

process of resettlement is flexible, funds for rural development should be available, worth to look at the area proposed by representative from M. Hom District and confirmed that in resettlement there is a lot of work need to be done.

14. Mr. Araki further recommended that people have to express more opinion after the site visit to the Nam Ngum I power plant scheduled tomorrow.
15. The workshop session ended at 16:20.

2nd Day

Session III: Technical Issues

1. Hydropower Planner of the Study Team, Mr. Masaki Wada presented about the development plan for the Nam Ngiep-1 project. He gave reviews how the dam scale and optimum installed capacity of the project were determined based on the criteria such as reservoir operation study, reservoir inundation, optimized development scale and power supply for domestic use. Each criterion was explained in details. Then he elaborated the conclusion of preliminary design as well as the salient features of the project, which cover the following main areas such as reservoir, access roads, main dam, river diversion, spillway, bottom outlet, intake structures and power waterway, main dam power station, re-regulating weir, re-regulating weir power station, transmission line and substation. Short video sample about embankment of a CFRD dam and concrete compaction of the dam face slab was shown to the participants.
2. Geologist of the Study Team, Mr. Yamada presented about the geological survey carried out during the Phase II Study based on the geological scope of works setup during the Phase I Study. He explained about the geology of the reservoir area, the dam site and the survey on material needed for the dam construction. List of drillings and results of each drillings were demonstrated with geological plan for dam site, area along the Nam Ngiep River. Also geological formation, structure and profile along the dam axis were presented and explained in details. Rock at dam site was classified into A, B, CH, CM, CL and D classes. Construction materials such as sandstone, mudstone, granite, limestone were surveyed as well.
3. Mr. Wada presented further about the construction planning and cost estimation of the project. It is assumed that the EPC contract would start by June 2005 then 6 months are needed for the temporary works such as permanent/temporary access roads and base camp. He explained in details about the construction schedule for the following major work items such as river diversion, earth work at main dam, concrete work at main dam, spillway, power intake and waterway, main dam power station, re-regulating facilities. Basic conditions for the cost estimate were listed such as price level in July 2002, cost estimate expressed in US\$ only, using the unit price estimate method, quantities computed from the preliminary design, price escalation rate of 1.3%/annum and all kind of tax were excluded. Finally, he shown the base cost of 343 million US\$ which include environmental and resettlement cost as well as operation cost for SPC and price

contingency.

4. Mr. Wada further presented the technical risk profile for the NamNgiiep-1 project. He listed the would-be consequences caused by technical risks such as cost overrun, construction time overrun and decrease of generated energy. He explained about the uncertain factors that might influence the technical risks like hydrology, geology and critical path activities. The impact of the technical risks were asset as following: maximum 10% increase of capital cost, maximum half-year time overrun and at worst 20% drop in generation for the first 3 years.
5. Director of DOE/MIH, Mr.Houmphone raised question that installed capacity was increased from 240MW to 252MW in Interim Report, then to 260MW, in Draft Final Trport, what are the reasons behind ?

Answer: Mr. Wada clarified that for the change from 252MW to 260MW, the dam dimension remains the same but only the combined efficiency for the rated head was increased higher than average value of 0.88. Regarding the change from 240MW of Phase I, the optimal minimum operation level in reservoir was more duly examined in Phase II.

6. Mr. Homphone asked further if the cost of 343 million US\$ includes the domestic use scheme already ?

Answer: Mr. Wada answered yes.

7. Executive Vice President of GMS power, Mr. Robert Kay asked about the transmission line component, how/where would be the power evacuated?

Answer: The transmission line will be connected to the 500kV Nabong S/S and assumed that this S/S is already constructed so only the connection cost to the S/S is included. If the cost of the S/S has to be included, it may affect the project viability. Mr. Houmphone added that the three projects (Nam Nagiep-1, Nam Ngum-2, and Nam Ngum-3) might be associated for the interconnection with Thai grid.

Session IV: Financing Issues

8. PFI Planner of the Study Team, Mr. Nobuhiro Mori presented the session about project financing and evaluation. He set up the financing plan for the project using the BOT scheme means loan to equity ratio of 70/30, and stressed on the capital disbursement method that equity capital to be fully paid prior to disbursement of loan capital. The total project cost including financing fees, IDC and initial works amounted to 379.6 million US\$. Both financial and economic evaluation methods were used in order to asset the project viability. Tariff assumption at COD (in late 2010) of 6.0UScent/kWh for primary energy export, 3.0USCent/kWh for secondary energy export and 5.2UScent/kWh for domestic supply were used. Results for the base case scenario were obtained as EIRR=19.7% and FIRR= 13.1% higher than the target of 12%. He closed the presentation by

elaborating the social benefits to the host communities that about 20,000 un-electrified households would have access to 24-hrs electricity and quality of live of the people will be improved through irrigation & agricultural productivity, more employment opportunities and better social services.

9. Representative from the Theun Hinboun Power Co., Mr. Kay made presentation on project refinancing for the TH project. He stressed and demonstrated that the process is not easy and time consuming. Almost 2 and half years were spending when starting from first concept to the final capital reduction. He explained in details about the objectives and obstacles of the project refinancing. But also described the benefits gained from the successful refinancing of the TH project for other followed hydropower projects in Lao PDR, since now Lao PDR market is opened for new lenders, Thai bank are more confident to borrow into projects in Laos and accepted the Lao market.
10. Mr.Mori further presented the session on project formation and risk analysis. He firstly explained about the project implementation process involving the major players like GOL, Investors, Lenders and Power purchaser and all the necessary agreements among the players. Then he pointed out on the significance of the project company as the focal point for the project implementation. He classified the risks into 3 stages: Pre-operation, During-operation and Common. Also the type of risks was listed into 9 types and further into components. He also displayed the 8 risk takers comprising GOL, Developer, Power purchaser, EPC contractor, Operator, Insurance co., Project co. and lenders. He explained using matrix method how to allocate the risks to the risk taker. Then he elaborated how to handle critical risks, showed example of successful risk mitigation measures from the TH project and finally briefed the lender's stance towards project financing.

11. Open floor for discussion

- 11.1. Mr. Houmphone asked about how realistic is the export tariff assumption of 6.0USCent/kWh by 2010 ? If it would be competitive against other generators in Thailand?

Answer: The assumption in the NEPO report of 4USCent/kWh is too low compared with international or regional tariff e.g. in Malaysia, Philippines, Indonesia is in the range from 5-6 USCent/kWh. Thai market has now over supply but this will change in the near future. If the tariff is lower than 6USCent/kWh, the project will not be viable.

- 11.2. Mr Kay raised the question about the third party risk that lender will not consider. This will be the case of the 500kV S/S at Nabong, who then will bear the risk?

Answer: Mr.Araki explained that he understood the situation and hope that Nam Ngum-3 project will be realized by 2010 before NamNgiiep-1 completion.

- 11.3. Mr. Houmphone asked about (i) in the financial model which is showing the GOL equity of 30% amounted about 34 million US\$, where could be the source expected from? (ii) It was

mentioned in the presentation that payment of equity should be fully paid prior loan disbursement. Is that common international practice?

Answer: Mr. Mori replied that the domestic power supply component of about 40 million US\$ could be requested for ODA/JBIC loan. Regarding the second question, Mr. Mori elaborated that lenders are now changing their attitude so the owner should make more effort in order to control cost overrun and completion on schedule especially in hydro power projects.

11.4. Mr. Oud from NTEC asked whether the 6USCent/kWh already included the wheeling charge.

Answer: Mr. Mori replied that is at the delivery point at Nabong S/S

11.5. JICA Advisor, Mr. Hayao Adachi asked whether if rule or act exists regarding the 5% royalty, 15% profit tax ..etc.?

Answer: Mr. Houmphone replied that no act exists so far. It was negotiated case by case.

11.6. Mr. Tai Phasavanh from Ministry of Health commented about the tariff setting for domestic supply at 5.2 USCent/kWh is not suitable for local people at project area.

Answer: Mr. Mori replied that he referred to the Nam Mang-3 report that presently the tariff is set at 4.3 USCent/kWh and will increase to 5.3 USCent/kWh by 2008.

Mr. Houmphone added that the assumption for domestic supply tariff from IPP project are correct in case of the Theun Hinboun project. EDL buy at tariff about 4.6 USCent/kWh, but subsidies to small household consumers.

11.7. Mr. Adachi raised the question about the impact of the NT2 implementation to the inflow of Theun Hinboun project.

Answer: Mr. Kay replied that Theun Hinboun project is aware about the post NT2 from the beginning of the project which would have 30% reduction on generation.

11.8. Mr. Oud asked whether the NamNgiiep-1 project would get credit from the government regarding the GHG reduction?

Answer: Mr. Araki informed that application has to be submitted to CDM Board about the project following the guideline to be conducted by GOJ until October 2002. Then during evaluation, the project will negotiate with GOL and GOT.

11.9. Mr. Tai Phasavanh from Ministry of Health asked whether social risk has been considered by the Study Team?

Answer: Mr. Araki informed that those matters were included as environmental matters and should be clean up before project starts so it is not considered as risk for the project.

12. The session ended at 16:15.

3rd Day

Session V: Discussion

1. Mr. Prosser reported to the meeting about the site visit to NamNgum-1 powerhouse, reservoir area, fishing villages and Nam Ngum Resort. He reported that the participants enjoyed the trip, they were impressed about the view and the development around the reservoir. Photos from the trip were shown to the meeting.
2. Mr. Prosser commented on the opinions made by the representatives from M.Hom and B.Sopyouk during Session II Resettlement Issues. He understood about the concern made by the affected people and indicated that continuous consultation should be carried out in order to bring more confidence. He requested the participants to give comments on the 3-resettlement areas surveyed by the study team.
3. Mr. Somneuk Chanthaseth from the Irrigation Department asked, (i) whether irrigation scheme also included in the mentioned infrastructure for new resettlement areas, (ii) the unit rate for resettlement of 3,600 US\$/pers. already included in the total amount of 16 million US\$ for resettlement works?

Answer: Mr. Araki responded to the first question with yes, it is included. Regarding the second question, Mr. Prosser commented that the figures would be reviewed during the details design phase and that 3,600 US\$/pers. is only indicative. Mr. Araki pointed out further that details are shown in draft Final Report chapter 6.3.3. Table 2.1, 2.2.

4. Mr. Vongsamay, Deputy District Head thanked Mr. Prosser for the understanding made at the beginning and would to explain about the reasons of concerns and why he proposed resettlement are in Hom district. District Hom is small and has only 7,200 persons. It is below the district standard but in the future about 1200 persons will be moved out then it will be less people to develop that area. Also rice field will be destroyed then it will be difficult for the remaining people to get access on food supply.

Answer: Mr. Araki informed that on September 23, the study team will organize a site workshop and will look at the new proposed resettlement areas. It would be perfect, if preliminary information about the areas proposed by M.Hom could be made available such as access road, water supply.

5. Mr. Sin Xay from Ethnic Department, briefed the participants on 3 issues:
 - 5.1. The affected area has many ethnic group and each group has different culture. We should understand and respect their culture and find out peaceful way that the people cooperate with the project.

- 5.2. On the other hand, GOL has the policy to eradicate the poverty by 2020. We will not achieve it, if local people do not cooperate by helping that kind of project to realize. We understand that hydropower project generated other benefits than electricity as well (roads, job etc.).
- 5.3. GOL and people should cooperate with each other in order to make Nam Ngiep-1 project becomes true. Loss and benefits for each party have to be balanced.
6. Mr. Somboun Manolom, Ministry's Cabinet Director, MIH informed the meeting on resettlement process, on project development using BOT scheme, on the position of GOL regarding resettlement issues of affected people, mentioned examples from NT2 project. He urged the local people from affected area not to stop working because of the project but to continue with the habitual livelihood until the day that the resettlement is firm.
7. Mr. Somneuk from the Irrigation Department wanted to get confirmed about the elevation of the re-regulating weir, so that the water gravity could be used for irrigation about 10,000ha in Pakxan area and electricity for pump might be saved.

Answer: Mr. Araki commented that the elevation had been confirmed by the national coordinate system, and water gravity might not be suitable to use for irrigation.

8. Mr. Tai Phasavanh from the Ministry of Health suggested that since the project help reduced GHG especially CO₂, then it is better to mention CO₂ reduction instead of GHG.
9. Mr. Kathuhiro HONGO from Kyusyu Electric Power Company questioned about the capacity of the regulating pond.

Answer: Mr. Wada responded that its capacity is designed for 16-hr generation. In case for 8-hr generation, further examination is required for its design.

10. Mr. Tai Phasavanh suggested that in slide 'Project Base Cost', page 5-4 of the handout, the environmental cost should be changed to environmental & social cost.
11. Mr. Tada asked if there is other candidate beside Nam Ngiep-1 project and what is the position of GOL regarding the priority of the project.

Answer: Mr. Araki is confident that the project will be implemented after the NT2 project. Mr. Somboun Manolom added that the project is a good project compared with other projects such as NN-2, NN-3 and Sekaman-1 in terms of generation, dam height & volume and resettlement issue. GOL will assure for fair competition among BOT projects.

Competitive Items	Nam Ngiep	Nam Ngum 3	Nam Ngum 2	Sekaman-1	Nam Theun 2
GWh/MW	5.1	4.2	3.4	4.1	4.8
Dam height (m)	151	217	182	184	44
Dam volume (mil. m ³)	7.3	9.0	7.9	8.6	0.2
Resettlers (person)	1,609	500	5,000	>800	4,800

12. Mr. Tai Phasavanh mentioned further that the cost for environment is small compared with total project cost.

Answer: Mr. Araki replied that the amount is not small, similar figure also at international level for large-scale project.

Mr. Adachi suggested that the cost for the re-regulating weir could be also counted as environmental cost. However, Mr. Araki replied that it is not fair for villagers to put the cost into environmental cost, because it is inevitable facility for peak power generation. Moreover, he is afraid NGOs would complain about this.

13. Mr. Houmpheng from the Land Titling Department asked about (i) land compensation would be enough in the new resettlement area, if so, it should be early to be trouble less? (ii) the tariff assumption for domestic use is quite different from consumer price.

Answer: Mr. Prosser replied that the actual resettlement at one year before commencement date might be not enough, if all necessary infrastructures have to be accessible. The "1 year before" is only indicative. Regarding the tariff, Mr. Mori informed that it is whole sales tariff not to be confused with consumer price. Mr. Somboun added that Laos has plenty of land but the issue is whether the people would be satisfied with it and the present consumer price (>150kWh/month) is already closed to the assumed tariff.

14. Mr. Tai Phasavanh asked how to prevent the technical risks and the uncertain factors for the project implementation.

Answer: Mr. Wada replied that there are many ways to reduce those risks and explained it broadly.

Closing Address

1. Mr. Soukata Vichith, Director of the Environment Department, addressed the closing ceremony. He expressed thank to all participants, to those who made opinions and recommendations to the results of the draft final report. He urged the local people to cooperate with the Study Team in future in order to get more useful information for a smooth project implementation. He also requested the Study Team to consider the concern expressed by the villagers so that a win-win situation took place and to ensure that the development of hydropower can be sustainable. Finally, he thanked JICA for the financing support of the feasibility study and continuous fruitful cooperation.

2. Finally, Bassi ceremony was prepared and held for all participants.

12.2 SITE WORKSHOP

12.2.1 1ST SITE WORKSHOP

(1) General

After the General Workshop, the Site Workshops were held by the villager in the affected area so as to transfer the summary of discussions exchanged at the General Workshop as well as to collect opinions of the affected villagers. A detailed program was instructed by the Study Team referring to the opinion of MIH during the 1st General Workshop.

The site workshops were held at (i) B.Dong in the Thaviang Sub-District (the upper reservoir area), (ii) B.Sopyouk (the lower reservoir area), (iii) B.Somseun (the downstream reach of the dam), which were also selected for the workshops in Phase I Study.

(2) Discussion Proceedings

Mr. Kongkham SOUTHAMMAVONG, Division of Industry and Handicraft office, Hom Distric organized the Site Workshop.

We are representatives of the Hom District and together with the chief of 4 villages at the future reservoir area. After attend to the Inception Workshop of Feasibility Study of Nam Ngiep-1 (Phase II) in Vientiane, we have conducted the context to distributed to the population in project area. The details of the activity are as below:

No.	Date	Place	Total	Male	Female
1.	Aug.3	B.Sopyouak	60	35	25
2.	Aug.4	B.Namyouak	78	49	29
3.	Aug.6	B.Sopphouan	35	23	12
4.	Aug.8	B.Houaypamom	24	16	8

The meeting on each village, there was many people have interested to the project activity. While the representative of Hom District gave explained to the attendees of about focal of the Project and its stage of studies which are carried out by the Study Team. During these activity, we observed that most of attendance (about 85%) have a good understanding to the Project.

Advantage and

- The representative of Hom District and Chief of 4 villages conducted the focal point of workshop in Vientiane to these villages completely.
- Population of these villages was also very active to attend on each meeting and interest in each subject was given on talk.

Disadvantage

- These 4 villages are very remote area and very hard to approach because of road problem, more over at that time was rainy so the road were damage on many segment, so the conductivity of the main point idea to local population was late.

Suggestion

- The Nam Ngiep project should be provided a resettlement area according to the mind of the population and related to the resettlement plane of the district such as the Samleam (Xamteuy) and the Nam Thouay river basins.
- The Project developer should construct the access road to the new resettlement site prior to resettlement.
- Electrification to Hom District is desirable, if it can't be distributed from the Nam Ngiep project, supply from Nam Leuk project is considerable.
- The Hom District officer shall be involved with the Project, because they will conduct possible problems raised from local peoples against to the Project developer.

Remark:

- At Soppouan and Houaypamom villages, the representative of Hom District could not come to the villages because of the access road problem, so we have no a picture of the workshop.

12.2.2 2ND SITE WORKSHOP

(1) General

After the 2nd General Workshop, the Site Workshops were held by MIH in the affected area so as to transfer the summary of discussions exchanged at the General Workshop as well as to collect opinions of the affected villagers.

The site workshops were held at (i) B.Dong in the Thaviang Sub-District (the upper reservoir area) on March 18, 2002, (ii) B.Sopyouk (the lower reservoir area) on March 22, 2002, (iii) B.Somseun (the downstream reach of the dam) on March 15, 2002, which were also selected for the Workshops during Phase I Study.

(2) Program

1st Place in B.Dong (March 18, 2002)

No	From	To	Agenda	Contents	Presenter/Staff
	7:00	8:30	Preparation	Panel/Equipment Setting	All Staff
1.	8:30	8:40	Introduction of participants		Mss. Sengdeuan, DoE Staff

2.	8:40	8:45	Opening Speech		Vice Governor of Thathom
3.	8:45	9:15	Gender Issues		Mss. Santisouk, DoE Staff
4.	9:15	10:15	Background of project/ Hydropower/	Construction/ Benefits/ Social -Environment	Chansaveng, DoE Staff
5.	10:15	10:45	Video show	Fish Culture	Mss. Sengdeuan
6.	10:45	11:45	Discussion		Chansaveng
7.	11:45	12:00	Closing Speech		Vice Governor of Thathom
8.	12:15	13:30	Lunch		

2nd Place in B.Sopyouak (March 22, 2002)

No	From	To	Agenda	Contens	Presenter/Staff
	7:00	8:30	Preparation	Panel/Equipment Setting	All Staff
1.	8:30	8:40	Introduction of participants		Mss. Sengdeuan, DoE Staff
2.	8:40	8:45	Opening Speech		Vice Governor of Hom
3.	8:45	9:15	Gender Issues		Mss. Santisouk, DoE Staff
4.	9:15	10:15	Background of project/ Hydropower/	Construction/ Benefits/ Social -Environment	Chansaveng, DoE Staff
5.	10:15	10:45	Video show	Fish Culture	Mss. Sengdeuan
6.	10:45	11:45	Discussion		Chansaveng
7.	11:45	12:00	Closing Speech		Vice Governor of Hom
8.	12:15	13:30	Lunch		

3rd Place in B.Somseun (March 15, 2002)

No	From	To	Agenda	Contens	Presenter/Staff
	8:00	9:00	Preparation	Panel/Equipment Setting	All Staff
1.	9:00	9:15	Introduction of participants		Mss. Sengdeuan
2.	9:15	9:45	Gender Issues		Mrs. Sopa, Head of Borikhamxay's Women Union
3.	9:45	11:00	Background of project/ Hydropower/	Construction/ Benefits/ Social -Environment	Chansaveng, DoE Staff
4.	11:00	11:30	Video show	Fish Culture	Mss. Sengdeuan, DoE Staff
5.	11:30	12:30	Discussion		Chansaveng, DoE Staff
6.	12:45	13:30	Lunch		

(3) Attendance List

No	Thavieng on March 18, 2002		Sopyouak on March 22, 2002		Mouang Mai on March 15, 2002	
	Name	Organization	Name	Organization	Name	Organization
1	Mr. Thongpeng	M. Thathom	Mr. Beerchiu	M. Hom	Mr. Chaisombath	M. Pakxan
2	Mr. Sompun	Thavieng Office	Mr. Yeerlongvang	B. Houaypamom	Mr. Bounsonc	M. Bolikhan
3	Mr. Phoumy	Thavieng Office	Mr. Yongnavang	B. Houaypamom	Mr. Khen	B. Hat Kham
4	Mr. Inthavone	Thavieng Office	Mr. Maiyang	B. Houaypamom	Mr. Bounkong	B. Hat Kham
5	Ms. Nor	B. Dong	Mr. Thongdim	B. Houaypamom	Mr. Yerchong	B. Hat Kham
6	Ms. Puoua	B. Dong	Mr. Fongvang	B. Houaypamom	Mr. Ying	B. Hat Kham
7	Ms. Yoth	B. Dong	Mr. Kamavang	B. Houaypamom	Ms. Kongchai	B. Hat Kham
8	Ms. Keo	B. Dong	Ms. Chahimli	B. Houaypamom	Ms. Orlathai	B. Hat Kham
9	Ms. Onkham	B. Dong	Ms. Kouchong	B. Houaypamom	Ms. Khampheng	B. Hat Kham
10	Mr. Thidma	B. Dong	Mr. Yeertoulor	B. Namyouak	Ms. Manyvanh	B. Hat Kham
11	Ms. Chanhom	B. Hatsamkone	Mr. Chongvalor	B. Namyouak	Ms. Nalom	B. Hat Kham
12	Ms. Sonchan	B. Hatsamkone	Mr. Souksychalor	B. Namyouak	Mr. Kaochong	B. Hatkham
13	Ms. Sone	B. Hatsamkone	Mr. VanhChengyang	B. Namyouak	Mr. Vankham	B. Houaykhoun
14	Ms. Sida	B. Hatsamkone	Mr. Yachoichong	B. Namyouak	Mr. Khampian	B. Houaykhoun
15	Mr. Khammoun	B. Hatsamkone	Mr. Chongnoulor	B. Namyouak	Ms. Phokham	B. Houaykhoun
16	Ms. Chansam	B. Hatsamkone	Ms. Bouasone	B. Namyouak	Ms. Bounphan	B. Houaykhoun
17	Mr. Khamfeuan	B. Hatsamkone	Ms. khamla	B. Namyouak	Ms. Hiem	B. Nam Ngiep

No	Thavieng on March 18, 2002		Sopyouak on March 22, 2002		Mouang Mai on March 15, 2002	
	Name	Organization	Name	Organization	Name	Organization
18	Mr. Thidpeng	B. Hatsamkone	Ms.Chy	B.Namyouak	Ms. Oun	B. Nam Ngiep
19	Ms. Bouavone	B. Nahong	Ms.Neng	B.Namyouak	Ms. Dee	B. Nam Ngiep
20	Ms. Bounta	B. Nahong	Ms.Doichong	B.Namyouak	Ms. Boualee	B. Nam Ngiep
21	Ms. Chom	B. Nahong	Ms.Cheng	B.Namyouak	Ms. Chanthala	B. Nam Ngiep
22	Ms. Khamkong	B. Nahong	Ms.Maly	B.Sopohouan	Mr. Vangkeo	B. Nam Ngiep
23	Ms. Phouangchan	B. Nahong	Ms.Chongvang	B.Sopohouan	Ms. Bounhieng	B. Nam Ngiep
24	Mr. Souvan	B. Nahong	Ms.Khouvang	B.Sopohouan	Mr. VienKhone	B. Nam Ngiep
25	Mr. Siphone	B. Nahong	Mr.Hakongyang	B.Sopohouan	Mr. Khamphan	B. Nam Ngiep
26	Mr. Bouavan	B. Nahong	Mr.Khongha	B.Sopohouan	Ms. Tham	B. Nampa
27	Ms. Piew	B. Nam Long	Ms.Chengyang	B.Sopohouan	Ms. Som	B. Nampa
28	Ms. Vieng	B. Nam Long	Ms.Choivang	B.Sopohouan	Mr. Bounsou	B. Nampa
29	Ms. Loun	B. Nam Long	Ms.Maylychong	B.Sopohouan	Ms. Bounchan	B. Nampa
30	Ms. Thongta	B. Nam Long	Mr.Vatou	B.Sopyouak	Ms. Toui	B. Nampa
31	Ms. Vansi	B. Nam Long	Mr.Hapaoyang	B.Sopyouak	Ms. Khanhom	B. Nampa
32	Mr. Khamky	B. Namlong	Mr.Lorhoiyang	B.Sopyouak	Mr. Khamphim	B. Nampa
33	Mr. Keotammouan	B. Namlong	Mr.Yeervang	B.Sopyouak	Mr. Thongsai	B. Nampa
34	Mr. Chomphet	B. Namlong	Mr.Saytouchong	B.Sopyouak	Mr. Somphone	B. Nampa
35	Ms. Bounlid	B. Nasong	Mr.Chongpaovang	B.Sopyouak	Mr. Khamdeun	B. Nampa
36	Ms. Putsady	B. Nasong	Mr.Vachavang	B.Sopyouak	Mr. SEE	B. Namtek
37	Ms. Vane	B. Nasong	Mr.Yeernengchong	B.Sopyouak	Mr. Kounsai	B. Namtek
38	Ms. Chathali	B. Nasong	Mr.Yongmalor	B.Sopyouak	Ms. Saykeo	B. Namtek
39	Ms. Somsy	B. Nasong	Mr.Geerlorviu	B.Sopyouak	Ms. Bounyai	B. Namtek
40	Mr. Oudon	B. Nasong	Mr.Tongyang	B.Sopyouak	Mr. Siemay	B. Namtek
41	Mr. Bounmar	B. Nasong	Mr.Khiuyang	B.Sopyouak	Ms. Som	B. Namtek
42	Mr. Channoy	B. Nasong	Mr.Vapaochong	B.Sopyouak	Ms. Khamfong	B. Namtek
43	Ms. Pily	B. Naxay	Mr.Vamonchong	B.Sopyouak	Ms. Ma	B. Namtek
44	Ms. Toue	B. Naxay	Mr.Yatoiyang	B.Sopyouak	Mr. Bounhieng	B. Namtek
45	Ms. Meng	B. Naxay	Mr.Khiuyang	B.Sopyouak	Mr. Khamson	B. Phonsy
46	Ms. Nam	B. Naxay	Mr.Kayeychong	B.Sopyouak	Mr. Bouakeo	B. Phonsy
47	Ms. Bouakham	B. Naxay	Mr.Cheerliuyang	B.Sopyouak	Mr. Nit	B. Phonsy
48	Mr. Bounlith	B. Naxay	Mr.bouaherchong	B.Sopyouak	Ms. Sysouphanh	B. Phonsy
49	Mr. Der	B. Naxay	Mr.Porvongnouya	B.Sopyouak	Ms. Thaithong	B. Phonsy
50	Mr. Bounmar	B. Naxay	Mr.Vamai	B.Sopyouak	Mr. Vong	B. Phonsy
51	Mr. Maimon	B. Phiengta	Mr.Vachiu	B.Sopyouak	Ms. Soumountha	B. Sen-Oudom
52	Ms. Viengsamai	B. Phiengta	Mr.Kouyang	B.Sopyouak	Mr. Phouvong	B. Sen-Oudom
53	Ms. Vanc	B. Phiengta	Mr.Chengbiyang	B.Sopyouak	Ms. Bunyen	B. Sen-Oudom
54	Ms. Mipone	B. Phiengta	Mr.Chasongvang	B.Sopyouak	Ms. Phouvanh	B. Sen-Oudom
55	Ms. Viengli	B. Phiengta	Mr.Vachoi	B.Sopyouak	Mr. Phone	B. Sen-Oudom
56	Ms. Bounkop	B. Phiengta	Mr.Chertorchong	B.Sopyouak	Ms. Seum	B. Sen-Oudom
57	Mr. Pone	B. Phiengta	Mr.Yoiyailor	B.Sopyouak	Ms. Syphay	B. Sen-Oudom
58	Mr. Khampiew	B. Phiengta	Mr.Yoitongyang	B.Sopyouak	Mr. Sa	B. Sen-Oudom
59	Mr. Livone	B. Phonehom	Mr.Vapaochong	B.Sopyouak	Mr. Bounthan	B. Sen-Oudom
60	Ms. Pom	B. Phonehom	Mr.Sachong	B.Sopyouak	Mr. Samai	B. Somseun
61	Ms. Munth	B. Phonehom	Mr.Yengha	B.Sopyouak	Ms. Seun	B. Songkhone
62	Ms. Kham	B. Phonehom	Mr.Nengmoichong	B.Sopyouak	Ms. Champy	B. Songkhone
63	Ms. Pi	B. Phonehom	Mr.Yamailor	B.Sopyouak	Ms. Chanthuan	B. Songkhone
64	Ms. Hom	B. Phonehom	Mr.Yeungnengchong	B.Sopyouak	Ms. Phom	B. Songkhone
65	Mr. Vanheuang	B. Phonehom	Mr.Vachaha	B.Sopyouak	Mr. Somphone	B. Songkhone
66	Ms. Siphun	B. Phoneyeng	Mr.Geerhiuvi	B.Sopyouak	Mr. KeoOudone	B. Songkhone
67	Ms. Phonesy	B. Phoneyeng	Mr.Nengha	B.Sopyouak	Mr. Bounliem	B. Songkhone
68	Ms. Manila	B. Phoneyeng	Ms.Choivang	B.Sopyouak	Mr. Khamla	B. Songkhone

No	Thavieng on March 18, 2002		Sopyouak on March 22, 2002		Mouang Mai on March 15, 2002	
	Name	Organization	Name	Organization	Name	Organization
69	Ms. Ler	B. Phoneyeng	Ms. Vakhailor	B.Sopyouak	Mr. Phiek	B. Songkhone
70	Ms. Noukham	B. Phoneyeng	Ms. Choivang	B.Sopyouak	Ms. Phonesy	B. Thaheua
71	Mr. Bounsou	B. Phoneyeng	Ms. Tiuvang	B.Sopyouak	Ms. Bouathong	B. Thaheua
72	Mr. Sim Sidavong	B. Phoneyeng	Ms. Chaolor	B.Sopyouak	Ms. Kongsy	B. Thaheua
73	Mr. Some	B. Phoneyeng	Ms. Paiyang	B.Sopyouak	Ms. Chanphone	B. Thaheua
74	Mr. Thongvane	B. Phoneyeng	Ms. Khouher	B.Sopyouak	Ms. Hang	B. Thaheua
75	Mr. Khammang	B. Phoneyeng	Ms. khoulor	B.Sopyouak	Mr. Souvanthong	B. Thaheua
76	Mr. Pengvongsa	B. Phoneyeng	Ms. Payengyang	B.Sopyouak	Mr. Boundok	B. Thaheua
77	Mr. Vangseng	B. Pou	Ms. Chiuchong	B.Sopyouak	Mr. Sony	B. Thaheua
78	Ms. Thongmai	B. Pou	Ms. Mavang	B.Sopyouak	Mr. Thongkoun	B. Thaheua
79	Ms. Hong	B. Pou	Ms. Cierchong	B.Sopyouak	Ms. Khamvone	B. Thong-Gnai
80	Mr. Chanpeng	B. Pou	Ms. Maihoichong	B.Sopyouak	Ms. Bounsou	B. Thong-Gnai
81	Mr. Keo	B. Pou	Ms. Kieryang	B.Sopyouak	Ms. Veomany	B. Thong-Gnai
82	Mr. Kampi	B. Pou	Ms. Avang	B.Sopyouak	Ms. Doungsy	B. Thong-Gnai
83	Mr. Champa	B. Pou	-	-	Ms. Somphane	B. Thong-Gnai
84	Mr. Khamputh	B. Pou	-	-	Mr. Dom	B. Thong-Gnai
85	Mr. Xiengdung	B. Viengthong	-	-	Mr. Khemphone	B. Thong-Gnai
86	Ms. Mai	B. Viengthong	-	-	Mr. Boothda	B. Thong-Gnai
87	Ms. Cham	B. Viengthong	-	-	Mr. Bounpheng	B. Thong-Gnai
88	Mr. Vieng	B. Viengthong	-	-	Ms. Khamkhai	B. Thong-Noi
89	Mr. Punya	B. Viengthong	-	-	Ms. Chantha	B. Thong-Noi
90	Mr. Xiengvansi	B. Xiengkong	-	-	Ms. Kham	B. Thong-Noi
91	Ms. Lot	B. Xiengkong	-	-	Ms. Teuanchai	B. Thong-Noi
92	Ms. Simon	B. Xiengkong	-	-	Ms. Bounhome	B. Thong-Noi
93	Mr. Nid	B. Xiengkong	-	-	Mr. Khammao	B. Thong-Noi
94	Mr. Chansom	B. Xiengkong	-	-	Mr. Khamsook	B. Thong-Noi
95	-	-	-	-	Mr. Savathdy	B. Thong-Noi
96	-	-	-	-	Mr. Phouvey	B. Thong-Noi
97	-	-	-	-	Mr. Kham	B. Somseun
98	-	-	-	-	Mr. Thitlit	B. Somseun
99	-	-	-	-	Ms. Bounmy	B. Somseun
100	-	-	-	-	Mr. Khammay	B. Somseun
101	-	-	-	-	Mr. Lang	B. Somseun
102	-	-	-	-	Mr. Khammeung	B. Somseun
103	-	-	-	-	Mr. Khanthong	B. Somseun
104	-	-	-	-	Mr. Thoun	B. Somseun
105	-	-	-	-	Mr. Bounyang	B. Somseun

(4) Proceedings (Comments, Questions and Answers)

Workshop at Thavieng, on 1 March 8, 2002

1. Mr. Khamfeuane, B. Nam pou

For the plan of district, we will move to resettle near main street and now there are some households already moved to main street, but our rice field will be inundated so we require to the project to construct irrigation at new resettlement area.

I think your rice field will be impact only rainy season, when water come up to full supply level,

I hope only 1 month. This draw down zone can be used during dry season.

2. Mr. Chomphet, B. Hatsomekhone

Our villages will have not direct impact but will have in direction impact, so we require to the project to construction irrigation for people in this area. For labor During construction Dam we need to share it. For the next site workshop please bring more CD about training jobs. For Rural labor the project will give first priority.

3. Mr. Bounsu, B. PhoneYeng

I agree with the project that's have detail study and have any mitigation of impact

4. Ms Phonsi, B. Phonegneng, Women's Union

During construction Dam, it will be impact with living life of people so we need to rent money with the project to make livestock and cultivation .

After finish construction Dam, How to supply electricity to local area and have we opportunity to use it.

Workshop at B. Sopyouak on March 22, 2002

5. Mr. Thongphet, Hero. he is living at B.Sopyouak

This area we used for fitting more then 30 years, and every body know this area is hero-zone, how can you make a flood this zone. We do not want to move from this area with out permission from prime minister office. I want to discussion with government directly. I hope that the final site work shop our vice minister will be jointed

6. Mr. Vatou, B. Sop youak, Head of village

1. Now the people is waiting, they don't work, and don't improve living life because of inundated impact by construction dam

As the phase 1, we already told you that it need at list 10 years to wait before the Dam can be implemented. Therefore today you must work as normally you do.

7. Ms Bouasone, B Namyouak

1. This village area we grave our ancestors. if construction Dam it will be inundated those graveyard, in our traditionalism can not do like that. How will you do.

I have been living here for many years, the soil is very fertile. We are self-sufficient, we use to spend little money. Prior to move us we would like to see the new site first. We want the new

land to be as fertile as our existing one.

How to compensate our plantation ?

Sorry, I have no experience on this matter, however during the Dam construction we will setup resettlement committee, I hope they can resolve this matter

8. Mr. Yeerlongvang, B. Houaypamom

Before we requested you to resettle us to Samteun area, but now district's governor provides this area for other people, we are afraid that land is not enough for us. Because of that we would like you to look for land at Bolikhan district

Workshop at B. Somseun, Bolikhan District on March 15, 2002

9. Presentation by Ms. Sopa, Head of women union of Bolikhamxay province

In the past there were little involvement of women in the public consultation. Development cannot be properly realized if women are left behind.

Gender issue is very much important for new development programs. Gender issue means the relationship between man and woman in a family. The responsibility of woman in the family differs from their role in the society, because at home they must look after the domestic sphere and nutrition. They look after the household garden and the family income.

In the Lao PDR by the woman and man have equal rights pertaining to family relations. Therefore men and women must help each other in all domestic activities.

GOL emphasizes a lot of attention woman role since the impact from the project will hit mostly women and children, because women work hard in all areas due to the fact that they must look after every thing, beside the other fact that in each year they have to deliver baby as well

10. Presentation by Mr. Chansaveng Chef of hydropower development Division

- Project History
- Detail Investigation (Topography, Geology, Power Market)
- Hydropower Planing
- Layout Design
- Social-Environmental Impact, and mitigation

11. Mrs. Sengdeuan, Video Show about Fish Culture and plantation

12. Mr. Pouvong, Head of B. Sen-Oudom

During the construction and during operation, What happen to the production areas locating in the area downstream of the proposed dam ? Will there be enough water all the time, for agriculture purpose

After the completion of the dam, the water to be released from the reservoir will be bad quality, consequently what can be the mitigation measures to be given to the people living downstream of the dam

Can you distribute CD about fish culture to all villages

As I presented to you about changing of water flow regime. In the natural condition, after Jun to October the water flow is big and November- May the flow is small. After the dam completion the water flow all most constant. I think it would be good for your agriculture

The first few years after dam completion, the water released will be of low quality. However we have some mitigation measure such as the provision of " water supply system – pump well". The situation at B. Sen-Oudom, would not be hard, because it is located far from the dam. By the time the water arrive to this village, natural re-oxygenation has completely happen during its course. We will request to JICA study team to make copy , and distribute to you.

13. Mr. Samai, Head of B. Somseun

I'm on behalf of B. Somseun's people would like to request Nam Ngiep-1 Project to provide us "water supply"

I want Nam Ngiep-1 Project to support us build weir on small tributary nearby our villages for water used and fish culture. We need study more detail next few year

14. Mr. Sompone, B. Houay Khoun

People live at near construction Dam area their want to get work with during construction Dam. For Rural labor the project will give first priority.

15. Mr. Yeusong, B. Hatxaikham

Our villages will be Inundated? Could we use water from Re-regulating pond for Irrigation?

B. Hatxaikham will be resettled in another place, because this area will be impacted by Re-regulation dam.

(5) Reference

The latest population of each village are surveyed during the site workshop as shown below:

No.	Village	House hold	population		Total
			Man	Woman	
I Upper Reservoir					
1	Viengthong	46	141	140	281
2	Piengta	48	200	128	328
3	Pou	67	118	280	398
4	Dong	85	317	218	535
5	Phonhome	71	197	216	413
6	Namlong	21	-	-	126
7	Naxay	25	80	74	154
8	PhongYeng	58	179	153	332
9	Nasong	76	239	222	461
10	Xiengkhone	40	120	120	240
II Downstream					
1	Houaykhoun	338	1111	876	1987
2	Somseun	197	589	526	1115
3	Hatkham	86	343	240	583
4	Thong-Gnai	65	195	173	368
5	Namtak	40	-	-	295
6	Xanaxay	140	324	413	737
7	Phonsi+Thakokkane	117	320	317	637
8	Thong-Noy	86	294	291	585
9	Thahua	44	129	124	253
10	San Oudom	75	205	192	397
11	Songkhone	48	198	129	327
12	Namngiep	78	153	156	309
13	Nampa	75	209	227	436
III Lower Reservoir					
1	Xop Yoak	78	295	230	525
2	Nam Yoak	106	347	368	715
3	Xop phoan	35	117	135	252
4	Houay pamom	20	57	60	117

12.2.3 3RD SITE WORKSHOP

After the 3rd General Workshop, the Site Workshop was held by MIH and the Study Team at B.Sopyouk, Muang Hom District, Vientiane Province (the lower reservoir area) on September 23, 2002 so as to transfer the summary of discussions exchanged at the 3rd General Workshop as well as to collect opinions of the affected villagers. The attendance programs, the attendance list and the discussion proceedings are shown below:

(1) Program : September 23 (Monday), 2002

Time	Period	Event	Remarks
08:00-11:15	3:15	Registration at Airport	Lao Air Base
11:15-11:55	0:40	Fly to Muang Hom	Hom District, Vientiane Province
11:55-12:15	0:20	Pick up Official	-
12:15-12:25	0:10	Fly to B.Sopyouk	-
12:25-12:45	0:20	Preparation for Workshop	-
12:45-13:15	0:30	Presentation of Resettlement	by Study Team
13:15-14:00	0:45	Discussion	-
14:00-15:00	1:00	Lunch with villagers	Preparation by MIH counterparts
15:00-15:55	0:55	Fly to Resettlement Area	Bolikhon District, Bolikhamsay Pro.
15:55-16:15	0:20	Discussion	with 16 villagers of 4 villages
16:15-17:00	0:45	Fly to B.Sopyouk	Helicopter MI-17

(2) Attendance List

No.	Position	Name	Title
1.	MIH (1)	Nam VIYAKET	Vise-Minister
2.	MIH (2)	Soukan PHONSAVANH	Deputy of Cabinet, MIH
3.	DOE/MIH (1)	Chansaveng BOUNGNOUNG	MIH Counterpart
4.	DOE/MIH (2)	Vitounhlabundit THOUMMABOUT	MIH Counterpart
5.	DOE/MIH (3)	Khonephet SAMOUNTY	MIH Counterpart
6.	DOE/MIH (4)	Sunya SOMVICHITH	MIH Counterpart
7.	DOE/MIH (5)	Phonsavanh PHIMMASONE	MIH Counterpart
8.	DOE/MIH (6)	Lamphone DIMANIVONG	MIH Counterpart
9.	JICA (1)	Azuma TSUNODA	JICA Specialist
10.	JICA (2)	Masatoshi KAIMASU	Project Formulation Advisor
11.	Study Team (1)	Ichiro ARAKI	Team Leader
12.	Study Team (2)	Masaki WADA	Hydropower Planner
13.	Study Team (3)	Jack Prosser	Environmentalist
14.	Study Team (4)	Satoshi OTAKI	Coordinator
15.	STS Consultant	Sisavath	Subcontractor for Study Team
16.	B. Houaypamon	Villagers	(5 persons approx.)
17.	B. Namyouk	Villagers	(5 persons approx.)
18.	B. Soppouh	Villagers	(5 persons approx.)
19.	B. Sopyouk	Villagers	(90 persons approx.)

(3) Proceedings of the 3rd Site Workshop

During the Site Workshop at B.Sopyouk, which was addressed by Mr.Nam Viyakhet, Vice-Minister of MIH and with Mr.Soukan Phongsavanh Deputy-Director of Cabinet for MIH, much of the discussion was in Lao and the local dialect of Hmong language. The translator to Hmong was Mr.Thongphet, a local National War Hero. The topics raised by the Vice-Minister included:-

Mr. Thongphet indicated that the villagers were concerned about moving and had a vested interest in remaining in their villages and stated that:

- The villagers wanted to inspect the potential resettlement sites and try growing their various fruit trees, other trees and crops
- The villagers wanted to retain the name of their village regardless of where they moved due to its fame during the war.
- Special and specific Hmong ceremonies are necessary to relocate local cemeteries and this would have to be negotiated with local villagers.
- It was essential that a hospital and a free bus be provided for local villagers at the resettlement location.

After discussions by Mr. Sisawat of STS Consultants outlining the features of the Thaksi-Xiang Leu-Xiang Xiane and the Pakbuak areas, the Vice-Governor of Hom District stated that:

- About one-quarter of the sparsely populated Hom District resides in the four affected communities (ie about 1,600 out of 7,200 total population).

- The capacity of the Hom District with its mountainous terrain is approximately 15,000 population
- If the villagers decide that it is a good place in Bolikhan District and want to resettle there the Hom District will not stand in their way, however he would appreciate they remain to build up the district.
- Ban Phoung and Ban Houay Tuay are possible places for them to move to.

Arrangements were made for 3-4 representatives of each village to fly by helicopter over the selected resettlement sites and the Ban Phoung and Ban Houay Tuay sites. This was undertaken except for the Ban Phoung site. It was revealed during the flights over Thaksi-Xiang Leu- Xiang Xiane that:

- The land appeared good with good potential for irrigation.
- Present development of the sites is very scattered and this raises the issue of land ownership in these areas and whether compensation will have to be paid to present owners/ occupiers
- The Thaksi-Xiang Leu- Xiang Xiane site appears mostly occupied with agricultural incursions occurring on the steeper slope margins throughout the site.
- The Pakbuak site appears to be more undulating to rolling with rice grown on the creek flats and to have large areas of unoccupied land.
- The Houay Tuay area is relatively high, dominated by the escarpment of the plateau, has limited water, is small and so has limited land for agricultural development.
- The Ban Phoung area was not flown over because of time and so comment can not be made.

These facts were reported to the meeting and it was stated that further investigation in the Hom District sites and others should proceed. The villagers also expressed a wish to visit the Bolikhan District sites during the dry season to inspect possible sites and make enquires as to their availability. This was agreed to in principle by the Vice Minister.

During a reconnaissance of B.Sopyouk by other JICA Study Team members, JICA representatives and Department of Electricity staff it was revealed that:

- A GTZ assistance program to Hom District had operated in the 1990-94 period and had constructed the basic dry season access road into B.Sopyouk.
- This program had encouraged the growing of Mulberry trees with attendant silk and papermaking activities and the planting of sandalwood trees for sale to Thailand and the Middle East (ie 1 kg of sandalwood sells for about Thai Bhat 100,000).
- Many of the elevated houses in B.Sopyouk are also from this period when money was made gathering natural sandalwood and cutting local trees with a portable sawmill.

In response to queries by Mr. Araki, the villagers indicated that:

- Three families from Nam Tha Province and three from Xiang Khouan Province had moved into the community within the past five years.
- Local flooding of rice paddy land in 2002 was not a problem but borers as evidenced by empty rice heads and rats as pests to stored crops are real problems for the community.

12.3 SUBLETTING WORKS

12.3.1 AERIAL PHOTO SURVEY

Based on the TOR and the technical specifications approved by JICA on June 7, 2001, the Study Team concluded the contract for the subletting works with regard to the aerial photo survey and river cross section survey with FINNMAP International on July 2, 2001, after obtaining JICA's approval on June 28, 2001.

The conceptual graphics of data acquisition by Airborne GPS is as follows: The 3-D aerial photography requires control points. However, when inertial guiding system and GPS are used to find positions of the camera and the airplane, the control points are not necessary. Highly accurate surveying in hazardous areas and tropical rain forests becomes possible.

12.3.2 MAPPING OF RESERVOIR AND DAM AREA

Detailed technical specifications and schedule are shown in the specifications for mapping preparation including aerial triangulation, digital plotting, digital editing and out-put format. Scales of map plotting from aerial photographs will be as follows according to the precision demanded. Approximate mapping areas that are required for F/S are also shown:

Table 12.3.1 Mapping of Reservoir and Dam Site Area

Scale	Place	Required Area for Mapping (km ²)
1:10,000	Reservoir area (including Large-scale Alternative)	200
	Relocation roads, construction roads, quarries, etc.	10
	Re-regulation pond	10
	Total	220
1:1,000	Dam site (including the sites for spillway, power waterway and other main appurtenant facilities.)	2.0
	New road route between B. Hatkham and dam site	5.0
	Construction site for re-regulation facilities	0.5
	Total	7.5

12.3.3 THAI POWER SECTOR SURVEY

Regarding the Study of Thailand Power Sector Market Outlook, the contract for the subletting works was made between the Study Team and the local consultant in Bangkok on July 23,

2001, following JICA's approval of the draft contract on July 13, 2001, and that of the draft TOR on May 28, 2001.

The Study Team submitted the Final Report on Thailand Power Sector Market Outlook. The Study was made by the local consultant in Bangkok during the period from August to October in 2001 under supervision by the Study Team.

12.3.4 GEOLOGICAL SURVEY

Based on the TOR and the technical specifications approved by JICA on February 18, 2002, the Study Team concluded the contract for the subletting works with regard to the geological investigations with Phoudoi Geo-Mining Company Ltd. on March 1, 2002, after obtaining JICA's approval on March 1, 2002.

A full-dress investigation was started after conclusion of the contract for the subletting works. The Study Team engaged in supervising on access road construction (about 10km long) and core drilling works in corporation with MIH counterpart members.

Based on the layout study of main structures and actual topography, the Study Team designated locations for core drillings at site as tabulated below:

Table 12.3.2 Core-Boring Investigations

Structure	Name	Length (m)	Location
Main Dam	ND1	150	Left bank, EL.300m (E344405, N2062505)
	ND2	100	Left bank, EL.200m (E344232, N2062376)
	ND3	100	Right bank, EL.200m (E3444213, N2062291)
	ND4	150	Right bank, EL.300m (E344312, N2062086)
	ND5	100	Right bank, EL.240m (E344252, N2062212, inclined)
Re-regulating Weir	NR1	20	Left bank (E349338, N2062543)
	NR2	20	Right bank (E349317, N2062454)
Quarry Sites	NQ1	50	About 1.3km upstream from confluence of Nam Katha and Nam Ngiép rivers (material: sandstone)
	NQ2	50	About 4km west from B.Sopyouk (material: granite)

Based on the TOR and the technical specifications approved by JICA on February 18, 2002, the Study Team concluded the 2nd contract for the subletting works with regard to the geological investigations with Phoudoi Geo-Mining Company Ltd. on June 13, 2002, after obtaining JICA's approval on June 12, 2002.

The Study Team engaged in checking the core samples, the water pressure test results, and the seismic refraction test method at site in corporation with MIH counterpart members.

12.3.5 POSSIBLE RESETTLEMENT AREA SURVEY

Based on the TOR and the technical specifications approved by JICA on June 28, 2002, the Study Team concluded the contract for the subletting works with regard to the resettlement study with STS

Consultants on July 11, 2002.

The Study Team engaged in checking the possible resettlement area survey methods that were proposed by the sub-contractor, in corporation with MIH counterpart members. Preliminary study suggested the 2-potential site study in Bolikhan District of Bolikamsay Province, such as Phakpuak along the Nam Sun river (Nam Khading) and Thasi-Xiengleu along the Nam Xan river.

12.4 TRANSFER OF KNOWLEDGE TO COUNTERPARTS

12.4.1 ON-THE-JOB TRAINING

Transfer of Knowledge and Technical Bringing-up for Counterparts of DOE/MIH are one of the scopes of the Study.

Transfer of Knowledge for the counterpart was carried out as the supplement to the actual works of the respective member of the JICA Study Team and especially the services had been made from the 2nd to 7th Field Investigations at the sectors on environmental study, geographical survey, geological investigation, hydrological observation and power sector survey in Thailand and Vietnam.

12.4.2 JICA COUNTERPART TRAINING

The JICA Counterpart Training was executed in October-November 2001 at first. For Mr.Chansaveng BOUNGNONG of DOE/MIH, the training was performed in Japan for 28 days from October 27 to November 23, 2001 with the site visiting program for dam development plan and environmental study as shown in the attached program.

The 2nd JICA Counterpart Training for Mr. Litthanoulok LASPHO of DOE/MIH was performed in Japan for 28 days from October 19 to November 15, 2002 with the site visiting program for generating, transformer, transmission line as shown in the attached program.

Table 12.4.1 JICA Counterpart Training Program in 2001

Nam Ngiep-1 Hydroelectric Power Project (Phase-II, the First Year)
JICA Counterpart Trainee, Training Program 2001

As of October 17, 2001

Total Date	Date	Day of Week	Programme	Place to Visit	Journey	Place to Stay	Person in Charge
1	27-Oct	Sat.	Departure from Laos		Vientiane-Bangkok	Bangkok	
2	28-Oct	Sun.	Arrival in Tokyo		Bangkok-Tokyo	Tokyo	
3	29-Oct	Mon.	JICA Briefing Session/Programme Orientation	JICA (TIC)		ditto	JICA (TIC)
4	30-Oct	Tue.	General Orientation	JICA (TIC)		ditto	JICA (TIC)
5	31-Oct	Wed.	General Orientation	JICA (TIC)		ditto	JICA (TIC)
6	1-Nov	Thu.	Lecture (1): Planning of Power Development	Nippon Koei		ditto	Nippon Koei
7	2-Nov	Fri.	Obs.: Takizawa Dam (concrete gravity dam/under construction); Water Resources Development Public Corporation	Takizawa Dam	Kobokuro-[train]-Seibu Chichibu-[car]-Takizawa Dam-Seibu Chichibu	ditto	JICA (TIC)/ Nippon Koei
8	3-Nov	Sat.	Holiday		Free	ditto	
9	4-Nov	Sun.	Holiday		Free	ditto	
10	5-Nov	Mon.	Lecture (2): Topographic Mapping (digital mapping)	Pasco International		ditto	Nippon Koei
11	6-Nov	Tue.	Obs.: Surikamigawa Dam (rockfill dam/under construction); Ministry of Land, Infrastructure and Transport	Surikamigawa Dam	Tokyo-[train]-Fukushima-[car]-Surikamigawa Dam-Fukushima-[train]-Yonezawa Yonezawa-[car]-Tsuetsukigawa Dam-Yonezawa-[train]-Yamagata	Yonezawa	JICA (TIC)/ Nippon Koei
12	7-Nov	Wed.	Obs.: Tsunakigawa Dam (rockfill dam/under construction); Yamagata Prefecture	Tsunakigawa Dam	Tsuetsukigawa Dam - Yonezawa-[train]-Yamagata	Yamagata	JICA (TIC)/ Nippon Koei
13	8-Nov	Thu.	Obs.: Sagar Dam (rockfill dam/completed); Ministry of Land, Infrastructure and Transport	Sagar Dam	Yamagata-[car]-Sagar Dam-[car]-Sendai	Sendai	JICA (TIC)/ Nippon Koei
14	9-Nov	Fri.	Trip: Sendai-[train]-Tokyo		Sendai-[train]-Tokyo	Tokyo	JICA (TIC)/ Nippon Koei
15	10-Nov	Sat.	Holiday		Free	ditto	
16	11-Nov	Sun.	Holiday		Free	ditto	
17	12-Nov	Mon.	Lecture (3): IPP Projects	Nippon Koei		#	Nippon Koei
18	13-Nov	Tue.	Trip: Tokyo-[train]-Nagoya		Tokyo-[train]-Nagoya	Nagoya	JICA (TIC)/ Nippon Koei
19	14-Nov	Wed.	Obs.: Tokuyama Dam (rockfill dam/under construction); Water Resources Development Public Corporation	Tokuyama Dam	Nagoya-[train]-[car]-Tokuyama Dam-Nagoya	Nagoya	JICA (TIC)/ Nippon Koei
20	15-Nov	Thu.	Obs.: Misogawa Dam (rockfill dam/completed); Water Resources Development Public Corporation; Oukiso and Nishitaniya Power Station (completed); Nagano Prefecture	Misogawa Dam, Oukiso and Nishitaniya P/S	Nagoya-[train]-Kisohakushina-[car]-Misogawa Dam-Inashi-Ribhironryu P/S-Inashi	Inashi	JICA (TIC)/ Nippon Koei
21	16-Nov	Fri.	Obs.: Kobuchi No.1, No.2 and Shokoku Power Stations (completed); Nagano Prefecture	Kobuchi No.1, No.2 and Shokoku P/S	Inashi-[car]-Power Stations-Inashi-[train]-Shokoku	Tokyo	JICA (TIC)/ Nippon Koei
22	17-Nov	Sat.	Holiday		Free	ditto	
23	18-Nov	Sun.	Holiday		Free	ditto	
24	19-Nov	Mon.	Obs.: Naramata Dam (rockfill dam/completed); Water Resources Development Public Corporation; Naramata Power Station (completed); Gunma Prefecture	Naramata Dam, Naramata P/S	Tokyo-[train]-Jomokougen-[train]-Naramata Dam-Jomokougen-Tokyo	#	JICA (TIC)/ Nippon Koei
25	20-Nov	Tue.	Reporting: Questions and Answers	Nippon Koei		#	Nippon Koei
26	21-Nov	Wed.	Evaluation Meeting	JICA (TIC)		#	JICA (TIC)
27	22-Nov	Thu.	Departure from Tokyo	JICA (TIC)	Tokyo-Bangkok	Bangkok	JICA (TIC)
28	23-Nov	Fri.	Arrival in Laos		Bangkok-Vientiane		

Table 12.4.2 JICA Counterpart Traing Program in 2002

Nam Ngiep-1 Hydroelectric Power Project (Phase-II, the 3rd Year)
JICA Counterpart Trainee, Training Program 2002

As of October 25, 2002

Total Date	Date	Day of Week	Programme	Place to Visit	Journey	Place to Stay	Person in Charge
1	19-Oct	Sat.	Departure from Laos		Vientiane-Bangkok	Bangkok	
2	20-Oct	Sun.	Arrival in Tokyo		Bangkok-Tokyo	Tokyo	
3	21-Oct	Mon.	JICA(Briefing Session/Programme Orientation)	JICA(TIC)	-	ditto	JICA(TIC)
4	22-Oct	Tue.	Course Orientation	JICA(TIC)	-	"	JICA(TIC)
5	23-Oct	Wed.	Lecture by TEPCO, Obs.: Generation, Transformer, etc. Factory	Generation, Transformer, etc. Factory	Tokyo-Kawasaki-Factory-Tokyo	"	JICA(TIC)/TEPCO
6	24-Oct	Thu.	Obs.: Hydropower Training Center	Hydropower Training Center	Tokyo-Gunma-Hydropower Training Center-Niigata	Niigata	JICA(TIC)/TEPCO
7	25-Oct	Fri.	Obs.: Hydropower Station	Hydropower Station	Niigata-Hydropower Station-Niigata-Tokyo	Tokyo	JICA(TIC)/TEPCO
8	26-Oct	Sat.	Holiday		Free	ditto	
9	27-Oct	Sun.	Holiday		Free	ditto	
10	28-Oct	Mon.	Obs.: Insulator Factory	Insulator Factory	Tokyo-Nagoya-Insulator Factory-Kyoto	Kyoto	JICA(TIC)/TEPCO
11	29-Oct	Tue.	Obs.: Insulator assembly Factory	Insulator assembly Factory	Kyoto-Insulator assembly Factory-Kyoto-Tokyo	Tokyo	JICA(TIC)/TEPCO
12	30-Oct	Wed.	Obs.: Underground Substation and Electric Power Laboratory	Underground Substation, Electric Power Laboratory		ditto	JICA(TIC)/TEPCO
13	31-Oct	Thu.	Orientation and Lecture by Nippon Koei, Obs.: Edo-Tokyo Museum	Edo-Tokyo Museum		"	JICA(TIC)/Nippon Koei
14	1-Nov	Fri.	Lecture: Nam Niep HPP, Biomass	Nippon Koei		"	Nippon Koei
15	2-Nov	Sat.	Holiday		Free	"	
16	3-Nov	Sun.	Holiday		Free	"	
17	4-Nov	Mon.	Holiday		Free	"	
18	5-Nov	Tue.	Obs.: GCB/GIS Factory	GCB/GIS Factory	Tokyo-Yawatahiku-GCB/GIS Factory-Yawatahiku-Tokyo	"	JICA(TIC)/Nippon Koei
19	6-Nov	Wed.	Obs.: Optical Fiber Factory	Optical Fiber Factory	Tokyo-Hinachi-Optical Fiber Factory-Hinachi-Tokyo	"	JICA(TIC)/Nippon Koei
20	7-Nov	Thu.	Lecture: Plant	Nippon Koei	-	"	Nippon Koei
21	8-Nov	Fri.	Obs.: GCB/GIS Factory	GCB/GIS Factory	Tokyo-Hinachi-GCB/GIS Factory-Hinachi-Tokyo	"	JICA(TIC)/Nippon Koei
22	9-Nov	Sat.	Holiday		Free	"	
23	10-Nov	Sun.	Holiday		Free	"	
24	11-Nov	Mon.	Obs.: NK's Research & Development Center	NK's Research & Development Center	Tokyo-Utsukui-NK's Research & Development Center-Utsukui-Tokyo	"	JICA(TIC)/Nippon Koei
25	12-Nov	Tue.	Reporting, Questions and Answers	Nippon Koei	-	"	Nippon Koei
26	13-Nov	Wed.	Evaluation Meeting	JICA(TIC)	-	"	JICA(TIC)
27	14-Nov	Thu.	Departure from Tokyo	JICA(TIC)	Tokyo-Bangkok	Bangkok	JICA(TIC)
28	15-Nov	Fri.	Arrival in Laos		Bangkok-Vientiane		

12.5 Site Photographs

	
<p>Photo-1 Inception Meeting at JICA Laos Office March 16, 2001 平成 13 年 3 月 16 日</p>	<p>Photo -2 Courtesy Call to MIH Soulivong Minister, MIH March 19, 2001</p>
	
<p>Photo-3 Draft Final Report Meeting at DOI/MIH with Nam Vice-Minister July 16, 2002</p>	<p>Photo-4 Power Sector Survey Visiting EGAT, Bangkok, Thailand July 11, 2001</p>
	
<p>Photo-5 Power Sector Survey Visiting EVN, Hanoi, Vietnam July 16, 2001</p>	<p>Photo-6 Power Sector Survey Visiting Singapore Power, Singapore July 2, 2001</p>

12.5 Site Photographs

<p>Photo-7 1st General Workshop (Lane Xane Hotel) Chairmen June 26, 2001</p>	<p>Photo-8 1st General Workshop (Lane Xane Hotel) Discussions June 26, 2001</p>
<p>Photo-9 2nd General Workshop (Pakxan) Discussion March 8, 2002</p>	<p>Photo-10 2nd General Workshop (near Dam Site) Dam Site Tour March 9, 2002</p>
<p>Photo-11 3rd General Workshop (Lao Plaza Hotel) Discussions September 18, 2002</p>	<p>Photo-12 3rd General Workshop (Lao Plaza Hotel) Exhibition September 18, 2002</p>

12.5 Site Photographs

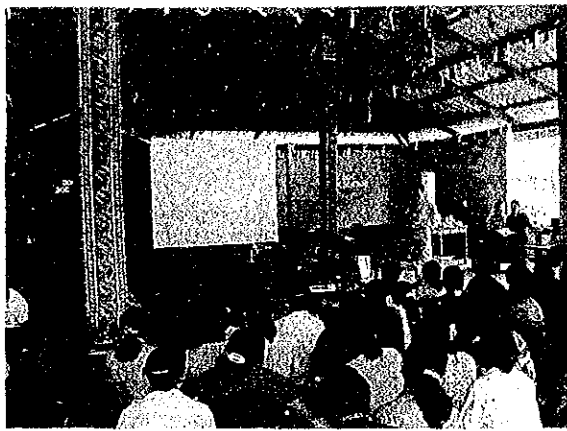


Photo-13 2nd Site Workshop at Muangmai
Project Explanation
March 29, 2002



Photo-14 2nd Site Workshop at Muangmai
Video Program
March 29, 2002



Photo-15 3rd Site Workshop at B.Sopyouk
Explanation of Resettlement Issues
September 23, 2002



Photo-16 3rd Site Workshop at B.Sopyouk
Visiting by Helicopter
September 23, 2002

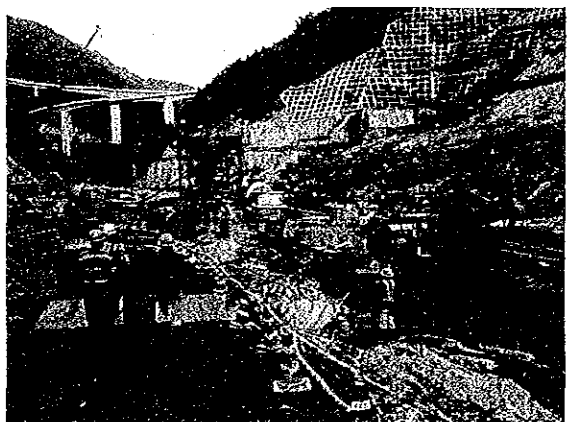


Photo-17 1st Counterpart Training
Visiting Dam Construction Site
November 2, 2001

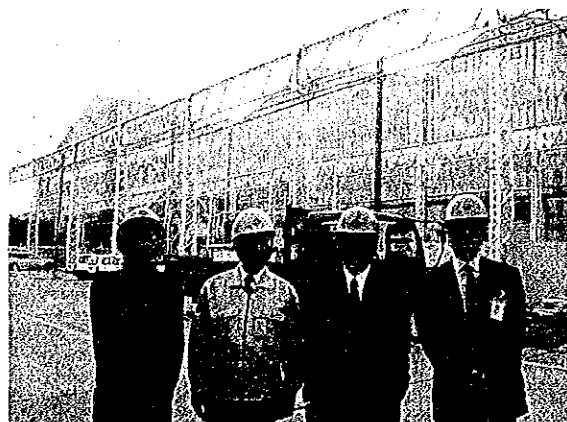







Photo-18 2nd Counterpart Training
Visiting GIS Factory
November 8, 2002







12.5 Site Photographs

<p>Photo-19 Geological Survey Access Road Construction March 2002</p>	<p>Photo-20 Geological Survey Selecting Left Abutment ND2 February 4, 2002</p>
<p>Photo-21 Geological Survey Boring at Right ND4 March 2002</p>	<p>Photo-22 Geological Survey Temporary Bridge at Dam Site April 28, 2002</p>
<p>Photo-23 Aerial-Photo Survey(Aircraft for shooting) Vientiane Airport December 7, 2001</p>	<p>Photo-24 Possible Resettlement Area Survey Bolikhan, Bolikhamxay Province July 2002</p>

12.6 JICA STUDY TEAM & COUNTERPARTS MEMBERS AND MANNING SCHEDULE

General scope of works for each respective team member are summarized shown below:

Name	Position	Description of Tasks
1. Ichiro ARAKI 	Team Leader / Dam Environmental Expert	<ul style="list-style-type: none"> • Manage overall investigation team in all respects • Meet with Laotian governmental officials • Supervise and coordinate work progress • Advise and guide team members • Finalize the most appropriate development plan • Finalize project cost • Conclude the recommendation for the next stage • Take responsibility for explanation, discussion at every workshop • Take responsibility for compilation, submission, explanation and discussion of all reports • Manage overall technology transfer program
2. Nobuhiro MORI 	Financial Expert / PFI Planner	<ul style="list-style-type: none"> • Economic survey and power demand forecast in Lao PDR, Thailand and Vietnam • Determine power price to Thailand and Vietnam • Support cost estimate • Calculate internal rate of return • Sensitivity analysis for the project • Analysis of feasibility by IPP • Explanation, discussion at every workshop • Prepare report on responsible tasks • Technology transfer on responsible tasks
3. Masaki WADA 	Power Development Planner	<ul style="list-style-type: none"> • Collect data for the power development plan in Lao PDR, Thailand and Vietnam • Plan optimum scale of development • Simulate for reservoir operation • Calculate installed capacity and annual energy • Explanation, discussion at every workshop • Prepare report on responsible tasks • Technology transfer on responsible tasks
4. Nejat IMECE 	Civil Engineer A (Civil Design)	<ul style="list-style-type: none"> • Study alternative development plan • Study dam height and dam type • Layout major facilities (Dam and powerhouse etc.) • Design major facilities • Calculate quantities • Prepare report on responsible tasks • Technology transfer on responsible tasks
5. Koji KOGA 	Civil Engineer B (Construction Plan)	<ul style="list-style-type: none"> • Collect information for construction material and machine • Marketing research of employment in Lao PDR • Route study for transportation (by land and sea) • Calculate quantities • Estimate project cost • Make a construction plan • Prepare report on responsible tasks • Technology transfer on responsible tasks

Name	Position	Description of Tasks
<p>6. Shuji NAKATA</p> 	<p>Plant Engineer (Plant Design)</p>	<ul style="list-style-type: none"> • Analyze data of transmission and transform equipment in Lao PDR, Thailand and Vietnam • Support to plan optimum scale of development • Preliminary design of transmission system • Design of power plant • Calculate quantities for transmission line and transformer • Prepare report on responsible tasks • Technology transfer on responsible tasks
<p>7. Kiyofumi TAMARI</p> 	<p>Topographical Surveyor</p>	<ul style="list-style-type: none"> • Make specifications, bidding, supervise and confirm for subletting works (aerial photo survey and river cross section survey) • Make specifications, bidding, supervise and confirm for subletting works (mapping of reservoir and dam area) • Prepare report on responsible tasks • Technology transfer on responsible tasks
<p>8. Kiyoshi HIRATA</p> 	<p>Hydrologist</p>	<ul style="list-style-type: none"> • Procure meteor-hydrological survey equipment • Collect and analyze hydrological data • Study location of rain gauge station • Calculate discharge at dam site • Calculate probable maximum flood(PMF) • Investigate and study water demand for downstream of the dam • Advise on meteor-hydrological investigation • Prepare report on responsible tasks • Technology transfer on responsible tasks
<p>9. Jack PROSSER</p> 	<p>Natural/Social Environmental Expert</p>	<ul style="list-style-type: none"> • Take responsibility for explanation, discussion at every workshop • Make minutes of meeting at every workshop • Prepare report on responsible tasks • Technology transfer on responsible tasks
<p>10. Kiyoshi YAMADA</p> 	<p>Geologist</p>	<ul style="list-style-type: none"> • Collect and analyze the existing geological data • Carry out site reconnaissance and mapping study on site geology • Prepare specifications and supervise for local contract of geological investigation • Analyze geological investigation results • Summarize geological report by subletting company • Prepare all geology-related reports • Prepare report on responsible tasks
<p>11. Satoshi OTAKI</p> 	<p>Coordinator (Civil Engineer)</p>	<ul style="list-style-type: none"> • Assistant for Members Field Investigation

12.7 CONTENTS OF SUPPORTING REPORTS



Mr. Chansaveang

Mr. Kammanh

Mr. Seunkham



Mr. Phonsavanh

Mr. Khonephet

Mr. Sanhya



Mr. Vitounhlabundit

Mr. Lamphone

Mr. Lihanoulok



Mr. Sivang

Mr. Link

Mr. Khamphong



Ms. Nid

Ms. Phetsita

Ms. Santisouk

Staffing Schedule

Nam Ngiep-1 Hydroelectric Power Project (Phase-II)

	Position	Name	Firm	Rank	FY2000												FY2001											FY2002											MAY								
					2001												2002											2002											Total								
					1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	FY2000	FY2001	FY2002	Total																
Field Work	1 Team Leader / Dam Environmental Expert	Ichiro Araki	Nippon Koei	1		0.50		0.40					0.70	0.70	0.70			0.50	0.50	0.50				0.50	3.57	1.50	5.57																				
	2 Financial Expert / PFI Planner	Nobuhiko Mori	Nippon Koei	2		0.50	0.50	0.50				0.70			0.70										0.33	2.37	1.20	3.90																			
	3 Power Development Planner	Masaki Wada	Nippon Koei	3		0.50		0.40					0.60			0.50	0.50								0.50	3.20	1.50	5.20																			
	4 Civil Engineer A (Civil Design)	Seiji Imece	Nippon Koei	3		0.50		0.40					0.60												0.53	2.43	0.90	2.90																			
	5 Civil Engineer II (Construction Plan)	Koji Koga	Nippon Koei	4		0.50						0.60													0.50	1.90	0.70	2.20																			
	6 Plant Engineer (Plant Design)	Shuji Nakata	Nippon Koei	3									0.60												0.60	1.40	0.70	2.10																			
	7 Topographical Surveyor	Kyosumi Tamari	Nippon Koei	3		0.50	0.50	0.50	0.50			0.70													0.50	2.60	0.90	2.50																			
	8 Hydrologist	Kyosumi Hirata	Nippon Koei	4		0.50		0.50					0.60												0.50	0.20	0.60	1.60																			
	9 Natural / Social Environmental Expert	Jack Prosser	Nippon Koei	4		0.47		0.40								0.50									0.47	0.93	0.60	2.00																			
	10 Geologist	Kiyoshi Yamada	Nippon Koei	3											0.50										0.68	1.60	0.73	1.73																			
	11 Coordinator	Satoshi Ozaki	Nippon Koei													0.50									0.20	0.00	0.70	0.70																			
Sub-total of Field Work					2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	5.83	18.40	7.63	25.86																	
Home Work	1 Team Leader / Dam Environmental Expert	Ichiro Araki	Nippon Koei	1		0.40		0.50					0.50	0.50											0.40	1.30	0.57	2.27																			
	2 Financial Expert / PFI Planner	Nobuhiko Mori	Nippon Koei	2		0.40									0.50											0.40	0.20	0.50	1.40																		
	3 Power Development Planner	Masaki Wada	Nippon Koei	3		0.40							0.50	0.50												0.40	1.60	0.50	1.90																		
	4 Civil Engineer A (Civil Design)	Seiji Imece	Nippon Koei	3		0.40							0.50	0.50												0.40	1.00	1.00	2.40																		
	5 Civil Engineer II (Construction Plan)	Koji Koga	Nippon Koei	4		0.40									0.50											0.40	0.50	1.90	1.90																		
	6 Plant Engineer (Plant Design)	Shuji Nakata	Nippon Koei	3									0.50	0.50												0.60	1.00	1.00	2.60																		
	7 Topographical Surveyor	Kyosumi Tamari	Nippon Koei	3		0.40		0.50					0.50													0.40	1.10	0.60	1.50																		
	8 Hydrologist	Kyosumi Hirata	Nippon Koei	4		0.40									0.50											0.40	0.50	0.70	1.40																		
	9 Natural / Social Environmental Expert	Jack Prosser	Nippon Koei	4		0.40									0.50											0.40	0.50	0.60	0.70																		
	10 Geologist	Kiyoshi Yamada	Nippon Koei	3												0.50										0.40	0.00	0.20	0.50																		
	Sub-total of Home Work					2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	3.20	7.20	5.57	15.97																
General	Repair/Workshop	Schedule			1st Workshop												2nd Workshop											DPR/2				F/W/2	5.83	1.20	18.40	7.20	7.63	2.57	29.86	15.97							
	Home Work	(N/A)			2AM												2AM											3AM				20MM				2nd Workshop	7.03	25.60	13.20	45.83							
	Field Work	Field Work			1st Field Work												2nd Field Work											3rd Field Work				4th Field Work				5th Field Work				6th Field Work				7th Field Work			
	Rainy Season in Law P.D.R.	Investigation Works			Investigation Work												1st Home Work											2nd Home Work				3rd Home Work				4th Home Work				5th Home Work				6th Home Work			
		Sub-Contractor's Investigation			Aerial Photo												Ground Photo											Surveying/Resurvey				Geology				Geology				Research							
					River Cross Section												Power Market											Geology				Geology				Research											

The actual Manning Schedule is shown below: