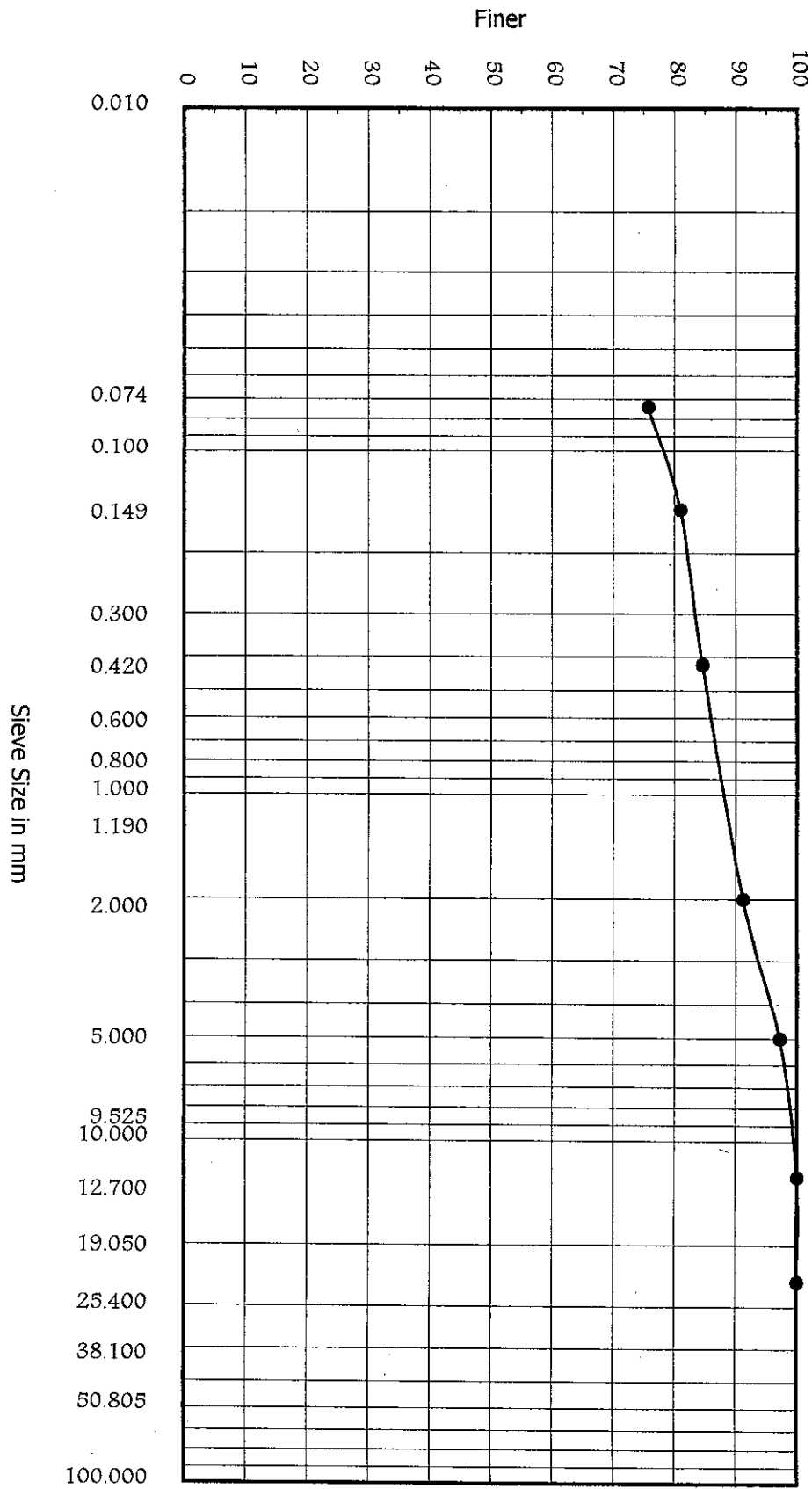
CLAY/SILT	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE

Graphical Representation of Soil Gradation  
 Bore Hole no BH -1 (Depth 12.0 m to 12.5 m)  
 Location: Al-Mansora



CLAY/SILT	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE

Graphical Representation of Soil Gradation  
 Bore Hole no BH -1 (Depth 5.0 m to 5.5 m)  
 Location: Al-Mansora



CLAY/SILT	SAND			GRAVEL		
	FINE	MEDIUM	COARSE	FINE	COARSE	



Test Boring Log No.1

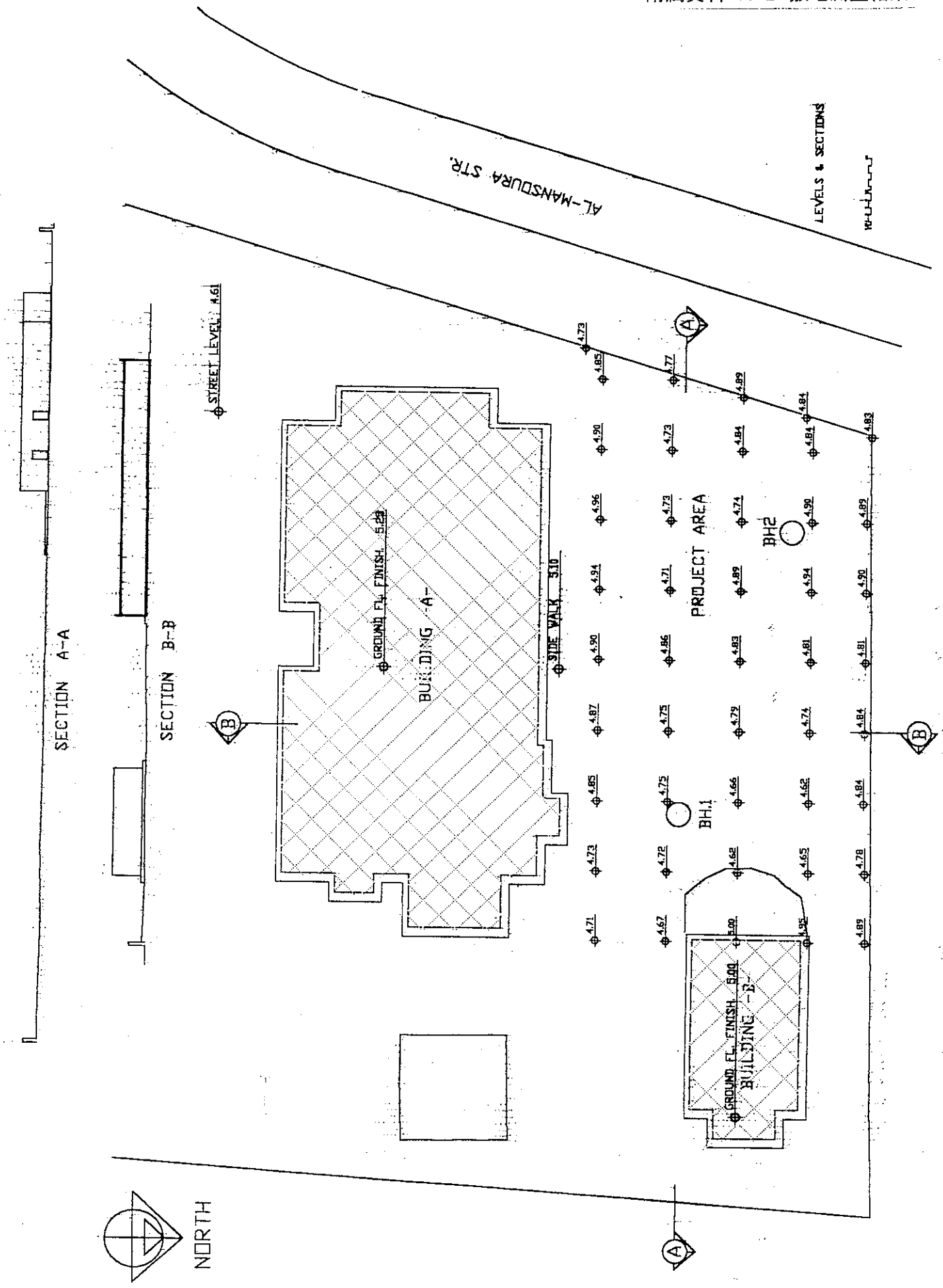
TEST BORING LOG						BORING NO. 1
PROJECT: T.C.Control Center						SHEET NO. 1/1
DRILLING METHOD: H. Stem Auger + Tricon Pit						DATE: April. 2000
LOCATION: Al Mansourah - Aden						TIME:
ELEV. (m)	THICK (m)	MOIST. COND.	COLOR	SYMBOL	IDENTIFICATION	REMARKS
1	0.5	Dry	Grey		Silty Sand	loose
2	-2.8					
3	$\frac{-2.8}{-7}$					
4						
5						
6						
7						hard
8	15.8	Wet	Brown to Redish		Stratified clayey silt layers Each 1 - 3m	
9						
10						
11						
12						
13						
14						
15						
16						
17						
18	3.7	Wet	Gray Light Brown		Stratified silty gravel Sand	Very dense
19						
20						

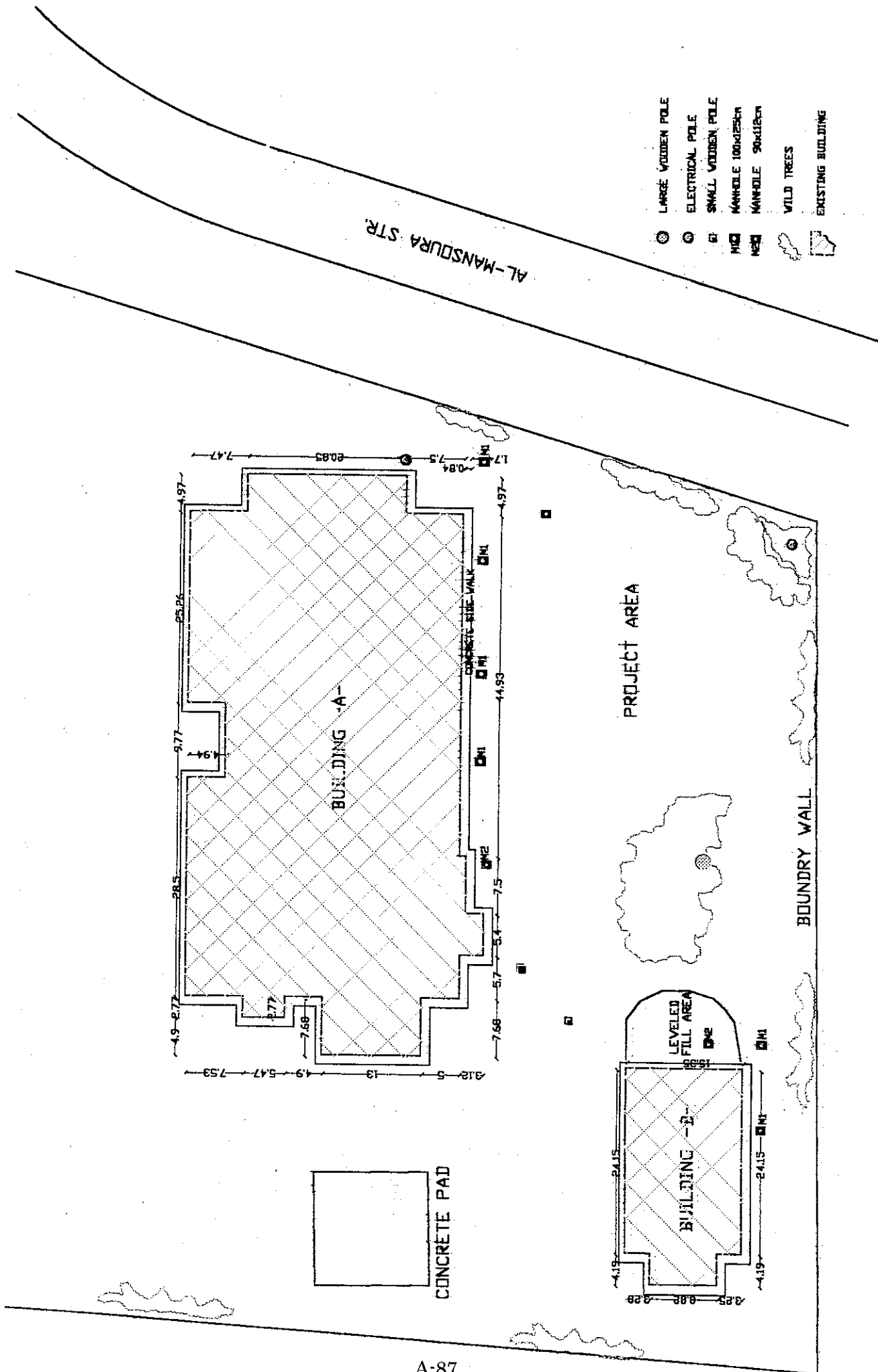
End of Excavation

Test Boring Log No.2

TEST BORING LOG						BORING NO. 2
PROJECT: T.C.Control Center						SHEET NO. 1/1
DRILLING METHOD: H. Stem Auger + Tricon Pit						DATE: April. 2000
LOCATION: Al Mansourah - Aden						TIME:
ELEV. (m)	THICK (m)	MOIST. COND.	COLOR	SYMBOL	IDENTIFICATION	REMARKS
1	0.3	Dry	Grey		Silty Sand	loose
2	-2.9					
3	$\frac{-2.9}{-7}$					
4						
5						
6						
7						hard
8	15.7	Wet	Brown to Redish		Stratified clayey silt layers Each 1 - 3m	
9						
10						
11						
12						
13						
14						
15						
16						
17						
18	4.0	Wet	Gray Light Brown		Stratified silty gravel Sand	Very dense
19						
20						

End of Excavation





(株)久米設計 殿

建築物飲料水水質検査登録番号

栃木県2年登録第32-2号

東西化学工業株式会社

東田ビルディングセンター

栃木県塩谷郡喜多町大字常宿4480

〒329-1411 TEL028-686-4172 FAX028-686-4172

2000年 5月19日

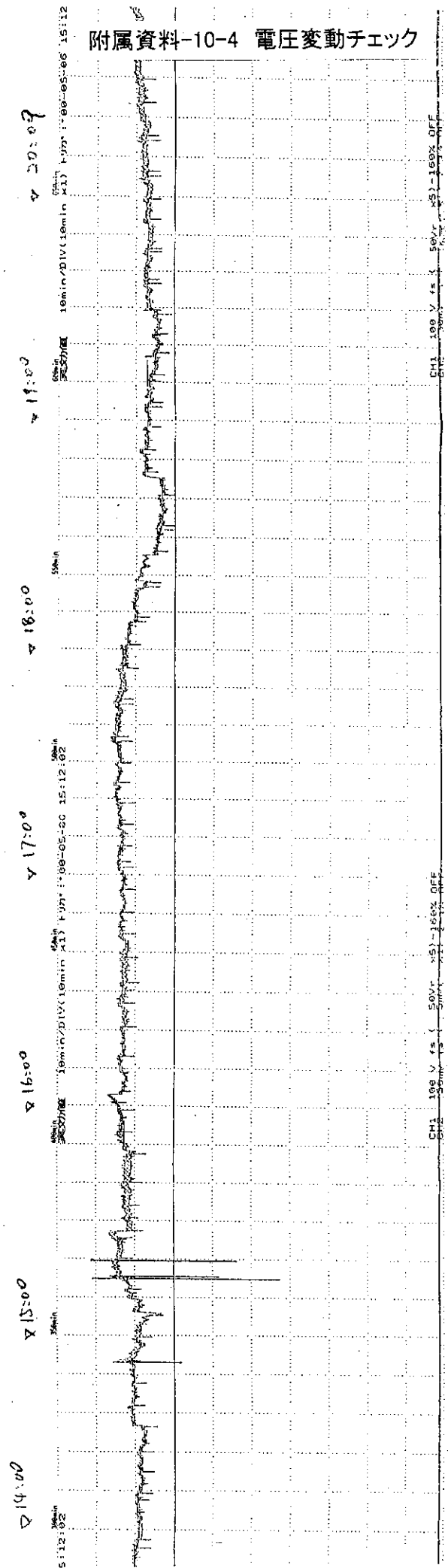
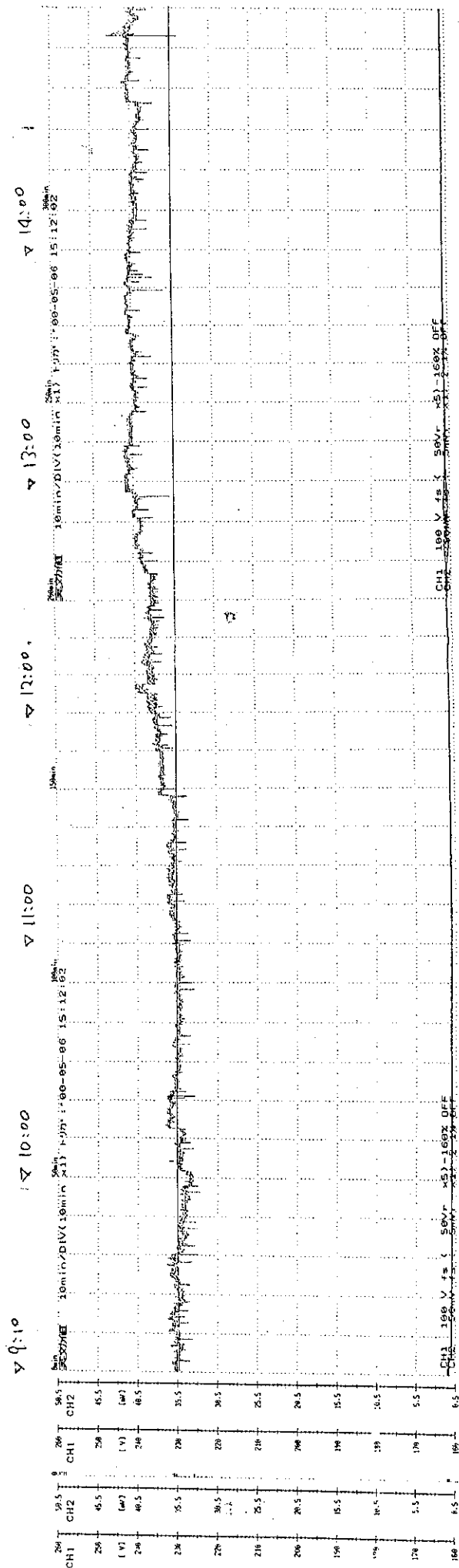
2000年 5月12日(受付)の試料について  
分析した結果を、下記の通り報告します。

本 社 大阪府中央区城見2-1-61(ツイン21MIDタワー)  
〒540-6118 TEL06-6947-5511 FAX06-6947-5510

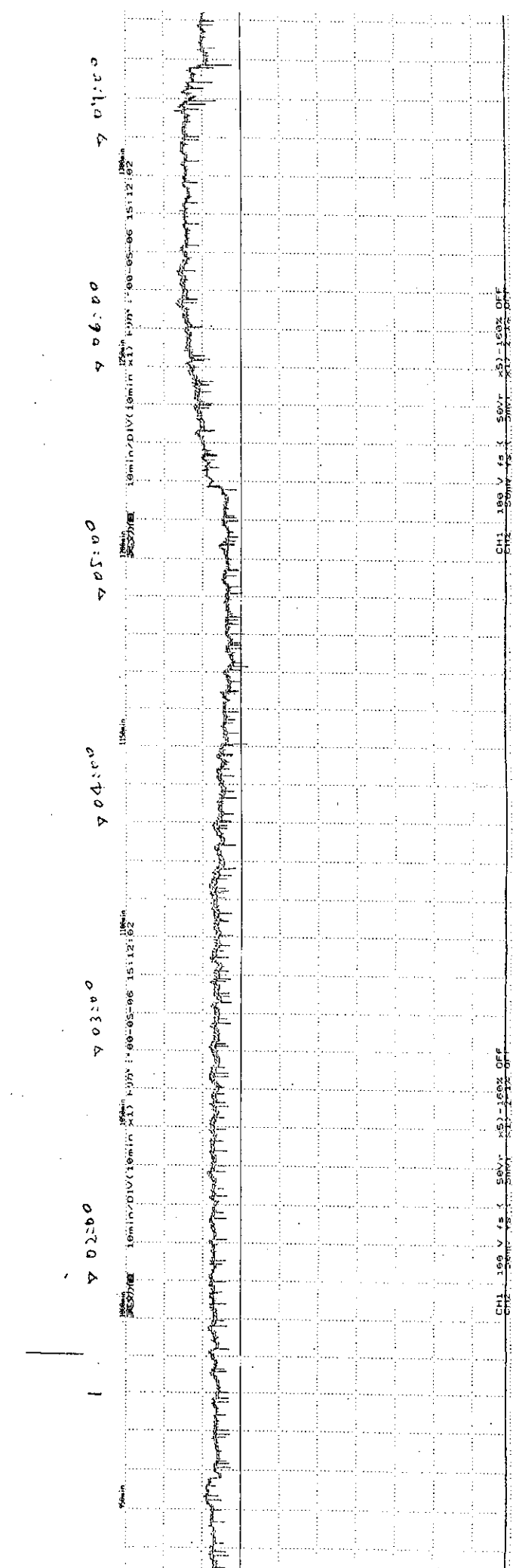
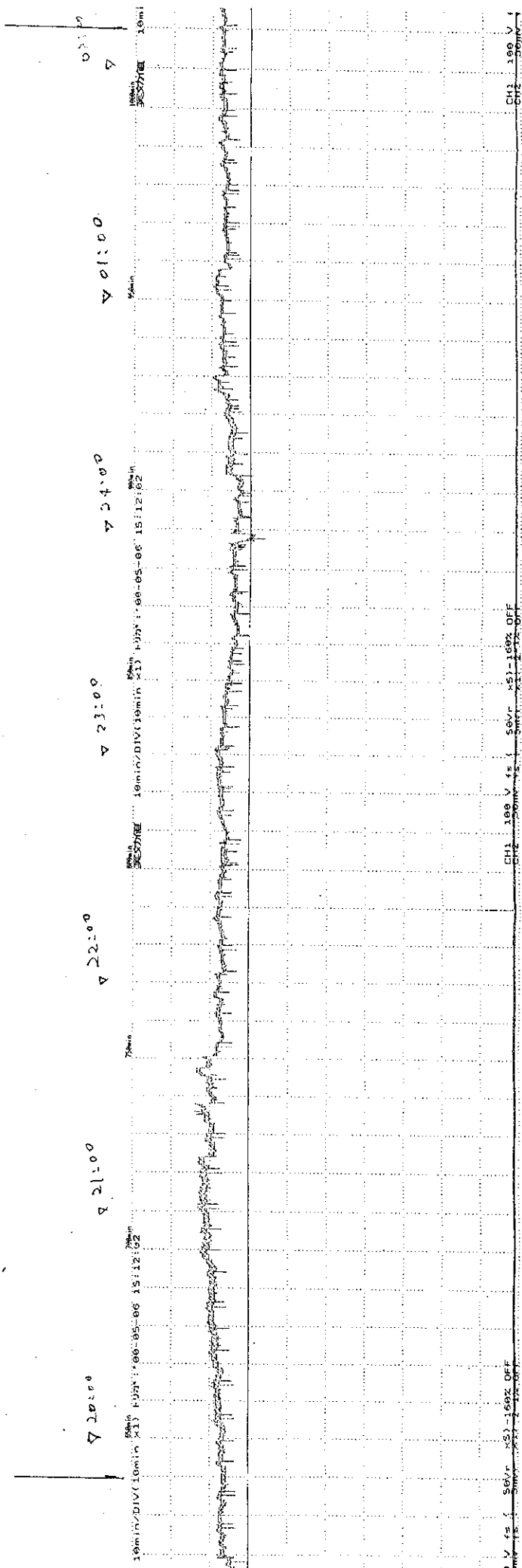
環境計量士 志水 眞人							平成4衛水 264 別表1
番 号	分 析 項 目	単 位	イエメン国 アデン			飲 料 水 基 準	
1	試 料 採 取 日		5 / 6	/	/		
2	試 料 採 取 時 刻		:	:	:		
3	試 料 採 取 場 所		洗 面				
4	試 料 採 取 時 水 温	℃					
5	試 料 採 取 時 気 温	℃					
6	分 析 時 水 温	℃					
7	p H 値		7.7			5.8~8.6	42 第1
8	濁 度	度	1			2 以下	46 第1
9	色 度	度	3			5 以下	45 第1
10	臭 気		異常なし			異常でないこと	44
11	味		分析不可			異常でないこと	43
12	過マンガン酸カリウム消費量	mg/l	2.6			10 以下	41
13	亜硝酸性窒素	mg/l	<0.01			合わせて	10 第1
14	硝酸性窒素	mg/l	9.1			10 以下	
15	大腸菌群		不検出			検出されない事	2 第1
16	全 硬 度	mg/l	432			300 以下	36
17	蒸発残留物	mg/l	1300			500 以下	37
18	塩素イオン	mg/l	318			200 以下	35 第1
19	鉛	mg/l	0.007			0.05 以下	6 第1
20	鉄	mg/l	0.28			0.3 以下	31 第1
21	銅	mg/l	<0.1			1.0 以下	32 第1
22	亜鉛	mg/l	0.4			1.0 以下	30 第1
23	マンガン	mg/l	0.006			0.05 以下	34 第1
24	ヒ素	mg/l	<0.001			0.01 以下	7 第2
25	以下余白						
26							
27							
28							
29							
30							
31							
32							
33							
34							

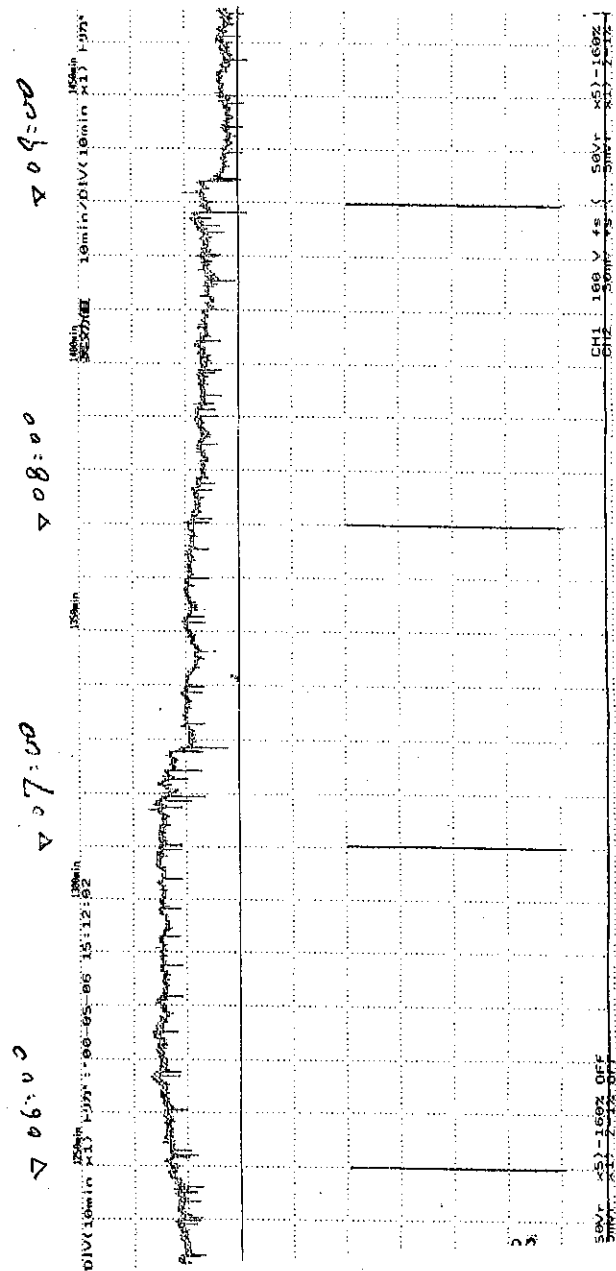
16, 17, 18 項の値が日本の飲料水基準を越えています。水処理としては逆浸透装置が考えられます。

所 長	計 量 士	主 任	係	営業担当
志水	志水	井上	井上	



附属資料-10-4 電圧変動チェック





5/7  
9:40 AM  
PAC

## 附属資料-12 関連施設の状況写真



## 敷地周辺状況



(写真-1) 南東から敷地を見る。



(写真-2) 敷地から南 PHC建物を見る。



(写真-3) PHC正門



(写真-4) マンスーラ PC正門



(写真-5) 西側道路既設排水果



(写真-6) 地質調査



(写真-7) 敷地西北サブ変電所

舛

## インフラ調査



(写真-93) 污水处理上看板



(写真-94) 污水处理場



(写真-95) 污水处理場



(写真-96) 同左



(写真-97) 水源付近井戸



(写真-98) 同左



(写真-99) 発電所



(写真-100) ごみ処分場



NTI



(写真-16) 外観



(写真-17) 廊下



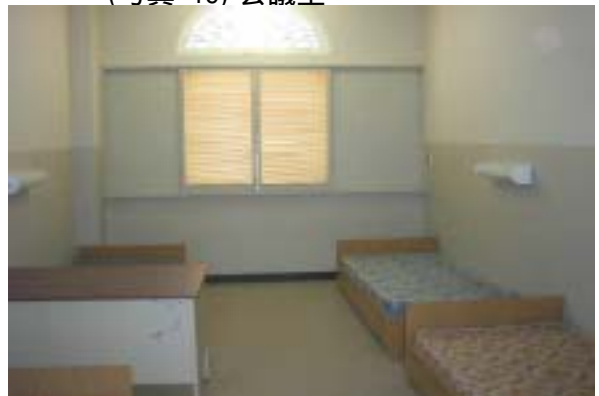
(写真-18) 検査室



(写真-19) 会議室



(写真-20) 教室



(写真-21) 宿泊室



(写真-22) 研究室



(写真-23) 準備室

## タイズ結核センター



(写真-24) 正面玄関



(写真-25) 玄関ホール



(写真-26) 教室



(写真-27) DOTS室



(写真-28) 検査室



(写真-29) 実習室



(写真-30) X線撮影室



(写真-31) 暗室



(写真-32) 廊下



## ホデイタ結核センター



(写真-33) 外観



(写真-34) 玄関ホール



(写真-35) 検査室



(写真-36) 教室



(写真-37) X線撮影室



(写真-38) 暗室



(写真-39) カルテ・フィルム庫



(写真-40) 診察室



(写真-41) 図書室



(写真-42) 中庭



(写真-43) 結核病棟



(写真-44) 結核病室

アデン ジョモフリー病院 結核病棟



(写真-45) 男子病室



(写真-46) 病棟外観



(写真-47) パントリー



(写真-48) 準備室



(写真-49) 診察室



(写真-50) 女子病棟パントリー



(写真-51) 女子病室



(写真-52) ナースステーション



## マンスーラ ポリクリニック



(写真-53) 外観



(写真-54) 中庭



(写真-55) 検査室



(写真-56) DOTS室

## ボレイカ ポリクリニック



(写真-57) 外観



(写真-58) DOTS室



(写真-59) 同 (DOTS室)



(写真-60) 同薬品庫



## メダン ホリクリニック



(写真-61) 外観



(写真-62) DOTS室



(写真-63) 検査室



(写真-64) 検査室

## マーラ ホリクリニック



(写真-65) 外観



(写真-66) DOTS室



(写真-67) 喀痰検査室



(写真-68) 診察室

## タワヒ HU



(写真-69) 中庭から処置室



(写真-70) 検査室



(写真-71) 管理事務室



(写真-72) 予防注射室

## コルマクサル ポリクリニック



(写真-73) 外観



(写真-74) 外来待合い



(写真-75) 検査ラボ



(写真-76) 薬局



## シェイクオスマン ポリクリニック



(写真-68) 玄関ホール



(写真-69) 診察待合い



(写真-70) 中庭



(写真-71) DOTS室



(写真-72) 検査ラボ



(写真-73) 同左



(写真-74) 暗室



(写真-75) X線撮影室

## アデン高等医療技術学校



(写真-85) 中庭



(写真-86) 製図室



(写真-87) コンピューター室



(写真-88) 学生宿舍

## アデン保健学校



(写真-89) 外観



(写真-90) 学長室



(写真-91) 教室1



(写真-92) 教室2

国名	イエメン共和国
	Republic of Yemen

1/2  
2000.11

一般指標					
政 体	共和制	*1	首 都	サヌア ( Sana'a )	*2
元 首	大統領/アリ・アブドゥラー・サーレハ	*1,3	主要都市名	アデン、タイズ、ホデイダ	*3
独立年月日	1990 年 5 月 22 日(南北イエメンの統一)	*3,4	雇用総数	5,312 千人 (1998 年)	*6
主要民族/部族名	アラブ人、他にインド人系	*1,3	義務教育年数	9 年間 ( 年)	*13
			初等教育就学率	70.2% (1997 年)	*6
主要言語	アラビア語	*1,3	中等教育就学率	34.4% (1997 年)	*6
宗 教	イスラム教	*1,3	成人非識字率	53.8% (2000 年)	*13
国連加盟年	1947 年 9 月 30 日	*12	人口密度	31.44 人/km <sup>2</sup> (1998 年)	*6
世銀加盟年	1969 年 10 月	*7	人口増加率	3.7% (1980 年)	*6
IMF 加盟年	1996 年 12 月	*7	平均寿命	平均 58.00 男 57.40 女 58.40	*6
国土面積	528.00 千 km <sup>2</sup>	*6	5 歳未満児死亡率	96/1000 (1998 年)	*6
総 人 口	16,599 千人 (1998 年)	*6	カロリー供給量	2,041.0cal/日/人 (1996 年)	*10

経済指標				
通貨単位	リアル (Rial)	*3	貿易量	(1998 年)
為替(1US\$ )	1 US\$=162.40 (2000 年 9 月)	*8	商品輸出	1,500.7 百万ドル
会計年度	1 月 1 日~12 月 31 日	*6	商品輸入	-2,201.2 百万ドル
国家予算	(1998 年)		輸入カバー率	4.0 月 ( 年)
歳入総額	300,791 百万円・リアル	*9	主要輸出品目	石油、野菜、果物、タバコ、魚類
歳出総額	309,942 百万円・リアル	*9	主要輸入品目	食料品、燃料、機械、車輛
総合収支	- 436.2 百万ドル (1998 年)	*15	日本への輸出	百万ドル ( 年)
ODA 受取額	310.2 百万ドル ( 年)	*18	日本からの輸入	百万ドル ( 年)
国内総生産(GDP)	4,318.16 百万ドル (1998 年)	*6		
一人当たり GNP	280.0ドル (1998 年)	*6	粗外貨準備額	0.0 百万ドル (1998 年)
GDP 産業別構成	農業 17.6% (1998 年)	*6	対外債務残高	4,138.0 百万ドル (1998 年)
	鉱工業 48.8% (1998 年)	*6	対外債務返済率(DSR)	4.2% (1996 年)
	サービス業 33.6% (1998 年)	*6	インフレ率	32.6% (1990-98 年)
産業別雇用	農業 男 % 女 % (1992 年)	*6	(消費者物価上昇率)	
	鉱工業 % % (1992 年)	*6		
	サービス業 % % (1992 年)	*6	国家開発計画	
経済成長率	3.8% (1990 年)	*6		

気象 (年~年平均)				観測地: サナア (北緯 15 度 23 分、東経 44 度 14 分、標高 2,200m)										*4,5
月	1	2	3	4	5	6	7	8	9	10	11	12	平均/計	
平均気温	17.2	18.4	19.3	21.7	23.8	25.3	24.9	24.8	23.7	20.2	17.3	17.0	21.1	
降水量	0.0	2.3	6.2	15.2	19.4	18.9	0.0	21.3	20.8	0.0	0.0	13.8	117.9mm	

- |  |   |
|--|---|
| *1 各国概況 (外務省)                                    | *9 Government Finances Statistics Yearbook 1998 (IMF) |
| *2 世界の国々一覧表 (外務省)                                | *10 Human Development Report 1999 (UNDP)              |
| *3 世界年鑑 2000 (共同通信社)                             | *11 Country Profile (EIU), 外務省資料等                     |
| *4 最新世界各国要覧 10訂版 (東京書籍)                          | *12 United Nations Member States                      |
| *5 理科年表 2000 (国立天文台編)                            | *13 Statistical Yearbook 1999 (UNESCO)                |
| *6 World Development Indicators 2000             | *14 Global Development Finance 1999 (WB)              |
| *7 The World Bank Public Information Center,     | *15 International Finances Statistics 1999 (IMF)      |
| International Financial Statistics Yearbook 1998 | *16 世界各国経済情報ファイル 1999 (日本貿易振興会)                       |
| *8 Universal Currency Converter                  | 注) 商品輸入については複式簿記の計上方式を採用しているため支払い額はマイナス表記になる          |

国名	イエメン共和国
	Republic of Yemen

2/2  
2000.11

\*17

我が国における ODA の実績		(資金供与は約束ベース, 単位: 億円)			
項目	暦年	1995 年	1996 年	1997 年	1998 年
技術協力		0.80	1.93	2.18	2.34
無償資金協力		12.37	42.10	39.93	65.20
有償資金協力		なし	なし	10.62	24.65
総 額		13.17	44.03	52.73	92.19

\*17

当該国に対する我が国 ODA の実績		(支出純額, 単位: 百万ドル)			
項目	暦年	1995 年	1996 年	1997 年	1998 年
技術協力					
無償資金協力					
有償資金協力					
総 額					

\*18

OECD 諸国の経済協力実績		(支出純額, 単位: 百万ドル)			
	贈与(1) (無償資金協力・ 技術協力)	有償資金協力 (2)	政府開発援助 (ODA) (1) + (2) = (3)	その他政府資金及び 民間資金 (4)	経済協力総額 (3) + (4)
二国間援助 (主要供与国)	154.2	12.6	166.8	-20.7	146.1
1. Janap	52.5	9.9	62.4	1.0	63.4
2. Netherland	46.2	0.0	46.2	0.0	46.2
3. Germany	31.3	0.0	31.3	0.7	32.0
4. France	9.0	1.0	10.0	-0.9	9.1
多国間援助 (主要援助機関)	28.6	114.7	143.3	3.9	147.2
1. IDA			110.7	0.0	110.7
2. EC			11.7	0.0	11.7
その他					
合 計	182.8	127.4	310.2	-16.9	293.3

\*19

援助受入れ窓口機関	
技術協力	計画開発省
無償	計画開発省
協力隊	計画開発省

\*17 我が国の政府開発援助 1999 (国際協力推進協会)

\*18 International Development Statistics (CD-ROM) 2000 OECD

\*19 JICA 資料

## 附属資料-13 当該国の社会経済事情



## 附属資料-13 参考資料リスト

### 1.MOPD

No.	Title	Issued by	Issued on	Received	Pages	Nature	Language
<i>MPD-1</i>	Statistical Year-Book, 1998	MOPD/CSO	Apr-99	2000/5/3	408pp.	Original	E/A
<i>MPD-2</i>	Statistical Year-Book, 1996	MOPD/CSO	Apr-97			Copy	E/A
<i>MPD-3</i>	The Yemen First Five Year Plan(1996-2000)	MOPD				Copy	E/A
<i>MPD-4</i>	Financial and Monetary Indicators	MOPD/CSO	1997	2000/5/17	7pp.	Copy	E/A
<i>MPD-5</i>	Yemen in Figures, 1997	MOPD/CSO	June,1998	2000/5/17	96pp.	Original	E/A
<i>MPD-6</i>	Population Estimates by Administrative and Geographical Subdivisions, 1994-2005	MOPD/CSO	Dec,1996	2000/5/17	124pp.	Original	E/A

### 2.MOPH

No.	Title	Issued by	Issued on	Received	Pages	Nature	Language
<i>MPH-1</i>	Health Sector Reform in the Republic of Yemen Volume 1: Strategy for Reform	MOPH	Dec-98	2000/4/30	60pp.	Copy	E
<i>MPH-2</i>	Annual Health Report, 1998	MOPH		2000/4/30		Original	A
<i>MPH-3</i>	National TB Control Programme: Annual Report, 1997	MOPH/JICA				Copy	E
<i>MPH-4</i>	Health Science Newsletter, Dec/1997					Copy	E
<i>MPH-5</i>	Manual of the National TB Control Programme in the Republic of Yemen	MOPD/NTP	1996	2000/4/18	93pp.	Original	E

### 3.NTI

No.	Title	Issued by	Issued on	Received	Pages	Nature	Language
<i>NTI-1</i>	Budget Allocation, 2000	NTI	2000/4/10	2000/4/20	1pp.	Copy	A
<i>NTI-2</i>	Activities of NTI,1990-1995	NTI		2000/4/20	1pp.	Copy	A
<i>NTI-3</i>	Training of NTI,1996 and 1997	NTI		2000/4/20	1pp.	Copy	A
<i>NTI-4</i>	Training of NTI, July to November 1998	NTI		2000/4/20	1pp.	Copy	A
<i>NTI-5</i>	Budge and Income of NTI in 1998	NTI/JICA		2000/4/20	3pp.	Copy	E
<i>NTI-6</i>	Plan of Operations: Yemen TB Control Project III	NTI/JICA		2000/4/29	1pp.	Copy	E
<i>NTI-7</i>	Chart Organization of Aden TB Center	NTI		2000/4/29	1pp.	Copy	E
<i>NTI-8</i>	Population/1998	NTI		2000/4/29	1pp.	Copy	E
<i>NTI-9</i>	Health Monpower/1998-2	NTI		2000/4/29	1pp.	Copy	E
<i>NTI-10</i>	DOTS Population Coverage	NTI		2000/4/29	1pp.	Copy	E
<i>NTI-11</i>	Health Manpower in TB Control(Salaries)	NTI		2000/4/29	1pp.	Copy	E
<i>NTI-12</i>	The Organograme of NTI	NTI		2000/4/29	3pp.	Copy	E
<i>NTI-13</i>	Training Activities/1999	NTI		2000/4/28	2pp.	Copy	E
<i>NTI-14</i>	Conversion Rate of Smear-Positive P.TB. Cases to Negative at 2,3 months of the	NTI		2000/4/28	2pp.	Copy	E
<i>NTI-15</i>	All Smear-Positive P.TB. Cases detected/1998/Dots Coverage related to all new Sm.	NTI		2000/4/28	4pp	Copy	E



<i>NTI-16</i>	Table shows new Sm.+R.,T/l.,T/D. and O.+ recorded	NTI		2000/4/28	2pp.	Copy	E
<i>NTI-17</i>	Q1/1998/New P.Sm.+ TB. cases/Non-Dots Tx.	NTI		2000/4/28	4pp.	Copy	E
<i>NTI-18</i>	CF./1999/DOTS/Gvs./Ds./Hfs./Data is from Districts	NTI		2000/4/28	4pp.	Copy	E
<i>NTI-19</i>	イエメン結核対策プロジェクト( )概要	NTI/JICA		2000/4/30	4pp.	Copy	J
<i>NTI-20</i>	Guideline of Supervision and Quality Control for TB Laboratories	NTI/JICA	Jun-98	2000/5/3	7pp.	Copy	E
<i>NTI-21</i>	NTP TB Laboratory, 1999	NTI/JICA	1999	2000/5/3	3pp.	Copy	E
<i>NTI-22</i>	Schedule of the GTC Meeting 2000	NTI/JICA		2000/5/3	1pp.	Copy	E
<i>NTI-23</i>	Curriculum oh the Training Courses	NTI		2000/5/12	3pp.	Copy	E/A
<i>NTI-24</i>	プロ技協供与機材リスト2000年(案)	NTI/JICA		2000/5/13	1p.	Copy	E
<i>NTI-25</i>	NTP Training Courses and Meetings at Aden, Plan 2002	NTI/JICA		2000/5/13	1p.	Copy	E/J

#### 4. Aden PHC

No.	Title	Issued by	Issued on	Received	Pages	Nature	Language
<i>APH-1</i>	Health Statistics Aden, 1997	Aden Health				Copy	A
<i>APH-2</i>	Number of Graduates: Aden HIHS	HIHS	1999	2000/5/5	1p.	Copy	A
<i>APH-3</i>	School Brochure: Aden HIHS	HIHS	1996	2000/5/5	20pp	Original	E
<i>APH-4</i>	General Specifications for Building	MOC	1977	2000/5/2	???	Copy	E
<i>APH-5</i>	Aden PHC Office: Organization Charts	PHC	1999	2000/5/5	???	Copy	A
<i>APH-6</i>	DOTS Expansion Plan in the Southern and Eastern	NTP		2000/5/7	1p.	Copy	E
<i>APH-7</i>	Organization of Aden PHC Office	Aden PHC Office	2000	2000/5/7	30pp.	Copy	A
<i>APH-8</i>	Organizational Skeleton for PHC, Aden Governorate	Aden PHC Office		2000/5/7	3pp.	Copy	E/A
<i>APH-9</i>	Health Statistics in Aden 1990-1999	Aden Health	2000	2000/5/7	121pp.	Copy	A
<i>APH-10</i>	アデン州PHC事務所の研修内容	PHC		2000/5/9	14pp.	Copy	A
<i>APH-11</i>	水質検査結果(アデン州PHC事務所)	PHC		2000/5/9	2pp.	Copy	A
<i>APH-12</i>	アビヤン州保健職員・施設数	PHC		2000/5/9	2pp.	Copy	A
<i>APH-13</i>	アデン州PHC年次活動計画、1999年	PHC	1999	2000/5/9	38pp.	Copy	A
<i>APH-14</i>	アデン州財務資料	Aden Health		2000/5/9	14pp.	Copy	A

#### 5. TB CENTER: TAIZ, HODAIDAH

No.	Title	Issued by	Issued on	Received	Pages	Nature	Language
<i>TBC-01</i>	Annual Report of NTP/TAIZ, 1999	Taiz TB Center		2000/5/10	23pp.	Copy	A/E
<i>TBC-02</i>	Taiz TB Center, Budget 1998	Taiz TB Center		2000/5/10	6pp.	Copy	A
<i>TBC-03</i>	Taiz TB Center, Plan for Implementation 2000	Taiz TB Center		2000/5/10	4pp.	Copy	E
<i>TBC-04</i>	TB Registration Cards	Taiz TB Center		2000/5/10	4 pcs	Original	A
<i>TBC-05</i>	Case Finding: Quarterly Report, 1999	Hodaidah TBC		2000/5/13	1p.	Copy	E
<i>TBC-06</i>	WFP:食糧支給カード	Hodaidah TBC		2000/5/13	1p.	Original	A
<i>TBC-07</i>	Map of Hodaidah City	Hodaidah TBC		2000/5/13	1p.	Copy	E

## 6. Others

No.	Title	Issued by	Issued on	Received	Pages	Nature	Language
OTH-1	Cost Sharing for Health Services	MOPH	Dec-97	2000/5/2	13pp.	Copy	E
OTH-2	Transformation of the 5 Year Plan	MOPH/HSRC	Jan-98	2000/5/2	36pp.	Copy	E
OTH-3	Highlights on Planing of Human Resources	MOPH/CP	?	2000/5/2	10pp.	Copy	E
OTH-4	What about all these Teams, Councils, Committees?	HESAS	1999/8/17	2000/5/2	4pp.	Copy	E
OTH-5	Donors Health Sectorial Committee	MOPH/HSC	1999/4/24	2000/5/2	6pp.	Copy	E
OTH-6	Health Information of Yemen The Cabinet's Decree No.(15) of 1999 regarding the		1999/9/16	2000/5/2	12pp.	Copy	E
OTH-7	Community Participation in the Health & Curative Services & Regulating the Work of the Central Public autonomous Hospitals	MOF/MOPH	1999/1/26	2000/5/2	17pp.	Copy	E
OTH-8	Members of the Health Sector Coordination Meeting UNICEF:1999-2001 Country Program of Cooperation:	~	~	2000/5/2	1pp.	Copy	E
OTH-9	Volume 2 Program Plans of Operations	UNICEF	?	2000/5/2	54pp.	Copy	E
OTH-10	保健セクター・ドナー会合	MOPH/HSC	2000/2/21	2000/5/2	2pp.	Copy	J
OTH-11	MSF/Doctors without Borders: Activities in the Republic of Yemen	MSF/Yemen	Jul-97	2000/5/2	4pp.	Copy	E
OTH-12	USAID/Yemen: Activity management Office	USAID/Yemen	1997	2000/5/2	7pp.	Copy	E
OTH-13	Health Task Force Sub-Committee Meeting on Setting Standards	UNICEF	1998/8/16	2000/5/2	4pp.	Copy	E
OTH-14	Health Services in the Republic of Yemen, Handbook for Standards: Module 2 Health Unit	MOPH/CSS	1999/10/9	2000/5/2	7pp.	Copy	E
OTH-15	Yemen TB Control Project(III): PDM	MOPH/JICA	Nov-99	2000/5/2	8pp.	Copy	E/J
OTH-16	Health Sector Donors Co-ordination: Proposal on employment of trained health personnel	MSF/Yemen	Nov-99	2000/5/2	4pp.	Copy	E
OTH-17	Points of Clarification about Management Structure for the HSR	MOPH/HSRC	Nov-99	2000/5/2	12pp.	Copy	E
OTH-18	Summary Report of the In-depth review mission of the NTCP of Republic of Yemen (9-22 April 1999)	MOPH/WHO	Apr-99	2000/5/2	13pp.	Copy	E
OTH-19	Cost-sharing of Medical Expenses by Local Communities Act (First Draft, October 1997)	MOPH	Oct-97	2000/5/2	14pp.	Copy	E
OTH-20	MSF/Annual Report Yemen 1998	MSF/Yemen	1998	2000/5/3	39pp.	Copy	E
OTH-21	Yemen: Tourist Guide	MOCT	Jan-96	2000/5/3	115pp.	Copy	E
OTH-22	WHO: Joint Program Review Mission2000-2001	WHO	1999	2000/5/13	2pp.	Copy	E
OTH-23	総合報告書:結核対策プログラム管理(単発)/渡辺勝美	JICAプロ技協	1999/8/5	2000/5/13	47pp.	Copy	J
OTH-24	業務報告書:イエメン共和国結核対策/下内 昭	JICAプロ技協	Apr-98	2000/5/13	13pp.	Copy	J
OTH-25	Summary Report on TB Laboratory Activities to NTCP in the Republic of Yemen/Ms.Mika Horie	JICAプロ技協	Jul-98	2000/5/13	18pp.	Copy	E
OTH-26	アデン共和国病院の結核病棟改修工事について/渡辺勝美	JICAプロ技協	Jul-98	2000/5/13	5 pp.	Copy	E
OTH-27	短期派遣専門家報告書(Draft)/江上由里子	JICAプロ技協	Mar-99	2000/5/13	29pp.	Copy	J/E
OTH-28	イエメン在住難民に対する結核対策について	JICAプロ技協	Mar-99	2000/5/13	2pp.	Copy	J
OTH-29	業務報告書:イエメン共和国国家結核対策(III)/南川真理子	JICAプロ技協	2000/4/3	2000/5/13	33pp.	Copy	J/E