

## ANNEX - 5 (1/10) Minutes of Discussions at the 2nd General Workshops

The Nam Ngiep-I Hydroelectric Power Project  
Minutes of Discussion  
of  
The 2nd General Workshop for Interim Report  
(at Pakxan on June 9-11, 1999)

## 1st Day Program 13:40-16:30 June 9, 1999

No.	Program	Name and Position	Contents
1.	Opening Speech	Mr. Somboune Rassombath, Vice-Minister of MH	
2.	General Speech	Mr. Kumaki Nagata, Director of JICA/Tokyo	
3.	General Speech	Mr. Khauphambh, Deputy Governor of Bolikhamxay Province	
4.	Brief Explanation	Mr. L. Araki, JICA S/Team, Team Leader	
5.	Presentation by JICA S/Team	Mr. H. Ikeda, JICA S/Team, Hydropower Planner	

## Detailed Discussion (I) 16:30-17:20

No.	Name and Position	Questions and comments	Study Team's comments
1.	Mr. Bounphakam Sisanon Representative for the Cabinet of the Prime Minister Office	I am interested on the design of the Dam. I would like to know if the Dam would be provided with fish ladder.	The Main Dam is of more than hundred meters high, therefore fish ladder for a such height cannot be provided.
2.	Mr. Bounton Chanthaphone Chief of the Foreign Investment and Co-operation Department	I join this meeting on the behalf of Xiengkhouang Governor Office. I would like to say few words on two main issues: 1. According to the information I have received on the 28/4/99 from the exploration companies: it is confirmed that there are neither gold nor iron mineral deposits inside the catchment area or in the flooded reservoir. 2. Xiengkhouang Province has particular preference for FSL320, where we assume that the water at full supply level will reach Ban Pou. If that is the case, we can move the affected villagers to some other places, but not far from Ban Pou, as the soil in this area is fertile. Moreover, in the future, the impoundment at this level will ease fluvial transportation, where the communication distance between Xiengkhouang and Bolikhamxay Provinces will be substantially shorten. I believe that Thavieng District will become important port community of Xiengkhouang Province. This alternative can also promote the development of the agriculture of the district as well, as there will be exchange of goods between the two Provinces. How long it takes for the Reservoir to fill-up completely before the Energy Generation can start?	Geological investigation for mineral below 360m or 400m along Nam Ngiep has not been carried out yet. However, if exploitation of mineral will take place, watershed and rivers in the area might be polluted. We noted that Xiengkhouang Province has particular preference for the FSL320 Alternative, because the concept will boost also fluvial transportation.
3.	Mr. Souvata Vichit Director of Environment Department, STENO		Technically, impoundment could take more than 1 year, say about 14 months. However, during the filling period, we should also consider some riparian release to the downstream area of the Dam, which is about some 15-20m <sup>3</sup> /s. These values represent more or less, the average discharge for the driest month in a mean year.

## ANNEX - 5 (2/10) Minutes of Discussions at the 2nd General Workshops

2nd Day Program 09:00-14:00 June 10, 1999		Contents		
No.	Program	Name and Position		
1.	Presentation by JICA S/Team	Mr. E. Yon, JICA S/Team, Natural Environmentalist		
2.	Coffee Break			
3.	Presentation by JICA S/Team	Mr. T. Ragsdale, JICA S/Team, Social Environmentalist		
4.	Lunch Break			
<b>Detailed Discussion (II), (III) &amp; (IV) 10:50-11:00, 14:00-17:30</b>				
No.	Name and Position	Questions and comments	Study Team's comments	
4.	Mr. Thavone STENO	<p>I would like to suggest the following:</p> <ol style="list-style-type: none"> <li>1. Please, give more clarification on geological issues such as the permeability of the soil and the wateriness of the Reservoir</li> <li>2. What is the actual landuse situation of the local farmers. How many Ha of cultivated land will be lost, notably in term of irrigated land? Please, indicate in details the new crop pattern relevant to the soil condition and the possible profits from the cultivation of the land according to an agricultural program specific for each individual zone inside the new resettlement areas.</li> <li>3. The surface water and underground water must be surveyed. Appropriate and adequate samples must be collected for further comparison against various Standards. Underground water quality should be investigated in the new resettlement areas.</li> <li>4. Erosion and landslide should be explored for their occurrence in the past as well as in the future inside the catchment area of the Reservoir, in the area of the irrigation system and in the new resettlement sites. The rate of their occurrence should be, afterwards reported on maps. It is important to establish a database for soil classification for those areas. There should be a detail and specific study to assess on impacts and to determine landuse plan for the utilisation of land according to its soil property.</li> </ol>	<ol style="list-style-type: none"> <li>1. With respect to wateriness of the Reservoir, soil erosion, and landslide, after site inspection, we did not found any serious geological issues, yet. We have accounted our findings in the Interim Report. So far, we believe that there is no risk for the design of high dam. Of course, in our work program for the next phase, we have anticipated detail geological survey of the entire area, where special attention will be devoted to cracks and joints.</li> <li>2. Regarding the landuse aspect, we have carried out investigation in the Project area and finally came out with 40 Land Systems. Main types of soil were identified, general speaking there was no specific soil study allowing this evaluation. However, at this stage we have general idea of the type soils existing in the area and their suitability to the agricultural development. In the maps I have shown you this morning where there are resettlement sites with agricultural potential. They are mainly based on the topography of the area and the quality of the soil.</li> <li>3. We agree that both, surface and underground water are vital water resource for the resettlement areas. In term of quality and quantity, these 2 elements are always in our mind while investigating for new resettlement sites.</li> </ol>	
Coffee Break / Lunch				
5.	Ms. Sakonhiyom Ministry of Foreign Affairs	Malayvieng Foreign Affairs	<p>I am interested in Hydrology Risk. I learned from your presentation that there are not many Meteorology and Hydrology stations in the Project area. To which extend, the Project can control over drought and flood? How much are we confident that there will be enough water to generate energy to the Customer?</p>	<p>With this Project, new rainfall gauging stations and hydrology stations have been established in the Project area. We think that the implementation of this Project will be happened, perhaps after 10 years at least from now. By that time, we will have more of these data. On the other hand, to minimise influence of the hydrology risk on our calculation and design, we are simulating the discharge of this river by using various figures including the conservative value for river discharge.</p>

## ANNEX - 5 (3/10) Minutes of Discussions at the 2nd General Workshops

6.	Mr. Sengdala Phummanao Department of Industry & Handicraft, Bolikhamsai Province.	I would like to address on 2 issues: 1. Did you have the opportunity to carry out any survey on artefact? Usually with the foundation of a new Wat (temple), the villagers are custom to offer many valuable or precious objects, which were afterwards buried under the temple floor. With the impoundment of the Reservoir all of these precious objects will be lost forever, if they are not rescued on time. 2. If on Sunday, energy will not be dispatched to Thailand, would that harm the Power Purchase Agreement?	1. We did carry out preliminary survey for artefact. We found that there are not Wat in these 14 villages. Old peoples confirmed that since the past until now, no Wat has been established in any village. We are not in a geology terrain characterised by Karstic limestone with many caves as it is the case in many part of Khammouane Province. Beside the fact that the whole reservoir has negligible limestone geology, we did found only two small caves situated a little bit upstream of the Dam Site. The above observation is also valid to confirm water richness of the Reservoir. However, in the next step of the Study, it is planned that there will be an assignment of an archaeologist to survey thoroughly the Project area. 2. The fact that Energy generation to Thailand will be nil during Sunday and Holidays is part of the Power Purchase Agreement required by EGAT, the Buyer.
7.	Mr. Thavone STENO	I would like to suggest re-consideration on all options studied, in order to compare advantages and impacts, and to choose the best option, which must have the least impact, and being technically feasible. Please, present us your findings with regards to Dam Height selection, and explain your concept on the management of existing water resources as well as of the future Reservoir.	What you are asking forms the main part of our research. Yesterday and today, we have broadly presented our findings to all related issues, at this Interim stage. Briefly speaking, we come up with 2 options, FSL320 and FSL360. Both differ by their economic return, environment impact and cost parameters. However, today it still be early to formulate a conclusive recommendation. At the next workshop, we hope ourselves to be able to provide the GOL with more information to enable them to decide whichever of the studied schemes to choose.
8.	Mr. Phichit Chief of Department of Agriculture and Forestry Bolikhamsai Province	The water released from the Power Plant represent some interest for the agriculture of the area. Actually, in Bolikhamsai, there are a potential of 40,000 ha for agriculture development and your Re-regulating weir can store 6 millions cubic meter of water. You can see that there is huge possibility to accommodate all affected villagers. I would like to suggest the Team to consider the above figures. Notably, to study on the possibility to establish irrigation system for cultivable area in the downstream of the Powerhouse and in Bolikhamsai District. That can be another relevant study for the people to be resettled, as it can give them more option to choose.	We do not have precise topography map of the downstream area. However, it is difficult to anticipate low gravity flow irrigation can be applied there. On the other hand we must not forget that riparian release must always be present inside the river itself. We know that MAF like to see the implementation of irrigation system (even small schemes) and use of the water in that area. Their vision can be realised by means of pumping stations. Nevertheless, gravity flow irrigation remains great challenge and almost not realistic because of the big difference between river and land elevations.
9.	Mr. Erawan Boungnaphalom Monitoring Office for Mine Concession. Department of Geology and Mines, MIH	1. I like to refer my concern to the value of "4%" quoted for "ratio of Environmental Impact Mitigation". Can you clarify if this value is applied for the whole life of the Project or just during the implementation period of the Project? 2. Is the estimate for Resettlement cost come from international experience, or did you work it out from the real situation of the villages? Can the figures of borrowed from Nam Theun 2 HPP be applied for Nam Ngiep case? To which standard the US\$ 3,000 -4,000 per person can re-establish the livelihood of these people?	The figures reflected in the cost estimate are adopted for preliminary assessment of the Economic analysis only. After we have completed few more studies we will consequently get more accurate figures and numbers. The numbers borrowed from Nam Theun 2 are indicative and they are here for discussion purpose only. Further estimate will be based on more sophisticated concept and facts.

## ANNEX - 5 (4/10) Minutes of Discussions at the 2nd General Workshops

10.	Mr. Oudomsak Phulavong, Lao Mekong River Committee	How many units will be in operation during Peak hours and Off-peak hours?	For Economic Analysis purpose, 2 cases were used: - Medium scale case: 3 units of 90 MW - Large scale case: 4 units of 100 MW 1. The Power Plant will operate according to the customer (EGAT) requirement. There will be power generation with export to Thailand during working days. Every day, power generation will stop after 16 hours of operation. On holidays, there will be very little power generation, for local consumption in Laos. Therefore, the need of a Regulation Pond. It is anticipated that water to be discharged from the Pond during the 16 Operation hours is about 300m <sup>3</sup> /s. During the period between the Daily Operation, the discharge is approximately: 100 m <sup>3</sup> /s. During holidays, only about 20 m <sup>3</sup> /s will be dispatched to the downstream of the Dam. Since, the above figures shown big river water level fluctuation between working days and the holiday, we also thought about regulating gates at the outlet of the Pond. Appropriate design can enable constant release of 200m <sup>3</sup> /s and thus to reduce big fluctuation between the 2 periods. 2. We know that the Mekong Secretariat has conducted studies on waterborne diseases in the Mekong Basin. In theory the climate of the region can be favourable for waterborne diseases to spread quickly in many places especially in lakes and reservoirs. However, so far the big worry for waterborne disease lean on Shistosomiasis. There is Shistosomiasis in Khong Island, but we did not find the presence of them in other part of the country. The snails host exist in many places, but they are not infected with the disease. There were extensive studies on this issues for many rivers, lakes and reservoir. None of them has reported the prevalence of this disease. Consequently, there should not be any reason to say that Shistosomiasis will develop in the Nam Ngiep Reservoir. In the drawdown area, floating weeds can provide habitat for mosquitoes. However, risk is reduce during drawdown period, as the weeds go away from the dwelling areas.
11.	Mr. S.Hongme Mekong River Secretariat Phnom Penh, Cambodia	I have 1 question and 2 comments: 1. I am interested in the operation of the Dam. I presume that the quantity of water discharged by the turbine should be large because the Regulation pond is designed with a volume capacity of 6 million cubic meters. The way the power plant operates has influence on the size of the pond; thus the regulation pond can also affect the cost of the Project. Please, consider. 2. What is the range of the water level fluctuation in the river? My first comment regards waterborne disease. The people to be resettled will continue to use the reservoir for many activities. The water of the Reservoir will be contaminated with waterborne diseases, many of the people will suffer from infection. Please, consider this issue. 3. My second comment concerns the soil quality in the new resettlement sites. Actually, the cultivated land of the people seems to be fertile and suitable for their crops pattern. Therefore, the new resettlement site should be of same quality, at least.	1. In our work program, there will be soil capability assessment for the identified resettlement sites. Investigation for the availability of water resource for both agriculture and domestic use. We will consult the local administration, to get more information on more possible resettlement sites and consequently to assess on their viability. We will assess also on irrigation possibilities in the areas where they can be feasible. We will use International Guide Lines to study on Resettlement planning as well as all other associate issues. 2. Showed in Left cell.
12.	Mr. Singkhom Sivongkham Department of Industry and Handicraft, Special Zone Xaisomboun	1. Will the soil at the resettlement sites be fertile as the soil in the former villages? Or will it be better? 2. There will be power line of 115 kV to dispatch electricity from Nam Leuk to Xiengkhouang via Saysomboun Special zone. The work ought to be completed by 2001. Hopefully, Thavieng District people can use electricity. What happen to the power line, if Nam Ngiep will be built? 2.If Nam Ngiep Project is feasible, we will have not less than 10 years for many others preparatory activities before the implementation. If FSL 360 is adopted, the Transmission line can be moved aside.	
Afternoon Coffee Break			

## ANNEX - 5 (5/10) Minutes of Discussions at the 2nd General Workshops

13.	Mr. Thongkhoun Lao Trade Union	<p>1. In resettlement issues man-power is also an important topic. It is necessary to start the preparation today. This concern is relevant for the people in the Reservoir area as well as for the one in the catchment area. I like to suggest the Study Team, to study how better the employment can be distributed fairly among the whole population of the area.</p> <p>2. I agree with the representative of the Department of Agriculture of Bolikhamxai Province. I prefer to see irrigation scheme and Power Plant include in one development project, rather than 2 separate projects.</p>	<p>1. Good suggestion. We should see what is the availability of labours is in relation to season, and what skill is available, as up to now there were a lot of projects of various aspects implemented in Laos. For instance, Nam Leuk Project employed Hmong villagers from Nam San valley (400 people) for 5 months to clear the reservoir. The total income for these people was in the range of US\$350,000. There were also recruitment centres to engage people.</p> <p>2. We understand your point and we will keep in mind to suggest irrigation scheme where feasible.</p>
14.	Mr. Khamla Keophouthoum Deputy National Assembly	<p>I would like to make some comments:</p> <p>1. Options for employment opportunity for the resettled people are very important issues. They must be consistent with the Government planning strategy, such as the termination of the slash and burn practice for rice cultivation.</p> <p>2. The other strategy outline is the production of goods on commerce oriented basis. The GOL and the Project must cooperate very closely. As an example, to realise such target, one must employ people who use to practice slash and burn. They must learn to cultivate fruit trees instead. In parallel, the fruit-processing factory must be constructed. In addition to that many other dependant sectors must be created and their personnel must be trained accordingly.</p> <p>3. I agreed with the representative of Bolikhamxai Agriculture Department We must find the way to use the water released from the Power Plant, for agriculture purpose.</p> <p>4. Water released through the Dam may contain diseases or polluted. As now we have more few dams, thus more pollution can be accumulated in Mekong River. There should be some assessment with regards to this issue.</p> <p>5. Logging of commercial timbers must be planned and executed well ahead of the construction period. If trees cut starts just before the construction, the log price might drop, because the market will be saturated by wood volume. The Nation will sustain waste and loss as consequence. The other solution to that fact is to minimise such risk by installing wood processing factories. All timbers must be processed before export.</p>	<p>We take on board your comments and questions. As they are numerous, we like to address them separately.</p>
15.	Unknown	<p>I would like to suggest the Contractor to make plan requirement for labour force. I would like them to base on Lao labours. From our experience in many previous projects, Foreign workers are very difficult to control.</p>	<p>We are in EIA stage. It is early to address on the detail of this issue. On the other hand that is also part of the government policy vis-à-vis workers issues.</p>
16.	Mr. Song Vang, Chief of Sopphouan village	<p>I agree with the project. However, the Project must compensate us with school, dispensary, and new paddy rice fields.</p>	<p>We take in account your request.</p>

## ANNEX - 5 (6/10) Minutes of Discussions at the 2nd General Workshops

17.	Ms. Elizabeth Kilmarx Programme Officer UNDP	My concern is related to the participation process. The interview has been almost with chief of village, and chief of household. I don't know what is the size of a household and who makes decision. What has been done to make sure that woman issues and women opinions have been included in the public participation process?	We have statistic data of women in a household. During the participation process, only one woman was participating during the discussion while the other were standing around in the outside. That was not so much the case in the Upper reservoir, in the Lao Loum area, where a sizeable proportion of women participated. I think it is part of the participation planning to work out on woman participation. During our next discussion we may have a separate meeting for women only. For Lao Soung village, we will use people speaking Lao Soung language. We will use the experience of Nam Theun 2. 2. If the Project proceeds, the people will be consulted at each stage. All of these issues will be addressed and recommended in our Resettlement Action Plan report.
18.	Mr. Phitthasone Chummanivong Ministry of Health	The experience in the past shown that Resettlement can impact on people health and mentality. According to the health data of the people in the area, I notice that main of their health problem come from lack of hygiene, malnutrition. Consequently, these people became vulnerable to disease. Therefore, today it is necessary to collect and to update all data regarding the present health status of the people, the prevalence of diseases, the cause of death, and many other health issues. Therefore, health education for the villagers is vital to elevate their livelihood standard, notably after being reallocated.	In our cost estimate, we have included some budget for health care, as our statistical data reveals prevalence of some diseases, such as dysentery and malaria. We should also focus on the most vulnerable people like women and children and older people prior to plan for a specific health programme. We will also give recommendation on the steps and on the transition period after the move.
19.	Mr. Charith Sittibandit Lao Front for Construction	As many ethnic minorities groups exist in the reservoir area, therefore resettlement for them is very sensible issue. What can be done to make a better communication with them, to make them accept the situation and to avoid any misunderstanding in the future?	According to the World Bank recommendation, ethnic groups must get special attention. Our questionnaires in the past were very useful. They help us to better understand them. We will examine this issue in all details. We will advise to minimise resettlement where possible.
20.	Dr. Sean Watson Resource management and Research	From the experience of Public Consultation Process in Nam Theun 2, where there is delay for the implementation of that Project. In Nam Ngiep case, could you suggest some mitigation measure, if the Project fail to proceed?	It is hard to work in Nam Theun 2 condition, as over a year, people are expecting the Project to be implemented. However, at the last minute, every body is uncertain if the Project will proceed or not. After that, there is the feeling that people do not want to talk about the Project anymore. We do not know the World Bank policy with regard to such situation. However, we should keep in mind such issue while designing the Public Consultation Process for Nam Ngiep 1.
21.	Ms. Khama Saisornbat Central Lao Women Union	1. If the people want to go elsewhere than the Resettlement sites, say for instance Sam Neua or Champassak Provinces, will they be entitled to any compensation? 2. What are the options among the new occupations for the people? Will they contribute effectively to the improvement of their livelihood? 3. As presented earlier by the S/Team: after the construction of the Dam, the water quality in the Reservoir will be bad. Is there some health education program for women and children, to deal with this issue?	1. Yes, they will. 2. We are looking on various job opportunities. They must be relevant to the area and the people. Among them can be fish cage raising, livestock rearing.... However, we will consult the people for their preference. 3. We want to do the RAP on International Standard, acceptable to WB or ADB. All vulnerable group, like women children, older people, ethnic groups will be granted with special attention.

## ANNEX - 5 (7/10) Minutes of Discussions at the 2nd General Workshops

<p>22. Mr. Bouaphan Vannavong Chief of Thavieng District</p>	<p>1. Thavieng District is a special focal zone. Particular attention must be given to during resettlement due to the remoteness and difficult access of the area. The Project should not only give assistance during the resettlement process, but they should also support the people after the process for a definite period.</p> <p>2. At FSL 360, will the municipality of Tha Thom district be flooded? If the Project proceed, there will be development in the District; we want the District to be electrified.</p>	<p>1. Thathom district will not be flooded, due to its location outside of the reservoir area. 2. We have learned that there will be an ADB-EDL Rural Electrification Project, which will be implemented very soon. Perhaps, Thathom is one of their target area.</p>
<p>23. Mr. Khamsey Chief of Bolikham District Bolikhamxai</p>	<p>- I speak on behalf of the people of Bolikham District. We are ready to give assistance to the Project. We believe that there is no issue that we cannot overcome.</p> <p>- Bolikham District has a lot of cultivable land. There are more than 20,000 Ha of land cultivable, and not yet exploited. They are scarcely distributed inside the territory of Bolikham District. That includes also 2,000 Ha in one place, located on both side of Nam Xan River. To be sure of its suitability, I recommend the Study Team to inspect it.</p>	<p>We have identify few resettlement sites as they were presented to you. Your proposal is very supportive. We will consult you again for more details.</p>
<p>24. Mr. Boumlieng Chief of Hautkham village</p>	<p>Will Hautkham flooded? If yes, How far from the Dam will the village be resettled?</p>	<p>Hautkham will not be flooded at all, due to its location outside the Reservoir.</p>
<p>25. Mr. Soua Tor Phiangluang Chief of Hom District</p>	<p>We rely on the Study Team to conduct good study and give us good recommendation.</p> <p>1. As the population number of Hom District is small, we may like to choose to move to Phou Ka Tha area. If such is the case, will we receive any compensation?</p> <p>2. We want the standard of our livelihood in the new resettlement place not worse than the former one.</p>	<p>Every body who sustained less because of the Project is entitled to compensation. Their livelihood should be better off.</p>
<p>26. Mr. Yialongvang Chief of Ban Houa Pamon</p>	<p>We agree with the construction of this Project. Almost 2 years already that we keep waiting for the implementation. There will be only some 30 ha paddy field remaining out of the reservoir. If we will be moved, we like:</p> <p>- To live in a same place with the people of B-Sop Phouan</p> <p>- To be trained in other professions or in other types of crops plantation, as there will be not enough paddy rice field for every body</p> <p>- To adopt fishing activities, as they may bring more income to the family</p> <p>EDL will build a transmission line from Nam Leuk to Phonsavan. Along the power line, many villages will be electrified, that includes Thavieng and Tha Thom as well.</p> <p>1. I am interested about the survey on the income of the villagers. The study shows an income of about 750,000 Kips per month per household, that is about US\$177. Is your approach correct to evaluate the income. Such income is relatively high for Lao people. Many of your pictures display of the area have tendency to tell the opposite.</p> <p>2. Can 179 interviewed households be representative of 853 HH?</p>	<p>When you will be resettle, the paddy field that you have lost will be replaced with another one with at least, same size same quality.</p>
<p>27. Phalun Daravong Engineer, EDL</p>	<p>1. Yes, 179 interviewed households can be representative of 853 HH. 2. We did the survey on pure random basis. 3. Yes, to me I feel that the income amount is relatively high. Perhaps, that is due to the abundance of rice yield. However, I believe that the figures are correct, that is perhaps why EDL planned to bring electricity in. Today, we are in the middle of the examination of our study results. By end of June, we plan to check these numbers again.</p>	<p>1. Yes, 179 interviewed households can be representative of 853 HH. 2. We did the survey on pure random basis. 3. Yes, to me I feel that the income amount is relatively high. Perhaps, that is due to the abundance of rice yield. However, I believe that the figures are correct, that is perhaps why EDL planned to bring electricity in. Today, we are in the middle of the examination of our study results. By end of June, we plan to check these numbers again.</p>

ANNEX – 5 (8/10) Minutes of Discussions at the 2nd General Workshops

**Official Meeting 17:30-18:30**

No.	Program	Name and Position	Contents
1.	Official Discussion	Bolikbamsay Province	
2.		Xiengkhouang Province	
3.		Saysomboun Special Zone	
4.		Thaviang Sub-District	
5.		Hom District	

**3rd Day Program 09:00-12:00 June 11, 1999**

No.	Program	Name and Position	Contents
1.	Presentation by JICA S/Team	Mr. B.Yon, JICA S/Team, Natural Environmentalist	
2.	Coffee Break		
3.	Supplementary Explanation	Mr. Somboune Manolom, Deputy Director of MIH/HPO	
4.	Report on EAC Meeting Results	Mr. H.Adach, Facilitator of EAC, JICA Specialist	
5.	Schedule on Next Workshop	Mr. L.Araei, JICA S/Team, Team Leader	
6.	Closing Speech	Mr. Somboune Rassombath, Vice-Minister of MIH	

**Detailed Discussion (V) 09:10-10:40**

No.	Name and Position	Questions and comments	Study Team's comments
28.	Mr. Soukhan Phongsavat Dy. Chief of Cabinet MIH	<p>1. So far, we understand that there are 2 alternatives to choose, whether FSL320 or FSL360. Why the elevations between these two FSL were not taken in account? What about the FSL higher than 360? What can be the EIRR at FSL higher than 360? What can be the magnitude of its impact to the environment? It is necessary to present all of these figures together prior to the selection of the optimal option.</p> <p>2. The 2<sup>nd</sup> issue regards the use of the water discharged from the Power Plant. Many of the participants like to see an effective use of the water resource, which should not used only for power generation end, moreover irrigation of the cultivable land must get benefit also. I would like to ask the Study Team to make observation on the likely effect that can be derived to Power Generation, if a design of a Power Plant must also meet the irrigation requirement. According to my knowledge, to allow water flows by gravity in the irrigation channels, the actual design floor level of the Powerhouse must be raised up. If it is the case, there will be less Head thus less generation output. On the other hand if we keep following the actual design we would not be able to provide water, by gravity to the paddy rice fields, as they located at a higher elevation.</p> <p>3. I would like to comment on the benefit that Dam can contribute to flood control. Lets take for instance Nam Ngum Dam, before its implementation,</p>	<p>1. In our study, we have look carefully on all of the said alternatives, and also at FSL over 360. As it is presented to you yesterday, the result of our analysis in term of Environment impact as well as Economic Return (slides: "Nam Ngiep Reservoir Profile at various FSLs" and "B/C ranking of perspective FSLs") definitely concluded that FSL320 ("Medium scale") and FSL360 ("Large Scale") remain as 2 optimum cases among the others to be heeded on.</p> <p>2. In our case, the target land to be irrigated are located in a considerably high elevation while comparing to the Dam site location. Taking in account the topography of that area, at the first impression, a wide scale irrigation cannot be realized. Nevertheless, the Study Team takes on board your suggestion.</p> <p>3. We agree with your observation. The presence of the Dam will reduce flood occurrence and thus minimize damage in the downstream area.</p>



ANNEX - 5 (9/10) Minutes of Discussions at the 2nd General Workshops

	<p>flooding use to occur every year in that region. Once the Dam built, flood in the downstream area has been considerably reduced, to a such extend that all of us have forgotten that was because of the Dam presence. Therefore, in the Nam Ngiep case, today it is important that the Study Team must concentrate on the natural flood occurred in the past as well as in the future, over the entire Project area. Its occurrence rate, magnitude and damage should be studied.</p>	
<p>29. Mr. Vannasinh EDL, Engineer.</p>	<p>I would like to give some observation on the Economic Return of the Project. I understand that today we are in the early stage of the study. As you said previously, if the B/C ratio exceed 1, the project is economically profitable. However, there so many elements to take into account while calculating the EIRR of a Project. Experience in the past has shown that the preliminary estimate of a Project ending with an EIRR of 15% remains risky, because in the future, that value may substantially decrease when other elements will be taken into account, such as resettlement cost, for instance.</p>	<p>In this preliminary cost estimate we have include many details. In the Final report we will include more parameters and take into account various risks. Only, afterwards we will get a better perception of the economic viability.</p>
<p>30. Ms. Malayvieng Sakonhiyom Ministry of Foreign Affairs</p>	<p>I understand that today we are in an EIA stage. If this Project can be proven viable, we will need Money and Buyer. I know that the present study of this Project has been financed by Japanese Government. I feel some worry for the continuity of the Project, starting from the Study phase until the implementation date. Consequently, I would like to ask from where the finance for the implementation of the Project? Would ADB finances it, as the EIA study is following some guide lines of the ADB or do we expect Japanese Investors to come and develop the Project? Who will be the Buyer, Thailand or Vietnam? Note, that today, Power purchase negotiation is facing with many difficulties and the development of a Project has to confront with many risks. Albeit the understanding that my questions is in some kind ahead of the study, but please consider these issues.</p>	<p>Your questions touch the financial aspect of a Project. In Laos, many forms of investment have been applied for Hydropower Project. For examples: Nam Leuk is an ODA Project, where OECF of Japan is also involved; Theun Hinboun is a Joint Venture Project, where EDL represents GOL; Nam Theun 2 is a BOOT Project where the GOL holds equity and many others... The Study Team will try to simulate various forms of investments to see how which of them can fit with Nam Ngiep 1 case. The findings will be presented in the final report.</p>
<p>31. Mr. Thongkhoun Lao Trade Union</p>	<p>Since the first day, the people have heard about this Project, many of them are now waiting for its implementation. Apparently, during this waiting period, they do not work hard like before. In another word, the development rhythm in the area has tendency to slow down. As consequence, the people can become poorer than before. We must advise them some recommendations.</p> <p>We like to recommend that the repartition of the population in the new resettlement sites must be well distributed. The process must end up with an acceptable equilibrium among people, occupations, spaces, resources ...</p> <p>We like to know precisely the timing of each activities (Feasibility Study, Design, Financing Closure, Construction....). We want to know how more to wait before the construction can start. We have to explain that to the people.</p>	<p>Today, we are in the very beginning stage of the project. We must complete the EIA study first. If the result from the EIA Study shows acceptable impact and mitigation, we then may start with 2<sup>nd</sup> phase of the Project, which is the Technical Study. Definitely, there are many steps to follow before we can arrive to the construction date. Hopefully, if things go smoothly, the process will require about 10 years, prior to the construction start. In our previous workshops at sites, this issue has been carefully addressed to the people. Moreover, we have advised them not to sit and wait, they must continue to work and to develop their home land as before, no matter if the Project will proceed or not.</p>

## ANNEX – 5 (10/10) Minutes of Discussions at the 2nd General Workshops

32. Mr. Duangnibai Likaya Ministry of Information and Culture	<p>In 1995, the downstream of Nam Ngum Dam was flooded as an influence reverberated from 2 storms in Vietnam. That happens during the period between the end of August to September 2<sup>nd</sup>. As consequence, the water level in the reservoir has raised up to the critical level. Therefore, since September 1<sup>st</sup> up to September 3<sup>rd</sup>, all 4 gates of the Spillway were opened. Many people sustain loss in their paddy rice field, 2 important villages were inundated also. I would like to ask if it is possible to install more gates at other places, because the gates opening at in many places will reduce the damage caused to one area? What is related to the FSL selection, I understand that whatever the scale of the Dam, the people have to move away. In consequence, the selection ought to be based on the economic return.</p>	<p>We understand your concern with regard to flood damage caused by water released from spillway located at one place only. Your comment will be referred during the next phase for technical design of the Nam Ngiep Dam. The fact that the lower plain of Nam Ngum was ravaged by the flood was due to the presence of the storm. The water level in the Mekong has also intensively increase at that time, and it has created back-water effect by pushing back the flow of all tributaries water.</p>
33. Mr. Soukan Phongsavath Deputy Chief Cabinet MIH	<p>I would like to endorse the Team Study Observation related to Nam Ngum flooding.</p> <ul style="list-style-type: none"> <li>■ The inundation of the lower plain of Nam Ngum is due almost to back water effect from Mekong River. At that time I was assigned by MIH to observe very closely the situation, and I notice that water flowed back "uphill" when threw leaves into the Nam Ngum river, downstream of the Dam.</li> </ul>	
34. Mr. Soukta VICHIT STENO	<p>I would like to congratulate MIH, for the realisation of this Workshop. I agree with the start of this Hydropower Project with EIA study. Today, Environment Impact caused by Projects is a focal subject with great criticism for many in the world. The EIA study now is an obligation by Law for all major projects like Nam Ngiep. In these 3 days of Workshop, the Study Team will get benefit from our inputs such as questions, comments, opinions, concerns, suggestions, informant data and so forth. They are essential for the study, planning, and mitigation of the impact. One of the Study Team's objectives is not to forget anything, including the all kind of compensation to the people who sustain loss. We hope that in December 99 at the next Workshop, all issues will be touched and recommendations will come along. I note also that the participation from the participants was very dynamic and covered broad field of interest. We have realised our objectives in this Workshop thanks to the care of the Provincial Authority as well as the local people. I address also my sincere thanks to all of the participant for their devotion to join this Workshop.</p>	

## ANNEX – 6 (1/2) Summary of 2nd Site Workshops

## (i) Date and Place

Date	Name of Village	Place	Representative
Jun.24	B.Somseuan in Bolikhan District (D/S of Dam)	Public building	Main village in 14

Note : The village name of B.Moungmai was changed by B.Somseuan.

## (ii) Time Schedule of Workshop including Preparatory Work

No.	Date	Events	Remarks
1.	Jun.21 (Mon)	VTE→PKX by Car for Preparatory team of HPO	Stay at PKX
2.	Jun.22 (Tue)	PKX→B.Somseuan→PKX by Car	Stay at PKX
3.	Jun.23 (Wed)	PKX→B.Somseuan→PKX, VTE→PKX by Car	Stay at PKX
4.	Jun.24 (Thu)	PKX→B.Somseuan→PKX by Car (Workshop)→VTE	Stay at PKX

Note; VTE:Vientiane, PKX:Pakxan, HTK:B.Hatkham

## (iii) Program on June 24

No.	From	To	Agenda	Contents	Presenter/Staff
1.	08:00	08:30	Trip from Pakxan	-	6 cars
2.	08:30	09:00	Preparation	Panel Setting	HPO Staff
3.	09:00	09:30	Registration	Questionnaires/Note/Pen	HPO Staff
4.	09:30	-	Introduction of Participants	-	S/Team, Mr.Araki
5.	-	09:35	Introduction of JICA	JICA's policy and JICA Study	S/Team, Mr.Araki
6.	09:35	09:40	Project Description	Background of Project	S/Team, Mr.Araki
7.	09:40	09:50	Opening Speech	Power policy in Lao	HPO, Mr.Somboune
8.	09:50	10:20	Presentation (1)	Natural Impacts Issues	S/Team, Mr. Yon
9.	10:20	10:50	Discussion (1)	-	-
10.	10:50	11:10	Break Time		
11.	11:10	11:15	Explanation	Answer to Questionnaire	
12.	11:15	11:40	Presentation (2)	Social Impacts Issues	S/Team, Mr.Ragsdale
13.	11:40	11:55	Discussion (2)	-	-
14.	11:55	12:10	Supplementary Explanation	Nam Ngiep HEPP	HPO, Mr.Somboune
15.	12:10	12:20	Closing Speech	Thanks for participants	Local Governor
16.	12:20	13:00	Break Time	Lunch Preparation	-
17.	13:00	14:00	Lunch Time		
18.	14:00	17:00	Trip to VTE via Pakxan		

## (iv) Participants

## 1. From Lao Government in Vientiane (Total 7 pers.)

No.	Name	Position
1.	Mr. Somboune	Deputy Director, HPO
2.	Mr. Voradeth	HPO
3.	Mr. Saynavat	STENO
4.	Mr. Chansaveng	Counterpart, HPO
5.	Mr. Semkhan	Counterpart, HPO
6.	Mr. Khamman	Counterpart, HPO
7.	Mr. Vilhon	Counterpart, HPO

## ANNEX – 6 (2/2) Summary of 2nd Site Workshops

## 2. From JICA, Study Team &amp; Others in Vientiane (Total 10 pers.)

No.	Name	Position
1.	Mr. Sophonh K.	Programme Officer, JICA/Laos Office
2.	Ms. C.Shimado	Assistant Programme Officer, JICA/Laos Office
3.	Ms. K.Iwata	JICA Expert at Pakxan Hospital (JOCV)
4.	Mr. I.Araiki	Team Leader, Study Team
5.	Mr. B.Yon	Natural Environmental Expert, Study Team
6.	Mr. T.Ragsdale	Social Environmental Expert, Study Team
7.	Mr. Detmahinh	Interpreter (Laotian)
8.	Mr. Khantam	Engineer of STS Consultants (Natural issues)
9.	Mr. Singthong	Engineer of STS Consultants (Social issues)
10.	Ms. Kesone	Gender Expert (Observer)

## 3. From Local Villages (Total 42 pers.)

No.	Name	Position
<b>Local Government : 1 per.</b>		
1.	Bolikhambay Province : 0	0 pers.
2.	Bolikhambay District : 0	0 pers.
3.	Pakxan District : 1	1 pers.
<b>Villagers of Bolikhambay District : 18 pers.</b>		
1.	B.Hatkham	4 pers.
2.	B.Tahua	2 pers.
3.	B.Somseuan (B.Moungmai)	5 pers.
4.	B.Houaykoun(inc.B.Nongdeng)	4 pers.
5.	B.Nampa	3 pers.
<b>Villagers of Pakxan District : 24 pers.</b>		
1.	B.Songkhon	3 pers.
2.	B.Thongnoi	4 pers.
3.	B.Thonggnai	3 pers.
4.	B.Komsipchet	0 per. (Military village)
5.	B.Thakokkhen	2 pers.
6.	B.Phonsi	2 pers.
7.	B.Namngiep	4 pers.
8.	B.Namtek	2 pers.
9.	B.Senoudom	4 pers.

## ANNEX - 7 (1/3) Minutes of Discussion at the 2nd Site Workshop

MINUTES OF MEETING  
FOR  
THE 2ND SITE WORKSHOP  
FOR  
INTERIM REPORT

(At B.Somseuan, Bolikhan District, June 24, 1999 )

No.	Name and Position	Presentation / Questions and Comments	Explanation Items / Study Team's Comments
1.	Mr. LAraki, Team Leader of JICA S/Team	Introduction of Participants Introduction of JICA Introduction of the Project Introduction of JICA Study	<ol style="list-style-type: none"> <li>1. Presentation of HPO, STENO and Palvane District Representative and JICA Study Team members</li> <li>2. Introduction of JICA</li> <li>3. Background on Project</li> <li>4. Previous General Workshops in Viennane and in Palvane.</li> <li>5. Previous Site workshop in B.Dong and B.Soyyouak</li> <li>6. Next Site Workshop</li> <li>7. Objective of the EIA Study in Nam Ngiep-I HEPP</li> <li>8. Condition for the continuation of Nam Ngiep-I HEPP</li> </ol>
2.	Mr. Sombeun Manolom, Deputy Director of DoE, HPO/MIH	Opening Speech	<ol style="list-style-type: none"> <li>1. Thank you for your time and joining us</li> <li>2. The GOL Policy toward rural electrification</li> <li>3. The GOL Policy toward Energy Export as source for Foreign Income</li> <li>4. The opportunity to boost rural development together with the implementation of hydropower projects.</li> </ol>
3.	Dr. Bernard YON, Natural Environmentalist, JICA S/Team	Presentation of Natural Environmental Issues	<ol style="list-style-type: none"> <li>1. What is Hydropower Project?</li> <li>2. Downstream villages will not be affected by resettlement issues</li> <li>3. Water quality issues for water domestic use in the area below the Dam</li> <li>4. Opportunity and easy access to water for agriculture irrigation purposes</li> <li>5. Access road and jobs Opportunity during construction</li> <li>6. Energy production regime</li> <li>7. Water flow regime below the Dam</li> <li>8. Fish issues. Fish pond as new reliable sources for domestic fishes consumption or sale.</li> </ol>
4.	Break Time		

## ANNEX - 7 (2/3) Minutes of Discussion at the 2nd Site Workshop

No.	Name and Position	Presentation / Questions and Comments	Explanation Items / Study Team's Comments										
5. (1)	Discussion Mr. Boumkong, Chief of B.Somseun	<p>1. What are the negative impacts to the people living in the downstream area?</p> <p>2. What happen to the production areas locating in the areas below the proposed dam? Will there be enough water all the time, for agriculture purposes ?</p> <p>3. After the completion of the Dam, the water to be released from the Reservoir will be of bad quality, consequently what can be the mitigation measures to be given to the people living below the Dam?</p>	<p>1. After what have been presented to you today, the main likely impacts will come from :</p> <p>a) Change of water flow regime, b) Water quality of the Reservoir water, and c) Construction of the access roads.</p> <p>2. In some places, river bank gardens may receive.</p> <p>3. One of the mitigation measure to remedy the situation can be provided by the Project is the provision of "water supply system". That can be implemented by the Project for the people, in the case where by that time the affected villages are not yet equipped with water supply facilities.</p>										
(2)	Mr. Sa, Villager, B.Sem-Oudom	After the construction of the Dam, will the water released from the Reservoir harm the health of the people and the livestock living below the Dam?	During the first years of operation, the water released will be of low quality. However, as we mentioned earlier, to alleviate the impact, the Project will provide water supply system to the villages. The situation at B.Sem-Oudom, would not be hard, because it is located 50 km far from the Dam. By the time the water arrive to this village, natural re-oxygenation has completely happen during its course. We anticipate the flow speed of the water would not exceed some 0.5 m/s. Therefore, likewise, heavy particles almost have the time to settle down to the bottom of the river bed. Your village will receive less impact.										
6.	Dr. Tod Ragsdale, Social Environmentalist, JICA S Team	Presentation of Social Environmental Issues	<p>1. Upper reservoir zone: people, villages and landuse</p> <p>2. Lower reservoir zone: people, villages and landuse</p> <p>3. 2 alternatives of FSL to consider (FSL320 and FSL360) and the size of the Reservoir at each respective alternative</p> <p>4. Resettlement issues in the Upper and Lower Zone</p> <p>5. New Resettlement sites: actual studies and compensation Concept</p>										
7. (1)	Discussion Mr. Mon, Chief of Father Land Front B.Thong Gnai	<p>1. I understand that the majority of the people will move before the process of the Impoundment of the Reservoir can start. However, is it correct to understand that the people who do not move are the ones whose villages and rice fields are not affected by the Reservoir water?</p> <p>2. When the Project will start? About year 2010?</p>	<p>1. Yes, depending of the FSL options, villages not submerged by the Reservoir will remain in their former place. If some paddy fields will be under water, they will be replaced at the same value, in term of size and fertility.</p> <p>2. Actually, it is very difficult to guess. The Future of this Project is depending on the results of our EIA study. In December 1999, the Government of Lao PDR and Japan will have to consider the said results. However, roughly we think that if every things can advance smoothly, each of the steps will require about</p> <table border="0"> <tr> <td>1. Technical Feasibility study phase</td> <td>: 1.5 year</td> </tr> <tr> <td>2. Detail Design</td> <td>: 2.0 years</td> </tr> <tr> <td>3. Negotiation of the PPA</td> <td>: 1.0 year</td> </tr> <tr> <td>4. Construction</td> <td>: 5.0 years</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>: 9.5 years</b></td> </tr> </table> <p>Say at least not less than 10 years. We understand your worry, therefore, we will keep you update with the findings and the decision of both Governments, no matter if the Project will be proceed or not. Therefore, if we are assuming 10 years from now optimistically, that means about year 2010.</p>	1. Technical Feasibility study phase	: 1.5 year	2. Detail Design	: 2.0 years	3. Negotiation of the PPA	: 1.0 year	4. Construction	: 5.0 years	<b>TOTAL</b>	<b>: 9.5 years</b>
1. Technical Feasibility study phase	: 1.5 year												
2. Detail Design	: 2.0 years												
3. Negotiation of the PPA	: 1.0 year												
4. Construction	: 5.0 years												
<b>TOTAL</b>	<b>: 9.5 years</b>												

## ANNEX - 7 (3/3) Minutes of Discussion at the 2nd Site Workshop

No.	Name and Position	Presentation / Questions and Comments	Explanation Items / Study Team's Comments
8.	Mr. Somboun Manolom, Deputy Director of DoE, HPO/MIH	Supplementary Explanation	<ol style="list-style-type: none"> <li>1. This Project as well as other hydropower projects are constituted with many long steps.</li> <li>2. ELA study is obligatory for Hydropower Projects. Socio-Economic Studies gives us at least information on the present status of the livelihood of the population in the area.</li> <li>3. The results of this ELA study will be considered by the Government of Japan and the Government of Lao PDR. Both Governments will discuss on benefit and harm that this Project will derive.</li> <li>4. If the Project can continue, the second phase will focus on the technical issues such as: topography, geology, design...etc.</li> <li>5. FSL-320 will require resettlement of about 1,200 people.</li> <li>6. FSL-360 will require resettlement of about 5,300 people.</li> <li>7. The JICA Study Team is to optimise the Study over FSLs between these 2 options.</li> <li>8. Every body sustaining loss will be compensated. The resettled people must be better-off. Planning on sites for resettlement, jobs opportunities, income on household basis.</li> <li>9. Inventories of the people assets will be done prior to the resettlement.</li> <li>10. Public Consultation and Public Involvement are important. Bad experiences in the Nam Ngum-1 HEPP resettlement, there are no public consultation process.</li> <li>11. Rural Development and Hydropower Power Project must be implemented together.</li> <li>12. Project costs will be 700 and 500 million US\$ for FSL-360 and FSL-320, respectively.</li> <li>13. The various steps at task that the Project must go through before the Construction can start.</li> <li>14. Please do not sit and wait. You must continue to develop your village as before.</li> <li>15. We will keep you inform with the findings of this Project.</li> <li>16. Please, do not feel shy. Ask questions or make comments.</li> </ol>
9.	Mr. Khamphet, Chief of Cabinet, Fabcan District	Closing Speech	<ol style="list-style-type: none"> <li>1. After your presentation, now the villagers have received better clarification on the Project features and issues.</li> <li>2. Taking in account the importance of your study, all the people living in the area below of the Dam will be delighted to give assistance to you during the field works.</li> <li>3. Once the Dam built, the livelihood of the people will be improved.</li> <li>4. We thank you for the information that you did provide to us today. Please, come back to us in December 1999. We are very much interested with your latest findings.</li> </ol> <p>Thank you, for your time. Thank you for participating.</p>
10.	Mr. Laraki, JICA Study Team, Team Leader	Closing Workshop	
11.	Lunch Time		





## ANNEX - 9 Tentative Time schedule of Future Field Investigation

## 5TH FIELD INVESTIGATIONS

No.	Date (1999)	Events	Remarks
0	Sep.28 (Tue.)	-	Mr.Ragsdale will leave USA.
1	Sep.29 (Wed.)	TYO→BKK	-
2	Sep.30 (Thu.)	BKK→VTE	Visit to Embassy & JICA/Laos
3	Oct.01 (Fri.)	Meeting with MIH/HPO	Presentation of Final Report (1st Draft)
4	Oct.02 (Sat.)	Site Inspection by Helicopter	VTE-Bolikhan-Hom-(Xienkuang)-VTE
5	Oct.03 (Sun.)	Holiday	
6	Oct.04 (Mon.)	Internal Meeting	-
7	Oct.05 (Tue.)	-	-
8	Oct.06 (Wed.)	Meeting with MIH/HPO	3rd General & Site Workshops
9	Oct.07 (Thu.)	Dam Site Inspection	T/Leader and HPO counterparts only
10	Oct.08 (Fri.)	- do -	-
11	Oct.09 (Sat.)	- do -	-
12	Oct.10 (Sun.)	Holiday	
13	Oct.11 (Mon.)	Visit to Embassy & JICA	-
14	Oct.12 (Tue.)	VTE→BKK	-
15	Oct.13 (Sun.)	BKK→TYO	-

## 6TH FIELD INVESTIGATIONS

No.	Date (1999)	Events	Remarks
0	Nov.20 (Sat.)	-	Mr.Ragsdale will leave USA.
1	Nov.21 (Sun.)	TYO→BKK	
2	Nov.22 (Mon.)	BKK→VTE	Visit to Embassy & JICA/Laos
3	Nov.23 (Tue.)	Meeting with MIH/HPO	Presentation of Final Report (2nd Draft)
4	Nov.24 (Wed.)	-	-
5	Nov.25 (Thu.)	Preparation of Site Workshop by HPO	at Bolikhan district
6	Nov.26 (Fri.)	- do -	(with discharge obserbation)
7	Nov.27 (Sat.)	- do -	-
8	Nov.28 (Sun.)	Holiday	
9	Nov.29 (Mon.)	-	-
10	Nov.30 (Tue.)	-	-
11	Dec.01 (Wed.)	-	-
12	Dec.02 (Thu.)	National Holiday	
13	Dec.03 (Fri.)	Environmental Committee (1st day)	Presentation by Study Team
14	Dec.04 (Sat.)	-	-
15	Dec.05 (Sun.)	Holiday	
16	Dec.06 (Mon.)	Environmental Committee (2nd day)	Discussion with S/Team & Reporting
17	Dec.07 (Tue.)	Environmental Committee (3rd day)	Discussion inside & Reporting
18	Dec.08 (Wed.)	General Workshop (1st day)	In Vientiane
19	Dec.09 (Thu.)	General Workshop (2nd day)	In Vientiane
20	Dec.10 (Fri.)	General Workshop (3rd day)	In Vientiane
21	Dec.11 (Sat.)	-	-
22	Dec.12 (Sun.)	Holiday	
23	Dec.13 (Mon.)	-	Vientiane→Saysomboune
24	Dec.14 (Tue.)	Site Workshop (1st day)	Saysomboune→B.Dong→Saysomboune
25	Dec.15 (Wed.)	Site Workshop (2nd day)	Saysomboune→B.Sopyouk→Pakxan
26	Dec.16 (Thu.)	Site Workshop (3rd day)	Pakxan→B.Muanmai→Vientiane
27	Dec.17 (Fri.)	Visit to Embassy & JICA.	Mr.Ikeda will leave Vientiane.
28	Dec.18 (Sat.)	-	-
29	Dec.19 (Sun.)	VTE→BKK	T/Leader and other 2 members
30	Dec.20 (Mon.)	BKK→TYO	-

**1. MINUTES AND MEMORANDUM FOR FIELD  
INVESTIGATIONS**

**1.6 MEMORANDUM FOR 5TH FIELD INVESTIGATION**

**FEASIBILITY STUDY  
ON  
THE NAM NGIEP-I HYDROELECTRIC POWER PROJECT  
IN  
LAO PEOPLE'S DEMOCRATIC REPUBLIC**

**MEMORANDUM  
ON  
FIFTH FIELD INVESTIGATION WORKS**

The JICA Study Team for the Feasibility Study on the Nam Ngiep-I Hydroelectric Power Project (hereinafter called as "the Study Team") entrusted by the Japan International Cooperation Agency (hereinafter called as "JICA") and represented by Mr. Ichiro ARAKI the Team Leader had a series of discussions in respect of the 5th Field Investigation Work Results, with the authorities concerned of the Hydropower Office (hereinafter called as "HPO") of the Department of Electricity under the Ministry of Industry and Handicrafts (hereinafter called as "MIH") represented by Mr. Somboune MANOLOM Deputy Director of the Department of Electricity from September 30 to October 12, 1999 as shown below. All the results of the discussions mutually confirmed are compiled hereunder and in the Annexes as per attached.

No.	Date	Agenda
1.	October 01	Presentation Meeting on 1st Draft Final Report
2.	October 11	Meeting for Review Results on 1st Draft Final Report

**1. Submission of 1st Draft Final Report**

The Study Team submitted to HPO of the Department of Electricity, MIH, twenty (20) copies of the 1st Draft Final Main Report (incl. 7 copies with colour figures) with (i) First Environmental Impact Assessment Report, (ii) Preliminary Environmental Management & Monitoring Plan (EMP), (iii) Preliminary Resettlement Plan (PRP) and (iv) Records during Field Investigations (Minutes of 2nd EAC Meeting and General/Site Workshops). HPO reviewed the above five (5) reports and stated that they had no objection basically for the Study Team to report the study results as mentioned in the 1st Draft Final Report. However, HPO pointed out some mistakes in the reports and commented in their papers of requirements for the further report.

The presentation meeting was held at HPO meeting room at 9:00 to 12:30 on October 01, 1999 with the program and participants as shown below:

Table of Program

No.	Period	Presenter	Contents
1.	09:00 - 09:40	Mr. Ichiro Araki	1.Process of project alternative decision 2.Composition of Final Study Reports 3.Contents of 1st Draft Final Main Report
2.	09:40 - 10:10	Mr. Ichiro Araki	1.Definition of Evaluation Criteria for the Project
3.	10:10 - 10:20	Discussion	1.CO2 emission matters 2.Supplementary explanation by Mr.Somboun
4.	10:20 - 11:30	Mr. Bernard Yon	1. Summary of EIA Report 2. Summary of Preliminary Environmental Monitoring & Management Plan
5.	11:30 - 12:10	Mr. Tod Ragsdale	1.Summary of Preliminary Resettlement Plan

## Attendance List

No.	Name	Organization	Position
1.	Dr. Bosaykham Vongdara	MIH	General Director
2.	Mr. Somboun Manolom	MIH	Deputy Director
3.	Mr. Khamsing Ngonvorarath	MIH	Advisor
4.	Mr. Outhai Oudavong	EDL	Engineer
5.	Mr. Xayaveth Visay	STENO	Head of Division
6.	Mr. Souphasith Oupravanh	CIC	Deputy Director
7.	Mr. Voradeth Phonekeo	MIH/HPO	Counterpart
8.	Mr. Chansaveng Bounong	MIH/HPO	Counterpart
9.	Mr. Chantho Milattanapheng	MIH/HPO	Counterpart
10.	Mr. Phetsavanh Milatanathongsay	MIH/HPO	Counterpart
11.	Mr. Seumkham Thoummavongsa	MIH/HPO	Counterpart
12.	Mr. Anousak Phongsavath	MIH/HPO	Counterpart
13.	Mr. Tasuya Abe	MIH/HPO	JICA Expert
14.	Mr. Sophone Kousonsavat	JICA Laos Office	
15.	Mr. Ichiro Araki	JICA Study Team	Team Leader
16.	Mr. Bernard Yon	JICA Study Team	Natural Environmentalist
17.	Mr. Tod Ragsdale	JICA Study Team	Social Environmentalist

The signed list of participants at the meeting is shown in Annex-1. The supplementary explanation sheets are shown in Annex-2. The Comments raised at the meeting on October 11, 1999 are shown in Annex-3.

## 2. Major Activities at 5th Field Investigation

Three (3) members of Study Team arrived at Vientiane on September 30, 1999 and left Vientiane on October 12, 1999 as shown below:

No.	Name	Position	Arrival	Departure
1.	I. Araki	Team Leader	September 30	October 12
2.	B. Yon	Natural Environmentalist	September 30	October 12
3.	T. Ragsdale	Social Environmentalist	September 30	October 11

During the period, the Study Team carried out the field investigation/reconnaissance on both the possible resettlement area and the proposed dam site, and received the Sub-Contractor's Final Report on Natural & Social Environment on schedule.

### 2.1 Field Investigation on Possible Resettlement Sites by Helicopter(Photo-1 & 2)

Three (3) members of the Study Team with a local social environmentalist carried out the field investigation by a small helicopter at 8:30 to 12:30 on October 2, 1999.

The visited possible resettlement sites are Sites D1 to D7 at Boloikhan District in Bolikhamxay Province and Site XSBI at Hom District in Xaysomboon Special Zone. These areas are the possible resettlement sites for the villagers in the downstream reservoir (4 villages in Hom District), out of 16 potential sites where the counterparts had carried out a preliminary inventory in August 1999.

Photo-1 of Annex-6 shows the overview of possible resettlement area Site-D6, which locates at the upstream of the Nam Xan River in Boloikhan District of Bolokhamxay

Province. The investigation results will be compiled in the 2nd Draft Final Report.

Photo-2 shows the overview of Nam Leuk HEPP, of which river diversion was closed on August 16, 1999. The Project is expected to complete by the end of 1999.

## **2.2 Receipt of Sub-Contractor's Final Report on Natural & Social Environment**

The Study Team received the Final Report on Natural & Social Environment with the photographs of public facilities and households interviewed from the STS Consultants on September 30, 1999 at the contract completion date as scheduled.

The STS Consultants carried out the EIA field survey since December 1, 1998 for 10 months under the 1st and 2nd Year Contracts between Nippon Koei Co., Ltd (the Study Team) and STS Consultants.

## **2.3 Receipt of Inventory Survey Report on Possible Resettlement Area**

The Study Team received the Inventory Survey Report on Possible Resettlement Area from the counterparts through the STS Consultants on October 11, 1999 as scheduled.

The survey was carried out by the aero-photo/map and field investigations mainly in August 1999 by the counterparts cooperating with the staff of STS Consultants. The Study Team finally confirmed these areas through field investigation by helicopter on October 2, 1999.

## **2.4 Lecture by Study Team**

The Team Leader of Study Team, Mr. I. Araki made a lecture of "Sustainable Rural Electrification (SRE) by applying Micro Hydraulic Power Generation" for 16 engineers of MIH/HPO on October 11, 1999 at HPO's meeting room with the contents as follows:

(i) What is SRE, (ii) Reasons/Effects on rural electrification, (iii) Alternative sources for rural electrification, (iv) Case study on rural electrification in Indonesia by Japanese Grant Aid, (v) Problems of rural electrification under Japanese Grant Aid, (vi) Proposal on SRE basic frame/concept, (vii) Sample of SRE project in Nepal, and (viii) Key success factor and Flow chart for SRE.

## **2.5 Site Visit to Proposed Dam Site of Nam Ngiep-I HEPP (Photo-5 & 6)**

The Team Leader of Study Team, Mr. I. Araki and the JICA expert, Mr. T. Abe made a site visit to the proposed dam site of the Nam Ngiep-I HEPP and the river flow measurement on October 07-09, 1999 under guidance of HPO staff, Messes. Changsaveng, Kamman and Vithon with following itinerary. In addition, three (3) geological boring experts of Geo-Mining in BPKP Group jointed our mission for plan of site preparation on future geological survey at the site.

Photo-5 in Annex-6 shows the proposed dam site. Photo-6 shows the measurement work of river velocity by HPO counterparts.

No.	Date	Time Schedule	Visiting Sites
1.	Oct.07 (Thu.)	8:30 VTE - 10:30 Pakxan - 11:30 B.Muangmay - 14:40 B.Hatkham	3 hours drive from Vientiane to B.Moungmay and 2 hours board to B.Hatkham
2.	Oct.08 (Fri.)	8:30 B.Hatkham - 9:30 Landing point - 11:30 Dam site - 13:30 Landing point - 15:00 B.Hatkham	1 hour board and 2 hours walking in animal/bush road from B.Hatkham to the dam site
3.	Oct.09 (Sat.)	8:30 Measuring at B.Hatkham - 11:30 Measuring at B.Tahua - 14:00 B.Moungmay - 15:00 Pakxan - VTE	Periodical measuring river flow velocity both at observation stations of B.Hatkam and B.Tahua

### 3. Schedule on the Further Field Investigation

The Study Team informed HPO of his schedule on the final (6th) Field Investigations as shown below:

No.	Study Team	Period		Events
1.	I. Araki	Nov.22 (Mon) - Dec.19 (Sun)	30 days	3rd EAC & Workshops
2.	H. Ikeda	Nov.22 (Mon) - Dec.14 (Tue)	25 days	3rd EAC & Workshops
3.	B. Yon	Nov.22 (Mon) - Dec.19 (Sun)	30 days	3rd EAC & Workshops
4.	T. Ragsdale	Nov.22 (Mon) - Dec.18 (Sat)	30 days	3rd EAC & Workshops

The 6th Field Investigation to be started on November 22, 1999 in Vientiane for 28 days is listed in details on Annex-4 and Annex-5 with the tentative report and material preparation schedule for both the General and Site Workshops.

### 4. JICA Counterpart Training

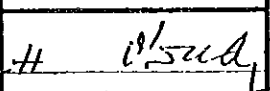
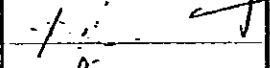

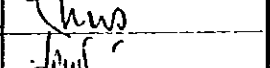
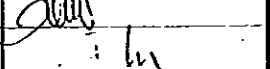
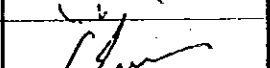

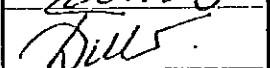
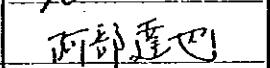
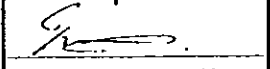
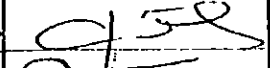
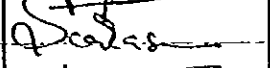
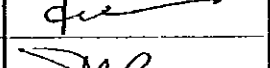
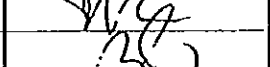

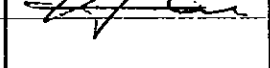
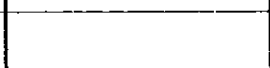
The Study Team accepted the 2nd year JICA Counterpart Training in Japan as shown below:

No.	Items	Descriptions
1.	Trainee	Mr. Seumkhan
2.	Training Period	28 days starting on October 23, 1999 (Sat.) ending on November 19, 1999 (Fri.)

**The Nam Ngiep-I Hydroelectric Power Project****MEMORANDUM OF 5TH FIELD INVESTIGATION WORKS****LIST OF ANNEX**

ANNEX-1	List of Participants at Meeting for 1st Draft Final Report .....	5
ANNEX-2	Supplementary Explanation Sheets for Presentation Meeting .....	6
ANNEX-3	Comments on 1st Draft Final Report.....	10
ANNEX-4	Tentative Time Schedule of Final (6th) Field Investigation .....	12
ANNEX-5	Overall Time Schedule.....	13
ANNEX-6	Photographs of Major Activities at 5th Field Investigation .....	14
	Photo-1 : The Aero-Investigation of Possible Assessment Area .....	14
	Photo-2 : The Aero-Investigation of the Nam Leuk HEPP .....	14
	Photo-3 : The Field Reconnaissance of the Proposed Dam Site.....	15
	Photo-4 : Discharge Measurement at B.Hatkham.....	15

ANNEX - 1 List of Participants at Presentation Meeting for 1st Draft Final Report on October 1, 1999

No	Name	Organization	signature
1	Bosaykham Vongdara	Min. of Industry	
2	Somchai Nam...		
3	Khamsing NGONYORARATH	MIH	
4	Duthai OUDAVONG	EDL	
5	Voradeth Phonekeo	MIH	
6	Chantho	MIH / DOE	
7	Xayaveth Vixay	STEA	
8	Phitsavun	MIH / DOE	
9	Seumxham	HPO	
10	TATSUYA ABE	JICA Expert	
11	Aneusak Phongsavathi	MIH / HPO	
12	Sophonh KOUNSAVAT	JICA Laos office	
13	Solasith Sougravanh	CIC	
14	Chansavong	DOE	
15	TOO RAGSDALE	JICA Study Team	
16	Bernard YON	JICA St. Team	
17	Ichiro ARAKI	JICA Study Team	
18			
19			
20			
21			
22			
23			
24			



ANNEX – 2 (1/4)

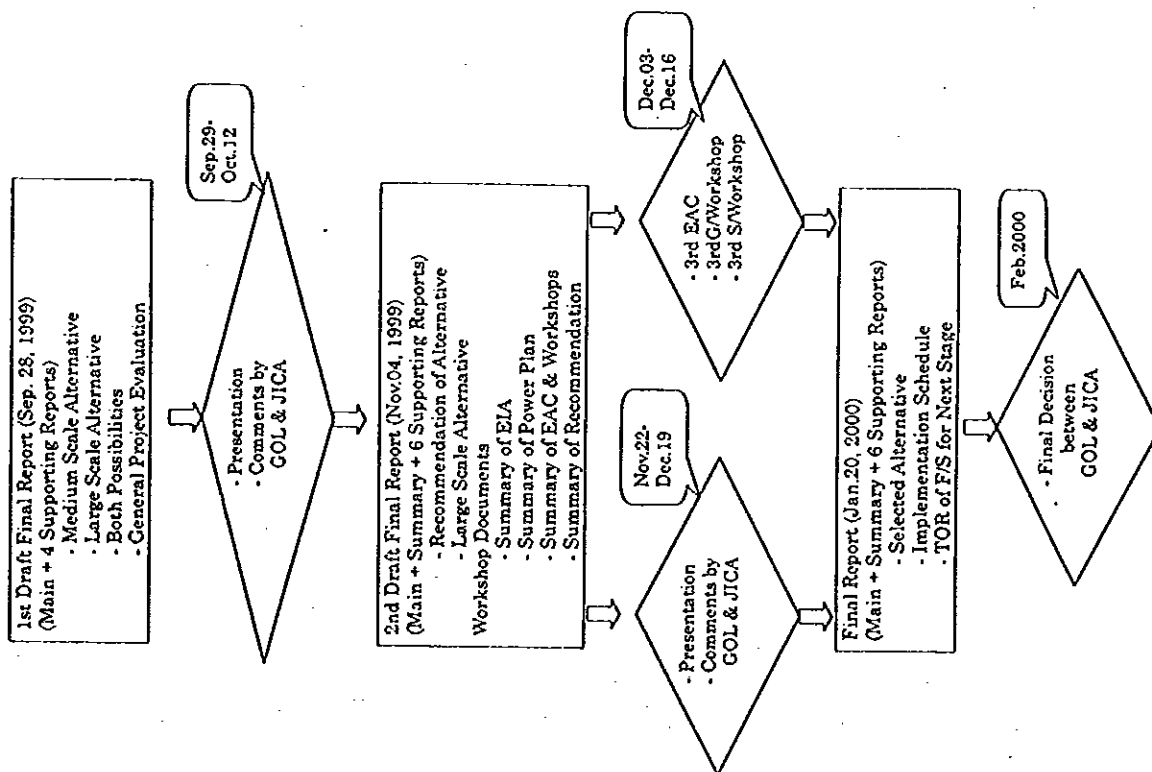
Supplementary Explanation Sheets for Presentation Meeting

COMPOSITION OF FINAL STUDY REPORTS

(PRESENTATION ON OCTOBER 1, 1999)

Volume No.	Report Title	1st	2nd	Final	Contents
Volume 1	Executive Summary Report	-	0	0	Workshop Documents, Booklet (English, Japanese, Lao)
Volume 2	Main Report	0	0	0	(English, Japanese)
Volume 3	Supporting Report (I)	0	0	0	First Environmental Impact Assessment Report (EIA)
Volume 4	Supporting Report (II)	0	0	0	Preliminary Environmental Management & Monitoring Plan (EMP)
Volume 5	Supporting Report (III)	-	0	0	Preliminary Resettlement Action Plan (RAP)
Volume 6	Supporting Report (IV)	-	-	0	Sub-Contractor's Final Field Invest. Report on Natural & Social Environment
Volume 7	Supporting Report (V)	0	0	0	Records during Field Investigations (EAC, General/Site Workshop, EIA Survey, Train)
Volume 8	Supporting Report (VI)	-	-	0	Final Data Book (Geophysics, Geology, Hydrology, Economy)

PROCESS OF PROJECT ALTERNATIVE DECISION  
(Presentation on October 1, 1999)



## ANNEX – 2 (2/4)

## Supplementary Explanation Sheets for Presentation Meeting

## DEFINITION OF EVALUATION CRITERIA

(PRESENTATION ON OCTOBER 1, 1999)

No.	Evaluation Category	Evaluation Criteria	Evaluation Results
1.	Natural Environment Evaluation	E.C. on the assumption that the existing natural, developed-natural and artificial environments should be preserved or improved.	Impacts on Natural Environment will become large as increasing dam scale, until a failure of the environmental preservation
2.	Social Environment Evaluation	E.C. on the assumption that people and social system surround them should be preserved and improved.	Impacts on Social Environment will become large as increasing dam scale, but, Social system can be kept safety by changing slowly.
3.	Economic Evaluation	E.C. on the assumption that the economic feasibility shall be judged by avoid cost of thermal generation.	Mathematical evaluation can be done with economical index: B/C, B-C, and EIRR; however, only a validity of hydropower can be evaluated.
4.	Financial Evaluation	E.C. on the assumption that the benefit by electricity sales shall cover all investment, under a good enterprise as IPP.	Ditto; however, evaluation is based on several assumption such as BOOT composition, fund procure, electricity sale cost, and commencement day of commercial operation.
5.	Technical Evaluation (Dam Construction)	Technical evaluation criteria for a high dam construction.	A Large-scale dam is technically restricted to construct. The highest record of dam construction is 180m, that of project design is 220m.
6.	Evaluation on EAC & Workshops	E.C. judged from opinion, suggestion and questionnaire results at EAC/Workshop.	Evaluation is based on individual extent of interest and understanding on participants, and on their positions.
7.	Evaluation on Japan's Mekong River Basin Development Plan	E.C. judged from the viewpoint of stance in official development aid of Japan	Aid policy in peace, development, environment preservation is essential for evaluation.

Note: E.C means Environmental Criteria.

## ANNEX – 2 (3/4)

## Supplementary Explanation Sheets for Presentation Meeting

TABLE OF CONTENTS  
(Presentation on October 1, 1999)

No	TITLE	CONTENTS
1.	INTRODUCTION	Background of Study
		Purpose of Study
		Work Progress of Study
		Composition of Study Reports
2.	GEOPHYSICAL SURVEY	GPS Survey in Proposed Reservoir
		Ground Survey at Thaviang Sub-District
3.	GEOLOGICAL SURVEY	Geological Data Collection
		Geological Structures of Indochina
		Geological Structures of Nam Ngiep Basin
		Geology around Proposed Reservoir
		Geology at Dam Site
		Seismicity
4.	METEO & HYDROLOGICAL SURVEY	Construction Material
		Meteorological & Hydrological Observation
		Collection of Meteorological & Hydrological Data
		Evaluation of Meteorological & Hydrological Data
		Review and Evaluation on Long-term Monthly Mean Inflow at Dam Site
5.	POWER MARKET SURVEY	Review on Flood Discharge
		Power Market in Greater Mekong Sub-Region
		Power Market in Lao PDR
		IPP Governmental Agencies
		Forecast of Electricity Demand in Lao PDR
		Candidate Projects for Power Export from Lao PDR
		Transmission System Development
		Impact of Asian Financial Crisis
		Power Market in Thailand
		Potential of Power Resources in Thailand
		Forecast of Electricity Demand in Thailand
		Power Import Plan of Thailand
IPPs in Thailand		
6.	HYDROPOWER PLAN	Reservoir Operation
		Purpose of Reservoir Operation Study
		Conditions for Determination of Optimum Reservoir Operation Model
		Simulation of Reservoir Operation
		Computation of Power Output
		Study of Hydropower Plan
		Basic Considerations for Project Power Development
		Confirmation of Basic Parameters
		Comparative Dam Scheme and Layout
		Run-of-River Type Alternative and Development Scale
		Construction Cost Estimate
		Conditions for Project Cost Estimate
		Estimate of Construction Work Quantities
		Estimate of Construction Unit Prices
		Cost Estimate other than Direct Construction Cost
		Economic and Financial Evaluation Criteria
		Approach to Project Economic and Financial Evaluation
		Parameters for Project Evaluation
		Valuation of Cost
		Valuation of Benefits
		Economic Evaluation
		Parameters for Economic Analysis
		Economic Analysis Using Avoided Cost
Risk Analysis		
Financial Evaluation		
Parameters for Financial Analysis		
Cost Assumed for Financial Analysis		
Benefits Assumed for Financial Analysis		
Base Model		
Sensitivity Analysis		
Alternative Model		
Conclusions		

## ANNEX - 2 (4/4) Supplementary Explanation Sheets for Presentation Meeting

No	TITLE	CONTENTS
7.	SUMMARY OF FIRST ENVIRONMENTAL IMPACT ASSESSMENT REPORT	Institutional and Legal Framework
		Government Institutions
		Policy and Legal Context
		Baseline Information on Present Conditions
		Typology of Project Area
		Landscape, Geology, Minerals and Soils
		Climate and Hydrology
		Water Quality
		Aquatic Ecology and Fisheries
		Vegetation and Wildlife
		Impact Analysis and Mitigation Measures
		Environmental Impacts Screening
		Impacts During Construction Phase
		Impacts During Filling Phase
Impacts During Operation Phase in Inundation Zone		
Impacts During Operation Phase in Downstream Area		
Environmental Comparison between Alternatives		
Environmental Management and Monitoring Plan		
Objectives of the Plan		
Institutional Organization and Responsibility		
Environmental Measures and Estimated Cost		
Implementation Schedule of Environmental Measures		
Summary of Preliminary Resettlement Action Plan		
Resettlement Impacts of Reservoir Inundation		
Reservoir Area Communities		
RAP Implementation Schedule		
Resettlement Objectives and Principles		
Identification of Potential Resettlement Sites		
Income Restoration		
Rehabilitation of Vulnerable Groups and Indigenous Peoples		
Social Adjustment		
Institutional Organization for RAP		
Participation and Consultation		
8.	PRELIMINARY DESIGN	Overall Project Layout
		General Layout
		Temporary Facilities
		Construction Access Road
		Preliminary Design of Major Structures
		Design Flood Discharges
		Reservoir Operation Levels
		Main Dam
		Spillway
		Outlet Works
		Intake Structure and Power Waterway
Power Station		
Re-Regulation Facilities		
9.	GENERAL PROJECT EVALUATION	General Project Evaluation Results
		Definition of Evaluation Criteria
		Natural Environment Evaluation Results
		Social Environment Evaluation Results
		Economic Evaluation Results
		Financial Evaluation Results
		Technical Evaluation
		Evaluation Results on EAC & General Site Workshops
		Evaluation Results on the Mekong River Basin Development Plans in Japan
		Process of Project Alternative Decision
Minutes of Meeting for 1st Draft Final Report		
Minutes of Meeting for 2nd Draft Final Report		
Minutes of Meeting for Final Report		
Proposed Development Scheme for Next Feasibility Study Stage		
10.	PROJECT IMPLEMENTATION	Feasibility Study for Next Stage
		Field Investigation
		F/S Grade Design Works
		Project Implementation Schedule
		Implementation Schedule
		Construction Time Schedule
		Implementing and Financing Plan
Prospective Implementing Plan		
Prospective Financing Plan		
11.	RECORDS ON WORK PROCESS	Environmental Assessment Committee
		General Workshop
		Site Workshop
		EIA Survey by Sub-Contractor
		Transfer of Knowledge to Counterparts
Photographs		

ANNEX - 3 (1/2)

Comments on 1st Draft Final Report

- Page 5-8: the foot-note reference "3" must be deleted if there is no reference. "2" indicates "EIA not yet submitted", such note has been given to Nam Ngum2 and Xekaman1, how about the others IPP, have they all submitted their EIA?
- Page 5-9: First Paragraph contains ambiguous statement, and is therefore recommended for deletion: "At another time, EGAT informed GOL that it would pay 1.08 Bath per unit of power from Nam Ngum 2 and 3". On the other hand the negotiations between the two sides are in process.
- Page 5-9: "Please precise if the US\$ 0.75/kwh of transmission cost for Lao Project" represent cost incurred in Laos or in Thailand?
- Page 5-10: in Paragraph 3, "B. Longkran 500 KV Grid Station (G.S.)" is an old perception, now irrelevant to the new concept for 500 kV.
- Page 5-11: Please update the information column on the right.

Chapter 6: Hydropower Plan

- Page 6-7: Table 6.3.4, how to come up to "87 mil. m<sup>3</sup>?"  
Total sediment per year from the whole reservoir:  
413.4 t/m<sup>2</sup>/year x 3,700 km<sup>2</sup> = 1.53 millions per year,  
with density of sediment of 2.65 t/m<sup>3</sup>, trap ratio 95 % and void ratio sediment in the reservoir of 40 % cumulative sediment in the reservoir for 100 years will be :  
1.53 mil.m<sup>3</sup>/year x 2.65 t/m<sup>3</sup> x 95 % x 40% x 100 years = 58 mil.m<sup>3</sup>
- At the same time, for monitoring purpose we think useful, if the sediment content can be collected and measured in the future at each water observation station
- Page 6.3.5 Para (6) "... and it was revealed that most of the villages and paddy fields in the Thavieng District is released from inundation, if FSL is lowered than El. 320m..." to be on the safe side, instead of El. 320m perhaps it would be better to state 240m, as GPS2 at B. Sopyouak is at elevation 245.48m... And that will correspond to your hypothesis in page 6-16.
- Page 6.3.5 "States of Inundation at respective elevation": There are 2 columns for "El. 320m.", with different values, which one is the correct one? This table differs from the previous one in the interim report, why? (The numbers of villages inundated by the various elevation has considerably increased):

	EL.320m	El. 340m	EL.360m	EL.380m
Interim Report Villages (no.)	1	4	9	14
This Report Villages (no.)	5	13	15	18
Difference (no)	4	9	6	4

- Number of villages inundated under FSL 360 are not consistent in many sections: sometimes 15, 17, 18. Please, check.
- Likewise the area of cultivated land seems not to be consistent with Table 7.4.5 page 7-26.
- Page 6-25, Table 6.4.6 Project Features for Alternatives FSLs.
- We noted that there are changes in values between the Inception Report and this Report, where:

Draft

Chapter 2.2.1

- Page 2-2: "Considering the fact that (1) local survey companies had poor experiences on GPS Survey" - not a good and correct statement, as our National Geographic Department has performed their work with many projects in Laos with acceptable confidence from various international companies.
- Page 2-2: Table 2.2.1 Feature of Geophysical Survey  
- Beginning point Paksane":  
On the map (fig 2.2.1): The Nam Ngiep river can be hardly seen, Paksane town is not represented of the Map. According to the above statement it is understood that leveling has been started from Paksane BM 0609, the yellow line which represent the leveling route of 100 km does not start from Paksane, why? (We presume that the yellow line should start from BM 0609 not from GPS 0102 which is Ban Phonthong).
- "Existing BM (GPS 0102), survey was made simultaneously by two parties but round survey was not made": Why? Round survey is part of verification and error determination, how you make sure that errors from survey are within acceptable tolerance?
- Page 2-4, Para 2.2.2 GPS SURVEY.  
in "(1) Given Points Adopted Base Points for GPS Survey": Perhaps the conjunction "and" has been omitted by error, otherwise it is hard to understand. Nevertheless, please give some lines for the definition of "given point" and adopted point". To make the description of this Chapter more comprehensible, we suggest to include the Fig 3.5-2 "GPS Survey Network" as well as Table 3.5-7 GPS Survey Results from "Progress Report" of October 1998.
- We suggest to include 3 more points in the Table 2.2.9 "Discrepancy of Elevation between survey result and read on existing map": GPS 0102, GPS 0001(Paksane), BM 0609, BM0526 and BM0111 as they are start points and end points.

Chapter 4: Meteorological & Hydrological Survey

- Page 4-17, Table 4.5.1 "Hydrological Data of Nam Ngiep Dam Site" the numbers should be:  
- Drainage Area of Nam Ngiep Dam Site: 3,730 Km<sup>2</sup>  
- Mean annual Runoff (m<sup>3</sup>/s): 152 m<sup>3</sup>/s

Chapter 5. Power Market Survey

- Page 5-1.5<sup>th</sup> Para, "1,600MW (including 608 MW from Hong Sa No.1 & Hong Sa No.2 Thermal Plant)": Hongsa is not included in the 1,600 MW MoU. It is included in the 1,700 MW MoU. (1,600 MW MoU comprises: Nam Theun2, Nam Ngum2 and Nam Ngum3)
- Figure 5.3.1: The Committee for Energy and Electric Power is now replaced by the National Committee for Energy. The members come from various Ministries and this committee report to the Prime Minister Office.
- Page 5-8: Table 5.3.3 Present IPP Projects in Lao PDR: Please update the table, because now Theun Hinboun Dam is in full operation since 1998; same for Houay Ho which has started their operation since September 3<sup>rd</sup>, 99. Nam Mo has an MoU and has completed an important part of their Feasibility Study; Nam Theun 2 in the key dates column, perhaps should be "F/S, MoU, EIA, EAMP submitted"?

<sup>1</sup> Progress Report, October 1998, page 3-40 Table 3.5-7

## ANNEX - 3 (2/2)

## Comments on 1st Draft Final Report

- Page 7-62: In income restoration with technical skill training, perhaps Tourism, notably Eco-tourism can be a livelihood option and thus bring benefit to the locality. Please, consider that opportunity too, as the project area contains a lot of special interest for bio-diversity and tourism. (see page 7-17).
  - **Chapter 8: Preliminary Design**
    - Page 8-8: We hope to see more clarification for the selection of CFRD dam for Nam Ngiep 1 HEPP.
- Apparently, we did not found any section treating "water born diseases, and other prevalent diseases" in the region made to you in our previous comments for the Interim Report.
- SUPPORTING REPORT (I)**
- Chapter 2.3.2 "Resettlement Laws and Regulations"**
- Page 2-5: "Resettlement Laws and Regulations": Ambiguous title, therefore preference is given to "Laws and Regulations relevant to Resettlement", as it is written in Supporting Report 4D page 4-1.
- Chapter 3: Project description**
- Page 3-13: Table 3.10 - Inconsistency between data in this table and the content in Page 6-25, Table 6.4.6 *Project Features for Alternatives FSLs*. For instance, the "number of units" and "plant capacity" are not consistent in both tables.
- SUPPORTING REPORT III**
- Page 1-68, Para 1.12.2.1.2. Xeset: "... but no details on this were in the NTEC RAP review". Details can be obtained at EDL, as at that time, it was the implementing agency.
  - Page 1-93, Fig 1.1: Low quality map. Likewise, there are few others low quality maps in this volume, could you please change?
  - Page 3-35, how to read "dab xwm kab"? *၂၃၃၃*
  - Page 3-36 mattayom (middle) comprises of 6 classes and substitutes outdom (high school)
  - Page 6-5 Table 6.1 and Table 6.2 seem not having resettlement cost consistent with the table 6.4.10 page 6-29.
- Higher MOL.
  - Less operational volume.
  - Less units, almost same plant factors
  - Higher head (+10m) for FSL 360m!
  - But nearly same production, less construction cost and higher EIRR!
- Please, explain.
- Titles for tables from "Tables 6.4.7 to 6.4.10" give information for 3 FSL (310m,320m,360m) in their various aspects, however the title wording specify only FSL 360m and 320m.... Please, consider.
  - Page 6-32: "Exchange rate of US\$1.00 for \_\_\_Kips", why blank? In page 7-10, exchange rate of 9,000 Kips for US\$1.00 has been used.
  - Page 6-33: Section (4): can the international Inflation rate of 2.4% be applied for a Project which can be obviously implemented not before year 2010? How much are we confident that this value remains unchanged?
  - Page 6-33: Para 6.5.3, Section (1) - How the total capital cost can arrive to US\$357.3 million? The value is expressed at mid-1999 price level and IDC is excluded (see page 6-37). Apparently, from the tables in page 6-29, for base case of FSL 320m:  
Construction Cost + Environmental cost = \$291,200,000 + \$17,510,000 = \$308,711,000
  - Page 6-33: Para 6.5.3, Section (2)- The concession period stated at the beginning of the page mentions 25 years. It would be advantageous for GOL to assume a 24 year of operation under the Concession term of Agreement and thus to estimate lump-sum replacement costs accordingly. During that time replacement cost will be not only bear by GOL, but the Partners will be involved, too.
  - Page 6-33: Please, indicate what are the various costs components in the Avoided Thermal Cost? Can the Lao environment sacrifice be evaluated too? As that represents a great social and Environmental benefit for Thailand.
  - Page 6-36: Table 6.6.3 "Result of Risk Analysis" - How to interpret the result "000"? No risk or EIRR equals zero percent if there is an increase in investment cost of 10%? and so forth... Please consider our request for a same check for the Alternative of FSL360.
  - Page 6.36: What are the risk in the Thai side? Please, list them down and provide estimate, too.
  - Page 6.36: We recommend to check for Hydrology Risk, where drought year can occur and the availability of water is reduced by, say 10%. How much the EIRR for the Base case and the Alternative Case will change?
  - Page 6.39: In the last line, "The cost per kWh, levelised to the year 2002 is US\$0.0642 assuming a 16% rate of return in equity investment, based on the Base Model", what kind of cost that means? Because, if that represents the construction cost, it seems to be higher than the purchase price proposed by EGAT described in page 6-40, Par 6.7.6 Sensitivity analysis.
- Chapter 7: Summary of First Assessment Report**
- Page 7-17: We note that new "resettlement site D4" is located inside the "Habitat of Elephant Herd"

## ANNEX - 4 Tentative Time Schedule of Final (6th) Field Investigation

## 6TH FIELD INVESTIGATION

As of October 11, 1999

No.	Date (1999)	Events	Remarks
0	Nov.20 (Sat)	-	Mr.Ragsdale will leave USA.
1	Nov.21 (Sun)	TYO→BKK	Messes.Araki, Ikeda & Yon will leave.
2	Nov.22 (Mon)	BKK→VTE	Visit to Embassy & JICA/Laos
3	Nov.23 (Tue.)	Meeting with MIH/HPO	Presentation of Final Report (2nd Draft)
4	Nov.24 (Wed.)	Meeting with MIH/HPO	Preparation for General & Site Workshop
5	Nov.25 (Thu.)	Preparation of Workshop	Panels & OHP sheets
6	Nov.26 (Fri.)	-	-
7	Nov.27 (Sat.)	-	-
8	Nov.28 (Sun.)	Holiday	
9	Nov.29 (Mon.)	-	-
10	Nov.30 (Tue.)	-	-
11	Dec.01 (Wed.)	-	-
12	Dec.02 (Thu.)	National Holiday	
13	Dec.03 (Fri.)	Environmental Committee (1st day)	Presentation by Study Team
14	Dec.04 (Sat.)	-	-
15	Dec.05 (Sun.)	Holiday	
16	Dec.06 (Mon.)	Environmental Committee (2nd day)	Discussion with S/Team & Reporting
17	Dec.07 (Tue.)	Environmental Committee (3rd day)	Discussion inside & Reporting
18	Dec.08 (Wed.)	General Workshop (1st day)	In Vientiane (Presentation)
19	Dec.09 (Thu.)	General Workshop (2nd day)	In Vientiane (Presentation & Discussion)
20	Dec.10 (Fri.)	General Workshop (3rd day)	In Vientiane (Discussion)
21	Dec.11 (Sat.)	Preparation of Minutes	-
22	Dec.12 (Sun.)	Holiday	
23	Dec.13 (Mon.)	Site Workshop (1st day):Heli.	VTE→Saysomboune→B.Dong→Pakxan
24	Dec.14 (Tue.)	Site Workshop (2nd day):Heli	Pakxan→B.Sopyouk→Pakxan (→VTE)
25	Dec.15 (Wed.)	Site Workshop (3rd day):4WD	Pakxan→B.Muanmai→Pakxan→VTE
26	Dec.16 (Thu.)	Preparation of Minutes	Mr.Ikeda will leave VTE (on Dec.14).
27	Dec.17 (Fri.)	Minutes of Memorandum	Visit to Embassy & JICA.
28	Dec.18 (Sat.)	Office clearance	Mr.Ragsdale will leave VTE.
29	Dec.19 (Sun.)	VTE→BKK	Mr.Araki & Mr.Yon will leave VTE.
30	Dec.20 (Mon.)	BKK→TYO	-

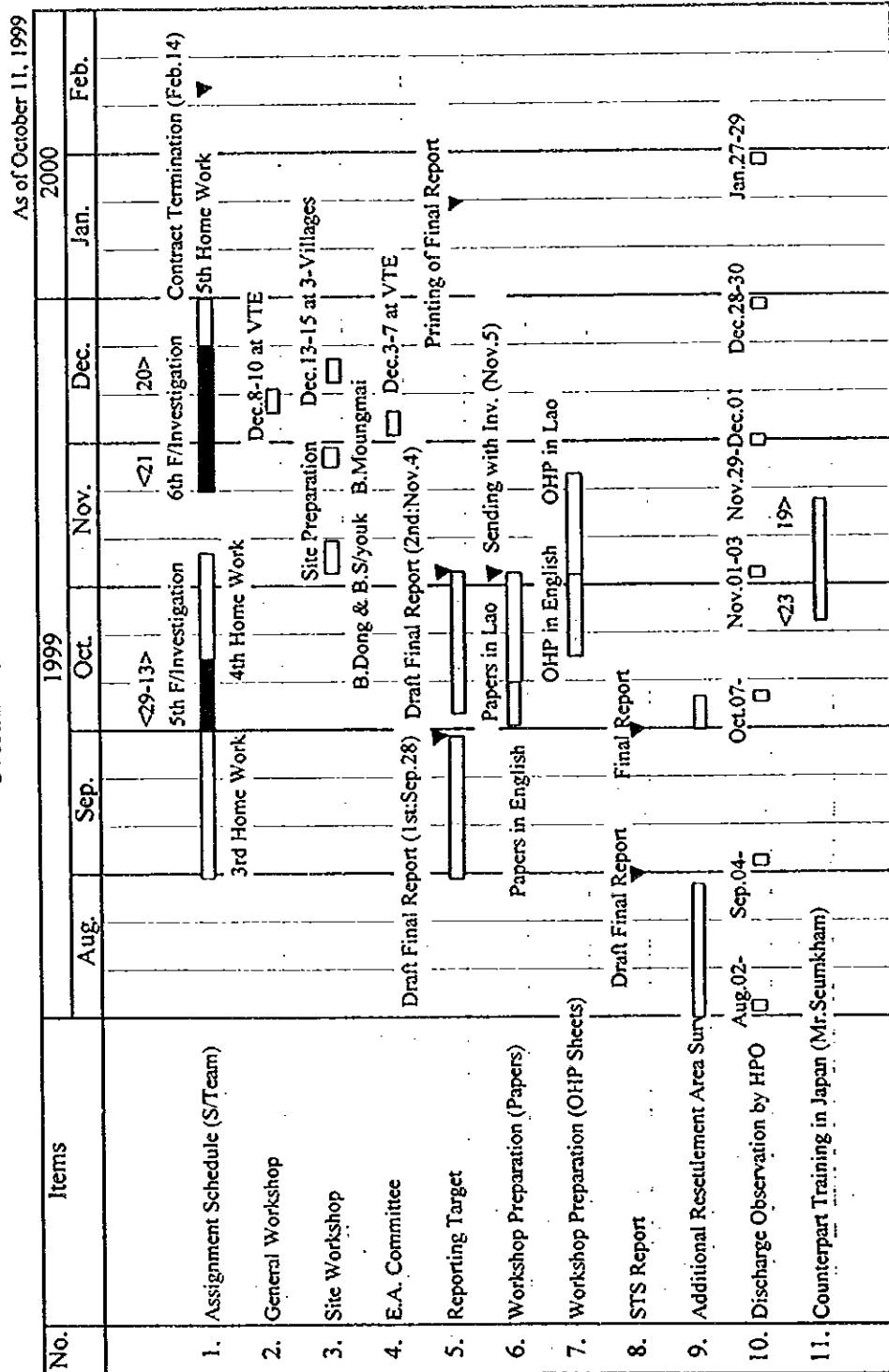
## SCHEDULE ON REPORT PREPARATION

No.	Date	Events	Remarks
1.	Oct.11 (Mon.)	Submission of Summary for G/Workshop	Lao translation (by Nov.05)
2.	Nov.05 (Fri.)	Submission of Invitation for G/Workshop	with Lao/Eng. Summary
3.	Nov.12 (Fri.)	Sending of 2nd Draft Final Report	Printing in VTE
4.	Nov.12 (Fri.)	Submission of OHP sheets for G/Workshop	Lao translation (by Dec.03)
5.	Dec.28 (Tue.)	Submission of Minutes and Questionnaires for G & S/Workshops to JICA S/Team	English translation
6.	Jan. 14 (Fri.)	Compilation of Final Report	Final review by JICA/Tokyo
7.	Jan. 20 (Thu.)	Printing of Final Report in TYO	Submission to JICA/Tokyo
8.	Jan. 21 (Fri.)	Sending of Final Report	Printing in VTE

ANNEX - 5 Overall Work Schedule

The Nam Ngiep-I Hydroelectric Power Project

Overall Work Schedule





**1. MINUTES AND MEMORANDUM FOR FIELD  
INVESTIGATIONS**

**1.7 MEMORANDUM FOR 6TH FIELD INVESTIGATION**



**FEASIBILITY STUDY  
ON  
THE NAM NGIEP-I HYDROELECTRIC POWER PROJECT  
IN  
LAO PEOPLE'S DEMOCRATIC REPUBLIC**

**MEMORANDUM  
ON  
SIXTH FIELD INVESTIGATION WORKS**

The JICA Study Team for the Feasibility Study on the Nam Ngiep-I Hydroelectric Power Project (hereinafter called as "the Study Team") entrusted by the Japan International Cooperation Agency (hereinafter called as "JICA") and represented by Mr. Ichiro ARAKI the Team Leader had a series of discussions in respect of the 6th Field Investigation Work Results, with the authorities concerned of the Hydropower Office (hereinafter called as "HPO") of the Department of Electricity under the Ministry of Industry and Handicrafts (hereinafter called as "MIH") represented by Mr. Somboune MANOLOM Deputy Director of the Department of Electricity from November 21 to December 19 as shown below. All the results of the discussions mutually confirmed are compiled hereunder and in the Annexes as per attached.

No.	Date	Agenda
1.	November 25	Discussion on 2nd Draft Final Report
2.	December 3-8	3rd Environmental Assessment Committee Meeting
3.	December 9-11	3rd General Workshop at Vientiane
4.	December 13-15	3rd Site Workshop at B.Dong, B.Sopyouk & B.Somseun

**1. Submission of 2nd Draft Final Report**

The Study Team submitted to HPO of the Department of Electricity, MIH, twenty (20) copies of the 2nd Draft Final Report with (i) the Executive Summary Report, (ii) the revised Preliminary EIA Report, and (iii) the revised Preliminary Resettlement Report. These reports were prepared after revisions based on the HPO's comments on the 1st draft Final Report and included the Study Team's conclusion. HPO reviewed the above four (4) reports and stated that they had no objection basically for the Study Team to report the conclusions of FSL.320m selection as mentioned in the draft Final Report. However, HPO proposed some possibility of other alternative selection with FSL.360m to be remained for the field investigation of the aero-photo survey and the geological survey at the next stage F/S.

**2. Major Activities at 6th Field Investigation**

The four (4) members of Study Team arrived at Vientiane on November 22, 1999 and will leave Vientiane on December 19, 1999 as shown below:

No.	Name	Position	Arrival	Departure
1.	I. Araki	Team Leader	November 21	December 19
2.	H. Ikeda	Hydropower Planner	November 21	December 16
3.	B. Yon	Natural Environmentalist	November 21	December 19
4.	T. Ragsdale	Social Environmentalist	November 21	December 18

During the period, the Study Team attended the 3rd EAC meeting and conducted mainly the 3rd General Workshop at Vientiane and the 3rd Site Workshop at B.Dong, B.Sopyouk and B.Somseuan(Moungmai) on schedule.

### 2.1 3rd Environmental Assessment Committee Meeting (Photo-1)

The 3rd Environmental Assessment Committee Meeting was conducted by JICA on December 3-8, 1999 prior to the 3rd General Workshop. The members of EAC are the same as the 2nd EAC Meeting in June 1999.

The summary of EAC meeting including member list, attendance list and agenda of meeting is shown in Annex-1 and the minutes of discussion are shown in Annex-2. The Study Team's comments on the EAC's suggestions are under preparation.

### 2.2 3rd General Workshop (Photo-2)

The third General Workshop for the Draft Final Report was held as scheduled at the national level with about 110 participants at Vientiane on December 9-11, 1999 for 3 days.

The Program and the Attendance Lists are shown in Annex-3 and Annex-4, respectively. The Minutes of discussions and the Study Team's comments on the suggestion sheets (60 sheets) for the participants are under preparation.

### 2.3 3rd Site Workshop (Photo-3)

The site level consultation process was organized on December 13-15, 1999 as the third Site Workshop at B.Dong (Upper Reservoir, Thaviang Sub-District of Thathom District), B.Sopyouk (Lower Reservoir, Hom District) and B.Somseun (same as Muangmai, D/S of Dam, Bolikhan District of Bolikhamsay Province), attended by about 220, 180 and 75 villagers, respectively.

The Summary of Site Workshop including agenda and attendance list is shown in Annex-5. The Minutes of discussions and the Study Team's comments on the suggestion sheets (194, 63 and 65 sheets, respectively) for the villagers are under preparation.

## 3. Schedule on the Further Field Investigation

The Study Team informed HPO of his schedule on the further Field Investigations as shown below:

Mission	Period	Study Team	Events	
7th	Jan.17 - 26, 2000	10 days	Economist (to be named)	Market survey at Bangkok

The Final Report with the summary report and the six (6) volumes of supporting report will be submitted to both MIH and JICA at the middle of February 2000, after compiling of the minutes of meeting for EAC Meeting and General/Site Workshops as well as the additional economic survey results to be executed in January 2000.

#### 4. Flow Discharge Observation

The Study Team proposed HPO to continue the bi-monthly flow discharge observation until the commencement of the next stage F/S to be expected in September 2000 by the Study Team's budget with the following procedures:

Items	Procedure	Remarks
Period	Once a month at each station	at Nam Ngiep and Nam Xao rivers
Cost	Transportation cost and 3 person-3days allowance	To be charged by the Study Team at the lump-sum price of US\$250/time
Data Collection	Received from villagers and payment for employment	To be reimbursed by S/Team
Requirements	Taking photo	Water level, Measuring velocity
Required Date	Four (4) times each 2 months from January to July 2000.	1st : end of January, 2nd : end of March, 3rd : end of May, 4th : end of July

#### 5. Extension of Contract for Rainfall and Water-level Gauge Station

The Study Team proposed HPO to extend the contracts on the daily recording of rainfall gauge at B.Dong, water-level gauge at both B.Hatkham and B.Tahua for 12 months (from December 1999 to November 2000) until commencement of the next stage F/S by the Study Team's budget (Kip.30,000/month/station : Exchange rate = 7,600Kip/US\$).

#### 6. Prospective Schedule for the Next Stage F/S

JICA will have a meeting for the next stage F/S in March 2000. Annex - 6 shows the prospective schedule of the second stage F/S.

**The Nam Ngiep-I Hydroelectric Power Project****MEMORANDUM OF 6TH FIELD INVESTIGATION WORKS  
(Final Mission to Lao PDR)****LIST OF ANNEX**

ANNEX-1	Summary of 3rd EAC Meeting.....	4
ANNEX-2	Minutes of EAC Meeting.....	6
ANNEX-3	Program of 3rd General Workshop.....	8
ANNEX-4	Attendance List of 3rd General Workshop.....	9
ANNEX-5	Summary of 3rd Site Workshop.....	12
ANNEX-6	Prospected Time Schedule of Next Stage F/S.....	14
ANNEX-7	Photographs of Major Activities at 6th Field Investigation.....	15
	Photo-1 : The 3rd Environmental Assessment Committee Meeting.....	15
	Photo-2 : The 3rd General Workshop.....	15
	Photo-3 : The 3rd Site Workshop (Upper Reservoir :B.Dong).....	16
	Photo-4 : The 3rd Site Workshop (Lower Reservoir :B.Sopyouk).....	16
	Photo-5 : The 3rd Site Workshop (D/S of Dam :B.Somseun).....	17

## ANNEX – 1 (1/2) Summary of 3rd EAC Meeting

### (i) Member List of Environmental Assessment Committee

Member	Specialized Subject : Geology Name (Nationality/Age/Sex) : Daiei INOUE (Japanese, 52, Male) Firm/Position : Director, General Research Institute of Electric Power Industry
Member	Specialized Subject : Natural Environment Name (Nationality/Age/Sex) : Donald L Graybill (USA, 55, Male) Firm/Position : President, GCP International Inc.
Member	Specialized Subject : Social Environment Name (Nationality/Age/Sex) : Ms.Thongsy Bounthipangno (Lao PDR, 40, Female) Firm/Position : Officer of External Relation, Lao Front National Construction
Member	Specialized Subject : Natural Environment Name (Nationality/Age/Sex) : Mr.Vean Vongphet (Lao PDR, 42, Male) Firm/Position : Director, Center for Protected Areas & Watershed Management, Department of Forestry
Member	Specialized Subject : Resettlement Planner Name (Nationality/Age/Sex) : Mr. Xonghoua Vangvongsay (Lao PDR, 53, Male) Firm/Position : Director of Cabinet, Committee for Rural Development
Adviser	Specialized Subject : Hydropower Plan Name (Nationality/Age/Sex) : Hayao ADACHI (Japanese, 62, Male) Firm/Position : Japan International Cooperation Agency

### (ii) Attendance List of Environmental Assessment Committee

No.	Position	No. of Attendance	Name (without title)
1.	Counterpart (MIH)	3	Somboune, Chansaveng, Sisoukham
2.	EAC	5	mentioned above
3.	JICA (Tokyo)	2	Adachi, Kobayashi
4.	JICA (Lao PDR)	2	Abe, Hatsadong
5.	Study Team	5	Araki, Ikeda, Yon, Ragsdale, Kesone
6.	Others (Observer)	1	Facilitator
	Total	18	

## ANNEX – 1 (2/2) Summary of 3rd EAC Meeting

## (iii) Execution Programs of Environmental Assessment Committee

No.	First Day	December 3, Friday, 1999	Presented By
1.	14:00 - 14:30	Opening of Meeting	JICA
2.	14:30 - 15:30	Presentation by Study Team (I)	Mr. I.Araki
3.	15:30 - 16:00	Coffee Break	-
4.	16:00 - 17:30	Presentation by Study Team (II)	Mr. H.Ikeda
No.	Second Day	December 6, Monday, 1999	Presented By
5.	09:00 - 10:00	Presentation by Study Team (III)	Mr. B.Yon (1/2)
6.	10:00 - 10:30	Coffee Break	-
7.	10:30 - 12:00	Presentation by Study Team (IV)	Mr. B.Yon (2/2)
8.	12:00 - 14:00	Lunch Time	-
9.	14:00 - 15:00	Presentation by Study Team (V)	Mr. T.Ragsdale (1/2)
10.	15:00 - 15:30	Coffee Break	-
11.	15:30 - 17:00	Presentation by Study Team (VI)	Mr. T.Ragsdale (2/2)
No.	Third Day	December 7, Tuesday, 1999	Presented By
12.	09:00 - 10:00	Discussion (I)	-
13.	10:00 - 10:30	Coffee Break	-
14.	10:30 - 12:00	Discussion (II)	-
15.	12:00 - 14:00	Lunch Time	-
16.	14:00 - 17:00	Report Preparation	EAC
No.	Fourth Day	December 8, Wednesday, 1999	Presented By
1.	09:00 - 11:00	Report Preparation	EAC
2.	11:00 - 12:00	Reporting and Discussion (III)	EAC
3.	12:00 - 14:00	Lunch at Lane Xane Hotel	Prepared by JICA



**ANNEX – 2 (1/2) Minute of EAC Meeting****Hydropower Planning and River Environment**

Vientiane, December 7, 1999

By Hayao Adachi, Facilitator

The issues on the hydropower planning and river environment are addressed in this paper, referring to the discussion made during the Committee meeting. By Mr. Adachi, Facilitator of the meeting.

- (1) The comparison between the 360 and 320 alternatives have been intensively discussed in the meeting. It has been recognized that the 320 alternative would be unable to be economically viable, as far as the present basis of the power purchase agreement between GOL and EGAT is referred to. I myself very confidence, it is possible that the 320 alternative would be viable very near future, even if the Thavian rejects to be submerged, but not now. Therefore, for the time-being, I recommend to continue also to pursue the economics of the alternative 36i0 in corporation with the investigation for further step, maintaining two alternatives of the 30 and 320. The significant factors may be inflow data and peaking hours.
- (2) The Study Team has proposed the daily demand in Thailand system and on the experience of negotiation process in other projects. It is observed that the 15-hour-peak, and that the situation of the 15-hour-peak may be on the transition in the course of the economic growth. It is very sure that the 8-hour-day peak would be emerging after several years, if the economic recovery would be as expected.
- (3) The accuracy of inflow data is substantial. However, it is recognized that the hydrological analysis is complex, and that the conclusion should be waited until the next stage. It has been clarified in this stage the back-water-effect from the Mekong mainstream is not affecting to the existing Muang Mai water level gauging station. If so, the records at the Muang Mai gauging station should be reviewed in corporation with the actual measurement

**ANNEX - 2 (2/2) Minute of EAC Meeting**

results at the new gauging stations after one-year measurement complete. It is advised that the review should be made in the early stage of the next step.

- (4) The Study Team has proposed to construct the re-regulating pond at the downstream of the powerhouse site. It may be proper solution from the view-point of the downstream river environment. The idea is supported, also, by the reason that the reliability of KW provision to the system is essential. It is observed that the re-regulating pond is substantial to secure the reliability of KW provision to the system. It is recommended also to scrutinize the capacity of re-regulating pond to respond to the peak discharge of the final stage for 8-hur-peak operation.
- (5) The layout of the project is agreed including the dam type of a concrete-faced rock-fill dam (CFRD). However, the CFRD type of dam is sensitive for rock condition of dam foundation and dam material for embankment. It is recommended that the rock foundation and dam material should be discussed in the next step to clarify the CFRD type is proper solution in the project. It should be also discussed to overcome the high CFRD could be applied for the designated height of more than 150 m referring to actual results in the world.
- (6) The 320 alternative may be very sensitive at the end of the reservoir in terms of back-water effect to the cultivated areas for the compensation. In the next step, micro adjustment of FSL is essential on the basis of more accurate and comprehensive topographic data, and the careful computation of the back-water effect.

END

## ANNEX - 3 Program of 3rd General Workshop

First Day (December 9, Thursday, 1999)			
No.	Time	Program	Presented By
1.	8:30 - 9:35	Registration & Distribution of Suggestions Sheets	HPO/MIH staff
2.	9:35 - 9:40	Opening Speech (Ministry of Industry & Handicrafts)	Mr.Somboune Rasasombath
3.	9:40 - 9:50	Introduction of Time schedule & Participants	Facilitator
4.	9:50 - 10:00	General Speech (JICA/Tokyo)	Mr.Y.Otake
6.	10:00 - 10:30	Morning Coffee Break	Drink service
7.	10:30 - 11:20	Brief Presentation of (i) Conclusion, (ii) Previous workshops, (iii) Study process	JICA S/Team (Mr.I.Araki)
8.	11:20 - 12:30	Presentation of Hydropower plan on (i)Alternative study results and (ii)Economic analysis results	JICA S/Team (Mr.H.Ikeda)
9.	12:30 - 14:00	Lunch Break	Lunch service
10.	14:00 - 15:00	Presentation of Natural environmental aspects (I)	JICA S/Team (Dr.B.Yon)
11.	15:00 - 15:30	Afternoon Coffee Break	Drink service
12.	15:30 - 16:40	Presentation of Natural environmental aspects (II)	JICA S/Team (Dr.B.Yon)

Second Day (December 10, Friday, 1999)			
No.	Time	Program	Presented By
1.	8:30 - 9:00	Registration	HPO/MIH staff
2.	9:00 - 9:10	Brief Review of Study Team's Presentation yesterday	JICA S/Team (Mr.I.Araki)
3.	9:10 - 10:05	Presentation of Social environmental aspects (I)	JICA S/Team (Dr.Ragsdale)
4.	10:05 - 10:35	Morning Coffee Break	Drink service
5.	10:35 - 12:00	Presentation of Social environmental aspects (II)	JICA S/Team (Dr.Ragsdale)
6.	12:00 - 12:20	Report on the 3rd EAC Meeting Results	JICA (Mr. Adachi)
7.	12:20 - 14:00	Lunch Break	Lunch service
8.	14:00 - 15:25	Detailed Discussion (I)	Facilitator
9.	15:25 - 15:55	Afternoon Coffee Break	Drink service
10.	15:55 - 18:00	Detailed Discussion (II)	Facilitator
11.	18:00 - 18:30	Bassii	Religious Ceremony
12.	18:30 - 20:30	Dinner Reception of Workshop for Final Report	All participants

Third Day (December 11, Saturday, 1999)			
No.	Time	Program	Presented By
1.	8:30 - 9:00	Registration & Receipt of Suggestions Sheets	HPO/MIH staff
2.	9:00 - 9:10	Brief Review of Discussion Items yesterday	JICA S/Team (Mr.I.Araki)
3.	9:10 - 10:40	Detailed Discussion (III)	Facilitator
4.	10:40 - 11:10	Morning Coffee Break	Drink service
5.	11:10 - 11:40	Supplementary Explanation by HPO/MIH	If required.
6.	11:40 - 11:45	Schedule of Next Phase Study	JICA S/Team (Mr.I.Araki)
7.	11:45 - 12:00	Closing Speech	Vice-Minister of MIH
8.	12:00 - 13:00	Lunch Time	Lunch service

## ANNEX – 4 (1/3) Attendance List of 3rd General Workshops (1/3)

I. Chairman						
No.	Name	Position	Organization	9th	10th	11th
1.	Mr. Somboun Rasasombath	Vice Minister	Ministry of Industry and Handicraft	0	0	0
2.	Mr. khampeuw		Ministry of Information and Culture	0	0	0
3.	Mr. Soukata Vichith	Director	STENO	0	0	0
4.	Mr. Done Somvorachit		Ministry of Foreign Affair	0	0	0
5.	Mr. Yuji Otake	Director	JICA/Tokyo	0	0	0
6.	Mr. Hayao Adachi	Specialist	JICA/Tokyo	0	0	0
II. Central Government						
No.	Name	Position	Organization	9th	10th	11th
1.	Mr. Heuangseong Khamdalavong		Ministry of Foreign Affair	0	0	0
2.	Mr. Amphay Kindavong		Ministry of Foreign Affair	0	0	X
3.	Mr. Inthapanhya	Engineer	Ministry of Justice	0	0	0
4.	Dr. Taiphasavanh		Ministry of Public Health	0	0	0
5.	Mr. Inthadom Akhalath		Ministry of Agriculture & Forestry	0	0	X
6.	Mr. Khamtanh Vathanatham		Ministry of Agriculture & Forestry	0	0	0
7.	Mr. Khamla Saytha		Lao Youth Union	0	0	0
8.	Mr. Phouthasom Inthavong		Ministry of communication Transport	0	0	0
9.	Mr. Phonexay Vilaysak	Engineer	Commit for Investment & Cooperation	0	0	0
10.	Mr. Onechanh		Ministry of Defend	0	0	0
11.	Mr. Kongxaysi Phommaxay	Engineer	STENO	0	0	0
12.	Mr. Phouvong Onsisaleurm	Engineer	STENO	0	0	0
13.	Mr. Chansanouk Kounavong	Engineer	STENO	0	0	0
14.	Mr. Ounheuang Phommavixay		STENO	0	0	0
15.	Mrs. Viengkham		Lao Women Union	0	0	X
16.	Ms. Silikith Bou pha		Lao Women Union	0	0	0
17.	Mr. Bounphanh Sisanonh		Price Minister Office	0	0	0
18.	Mr. Hoi Phonvisouk		Resettlement Committee	0	0	0
19.	Mr. Viengnakhone Lavongvilay		SPC	0	0	0
20.	Mr. KongKham		SPC	0	0	X
21.	Mr. Khamlangsec		SPC	0	X	0
22.	Mr. Thongpheth	Engineer	EDL	0	0	0
23.	Mr. Phalim Dalavong	Engineer	EDL	0	0	0
24.	Mr. Soulasith Ouplayanh		CIC	0	0	0
25.	Mr. Bounthee Vanhsilimith		Ministry of Information and Culture	0	0	0
26.	Mr. Somfong Soulivanh		MIH	0	0	0
27.	Mr. Bouathi Soukkaseum	Deputy Director	MIH	0	0	0
28.	Mr. Bosaykham Viongdara	Head office	MIH	0	0	X
29.	Mr. Khamtanh		MIH	0	0	0
30.	Mr. Thala sayakoummane		MIH	0	0	0
31.	Mr. Thongkhan	Engineer	MIH	0	X	X
32.	Mr. Somboun Manolom	Deputy Director	MIH/HPO, Department of Electricity	0	0	0
33.	Mr. Khanoanh Houngdouangchanh		MIH	0	0	0
34.	Ms. Robin Anderlin	EIA Expert	MIH/HPO	0	0	0
35.	Mr. Chanhilo	Engineer	MIH/HPO	0	0	0
36.	Mr. Khammanh	Engineer	MIH/HPO	0	0	0
37.	Mr. Chansaveng	Engineer	MIH/HPO	0	0	0
38.	Mr. Seumkham	Engineer	MIH/HPO	0	0	0
39.	Mr. Sanhya	Engineer	MIH/HPO	0	0	0
40.	Mr. Voladeth Phonekeo	Engineer	MIH/HPO	0	0	0
41.	Mr. Bouathep Malakham	Engineer	MIH/HPO	0	0	0
42.	Mr. Vithounelabundith	Engineer	MIH/HPO	0	0	0

## ANNEX – 4 (2/3) Attendance List of 3rd General Workshops (2/3)

III. Local Government						
No.	Name	Position	Organization	9th	10th	11th
1.	Mr. Boun Tont	Head of Investment	Xiengkhouang Province	0	0	0
2.	Mr. Somdee Keodalavine		Saysomboun S/Zone	0	0	0
3.	Mr. Singkham Sivongkham	Head of Division	Saysomboun S/Zone, Industry&Handicraft	0	0	0
4.	Mr. Thithma Philavong		Saysomboun S/Zone	0	0	0
5.	Mr. Khambounnut Sayyanone		Borikhamsay Province	0	0	0
6.	Mr. Vanvilay	Deputy Director	Borikhamsay Province	0	0	0
7.	Ms. Thongloa Sengaphone		Borikhamsay Province	0	0	0
8.	Mr. Bouachan Bounvongsay	Head of Division	Borikhamsay, Industry & Handicraft	0	0	0
9.	Mr. Dandpee Mounhthadee		Borikhamsay Province	0	0	0
10.	Mr. Khamsing Sayphuvong	Engineer	Borikhamsay, Industry & Handicraft	0	0	0
11.	Mr. Bounema Bouchaleurn		Borikhamsay Province	0	0	0
12.	Ms. Phonesay	Chief	Borikhamsay, Lao Women Union	0	0	0

IV. Local People						
No.	Name	Position	Organization	9th	10th	11th
1.	Ms. Pearlor		Lao Women Union (Hom District)	0	0	0
2.	Mr. Vachuesang		B. Nong	0	0	0
3.	Mr. Khamfeuanh		B. Pou	0	0	0
4.	Mr. Chompheth thiphavong		B. Hathsamekhone	0	0	0
5.	Mr. Khamxay	Head of District	Borikhan District	0	0	0
6.	Mr. Samay	Head of Village	B. Somsieune (Muangmai)	0	0	0
7.	Mr. Phouvieng Piakeo	Villager	B. Hatheun (Hatkhom)	0	0	0
8.	Mr. Siphadone Vitayhak	National Front	B. Hatheun (Hatkhom)	0	0	0
9.	Mr. Khamveane Sorsamphaxay	Head of District	Thathom District	0	0	0
10.	Mr. Souatho Phialouang	Assist. of District	Hom District	0	0	0
11.	Mr. Souavang	Head of Village	B. Soppouan	0	0	0
12.	Mr. Yia yengvang	Head of Village	B. Houaypamom	0	0	0
13.	Mr. Bouaphanh Vandavong	Head of Thavieng	Thaviang Sub-District	0	0	0
14.	Mrs. Kham onh Phethdaoheuang		Lao Women union (Thathom District)	0	0	0
15.	Mr. Bounmark	Assist. of Village	B. Namlong	0	0	0
16.	Mr. Bounexou THimavong		B. Phoneyeng	0	0	0
17.	Mr. Done Daomalay	Head of Village	B. Viengthong	0	0	0
18.	Mr. Nouansi Phethsomphou	Assist. of Village	B. Nahong	0	0	0
19.	Mr. Tamly Khelnousay	Head of Village	B. Phiangta	0	0	0
20.	Mr. Bounemaher		B. Namyouak	0	0	0
21.	Mr. Bouakham	Head of Village	B. Dong	0	0	0
22.	Mr. Somlith	Head of Village	B. Xiengkhang	0	0	0
23.	Mr. Thoumma	Head of Village	B. Phonehom	0	0	0
24.	Mr. Bounnoy	Head of Village	B. Nakang	0	0	0
25.	Mr. Bounsouk	Head of Village	B. Naxay	0	0	0

## ANNEX – 4 (3/3) Attendance List of 3rd General Workshops (3/3)

V. International Organization						
No.	Name	Position	Organization	9th	10th	11th
1.	Mr. Hiroshi Manabe	Counselor	Embassy of Japan	O	O	O
2.	Mr. Ngeuan Duc Lien		Mekong River Commission Secretariat	X	O	O
3.	Mr. Boliboune Sanasisanh		M.R.C/Lao	O	O	X
4.	Mr. Dick Walling		IUCN	O	O	X
5.	Mr. Shinji Shimizu	Hydropower Engineer	Ministry of Foreign Affairs/Japan	O	O	O
6.	Dr. D.L.Graybill	Natural Environment	Env. Assess.Committee (EAC)	O	O	O
7.	Dr. Daiei Inoue	Director	Env. Assess.Committee (EAC)	O	O	O
8.	Mr. Thongsai Bounthiphanyo	Engineer	Env. Assess.Committee (EAC)	O	O	O
9.	Mr. Xonghoua Vangvongxay	Engineer	Env. Assess.Committee (EAC)	O	O	O
10.	Mr. Veavongpheth		Env. Assess.Committee (EAC)	O	O	O
11.	Mr. Maoki Kumagai	Hydropower Engineer	MITI/Japan	O	O	X
12.	Mr. Hitoshi Koyabu	Power System Planer	JICA Specialist/EDL	O	O	X
13.	Mr. Tetsuya Abe	Hydropower Engineer	JICA Specialist/HPO	O	O	O
14.	Mr. Hiroyuki Kobayashi	Program Officer	JICA/Tokyo	O	O	O
15.	Mr. Nobuaki Miyata	Deputy Resid Representative	JICA/Lao	O	X	X
16.	Ms. Chie Sato	Program Officer	JICA/Lao	O	O	O
17.	Mr. Hatsadong Chanthavongsa	Program Officer	JICA/Lao	O	O	O
18.	Mr. Mikio Masaki	Project Formulation Advisor	JICA/Lao	O	X	X

VI. NGOs in Lao PDR						
No.	Name	Position	Organization	9th	10th	11th
1.	Izumi Tsukamoto	-	JVC	O	O	O
2.	Dr. Boualakote	-	Cross red	O	O	O
3.	Mr. Chanhom pheanephayvong	-	Cross red	O	O	X

VII. NGOs Overseas in Lao PDR						
No.	Name	Position	Organization	9th	10th	11th
	None	-	-	X	X	X

VIII. Facilitator, Media and Interpreter						
No.	Name	Position	Organization	9th	10th	11th
1.	Mr. Michel Miron	Facilitator	-	O	O	O
2.	Mr. Soradeth Bannavong	Translator	-	O	O	O
4.	Mr. Detmahinh Souphanh	Translator	-	O	O	O
5.	Mr. Boualeane	-	TV 3	X	X	O
6.	Mr. Banhchop	-	TV 3	X	X	O
7.	Mr. Khampasith	-	TV 3	X	X	O
8.	Mr. Anoulak	-	Vientiane Times	O	X	O
9.	Ms. Sengthong	-	Business Newspaper	O	O	O

IX. Consultant and Study Team						
No.	Name	Position	Organization	9th	10th	11th
1.	Mr. Ichiro Araki	Team Leader	JICA Study Team	O	O	O
2.	Mr. Hiroshi Ikeda	Hydropower Planner	JICA Study Team	O	O	O
3.	Dr. Bernard Yon	Natural Envir. Expert	JICA Study Team	O	O	O
4.	Dr. Tod Anthony Ragsdale	Social Envir. Expert	JICA Study Team	O	O	O
5.	Mrs. Kesone Syasone	Gender Specialist	JICA Study Team	O	O	O

Ground Total : 120 participants  
 1st day (Dec.9) : 116 participants  
 2nd day (Dec.10) : 112 participants  
 3rd day (Dec.11) : 107 participants

## ANNEX - 5 (1/2) Summary of 3rd Site Workshops

## (i) Program

No.	From	To	Agenda	Contents	Presenter/Staff
<b>1st Day</b>			<b>Thaviang District</b>	<b>December 13, 1999</b>	<b>B.Dong</b>
Dec.13	08:30	10:00	Transportation	VTE→XSB→TVA	Helicopter
1.	10:00	10:30	Preparation	Panel Setting	HPO Staff
2.	10:30	10:35	Orientation of Workshop	Introduct. of Participants	Facilitator
3.	10:35	10:40	Opening Speech	Cooperation Lao & JICA	JICA, Mr.Ohtake
4.	10:40	10:50	Presentation 1	S/Team's Recommendation	S/Team, Mr.Araki
5.	10:50	11:05	Presentation 2	Dam Scheme Comparison	S/Team, Mr.Ikeda
6.	11:05	11:30	Presentation 3	Natural Environmental Issues	S/Team, Mr.Yon
7.	11:30	11:35	Break		
8.	11:35	12:05	Presentation 4	Social Environmental Issues	S/Team, Mr.Ragsdale
9.	12:05	12:20	Supplementary Speech	Power Policy in Lao	HPO, Mr.Somboune
10.	12:20	12:35	Discussion	-	Facilitator
11.	12:35	12:45	Closing Speech	-	Local Governor
12.	13:30	15:30	Lunch		
13.	15:30	16:30	Transportation	TVA→PKX	Stay at Pakxan
<b>2nd Day</b>			<b>Hom District</b>	<b>December 14, 1999</b>	<b>B.Sopyouk</b>
Dec.14	08:00	08:30	Transportation	PKX→SPY	Airport 7:30
1.	08:30	09:20	Preparation	Panel Setting	HPO Staff
2.	09:20	09:25	Orientation of Workshop	Introduct. of Participants	Facilitator
3.	09:25	09:30	Opening Speech	-	Local Governor
4.	09:30	09:40	Presentation 1	S/Team's Recommendation	S/Team, Mr.Araki
5.	09:40	10:05	Presentation 2	Dam Scheme Comparison	S/Team, Mr.Ikeda
6.	10:05	10:15	Presentation 3	Gender Issues	S/Team, Ms.Kesone
7.	10:15	10:30	Break		
8.	10:30	10:50	Presentation 4	Natural Environmental Issues	S/Team, Mr.Yon
9.	10:50	11:30	Presentation 5	Social Environmental Issues	S/Team, Mr.Ragsdale
10.	11:30	11:35	Supplementary Speech	Power Policy in Lao	HPO, Mr.Somboune
11.	11:35	12:45	Discussion	-	Facilitator
12.	12:45	12:50	Closing Speech	-	EAC, Mr.Adachi
13.	12:50	14:00	Lunch		
14.	14:00	14:20	Transportation	SPY→PKX	Stay at Pakxan
15.	14:20	15:30	Transportation	PKX→XSB→VTE	by Helicopter
<b>3rd Day</b>			<b>Bolikhan District</b>	<b>December 15, 1999</b>	<b>B.Somseun</b>
Dec.15	08:00	09:00	Transportation	PKX→SSM	4WD cars
1.	09:00	09:20	Preparation	Panel Setting	HPO Staff
2.	09:15	09:20	Orientation of Workshop	Introduct. of Participants	Facilitator
3.	09:20	09:25	Opening Speech	Power Policy in Lao	HPO, Mr.Somboune
4.	09:25	09:40	Presentation 1	S/Team's Recommendation	S/Team, Mr.Araki
5.	09:40	10:00	Presentation 2	Dam Scheme Comparison	S/Team, Mr.Ikeda
6.	10:00	10:25	Presentation 3	Natural Environmental Issues	S/Team, Mr.Yon
7.	10:25	10:40	Break		
8.	10:40	11:30	Presentation 4	Social Environmental Issues	S/Team, Mr.Ragsdale
9.	11:30	11:40	Presentation 5	Gender Issues	S/Team, Ms.Kesone
10.	11:40	11:50	Discussion	-	Facilitator
11.	11:50	12:00	Closing Speech	-	Local Governor
12.	12:00	13:30	Lunch	(Bassii)	
13.	13:30	16:00	Transportation	SSM→PKX→VTE	4WD cars

## ANNEX -- 5 (2/2) Summary of 3rd Site Workshops

## (ii) Participants

## 1. From Lao Government (Total 7 pers.)

No.	Name	Position	B.Dong	B.Sopyouk	B.Somseun
1.	Mr. Somboune	Deputy Director, HPO	0	0	0
2.	Mr. Voradeth	HPO	0	0	0
3.	Mr. Chansaveng	Counterpart, HPO	0	0	0
4.	Mr. Semkhan	Counterpart, HPO	0	0	0
5.	Mr. Khamman	Counterpart, HPO	0	0	0
6.	Mr. Vithon	Counterpart, HPO	0	0	0
7.	Mr. Sonya	Counterpart, HPO	0	0	0

## 2. From JICA, Study Team &amp; Others (Total 13 pers.)

No.	Name	Position	B.Dong	B.Sopyouk	B.Somseun
1.	Mr. Y.Otake	Director, JICA Tokyo	0	-	-
2.	Mr. H.Adachi	Facilitator of EAC, JICA Tokyo	0	0	-
3.	Mr. S.Shimizu	Ministry of Foreign Affairs	0	0	-
4.	Mr. T.Abe	JICA Expert of HPO	0	0	0
5.	Ms. C.Sato	Assistant Programme Officer, JICA/Laos	0	0	0
6.	Mr. Hasadong	Programme Officer, JICA/Laos Office	0	0	0
7.	Mr. I.Araki	Team Leader, Study Team	0	0	0
8.	Mr. H.Ikeda	Hydropower Planer	0	0	0
9.	Mr. B.You	Natural Environmental Expert, Study Team	0	0	0
10.	Mr. T.Ragsdale	Social Environmental Expert, Study Team	0	0	0
11.	Mr. Detmahinh	Interpreter (Laotian)	0	0	0
12.	Mr. Khantam	Engineer of STS Consultants	0	0	0
13.	Ms. Kesone	Gender Expert (Observer)	0	0	0

## 3. From Local Villages

No.	Name	Position
1.	at B.Dong	about 200 pers.
2.	at B.Sopyouk	about 170 pers.
3.	at B.Somseun	about 70 pers.





**1. MINUTES AND MEMORANDUM FOR FIELD  
INVESTIGATIONS**

**1.8 MINUTES OF MEETING FOR FINAL REPORT**

10th December 1999

MINUTES OF MEETING  
FOR  
THE FEASIBILITY STUDY ON THE NAM NGIEP-I HYDROELECTRIC POWER PROJECT  
IN  
THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

Mr. Yuji Otake, Director of Energy and Mining Development Study Division, Japan International Cooperation Agency (JICA), had a discussion on the above-mentioned Study in Vientiane with Mr. Somboun Manolom, Deputy Director of Department of Electricity, Ministry of Industry and Handicraft (MIH) on 8th December 1999.

Both sides agreed to record the following conclusions of the discussion:

**1. Implementation of additional studies**

Mr. Yuji Otake explained the necessity of the implementation of additional studies after this 6th field survey, which comprise the analysis of economic conditions in Thailand and Vietnam and the preparation of the financial alternative scheme for Nam Ngiep-I Hydroelectric Power Project, in order to make the necessity and feasibility of the project more clear. The Laotian side has no objection to the JICA's proposed additional studies to be carried out by JICA study team.

**2. Accomplishment of compiling the Final Report**

Mr. Yuji Otake requested to postpone the accomplishment of compiling the Final Report of the study until the middle of February 2000, since the results of the additional studies mentioned above should be reported in the Final Report. The Laotian side agreed.

**3. Free Access to Contents of the Final Report**

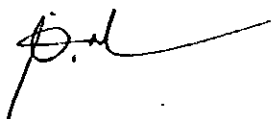
Both sides agreed that anyone could be allowed to read the contents of the Final Report and to make a copy of the report at his/her expense, in order to keep transparency of information.

**4. Meeting on the transition to the second phase of the study**

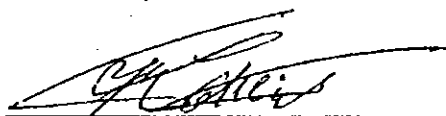
The meeting between JICA and MIH will be held in Vientiane after compiling the Final Report in order to discuss whether the study moves to the second phase. And, if the both sides reach an agreement to proceed with the second phase study, they also discuss the schedule and contents of the study. JICA will propose the detailed schedule of the meeting when the date is fixed (tentatively February end or early March).

**5. Collection of meteorological and hydrological data**

Mr. Yuji Otake requested the Laotian side to continue the collection of meteorological and hydrological data, at least until the meeting mentioned in clause 4 above, in the way as they did in the first phase study. Execution of the data collection after the meeting will be also discussed in the meeting. The Laotian side agreed with it.



Somboun Manolom  
Deputy Director,  
Department of Electricity  
Ministry of Industry and Handicraft



Yuji Otake  
Director,  
Energy and Mining Development study div.  
Japan International Cooperation Agency



## 2. ENVIRONMENTAL ASSESSMENT COMMITTEE (EAC)

### 2.1 OUTLINE OF ENVIRONMENTAL ASSESSMENT COMMITTEE



**The Nam Ngiep-I Hydroelectric Power Project**  
**Outline**  
**of**  
**The Environmental Assessment Committee**

The Environmental Impact Study on the Nam Ngiep-I Hydroelectric Power Project in the Lao People's Democratic Republic is to be conducted from August 1998 to December 1999. The Environmental Assessment Committee (hereinafter referred to as "the Committee") is organized in view of the fact that the technical and methodological propriety is very important in this study.

**1. Objectives**

The objectives of the Committee are to review the works of EIA implemented by the JICA Study Team, to evaluate the technical and methodological propriety in the study and to provide the Study Team with technical comment necessary to secure the credibility of the study.

**2. Definition**

- 1) The Committee is regarded as an advisory committee for the Study Team.
- 2) The Committee has no authority for the implementation of the Study and no responsibility for the results of the Study.
- 3) All comments from the Committee are to be referred to by the Study Team. The Study Team is obliged to explain to JICA the rationale of accepting or rejecting each of the comments.
- 4) The Committee meeting is a closed meeting and the committee report to be submitted by the Committee will be open to the public.
- 5) This Outline of the Environmental Assessment Committee should be known to the people concerned.

**3. Terms of Reference (for period from November 1998 to March 1999)**

**1) To review the study reports**

The Study Team will submit the study reports (the Inception Report and the Progress Report will be delivered to the Committee members in this fiscal year) before committee meetings will be held in Vientiane. The reports should be perused for preparing comments for the meetings. Delivering schedule of reports is as follows:

- Inception report and Progress report : at the beginning of November 1998
- Interim report : at the beginning of May 1999
- Draft final report : at the beginning of November 1999
- Final report : at the beginning of January 2000

**2) To attend the Committee meetings and Workshops (Public hearings) to be held in Vientiane and to evaluate technical propriety of the Study**

The Committee meetings and the Workshops will be held three (3) times in the study

period (only the first meeting and workshop will be held in this fiscal year) as shown in the following tentative schedule. The role of the Committee members in the Workshops is to offer technical advice, if necessary.

First committee meeting (this fiscal year 1998)	: Nov.20	Arrival at Vientiane
	Nov.21~Nov.25	Committee meeting
	Nov.26~Nov.27	Workshop (Public hearing)
	Nov.28	Leaving Vientiane
	(including site inspection by helicopter)	
Second committee meeting (1999)	: June.3	Arrival at Vientiane
	June.4~June.8	Committee meeting
	June.9~June.11	Workshop (Public hearing)
	June.12	Leaving Vientiane
Third committee meeting (1999)	: Dec.3	Arrival at Vientiane
	Dec.4~Dec.6	Committee meeting
	Dec.7~Dec.9	Workshop (Public hearing)
	Dec.10	Committee meeting
	Dec.11	Leaving Vientiane

3) To submit report containing summarized discussions of each committee meeting

#### 4. Organization

##### 1) Members of the Committee

The Environmental Assessment Committee consists of four specialists. The Ministry of Industry and Handicraft (MIH), the government of Lao PDR and JICA select the members of the committee based on the following conditions:

- a) Each of the MIH and JICA selects two members considering the following conditions, b),c) and d).
- b) The members should be environmental specialists who have sufficient experience in development projects.
- c) The two members to be selected by the MIH should be one specialized in natural environment (river environment) and the other in social environment.
- d) The two members to be selected by JICA should be one specialized in natural environment and the other in geology.

The members of the Committee will be confirmed with an agreement to be concluded between the MIH and JICA.

##### 2) Secretariat

Energy & Mining Development Study Division, Mining & Industrial Development Study Department, JICA will execute secretarial tasks for the Committee.



## 5. Expenses

All expenses concerned with the implementation of the Environmental Assessment Committee is borne by JICA, including a per diem, accommodation, transportation and consulting fee, if necessary.

**2. ENVIRONMENTAL ASSESSMENT  
COMMITTEE (EAC)**

**2.2 1ST EAC REPORT AND STUDY TEAM'S COMMENTS**

**COMMENTS OF ENVIRONMENTAL ASSESSMENT COMMITTEE  
AND  
REVIEW RESULTS OF JICA STUDY TEAM**

Nam Ngiep-I Hydroelectric Power Project

As of March 01, 1999

Name	No.	Comments	Review Results
Mr.Graybill	1-1	The Committee clarified that comparisons of alternative cases will include environmental impacts of additional access roads and transmission lines required for the run-of-river alternatives.	The Study Team justified the EAC's clarification.
	1-2	In response to the findings of the GPS survey, the Committee agrees that existing information concerning elevations of the reservoir area is not sufficient for making a competent comparison of the proposed alternatives for project optimization. The Committee endorses the proposal to improve the accuracy of topographic data in the Thaviang area by surveying 5-km transects across the river at approximately 2-km intervals; and, if the study proceeds to the second stage, to include aerial photography and preparation of orthophoto maps for the entire reservoir area.	
	1-3	The Committee recommends that the investigation of sediment transport and reservoir lifetime should include (a) evaluation of available data on sediment deposition in the Nam Ngum reservoir and (b) in addition to monthly sampling of suspended sediment concentration, event-based sampling to determine suspended sediment concentrations during some of the highest flows of the rainy season, and thereby provide data for the high-flow end of the sediment rating curve.	The Study Team accepted the EAC's recommendation.
	1-4	The Committee calls attention to the cumulative effects of sediment deposition and flood backwaters in the tails of the reservoir (i.e., areas near the confluence of the main river or large tributaries with the reservoir). Over the life of the project, sediment deposition can be expected to raise the elevation of the channel in these areas and thereby raise the elevations of flood backwaters that are associated with flood events of given return periods. The Committee recommends that these cumulative effects be considered in the choice of reservoir water level if areas near the tail of the reservoir are inhabited, cultivated or otherwise developed.	The Study Team accepted the EAC's recommendation.
	1-5	The Committee recommends that the study should address, together, and from an environmental perspective, (a) the combination of downstream issues related to initial reservoir filling, (b) the need for a re-regulating pond, (c) the need for riparian flow, (d) the need for local power supply, (e) the constraints of an agreement for exporting firm peak power, (f) the backwater effects of the Mekong River during various discharge events and (g) impacts on fisheries between the dam and the Mekong River.	The Study Team accepted to carry out the further studies at the items (a) to (g) basically.
	1-6	The Committee recommends that the TOR for water quality sampling and analysis should be amended as necessary (a) to insure that no samples are collected, which cannot be analyzed within international recognized holding times, (b) to include H2S, total P, total N, HCO3 and heavy metals in the list of parameters, if the laboratory can analyze these parameters and (c) to include any additional parameters that are justified on the basis of special activities in the catchment area (such as mining or pesticide application).	The Study Team will amend the TOR in the contract for 2nd year after reviewing the EAC's recommendations (a) to (c).

SUPPORTING REPORT(V)

1-7	<p>The Committee raised questions about the adequacy of the TOR and work plan for discovering rare or endangered species of wildlife. The Committee is satisfied with the explanation that (a) stage-1 discovery will be based primarily on interviews of reservoir area inhabitants, (b) the EIA report will include clear identification of the most promising locations and habitats for rare species (in areas that could be affected by the project) and will recommend future tasks to insure competent coverage and closure of issues involving rare and endangered wildlife; and (c) the EIA will explain in detail the rationale of this approach, as it was explained to the committee. The Committee also suggests that the EIA should address species in the Nam Kading National Biodiversity Conservation Area (NK-NBCA) as well as the Phou Khao Khoay NBCA as indicators of rare species in the region.</p>	<p>The Study Team agreed to address rare species in NK-NBCA as well as PKK-NBCA.</p>
1-8	<p>MIH and the Committee raised a series of questions about the adequacy of the TOR and work plan for discovering rare or endangered species of fish and migratory fish and estimating the pre-project (baseline) harvest of fish in the project area. The Committee recommends that (a) stage-1 investigations should include additional fish sampling at least once in the rainy season, even if this sampling may not extend into the main stream of the river, (b) the EIA report should recommend future tasks to insure competent coverage and closure of issues involving rare or endangered fish, migratory fish and pre-project fish harvests; and (c) the EIA should explain in detail the rationale of this approach for investigating fish and fisheries, as it was explained to the Committee.</p>	<p>The Study Team accepted the EAC's recommendations (a) to (c).</p>
1-9	<p>The Committee agrees with the need for reduction of biomass and elimination of tree trunks that could threaten health, safety or aesthetics in the reservoir area, but it questions the necessity and efficacy of complete clearing, especially of areas with difficult access, deep in the reservoir. The Committee recommends that areas to be cleared should be prioritized on the basis of criteria that include health and safety, aesthetics, value of timber and cost of removal.</p>	<p>The Study Team agreed to classify the reservoir area with priority for biomass reduction at the proposed dam scheme.</p>
1-10	<p>The Committee suggests that transboundary effects of the project on downstream discharges should be revealed (even if very small), through comparison of mean monthly discharges of the Mekong River, at or along national boundaries or places of special interest (such as the confluence with the Tonle Sap), for two cases – i.e., with the project and without the project.</p>	<p>The Study team proposes to carry out the exercise at Khone Falls, where the Mekong leaves Laos to enter Cambodia.</p>
1-11	<p>The Committee raised two (2) concerns about the use of "participant observers" for social investigations, as they are explained in the IEE. First, without careful prior instruction about the features of the project, the observers may inadvertently convey contradictory information about the project. Second, without careful prior instruction about the possible mitigating measures, the observers may inadvertently contribute to the raising of expectations about what the project will provide, in ways that may extend beyond the scope or capacity of the project to respond. The Committee recommends that all participant observers be made aware of these concerns and be given clear advice for avoiding contradictions, raising expectations or expressing themselves in ways that could be interpreted as making promises on behalf of the project.</p>	<p>The Study Team will follow the EAC's recommendation through further workshops, currently scheduled in the Thaviang District on March 16, 1999 and at B.Namyouk on March 17, 1999.</p>
1-12	<p>The Committee clarified that (a) environmental impacts of resettlement will be considered in the choice of project alternatives and will be included in the EIA, and (b) criteria for sizing resettlement areas will be explicitly stated in the EIA and will include requirements for grazing animals.</p>	<p>The Study Team agrees to follow these recommendations.</p>
1-13	<p>The Committee recommends that investigation of approaches for resettlement should include special attention to options which utilize the reservoir itself for restoring the income of affected families, building on lessons learned from other projects.</p>	<p>The Study Team agreed.</p>

Mr.Graybill

Mr.Graybill	1-14	<p>The Committee clarified that if the study proceeds to the second stage, the first-stage EIA will be updated to (a) follow-up first-stage environmental findings and (b) respond to refinements and changes in the project description that emerge during the second stage.</p>	<p>The Study Team will recommend for the 2nd stage in his report at the end of the 1st stage as the EAC clarified.</p>
	2-1	<p>Proposed dam site of the Nam Ngiep-1 will be expected to be possible for the construction of 180 meters class concrete faced rockfill dam (CFRD) by the geological and geomorphologic condition in the first stage of investigation. However, the most important point of this project at the dam site is the geological condition of dam basement at the high elevation part, whether they may have affected by deep weathering and have thick open cracks or not.</p> <p>In this connection, there are some comments given on the environmental tasks that will be caused by geological and geomorphologic points of view.</p> <p>First of all, it is recommended to learn the environmental influence from the experience of the Nam Ngum-1 project, because data of the estimation of the environmental impact such as sedimentation rate, erosion rate, grade of weathering etc. at the Nam Ngiep project site is extremely short in the present stage. Since the Nam Ngum-1 reservoir was constructed about 30 years before, locating almost at the same elevation with the project, adjoining the river each other and resembling geology of the hinterland comparatively to the Nam Ngiep site, the Nam Ngum-1 reservoir is skillful object for our reference.</p>	<p>The Study Team agreed.</p>
Mr.Inoue	2-2	<p>It could not be deny that the big load to environment by moving enormous earth volume caused by excavation of the dam, quarry and powerhouse etc.</p> <p>It is recommended to plan the quarry inside the reservoir. The evidence of the quarry earth works should be hidden in the reservoir. It could reduce a load to environment after completion. In the first stage of geological investigation of the quarry site, it is recommended to look for sandstone or conglomerate layer of the Mesozoic age which may be distributed in the reservoir just upstream of the dam site.</p> <p>In the report, even though one of the candidates of quarry is selected downstream outside of the reservoir, quarry in the reservoir should be the first priority in order to decrease impact to the environment even if it is far from the dam site.</p>	<p>The Study Team agreed.</p>
	2-3	<p>There are very few avalanches in the planned reservoir area as far as I investigated through the helicopter. Sandstone and conglomerate rocks, which are resistant against weathering are left with a shape of a ridge. On the other hand, since muddy rocks were influenced by strongly eroded, it is a characteristic to be left as a wide valley shape.</p> <p>The reason why the Thaviang village, located at the end of the reservoir, with a vast valley and with wide terrace, is supposed to be composed of muddy rock which is easy to erode and the result of meandering of the river.</p> <p>When geomorphology appears as steep cliff, weathered rocks had already fallen down to the riverside and accumulated as talus deposits. These talus deposits seem stable if without artificial works, because they passed many geological times since they fallen down.</p> <p>After the reservoir would be filled with water to the high water level and the reservoir would be operational to the electric generation, phenomenon of small avalanches through the reservoir may occur by the up and down of the water level. However, large scale avalanches or landslides may be expected as a small chance. It is recommended to check this idea by observing the Nam Ngum-1 reservoir.</p>	<p>The Study Team agreed.</p>

Mr. Inoue	2-4	<p>When water would be filled up in the reservoir, sand and soil in water flow would be generally piled up at the tail end of the reservoir as it is called sedimentation, due to the fast water velocity changes to slow one at the tail end of the reservoir.</p> <p>It gives an environmental change greatly between low water and high water level and just also higher than the high water level area. The prediction of future sedimentation volume is very important in order to assess the impact to the environment. Because, in this stage, quantitative measurement isn't formed at the Nam Ngiep-1 project for estimating sedimentation volume, it is recommended to refer to the experience of the Nam Ngum-1 reservoir which is located nearby.</p> <p>Sedimentation at the tail end of the Nam Ngum-1 reservoir is not confirmed even with observation from the helicopter. Though it is imagined that sedimentation volume is not much volume in the appearance, the measurement record must be checked.</p> <p>However, the suspended load and bed load should be roughly taken into account both by checking nearby reservoir mentioned above and by the calculation.</p>	The Study Team agreed.
	2-5	<p>The following matters are desirable shortly mentioned in this report, (i) dam type from the geological, geomorphologic and economical point and (ii) earthquake induced by the filling up the reservoir.</p>	
Mr. Khamphaeng	3-1	<p>Similarities and Differences between Nam Ngiep-1 HEPP and Nam Theun-2 HEPP</p> <p>(i) Similarities:</p> <ol style="list-style-type: none"> <li>Both sites are located near the NBCA (National Biodiversity Conservation Area)</li> <li>Aspiration for standardization of resettlement under the guidelines of World Bank or ADB.</li> <li>Both sites were located in conflict zone during the Indochina war, therefore inhabitants in the both area had experience of 43-occupation which is similar to resettlement.</li> </ol> <p>(ii) Differences:</p> <ol style="list-style-type: none"> <li>Rare species of fauna such as saola, muntjac deer, and wild white wing aile dug living in the Nam Theun area are not apparently exist in the Nam Ngiep area.</li> <li>Number of the Flora in Nam Theun is greater than in Nam Ngiep, because the Nam Theun site includes NBCA.</li> <li>The Nam Theun site is said that it includes the homeland of Vietmuong ethnics, therefore the area seemed to have more large numbers of Vietmuong ethnics than Nam Ngiep and others.</li> <li>Nam Ngiep project is more early stage than the Nam Theun project which has already finished RRA (Rapid Rural Appraisal) and PRA (Participatory Rural Appraisal) studies.</li> </ol>	<p>It is worth to mention that these projects are basically very different mainly by the fact that Nam Ngiep-1 HEPP concerns only one (1) river basin when the Nam Theun-2 HEPP is a trans-basin project. Indeed, the Study Team considers that these two (2) projects are drastically different with only very few common points.</p>
	3-2	<p>I found some numbers of elevations and area which are different to former data such as heights of Phou Bia measured as 2,819 m (former data was 2,888 m) and Ph Khtha measured as 3,071 m (in former data, highest peak is never reached 3,000 m). Those numbers should be justified in this study.</p>	<p>The Study Team corrected EL.3,071 m to EL.2,071 m, at Ph.Khtha, however EL.2,819 at Ph.Bia is correct.</p>

Mr. Khamphaeng	3-3	<p>Socio-economic study will be improved by taking methodic approach as follows:</p> <p>1st phase : Feasibility study</p> <ul style="list-style-type: none"> <li>- Village level participatory questionnaire (for heads of village)</li> <li>- Household level participatory questionnaire (sampling)</li> </ul> <p>3rd phase : PRA</p> <ul style="list-style-type: none"> <li>- Village level participatory questionnaire (for heads of village)</li> <li>- Household level participatory questionnaire (sampling)</li> <li>- Individual participatory questionnaire (sampling)</li> <li>- Questionnaire about Livelihood</li> </ul>	The Study Team discussed with the Sub-contractor of EIA survey carrying out the survey methods for improving the participatory nature of the survey methodology, as per the suggestion.
Mr. Bounthong	4-1	<p>The General comments are as follows:</p> <ul style="list-style-type: none"> <li>- After having passed through the documents received, personally I have the impression that the study team has made necessary efforts to fulfill its tasks and duties mentioned in the T.O.R. and Minutes.</li> </ul> <p>The purpose of the study is commendable. It's clearly stated to work out the most recommendable reservoir type hydroelectric power project.</p> <ul style="list-style-type: none"> <li>-I, really, appreciate that the Study Team referred not only to the Lao laws and regulations but also to international standards and guidelines, specially to the W.O.D.</li> <li>-I totally agreed with the report on the status of forests in the reservoir area; primary forests have been destroyed or logged. <u>The remaining forests are of secondary forests and sparsely distributed.</u></li> </ul> <p>Additional survey of vegetation types, habitats and wildlife survey including fishes in the upstream and downstream seems necessary.</p>	The Study Team appreciates the comments made.
Mr. Bounthong	4-2	Beside economic indicator, the magnitude of flooded area in the downstream and upstream should be taken in account when deciding on the size of the dam.	The Study Team agreed.
	4-3	The study should anticipate preliminary management plan of the watershed area; reforestation program, stabilization of shifting cultivation.	The Study Team agreed.
	4-4	Cattle raising, cash crop production, reforestation work and fisheries should be considered as alternative or complementary to rice production for resettled people.	The Study Team agreed.
Mr. Adachi	5-1	<p>The Study Team has proposed to proceed the further studies dividing the area into three zones; Upstream, Midstream and Downstream.</p> <p>In this connection, the Team might have the alternatives of the HWLs 360 m, 320 m and 240 m, approximately. The 360 m – alternative requires resettlement of 5,000 people including Taviang District, the 320 m – alternative avoids the resettlement of 3,000 in Taviang, and the 240 m – alternative requires no resettlement. My preliminary computation is saying that the 360 m may have enough economic viability to proceed to the further steps, the 320 m may be marginal in economic viability, and the 240 m may not be viable in economic evaluation.</p> <p>This brief estimation should be confirmed in further steps referring to the precise topographic, geologic and hydrologic information, which will be obtained in the further steps.</p>	The Study Team agreed.
	5-2	<p>The Team has tentatively proposed the 8-hr daily peak getting the maximum installed capacity of 440 MW. Mr. Somboun, MIEH, explained the present status of the discussion with Thailand, the sole purchaser of the electricity, saying that the sixteen-hour peak was the tentative agreement with Thailand in Nam Theun-2 case. It may be necessary for the Team to check the economic viability of the project based on the principle adopted in the Nam Theun-2 case.</p>	The Study Team agreed

## SUPPORTING REPORT(V)

	<p>However, it may be difficult to clarify the economic viability of the project based on 16-hr in Nam Ngiep-1 case. If so, the peaking 8-hr case may have to be maintained in the proposal in the further steps. In this case, the reliability of the output may be essential to negotiate the purchase agreement with Thailand.</p> <p>The dam site candidate at the midstream has been given up by the Team because of the difficulty of access and no meaning to rescue the Taviang area from submerging. However, it seems that the dam construction cost may be less than that of the d/s dam site, and that the m/s idea could avoid the resettlement of 2,000 in the d/s. Therefore, it is recommended to check on the map whether the m/s dam site could be eliminated or not, when more precise maps are available. This confirmation is substantial to avoid further dispute for the dam site selection issue. In this examination, the river bed elevation and the dam scale at the m/s dam site may be the key factors.</p>	The Study Team agreed.
5-3	<p>The Team has an opinion that a concrete-faced rockfill dam (CFRD) may be only the alternative for the selection of the dam type. This opinion has been almost agreed by the Committee members. This idea of the dam type may depend on the geologic condition (it is said that CFRD must have enough soundness of the foundation rock because of thin impervious line.). Further, the rockfill type dam requires the large scale of the quarry site and the long and wide construction roads, which may cause the disturbance of the area. This dispute may come in the further stage. Enough countermeasures to protect the disturbance should be proposed in the study of the environmental countermeasures.</p>	The Study Team agreed.
5-4	<p>The Team has proposed to construct the re-regulating dam just downstream of the main dam. This afterbay may be necessary if the peaking generation is essential. However, since the afterbay requires the increase of the construction costs and some influence to the submerged area, the cases of with-and without-afterbay should be discussed in the next report. Several alternatives without the afterbay could be discussed, such as the compensation of the boat-activities organizing the transportation system through the shore lines and the complete installation of the warning system. Since the distance between the Mekong main stream and the dam site is not far, several countermeasures could be considered. It is noted that the afterbay could be utilized for some contributions to the downstream people, such as small hydropower to provide the electricity to the villagers, water supply facilities also to the villagers, and so on.</p>	The Study Team agreed.
5-5	<p>The influence of the back-water phenomena from the Mekong mainstream has been discussed in the meeting. This may require the examination of river flow data at the existing river gauging station. Further, since the flood may come from the upstream areas even when the project area is dry, the discharge from the power station of the project may cause the water level up rather than before the project is complete. This should be carefully checked up. Also, the back-water may give some influences to the design of the afterbay.</p>	The Study Team agreed.
5-6	<p>The Team's observation on the river sediment is short. It is said that the sediment problem is generally less than in other Asian countries, such as China, Indonesia and so on. However, it is recommended that the measurement of the water contents and the analysis should proceed carefully in the further steps. The sediment problem may cause the back-sand effect at the end of the reservoir and the scouring of the riverbed and river banks downstream of the dam. Enough countermeasures should be considered to protect the several river structures in the downstream area from scouring and erosions.</p>	The Study Team agreed.
5-7		

Mr.Adachi