

**LAO PEOPLE'S DEMOCRATIC REPUBLIC
NAM THEUN 2 HYDRO PROJECT**

**EIGHTH REPORT OF THE
INTERNATIONAL ENVIRONMENTAL AND SOCIAL
PANEL OF EXPERTS**

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February 7, 2005

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**For the Nam Theun 2 Hydro Project
Lao People's Democratic Republic
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LIST OF RECOMMENDATIONS

Recommendation 1: That a much more coordinated NT2 Project approach from the Vietnam border to the Mekong Border is required by GOL Central, Provincial and District officials, NTPC, International Financial Institutions and others to realize the major development benefits of the NT2 Project.

Recommendation 2: The Ministry of Agriculture, under the supervision of H.E the Deputy Prime Minister, should become more actively involved in the NT2 Project.

Recommendation 3: Clarification and Strengthening of Decree 193/PM of December 29, 2000, of Supplemental Decree 37/PM of April 12, 2002 and of Regulation 484/KM.Gov should specify in more details how the intent of the first Decree to

protect the NPA is to be ensured while both decrees and Regulation 484 should specify in more detail the resources and activities that have been reserved for the use of those resettled or otherwise compensated through the Nakai Plateau Village Forestry Association and the reservoir fisheries.

Recommendation 4: That NTPC, cooperating with the RC, the RMU, the WMPA, and the Head Contractor and Sub-Contractors, should develop an environmental, health and social monitoring strategy and system applicable to all project areas and that can become operative as soon as possible.

Recommendation 5: That priority be given to completing village land use planning and allocation in the PIZ, NPA, and Nakai Plateau and XBF zones.

Recommendation 6: NTPC, cooperating with the RC, the RMU, and the appropriate GOL officials in Khammouane and Bolikamsai Provinces, should advertise for an NGO to consult and work with project affected Vietic I and II communities as soon as possible after Financial Close for the purpose of identifying their relocation preferences and improving their livelihoods.

Recommendation 7: That participatory family planning in the context of health and livelihood improvements must be a NT2 priority issue throughout the project area.

Recommendation 8: As implementation proceeds, it is essential to supplement the recruitment of NT2 project officials from other government agencies with recruitment and training of recent university graduates in relevant fields and from the private sector, NGOs and other agencies.

Recommendation 9: Create an integrated master plan for development of ecotourism.

Recommendation 10: That Prime Ministerial Decree #193 of 2000, and Prime Ministerial Decree #25 of 2001, be strengthened by the addition of a strong, unambiguous statement of the conservation vision for the NPA.

Recommendation 11: To ensure that conservation is the primary priority that there be dialogue between the senior GOL ministers who understand the conservation priorities for the NPA, and the Board of Governors of the WMPA, to clarify the role of conservation in the project.

Recommendation 12: That improved access should be provided to appropriate villages in the NPA, but only with the following stipulations:

- Any access only should be from the Nakai Plateau. The former road from the eastern Khamkerd District to Ban Thameung and Ban Navang should be converted to a foot path.
- Any access tracks should be designed for two-wheel tractors with trailers, and should be no wider than necessary for passage of a single tractor with

trailer (about 1.5 m). They must not be designed to allow four-wheel vehicles.

- The WMPA should conduct a survey to determine the true needs for access and develop a master plan for access tracks including necessary controls, keeping such tracks at an absolute minimum; and any track construction should conform to that plan and should be approved by the WMPA. There should be no more ad hoc construction of tracks or roads.
- There must be monitoring of tractor and other use of the tracks to assure that they are not used as conduits to exploit the biodiversity of the area. Among other things this will require that check points be established near the Plateau end of any tracks.
- Tracks in the NPA must not link with Vietnamese roads at the border.

Recommendation 13: That immediate attention be given to monitoring and control of the activities of project labor camps that threaten wildlife and NTFPs from the NPA and other project areas.

Recommendation 14: That early consideration be given to the establishment of biological research stations in the NPA, and to setting up a procedure for screening and issuing permits for research.

Recommendation 15: That further consideration be given to applying for World Heritage status for the NPA.

Recommendation 16: That the WMPA budget be revisited, particularly with regard to the fixed budget caps, and the amounts projected for patrolling and livelihood assistance to villagers.

Recommendation 17: That the Technical Assistance (TA) for the key WMPA Executive Secretariat positions be obtained without delay, and that higher priority be afforded TA for conservation/wildlife ecologist TA.

Recommendation 18: Accelerating the Resettlement Schedule.

Recommendation 19: Livestock Development.

Recommendation 20: Allocation of Physical Assets to Affected People.

Recommendation 21: The Development Potential of the XBF Basin.

Recommendation 22: That the NTPC's XBF compensation activities along the XBF include additional development initiatives as well as mitigation and asset for asset compensation.

Recommendation 23: That NTPC and GOL place more emphasis on planning how the Project Operator's Village at Gnommalat and various construction camp

facilities there could also be constructed for regional development purposes within the XBF Basin.

INTRODUCTION

The Panel, Its Role, and Previous Missions

This is the eight report of the International Environmental and Social Panel of Experts (POE or the Panel) for the Nam Theun 2 (NT2) Project in the Lao People's Democratic Republic.¹ The Panel's previous reports covered visits to Laos in January and February 1997, July 1997, January 1998, January 1999, January 2001, January 2003, and February - March, 2004. An Interim Report was prepared in March 2002, while a joint World Bank, Watershed Management and Projection Authority (WMPA), IAG and POE visit to Vietnam followed the end of the 2004 visit. Members also have represented the POE on the 2001 and 2002 World Bank logging missions and at the July 2002 Round Table Meeting on NT2 in Vientiane.

The Panel's primary responsibility is to provide independent review of, and guidance on, the treatment of environmental and social issues associated with the NT2 Project.² The Panel's findings and recommendations are submitted to the Minister of Industry and Handicrafts of the Lao P.D.R., as Chair of the NT2 Steering Committee of the GOL, which itself is a committee of the National Committee for Energy chaired by the Deputy Prime Minister. This higher level arrangement has superseded the NT2 Hydro Power Office through which the Panel reported in the past. The POE reports are also made available for distribution to the World Bank, other cooperating organizations and the public. The Panel is free to make its own determination on which environmental and social issues it should focus, and has the final say as to what is incorporated within its reports.

The Panel's area of responsibility includes the entire Nam Theun basin from the border of Vietnam to the Mekong River, the Nakai-Nam Theun National Biodiversity Conservation Area (NNT-NBCA or the NPA) which includes the NT2 project catchment area, inter-basin transfers from the Nam Theun to the Xe Bang Fai and Nam Hinboun river basins, the NT2 transmission line, and whatever enhancement and other projects are impacted upon by water releases from the Nam Theun reservoir. The Panel is also obligated to assess the extent to which planning for the NT2 project meets relevant World Bank safety net guidelines including, but not restricted to, those for environment, indigenous people, and resettlement with development.

¹ The members of the Panel of Experts are:
T.Scudder, California Institute of Technology, USA
L.M.Talbot, George Mason University, Virginia, USA

² The Terms of Reference for the POE are under Annex 1 of the First Report of the Panel, February, 1997.

Summary of Panel Activities

Since the 7th visit in February and March, 2004 Panel members have represented the POE at meetings with World Bank staff at the World Bank and elsewhere in Washington D.C., U.S. Government agencies (e.g., Treasury Department) potentially involved with the project, representatives of the NGO community, and scientific organizations. One member met with GOL and NTPC officials in Vientiane in November, 2004. Panel members have also read and commented on a series of NT2 Project reports and documents. Among the documents dealt with during 2004-5 were the evolving Concession Agreement, the Appraisal Draft Environmental Assessment and Management Plan (EAMP) of November 2004, the Appraisal Draft Social Development Plan (SDP) of November 2004, the Appraisal Draft Social and Environment Management Framework and 1st Operational Plan (SEMFOP) of October, 2004, and the Hydrological Study of Lower Xe Bang Fai of September 2004.

For this 8th Mission the Panel members arrived in Vientiane on January 3, 2005. The objectives of this visit were to participate in the review of the appraisal versions of the safeguard documentation prepared for the Government of Laos (GOL), Asian Development Bank (ADB), French International Development Agency (AFD), World Bank (WB), International Advisory Group (IAG), and the Nam Theun Power Company(NTPC); to examine developments on the Nakai Plateau which have taken place since the Panel's last visit; to examine the middle and upper portions of the Nam Xot river basin during a four day trip; to visit site preparation works (including quarries, worker camps, the NT2 dam site, Ban Nam Pan village in Khamkerd District where relatively recent immigrants to Ban Sop Hia and Ban Nam Nian on the Nakai Plateau will be resettled, the diversion channel serving the power station and the power station itself); and project affected villages along the middle and lower zones of the Xe Bang Fai.

During our visit on the Nakai Plateau, we were accompanied by the Deputy Governor of Khammouane Province, the Nakai District Governor and the Director of the Resettlement Management Unit with a meeting arranged with district staff at their headquarters in Oudomsouk. A visit was also arranged with the Provincial Governor in Thakhek and discussions were held at the Thakhek office of the Watershed Management and Project Authority.

On return to Vientiane, the POE spent January 14-22 reviewing and discussing in detail with representatives of GOL, World Bank, ADB and NTPC the current drafts of the Concession Agreement, the safeguard documents, including the SDP, SEMFOP and EAMP as well as various supporting documents and reports. Meetings were also held with the H.E. the Deputy Prime Minister, H.E. the Minister of Commerce and H.E. the Minister of Agriculture and with resident experts.

Organization of this Report

The POE's past reports were written as stand-alone documents, providing extensive analysis and descriptions of the project, its national and global significance, and

the environmental and social issues involved. Previous POE reports have also reviewed actions taken on earlier recommendations.

The Panel believes that at this stage in the development of the project it would be most useful to focus for the first time on important post-appraisal implementation issues, and on recommendations dealing with those issues, as opposed to further discussion and recommendations on planning issues which have been the main topic of previous reports. Each topic is preceded by a recommendation. The first three deal with the need for much improved coordination throughout the project area from the Vietnam border to the Mekong River and with the need for strengthening the Prime Ministerial Decrees dealing with the Nakai Protected Area (NPA) and the 20,800 ha Nakai Plateau resettlement area. They are followed by five more recommendations that involve more than one NT2 project zone. The remaining recommendations deal more specifically with the NPA and adjacent peripheral impact zones (PIZ), the Nakai Plateau and the Nam Pan irrigation project, and the Xe Bang Fai Basin.

There are two major reasons for emphasizing implementation issues. The first is that implementation activities concerning project infrastructure have already begun with the result, explained below, that the risk increases that resettlement and other social as well as environmental activities could fall seriously behind a schedule that will back up water behind the coffer dam during the 2006-2007 rainy season and water behind the dam during the 2007-2008 rainy season. Furthermore, though implementation activities have begun, a system for monitoring those activities has yet to be designed let alone commenced. Some adverse impacts have already been reported. According to NPTC's December 2004 report on Xe Bang Fai fisheries, five villages have already lost "the opportunity to fish from caves at the quarry for about two years" (2004, p20), while compensation complaints associated with clearing the Gnommalath site have already arisen.

The second reason why emphasis on implementation is both timely and overdue is because of the POE's conviction that continued emphasis on Safety Net planning has become counter productive for several reasons. First, and most important, it continues to require social and environmental staff to spend most of the time that could be spent on critical implementation activities revising safety net documents and carrying out last minute surveys and consultations. Ongoing delays have also been at the expense not just of GOL and NTPC (and the Panel is well aware that the Company has also been at fault in causing unnecessary delays) but especially of project affected people on the Plateau and in the NPA since their living standards have been adversely affected during the planning process for reasons that have world-wide applicability.

With over 100 years of combined experience on large dams in late industrializing countries, the POE is unaware of any safety net plans that are more 'state of the art' than those that have been prepared for the Nam Theun 2 Project. The same applies to the Health Impact Assessment. Moreover, the World Bank's most recent water sector policy emphasizes the need for more "high risk, high return dams." Even without that renewed emphasis on dams by the Bank's management, nowhere does Bank policy state that Resettlement Action Plans, Environment Impact Assessments and Health Impact

Assessments must be letter perfect, with every "i" dotted and every "t" crossed. Indeed such an approach is unrealistic since social, environmental and health issues, unlike many engineering ones, involve a considerable degree of uncertainty.

Aside from being inconsistent with the Bank's water sector policy, it makes no sense, for example, for the Bank to require more detailed and acceptable livelihood options for resettlers on the plateau as requested by senior Bank management in late 2004. As the Panel pointed out during 2004, risk assessment concerning implementation of the resettlement process can be carried only so far because of the uncertainties involved. What is important is that a diversified set of feasible livelihood options have been prepared in the form of a state of the art Resettlement Action Plan which includes production, consumption and sale of irrigated produce associated with 16 (counting Ban Nam Pan) resettlement villages, reservoir fisheries restricted to resettlers, current fishers and their descendents, use of the reservoir drawdown area for agriculture, fishing and grazing; livestock management; forestry controlled by the resettlers' own organization, and some wage labor with special attention paid throughout to improving (not just restoring as allowed by World Bank Guidelines) resettlement livelihoods and to vulnerable households. Just as the completion of the Pilot Village, which let us remember was a Company action not required under the Concession Agreement before Financial Close, provided more valuable knowledge for implementation than could further planning, so too can prompt post-appraisal resettlement of additional villages during the 2005-06 dry season. It is also important to keep in mind the global significance of setting aside a 4,000 km² catchment area of unique biocultural diversity and the very significant potential of turbinated waters to raise living standards along the Xe Bang Fai through flood management and dry season irrigation provided appropriate donor assistance is available.

It is time to complete an appraisal process that should have been completed at a substantially earlier date and to get on with NT2 project implementation!

Acknowledgments - Appreciation

The Panel met with GOL officials at Central, Provincial and District levels, with WB, ADB, non-governmental organizations (NGO), NTPC and other local personnel, and with villagers in the areas visited. We wish to acknowledge with gratitude the information, advice and assistance, as well as the warm welcome, that we received from everyone to whom we talked. Special thanks are due to H.E. the Minister of the Ministry of Industry and Handicrafts for approving our visit, to H.E. Dr. Thongloun Sisoulith, the Deputy Prime Minister, to the Ministers of Agriculture and Forestry and of Commerce, and to the Secretariat of the Lao National Committee for Energy (LNCE) to which we reported and especially to the Secretariat's Xaipaseuth Phomsoupha and Sychath Boutsakitirath.

The Panel also benefited from the opportunity to work closely with the IAG's David McDowell, with GOL lawyers Paul Cargill and Jane Furniss, and with LNCE assistant Kirsty Cargill. We are particularly grateful for the organization and arrangements made for us in LAO P.D.R. by the Secretariat of the Lao Committee for

Energy, by Phalim Daravong, by Bernard Tribollet, Peter Goldston, Loy Chansavath, Jean Foerster, Christ Flint, François Obein and the staff of the Company, the RMU's Hoy Phomvisouk and Keoula Souliyadeth, and the Head Contractor and his staff; by the Governor of Nakai District who received our mission on the Nakai Plateau; and the Governor and Deputy Governor of Khammouane Province who received us in Thakek; by local district and village officials who enabled the Panel to make village visits in Nongbok and Xe Bang Fai Districts; and by village residents who met with us throughout the project area.

Thanks to these fine arrangements it was possible for the Panel to see and accomplish so much in a short time.

1. OVERVIEW

1.1 The POE Views on NT2

The Panel continues to reiterate its strong support for the NT2 Project³. As the Panel has noted previously, the NT2 Project sets new high standards for resettlement and environmental issues and the POE believes that if it is executed as planned NT2 will be a model of global significance. Moreover, we remain convinced that if the NT2 Project is not carried out as planned, the effect will be to increase rather than decrease rural poverty, and to seriously degrade the globally recognized biodiversity values of the NNT NBCA.

1.2 Recommendation 1: That a much more coordinated NT2 Project approach from the Vietnam border to the Mekong Border is required by GOL Central, Provincial and District officials, NTPC, International Financial Institutions and others to realize the major development benefits of the NT2 Project.

The NT2 Project has evolved over the years from a hydro to a multipurpose project with a significant potential for multiplier effects at the national, provincial and district levels. Realization of that potential will require the type of coordination **for the entire project area** that was recommended in the October 2003 World Bank Scoping Mission for the NT2 Rural Livelihoods Project within the Xe Bang Fai basin. That will require a yet to be formalized institutional mechanism with more authority and influence than the NT2 Steering Committee and a more specific NT2 project focus than the National Committee for Energy. In its seventh report the POE recommended a similar approach for the Xe Bang Fai basin as a 'Pilot Project' for the utilization of other river basins in Lao P.D.R. The POE is now extending that recommendation to the entire NT2 Project area.

³ Description and background information on the NT2 Project are covered in previous POE reports and will not be reiterated here.

1.3 Recommendation 2: The Ministry of Agriculture, under the supervision of H.E the Deputy Prime Minister, should become more actively involved in the NT2 Project.

Irrigated agriculture for paddy and higher value crops, livestock rearing, forestry and fisheries have become key project elements as the NT2 has evolved from a unipurpose project to a multipurpose one. That evolution now requires the more active involvement of the Ministry of Agriculture at the Central, Provincial and District Levels. The POE was gratified to learn during their meeting with H.E. the Deputy Prime Minister that a first step in this direction had been made by appointing the Minister of Agriculture as the fifth member of the National Committee for Energy.

1.4 Recommendation 3: Clarification and Strengthening of Decree 193/PM of December 29, 2000, of Supplemental Decree 37/PM of April 12, 2002 and of Regulation 484/KM. GOL should specify in more detail how the intent of the first Decree to protect the NPA is to be ensured while both decrees and Regulation 484 should specify in more detail the resources and activities that have been reserved for the use of those resettled or otherwise compensated through the Nakai Plateau Village Forestry Association and the reservoir fisheries. It is especially important for the Department of Forestry to play a more responsible development role by acting promptly on RMU requests for permits relating to resettler use of timber and the BPKP sawmill.

It is the intent of Decree 193/PM to conserve the NPA and to develop in an environmentally sustainable fashion the livelihoods of current residents and their descendents. To protect those intentions the POE recommends that the decree should explicitly prohibit commercial mining and the commercial felling of timber within the NPA. Similarly since it is the intent of both decrees and Regulation 484 to allocate the use of the resources within the 20,800 ha resettlement area to the existing impacted villages and villagers, the POE recommends that those legal instruments should specify that all use of the land and its natural resources within the 20,800 hectares should be reserved for the use of all persons and their descendents covered under the Social Development Plan including use of the land for village settlement, agriculture, rearing of livestock, and use of forest products. Furthermore, the POE recommends that clarification of Decree 193/PM should emphasize that the reservoir fishery and the processing and trade of fish and aquatic products should be reserved to those living on the Nakai Plateau as specified in Chapter 24 of the Social Development Plan.

Such specification of PM Decrees 193 and 37 and Regulation 484 is required to end the types of activities by outside interests that have already commenced on the Nakai Plateau to take away from, or restrict the rights of, resettling villages and other project affected people covered under the Social Development Plan and Decrees 193 and 37 and Regulation 484 to utilize the resources intended to promote their welfare under those legal instruments. If current efforts continue within the 20,800 resettlement zone, for example, to reserve use of salvage timber and timber cut while clearing village resettlement sites and access roads for the benefit of outside interests, a precedent will

have been set for infringing on other resource rights, including rights to fishing, fish processing and trading, that have been allocated to Nakai Plateau residents under the Social Development Plan. In particular the POE urges the Department of Forestry to play a more constructive role in facilitating the access of the resettling villages to all forest resources within the 20,800 ha resettlement zone as well as their purchase of the BPKP sawmill.

1.5 Recommendation 4: That NTPC, cooperating with the RC, the RMU, the WMPA, and the Head Contractor and Sub-Contractors, should develop an environmental, health and social monitoring strategy and system applicable to all project areas that can become operative as soon as possible. All monitoring results should be made available to the POE throughout the pre-COD and Concession periods.

Project implementation has begun. Yet aside from monitoring household livelihoods in the Pilot Village, systematic monitoring of project impacts on environmental indicators and on people has yet to begin. Such monitoring requires adequate baseline data, trained personnel, and a sophisticated data acquisition and management system. Granted the appropriate emphasis in NT2 project documents on an adaptive management approach, the critically important monitoring component also requires an adequate budget.

Project documents contain frequent reference to the importance of monitoring. The POE understands that both GOL and the lenders/NTPC will have their own independent monitoring systems. That is appropriate. What is not clear from project documents, however, is what agency or agencies are responsible for developing, as opposed to using, the necessary environmental, health and social monitoring system or systems for the NPA, the Plateau resettlement program, and the XBF. Nor is it clear how many monitoring systems there will be and whether or not adequate funding has been provided for their implementation.

Clarification is needed on two important topics. The first concerns the extent to which environmental, health and social topics can be combined in a single system or at most two systems (environmental and health/social) that can be used in all project areas. At the moment it is assumed, for example, that the different goals of the Nakai Plateau livelihood improvement program and the XBF livelihood restoration program will require different systems. Perhaps so; however, the POE believes that a case can also be made for a single system in which reliance is placed on a carefully stratified sample of households and villages which are linked to and compared with the 1998 socio-economic survey of the Nakai Plateau and the 2001 socio-economic survey of the XBF, with the same households and villages monitored once or twice a year on a long term basis.

Current thinking within NTPC is based on monitoring 100 percent of the more than 1000 households to be resettled from the Nakai Plateau reservoir basin. The POE believes that insufficient attention has been paid to the data management magnitude of such a monitoring program, including prompt analysis and prompt presentation of policy

relevant conclusions. Moreover, existing baseline surveys against which monitoring results can be compared are not 100 percent. The 1998 socio-economic survey of the Nakai Plateau, for example, is based on a 28 percent sample of households, while the 2001 Socio-economic survey of the XBF basin was based on a sample of 1,680 households. As for plans to carry out a new 100 percent baseline survey of Nakai Plateau households, they are unrealistic since results would be biased since existing living standards already have been adversely affected during the long NT2 planning process.

The second topic on which clarification is needed concerns the yet to be development, budgeting and staffing of an appropriate data acquisition and management system. Rather than design a totally new system, the POE suggests that GOL and NTPC consider modifying Hunting Technical Services' January 1998 *A Guide to the establishment of an Acquisition and Resettlement Management System* (ARMS) that was prepared with the technical assistance of John Taylor for the Lesotho Highlands Water Project. As summarized in the HTS report, ARMS is "a Management Information System designed for any project that requires the acquisition of land, the compensation and resettlement of people and the monitoring of social and environmental parameters... An ARMS is not a new software package; rather, it is an application for a suite of software packages that already exist" and that include a Relational Database Management System for managing non-spatial data bases, a Geographic Information System (GIS) that incorporates all spatial data, and a Project Management System "which is used for programme planning and monitoring and the allocation of resources and budgets." Further information from the HTS report's one page summary is presented in Annex 2.

1.6 Recommendation 5: That priority be given to completing village land use planning and allocation in the PIZ, NPA, and Nakai Plateau and XBF zones

According to the authors of NTPC's September 20, 2004 "Ground-Based Inventory of Human Activity in the Peripheral Impact Zones of Nakai-Nam Theun National Protected Area", land allocation gives PIZ villages increasing confidence to carry out enforcement activities against outsiders and to serve as NPA guardian villages. The POE assumes that the same confidence would apply to NPA, Nakai Plateau, and XBF villages once land allocation has been completed.

1.7 Recommendation 6: NTPC, cooperating with the RC, the RMU, and the appropriate GOL officials in Khammouane and Bolikhamxay Provinces, should advertise for an NGO or other appropriate agency to consult and work with project affected Vietic I and II communities as soon as possible after Financial Close for the purpose of better understanding their current status, identifying their relocation preferences and improving their livelihoods. The POE further recommends that Vietic households previously consolidated in Na Kadok, Na Thone and Thameung villages must have the option, if they so wish, of establishing a separate Vietic village, with school, in the middle or upper Nam Xot Basin.

The first part of this recommendation involves two Vietic I and II populations. The first are those Vietic households that GOL officials moved to the PIZ villages of Na

Kadok and Na Thone in 1999 and 2001 as well as Vietic households moved to Ban Thameung in the NPA in the 1970s. Currently approximately 44 households live in the two PIZ villages in the Nam Kata basin. Yet to be allocated land for farming and dependent on wage labor for income, their living standards, including a significant amount of opium addiction, are unsatisfactory. Over 30 households live in Thameung which is adjacent to the Nam Xot. Their living standards are better, with a number of families cultivating rice in an outlying hamlet about an hour's boat trip further up the Nam Xot.

Though the Vietic households in the three villages were resettled from different spirit territories and consider themselves culturally distinct from their Vietic neighbors, some visitation and some intermarriage occurs between such households all of whom originally came from the middle and upper Nam Xot basin. One purpose of the POE's Nam Xot field trip was to visit that area, and especially the spirit territory and old village sites of the Vietic-speaking Atel, some of whom have already begun establishing hamlets and fields upriver from Thameung. In reply to POE questions, one Atel man, who was a member of the village militia, stated a desire to return to his old spirit territory provided such social services as a school were present.

To date consultations among such Vietic households have either been too short or unsatisfactory due to the presence of other persons who view Vietic households unfavorably. That is why the POE agrees with the World Bank recommendation that an experienced NGO or other appropriate agency be contracted to carry out an extended period of consultation with these households, one purpose of which would be to explore the option of founding a Vietic village upstream from Thameung on the Nam Xot. Should enough households be interested in such an option, the POE identified several sites along the middle and upper Nam Xot which could accommodate a large enough village to justify a school and other social services. Not only did James Chamberlain consider this a feasible option, but he also thought that investigation of possible sites could be combined with an detoxification program for opium addicts who could be isolated at such a site during the necessary several week period of treatment.

The second Vietic population involves a yet to be determined number of Vietic II Ahoe and perhaps other Vietic households living in several Nakai Plateau villages that must resettle from the reservoir basin no later than April 2007. According to 1996 data, there were 29 such households in Sop Hia but only 15 in 2004. Though what happened to the others is unknown, some presumably moved to other villages such as Ban Thalang, Ban Sop On and Ban Nakai Tai where smaller numbers of Ahoe households are known to live.

As with the first Vietic population, there is a need for an extended period of consultation away from the influence of other ethnic groups and from that of government officials. That would include further and prolonged discussion of resettlement and livelihood options under the RAP and the EMDP. Further discussion is needed, for example, because it is unclear whether or not the stated preference of some Vietic households in Sop Hia to move to Nam Pan near Lak Sao have been unduly influenced

by the dominant immigrant households in Sop Hia who have opted to return to their district of origin in Bolikhamxay Province.

There are a number of options for establishing a separate Vietic village on the Nakai Plateau that should include a school if possible. According to the SDP, such a village is being planned in the vicinity of Ban Thalang. Another option would be to allow resettlement near the eastern end of Nam Malou where fishing could provide an important source of food and income. Another would be to allow the Ahoe to return to their spirit territory and old village site in the NNT-PHP corridor. In that case, the village should be designed and implemented as a guardian village.

1.8 Recommendation 7: That participatory family planning in the context of health and livelihood improvements must be a NT2 priority issue throughout the project area.

As stated in the POE's 2003 report "A rate of population increase in excess of 2.2 percent per annum poses a major threat not only to NPA biodiversity and village livelihoods but also to the Social Development Plan for the Nakai Plateau and the Xe Bang Fai river basin. Family planning in the broader context of health and livelihood improvements is essential."

1.9 Recommendation 8: As implementation proceeds, it is essential to supplement the recruitment of NT2 project officials from other government agencies with recruitment and training of recent university graduates in relevant fields and from the private sector, NGOs and other agencies.

The critical issue of capacity has been emphasized in each POE report. In this report we repeat from the POE's 2003 report, with some modification, two ways in which capacity could be built by drawing more on the resources of the University and NGOs currently registered in Lao P.D.R. and by drawing on Lao students or professionals learning or working in other countries. The first way is to develop the capacity of a cadre of newly recruited government officials to deal with important environmental and social issues associated with such major development projects as hydro. Such a cadre would be available not only to staff such institutions as the NT2 Resettlement Management Unit and the WMPA but also to deal with environmental and social issues associated with future hydro projects.

The second way, which is detailed in the POE's 2003 report, is to train students for carrying out biodiversity and socio-cultural surveys in the project areas which are needed for providing a better understanding, for example, of the cultures, and especially the indigenous knowledge and livelihood systems, of the 31 NPA villages - knowledge that is essential for participatory conservation purposes and for participatory stabilization and improvement of livelihood systems and selection of target villages and village catchment units during the phased development of those villages as well as for development purposes on the Nakai Plateau and along the Xe Bang Fai.

In repeating this recommendation from the POE's 2003 report, it is important to emphasize that lack of capacity is likely to threaten NT2 implementation activities more than any other factor. Several global problems have been identified with recruiting additional full-time and part-time staff only from other government agencies. First, they create jealousy between the project agency and the agencies from which they are recruited, jealousies which interfere with the necessary inter-department cooperation for realizing project goals and for the eventual handing over of project assets. Second, such recruitment only partially provides for the necessary capacity. And third the morale of such recruits tends to be low since they worry that their secondment may interfere with subsequent advancement in their parent agency.

To acquire the necessary capacity, the POE recommended two approaches in its 2003 report, modification of which follow:

- That special GOL / Company / Donor / NGO attention should be paid to training a cadre of recent university graduates as well as others recruited from the private sector, NGOs and other non-government agencies as specialists to deal with the environmental and social issues associated with NT2 and other forthcoming hydro and major development projects, and who become permanent staff of appropriate government agencies.
- That appropriate Lao students in their final year at the various faculties of the National University of Laos and neighboring universities in Thailand should be selected to do their thesis projects on biodiversity and socio-cultural topics relevant to the conservation and development of the NPA and the development of the Nakai Plateau and the Xe Bang Fai basin.

1.10 Recommendation 9: Create an integrated master plan for development of ecotourism.

There is very great potential for development of ecotourism which can bring substantial benefits to the people and the biodiversity of the NPA as well as the greater NT2 project area and surroundings. However, tourism in general has been relatively little developed in Lao P.D.R.. Experience in other developing countries has shown that if ecotourism is unplanned it may develop in ways that do not benefit the local economy, and on the contrary, degrade the local culture, environment, and the ecotourist experience itself. Accordingly, the POE recommends that assistance be sought to develop a comprehensive ecotourism plan for the NPA and surrounding areas. Before the plan is available care must be taken to assure that any ad hoc ecotourism that takes place does not adversely impact the culture or environment.

Such an integrated ecotourism plan should be based as much as possible on community based nature tourism (discussed in the SEMFOP, section 5.4.8.1). It might include access through the river cave from the upper Nam Himboun Basin through the karst range, then up the Phou Ark escarpment to the Nakai Plateau, then to the Nakai Reservoir and up into the NPA. One possibility for a tourist focus that also benefit wildlife would be to create mineral "salt licks" on the watershed side of the reservoir. These could replace the 8 mineral licks, currently used by elephants and other animals,

that will be inundated by the reservoir. In Africa and elsewhere artificial salt licks have proven to be remarkably effective tourist destinations. Viewing and sometimes lodging facilities have been constructed overlooking the licks where tourists can watch the elephants and other wildlife that come to the licks. At night flood lights illuminate the animals that apparently are not bothered by them.

2. THE NPA (NNT NBCA)

2.1 Biodiversity and Conservation Issues

2.1.1. Introduction

In its previous reports the POE has described the NNT NBCA (hereafter called NPA) and its globally significant biodiversity and cultural diversity. As the POE's first hand knowledge of the area has expanded with each new field visit it has become increasingly impressed with the outstanding international importance of the area's unique biodiversity values, along with the magnitude of the threats they face. While systematic surveys or studies of the NPA's biodiversity have yet to be undertaken, recognition of the potential amount and importance of that biodiversity has been significantly expanded by the recent wildlife surveys of the Nam Et-Phou Louey NBCAs of northern Laos undertaken by the Wildlife Conservation Society. With the use of camera traps (which operate both night and day) these surveys have revealed a remarkably rich and varied wild fauna that previously was largely unknown and unsuspected. It is anticipated that the application of the same techniques to the NPA may equally dramatically expand the known great biodiversity values of the area.

Conservation of the biodiversity of the NPA and protection and rehabilitation of forest cover in the watershed have remained a fundamental objective of the NT2 Project and of potential World Bank involvement in it. This is in part because protection of the NPA is an explicit offset for the area to be inundated under the World Bank's OP4.04 requirements.

Last year's POE report stated that "on the basis of discussions with some of the GOL officials involved with the NT2, it appears to the POE that not all the GOL personnel share the conservation goals for the NPA." This serious concern has been heightened by discussions during this year's POE mission, and as discussed below. (Section 2.1.2) inappropriate development activities appear to represent the greatest threat to the integrity of the NPA and the achievement of the fundamental conservation goals of NT2.

Threats to conservation of the NPA come from inappropriate, largely commercial, exploitation of its biodiversity, development activities that are inconsistent with conservation, and uncontrolled increase of the human population within the NPA. The major forms of current biodiversity exploitation are transborder poaching and trade in wildlife and other NTFPs, and similar incursions across the NPA borders within Laos, particularly on the northwest border near the Nam Kata. Additional threats are the

potential for serious exploitation from uncontrolled access roads or tracks, and the demands of the project labor force. The planned labor camps may house some 3,000 project workers and up to four times as many camp followers representing a major market for wildlife and NTFPs that will be extremely hard to control. The process has already started as the POE has already received reports that the UXO clearance crews were buying wildlife from villages on the plateau.

2.1.2 Recommendation 10: That Prime Ministerial Decree #193 of 2000, and Prime Ministerial Decree #25 of 2001, be strengthened by the addition of a strong, unambiguous statement of the conservation vision for the NPA.

Recommendation 11: To ensure that conservation is the primary priority, that there be dialogue between the senior GOL ministers who understand the conservation priorities for the NPA, and the Board of Governors of the WMPA, especially those who feel that “development” is the higher priority.

The central importance of conservation of the NPA is indicated in the Prime Minister’s Decrees 193 of 2000 which established the NPA, and 25 of 2001 which also established the Watershed Management and Protection Authority (WMPA).

In the Preface to the October 2004 SEMFOP, H.E. the Minister of Agriculture and Forestry, in his capacity as Chairman of the WMPA Board of Governors, stated that, “the purpose of the SEMFOP is to develop a management framework and operational plans to effectively protect the watershed, and its forests, habitats, wildlife and biodiversity values, and at the same time, safeguard the wellbeing, traditional livelihoods and culture of its human inhabitants.” And the SEMFOP itself, particularly in the Vision Statement (page 2), emphasizes the conservation objectives and need for development that is consistent with conservation.

However, in spite of this it was clear to the POE that this vision still was not shared by all GOL officials, even within the Board of Governors of the WMPA. There is no doubt that meeting development needs of the inhabitants of the NPA is an essential objective of the management of the NPA, but there is equally no doubt that the development involved must be consistent with meeting the area’s conservation objectives. Consequently “development” as applied to the NPA will not be the same as “development” applied to more urbanized and accessible parts of Lao P.D.R. The Panel believes that this distinction is not necessarily recognized by all who are involved, that consequently there may be efforts to proceed with inappropriate development, and that such activities appear to represent the greatest threat to the integrity of the NPA and achievement of the fundamental conservation goals of NT2.

To forestall this eventuality the POE strongly recommends (1) that the Prime Ministerial Decree 193 of 2000, and Prime Ministerial Decree 25 of 2001, be amended to include a strong, unambiguous statement of the conservation vision for the NPA, and (2) that there be dialogue between the senior GOL ministers who understand the conservation priorities for the NPA, and the Board of Governors of the WMPA,

especially those who feel that “development” is the higher priority.

2.1.3 Recommendation 12: That improved access should be provided to appropriate villages in the NPA (NNT NBCA), but only with the following stipulations:

- **Any access only should be from the Nakai Plateau. The former road from the eastern Khamkerd District to Ban Thameung and Ban Navang should be converted to a foot path.**
- **Any access tracks should be designed for two -wheel tractors with trailers, and should be no wider than necessary for passage of a single tractor with trailer (about 1.5 m). They must not be designed to allow four-wheel vehicles.**
- **The WMPA should conduct a survey to determine the true needs for access and develop a master plan for access tracks including necessary controls, keeping such tracks at an absolute minimum; and any track construction should conform to that plan and should be approved by the WMPA. There should be no more ad hoc construction of tracks or roads.**
- **There must be monitoring of tractor and other use of the tracks to assure that they are not used as conduits to exploit the biodiversity of the area. Among other things this will require that check points be established near the Plateau end of any tracks.**
- **Tracks in the NNT NBCA must not link with Vietnamese roads at the border.**

The issue of access was discussed in detail in POE Reports #6 and 7. Even though access is considered in detail in the SEMFOP, some ambiguity remains, particularly about the dimensions and routes of access tracks and the maintenance of the road to Ban Navang, and the issue remains contentious. Since the WMPA is now in operation, access is one of the early issues with which it must deal. As a consequence the Panel considers that it is necessary to revisit the issue here in the context of project implementation.

As the panel noted in Report #7, it is clear that the truly global biodiversity value of the NPA is due to the lack of access from the outside, coupled with a low human population with a relatively light impact on the biota of the area—which itself is largely due to the lack of easy access. Study after study has shown that the greatest and most globally widespread single threat to the survival of biodiversity is access, and that roads allowing vehicular travel are by far the most dangerous form of that access. This is a worldwide phenomenon, operating in industrialized nations as well as developing ones, although the impacts are generally much greater in developing nations where legal protections for biodiversity, and the means to enforce them, tend to be less rigorous.

Consequently, unless it is extraordinarily well done, provision of access from outside can and almost surely will lead to the demise of the globally important biodiversity values of the NPA and undermine a key component of the rationale for the NT2. As the Panel recommended previously, there must be a careful participatory survey/study to determine what access is really needed. Then, on the basis of the results, a comprehensive, integrated access plan for the entire NPA must be developed. Access

tracks should be kept to an absolute minimum. Outside access should only be from the Nakai Plateau and accordingly the road from the eastern Khamkerd District into the Nam Xot valley at Ban Thameung and thence to Ban Navang should be converted to a footpath. Effective controls over the use of the access tracks for access to and export of biodiversity from the watershed must be an essential part of the access plan. The plan must be completed and the controls put in place before any further access routes are constructed. There must be monitoring of tractor and other use of the tracks to assure that they are not used as conduits to exploit the biodiversity of the area. Among other things this will require that check points be established near the Plateau end of any tracks, where traffic may be recorded and, as in check points elsewhere in the country, where loads may be inspected. Until the plan and controls are in place there should be no further ad hoc construction of access roads or tracks.

The SEMFOP (section 2.1.6.3) specifies the width of access tracks into and within the NPA at 2.5 meters. The Panel strongly objects to this width. This specification apparently is based on the width needed for two hand tractors to pass. A high volume of traffic is not anticipated nor should it be, and there is almost always room for a tractor to pull off a narrower track for passing. A track of 2.5 m. width would allow access to trucks. Such a width is totally unnecessary for two wheel tractors with trailers. The maximum width of two wheeled tractors measured by the Panel was under one meter, and that of the trailers about 1.2 m. The Panel recommends a width not to exceed 1.5 m. but with wider places where topography requires it. This would be easily adequate for tractors and would have the additional benefit of requiring far less labor to construct.

2.1.4 Recommendation 13: That immediate attention be given to monitoring and control of the activities of project labor camps that threaten wildlife and NTFPs from the NPA and other project areas.

It is anticipated that two to three thousand wage-earning workers will be required during the project construction. Most of these will be housed in labor camps. Except for the camp for 200 to be located at the dam site, the camps will also need to accommodate camp followers (workers families, traders, restaurateurs, bar-owners, shop keepers and providers of other services) whose numbers may be three to four times that of the project laborers. The labor camp for other dam workers on route 8B near Ban Phonkeo might therefore house well over 2,000 people in relatively close proximity to the NPA (both the corridor and the main watershed). Unless they are very effectively regulated these labor camps represent a major threat to the biodiversity both of the NPA and the rest of the project area (including areas to be reserved for the resettlers on the plateau). In addition to the hunting and NTFP gathering they conduct themselves, they represent a vast market for purchasing wildlife and NTFPs from villagers within and without the project area, providing a major incentive for intensive hunting and gathering. This process has already started and the Panel was told of villagers on the plateau selling wildlife to the staff of the UXO clearance contractors who were camped nearby.

The Panel is pleased that the issue is emphasized in the SEMFOP (section 4.3.1.10). However, this sudden and massive influx of people will totally overwhelm the

limited monitoring and enforcement capabilities of the WMPA and the Districts unless very effective planning and preparation is carried out very quickly. The need is urgent because at least some of the camps will be set up during the present dry season, and a number of workers are already on the various construction sites.

2.1.5 Recommendation 14: That early consideration be given to the establishment of biological research stations in the NPA, and to setting up a procedure for screening and issuing permits for research.

As noted in the two previous reports, the Panel recommends that one or more small field stations be established for conservation and research into the NPA's biodiversity. Several villages have already suggested or requested such stations. As noted previously, the villages could construct the station which could consist of simple shelter huts but could be expanded later if warranted. Scientists who wished to conduct research on the area's biodiversity could stay at the station, paying a fee to the village which could also provide food, other services and field help for suitable fees.

The POE noted with pleasure that the WMPA is exploring the possibility of having the Wildlife Conservation Society undertake a biodiversity survey of the NPA. When this survey is carried out it might provide the initial impetus for starting the establishment of field stations.

Several researchers, both biologists and social scientists, told the Panel of their difficulties in obtaining permits to conduct research in the NPA. Some areas of biological and sociological research can assist the WMPA to carry out its mission. Also, research that provides opportunities for training of Lao and facilitating their field experience can build needed Lao research capacity. While there may be some existing procedures for issuing permission for research in the NPA, it appears that they are not very transparent. Consequently the Panel recommends that a standard procedure for screening and, as warranted, issuing permits for NPA research be established and publicized.

2.1.6 Recommendation 15: That further consideration be given to applying for World Heritage status for the NPA.

From the start the POE has consistently recommended that GOL apply for World Heritage status for the NPA. The Panel continues to believe that the NPA is of such great global importance that it deserves such status, and that such status can be of significant benefit to the LAO P.D.R.

2.1.7 Recommendation 16: That the WMPA budget be revisited, particularly with regard to the fixed budget caps, and the amounts projected for patrolling and livelihood assistance to villagers.

The Concession Agreement specifies fixed limits to Company funding of SEMFOP activities for the first five years, including providing a 15% cap on shifting funds from one category to another. The Panel feels that some limitations are needed, but

agrees with the IAG recommendations on budgetary matters including the recommendation that fixed caps are unrealistic for such a long period when the organization is just getting started, and when a large degree of adaptive management will be needed.

2.1.8 Recommendation 17: That the Technical Assistance (TA) for the key WMPA Executive Secretariat positions be obtained without delay, and that higher priority be given to the conservation/wildlife ecologist TA.

While the key WMPA Executive Secretariat leadership positions have been assigned, the Panel understands that the TAs for them are not to be activated until after financial closure. The Panel believes that it is very important to have the TAs in place as early as possible in the development of the WMPA. Further, in view of the key importance of conservation, the Panel believes that a higher priority should be afforded the TA position for conservation issues.

2.2 Development Issues

The POE dealt at length with NPA development issues in its 2003 and 2004 reports. All four recommendations in the 2003 report remain pertinent. They dealt with the critical need for participatory family planning, aggregating villages into catchment management units, and recognizing the importance of a diversified livelihood system for NPA villages that includes rotational shifting cultivation, irrigated rice cultivation and river bank gardens, livestock management, and sustainable gathering of non timber forest products, fishing and hunting.

Looking to the future the POE also sees potential in such additional activities as hosting research stations and participating in programs of ecotourism. The POE is impressed with the two main objectives of the proposed Ban Maka research station on the upper Nam Theun as outlined in Dr. Nick Enfield's three 2004 reports. They are "facilitating ethnically sensitive community development in the NT2 NBCA" and "Gathering data on language, livelihood and ethnicity in the NT2 NBCA."

3. THE NAKAI PLATEAU

3.1 Introduction

In addition to Recommendation 3 (Section 1.4) on the need to strengthen the Prime Minister's Decree 37 for the benefit of the resettling villagers, two other recommendations apply to the Nakai Plateau.

3.2 Recommendation 18: That the Company working with the RC and the RMU accelerate the resettlement planning and implementation of Group 1 and Group 2 villages so as to reduce the risk of resettlement becoming a crash program to physically remove all villages before April 2007.

The POE wishes to emphasize its concern about the resettlement program falling behind the NT2 project construction schedule. The resettlement time table and list of still to be resettled villages in the Appraisal Draft of the SDP has been replaced by the time table and list in the River Hydraulics Studies on the backwater effects of the NT2 coffer dam. According to that report the eight most affected villages need be resettled prior to the 2006 wet season, that is by June 2006. Due to the backwater effect of construction on the main dam there is “a risk of flooding in May” 2007 so that the remaining villages must be resettled no later than April 2007.

The above schedule means that there is no longer a one year cushion before the commencement of commercial operations should resettlement during the 2005-April 2007 period fall behind schedule. The POE discussed this situation with the Director of the Company’s Social and Environmental Department who outlined an impressive set of activities for getting on with resettlement planning and implementation. These included locating essential NTPC staff on the Nakai Plateau so that they could get on with monitoring and could directly supervise the implementation of access roads and village infrastructure during the 2005-2006 dry season. Meanwhile TOR have been advertised for consultants to design resettlement villages during the 2005 rainy season, with the Social and Environmental Department supervising all such work as a management agency.

Nonetheless, the POE’s concern remains. One example of that concern relates to planning for the Ban Nam Pan irrigation project in Bolikhamxay Province that is required for resettling the majority of households in Ban Sop Hia which will be most affected by the backwater effect of the coffer dam. In that case the Company and the GOL have yet to agree on cost sharing for the irrigation component due to the government’s desire for a larger scheme which will better incorporate the host population as well as the descendents of both the hosts and the resettlers. The POE agrees with the Government’s view since World Bank guidelines require incorporation of host populations within resettlement plans. Furthermore the POE was informed that sufficient money for the larger project exists within the Company’s Resettlement Budget. In the meanwhile the necessary improvement of the access road to Ban Nam Pan and site preparations have yet to begin aside from some preliminary surveys.

While the first example illustrates a tendency of the Company to economize more on social and environmental commitments than construction ones, the second example involves increasing the number of households that must be resettled before June, 2006. Now that priority must be given to villages most at risk from the coffer dam’s backwater effect, Nam Nian with 28 affected households could be resettled after June 2006 while Ban Done with 127 households must be resettled before than date. A third example relates to the fact that the Company has yet to advertise for a new Manager for the Social and Resettlement Division, while current staff including the Department Director (who badly needs, in the opinion of the POE, a full-time assistant) are over-worked due to the necessity to combine safety net and implementation activities. A fourth example is the delayed completion of resettlement site soil surveys in spite of previous Panel recommendations as to their importance.

3.3. Recommendation 19: That further attention be paid to livestock management as a component of the resettlement livelihood models and the RAP.

The POE agrees with the emphasis in AFD's IRAM report that more emphasis need be placed on livestock management within the livelihood models and the RAP and commends the Company and the RMU for responding favorably to that suggestion. Australia's International Centre for Tropical Agriculture (CIAT) will be completing its Forages and Livestock Systems Project in June 2005, the purpose of which is to allow "households to run more livestock that can also be housed close to or in the village where their security, conditioning and health can be better managed." (CIAT, September 2004).

The POE suggests that NTPC and the RMU could benefit from the results of this project by contacting its director, Dr. Peter Horne. In response to POE queries, Dr. Horne emphasized that intensive forage production such as is anticipated within the RAP is a totally new concept in Lao P.D.R. that needs careful handling. Disease control, which Dr. Horne said was a major concern of farmers, provides one entry point since it needs more intensive feeding and control. The best approach, in Horne's opinion, is to start with a small household enclosed plot of say 500 to 1,000 square meters in which household members are encouraged to keep fodder cover well cropped – to within a inch of the soil as opposed to the temptation to allow it to mature. After about a year it is important for farmers to discuss their experiences in a community forum after which, if interest is sufficiently high, more emphasis can be placed on such procedures as targeting selected animals for draft purposes or sale, or enlarging household plots.

As for grazing the reservoir drawdown area, Horne believes that emphasis should be on indigenous grasses preceded by a survey of existing grasses within the floodplain of the future reservoir by a botanist such as Bryan Hacker who has surveyed grasses in Savannakhet. Another approach involves ponded pastures behind a small weir build in reservoir inlets which could be combined with fish production. In all such cases introduced grasses should be avoided due to the risk of their becoming established in cropland as weeds. As for grazing under forest cover, carrying capacities are much lower so that the key issue there is managing livestock numbers.

3.2 Recommendation 20: That first priority regarding such existing structures as the BPKP sawmill on the Nakai Plateau and such future structures as ice plants is their ownership by resettler institutions.

This recommendation is designed to stop outside private sector interests from obtaining control of Nakai Plateau processing and other assets as has already occurred in the case of the BPKP sawmill and could well include the two small ice plants mentioned in the SDP for serving the reservoir fishery. To reduce such risks, where training in asset use and management is involved, the POE recommends that outsiders be given management contracts as opposed to being partners in joint ventures, as recommended in the POE's March 2004 report.

4. THE XE BANG FAI RIVER BASIN

4.1 Recommendation 21: That NTPC emphasize more the potential of the NT2 Project for the integrated development of the XBF basin in the form of irrigated dry season agriculture and livestock management, and flood management in the lower XBF Zone.

The Xe Bang Fai Basin has significant development potential. This potential has been enhanced by the completion of Route 12 linking Vietnam, Lao P.D.R and Thailand and will be further enhanced in terms of the increased availability of electricity and dry season turbined water that will follow the completion of the NT2 Project. GOL understands this potential and has requested donor assistance in livelihood development throughout the basin. The POE agrees with the World Bank's Rural Livelihoods' Scoping Mission that there is a need now for "a comprehensive review of government programs and projects, including those supported by donors/NGOs to verify geographical coverage, types of support provided and mechanisms for supporting village based development activities."

Existing donor-supported projects include ADB's decentralized irrigation project for strengthening local water user associations on the left bank of the XBF, the World Bank's Southern Provinces Electrification Project for on and off-grid facilities (and which will complete the electrification of all XBF villages during the next three years), CARE's EU-funded Food Security Project, SIDA's Lao-Swedish Roads Sector Project II, and UNDP's Governance and Public Administration Reform Project as well as such forthcoming projects as the World Bank's Rural Livelihood Project the focus of which has been extended to include both banks of the XBF.

NTPC adds a sentence in several places in Volume 3 of the SDP that it will cooperate with GOL and the donor community in XBF basin development, but nowhere are the benefits that the NT2 Project could provide summarized. Nor has the Company summarized in one place the surveys that it has financed (see here the POE's March 2004 report) and its shift from a reactive to a proactive strategy.

During the dry season the NT2 Project's actual contribution will be the provision of additional electricity and increased dry season flows that can play a vital role in increasing the area under rice and higher value crops as well as reducing pumping costs. The potential is highest in the upper and lower XBF zones. In the upper zone that potential is centered around lower cost gravity flow dry and wet season irrigation. Turbined flows in the 27 km canal provide the opportunity to bring into full production and extend the Gnommalath Community Irrigation Project. Release of turbined flows from the regulating reservoir into the Nam Kathang/Nam Gnom could significantly improve the livelihood of up to 27 villages.

In the lower XBF zone the Project could play a vital role in planning and implementing (as a required compensation and development measure) an improved flood management system that could bring dry season irrigation to another 5,000 hectares. Such

a system would emphasize more living with, and benefiting from, floods than GOL's attempts, largely since the 1990s, to control floods with levees and flood gates. What would be needed would be a master plan that would redesign and rehabilitate existing flood gates and locate sites for new ones whose function would be to both better manage wet season flooding and increase the availability of water on the flood plain for dry season irrigation. By necessity both inflows and outflows must be managed, while master planning flood gate placement and use need also take into consideration the need for migratory fish to enter the flood plain for breeding purposes and to return with the next generation to the XBF and the Mekong – no easy matter to integrate with water storage for dry season irrigation.

Dry season irrigation, of course, is not problem free. Villagers along the length of the XBF, however, have emphasized its importance to the POE because of higher yields and the drought and flood risks associated with rainy season cultivation. In Nam Kham village, for example, the POE was told during a village meeting how living standards had risen due to electrification, installation of electric pumps and dry season irrigation. Whereas we were told that 90 percent of households were poor 10 years ago, today only 3 of 244 families are not self-sufficient in rice.

Planning need also pay due attention to seepage, water overuse problems and salinity where irrigated areas overlie the salt dome, the boundaries and depth of which require geological surveys. Over-emphasis on double and triple cropping of rice must also be avoided because of the difficulty, due to such factors as the cost of electricity and pump maintenance, adverse rural urban terms of trade affecting rising costs of fertilizer, and halving of the price of rice within Asia in recent years, of paddy cultivation to move village farmers out of poverty. According to Tony Zola, in his capacity as consultant to the World Bank's livelihood project, higher value crops exist for which there is a market while the development of agro-industry in Laos and Thailand provides possible multiplier effects in terms of enterprise development and employment generation. Soya and other legumes, for example, are crops with market demand and processing facilities in Thailand for livestock feed for export. Cassava is another such crop.

4.2 Recommendation 22: That the NTPC's XBF compensation activities along the XBF include additional development initiatives as well as mitigation and asset for asset compensation.

NTPC is to be congratulated for its willingness to include development assistance to its mitigation and asset for asset compensation policies for XBF basin villages. The POE believes that a development approach will be especially necessary in XBF District villages upriver from the Route 13 bridge that are more isolated and poorer than most other villages and that will be further impoverished by the NT2 project because of their greater dependence on fishing and on river bank gardens. Restoration of living standards in individual villages is apt to require, more than any other single factor, provision of electricity, electric pumps (in some cases replacing diesel pumps which are no longer used because of rising costs of fuel and other problems) and assistance in constructing a dry season irrigation system and institutionalizing a water user association for operation

and maintenance. A similar development approach is apt to be necessary in villages utilizing the Nam Prit, the flow and productivity of which will be adversely affected by the 27 km channel.

4.3 Recommendation 24: That NTPC and GOL place more emphasis on planning how the Project Operator’s Village at Gnommalat and various construction camp facilities there could also be constructed for regional development purposes within the XBF Basin.

All too often elsewhere in the world, construction camps and operators’ facilities are built as if the project with which they are associated was being built in a vacuum. What a waste, when with better planning, those facilities could also contribute to the development of the surrounding region!

5. CONTINUING ACTIVITIES OF THE PANEL

The Panel anticipates or is available for the following activities in the coming year:

- Desk review of revised studies, plans or other documents as requested;
- Consultations and/or presentations with World Bank, Government officials, NGOs, and others;
- Return visit to Lao P.D.R. by one or more of the Panel members if requested to do so by the GOL (e.g. with public consultations, Bank appraisal and/or logging missions);
- Next regular visit of the Panel to Lao P.D.R. at the usual time (probably January) next year.

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World Bank

2003 Scoping Mission for the NT2 Rural Livelihoods Project.

ANNEX

ANNEX 1: ABBREVIATIONS, ACRONYMS AND GLOSSARY USED IN POE REPORTS

ADB	Asian Development Bank
AFD	French International Development Agency
ARMS	A Guide to the establishment of an Acquisition and Resettlement Management System
Ban	Village
BPKP	Bolisat Phathana Khet Phudoi (Mountainous Region Development Company)
CIAT	International Centre for Tropical Agriculture
COD	Commercial Operations Date
Company	Nam Theun 2 Power Company Limited
CPUE	Catch per unit effort
DAFO	District Agriculture and Forestry Office
DUDCP	District Upland Development and Conservation Project of the World Bank

EAMP	Environmental Assessment and Management Plan
EMDP	Ethnic Minority Development Plan
EU	European Union
GIS	Geographic Information System
GOL	Government of Lao P.D.R.
HTS	Hunting Technical Services
IAG	The International Advisory Group for NT2 of the World Bank
IRAM	Institut de Recherches et d'Applications des Méthodes de Développement
IUCN	The World Conservation Union
Lao P.D.R.	The Lao People's Democratic Republic
LNCE	Lao National Committee for Energy
KM	Khammouane Province
MAF	Ministry of Agriculture and Forestry
Nam	River
NBCA	National Biodiversity Conservation Area (protected areas created by GOL Decree)
NGO	Non-governmental Organization
NNT-NBCA	Nakai-Nam Theun National Biodiversity Conservation Area (a portion of the NT2 Project, most of which is in the water catchment area of the project reservoir) which was created in 1993
NPA	National Protected Area, the name now being used for the NNT-NBCA
NT2	Nam Theun 2 Hydro-electric Project
NTEC	Nam Theun 2 Electricity Consortium
NTFP	Non Timber Forest Products
NTPC	Nam Theun 2 Power Company
NT2-WMPA	Nam Theun 2 Watershed Management and Protection Authority
Panel, POE	The International Environmental and Social Panel of Experts for the NT2
PHP	Phou Hin Poun NBCA
PIZ	Peripheral Impact Zones
PM	Prime Ministerial
RAP	Resettlement Action Plan
RC	Resettlement Committee
RMU	Reservoir Management Unit
SDP	Social Development Plan
SEMFOP-1	Social and Environmental Framework and 1 st Operational Plan for the Watershed Management and Protection Authority
SIDA	Swedish International Development Agency
TA	Technical Assistance (position)
TOR	Terms of Reference
UNDP	United Nations Development Programme
UXO	Unexploded Ordnance
WB	World Bank
WMPA	Watershed Management and Conservation Authority
XBF	Xe Bang Fai

ANNEX 2: Summary Page from Hunting Technical Services' ARMS

World Bank statistics indicate that, on average, some 10 million people are resettled each year as a result of dam construction, urban development and transportation projects in developing countries. Many governments now recognise their responsibility to address social and environmental issues when considering the implementation of large infrastructure development projects. The management of the social and environmental components of such a project can be a formidable task. A computerised Management Information System can provide many facilities to assist the managers of such projects.

An ARMS is a Management information System designed for any project that requires the acquisition of land, the compensation and resettlement of people and the monitoring of social and environmental parameters.

This report details the implementation and development of an ARMS for Phase 18 of the Lesotho Highlands Water Project.

An ARMS is not a new software package; rather, it is an application for a suite of software packages that already exist.

The software packages used by the ARMS are:

- A Relational Database Management System (RDBMS), which is used to manage all of the non-spatial databases, such as socio-demographic data;
- A Geographic information System (GIS), which incorporates all of the spatial data, such as land resources, cadastral and infrastructure mapping;
- A Project Management system, which is used for programme planning and monitoring and the allocation of resources and budgets.

These different software packages have different capabilities and strengths that complement each other. They are each able to utilise the same central database and allow data of different types to be combined to generate accurate and relevant information for project managers.

The RDBMS database contains data from socio-demographic and public health surveys. It also stores resettlement and compensation information and various environmental data. All of these data are cross-referenced to the data in the GIS database. The RDBMS database is used to provide answers to many of the questions raised during the social and environmental planning and implementation process.

The great strength of the ARMS system is its ability to generate valuable information by combining spatial and non-spatial data. The ARMS GIS database contains base mapping data and land resources data relating to the project area. A land cadastre and a database of buildings belonging to affected people are also included. Works plans are incorporated into the database from engineering plans. These spatial data are used in

conjunction with the RDBMS database for many projects, ranging from simple map production to advanced spatial analysis and the modeling of ‘what if’ scenarios.

The information generated from the ARMS database is available to project managers and decision-makers. These managers use Project Management software to plan and monitor the various activities that make up the Action Plans for the project.

The benefits of using an ARMS include:

- More cost effective and efficient management of information for the environmental and social programmes;
- Ready access to accurate, consistent, up-to-date and secure data for the whole project team;
- The ability to perform complex data analysis, to model the consequences of various options and ask ‘what if’ questions;
- The ability to plan social and environmental programmes based on accurate information, to establish baselines for these programmes and to monitor their status;
- Effective storage of large volumes of data;
- The production of effective map-based information facilitating greater use, understanding and analysis of data.
- An improved basis for integrated development approaches;

These benefits result in a significant empowering of environmental and social planners and of the project organisation as a whole.