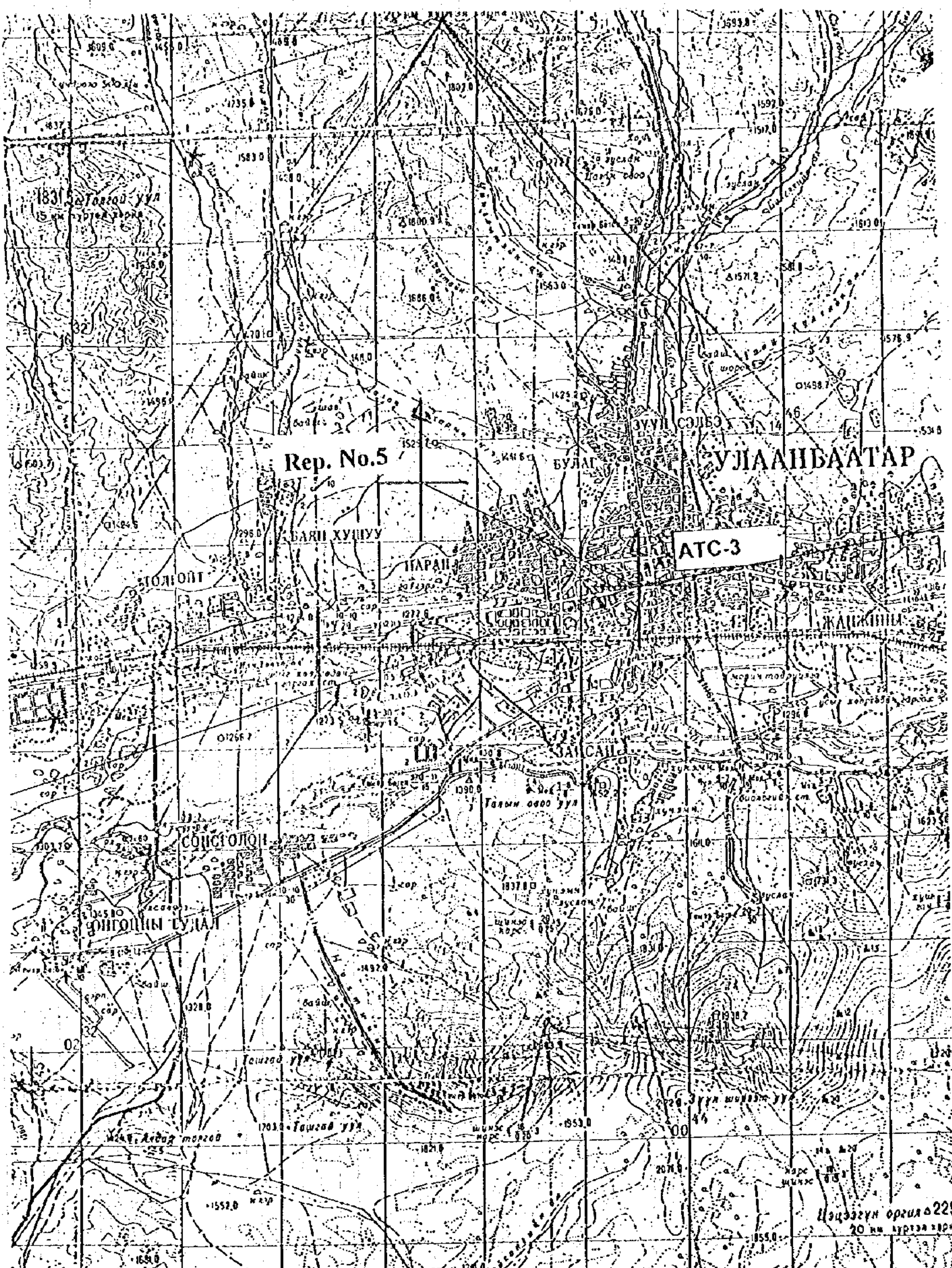
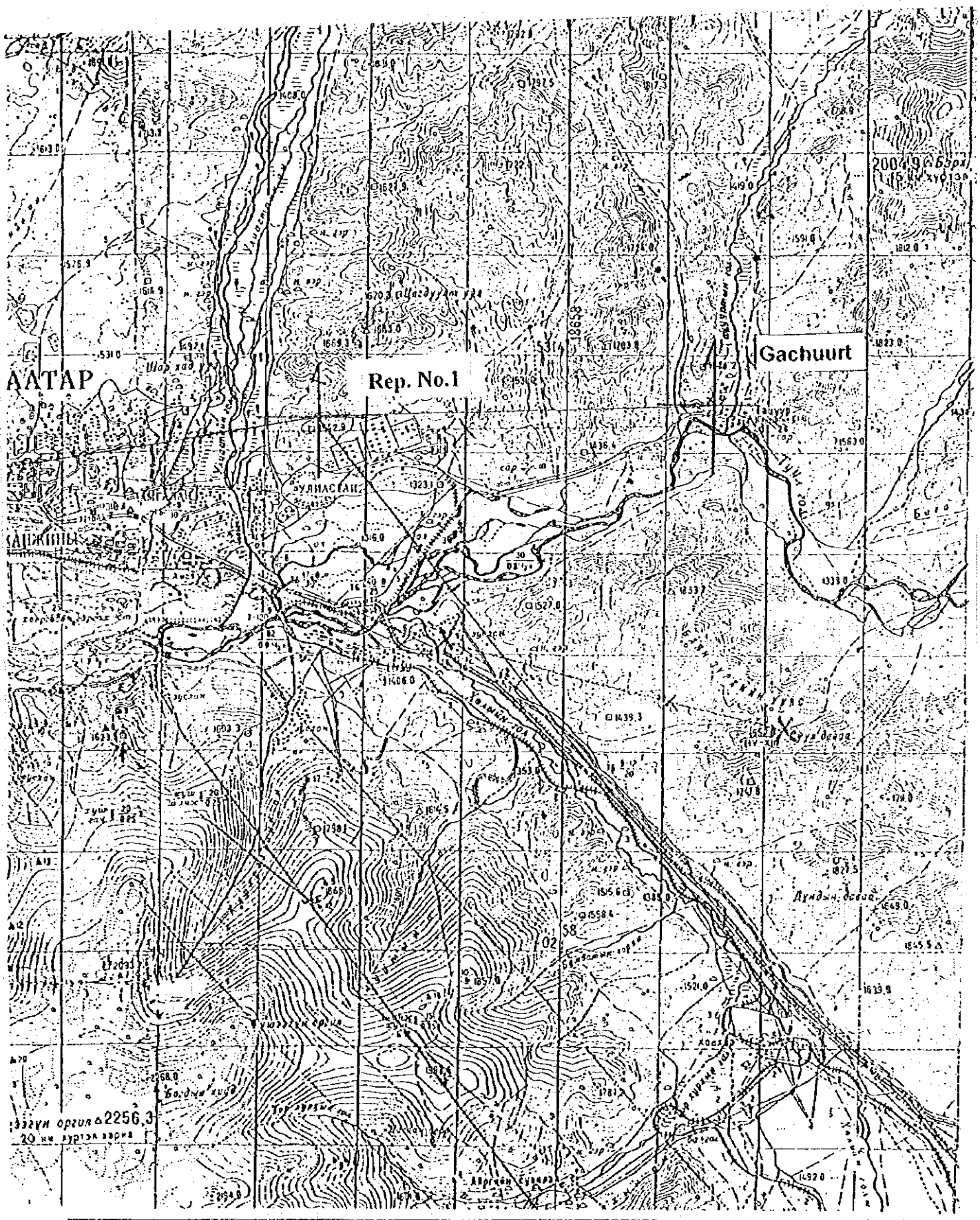
CHAPTER 7

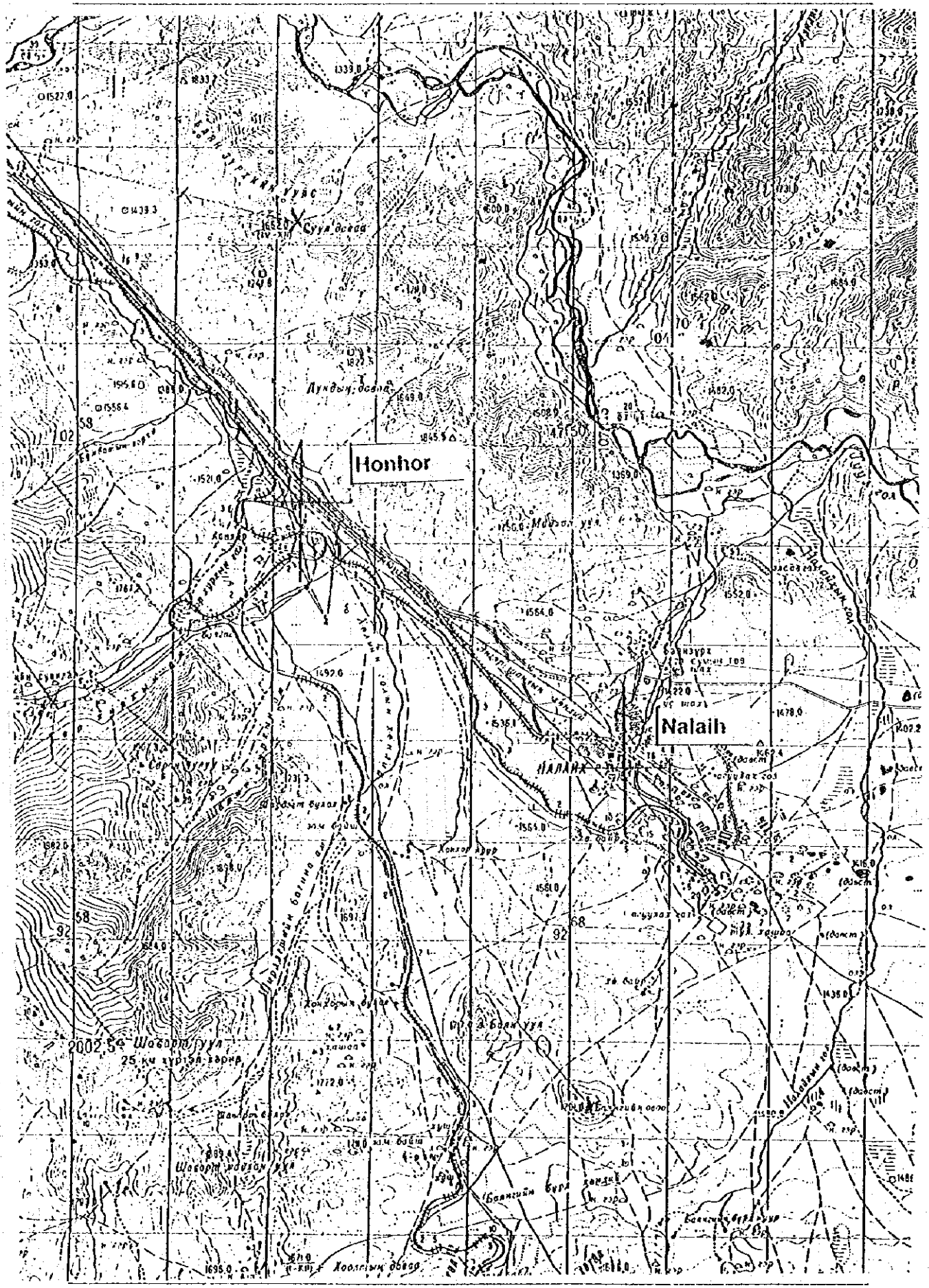
MAPS

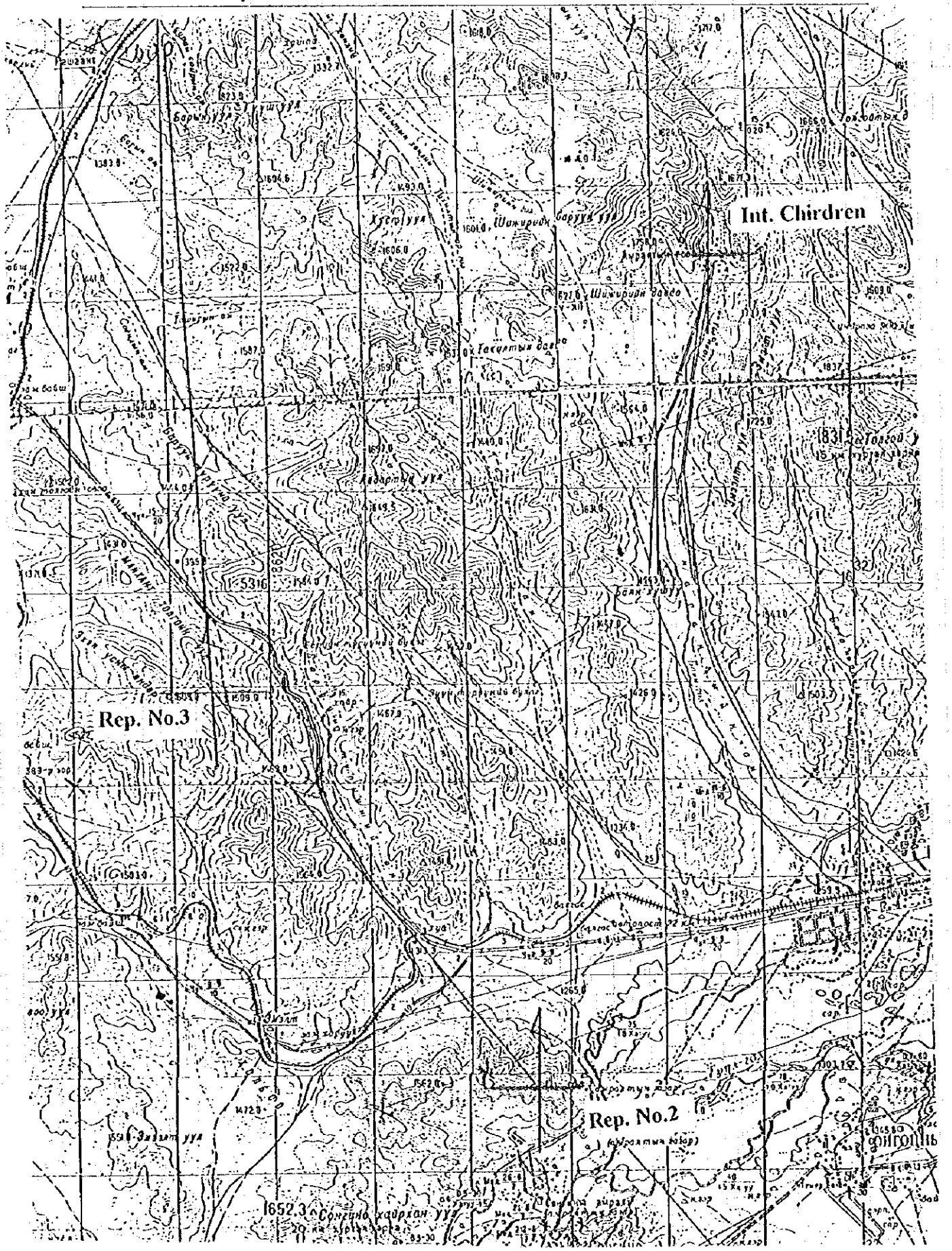
Table Location of Radio stations

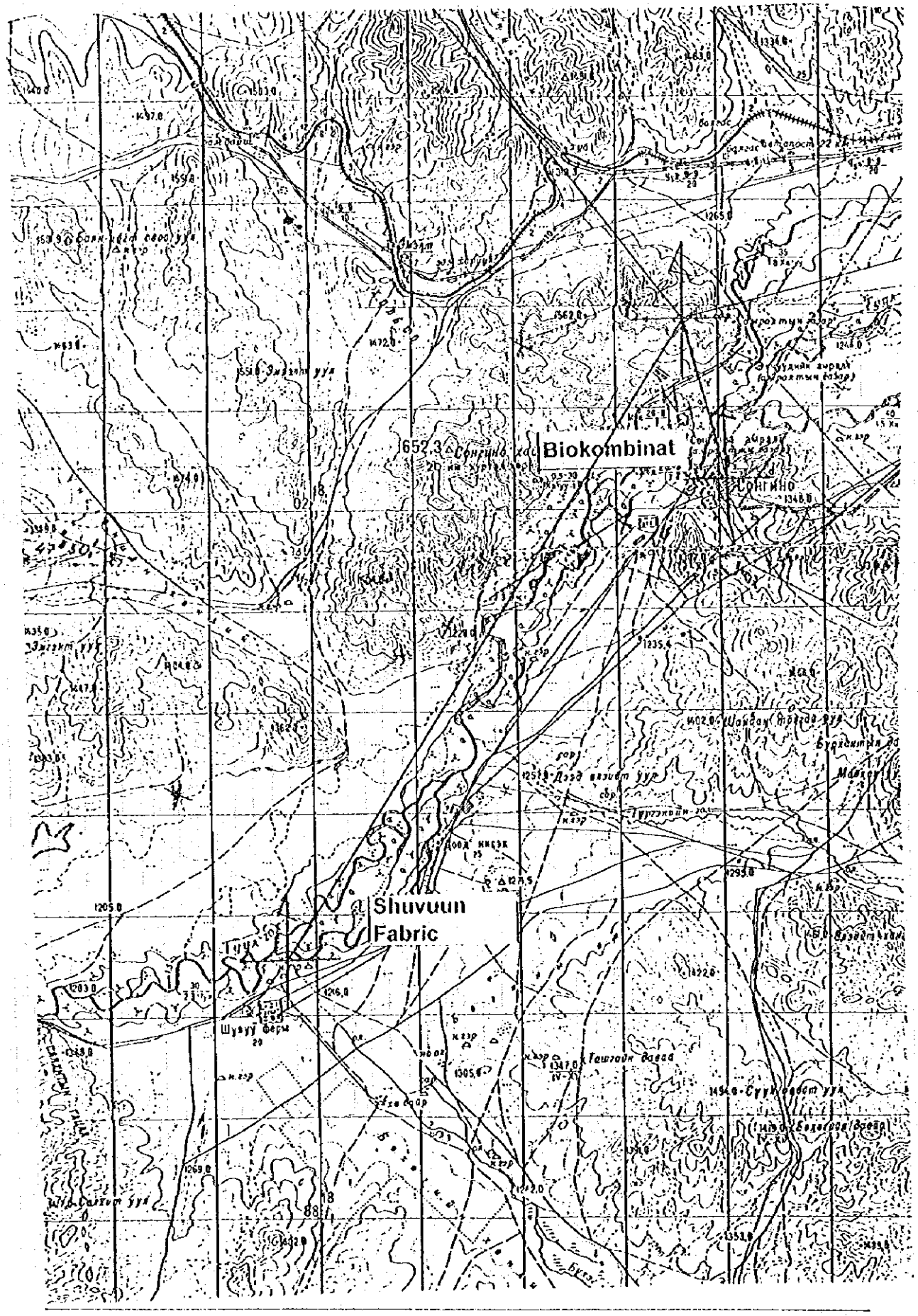
No.	Site Name	Altitude	Latitude	Longtide
1.	ATC-3 (DRCS Base Station)	1,270m	47° 55.3′ N	106° 55′ E
2.	Reeater No.1	1,520m	47° 55.7′ N	107° 30.3′ E
3.	Gatsurt	1,330m	47° 55.8′ N	107° 09.1′ E
4.	Honhor	1,450m	47° 49.5′ N	107° 11.1′ E
5.	Repeater No.2	1,520m	47° 53.5′ N	106° 40′ E
6.	Int. Children	1,540m	48° 01.1′ N	106° 44′ E
7.	Biokombinat	1,230m	47° 50.6′ N	106° 40.6′ E
8.	Shuvuun Fabric	1,200m	47° 45.3′ N	106° 33.8′ E
9.	Repeater No.3	1,520m	47° 57′ N	106° 35.5′ E
10.	Repeater No.4	1,520m	48° 03.3′ N	106° 35.6′ E
11.	Jargalant	1.250m	48° 07.6′ N	106° 39.2′ E
12.	Repeater No.5	1,450m	47° 56.7′ N	107° 46′ E

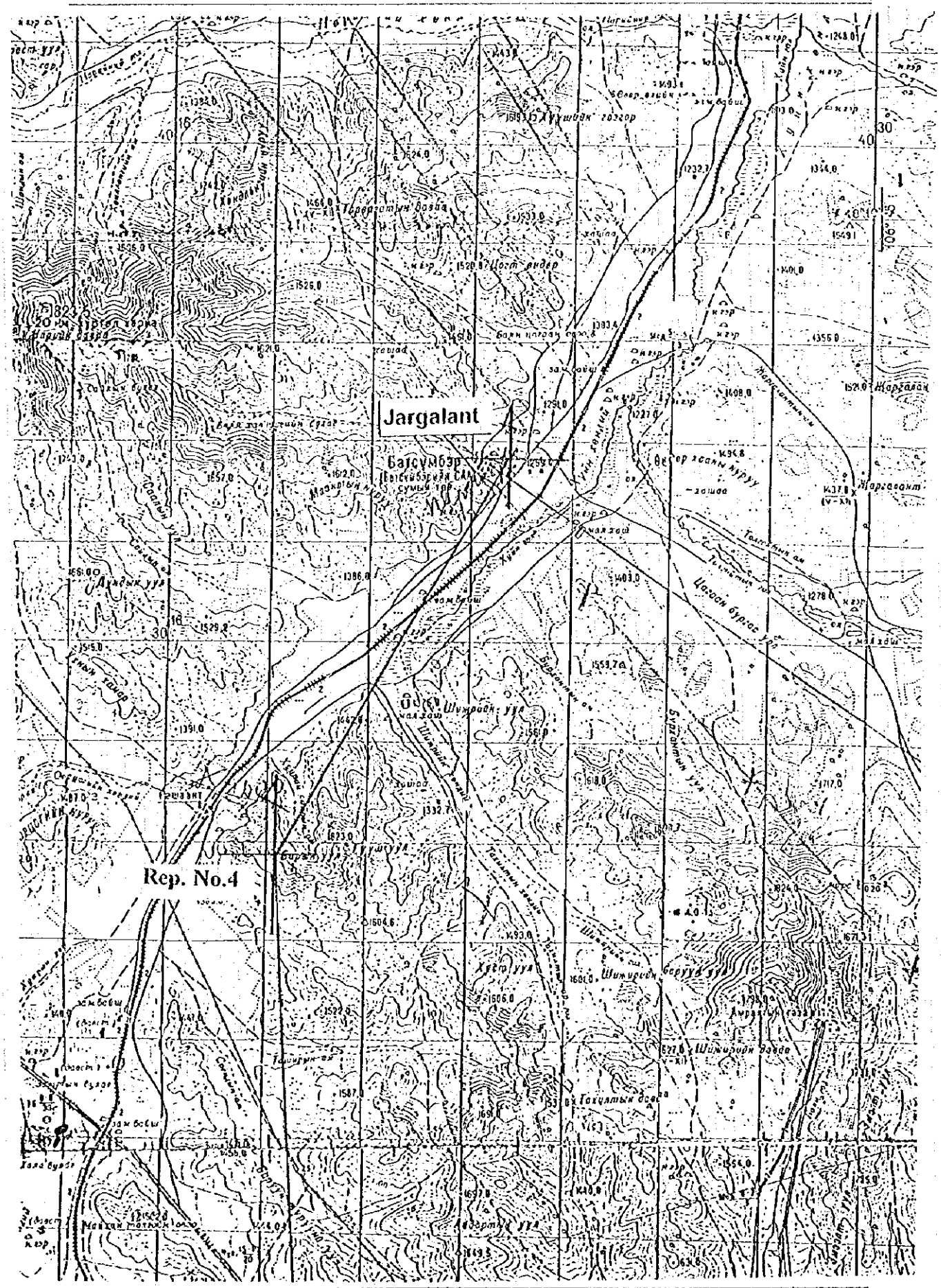

Rep. No.5
ATC-3
УЛААНБААТАР


Rep. No.1
Gachuurt
ААТАР


Honhor
Nalaih


Int. Chirdren
Rep. No.3
Rep. No.2


Biokombinat
Shuvuun
Fabric


Jargalant
Rep. No.4

CHAPTER 8

O&M OFFICE ORGANIZATION

1. Exsiting O & M office organization and its Number of Employees in Ulaanbaatar city

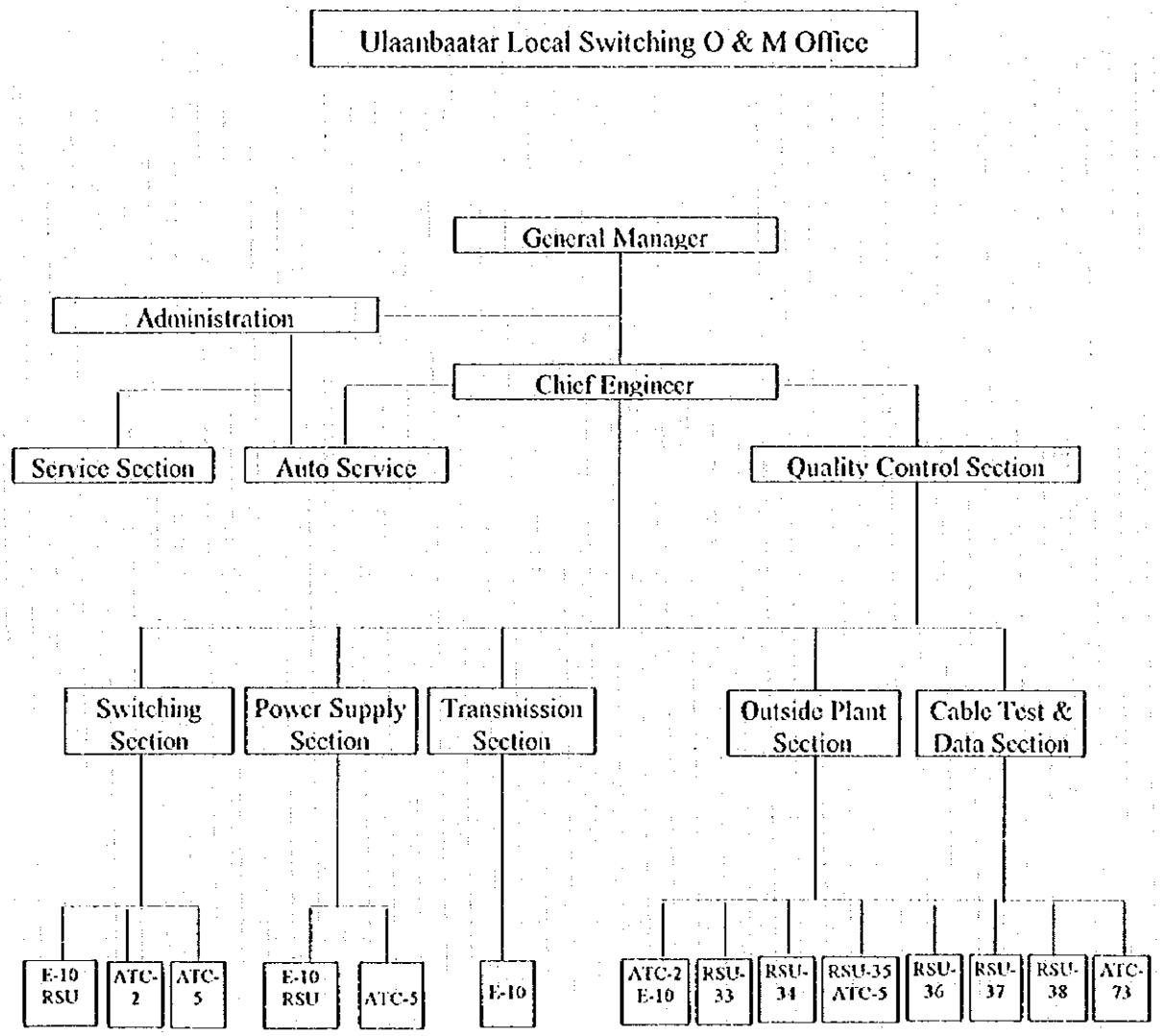


Figure 1-1

Table 1-1

Division	sub	Post	Number of Employee		
Administration		General manager	1	5	
		Chief Engineer	1		
		Human resource manager	1		
		Office support man	1		
		secretary	1		
Quality control Division		Senior engineer	1	11	
		Cable senior engineer	1		
		Traffic engineer	1		
		Repair engineer	1		
		inspector	3		
		Assistant cable technician	1		
		Repair man for long distance cable	2		
		Operator	1		
Switching section	E-10 (RSU)	Senior engineer	1	14	
		Maintenance engineer	4		
		Trafflic engineer	1		
		Shift engineer	4		
		Air condition engineer	1		
		Air condition technician	1		
		Technical support man	2		
	ATC-2	Engineer	1	11	
		Technician	5		
		Repair man	3		
		Operator	2		
	ATC-5	Engineer	1	24	
		Technician	11		
		Repair man	9		
		Operator	3		
Transmission section		Senior engineer	1	13	
		Maintenance engineer	3		
		Technician	6		
		Cable technician	3		
Power supply section	E10 (RSU)	Senior engineer	1	11	155
		Maintenance engineer	1		
		Technician	5		
		Repair man	2		
		Workers	2		
	ATC-5	Senior technician	1	2	
		Technician	1		
Cable test & data section	Central	Engineer	2	17	
		Senior Technician	1		
		Technician	4		
		Repair man	10		
	ATC-2	Senior technician	1	3	
		Repair man	2		
	RSU-33	Technician	1	2	
		Repair man	1		
	RSU-34	Technician	1	2	
		Repair man	1		
	RSU-35	Senior technician	1	2	
		Repair man	1	2	
	RSU-36	Senior technician	1		
		Repair man	1	2	
	RSU38	Technician	1	1	
Service section		Engineer	1	14	
		Technician	1		
		Workers	12		
Auto service section		Auto engineer	1	21	
		Mechanic	1		
		Driver	18		
		Workers	1		
TOTAL			155	155	155

Table 1-2

		Engineer	E-10 ATC-2	RSU-33	RSU-34	RSU-35 ATC-5	RSU-36	RSU-37	RSU-38	ATC-73	TOTAL
MDF		Engineer	1								1
		Technician	1	1	1	2	2			11	9
		Operator	15	5	6	7	7	5	7	1	1
Cable & Line		Senior engineer	1	1	1	1	1		1		6
Cable maintain	Managem	Engineer	1			1	1				3
		Technician	27	15	12	20	15	2	10	5	106
		Repair man	1			1	1				3
Subscriber line	Managem	Engineer		1	1						2
		Technician									
		Repair man	18	8	5	5	9	2	5	2	60
		Workers		5	5	5	9		1	4	29
TOTAL			66	37	32	49	46	10	27	14	281

Table 1-3

Remote area in Ulaanbaatar		
Telephone office		Number of Employees
1	Jargalant	2
2	Nairamdal	2
3	Shuvuun	5
4	Bagakhangai	4
5	Nalaih	60
6	Gachuurt	3
7	Honhkor	3
8	Baganuur	102
9	Biokombinat	4
10	Ulaanbaatar	436
	Total	621

2. Ideas of O & M office Organization and Number of Employees in Ulaanbaatarcity in future (the year 2010)

2.1 Idea - 1

This Idea - 1 comes from "Annex I. Indicative rations for staffing at O & M Headquarters. 1A-5011-MTO's O & M and Customer Service review, by NTC & SOFRECOM" The result of the Idea-1 is 652. The calculation process of this Idea-1 is as follows ;

SWITCHING 56

Technicians	= 5+((Nber MSC-1)*2)+(1/12,000*SL)	= 5+14+14	≒33
Executive	= 1/12 technicians	= 33÷12	≒ 3
Administrative	= 1.2*(1/10,000*SL)	= 1.2×16.3	≒20

TRANSMISSION 11

Technicians	= 1+(4*10^{-5}*SL)	= 1+(4×10^{-5}×163,562)=8	
Executive	2		=2
Administrative	= 1*(Nber MSC / 15)	=	≒1

POWER AND A/C 3

Technicians	= 2+(Nber MSC*0.1)	= 2+0.8	≒3

FAULT CLEARANCE 196

Linemen = 1/500*FLS $= \frac{0.05 \times 12 \times 163,562}{500} \fallingdotseq 196$

REPAIRING CABLES 327

Lineman = 1/300*FC $= \frac{0.05 \times 12 \times 163,562}{300} \fallingdotseq 327$

SUBSCRIBERS INSTALLATIONS 27

Lineman = 1/300*GSL $= \frac{8000}{300} = 27$

ADMINISTRATIVE EMPLOYEES 32

Executive	= 1/15 employees	= 30÷15	=2
Employees =	11+(1/10,000*SL)+(0.3/1,000 GSL)	=11+16.3+2.4	=30

in which,

Nber MSC = quantity of MSC (Master or Host Exchanges)	·····8
SL = number of subscriber lines	·····163,562
GSL = annual growth of subscribers lines	·····8,000
FC = annual number of faults due to cable failures	·····5/100SL/month
FLS = annual number of faults on the subscriber lines	·····5/100SL/month

2.2 Idea-2

2.2.1 Organization of O&M office in Ulaanbaatar city

This idea has a common headoffice parts consisted of administration and quality control division, and 8 telephone offices (those telephone offices have one or more host exchange units) which have the same organization as the existing ATC-3 O&M office expect administration and quality control division.

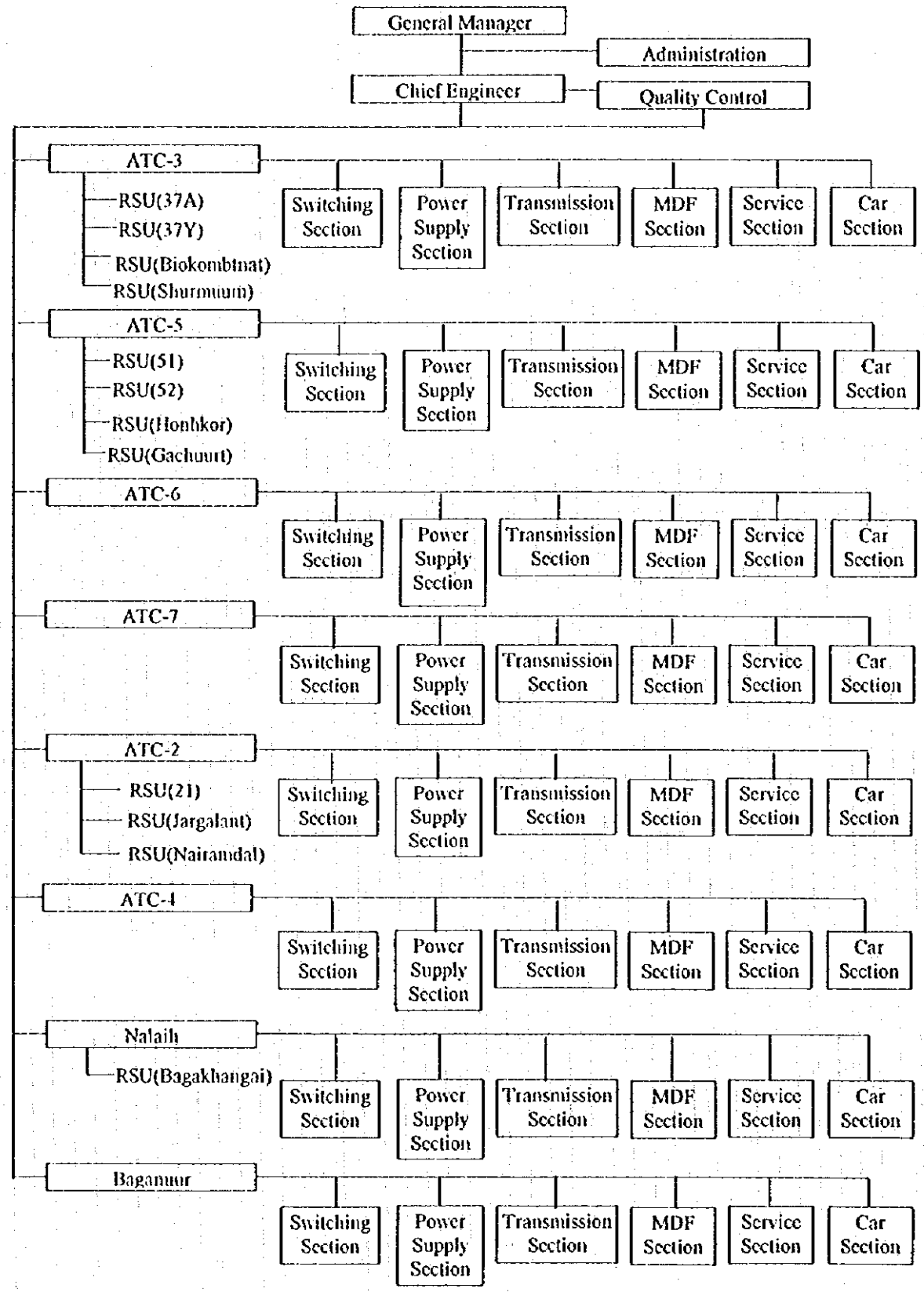


Figure 2-1 Ulaanbaatar City Operation & Maintenance Office Organization Chart in 2010

2.2.2 Organization & number of staff of OPMC in Ulaanbaatarcity

Division	Section	No. of Staff
Chief		1
Training		4
Planning		5
Installation & Maintenance (Cable & Line)	Cable test/Data	25
	Cable	*290
	Subscriber Line	*150
System Information/Computer System		5
Administration	Auto Service	20
	Procurement	2
	Service	3
		505

Calculation Basis

*Maintenance :

$$\text{Cable} : \frac{0.08 \times 12 \times 151{,}152}{500} \fallingdotseq 290$$

$$\text{Subsc.} : \frac{0.02 \times 12 \times 151{,}152}{300} \fallingdotseq 120$$

*Installation

Subsc. : 150,327 (2010)-60531 (2000) = 89800 / 10year = 8,980 / year

$$\frac{8980}{300} \fallingdotseq 30$$

150

2.2.3 Itemized Statement

Table 2-1 Number of Employees in O & M Head Office

Division	sub	Post	Number of Employee		
Administration		General manager	1	5	
		Chief Engineer	1		
		Human resource manager	1		
		Office support man	1		
		Secretary	1		
Quality Control Division		Senior engineer	1	11	
		Cable senior engineer	1		
		Traffic engineer	1		
		Repair engineer	1		
		Inspector	3		
		Assistant cable technician	1		
		Repair man for long distance cable	2		
		Operator	1		16

Table 2-2 Employees Number for Sections of Telephone Officer in 2010

Telephone Office		ATC-3	ATC-5	ATC-6	ATC-7	ATC-2	ATC-4	Nalaih	Bamas
No of Subscriber Line		(48,615)	(25,290)	(33,672)	(9,854)	(24,106)	(10,669)	(5,343)	(6,013)
No of RSU		4	4	0	0	3	0	1	0
No of Optical Fiber System		7	5	3	3	4	3	0	0
No of Radio System		2	2	0	0	2	0	2	1
Switching Section	Senior Engineer	1	1	1	1	1	1	1	1
	Maintenance Engineer	5	3	4	2	3	2	2	2
	Traffic Engineer	1	1	1	0	1	0	0	0
	Shift Engineer	4	4	4	4	4	4	4	4
	Aircondition Engineer	1	1	1	0	1	0	0	0
	Aircondition Technician	1	1	1	1	1	1	1	1
	Sub Total	13	11	12	8	11	8	8	8
Transmission Section	Senior Engineer	1	1	1	1	1	1	1	1
	Cable/Radio Technician	9	7	3	3	6	3	2	1
	Sub Total	10	8	4	4	7	4	3	2
Power Supply Section	Senior Engineer	1	1	1	1	1	1	1	1
	Technician	4	3	3	2	3	2	1	1
	Sub Total	5	4	4	3	4	3	2	2
MDF Section	Engineer	1	1	1	1	1	1	1	1
	Technician	1	1	1	1	1	1	1	1
	Operator	6	4	5	3	4	3	2	2
	Sub Total	8	6	7	5	6	5	4	4
Service Section	Engineer	1	1	1	1	1	1	1	1
	Worker	6	6	6	4	6	4	2	2
	Sub Total	7	7	7	5	7	5	3	3
Car Section	Car Engineer	1	1	1	1	1	1	1	1
	Mechanic	1	1			1		1	1
	Driver	5	5	2	2	4	2	5	4
	Sub Total	7	7	3	3	6	3	7	6
Cable & Line	Senior Engineer							1	1
Cable maintenance	Engineer							1	1
	Technician							1	1
	Repair man							5	5
Subscriber line	Engineer							1	1
	Technician							1	1
	Repair man							3	3
Sub Total								13	13
Grand Total		305							

2.3 Number of Employees in Ulaanbaatar city and Area.

Table 2-3 Number of Employees for Telephone offices in Ulaanbaatar city

Ulaanbaatar city Telephone Office		Number of Employees		
		1995	Idea-1(2010)	Idea-2(2010)
1	Jargalant	2		3
2	Nairamdal	2		3
3	Shuvuun	5		5
4	Bagakhangai	4		5
5	Nalaih	60		40
6	Gaciurt	3		3
7	Honhkor	3		3
8	Baganuur	102		38
9	Biokombinat	4		5
10	Ulaanbaatar	436		748
	TOTAL	621	652	853
	Ulaanbaatar area	1,351	1,382	1,583

Table 2-4 Number of Employees in Ulaanbaatar Area

Idea / Year	1995	2000	2005	2010
Idea-1	1,351	1,361	1,371	1,382
Idea-2	1,351	1,428	1,505	1,583