

Chapter 3

The Existing Procedure of the Energy Audit Report Making

3.1 Consumed Time for Reviewing the Energy Audit Report

The first step of research is to study the procedure of the energy audit report making and record the time for reviewing which will be used for comparing between before and after improvement.

After Receive the report from auditor, the following process is the report reviewing. The reviewing runs through two steps. The first is the details reviewing by reviewer number 1. The second is the generals reviewing by reviewer number 2. The recorded time for reviewing the energy audit report in year 1996 and 1997 are shown in table 3-1. It shows that the consumed time by the first reviewer is 4 days per one report and by the second reviewer is 7.4 days per one report (The consumed time means the difference between receiving and finishing day. [25])

3.2 Flowchart of the Energy Audit Reports Making

When we know the time for reviewing the energy audit report in the past we should know how to make the energy audit report

The process of the energy audit reports writing is divided into three main systems in the figure 3-1. The first is the air-conditioning system. The second is the lighting system, and third is the building envelope system.

There are eight main steps of the energy audit report making.

- Update the term of reference.
- Record the data about the existing system.
- Calculate the basic data of each system.
- Suggest the measures of each system.
- Present the appendix of each system
- Show the table of the potential of energy conservation.
- Show the energy conservation plan.
- Show the list of new equipment or bill of quantity.

3.3 Existing Organization of the Energy Audit Report

From 1996 to 1998, the energy audit report only presented along the term of reference. The sequence of each auditor is not the same. So with the concept of the simultaneous engineering i.e. do the work in the same time, the organization of the energy audit report should be set clearly. That is to say each system is independent. Thus the organization of the energy audit report is divided into 8 main groups.

- Introduction

- General data and the characteristic of the building
- Characteristic of the energy utilization
- Suggestion for the energy conservation
- Potential for energy conservation
- Energy conservation plan
- Appendix
- Energy conservation improvement drawing.

The detail of each part is in figure 3-2.

Table 3-1 Consumed Time for Reviewing the Report in 1996 (No. 1-113) and 1997-1998 (No. 114-191)

No.	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
1	The Government Pharmaceutical Organization	KAU	KU	26/11/96	27/11/96	2	KU	28/11/96	1/12/96	4	6
2	Sports Authority of Thailand	KAU	SA	28/8/96	29/8/96	2	SA	30/8/96	27/9/96	28	30
3	Fish Marketing Organization	KAU	KU	21/8/96	29/8/96	10	KU	30/8/96	23/9/96	24	34
4	Somdejsangkaraj Supanburi Hospital	KAU	AK	21/10/96	22/10/96	2	AK	23/10/96	23/10/96	1	3
5	Donjedi Hospital	KAU	SA	18/9/96	19/9/96	2	SA	20/9/96	12/10/96	23	25
6	The Bangkok Mass Transit Authority	IAH	KU	5/8/96	6/8/96	2	KU	7/8/96	22/8/96	16	18
7	The Forest Industry Organization	IAH	SA	7/8/96	8/8/96	2	SA	9/8/96	23/8/96	15	17
8	Telephone Organization of Thailand	IAH	SA	5/9/96	6/9/96	2	SA	7/9/96	9/9/96	3	5
9	Rayong Hospital	IAH	KU	16/9/96	17/9/96	2	KU	18/9/96	18/9/96	1	3
10	Nakornchaisri Hospital	IAH	KU	20/9/96	23/9/06	4	KU	24/9/96	24/9/96	1	5
11	Uthaitani Hospital	SRA	SA	16/9/96	17/9/96	2	SA	18/9/96	27/9/96	10	12
12	The Thai Plywood Company Limited	SRA	KU	27/9/96	30/9/96	4	KU	1/10/96	8/10/96	8	12
13	Uthaitani City Hall	SRA	SA	4/9/96	5/9/96	2	SA	6/9/96	12/9/96	7	9
14	Port Authority of Thailand	SRA	KU	19/8/96	21/8/96	3	KU	22/8/96	29/8/96	8	11
15	Department of Skill Development	SRA	SA	8/10/96	9/10/96	2	SA	10/10/96	30/10/96	21	23
16	Industrial Metrology and Testing Service Center	GRE	KU	24/9/96	25/9/96	2	KU	26/9/96	27/9/96	2	4
17	The State Railway of Thailand	GRE	SA	26/8/96	27/8/96	2	SA	28/8/96	29/8/96	2	4
18	Rajabhat Institute Chachoengsao	GRE	KU	7/8/96	15/8/96	9	KU	16/8/96	21/8/96	6	15
19	Patumtani Hospital	GRE	SA	21/10/96	22/10/96	2	SA	23/10/96	30/10/96	8	10

Table 3-1 (Continue) Consumed Time for Reviewing the Report in 1996 (No. 1-113) and 1997-1998 (No. 114-191)

No.	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
20	National Housing Authority	GRE	SA	4/10/96	7/10/96	4	SA	8/10/96	30/10/96	23	27
21	Department of Public Welfare	ARU	SA	9/8/96	10/8/96	2	SA	1/10/96	30/10/96	30	32
22	Singhaburi Hospital	ARU	KU	10/9/96	11/9/96	2	KU	12/9/96	12/9/96	1	3
23	The Express Transportation Organization of Thailand	ARU	SA	6/9/96	7/9/96	2	SA	8/9/96	12/9/96	5	7
24	The Royal Institute	ARU	SA	5/8/96	6/8/96	2	SA	7/8/96	28/8/96	22	24
25	Sena Hospital	ARU	KU	10/9/96	11/9/96	2	KU	12/9/96	12/9/96	1	3
26	The Transport Company Limited (Southern Region Bus Division)	ENN	SA	20/8/96	21/8/96	2	SA	22/8/96	23/8/96	2	4
27	Tamuang Hospital	ENN	KU	20/8/96	21/8/96	2	KU	22/8/96	6/9/96	16	18
28	The Mass Communication Organization of Thailand	ENN	KU	30/9/96	1/10/96	2	KU	2/10/96	30/10/96	29	31
29	Trad Hospital	ENN	KU	9/9/96	11/9/96	3	KU	12/9/96	30/9/96	19	22
30	The Government Saving Bank	ENN	KU	11/10/96	NA	NA	KU	NA	NA	NA	NA
31	Angtong Hospital	EMC	KU	6/8/96	8/8/96	3	KU	9/8/96	15/8/96	5	8
32	Office of the Rubber Replanting Aid Fund	EMC	KU	4/7/96	9/7/96	6	KU	10/7/96	19/8/96	10	16
33	The Transport Company Limited (Eastern Region Bus Division)	EMC	SA	25/7/96	26/7/96	2	SA	27/7/96	9/8/96	14	16
34	Lopburi Hospital	EMC	KU	12/9/96	13/9/96	2	KU	14/9/96	18/9/96	5	7
35	The Bureau of the Budget	EMC	KU	29/8/96	30/8/96	2	KU	31/8/96	6/9/96	7	9
36	The Revenue khet 2	RAN	SA	12/9/96	12/9/96	1	SA	13/9/96	13/9/96	1	2
37	Dairy Farming Promotion Organization of Thailand	RAN	KU	3/9/96	3/9/96	1	KU	4/9/96	4/9/96	1	2
38	The Marketing Organization for Farmers	RAN	SA	6/8/96	7/8/96	2	SA	8/8/96	15/8/96	8	10

Table 3-1 (Continue) Consumed Time for Reviewing the Report in 1996 (No. 1-113) and 1997-1998 (No. 114-191)

No.	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
39	Chainat Hospital	RAN	SA	21/8/96	22/8/96	2	SA	23/8/96	30/8/96	8	10
40	Krung Thai Bank Public Company Limited	RAN	SA	3/10/96	4/10/96	2	SA	5/10/96	NA	NA	NA
41	Samutsakorn Hospital	ASI	KU	21/8/96	22/8/96	2	KU	23/8/96	28/8/96	6	8
42	Sampran Hospital	ASI	SA	26/9/96	27/9/96	2	SA	28/9/96	NA	NA	NA
43	Ministry of Foreign Affairs	ASI	SA	8/10/96	9/10/96	2	SA	10/10/96	NA	NA	NA
44	Department of General Education	ASI	KU	26/9/96	27/9/96	2	KU	28/9/96	3/10/96	6	8
45	Samutsakorn Technical College	ASI	KU	17/9/96	18/9/96	2	KU	19/9/96	3/10/96	15	17
46	Department of Local Administration	CHO	KU	9/9/96	10/9/96	2	KU	11/9/96	NA	NA	NA
47	Thai Airways International Public Company Limited	CHO	AT	17/7/96	20/7/96	4	AT	21/7/96	26/7/96	6	10
48	Prajomklao Petchburi Hospital	CHO	AK	24/7/96	16/8/96	25	AK	17/8/96	3/10/96	17	42
49	Damnern Saduak Hospital	CHO	KU	23/7/96	26/7/96	4	KU	27/7/96	14/8/96	19	23
50	Ministry of Education	CHO	SA	26/9/96	26/9/96	1	SA	27/9/96	NA	NA	NA
51	Ministry of Transport and Communication	KAU	KU	NA	NA	NA	KU	NA	NA	NA	NA
52	Office of Environmental Policy and Planning	KAU	SA	24/6/96	27/6/96	4	SA	28/6/96	15/7/96	18	22
53	Nakornpatom City Hall	KAU	KU	18/7/96	19/7/96	2	KU	20/7/96	26/7/96	7	9
54	Lopburi Technical College	KAU	KU	8/8/96	16/8/96	9	KU	17/8/96	6/9/96	21	30
55	Chainat Hospital	KAU	NA	11/7/96	11/7/96	1	NA	12/7/96	26/7/96	15	16
56	Office of the Permanent Secretary, the Prime Minister's Office	IAH	PO	NA	NA	NA	PO	NA	NA	NA	NA
57	Supanburi City Hall	IAH	PO	23/7/96	NA	NA	PO	NA	NA	NA	NA

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No.	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
58	Office of Insurance, Ministry of Commerce	IAH	SA	23/7/96	NA	NA	SA	NA	NA	NA	NA
59	Cholburi Technical College	IAH	SA	22/7/96	NA	NA	SA	NA	26/8/96	NA	NA
60	Somdejsriracha Hospital	IAH	NA	16/7/96	NA	NA	NA	NA	9/8/96	NA	NA
61	Rubber Research Institute	SRA	PO	NA	NA	NA	PO	NA	NA	NA	NA
62	Ministry of Labor and Social Welfare	SRA	PO	2/8/96	NA	NA	PO	NA	NA	NA	NA
63	Ministry of University Affairs	SRA	SA	23/8/96	NA	NA	SA	NA	NA	NA	NA
64	Ramrajchaniwej Hospital	SRA	SA	15/7/96	16/7/96	2	SA	17/7/96	17/7/96	1	3
65	Petchburi City Hall	SRA	JI	5/7/96	8/7/96	4	JI	9/7/96	26/7/96	18	22
66	The Tourism Authority of Thailand	TEA	KU	5/8/96	NA	NA	KU	NA	NA	NA	NA
67	Office of Atomic Energy for Peace	TEA	AT	24/6/96	1/7/96	8	AT	2/7/96	9/7/96	8	16
68	Cholburi City Hall	TEA	KU	25/6/96	1/7/96	7	KU	2/7/96	19/7/96	18	25
69	The Revenue Khet 1	TEA	KU	25/7/96	26/7/96	2	KU	27/7/96	14/8/96	12	14
70	Paholpolpayuhasena Hospital	TEA	NA	25/7/96	26/7/96	2	NA	27/7/96	15/8/96	13	15
71	Office of the Auditor-General of Thailand	ARU	SA	NA	NA	NA	SA	NA	NA	NA	NA
72	Banpong Hospital	ARU	PO	NA	NA	NA	PO	NA	18/7/96	NA	NA
73	Rayong City Hall	ARU	PO	23/7/96	NA	NA	PO	NA	NA	NA	NA
74	Ministry of Industry	ARU	PO	23/7/96	NA	NA	PO	NA	NA	NA	NA
75	The Post and Telegraph Department	ARU	KU	2/8/96	NA	NA	KU	NA	NA	NA	NA
76	National Research Agency	ENN	SO	7/6/96	14/6/96	8	SO	15/6/96	19/6/96	5	13

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No.	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
77	The Government Cold Storage Organization	ENN	SO	NA	NA	NA	SO	NA	NA	NA	NA
78	Samutprakan	ENN	SO	NA	NA	NA	SO	NA	NA	NA	NA
79	Trad City Hall	ENN	AT	NA	NA	NA	AT	NA	NA	NA	NA
80	Pongnamron Hospital	ENN	AT	NA	NA	NA	AT	NA	NA	NA	NA
81	The Office of Register Management	EMC	NA	NA	NA	NA	NA	NA	NA	NA	NA
82	Rajabhat Institute Petchburi	EMC	SA	NA	NA	NA	SA	NA	NA	NA	NA
83	Sankaraj Ayudhaya Hospital	EMC	SA	NA	NA	NA	SA	NA	NA	NA	NA
84	Kanchanaburi City Hal	EMC	SO	NA	NA	NA	SO	NA	NA	NA	NA
85	The Royal Irrigation Department	EMC	KU	21/6/96	24/6/96	4	KU	25/6/96	5/7/96	10	14
86	The Secretariat of the Cabinet	RAN	NA	NA	NA	NA	NA	NA	23/7/96	NA	NA
87	Rajabhat Institute Tapestry	RAN	JI	22/7/96	NA	NA	JI	NA	26/7/96	NA	NA
88	Samutprakarn City Hall	RAN	PO	23/7/96	NA	NA	PO	NA	NA	NA	NA
89	Ministry of Agriculture and Cooperatives	RAN	AT	NA	NA	NA	AT	NA	26/7/96	NA	NA
90	Banmi Hospital	RAN	SA	NA	NA	NA	SA	NA	NA	NA	NA
91	The Revenue Khet 6	ASI	NA	NA	NA	NA	NA	NA	NA	NA	NA
92	Nonburi City Hall	ASI	AT	2/8/96	NA	NA	AT	NA	16/8/96	NA	NA
93	National Energy Policy Office	ASI	AT	23/7/96	NA	NA	AT	NA	NA	NA	NA
94	Cholburi City Hall	ASI	KU	21/6/96	25/6/96	5	KU	26/6/96	5/7/96	10	15
95	Nakornpatom Hospital	ASI	SA	6/7/96	9/7/96	4	SA	10/7/96	19/7/96	10	14

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No	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
96	Singhaburi City Hall	EEC	PO	2/8/96	NA	NA	PO	NA	16/8/96	NA	NA
97	Ministry of Public Health	EEC	AT	NA	NA	NA	AT	NA	17/7/96	NA	NA
98	The Department of Military Energy	EEC	PO	23/7/96	NA	NA	PO	NA	NA	NA	NA
99	Rajbhat Institute Ayudhaya	EEC	AT	3/7/96	8/7/96	6	AT	9/7/96	19/7/96	11	17
100	Pakto Hospital	EEC	KU	3/7/96	8/7/96	6	KU	9/7/96	19/7/96	11	17
101	Ministry of Science Technology and Environment	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
102	Department of Science Service	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
103	The Zoological Park Organization	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
104	Liquor Distillery Organization Excise Department	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
105	The Government Lottery Office	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
106	Patumthani City Hall	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
107	Ratchaburi City Hall	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
108	Department of Technical and Economic Cooperation	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
109	Office of the Judicial Affairs	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
110	The Industrial Estate Authority of Thailand	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
111	The Metropolitan Waterworks Authority	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
112	Potaram Hospital	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
113	National Intelligence Agency	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
114	Expressway and Rapid Transit Authority of Thailand	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA

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No.	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
115	The Cooperatives Promotion Department	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
116	Khet Phayatai	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
117	Department of Cooperative Auditing	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
118	Khet Ratchathevi	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
119	Department of Industrial Works	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
120	The Department of Highways	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
121	National Institute of Animal Health	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
122	National Youth Bureau	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
123	The Post and Telegraph Department	ECC	NA	NA	NA	NA	NA	NA	NA	NA	NA
124	The Marketing Organization	ARU	WI	13/8/97	18/8/97	6	AK	19/8/97	20/8/97	2	8
125	Department of Agriculture Extension	ARU	PR	15/10/97	23/10/97	9	SA	24/10/97	24/10/97	1	10
126	Khet Lad Prao	ARU	WI	17/11/97	20/10/97	4	AK	21/10/97	24/10/97	4	8
127	Khet Bang Sue	ARU	WI	11/1/97	17/11/97	7	AK	18/11/97	20/11/97	3	10
128	Khet Sampantawong	ARU	PR	25/11/97	26/11/97	2	KU	27/11/97	5/12/97	9	11
129	Department of Lands	ARU	PR	16/12/97	17/12/97	2	KU	18/12/97	22/12/97	5	7
130	Khet Nongchok	ARU	WI	15/12/97	17/12/97	3	AK	18/12/97	18/12/97	1	4
131	Khet Klongsan	ARU	PR	24/12/97	25/12/97	2	KU	26/12/97	26/12/97	1	3
132	The Central Labor Court	ARU	PR	22/1/98	23/4/98	2	SA	24/5/98	24/5/98	1	3
133	Khet Bangkokkapi	ARU	PR	22/1/98	23/1/98	13	PR	24/1/98	3/2/98	11	24

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No.	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
134	Khet Bangkokyai	ARU	PR	3/2/98	3/2/98	1	SA	4/2/98	5/2/98	2	3
135	Khet Pranakorn	ARU	WI	6/2/98	6/2/98	1	PR	7/2/98	7/2/98	1	2
136	Department of Internal Trade	ARU	PR	20/2/98	23/2/98	4	SA	24/2/98	24/2/98	1	5
137	The Metropolitan Waterworks Authority (Thonburi)	EMC	PR	5/8/97	8/8/97	4	SA	9/8/97	13/8/97	5	9
138	The Office of Accelerated Rural Development	EMC	PR	9/10/97	13/10/97	5	SA	14/10/97	16/10/97	2	7
139	Agricultural Land Reform Office	EMC	WI	3/11/97	10/11/97	8	KU	11/11/97	13/11/97	3	11
140	Office of Agricultural Economics	EMC	WI	6/11/97	11/11/97	6	KU	12/11/97	25/11/97	14	20
141	The Harbour Department	EMC	WI	27/11/97	1/12/97	6	SA	2/12/97	11/12/97	10	16
142	Department of Business Economics	EMC	PR	11/12/97	17/12/97	7	AK	18/12/97	22/12/97	5	12
143	The Metropolitan Electricity Authority (Rat Burana District Zone)	EMC	WI	5/1/98	7/1/98	3	KU	8/1/98	8/1/98	1	4
144	Khet Bangkolam	EMC	PR	6/1/98	7/1/98	2	AK	8/1/98	8/1/98	1	3
145	Office of the Board of Investment	EMC	WI	20/1/98	23/1/98	4	AK	24/1/98	24/1/98	1	5
146	Institute of Food Research and Product Development	EMC	WI	21/1/98	23/1/98	3	SA	24/1/98	24/1/98	1	4
147	Khet Prakonong	FEC	WI	5/8/97	7/8/97	3	AK	8/8/97	13/8/97	6	9
148	Nitijitawej Hospital	FEC	WI	9/10/97	23/10/97	15	AK	24/10/97	18/11/97	26	41
149	Department of Probation	FEC	PR	18/11/97	19/11/97	2	KU	20/11/97	20/11/97	1	3
150	Khet Pasicharoen	FEC	WI	17/11/97	19/11/97	3	KU	20/11/97	21/11/97	2	5
151	Khet Bangkoknoi	FEC	WI	26/11/97	1/12/97	6	KU	2/12/97	3/12/97	2	8
152	Khet Bangkuntean	FEC	WI	18/12/97	19/12/97	2	SA	20/12/97	22/12/97	3	5

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No	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
153	Khet Taling Chan	FEC	PR	12/1/98	12/1/97	1	AK	13/1/97	13/1/98	1	2
154	The Teachers Council of Thailand	FEC	WI	20/1/98	23/1/98	4	KU	24/1/98	24/1/98	1	5
155	Somdejchaopraya Hospital	FEC	PR	29/1/98	30/1/98	2	KU	31/1/98	31/1/98	1	3
156	Legal Execution Department	FEC	WI	29/1/98	30/1/98	2	SA	31/1/98	31/1/98	1	3
157	The Provincial Waterworks Authority	GRE	WI	7/8/97	15/8/97	9	SA	16/8/97	16/8/97	1	10
158	The Community Development	GRE	WI	8/10/97	8/10/97	1	KU	9/10/97	9/10/97	1	2
159	The Preserved Food Organization	GRE	WI	17/10/97	21/10/97	5	SA	22/10/97	22/10/97	1	6
160	Khet Plomprabsatrupai	GRE	PR	12/11/97	19/11/97	8	KU	20/11/97	20/11/97	1	9
161	Department of Town and Country Planning	GRE	WI	17/11/97	17/11/97	1	SA	18/11/97	18/11/97	1	2
162	Khet Dusit	GRE	PR	28/11/97	1/12/97	4	AK	2/12/97	2/12/97	1	5
163	Khet Bangrak	GRE	WI	23/12/97	24/12/97	2	KU	25/12/97	25/12/97	1	3
164	Rachanukul Hospital	GRE	WI	5/1/98	6/1/98	2	KU	7/1/98	7/1/98	1	3
165	The Department of Export Promotion	GRE	PR	23/1/98	27/1/98	5	KU	28/1/98	28/1/98	1	6
166	Office of the National Culture Commission	GRE	PR	27/1/98	28/1/98	2	SA	29/1/98	29/1/98	1	3
167	Department of Agriculture Extension	GRE	PR	3/2/98	6/2/98	4	AK	7/2/98	7/2/98	1	5
168	Khet Bunkum	GRE	PR	17/2/98	18/2/98	2	AK	19/2/98	19/2/98	1	3
169	Khet Lad Krabang	GRE	PR	18/2/98	23/2/98	6	KU	24/2/98	24/2/98	1	7
170	Khet Minburi	RAN	PR	5/8/97	7/8/97	3	AK	8/8/97	12/8/97	4	7
171	Khet Bangkhen	RAN	PR	9/10/97	29/10/97	21	KU	30/10/97	7/11/97	9	30

Table 3-1 (Continue) Consumed Time for Reviewing the Report in 1996 (No. 1-113) and 1997-1998 (No. 114-191)

No	Building	Auditor	Revision 1				Revision 2				Total Days
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days	
172	Land Development Department	RAN	PR	10/11/97	17/11/97	8	KU	18/11/97	18/11/97	1	9
173	Department of Foreign Trade	RAN	PR	12/11/97	13/11/97	2	KU	14/11/97	19/11/97	6	8
174	The Office of the Maritime Promotion Commission	RAN	PR	21/11/97	24/11/97	4	SA	25/11/97	27/11/97	3	7
175	Khet Donmuang	RAN	PR	9/12/97	17/12/97	9	KU	18/12/97	19/12/97	2	11
176	Khet Ratburana	RAN	PR	19/12/97	22/12/97	4	KU	23/12/97	23/12/97	1	5
177	Department of Labor Protection and Welfare	RAN	WI	22/12/97	24/12/97	3	AK	25/12/97	25/12/97	1	4
178	Health Center Promotion Regional 1	RAN	WI	19/1/98	26/1/98	8	AK	27/1/98	28/1/98	2	10
179	The Department of Fisheries	RAN	PR	23/1/98	28/1/98	6	AK	29/1/98	29/1/98	1	7
180	Khet Jatujak	RAN	WI	30/1/98	4/2/98	6	KU	5/2/98	6/2/98	2	8
181	The Secretariat of the Cabinet	RAN	WI	14/2/98	18/2/98	5	SA	19/2/98	20/2/98	2	7
182	Khet Patumwan	SRA	PR	7/8/97	13/8/97	7	AK	14/8/97	15/8/97	2	9
183	The Customs Department	SRA	WI	13/10/97	17/10/97	5	AK	18/10/97	29/10/97	12	17
184	The Meteorological Department	SRA	PR	10/11/97	11/11/97	2	AK	12/11/97	20/11/97	9	11
185	The Battery Organization	SRA	PR	11/11/97	17/11/97	7	SA	18/11/97	26/11/97	9	16
186	Khet Yannawa	SRA	WI	21/1/97	25/11/97	5	AK	26/11/97	8/12/97	13	18
187	The Glass Organization	SRA	PR	16/12/97	19/12/97	4	AK	20/12/97	25/12/97	6	10
188	Khet Sathom	SRA	WI	24/12/97	25/12/97	2	AK	26/12/97	26/12/97	1	3
189	The Public Warehouse Organization	SRA	PR	7/1/98	7/1/98	1	SA	8/1/98	12/1/98	5	6
190	The Tanning Organization	SRA	PR	23/1/98	23/1/98	1	SA	24/1/98	26/1/98	3	4

Table 3-1 (Continue) Consumed Time for Reviewing the Report in 1996 (No. 1-113) and 1997-1998 (No. 114-191)

No.	Building	Auditor	Revision 1				Revision 2				Total Days	
			Reviser 1	Start	Finish	Days	Reviser 2	Start	Finish	Days		
191	The Center of Juvenile and Family Court	SRA	PR	28/1/98	28/1/98	1	SA	29/1/98	29/1/98	1	2	
Total						533					939	1413
Average						4.0					7.4	11.0

Abbreviation Description of Checker

KU: Kua-anan Techato
 SA: Sanguan Salee
 AK: Akkchai Thitiwitayakul
 AT: Athikom Nil-ubol
 PO: Pongjaroon Srisowanna
 JI: Jirasak Boonrod
 WI: Wichean Chompatana
 PR: Prapas Pojana

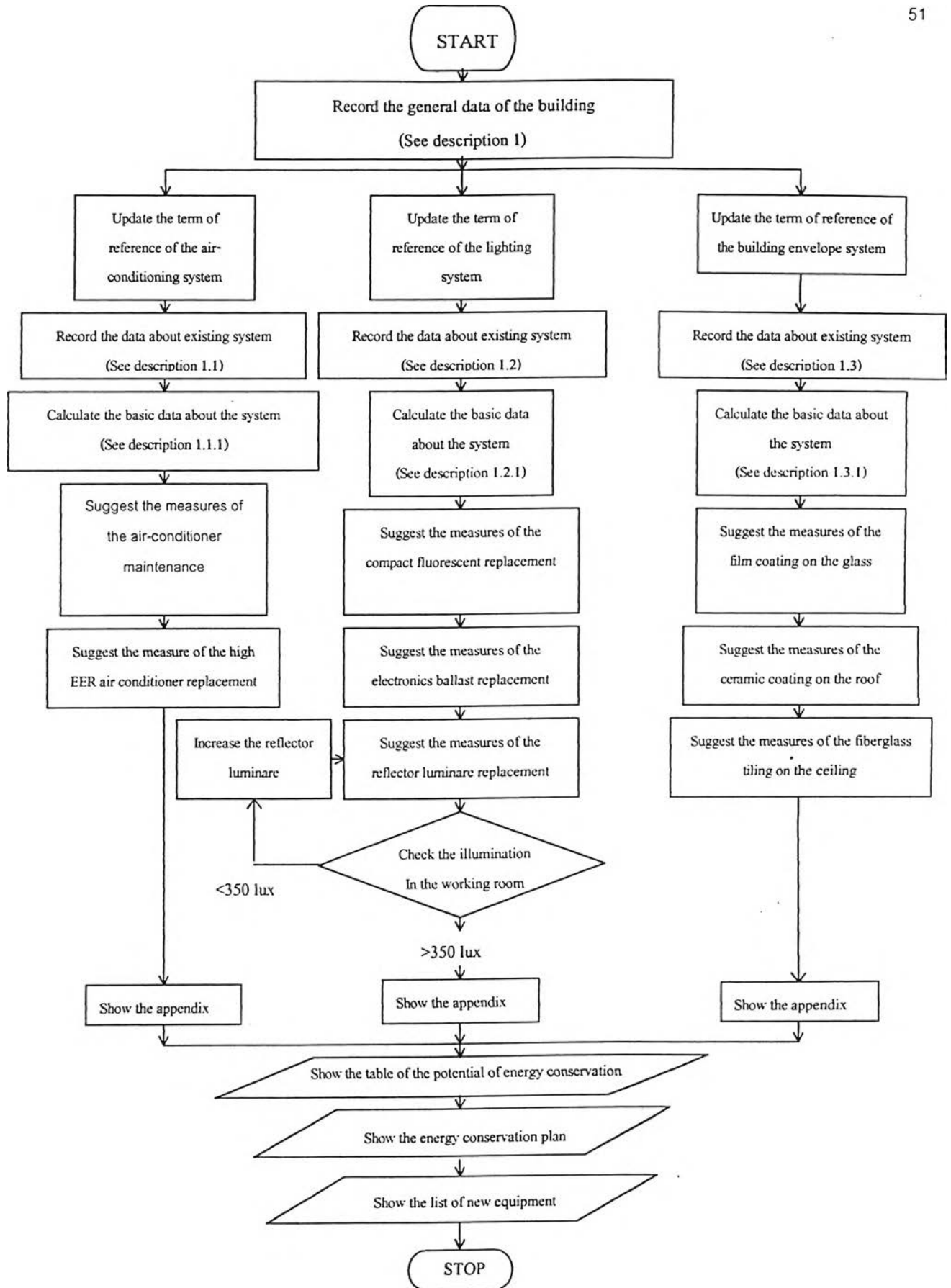
Abbreviation Description of Auditor

KAU: Kasetsart University
 IAH: I.A. Holding Company Limited
 SRA: Srang San Consultant Company Limited
 GRE: Green Energy Company Limited
 ARU: Arunchaiseri Consulting Engineers Company Limited
 ENN: Enner Consultant Company Limited
 EMC: Energy Management and Consultant Company Limited
 RAN: Rangsit University
 ASI: Asia University
 CHO: Choeng Chan Company Limited
 TEA: Team Consulting Engineering Company Limited
 EEC: Environmental Engineering Company Limited

Abbreviation Description

NA: Not Available

Figure 3-1. FLOW CHART OF THE ENERGY AUDIT REPORTS MAKING



DESCRIPTION 1 Record the following data

1. Thai and English name of the building
2. Using energy area
3. Location, telephone number, type of building (hospital, school, and others)
4. Opened year, number of worker (number of bed in the case of hospital)
5. The electrical cost of each month in last year and cost per unit (baht/kW)
6. Name of cooperator, title, telephone number and facsimile number
7. Peak load, load factor, average load factor, transformer capacity, voltage, electrical using index ($\text{kwh/m}^2/\text{year}$), and power factor
8. Percent of the electrical energy using in surveyed building relate to all building
9. Water consumption (m^3/year), cost per volume (baht/ m^3), and the water using index ($\text{m}^3/\text{man-year}$)
10. Picture of each side of building

DESCRIPTION 1.1 Record the following data

1. Capacity (Btu), type of install, and register number
2. Existing location, pipeline from the fan-coil unit to condensing unit, and the wiring of the thermostat
3. Phase of electrical for supporting and operating factor for air conditioning system
4. Area of air conditioning room
5. Area of sending window of fan-coil unit, velocity of air flow from sending window, and temperature and relative humidity at sending and return point

DESCRIPTION 1.1.1 Calculate the following data

1. The energy efficiency ratio of each and average of all air conditioner
2. Air conditioning system index (Btuh/m^2) of each and average of all room
3. Percent of energy using relate to other systems
4. List new air conditioner

5. Saving from maintenance and from the replacement of the high EER conditioner (kWh/year and baht/year)
6. Cost of investment
7. EIRR and payback period

DESCRIPTION 1.2 Record the following data

1. Existing location of each luminary
2. Existing type and number, size (watt), mounting, ceiling in the room, cover, reflector, lamp size (watt), and type of ballast
3. The illumination (lux) of the working room
4. Operating factor
5. Area of lighting system

DESCRIPTION 1.2.1 Calculate the following data

1. Percent of energy using relates to other systems
2. Lighting system index (watt/m²)
3. Saving form replacement of the compact fluorescent, reflector luminary, and electronic ballast
4. Cost of investment
5. EIRR and payback period

DESCRIPTION 1.3 Record the following data

1. Characteristic of the building envelope ; structure (material, thickness, and color of all layer), window (type of overhang, thickness, and shading coefficient), roof (material, thickness, and color)
2. Area of opaque and transparent wall and roof

DESCRIPTION 1.3.1 Calculate the following data

1. Overall thermal transfer value
2. Roof thermal transfer value

3. Saving from the film coating, ceramic coating, and fiber glass insulation tiling
4. Cost of investment
5. EIRR and payback period

Figure. 3-2 The organization of the energy audit report

