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No. 24

JAPAN INTERNATIONAL COOPERATION AGENCY

DAMASCUS CITY WATER SUPPLY AND SEWERAGE AUTHORITY
SYRIAN ARAB REPUBLIC

THE STUDY
ON
THE DEVELOPMENT OF WATER SUPPLY SYSTEM
FOR
THE DAMASCUS CITY

PHASE II

VOLUME IV

FINAL REPORT
DATA BOOK

DECEMBER 1997

NIPPON KOEI CO., LTD

JAPAN INTERNATIONAL COOPERATION AGENCY

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ESTIMATE OF PROJECT COST

Estimate of Base Cost : as of July 1997 Price Level

Currency Exchange Rate: US$1 = SL45 = Yen 115

LIST OF REPORTS

ABBREVIATIONS

Organizations

ACSAD	-	The Arab Center for the Studies of Arid Zone and Dry Lands
BRGM	-	Bureau de Reche rche Geologique et Miniere, France
CBS	-	Central Bureau of Statistics
CGE	-	Compaginie Generale des Eaux, France
DAWSSA	-	Damascus City Water Supply and Sewerage Authority
EDWSSR	-	Establishment of Drinking Water Supply and Sewerage in the Rural Province of Damascus
EPEF	-	Establishment Public Des Eau De Damas (Figeh)
HIAST	-	Higher Institute of Applied Sciences and Technology
IED	-	Industrial Establishment for Defense
JICA	-	Japan International Cooperation Agency
MHU	-	Ministry of Housing and Utilities
MOI	-	Ministry of Irrigation
MOF	-	Ministry of Finance
SAR	-	Syrian Arab Republic
SPC	-	The State Planning Commission
STE	-	Syrian Telephone Exchange
WHO	-	World Health Organization

Others

CIP	-	Cast Iron Pipe
CIS	-	Customer Information System
DBMS	-	Data Base Management System
DIP	-	Ductile Iron Pipe
DMA	-	District Meter Areas
EIA	-	Environmental Impact Assessment
EIRR	-	Economic Internal Rate of Return
FLS	-	Financial Ledger System
FMIS	-	Financial Management Information System
GDP	-	Gross Domestic Product
GIS	-	Geographical Information System
HDET	-	Hand-held Data Entry Terminals
H/W	-	Hardware
IEE	-	Initial Environmental Evaluation
LAN	-	Local Area Network
LIMS	-	Laboratory Information Management System
MIS	-	Management Information System
MMS	-	Maintenance Management System
ND	-	Nominal Diameter
NPV	-	Net Present Value
O&M	-	Operation and Maintenance
OS	-	Operating System
PE	-	Polyethylene
PVC	-	Polyvinyl Chloride
SGP	-	Steel Galvanized Pipe
S/W	-	Software
SCADA	-	Supervisory Control and Data Acquisition (System)
UAS	-	Unified Accounting System
UFW	-	Unaccounted for Water
UPS	-	Uninterrupatble Power Supply System
VAT	-	Value Added Tax

ABBREVIATIONS OF MEASUREMENT

Length

mm	=	millimeter
cm	=	centimeter
m	=	meter
km	=	kilometer

Area

cm^2	=	square centimeter
m^2	=	square meter
ha	=	hectare
km^2	=	square kilometer

Volume

cm^3	=	cubic centimeter
l	=	liter
m^3	=	cubic meter
MCM	=	million cubic meter

Weight

mg	=	milligram
g	=	gram
kg	=	kilogram

Time

s	=	second
min	=	minute
h	=	hour
d	=	day
y	=	year

Electrical Measurement

V	=	Volt
A	=	Ampere
Hz	=	Herz
W	=	Watt
kW	=	kilowatt
MW	=	Megawatt

Other Measures

%	=	percent
HP	=	horsepower
°C	=	Celcius degree

Derived Measures

l/s	=	liter per second
m^3/s	=	cubic meter per second
m^3/h	=	cubic meter per hour
m^3/d	=	cubic meter per day
lpcd	=	liter per capita per day
kgf/cm^2	=	kilogram forceper square centimeter
kWh	=	kilowatthour
MWh	=	megawatthour
kVA	=	kilovolt ampere
mg/l	=	milligram per liter
μg/l	=	microgram per liter
meq/l	=	milliequivalents per liter
μS/cm	=	microsiemens per centimeter

Currency

US$	=	US Dollar
SL	=	Syrian Pound

CURRENCY EQUIVALENT

(as of July 1997)

US$ 1 = SL 45.0

TRANSLITERATIONS OF ARABIC PLACE NAMES (1/2)

عباسيين	Abasiyin	بيت جن	Beit Jenn
أبو زاد	AbuZad	بيت تيما	Beit Tima
أشرفية	Achrafye	برزة	Berze
عين عوينات	Ain Awenad	باردان	Bloudan
عين بدا	Ain Beda	بقين	Boukein
عين حبيب	Ain Habib	دحاديل	Dahadil
عين حداد	Ain Hadad	دار المعلمات	Dar al Moalimat
عين حاروش	Ain Haroush	داريا	Daraya
عين حور	Ain Hour	دير مقرن	Deir Moukaren
عين عيسى	Ain Issa	دير العشاير	Deir al Ashayer Shahour
عين نورية	Ain Nourich	حوض التشتيت	Dissipation Basin
عين رضوان	Ain Roudwan	دربل	Dourbol
عين صبا	Ain Saba	دمر	Dummar
عين صالح	Ain Saleh	عسالي	El Esaly
عين الباردة	Ain el Baradeh	الفوار	El Fawar
عين الخضرة	Ain el Khadra	الفيض	El Feid
عين المالحة	Ain el Malha	حفيرية	El Hafirich
عين الصاحب	Ain el Saheb	الهامة	El Haime
عين التينة	Ain el Tineh	العرق	El Irk
أكراد	Akrad	الشواط	El Shuvhat
جامع القصاب	Al Aksab Mosque	عش الورور	Esh al Warwar
الضاحية	Al Dahia	فاسريا	Fasraya
الخضرة	Al Khadra	نبع التينة	Figeh Spring
المشارع	Al Mashare	فراسكن	Fraskin
القزاز	Al Qazzaz	الغوطة	Ghouta
السهل	Al Sahl	حفير الفوقة	Hafir el Foka
عرطوز	Artooz	حاليا	Halaya
قدم عسالي	Asalie Kadam	حسيبة	Hassibeh
الاعوج	Awaj	حسينية	Huseiniyeh
باب مصلى	Bab Mosallah	ابن النفيس	Ibn Alnafeas
باب شرقي	Bab Sharki	ابن عساكر	Ibn Assaker
باب السلام	Bab el Salam	جناني	Janani
شارع بغداد	Baghdad Street	جرمانا	Jaramana
بردى	Barada	جمرايا	Jemarya
بساتين	Basateen	جوبر	Jobar
بسيمة	Bassime	جوبر عكاش	Jobar Akache

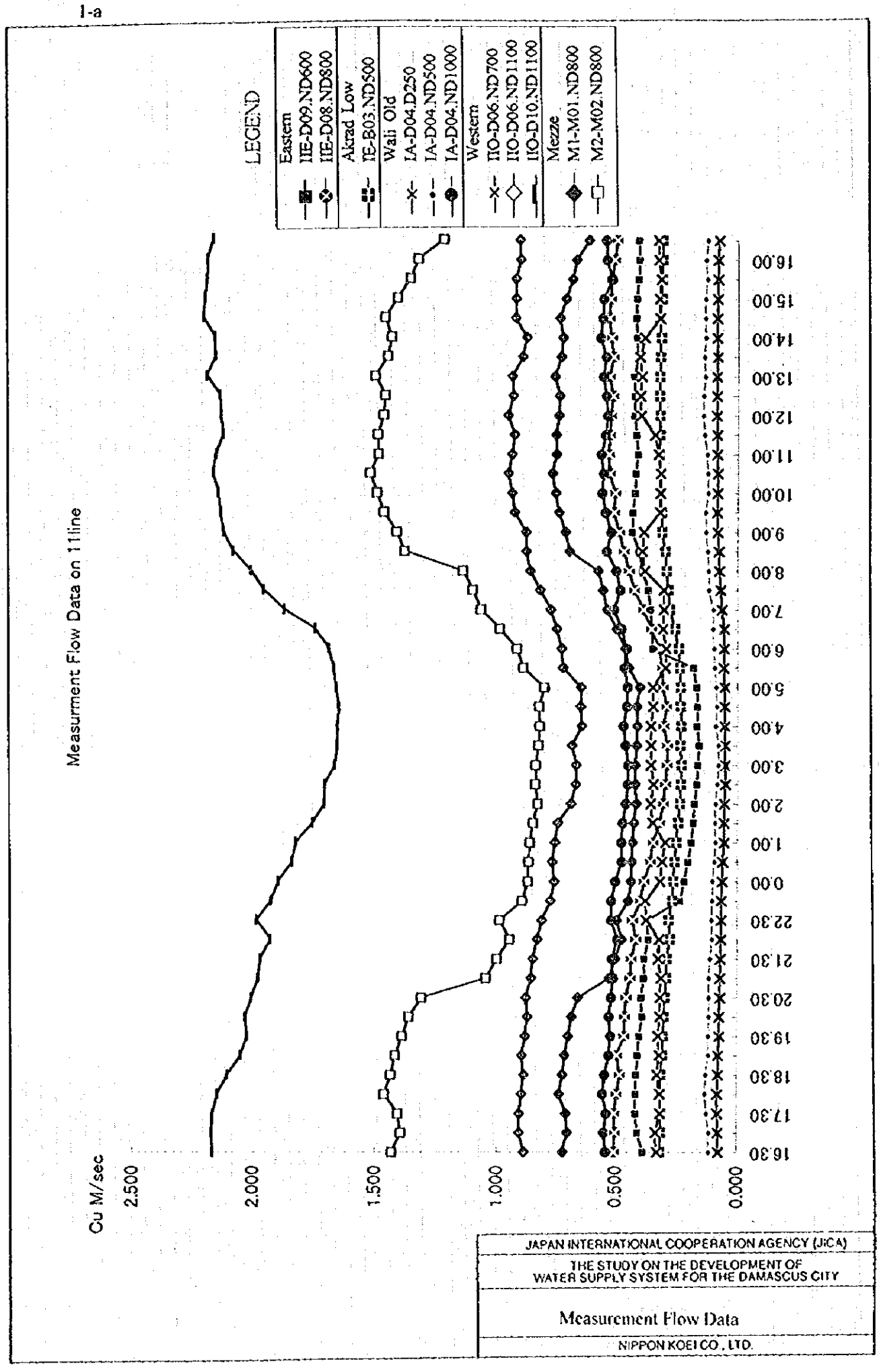
TRANSLITERATIONS OF ARABIC PLACE NAMES (2/2)

جوبر عمادية	Jobar Imadye	قطيفة	Qutayfeh
جوبر قباني	Jobar Kabani	رنكوس	Rankous
جرجانية	Jourjaniych	راس الحاجب	Ras Hasib
قابون	Kaboon	راس الوادي	Ras el Wadi
قدم	Kadam	الرازي	Razy
كفرسوسة	Kafar Souseh	رمة	Rimeh
كفر العواميد	Kafar el Awamid	ركن الدين	Rukn Aldyn
قنوات	Kanawat	سعسع	Saasaa
قاسيون	Kassioun	صفصافة	Safsafi
قطنا	Katana	سردا	Sarada
الكرش	Keish	ساروجة	Sarouja
خان الفندق	Khan el Founduk	صيادي	Sayafeh
خورشيد	Khorshead	سبيراني	Sebrani
قدسيا	Kudsaya	صيدنايا	Sednaya
كيوان	Kywan	شاغور	Shaghour
لوان	Lawan	شحاب	Shakhab
معاولا	Maaloula	ينابيع جانبية	Side Spring
معرونة	Maaroune	سومرية	Somareych
مضايا	Madaya	سيرونكس	Syronics
مهدي بن بركة	Mahadi Bin Baraka	طبالة	Tabbaleh
شارع الملكي	Malki street	طبية	Tabibiych
مزرعة	Mazraa	تضامن	Tadamoun
ميساون	Meisaloun	تقدم	Takadom
منبج	Membej	تلمذية	Talmasieh
مزة	Mezze	تكية	Tekieh
ميدان	Midan	المدينة القديمة	The Old City
منين	Mnin	تشرين	Tishreen
مخيم	Mokhayam	المدينة الجامعية	University City
مهاجرين	Mouhajreen	وادي مروان	Wadi Marwan
النبوع	Naboua	الوالي	Wali
نهر عيشة	Naher Esheh	يعفور	Yaafoor
ناظم باشا	Nazem Basha	يرموك	Yarmouk
النبك	Nebk	زبداني	Zabadani
أمية	Omayad		
أمويين	Oumawiyin		
منطقة الرئاسة	Presidential Area		

DATA BOOK 1

DMA FIELD SURVEY DATA

1-a


LEGEND
Eastern
IIE-D09.ND600
IIE-D08.ND800
Akrad Low
IE-B03.ND500
Wali Old
IA-D04.D250
IA-D04.ND500
IA-D04.ND1000
Western
IIO-D06.ND700
IIO-D06.ND1100
IIO-D10.ND1100
Mezze
M1-M01.ND800
M2-M02.ND800
Measurment Flow Data on 11line
Cu M/sec
2.500
2.000
1.500
1.000
0.500
0.000
16.30
17.30
18.30
19.30
20.30
21.30
22.30
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY
Measurement Flow Data
NIPPON KOEI CO., LTD.

Install Check List

MEASUERMENT LINE CORD	ⅡE-D09. D600	ⅡE-D08. D800	ⅠE-B03. D500	ⅠA-D04. D250	ⅠA-D04. D500	ⅠA-D04. D1000
Instalation Date	May, 18, 97	May, 18, 97	May, 19, 97	May, 18, 97	May, 20, 97	May, 18, 97
Pipe O/D	627. 75mm	843. 63mm	511. 78mm	276. 91mm	519. 10mm	1077. 70mm
Pipe Material	Steel	Steel	Steel	Steel	Steel	Steel
Wall Thicknes	7mm	13mm	5. 5mm	7mm	6. 5mm	10mm
Liner Material	None	None	None	None	None	None
Liner Thicknes						
Measurment V/S	1464. 52m/SEC	1453. 18m/SEC	1469. 73m/SEC	1481. 33m/SEC	1460. 62m/SEC	1456. 27m/SEC
Ultrasonic wave reception signal	45%	64%	40%	63%	46%	56%
Aar Content	45%	12%	12%	10%	14%	5%
Signal mV	15	84	9	74	16	39
Measuerment Unit	K CubicMeter	K CubicMeter	K CubicMeter	K CubicMeter	K CubicMeter	K CubicMeter
Loggering Interval	1min	1min	1min	1min	1min	1min

MEASUERMENT LINE CORD	ⅡO-D05. D700	ⅡO-D06. D1100	ⅡO-D10. D1100	M1-M02. D800	M2-M01. D800
Instalation Date	May, 18, 97	May, 18, 97	May, 19, 97	May, 18, 97	May, 18, 97
Pipe O/D	723. 88mm	1121. 6mm	1121. 6mm	817. 19mm	817. 19mm
Pipe Material	Steel	Steel	Steel	Steel	Steel
Wall Thicknes	6. 5mm	15. 0mm	15. 0mm	7. 3mm	7. 3mm
Liner Material	None	None	None	None	None
Liner Thicknes					
Measurment V/S	1462. 63m/SEC	1421. 52m/SEC	1427. 66m/SEC	1454. 65m/SEC	1457. 25m/SEC
Ultrasonic wave reception signal	39%	47%	40%	34%	51%
Aar Content	52%	10%	14%	102%	6%
Signal mV	8	11	9	5	25
Measuerment Unit	K CubicMeter	K CubicMeter	K CubicMeter	K CubicMeter	K CubicMeter
Loggering Interval	1min	1min	1min	1min	1min

Pipe line Measured flow

Time	E-D09, D600	E-D08, D800	E-D03, D500	A-D04, D250	A-D04, D500	A-D04, D1000	O-D05, D700	O-D06, D1100	O-D10, D1100	M1-M01, D800	M1-M02, D800
16.30	0.389	0.508	0.319	0.076	0.116	0.542	0.331	0.884	2.166	0.723	1.431
17.00	0.410	0.503	0.313	0.078	0.113	0.550	0.335	0.904	2.171	0.704	1.394
17.30	0.418	0.507	0.313	0.080	0.124	0.539	0.317	0.904	2.166	0.710	1.405
18.00	0.419	0.496	0.317	0.080	0.131	0.555	0.318	0.895	2.148	0.739	1.463
18.30	0.416	0.485	0.314	0.076	0.127	0.546	0.329	0.885	2.106	0.725	1.435
19.00	0.411	0.497	0.309	0.077	0.116	0.530	0.319	0.895	2.051	0.716	1.417
19.30	0.406	0.467	0.305	0.073	0.118	0.522	0.325	0.881	2.025	0.701	1.389
20.00	0.392	0.464	0.300	0.074	0.115	0.530	0.317	0.872	2.033	0.687	1.360
20.30	0.396	0.458	0.299	0.070	0.116	0.521	0.318	0.878	2.007	0.661	1.309
21.00	0.387	0.443	0.292	0.071	0.116	0.512	0.314	0.856	1.981	0.529	1.048
21.30	0.385	0.439	0.292	0.069	0.112	0.518	0.326	0.849	1.972	0.506	1.002
22.00	0.368	0.420	0.279	0.068	0.103	0.497	0.323	0.831	1.930	0.478	0.948
22.30	0.375	0.435	0.283	0.067	0.106	0.523	0.378	0.813	1.988	0.500	0.990
23.30	0.237	0.402	0.270	0.067	0.104	0.523	0.381	0.777	1.928	0.451	0.894
0.00	0.221	0.387	0.264	0.062	0.102	0.505	0.319	0.761	1.899	0.439	0.870
0.30	0.203	0.360	0.259	0.061	0.095	0.479	0.312	0.770	1.841	0.438	0.867
1.00	0.189	0.349	0.253	0.066	0.089	0.480	0.298	0.758	1.827	0.435	0.861
1.30	0.182	0.323	0.246	0.055	0.093	0.474	0.361	0.745	1.758	0.429	0.849
2.00	0.175	0.307	0.237	0.054	0.089	0.462	0.359	0.691	1.711	0.419	0.829
2.30	0.167	0.299	0.234	0.050	0.084	0.452	0.348	0.671	1.710	0.423	0.839
3.00	0.163	0.291	0.231	0.051	0.079	0.452	0.358	0.670	1.668	0.423	0.838
3.30	0.158	0.289	0.236	0.051	0.078	0.463	0.358	0.687	1.659	0.417	0.826
4.00	0.166	0.306	0.233	0.053	0.090	0.472	0.358	0.648	1.658	0.414	0.821
4.30	0.164	0.292	0.234	0.053	0.085	0.456	0.350	0.651	1.653	0.416	0.823
5.00	0.168	0.308	0.236	0.052	0.088	0.454	0.351	0.651	1.666	0.405	0.802
5.30	0.181	0.311	0.237	0.057	0.093	0.467	0.299	0.725	1.675	0.450	0.892
6.00	0.350	0.322	0.242	0.055	0.097	0.458	0.296	0.732	1.695	0.464	0.919
6.31	0.355	0.356	0.258	0.056	0.101	0.480	0.307	0.750	1.750	0.501	0.992
7.00	0.361	0.390	0.279	0.064	0.100	0.511	0.304	0.777	1.878	0.541	1.072
7.30	0.371	0.428	0.287	0.069	0.118	0.486	0.305	0.821	1.964	0.558	1.106
8.00	0.394	0.451	0.294	0.075	0.120	0.503	0.384	0.862	2.015	0.578	1.146
8.30	0.409	0.471	0.299	0.077	0.124	0.543	0.396	0.880	2.090	0.700	1.387
9.00	0.438	0.491	0.314	0.083	0.131	0.524	0.389	0.882	2.130	0.717	1.419
9.30	0.435	0.512	0.317	0.085	0.132	0.548	0.322	0.931	2.142	0.744	1.473
10.00	0.426	0.509	0.321	0.084	0.122	0.562	0.321	0.943	2.151	0.759	1.502
10.30	0.424	0.531	0.321	0.083	0.123	0.557	0.320	0.959	2.173	0.773	1.531
11.00	0.415	0.535	0.327	0.085	0.126	0.567	0.329	0.943	2.161	0.755	1.495
11.30	0.421	0.531	0.322	0.085	0.138	0.548	0.343	0.932	2.132	0.757	1.500
12.00	0.428	0.527	0.322	0.086	0.141	0.539	0.402	0.960	2.141	0.745	1.475
12.30	0.427	0.518	0.325	0.086	0.142	0.545	0.404	0.938	2.145	0.742	1.469
13.00	0.430	0.532	0.323	0.087	0.134	0.558	0.399	0.942	2.200	0.762	1.510
13.30	0.414	0.516	0.322	0.084	0.139	0.546	0.408	0.899	2.164	0.737	1.460
14.00	0.419	0.526	0.319	0.086	0.133	0.571	0.388	0.882	2.168	0.729	1.444
14.30	0.423	0.535	0.325	0.086	0.135	0.562	0.324	0.929	2.217	0.743	1.471
15.00	0.421	0.529	0.317	0.085	0.135	0.558	0.326	0.928	2.210	0.717	1.420
15.30	0.413	0.523	0.317	0.084	0.128	0.573	0.320	0.928	2.201	0.690	1.366
16.00	0.411	0.513	0.313	0.082	0.134	0.543	0.329	0.908	2.199	0.673	1.332
16.29	0.412	0.501	0.313	0.078	0.124	0.547	0.331	0.912	2.177	0.620	1.228

Measurment flow data at P/A

Wet season

Date	06.13.97	06.13.97	06.13.97	06.13.97	06.13.97	06.13.97	06.13.97	06.13.97	06.13.97	06.13.97
Time	1. D250mm	2. D200mm	3. D600mm	4. D300mm	5. D300mm	Total	6. D300mm	7. D400mm	8. D200mm	Sub Total
	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec
9:00	0.008	0.012	0.562	0.102	-0.036	0.684	0.198	0.390	0.108	0.696
10:00	0.008	0.009	0.569	0.114	-0.043	1.476	0.198	0.404	0.113	0.715
11:00	0.008	0.005	0.574	0.119	-0.045	1.508	0.196	0.410	0.116	0.722
12:00	0.008	0.002	0.583	0.123	-0.045	1.515	0.192	0.415	0.122	0.729
13:00	0.008	0.001	0.584	0.129	-0.048	1.511	0.191	0.419	0.123	0.733
14:00	0.008	0.003	0.582	0.123	-0.051	1.480	0.194	0.415	0.126	0.735
15:00	0.008	0.008	0.582	0.120	-0.050	1.468	0.194	0.414	0.123	0.731
16:00	0.008	0.009	0.581	0.118	-0.048	1.467	0.194	0.418	0.119	0.731
17:00	0.008	0.011	0.580	0.118	-0.047	1.467	0.195	0.419	0.120	0.734
18:00	0.008	0.010	0.583	0.118	-0.047	1.473	0.195	0.423	0.120	0.738
19:00	0.007	0.009	0.587	0.116	-0.050	1.461	0.197	0.424	0.118	0.739
20:00	0.007	0.012	0.584	0.115	-0.047	1.450	0.196	0.417	0.116	0.729
21:00	0.007	0.013	0.578	0.114	-0.045	1.427	0.194	0.413	0.118	0.725
22:00	0.007	0.012	0.578	0.107	-0.043	1.421	0.193	0.420	0.119	0.732
23:00	0.007	0.012	0.568	0.108	-0.043	1.388	0.189	0.420	0.119	0.728
0:00	0.007	0.012	0.559	0.103	-0.040	1.352	0.182	0.411	0.114	0.707
1:00	0.006	0.014	0.544	0.093	-0.037	1.301	0.176	0.386	0.110	0.672
2:00	0.006	0.015	0.529	0.087	-0.032	1.263	0.169	0.371	0.105	0.645
3:00	0.006	0.015	0.514	0.081	-0.029	1.237	0.164	0.353	0.100	0.617
4:00	0.006	0.015	0.509	0.081	-0.026	1.238	0.162	0.350	0.100	0.612
5:00	0.006	0.014	0.507	0.079	-0.024	1.236	0.163	0.346	0.099	0.608
6:00	0.007	0.015	0.515	0.081	-0.026	1.285	0.171	0.358	0.099	0.628
7:00	0.007	0.014	0.530	0.087	-0.026	1.342	0.180	0.380	0.102	0.662
8:00	0.008	0.013	0.547	0.099	-0.032	1.419	0.186	0.388	0.105	0.679
9:00	0.008	0.010	0.564	0.108	-0.036	1.461	0.193	0.399	0.110	0.702

Measurment flow data at P/A

Dry season

Date	08.08.97	08.08.97	08.08.97	08.08.97	08.08.97	08.08.97	08.08.97	08.08.97	08.08.97	08.08.97
Time	1. D250mm	2. D200mm	3. D600mm	4. D300mm	5. D300mm	Total	6. D300mm	7. D400mm	8. D200mm	Sub Total
	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec	CUM/Sec
9:00	0.006	0.005	0.521	0.053	0.093	1.324	0.201	0.408	0.112	0.721
10:00	0.006	0.003	0.568	0.053	0.108	1.341	0.207	0.445	0.122	0.774
11:00	0.007	-0.006	0.533	0.054	0.111	1.355	0.213	0.443	0.128	0.784
12:00	0.007	-0.005	0.558	0.054	0.116	1.406	0.201	0.439	0.125	0.765
13:00	0.007	-0.009	0.562	0.054	0.124	1.393	0.200	0.441	0.128	0.769
14:00	0.006	-0.006	0.565	0.055	0.117	1.377	0.199	0.446	0.130	0.775
15:00	0.006	-0.003	0.561	0.055	0.113	1.362	0.203	0.449	0.131	0.783
16:00	0.006	0.001	0.560	0.056	0.112	1.373	0.203	0.450	0.128	0.781
17:00	0.006	0.000	0.568	0.056	0.114	1.370	0.207	0.443	0.126	0.776
18:00	0.006	-0.001	0.564	0.057	0.113	1.364	0.200	0.440	0.124	0.764
19:00	0.006	0.001	0.563	0.057	0.112	1.355	0.205	0.442	0.125	0.772
20:00	0.006	0.002	0.560	0.057	0.109	1.338	0.210	0.440	0.124	0.774
21:00	0.006	0.003	0.559	0.058	0.108	1.336	0.202	0.438	0.122	0.762
22:00	0.006	0.004	0.554	0.058	0.105	1.303	0.204	0.436	0.121	0.761
23:00	0.006	0.005	0.566	0.059	0.104	1.354	0.196	0.423	0.117	0.736
0:00	0.005	0.006	0.562	0.059	0.101	1.268	0.193	0.425	0.117	0.735
1:00	0.005	0.003	0.517	0.059	0.091	1.185	0.191	0.422	0.118	0.731
2:00	0.005	0.004	0.498	0.060	0.081	1.167	0.186	0.404	0.113	0.703
3:00	0.005	0.007	0.495	0.060	0.078	1.157	0.177	0.380	0.108	0.665
4:00	0.005	0.007	0.488	0.060	0.075	1.151	0.175	0.374	0.105	0.654
5:00	0.005	0.006	0.489	0.060	0.075	1.154	0.171	0.373	0.103	0.647
6:00	0.005	0.007	0.498	0.061	0.077	1.166	0.182	0.385	0.104	0.671
7:00	0.005	0.008	0.516	0.061	0.087	1.199	0.187	0.393	0.107	0.687
8:00	0.005	0.007	0.543	0.061	0.092	1.240	0.191	0.403	0.107	0.701
9:00	0.005	0.002	0.529	0.062	0.099	1.224	0.198	0.420	0.112	0.730

MEASUREMENT PRESSURE DATA

	MEASUREMENT PERIOD		19May'97 to 21MAY'97								
	PointNo	B03-P1	D10-P1	D04-P1	D06-P1	D05-P1	M01-P1	D10-P2	D10-P3	D10-P4	D10-P5
DATE	Time	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2
5/19	11:00	2.5									
	11:30	2.5	3.8								
	12:00	2.5	3.7	8.4							
	12:30	2.5	3.7	8.3	4.5						
	13:00	2.5	3.6	8.2	4.5		3.0				
	13:30	2.5	3.7	8.2	4.5		3.0	3.9			
	14:00	2.5	3.7	8.1	4.5	6.2	3.0	3.9			
	14:30	2.4	3.6	8.0	4.5	6.2	3.0	3.9		3.5	1.9
	15:00	2.4	3.6	8.0	4.3	6.2	3.0	3.9		3.5	1.9
	15:30	2.3	3.6	8.0	4.3	6.2	3.0	3.9		3.7	1.8
	16:00	2.4	3.8	8.0	4.3	6.2	3.0	3.9	4.5	3.5	1.8
	16:30	2.4	4.0	8.0	4.3	6.2	3.0	3.8	4.5	3.5	1.8
	17:00	2.4	4.0	8.0	4.3	6.2	3.0	3.8	4.5	3.4	1.8
	17:30	2.4	4.0	8.0	4.2	6.2	3.0	3.8	4.6	3.4	1.8
	18:00	2.4	4.0	8.0	4.2	6.0	3.0	3.9	4.5	3.5	1.8
	18:30	2.4	4.0	8.2	4.2	6.0	3.0	4.0	4.5	3.5	1.8
	19:00	2.4	4.0	8.1	4.2	6.0	3.0	4.0	4.5	3.7	1.8
	19:30	2.4	4.0	8.0	4.5	6.0	3.0	4.1	4.4	3.7	2.1
	20:00	2.5	4.2	8.0	4.5	6.0	3.2	4.2	4.6	3.7	2.0
	20:30	2.5	4.2	8.0	4.5	6.1	3.4	4.3	4.7	3.8	2.2
	21:00	2.5	4.2	8.0	4.5	6.1	3.4	4.3	4.8	4.0	2.4
	21:30	2.5	4.3	8.0	4.5	6.1	3.5	4.4	4.9	4.0	2.4
	22:00	2.5	4.2	8.0	4.8	6.2	3.5	4.5	5.0	4.0	2.4
	22:30	2.6	4.0	8.0	5.0	6.2	3.5	4.5	5.2	4.1	2.5
	23:00	2.6	4.2	8.1	5.0	6.2	3.6	4.7	5.3	4.5	2.5
	23:30	2.6	4.1	8.0	5.0	6.3	3.7	4.7	5.4	4.5	2.5
5/20	0:00	2.6	4.3	8.0	5.0	6.3	4.0	4.8	5.4	4.5	2.6
	0:30	2.7	4.4	8.0	5.2	6.5	4.0	4.8	5.6	4.7	2.7
	1:00	2.8	4.5	8.3	5.3	6.5	4.0	5.0	5.7	5.0	3.0
	1:30	2.8	4.6	8.1	5.2	6.7	4.1	5.0	5.8	5.0	3.4
	2:00	2.9	4.8	8.1	5.2	6.9	4.2	5.0	6.0	5.0	3.5
	2:30	2.9	4.9	8.0	5.2	6.9	4.3	5.0	6.0	5.0	3.5
	3:00	3.0	5.0	8.0	5.4	7.0	4.3	5.0	6.0	5.0	3.6
	3:30	3.0	5.1	8.0	5.2	7.0	4.3	5.3	6.2	5.1	3.7
	4:00	3.0	5.0	8.0	5.2	7.0	4.3	5.2	6.2	5.1	3.7
	4:30	3.0	5.0	8.0	5.2	7.0	4.3	5.2	6.2	5.1	3.7
	5:00	3.0	5.0	8.0	5.2	7.0	4.3	5.1	6.2	5.1	3.7
	5:30	3.0	5.1	8.0	5.2	7.0	4.3	5.0	6.2	5.1	3.7
	6:00	3.0	5.0	8.0	5.2	7.0	4.1	5.0	6.2	4.9	3.6
	6:30	3.0	5.0	8.0	5.2	7.0	3.8	4.8	6.1	4.7	3.5
	7:00	3.0	4.9	8.0	5.1	7.0	3.6	4.7	6.2	4.5	3.0
	7:30	2.8	4.7	8.0	5.0	6.5	3.3	4.7	6.0	4.3	3.0
	8:00	2.8	4.5	8.0	5.0	6.5	3.1	4.5	5.7	4.2	2.7
	8:30	2.8	4.2	8.0	5.0	6.5	3.0	4.5	5.5	4.0	2.6
	9:00	2.7	4.0	8.0	4.9	6.3	2.9	4.4	5.3	3.8	2.5
	9:30	2.6	3.8	7.9	4.7	6.3	2.9	4.3	5.0	3.6	2.5
	10:00	2.5	3.7	7.8	4.7	6.3	2.9	4.2	4.8	3.5	2.3
	10:30	2.5	3.5	7.9	4.5	6.3	2.9	4.2	4.6	3.5	2.1
	11:00	2.5	3.4	8.0	4.5	6.3	2.9	4.1	4.5	3.5	2.1
	11:30	2.5	3.5	8.0	4.5	6.3	2.9	4.1	4.5	3.5	2.0
	12:00	2.5	3.4	8.0	4.5	6.3	2.9	4.0	4.5	3.5	2.0
	12:30	2.5	3.4	8.0	4.5	6.3	2.9	4.0	4.5	3.5	2.0
	13:00	2.5	3.4	8.0	4.5	6.3	2.9	4.1	4.5	3.5	2.0
	13:30	2.5	3.4	8.0	4.5	6.0	2.9	4.2	4.5	3.5	2.0
	14:00	2.5	3.4	8.0	4.5	6.0	3.0	4.2	4.5	3.5	2.0
	14:30	2.5	3.4	7.9	4.5	6.0	3.0	4.2	4.6	3.6	2.0
	15:00	2.5	3.4	7.9	4.5	6.0	3.0	4.3	4.5	3.8	2.0
	15:30	2.4	3.2	7.9	4.6	6.0	3.0	4.4	4.5	3.8	2.1
	16:00	2.4	3.4	7.9	4.7	6.0	3.0	4.4	4.6	3.8	2.1
	16:30	2.5	3.4	7.9	4.7	6.0	3.0	4.4	4.7	3.8	2.2
	17:00	2.5	3.5	7.9	4.8	6.0	3.0	4.4	4.9	3.8	2.2
	17:30	2.5	3.5	7.9	4.7	6.0	3.0	4.4	4.8	3.8	2.2
	18:00	2.5	3.5	7.9	4.7	6.0	2.7	4.4	4.8	4.0	2.2
	18:30	2.5	3.5	7.9	4.8	6.3	2.8	4.4	4.9	4.0	2.3
	19:00	2.5	3.5	7.9	4.8	6.5	3.0	4.4	4.9	4.0	2.4
	19:30	2.5	3.6	7.9	4.7	6.2	3.1	4.4	5.0	4.0	2.4
	20:00	2.5	3.7	7.9	4.5	6.2	3.1	4.4	5.0	4.0	2.4
	20:30	2.5	3.7	7.9	4.4	6.2	3.3	4.4	5.0	4.0	2.4

MEASUREMENT PRESSURE DATA

	MEASUREMENT PERIOD	19May'97 to 21MAY'97									
	PointNo	B03-P1	D10-P1	D04-P1	D06-P1	D05-P1	M01-P1	D10-P2	D10-P3	D10-P4	D10-P5
DATE	Time	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2
5/20	21:00	2.5	3.7	7.9	4.5	6.3	3.5	4.5	5.0	4.1	2.4
	21:30	2.5	3.8	7.9	4.5	6.5	3.5	4.5	5.0	4.3	2.5
	22:00	2.5	3.8	7.9	4.6	6.7	3.5	4.5	5.1	4.3	2.8
	22:30	2.5	4.0	7.9	4.6	6.5	3.5	4.5	5.1	4.3	2.6
	23:00	2.7	4.0	8.4	4.7	6.3	3.5	4.6	5.4	4.3	2.6
	23:30	2.6	4.2	8.2	4.8	6.3	3.7	4.7	5.4	4.6	2.7
5/21	0:00	2.6	4.1	8.0	4.7	6.5	4.0	4.8	5.4	4.6	2.9
	0:30	2.7	4.2	8.0	5.0	6.6	4.0	5.0	5.4	4.7	3.2
	1:00	2.7	4.4	8.0	5.0	6.6	4.0	5.0	5.5	4.9	3.4
	1:30	2.8	4.6	8.0	5.2	6.6	4.1	5.0	5.6	5.0	3.5
	2:00	2.8	4.5	8.0	5.2	7.0	4.2	5.0	5.8	5.1	3.7
	2:30	2.9	4.5	8.0	5.2	6.9	4.2	5.1	6.0	5.1	3.8
	3:00	3.0	4.5	8.0	5.2	7.1	4.2	5.1	6.0	5.2	3.9
	3:30	3.0	4.5	8.0	5.2	7.1	4.2	5.1	6.0	5.2	4.0
	4:00	3.0	4.5	8.0	5.2	7.1	4.2	5.1	6.1	5.2	4.0
	4:30	3.0	4.5	8.0	5.2	7.1	4.2	5.1	6.1	5.2	4.0
	5:00	3.0	4.5	8.0	5.2	7.0	4.2	5.0	6.1	5.2	4.0
	5:30	3.0	4.5	8.0	5.2	7.0	4.2	5.0	6.1	5.1	3.9
	6:00	3.0	4.5	8.0	5.2	7.0	4.2	5.0	6.1	5.0	3.8
	6:30	3.0	4.5	8.4	5.1	7.1	4.0	4.8	6.1	4.7	3.7
	7:00	3.0	4.5	8.2	5.0	7.1	3.6	4.7	6.0	4.5	3.3
	7:30	3.0	4.5	8.1	5.0	7.1	3.5	4.7	5.8	4.2	3.0
	8:00	2.7	4.5	8.0	5.0	6.8	3.5	4.6	5.5	4.2	3.0
	8:30	2.7	4.3	8.0	4.8	6.6	3.2	4.5	5.3	4.0	2.8
	9:00	2.7	4.2	8.0	4.8	6.5	3.1	4.4	5.3	3.7	2.5

MEASUREMENT PRESSURE DATA

MEASUREMENT PERIOD 10. June, 97to13 june, 97

DATE	PointNo / Time	M01 P1 Kgf/Cm2	D01-P2 Kgf/Cm2	D03-P1 Kgf/Cm2	D08-P1 Kgf/Cm2	D09 P1 Kgf/Cm2	D10 P6 Kgf/Cm2	D10-P7 kgf/cm2	D10 P8 kgf/cm2	D10-P9 kgf/cm2
6/10	9:00	4.8								
	9:30	4.7								
	10:00	4.7								
	10:30	1.5								
	11:00	1.5								
	11:30	1.5		6.0						
	12:00	4.5		6.0						
	12:30	1.6		6.2		3.3		2.5		
	13:00	1.5		6.0	5.0	3.3		3.5		
	13:30	1.5		7.0	5.0	3.4		3.3	1.8	
	14:00	1.5		8.0	5.0	3.5		3.1	1.8	
	14:30	1.5		7.3	5.0	3.5		3.1	1.8	
	15:00	1.6		8.0	5.0	3.5	3.8	3.1	1.8	
	15:30	1.6		8.3	5.0	3.5	1.0	3.3	1.8	
	16:00	1.6	3.0	8.2	5.1	3.5	1.0	3.3	1.8	1.2
	16:30	1.6	3.0	8.5	5.1	3.5	1.0	3.2	1.8	1.2
	17:00	1.6	3.0	7.5	5.1	3.5	1.0	3.1	1.8	1.2
	17:30	1.6	3.0	8.9	5.1	3.5	1.0	3.2	1.8	1.2
	18:00	1.6	3.2	8.9	5.1	3.5	1.0	3.2	1.8	1.2
	18:30	1.7	3.2	8.5	5.0	3.5	1.1	3.5	1.9	1.2
	19:00	1.7	3.2	9.0	5.0	3.5	1.0	3.6	2.0	1.2
	19:30	1.8	3.2	8.5	5.0	3.7	1.0	3.5	2.0	1.2
	20:00	1.9	3.2	8.7	5.0	3.8	1.0	3.5	2.0	1.2
	20:30	1.9	3.2	8.3	5.0	3.8	1.0	3.5	2.0	1.3
	21:00	5.0	3.2	7.9	5.0	3.8	1.1	3.7	2.1	1.1
	21:30	5.0	3.2	8.5	5.0	3.8	1.2	3.7	2.2	1.1
	22:00	5.3	3.2	8.5	5.0	4.0	1.2	3.9	2.2	1.5
	22:30	5.1	3.1	8.5	5.1	4.2	1.1	4.0	2.2	1.5
	23:00	5.1	3.1	6.5	5.2	4.2	1.1	4.2	2.3	1.6
	23:30	5.3	3.1	6.2	5.2	3.7	1.2	4.5	2.5	1.6
6/11	0:00	5.3	3.5	6.2	5.3	3.9	1.3	4.5	2.5	1.6
	0:30	5.3	3.5	8.3	5.3	4.0	1.3	4.5	2.8	1.7
	1:00	5.3	3.6	9.9	5.4	4.2	1.4	4.6	3.0	1.8
	1:30	5.3	3.6	10.0	5.4	4.3	1.5	4.6	3.2	1.8
	2:00	5.3	3.6	10.0	5.5	4.4	1.5	4.8	3.5	2.0
	2:30	5.3	3.6	10.0	5.5	4.5	1.7	4.8	3.5	2.1
	3:00	5.1	3.6	10.0	5.5	4.5	1.8	4.8	3.6	2.4
	3:30	5.1	3.6	10.0	5.5	4.5	1.8	4.7	3.6	2.6
	1:00	5.1	3.6	10.0	5.5	4.5	4.9	4.8	3.6	3.0
	1:30	5.1	3.6	10.0	5.5	4.5	5.0	4.8	3.6	3.2
	5:00	5.1	3.6	10.0	5.5	4.5	5.0	4.8	3.6	3.5
	5:30	5.1	3.5	10.0	5.5	4.5	5.0	5.0	3.5	3.4
	6:00	5.5	3.1	10.0	5.5	4.1	5.0	4.9	3.5	3.4
	6:30	5.3	3.3	10.0	5.5	4.3	5.0	4.5	3.3	3.1
	7:00	5.3	3.0	10.0	5.5	4.1	5.0	4.5	3.0	3.1
	7:30	5.0	3.0	7.0	5.5	3.8	5.1	4.0	2.7	3.3
	8:00	4.9	2.9	5.5	5.1	3.5	5.0	3.5	2.5	3.3
	8:30	1.7	2.8	5.3	5.3	3.3	5.0	3.2	2.2	3.0
	9:00	1.8	2.7	5.0	5.2	3.1	5.0	3.2	2.0	2.9
	9:30	1.8	2.7	5.0	5.2	3.0	1.8	2.8	2.0	2.8
	10:00	1.6	2.7	4.8	5.0	3.3	1.6	3.0	1.9	2.4
	10:30	1.6	2.7	4.8	5.0	3.3	1.5	2.8	1.8	2.0
	11:00	1.6	2.7	5.0	5.0	3.3	1.3	2.8	1.6	1.7
	11:30	1.5	2.7	5.5	5.0	3.3	4.1	2.8	1.6	1.5
	12:00	1.5	2.7	5.7	5.0	3.3	4.0	2.8	1.6	1.3
	12:30	1.5	2.7	6.0	5.0	3.3	4.0	2.8	1.6	1.3
	13:00	1.6	2.7	6.6	5.0	3.3	3.9	3.1	1.6	1.1
	13:30	1.6	2.7	7.8	5.0	3.1	3.8	3.0	1.6	1.0
	11:00	1.6	2.7	7.5	5.0	3.1	3.8	3.0	1.6	1.0
	11:30	1.6	2.7	7.5	5.0	3.1	1.0	3.0	1.7	1.0
	15:00	1.7	3.0	8.5	5.0	3.5	1.0	3.0	1.7	1.0
	15:30	1.7	3.0	9.0	5.0	3.6	1.0	3.1	1.8	1.0
	16:00	1.8	3.0	9.2	5.0	3.6	1.0	3.1	1.9	1.0
	16:30	5.0	3.0	8.8	5.0	3.6	1.0	3.2	1.9	1.1
	17:00	5.0	3.0	9.8	5.0	3.6	1.0	3.2	1.9	1.2
	17:30	1.8	3.0	9.3	5.0	3.6	1.0	3.1	1.9	1.2
	18:00	1.8	3.2	10.0	5.0	3.6	1.0	3.1	1.9	1.3
	18:30	1.8	3.2	10.0	5.0	3.8	1.0	3.5	2.0	1.3
	19:00	1.7	3.2	10.0	5.0	3.2	1.0	3.5	2.0	1.3
	19:30	1.8	3.2	10.0	5.0	3.2	1.0	3.5	2.0	1.3
	20:00	1.8	3.2	9.8	5.0	3.2	1.2	3.6	1.9	1.1

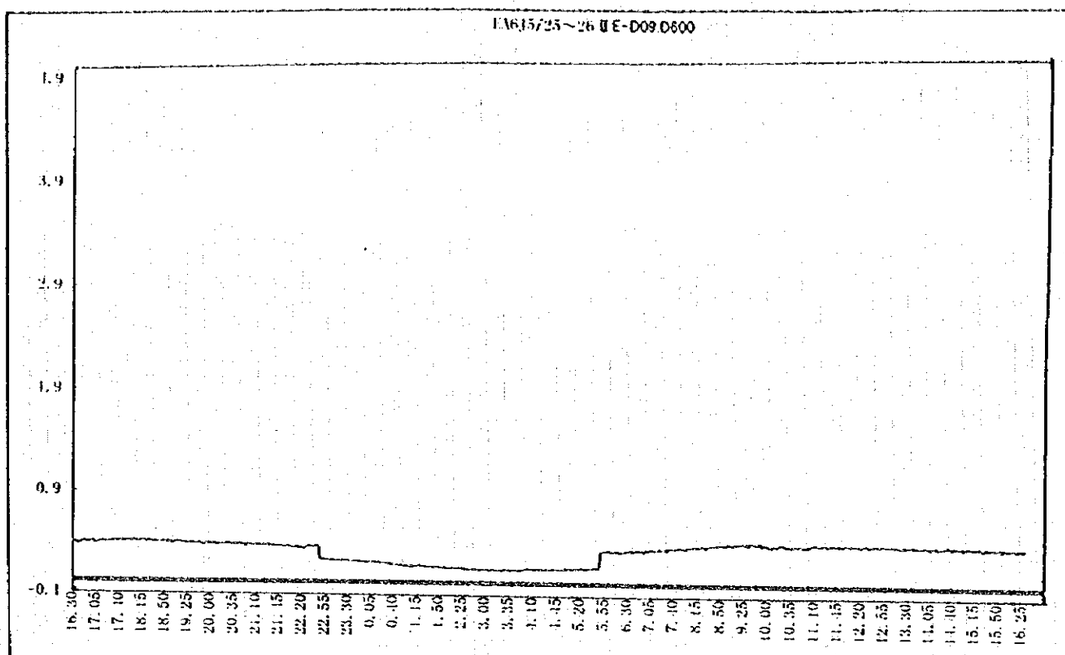
MEASUREMENT PRESSURE DATA

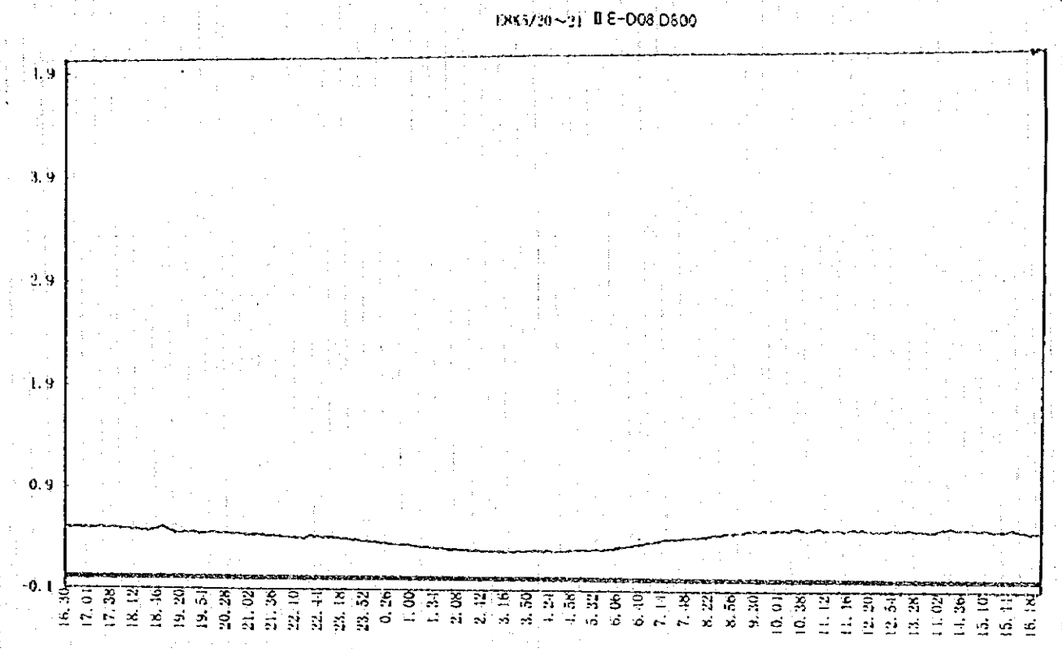
MEASUREMENT PERIOD 10. June, 97 to 13 June, 97

	PointNo	M01 P1	D01-P2	D03 P1	D08 P1	D09 P1	D10 P6	D10 P7	D10 P8	D10 P9
DATE	Time	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	kgf/cm2	kgf/cm2	kgf/cm2
	23:00	5.0	3.5	8.0	5.2	4.5	4.4	4.1	2.5	1.7
	23:30	5.2	3.5	8.3	5.3	4.7	4.5	4.1	2.5	1.7
6/12	0:00	5.2	3.5	9.6	5.3	4.9	4.5	4.1	2.9	1.9
	0:30	5.2	3.6	10.0	5.3	5.0	4.5	4.6	3.2	1.8
	1:00	5.3	3.6	10.0	5.1	5.0	4.5	4.6	3.1	1.8
	1:30	5.3	3.6	10.0	5.5	5.3	4.5	4.8	3.5	2.0
	2:00	5.3	3.6	10.0	5.5	5.4	4.8	5.0	3.6	2.2
	2:30	5.3	3.6	10.0	5.5	5.4	4.8	5.0	3.7	2.4
	3:00	5.3	3.6	10.0	5.5	5.5	5.0	5.0	3.8	2.6
	3:30	5.4	3.6	10.0	5.5	5.5	5.1	5.0	3.8	3.0
	4:00	5.4	3.6	10.0	5.5	5.5	5.2	5.0	3.8	3.0
	4:30	5.4	3.6	10.0	5.6	5.5	5.3	5.0	3.8	3.2
	5:00	5.4	3.6	10.0	5.6	5.5	5.3	5.0	3.8	3.5
	5:30	5.5	3.6	10.0	5.6	5.5	5.3	4.5	3.7	3.5
	6:00	5.4	3.5	10.0	5.5	5.4	5.3	4.5	3.5	3.5
	6:30	5.3	3.4	10.0	5.4	5.4	5.3	4.5	3.3	3.5
	7:00	5.2	3.3	10.0	5.4	5.0	5.3	4.5	3.1	3.5
	7:30	5.2	3.2	10.0	5.4	4.7	5.3	4.5	2.9	3.5
	8:00	5.1	3.0	8.7	5.4	4.3	5.3	4.0	2.5	3.4
	8:30	4.8	2.9	7.3	5.3	3.8	5.2	3.5	2.3	3.2
	9:00	4.6	2.8	6.0	5.2	3.7	5.0	3.0	2.1	3.0
	9:30	4.6	2.7	5.0	5.0	3.5	5.0	2.6	2.0	2.7
	10:00	4.6	2.7	5.1	5.0	3.5	4.8	2.9	1.8	2.5
	10:30	4.6	2.7	5.0	5.0	3.5	4.6	2.9	1.7	2.3
	11:00	4.5	2.7	6.0	5.0	3.4	4.4	2.5	1.6	1.9
	11:30	4.5	2.7	6.3	5.0	3.4	4.3	2.7	1.6	1.5
	12:00	4.7	2.8	6.2	5.0	3.5	4.0	2.7	1.5	1.3
	12:30	4.7	2.8	6.0	5.0	3.5	3.9	2.7	1.5	1.2
	13:00	4.7	2.8	7.4	5.0	3.5	3.8	2.7	1.6	1.0
	13:30	4.7	2.7	8.0	5.0	3.5	3.7	2.7	1.6	1.0
	14:00	4.8	2.7	7.6	5.0	3.5	3.7	3.0	1.6	1.0
	14:30	4.8	2.9	8.0	5.0	3.5	3.7	3.0	1.6	1.0
	15:00	4.9	3.0	8.2	5.0	3.5	3.7	3.0	1.6	1.0
	15:30	4.8	3.0	8.5	5.0	3.5	3.6	3.2	1.6	1.2
	16:00	5.0	3.0	9.2	5.0	3.7	3.9	3.2	1.6	1.1
	16:30	4.9	3.0	9.5	5.1	3.7	3.9	3.2	1.6	1.0
	17:00	5.0	3.0	9.5	5.1	3.7	4.0	3.2	1.7	1.0
	17:30	4.8	3.0	10.0	5.2	3.7	3.9	3.2	1.8	1.0
	18:00	4.7	3.1	8.0	5.2	3.7	3.9	3.1	1.8	1.3
	18:30	4.7	3.1	9.4	5.2	3.7	4.0	3.2	1.8	1.3
	19:00	4.7	3.1	8.8	5.2	3.8	4.0	3.5	1.9	1.3
	19:30	4.7	3.1	7.5	5.2	4.0	4.0	3.5	1.9	1.3
	20:00	4.8	3.2	7.7	5.2	3.9	4.0	3.5	2.0	1.3
	20:30	5.0	3.2	7.3	5.2	4.0	4.0	3.1	2.0	1.3
	21:00	5.0	3.2	7.3	5.2	3.9	4.0	3.5	2.1	1.3
	21:30	5.0	3.3	7.3	5.2	4.3	4.1	3.6	2.1	1.4
	22:00	5.0	3.3	8.3	5.2	4.3	4.1	3.7	2.2	1.4
	22:30	5.0	3.4	8.5	5.2	4.4	4.2	3.8	2.2	1.4
	23:00	5.0	3.4	8.5	5.2	4.5	4.2	4.1	2.4	1.4
	23:30	5.0	3.5	9.2	5.2	4.5	4.3	4.3	2.5	1.4
6/13	0:00	5.2	3.5	10.0	5.2	4.7	4.4	4.5	2.6	1.5
	0:30	5.1	3.5	10.0	5.2	5.0	4.4	4.5	2.7	1.7
	1:00	5.1	3.5	10.0	5.3	5.1	4.5	4.5	3.0	1.7
	1:30	5.1	3.6	10.0	5.4	5.3	4.5	4.6	3.3	1.8
	2:00	5.1	3.6	10.0	5.4	5.5	4.6	4.8	3.5	2.0
	2:30	5.2	3.6	10.0	5.4	5.5	4.7	4.8	3.6	2.1
	3:00	5.3	3.6	10.0	5.5	5.5	5.0	5.0	3.8	2.1
	3:30	5.3	3.6	10.0	5.5	5.6	5.0	4.9	3.8	2.5
	4:00	5.3	3.6	10.0	5.5	5.6	5.0	4.9	3.8	2.9
	4:30	5.3	3.7	10.0	5.5	5.6	5.2	4.9	3.8	3.0
	5:00	5.3	3.6	10.0	5.5	5.6	5.3	4.9	3.8	3.1
	5:30	5.3	3.6	10.0	5.5	5.6	5.3	4.9	3.8	3.2
	6:00	5.3	3.5	10.0	5.6	5.6	5.3	4.9	3.8	3.4
	6:30	5.2	3.5	10.0	5.6	5.5	5.3	4.8	3.6	3.1
	7:00	5.2	3.4	10.0	5.6	5.4	5.3	4.6	3.5	3.4
	7:30	5.2	3.3	7.5	5.6	5.3	5.3	4.6	3.3	3.4
	8:00	5.0	3.2	5.0	5.6	5.0	5.3	4.5	3.0	3.4
	8:30	5.0	3.0	6.0	5.5	4.6	5.3	4.0	2.6	3.4
	9:00	4.8	2.7	4.0	5.1	4.3	5.3	3.8	2.5	3.2

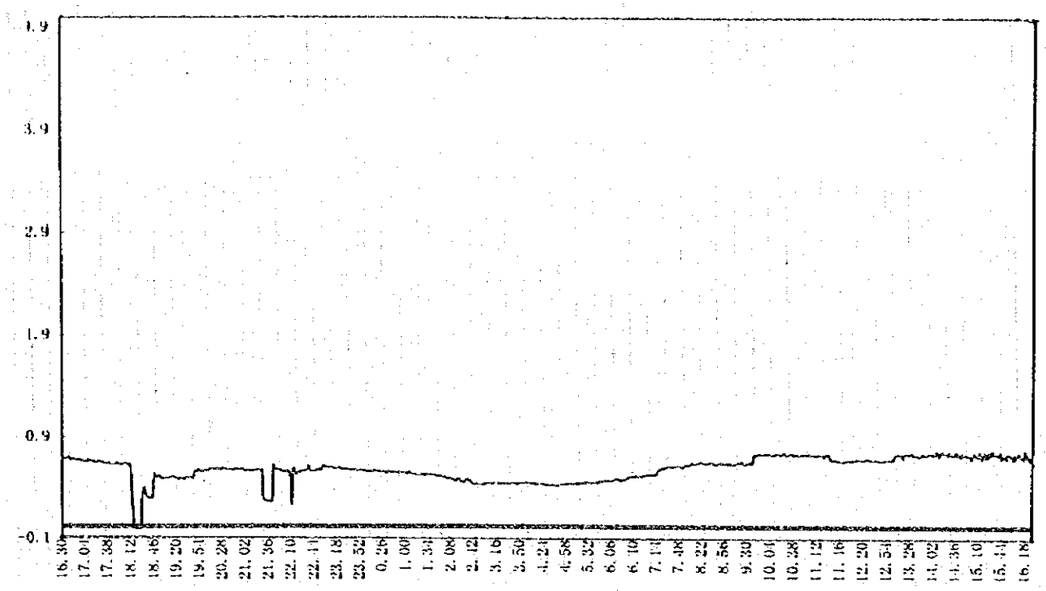
MEASUREMENT PRESSURE DATA

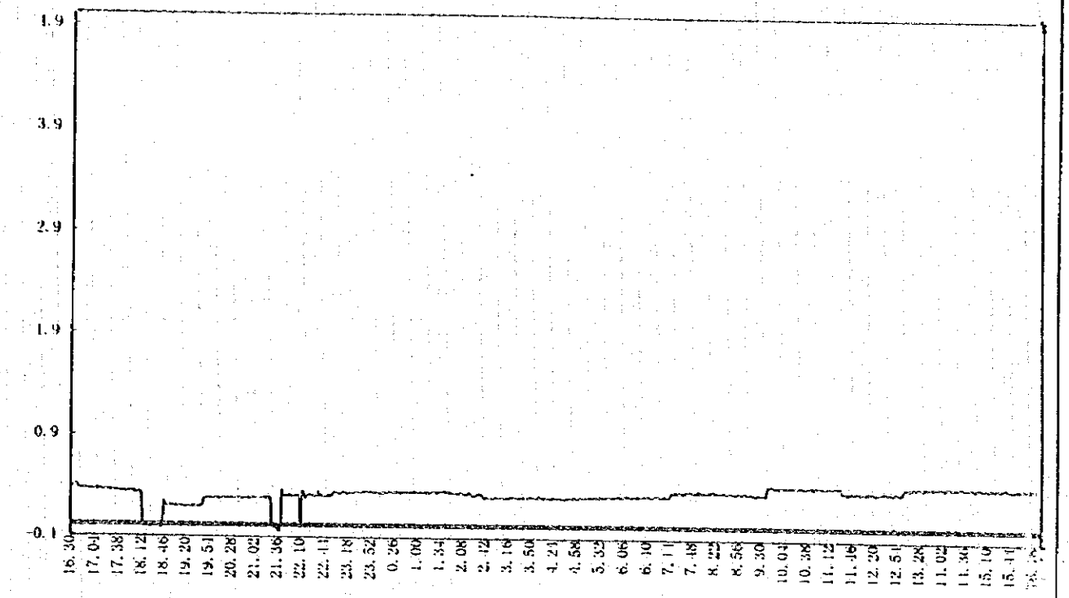
MEASUREMENT PERIOD												10.june.97to13june.97
	PointNo	MO2-P2	DO5-P1	DO6-P1	DO4-P2	B03-P1	D10-P3	D10-P4	D10-P2	D10-P6	D10-P9	
DATE	Time	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	Kgf/Cm2	
8/10	11:00	4.1										
	11:30	4.3	3.7									
	12:00	4.3	3.7	4.5	3.2							
	12:30	4.2	3.6	4.2	3.0	2.0						
	13:00	4.1	3.6	4.9	3.0	2.0	4.8		3.5			
	13:30	4.1	3.6	5.2	3.0	2.0	4.9		3.6			
	14:00	4.3	3.7	5.2	2.9	2.0	5.0	3.5	3.6	2.8	1.9	
	14:30	4.2	3.6	5.2	2.9	2.0	5.0	3.5	3.6	2.8	1.9	
	15:00	4.3	3.6	5.2	2.9	2.0	5.0	3.5	3.6	2.5	1.8	
	15:30	4.3	3.6	5.3	2.9	2.0	5.0	3.5	3.6	2.9	1.8	
	16:00	4.4	3.7	5.3	3.0	2.0	5.0	3.5	3.7	3.0	1.7	
	16:30	4.5	3.7	5.3	3.0	2.0	5.1	3.5	3.8	3.0	1.7	
	17:00	4.5	3.6	5.3	3.0	2.0	5.1	3.5	3.8	3.0	1.7	
	17:30	4.5	3.6	5.3	3.2	2.0	5.1	3.7	3.8	3.0	1.7	
	18:00	4.4	3.5	5.0	3.0	2.0	5.1	4.0	3.8	3.0	1.8	
	18:30	4.4	3.6	5.0	3.1	0.7	5.1	3.7	3.8	3.0	1.7	
	19:00	4.3	3.6	5.2	3.3	0.8	5.2	4.0	3.8	3.0	1.7	
	19:30	4.5	3.7	5.3	3.3	1.0	5.2	3.8	3.8	3.0	1.7	
	20:00	4.5	3.7	5.3	3.3	1.0	5.3	3.8	3.9	3.3	1.8	
	20:30	4.6	3.7	5.3	3.3	1.3	5.3	3.8	3.9	3.3	1.8	
	21:00	4.6	3.8	5.3	3.4	1.4	5.5	4.0	4.0	3.3	1.9	
	21:30	4.5	3.9	5.3	3.5	1.5	5.5	4.0	4.1	3.6	2.6	
	22:00	4.6	4.0	5.3	3.4	1.6	5.6	4.2	4.1	3.7	2.8	
	22:30	4.5	4.0	5.3	3.5	1.7	5.7	4.3	4.2	3.9	2.5	
	23:00	4.6	4.0	5.3	3.5	1.7	5.7	4.3	4.2	3.9	2.5	
	23:30	4.5	4.0	5.3	3.5	1.8	5.7	4.3	4.2	4.0	2.5	
8/11	00:00	4.6	4.2	5.3	3.6	2.0	5.9	4.4	4.2	4.0	2.5	
	00:30	4.7	4.3	5.4	3.6	2.2	6.0	4.5	4.4	4.1	3.0	
	01:00	4.7	4.3	5.5	3.7	2.2	6.0	4.8	4.4	4.2	2.9	
	01:30	4.8	4.3	5.5	3.7	2.2	6.2	4.8	4.5	4.4	3.0	
	02:00	4.8	4.5	5.5	3.7	2.3	6.4	4.8	4.7	4.7	3.5	
	02:30	5.0	4.5	5.6	3.8	2.4	6.4	4.9	4.7	4.7	3.5	
	03:00	5.0	4.7	5.6	3.9	2.4	6.5	5.0	4.8	4.9	3.7	
	03:30	5.0	4.7	5.7	3.9	2.5	6.4	5.0	4.8	5.0	3.9	
	04:00	5.0	4.7	5.7	3.9	2.5	6.4	5.0	4.9	5.0	4.0	
	04:30	5.0	4.7	5.7	3.9	2.5	6.4	5.0	4.9	5.0	4.0	
	05:00	5.0	4.7	5.7	3.9	2.5	6.4	5.0	5.0	5.1	4.0	
	05:30	5.0	4.5	5.7	3.9	2.1	6.4	5.0	5.0	5.1	4.0	
	06:00	5.0	4.5	5.8	3.9	2.1	6.4	5.0	5.0	5.1	4.0	
	06:30	5.0	4.5	5.8	3.9	2.1	6.4	4.9	4.9	5.1	3.9	
	07:00	4.9	4.3	5.7	3.8	2.5	6.4	4.7	4.8	4.5	3.6	
	07:30	4.7	4.3	5.7	3.7	2.5	6.1	4.5	4.6	4.4	3.0	
	08:00	4.5	4.0	5.6	3.7	2.5	5.9	4.3	5.0	4.5	3.2	
	08:30	4.5	3.8	5.5	3.5	2.4	5.7	4.0	4.3	4.2	3.0	
	09:00	4.4	3.7	5.2	3.2	2.4	5.4	3.9	4.0	3.8	2.7	
	09:30	4.4	3.6	5.1	3.2	2.3	5.2	3.7	4.0	3.5	2.9	
	10:00	4.4	3.6	5.3	3.1	2.2	5.0	3.5	4.0	3.3	2.3	
	10:30	4.3	3.6	5.3	3.1	2.0	4.9	3.5	4.0	2.7	2.3	
	11:00		3.5	4.0	3.2	2.0	4.8	3.5	4.0	2.6	2.1	
	11:30			5.2	3.2	2.0	4.8	3.4	3.7	2.4	2.2	
	12:00					2.0	4.9	3.4	4.0	2.8	2.5	
	12:30						4.8	3.3	3.8	2.6	2.3	
	13:00							3.3		2.7	2.2	
	13:30										2.0	
	14:00											
	14:30											
	15:00											

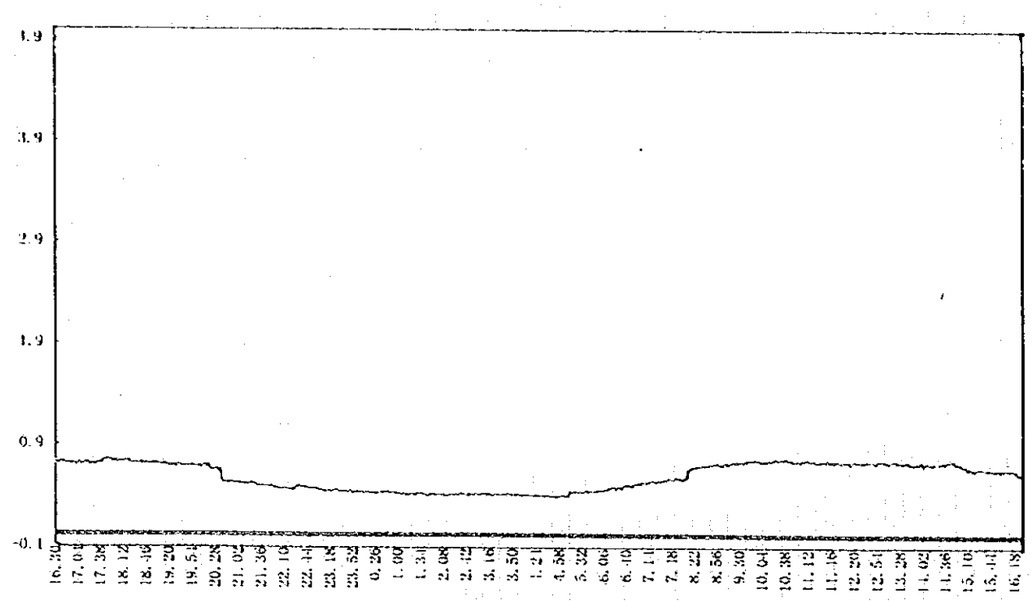


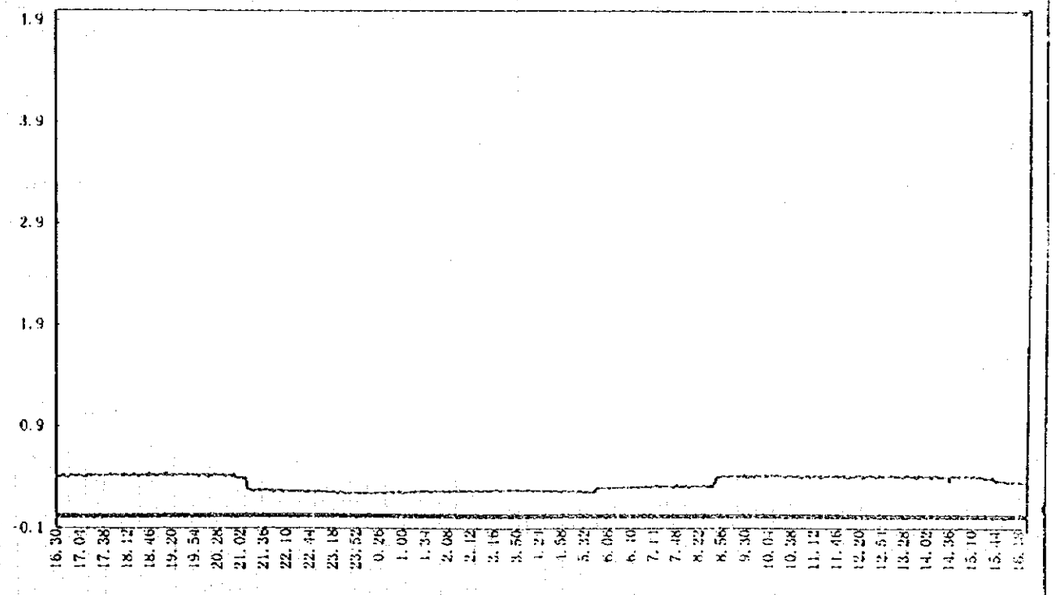


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY
Flow Data at Reservoir(IIE)
NIPPON KOEI CO., LTD.

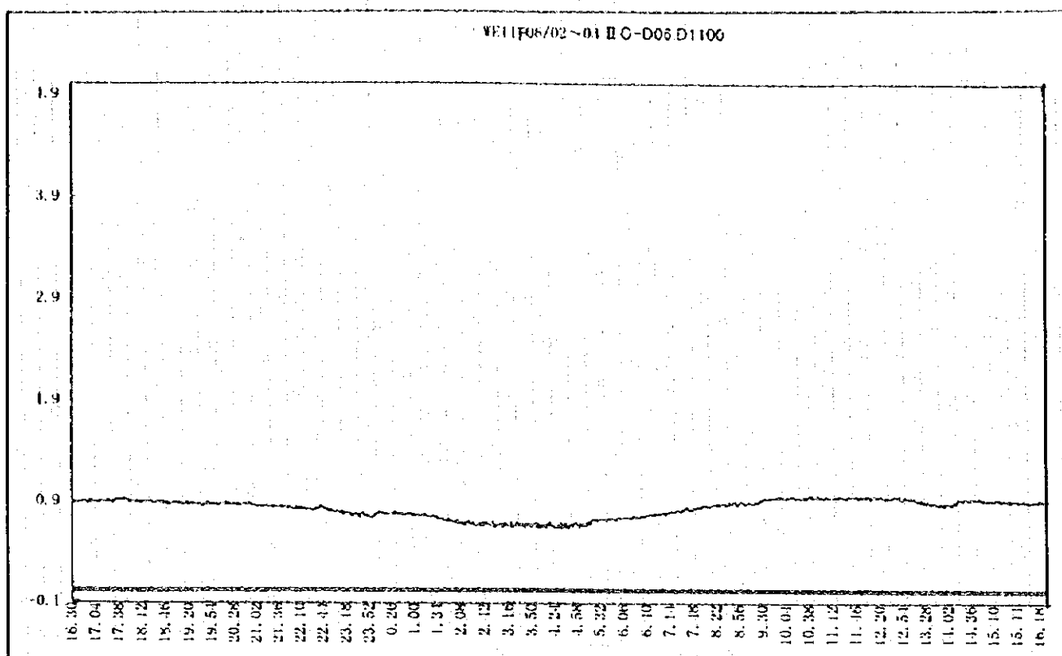


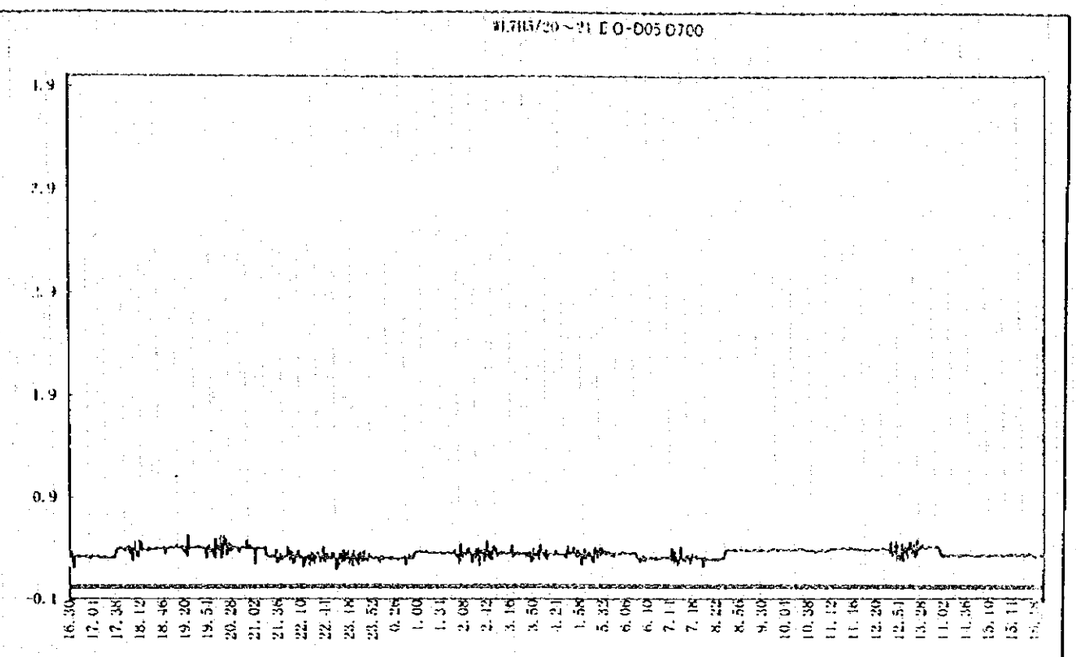




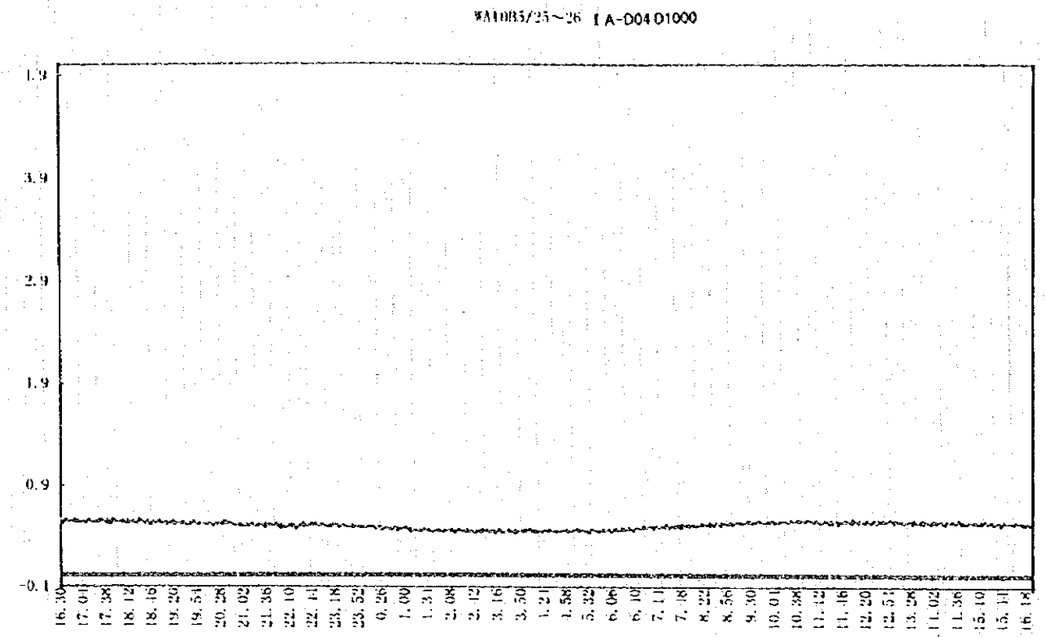


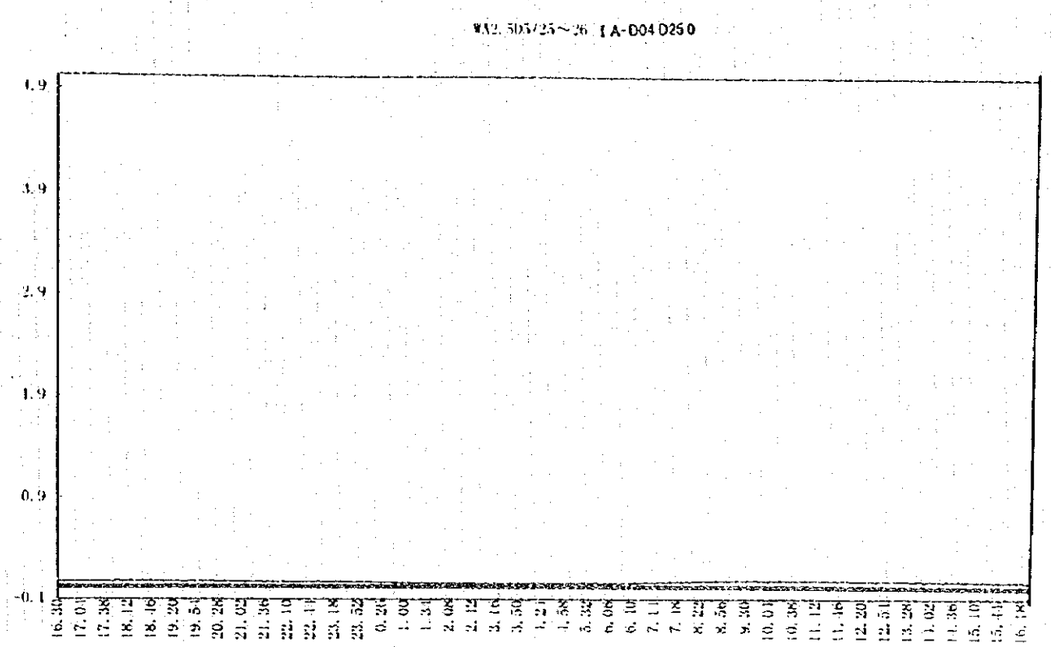
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY
Flow Data at Reservoir(M1&M2)
NIPPON KOEI CO., LTD.

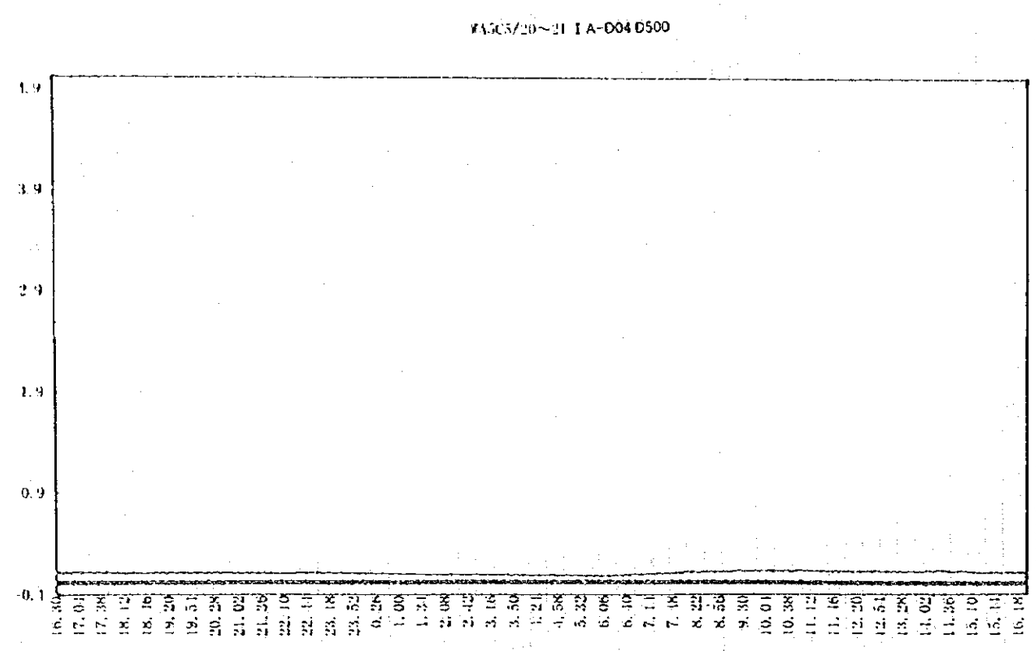


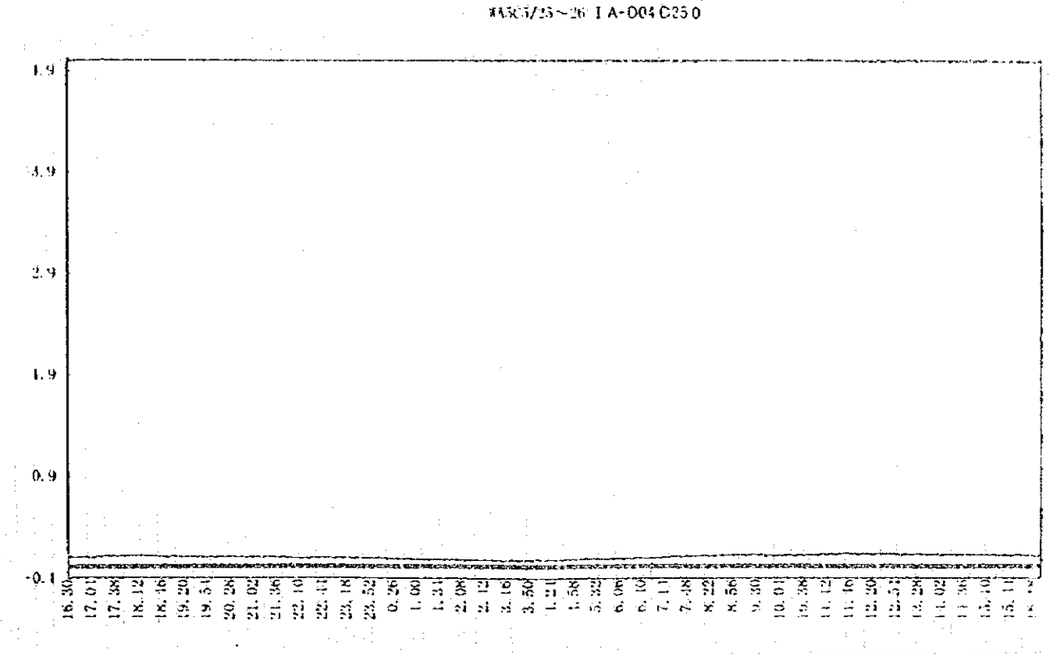


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY	
Flow Data at Reservoir(H0)	
NIPPON KOEI CO., LTD.	







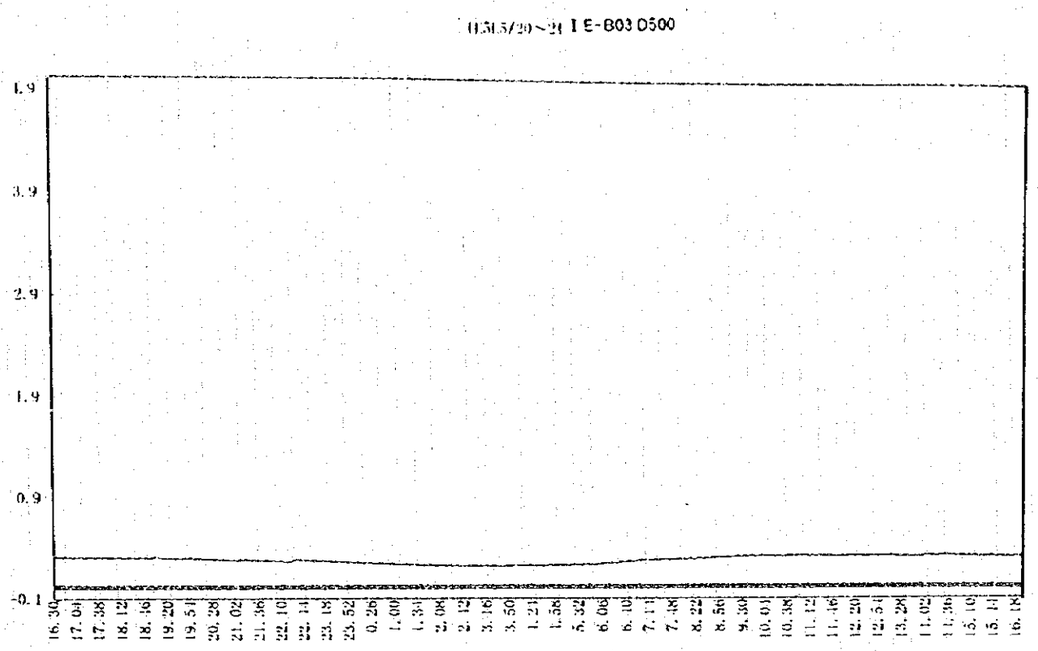


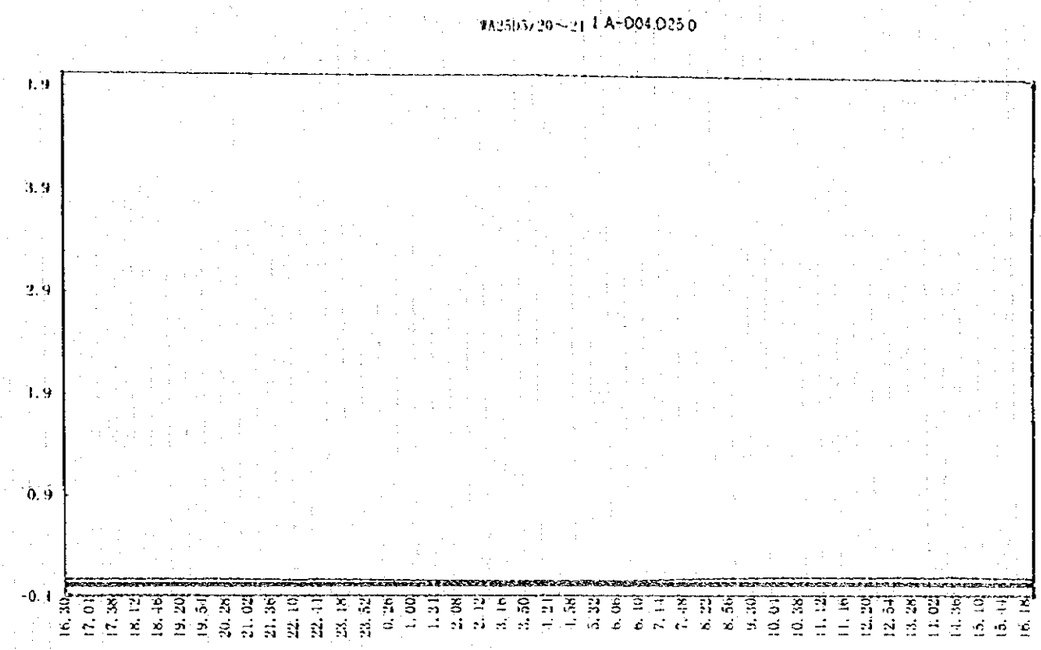
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

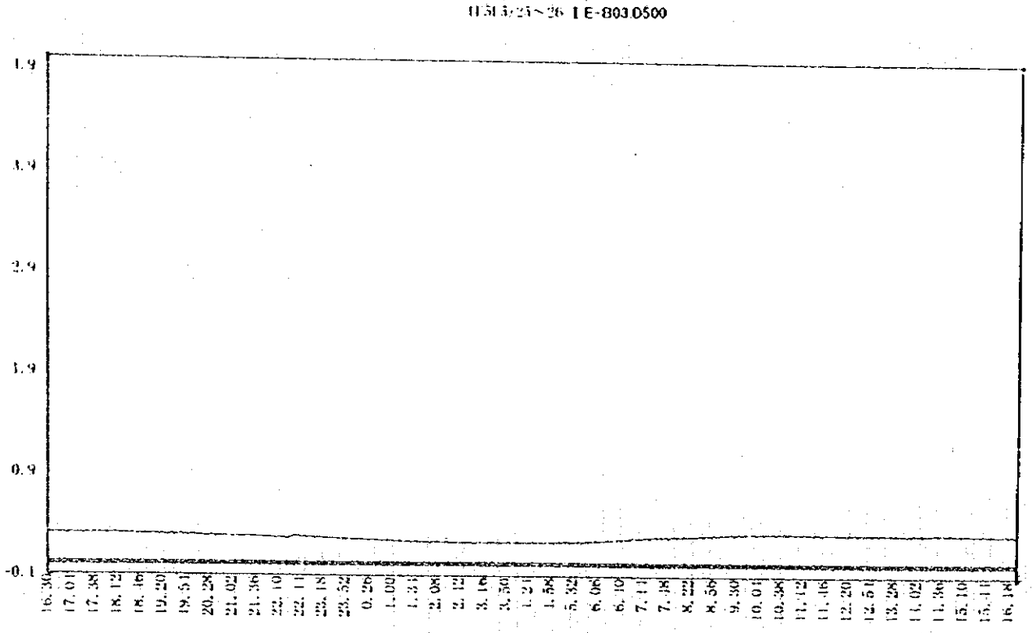
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY

Flow Data at Reservoir(IA)

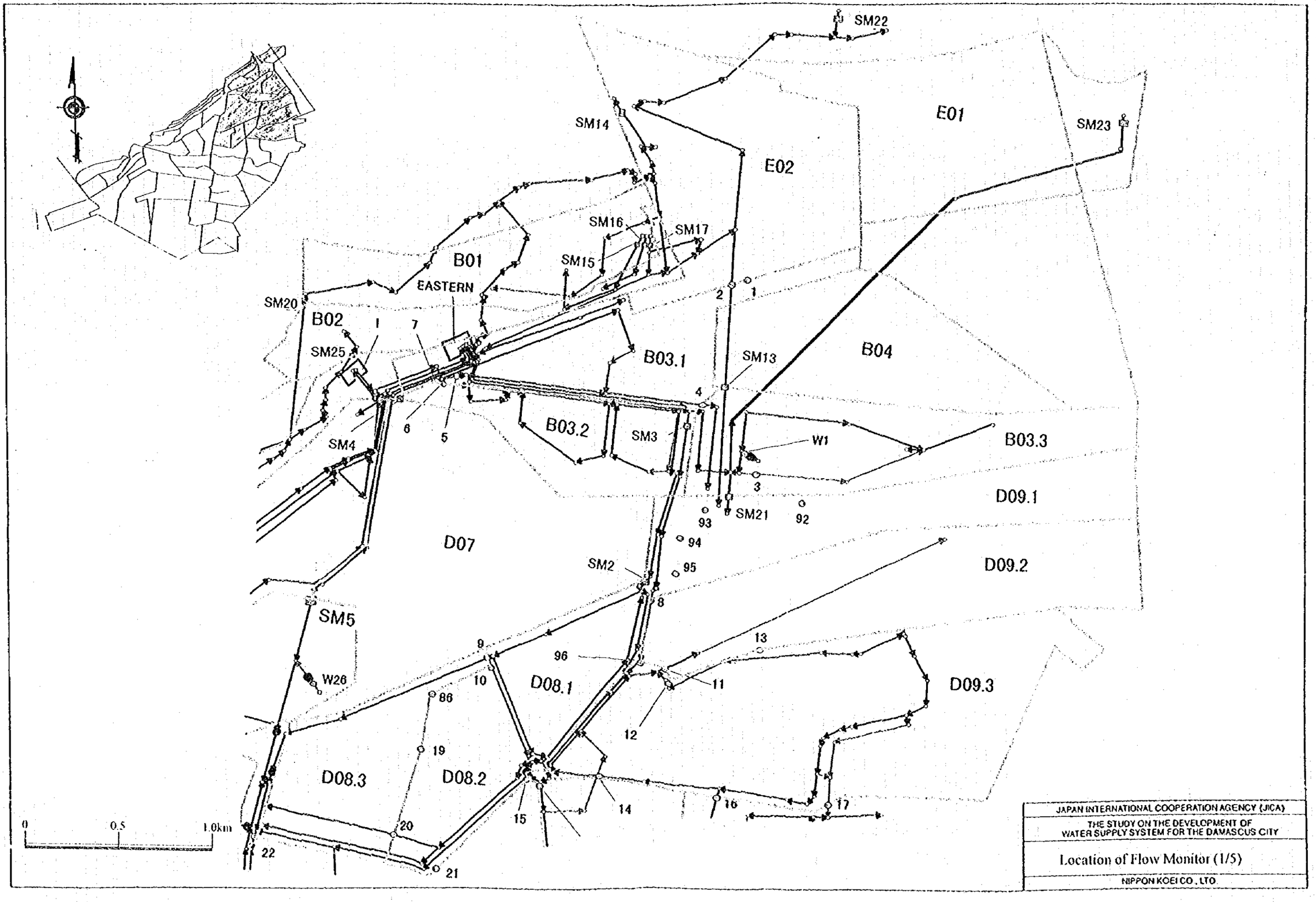
NIPPON KOEI CO., LTD.

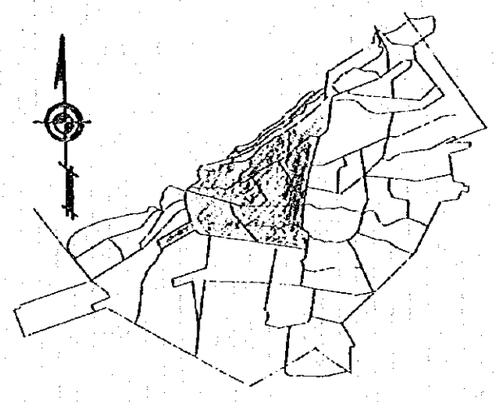


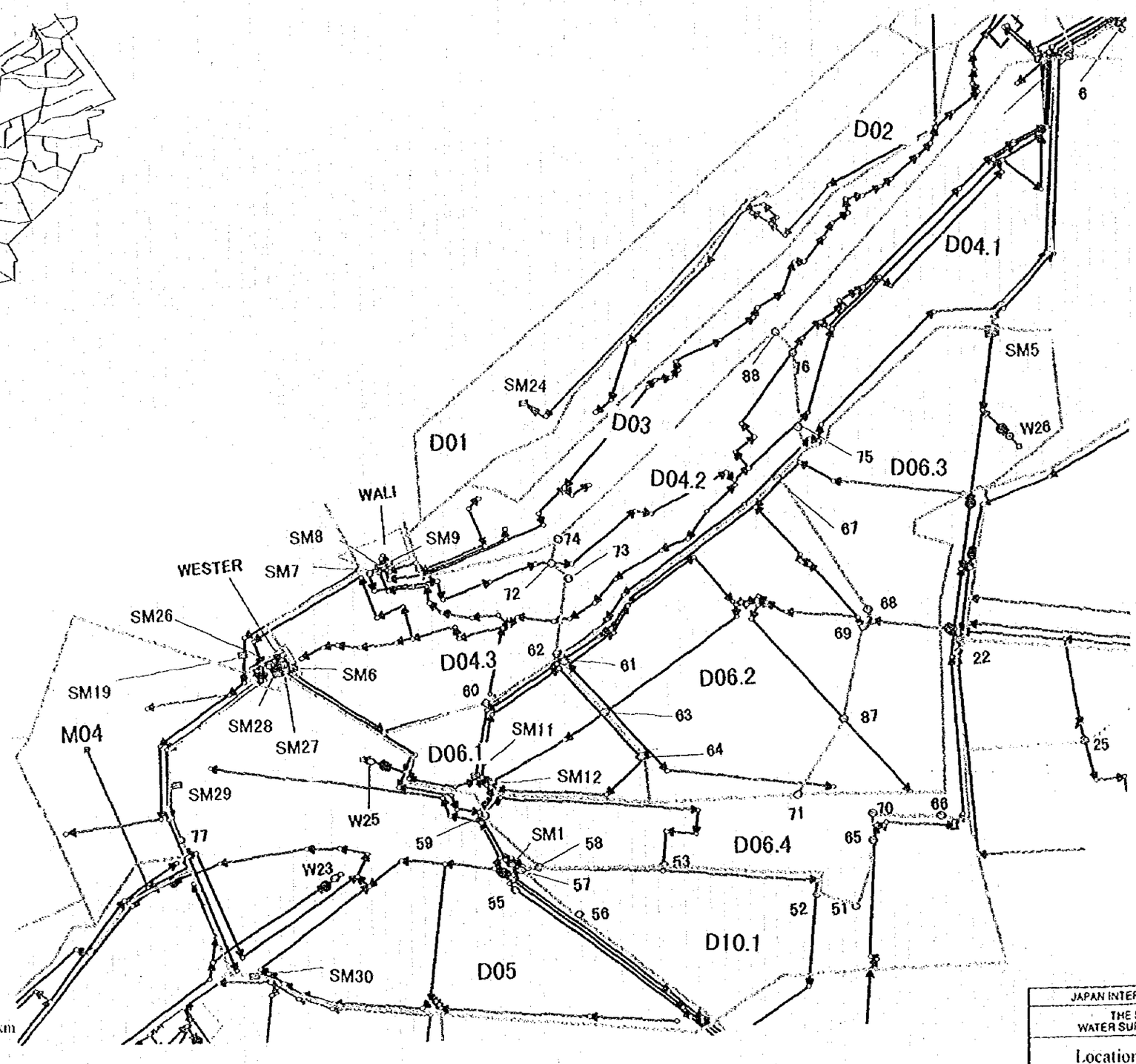




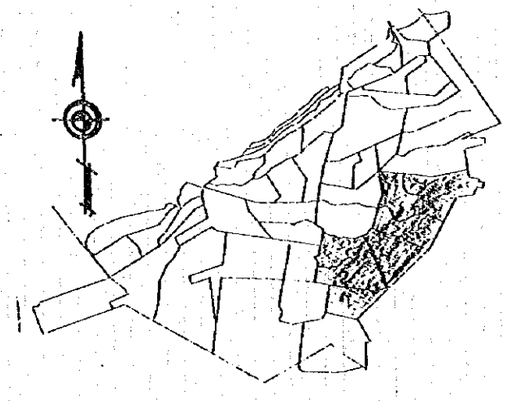
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY
Flow Data at Reservoir(IE&IA)
NIPPON KOEI CO., LTD.

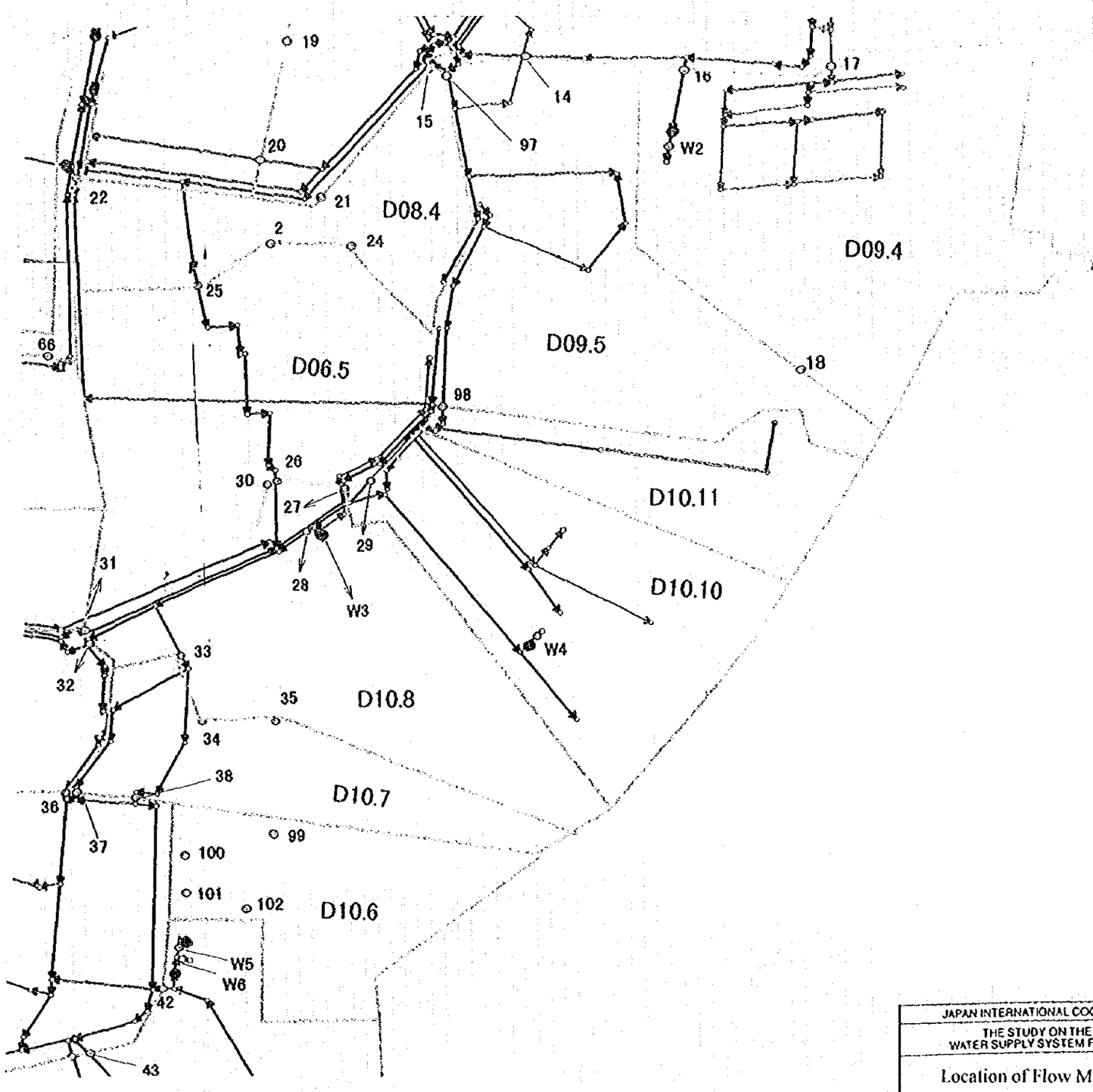

SM22
E01
SM23
SM14
E02
SM16
SM17
SM15
B01
EASTERN
SM20
B02
SM25
B03.1
SM13
B04
B03.2
SM3
W1
B03.3
SM4
D09.1
SM21
D07
SM2
D09.2
SM5
W26
D08.1
D09.3
D08.3
D08.2
0
0.5
1.0km
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY
Location of Flow Monitor (1/5)
NIPPON KOEI CO., LTD.



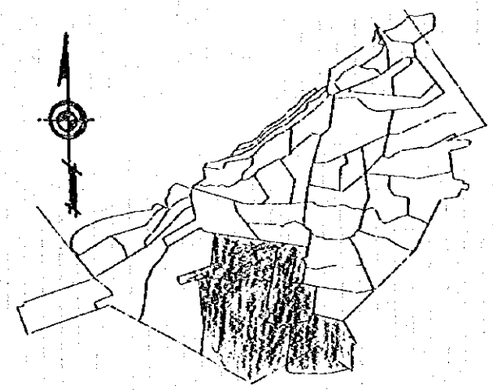


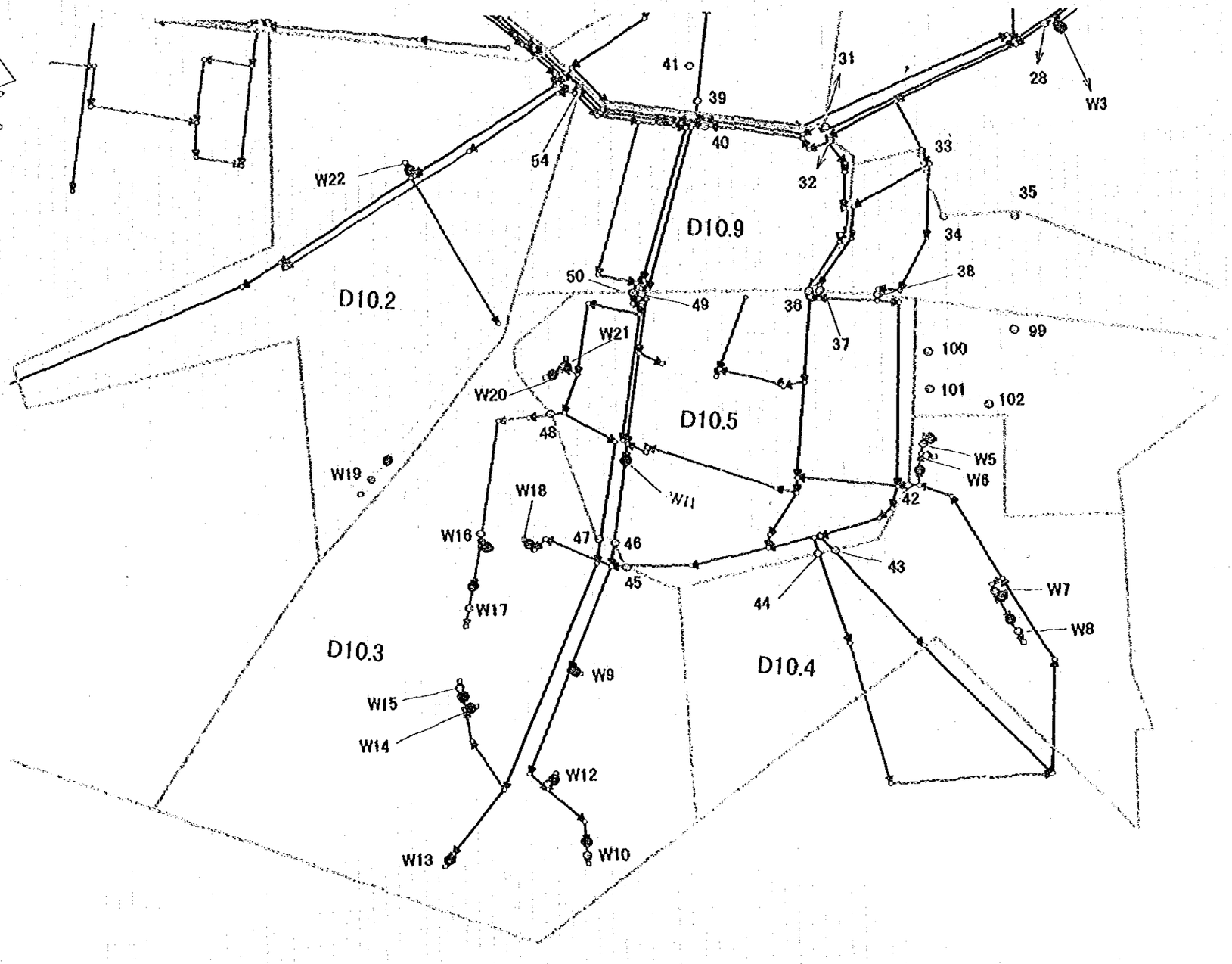
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY
Location of Flow Monitor (2/5)
NIPPON KOEI CO., LTD.



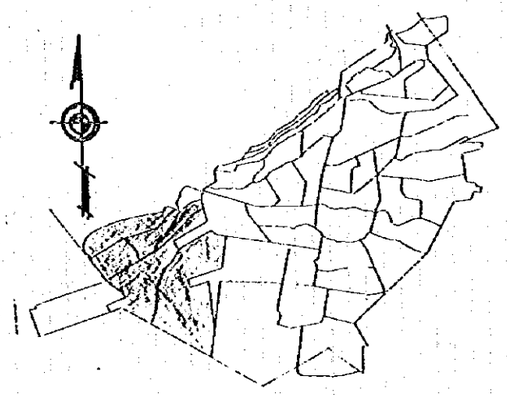


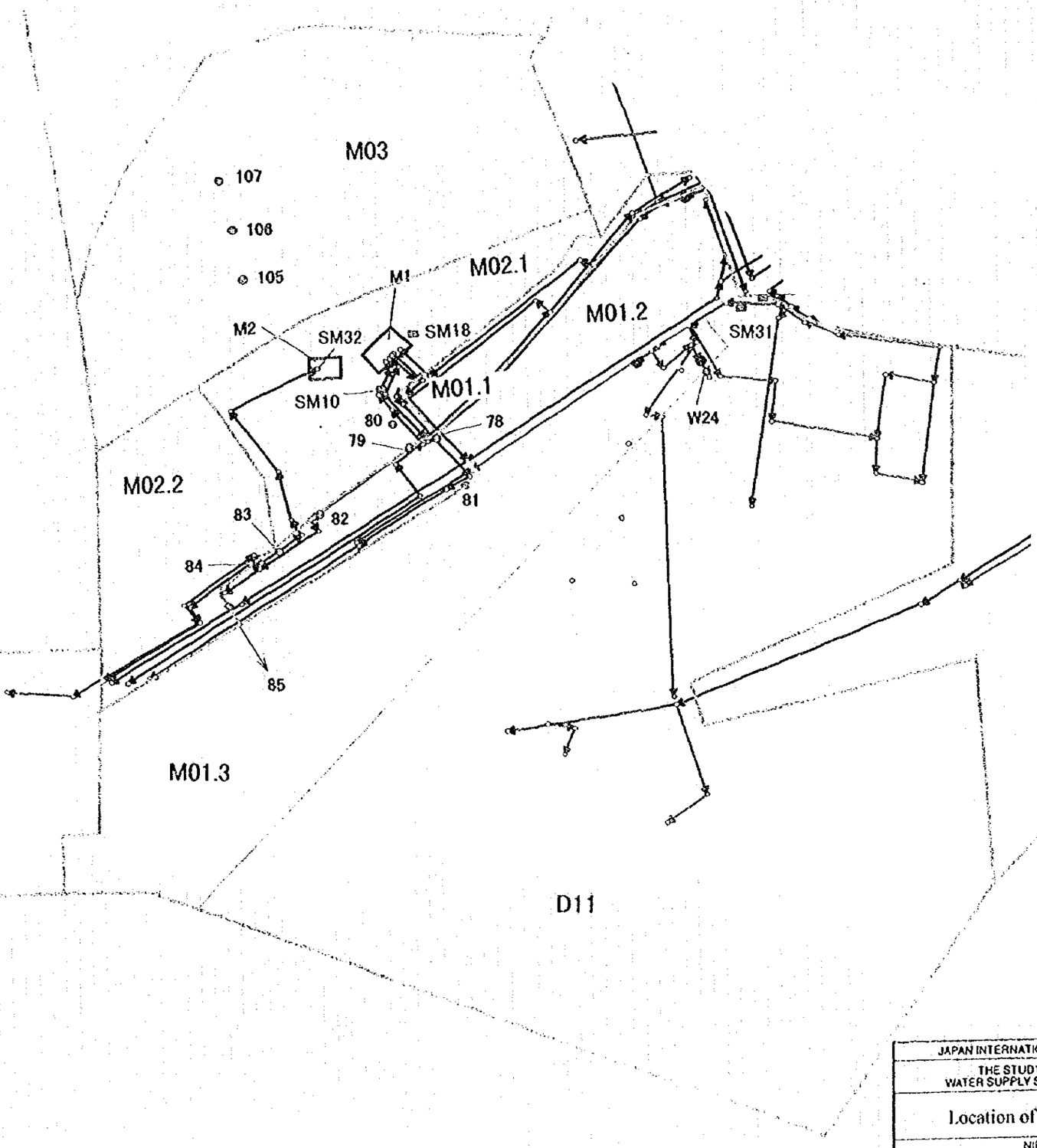
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY
Location of Flow Monitor (3/5)
NIPPON KOEI CO., LTD.





JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY
Location of Flow Monitor (4/5)
NIPPON KOEI CO., LTD.





0 0.5 1.0km

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE STUDY ON THE DEVELOPMENT OF WATER SUPPLY SYSTEM FOR THE DAMASCUS CITY

Location of Flow Monitor (5/5)

NIPPON KOEI CO., LTD.