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NATURAL RESOURCES MANAGEMENT PROJECT

BAPPENAS – Ministry of Forestry
Assisted by
USAID

**MANAGEMENT INFORMATION SYSTEM
FOR THE NATURAL RESOURCES MANAGEMENT PROJECT**

REPORT ON THE SECOND MISSION TO JAKARTA
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TABLE OF CONTENTS

PREFACE

1.	INTRODUCTION	1
1.1	State of the MIS System and needs for this mission	1
1.2	Hiring a programmer	2
2.	SOFTWARE MODIFICATIONS	4
2.1	Debugging	4
2.2	Streamlining	4
3.	PREPARING THE MASTER ACTIVITY LIST	6
3.1	Updating the activity list	7
3.2	Software training	8
3.3	Revised documentation	8
3.4	Inclusion of WEC in the MIS	8
4.	NEXT STEPS	11
4.1	Program modifications	11
4.2	Routine system use and activity list updates	12
4.3	Joint Implementation Plan	13
4.4	Work plans	13
APPENDIX A: Proposed Modifications to the MIS Software		
APPENDIX B: Scope of Work: Management Information Specialist		

PREFACE

This report is one of a number of reports produced under the Government of Indonesia's Natural Resources Management Project (NRM) that is assisted by the United States Agency for International Development (USAID).

The NRM Project, working with the Indonesian National Planning Board (Bappenas) and the Department of Forestry (Departemen Kehutanan), provides through a specially established project Policy Secretariat advice to Bappenas on natural resource issues relating to long term and short-term national planning. In addition, working with the Department of Forestry the NRM project carries out field activities in two pilot project areas one in West/Central Kalimantan and one in North Sulawesi including the preparation of management plans for the Bukit Baka - Bukit Raya National Park in Kalimantan and the Bunaken National Park in North Sulawesi. Each report addresses an aspect of the planned NRM project activities that are agreed on and laid out in an annual NRM Implementation Plan and each report aims at providing specific recommendations for future work in the area addressed.

This report provides a basis for the implementation of the management information system (MIS) for the NRM project. This system is aimed in encompassing all the activities and objectives of the project to allow for effective monitoring and future planning.

1. INTRODUCTION

1.1 State of the MIS System and Needs for this Mission

Between my first MIS mission in February 1993 and the current mission, the MIS system went largely unused. Because of time constraints under which it was written, there was no opportunity to do more than the most rudimentary training in its use in February. This was provided to a few of the Jakarta-based staff, but for logistical reasons no training at all was provided to anyone else. The field staff were not available, the forestry advisor was in language training, and so on. Consequently, from February through June the system was only used by Erik Scarsborough and Roy Voss to produce their monthly reports. Fernando Potess and Elmo Drilling reviewed the activity codes, but did not use the software to produce reports.

Erik and Roy's use of the system showed an interesting difference in style which has some implications for how the system will be used in the long run. Erik invested a great deal of time in refining the activity codes which describe his work. These codes may be thought of as a kind of filing system for categorizing and tracking activities. Erik's use of the system is therefore akin to building a very detailed and precise filing system, with some 300 carefully defined categories for his activities. He then used the software to record daily process in an ongoing "diary" which was simplified each month to produce a report for USAID.

Roy, on the other hand, felt that the broad categories established in the February master activity list for his work were fine, and put no further effort into refining them. He used the software each month to write his report without using it as an ongoing diary. Once each report was completed, he translated it into a text file using the MIS software, and reformatted it in Word Perfect. The result looked like the earlier non-automated reports, but included the MIS system activity codes. One reason for this reformatting was to access Word Perfect's spell checker, since such word processing features are not available within the MIS system.

No one used the activity list structure to prepare his 1993-94 work plan. The design of the system assumed that the experts would jointly think through their activities and determine how to classify and code them. Each would then take his own individual activity list and fill in more detail about what he actually does and how his work relates to that of the other experts. These annotated activity lists would be the 1993-94 work plans. This process is described in the system documentation prepared in February 1993. However, because there was no time for training or joint review of the activity list at that time, no one realized that this was how the activity classification system was meant to

be used. The 1993-94 work plans therefore do not incorporate the MIS system activity list.

Given the status of the system at the start of my mission, several tasks needed to be undertaken during my stay:

- Hire and train an Indonesian dBase programmer to take over the system and maintain it locally.
- Identify bugs and desired changes in the system. Insofar as time permits, correct them during my mission (either myself or - preferably - have the new programmer correct them). Agree on a list of additional modifications to be completed by the programmer after my departure.
- Work with the long-term experts to review and agree on the master list of activities.
- Design and agree on an institutional mechanism guarantee the ongoing coherence of the master activity list.
- Train the long-term experts in use of the software and ensure that they can (and will) write their monthly reports using it. In the process they were expected to identify further bugs and desired changes in the software for the new programmer to deal with after my departure.
- Update the system documentation insofar as possible, given that the software will be modified further after my departure.

This list of tasks covers what was in my TOR for this trip (of which a copy is appended to this trip report). In addition, it includes work on the master activity list and a mechanism for ensuring its continued coherence, which were not anticipated in preparing the TOR. As expected, the long-term experts convened on Jakarta for the third (and last) week of my mission. Therefore the training of the new programmer occurred during the first two weeks, as did much software modification and updating of the documentation. The development of a definitive activity list, training the system users on the software, and identification of further system modifications were all done during the last week of the mission.

1.2 Hiring a programmer

Prior to my arrival in Jakarta, the project advertised for a dBase programmer to take over responsibility for maintaining and updating this system. When I arrived, three candidates came in for me to interview, and I selected Hasrat Madiadipura for the position. He began working with me on July 21. He spent a few days going through the code to understand how it is structured. He then began

simplifying some parts of the system, and modifying details in order to compile it using Clipper. Throughout the rest of my mission, Pak Hasrat worked on a variety of modifications of the software, making it simpler, more powerful, and more user-friendly. He worked with the long-term experts on use of the software, and will take responsibility for modifying it in response to their priorities after my departure.

2. SOFTWARE MODIFICATIONS

Modifications of the software serve three general purposes. One is to correct errors ("bugs") which make it impossible or difficult to use. The second is to simplify and streamline the software without changing its basic function. The third is to give it totally new capabilities. Most of the changes made during this mission were of the first and second types. A number of modifications of the third type were identified by the system users during the last week of the mission, and will be implemented by Pak Hasrat in the coming month. The changes implemented during this mission are discussed in this section; those proposed for later are discussed below. These changes were carried out by Pak Hasrat and myself, sometimes jointly.

2.1 Debugging

Several system bugs were corrected during this mission, none of them major:

- Several programs were modified to erase temporary working files, so that the users would not be asked whether to overwrite them as the program ran.
- The config.sys file on the system administrator's machine was modified to increase the number of files which could be opened at once, which is necessary in order to run the software properly.
- Several errors in the on-screen menus were corrected, making it more clear which commands do what.
- The routine to print the full master activity list was modified to include the responsibilities of the forest advisor, which had inadvertently been left out.
- The programs and files were modified to reflect changes in project personnel since February.

2.2 Streamlining

A number of changes were made to help the program run more smoothly in carrying out its current functions:

- A file which stores the names, initials, and titles of all long-term experts was more fully implemented, replacing "hardcoded" lists of personnel in the dBase programs. (Some changes remain in order to complete this task.)

- All of the system menus were made considerably more legible and attractive, making it easier for users to find the options they need.
- The code was made more modular, making it easier to understand the flow from one part to another, and thus to find errors in the future.
- The system was compiled in Clipper, so it is no longer run interactively in dBase 3+. This means the users no longer need to have a copy of dBase in order to use the software. It also gives us access to more sophisticated data entry and management features not available in this version of dBase. As a result, the program runs much faster than it did before, which is of particular importance to those experts using 80286 laptop computers. Converting the system to Clipper is the most important streamlining change made so far, and it used more than half of Pak Hasrat's time during my mission. It will be very beneficial in terms of simplifying data entry and speeding up system use.

3. PREPARING THE MASTER ACTIVITY LIST

A series of meetings were held with the long-term experts to refine the hierarchical master activity list. This is a difficult process. Creating a list of project activities is like building a complex filing system. General categories in the list are like file drawers. Within each drawer are section dividers, and within each divider are file folders. Within each folder the papers (or activities) may be tossed in any which way, or they may be ordered. Putting together the list raises the same questions as designing a file system. The experts had given these kinds of issues some thought before this week, but they had to address them much more seriously now. Some of the questions they raised included:

- Should they structure activities by process or by content? For example, should they have a category for meetings, one for formal training, and one for public information? Or should they have, say, categories for agroforestry, production forestry, and forest protection, and "file" meetings, training and public information within the appropriate subject category?
- Should similar activities in each of the four project sites (Kalimantan, North Sulawesi, the policy secretariat linked to Bappenas, and the Ministry of Forestry) be classified in similar ways within the "file drawers" allocated to them, or should they be lumped together in the "project-wide" classification? This question arises for many different issues, including training, communication of research or policy results to the GOI, communication between the sites about research and policy results, administration, non-routine contacts with organizations outside of the project, and so on. It was resolved differently depending on the issue.
- Who will use the information in this system, and how does that play into decisions about how to classify certain types of activities (e.g. training, outside meetings and conferences, contacts with other donors)? To what extent is it possible to create a classification system which allows the extraction of information according to a number of different criteria, in order to meet the needs of different information users?
- How do they classify input they provide into each other's work? For example, if Chris goes to Bukit Baka and discusses issues which arise in the field, should he consider himself to be involved in the field work? How do field staff classify their comments on policy research in Jakarta? How can they distinguish between supervising an activity and taking direct responsibility for carrying it out?

While the discussion of these issues was somewhat frustrating, because they are difficult and at times arbitrary, it did seem to give people a better understanding both of their own work and of the MIS system. The experts did seem to get a much better sense of the interrelationships among their activity lists, and of the need to talk to each other and agree on classification systems. They also seemed to have a better appreciation of how this activity list should relate to their work plans. If they do use the system to produce their monthly reports (as looks likely), it should make sense to repeat this week's discussions of the list next spring as an input into the production of 1994-95 work plans.

3.1 Updating the activity list

The discussion of the activity list also seemed to strengthen the experts' understanding of the need for a centralized updating system. In general, all definitive changes will be made in Jakarta by the system administrators (Nike and Budhi). Thus they entered the list produced this week in Jakarta and a number of subsequent corrections and modifications requested by the long-term experts.

However, given the physical constraints imposed by the difficulty of communicating with the field, particularly Bukit Baka, field staff may also enter changes as an intermediate measure. As people write their monthly reports, they may find they want to change things in their activity lists. If so, they will scrutinize the master activity list to see how their changes fit with other people's codes, and they will confer with the people at their field site about them. If everyone thinks the changes are possible, they will run the routines in the software to modify activities and create new activity lists for themselves (options [E] and [W] on the main menu - see system documentation).

When each person submits his monthly report, he will include with it a completed copy of the new monthly report cover sheet. On it, he will check a box indicating whether or not he wants any activities changed in the master file. If he wants any changes, he will fill in all the information requested about the changes. He will also confirm that he has referred to the master activity code list and conferred with his colleagues in the field. While everyone groaned at the idea of yet another form, and particularly at the rather patronizing nature of this one, after designing the activity list they grudgingly agreed that this might be an effective way actually to ensure that all changes were reported to the system administrators in Jakarta. The fact that the form is to be used whether or not they want any changes is key to its effectiveness.

When the system administrators receive the forms in Jakarta, they will review them. Assuming that the requested changes do not cause any conflicts, they will enter the new codes in the system. Periodically they will send updated copies of the master activity file to the people in the field. Since the field staff can change their own master activity lists themselves, they will still be able to use the software even if they haven't received the updated files, so the usual time delays imposed by remoteness of field sites will not pose much of a problem.¹

3.2 Software training

The experts spent an afternoon at the project office using the software to write their July monthly reports. The system is quite simple to use, so they were able simply to begin work, only posing occasional questions of Pak Hasrat and myself. In the process, they quickly identified a few changes in how the software works which would make it easier for them to use, some of which are already in the process of being modified. They also identified one relatively minor bug which Pak Hasrat was already aware of and will correct soon. A few people finished their reports during the afternoon, while others went on to do so in the evening. The next afternoon we went over how to change the master and individual activity lists, should they need to modify them in the field. This, too, is quite simple, and posed no problems.

3.3 Revised documentation

The system documentation has been substantially rewritten and updated. It is a separate document from this report, unlike the documentation produced during my previous mission, which was appended to my trip report. A copy of the draft documentation has been given to each of the system users.

3.4 Inclusion of WEC in the MIS

The question has been under consideration since last winter of whether the World Environmental Center contract for work on industrial pollution should be included in the MIS. On my previous mission, they had hardly begun work, and there was clearly nothing to include. On this trip, Pak Hasrat and I met with Adiwiyana at USAID on July 23 to discuss the question. Our conclusion was that no purpose will be served by incorporating WEC activities into the MIS software.

¹ The series of steps for system updates and the reasons for it are described in detail in section 2 of the revised system documentation. A copy of the monthly report cover sheet is appended to the documentation.

This understanding is based on a discussion of what precisely the MIS software does. The hierarchical activity list around which the system is based specifies which experts are responsible for each activity. The list is linked to two timelines, one indicating when work is projected on each activity and the other indicating when it was actually carried out.

The monthly report software uses the activity list to ensure that each expert presents information in his report about the activities for which he is responsible, and that work carried out is described following this uniform classification system. The software uses the files created by the monthly report program to update the timeline which shows when work was actually carried out. It also uses those files to produce reports structured by activity (rather than by person) showing what has been accomplished over a given time period on each activity. Thus all ongoing information is inputted into the system through the writing of the monthly reports by the individual experts.

Including the WEC activities in the MIS activities list would be straightforward. The WEC staff would spend a few days thinking through their activities and describing them in a hierarchical list. This would then be incorporated in the overall list of the MIS, using the program within the software for entering new activities.

However, WEC staff do not write monthly reports for USAID. Therefore the report-writing feature of the MIS would not be useful to them. More importantly, because they do not produce monthly reports, there would be no mechanism for entering data in the system about what they had accomplished. Therefore the timelines could not be updated for their activities, and there would be no way to produce aggregations by activity.

This could be resolved by requiring WEC staff to write monthly reports. However, this does not seem warranted. The monthly reports were initiated for the NRMP staff because USAID felt it did not have a good handle on what was happening on a complex and far-flung project. The same is not true of WEC.

The WEC activities are relatively simple, and they are all carried out through discrete missions by consultants working relatively independently of each other. Each consultant writes a trip report each time she or he comes to the country, so there is a full record of each step in the project's activity. Adiwiyana did not feel any need for further information from WEC about what they are doing, and so did not feel that monthly reports are needed.

Moreover, because the WEC activities are relatively simple to manage compared to the NRMP ones, the WEC staff probably do not need anything like this MIS system to help them keep track of where they are. Thus the additional burden of writing monthly reports would not be justified by the historical timelines and activity-structured reports which the software could give them in return.

Given this, we concluded that no purpose would be served by incorporating the WEC activities into the MIS software.

4. NEXT STEPS

Several steps should follow this mission in order to continue implementation of the MIS system.

4.1 Program modifications

Pak Hasrat will implement a number of modifications of the software which have been identified by the experts in the weeks following this mission. During the mission about a dozen possible modifications were suggested, some to correct bugs, some to streamline the system, and a few to substantively change its function. The tables in Appendix A to this trip report below describe all of the modifications proposed, along with an estimate of their importance and how much work they would require. Of these, we set up the following system of priorities:

MODIFICATIONS IN SYSTEM FUNCTIONS

- | | |
|--------------------------------------|--|
| 1. Create a status category | To do eventually, not urgent |
| 2. Specialized aggregate reports | To be implemented in time for August reports |
| 3. Automate monthly training summary | Not important at this time |
| 4. Logframe linkages | To be implemented in time for August reports |

STREAMLINING SYSTEM OPERATION

- | | |
|--|--|
| 1. Report format change | Done |
| 2. Date format change | Done |
| 3. Data entry screen change | Will be done by August 10 |
| 4. Code changes | To be implemented in time for August reports |
| 5. "Previous" menu option | If possible, to be done by August reports |
| 6. Pop-up window to specify activities | To be done by August 10 if possible |
| 7. Personnel changes | To do eventually, not urgent |
| 8. Entering names easily | To do by August reports if possible |

DEBUGGING

- | | | |
|----|--------------------------------------|--|
| 1. | Updates of historical timetable | To monitor and fix if needed |
| 2. | Printing errors | Not urgent - by August reports if possible |
| 3. | Redo bugs | By August 10 if possible |
| 4. | Files not found in aggregate reports | By August reports |

The software works correctly as it is now, so while these changes are desirable, delays in implementing them will not hold up the use of the system. Those to be carried out by August 10 should be done in time for the long-term experts to take the revised software back into the field on that day. Changes implemented "in time for August reports" should be available by the time people are ready to write their August reports, i.e. early September.

Revised software will be sent to the field periodically as significant changes are made. During my stay we gave all of the experts a version of the software which was last updated on August 5. By the 10th a new updated version should be available. They will take the August 10 version to the field with them, copying it onto their hard disks to replace the August 5 version. By late August another version will be available. This will be mailed to Pontianak and Manado on diskette and everyone will copy it onto their hard disks to replace the August 10 version. This should be available in time for August monthly reports.

Each such update will involve copying four new software files onto the hard disks; mis.exe, monthly.ovl, quarter.ovl, and update.ovl. With each software update, the system administrators will also provide the field a copy of the latest master activity list. This involves two files; timetabl.dbf and histtabl.dbf. No other files should need to be changed on a routine basis, although specific data files may be changed to accomodate some of the software modifications. Pak Hasrat will provide all modified files to the system users as needed.

4.2 Routine system use and activity list updates

The long-term experts will use this system to write their monthly reports. The system administrators and NRMP director should keep an eye out to ensure that certain things are done:

- Reports are submitted on diskette and (if desired) on paper, as described in the system documentation.

- Each report is accompanied by the cover sheet indicating whether any changes were made in the master activity list.
- The system administrators should check all requested activity code changes and, if they do not cause any conflicts, enter them in the master list. If they do cause conflicts, the administrators should so notify the experts who proposed them, and not enter them into the master list.
- When necessary, the system administrators should send updated master activity lists (timetabl.dbf) to the field.

Pak Hasrat's services may be of help to the system administrators in carrying out these tasks as the next round of monthly reports (August, 1993) are received in Jakarta.

4.3 Joint Implementation Plan

When the next joint implementation plan is prepared, the system should be used to prepare the timelines showing when activities are projected and what has been done, using option [T] in the main menu of the software. So far, most of the experts have not actually projected the times when they will carry out their activities. Therefore it may be appropriate to fill in this information, either in the MIS software or in the Lotus spreadsheet, when the JIP is being prepared.

4.4 Work plans

The master and individual activity lists should play a key role in the preparation of 1994-95 work plans. Prior to beginning work on the plans, the experts should come together in Jakarta to do a complete reworking of the activity list, as they have done this week. Based on that reworking, they will use the software to generate individual activity lists. They will then take their own lists and fill in a narrative which describes more fully what they will actually do on each of the activities. This will lead to preparation of work plans which are directly related to the MIS system, making it possible to use the monthly reports to review the progress of each expert in carrying out his work plan.

APPENDIX A

PROPOSED MODIFICATIONS TO THE MIS SOFTWARE

MODIFICATIONS IN SYSTEM FUNCTIONS:	Recommendation
<p>1. Status code</p> <p>Create an additional category for each activity in the monthly report for information similar to the "status" column in Erik's old monthly report form. This might be a simple line of text where you could fill in a few words such as "completed", "ongoing", "continuous", "not yet begun", "pending approval", etc.</p> <p>One option would be to put no restrictions on what could go here - or indeed whether anything went here. The only limitation would be on the length of this line, and even this could be variable if needed. This would let you indicate the status of an activity if there were anything important to say, and leave it out entirely otherwise.</p> <p>In this scenario, the program would not make any decisions based on the <i>contents</i> of this field, such as not to allow entry of information on activities reported as completed. Instead this would just be a way to highlight such status information in your printed report.</p> <p>Alternately, this status variable could have preset values, and the program could automatically make certain decisions based on the status of each activity. Possible status values might be "not begun", "in process", "continuous", or "completed". Activities whose status was "completed" might be listed in the report with their status, to highlight the fact that this task was done, but you might be prevented from adding any new information about them. "Continuous" activities might appear on every monthly report, even if you didn't enter any information about them, to remind the reader that you spend time on them every month.</p> <p>While this might be desirable for some activities, it could be cumbersome and restrictive. For example, while highlighting some completed tasks could be interesting, you would not want dozens of completed training courses to show up every month in your report. Considerable thought would have to go into how you would want the program to use the restricted status information. An unrestricted variable field which you can control yourselves might be more useful.</p>	<p>For your consideration. Should be fairly easy to implement - perhaps 2 days work.</p>

MODIFICATIONS IN SYSTEM FUNCTIONS:	Recommendation								
<p>2. Specialized aggregate reports</p> <p>Insert an option in the aggregation routine (option [A]) to produce aggregate reports about specific topics rather than always aggregating all of the information in the input reports. Three topics have been identified so far for which this option may be useful:</p> <table> <tr> <td>training</td> <td>dedicated level 2 code 50-59 level 1 category 5</td> </tr> <tr> <td>non-routine contacts outside NRMP</td> <td>dedicated level 2 code 60</td> </tr> <tr> <td>meetings, seminars or conferences outside NRMP (presenter or attender)</td> <td>6. 9. 0. 0 codes</td> </tr> <tr> <td>trips away from post</td> <td>6.1.4.0 codes</td> </tr> </table> <p>The program can search for all information entered on the appropriate codes, and only aggregate those portions of the monthly reports. It then would print out a report describing all relevant activities carried out over a several month period, or all contacts with organizations outside of NRMP.</p> <p>This may be of use to Colin in sorting through training information, and to anyone interested in keeping track of contacts with organizations outside of the project.</p>	training	dedicated level 2 code 50-59 level 1 category 5	non-routine contacts outside NRMP	dedicated level 2 code 60	meetings, seminars or conferences outside NRMP (presenter or attender)	6. 9. 0. 0 codes	trips away from post	6.1.4.0 codes	<p>Already implemented or in process</p>
training	dedicated level 2 code 50-59 level 1 category 5								
non-routine contacts outside NRMP	dedicated level 2 code 60								
meetings, seminars or conferences outside NRMP (presenter or attender)	6. 9. 0. 0 codes								
trips away from post	6.1.4.0 codes								
<p>3. Automate monthly training summary sheet</p> <p>Incorporate the monthly training summary sheet, which is now filled out manually and appended to the monthly reports, into the report writing program. If the expert entered any training activity (level 2 code of 50-59 - see modification 2 above), a new data entry screen would automatically appear requesting the specific details which are now on the manual training summary sheet. After they were entered, the program would present the usual data entry screen, and the expert would type in whatever additional information he wanted about the training course.</p> <p>When all monthly reports were submitted to Jakarta, the system administrators would run a new utility program to compile those training details into a master training file and automatically produce the overall monthly summary which Nike now produces in Lotus based on the manual forms submitted by the individual experts.</p>	<p>For consideration.</p> <p>The manual system works, which is an argument against changing it. An automatic one might be a bit easier. It would probably take about 3-4 days or work to set up.</p>								

MODIFICATIONS IN SYSTEM FUNCTIONS:	Recommendation
<p>4. Logframe linkages</p> <p>Create a new field in the master activity list to indicate whether each activity contributes directly to an output specified in the project logframe. Couple this with an additional option in the aggregation program (option [A]) analogous to those described in modification 2 above, which produces aggregate reports of workplan information only for those activities directly related to the logframe.</p> <p>This would make it easier to track logframe-related activities. It still would not necessarily highlight outputs which are not under the control of NRMP staff, such as the launching of independent NRM policy research efforts in other parts of the GOI.</p> <p>This could also be coupled with a flag in the monthly report writing program, which would remind the expert whenever he was entering information for a logframe activity. When the program encountered an activity of relevance to the logframe (as indicated by the code in the master activity list), it might put a message on the data entry screen saying:</p> <p>This activity contributes directly to the NRM project logframe; make sure any relevant outcomes are described fully! <u>(more elegant wording would be appreciated)</u></p> <p>This could help the experts remember what is in the logframe, and make it easier for evaluators and project staff to flag the achievements which the logframe anticipates.</p>	<p>For consideration.</p> <p>Should be fairly easy to implement in terms of software modifications (2-3 days), but will also require the long-term experts (especially in the policy secretariat) to go through the logframe and the activities list carefully to identify how each activity relates to the logframe.</p>

STREAMLINING SYSTEM OPERATION	Recommendation
<p>5. Data entry for monthly reports</p> <p>The one-line menu for entering monthly report activity information should allow the user to back up to the previous activity for which information was entered during his data entry session. Note that earlier implementations of the "[P]revious" option in this menu went to the previous activity code <i>in the individual activity list</i>. The change proposed here would go to the previous activity <i>for which information was just entered</i>. If the user is going through his activity list in order these two will be the same, but if he is specifying codes they will not be.</p>	<p>For consideration. Relatively low priority. Once users have printed out their own activity lists and are more familiar with them, they are not likely to find this that important.</p>
<p>6. Pop-up browse window to specify activity codes</p> <p>While doing data entry for the monthly report, it would be useful to have a pop-up window in which the user could browse through his own individual activity list, and select the activity for which he wants to enter data by highlighting it and hitting "enter". This would be useful to people who don't remember their codes or have a printout handy. It would also avoid the slightly cumbersome typing in o: codes.</p>	<p>For consideration. Less urgent than other modifications, but desirable. One day.</p>
<p>7. Personnel changes</p> <p>Changes in the long-run expert staff of the NRMP require a number of small changes to the programs and files. At present the system is up to date, including the inclusion of Ken Leathers as the natural resources economist. A program should be written to automate this set of changes which can be run by the system administrator in the future.</p>	<p>Necessary but not urgent. Half a day.</p>
<p>8. Entering names</p> <p>Many of the screens which call for specifying the names of long-term experts now have a list of names with true-false variables to be filled in (options [E], [A], etc.). These are quite hard to read. Find a way to make this easier to use, possibly with a pop-up browse menu in which all people to be chosen can be highlighted.</p>	<p>Not urgent, but nice. One day.</p>

DEBUGGING	Recommendation
<p>1. Updates of historical timetable</p> <p>There may be an error in the way activity information is transferred to the historical timetable. This will require monitoring, and possibly correction over the next month if it turns out that there is a problem.</p>	<p>Necessary to monitor the files on an ongoing basis. Magnitude of correction not known (possibly none).</p>
<p>2. Printing errors</p> <p>When printing activity lists and possibly other reports, the program gives an error message. Pressing "retry" causes it to continue without problem; however there is some underlying cause of this which should be corrected.</p>	<p>This is an easy bug to live with, and is therefore of low priority. Should be addressed eventually. Time not known, because the cause of the error is unknown.</p>
<p>3. Redo</p> <p>In entering monthly report information, the "[R]edo" option for looking at the same entry again does not work.</p>	<p>Should be corrected soon. About one day of work.</p>
<p>4. Files not found</p> <p>In the report to aggregate several reports (option [A] in the main menu), the program bombs if one of the files specified is not found. It should return an error message instead.</p>	<p>Should be corrected soon. About one hour of work.</p>

APPENDIX B

SCOPE OF WORK MANAGEMENT INFORMATION SYSTEM SPECIALIST

I. Background

The Government of Indonesia (the National Planning Agency (Bappenas) and the Ministry of Forestry (MoFr)) are conducting research and pilot activities in the fields of sustainable forest management, protected area management, sustainable economic development and urban environment. The Government of Indonesia (GOI) counterparts in Bappenas and MoFr are assisted by a technical assistance team (Associates in Rural Development (ARD)) funded by USAID to achieve project goals, and to coordinate and implement research, data collection and analysis, and improved policy analysis. This team of NRM/ARD advisors are working with GOI counterparts on policy issues in Jakarta; natural forest management, protected area management, and research station development in West and Central Kalimantan; and marine protected area management in North Sulawesi. The World Environment Center (WEC) provides technical experts and training to support the implementation of pilot activities in industrial pollution reduction.

To assist the GOI agencies and the NRMP team, a project-based Management Information System (MIS) was developed by a short-term specialist in January-February 1993. As the users become familiar with the system and with its requirements and limitations, there is a need for a short-term specialist to further and modify the MIS to best respond to user's needs, to train a local programmer in the use of the system, and to train the NRM/ARD advisors and other users of the modified system.

II. Tasks

1. The consultant will work with the GOI agencies (Bappenas and MoFr), the NRM/ARD technical assistance advisors and USAID to review experience with the system to date and identify needed modifications.
2. The consultant will review the system software with a locally-hired programmer who is familiar with DBase software, and train the programmer in system operation and maintenance.
3. The consultant will work with the local programmer to carry out any necessary debugging and/or system modifications.
4. The consultant will write-up revised documentation for system users.

5. The consultant will train NRM/ARD advisors, staff and GOI counterparts in the use of the MIS.
6. The consultant will consult with USAID on the management of the WEC component to fit its requirements into the modified system.

III. Outputs

1. A modified MIS system including the WEC component.
2. Trained local programmer in technical areas of MIS system
3. Trained NRM staff in use of the MIS system.
4. Revised documentation for the system users.
5. A final report to be submitted through the NRM/ARD COP on work accomplished, with recommendations for any follow-up work which will need to be done.
6. A debriefing on the results of the consultancy for GOI officials, NRM/ARD advisors and USAID.

IV. Reporting

The consultant will work with the relevant GOI counterparts, USAID, NRM/ARD Advisors and staff through the NRM/ARD COP. A presentation will be made to GOI, USAID, NRM/ARD advisors and staff with a final report completed before the end of the consultancy.

V. Duration

Three weeks (with one preparatory day in the US prior to departure). From mid July 1993.

VI. Qualifications

1. The consultant should have formal training in management information systems or a related discipline, be knowledgeable in USAID project management and evaluation requirements and have experience in designing MIS for USAID projects.
2. The consultant will have extensive experience conducting training programs and writing software documentation.
3. Knowledge of Indonesia and spoken Bahasa Indonesian is desirable.

NATURAL RESOURCES MANAGEMENT PROJECT

BAPPENAS – Ministry of Forestry
Assisted by
USAID

MANAGEMENT INFORMATION SYSTEM FOR THE NATURAL RESOURCES MANAGEMENT PROJECT USER MANUAL AND TECHNICAL DOCUMENTATION

Volume 2

Associates in Rural Development
for
Office of Agro–Enterprise and Environment
USAID – Jakarta

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23

TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	THE SYSTEM FOR NRMP INFORMATION MANAGEMENT	3
2.1	General description of the activity coding structure	3
2.2	Dedicated level 2 codes	4
2.3	Creating individual activity lists	5
2.4	Maintaining the coherence of the activity list	9
2.5	Logistical arrangements for updating the list	12
3.	USING THE SOFTWARE	14
3.1	Setup	14
3.2	Main Menu	14
3.3	Writing and printing monthly reports [M]	16
3.3.1	The monthly activity report menu	16
3.3.2	Data input	16
3.3.3	Report output	18
3.3.4	Submitting reports	19
3.4	Updating the master activity list and timeline [E]	19
3.5	Preparing a summary report by activity [A]	21
3.6	Output functions [T]	22
3.6.1	Transferring timelines	22
3.6.2	Printing activity lists	23
4.	TECHNICAL DOCUMENTATION	24
4.1	Files list	24
4.2	Modifying the list of experts using the system	26
4.3	Recompiling the Clipper programs	26
APPENDIX A: Monthly Report Cover Sheet		
APPENDIX B: Proposed Software Modifications		
APPENDIX C: Master Activity List		

1. INTRODUCTION

The activity reporting Management Information System (MIS) helps the NRM project in preparation of routine reports and monitoring of project activities and plans. It has two basic purposes. First, it is designed to build consistency in the way that different reports describe the activities of the workplans, monthly reports, and the overall timelines in the Joint Implementation Plan. In the past, each of these documents described project activities in a different way, in text and in timelines for tracking the completion of tasks. Thus in their monthly reports, the long-term experts might describe their work differently from how it is presented in their annual work plans, their terms of reference, or the project-level Joint Implementation Plan. This has made it hard to understand the relationship among these different reports and to use monthly reports to track the project's success in accomplishing the tasks which it has set out for itself.

The MIS addresses this problem by establishing a single, standardized list of project activities. This list has been developed by the long-term experts and reflects their characterization of their own work. It is to be used in producing monthly reports, maintaining a timeline of work accomplished by activity for the whole project, and as an information support for the preparation of quarterly reports. This list is built into a software tool which is used to write monthly reports and maintain timelines of work projected and carried out. If the software tool is used as planned, it ensures that consistency is maintained in the way activities are described in the different project reports. Thus the system facilitates the use of routine reports to assess progress in carrying out broad NRMP tasks and accomplishing project objectives.

Second, the system streamlines the production of routine reports by the long-term experts. It uses the standardized description of project activities to simplify the writing of monthly reports to USAID. It permits the compilation of monthly reports by activity rather than by individual, to facilitate the preparation of quarterly progress reports to USAID and the GOI. Finally, it uses the overall description of project activities, combined with quarterly report data, to produce timelines for the annual Joint Implementation Plans produced by the NRMP staff and the GOI.

Conceptually, the core of the system is the standardized description of project activities, structured as a hierarchical list. This list is prepared and updated by the long-term experts, and maintained by project administrative staff. The categorization of activities in this list must be consistent with the activities described in the annual work plans of the individual experts and with their terms of reference. That coherence is established when

the annual work plans are prepared, when each expert defines his own activities and reviews the activity lists of others to ensure that the relationships among them are clear. Those individual activity lists then provide the structure for information presented in monthly and quarterly reports. Thus the way in which activities are structured in this list is key to the effective operation of the system. The hierarchical structure of the list is described further in section 2 below.

The system has three main functional outputs:

- monthly reports to USAID written by the long-term experts
- periodic summaries of progress on each project activity, which are used to prepare quarterly reports to USAID and the GOI.
- timelines showing projected completion of project activities and historical effort put into each activity, for the Joint Implementation Plan and other project reports.

This documentation has been modified most recently in early August, 1993. It describes the system as it stands at this time. It does not include modifications to the software which are expected to be implemented after the completion of the MIS consultant's summer 1993 mission to Jakarta (though these are described in appendix B), nor will it include subsequent modifications likely to become necessary in the future. If an update of the documentation becomes necessary in the future, a mechanism will have to be identified at that time to have it written.

This report presents the MIS in several different ways. Section 2 is focused on how the *information system* works - that is, how the standard list of activities helps organize the presentation of the project and sort out the relationships among its many parts. Section 3 discusses how to use the *software* through which some parts of the information system are implemented. Section 4 provides some technical documentation on the software. Appendix 1 is a copy of the monthly report cover sheet. Appendix 2 describes software modifications which will be implemented after completion of the summer 1993 mission and this documentation.

2. THE SYSTEM FOR NRMP INFORMATION MANAGEMENT

2.1 General description of the activity coding structure

The system is structured around a hierarchical listing of the activities carried out under the NRM project. The hierarchical nature of this listing establishes the link between the personal monthly reports and annual work plans and the activity-structured format needed in order to track the progress of the project.

At the top level of the hierarchy, the project has six activities:

Activity Code (level 1)	Activity Area
1.	Policy Secretariat
2.	Ministry of Forestry
3.	Kalimantan Field Site
4.	North Sulawesi Field Site
5.	Long-term training
6.	Contract Management/Administration

Each of these activities is further subdivided, with a total of about 600 activities in the whole system. Although there are four levels in the hierarchy, where the activities are not complex only the first two or three are used.

Each activity is assigned a code which indicates where it fits in the hierarchy. Thus, for example, all activities within the Ministry of Forestry begin with a 2. Within that overall category, 2.1 refers to applied research through the Ministry of Forestry, 2.2 is applied research through Kalimantan, 2.3 is the competitive awards system, and so on. Thus the Ministry of Forestry area activities look something like this¹:

- 2. MINISTRY OF FORESTRY
 - 2.1 Applied research - MoFor
 - 2.2 Applied research - NRM Kalimantan

¹ These examples do not necessarily reflect the current master activity list.

- 2.3 Competitive Awards System for Applied Research
 - 2.3.1 General proposals
 - 2.3.2 Workshop Pontianak
 - 2.3.3 Workshop Manado
 - 2.3.4 Development of the System
- 2.5 Policy Analysis
 - 2.5.1 Linked to Kalimantan
 - 2.5.2 Linked to North Sulawesi
 - 2.5.3 Demand driven
 - 2.5.4 Other policy studies

In their annual work plans, the long-term experts will describe the steps involved in carrying out each activity in the timeline. They may add additional levels in the hierarchy as needed in order adequately to explain the steps they will take in carrying out their work. However, once they have agreed on the four-level general activity structure for the overall timeline, they should avoid changing it; if possible, they should only add detail within the overall timeline hierarchy.

2.2 Dedicated level 2 codes

In order to establish some consistency across field sites and to facilitate identification of information on key topics, the long-term experts have decided to reserve ("dedicate") specific level 2 codes for particular activities. The term "level 2 codes" refers to the second level of the hierarchy. Thus in the example above for Ministry of Forestry activities, the overall category of policy analysis has a level 2 code of 5. All the activities underneath it in the list - policy analysis linked to Kalimantan, policy analysis linked to North Sulawesi, demand driven policy analysis, and other policy studies - also have level 2 codes of 5. Applied research within the Ministry of Forestry has a level 2 code of 1. There are no activities with a level 2 code of 4.

The level 2 codes from 50 to 59 have been reserved for training. Thus we can interpret any activity code for which level 2 is between 50 and 59 as follows:

- 1.50.0.0 to 1.59.99.99 is policy secretariat training.
- 2.50.0.0 to 2.59.99.99 is Ministry of Forestry training.
- 3.50.0.0 to 3.59.99.99 is Kalimantan training.
- 4.50.0.0 to 4.59.99.99 is North Sulawesi training.

This will make it easy to pull out all training information from the work plans if needed.

Similarly, level 2 code 60 is dedicated to non-routine liaison with other organizations. Thus:

- 1.60.0.0 to 1.60.99.99 is policy secretariat-related liaison.
- 2.60.0.0 to 2.60.99.99 is Ministry of Forestry-related liaison.
- 3.60.0.0 to 3.60.99.99 is liaison in Kalimantan.
- 4.60.0.0 to 4.60.99.99 is liaison in North Sulawesi.

In the future the experts may decide that it is useful to dedicate additional level 2 codes; if so, they will adjust the master activity list accordingly.

2.3 Creating individual activity lists

The production of annual work plans by the long-term experts should involve a review and modification of the master activity list. This was not done for preparation of 1993-94 work plans, but it was done during the summer 1993 mission of the MIS consultant. It should be redone in spring of 1994 prior to preparation of 1994-95 work plans.

Once the long-term experts have reviewed the master activity list in 1994, they should prepare their annual work plans by adding full descriptive information about their activities. For example, Chris Bennett, who is responsible for most Ministry of Forestry work, may have a role to plan in the following activities:

Chris Bennett: Summary of Activities

Activity code (all levels)	Activity
1.2.4	Policy study number 4
1.2.6	Policy study number 6
2.	Ministry of Forestry
2.1	Applied research related to MoFor
2.2	Applied research - NRM Kalimantan
2.3	Competitive Awards System for Applied Research

2.3.1	General proposals
2.3.2	Workshop Pontianak
2.3.3	Workshop Manado
2.3.4	Development of the System
2.5	Policy Analysis
2.5.1	Linked to Kalimantan
2.5.2	Linked to North Sulawesi
2.5.3	Demand driven
2.5.4	Other policy studies
6.2.1	Monthly reports
6.2.3	Annual Work Plans
6.2.4	Annual Reports
6.2.5	Joint Implementation Plan

Note that in this example, as in most cases, Chris will have responsibilities that fall outside of his basic activity area. Note also that the activity codes for his tasks are not consecutive. Thus the activities in his work plan are not numbered in a straightforward way in his work plan - 1(a), 1(b), 2(a), 2(b), etc. Instead they will jump around, according to the hierarchical codes assigned to each activity in the overall timeline. While this may look somewhat silly from the perspective of an individual work plan, it is essential in order to establish the logical link between the individual work plans and the activity-based overall timeline.

Each of the activities listed above for Chris is included in the overall timeline as shown above. However, this does not specify what his role is on those activities. On his own work plan, he will spell them out in more detail. Thus his work plan might look like this:

Activity code (all levels)	Activity
1.2.4	<p>Policy study number 4</p> <p>Work with Erik Scarsborough and Ken Leathers on the preparation and management of the study. Track particular implications for forestry. Keep MoFr informed of relevant results.</p>
1.2.6	<p>Policy study number 6</p> <p>Work with Erik Scarsborough and Ken Leathers on the preparation and management of the study. Track particular implications for forestry. Keep MoFr informed of relevant results.</p>
2.	Ministry of Forestry
2.1	<p>Applied research related to MoFr</p> <p>Work with MoFr experts to define manageable topics for applied research in forestry. Oversee research projects, review results, help target audiences for interesting papers.</p>
2.2	<p>Applied research - NRM Kalimantan</p> <p>Work with NRM staff in Kalimantan on identification of research topics. Comment on work in progress, review completed papers.</p>
2.3	Competitive Awards System for Applied Research
2.3.1	<p>General proposals</p> <p>Solicit and review proposals for research projects seeking funding through the competitive awards system.</p>
2.3.2	<p>Workshop Pontianak</p> <p>Organize and manage workshop on procedures for managing the competitive awards. Work with regional MoFr officials and NRM staff to ensure that information about the system reaches targeted audience.</p>

2.3.3	<p>Workshop Manado</p> <p>Organize and manage workshop on procedures for managing the competitive awards. Work with regional MoFr officials and NRM staff to ensure that information about the system reaches targeted audience.</p>
2.3.4	<p>Development of the System</p> <p>Work with MoFr officials in Jakarta to work out the details of how the system will work. Advise on its implementation as needed.</p>
2.5	Policy Analysis
<p>2.5.1</p> <p>2.5.1.1</p> <p>2.5.1.2</p> <p>2.5.1.3</p> <p>2.5.1.4</p> <p>2.5.1.5</p>	<p>Linked to Kalimantan</p> <p>Undertake policy analysis studies stemming from issues which arise in the field.</p> <p>Design the studies.</p> <p>Hire local or expatriate short-term staff to work on them as needed.</p> <p>Oversee progress in the study.</p> <p>Review results.</p> <p>Disseminate final reports.</p>
<p>2.5.2</p> <p>2.5.2.1</p> <p>2.5.2.2</p> <p>2.5.2.3</p> <p>2.5.2.4</p> <p>2.5.2.5</p>	<p>Linked to North Sulawesi</p> <p>Undertake policy analysis studies stemming from issues which arise in the field.</p> <p>Design the studies.</p> <p>Hire local or expatriate short-term staff to work on them as needed.</p> <p>Oversee progress in the study.</p> <p>Review results.</p> <p>Disseminate final reports.</p>
2.5.3	<p>Demand driven</p> <p>Carry out short term studies as requested by Ministry of Forestry officials.</p>

2.5.4	Other policy studies
2.5.4.1	Carry out studies identified by anyone else involved with the NRM project.
2.5.4.2	Design the studies.
2.5.4.3	Hire local or expatriate short-term staff to work on them as needed.
2.5.4.4	Oversee progress in the study.
2.5.4.5	Review results.
	Disseminate final reports.
6.2.1	Monthly reports
	Prepare monthly reports using the MIS system. Submit them to the MIS system administrators on paper and on diskette.
6.2.3	Annual Work Plans
	Prepare annual work plans structured around my individual activity list in the MIS system.
6.2.4	Annual Reports
	Prepare annual overview of NRMP activities with the MoFr.
6.2.5	Joint Implementation Plan
	Work with all other NRMP staff in preparation of the joint implementation plan each year.

If it is useful to Chris actually to structure the detailed activity descriptions using the hierarchical coding structure (as shown here in points 2.5.1.1 through 2.5.1.5, 2.5.2.1 through 2.5.2.5, and 2.5.4.1 through 2.5.4.5), then he may do so. If it is more useful simply to provide some description of the activity, as shown under the other codes, that is fine as well. The essential point is that the integrity of the hierarchical activity coding system of the overall timeline be maintained.

2.4 Maintaining the coherence of the activity list

The example in the previous section shows Chris defining his activities to suit his own understanding of how to classify his use of time. It also implies that he will do this once, when he begins using the system, and will continue to work with the same list of activities throughout the project.

Unfortunately, things are not so simple in practice. The MIS is built around a single activity list which is the kernel of an integrated tool for managing the whole project. It is not a collection of a dozen or so stand-alone activity lists, one for each person. The activity lists of the different experts must incorporate the links among them. Thus Chris's activity list must be developed in conjunction with those of everyone else in the policy secretariat, as well as with those of the team in Kalimantan, to ensure that everyone agrees on what they are doing and how each person's work relates to the others'.

In addition, it will not usually be possible to establish these activity lists definitively when the information system is introduced. All of the experts are likely to take on new activities during the year which they could not have anticipated at the start. Moreover, it is hard to design a good activity classification system simply by spending a few days working on it. The robustness of the activity classifications will emerge as the experts write monthly reports using them. At that time, they are likely to identify activities which were badly classified or inadequately described, and they will want to change the timeline.

One of the major issues in using this system, therefore, will be guaranteeing the coherence of the overall timeline while still allowing individual experts the flexibility to change the description of their activities as needed. A new example may help show the nature of the problems that will arise. The master activity list prepared in February listed applied research in Kalimantan this way:

CODE	ACTIVITY DESCRIPTION	Roy	Fer.
3.1.0.0	Applied research	F	T
3.1.1.0	Biodiversity survey	T	T
3.1.2.0	Establish field station	T	F
3.1.2.1	Contract awarded	T	F
3.1.2.2	Construction carried out	T	F
3.1.2.3	Operating procedures finalized	T	F
3.1.2.4	MoFr staff assigned to station	T	F
3.1.2.5	Plan for field research prepared	T	F
3.1.2.6	Applied research ongoing	T	F
3.1.2.7	Researcher training	T	F

3.1.2.8	Results reviewed/revised	T	F
3.1.2.9	Research plan reviewed/revised	T	F

This classification system has two broad categories for research, the biodiversity survey and the field station. The field station, which is Roy Voss's responsibility, is a complex activity for which a number of distinct steps have been distinguished. The biodiversity study, which is the responsibility of Fernando Potess, the nature conservation advisor, is relatively discrete, and appears as only a single step. Roy has been using this structure to prepare his monthly reports since the winter, and is satisfied with it.

However, suppose that Fernando realizes he is involved with several different research activities. For him, it might make more sense to have the following scheme for research (which, in fact, he recently submitted to the Jakarta office):

CODE	ACTIVITY DESCRIPTION	Roy	Fer.
3.1.0.0	Applied research	F	T
3.1.1.0	Biodiversity survey	F	T
3.1.2.0	Protected area management & research	F	T
3.1.3.0	Research in nature conservation	F	T
3.1.4.0	Applied research results/report	F	T

If he were simply to make this change, he would wipe out Roy's classification system for the field station. If Fernando changed his copy of the master activity list, on his computer in Bukit Baka, while Roy worked with a different copy on his computer in Pontianak, this would seem to be acceptable. However, when each of them sent his monthly report to Jakarta, the NRMP staff would use those reports to update the master list of who has done what. Then the data on the master list would be completely confused, because Fernando would show work on protected areas as 3.1.2.0, while Roy showed work on the research station with the same code. The problems caused by lack of communication between Roy and Fernando on their activity lists are apparent.

Other issues may also call for collaboration in the definition of activity codes. The macroeconomist and the forest policy expert in Jakarta (Erik Scarsborough and Chris Bennett) put a fair bit of time into discussing policy issues with each other. Each wants an activity code to show this effort. It does seem reasonable that they should use the same code - so that Erik talking to Chris shows up in the same place as Chris talking to Erik. In addition, both Chris and Erik are concerned about strengthening the communications with the team working on forestry in Bukit Baka. Once the marine policy study is underway, they will probably also need to strengthen links to Manado. Again, it would seem rational for all of this communication to be reported by all of the experts using the same activity code. This suggests that there should be a single code somewhere under project management (activity 6) to account for liaison among project staff. This will require everyone's agreement, to ensure that they do in fact use such a code to record their discussions with each other.

2.5 Logistical arrangements for updating the list

In an ideal world, everyone on the project would be connected via an electronic network, and updating the master activity list would be fairly simple. Only one person, probably an NRMP administrative staff member with a title like "MIS system administrator", would be able to change the activities timeline. He would do so on request of the experts, but only once everyone involved had agreed to any changes requested. Then everyone using the software would access the one definitive version of the timeline available on the system administrator's computer.

Obviously, NRMP does not look like this at all. Therefore a human system will have to substitute for electronic controls to insure the integrity of the master activity list. This will be done in several steps:

- An initial joint effort has been made to agree on a list of activities (Jakarta, August 1993).
- The MIS system administrators (Budhi and Nike) have entered all of the activities into the computer system.
- Each person will return to the field with a copy of the activity list (printout and file on diskette) and the associated files needed to produce his own monthly reports.
- As each person produces his monthly reports, he may find he wants to change things in his activity list. If so, he will refer to the printout of the master activity list and confer with the people around him who may be using some of the same activity codes as he is. If the changes

do not conflict with the master list, and everyone working at the same site agrees that they won't cause any problems, the expert will run the programs in the MIS software to enter new activities and produce a new file containing his own activity list.²

- When the expert submits his monthly report, he will include with it a completed copy of the new monthly report cover sheet (copy attached in appendix A). On it, the expert will check off a box indicating whether or not he wants any activities changed in the master file. If he wants any changes, he will fill in all the information requested about what changes he wants. He will also confirm that he has referred to the master activity code list and conferred with his colleagues in the field to ensure that this will not conflict with their activity codes.

- When the forms are received in Jakarta, the system administrator(s) will review them. Assuming that the requested changes do not cause any conflicts, the system administrators will enter the new codes in the system. Periodically they will send updated copies of the master activity file to the people in the field.

² These are options [E] and [W] in the main menu of the software program. See the following section of this manual for details on how to use them.

3. USING THE SOFTWARE

3.1 Setup

All of the files needed to run the activity report MIS are stored in a single directory on the computer. This includes the program (written in compiled Clipper 5.1), the reference data files, and the reports and other data files produced by using the system. The program should be stored in a directory called MIS, directly under the root directory (c:\mis).

The user's config.sys file, stored in the root directory on the hard disk (C:\) must contain the line:

```
FILES=50
```

3.2 Main Menu

To use the system, the user must be in the MIS directory. To begin work, type:

```
mis                <enter>
```

This will print the program's main menu on the screen:

NRMP ACTIVITY REPORTING INFORMATION SYSTEM - MAIN MENU

ACTIVITIES FOR LONG-TERM EXPERTS:

```
[ M ] - Write or print your monthly report
```

ACTIVITIES FOR NRMP ADMINISTRATIVE STAFF:

- ```
[E] - Enter, modify, or delete activities in the main timetable
[W] - Create the files that store annual workplan info (should be
 done after you have added activities for yourself in the timeline,
 or at least once a year after your workplan is updated)
[A] - Produce and print a summary report on progress by activity for several
 project staff
[U] - Update the 'historical' timeline for activities carried out [U]
[T] - Print timelines or activity lists
[Q] - QUIT THIS PROGRAM
```

```
Please enter your choice: _
```

Option [M] will be used by the long-term experts to write their monthly reports and print them out. This option is discussed in detail in section 3.3 below.

Option [E] runs the program to update the overall activity list and timeline. This should be done only by NRMP administrative staff in Jakarta, and not by the long-term experts. This will ensure that there are no discrepancies among the versions of the timeline used by each of the long-term experts. This option is discussed in detail in section 3.4 below.

Option [W] is used to create the list of each person's work plan activities, based on the information entered by the administrative staff using option [E]. The individual lists created by option [W] are used by the program to verify activities listed in the monthly reports. [W] is essentially a utility program. Unless the workplans are changed during the year, it will be run only once per year for each person. It will be run by NRMP administrative staff in Jakarta once all of the updates to the timeline are complete. At that point, the administrative staff will give each long-term expert a copy of the master activity lists and of his own work plan activity list file, which the program will use in writing and printing monthly reports. No further detail should be required to run this option.

Option [A] is used to produce a period summary of progress by activity. It asks the user to specify the start and end months of the summary and whose monthly reports are being summarized. It then automatically merges the files, sorts them by activity, and prints a report. This option is likely to be useful in for several different purposes. In Pontianak, the director of project forestry activities is providing quarterly reports to PHPA. This option will allow him to review the progress of all of his staff by activity, as an aid to preparing quarterly reports. Similarly, this option will allow the project director in Jakarta quickly to review progress in each area of activity in order to prepare quarterly and annual reports for USAID and the GOI. This option is discussed in detail in section 3.5 below.

Option [U] takes the information in the monthly report and updates the "historical" timeline file with information indicating whether work was actually carried out on each activity. It prompts the user to indicate whose report is being entered, and for which month. It then does the updates automatically. This option will be run by NRMP administrative staff in order to prepare timelines for quarterly and annual reports and for the Joint Implementation Plan. No further detail should be needed to run this option.

Option [T] transfers the timelines to files which can be accessed by Lotus, and prints out lists of project activities. It is described in detail in section 3.6 below.

### 3.3 Writing and printing monthly reports [M]

#### 3.3.1 The monthly activity report menu

When the user chooses option [M] from the main menu, the program enters the monthly report production subroutine. It begins by asking the user for his initials and for the date of the report being written. Make sure the format of the date is month-day-year, rather than day-month-year. Always put the first of the month for the date.

The program then offers the following choices:

#### MONTHLY ACTIVITY REPORT MENU

- [ S ] - Specify an activity for which to enter information
- [ F ] - Enter information for the first activity on the list
- [ X ] - Enter a non-workplan activity
  
- [ W ] - Print a completed monthly report
- [ T ] - Transfer a completed monthly report to a text file
  
- [ Q ] - Quit this program and return to the main menu

Please indicate your choice: \_

#### 3.3.2 Data input

The user can enter information either for activities which are part of his work plan (options [S] and [F]) or for activities which were not included in the work plan (option [X]). The system stores a file for each person which lists the activities in his work plan, with which it verifies the data entry.<sup>3</sup>

When entering activities from the work plan, the user either specifies the activity for which he wants to enter information, by selecting [S], or simply begins with the first activity in his plan. For users with many, very detailed activities, it will probably be easier to specify the activity [S]; for those with only a few, going through the list of activities may be easier.

<sup>3</sup> This file is maintained by the NRMP administrative staff using option [W] in the main menu, and given to the long-term experts with up-to-date copies of the timelines.

The program then asks for a description of what was done on that activity during the month, and the user types in whatever he wants.<sup>4</sup> If the user has used option [S] but then specified an activity code which in fact is not in his work plan, the program will not allow him to do data entry. If he uses option [X] and then enters a code which is in his work plan, it will be entered as a normal workplan activity.

Non-workplan activities are those which were not included in the user's workplan for this year, but which he finds himself engaged in nonetheless. They are entered through a separate menu option, [X]. In this case the program asks whether an activity code for that activity exists in the overall NRMP timeline - that is, whether this activity is contained in someone else's activity code list. If so, the program finds it and enters the code in your report along with the description of work carried out. Otherwise the description is simply entered in a category called "non-workplan activity". Either way, activities not in the workplan are distinguished from those which are in the workplan. This allows the user and the project manager to consider whether the user should modify his workplan to reflect what he is actually doing.

After each item is entered, this program offers a one-line data-entry menu at the bottom of the screen, which looks like this:

What now? [S]pecify [N]ext [R]edo [X]-non-workplan [Q]uit data entry

The user enters the letter corresponding to his choice:

- [S] to specify another activity for data entry
- [N] to enter data for the activity code following the one for which he just entered information. This option will be useful to people with relatively few activities, who might like to go through their entire activity code list each time they prepare their monthly report.
- [R] to review or edit the information just entered. This is useful if the user realizes he has made a mistake or left something out.
- [X] to enter information about an activity which is not in the user's work plan.

<sup>4</sup> Modifications of the software are currently underway to make this data entry easier, make word wrap more effective, allow longer entries, etc. See appendix B.

[Q] to quit data entry. This returns the user to the monthly activity report menu. After each data entry session, the new data are automatically saved. Thus the user can enter information about a few activities, exit the program, and then return later to pick up where he left off. Similarly, once everything has been entered for one month's report, the user can stop work and return later to print the completed report.

### 3.3.3 Report output

When the user is done entering all of his activities for the month, he selects option [W] to print out his report. Workplan activities are listed in numerical order by activity code. Non-workplan activities appear at the end of the report after everything which was in the user's activity code list.

When the user prints his report, he indicates whether the report should list all the activity codes on his activity list, including on which he has not done anything this month (as opposed to only mentioning those on which he has work to report). If all codes are listed, each code for which no work was done will appear in the report as follows:<sup>5</sup>

CODE: *(code here)*      ACTIVITY: *(brief description here)*

No activity this month.

For people with relatively few activities, including this information might be of interest because it keeps the reader of the report informed about activities which are on hold for the moment. People with many highly detailed activities will not choose this option, since it would clutter their work plans with too many "no activity this month" lines, and might lead readers to think that they are not doing anything.

Option [T] copies the contents of the report into a text file accessible from Word Perfect or other word processing programs. This text file is useful to users who want to be able to cut and paste text from their monthly reports into other documents which they may be writing, such as the quarterly narrative reports.

<sup>5</sup> This is in the process of slight modification, but it will not affect the presentation of activities for which no work was carried out. See Appendix B.

### 3.3.4 Submitting reports

Once the report is completed for a given month, the user should submit a printed report and the dBase file (on diskette) to the NRMP office in Jakarta (or Pontianak). The file will have a name of the following type:

*IN\_mo9x.dbf*

where:

*IN* corresponds to the initials of the users (GU=Graham, ED=Elmo, MN=Mering, and so on.)

*MO* indicates the month. The initials used in this system are JA, FE, MR, AP, MY, JN, JL, AU, SE, OC, NO, and DE.

*9X* indicates the year - 93, 94, etc.

Thus, for example, Erik's June 1994 report will be named "ES\_JN94.dbf".

This file will be used by project staff in Jakarta and Pontianak to produce the periodic summary of progress by activity code.

The text file created by option [T] will be called *IN\_mo9x.txt*. Normally there is no reason to submit this with your report (especially since anyone who wants it can easily create it himself from the .dbf file). It is mainly for the individual expert to use if he wishes to pull text from his monthly report into another document.

### 3.4 Updating the master activity list and timeline [E]

Option [E] is used to add, delete, or modify activities in the master activity list. Insofar as possible this should be done only by the system administrators in Jakarta, after agreement is reached among the long-term experts as to the appropriateness of the desired changes. See sections 2.3 and 2.4 of this report for a detailed discussion of changing the master activity list if you are not absolutely sure this is what you really want to do.

The program first prompts for the activity code to be specified and then looks for it in the existing master activity list. If that activity code is already in the list, the program asks whether the user wants to change it. To look at the information for that activity code or to modify it, say "yes". If you entered the wrong code, or to delete that activity, say "no". If you say "no", a one-line menu will appear on the bottom of the screen asking what to do next. This message is discussed below.

If the user says yes (i.e. you want to look at or modify the existing record), then the program prints the information about that activity on the screen. If the activity does not exist yet, the same screen appears, for the user to fill in the information. Several kinds of information are requested:

- A several-word description of the activity.
- The initials of the institutions responsible for the activity. Up to two institutions may be responsible for each activity. Possible institutions include:

|      |                                                     |
|------|-----------------------------------------------------|
| NRMP | for the ARD contract                                |
| GOI  | Government of Indonesia                             |
| NGO  | for any non-governmental organization contracts     |
| WEC  | for the World Environment Center contract           |
| ITTO | International Tropical Timber Organization          |
| SBK  | Sari Bumi Kusuma (Kalimantan Forest Concessionaire) |

Other institutions may be designated in this field if appropriate.

- The individuals responsible. If NRMP is one of the two institutions, then the program will give a list of all the long-term experts in the project. The user should type "y" or "t" in the box next to each person with some responsibility for that activity, and leave the others designated "f" or "n".
- The dates when the activity will be carried out. The program presents a monthly "timeline" running through December, 1996. The user enters two dashes ("--") in the boxes for each month when there will be work carried out on this activity. This is the information which will later be used to produce the Joint Implementation Plan projected timeline.

Once all of this information has been entered, the program automatically updates the "historical" timeline file with everything except the projected dates of completion, so the two timelines always include the same activities.

When the user has entered all the information (or if he says he doesn't want to change the existing activity), the program prints the following menu on the bottom of the screen:

What next? [A]dd [S]pecify [R]epeat [N]ext [P]revious [D]elete [Q]uit

These options are as follows:

- [A] allows the user to add a new activity to the master activity list and timeline. If the user chooses this option, and then inadvertently types in a code which already exists, the program will retrieve the existing information.
- [S] asks the user to specify an existing activity to look up in the list. If it turns out not to exist, the program will allow the user to create a new one.
- [R] puts information for the current activity (the one worked on most recently) on the screen. This is useful if you realize you made an error, if you are not sure what the current activity is, etc.
- [N] goes on to the next activity in the hierarchical coding system after the one you looked at. This is useful when going through the whole master activity list to do updates.
- [P] goes to the activity preceding the one just looked at in the hierarchical coding system.
- [D] deletes the current activity. Before actually deleting it, the program prompts the user to be sure he really means to delete the activity.
- [Q] quits option [E] and returns to the main menu.

### 3.5 Preparing a summary report by activity [A]<sup>6</sup>

Option [A] in the main menu is used to produce and print a report which shows what action has been taken on each activity by different people, for as many months as desired. Option [A] prints out the same text that was entered in the monthly reports, but merges as many different reports as desired and organizes the information by activity and chronologically instead of by person. These reports may be used to prepare quarterly or annual overviews of progress on project activities.

When option A is selected, the program first asks for starting and ending dates for the periodic report. It then asks whose reports are to be merged; type "t" or "y" in the box next to each person whose monthly reports are to be included. This program uses the monthly report ".dbf" files which are

---

Modifications of this option are now underway to permit creation of specialized reports only addressing a single topic. See appendix B.

submitted by the long-term experts each month. If any of the necessary files is not found in the system directory, the program will indicate what is missing and return to the main menu. If all files are found, the program merges the information and prints the report. Therefore this option should be chosen only when all necessary monthly report files are on the hard disk and the computer is connected to a printer.

### 3.6 Output functions [T]

Option [T] in the main menu provides a set of output options primarily of use to NRM administrative staff. When this option is chosen, the program prints another menu on the screen:

What would you like to do?

- [ P ] - Projections timetable - the one which indicates when you EXPECT things to be done in the future - convert to Lotus
- [ H ] - Historical timetable - the one that shows when things really WERE done, from the monthly reports - convert to Lotus
- [ F ] - Full activity list - print it out for reference
- [ L ] - Long-term expert workplan activity list - print
- [ Q ] - Quit this program right away, please.

Please indicate your choice here: \_

#### 3.6.1 Transferring timelines

The first two choices, [P] and [H], transfer the timelines from dBase to Lotus. DBase cannot print timelines in an attractive fashion; this transfer lets the users modify the presentation in Lotus and print nicer documents for project reports.<sup>7</sup>

When transferring timelines to Lotus, it is possible to aggregate the information to reduce the level of detail, in order to simplify the timeline. The program asks

What level of hierarchical detail do you want? The full timetable has 4 levels - you can aggregate to 1 (least detail), 2 or 3, or print all 4.

Please enter 1 through 4: \_

---

<sup>7</sup> Modifications of this option are now underway to address minor differences between dBase and Clipper. See appendix B.

This feature takes advantage of the hierarchical structure of the activities codes. Suppose the four-level activity data are to be aggregated to three levels in the hierarchy. Then any activity carried out on more detailed level activities is entered on the higher level. For example, if work was undertaken in a given month on 2.1.3.1, 2.1.3.2, or 2.1.3.3, the new aggregate timeline will simply show that work was undertaken on 2.1.3, without showing further detail. This option may be useful when the full four-level timeline is too long and detailed to present a concise overview of the project. It is, of course, always possible to transfer the full four-level timelines.

Once the timelines have been transferred, the user exits the dBase system, exits dBase, enters Lotus, and retrieves the timeline. It can then be formatted, made more presentable, and printed for inclusion in the Joint Implementation Plan or other reports.

### **3.6.2 Printing activity lists**

Options [F] and [L] print out activity code lists. [F] prints the entire master list, along with the information about who is responsible for which activities. [L] prompts the user to specify whose activity list is to be printed, and then prints only that one. This is likely to be of use to the long-term experts as they are developing their work plans.

## 4. TECHNICAL DOCUMENTATION

### 4.1 Files list

This system depends on a set of permanent reference files, plus others created to store workplan and monthly report data. Most of these files are stored in the directory C:\MIS. The program files are as follows:

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| <b>mis.exe</b>     | Main program used to run the MIS package.                  |
| <b>monthly.ovl</b> | Additional program file which must be accessed by mis.exe. |
| <b>quarter.ovl</b> | Additional program file which must be accessed by mis.exe. |
| <b>update.ovl</b>  | Additional program file which must be accessed by mis.exe. |

These executable files are based on the following source code programs which the system administrators will have but which will not be accessible to system users:

|                     |                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>reports.prg</b>  | Main program which presents the initial menu on the screen and then runs the other programs.                                                |
| <b>newact.prg</b>   | Program to enter or modify activities in the master activity list (timetabl.dbf). Accessed with option [E] in reports.prg.                  |
| <b>mkprpt.prg</b>   | Program to create an activities file for each long-term expert, based on the data in timetabl.dbf. Accessed with option [W] in reports.prg. |
| <b>monthlap.prg</b> | Program to write monthly reports. Accessed with option [M] in reports.prg.                                                                  |
| <b>quartrpt.prg</b> | Program to merge monthly reports in a summary report by activity. Accessed with option [A] in reports.prg.                                  |
| <b>update.prg</b>   | Program to put monthly report information into the historical timeline. Accessed with option [U] in reports.prg.                            |

**print-tt.prg** Program to transfer timelines to Lotus, print the full activity list, or print the activity list for an individual person. Accessed with option [T] in reports.prg.

The data and index files are as follows:

**timetabl.dbf** Main timeline file with all activities, who is responsible for each, and projections for when work will be carried out in the future.

**actcode.ndx** Index file for organizing timetabl.dbf according to activity code.

**histtabl.dbf** Timeline file for storing historical information about when activities were carried out.

**histcode.ndx** Index file for organizing histtabl.dbf according to activity code.

**people.dbf** Reference file which lists project staff and titles.

**initials.ndx** Index file for organizing people.dbf according to 2-letter initials.

**datefile.dbf** Reference file which contains date information.

**date.ndx** Index file for organizing datefile according to 4-character dates.

**monthfrm.dbf** File accessed by mkrpt.prg which stores the structure for the workplan activity files and monthly report files. It should always be empty.

**lotform.dbf** File accessed by print-tt.prg in transferring data to Lotus. It should always be empty.

**textfrm.dbf** File accessed by monthlap.prg in transferring monthly report data to a text file for use in Word Perfect. It should always be empty.

**helpfile.txt** File containing the help screen used in monthlap.prg.

In addition to these system files, the programs create additional "dbf" files:

- "inform.dbf"** There is one of these for each person, with "in" replaced by the initials. They are created by mkrpt.prg based on the timetabl.dbf using the structured stored in monthfrm.dbf. They contain the workplan activity list of each individual.
- "in\_mo9x.dbf"** There is one of these for each monthly report, with "in" replaced by the person's initials, "mo" by the month, and "x" by the last digit of the year. These store the monthly reports of the different long-term experts.
- "in\_mo9x.txt"** One for each monthly report, containing the text file version of the report. Usually only the person who wrote the report will have this file.
- "m19xm29y.dbf"** Reports containing the data for the quarterly sort of work carried out by activity code. "m1" is replaced by the first month included in the report. "x" is replaced by the last digit of the year for the first month. "m2" is replaced by the last month included in the report, and "y" by the last digit of the year for the last month. ("x" and "y" would be different if the report goes from December to February.)

#### 4.2 Modifying the list of experts using the system

Changing the names of experts using the system, or adding new ones, requires a number of small modifications of the data files. A utility program is now under development which will automate this process; it will be implemented during the summer of 1993.

#### 4.3 Recompiling the Clipper programs

The seven source code programs must be compiled and then linked to each other in order to create mis.exe and the three overlays. To compile, type:

```
clipper filename /l /m /oc:\clipper5\obj\filename.obj
```

*Filename* is replaced by the name of the file to be compiled. The compiler assumes by default that its extension is .prg. The resulting object code will be stored in a directory called c:\clipper5\obj; if that does not exist, it must be created first. (To store the object code elsewhere, specify that directory instead of \clipper5\obj.) This must be run once for each of the 7 .prg source code program files.

To link the seven files together, use the interactive mode on the clipper linker, rtlink.exe. From the DOS prompt, type:

```
rtlink <enter>
```

This will give you the rtlink prompt, and arrow. After each arrow you type the information in italics:

```
==> file reports
==> output c:\mis\mis
==> beginarea
==> sec into c:\mis\monthly
==> file monthlap
==> sec into c:\mis\quarter
==> file quartrpt, print_tt
==> sec into c:\mis\update
==> file mkrpt, newact, update
==> endarea;
```

The first line tells the linker that reports.prg is the main program which runs the rest of the MIS system. The second line says that the output of this linking operation should go into the directory c:\mis, into a file called mis.exe. The commands from beginarea to endarea tell the linker which code should go in which overlay file. Thus monthly.ovl contains the code in monthlap.prg, quarter.ovl contains the code in quartrpt.prg and print\_tt.prg, and update.ovl contains the code form mkrpt.prg, newact.prg, and update.prg. The semi-colon after endarea indicates that the linking instructions are completed.

To compile and link the MIS system, the clipper files clipper.exe and rtlink.exe must be in the path or their location on the hard disk must be contained in the commands running them. All libraries #included in the programs must be made accessible to clipper through set environment commands in DOS.

## APPENDIX A: Monthly Report Cover Sheet

The next page is a sample of monthly report cover sheet, to be submitted with each monthly report irrespective of whether there are changes in activity codes that month.



## APPENDIX B: Proposed Software Modifications

| MODIFICATIONS IN SYSTEM FUNCTIONS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Recommendation                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <p>1. Status code</p> <p>Create an additional category for each activity in the monthly report for information similar to the "status" column in Erik's old monthly report form. This might be a simple line of text where you could fill in a few words such as "completed", "ongoing", "continuous", "not yet begun", "pending approval", etc.</p> <p>One option would be to put no restrictions on what could go here - or indeed whether anything went here. The only limitation would be on the length of this line, and even this could be variable if needed. This would let you indicate the status of an activity if there were anything important to say, and leave it out entirely otherwise.</p> <p>In this scenario, the program would not make any decisions based on the <i>contents</i> of this field, such as not to allow entry of information on activities reported as completed. Instead this would just be a way to highlight such status information in your printed report.</p> <p>Alternately, this status variable could have preset values, and the program could automatically make certain decisions based on the status of each activity. Possible status values might be "not begun", "in process", "continuous", or "completed". Activities whose status was "completed" might be listed in the report with their status, to highlight the fact that this task was done, but you might be prevented from adding any new information about them. "Continuous" activities might appear on every monthly report, even if you didn't enter any information about them, to remind the reader that you spend time on them every month.</p> <p>While this might be desirable for some activities, it could be cumbersome and restrictive. For example, while highlighting some completed tasks could be interesting, you would not want dozens of completed training courses to show up every month in your report. Considerable thought would have to go into how you would want the program to use the restricted status information. An unrestricted variable field which you can control yourselves might be more useful.</p> | <p>For your consideration. Should be fairly easy to implement - perhaps 2 days work.</p> |

| MODIFICATIONS IN SYSTEM FUNCTIONS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Recommendation                                                                                                                                                                                       |                                                    |                                      |                           |                                                                              |                  |                      |               |                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------------------|---------------------------|------------------------------------------------------------------------------|------------------|----------------------|---------------|------------------------------------------|
| <p>2. Specialized aggregate reports</p> <p>Insert an option in the aggregation routine (option [A]) to produce aggregate reports about specific topics rather than always aggregating all of the information in the input reports. Three topics have been identified so far for which this option may be useful:</p> <table border="0"> <tr> <td>training</td> <td>dedicated level 2 code 50-59<br/>level 1 category 5</td> </tr> <tr> <td>non-routine contacts<br/>outside NRMP</td> <td>dedicated level 2 code 60</td> </tr> <tr> <td>meetings, seminars or<br/>conferences outside NRMP<br/>(presenter or attender)</td> <td>6. 9. 0. 0 codes</td> </tr> <tr> <td>trips away from post</td> <td>6.1.4.0 codes</td> </tr> </table> <p>The program can search for all information entered on the appropriate codes, and only aggregate those portions of the monthly reports. It then would print out a report describing all relevant activities carried out over a several month period, or all contacts with organizations outside of NRMP.</p> <p>This may be of use to Colin in sorting through training information, and to anyone interested in keeping track of contacts with organizations outside of the project.</p> | training                                                                                                                                                                                             | dedicated level 2 code 50-59<br>level 1 category 5 | non-routine contacts<br>outside NRMP | dedicated level 2 code 60 | meetings, seminars or<br>conferences outside NRMP<br>(presenter or attender) | 6. 9. 0. 0 codes | trips away from post | 6.1.4.0 codes | <p>Already implemented or in process</p> |
| training                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | dedicated level 2 code 50-59<br>level 1 category 5                                                                                                                                                   |                                                    |                                      |                           |                                                                              |                  |                      |               |                                          |
| non-routine contacts<br>outside NRMP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | dedicated level 2 code 60                                                                                                                                                                            |                                                    |                                      |                           |                                                                              |                  |                      |               |                                          |
| meetings, seminars or<br>conferences outside NRMP<br>(presenter or attender)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6. 9. 0. 0 codes                                                                                                                                                                                     |                                                    |                                      |                           |                                                                              |                  |                      |               |                                          |
| trips away from post                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 6.1.4.0 codes                                                                                                                                                                                        |                                                    |                                      |                           |                                                                              |                  |                      |               |                                          |
| <p>3. Automate monthly training summary sheet</p> <p>Incorporate the monthly training summary sheet, which is now filled out manually and appended to the monthly reports, into the report writing program. If the expert entered any training activity (level 2 code of 50-59 - see modification 2 above), a new data entry screen would automatically appear requesting the specific details which are now on the manual training summary sheet. After they were entered, the program would present the usual data entry screen, and the expert would type in whatever additional information he wanted about the training course.</p> <p>When all monthly reports were submitted to Jakarta, the system administrators would run a new utility program to compile those training details into a master training file and automatically produce the overall monthly summary which Nike now produces in Lotus based on the manual forms submitted by the individual experts.</p>                                                                                                                                                                                                                                                | <p>For consideration.</p> <p>The manual system works, which is an argument against changing it. An automatic one might be a bit easier. It would probably take about 3-4 days of work to set up.</p> |                                                    |                                      |                           |                                                                              |                  |                      |               |                                          |

| MODIFICATIONS IN SYSTEM FUNCTIONS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Recommendation                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4. Logframe linkages</p> <p>Create a new field in the master activity list to indicate whether each activity contributes directly to an output specified in the project logframe. Couple this with an additional option in the aggregation program (option [A]) analogous to those described in modification 2 above, which produces aggregate reports of workplan information only for those activities directly related to the logframe.</p> <p>This would make it easier to track logframe-related activities. It still would not necessarily highlight outputs which are not under the control of NRMP staff, such as the launching of independent NRM policy research efforts in other parts of the GOI.</p> <p>This could also be coupled with a flag in the monthly report writing program, which would remind the expert whenever he was entering information for a logframe activity. When the program encountered an activity of relevance to the logframe (as indicated by the code in the master activity list), it might put a message on the data entry screen saying:</p> <p>This activity contributes directly to the NRM project logframe; make sure any relevant outcomes are described fully! <u>(more elegant wording would be appreciated)</u></p> <p>This could help the experts remember what is in the logframe, and make it easier for evaluators and project staff to flag the achievements which the logframe anticipates.</p> | <p>For consideration.</p> <p>Should be fairly easy to implement in terms of software modifications (2-3 days), but will also require the long-term experts (especially in the policy secretariat) to go through the logframe and the activities list carefully to identify how each activity relates to the logframe.</p> |



| STREAMLINING SYSTEM OPERATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Recommendation                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>5. Data entry for monthly reports</p> <p>The one-line menu for entering monthly report activity information should allow the user to back up to the previous activity for which information was entered during his data entry session. Note that earlier implementations of the "[P]revious" option in this menu went to the previous activity code <i>in the individual activity list</i>. The change proposed here would go to the previous activity <i>for which information was just entered</i>. If the user is going through his activity list in order these two will be the same, but if he is specifying codes they will not be.</p> | <p>For consideration. Relatively low priority. Once users have printed out their own activity lists and are more familiar with them, they are not likely to find this that important.</p> |
| <p>6. Pop-up browse window to specify activity codes</p> <p>While doing data entry for the monthly report, it would be useful to have a pop-up window in which the user could browse through his own individual activity list, and select the activity for which he wants to enter data by highlighting it and hitting "enter". This would be useful to people who don't remember their codes or have a printout handy. It would also avoid the slightly cumbersome typing in of codes.</p>                                                                                                                                                      | <p>For consideration. Less urgent than other modifications, but desirable. One day.</p>                                                                                                   |
| <p>7. Personnel changes</p> <p>Changes in the long-run expert staff of the NRMP require a number of small changes to the programs and files. At present the system is up to date, including the inclusion of Ken Leathers as the natural resources economist. A program should be written to automate this set of changes which can be run by the system administrator in the future.</p>                                                                                                                                                                                                                                                        | <p>Necessary but not urgent. Half a day.</p>                                                                                                                                              |
| <p>8. Entering names</p> <p>Many of the screens which call for specifying the names of long-term experts now have a list of names with true-false variables to be filled in (options [E], [A], etc.). These are quite hard to read. Find a way to make this easier to use, possibly with a pop-up browse menu in which all people to be chosen can be highlighted.</p>                                                                                                                                                                                                                                                                           | <p>Not urgent, but nice. One day.</p>                                                                                                                                                     |

| DEBUGGING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Recommendation                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Updates of historical timetable</p> <p>There may be an error in the way activity information is transferred to the historical timetable. This will require monitoring, and possibly correction over the next month if it turns out that there is a problem.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>Necessary to monitor the files on an ongoing basis. Magnitude of correction not known (possibly none).</p>                                                         |
| <p>2. Printing errors</p> <p>When printing activity lists and possibly other reports, the program gives an error message. Pressing "retry" causes it to continue without problem; however there is some underlying cause of this which should be corrected.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>This is an easy bug to live with, and is therefore of low priority. Should be addressed eventually. Time not known, because the cause of the error is unknown.</p> |
| <p>3. Redo</p> <p>In entering monthly report information, the "[R]edo" option for looking at the same entry again does not work.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>Should be corrected soon. About one day of work.</p>                                                                                                               |
| <p>4. Files not found</p> <p>In the report to aggregate several reports (option [A] in the main menu), the program bombs if one of the files specified is not found. It should return an error message instead.</p> <p>However, there may be cases where one monthly report file legitimately does not exist. For example, if someone was on leave for a calendar month, he will not produce a report. At present, there is no way to tell option [A] this. Therefore, instead of simply indicating a missing file and returning to the previous menu, it should state which file is missing and ask if this is correct. If the user says "yes", it will continue without that file; if she or he says "no" it will return to the previous menu.</p> | <p>Should be corrected soon. About one day of work.</p>                                                                                                               |

## APPENDIX C: Master Activity List

The attached master list of NRMP activities is provided give a general indication of how the list is structured. It was printed on August 5, 1993, and reflects the state of the system as of that day. It will be modified on a regular basis as they system is used, so this should not be considered a current, up-to-date activity list.













| CODE       | ACTIVITY DESCRIPTION                 | Person Responsible: |   |   |   |   |   |   |   |   |   |   |  |
|------------|--------------------------------------|---------------------|---|---|---|---|---|---|---|---|---|---|--|
|            |                                      | C                   | E | K | C | R | E | F | M | G | R | A |  |
|            |                                      | M                   | S | L | B | V | D | P | N | U | R | W |  |
| 1.51. 4. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 4. 2 | TRAIN NATIONAL EXPERTS/CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 5. 0 | STUDY 1.3.5 TRAINING                 | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 5. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 5. 2 | TRAIN NATIONAL EXPERTS/CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 6. 0 | STUDY 1.3.6 TRAINING                 | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 6. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 6. 2 | TRAIN NATIONAL EXPERTS/CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 7. 0 | STUDY 1.3. 7 TRAINING                | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 7. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 7. 2 | TRAIN NATL EXPERTS AND CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 8. 0 | STUDY 1.3. 8 TRAINING                | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 8. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 8. 2 | TRAIN NATL EXPERTS AND CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 9. 0 | STUDY 1.3. 9 TRAINING                | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 9. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51. 9. 2 | TRAIN NATL EXPERTS AND CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.13. 0 | STUDY 1.3.13 TRAINING                | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.13. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.13. 2 | TRAIN NATL EXPERTS AND CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.14. 0 | STUDY 1.3.14 TRAINING                | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.14. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.14. 2 | TRAIN NATL EXPERTS AND CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.15. 0 | STUDY 1.3.15 TRAINING                | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.15. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.15. 2 | TRAIN NATL EXPERTS AND CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.16. 0 | STUDY 1.3.16 TRAINING                | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.16. 1 | TRAIN STUDY RESEARCH ASSISTANCE TEAM | F                   | T | F | F | F | F | F | F | F | F | F |  |
| 1.51.16. 2 | TRAIN NATL EXPERTS AND CONSULTANTS   | F                   | T | F | F | F | F | F | F | F | F | F |  |
|            |                                      |                     |   |   |   |   |   |   |   |   |   |   |  |
| 2. 0. 0. 0 | FORESTRY - JAKARTA                   | T                   | F | F | T | F | F | F | F | F | F | F |  |
| 2. 1. 0. 0 | APPLIED RESEARCH                     | F                   | F | F | T | F | F | F | F | F | F | F |  |
| 2. 1. 1. 0 | RESEARCH PROPOSALS                   | F                   | F | F | T | F | F | F | F | F | F | F |  |
| 2. 1. 2. 0 | RESEARCH EVALUATION                  | F                   | F | F | T | F | F | F | F | F | F | F |  |
|            |                                      |                     |   |   |   |   |   |   |   |   |   |   |  |
| 2. 2. 0. 0 | APPLIED RESEARCH - NRM KALIMANTAN    | F                   | F | F | T | F | F | F | F | F | F | F |  |
|            |                                      |                     |   |   |   |   |   |   |   |   |   |   |  |
| 2. 3. 0. 0 | COMPETITIVE AWARDS SYSTEM            | F                   | F | F | T | F | F | F | F | F | F | F |  |
| 2. 3. 1. 0 | GENERAL PROPOSALS                    | F                   | F | F | T | F | F | F | F | F | F | F |  |
| 2. 3. 2. 0 | WORKSHOP - PONTIANAK                 | F                   | F | F | T | T | T | T | T | F | F | F |  |
| 2. 3. 3. 0 | WORKSHOP - MANADO                    | F                   | F | F | T | F | F | F | F | T | T | T |  |
| 2. 3. 4. 0 | DEVELOPMENT OF THE SYSTEM            | F                   | F | F | T | F | F | F | F | F | F | F |  |
|            |                                      |                     |   |   |   |   |   |   |   |   |   |   |  |
| 2. 5. 0. 0 | POLICY ANALYSIS                      | F                   | F | F | T | T | T | T | T | T | T | T |  |
| 2. 5. 1. 0 | LINKED TO KALIMANTAN ACTIVITIES      | F                   | F | F | T | T | T | T | T | F | F | F |  |
| 2. 5. 2. 0 | LINKED TO NORTH SULAWESI ACTIVITIES  | F                   | F | F | T | F | F | F | F | T | T | T |  |
| 2. 5. 3. 0 | LINKED TO POLICY SECRETARIAT ACTIV.  | F                   | F | F | T | F | F | F | F | F | F | F |  |
| 2. 5. 4. 0 | DEMAND DRIVEN                        | F                   | F | F | T | F | F | F | F | F | F | F |  |

| CODE       | ACTIVITY DESCRIPTION                 | Person Responsible: |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------|--------------------------------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|            |                                      | C                   | E | K | C | R | E | F | M | G | R | A | M | S | L | B | V | D | P | N | U | R |
| 2. 5. 5. 0 | OTHER POLICY STUDIES                 | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 0. 0 | COMM. FIELD SITE RESULTS TO MOFR     | F                   | F | F | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 2. 6. 1. 0 | KALIMANTAN                           | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 1. 1 | PROTECTED AREAS                      | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 1. 2 | NATURAL PRODUCTION FORESTS           | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 1. 3 | COMMUNITY DEVELOPMENT                | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 1. 4 | APPLIED RESEARCH                     | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 2. 0 | NORTH SULAWESI                       | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 2. 1 | PROTECTED AREAS                      | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 2. 2 | PRODUCTION AREAS                     | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 2. 3 | COMMUNITY DEVELOPMENT                | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 6. 2. 4 | APPLIED RESEARCH                     | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 7. 0. 0 | MISC. LIAISON WITH MOFR              | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 9. 0. 0 | POLICY COMMUNICATIONS/OUTREACH       | F                   | T | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 9. 1. 0 | CLIENT-ORIENTED REPORT DISSEMINATION | T                   | T | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 9. 2. 0 | NRM POLICY BULLETIN                  | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 2. 9. 3. 0 | SUPERVISE EDITORIAL SERVICES         | T                   | T | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 9. 4. 0 | POLICY MEMORANDUM                    | F                   | T | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 9. 5. 0 | PUBLICATIONS                         | T                   | T | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 9. 6. 0 | SPEECH WRITING                       | F                   | T | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 9. 7. 0 | SEMINARS                             | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2. 9. 8. 0 | ROUND TABLES                         | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2.50. 0. 0 | FORMAL TRAINING                      | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2.51. 0. 0 | INFORMAL TRAINING                    | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 2.60. 0. 0 | LIAISON WITH OTHER INSTITUTIONS      | F                   | F | F | T | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F |
| 2.60. 1. 0 | GOI                                  | F                   | F | F | T | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F |
| 2.60. 2. 0 | DONOR ORGANIZATIONS                  | F                   | F | F | T | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F |
| 2.60. 3. 0 | DONOR PROJECTS                       | F                   | F | F | T | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F |
| 2.60. 4. 0 | NGOS                                 | F                   | F | F | T | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F |
| 2.60. 5. 0 | UNIVERSITIES                         | F                   | F | F | T | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F |
| 2.60. 6. 0 | PRIVATE SECTOR                       | F                   | F | F | T | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F |
| 3. 0. 0. 0 | KALIMANTAN FIELD SITE                | T                   | F | F | T | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F |
| 3. 1. 0. 0 | APPLIED RESEARCH                     | F                   | F | F | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 3. 1. 2. 0 | AGROFORESTRY                         | F                   | F | F | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 3. 1. 3. 0 | ACCELERATED NATURAL REGENERATION     | F                   | F | F | F | F | T | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 3. 1. 4. 0 | NATURE CONSERVATION                  | F                   | F | F | F | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 3. 1. 5. 0 | BIODIVERSITY                         | F                   | F | F | F | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 3. 1. 6. 0 | NON-TIMBER FOREST PRODUCTS           | F                   | F | F | F | F | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 3. 1. 7. 0 | LAND AND TREE TENURE SYSTEMS         | F                   | F | F | F | F | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 3. 2. 0. 0 | COMMUNITY ACTIVITIES                 | F                   | F | F | T | T | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F | F |

68

| CODE       | ACTIVITY DESCRIPTION                 | Person Responsible: |   |   |   |   |   |   |   |   |   |   |  |
|------------|--------------------------------------|---------------------|---|---|---|---|---|---|---|---|---|---|--|
|            |                                      | C                   | E | K | C | R | E | F | M | G | R | A |  |
|            |                                      | M                   | S | L | B | V | D | P | N | U | R | W |  |
| 3. 2. 1. 0 | NON-TIMBER FOREST PRODUCTS           | F                   | F | F | F | F | T | T | T | F | F | F |  |
| 3. 2. 2. 0 | LOCAL USE OF FORESTS                 | F                   | F | F | T | T | T | T | T | F | F | F |  |
| 3. 2. 3. 0 | VILLAGE MAPPING                      | F                   | F | F | F | F | T | T | T | F | F | F |  |
| 3. 2. 4. 0 | AGROFORESTRY                         | F                   | F | F | F | F | T | T | T | F | F | F |  |
| 3. 2. 5. 0 | SOIL AND WATER CONSERVATION          | F                   | F | F | F | T | T | T | F | F | F | F |  |
| 3. 2. 6. 0 | ACCELERATED NATURAL REGENERATION     | F                   | F | F | F | F | T | T | T | F | F | F |  |
| 3. 2. 7. 0 | FIRE MANAGEMENT                      | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3. 2. 8. 0 | SOCIAL FORESTRY EXT. ISSUES IDENTIF. | F                   | F | F | F | F | F | F | F | T | F | F |  |
| 3. 2. 9. 0 | COMMUNITY INSTITUTIONAL STRENGTHEN.  | F                   | F | F | F | F | F | F | F | T | F | F |  |
| 3. 2.10. 0 | COMMUNITY WATER SUPPLIES             | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 3. 0. 0 | NATURAL PRODUCTION FOREST MNGMENT    | F                   | F | F | T | F | T | F | F | F | F | F |  |
| 3. 3. 1. 0 | 20 YEAR MANAGEMENT PLAN DEVELOPMENT  | F                   | F | F | F | F | T | F | F | F | F | F |  |
| 3. 3. 2. 0 | 5 YEAR MANAGEMENT PLAN DEVELOPMENT   | F                   | F | F | F | F | T | F | F | F | F | F |  |
| 3. 3. 3. 0 | 1 YEAR MANAGEMENT PLAN DEVELOPMENT   | F                   | F | F | F | F | T | F | F | F | F | F |  |
| 3. 3. 4. 0 | STRENGTHENING TPTI AND TJTK          | F                   | F | F | F | F | T | F | F | F | F | F |  |
| 3. 3. 5. 0 | STRENGTHENING TJTK                   | F                   | F | F | F | F | T | F | F | F | F | F |  |
| 3. 3. 6. 0 | IMPROVE LOGGING & ENGINEERING TECH.  | F                   | F | F | F | F | T | F | F | F | F | F |  |
| 3. 3. 7. 0 | BINA DESA STRENGTHENING              | F                   | F | F | F | F | T | F | T | F | F | F |  |
| 3. 3. 8. 0 | LOGGING WASTE MANAGEMENT             | F                   | F | F | F | F | T | F | F | F | F | F |  |
| 3. 4. 0. 0 | PROTECTED AREA MANAGEMENT            | F                   | F | F | T | F | T | T | T | F | F | F |  |
| 3. 4. 1. 0 | 25 YEAR BB-BR NP MANAGEMENT PLAN     | F                   | F | F | F | F | T | T | T | F | F | F |  |
| 3. 4. 2. 0 | 5 YEAR BB-BR NP DEVELOPMENT PLAN     | F                   | F | F | F | F | T | T | T | F | F | F |  |
| 3. 4. 3. 0 | 1 YEAR BB-BR NP OPERATIONAL PLAN     | F                   | F | F | F | F | T | T | T | F | F | F |  |
| 3. 4. 4. 0 | 25 YEAR GP NP MGMT PLAN REVISION     | F                   | F | F | F | F | F | T | T | F | F | F |  |
| 3. 4. 5. 0 | 5 YEAR GP NP DEVT. PLAN REVISION     | F                   | F | F | F | F | F | T | T | F | F | F |  |
| 3. 4. 6. 0 | 1 YEAR GP NP OPER. PLAN REVISION     | F                   | F | F | F | F | F | T | T | F | F | F |  |
| 3. 4. 7. 0 | LOCAL SOCIO-ECONOMIC SURVEYS         | F                   | F | F | F | F | F | T | T | F | F | F |  |
| 3. 4. 8. 0 | NP COMMUNITY PARTICIPATION BB BR NP  | F                   | F | F | F | F | T | T | T | F | F | F |  |
| 3. 4. 9. 0 | NP COMMUN. PARTICIPATION GP NP       | F                   | F | F | F | F | T | T | T | F | F | F |  |
| 3. 5. 0. 0 | TRAINING AND RESEARCH STATION        | F                   | F | F | T | T | F | F | F | F | F | F |  |
| 3. 5. 1. 0 | CONTRACT AWARDED                     | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 5. 2. 0 | STATION CONSTRUCTED & CARRIED OUT    | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 5. 3. 0 | STATION OPERATING PROC. FINALIZED    | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 5. 4. 0 | MOFR. STAFF ASSIGNED TO STATION      | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 5. 5. 0 | PLAN FOR FIELD RESEARCH PREPARED     | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 5. 6. 0 | APPLIED RESEARCH ON-GOING            | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 5. 7. 0 | RESEARCHER TRAINING                  | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 5. 8. 0 | RESULTS REVIEWED/REVISED             | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 5. 9. 0 | RESEARCH PLAN REVIEWED/REVISED       | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 6. 0. 0 | TRADITIONAL FOREST AREAS             | F                   | F | F | T | F | T | T | T | F | F | F |  |
| 3. 7. 0. 0 | SHORT TERM CONSULTANCIES             | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3. 7. 1. 0 | TOR PREPARATION                      | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3. 7. 2. 0 | REVIEW CANDIDATES                    | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3. 7. 3. 0 | COLLABORATION                        | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3. 7. 4. 0 | REVIEW REPORTS                       | F                   | F | F | F | T | T | T | T | F | F | F |  |

49

| CODE       | ACTIVITY DESCRIPTION                 | Person Responsible: |   |   |   |   |   |   |   |   |   |   |  |
|------------|--------------------------------------|---------------------|---|---|---|---|---|---|---|---|---|---|--|
|            |                                      | C                   | E | K | C | R | E | F | M | G | R | A |  |
|            |                                      | M                   | S | L | B | V | D | P | N | U | R | W |  |
| 3. 9. 0. 0 | POLICY COMMUNICATIONS/OUTREACH       | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3. 9. 1. 0 | REPORTS & RESULTS DISSEMINATION      | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3. 9. 2. 0 | SEMINARS AND WORKSHOPS               | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.50. 0. 0 | FORMAL TRAINING                      | F                   | F | F | T | T | T | T | T | F | F | F |  |
| 3.50. 1. 0 | RESEARCH MGMNT & METHODS             | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.50. 2. 0 | COMMUNITY DEVELOPMENT                | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.50. 3. 0 | FORESTRY PRACTICES                   | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.50. 4. 0 | PROTECTED AREA MANAGEMENT            | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.50. 5. 0 | NATURE CONSERVATION                  | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.50. 6. 0 | OTHER                                | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.51. 0. 0 | INFORMAL TRAINING                    | F                   | F | F | T | T | T | T | T | F | F | F |  |
| 3.51. 1. 0 | RESEARCH MANAGEMENT & METHODS        | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.51. 2. 0 | COMMUNITY DEVELOPMENT                | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.51. 3. 0 | FORESTRY PRACTICES                   | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.51. 4. 0 | PROTECTED AREA MANAGEMENT            | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.51. 5. 0 | NATURE CONSERVATION                  | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.51. 6. 0 | OTHER                                | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.60. 0. 0 | LIAISON WITH OTHER ORGANIZATIONS     | F                   | F | F | F | T | F | F | F | F | F | F |  |
| 3.60. 1. 0 | GOI                                  | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.60. 2. 0 | DONOR ORGANIZATIONS                  | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.60. 3. 0 | NGOS                                 | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.60. 4. 0 | UNIVERSITIES                         | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.60. 5. 0 | PRIVATE SECTOR                       | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 3.60. 6. 0 | DONOR PROJECTS                       | F                   | F | F | F | T | T | T | T | F | F | F |  |
| 4. 0. 0. 0 | NORTH SULAWESI FIELD SITE            | T                   | F | F | F | F | F | F | F | T | F | F |  |
| 4. 1. 0. 0 | MANAGEMENT PLAN                      | F                   | T | T | T | F | F | F | F | T | F | F |  |
| 4. 1. 1. 0 | PRODUCTION OF 1ST DRAFT              | F                   | F | F | F | F | F | F | F | T | F | F |  |
| 4. 1. 1. 1 | WRITE DRAFT                          | F                   | F | F | F | F | F | F | F | T | T | F |  |
| 4. 1. 1. 2 | PRESENTATION AND DISCUSSION          | F                   | F | F | F | F | F | F | F | T | T | F |  |
| 4. 1. 2. 0 | PRODUCTION OF 2ND DRAFT              | F                   | F | F | F | F | F | F | F | T | F | F |  |
| 4. 1. 2. 1 | REVISION OF DRAFT I                  | F                   | F | F | F | F | F | F | F | T | F | F |  |
| 4. 1. 2. 2 | TRANSLATION OF REVISION DRAFT 2      | F                   | F | F | F | F | F | F | F | T | F | F |  |
| 4. 1. 2. 3 | PRESENTATION OF REVISION DRAFT 2     | F                   | F | F | F | F | F | F | F | T | T | F |  |
| 4. 1. 3. 0 | PRODUCTION OF FINAL DRAFT            | F                   | F | F | F | F | F | F | F | T | F | F |  |
| 4. 1. 3. 1 | REVISE DRAFT 2-NAT'L NP MP GUIDELINE | F                   | F | F | F | F | F | F | F | T | T | T |  |
| 4. 1. 3. 2 | TRANSLATION OF FINAL DRAFT           | F                   | F | F | F | F | F | F | F | T | T | T |  |
| 4. 1. 3. 3 | PROVINCIAL PRESENTATION              | F                   | F | F | F | F | F | F | F | T | T | T |  |
| 4. 1. 3. 4 | NATIONAL PRESENTATION                | F                   | F | F | F | F | F | F | F | T | T | T |  |
| 4. 1. 3. 5 | MANAGEMENT PLAN APPROVAL             | F                   | F | F | F | F | F | F | F | T | F | F |  |
| 4. 1. 4. 0 | REVIEW                               | F                   | F | F | F | F | F | F | F | T | T | T |  |
| 4. 2. 0. 0 | PARK MANAGEMENT PLAN IMPLEMENTATION  | F                   | T | T | T | F | F | F | F | T | F | F |  |
| 4. 2. 1. 0 | CONSTRUCTION OF FACILITIES           | F                   | F | F | F | F | F | F | F | T | F | F |  |

| CODE       | ACTIVITY DESCRIPTION                 | Person Responsible: |   |   |   |   |   |   |   |   |   |   |   |  |
|------------|--------------------------------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|--|
|            |                                      | C                   | E | K | C | R | E | F | M | G | R | A |   |  |
|            |                                      | M                   | S | L | B | V | D | P | N | U | R | W |   |  |
| 4. 2. 2. 0 | PROCUREMENT OF EQUIPMENT             | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 2. 3. 0 | ESTABLISH COMMUN. PARTICIP. GROUPS   | F                   | F | F | F | F | F | F | F | F | T | T | T |  |
| 4. 2. 4. 0 | ESTABLISHMENT OF ZONES               | F                   | F | F | F | F | F | F | F | F | T | T | F |  |
| 4. 2. 4. 1 | ANNOUNCEMENT OF PROPOSED ZONE ESTAB. | F                   | F | F | F | F | F | F | F | F | F | F | F |  |
| 4. 2. 4. 2 | FEEDBACK FROM COMMUNITY              | F                   | F | F | F | F | F | F | F | F | F | F | T |  |
| 4. 2. 4. 3 | FEEDBACK FROM REGIONAL GOVERNMENT    | F                   | F | F | F | F | F | F | F | F | F | T | F |  |
| 4. 2. 4. 4 | DISSEMINATION                        | F                   | F | F | F | F | F | F | F | F | F | F | F |  |
| 4. 2. 4. 5 | EST. BLISHMENT OF ZONE               | F                   | F | F | F | F | F | F | F | F | F | F | F |  |
| 4. 2. 5. 0 | ESTABLISHMENT OF MOORINGS            | F                   | F | F | F | F | F | F | F | F | T | T | F |  |
| 4. 3. 0. 0 | APPLIED RESEARCH                     | F                   | T | T | T | F | F | F | F | F | T | F | F |  |
| 4. 3. 1. 0 | DEV. OF RESEARCH & MONITORING PLAN   | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3. 1. 1 | COLLECTING REFERENCES& METHODOLOGIES | F                   | F | F | F | F | F | F | F | F | T | T | F |  |
| 4. 3. 1. 2 | PREPARATION OF DRAFT PLAN            | F                   | F | F | F | F | F | F | F | F | T | T | F |  |
| 4. 3. 1. 3 | DISSEMINATE DRAFTPLAN FOR DISCUSSION | F                   | F | F | F | F | F | F | F | F | T | T | T |  |
| 4. 3. 1. 4 | REVISE DRAFT AS REQUIRED             | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.20. 0 | IMPL.OF NON-SOCIOECONOMIC MONITORING | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.20. 1 | SUPERVISE ROUTINE MONITORINGS        | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.20. 2 | COLLATE RESULTS                      | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.20. 3 | FORMULATE RECOMMENDATIONS            | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.25. 0 | IMPLEM. OF SOCIOECONOMIC MONITORING  | F                   | F | F | F | F | F | F | F | F | T | F | T |  |
| 4. 3.25. 1 | SUPERVISE ROUTINE MONITORINGS        | F                   | F | F | F | F | F | F | F | F | F | F | T |  |
| 4. 3.25. 2 | COLLATE RESULTS                      | F                   | F | F | F | F | F | F | F | F | F | F | T |  |
| 4. 3.25. 3 | FORMULATE RECOMMENDATIONS            | F                   | F | F | F | F | F | F | F | F | F | F | T |  |
| 4. 3.30. 0 | BIODIVERSITY SURVEY                  | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.30. 1 | PREPARATION OF TEAM                  | F                   | F | F | F | F | F | F | F | F | F | T | F |  |
| 4. 3.30. 2 | EXECUTION                            | F                   | F | F | F | F | F | F | F | F | F | T | F |  |
| 4. 3.30. 3 | REVIEW OF RESULTS                    | F                   | F | F | F | F | F | F | F | F | F | T | F |  |
| 4. 3.40. 0 | CARRYING CAPACITY STUDY              | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.40. 1 | REVIEW TOR                           | F                   | F | F | F | F | F | F | F | F | F | T | F |  |
| 4. 3.40. 2 | COLLABORATE WITH STUDY TEAM          | F                   | F | F | F | F | F | F | F | F | F | T | F |  |
| 4. 3.40. 3 | REVIEW RESULTS                       | F                   | F | F | F | F | F | F | F | F | F | T | F |  |
| 4. 3.50. 0 | SUSTAIN. MANGROVE UTILIZATION STUDY  | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.50. 1 | PREPARE TOR                          | F                   | F | F | F | F | F | F | F | F | F | T | F |  |
| 4. 3.50. 2 | COLLABORATE WITH STUDY TEAM          | F                   | F | F | F | F | F | F | F | F | T | T | F |  |
| 4. 3.50. 3 | REVIEW RESULTS                       | F                   | F | F | F | F | F | F | F | F | T | T | F |  |
| 4. 3.60. 0 | AERIAL PHOTOGRAPHY MAPPING           | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.60. 1 | PREPARE TOR                          | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.60. 2 | SUPERVISE PHOTOGRAPHY                | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.60. 3 | SUPERV.DIGIT.&PRODUCT.OFTHEMATICMAPS | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 3.60. 4 | DISSEMINATE RESULTS                  | F                   | F | F | F | F | F | F | F | F | T | T | T |  |
| 4. 4. 0. 0 | COMMUNITY DEVELOPMENT                | F                   | T | T | T | F | F | F | F | F | T | F | F |  |
| 4. 4. 1. 0 | PROBLEMS & ISSUES IDENTIFICATION     | F                   | F | F | F | F | F | F | F | F | F | F | T |  |
| 4. 4. 1. 1 | COLLATE&REVIEW RELATED SOURCE OF INF | F                   | F | F | F | F | F | F | F | F | T | F | T |  |
| 4. 4. 1. 2 | ASSESSMENT OF KEYFACTORS             | F                   | F | F | F | F | F | F | F | F | F | F | T |  |
| 4. 4. 1. 3 | ESTABLISHMENT OF WORKING GROUPS      | F                   | F | F | F | F | F | F | F | F | F | F | T |  |
| 4. 4. 1. 4 | FACTS FINDING TRIPS                  | F                   | F | F | F | F | F | F | F | F | F | F | T |  |
| 4. 4. 2. 0 | NGOS STRENGTHENING                   | F                   | F | F | F | F | F | F | F | F | T | F | F |  |
| 4. 4. 2. 1 | ASSESSMENT OF BASIC TRAINING NEEDS   | F                   | F | F | F | F | F | F | F | F | F | F | T |  |

111

| CODE       | ACTIVITY DESCRIPTION                 | Person Responsible: |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------|--------------------------------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|            |                                      | C                   | E | K | C | R | E | F | M | G | R | A | M | S | L | B | V | D | P | N | U | R |
| 4. 4. 2. 2 | ASSESS.OF OPPORT.TO SUPPORT NGO ACT. | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 4. 2. 3 | STRENGTHENING NGO NETWORK            | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 4. 3. 0 | NGO-BASED PILOT PROGRAMS             | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F |
| 4. 4. 3. 1 | PRIORITY AREAS ASSESSMENT            | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F |
| 4. 4. 3. 2 | COMM.LIVELIHOOD IMPR. NEEDS ASSESSM. | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F |
| 4. 4. 3. 3 | SUPERVISE PREP.OF THE PILOT PROGRAMS | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 4. 4. 0 | NGO-BASED PILOT PROGRAM IMPL.        | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F |
| 4. 4. 4. 1 | PREPARE THE TEAM                     | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 4. 4. 2 | IMPLEMENTATION                       | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 4. 4. 3 | REVIEW THE RESULTS                   | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 4. 4. 4 | DISSEMINATION                        | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | T |
| 4. 5. 0. 0 | PUBLIC AWARENESS                     | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4. 5. 1. 0 | DEVELOPMENT OF CIE STRATEGY          | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4. 5. 1. 1 | PRODUCTION OF TOR                    | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4. 5. 1. 2 | SUPERVISE & COORDINATE CONSULTANCY   | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | T |
| 4. 5. 1. 3 | REVIEW REPORT                        | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | T |
| 4. 5.20. 0 | IMPLEM. OF CIE STRATEGY-PLANNING     | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4. 5.20. 1 | SELECT MEDIA                         | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 5.20. 2 | SELECT IMPLEMENTING AGENCIES/PERSONS | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | T |
| 4. 5.20. 3 | SELECT TARGET AUDIENCES              | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | T |
| 4. 5.20. 4 | BUDGET PREPARATION                   | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 5.21. 0 | IMPL. CIE STRATEGY-PRODUC. OF MATER. | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4. 5.21. 1 | PROJECT & PARKS BROCHURES            | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 5.21. 2 | VISITOR FEEDBACK QUESTIONNAIRE       | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | T |
| 4. 5.21. 3 | POSTERS                              | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 5.21. 4 | PARK SIGNBOARDS                      | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 5.21. 5 | EXHIBITION MATERIALS (PHPA)          | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | T |
| 4. 5.21. 6 | INFORMATION PACKAGES                 | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | T |
| 4. 5.21. 7 | NGO-PRODUCED MATERIALS               | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 5.21. 8 | VIDEOS                               | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | T |
| 4. 5.21. 9 | PUBLIC SERVICE ANNOUNCEMENTS         | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T |
| 4. 5.22. 0 | IMPLEM. OF CIE STRATEGY-DISSEMINAT.  | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | T |
| 4.50. 0. 0 | FORMAL TRAINING                      | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4.50.10. 0 | STUDY TOUR-OVERSEAS (SE ASIA)        | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4.50.10. 1 | PREPARE TOR                          | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | F |
| 4.50.10. 2 | IDENTIFY & ASSESS CANDIDATES         | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4.50.10. 3 | TEST CANDIDATES                      | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 4.50.10. 4 | PREPARE TOUR PROGRAM                 | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | F |
| 4.50.10. 5 | IMPLEMENT TOUR                       | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 4.50.10. 6 | REVIEW AND EVALUATE TOUR             | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | F |
| 4.50.11. 0 | STUDY TOUR - INDONESIA               | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4.50.11. 1 | PREPARE TOR                          | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | F |
| 4.50.11. 2 | IDENTIFY AND ASSESS CANDIDATES       | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4.50.11. 3 | TEST CANDIDATES                      | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | F | F |
| 4.50.11. 4 | PREPARE TOUR PROGRAM                 | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | F |
| 4.50.11. 5 | IMPLEMENT TOUR                       | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 4.50.11. 6 | REVIEW AND EVALUATE TOUR             | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | T | F |
| 4.50.20. 0 | SKILLS/FIELD SKILLS TRAIN.FOR SBKSDA | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |



Person Responsible:  
 C E K C R E F M G R A  
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| CODE       | ACTIVITY DESCRIPTION                 | C | E | K | C | R | E | F | M | G | R | A | M | S | L | B | V | D | P | N | U | R | W     |
|------------|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| 4.50.65. 3 | PROPOSAL APPROVALS                   | F | F | F | F | F | F | F | F | F | F | T | T |   |   |   |   |   |   |   |   |   |       |
| 4.50.65. 4 | SUPERVISE TRAINING                   | F | F | F | F | F | F | F | F | F | F | T | T |   |   |   |   |   |   |   |   |   |       |
| 4.50.65. 5 | REPORTING                            | F | F | F | F | F | F | F | F | F | F | T | T |   |   |   |   |   |   |   |   |   |       |
| 4.50.80. 0 | SKILLS TR:ECO.&CONS. TR.(NGO & KSDA) | F | F | F | F | F | F | F | F | F | F | T | F | F |   |   |   |   |   |   |   |   |       |
| 4.50.80. 1 | PREPARE TOR                          | F | F | F | F | F | F | F | F | F | F | T | T |   |   |   |   |   |   |   |   |   |       |
| 4.50.80. 2 | PREPARE CURRICULUM/MATERIALS         | F | F | F | F | F | F | F | F | F | F | T | T |   |   |   |   |   |   |   |   |   |       |
| 4.50.80. 3 | SELECT CANDIDATES                    | F | F | F | F | F | F | F | F | F | F | T | T |   |   |   |   |   |   |   |   |   |       |
| 4.50.80. 4 | CONDUCT TRAINING                     | F | F | F | F | F | F | F | F | F | F | T | T |   |   |   |   |   |   |   |   |   |       |
| 4.50.80. 5 | REPORTING                            | F | F | F | F | F | F | F | F | F | F | T | T |   |   |   |   |   |   |   |   |   |       |
| 4.51. 0. 0 | INFORMAL TRAINING                    | F | F | F | F | F | F | F | F | F | F | T | F | F |   |   |   |   |   |   |   |   |       |
| 4.51.10. 0 | SBKSDA STAFF                         | F | F | F | F | F | F | F | F | F | F | T | T | T |   |   |   |   |   |   |   |   |       |
| 4.51.20. 0 | PRIVATE SECTOR                       | F | F | F | F | F | F | F | F | F | F | T | T | F |   |   |   |   |   |   |   |   |       |
| 4.51.30. 0 | NGOS                                 | F | F | F | F | F | F | F | F | F | F | F | F | T |   |   |   |   |   |   |   |   |       |
| 4.51.40. 0 | LOCAL COMMUNITIES                    | F | F | F | F | F | F | F | F | F | F | F | F | T |   |   |   |   |   |   |   |   |       |
| 4.51.50. 0 | STUDENTS                             | F | F | F | F | F | F | F | F | F | F | T | T | F |   |   |   |   |   |   |   |   |       |
| 4.60. 0. 0 | LI#ISON WITH OTHER ORGANIZATIONS     | F | F | F | F | F | F | F | F | F | F | T | F | F |   |   |   |   |   |   |   |   |       |
| 4.60. 1. 0 | GOI                                  | F | F | F | F | F | F | F | F | F | F | T | T | T |   |   |   |   |   |   |   |   |       |
| 4.60. 2. 0 | DONOR ORGANIZATIONS                  | F | F | F | F | F | F | F | F | F | F | T | T | T |   |   |   |   |   |   |   |   |       |
| 4.60. 3. 0 | NGOS                                 | F | F | F | F | F | F | F | F | F | F | F | F | T |   |   |   |   |   |   |   |   |       |
| 4.60. 4. 0 | UNIVERSITIES                         | F | F | F | F | F | F | F | F | F | F | T | F |   |   |   |   |   |   |   |   |   |       |
| 4.60. 5. 0 | PRIVATE SECTOR                       | F | F | F | F | F | F | F | F | F | F | T | F | T |   |   |   |   |   |   |   |   |       |
| 4.60. 6. 0 | DONOR PROJECTS                       | F | F | F | F | F | F | F | F | F | F | T | T | T |   |   |   |   |   |   |   |   |       |
| 5. 0. 0. 0 | LONG TERM OVERSEAS TRAINING          | T | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |       |
| 5.50. 1. 0 | RECRUITMENT                          | F | F | F | F | F | F | F | F | F | F | T | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 1. 1 | CIRCULATE INFORMATION                | F | F | F | F | F | F | F | F | F | F | T | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 1. 2 | COLLECT CANDIDATE DATA               | F | F | F | F | F | F | F | F | F | F | T | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 2. 0 | TEST CANDIDATES                      | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 2. 1 | INFORM CANDIDATES                    | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 2. 2 | ADMINISTER TESTS                     | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 3. 0 | SCREEN APPLICANTS                    | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 3. 1 | REVIEW DATA                          | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 3. 2 | RANK CANDIDATES                      | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 4. 0 | ENROLL IN ENGLISH TRAINING           | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 5. 0 | APPLICATION PREPARATION              | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 6. 0 | TOEFL REGISTRATION                   | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 7. 0 | GRE REGISTRATION                     | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 8. 0 | IIE UNIVERSITY PLACEMENT SUBMISSIONS | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50. 9. 0 | ADMISSIONS DECISIONS                 | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50.10. 0 | CANDIDATES DEPART                    | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50.10. 1 | ADVANCED GROUP                       | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50.10. 2 | SECOND GROUP                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | F F F |
| 5.50.11. 0 | U.S. MONITORING                      | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50.11. 1 | PROGRESS REPORTS (SEMESTER/ANNUAL)   | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50.11. 2 | FINANCIAL REPORTS                    | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50.12. 0 | THESIS FIELD WORK IN INDONESIA       | F | F | F | F | T | T | T | T | T | T | F | F |   |   |   |   |   |   |   |   |   |       |
| 5.50.13. 0 | REENTRY                              | F | F | F | F | F | F | F | F | F | F | F | F |   |   |   |   |   |   |   |   |   |       |

274

| CODE      | ACTIVITY DESCRIPTION                 | Person Responsible: |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
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|           |                                      | C                   | E | K | C | R | E | F | M | G | R | A | M | S | L | B | V | D | P | N | U | R | W |
| 5.50.14.0 | POST-TRAINING MONITORING             | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 5.50.15.0 | OTHER L-T TRAINING PHD SUPPORT       | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.0.0.0   | CONTRACT MGMT/ADMINISTRATION         | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.1.0.0   | MEETINGS                             | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.1.1.0   | PWG                                  | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.1.2.0   | PCC                                  | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.2.0.0   | REPORTING & PLANNING                 | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.2.1.0   | MONTHLY REPORTS                      | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6.2.2.0   | QUARTERLY REPORTS                    | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6.2.3.0   | ANNUAL WORKPLANS                     | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6.2.4.0   | ANNUAL REPORTS                       | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6.2.5.0   | JOINT IMPLEMENTATION PLAN            | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6.2.6.0   | NRMP INTERNAL ADMINISTRATIVE MATTERS | F                   | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.3.0.0   | REVIEWS                              | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.3.1.0   | ENVIRONMENTAL ASSESSMENT             | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.3.2.0   | MID-TERM EVALUATION                  | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.4.0.0   | PERSONNEL RECRUITMENT                | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.4.1.0   | LONG-TERM ADVISORS                   | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.4.2.0   | SHORT-TERM CONSULTANTS               | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.4.3.0   | LOCAL STAFF                          | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.4.4.0   | TEMPORARY STAFF                      | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6.5.0.0   | PROCUREMENT                          | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.5.1.0   | PHASE I                              | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.5.1.1   | PLAN PREPARED                        | T                   | F | F | F | T | F | F | F | T | F | F | F | T | F | F | F | T | F | F | F | F | F |
| 6.5.1.2   | COMMODITIES APPROVED                 | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.5.1.3   | COMMODITIES DELIVERED TO JAKARTA     | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.5.1.4   | COMMODITIES RCVD & APPROVED IN FIELD | F                   | F | F | F | T | F | F | F | T | F | F | F | T | F | F | F | T | F | F | F | F | F |
| 6.5.2.0   | PHASE II                             | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.5.2.1   | PLAN PREPARED                        | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.5.2.2   | COMMODITIES APPROVED                 | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.5.2.3   | COMMODITIES DELIVERED TO JAKARTA     | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.5.2.4   | COMMODITIES RCVD & APPROVED IN FIELD | F                   | F | F | F | T | F | F | F | T | F | F | F | T | F | F | F | T | F | F | F | F | F |
| 6.6.0.0   | SUBCONTRACT MONITORING               | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.6.1.0   | PT INTERSYS                          | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.6.2.0   | IIE                                  | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.7.0.0   | INFORMATION MANAGEMENT               | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.7.1.0   | MIS SYSTEM                           | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6.7.2.0   | LIBRARY                              | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.7.2.1   | POLICY SECRETARIAT                   | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.7.2.2   | MINISTRY OF FORESTRY                 | F                   | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.7.2.3   | KALIMANTAN                           | F                   | F | F | F | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |

175

| CODE       | ACTIVITY DESCRIPTION               | Person Responsible: |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
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|            |                                    | C                   | E | K | C | R | E | F | M | G | R | A | M | S | L | B | V | D | P | N | U | R | W |   |
| 6. 7. 2. 4 | NORTH SULAWESI                     | F                   | F | F | F | F | F | F | F | F | T | T | T |   |   |   |   |   |   |   |   |   |   |   |
| 6. 7. 3. 0 | REPORT DISSEMINATION               | T                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6. 8. 0. 0 | INTRA/PROJECT POLICY COMMUNICATION | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6. 8. 1. 0 | INTRA SITE COMMUNICATION           | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6. 8. 2. 0 | FIELD TO JAKARTA                   | F                   | F | F | F | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6. 8. 3. 0 | JAKARTA TO FIELD                   | T                   | T | T | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6. 8. 4. 0 | PROJECT-WIDE MEETINGS              | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6. 9. 0. 0 | ATTENDANCE AT NON-NRM MEETINGS     | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6. 9. 1. 0 | PRESENTED                          | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6. 9. 2. 0 | ATTENDED                           | T                   | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| 6.10. 0. 0 | ACCOUNTING                         | F                   | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.10. 1. 0 | KALIMANTAN                         | F                   | F | F | F | T | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 6.10. 2. 0 | NORTH SULAWESI                     | F                   | F | F | F | F | F | F | F | F | F | F | F | T | F | F | F | F | F | F | F | F | F | F |

## NRM/ARD CONSULTANCY REPORTS

| NO. | TITLE                                                                                                                                                                | AUTHOR                             |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 1.  | Procurement Plan For Research Equipment at Bukit Baka and Equipment Installation at Samarinda Forestry Research Station                                              | Roy Voss                           |
| 2.  | Agroforestry in Bukit Baka/ Bukit Raya                                                                                                                               | W.G. Granert                       |
| 3.  | Pengukuran dan Pemetaan Topografi Sebagian Daerah Taman Nasional Bukit Baka/Bukit Raya                                                                               | Sahri Denny, cs                    |
| 4.  | Applied Research Recommendations for Production Forest Management An Economic and Ecological Review of the Indonesian Selective Cutting and Replanting System (TPTI) | Lisa Curran<br>&<br>Monica Kusneti |
| 5.  | Balancing Forest and Marine Conservation with Local Livelihoods in Kalimantan and North Sulawesi                                                                     | Jill M. Belsky                     |
| 6.  | Proposal to the GOI and USAID for the Development of Comprehensive Environmental and Natural Resources Accounts (CENRA) for Economic Planning and Management         | Henry Peskin<br>&<br>Joy Hecht     |
| 7.  | Bukit Baka Mini-Hydraulic System Implementation Plan                                                                                                                 | Michael Johnson                    |
| 8.  | Final Report: Bukit Baka – Bukit Raya 1992                                                                                                                           | Roy Voss                           |
|     | Station Protocol:<br>Bukit Baka – Bukit Raya<br>1992                                                                                                                 | Roy Voss                           |
|     | Research Protocol:<br>Bukit Baka – Bukit Raya<br>1992                                                                                                                | Roy Voss                           |

| NO. | TITLE                                                                                                                                                         | AUTHOR                                  |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 9.  | Environmental Education and Awareness in Bukit Baka (vol.1)                                                                                                   | Nancy Bergau                            |
|     | Environmental Education and Awareness in Bukit Baka Guide to Environment and Fire Campaign (vol.2)                                                            | Nancy Bergau                            |
| 10. | Recommendations for Controlled Timber Harvesting in the SBK Forest Concession                                                                                 | John Hendrison                          |
| 11. | Cruiser Identifications at SBK and Local Uses of Trees by Local People                                                                                        | Jim Jarvie                              |
| 12. | Community Water Supply Feasibility Study for Bukit Baka–Bukit Raya, Kalimantan                                                                                | Rick McGowan<br>&<br>Alfonso Rieuwpassa |
| 13. | Report on NRM Library Consultancy September – December 1992                                                                                                   | Dachlan Cartwright                      |
| 14. | Livelihoods Strategies and Marine Resource Among Residents of Bunaken National Park, North Sulawesi: Recommendations for Local Involvement in Park Management | Jill M. Belsky                          |
| 15. | A Competitive Awards Scheme for Applied Forest Management and Nature Conservation                                                                             | Peter R. Burbridge                      |
| 16. | Design of a Management Information System for the Natural Resources Management Project                                                                        | Joy Hecht                               |
| 17. | Environmental Education and Awareness Strategy for Bukit Baka – Bukit Raya National Park (volume 1)                                                           | Nancy Bergau                            |
|     | NGO Training for a Local Environmental Education and Awareness Strategy (volume 2)                                                                            | Nancy Bergau                            |
| 18. | Water Supply and Sanitation (WS&S) Program in Bukit Baka – Bukit Raya, Kalimantan                                                                             | Rick McGowan                            |

| NO. | TITLE                                                                                                                                                         | AUTHOR              |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 19. | The Role of NGOs in Supporting the NRM Project in Bukit Baka – Bukit Raya National Park                                                                       | Marcel de Brune     |
| 20. | Integration of Provincial Regional Development Planning into the Bukit Baka – Bukit Raya National National Park Management Plan                               | E. Edwards McKinnon |
| 21. | Communications, Information, and Education Strategy for Bunaken National Park                                                                                 | Nancy Bergau        |
| 22. | Report on the Preparation of a Design for a Study of the Natural Resource Impacts of Marine Sector Policy During the Second Long–Term Development Plan Period | Andrea S. Katz      |