LIST OF ANNEXES

Project Design Matrix for Evaluation (Second Phase of National Standards and Calibration Laboratory in Syria)

NARRATIVE SUMMARY	Detailed Contents of ONARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<Overall Goal> Establish a measurement standards (traceability) system in Syria.	<Overall Goal> Measurement standards (traceability) system will be established in Syria.	1. Establishments and activities of the secondary and tertiary calibration orgnizations. 2. The number of NSCL's calibration services supplied to the secondary organizations, and their content.	1. Syrian measurement traceability system. 2. Calibration records and calibration certificates.	a. Support will be provided in accordance with policies, in order to maintain the traceability of measurement standards in Syria.
<Project Purpose> Make NSCL a national standards laboratory which can supply calibration servicess regarding length, mass, pressure, electricity and temperature to domestic industries in Syria.	<Project Purpose> NSCL will become a national standards laboratory which can supply calibration services regarding length, mass, pressure, electricity and temperature to domestic industries in Syria.	1. Increase of fields of measurement standards. 2. Range and accuracy of calibration service which can be provided. 3. The increase in calibration services provided regarding electricity. 4. Customers satisfaction of calibration services regarding electricity.	1. NSCL list of measurent standards. 2-1. NSCL list of Calibration services capabilities. 2-2. Calibration certificates. 3. Control graph of NSCL services. 4. Results of questionnaire and interview on customer satisfaction.	a. Measurement law will be established. b. Secondary and tertiary organizations will be established to provide standards for the beneficiaries. c. Industry standards will be established and the standardization of industrial products will be promoted. d. Standards of length, mass and pressure will be internationally traceable by overseas calibration or international comparison.
<Outputs> 1. Standards of length, mass and pressure, as well as relevant measuring and calibration techniques are to be established. 2. Applications of measurement standards system regarding electricity and temperature as well as a maintenance and control system, are to be strengthened. 3. The range of calibration servicess regarding electricity is to be widened. 4. Measurement engineers are to be trained, and their numbers are increased. 5. The importance of measurement standards are to become widely recognied.	0. Operation system of the Project will be established. 1. Standards of length, mass and pressure, as well as relevant measuring and calibration techniques will be established. 2. Measurement standards system and management system regarding electricity and temperature will be improved. 3. Calibration services regarding electricity will be more widely extended. 4. Technical capability of the counterpart personnel (C/P) will be upgraded.	0. Organization, Staif allocation, budget and settlement account. 1-1. Equipment inventory. 1-2. Standards maintaining condition. 1-3. Compillation of operation manuals prepared or obtained. 1-4. Compillation of calibration procedures prepared. 1-5. Temperature and humidity of the laboratory. 2-1. Progress of inhouse-comparison between primary standards. 2-2. Quality manual prepared. 2-3. Compillation of procedures checked, revised and prepared. 3-1. Working condition of the calibration vehicle. 3-2. The number of calibrations provided by the calibration vehicle. 3-3. The number of customers and items. 4-1. Histrory of allocation of the C/P. 4-2. Progress and evaluation of technical transfer. 4-3. The number of in-house seminars by the C/P. 4-4. The number technical books and references obtained.	0. Organization chart, Administration record, Accounting record, Personnel record. 1-1. Ledgers of equipment inventory, Equipment monthly report. 1-2. Calibration records (Historical cards). 1-3. Operation manuals and their list. 1-4. Calibration procedures and their list. 1-5. Temperature and humidity monitoring records. 2-1. Calibration report and their list. 2-2. NSCL Quality manual. 2-3. Calibration manuals and their list. 3-1. Operation records of NSCL calibration service car. 3-2. Control graph of NSCL services. 3-3. Calibration service records. 4-1. Allocation record of the C/P. 4-2. Evaluation sheets of technical transfer. 4-3. Seminar records in NSCL. 4-4. Register of books and references.	a. The Syrian government approves the NSCL as its only national measurement standards laboratory. b. Syria requests to expand the functions of NSCL. c. The NSCL's vision and policies are in harmony with the goal of the industry.

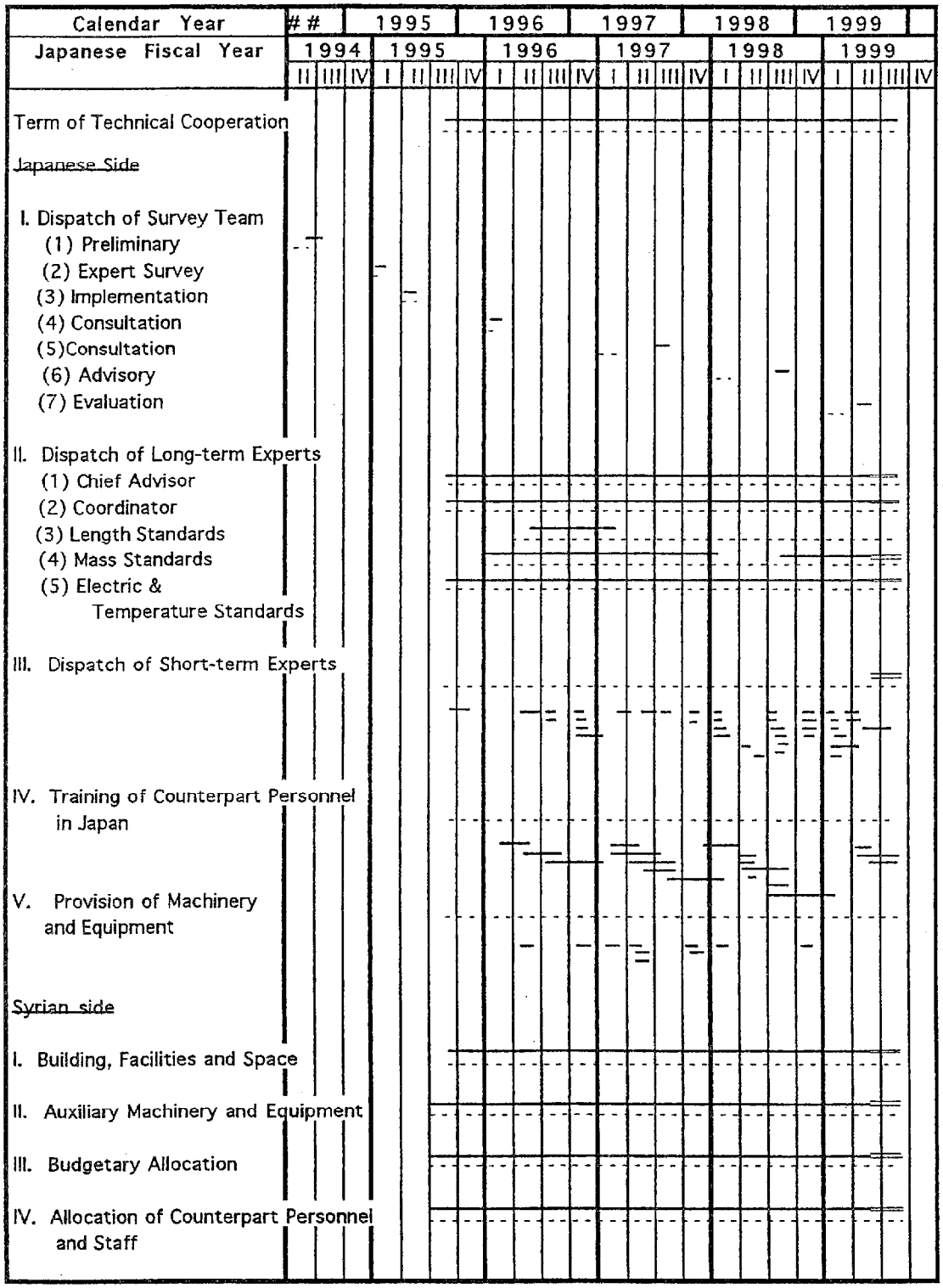
<Activities>		<Inputs>		
		The Syrian side	The Japanese side	
1-1. Install a measurement standards system regarding length, mass and pressure. (J) 1-2. Prepare operating manuals for the measurement standards system and calibraion devices. (B) 1-3. Prepare manuals for maintenance and control of the measurement control system and calibration devices. (B) 1-4. Prepare procedures for calibration services. (B) 1-5. Design, procure, install, operate and maintain the air conditioning system. (B) 1-6. Open a small workshop to maintain measurement devices. (B) 2-1. Install additional primary standard devices. (J) 2-2. Check, revise or create quality manuals, various control manuals and calibration procedures. (B) 3-1. Procure a calibration vehicle. (J) 3-2. Operate a calibration vehicle to provide calibration servicess regarding electricity at the sites disignated by the beneficiaries. (S) 4-1. Prepare and implement C/Ps training programs in Japan. (B) 4-2. Experts provide technical advice to the C/Ps by utilizing the NSCL measurement standards system. (J) 4-3. C/Ps provide technical advice to other employees. (S) 4-4. Obtain technical books and references regarding length, mass and pressure to expand the library. (S) 5-1. Strengthen public relations activities to promote the importance of calibration in the industory. (S) 5-2. Hold seminars regarding measurement standards. (B) 5-3. Hold open house of NSCL. (S)	0-1. Allocate staff as planned. 0-2. Formulate plans of activities. 0-3. Make budget plan with appropriate expenditures. 0-4. Establish and operate management system. 1-1. Make reconstruction plan of facilities and execute as planned. 1-2. Design, procure, install, operate and maintain the air conditioning system. 1-3. Procure, install and maintain measurement standards systems regarding length, mass and pressure. 1-4. Prepare operation manuals for the measurement standards systems and calibration devices. 1-5. Prepare procedures for the maintenance of the measurement standards systems and calibration devices. 1-6. Prepare procedures for calibration services. 1-7. Open a small workshop to maintain measurement standards equipment. 2-1. Procure, install and maintain additional primary standards equipment. 2-2. Review, revise or create a quality manual and various procedures. 3-1. Procure a calibration vehicle. 3-2. Operate and maintain a calibration vehicle to provide calibration services regarding electricity. 4-1. Assess the technical capabilities of the C/P through on-the-job-training (OJT). 4-2. Make a technical cooperation program. 4-3. Implement technical transfer to the C/P. 4-4. Evaluate the results of technical transfer to the C/P. 4-5. The C/P provide technical information to other staff. 4-6. Procure and register technical books and references regarding length, mass and pressure to expand the library.	(1) Land, building, facilities and space for the Project. (2) Allocation of the C/P Mass, Length, Pressure, Electricity and Administrative staff. (3) Local cost Necessary budget for the implementation of the Project.	(I) Dispatch of experts a. Long-term experts Chief advisor Coordinator Mass, Length, Electricity and Temperature Standards b. Short-term experts Appropriate number of short-term experts will be dispatched as necessity arises. (2) C/P training in Japan (3) Supporting local cost (4) Provision of machinery and Equipment	a. C/Ps and employees continue to work in NSCL. <Pre-Conditions> a. There are no major political, economic or social changes in Syria. b. Utilities such as electricity and water are provided regularly. c. Budget allocations necessary to have regular calibration of the transfer standards are secured. d. Periodical calibrations of electrical and temperature transfer standard are to be entrusted to overseas calibration autohrities to secure the traceability of international standards.

Note) S: Syrian side, J: Japanese side, B: Both sides

Chronological Review of the Project

Year	Month/Date	Item
1994	January	The Syrian government submitted a request for a project type technical cooperation to the Government of Japan.
	September	Dispatch of the Preliminary Study Team.
1995	April	Dispatch of the Experts Survey Team.
	July	Dispatch of the Implementation Study Tem.
	July 23	Signing of the Record of Discussions(R/D).
	December 1	Commencement of the Term of the Cooperation.
		Dispatch of the Japanese Long-term Experts (Chief Advisor & Coordinator).
1996	April 8	Dispatch of the Japanese Long-term Expert (Mass standards).
	May-August	Training of the 1st Syrian counterpart in Japan.
	May-June	Dispatch of the Consultation Team.
	August 12	Dispatch of the Japanese Long-term Expert (Length standards).
	September	Completion of the reconstruction of Length, Mass, Pressure Laboratory .
	October	Seminar in SSRC on "Measurement Traceability System" during the quality month in Syria by the Chief Advisor Mr.Noguchi
	November 14	Technical exchange scheme(organized by SASO) with SASO(Saudi Arabian Standards Organization) in Syria.
1997	May 20	Visit by SSRC Director.
	May 21	Visit and inspection by the Japanese Board of Audit team.
	May 23～28	Participation in the SIFA(Syria Industrial International Fair) 97.
	October	Dispatch of the Consultation Team.
	December	NSCL join APMP (Asia-Pacific Metrology Programme) as an associated member.

1998	January 11～17	Technical exchange scheme(organized by NSCL) with SIRIM in Malaysia.
	March 4	Press tour in NSCL by JICA Syria Office.
	March	Postponement of the dispatch of short-term experts because of the Iraq crisis.
	August 29～7	Participation in APMP meeting held in SIRIM Malaysia by NSCL Director Mr.Aghbar.
	October	Commencement of the calibration services by the calibration vehicle (electricity)
	October-November	Dispatch of the Advisory Team.
	December	Seminar in Damascus & Aleppo on "Measurement System in Japan" during the quality month in Syria by the project chief advisor Mr.Noguchi.
1999	May	Commencement of the calibration services of mass standards (partially).
	June	Commencement of the calibration services of length standards (partially)
	August-September	Dispatch of the Evaluation Team.



Note: 1. The Japanese fiscal year starts in April and ends in March.
2. This schedule is subjected to change in accordance with the progress of the Project.
3. The Long-term expert in the field II.(5) may be concurrently assigned as Chief Advisor.

Legend: ---- = Previous plan(1996) —— =actual / determined ═══ =plan

Technical Cooperation Program (TCP)

Calendar Year	#	1996				1997				1998				1999				00
Japanese Fiscal Year	# #		1996				1997				1998				1999			
	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Term of Technical Cooperation																		
Length																		
Standards and related measurement and calibration technology																		
(1) Measurement standards system practices																		
① System set-up																		
② Environmental condition set-up																		
③ System operation and management technology																		
④ Calibration methods and procedures																		
⑤ Calibration recording procedures																		
⑥ Training in calibration																		
(2) System accuracy management																		
① System measuring equipment accuracy check																		
② Calibration of low-level standards using high-level standards																		
③ Periodic calibration of measuring equipment																		
(3) System maintenance and management																		
① Maintenance and management of system component equipment and environmental conditions																		
② Asset master book management and registration of equipment																		
Mass																		
Standards and related measurement and calibration technology																		
(1) Measurement and traceability system theory																		
① Measurement system																		
② Traceability system																		
(2) Measurement standards system practices																		
① Principle, methods and construction																		
② System set-up																		
③ System operation and management technology																		
④ Environment condition set-up																		
⑤ Training in measurement and calibration																		
(3) Calibration technology																		
① Calibration methods and procedures																		
② Calibration practices of low-level standards using high-level standards																		
(4) System accuracy management																		
① System measuring equipment accuracy check																		
② Periodic calibration of standards and measuring equipment																		
(5) System maintenance and management																		
① Maintenance and management of system component equipment and environmental conditions																		
② Calibration recording procedures																		
③ Asset master book management and registration of equipment																		
④ Documents for calibration service																		

Technical Cooperation Program (TCP)

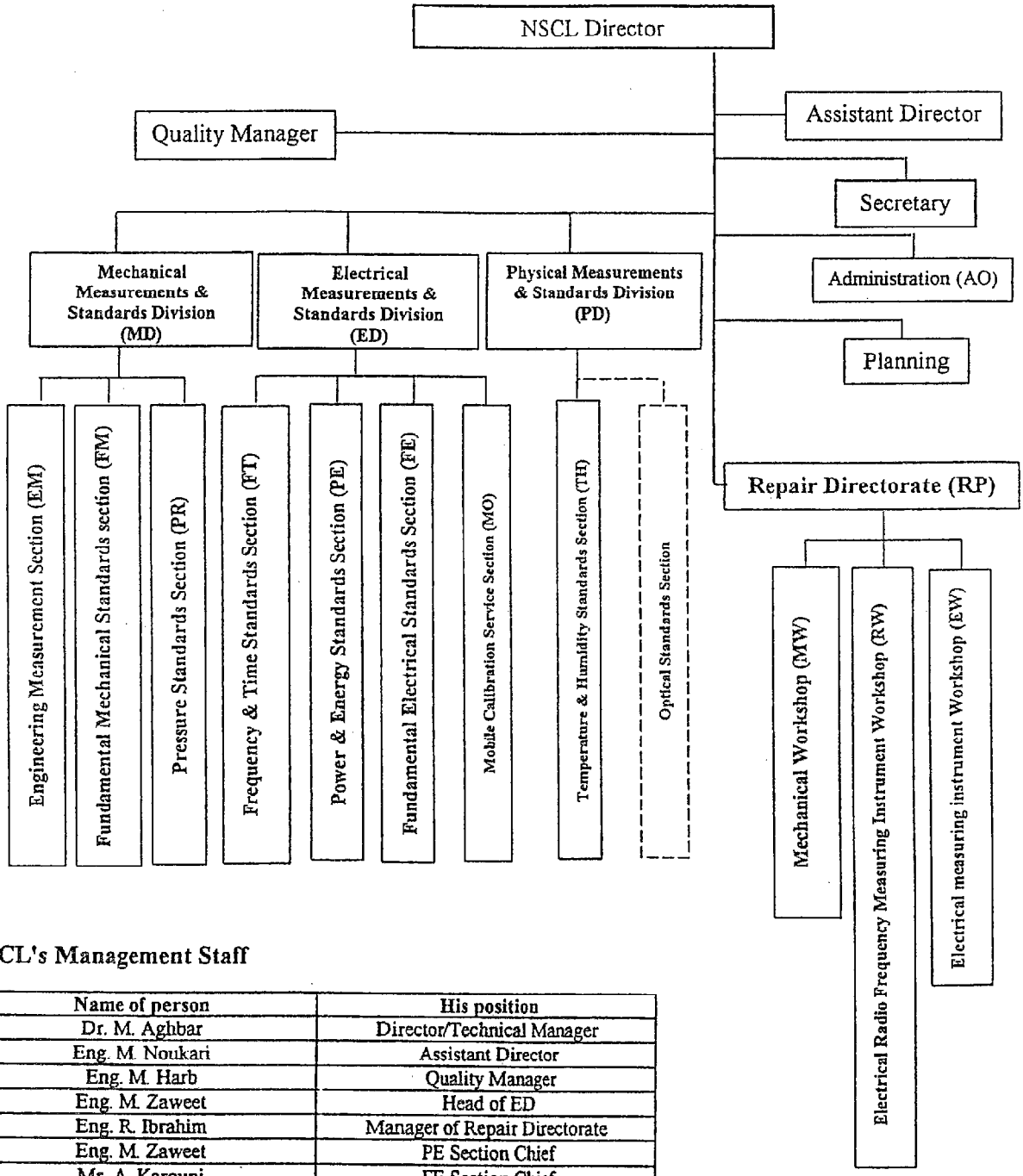
Calendar Year	#	1996		1997				1998				1999				00
Japanese Fiscal Year	# #	1996		1997				1998				1999				
	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Pressure																		
Standards and related measurement and calibration technology																		
(1) Measurement standards system practices																		
① System set-up																		
② Environmental condition set-up																		
③ System operation and management technology																		
④ Calibration methods and procedures																		
⑤ Calibration recording procedures																		
⑥ Training in calibration																		
(2) System accuracy management																		
① System measuring equipment accuracy check																		
② Calibration on low-level standards using high-level standards																		
③ Periodic calibration of measuring equipment																		
(3) System maintenance and management																		
① Maintenance and management of system component and environmental conditions																		
② Asset master book management and registration of equipment																		
Electric & Temperature																		
Standards and related measurement and calibration technology																		
(1) Operation of existing system																		
① System operation and management technology (Review and revision)																		
② Calibration methods and procedures (Review and revision)																		
③ Calibration recording procedures (Review and revision)																		
(2) System accuracy management																		
① Calibration of low-level standars using high-level standards (Review and revision)																		
② Periodic calibration of measuring equipment (Review and revision)																		
③ Calibration of primary standards using transferred standards																		
(3) Calibration vehicle operation and accuracy management of calibration system with vehicle																		
① Calibration system set-up																		
② Calibration vehicle operation																		
③ Accuracy check and periodical calibration of calibration system																		

no previous

Legend: - - - =previous plan(1997) — =implemented = =to be implemented

Organization chart of NSCL

Annex 5



NSCL's Management Staff

Name of person	His position
Dr. M. Aghbar	Director/Technical Manager
Eng. M. Noukari	Assistant Director
Eng. M. Harb	Quality Manager
Eng. M. Zaweet	Head of ED
Eng. R. Ibrahim	Manager of Repair Directorate
Eng. M. Zaweet	PE Section Chief
Mr. A. Karouni	FE Section Chief
Eng. M. Harb	TH Section Chief
Eng. B. Abo-Addas	FT Section Chief
Eng. S. Essa	FM Section Chief
Eng. Z. Kanakrieh	EM Section Chief
Eng. M. Razouk	PR Section Chief
Mr. T. Hajji	MO Section Chief
Eng. B. Makkieh	Electric. RF Meas. Ins. Workshop Chief
Mr. M. Kashour	Electrical Meas. Ins. Workshop Chief
Mr. A. Haider	Mechanical Workshop Chief

List of NSCL Staff

(As of August 1999)

No.	Name	Age	Graduated	Main subject(Career)	Section
1	Dr.Mr.M.Aghbar	1952	CNAM (Paris)	Metrology & System	Director
2	En.Mr.M.Noukary	1944	Belgrade Univ.	Electrical Eng.	Assistant Director
3	En.Mr.M.Zaweet	1953	Damascus , Cairo	Electronic Eng. Calibration ,QC	Head of Elec.Std.Div. / Power & Energy; Sec. Chief
4	As.Mr.K.Barakat	1966	Damascus Inst.	Electronic	Power & Energy Sec.
5	As.Mr.G.Sharani	1964	Damascus Inst.	Electronic	Power & Energy Sec.
6	En.Mr.M.Harb	1960	(UMIST) England	M.Sc. Instrumentation	Quality Manager / Temp. & Humidity Sec. Chief
7	En.Mr.N.Harba	1965	Damascus Univ.	Electronic Eng.	Temp. & Humidity Sec. *(Studying abroad)*
8	En.Mr.R.Razouk	1975	ESPG , FRANCE	Instrumentation	Temp. & Humidity Sec.
9	As.Mr.M.A.Karouni	1951	Damascus Inst.	Electronic,Test & Cal.Dep	Fundamental Elec. Std. Sec. Chief
10	As.Mr.M.I.Salhani	1964	Damascus Inst.	Electronic	Fundamental Elec. Std. Sec.
11	En.Mr.M.W.Alsaadi	1964	Damascus Inst.	Electronic	Fundamental Elec. Std. Sec.
12	En.Mr.M.Alhafiri	1966	Damascus Inst.	Electronic	Fundamental Elec. Std. Sec.
13	En.Mr.B.A.Adas	1966	Damascus Univ.	Electronic Eng.	Frequency & Time Sec. Chief
14	En.Mr.S.Alzaher	1966	Aleppo Univ.	Electronic Eng.	Frequency & Time Sec. *(Studying abroad)*
15	En.Mr.A.Alkafri	1968	H.I.A.S.T	System Eng.	Frequency & Time Sec.
16	En.Mr.A.Alhafez	1966	Damascus Univ.	Electronic Eng.	Frequency & Time Sec.
17	As.Mr.M.Z.Swied	1969	Damascus Inst.	Electronic	Frequency & Time Sec.
18	En.Mr.R.Ibrahim	1957	Damascus Univ.	Electronic Eng.	Head of Repair Directorate
19	En.Mr.B.Makkieh	1966	Damascus Univ.	Electronic Eng.	Electronic. Workshop Sec. Chief
20	En.Mr.A.Danber	1967	Damascus Univ.	Electronic Eng.	Elec. W.S
21	As.Mr.M.H.Bustati	1968	Damascus Univ.	Electronic Eng.	Elec. W.S
22	As.Mr.M.Jouma	1959	Damascus Inst.	Electronic	Elec. W.S
23	As.Mr.B.Nabulsi	1960	Damascus Inst.	Electric	Elec. W.S
24	As.Mr.M.Kashour	1957	Damascus Inst.	Electronic	Radio Frequency Electronic. Workshop Sec. Chief
25	En.Mr.S.Amro	1962	Damascus Univ.	Electronic Eng.	Elec. W.S
26	En.Mr.S.Issa	1973	H.I.A.S.T	Physics	Fundamental Mech. Std., Sec. Chief
27	En.Mr.M.Alrashed	1968	Damascus Univ.	Mechanical Eng.	Fundamental Mech. Std. Sec.
28	En.Mr.A.Daoujy	1966	Damascus Univ.	Mechanical Eng.	Fundamental Mech. Std. Sec. *(Studying abroad)*
29	As.Mr.T.Haji	1958	Damascus Inst.	Electronic	Mobile; Sec. Chief
30	As.Mr.I.Kanaan	1969	Damascus Inst.	Electronic	Mobile Sec.
31	As.Mr.M.Safeer	1971	Damascus Inst.	Physical Measurement	Fundamental Mech. Std. Sec.
32	As.Mr.K.Alsaadi	1967	Damascus Inst.	Electric	Mobile Sec.
33	As.Mr.A.Haidar	1959	Damascus Inst.	Fine Mechanic	Mechanical W.S
34	En.Mr.M.Z.Kanakrieh	1967	Damascus Univ.	Mechanical Eng.	Eng. Measurement Sec. Chief
35	En.Mr.M.Masri	1968	Damascus Univ.	Mechanical Eng.	Eng. Meas. Sec.
36	En.Mrs.M.Dibou	1966	Damascus Univ.	Mechanical Eng.	Eng. Meas. Sec.
37	As.Miss.S.Sharaf	1971	Damascus Inst.	Physical Measurement	Eng. Meas. Sec.
38	En.Mr.M.Razouk	1971	H.I.A.S.T	Physics	Pressure Sec. Chief
39	En.Mr.M.Damad	1973	ESPG , FRANCE	Instrumentation	Pressure Sec.
40	As.Mr.S.El Ahmar	1974	Damascus Inst.	Physical Measurement	Pressure Sec.
41	As.Mr.F.Kashtony	1951	Damascus Inst.	Electronic	Library
42	Mr.M.S.Mawlawi	1942	Cairo Univ.	Bachelor of Commerce	Head of Admin.
43	As.Mr.A.Garz	1961	Damascus Inst.	Physical Measurement	Store
44	As.Mr.Z.Saada	1971	Damascus Inst.	Physical Measurement	Store
45	Mrs.M.Sherabati	1949	Damascus Inst.	Secretariat	Secretary
46	Mrs.S.Sbieh	1961	.	.	Secretary
47	Mrs.R.Alsafdi	1966	Damascus Inst.	.	Accountant
48	Mr.F.Ismail	1960	.	.	Driver
49	Mr.A.Fiad	1961	.	.	Driver
50	Mr.W.Assahd	1946	.	.	Services

Allocation of Counterpart Personnel

Annex 6-2 (1/2)

	JapaneseFiscal year / Month / name* / Position	Placementsituation 1995 (4 7 10 1)	1996 (4 7 10 1)	1997 (4 7 10 1)	1998 (4 7 10 1)	1999 (4 7 10 1)	Year	Major training institute in Japan	Remark
Length	En. Mr.Z.Kanakrieh Section Chief						1996 1997	NRLM etc. NRLM etc.	
	En. Mr.M.Masri						1997	NRLM etc.	
	As. Ms.S.Sharaf						1998	NRLM etc.	
	En. Ms.M.Dibo								
	As.Mr.A.Haidar (Mechanical W.S)						1999	MITSUTOYO etc.	
Mass	En. Mr.A.Daoujy						1996	Legal Metlorogy Group course	Study in Japan for scholarship
	En. Mr.M.Rashed						1996	NRLM etc.	
	En. Mrs.R.Rijlet								Move to another section
	En. Mr.S.Issa Section Chief						1997	NRLM,JQA etc.	
	As. Mr.M.Saffir						1998	Legal Metlorogy Group course	Move from Mobile section
Pressure	En. Mr.M.Rzouk Section Chief						1997	NRLM,JQA etc.	
	As. Mr.S.El Ahmar						1998	NRLM,JQA etc.	
	En. Mr.M.Al-Dammad								

Allocated Period Training in Japan * En:Engineer, As:Assitant Engineer

Allocation of Counterpart Personnel

Annex 6-2 (2/2)

	JapaneseFiscal year / Month / name* / Position	Placementsituation 1995 (4 7 10 1)	1996 (4 7 10 1)	1997 (4 7 10 1)	1998 (4 7 10 1)	1999 (4 7 10 1)	Year	Major training institute in Japan	Remark
Elect/ Temp.	En. Mr.M.Zaawite Head of Elec.Div/ P&E Section Chief	├	———	———	———	———			
	En. Mr.M.Harb Quality Manager/ Temp. Section Chief	├	———	———	——=———	———	1998	JEMIC etc.	
	As. Mr.A.Karouni Fundamental Elec.Std. Section Chief	├	———	———	———	———			
	En. Mr.A.Adas Frequency&Time Section Cheif	├	———	———	———	———			
	En. Mr.R.Ibrahim Head of Repair Directorate	├	———	———	———	———			
Cal. Serv. Car	En. Mr.S.Amro	├	———	—==———┤			1997	JEMIC etc.	Move to Repair Directorate
	As. Mr.Z.Sweid	├	———	——===——	———┤		1997	Legal Metlorogy Group course	Move to Freq. & Time section
	As. Mr.I.Kanaan	├	———	———	——==———	———	1998	JEMIC etc.	
	As. Mr.T.Haji Section Chief			├	———	——=	1999	JEMIC etc.	
	As. Mr.K.Al Saadi			├	———	——=	1997	Legal Metlorogy Group course	
	As. Mr.M.Saffir			├	——==┤		1998	Legal Metlorogy Group course	Move toMass section

——— Allocated Period ═══ Training in Japan

* En:Engineer, As:Assitant Engineer

Annex.7

Expenses by the Syrian Side (thouthands of S.P)

Description	In (S.P)1996 Actual	In (S.P)1997 Actual	In (S.P)1998 Actual	In (S.P)1999 Allocated	In (S.P02000) Reqested
Wages & Salaries	6851	5796	5500	5600	5500
Adminisrative fees	548	747	722	746	646
Air conditioning system	6764	55	250	292	300
Water; electicity and telecom	650	697	750	800	850
Heating	104	94	130	155	170
Spare parts and materials	2300	964	998	746	985
Furniture	400	364	200	500	500
Social and medical assurance	164	301	440	472	490
Total	17781	9018	8990	9311	9441

Annex 8-1

Number of Calibrated Instruments by NSCL

		1995	1996	1997	1998	1999	Apr.1989 - Jul.1999
						Jan - July	
Calibration Services within NSCL							
Electricity	Regular service at NSCL	1,007	933	702	707	305	3,654
	Service by Calibration Vehicle	0	0	0	0	0	0
Tempreture		54	56	41	9	10	170
Length		0	0	0	0	19	19
Mass *2		0	0	0	0	90	90
Pressure		0	0	0	0	0	0
Sub Total		1,061	989	743	716	424	3,933
Calibration Services for Laboratories under SSRC							
Electricity	Regular service at NSCL	319	113	138	203	103	876
	Service by Calibration Vehicle	0	0	0	0	156	156
Tempreture		10	12	2	5	0	29
Length		0	0	0	0	0	0
Mass *2		0	0	0	0	0	0
Pressure		0	0	0	0	0	0
Sub Total		329	125	140	208	259	1,061
Calibration Services for Government and Private Organization outside SSRC							
Electricity	Regular service at NSCL	248	172	162	141	158	881
	Service by Calibration Vehicle	0	0	0	93	129	222
Tempreture		13	40	48	61	43	205
Length		0	0	0	0	1	1
Mass *2		0	0	0	0	41	41
Pressure		0	0	0	0	1	1
Sub Total		261	212	210	295	373	1,351
	*3	(16)	(48)	(82)	(149)	na *1	(295)
GROUND TOTAL		1,651	1,326	1,093	1,219	1,056	6,345

Data : NSCL

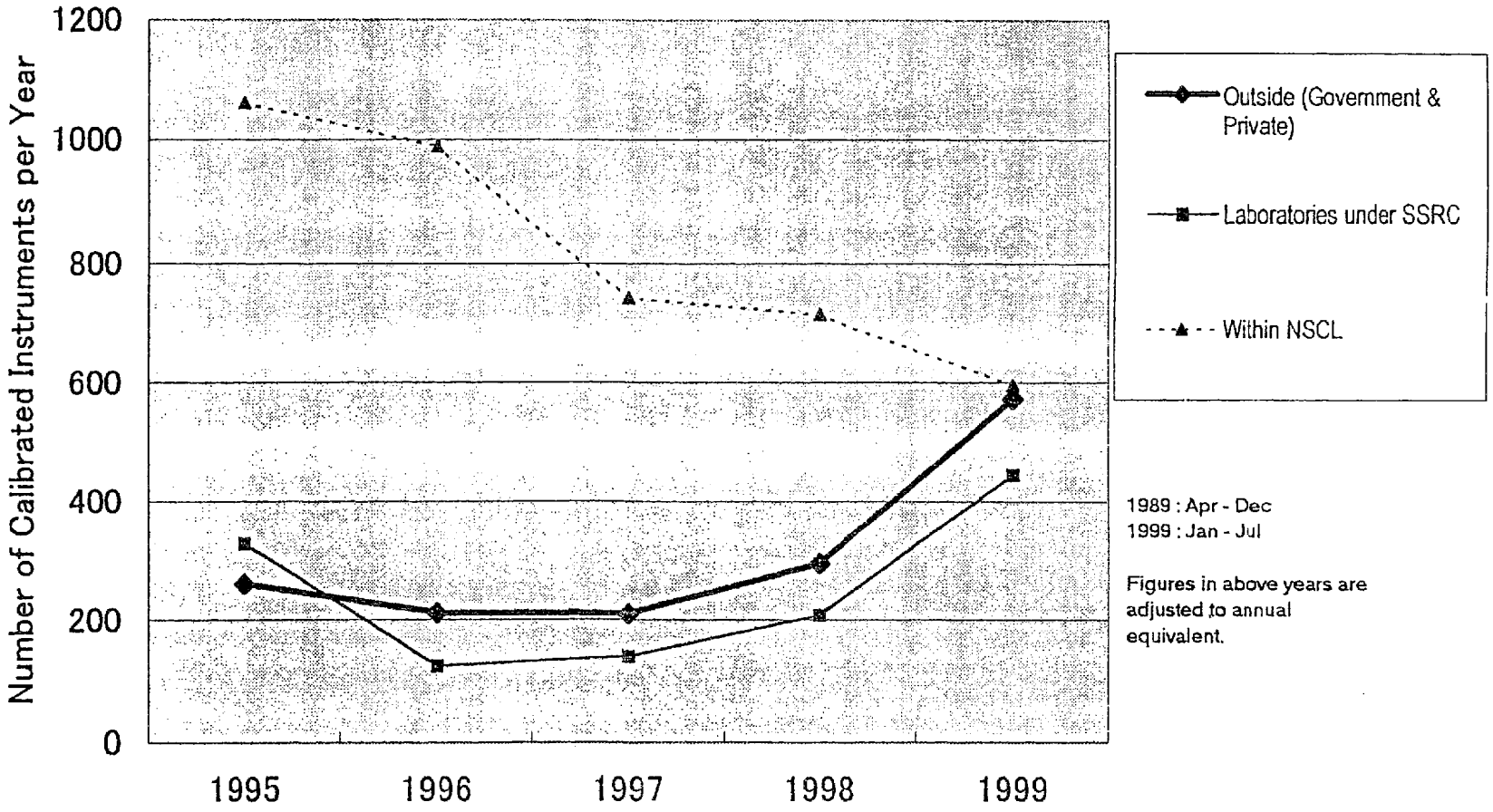
Note *1 : Data is not yet compiled, but NSCL estimates that some 30 % of total number of calibrated instruments i.e. around 280 are for private companies.

Note *2: For Mass, the number of instruments means the number of pieces of weight.

Note *3: The figure in () is number of calibrated instruments in private companies.

Note *4: The figure in the field of electricity (within NSCL) is decreased because NSCL made tne calibration interval of equipment longer after confirming their functional stability.

Number of Calibrated Instruments on Electricity and Tempereture



List of Measurement Standards and Calibration Services Capabilities of NSCL

Electricity			
Item	**Range**	**Condition**	**Uncertainty/ Stability**
Standard Cells	1.018088 V	air bath stab. ±1mK/day	2×10^{-6} V
DC Comparator Potentiometer	± 2.111111 V	DC voltage measurements	5×10^{-7}
DC Reference Standard	10 V		5×10^{-7}/30 days
	1 V and 1.018 V		15×10^{-7}/30 days
DC Voltage Calibrators	Up to 1000 V	DC	$5 \times 10^{-6} \sim 5 \times 10^{-5}$
Digital Voltmeters	Up to 1000 V	DC	$1 \times 10^{-5} \sim 5 \times 10^{-5}$
Volt-Ratio Boxes	1, 10, 100 & 1000	DC	$5 \times 10^{-6} \sim 2 \times 10^{-5}$
DC Current Calibrators	Up to 30 A	DC	$2 \times 10^{-5} \sim 2 \times 10^{-4}$
Standard Shunts	Up to 100 A	DC	$5 \times 10^{-5} \sim 2 \times 10^{-4}$
Standard Resistors	1 Ω	oil bath stab. ± 10 mK/day	2×10^{-6}
Standard Resistors	0.1, 1, 10 & 100 Ω	oil bath stab. ± 10 mK/day	5×10^{-6}
Standard Resistors	1 mΩ ~10 MΩ	oil bath stab. ± 10 mK/day	$5 \times 10^{-6} \sim 5 \times 10^{-5}$
DC Comparator Bridge	11.111111	DC resistance measurements	2×10^{-7}
Decade Resistance Boxes	0.1 Ω ~100 MΩ		$1 \times 10^{-4} \sim 2 \times 10^{-3}$
Resistance Bridge	100 μΩ ~100 MΩ		$1 \times 10^{-4} \sim 3 \times 10^{-4}$
Meg-ohm Resistance Box	1 MΩ ~2000 MΩ		5×10^{-3}
Standard Capacitors	100 pF and 1000 pF	1 kHz	1×10^{-5}
Standard Capacitors	1 pF ~10 μF	1 kHz	$\times 10^{-4}$
Capacitance Measurements	1 pF ~11.11110 μF	50 Hz ~10 kHz	$\times 10^{-4}$
Dissipation Factor; D	0.000001 ~1	1 kHz	1×10^{-3}
LCR Meter	1000 fF ~1000 mF	100 Hz ~100 kHz	$1 \times 10^{-3} \sim 1 \times 10^{-1}$
	100 nH ~1000 H	100 Hz ~100 kHz	$1 \times 10^{-3} \sim 5 \times 10^{-2}$
Digital Voltmeters	Up to 1000 V	50 Hz ~20 kHz	$2 \times 10^{-4} \sim 1 \times 10^{-3}$
AC Current Meters	Up to 100 A	50 Hz ~400 Hz	$5 \times 10^{-4} \sim 5 \times 10^{-3}$
AC Current Generators	Up to 100 A	50 Hz ~400 Hz	$5 \times 10^{-4} \sim 5 \times 10^{-3}$
AC Current Transformer	1 A ~120 A	50 Hz	$5 \times 10^{-4} \sim 1 \times 10^{-3}$
AC/DC Transfer	Up to 1000 V	50 Hz~20 kHz	$5 \times 10^{-4} \sim 2 \times 10^{-4}$
Watt Meter	Up to 600 V x 30 A	50 Hz~400 Hz	$5 \times 10^{-4} \sim 1 \times 10^{-3}$
Watt Hour Meter	220 V/(5, 30, 40, 120)A	50 Hz	$1 \times 10^{-3} \sim 3 \times 10^{-3}$
AC Voltage Calibrators	Up to 1000 V	50 Hz~20 kHz	$2 \times 10^{-4} \sim 1 \times 10^{-3}$
Frequency Standard	0.1, 1, 5 & 10 MHz		1×10^{-10}
RF Power Measurements	-60 to +20 dBm	100 kHz ~1 GHz	(0.28 ~ 0.5) dB
Attenuation Measurements	(3 ~ 60) dB	10 Hz ~1 GHz	(0.3 ~ 0.35) dB
Impedance Measurements	20 ~ 40 dB	10 MHz ~1 GHz	(0.6 ~ 5.5) dB
Frequency Measurements	100 kHz ~1 GHz		$1 \times 10^{-6} \sim 5 \times 10^{-8}$
Frequency Generators	100 kHz ~1 GHz	-110 ~ 10 dBm	$1 \times 10^{-6} \sim 5 \times 10^{-8}$
DC Voltage Calibrator	Up to 1000V	*	$1 \times 10^{-5} \sim 15 \times 10^{-4}$

List of Measurement Standards and Calibration Services Capabilities of NSCL

DC Current Calibrator	Up to 1A		*	$5 \times 10^{-5} \sim 12 \times 10^{-4}$
AC Voltage Calibrator	Up to 1000V	50 Hz ~ 20 kHz	*	$5 \times 10^{-4} \sim 1 \times 10^{-3}$
AC Current Calibrator	Up to 2A	50 Hz ~ 400 Hz	*	$5 \times 10^{-4} \sim 1 \times 10^{-3}$
DC Digital Voltmeter	Up to 1000V		*	$1 \times 10^{-4} \sim 2 \times 10^{-3}$
DC Digital Ammeter			*	$3 \times 10^{-4} \sim 2 \times 10^{-3}$
AC Digital Voltmeter		50 Hz ~20 kHz	*	$5 \times 10^{-4} \sim 1 \times 10^{-3}$
AC Digital Ammeter	Up to 50A	50 Hz ~ 400 Hz	*	$7 \times 10^{-4} \sim 2 \times 10^{-3}$
Indicating Instruments	Up to 1000V DC		*	$2 \times 10^{-4} \sim 2 \times 10^{-3}$
	Up to 30A DC		*	$2 \times 10^{-4} \sim 3 \times 10^{-3}$
	Up to 1000V AC	50 Hz ~ 20 kHz	*	$8 \times 10^{-4} \sim 2 \times 10^{-3}$
	Up to 50A AC	50 Hz ~ 400 Hz	*	$8 \times 10^{-4} \sim 2 \times 10^{-3}$
Standard Resistor	1mΩ ~1 MΩ		*	$1 \times 10^{-5} \sim 3 \times 10^{-3}$
Decade Resistance Box	1mΩ ~1 MΩ		*	$1 \times 10^{-4} \sim 3 \times 10^{-3}$
Resistance Bridge	1mΩ ~1 MΩ		*	$1 \times 10^{-5} \sim 3 \times 10^{-3}$
Insulation Resistance Tester			*	2×10^{-3}
Resistance Meter	Up to 320V X 30A	45 ~65 Hz	*	$8 \times 10^{-4} \sim 15 \times 10^{-4}$
Wattmeter 1 2W-3 4W	Up to 320V X 30A		*	$8 \times 10^{-4} \sim 15 \times 10^{-4}$
Frequency Counter	10Hz ~ 2MHz		*	20×10^{-6}
Frequency Generator	10Hz ~ 1GHz		*	3×10^{-6}
Oscilloscope	10Hz ~ 250MHz	5mVp-p ~ 120Vp-p	*	0.2% ~ 3%

Temperature			
Item	**Range**	**Condition**	**Uncertainty/ Stability**
RTD	419 °C		0.05 °C
Thermocouples	Up to 1100 °C		1.5 °C
Thermometer & Recorder	B,C,E,K,R,S,T & RTD	*	0.3 to 1.5 C

Pressure			
Item	**Range**	**Condition**	**Uncertainty/ Stability**
Air Absolute Pressure	5 ~200 kPa	Temp. 23 °C, Hum. 50%	0.03% or 30 Pa
Air Gauge Pressure	4 ~1000 kPa	Temp. 23 °C, Hum. 50%	0.01% or 10 Pa
Oil Gauge Pressure	1 ~10 MPa	Temp. 23 °C, Hum. 50%	0.02% or 0.001 MPa
High Pressure	10 ~100 MPa	Temp. 23 °C, Hum. 50%	0.02% or 0.01 MPa

List of Measurement Standards and Calibration Services Capabilities of NSCL

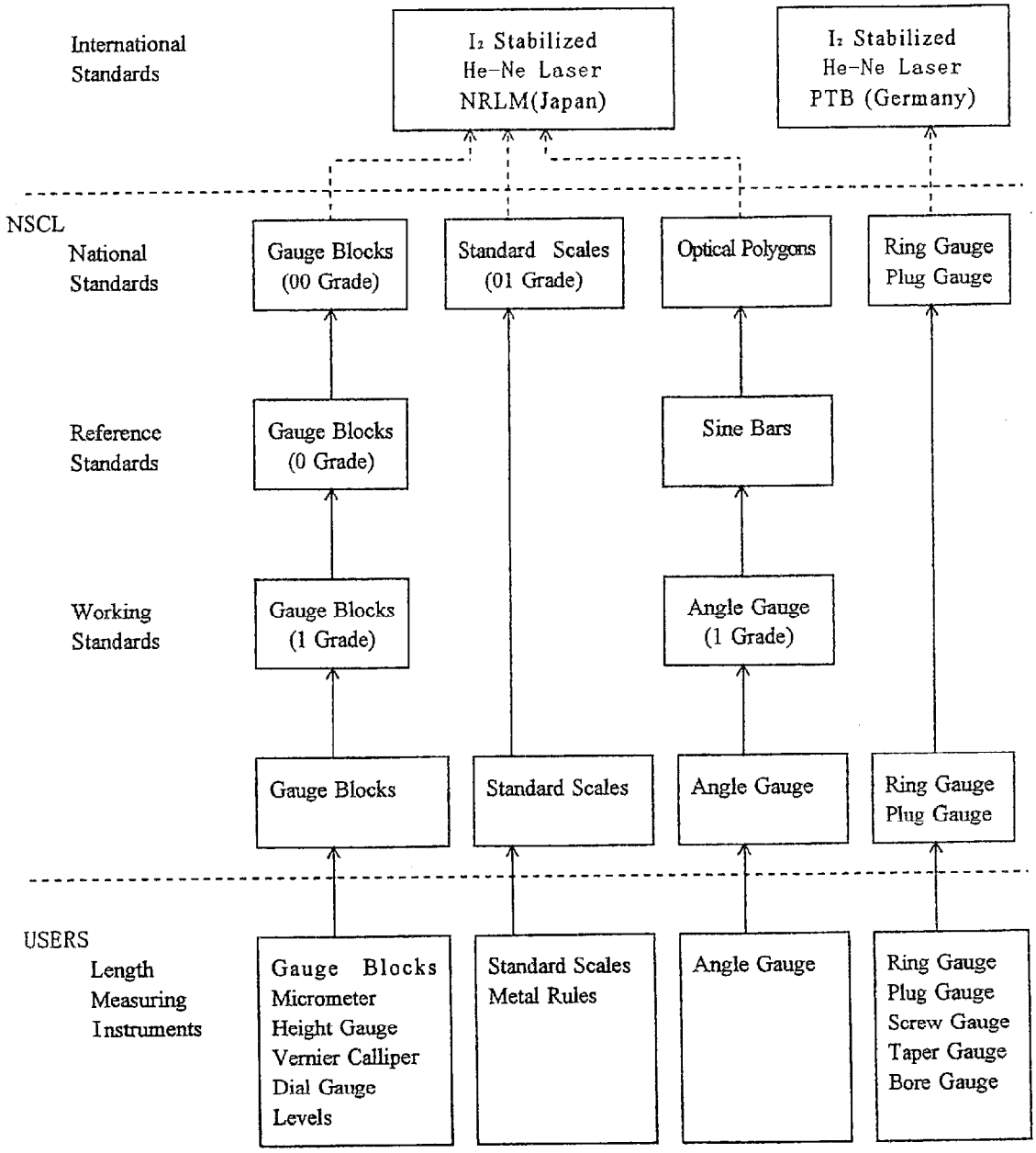
Length			
Item	**Range**	**Condition**	**Uncertainty/ Stability**
Reference Scale	200 ~ 2000mm	Temp. 20 °C, Hum. 55%	0.004mm, JIS 1 Class
Metal Scale	200 ~ 2000mm	Temp. 20 °C, Hum. 55%	0.05mm, JIS 1 Class
Gauge Block	0.5 ~ 100mm	Temp. 20 °C, Hum. 55%	Best 0.0001mm, ISO 1 Class
Standard Bar for Micrometer	10 ~ 1000mm	Temp. 20 °C, Hum. 55%	Best 0.0001+ 0.000001L L(mm)
Angle Gauge	0.05 ~ 41	Temp. 20 °C, Hum. 55%	5 Sec
Polygon Mirror	360	Temp. 20 °C, Hum. 55%	5 Sec
Plug Gauge	0.1 ~ 100mm	Temp. 20 °C, Hum. 55%	0.0005- 0.005mm
Ring Gauge	10 ~ 100mm	Temp. 20 °C, Hum. 55%	0.005mm
Thread Gauge	Diameter: Up to 50mm Pitch: Up to 3.5mm	Temp. 20 °C, Hum. 55%	ISO - Standard
Micrometer	Up to 100mm	Temp. 20 °C, Hum. 55%	ISO - Standard
Dial Gauge	Up to 10mm	Temp. 20 °C, Hum. 55%	ISO - Standard
Vernier Caliper	Up to 100mm	Temp. 20 °C, Hum. 55%	ISO - Standard
Height Gauge	Up to 300mm	Temp. 20 °C, Hum. 55%	ISO - Standard
Bore Gauge	0.5- 4mm	Temp. 20 °C, Hum. 55%	ISO - Standard

Mass			
Item	**Range**	**Condition**	**Uncertainty/ Stability**
Primary Standards ** E2 Class Standard Weights	1 mg to 20 Kg	Temp. 20.0 °c, Hum. 50%	In conformity of OIML
F1 Class Standard Weights	1 mg to 20 Kg	Temp. 20.0 °c, Hum. 50%	
Secondary Standards F1 Class Standard Weights	1 mg to 20 Kg	Temp. 23.0 °c, Hum. 50%	In conformity of OIML
F2 Class Standard Weights	1 mg to 20 Kg	Temp. 23.0 °c, Hum. 50%	
M1 Class Standard Weights	1 mg to 20 Kg	Temp. 23.0 °c, Hum. 50%	

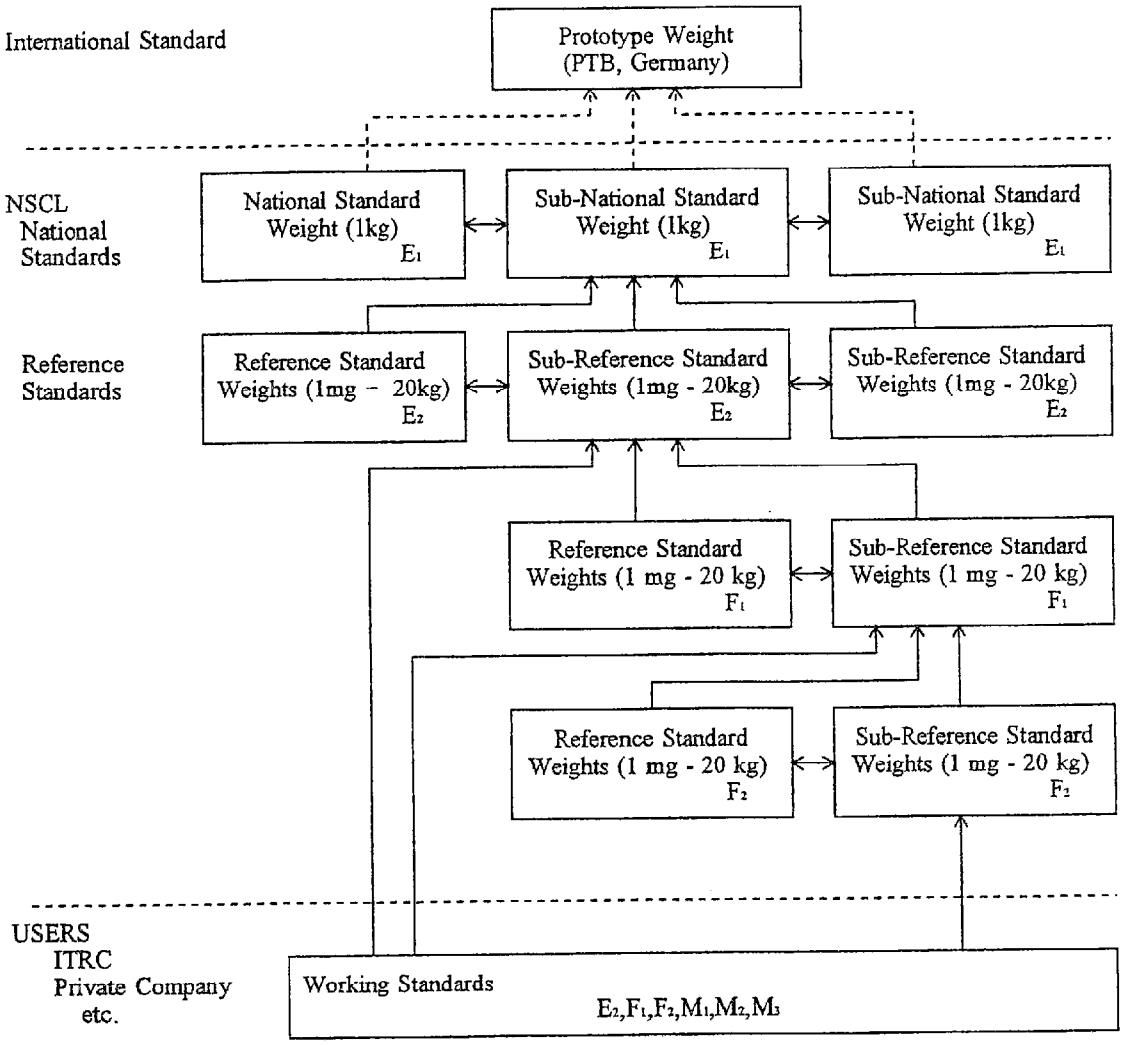
* Calibration Service Car

** The services of calibration regarding E2 class is still under investigation.

Traceability Chart of Length Standards

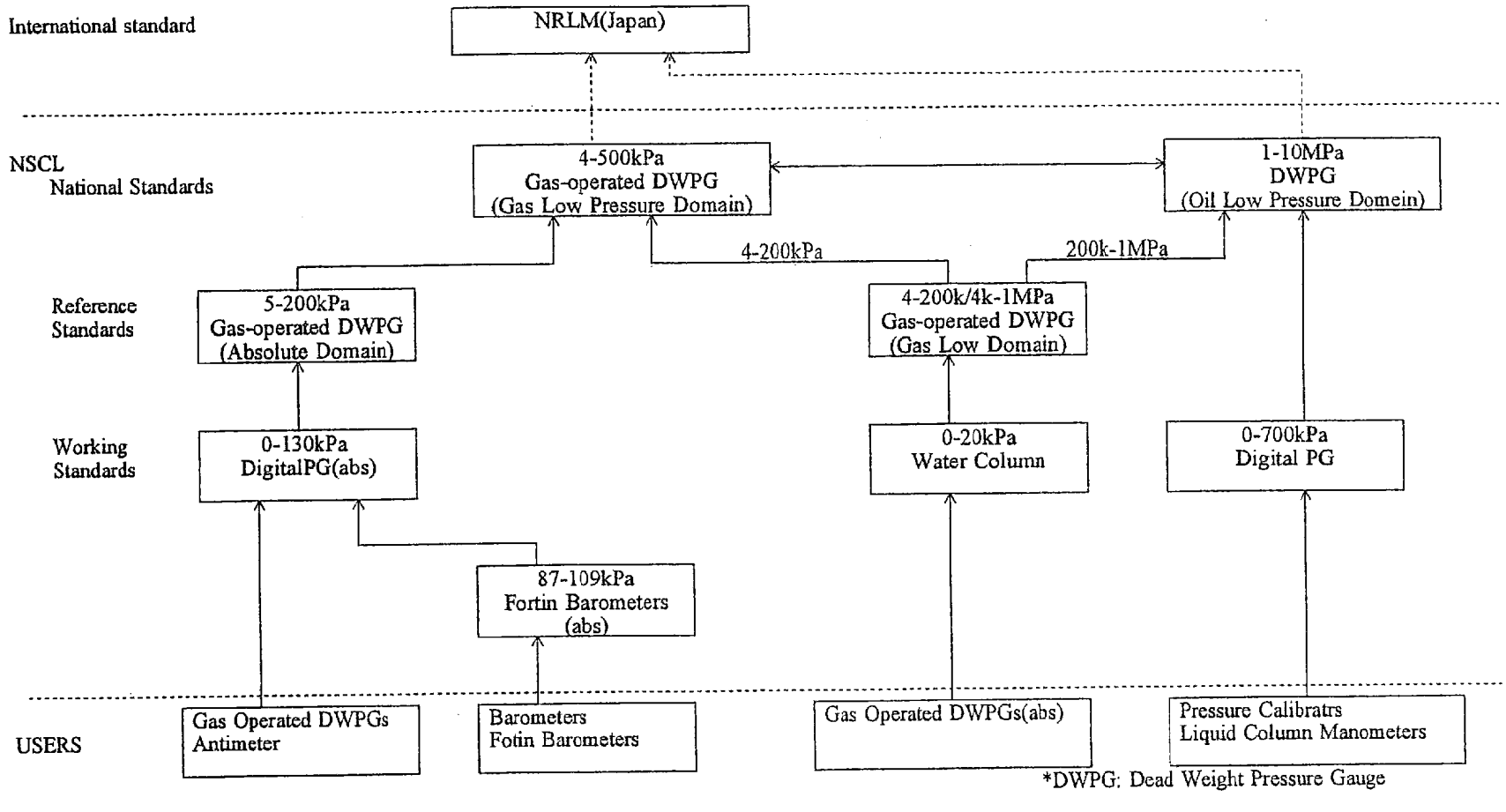


Traceability Chart of Mass Standards



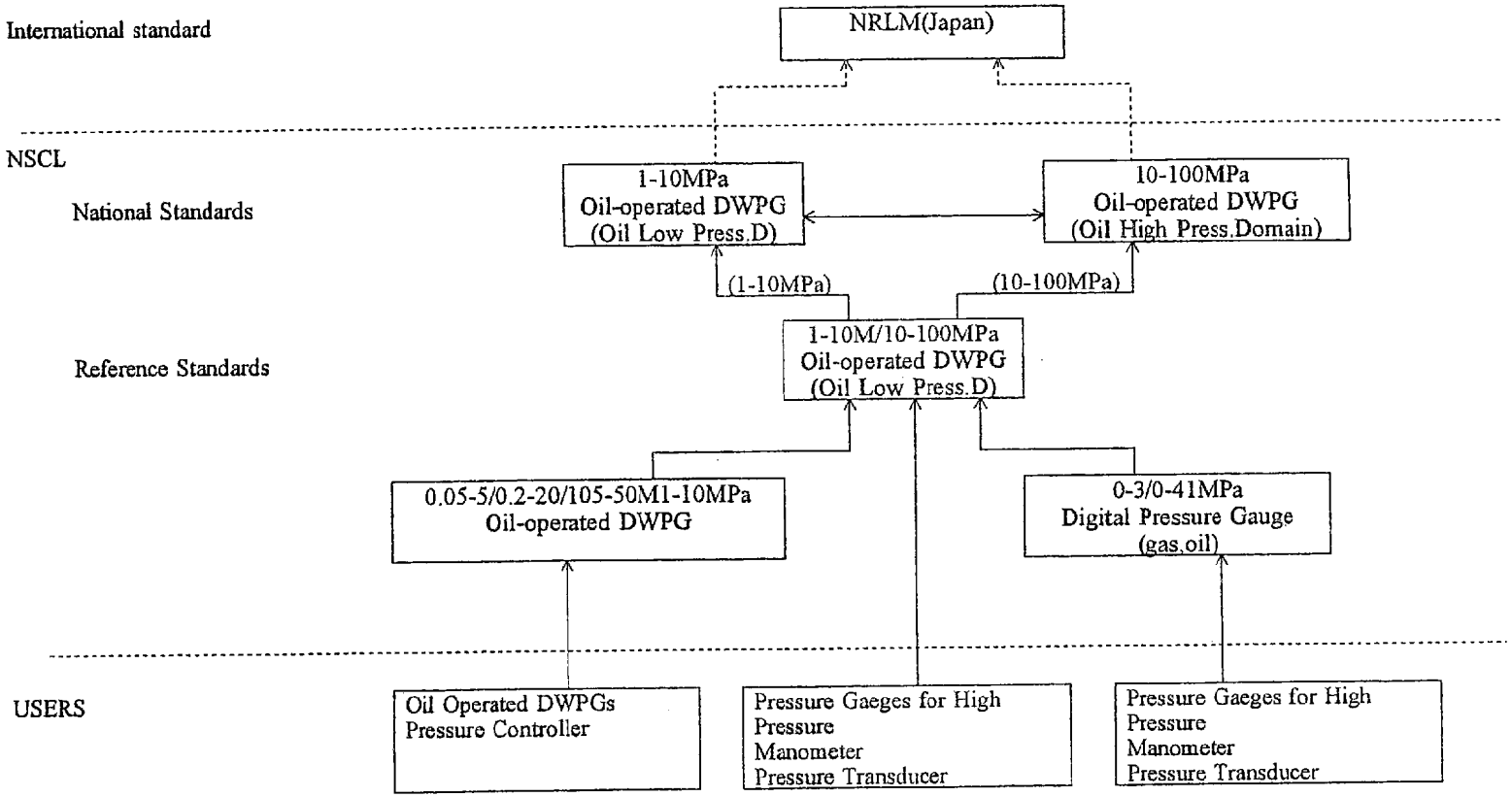
Note : The services of calibration regarding E_2 class is still under investigation.

Traceability Chart of Pressure Standards
(Gas Pressure)



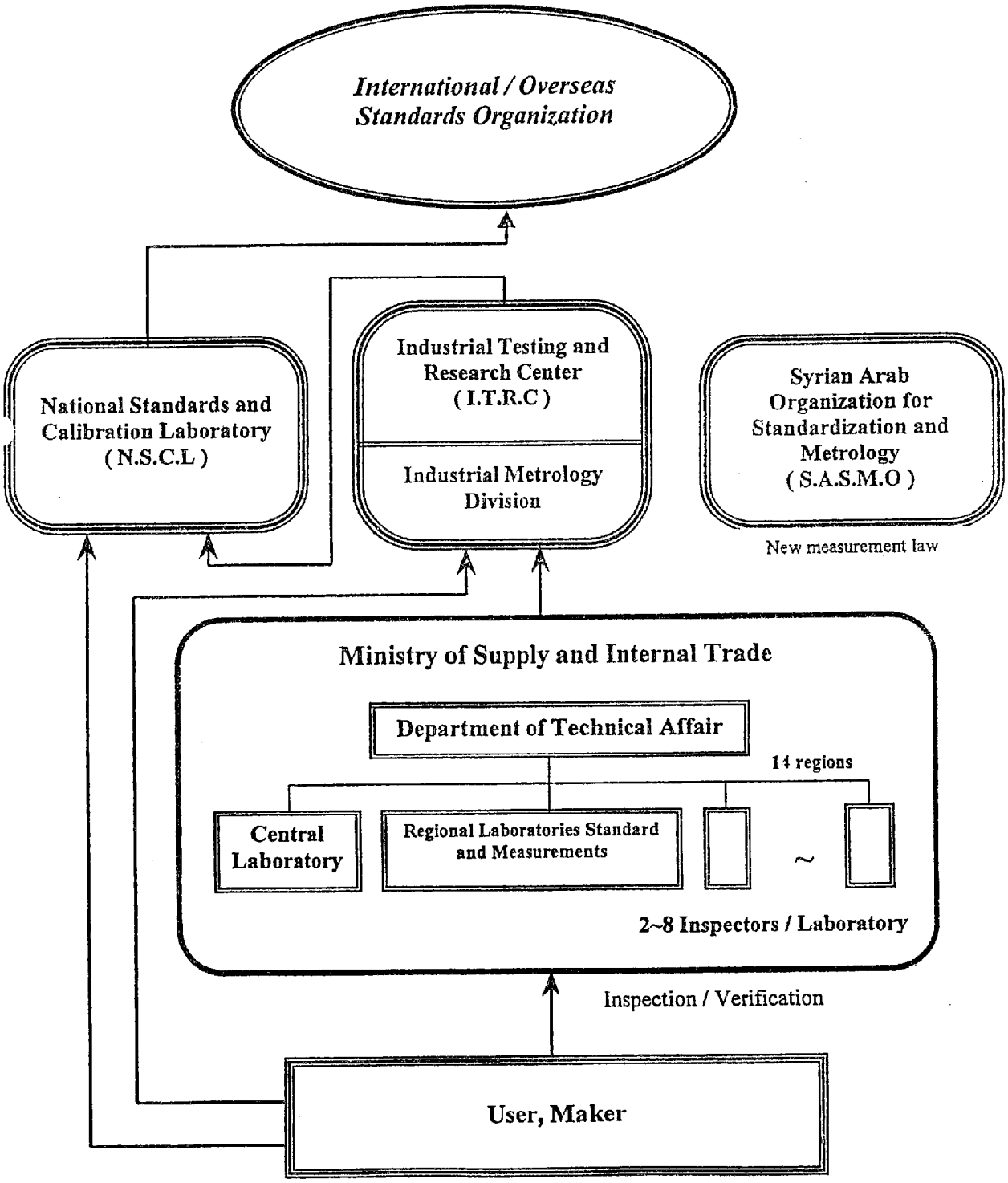
*DWPG: Dead Weight Pressure Gauge

Traceability Chart of Pressure standards
(Liquid pressure)



*DWPG: Dead Weight Pressure Gauge

Provisional Image of Traceability System in SYRIA



List of the Dispatched Experts

Japanesefiscal year / Month			1995 456 789 101112 123	1996 456 789 101112 123	1997 456 789 101112 123	1998 456 789 101112 123	1999 456 789 101112 123
Expert	Long	Yoshihiko NOGUCHI; Chief Advisor/Elec.&Temp.	1995/12				1999/11
		Hisashi SHIBUYA; Coordinator	1995/12				1999/11
		Makoto KOYAMA :Length		1996/8	1997/5		
		Shozo YANO :Mass		1996/4		1998/5 1998/10	1999/11
	Short	Sadatoshi MINOYAMA: Environmental condition(S)	12/1-1/31	7/14-9/29 2/15-	4/14		
		Yasuhiro KUGE :Length(S)		10/11-26			
		Tsumeo SHIMIZU :Length(S)		10/11-26			
		Jiro MATSUDA :Length(T)		2/17-3/15			5/27-6/26
		Masami HORITA :Length(T)		2/25-3/10	6/26-7/19	10/8-17	4/2-30
		Kenji ISHIHARA :Length(T)(S)			9/4-9/30	7/4-31	
		Shigeru UENO :Length(S)			11/13-28	11/19-12/2	
		Akinori NIRASAWA:Length(S)				4/16-25	
		Kensei EHARA :Length(T)				10/2-12	
		Yoichi AWANO :Length(T)				10/23-11/18	6/24-7/15

(S);Setup & Training ,(T);Technical Guidance

List of the Dispatched Experts

Japanesefiscal year / Month			1995 456 789 101112 123	1996 456 789 101112 123	1997 456 789 101112 123	1998 456 789 101112 123	1999 456 789 101112 123
Expert	Short	Fumio KUBOTA :Length(T)				1/28-2/24	
		Shinichi TAKAHASHI :Length(T)					4/21-5/19
		Yasuhiro MIYAMA :Length(T)					4/21-5/19
		Makiko NAKANO :Length(T)					6/17-7/5
		Toshiaki YASUDA :Length(T)					8/5-10/15
		Itaru KANO :Mass(S)		2/28-3/10	2/5-20		
		Akira NISHIO :Mass(S)				4/9-29	
		Shozo YANO :Mass(T)				9/4-28	
		Yoshiaki NEZU :Mass(T)				2/25-3/12	

(S);Setup & Training ,(T);Technical Guidance

List of the Dispatched Experts

Japanesefiscal year / Month			1995 456 789 101112 123	1996 456 789 101112 123	1997 456 789 101112 123	1998 456 789 101112 123	1999 456 789 101112 123
Expert	Short	Akira OIWA :Pressure (T)				4/9-23	
		Shigemitsu OGAWA:Pressure (S) (T)				4/18-5/16 2/9-3/26 10/8-11/20	5/8-7/21
		Kazumasa TSUKADA :Pressure(S,T)				2/9-3/26	5/8-6/11
		Eiichi GOTO :Cal.car(S)			2/5-3/20		
		Yasuhiro TSURU :Cal.car(S)			3/13-20		

(S);Setup & Training ,(T);Technical Guidance

List of the C/P Trained in Japan

Name of Counterpart	Assigned scope	Assigned term
Z.Kanakrieh	Length standards	1996/5/18 ~ 1996/8/22 1998/3/27 ~ 1998/7/12
M.Masri		1997/6/26 ~ 1997/10/24
S.Sharaf		1998/10/4 ~ 1999/5/25
A.Haider		1999/8/29~ 1999/11/20
A.Daouji (Legal Metrology Group Course)	Mass stndards	1996/7/13 ~ 1996/12/15
M.Rashed		1996/10/19 ~ 1997/4/19
S.Issa		1997/11/16 ~ 1998/5/15
M.Al Saffir (Legal Metrology Group Course)		1998/7/13 ~ 1998/12/13
M.Razouk	Pressure standards	1997/9/21 ~ 1997/12/6
S.Al Ahmar		1998/10/4 ~1998/12/18
S.Amro	Electric standards	1997/5/26 ~ 1997/7/15
Z.Sweid (Legal Metrology Group Course)		1997/7/14 ~ 1997/12/14
I.Kanaan		1998/7/8 ~ 1998/9/4
T.Haji		1999/7/4 ~ 1999/8/23
K.Al Saadi (Legal Metrology Group Course)		1999/7/12~ 1999/12/12
M.Harb	Temperature standards	1998/7/8 ~ 1998/8/22
M.Aghbar	Inspection of Standards Laboratory	1998/8/19 ~ 1998/8/29

Annex 14-1

List of Machinery and Equipment Provided by the Japanese Side

Length

(1/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
96/8/27 (1995)	Optical Flat with standard accessories	T-FL	36,000	1	36,000	A
	Sine Bar with standard accessories	TSUGAMI CORPORATION B-20	77,000	1	77,000	A
	Stand with standard accessories	Mitsutoyo JAPAN 7010S(Magnet), 7007(Cast Iron)	25,000	2	50,000	A
	Digital Thermometer	CHINO CORPORATION ND512-TNN with Sensor C510-06T	68,000	1	68,000	A
	Sided Polygon Mirror	Nikon Corporation	625,000	1	625,000	A
	Precision Square Level with accessories	Fujita Seisakusho No.751	136,000	1	136,000	A
	Precision Flat Level with accessories	Fujita Seisakusho No.710	111,000	1	111,000	A
	Cylindrical Square with accessories	Fujita Seisakusho No.411-200	100,000	1	100,000	A
	Precision Surface Plate with Level Block	SEKIGAHARA SEISAKUSHO LTD. Stone Plate(630x400x200mm) Cast Iron(400x400x100mm)	140,000	2	280,000	A
	V Block	Fujita Seisakusho No.205V	254,000	1	254,000	A
	Thermistor Thermometer with Standard Accessories	TECHNOL SEVEN Type D642-20	1,178,000	1	1,178,000	A
	Electronic Micrometer	TOKYO SEIMITSU CO.,LTD. MINICOM TYPE E-M5R DETECTOR E-DT-LM STAND E-ST-100HB-80	283,000	1	283,000	A
	Bench Milling Machine with Standard Accessories	MITSUHATA.S.S CO.,LTD. COSMO ACE FK-300 End Mill M-42. 3-20mm Sealing vice F-100 Drill chuck , Milling Cutter, Cutter Tip etc.	657,000	1	657,000	A
	Hrizontal Universal Measuring Machine with Standard Accessories	Cahl Mahr Gmbh & Co., 828PC1000 828uk Table with Cabinet 828t Support Table, 828s Floating Table 828no Setting Master Controller, Monitor, Printer, Transformer etc	12,688,000	1set	12,688,000	A
	Photoelectric Auto Collimeter with standard accessories	Nikon Corporation Main Body, Auto Coli-mirror(ϕ 42mm) and Auto Colli-mirror(Outside ϕ 30mm)	3,080,000	1	3,080,000	A
	Surface Plate with Level Block	SEKIGAHARA SEISAKUSHO LTD. Stone Plate(1500x1000x200mm) Cast Iron(1000x1000x180mm)	1,600,000	1	1,600,000	A
	Roundness Tester witth accessories	TOKYO SEIMITSU CO.,LTD. Main body: RANDCOM 45A Table: RANDCOM45A E-VB-R-16A Control Computer: E-MD-R-134A Air Dryer (SMC): IDF1D-1-X028 Transformer: 220V-100V Master Peace(round), Master Peace(sphere) Master Peace ZERO ADJUST(FUJITA) GRADE-A(2)	8,983,000	1	8,983,000	A
	Table	Dalton WT-144, WT-152,MC-102	1,622,000	1	1,622,000	A
	Shelving Unit					
	Storage Cabinet	Dalton CS-114				
	Chair	C-13,TL-711WC				
	Comsumable Things		181,000	1set	181,000	—
97/1/18 (1995)	Gauge Block	MITSUTOYO CERA BLOCK Class:0 BM3-10M-0	60,000	1	60,000	A
	Gauge Block	TSUGAMI B2 Class:00	1,223,000	1	1,223,000	A
	Gauge Block	TSUGAMI B-2 Class 0, B-2 Class 1	680,000	1	680,000	A
	Gauge Block	TSUGAMI B-7 Class 00, B-7 Class 0 B-8 Class 00, B-8 Class 0	231,000	1	231,000	A
	Optical Parallel	MITSUTOYO 157-903	36,000	1	36,000	A
	Square Gauge	TSUGAMI TYPE:B-65 CLASS ±3	825,000	1	825,000	A
	Long Gauge Block	MITSUTOYO BM1-8R 600mm(Class 00, Class 0) 700mm(Class 00, Class 0) 750mm(Class 00, Class 0) 800mm(Class 00, Class 0) 900mm(Class 00, Class 0) 1000mm(Class 00, Class 0)	3,986,000	1	3,986,000	A
	Dial Gauge Comparator with accessories	TSUGAMI Co., ECHD Mainbody & Display Control Computer NEC PC-9821V10 CRmodel1B Printer: NEC PC-PR201/40 Transformer: TSUGAMI 220V・100V,2A	5,989,000	1	5,989,000	B

Annex 14-1

List of Machinery and Equipment Provided by the Japanese Side

Length

(2/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
97/1/18 (1995)	Profile Projector with accessories	MITSUTOYO PJ311Z3	2,400,000	1	2,400,000	A
	Universal Measuring Machine with accessories	TSUGAMI UL5D Mainbody Display: HEIDNHAIN Transformer: TSUGAMI Co. 220V•100V,2A a. Center Support b. Vertical Center Stand c. Measuring Attachment for Internal Thread d. Small Hole Measuring Equipment	7,610,000	1	7,610,000	A
	Universal Measuring Microscope with accessories	TSUGAMI UM2D & Digital Display Transformer: TSUGAMI Co. 220V•100V,2A a. Square Glass Table b. Template Ocular c. Interchangeable Objectives; 1x d. Interchangeable Objectives; 5x e. Interchangeable Objectives; 10x f. Adjustable V-Support g. Double Image Ocular h. Center Support i. Z-Measuring Device 1/2 j. Z-Measuring Device 2/2 k. Digital Dividing Head l. Knife Edges m. Big Center Support n. Others	14,779,000	1	14,779,000	A
	Super Precision Indexing Machine with accessories	DAIICHI SOKUHAN SPID-720A Mainbody & Controller unit Transformer TOYOZUMI DENGENKIKI Co.,LTD MODEL KD-600(600VA)	4,697,000	1	4,697,000	A
	Precision Square	MITSUTYO 916-103	43,000	1	43,000	A
	Inside Micrometer	MITSUTOYO 145-185(IMP-30) 145-186(IMP-50), 145-187(IMP-75) 145-188(IMP-100), 145-189(IMP-125), 145-190(IMP-150)	39,000	6	234,000	A
	Digital Tension Gauge	MITSUTOYO 546-104(DTG-30), 546-107(DTG-150), 546-109(DTG-500)	7,000	3	21,000	A
	Linited Screw Thread/Taper Pipe Thread Gauge M22x2.5	DAIICHI SOKUHAN 4hGR, 4hNR, 5HGP, 5HNP, 4hGRGF, 4hGRNF 4hNRGF, 4hNRNF	21,000	11	231,000	A
	Master Gauge	DAIICHI SOKUHAN	38,750	8	310,000	A
	Outside Micrometer	MITSUTOYO 193-917, 103-137	14,000	7	98,000	A
	Vernier Caliper	MITSUTOYO 530-320, 530-322	11,500	2	23,000	A
	Dial Indicator	MITSUTOYO T1-133H	11,000	1	11,000	A
	Dial Gauge	MITSUTOYO 2046F	4,000	1	4,000	A
	Roller for Measuring Screw	DAIICHI SOKUHAN	87,000	1	87,000	A
97/3/28 (1996)	Electric Vacume Cleaner	SANRITSU Co.,LTD JET Vacume Cleaner JE-3000	86,000	1	86,000	A
	Stainnless Workstand	TANICO Co., TS-WCT-120 DNB 1200X600X800mm	98,000	1	98,000	A
	Closet	DALTON CS-114 880X400X880mm	45,900	2	91,800	A
	Comsumable Things	Clean Ace, Dust Mat, No Dust Uniform, Shoes Cover, etc.	734,800	1	734,800	—
97/5/28 (1995)	Surface Roughness Standard Set	VLSI STANDARDS INC. RAS-90, RAS-440, RAS-2250	850,000	1	850,000	A
	Surface Roughness Measuring Intrument with accessories	Kosaka Laboratory Ltd. Driving Unit DR-100X32 Bed with Colunm SP-81DS2 Universal Loading Stand RAF-11 Vibration Absorbing Table SM-1 Amplifier AS-3400 Surfcorder(Data recorder) SE-3400 Table & Repair Kit Interchangeable Pick Up Set PU-CS and Interchangeable Stylus arm A5,C5,G5, H10,I5 and Interchangeable Noise Piece NA,NG,NH Transformer TOYOZUMI DENGENKIKI CO.,LTD. CD-220-10 1KVA	4,450,000	1	4,450,000	A

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List of Machinery and Equipment Provided by the Japanese Side

Length (3/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
97/6/28# (1997)	Personal Computer and accessories (Note type)	TOSHIBA SATRLLITE220CDS MODEL No.PA1240U JVCD AC Adapter PA2450U	258,000	1	258,000	A
	Printer	CANON BJC-70, AC Adarter AD-320	52,000	1	52,000	A
97/8/19 (1995)	Contour Measuring Machine with accessories	MITSUTOYO CONTRACER CP-410 Mainbody:Driving unit Code No.218-831D Electronic unit Code No.218-831D Main table Code No.218-001 Surport table Code No.218-003 Accessory kits Transformer Matsunaga Manifacturing Co. Automatic Voltage Regulator Stavo 1 ,Model SVC-1500VA Personal computer COMPAQ DESKPRO 2000 5133M1200 A/P COMPAC Monitor 14" No.473 Printer: EPSON LQ-570+ P630B GRAPHTEC CORP. Pen Plotter MP-5200	3,880,000	1	3,880,000	A
	Small Sized Precision Cylindrical Grinder with accessories	TSUGAMI Co., Mainbody T-CGD-150 Transformer: KASUGA E.W.LTD Type:DVTB 1.5VA 380V 3 ϕ ・220V 1 ϕ	5,000,000	1	5,000,000	A
	Precision Form Grinding Machine with accessories	OKAMOTO PFG-450DXB Mainbody and Coolant Unit Transformer: 380V 3 ϕ ・ 220V 1 ϕ	4,920,000	1	4,920,000	A
97/9/30 (1995)	Standards Scale Measuring Machine with accessories	Technical Research Institute SMM-2000 Main Body with wood case Control Box Scale Counter FUTABA PULSOLE Co., Type:CMJ100A00 and Accessory Parts Fiber Illumination Unit KENKO Co.,LTD Type:KTX50C MITSUTOYO Microscope Head for CCD Camera CCD VIDEO CAMERA KOCOM KB-380A andAccessory Parts MITSUI SEIKI Microscope Head for Manual Measurement MITSUTOYO Micrpscope Unit VMU-1H Accessory Parts Support Table, Scale for Scale Ditector etc. Data Collect Computer: GATWAY 2000 Main body Keyboard:GATWAY 2000 Monitor: GATWAY Model 500CS CRYSTALSCAN 15 Inch StepDowm Transformer	25,700,000	1	25,700,000	A
97/11/15# (1997)	Standard Scale(L10)	MITSUTOYO Optical Glass Scale HL-500	550,000	1	550,000	A
	Standard Scale(L11)	MITSUTOYO Optical Glass Scale HL-250	435,000	1	435,000	A
98/3/25 (1998)	Digital Micrometer	MITSUTOYO 293-521-30(345-511-30)	26,000	1	26,000	A
	Dial Gauge	MITSUTOYO 2052FE	20,000	1	20,000	A
	Height Master	MITSUTOYO 515-322	130,000	1	130,000	A
98/5/12 (1997)	Magnetic Stand	MITSUTOYO Model 7011	12,000	2	24,000	A
	Degimatic Caliper	MITSUTOYO Model: 550-201-10	36,000	1	36,000	A
	ABS Degimatic Caliper	MITSUTOYO Model: 500-151	21,000	1	21,000	A
	Carbide Jae typeVernir Caliper	MITSUTOYO Model: 530-320	12,000	1	12,000	A
	Differencial type Digital Mu-Checker	MITSUTOYO Model: 519-411D	290,000	1	290,000	A
	Lever Head Probe	MITSUTOYO Model: 519-327	120,000	1	120,000	A
	Cartridge Head Probe	MITSUTOYO Model: 519-338	110,000	1	110,000	A
	Dial Indicator	MITSUTOYO Model: 2046F	6,500	5	32,500	A
	Calibration	MITSUTOYO UDT-2 Dial Gauge Tester(Metric Type)	160,000	1	160,000	A
	828PC Accesories	Carl Mahr Gmgh & Co. Accesories for Testing External Micrometer Mounting Device Calliper Measuring Jaws(Model: 828MS I) Software	1,190,000	1	1,190,000	A
98/7/4# (1998)	Taper Thread Gauge for Pipe	DAIICHI SOKUHAN WORKS CO., PT-2/1, NPT-3/4	211,400	1	211,400	A

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List of Machinery and Equipment Provided by the Japanese Side

Length (4/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
98/11/20# (1998)	Working Standard Scale	MITSUTOYO HL3-1000(Glass Scale)	173,600	1	173,600	A
99/7/28 (1998)	Reading Scale for Profile projector	MITSUTOYO 172-118	31,000	1	31,000	A
	Rotary Table for Profile projector	MITSUTOYO 172-196	64,000	1	64,000	A
	V-Block with Clamp	MITSUTOYO 172-378	40,200	1	40,200	A
	Stand	TOKYO SEMITSU Co.,LTD E-ST-LCB	59,000	1	59,000	A
	Comparator Stand	MITSUTOYO 215-822	203,000	1	20,300	A
	Thread Measurement Four Wires	TSUGAMI Co. 110, 112, 115, 118	32,000	1	32,000	A
	Roughness Measurement Standard	Halle-Prazisions Kalibrieronormale GmbH Grade 2, KNT 2058101, 1 set	373,800	1	373,800	A
	Sensitive Gauge	KOSAKA LABORATORIES SS-C (4.99 μm, 29 μm)	148,200	1	148,200	A
	Gauges	Mahr GmbH Plug Gauge 355E DIN2250	86,000	1	86,000	A
		Mahr GmbH Ring Gauge 390	74,200	1	74,200	
	Precision vice	G & J Co., VS-75	78,500	1	78,500	A
	Universal bevel protoractor	MITSUTOYO 187-907	22,000	1	22,000	A
	Magnetic stand	MITSUTOYO No.7019	28,000	1	28,000	A
	Consumable Things		23,100	1	23,100	—
			Total		126,329,400	

Date	Name of Equipment	Type	Unit Price (S.P.)	Q'ty	Amount (S.P.)	Status
98/2/18 (1997)	Personal Computer set	Assembled type CPU: 166Mhz(Intel) with CPU FAN RAM: 32MB EDO VGA card PCI 1MB RAM Exp. to 2M, HDD: 2.1GB, FDD: 3.5 inch Sony, CD ROM: x16 speed, Mini tower case, Key-board(win95), MS-Mouse, 14-inch Monitor(NI.LR 0.28 DPI) Power Supply: AC 220V±10%, 50Mhz Software: MS Windows 95(Arabic Version) MS-Office 95 for Windows Printer: Hewlett Packard HP-6L UPS UPGUARDS Co., Pro 1000 Model: 1062A, 1000VA standby	118,000S.P.	1	118,000S.P.	A
			Total		118,000S.P.	

Legend A: Good Condition, B: Need minor repair

Annex 14-1

List of Machinery and Equipment Provided by the Japanese Side

Mass

(5/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
96/6/27 (1995)	Hygro-Thermometer	CHINO CORPORATION Digital Humiditymeter HN-K Humidity Sensor	100,000	2	200,000	A
	Mercury Barometer	Tokyo Suzuki Seisakusho Co.,LTD. M-10A, Stand, Carrying case(Aluminum)	734,000	2	1,468,000	A
	Dry Cabinet	TOYO LIVING Super Dry SD-1101	645,000	1	645,000	A
	Glass Jar with Stainless Plate		60,000	3	180,000	A
	Shelf Wagon		317,000	2	645,000	A
	Electronic Balance with accessories	SHIMAZU CORPORATION Main Body Type AEG-80SM Electronic Printer EP-50 Transformer B-5 Stone Table(Sindorf) and Cover	1,268,000	1	1,268,000	A
	Electronic Balance with accessories	SHIMAZU CORPORATION Main Body AEG-45SM Electronic Printer EP-50 Transformer B-5 Stone Table(Sindorf) and Cover	1,178,000	1	1,178,000	A
	Electronic Balance with accessories	SHIMAZU CORPORATION Main Body EB-20KHS SHARP Pocket Computer PC-E650 Printer CE-126P Transformer B-5 Stone Table(Sindorf) and Cover	1,042,000	1	1,042,000	A
	Electronic Balance with accessories	SHIMAZU CORPORATION Main Body AEM-5200 Electronic Printer EP-50 Transformer B-2 Stone Table(Sindorf) and Cover	1,993,000	1	1,993,000	A
	Dry Cabinet	TOYO LIVING Super Dry SDC-1201	848,000	1	848,000	A
	Glass Jar with Stainless Plate		60,000	3	180,000	A
	Shelf Wagon		317,000	2	634,000	A
	Comsumable Things	Filter Paper etc.	42,000	1set	42,000	A
96/12/11 (1995)	Mass Standard Weight with Glass Cover	METTLER TOREDO AG OIML E1 Class 1kg	328,000	3	984,000	A
	Standard Weight	METTLER TOREDO AG OIML E1 Class 20kg~1mg(5box) (With certification report)	4,530,000	3	13,590,000	A
	Electronic Balance with accessories	METTLER TOLEDO AG AT-106 Balance unit, Control unit, Cover, Stone Table, Printer(LC-P45), AC Adapter	4,922,000	1	4,922,000	A
	Standard Weight	METTLER TOREDO AG OIML E2 Class 20kg~1mg(5box)	2,355,000	1	2,355,000	A
	Standard Weight	METTLER TOREDO AG OIML E2 Class 20kg~1mg(5box)	1,947,500	2	3,895,000	A
	Electronic Balance with accessories	METTLER TOLEDO AG PR-5003 Balance unit, Control unit, Cover, Stone Table, Printer(LC-P45), AC Adapter	1,630,000	1	1,630,000	A
	Electronic Balance with accessories	METTLER TOLEDO AG AT-1004 Balance unit, Control unit, Cover, Stone Table, Printer(LC-P45), AC Adapter Standard Weight F1 class 1kg	3,714,000	1	3,714,000	A
97/1/18 (1995)	Electric Balance	NIHON ZARUTORIUS C20000 Mainbody(Road-cell) type:000V0A2 Alternator C20000-000V0A2 Alternator C20000-000V0A Control Unit C20000-000V0A2 Display, Cover, Stone Table	6,885,000	1	6,885,000	A
97/9/30 (1996)	Chair	KS-463 550(W)x525(D)x770-990(H)mm	25,000	2	50,000	A
	Manometer	YOKOGAWA Digital Manometer 2652-33-U2C1-F, AC220V/50HZ	630,000	1	630,000	A
	Glass Vessel	φ210mm x H210mm	180,000	2	360,000	A
	Desiccator	OGAWA GLASS Co.,LTD. 150mmφ, 240mmφ and Accessory	135,000	1	135,000	A
	Standard Weight Set	MURAKAMI KOKI Co.,LTD OIML F1 Class 20kg~1mg(4 box each)	1,170,000	2	2,340,000	A
	Water Distilling Appatatus	SHIMAZU CORPORATION BE-35	230,000	1	230,000	A
	Regent Strage Cabinet and accessories	SHIMAZU CORPORATION RCB-30	260,000	1	260,000	A

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List of Machinery and Equipment Provided by the Japanese Side

Mass (6/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
97/9/30 (1996)	Consumable Things	Thermometer, Cloth, Glove, Special Tissue, Jet Blow, Vat, Lupe, Petri Dish, Beaker, Erlenmeyer Flask, Wash Bottle, Regent Bottle, Pipet, Ethnol, Acetone, Benzene	176,300	1set	176,300	—
98/1/6 (1996)	Mass Comparator with accessories	NIHON ZARUTORIUS C20000-000V0A2 Mainbody(Road-cell) Altanator C20000-000V0A2 Control Unit C20000-000V0A2 Display, Cover, Stone Table Standard Accesories Weight Set 10kg Weight for Calibration E2 class 50g	7,700,000	1	7,700,000	A
	Mass Comparator with accessories	NIHON ZARUTORIUS C10000S Mainbody, Display C10000S YDP03 0CE Printer Stone Table & standard accessories Weight Set Weight for Calibration E2 class 50g	6,200,000	1	6,200,000	A
	Mass Comparator with accessories	METTLER TOLEDO AG AT-1005 Balance unit, Control unit, Cover, Stone Table, Printer(LC-P45), AC Adapter	6,600,000	1	6,600,000	A
	Mass Comparator with accessories	METTLER TOLEDO AG UMT2 Balance unit, Control unit, Cover, Stone Table, Printer(LC-P45), AC Adapter	2,800,000	1	2,800,000	A
	Ultra -Precision Balance with accessories	SHIMAZU Co., Special Model SIMAZU Printer (EP-50), Cover Standard Weight OIML F1 Class	15,000,000	1	15,000,000	A
	Measuring System for Special Gravity	SHIMAZU Co., Model: SGM-300P Balance unit, Control unit, Cover,	2,290,000	1	2,290,000	A
98/5/12 (1997)	Precision Weight Set	MURAKAMI KOKI Co.,LTD OIML F2 Class 20kg~1mg(4 box each)	1,320,000	2	2,640,000	A
	Cabinet	Dalton CS-114	45,000	4	180,000	A
	Comsumable Things	Clean Ace, Dust Mat, No Dust Uniform, Shoes Cover, etc.	1,218,000	1	1,218,000	—
99/7/28 (1998)	Standard weight	MURAKAMI KOKI Co.,LTD OIML M1(100g, 1kg)	27,000	1	27,000	A
		MURAKAMI KOKI Co.,LTD OIML M2(100g, 1kg)	25,000	1	25,000	A
	Stone table	SHIMAZU CORPORATION VB-A9, 900(W) x 750(D) x 800mm(H)	186,000	1	186,000	A
	Comsumable Things	Glove etc.	9,000	1	9,000	—
			Total		97,354,300	

Date	Name of Equipment	Type	Unit Price (S.P.)	Q'ty	Amount (S.P.)	Status
98/2/18 (1997)	Personal Computer set	Assembled type CPU: 166Mhz(Intel) with CPU FAN RAM: 32MB EDO VGA card PCI 1MB RAM Exp. to 2M, HDD: 2.1GB, FDD: 3.5 inch Sony, CD ROM: x16 speed, Mini tower case, Key-board(win95), MS-Mouse, 14-inch Monitor(NI.LR 0.28 DPI) Power Supply: AC 220V±10%, 50Mhz Software: MS Windows 95(Arabic Version) MS-Office 95 for Windows Printer: Hewlett Packard HP-6L UPS UPGUARDS Co., Pro 1000 Model: 1062A 1000VA standby	118,000S.P.	1	118,000S.P.	A
			Total		118,000S.P.	

Legend A: Good Condition, B: Need minor repair

List of Machinery and Equipment Provided by the Japanese Side

Pressure

(7/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
97/9/30 (1996)	Pressure Gauge	NAGANO KEIKI SEISAKUSHO LTD. GA21-241(Class 0.5) 0~5MPa ±0.5%F.S.	75,000	1	75,000	A
	Tools Set	KIMACHI Co., Model SK401M	90,000	1	90,000	A
	Fortin Barometer	TOKYO SUZUKI SEISAKUSHO Co.,LTD. PM-2	660,000	1	660,000	A
	Pressure Gauge	NAGANO KEIKI SEISAKUSHO LTD. GA21-241(Class 0.5) 0~25MPa ±0.5%F.S.	110,000	1	110,000	A
	Pressure Gauge	NAGANO KEIKI SEISAKUSHO LTD. GA21-241(Class 0.5) 0~50MPa ±0.5%F.S.	110,000	1	110,000	A
	700Kpa Digital Manometer	YOKOGAWA MT-120 Model 265205-U2-C1-F	820,000	1	820,000	A
	Compressor with accessories	HITACHI PA1000S Transformer SUGANO ELECTRIC LAB. LTD. Model:1500AE 100V,15A 220~240V・100V	135,000	1	135,000	A
	Displacement Gauge	SENTEC LS500-15, HA-3025 Range 10mm	100,000	1	100,000	A
	Weight	MURAKAMI KOKI Co.,LTD. OIML CLASS M2 1kg-10mg 21pcs	230,000	1	230,000	A
	Weight	MURAKAMI KOKI Co.,LTD. OIML CLASS M2 500g-10mg 20pcs	200,000	1	200,000	A
	Recorder with accesoory	YOKOGAWA ELECTRIC CO., Model:371243-B-O/F	285,000	1	285,000	A
	Digital Multimeter	YOKOGAWA ELECTRIC CO., 7541-01/B	122,000	1	122,000	A
	Table	SAKAE LTD. WP-8F 1800(W)x800(D)x740(H)mm	100,000	1	100,000	A
		SAKAE LTD. KWF-188T1 1800(W)x800(D)x740(H)mm	70,000	3	210,000	A
		SAKAE LTD. CK187PD 1800(W)x750(D)x740(H)mm	25,000	2	50,000	A
		SAKAE LTD. BR-1146 900(W)600(D)x1800(H)mm	40,000	2	80,000	A
	Desk & Chair	KOKUYO Desk SD-S583, Chair CR-1	9,600	2	19,200	A
	Pressure Calibrator with accessories	NAGANO KEIKI SEISAKUSHO LTD. Model:PC-33 & Sensor unit Transformer TOYOZUMI DENGEN KIKI Co.,LTD. Model:CD220-01 100VA NAGANO KEIKI SEISAKUSHO LTD. HAND PUMP MODEL: PP11, 0~1MPa HAND PUMP MODEL: PP12, 0~20MPa HAND PUMP MODEL: PP13, 0~50MPa Carring Case(Aluminium Type)	2,612,000	1	2,612,000	A
	Others	Stop Watch etc.	9,000	1	9,000	—
98/3/25 (1996)	Pressure Sensor	MINEBEA Co.LTD. PRB-100MPa	85,000	1	85,000	A
	Water Column Tester with accessories	NAGANO KEIKI SEISAKUSHO Co. PM43-241 Controller PM26 Water Column 0~20.0MPa	1,200,000	1	1,200,000	A
	Mercury Column Tester with accessories	NAGANO KEIKI SEISAKUSHO Co. PM13,XJ11 Controller PM13-233 Mercury Column 0~200KPa	600,000	1	600,000	A
	Dead Weight Tester (5MPa)	NAGANO KEIKI SEISAKUSHO Co. PD13-M01 Mainbody & Dead Weight(2 Box)	568,000	1	568,000	A
	Dead Weight Tester (20MPa)	NAGANO KEIKI SEISAKUSHO Co. PD23-M01 Mainbody & Dead Weight(3 Box)	1,240,000	1	1,240,000	A
	Dead Weight Tester (50MPa)	NAGANO KEIKI SEISAKUSHO Co. PD23-M01 Mainbody & Dead Weight(3 Box)	1,240,000	1	1,240,000	A
	Pressure Sensor	MINEBEA Co.,LTD. DHF-10MPa	161,000	1	161,000	A
	Degital Indocator	NMB CSD-902-P64-P74	250,000	1	250,000	A
	Digital Indicator	NMB CSD-802-P15-P64	180,000	1	180,000	A
	Dead Weght Tester with accessories	NAGANO KEIKI SEISAKUSHO Co. PD89 Control Pack 500MPa PD82 Pneumatic Dead Weight Tester Dead Weight 2 Box	4,800,000	1	4,800,000	A
	10MPa Standard Dead Weight Tester with accessories	NAGANO KEIKI SEISAKUSHO Co. PD66-M01 Controller Dead Weight Tester & Dead Weight(3 Box)	6,340,000	1	6,340,000	A
	100MPa Standard Dead Weight Tester with accessories	NAGANO KEIKI SEISAKUSHO LTD. PD66-M01 Controller Dead Weight Tester & Dead Weight(3 Box)	6,900,000	1	6,900,000	A

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List of Machinery and Equipment Provided by the Japanese Side

Pressure (8/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
99/1/26 (1998)	Pneumatic Weight type Pressure Gauge with accessories	NAGANO KEIKI SEISAKUSHO LTD. Main frame, Pump, Macleod Gauge, Hand pump etc.	4,830,000	1	4,830,000	A
99/2/5 (1998)	Accessories for Pneumatic Calibration System	Comparator PR10003	2,200,000	1	2,200,000	A
99/2/23 (1998)	Stand for compare & Calibration System with accessories	NAGANO KEIKI SEISAKUSHO LTD.	367,000	2	734,000	A
	Piston sylinder set for Dead Weight Tester with accessories	NAGANO KEIKI SEISAKUSHO LTD.	1,036,000	1	1,036,000	A
	Pneumatic Compare & Calibration System with accessories	NAGANO KEIKI SEISAKUSHO LTD.	2,312,000	1	2,312,000	A
	Pneumatic Dead Weight Tester with accessories	NAGANO KEIKI SEISAKUSHO LTD. Model: PDB2	4,406,000	1	4,406,000	A
	Low oil pressure Compare & Calibration system with accessories	NAGANO KEIKI SEISAKUSHO LTD.	2,238,000	1	2,238,000	A
	High oil pressure Compare & Calibration system with accessories	NAGANO KEIKI SEISAKUSHO LTD.	5,106,000	1	5,106,000	A
	Oil type Dead Weight Tester tester	NAGANO KEIKI SEISAKUSHO LTD. Model: PD66	5,777,000	1	5,777,000	A
			Total		58,220,200	

Date	Name of Equipment	Type	Unit Price (S.P.)	Q'ty	Amount (S.P.)	Status
98/2/18 (1997)	Personal Computer set	Assembled type CPU: 166Mhz(Intel) with CPU FAN RAM: 32MB EDO VGA card PCI 1MB RAM Exp. to 2M, HDD: 2.1GB, FDD: 3.5 inch Sony, CD ROM: x16 speed, Mini tower case, Key-board(win95), MS-Mouse, 14-inch Monitor(NI.LR. 0.28 DPI) Power Supply: AC 220V±10%, 50Mhz Software: MS Windows 95(Arabic Version) MS-Office 95 for Windows Printer: Hewlett Packard HP-6L UPS UPGUARDS Co., Pro 1000 Model: 1062A 1000VA standby	118,000S.P	1	118,000S.P.	A
			Total		118,000S.P.	

Legend A: Good Condition, B: Need minor repair

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List of Machinery and Equipment Provided by the Japanese Side

Electricity and Temperature

(9/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Stauts
96/8/27 (1995)	Standard Platinum Resistance Thermometer	CHINO CORPORATION Model R-800-2	589,000	1	589,000	A
	Standard Thermocouple	CHINO CORPORATION Model C800-15	408,000	1	408,000	A
	DC Nanovolt Amplifier	EM ELECTRONICS (ENGLAND) Model A10	498,000	1	498,000	A
97/1/18	Standards watt Converter	YOKOHAMA ELECTRIC CO., Model:2885 21	1,631,000	1	1,631,000	A
98/2/18 (1996)	Digital AC/DC Clamp-on Tester	YOKOGAWA ELECTRIC CO., Model:CL-612	29,000	2	58,000	A
	Hunidity & Temperature Meter with accessories	YOKOGAWA ELECTRIC CO., Model:2451 01 Leveler, Tool Kit etc.	88,000	1	88,000	A
	Digital Phase-Frequency Meter	Keihin DENSOKKI CO., MODEL:DPF-300/E-85	576,000	1	576,000	A
	DC Calibration Set	YOKOGAWA ELECTRIC CO., 2553 DC Voltage Current Standards Model:2553 42	1,150,000	1	1,150,000	A
		2563 DC Voltage Unit Model:2563 00				
		2564 Current Unit Model:2564 00				
	AC Voltage/Current Standard	YOKOGAWA ELECTRIC CO., Model:2558 01-6/F/RAK	1,320,000	1	1,320,000	A
	6-Digital DecadeResistance Box	YOKOGAWA ELECTRIC CO., Model:2793 01 Max:1111.210Ω, Min:0.100Ω	370,000	2	740,000	A
	6-Digital DecadeResistance Box	YOKOGAWA ELECTRIC CO., Model:2793 03 Max:1111.1110Ω	570,000	2	1,140,000	A
	Standard Resistor	YOKOGAWA ELECTRIC CO., 2792 1mΩ, 2792 10mΩ, 2792 0.1Ω, 2792 1Ω, 2792 10Ω, 2792 100Ω, 2792 1KΩ, 2792 10KΩ, 2792 100KΩ	144,000	9	1,296,000	A
		YOKOGAWA ELECTRIC CO., 2792 1MΩ	216,000	1	216,000	A
	Universal Counter	YOKOGAWA ELECTRIC CO., Model: T120	446,000	1	446,000	A
	Synthesized Function Generator	YOKOGAWA ELECTRIC CO., Model:FG110	560,000	1	560,000	A
	DC Nano-Volt Amplifair		530,000	2	1,060,000	A
	Digital Oscilloscope	YOKOGAWA ELECTRIC CO., OL1540 Model:7015 10-5F/B5/E1	1,114,000	1	1,114,000	A
	Inslation Tester	YOKOGAWA ELECTRIC CO., Model:2426 10	54,000	2	108,000	A
	Digital Multimeter	YOKOGAWA ELECTRIC CO., Model:7544 02	59,000	2	118,000	A
	Digital Power Meter	YOKOGAWA ELECTRIC CO., WT2030 Model:253103	2,700,000	1	2,700,000	A
	Prpogramable 3-Phase Power Generator	Keihin DENSOKKI CO., Reference Seter PWS-307C	7,400,000	1	7,400,000	A
		Out-put Unit PWS-307T				
		Single Phase Out-put Unit PWS-307AMT				
		Power Amplifier PWS-307AM				
		Voltage Adopter LVA-18				
	Mounting Rack with accessories		2,000,000	3	6,000,000	A
	Standard Watt Converter	YOKOGAWA ELECTRIC CO., Model:2885 20	2,500,000	1	2,500,000	A
	Self-Cal Digital Multimeter	YOKOGAWA-Datron Model:1271	1,760,000	1	1,760,000	A
	Universal Calibration System	YOKOGAWA-Datron Model:9100	4,290,000	1	4,290,000	A
	Self-Cal Digital Multimeter	YOKOGAWA-Datron Model:1271	1,760,000	1	1,760,000	A
	Track Car with special accessories	MITSUBISHI Moter Company KC-FK617KHL 190P/S, Diesel Engine 8,335(L)x2,210(W)x3,500(H)mm	20,800,000	1	20,800,000	A
98/5/12 (1997)	Comsumable Things	DC Power Supply, Zener Diode, Thermister, Metal Foil Precision Resister etc.	916,500	1	916,500	—
98/2/5# (1998)	Oscillographic Recorder	YOKOGAWA	249,000	1	249,000	A
		Battery Charger & Carry Case				
99/2/18 (1998)	Higt-precision Standard Resister	YOKOGAWA ELECTRIC Co., 2781-04	590,000	3	1,770,000	A
				Total	63,261,500	

Date	Name of Equipment	Type	Unit Price (US $)	Q'ty	Amount (US $)	Status
98/2/8 (1997)	Accompanied Car forCalibration Service Car	SUBARU LEGACY 2.2GX S/W WD Station-wagon type, 2200cc Gasoline Type	17,500US $	1	17,500US $	A
				Total	17,500US $	

Legend A: Good Condition, B: Need minor repair

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List of Machinery and Equipment Provided by the Japanese Side

Air-conditioning system

(10/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
96/7/10 (1995)	Humidifier with accessories	a.KPH-2 Capacity:2.4•/h, Piping dia.:25A Power source:3phase,380V, 2kw b.KPH-1 Capacity:1.2•/h, Piping dia.:25A Power source:3phase,380V, 1kw	71,000	10	710,000	A
	Cooling Water Circulation Pump with accessories	EBARA CORPORATION FS-65x50 4H-51.5 Capacity:200•/min. Total head:130kpa, Dia.:65 ϕ x50 ϕ Power source:3phase,380V,50hz 1.5kw gauge,valve,flange,bolt, nuts,packing etc.	245,000	2	490,000	A
	Cooling Water Pump with accessories	EBARA CORPORATION FS-80x65 4K55.5 Capacity:500•/min. Total head:250kpa, Dia.:80 ϕ x65 ϕ Power source:3phase,380V,50hz 5.5kw gauge,valve,flange,bolt, nuts,packing etc.	485,000	2	970,000	A
	Three Way Valve Apparatus	a.Three way valve apparatus V5065A(valve body),Dia.:25Ax25A(port 20A) b.Controll moter:M7284C1067 c.Transformer:AT72-J1(24V) d.Valve linkage:Q455C e.Flow switch:FS4-3J	234,000	10	2,340,000	A
	Air Diffuser	AL-K3000, AL-k1500x2pcs/sets Air volume:44•/min.,Air speed:v=2.5m/sec. Vent mouth total length:3 m Slit vent width:100mm with wind vane	148,000	5	740,000	A
	Filter Unit for Outside Air	AIR TECH JAPAN LTD. Model:OFU-400 Air volume:400•/h Power source:3phase,380V,50hz	455,000	4	1,820,000	A
	Ventilation Units	AIR TECH JAPAN LTD. a.type:Floor typr,with flange for dust Air volume:22•/min., Filter:Prefilter Heater:11kw(3kw+4kw+4kw) Power source:3phase,380V,50hz b.Thermostat:LWS-C1060AR	690,000	1	690,000	A
	Recorder	YOKOGAWA CORPORATION HYBRID RECORDER HR-2400 408222-01 with 250orm resistance	905,000	1	905,000	A
	Draft Chamber and Accessories	AIR TECH JAPAN LTD. FF-1303KS Exhaust air volume:10•/min. Suction dia.:15A, drain dia.:32A Power source:single phase,220V,50hz	1,150,000	1set	1,150,000	A
	Air Conditioning Unit (with Damper & Damper Connecter)	HITACHI RF-5P Cooling capacity:4,800Kcal Airvolume:44•/min. Intaked air:20℃ 55% 145.7WB Cooling water:Temp.9℃:volume 40•/min. Heater:3KW Power source:3phase,380V,50Hz	876,000	10	8,760,000	A
	Controller for Temp. & Humidity	a.Temperature controller YOKOGAWA UT-35 Cooling side:continuous output PID(4~12maDC) Heating side:Time proportionality output PID (SSR in case of AC input 4~12mA DC) b.Humidity controller (24V DC power type 4~20mA) YOKOGAWA UT-37 Humidity side:Time proportionality output PID (SSR in case of AC input 4~20mA DC)	178,000	10	1,780,000	A
	Sensor for Temp. & Humidity	a.Temperature detector HAYASHI DENKI JAPAN b.Humidity detector SH-35(4~29mA DC) c.Temp. & Humidity detector for recorder CHINO CORPORATION HN-Q20(pt 100ohm 4~20mADC) d.Distributor(ac220V/DC24V)	177,000	10	1,770,000	A

Annex 14-1

List of Machinery and Equipment Provided by the Japanese Side

Air-conditioning system

(11/11)

Date	Name of Equipment	Type	Unit Price (Yen)	Q'ty	Amount (Yen)	Status
96/7/10 (1995)	HEPA Filter Unit with Manometer	.AIR TECH JAPAN LTD. a.AFU-C28 Capacity:DOP 0.3 99.99% Air volume:28㎥/min., single phase, 220V b.AFU-C28 Capacity:DOP 0.3 99.99% Air volume:28㎥/min., three phase, 380V c.Inverter FUJI ELECTRIC CO.,Ltd FVRO-75E9S-7 2pcs/set	7,300,000	1unit	7,300,000	A
	Clean Air Shower with accessories	.AIR TECH JAPAN LTD. AAS-808A HEPA filter:0.3μ 99.9% door width:800mm, light:20W 3phase,380V,50hz a.Garmet stocker AGL-2m 220V,1 φ b.Safety-Damper APD-10C c.Pressure gauge WO-81	2,130,000	1set	2,130,000	A
	Valve	a. Gate Valve JIS 5K 80A, 65A, 50A, 40A, 32A, 25A b. Stop Valve JIS 5K 15A, c. Air Vent 15A d. Glove Valve 80A, 25A e. Strainer 80A f. Flexble Tube 80A, 65A, 50A g. Pressure Gauge 75 φ h. Thermometer(Dial type) 75 φ i. Flange	790,000	1set	790,000	—
	Solid State Relay	a. Electric Power unit G3PA-220B b. onnecting unit G32-EA	545,000	1	545,000	—
	Accessories	a. Shock-Absorber type rack for Pump DB-2, DB-5 b. Wood Base for Air Conditioner c. Single Shield Cable MVVS 1.25 d. Particle Counter RION Co.,Ltd. Model KM-07 e. Sensor Panel f. Relay & Lamp	3,500,000	1set	3,500,000	—
	Spare Parts	a. HEPA Filter Unit b. Filter for Air Shower c. Controller UT-35, UT-37, UT40 d. Humidity Sensor SH-35, HN-Q20 Distributor HN-W1A e. Humidifier KPH-2, KPH-1 f. Solid State Relay G3PA-220B,G32A-EA g. Heater Element h. Flange i. Others	6,110,000	1set	6,110,000	A
			Total		42,500,000	

Legend A: Good Condition, B: Need minor repair

List of Machinery, Equipment and Infrastructure provided by the Syrian side

(1) Machinery and Equipment

1. Electrical furnace for Temperature and Humidity Section
2. Oil bath for Fundamental Electrical Section
3. LAN (Local Area Network)
4. Computers and Printers
5. Control panels
6. AC Power panels
7. Recorder panels
8. Spare parts
9. Consumable materials
10. Furniture
11. Books and Magazines

(2) Infrastructure

1. Water tank
2. Thermal Insulation
3. 2nd Ceiling
4. Partition
5. Air duct and Fresh air ducting
6. Floor
7. AC Power line between Panels and Devices
8. Control/Signal line
9. Drain piping
10. Water supply (after purification)
11. Cooling gas injecting
12. Garage for Calibration Vehicle

Evaluation Sheet for Technology Transfer of the Project -Length-

Subject	Current Status						Future Plan			Actual Products
	Input			Establishment & Maintenance	Calibration	Measures to Monitor	Item Not Achieved	Mode of Technology Transfer	Necessary Equipment	
	Counterpart (C/P Training) (1)	Expert (Term)	Main Equipment	Current Level /Goal (2)	Current Level /Goal (3)	(4)	(5)		(6)	
1.Standard Scale Measurement (200-2000mm)	*Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) M.Masri (97.5.25-10.26)	Shigeru UENO (97.11.13-28) (98.11.19-12.02) Yasuo MIYAMA (99.4.21-5.19)	1.Standard Scale Measuring Machine (Techno Precision; 97.8.19)	4/4	4/4	a b-1 b-2 c				1.Operational Manual 2.Calibration procedure 3.Calibration report 4.Calibration certificate 5.Calibration result sheet 6.Calibration record
2.Gauge Blocks Measurement (0.5~500mm)	*Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) M.Masri (97.5.25-10.26)	Makoto KOYAMA (96.8-97.5) Jiro MATSUDA (97.2.7-3.15) Kensei EHARA (98.10.2-12) Yoichi AWANO (98.10.23-11.18) Fumio KUBOTA (99.1.28-2.24) Masami HORITA (99.4.2-30) Yasuo MIYAMA (99.4.21-5.19)	1.Gauge block set (MITSUTOYO;96.8.26) (TSUGAMI;97.1.18) 2.Comparator for gauge blocks (TSUGAMI;97.1.18)	4/4	4/4	a b-1 b-2 c				
3.Gauge Blocks Measurement (500~1000mm)	*Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) M.Masri (97.5.25-10.26)	Makoto KOYAMA (96.8-97.5) Yasuhiro KUGE (96.10.11-26) Tsuneo SHIMIZU (96.10.11-26) Yoichi AWANO (98.10.23-11.18) Shinichi TAKAHASHI (99.4.21-5.19) Yasuo MIYAMA (99.4.21-5.19)	1.Gauge block set (MITSUTOYO;96.8.27) 2.Measuring Machine (Mahr PC-828;96.8.27)	4/4	4/4	a b-1 b-2 c				
4.Angle Gauges Measurement	Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) *M.Masri (97.5.25-10.26) S.Sharaf (98.10.4-99.3.17)	Yoichi AWANO (98.10.23-11.18) (99.6.24-7.15) Makiko NAKANO (99.6.17-7.5)	1.Sine bar (TSUGAMI B-20;96.8.27)	4/4	4/4	a b-1 b-2 c				

(1)
The period shown in the () includes the training for other parameters

(*) The C/P with major responsibility for the parameter

(2),(3)
1:Yet to be implemented
2:Implemented partically, on going
3:Operatable with expert's advise
4:Operatable without expert's advise

(4)
a:Measurement data
b-1:Calibration data
b-2:Intercomparison data
c:Documents

(5)
A:Measuring Technique
B:Calibration Technique
C:Documentation

(6)
Such Equipment will be provided within the limits of the budget

Evaluation Sheet for Technology Transfer of the Project -Length-

Subject	Current Status						Future Plan			Actual Products
	Input			Establishment & Maintenance	Calibration	Measures to Monitor	Item Not Achieved	Mode of Technology Transfer	Necessary Equipment	
	Counterpart (C/P Training) (1)	Expert (Term)	Main Equipment	Current Level /Goal (2)	Current Level /Goal (3)	(4)	(5)		(6)	
5.Polygon Mirror Measurement	Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) *M.Masri (97.5.25-10.26) S.Sharaf (98.10.4-99.3.17)	Yoichi AWANO (98.10.23-11.18) (99.6.24-7.15) Makiko NAKANO (99.6.17-7.5)	1.Polygon mirror (NIKON;96.8.27) 2.Indextable (Daiichi sokuhan SPD-720A;97.1.18)	4/4	4/4	a b-1 b-2 c				1.Operational Manual 2.Calibration procedure 3.Calibration report 4.Calibration certificate 5.Calibration result sheet 6.Calibration record
6.Outside Diameter Measurement	Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) *M.Masri (97.5.25-10.26) S.Sharaf (98.10.4-99.3.17)	Makoto KOYAMA (96.8-97.5) Yasuhiro KUGE (96.10.11-26) Tsuneo SHIMIZU (96.10.11-26) Masami HORITA (97.2.25-3.10) (97.6.25-7.19) (98.10.8-17) Makiko NAKANO (99.6.17-7.5)	1.Measuring Machine (Mahr PC-828;96.8.27) (TSUGAMI UM2D;97.1.17)	4/4	3/4	a b-1 b-2 c	B	Short term expert		
7.Inside Diameter Measurement	Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) *M.Masri (97.5.25-10.26) S.Sharaf (98.10.4-99.3.17)	Makoto KOYAMA (96.8-97.5) Yasuhiro KUGE (96.10.11-26) Tsuneo SHIMIZU (96.10.11-26) Masami HORITA (97.2.25-3.10) (97.6.25-7.19) (98.10.8-17) Makiko NAKANO (99.6.17-7.5)	1Measuring Machine (Mahr PC-828;96.8.27) (TSUGAMI UL5D;97.1.18) 2.Measuring Micrometer (TSUGAMI UM2D;97.1.17)	4/4	2-3/4	a b-1 b-2 c	B	Short term expert		
8.Screw Thread Measurement	Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) M.Masri (97.5.25-10.26) *S.Sharaf (98.10.4-99.3.17)	Kenji ISHIHARA (97.9.4-10.2) (98.7.4-7.31) Toshiaki YASUDA (99.8.5-10.15)	1.Measuring Machine (TSUGAMI UL5D;97.1.18) 2.Measuring Micrometer (TSUGAMI UM2D;97.1.17)	4/4	2-3/4	a c	C	Short term expert		1.Operational Manual 2.Testing procedure 3.Testing report 4.Testing certificate 5.Testing result sheet

(1)
The period shown in the () includes the training for other parameters

(*) The C/P with major responsibility for the parameter

(2),(3)
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2:Implemented partically, on going
3:Operatable with expert's advise
4:Operatable without expert's advise

(4)
a:Measurement data
b-1:Calibration data
b-2:Intercomparison data
c:Documents

(5)
A:Measuring Technique
B:Calibration Technique
C:Documentation

(6)
Such Equipment will be provided within the limits of the budget

Evaluation Sheet for Technology Transfer of the Project -Length-

Subject	Current Status: Input: Counterpart (C/P Training) (1)	Current Status: Input: Expert (Term)	Current Status: Input: Main Equipment	Current Status: Establishment & Maintenance: Current Level /Goal (2)	Current Status: Calibration: Current Level /Goal (3)	Current Status: Measures to Monitor (4)	Future Plan: Item Not Achieved (5)	Future Plan: Mode of Technology Transfer	Future Plan: *Necessary Equipment	Actual Products
9.Surface Roughness Measurement	Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) M.Masri (97.5.25-10.26) *S.Sharaf (98.10.4-99.3.17)	Toshiaki YASUDA (99.8.5-10.15)	1.Surface roughness tester (MITSUTOYO;97.3.21)	2/4	2-3/4	a c	A C	Short term expert		1.Operational Manual 2.Testing procedure 3.Testing report 4.Testing certificate 5.Testing result sheet
10.Roundness Measurement	Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) M.Masri (97.5.25-10.26) *S.Sharaf (98.10.4-99.3.17)	Makoto KOYAMA (96.8-97.5) Tsuneo SHIMIZU (96.10.11-26) Toshiaki YASUDA (99.8.5-10.15)	1.Roundness tester (TOKYO SEIMITSU 45A; 96.8.27)	4/4	2-3/4	a c	C	Short term expert		
11.Form Measurement	Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) M.Masri (97.5.25-10.26) *S.Sharaf (98.10.4-99.3.17)	Toshiaki YASUDA (99.8.5-10.15)	1.Form tester (TOKYO SEIMITSU; 97.8.19)	2/4	2-3/4	a c	A C	Short term expert		
12.Measurement testing (Micrometer, Dial Gauge, Hight Gauge, Vernier Caliper, Bore Gaige)	Z.Kanakrieh (96.5.18-8.22) (98.3.27-7.12) M.Masri (97.5.25-10.26) *S.Sharaf (98.10.4-99.3.17)	Makoto KOYAMA (96.8-97.5) Toshiaki YASUDA (99.8.5-10.15)	1.Measuring Machine (Mahr PC-828;96.8.27) 2.Gauge blocks set (TSUGAMI;96.8.27)	4/4	2-3/4	a c	C	Short term expert		

(1)
The period shown in the () includes the training for other parameters

(*) The C/P with major responsibility for the parameter

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2:Implemented partically, on going
3:Operatable with expert's advise
4:Operatable without expert's advise

(4)
a:Measurement data
b-1:Calibration data
b-2:Intercomparison data
c:Documents

(5)
A:Measuring Technique
B:Calibration Technique
C:Documentation

(6)
Such Equipment will be provided within the limits of the budget

Evaluation Sheet for Technology Transfer of the Project -Mass-

Subject	Current Status						Future Plan			Actual Products
	Input			Establishment & Maintenance	Calibration	Measures to Monitor	Item Not Achieved	Mode of Technology Transfer	Necessary Equipment	
	Counterpart (C/P Training) (1)	Expert (Term)	Main Equipment	Current Level /Goal (2)	Current Level /Goal (3)	(4)	(5)		(6)	
Direct comparison Technique	S.Issa (97.11.16-98.5.15) M.Rashed (96.10.19-97.4.19)	Shozo YANO (96.4.7-98.5.2) (98.10.30-99.11.30) Itaru KANO (97.2.28~3.10) Itaru KANO (98.2.5-2.20) Akira NISHIO (98.4.9-29) Shozo YANO (98.9.4~28) Yoshihiko NEZU (99.2.25-3.12)	1.Mass comparator (C-20000) 2sets 2.Mass comparator (C-10000S) 3.Electronic balance (AT-1005,AT-106) (PM 5003,AT1004) (AEG-80SM,AEG-45M) (EB-20KHS) 4.Electronic micro-balance 5.Electronic chemical balance 6.Specific gravity balance 7.Standard weights E1 class 4 sets E2 class 3 sets F1 class 2 sets F2 class 2 sets (96.8.27, 96.12.11, 97.1.18,97.9.30, 98.1.6, 98.5.12, 99.7.28)	4/4	4/4	a b-1 b-2 c				1.Technical text 2.Operation manual 3.Calibration procedure 4.Calibration report 5.Calibration certificate 6.Calibration result sheet 7.Calibration record
Equivalent comparison technique	S.Issa (97.11.16-98.5.15) M.Rashed (96.10.19-97.4.19)			4/4	3/4		B	Long term expert		
Sub-multiple comparison technique	S.Issa (97.11.16-98.5.15) M.Rashed (96.10.19-97.4.19)			4/4	3/4					
Multiple comparison technique	S.Issa (97.11.16-98.5.15) M.Rashed (96.10.19-97.4.19)			4/4	3/4					

(1)
The period shown in the () includes the training for other parameters

(2),(3)
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2:Implemented partically, on going
3:Operatable with expert's advise
4:Operatable without expert's advise

(4)
a:Measurement data
b-1:Calibration data
b-2:Intercomparison data
c:Documents

(5)
A:Measuring Technique
B:Calibration Technique
C:Documentation

(6)
Such Equipment will be provided within the limits of the budget

Evaluation Sheet for Technology Transfer of the Project -Pressure-

Subject	Current Status: Input: Counterpart (C/P Training) (1)	Current Status: Input: Expert (Term)	Current Status: Input: Main Equipment	Current Status: Establishment & Maintenance: Current Level /Goal (2)	Current Status: Calibration: Current Level /Goal (3)	Current Status: Measures to Monitor (4)	Future Plan: Item Not Achieved (5)	Future Plan: Mode of Technology Transfer	Future Plan: *Necessary Equipment	Actual Products
Absolute range (5~130kPa abs.)	M.Razouk (97.9.19-12.7) M.Al Dammad S.Al Ahmer (98.10.4-12.18)	Akira OIWA (98.4.9-22) Shigemutsu OGAWA (98.4.18-5.16) (98.10.8-11.20) (99.2.9-3.26) (99.5.8-7.21)	1.Fortin Barometer 87~109kPa (98.3.25) 1. Dead Weight Tester (1~130Kpa abs.) 2.Digital pressure indicator(0~130kPa) (99.2)	4/4	3/4	a b-1 c	B C	Short term experts Mass Expert C/P training		1.Operation Manual 2.Calibration procedure 3.Calibration report 4.Calibration certificate 5.Calibration result sheet 6.Calibration record
Low pressure range(Gas) (5kPa~1MPa)	M.Razouk (97.9.19-12.7) M.Al Dammad S.Al Ahmer (98.10.4-12.18)	Kazumasa TSUKADA (99.2.9-3.26) (99.5.8-6.11)	1.Dead Weight tester (National standards) (Gas) 4kPa~1MPa 2.Water column tester(0~20kPa) 3.Digital Pressure Indocator (Gas) 0~700kPa 4.Prssure Calibrator 0~500kPa,0~1MPa (98.3.25) 1.Null balanced cross float system(1MPa) (99.1.26, 2.5, 2.23)	4/4	3/4	a b-1 b-2 c	B C	Short term experts Mass Expert C/P training		
Low pressure range (Oil) (1MPa~10MPa)	M.Razouk (97.9.19-12.7) M.Al Dammad S.Al Ahmer (98.10.4-12.18)		1.Dead Weight tester (National standards) (Oil) 1~10MPa 2.Dead Weight tester (Working standards) (Oil) 50kPa~5MPa 3.High Pressure Transducer(0~10MPa) (98.3.25) 1.Null balanced cross float system(10MPa) 2. Digital Pressure Indicator(0~3MPa) (99.2)	4/4	2/4		B C	Short term experts Mass Expert C/P training		

(1)
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1:Yet to be implemented
2:Implemented partically, on going
3:Operatable with expert's advise
4:Operatable without expert's advise

(4)
a:Measurement data
b-1:Calibration data
b-2:Intercomparison data
c:Documents

(5)
A:Measuring Technique
B:Calibration Technique
C:Documentation

(6)
Such Equipment will be provided within the limits of the budget

Evaluation Sheet for Technology Transfer of the Project -Pressure-

Subject	Current Status						Future Plan			Actual Products
	Input			Establishment & Maintenance	Calibration	Measures to Monitor	Item Not Achieved	Mode of Technology Transfer	*Necessary Equipment	
	Counterpart (C/P Training) (1)	Expert (Term)	Main Equipment	Current Level /Goal (2)	Current Level /Goal (3)	(4)	(5)			
High pressure range (Gas) (3~25MPa)	M.Razouk (97.9.19-12.7) M.Al Dammad S.Al Ahmer (98.10.4-12.18)		-----	1/4	1/4		B C	Short term experts	1.N2 Gas Booster	1.Operation Manual 2.Calibration procedure 3.Calibration report 4.Calibration certificate 5.Calibration result sheet 6.Calibration record
High pressure range (Oil) (10~100MPa)	M.Razouk (97.9.19-12.7) M.Al Dammad S.Al Ahmer (98.10.4-12.18)	Akira OIWA (98.4.9-22) Shigemutsu OGAWA (98.4.18-5.16) (98.10.8-11.20) (99.2.9-3.26) (99.5.8-7.21) Kazumasa TSUKADA (99.2.9-3.26) (99.5.8-6.11)	1.Dead Weight tester (National standards) (Oil) 10~100MPa 2.Dead Weight tester (Working standards) (Oil) 0.2~20MPa 3.Dead Weight tester (Working standards) (Oil) 0.5~50MPa 4.High Pressure Transducer 0~100MPa (98.3.25) 1.Null balanced cross float system (100MPa) 2. Digital Pressure indicator(0~42MPa) (99.1.26, 2.5, 2.23)	3/4	3/4	a b-1 b-2 c	B C	Short term experts Mass Expert C/P training		

(1)
The period shown in the () includes the training for other parameters

(2),(3)
1:Yet to be implemented
2:Implemented partically, on going
3:Operatable with expert's advise
4:Operatable without expert's advise

(4)
a:Measurement data
b-1:Calibration data
b-2:Intercomparison data
c:Documents

(5)
A:Measuring Technique
B:Calibration Technique
C:Documentation

(6)
Such Equipment will be provided within the limits of the budget

Evaluation Sheet for Technology Transfer -1st phase follow-up-

Subject	Input			Current Status		Future Plan			Actual Products
	Counterpart (C/P Training) (1)	Expert (Term)	Main Equipment	Current Level /Goal (2)	Measures to Monitor (4)	Item Not Achieved (5)	Mode of Technology Transfer	Necessary Equipment (6)	
1.In-house Comparison of Primary Standards	A.Karouni(DC) M.Zaaweite(PW) M.Harb(Temp.) (98.7.13-8.22)	Yoshihiko NOGUCHI (95.12.1-99.11.30)	Standard Watt Converter (97.2, 98.2) Standard Thermoresistance (96.8) Standard Thermocouple (96.8) Standard Resister (99.2.18)	4/4	b-1				1.Calibration Certificate 2.Historical Card
2.Improvement of Measurement System	Dr.Aghbar (98.8.17-29) M.Harb (98.7.13-8.22) G.Sharani Zaawite A.Karouni R.Ibrahim Abo Adas M.Sweid (97.7.13-12.15) K.Barakat (working Group)	Yoshihiko NOGUCHI (95.12.1-99.11.30)		4/4	c				1.Quality Manual 2.Procedures: Common Procedures, Individual Procedures, etc.
3.Calibration by Mobile Car	T.Haji (99.7.4-8.13) K.Saadi (99.7.12-12.12) I.Kanaan (98.7.8-9.6)	Yoshihiko NOGUCHI (95.12.1-99.11.30) Eiichi GOTO (98.2.6-3.20) Yoasuhiro TSURU (98.3.13-3.20)		4/4	b-1 c				1.Operation Manual 2.Calibration Procedure

(1)
The period shown in the () includes the training for other parameters

(2)
1:Yet to be implemented
2:Implemented partically, on going
3:Operatable with expert's advise
4:Operatable without expert's advise

(4)
a:Measurement data
b-1:Calibration data
b-2:Intercomparison data
c:Documents

(5)
A:Measuring Technique
B:Calibration Technique
C:Documentation

(6)
Such Equipment will be provided within the limits of the budget

level 1	The technical transfer does not start yet.

Establishment/maintenance of standard equipment

level 2	C/Ps have installed the supplied equipment and carried out its performance test in cooperation with the experts. They have understood the principle of measurement on the relevant field. The English operation and maintenance manuals have been provided.
level 3	C/Ps can use the equipment for measurement under the guidance of an expert.
level 4 (target)	C/Ps can use the equipment for measurement by themselves.

Calibration techniques

level 2-1	C/Ps have investigated the influence quantities by environmental condition and mastered relevant techniques.
level 2-2	C/Ps have mastered measurement techniques after they repeated practice in measurement and collected a lot of measurement data.
level 2-3	C/Ps have applied techniques on the analysis of measured data and the estimation of uncertainty of measurement.
level 2-4	Documented management standards and procedures necessary to maintain measurement standards system have been made jointly by the both sides.
level 3	Almost all of techniques have been transfered. C/Ps can maintain their measurement standards system, provide calibration service to customers and make an international comparison, under the guidance of an expert.
level 4 (target)	Transfered techniques have been fixed in NSCL. C/Ps can maintain their measurement standads system, provide calibration service to customers and make an international comparison by themselves.

MH

List of Technical Evaluation Data

Annex 15-6

Length standards

Subject	Means of Evaluation	Criteria	Result(as of 25/8/99)	
1.Standard Scale Measurement (200-2000mm)	Comparison between the data measured by c/p and in Japan	Uncertainty 0.004mm, JIS 1 class	Less than 0.004mm	○
2.Gauge Blocks Measurement (0.5-500mm)	ditto	Uncertainty 0.0001mm ISO 1 class	Less than 0.0001mm	○
3.Gauge Blocks Measurement (500-1000mm)	ditto	Uncertainty 0.0001 + 0.000001 L (L=mm)	Less than 0.0001 + 0.000001 L	○
4.Angle Gauge Measurement	dotto	Uncertainty 5 sec	Less than 5 sec	○
5.Polygon Mirror Measurement	ditto	Uncertainty 5 sec	Less than 5 sec	○
6.Outside Diameter Measurement	Comparison between the data measured by c/p and by DKD (Germany)	Uncertainty 0.0005~0.005mm	To be confirmed by Middle of September	---
7.Inside Diameter Measurement	ditto	Uncertainty 0.005mm	ditto	---
8.Screw Thread Measurement	Checking data measured by c/p and refer to the data measured by maker	In conformity to JIS or ISO standard	Good	○
9.Surface Roughness Measurement	Measurement of standard pieces provided by equipment maker	Provided test data by equipment maker	To be confirmed by the end of October	---
10.Roundness Measurement	ditto	ditto	ditto	---
11.Form Measurement	ditto	ditto	ditto	---
12.Measurement Testing Micrometer Dial Gauge Hight Gauge Vernier Caliper Bore Gauge	Checking data measured by c/p and refering to the data measured by maker	In conformity to JIS or ISO standard	To be confirmed by the middle of September	---

Note : 1~7 : Calibration, 8~12 : Testing

Mass Standards

Subject	Means of Evaluation	Criteria	Result(as of 25/8/99)	
Direct Comparison Technique	Comparison between the data measured by c/p and by DKD in Germany	Uncertainty ±2 μg ~ ±10 mg In conformity to OIML Standard	Less than ±2 μg ~ ±10 mg	○
Equivalent Comparison Technique	ditto	ditto	ditto	○
Sub-multiple Comparison Technique	ditto	ditto	To be confirmed by the middle of September	---
Multiple Comparison Technique	ditto	ditto	ditto	---

Pressure Standards

Subject	Means of Evaluation	Criteria	Result(as of 25/8/99)	
Absolute Pressure	Calculating from the data of Low Pressure (Gas)	Uncertainty ±0.03% or 30 Pa	To be confirmed by the end of October	---
Low Pressure (Gas)	Comparison between the data measured by c/p and by NRLM in Japan	Uncertainty ±0.01% or 10 Pa	ditto	---
Low Pressure (Oil)	ditto	Uncertainty ±0.02% or 0.001 Pa	ditto	---
High Pressure (Gas)	Calculating fom the data of High Pressure (Oil) / Low Pressure (Oil)	Uncertainty ±0.02%	ditto	---
High Pressure (Oil)	Comparison between the data measured by c/p and by NRLM in Japan	Uncertainty ±0.02% or 0.01 Pa	ditto	---

Ledend ○ : Good ----: To be confirmed