4．面談記録

議事録

日時：11月９日
場所：OCD事務所
出席者：Director Ronald I. Flores　Civil Defense Executive Officer, OCD/NDCC
Ms. Josie Timofeo　Planning Division, OCD/NDCC
Ms. Crispina B. Abat　Planning Division, OCD/NDCC
Ms. Ruth Rodriguez　Officer, OCD/NDCC
Ms. Lenie Duran　OCD/NDCC

要旨：

・災害における法令PD1566においては、災害における中央政府の対応のみならずコミュニティについても明記されている。
・被災後の救援支援が中心であるため、予防も含めた枠組みとすべく、改正案を議会に提出した。
・カラミティファンドについては、大統領のみが申請するものではなく、LGUにも申請権限がある。ただし、これがまだ地方に周知されていないため、予算の使い方について混乱が生じている。
・OCDは従来の災害時の緊急対応から災害予防に役割をパラダイムシフトしている。これまで災害時のみに支出を認められていたカラミティファンド（歳入の５％が割り当てられている）を95年からはOCDが災害リスクの高い地域の予防対策として申請できるようになった。今国会において、恒常的に予防にも支出できるよう申請している。
・OCDは州政府やLGUsの関係者のトレーニング、機材調達、防災計画を担当。各地域においては、知事が防災の責任を有し（知事がPDCCの長となる）OCDが各地域へのマイクロマネージメントは行わない。OCDのプロジェクトとして現場でプロジェクトを実施することはある。人的、物的リソースが必要な場合は、OCDが補足を行う。OCDは全国17地域に地域センターを有し、職員を配置。地域職員が州政府と定期的に防災予防、実施対策を協議している。OCDは地方に対して訓練された人員を配置している。防災を中心的に担うLGUにおいては選挙ごとに人員が入れ替わり、訓練された担当者が継続しないため、組織的な蓄積、対応ができていない。また、恒常的な予算不足などの問題を抱えている。
・UNDPなどドナーからは、防災アセスメント、コミュニティ予警報の支援を受けている。またアジア地域防災センターは防災教育、リスクマネージメントなどAdoptation projectを実施している。
・DENRにおいては、防災にかかる２件の実施案件があり、北部フィリピンの農地データ、天然資源データの作成が行われている。
・日本への協力要請は、規模によってOCDが直接申請するものと国防省を通すものがある。OCDが国防省に所属していることから、ODA大綱との関係で協力対象機関になりうるのか確認の必要があるものの、OCDを窓口として要請を受け付けた後、採択、実施協議の段階で実質的なカウンターパート先に振り替えることは可能であると思料する。
・OCDが災害時のみの対応ではなく、予防へのパラダイムシフトを図っていることについては、今後日本がコミュニティ防災を行う上で方向性が合致する。また、フィリピンの各省庁が防災

における各々の役割、業務を担うものの、中央政府および地方で唯一包括的に管理しうる機能を有していることから、今後協力を行う上で、OCDとの関連性は密にしていく必要がある。ただし、恒常的な物的、人的不足に加え、予算不足であることは否めず、短期的には、今ある資源の中での能力強化による質の向上が必要であり、長期的には防災への予算配分の優遇など国家計画としての優先度の引き上げが課題となる。

日時：11月９日
場所：パンガシナン州バカヤロースルーバランガイ避難センター
出席者：バランガイキャプテン

要旨：

・300人規模のバランガイで、今回のアグノ川有償資金協力において遊水地対象地域になっていることから、補償の一環として避難センターが2005年に建設された。有償資金協力終了後には、アグノ川本川に分流の構造物が完成し、同地域に70%の水が流水する計算。バランガイキャプテンも事態は認識しているものの、未経験であることから実感はしていない模様。避難センター建設については日本側に非常に感謝している。
・避難センターは１人あたり1.25㎡の計算で600人が収容可能であり、２階は観察欄干のような構造になっている。平時にはバランガイホール、ソーシャルフェスタや結婚式、穀物の乾燥などに使われている。ジェネレーターが設置されているものの、緊急時対応のため、近くローカルファンドにて電気をひく予定。ただし費用対効果の観点から議論があるとのこと。トイレ、浄水など基礎インフラは設置されている。付近道路のかさ上げ工事、避難センターの床高については、10年確率計算で設計されており、それ以上の洪水には対応できない。

緊急時の連絡体制としては、PDCCからMDCCへの洪水予警報が入った後、各バランガイに無線、ラジオなどで連絡が入り、BDCCメンバーが各住民に徒歩で直接通報を行う。2004年の洪水で床上浸水した際は住民が自発的に、建設中の同避難センターに避難した実績があり、危機意識の高さがうかがわれた。ただし、バランガイレベルで事前の住民対象の避難訓練などは実施していない。今後さらにサイレンが供与される予定となっており、緊急時にはPAGASA経由にてサイレンによる住民への通報を予定している。

日時：2007年11月12日　９時～11時30分
会議名：「カマナバ地区洪水防御・排水システム改良計画」聞き取り調査
会場：プロジェクト事務所、および現場
JICA：半澤団員、池田所員、石井団員
JBIC：福渡団員、澤団員、内田駐在員
Project : Ms. Macariola S. Bartolo : DPWH Project Director, Mr. Joel Magtaghb : DPWH Project Engineer, Mr. M. Yoshii : Consultant Project Manager, Mr. Y. Azegami : Consultant、Mr. L.M. Sosa : Consultant

Project Directorよりプロジェクトの概要が説明された後、現地を視察した。

Spine排水機場を視察した。この機場は2006年に完成し、ディーゼル発電による４基の横軸軸流ポンプが備えられている。潮位がEL. 10. 5mに達すると運転を開始することになっているとのことである。
2007年については２月～調査時まで運転を続けており、１日あたりの平均運転時間は１時間程度とのことであった。吸込み水槽の前のスクリーンには自動除塵機が設置されている。維持管理者のMMDAは、排水路へゴミを捨てないよう住民に訴えているが、排水機場側では大量のゴミの集積に頭を悩ませているとのことであった。

続いて、工事中のNavigation Gateを視察した。Navotas川の河口から内陸側は漁船の基地となっており、視察中にも多くの漁船が通行していた。本施設は、河口に25m長の舟通し水門を設け、併設するNorth Navotas排水機場との併用操作により、高潮時の外水の進入防止に加え、船運にも支障のないよう配慮したものである。

最後に、Malabon川とCatmon川の合流地点に設けられたCatmon排水機場を視察した。ディーゼル発電による４基の水中モーターポンプが備えられており、工事はほぼ完了していた。Catmon川はホテイアオイがびっしりと侵入しており、水質の富栄養化が進行しているようであった。下流側の一部で土地の収用が完了しておらず、護岸工事の進捗が遅れているようであった。

日時：2007年11月12日　16時30分～17時30分
会議名：「気象庁（PAGASA）」聞き取り調査
会場：気象庁の会議室
JICA：石渡団長、半澤団員、三村職員、石井団員
JBIC：澤団員
PAGASA：Mr. Prisco D. Nilo：Director, Ms. Susana Espinueva：Sr. Weather Specialist, Mr. Oskar D. Cruz：Meteorological Facilities Specialist II, Mr. Socrates Part Jr.：Weather Specialist I

・洪水予警報システムについて、日本政府の支援により導入したPampanga河の洪水予警報システムは、20年を経た今日でも機能しており感謝している。一方、コミュニティ・ベースの視点では、Ilo Ilo、Bulacan両市が導入しているものの、自動システムは極めて効果である。
・PAGASA：Flood Bulletin誌には気象観測データを提供しているが、今後は氾濫マップを提供する予定である。自動水位計については、Cagayan河、Agno河、Pampanga河に設置しているが、SMSの導入を計画する一方、水位記録の質を向上させるために、これらの河川の縦横断データの提供をDPWHに依頼している。
・流域レベルでの氾濫マッピングについては、アメリカ統治時代に編集された20mコンターの１/50, 000スケール地形図を使用しているのが実態である。マッピング精度向上に当たり、高精度なデジタル・エレベーション・モデルがぜひ必要である。

・コミュニティ・ベースの洪水警報マニュアルは、ハードコピー30部、およびCD200部を作成し、公立学校に配布した。また、優先公立学校では雨量計を設置して観測している。
・防災ハザードマップ作成については、UNDPの支援により2009年までに13州で完了する予定である。このマップは１/10,000スケールで、現在までに４州で完了した。

日時：2007年11月12日　９時30分～11時30分
会議名：フィリピン火山地震研究所（PHIVOLCS）打ち合わせ
会場：フィリピン火山地震研究所（PHIVOLCS）
JICA側：石渡団長、原団員、Minnie M. Dacanay In-House Consultant JICA
フィリピン火山地震研究所（PHIVOLCS）側：
RENATO　U. SOLIDUM, JR., Ph. D. Director
BARTOLOME　C.BAUTISTA, D. Sc　Deputy　Director

石渡団長が調査団の目的や調査工程を説明した後、以下の通り質疑応答が行なわれた。

１．本業務の対象サイトについて
・本業務の対象サイトのうち、マヨン火山、インファンタ町、カミギン島についてはPHILVOCSが関わっている。
・インファンタでは地すべり、洪水、地すべりダムの形成とその決壊に伴う洪水（Flush Flood）等の現象が発生した。

２．業務分担、現在の活動内容について
・ハザードマップ、リスクアセスメントについては準備できている。
・PHIVOLCS、OCD、MGB等はハザードマップを作成している。
・PHIVOLCSは地震、津波、火山（Fault、Tsunami、Volcano）を担当している。
・PAGASAは台風（Storm）、洪水（Flood）と洪水のハザードマップを担当している。
・OCDは災害後の調整の情報等を担当している。
・砂防（SABO）については、対策工事等（Works）をDPWHが、研究（Study）をPHIVOLCSが担当している。
・モニタリングと警報は担当が異なる。モニタリングはPHIVOLCS、警報はコミュニティ（Community-based）か、地方自治体、もしくはその共同で行っているようだ（明言は避けた）。

３．地震について
・MMDAで地震について業務を行った（応用地質）。
３つのコミュニティで試験的に行ったがほかに広がっていない。貧困なコミュニティと裕福なコミュニティ、その中間のコミュニティである。タウンウォッチングを行った。
・パキスタンの地震後、学校、病院、橋梁について耐震補強を提案している。
・断層のモニタリングを行っている。これについてMMDAで講義を行った。
・活動のひとつが防災への自覚についての講義を行うことである。PHIVOLCSの組織に「地質

的災害の自覚と準備部門」“Geologic disaster awareness and preparedness division”がある。
・地震の間隔の調査は京都大学と共同で研究を行い、トレンチ調査、モニタリングシステムの設置等を行っている。住民への自覚については大変多くの講義を行っている。
・地震の間隔の調査の結果、地震の間隔は平均的には200～600年間隔であることがわかっている。最も活動的なもので200年間隔である。

4．現在の状況について
・無償のPhase-１：モニタリングシステム
Phase-２：ネットワークの確立
を行っている。
目指すところは、例えばPolo(?) 断層等、火山に近い断層で地震があった場合、火山性の地震であれば住民はパニックに陥る。しかし、火山性の地震ではなく、単なる地震であったことを住民に周知できれば問題はない。そのような情報を流すことが出来るようになることである。
・地震発生からの対応にこれまで30分かかっていたのが10分に短縮できた。
・通信はブロードバンドを導入した。

5．津波について
・津波のモデリングは北海道大学のタニオカ先生と研究中である。
・マッピングについても作業中である（一部ハザードマップを提示された)。
・観測機器によるモニタリングと、コミュニティによる対応と２種類のアプローチがある。
コミュニティについては、すべての州で訓練が望まれている。重要な問題は津波である。
地震についての講義は、2005年から全国、自治体レベル、等で行っている。
・マカティ市（全市ではない）で行った。
・フィンランド大使館で250万ペソで一部行った。
・津波の看板（避難場所を書いた）を設置した。
・SMSシステムで情報を提供できるようにしている。
・津波の潮位観測についてはアメリカのシステムは海洋に設置され、日本のシステムは海岸に設置されている。
・PHIVOLCSはオープンソースを自治体に提供し、計画作りに役立ててもらっている。
・津波の到達時刻は最短で数分と短い。
・LGUの能力は不明である。PHIVOLCSは能力があるが、JICAにはない。
・活断層について、Infantaは個別に訓練している。PHIVOLCSは３つの州で訓練している。
・JICA開調を要請準備している。観測機器なども含んでいる。

6．火山について
・以前は遠隔地震計が設置されていた。
・活火山に３ヶ所設置され、2006年から６ヶ所設置された。
・マヨン、ブルサンでは噴出物の調査と地震観測のモニタリングシステムを設置した。
・マヨンでは３ヶ月以上避難したものが、プロジェクトにより１ヶ月程度に短縮された。

・ブルサンでは、過去１年半で20回も火山活動があったが、プロジェクトの機器により避難しないですんでいる。
・ブルサンはクレーターが形成され、4000年前に噴火した。ブルサンのある地域では住戸がなく、2006年３月から2007年10月までPHIVOLCSが何も言っていないのに住民独自で避難した。
・タール火山は普通の火山であるが、マニラに近い。
・警戒情報は重要である。特に訓練は重要である。約30%にあたる30人が日本で研修を受けた。JICAのNet施設を３回利用した。
・タイやベトナムなど、近隣諸国からPHIVOLCSに訓練の要請がある。
・津波については１：10,000のハザードマップ以上のものはない。

７．その他
・ワイヤーセンサーが切れて使えなくなるので、地震計を設置した。

日時：2007年11月13日　９時30分～10時30分
会議名：「国連開発計画（UNDP)」聞き取り調査
会場：UNDP打合せスペース
JICA：石渡団長
UNDP：Mr. Kyo Naka, Deputy Res. Rep.　Ms. Amellia Dulce Supetran, Assistant Res. Rep, Env.

・レイテ地すべり災害の後、大統領から協力依頼があり防災分野への支援を開始した。
・ローカルリソース（人材、技術）を最大限、活用するが、必要があれば本部BCPRの支援を受けることも可能である。
・災害対応は国連機関間調整のためクラスターアプローチをとっている。
・防災活動持続性確保のためには維持管理予算の制度化といった取り組みも重要
・Ready Project
  - 総合的なリスク管理を目指す。
  - 国家的な枠組み構築を支援する。
  - PHIVOLCS（火山・土砂災害)、PAGASA（洪水ハザードマップ、予警報)、OCD（総合防災)，NEDA（開発への主流化)、NAMRIA（地図)、MGB（土砂災害ハザードマップ）が実施機関。
  - 活動①複数災害ハザードマップを2009年までに優先27州にて整備
  - 活動②コミュニティ防災強化：コミュニティ予警報システム等、コミュニティ内情報・教育・伝達
  - 活動③防災の開発での主流化：NEDAや計画部局での土地利用や開発規制にかかわる能力強化支援（計画図そのものを作成するではなく、作成能力向上を目指す）
  - ケソン州インファンタ町にては、土砂災害と洪水に対して、①災害評価、②コミュニティとの情報共有、③早期警戒システムを支援。
  - 実施機関への活動経費支援が中心だが、コンサルタント等の契約は先方実施機関のニーズに応じて行っている。
・協調について

- メトロマニラにてJICA地震対策調査を受けて防災計画策定を支援している。
- Aus Aid、EU、ADB（担当：Ms. Jia Xinning, PHI country off.）と協調している。
- JICAとの協調も是非行っていきたい。（こちらからの提案として、JICAにて日本の技術や経験を生かしたパイロットプロジェクトを実施し、その成果をUNDPにて広げる提案をしたところ）望ましい形だと思う。
- JBICと協調の合意をし、ミンダナオと灌漑プロジェクトにて、維持管理面を支援予定。施設建設のみならず、維持管理や住民参加などソフト面での支援は重要と認識している。

日時：2007年11月13日　9時～10時30分
会議名：「公共事業道路省（DPWH）」聞き取り調査
会場：公共事業道路省 計画局長室打合せスペース
JICA：半澤団員、原団員、石井団員、Ms. Minnie M. Dacanay所員
JBIC：馬場駐在員、内田駐在員、澤団員
DPWH：Ms. Maria Catalina E. Cabal：Director, Ms. Rebecca T. Garsuta：Division Chief

---

・DPWH：2007年11月22日付で、今後６年間の中期公共投資プログラムを発表する。DPWHとしては20のMajor River Basinに重点を置く一方、Minor TributaryについてはLocal Government Unit（LGU）の責任範囲と位置付けている。予算については、DPWHの2008年度要求予算総額940億ペソの内、740億ペソが事業向け予算で、更にその内の12%が治水事業向け予算である。
・現在実施中の治水・防災事業としては、JICAを通じてNationwide Flood Risk Assessment調査を行っている。この調査では治水事業優先河川の順位付けを行っており、LGU、あるいは国際援助機関に対して事業優先度を説明する手段として期待している。
・地方事務所としてはProvincial Officeが16、District Officeが274あり、DPWH単独予算、およびCalamity Fund予算で小規模な治水・防災事業を行っている。公正な分配の視点から、特定地方に優先度を置くことはない。
・造成施設の維持管理については、例えば、Kamanava地区についてはMMDAを主管理者とし、LGUも管理者としている。一般論としてDPWHの施設維持管理予算は限られていることから、直接の受益者であるLGUとMemorandum of Agreement（MOA）を交わし、維持管理委託を行っている。この場合のLGUは、Province、およびMunicipalityの両者である。
・FCSECの役割については、現状として、(1) FCSECは研究機関であること、(2) Office of Secretaryに所属する暫定機関であること、(3) 要員数は20名程と限られる上に契約職員であること、を申し上げたい。将来的には、職員の常勤化を行い、DPWHのField Engineerへの研修機関となることが期待される。
・マヨン火山周辺被災地域については、2006年の災害以降、60億ペソの復興予算が確保され、この内の20億ペソがDPWHによる治水・防災事業に割り当てられている。マヨン火山周辺には100万人が居住しており、常に被災の危険にさらされている。マヨン災害対策として、５ヶ所の避難センター、アクセス道路、学校等の整備をNEDAと協議中である。JICA支援のみならずJBIC予算を使った規模の大きい災害対策も実施したい。Bicol Riverについは、DPWH独自予算による支流整備が現在まで行われてきたに過ぎず、JICAに対しては総合流域管理調査の実施を依頼

したい。Yawa川については、Calamity Fundを使い、DPWHが浚渫、堤防整備を行っている。
・事業実施に当り、河川管理区域内の非正規居住者への対応はLGUが行うべき課題である。成功例として、Ilo Ilo事業ではLGUと連携して再定住地の整備を行い、非正規居住者を河川管理区域から立ち退かせた。一方、Kamanava事業ではLGUとの十分な連携が図れておらず、不法占拠者の問題に頭を悩ませている。

日時：2007年11月13日　16時～16時30分
会議名：「アルバイ州災害対策調整委員会（PDCC Albay)」聞き取り調査
会場：委員会打合せスペース
JICA：石渡団長、半澤団員、角田団員、原団員、石井団員、Ms. Minnie M. Dacanay所員
JBIC：馬場駐在員
OCD V：Mr. Raffy Alejandro：Regional Director
PDCC Albay：Mr. Cedric D. Daep：Executive Officer

・2006年の11月30日のTyphoon Reming襲来による犠牲者数は、死者500人以上、行方不明者400人以上の合計１千人に上る大惨事であった。
・各自治体や援助機関、NGOの支援により被災者のResettlement事業を推進しているが、被災者の多くは農民であり、移転地での収入源の確保が困難であることから、農地を求めて被災地域に再び戻る被災者が後を絶たない。

日時：2007年11月13日　16時50分～10時30分
会議名：「Albay州知事」聞き取り調査
会場：州知事の私邸
JICA：石渡団長、半澤団員、角田団員、原団員、石井団員、Ms. Minnie M. Dacanay所員
JBIC：馬場駐在員
Province of Albay：Mr. Joey Salceda：Provincial Governor
PDCC Albay：Mr. Cedric D. Daep：Executive Officer
PHIVOLCS：Eduardo P. Laguerta：Sr. SRS
DPWH V：Ms. Marilou N. Lacuna：Engineer III, Mr. Vicente R. Repolles Engineer I

・州開発の重要戦略は(1)インフラ整備、(2)教育、(3)農業振興、の３つである。フィリピン国は７千以上の島で構成され、地方では開発が進まないのが実情である。Albay州は肥沃な土壌に恵まれているので、海外市場を含めた農産物の取引を拡大しなければならない。
・Albay州では2006年11月のTyphoon Remingによる被災者10,076戸について、６ヶ所のResettlement areaに移転させた。Mayon火山周辺は、Rapu-Rapu island、Batan Island、Cagraray Island、San Miguel Islandの４つの島の配置が影響して、台風災害を受けやすい地形条件にある。従って、毎年のように災害復旧が必要となり多大な負担、かつ経済活動停滞の原因になっている。このような実情を考慮すれば、危険地域住民は安全な地域へ移転させるほうが現実的である。

・今後の州開発として、GUICADALEプロジェクト構想を持っている。これは、Bicol国際空港を中心に環状道路を整備し、Mayon火山周辺の危険地域から住民を移転させ、農業を中心とした産業振興を図る地域総合開発計画である。日本政府への協力要請したいのは道路の整備である。

日時：2007年11月15日　9時00分～10時30分
会議名：「第５地域 市民防衛局（OCD Region V)」聞き取り調査
会場：局打合せスペース
JICA：石渡団長、半澤団員、角田団員、原団員、石井団員、Ms. Minnie M. Dacanay所員
JBIC：馬場駐在員、内田駐在員
OCD V：Mr. Raffy Alejandro：Regional Director
PDCC Albay：Mr. Cedric D. Daep：Executive Officer
APSEMO：Mr. Glenn R. Ravalo：Planning Officer
PHIVOLCS：Eduardo P. Laguerta：Sr. SRS
DPWH V：Ms. Marilou N. Lacuna ：Engineer III, Mr. Vicente R. Repolles Engineer I

石渡団長が調査団の目的や調査工程を説明した後、以下の通り質疑応答が行なわれた。

１．災害時の対応等について
・災害時の対応はOCDがイニシアティブを取っている。
技術的にはローカルのコンサルタントの派遣等の援助をいただいている。
金銭的にはADPCに支援いただいている。具体的な金銭ではなく住宅や食べ物等の物資の援助である。

２．災害後の対応について
・台風などの災害後、河川の再評価を行った。
・クリティカルなバランガイ等には無線機を供給したほか、発電機も提供した。
・衛星電話のシステムは台風で破壊されたので、他のタイプのコミュニケーション方法を取っている。
・河川の状況を監視するためのカメラによるモニタリングを行っている。
・避難の手順について訓練している。
・雨季の前に訓練する必要がある。
・避難基準は公的な問題である。

３．災害時の問題点について
・ワイヤーセンサーと雨量計が設置されているが、今回の災害時には機能しなかった。理由は不明である。
・PAGASAの雨量計が空港の近くにあるが、有効ではない。
・災害時には携帯、ハンドマイク、無線等を使用したが、携帯と無線は機能しなかった。
・要請にある衛星電話だが、使用料金を誰が払うか不明である。おそらくDPWHが負担する。

・バランガイにはDPWHが無線（ウォーキートーキー）を提供した。
・日本ではサイレン等のシステムが普及しているが、高価である。
・ラジオ放送とハンドマイク（Megaphone）が信頼できる。

4．避難センターについて
・避難センターのリストから優先順位をつける必要がある。
・安全なセンターで、安全な道路があり、距離が近いこと、等から評価する必要がある。この判断のために地質専門家が必要である。

5．必要な資料、機材等
・ハザードマップを修正する必要がある。少なくとも昨年の災害時には機能しなかった。
・DPWHがGPSで標高を観測し、データをPHIVOLCSに送り、ハザードマップを作成してもらう。
・JICAから通常の雨量計が提供された。このほかデジタル雨量計をDPWHで設置した。25基が稼動している。
・マヨン周辺の住民は被害時の対応について理解していない。
・ドップラーレーダーが必要である。
・ユニセフから病院、発電機が提供された。
・12月から元の自宅に戻る人がいる。危険だが、DPWHは危険というだけで、彼らをコントロールすることはできない。
・ヤワ川は非常に重要である。

日時：2007年11月16日　9時20分～10時30分
会議名：「オーストラリア国際開発庁（AusAID）」聞き取り調査
会場：オーストラリア国際開発庁打合せスペース
JICA：石渡団長、原団員、石井団員、Ms. Minnie M. Dacanay所員
AusAID：Mr. Deo Mwesigye：First Secretary, Ms. Maria Anna C. Orquiza：Programme Officer

---

・AusAID：全世界レベルでのDisaster Risk Managementに係る支援として、ICRDへは60百万ドル、OCHAへは5百万ドルを拠出している。地域レベルでは、バンコク、およびジャカルタに協議事務所を置きADPC、およびIFRCへの支援を行っている。
・フィリピン国内レベルとしては、インフラ整備支援は行っておらず、PNRCの143プロジェクト（各バランガイから43人のボランティアを募りDisaster Response Teamを組織）、UNDPのジオハザードマッププロジェクト、FAO、Oxfarm等のNGOへの支援を行っている。
・緊急支援として、Quezonの地すべり、Southern Leyteの地すべり、Guimarasの石油流出事故、Bicolの台風Reming、ミンダナオ問題へ資金、および技術を行った。
・Disaster Risk Managementに係る基本的な姿勢は、Local solutionを支援することである。
・ジオハザードマッププロジェクトでは6州を対象としているが、NAMRIAの1/10,000地形図をベースマップとしているため、地形図の未整備地域ではプロジェクト自体が遅延している。

・NAMRIAへの支援は1980年代より継続しているものの、１/10,000地形図の整備が未だに完了していない。
・Southern Leyteの地すべり復旧支援としては、130戸の移転住宅の提供や、NGOを通じた食料支援、飲料水、衛生、教育に係る支援を行った。キャンベラからの専門家を派遣による技術支援を行った。
・台風Reming復旧としては、UNICEFと共同で移転住宅の建材の提供を行った他、Albay州でUNICEFと連携して40個の教室を提供した。また、就学前、および小学生を対象にFood for trainingとしてSchool feeding programmeを行った。
・今後の計画として、ILOと連携してPredisaster livelihood programmeを結ぶことになっている。

日時：2007年11月16日　11時30分～13時00分
会議名：「フィリピン赤十字社（PNRC)」聞き取り調査
会場：フィリピン赤十字社打合せスペース
JICA：半澤団員、石井団員
PNRC：Mr. Benjamin B. Delfin II：Manager of Disaster Management Service

---

・PNRCは、全世界で186社が所属する国際赤十字・赤新月社連盟の会員の１社で、1899年にPhilippine Women's Red Crossとして活動を開始し、1947年４月15日にRepublic Act 95を通じて正式に発足した。現在ではフィリピン全土の94の支部を持っており、議長は国防大臣としている。
・PNRCの任務は、(1) Disaster response teamの結成、(2) 防災訓練の実施、およびDCC実施訓練の支援、(3) 被災者への緊急救援の提供、(4) 災害時の血液、および派生物の確保、(5) 緊急福祉サービスに係る会員組織との連絡、(6) 災害時の追跡サービス、である。
・Disaster Management System（DMS）に係る戦略は、(1) 緊急管理プロトコルの強化（予測、計画、準備、予防、訓練、緩和、救済、再建、リハビリ)、(2) 統合的運用を通じての効果的な防災管理の能力、である。
・DMSに係る２大プログラムは、(1) 防災：被災者への迅速、かつ効果的な救援を保証し、人の命を守り、苦難を緩和、財産を守る事を目指す。(2) 災害時対応：被災者への基本的必需事項（食料、衣類、住居、医薬品と看護、メンタルケア、家族サービス）を提供する。である
・災害時への準備として、(1) 24時間体制の医療、および救援サービス、(2) 各支部でのDisaster Response Teamの配置、(3) 救援トラック、救急車、バン、ボート、通信機材等の機材の整備、(4) 国に１ヶ所、地方に５ヶ所、支部に26ヶ所の防災倉庫の整備、(5) 救援物資、およびテントの準備、(6) 献血、および医療の提供、を行っている。
・コミュニティボランティア制度として143プロジェクトを実施している。これは、各バランガイから43人のボランティアを募り、災害時にはPNRCの活動要員として動員するプロジェクトである。43人の役割分担は、９人がBarangay Disaster Response Team（BDRT）要員、９人が保健・福祉要員、残り25人が献血要員である。

日時：2007年11月16日　11時30分～12時00分
会議名：国家経済開発庁（National Economic Development Authority）打ち合わせ
会場：国家経済開発庁（NEDA）
JICA側：石渡団長、原団員（コンサル）
国家経済開発庁（NEDA）側：Maria Victoria H. de Guzmen
Marian T. Cruz

石渡団長が調査団の目的や調査工程を説明した後、以下の通り質疑応答が行なわれた。

・DRR（Disaster Risk Reduction）プロジェクトが進行中である。NEDAの地方局とでやっていて、地方局が試験的に行っている州の準備や支援を行っている。
・UNDP、PHIVOLCS、PAGASA、OCDなどがメンバーである。
・ガイドラインを作成し、地域を選んでガイドラインの使い方等のトレーニングを行って地方に普及させる。
・例えばDPWHが作っている橋の評価などはそれほど厳しいものではなく、あくまで計画上のものである。
・政策としてはすでにあるが、規制や手法等については準備中である。
・ガイドラインは完成しているので数年後には発行した。
・防災を考慮するとインフラ整備のコストが増加するが、州や市にとってはやむを得ない。
・ガイドラインのターゲットは地方のスタッフである。
・NEDAの政策としては、インフラが最優先である。災害対策は政府の政策である。
・JICA案件は今のところない。

日時：2007年11月16日　13時30分～14時00分
会議名：災害準備センター（Center of Disaster Preparedness CDP）打ち合わせ
会場：災害準備センター（CDP）
JICA側：石渡団長、原団員（コンサル）
災害準備センター（CDP）側：Eufemia Castro – Andaya　President, CDP

石渡団長が調査団の目的や調査工程を説明した後、以下の通り質疑応答が行なわれた。

1．NGOの設立、活動等について
・以下の関連資料を提供いただいた。
“Center for Disaster Preparedness”：brochure
“child-oriented participatory risk assessment and planning：a toolkit”：brochure
“Integrating Disaster Risk Management in Local Governance”：CD
・JICA関連では、カミギンの災害時にDagpan市役所で活動した。
能力向上とコミュニティのトレーニングを行った。

２．出版物

・“Citizenry Based & Development-Oriented Disaster Response”：小冊子
最初の出版物

・“Christian Perspectives Disaster management ：A Training Manual”
フィリピン用の本。日本大使館印刷。簡易で役に立つ。
Infantaなどではベストセラー（といっている）。

・“Integrating Disaster Risk Management in Local Governance”
最新の印刷物。地方自治体向け。UNDP発行。

・“Basic Study for Non-structural Disaster Prevention Measures for the Province of Camiguin, Philippines”

・コミックも出版している。

３．その他

・National Conference in 2003 1st
今のところ最初で最後。２回目は開催されていない。

・OCDは一生懸命やっているが、活動には限界がある。

・“Harmonization”という新しいキーワードを打ち出している。
OCDとのトレーニングや指揮、他のNGOのコンセプト、リスクマネジメント、準備、等々とのハーモナイズ、というイメージである。

・アンケート調査を手伝いできる。カミギンの時には100万ペソ／月／人であった。カミギンは複雑だったので、価格は相談に応じる。

日時：2007年11月16日　15時00分～16時00分
会議名：社会福祉開発省（DSWD）打合せ
会場：社会福祉開発省（DSWD）
JICA側：石渡団長、原団員（コンサル）
社会福祉開発省（DSWD）側：
CELIA C. YANGCO　Undersecretary, Operations and Capacity Building Group
MILOSIL EDLES CRUZ　Chief, Special Projects & Concerns

石渡団長が調査団の目的や調査工程を説明した後、以下の通り質疑応答が行なわれた。

１．活動等

・“Family & Community Disaster Preparedness”と、家族もターゲットに入れている。

・トレーニングに力を入れている。コミュニティのトレーニングも同様である。

・必要物資のストックの保存が問題である。

・準備は地方予算で行った。災害後は予算がつくが、準備には予算がつかない。

・カラミティファンドは、映画館や住宅の建設、銀行へのアクセス、生活必需品等に使われた。

・PAGASA、PHIVOLCSが物理的なものを取り扱っているのに対し、DSWDでは社会心理学的

な、メンタルヘルス面での被害者を救済している。
・東海岸は台風常襲地帯で火山もあり、地域的には重要な地域である。

2．他機関との連携
・NGO、OCDを通じてPSDMM（？）と連携している。
SMART、Philippine AirlineもPSDMMのメンバーである。
・NCDM、NCDP、NCDR等もNGOを招待している。

3．その他
・Livelihood Programは非常に限定的で、地方自治体のみである。
・マヨンの被災者の大半は農民である。
能力トレーニングを行うことを推薦している。
電力は供給されていない。
再移住は困難である。
・国際的な連携で戦略を練る必要がある。
バンコクの災害訓練教育センターのようなものである。

日時：2007年11月18日　13時30分～14時30分
会議名：「Infanta町役場」聞き取り調査
会場：町内のホテル
JICA：石渡団長、角田団員、石井団員
JBIC：馬場所員
Infanta：Ms. Filipina Gracer R. Americana：Municipal Mayor, Mr. Ron P. Crisostomo：Planning Officer
DPWH Quezon I：Freddie M. Combalicer：Engineer II
DPWH FCSEC：Mr. Gil I. Iturralde：Engineer V, Mr. Alexander B. Borja：Engineer IV
ICDAI：Mr. Francis B. Lucas：President, Gina Auellano：Administrative Officer

---

・2004年11月29日のTyphoon Winnieで多大な被害に見舞われて以来、Disaster risk managementは町が取組む中心活動となっている。被災以降、町独自の警戒避難システムを立ち上げており、アゴス川水位観測点（Km 3 Watch point）の設置、km12地点（バランガイMagsaysay）へのテレメータ雨量計の設置、BDCCへの無線機、および警報ベルの設置、防災訓練等を行っている。また、役場敷地内にはPAGASAの気象観測所が位置しており、テレメータ雨量計の伝送データを含めたリアルタイムの降雨監視をMDCCで行っている。これらの防災費財源には町歳入の20%を充てている。
・MDCC Infantaでは全11バランガイを対象に、Rain-Induced Landslide/Flashflood Disaster Preparedness Planを2006年に策定しており、MDCCの組織体系（Mayorが議長）、災害時の行動指針、警戒／避難基準水位・雨量、地すべりハザードマップ、洪水ハザードマップ、バランガイ住民が作成すべきCapacity and resources map等が盛り込まれている。
・Watch pointでの水位監視は、町民ボランティア（Barangay action radio communication）によるもの

で無線機によりMDCCへ情報伝達を行っているが、2004年災害時には停電したことから、無線機への電源確保が懸案事項である。また、町内の公立学校では、Curriculum for disaster preparednessと称して防災訓練を行っている他、バランガイレベルでもCapacity and resources map（町民ハザードマップ）を作成している。

・町内では地すべり危険区域が数ヶ所で指摘されるており、監視体制は未整備である。PHIVOLCSによれば、日雨量100mmに達すると地すべり発生の恐れがあることを警告している。また、PHIVOLCSは2004年災害の規模について、山崩れによりアゴス川に天然ダムが形成されて巨大な量の水を貯留し、ダム崩壊に伴う猛烈な流水がInfantaを含む低地形で一気に氾濫したとの推測を行っている。

・JICAへ期待することは、アゴス川の治水に係る技術協力である。2004年災害以降、多くの日本人がInfantaを訪れているものの、残念ながら技術アドバイスを受けてはいない。国は将来計画としてGeneral Nakarに国際貿易港を整備する構想を持っているが、これは太平洋に接する地の利の良さに注目したものである。Marikina-Infanta highwayも工事が進められていおり、Infantaの発展のためにぜひ協力をお願いする。

日時：2007年11月20日　16時00分～17時00分
会議名：マニラ首都圏開発庁（MMDA）打ち合わせ
会場：マニラ首都圏開発庁（MMDA）
JICA側：原団員（コンサル）
マニラ首都圏開発庁（MMDA）側：田中　祥夫　JICA EXPERT

原団員が調査団の目的や調査工程を再度説明した後、以下の通り質疑応答が行なわれた。

1．過去及び現在の活動内容について

・防災訓練については３つのバランガイで行った。
・72個の災害用ボックスは洪水対策用であり、MMDA管轄下の洪水氾濫区域に集中して配備している。
・2004年の報告書のメガマニラ圏を提案については、クラスターミーティングを３回実施しており、地域ごとに電気、水道等の会社も参加している。MMDA下のLGUも参加している。
・このほか、防災センターの建設や、地震時のコミュニティに対する啓蒙等を提案しているが動いていない。

2．今後の予定について

・国際会議がマニラで開催され、Santiago氏がホスト役となっているため、会議の終わる11/28までは質問の回答は不可能である。11/28以降に速やかに回答していただけるよう、JICA側からもお願いしていただきたい。
・質問票の回答時に、田中専門家からも今後の提案についてお話を聞かせていただける予定である。

日時：2007年11月21日　８時50分～９時30分
会議名：「Camiguin州知事」聞き取り調査
会場：州知事室
JICA：石渡団長、角田団員、石井団員
Camiguin：Mr. Hon. Jurdin Jesus M. Romualdo：Provincial Governor

---

・2001年11月６～７日にかけてTyphoon Nanangで多大な被害に見舞われたが、現在では住居や農地は復旧している。しかしながら大雨の際には鉄砲水が発生し、住民は不安に駆られている。
・Community-based disaster preparednessは、バランガイ・レベルで既に組織化しているので、州の当面の課題としては廃棄物処理である。生計手段として農業振興に力を注がなくてはならない。水道については1989年にスペインの支援を受けている。また、2008年にはニュージーランドの支援でCostal management projectを開始する予定である。
・２週間前に島で地震があった。今までは被害を受けたことはないが、津波は恐怖である。
・砂防ダムの新設をJICAへ要請しており、期待している。
・先月10月17日のArroyo大統領の訪島の際には、州整備費として（1）Cross-country roadの建設、（2）州内の市場の整備、（3）Hubangon川の改修、の夫々に１千万ペソずつの合計３千万ペソの拠出を約束した。

日時：2007年11月22日　８時20分～８時40分
会議名：「Camiguin州」聞き取り調査
会場：Provincial Planning and Development Office
JICA：石渡団長、角田団員、石井団員
Camiguin：Mr. Felicisimo M. Gomez：Provincial Planning and Development Officer

---

・2001年11月のTyphoon Nanangによる被災を受けて、2003～2004年にJICAが提供してくれた防災技術協力には感謝している。特に無線機は非常に有用で、各町々では維持管理費を予算化している。無線機は災害時のみならず、ボーイスカウトのジャンボリー（調査時に開催中）等、多目的に使用している。
・JICA技術協力では州全体で５つのバランガイをパイロットとしたが、今では15バランガイにBDCCによる警戒避難体制が整った。この努力の甲斐があって、Camiguin州は2006年に開催されたRDCC Northern MindanaoによるRescue Olympicsで総合チャンピオンになった。バランガイの防災訓練については州のスタッフが指導しており、Camiguin州の予警報体制はフィリピン国で誇れるものである。

日時：2007年11月22日　９時20分～10時00分
会議名：「Mahinog町役場」聞き取り調査
会場：町長室
JICA：石渡団長、角田団員、石井団員

Mahinog : Mr. Alex R. Jajalla : Municipal Mayor, Mr. Benito C. Paderansa : Municipal Planning and Development Officer, Ms. Merian C. Bucton : Municipal Planning and Development Coordinator, Homer R. Jajalla : Mahinog Response 143 Chairman

---

・JICA無償協力を要請しているHubangon橋は、2001年11月のTyphoon Nanangの後、DPWH技術者の検査により構造上の不具合が指摘されて以来、今日まで片側通行となっている。
・JICAが供与してくれた無線機をきっかけとして町予算で無線機の調達を行い、今ではMahinog町の全13バランガイで多用途に使用している。無線通信については町民ボランティアによる組織が発足し、50台以上が加入している。これに伴い、山間部へも電波が届くよう町役場ではリピーター局を設置した。無線はVHFであるが、目下の課題はチャンネル数（現在は５チャンネル）の増設である。
・Hubangon川、およびBugwak川には水位計を設置して４つの警戒レベルを設定している。監視員はバランガイが任命した近所の住民で、無線を通じてBDCC→MDCC→PDCCへ情報伝達を行っている。
・Typhoon Nanangでもっとも大きな被害を受けたのはMahinog町で、現在では143プロジェクトが組織されており、災害時の供えた訓練を行っている。また、救急車は24時間体制で待機している。

日時：2007年11月23日　９時30分～10時30分
会議名：「アジア開発銀行（ADB）」聞き取り調査
会場：ADB打合せスペース
JICA：石渡団長
ADB：Ms. Xinning Jia

・ADBの防災分野への協力は主流ではなく限られている。
・地すべり災害後の南レイテでの、TAにて州政府、LGUsの能力強化。日本基金による無償にて州政府を通じて、学校等のリハビリ、州防災センター建設等が実施中。2009年末完成予定。
・OCDに対するTAを08年８月まで実施中である。全国防災フレームワークを提案している。
・さまざまなドナー、NGOが個別に動いており、全体を調整できていない。OCDは調整機能を果たすべきであり、全国のプロジェクトを管理するデータベース等のシステム構築が必要であろう。
・今後、予定されている案件はない。融資案件も提案したが、フィリピン政府が断った。
・優秀なNGOが多くおり、レイテでも技術アドバイスを行ったり、PPSB（コンタクト先：Executive Director Mr. Gil Salagar）による訓練も行われている。
・中央政府機関を通じての支援ではコミュニティに届きにくい。州政府やLGUsを通じた支援により、地方にオーナーシップ、リーダーシップを持たせる必要があると認識している。

日時：2007年11月23日　18時10分～18時40分
会議名：「欧州委員会EC)」聞き取り調査
会場：JICAフィリピン事務所第４会議室
JICA：石渡団長、石井団員
EC：Mr. Michael Gowen：Deputy Head of Unit Asia and Latin America, Ms. Laurence Bardon：Technical Assistant

---

・2006年の11月のTyphoon Reming襲来の際、2.7百万ユーロの拠出を行い、ILO、ICRC、PNRC、NHA、OCHA、DSWD、NDCCを支援した。また、Albay州では10,000人をEvacuation Centerへ避難させた。支援の際のKey Issueは(1) Resources、(2) Land、(3) Political Willであった。
・ECのDisaster Preparedness Programme（DIPP）は、東南アジアを対象とした２年サイクルのプログラムで、次回分の予算については、本年12月13～14日のConsulting Meetingで正式に決定する。
・ECがフィリピン国で行うプロジェクトの予算規模は、20～30万ユーロ／件で、2007年の総予算規模は2.33百万ユーロであり、2008年５月には多くのプロジェクトが完了する。インフラプロジェクトは行っておらず、Capacity Building、Information Training等、小さな投資で行えることを行っている。また、LGUsへの直接支援を行うことが出来ない明確な法令がある。
・Emergency Food Aid Programmedでは、2007年度予算でアフリカ向けに５億ユーロ、アフガニスタン向けに31百万ユーロ、バングラデシュの洪水被害支援として19百万ユーロ等を拠出している、その他のアジア諸国としては、タイ、スリランカ、ネパール、インド・カシミール、東チモール、ベトナムへ支援を行った。
・各国ドナーとの支援プログラムの調整は大きな課題である。JICAフィリピンとはECのバンコクRegional Officeを通じた調整をぜひとも行っていきたい。

日時：2007年11月23日　15時30分～16時00分
会議名：環境天然資源省鉱山・地質科学局（DENR、MGB）打合せ
会場：環境天然資源省鉱山・地質科学局（DENR、MGB）
JICA側：原団員（コンサル）、Minnie M. Dacanay In-House Consultant JICA
環境天然資源省鉱山・地質科学局（DENR、MGB）側：Sevillo D. David Jr., Ph.D.　Structural Geologist

---

Minnnie氏が調査団の目的や調査工程を説明した後、以下の通り質疑応答が行なわれた。

１．活動等
・10%がUNDPのREADY Projectであり、PHIVOLCS、PAGASA等と実施中である。
・ハザードマッピングは2010年までに完成予定である。
・土砂災害、洪水にかかわるハザードマッピングを作成中であり、その他石灰岩中に形成されるシンクホール等についても作成している。GISを用いてマッピングし現地確認を行って成果を作成している。縮尺は１：5,000である。
・海洋部では、津波、海岸浸食、海岸洪水、等のハザードマッピングを行っている。

日時：2007年11月23日　14時00分～15時00分
会議名：内務自治省（DILG）打合せ
会場：内務自治省（DILG）
JICA側：原団員（コンサル）、Minnie M. Dacanay In-House Consultant JICA
内務自治省（DILG）側：Manuel Q. Gotis, Ceso Ⅲ　Director Ⅳ

Minnnie氏がが調査団の目的や調査工程を説明した後、以下の通り質疑応答が行なわれた。

1．活動等

・DILGの政策は、コミュニティ防災による災害防止である。

◆法令としては以下のものがある。

・第５節　RA6975に基づく条例、規定
  - 地方自治体と法執行と公共の安全に影響する国内法の準備に関する支援を行う。
  - 自然災害もしくは人災による地域的な緊急事態に際しては、計画、政策、プログラムを作成する。
・大統領令1566では、地方自治体の長は他のNGAと調整してLDCCのメンバーの訓練を行い、DCCの組織とすべての地方自治体におけるオペレーションセンターの設立とについて監督責任があることが規定されている。

◆主な役割

・大統領令1566　1978年６月11日
  - PDCCの強化とNPCDCの設立
  - 政策宣言書
    * 指導責任は州知事、市町村長、バランガイ長、副知事、副市町村長、等々が、各々の地域について責任を負う。
  - 大統領令1566　自己責任、自助、相互補助
    * 国家の政治的、管理上の再分割に際しては、隣接する事業体もしくは上位機関からの支援依頼以前に地域内での全ての利用可能な資源を活用する。
  - 権限、義務、機能　（1991年　LG規約、444節　par. B（vii））
    （324（d）節　RA No.8185改定）
    * 人災もしくは自然災害からLGUの居住者を守るための方策を策定する。災害後に被災者に救援物資、援助及び災害後に生計を立て直すための救援物資、援助を提供する。

2．問題点等

・全ての州と市で公共の安全と緊急時の管理を行う制度を設立する必要がある。
・LDCCは自然に対してその場限りである。大部分のLGUが災害管理のための恒久的な事務所を持っていない。
・人々を対象にした地方の災害管理は地方自治体の最終的な目標である。
・全てのLGUが減災事業の開発基金を活用しているわけではなく、大部分のLGUは災害管理に

関連する活動を支援するための地方災害基金に依存している。

- LGUは地域の自然災害及び人災によってもたらされた災害の認識、評価、観測に関する知識が不足している。
- LGUはハザードマッピングの価値と、（固有のもしくは標準的な）早期警戒体制の調査についての知識が不足している。
- 被害と損失にかかわる評価と報告手段に関するDRNAのフレームワークとガイドラインの基準がない。
- 準備と災害時の対応に有効なデータベースを構築する能力が不足している。
- どのようなデータを収集して何を大衆に知らせるかという認識が不足している。
- 過去の災害の経済的な影響に関する調査研究と文書化と、次の災害に備えた災害復旧と復興計画にかかる事業の費用対効果分析が不足している。
- マグニチュードや頻度、被害等の数値間の傾向分析にかかわる研究・文書化が不足している。
- DRRにおける認識不足によるDRR（建築条例、土地利用/分類条例）に関する既存法律の実施の問題。
- LGUの使用する具体的な自然災害に関する基準の概要がない。
- 地方開発計画、政策及び投資事業に関していかにDRRを盛り込むかの国内基準がない。

等々、多々問題がある。

DILGとしては、わずか2,000,000P/年の予算と災害対応担当が２名しかいない、という予算及び人材不足が問題である。

日時：2007年11月28日　14時00分～15時30分
会議名：「Ligao市役所」聞き取り調査
会場：Ligao市役所のPublic Safety & Emergency Mitigation Office
JICA：角田団員、石井団員、原団員
Ligao：Mr. Antonio S. Imperial：Public Safety & Emergency Mitigation Office
APSEMO：Mr. Roderick P. Mendoza：Planning Officer II

- 2006年の11月30日のTyphoon Reming襲来の際、幸いLigao市では死者は発生しなかった。しかしながら、川沿いでは堤防から超水して水深２m程度に及ぶ洪水被害があり、市役所でも30cm程度の浸水に見舞われた。
- 国道上のTobgon橋、およびBasag橋が崩壊し、その他の１橋が障害を受けている。従って、DPWHには早急の復旧を要求している。
- Albay州政府案として、Ligao East Central SchoolにEvacuation Centerを設置するようJICAへ要請している。先般11月22日にはTyphoon Minaによる洪水、およびラハール災害に備えて9,172人を避難させた。この際、市役所担当職員が全バランガイを巡回し、携帯電話にてバランガイ・キャプテンへ警戒態勢を指示したが、避難対象者の判断はバランガイ・キャプテンが行った。
- Ligao市CDCCではPresidential Decree 1566 dated 1978に従ってCalamity and Disaster Preparedness Planを規定している。また、BDCCの規約についてはボランティア組織の支援を受けて策定して

いる。しかしながら、防災資機材の用意が整っておらず、無線機、救援用資機材、ラバーボート等を準備する必要がある。また、川の浚渫用にバックホーも必要である。

・DENR, Mines and Geosciences Bureau, Regional Office Vでは、Ligao市の１/85,000縮尺のFlood hazard map、およびLandslide susceptibility mapを2007年に完成させており、全バランガイを対象としたセミナーを通じ、同マップの提供、および災害時の避難ルートの確保を啓蒙している。

・NGOについては、市民団体による通信ボランティア、および救援ボランティアがある。

日時：2007年11月28日　16時00分～16時50分
会議名：「Guinobatan町役場」聞き取り調査
会場：町長の私邸
JICA：角田団員、石井団員、原団員
Guinobatan：Mr. Juan Mitre Garcia：Municipal Mayor
APSEMO：Mr. Roderick P. Mendoza：Planning Officer II

・2006年の11月30日のTyphoon Reming襲来の際、Guinobatan町ではラハール災害、および洪水により500人以上の犠牲者を数える大惨事に見舞われた。特に、Maiponバランガイは壊滅的に被災した。

・先般11月22日にはTyphoon Minaによる洪水、およびラハール災害に備えて２千人を避難させた。

・災害警報の伝達順序は、PDCC→MDCC→BDCCであるが、災害時には停電するため、電灯電源式の無線は伝達手段としての信頼性が低い。また、避難者あるいは被災者の移動手段であるトラックを役場は所有していないので、町民から借上げた車両を利用している。災害に備えて整備したおきたい資機材は、トラック、救急車、警報サイレンであり、中央政府に調達を要請している。町民は身をもって災害体験を有しているため、バランガイレベルでの防災活動は非常に活発である。

・Guinobatan町の所有するResettlement areaは、(1) Mabugos：105世帯、(2) Mauraro：500世帯、(3) Quitago：590世帯である。土地の調達については、(1)が前Albay州知事の提供、(2), (3)がNHAの整備による。移転住宅の建設に当り、町は70,000ペソを材料費として供与するが、建設作業については被災者自身の提供とさせ、女性には作業員用の炊事を割当てている。資金の調達については、IOM、US Aid、イスラエル政府、NGOのGawad Kalinga等が支援している。

・移転住民の多くは農家であるので、収入源として彼らの栽培経験のない商品作物の栽培技術をDepartment of Agricultureの普及員が指導している。Mayonのラハールは肥沃であるため今後が期待される。

・ラハール被害軽減のために、構造物による対策には期待している。

日時：2007年11月29日　９時50分～11時30分
会議名：「Camalig町役場」聞き取り調査
会場：町長室
JICA：角田団員、石井団員、原団員

Camalig : Mr. Carlos Baldo : Municipal Mayor, Mr. Arvin M. Vibar : MDCC Action Officer, Ms. Josephine G. Abansi : Municipal Planning and Development Coordinator, Mr. Rommel Negreto : Municipal Planning and Development Office Staff, Mr. Rogelio P. Naz Jr. : Municipal Engineer
APSEMO : Mr. Roderick P. Mendoza : Planning Officer II

・2006年の11月30日のTyphoon Reming被災以降、町ではDisaster Preparedness Planを策定し、1/100,000のスケールで洪水ハザードマップも作成している。
・町が指定する災害警戒地域に居住する人口は28,989人5,946世帯で、世帯の主たる生計手段は、農業38%、雇用労働35%、民芸品製造12%、商業・製造業15%となっている。
・町が所有するResettlement areaは、バランガイTagaytayに位置するAlbay州から購入した14.5haの土地である。1,000戸分の収容能力があり、現在までに483戸が移転している。町が移転勧告を発令している戸数は1,735あり、更に12haの土地が必要であるが未購入である。移転地での産業誘致のため市長自ら企業家と交渉している。
・災害時の救援物資はLocal calamity fundで購入しているが、毎年20以上の台風に見舞われるので財政は厳しい。
・町の防災事業として、河川の植生護岸を試験的に行った。これはココナッツ繊維を河道法面に敷き詰めてココナッツ繊維で編んだネットで固定したもので、水草とベチベル草を移植している。法尻にはインターロッキングブロックを敷くことになっている。地元で容易に調達できる材料を利用したEnvironmentally friendlyな工法としてBBC Worldが取材に来たほどで、雇用機会の創設を兼ね、今後は町の目玉プロジェクトとして展開していきたい。

日時：2007年11月29日　13時～14時
会議名：「Daraga町役場」聞き取り調査
会場：町長室
JICA：角田団員、石井団員、原団員
Daraga : Mr. Hon. Cicero C. Triunfante : Municipal Mayor, Mr. Manuel M. Andes : MDCC Action Officer,
APSEMO : Mr. Roderick P. Mendoza : Planning Officer II

・2006年の11月30日のTyphoon Reming襲来により、町では９万人が避難し159名が犠牲となった。
・町が所有するResettlement areaは、Anislag Resettlement areaで、22ha、31ha、13haの３地区で構成されている。22ha地区はPhase１地区とPhase２地区から成り、Phase１地区は1994年のマヨン火山噴火を機に648戸が移転している。また、Phase２地区には50戸（６m×３m/戸）のTransit shelterが設けられている。31ha地区は州から購入した土地で、３地区で最大の３千戸が移転しており、Daughters of Charity of St. Vincent Depor、DSWD、Habitat of Bicol、Christian Aid Foundation、Gawad Kalingaの全部で５つの団体が支援を行っている。13ha地区はNHAが整備を進行中である。現在のところ、３地区全体での移転戸数は4,769である。
・Anislag Resettlement areaでの生計手段は、食品加工、製パン、石鹸製造、民芸品製造、建材用ブロック製造等であるが、十分ではない。また、小学校の建設も行われている。
・Local calamity fund（町歳入の５%）の使途は災害後の復旧であるので、町独自で歳入の20%を

防災関連事業費として割り当てている。

・町では、Municipal Land Management Responsive to Internally Displaced Personsとのテーマで、International Organization for Migration（IOM）と共同で本年９月にワークショップを開催して意見交換を行った。

日時：2007年12月４日　11時00分～12時00分
会議名：DPWH Region 3打合せ
会場：
JICA側：原団員（コンサル）
DPWH Region 3 MPE-PMO側：ISABELITA M. MANALO　OIC -ASST.PROJECT DIRECTOR
TOMAS EDISON S. OLALIA　ENGINNER IV

調査団の目的や調査工程を説明した後、以下の通り質疑応答が行なわれた。

１．対策工事の現況について
・Phase-I, IIは完成した。
・Phase-IIIについては、日本大使館で近々契約がなされる予定である。

２．被害について
・対策工施工後の被害については、JBICによる効果評価にまとまっている。

３．ピナツボ西側の対策工（Phase-V等）について
・緊急対策で堤防等が施工されたが、それだけである。
・現在はSto. Thomas川の橋梁工事しか実施中ではない。

４．コミュニティ防災活動について
・2001年にコミュニティ防災の報告書が作成されたが、それ以降更新されていない。
・Mt. Pinatubo Commissionで家具製作、被服製作、ピナツボから流出してきた石を利用した彫刻等の訓練等は当時行われた。特にDPWHでは訓練等は実施していない。

５．期待されるプロジェクトについて
・Phase-IIIが実施されれば、IV、Vが残っているが、特にPhase-Vは必要性が高いため、ぜひとも実施したい。
・それ以外の追加対策工事は今のところ考えていない。とにかく、Phase-Vの実施が必要である。

日時：2007年12月４日　13時30分～15時00分
会議名：Guagua Municipality都市計画開発局　打合せ
会場：Guagua Municipality都市計画開発局
JICA側：原団員（コンサル）
Guagua Municipality都市計画開発局側：
　　ELSA PEREZ-PANTINO　Municipal Planning and Development Officer

---

調査団の目的や調査工程を説明した後、以下の通り質疑応答が行なわれた。

１．JBICによるPhase-I、IIの効果について
・洪水被害は対策工完成後も続いているが、湛水時間が短くなるなどの効果があった。
・引き続きPhase-IIIの工事によるさらなる効果が期待される。

２．被害について
・Municipal Office周辺も洪水危険範囲であり、ほぼ毎年のように１階部分は浸水している。
・浸水深が深いときは船で通勤するなどしている。

３．コミュニティ防災活動について
・訓練は州政府によりほぼ毎年実施されている。

４．警戒避難システム等について
・PAGASAの手動式雨量計がついているが、３時間ごとのデータしかない。
・河川水位は６時間ごとにデータを取っている。したがって、洪水の予報には使えない。
・洪水時には電話等も使えなくなり、電子メールによる通信しかないが、使用可能なパソコンが少ないため、連絡がうまくいかない。
・バランガイキャプテンは１台ずつ無線機を持っている。
・洪水ハザードマップはあり、Municipalityで作成した。

５．期待されるプロジェクトについて
・自動観測計器（雨量、河川水位）はもちろんほしい。
・専門家の派遣については、言葉を濁された。
・上記Phase－IIIによって、Guaguaの洪水被害が軽減されるので、ぜひとも早く実施してほしい。

日時：2007年12月５日　16時00分～17時00分
会議名：マニラ首都圏開発庁（MMDA）打ち合わせ
会場：マニラ首都圏開発庁（MMDA）
JICA側：原団員（コンサル）
マニラ首都圏開発庁（MMDA）側：田中　祥夫　JICA EXPERT

以下の通り質疑応答が行なわれた。

1．形成プロジェクトについて

・2004年報告書の提案プロジェクトの地震災害分野のうち、「地震災害に強い都市づくり促進」プロジェクトはぜひ提案していただきたい。
・メトロマニラでは、火災に対する対応能力がほとんどない。消防車等の機材は必要である。
・建築物の耐震性向上等の構造物対策はほぼ不可能であろう。したがって、コミュニティ防災主体のプロジェクトを立ち上げることが現実的と考えられる。たとえば、起震車を派遣して地震の疑似体験をさせ、教育していく、などである。

日時：2007年12月６日　９時00分～10時30分
会議名：マニラ首都圏開発庁（MMDA）打ち合わせ
会場：マニラ首都圏開発庁（MMDA）
JICA側：角田団員（コンサル）、原団員（コンサル）
マニラ首都圏開発庁（MMDA）側：Ramon J Santiago　Director for Public Safety
Amante Salvador　Director II

質問票の回収の際に以下の通り質疑応答が行なわれた。

1．過去及び現在の活動内容について

・質問票の活動状況については、各項目について別表で示した。
・MMDCCは現在組織の改変中であり、NGOも取り込んだ組織として生まれ変わる予定である。
・指導訓練は、全ての学校について２回/年行っている。
・“Public Safety”と題した2006年の活動と2007年の活動計画を示した。
・質問票の他の項目については、提供した資料を参照にする。

日時：2008年３月７日　９時～14時00分
会議名：「フィリピン防災セミナー（JICA、JBIC、日本大使館）」における公開討論会
場所：JICAマニラ事務所 会議室
出席者：別紙のとおり
調査団員：石渡団長、福渡団員（JBIC）、沢団員（JBIC）、半澤団員、石井団員、原団員、角田団員

議題：「フィリピンの防災マネジメント・セミナー
「フィリピンの災害マネジメントへの日本政府の協力ポリシーとローリングプラン」（調査団長）のプレゼンテーションに続く「オープン・フォーラム」（12時10分～12時50分）

[EC-DiPECHO]

・JICA、WB、ADBなどドナー間の調整やフィリピン関係機関のこれまでの経験交流の場とし

今日のセミナー、および今後に期待している。

[団長]　ドナー機関の調整の場を設けることは重要である。UNDPなど国際機関が設定されることを期待する。

・New CASの見通しについて：

[JICA半澤/大使館]　New CASは、日本のODA現地タスクフォースで検討中。その後でフィリピン政府との協議に入る。

[DPWH]

・基本的にはプログラムを了解できる。一方、個々の案件でみると、DPWH関連の新しい案件としてはカミギンだけで、マニラ首都圏案件（新規）、アグノ流域事業の次期案件などが示されていない。

[団長]　「防災プログラム」は10ヶ年間のプログラムであり、現段階で提示されていなくても、今後、必要な新しい案件が形成されるであろう。なお、全国治水プロジェクトは終了する。

・地方自治体開発予算（Local Development Fund）による防災分野での対応はリハビリテーション程度であり、十分でない。

[団長]　構造的対応には財源確保の課題がある。今後は、今まで以上にコミュニティレベルの防災（災害対応力強化）を展開する必要がある。

[OCD]

・Project 1（中央政府レベルの制度・政策の支援とコミュニティ防災）は、よいプログラムであると考える。中央政府の対応とコミュニティレベルの対応、フィリピンの経験と日本の経験・技術の展開など、期待したい。なお、現在、政府は災害マネジメント法の制定に向けて努力している。

・フィリピン政府の目標は死傷者ゼロである。

[FCSEC/DPWH]

・昨年2007年12月のBicolをおそった台風では70万人が避難した。⇒？　Bicolでは　構造的対策が必要である。

[団長]　Project 2（マヨン火山地域災害マネジメント）で検討されよう。

[PHIVOCS]

・提案された「防災プログラム」には、地震・津波関連災害に関するプロジェクトがない。

[団長]　コミュニティレベルの活動は、CBDRD早期警報システム・避難システムのプロジェクトの中で対応できると考える。

・2007年に養成した地震案件が入っていないが、JICAに届いているか？

[半澤]　フィリピン国からの要請案件はNEDAが調整して日本政府に伝えられる。JICAは受けとっていない。

<u>個別の案件についての質問</u>：

[FCSES]

・カミギンの無償案件はいつ開始されるのか?

[団長]　ここではコンセプトのレベルで示している。

[PAGASA]

・Project 5（コミュニティへの災害情報の質の改善）はいつごろスタートするのか？なお、ト

ップ・レーダー整備の養成も出している。
[団長]　これから、具体的なプロセスが始まることになる。

参加者リスト：「フィリピン防災セミナー（JICA，JBIC，日本大使館）」2008年３月７日（１）

Attendance for the Disaster Management Workshop
March 7, 2008 JICA Philippine Office

Organization	Name of Participant	Signature	Received DVD/ VCD
DOST	Graciano Yumol, Undersecretary		
DSWD	Usec. Celia Yangco		
	Violeta Cruz, Director ESTHER C. GERALDO		
MGB	Dr. Sevillo David		
MMDA	Ramon Santiago, Director		
NDCC	Gen. Glen Rabonza, Administrator		
NDCC-OCD	Crispina Abat		
	Lenny Alegre		
	Ruth Rodriguez		
	Ronald Flores		
NEDA	Aurora Collantes		
	~~Roma Rodriguez~~, Social Development Staff MARIA DE GUZMAN / RDCS		

Attendance for the Disaster Management Workshop
March 7, 2008 JICA Philippine Office

Organization	Name of Participant	Signature	Received DVD/ VCD
NEDA-RDCS	Ma. Victoria de Guzman		
PAG-ASA	Dr. Prisco Nilo, Director		
	Susan Espinueva		
	Oscar D. Cruz - MA CECILIA MONTEVERDE		
	Socrates Paat		
PHIVOLCS	Director Renato U. Solidum		
PNRC	Benjamin B. Delfin II		
	Genevieve de Jesus		
	Evelyn Lacsina		
Center for Disaster Preparedness	Lorna Victoria		

参加者リスト：「フィリピン防災セミナー（JICA，JBIC，日本大使館）」2008年３月７日（２）

Attendance for the Disaster Management Workshop
March 7, 2008 JICA Philippine Office

Organization	Name of Participant	Signature	Received DVD/ VCD
DENR	Analiza Rebuelta-Teh, Assistant Secretary		
	Vicente B. Tuddao		
	Conrado Bravante, Jr.		
	Eddie Abugan, FASPO		
DILG	Director Manuel Gotis Marilyn L. Go		
DPWH	Ma. Catalina Cabral, Assistant Secretary		
	Rebecca Garsuta, Chief Planning		
	Philip Menez, Director, PMO Alejandro A. Sosa, PMO		
	Patrick Gatan, Director, PMO/Atty. de Castro		
	Resito David, Director, PMO-FCSEC		
	Dolores Hipolito, FCSEC		
DOF	Roberto B. Tan, Undersecretary		

Attendance for the Disaster Management Workshop
March 7, 2008 JICA Philippine Office

Organization	Name of Participant	Signature	Received DVD/ VCD
AUSAID	Peter Jensen		
	Patricia Georgina Domingo		
UNDP	Amelia Supetran, Portfolio Manager and Environment		
PBSP	Kristine Jimeno		
World Bank	Catherine Vidar, Consultant		
DIPECHO	Thearat Touch		
KOICA	Choi Jae-Young		
	Eugene Baclig		
OXFAM	Donamitzi Lagdameo		

参加者リスト：「フィリピン防災セミナー（JICA，JBIC，日本大使館）」2008年３月７日（３）

Attendance for the Disaster Management Workshop
March 7, 2008 JICA Philippine Office

Organization	Name of Participant	Signature	Received DVD/ VCD
EOJ	Koichi Sakai, Second Secretary		
JBIC	Takashi Baba, Representative		
	Kumiko Uchida, Representative		
	Mari Sawa		
	Takashi Fukuwatari		
JICA	Norio Matsuda, JICA Resident Representative		
	Harumi Kitabayashi, JICA Deputy Resident Representative		
	Mikio Ishiwatari, JICA Advisor, Disaster Management		
	Michiru Hanzawa, JICA Officer, Disaster Management		
	Masaki Ishii, JICA Consultant, Disaster Management		
	Masashi Yamamoto, JICA Assistant Resident Representative		
	Minerva Dacanay, JICA In-house Consultant		

JICA SEMINAR ON DISASTER MANAGEMENT
March 7, 2008
9:00am – 2:00pm

Name	Designation	Agency	Contact Number
1. Yoshio Tanaka			
2. MITSUNAGA Takeo			
3. Yoshio TOKUNAGA		DPWH-FCSEC.	
4. Dir. Erlinda Capones		NEDA - SDS	
5.			
6.			
7.			
8.			
9.			
10.			

5．質問票回答

（1）DILG質問票回答

For a better tomorrow for all.
Japan International Cooperation Agency
PHILIPPINE OFFICE

11-19-07 PE- 11-19002
November 16, 2007

Mr. Manuel Q. Gotis
Director
Bureau of Local Government Development

Subject: JICA Project Formulation Study on Disaster Prevention

Dear Director Gotis:

Japan International Cooperation Agency (JICA) will conduct a Project Formulation Study on Disaster Prevention from November 8 – December 6, 2007. The purposes of the study are: i) to formulate a disaster prevention program over the long term; ii) define pressing issues on community-based disaster preparedness (CBDP); and iii) to formulate projects on CBDP in particular sites devastated by floods and mudslides.

In this regard, a JICA Mission would like to visit your office on November 23, 2007 at 2:00pm to know more about DILG and LGUs' role in Disaster Risk Management (DRM), and the issues confronting LGUs on DRM.

The Mission Team would be composed by the following:
1. Mr. Mikio Ishiwatari, Senior Advisor, JICA
2. Mr. Takashi Kadota, Consultant
3. Mr. Masaki Ishii, Consultant
4. Mr. Ryuichi Hara, Consultant

For confirmation or questions, please contact Minnie Dacanay at telephone no. 889-7119 local 216.

Thank you.

Very truly yours,

北林 春美
Harumi Kitabayashi
Deputy Resident Representative

40th Floor, Yuchengco Tower, RCBC Plaza, 6819 Ayala Avenue, Makati City 1200 Philippines
P.O. Box 1026, Makati Central Post Office
Tel. No.: (+632) 889-7119 Fax. No.: (+632) 889-6850
JICA Homepage: http://www.jica.go.jp/philippines

1. **General Information/Data**

Please access our website for the answers/data on this item at www.dilg.gov.ph

2. **Development Plan, the Policy and the Mandate of DILG**

- Mandate of the DILG (Republic Act 6975)
  - Assist the President in the exercise of general supervision over local governments
  - Advise the President in the promulgation of policies, rules, regulations and other issuances on the general supervision over local governments and on public safety
  - Establish and prescribe rules, regulations and other issuances implementing laws on public order and safety, the general supervision over local governments and the promotion of local autonomy and community empowerment and monitor compliance thereof
  - Provide assistance in the preparation of national legislation affecting local governments, law enforcement and public safety
  - Establish and prescribe plans, policies, programs and projects to promote peace and order, ensure public safety and strengthen the administrative, technical and fiscal capabilities of local governments

- Development Plan/Policies of the DILG

DILG Policy Development Agenda for CY 2007-2008 serve as the roadmap for DILG and other partners in further improving the policy environment for local government operations

a. The current Long/Medium Term Plans/Programs

- The Medium Term Philippine Development Plan (MTPDP) 2006-2010, National Physical Framework Plan (1993-2022)
- The policy strategy and mandate on local autonomy Republic Act 7160 on the Local Government Code of 1991 which provide a policy on decentralization and local autonomy to the political subdivisions of the Philippines to enable them to attain their fullest development as self-reliant communities and make them more effective partners in the attainment of national goals.
- Policy/strategy and mandate for supporting DILGs activities related for disaster risk reduction/mitigation
  - PD 1566 – otherwise known at the Philippine Comprehensive Disaster Management Program
  - Hyogo Framework for Action (HFA) DILG as member of the National Disaster Coordinating Council (NDCC)
  - MDG Localization Framework
  - National Strategy on the Mainstreaming of Disaster Risk Reduction (DRR) in Local Development Planning and Budgeting (Still on the process of drafting the strategy)

3. Activities/Projects of DILG on Disaster Risk Reduction/Mitigation

1. Mainstreaming Disaster Risk Reduction in Local Governance
2. National Conference on Disaster Risk Reduction
3. Community Based Disaster Risk Management (CBDRM)

Note: These projects/activities are in partnership of the Asian Disaster Preparedness Center, GTZ and other partners.

3.1 Department's activities on Disaster Risk Reduction through supporting LGUs

The DILG regional offices promotes technical assistance to local government units on DRR specifically on mainstreaming DRR in the local planning process. It also provide capacity development interventions through conduct of trainings, symposia, for a and conferences on DRR. The Department also provide the necessary policy guidelines to LGUs.

3.2 Collaborations with other departments, LGUs and NGOs on DRR activities

The following agencies are our major partners on DRR

1. Office of the Civil Defense (OCD)
2. National Economic Development Authority (NEDA)
3. Department of Education
4. Department of Environment and Natural Resources
5. Center for Disaster Preparedness (CDP)
6. Philippine Volcanology and Seismology (PHIVOLCS)
7. UNDP
8. GTZ
9. ADPC

JICA's Project Formulation Study on the Program for Disaster Prevention (Disaster Risk Reduction and Disaster Risk Management)

QUESTIONNAIRE

Department of Public Works and Highways (DPWH)

Attention: _____

Address: _____

Telephone No.: _____

E-mail address: _____

Date: _____, 2007

Please provide us with the answers to the following questions, in particular preparedness phase, during our meeting or, if possible, beforehand in order to conduct fruitful discussion.

For each question, please:
- Fill in a blank, or
- Mark ○ on **Yes** or **No**, or
- Provide separate data and information which show reply to the question, or
- [illegible] provided description [illegible]

1. ORGANIZATION

1.1 General Information / Data

Please provide the following documents:

(1) Organization chart
(2) Financial Statements for the last 5 years (Balance Sheets and Profit and Loss)
(3) Number of total personnel for the last 5 years
(4) Brochure of introduction of your organization (if any)

1.2 Role and Functions

Please explain your organization's role and functions. We understand that your organization is responsible for the following:

(1) For flood preparedness
(2) For landslide preparedness
(3) For typhoon preparedness
(4) For storm surge preparedness
(5) For volcanic disaster preparedness
(6) For earthquake preparedness
(7) Please indicate other responsibilities, if any

1.3 Financial Status

(1) What are the major financial sources for the implementation of the projects? JBIC

(2) What kind of major expenditure exists?
construction of engineering intervention and other flood control structures.

1.4 Your Task in NDCC (National Disaster Coordinating Council)

(1) Management of natural disaster preparedness

(2) Others provide data of down proyect affected by calamities.

1.5 Laws and Regulations

Please indicate the laws and regulations, relating to natural disaster preparedness, regarding the basis of your organization's foundation. And also related laws and regulation when implementing the projects?

1.6 Superior Plans

What are your superior plans relating to natural disaster preparedness? - MTPIP

1.7 Projects and Programs

12% of whole annual budget for flood control

Please describe your projects and programs in operation & management relating to natural disaster preparedness.

1.8 Guidelines and Manuals

What kind of guideline and/or manual, relating to natural disaster preparedness, does your organization have? Who is targeted?

1.9 O&M Criteria - DPWH LGUs (w/ MOA)

Please describe O&M criteria for flood, landslide, debris flow and mud flow control structures such as interval of rehabilitation of structures.

1.10 Relocation of Local Dwellers

Please describe your basic policy, experience and know-how for settlement of issues regarding relocation of local dwellers affected by construction of structures. compensation and housing project are to be provided.

1.11 Future Plans and Projects

Do you have your future plans and projects relating to natural disaster preparedness? Construction of countermeasures projects

1.12 Coordination with Other Central Government Organizations

How are you making coordination with other central government organizations relating to natural disaster preparedness?

1.13 Coordination with Local Government Organizations

How are you making coordination with local government organizations relating to natural disaster preparedness?

1.14 Coordination with International Organizations
How are you making coordination with international organizations relating to natural disaster preparedness?

1.15 Partnership Activities with NGO
Do you have any partnership activities with NGO relating to natural disaster preparedness?

2. BASIC POLICY

(1) What are your organization's expected roles to overcome the major existing constraints (if any) on natural disaster preparedness sectors in the Philippines?

(2) How is your organization tackling those issues?

(3) Please describe your organization's prioritization in view of the regions and provinces.

✓ (4) How do you plan to develop the role of FCSEC in the future?

(5) From your point of view, do you think that your organization itself is capable of operating and managing projects, programs or facilities relating to natural disaster preparedness? Yes No

(a) If yes, please provide the reason.
(b) If no, what kind of assistance is necessary? financial assistance

(6) Please explain the prioritized principles within your organization's policies relating to NDCC task?

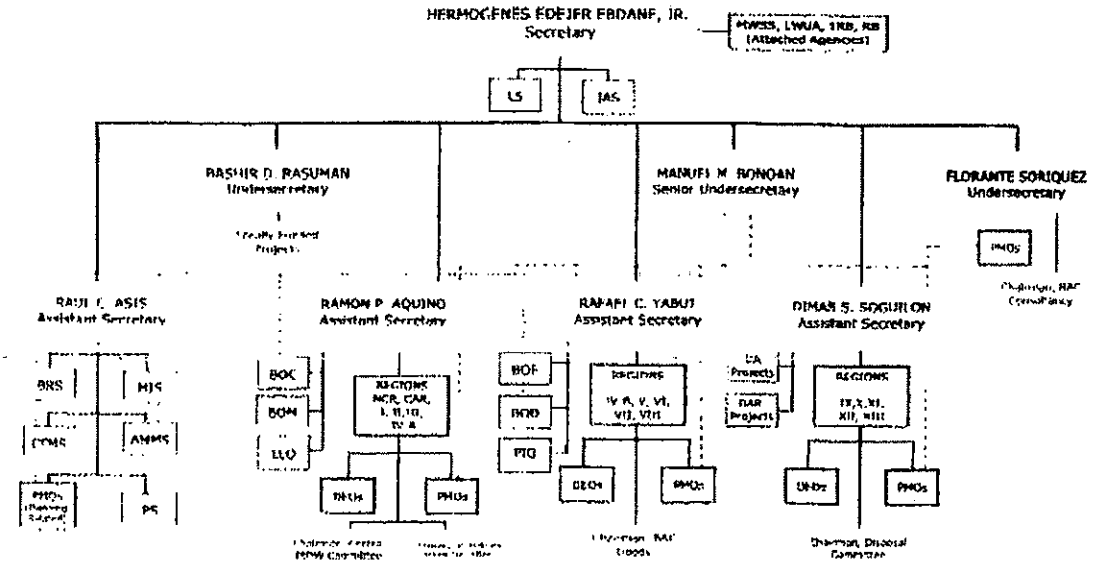
3. NEEDS FOR FOREIGN AIDS

Please describe your needs for foreign aids.

The OPCW is in need for foreign aids especially in conducting feasibility studies for our major river basins to minimized damages during rainy season time.

Department of Public Works and Highways

Organizational Chart



IMS - Administrative & Manpower Management Service
C - Bidding and Awards Committee
C - Bureau of Construction
D - Bureau of Design
E - Bureau of Equipment
M - Bureau of Maintenance
S - Bureau of Research and Standards
MS - Comptrollership & Financial Management Service
S - Internal Audit Service
- Legal Service
S - Monitoring and Information Service
- Planning Service

CAR - Cordillera Administrative Region
DEOs - District Engineering Office
IROW - Infrastructure Right-of-Way
LLO - Legislative Liaison Office
LWUA - Local Water Utility Administration
MWSS - Metropolitan Waterworks and Sewage System
NCR - National Capital Region
PIO - Public Information Office
PMO's - Project Management Office
PPP - Pump Priming Projects
RB - Road Board
TRB - Toll Regulatory Board

Department of Public Works and Highways

Mandate and Functions

Mandate

The Department of Public Works and Highways (DPWH) is one of the three departments of the government undertaking major infrastructure projects. The DPWH is mandated to undertake (a) the planning of infrastructure, such as roads and bridges, flood control, water resources projects and other public works, and (b) the design, construction, and maintenance of national roads and bridges, and major flood control systems. These activities are undertaken in support of the national development objectives as envisioned in the 2004-2010 Medium-Term Philippine Development Plan(MTPDP) with focus on meeting the President's 10-point Agenda or specific program of action enunciated in Her Excellency's inaugural speech on June 30, 2004.

Functions

The Department of Public Works and Highways functions as the engineering and construction arm of the Government tasked to continuously develop its technology for the purpose of ensuring the safety of all infrastructure facilities and securing for all public works and highways the highest efficiency and quality in construction.

DPWH is currently responsible for the planning, design, construction and maintenance of infrastructure, especially the national highways, flood control and water resources development system, and other public works in accordance with national development objectives.

Department of Public Works and Highway

Infrastructure Development Cycle

In the DPWH, the development of infrastructure projects (e.g. roads, bridges, flood control facilities and water supply) follows a cycle process consisting of four phases as follows:

- **PROJECT IDENTIFICATION**
  It is the process of collecting potential projects with expected return of investments.
- **PROJECT PREPARATION**
  a. Project Feasibility Study
  The feasibility study consists of various investigations and tests necessary to determine whether the project can and should be carried out and if, so, how and when?
  b. Inclusion in the Medium-Term
  If the project meets the above feasibility criteria, it is considered for inclusion in the medium-term infrastructure program for the period of six years.
  c. Fund Appropriation
  Based on the medium-term infrastructure program, appropriations for the projects are authorized thru legislation.
  d. Detailed Engineering
  Detailed engineering of a project under the medium term program is undertaken in preparation for actual implementation under t annual infrastructure programs.
  e. Inclusion of Project in Annual Program: Programming
  Projects proposed for inclusion in the annual infrastructure program are a) those that rank high high in priority within the mediun term program, and b) those that are technically ready for actual implementation during the year (i.e. with substantially completed detailed engineering).
- **PROJECT IMPLEMENTATION**

  a. Fund Releases
  Immediately after the NEDA Board approves the annual infrastructure program in early November, the DBM issues the Advice's Allotment (AAs) for the projects in the program on a comprehensive basis.

  b. Right-Of-Way Acquisition
  The right-of-way of any infrastructure project, such as road, should be acquired ahead of construction in order not to impede the work.

  c. Bidding and Contracting
  In line with the policy of the government to rely on the private sector as the main engine of economic development, infrastructur projects are generally undertaken by contract after public bidding.

  d. Construction

  Actual construction work is carried out through the Project Management Office (PMO) and the Regional/District Offices.

  e. Completion and Acceptance

  Project completion is the transition from the development to the operational stage. Completion reports and as-built plans are prepared for the submission to the implementing office heads, to management, and to funding institutions.

  f. Payment

  Due and demandable claims are processed by the DPWH either at the Central, Regional or District level, in accordance with existing government budgeting, accounting and auditing rules

- **PROJECT OPERATION AND EVALUATION**
  a. Operational and Maintenance
  National roads and bridges, major flood control structures, and related facilities of national importance remain under the responsibility of the DWPH during the operational phase. The Regional and District undertake the maintenance of the facilities generall by administration.
  b. Impact Evaluation
  Impact evaluation or post-project appraisal is an attempt to assess the results of a project and, as a function of the results, of the means employed to achieve them.

Department of Public Works and Highways
Infrastructure

Medium-Term Infrastructure Program

The DPWH, in compliance with the directive of President Gloria Macapagal-Arroyo & in coordination with the National Economic and Development Authority (NEDA), has revised & updated the medium-term infrastructure program covering the period 2005-2010. This serves as the multi-year framework to guide the selection of key projects that will support the four core beliefs of the Arroyo Administration:

1. winning the war against poverty
2. new consultative politics
3. high moral standards in government
4. leadership by example

List of Projects	Total Cost	Prior Years	PROPOSED ALLOCATION (In Thousand Pesos)						
			2005	2006	2007	2008	2009	2010	Later Years
I. HIGHWAYS	**366,182,452**	**74,369,749**	**30,843,707**	**32,786,541**	**37,011,150**	**38,151,705**	**40,095,687**	**43,504,325**	**69,218,2**
A. FOREIGN-ASSTD PROJ	231,490,528	60,969,855	17,269,209	22,376,969	24,341,893	23,229,749	17,789,140	20,694,445	44,820,2
a. On-going	121,864,773	59,774,270	16,892,808	16,839,159	16,551,097	8,742,088	1,065,251	-	-
b. New/Proposed	109,625,753	1,195,585	376,301	5,536,810	7,970,796	14,487,661	16,723,889	20,694,445	44,820,2
B. [illegible] PROJ	134,691,926	13,399,894	13,574,498	10,410,572	12,669,257	14,921,956	22,306,547	22,809,880	24,399,0
II FLOOD CONTROL	**77,466,515**	**19,028,632**	**5,724,544**	**7,398,556**	**8,655,147**	**7,568,592**	**9,065,31**	**8,968,972**	**12,856,7**
A. FOREIGN-ASSTD PROJ	68,860,493	17,082,610	5,534,544	6,208,556	4,665,147	6,378,592	7,875,310	7,778,972	11,358,7
a. On-going	34,845,529	17,071,910	5,449,544	5,696,756	2,802,798	1,557,452	1,339,630	50,000	477,4
b. New/Proposed	32,234,964	10,700	85,000	311,800	1,862,349	4,821,140	6,535,680	7,728,972	10,879,3
B. LOCALLY FUNDED PROJ	10,606,022	1,946,022	1,190,000	1,190,000	1,190,000	1,190,000	1,190,000	1,190,000	1,500,0
III OTHER DPWH PROJECTS 1/*	**28,568,073**	**18,757,855**	**1,051,703**	**1,051,703**	**1,051,703**	**1,051,703**	**1,051,703**	**1,051,703**	**1,500,0**
GRAND TOTAL	**470,217,040**	**112,156,236**	**38,719,954**	**41,236,800**	**43,918,000**	**46,772,000**	**50,213,000**	**53,525,000**	**83,576,0**

*Note: 1/ - Preliminary and Detailed Engineering, National Buildings, Payment of Claims for Completed Projects/VAT and Interests and Water Supply Projects.

（3） MMDA質問票回答

JICA's Project Formulation Study on Program for the Disaster Prevention (Disaster Risk Reduction and Disaster Risk Management)

QUESTIONNAIRE

Metropolitan Manila Development Authority (MMDA)

Attention: DIR. RAMON J. SANTIAGO

Address: EDSA corner Orense St., Guadalupe Nuevo Makati City, Metro Manila 1212

Telephone No.: 882-0851

E-mail address: mon_santiago78@yahoo.com

Date: _____; 2007

Please provide us with the answers to the following questions, in particular preparedness phase, during our meeting or, if possible, beforehand in order to conduct fruitful discussion.

For each question, please:
- Fill in a blank, or
- Mark ○ on Yes or No, or
- Provide separate data and information which show reply to the question, or
- Correct/add if provided description is wrong.

1. **General Information / Data**

Please provide the following documents:

✓ (1) Organization chart
(2) Financial Statements for the last 5 years (Balance Sheets and Profit and Loss)
(3) Number of total personnel for the last 5 years
✓ (4) Brochure of introduction of your organization (if any)
(5) The details of the charts of flood control
✓ (6) The details of the charts of disaster management
✓ (7) The list of flood control facilities managed by MMDA

2. **Current Situations on Disaster Management / the Role and Activities of MMDA**

Please provide the answers / the materials to explain: PLS. SEE ATTACHED

2.1 **Legislation of MMDA**

(1) Concerned laws and regulation -- PLS. REFER TO R.A. 7924 (attached)

(2) Future View / Program on the Revision

Current Chairman is proposing for inclusion of well-defined legislative-function and expansion of earlier organization approved by Department of Budget Management

2.2 Action plans for JICA development study on earthquake disaster in Metropolitan Manila (PLS REFER ATTACHMENTS)

(1) Current activities of follow-up

- Development of prevention laws by application of model bylaws in municipality
- Promotion of utilization of pocketable guidelines for emergency response and guidelines of information control
- Organization of MMDCC(Metropolitan Manila Disaster Coordinating Council) and revision of the organization ,and functional enhancement by creation of activity planning
- Organized responsibility enhancement
- Development of emergency road network
- Facility improvement of discharging of cargo in the north shore of Laguna
- Reservation of large scale source
- Formulation of water and food or other vital commodities supply system
- Enlightenment about seismic hazard and regional vulnerability
- Enhancement of risk management ability
- Application and promotion of sub-division development methods
- Enhancement of security of government agency including President's Office
- Promotion of city improvement around nationalistic important installations
- Enhancement emergency plans for business
- Enhancement security of financial on line services
- Enhancement of financial system in emergency situations

(2) Future View / Program on the Revision

(3) Activities of disaster management in communities disaster prevention planning/guideline

2.3 Other Current Situations and the Issues and Challenges on Disaster Management

2.3.1 In / By MMDA;

(1) Outline of the MMDA's activities in recent three years:
(Please provide materials to explain)

(2) Activities of MMDA in specific disaster that occurred in recent three years
(Please provide materials to explain)

(3) Issues and lessons from the past disaster management activities by MMDA and other organizations

(4) Concerned Regulations, Guidelines and By-Laws the coordination / collaborations in disaster management including emergency responses /the preparations

3. Other Topics related to MMDA

3.1 Cooperation / Coordination with NGOs

(1) Current Situations

(2) Detailed NGOs activities collaborations with MMDA

3.2 Current Situations on Training Program for Capacity Building

3.2.1 House Training

3.2.2 Other Programs by MMDA

3.3 Assistance / Support to Communities

3.3.1 Current Situations

3.4 Annual Expenditures

3.4.1 Budgets for recent five years

3.4.2 The Uses and the actual performance

3.4.3 The Procedures

4. Disaster Statistics

（4） OCD質問票回答

JICA's Project Formulation Study on Program for the Disaster Prevention
(Disaster Risk Reduction and Disaster Risk Management)

QUESTIONNAIRE

Office of Civil Defense (OCD)

Attention: **Administrator Glenn J. Rabonza**

Address: Camp General Emilio Aguinaldo, Quezon City
Telephone Nos: 912-2424; 912-6675; 912-5061 local 101
E-mail address: genrabonza@ndcc.gov.ph
c/o OCD-Planning Division
912-0441 / 5947; ndcc_secretariat@yahoo.com

Date: 16 November 2007

Please provide us with the answers to the following questions, in particular preparedness phase, during our meeting or, if possible, beforehand in order to conduct fruitful discussion.

For each question, please:
- Fill in a blank, or
- Mark ⬭ on **Yes** or **No**, or
- Provide separate data and information which show reply to the question, or
- Correct/add if provided description is wrong.

1. General Information / Data

Please provide the following documents:
(1) Organizational chart – ***(TAB A)***
(2) Financial Statements for the last 5 years (Balance Sheets and Profit and Loss) – ***(TAB B)***
(3) Number of total personnel for the last 5 years – ***(TAB C)***
(4) Brochure of introduction of your organization (if any) – ***(TAB D)***

2. Current Situations / Movements on Disaster Risk Reduction / the Management in Philippines and Specific Role / Activities of OCD in the above situations

Please provide the answers / the materials to explain:

2.1 Presidential Decree No. 1566 (June 11, 1978) – *(TAB E)*

(1) Current Movement / Needs on the Revision
- Membership of other key agencies to the NDCC
- Paradigm shift from:
  - Emergency management to disaster risk management (DRM)
  - Reactive response to emergencies/calamities to proactive stance
  - Disaster response to disaster risk reduction
  - Emergency specialist, hazard scientists to risk specialists, economic managers and development planners

(2) Future View / Program on the Revision

2.2 National Calamities and Disaster Preparedness Plan (NCDPP) – *(TAB F)*

(1) Current Movement / Needs on the Revision
- Also to be based on the above paradigm shift

(2) Future View / Program on the Revision

2.3 On other Current Situations and the Issues / Challenges on Disaster Risk Reduction / Management Areas

2.3.1 Nationwide: NDCC and local DCCs, Local Government Units, Barangays and other local communities, and NGOs
- Institutionalization of Local Disaster Management Office
- Mainstreaming of Disaster Risk Reduction at the Local DCCs

2.3.2 In / By OCD:

(1) Outline of the OCD's activities in recent three years and/or examples – ***(TAB G)***
(Please provide materials to explain)

(2) Concrete activities of OCD (and NDCC) in specific disaster that occurred in recent three years – ***(TAB H)***
(Please provide materials to explain)

(3) Specific Issues / Lessons in/from the past disaster management activities by OCD and other organizations, and on the coordination / collaborations in disaster management including emergency responses / the preparations – ***(TAB I)***

(4) Prepared Regulations, Guidelines and By-Laws

3. Other Topics related to OCD

3.1 Cooperation / Coordination with NGOs – *(TAB J)*

(1) Current Situations

(2) List of NGOs that participate / entry / commit to NDCC

3.2 Current Situations on Disaster Control Groups

3.3 Current Situations on Training Program for Capacity Building – *(TAB K)*

3.3.1 House Training

3.3.2 Other Specific Programs by DCC

3.4 Assistance / Support to Communities

3.4.1 Current Situations

3.4.2 Sharing of Roles and the Cooperation with DILG and DSWD in the area of Assistance / Support to Communities

3.5 Calamity Fund and Quick Response Fund – *(TAB L)*

3.5.1 Budgets for recent five years

OCD - QRF	
Year	*Amount*
2007	₱ 115M
2006	₱ 70M
2005	₱ 70M
2004	₱ 70M
2003	₱ 70M

CF Releases	
Year	*Amount*
2007	₱ 684,181,764
2006	₱ 1,173,834,752
2005	₱ 700M
2004	₱ 700M
2003	₱ 746,532,000

3.5.2 The Uses and the actual performance

3.5.3 The Procedures

3.6 Local Calamity Fund

3.6.1 Budgets for recent five years

3.6.2 The Uses and the actual performance

- **The Local Calamity Fund (LCF) - 5% of Annual LGU Budget**

  The 5% LCF is utilized by disaster-affected LGU to provide relief, rehabilitation, reconstruction and other works and services in connection with calamities which may occur during the budget year provided there is a Sangguniang Resolution declaring a state of calamity and/or imminent danger over the province, city or municipality or a portion thereof.

- **LGUs' 20% Development Fund** - for disaster mitigation projects

3.6.3 The Procedures

4. Disaster Statistics

（５）PHIVOLCS質問票回答

QUESTIONNAIRE

Philippine Institute of Volcanology and Seismology (PHIVOLCS)

Address: PHIVOLCS Building, C.P. Garcia Avenue,
UP-Diliman Campus, Quezon City
1100 PHILIPPINES

Telephone No.: +63-2-926-2611, +63-2-426-1468

Date: December 6, 2007

Please provide us with the answers to the following questions, in particular preparedness phase, during our meeting or, if possible, beforehand in order to conduct fruitful discussion.

For each question, please:

- Fill in a blank, or
- Mark ◯ on Yes or No, or
- Provide separate data and information which show reply to the question, or
- Correct/add if provided description is wrong.

1. General Information / Data

Please provide the following documents:

(1) Organization Chart

Please refer to the attached PHIVOLCS flyer.

(2) Financial Statements for the last 5 years (Balance Sheets and Profit and Loss)

Please see attached Financial Statements from 2002 to 2006.

(3) Number of total personnel for the last 5 years

(4) Number of total technical personnel for the last 5 years

Year	Total Personnel (3)	Technical Personnel (4)
2007	201	161
2006	196	156
2005	206	166
2004	212	172
2003	204	178
2002	226	186

(5) Number of total personnel who get a Doctor's degree: **5 + 2 Department of Science and Technology scientist detailed to PHIVOLCS**

(6) Number of total personnel who get a Master's degree: **21**

(7) Brochure of introduction of your organization (if any)

Please see attached PHIVOLCS flyer.

(8) Policy, vision, and approaches

The following are PHIVOLCS' Vision and Mission:

VISION

A leader in developing well-prepared communities safe from volcanic eruptions, earthquakes, tsunamis, and other related hazards.

MISSION

To ensure safe communities through establishment of effective monitoring network, development and application of technologies for accurate prediction of volcanic eruptions, earthquakes, tsunami occurrences, and other related hazards; mapping and delineation of areas prone to volcanic eruptions and earthquakes; and enhanced capacity for comprehensive disaster preparedness and risk mitigation.

2. Work Contents

2.1 Executive Order No. 128

Executive Order 128 is known as the Reorganization Act of the National Science and Technology (NSTA) issued by then President Corazon Aquino on January 30, 1987. NSTA is currently the Department of Science and Technology (DOST). Under EO 128, specifically Section 30, PHIVOLCS is listed as one of the agencies under NSTA and has the following mandates:

- Predict the occurrence of volcanic eruptions and earthquakes and their related geotectonic phenomena
- Determine how eruptions and earthquakes shall occur and also areas likely to be affected
- Generate sufficient data for forecasting volcanic eruptions and earthquakes
- Mitigate hazards of volcanic activities through appropriate detection, forecast and warning system
- Formulate appropriate disaster preparedness plans
- Exploit the positive aspects of volcanoes and volcanic terranes in furtherance of the socio-economic development efforts of the government

(1) Current Movement / Needs on the Revision

None.

(2) Future View / Program on the Revision

None.

2.2 Main Activity

- Operation of volcano observatories and warning systems at Pinatubo, Taal, Mayon, Bulusan, Kanlaon and Hibok-hibok volcanoes
- Operation of earthquake observation stations

- Hazard and risk assessment – related to volcanic activities, earthquakes and tsunamis
- Geologic hazard awareness and preparedness to various sectors of society, including the community

2.3 Equipment supported by Japanese grant assistance

(1) Current status of operation and maintenance

Volcano and earthquake monitoring stations have a regular schedule of preventive maintenance works which checks the settings and condition of the equipment through a series of calibration works.

Please refer also to the attached inventory and status of JICA donated-equipment.

(2) How to provide disaster information with public and concerned organization

- Earthquake
- Volcano

Information given to various sectors of society, especially the public, through 1) the Disaster Management System via the Office of Civil Defense and the various levels of Disaster Coordinating Council from the National, Regional, Provincial, Municipal and Barangay, and 2) the media

Please see attached flowcharts on the dissemination of volcano / earthquake information bulletins.

2.4 Current status of follow-up action plan of JICA study on earthquake disaster in Metro Manila

PHIVOLCS and MMDA jointly disseminated the results of the Metro Manila Earthquake Impact Reduction Study to all 17 cities and municipalities in Metro Manila through presentation and meetings with city/municipal and village officials. The results have been presented to officials of the National Disaster Coordinating Council and the President

PHIVOLCS regularly conducts information and education campaigns to schools, government and private offices, various professional and civic organizations regarding earthquake preparedness and result of JICA MMEIRS study

PHIVOLCS continues to monitor and study the movement of the West Valley Fault that transects the eastern side of Metro Manila, with some studies done together with other scientific organizations

PHIVOLCS has designed a guideline on how to formulate an earthquake preparedness plan focusing on earthquake safety and evacuation planning. The guide includes detailed descriptions on how to conduct earthquake drills especially in schools.

Current Situations on medium term planning (2004-2009) as follows

(1) Upgrading and expanding of network seismic stations

(2) Renovation and maintenance of network seismic stations

The Philippine Government has provided funds in 2006 for the repair and renovation for five (5) volcano and seismic stations, namely Taal (Buco), Tagaytay, Palayan, Callao and Lapu-lapu Stations. For 2007, construction of new buildings are currently being implemented for Puerto Princesa, Puerto Galera Seismic Stations and in Bulusan and Kanlaon Volcanoes. The Mayon Volcano Observatory and PHIVOLCS Main Office will also undergo repair and renovation

PHIVOLCS has proposed for its 2008 budget funds for the construction of new buildings and repair of existing seismic stations. If approved, PHIVOLCS will construct new buildings for two existing volcano observatories in Hibok-hibok and Pinatubo Volcanoes. The Pira-piraso Station in Taal Volcano Island will also be repaired. New buildings will be constructed for two existing seismic stations in Antique and Zamboanga. PHIVOLCS will repair and renovate five (5) existing seismic stations located in Baguio City, Davao City, General Santos City, Ilocos Norte and Surigao del Sur. For the ten (10) existing unmanned seismic observation points. equipment housing will be renovated and fence constructed. Continuing renovation will be done in Lapu-lapu, Puerto Galera and Puerto Princesa Seismic Stations and PHIVOLCS Main Office in Quezon City.

(3) Management improvement of seismic data

The satellite link of unmanned earthquake monitoring stations allowed near-realtime availability of earthquake records from different sites in the Philippines at the Data Receiving Center of PHIVOLCS. Data can be retrieved at specific time periods and waveforms can be simultaneously analyzed. This data acquisition set-up significantly reduced the time to release the processed information since it avoided the queued arrival of information from

different seismic stations and allows for cross-checking of processed information.

The establishment of digital seismographs has greatly improved the data acquired by PHIVOLCS. Phase arrival readings have become more accurate since the JICA-improved PHIVOLCS network. Earthquake hypocenters are now significantly improved, clearly defining the active earthquake generators in the country. Waveforms of seismic events are archived and can now be easily exchanged and sent to interested scientists.

Several manned seismic stations are now connected to the Main Office via internet, thus seismic data are now transmitted in real time through the net. Interconnection of manned seismic stations to the Main Office will continue if available.

(4) Multi hazards mapping (active faults, ground rupture, liquefaction, tsunami)

Since 2004 up to present, the following active faults have been field verified and maps have been updated (GIS-based 1:50,000 scale); paleoseismic data on some of these faults have been updated also:

- East Zambales Fault in Central Luzon
- Philippine Fault Zone (PFZ) segments in Masbate, Central Luzon, Northern Quezon
- Seismic profiles (through collaborative projects with Kyoto U, Hiroshima and Kochi Univ) of offshore splays of PFZ: Ragay Gulf Segment and Aglubang River Fault

Ground rupture hazard mapping projects produced Active Faults Maps for the following areas/fault segments (1: 50,000 scale GIS-based):

- PFZ: Surigao Fault in Surigao Del Norte Province
- PFZ: Eastern Mindanao Fault in Surigao Del Sur Province
- PFZ: Central Leyte Fault segment in Leyte and Southern Leyte Province
- East Bohol Fault
- Casiguran Fault (Aurora Province, on-going)

Site investigations for trenches excavated in development along deformation zones of the Valley Fault System (VFS) includes areas in Muntinlupa, Brgy. Bagumbayan Taguig, Fort Bonifacio, Taguig. PHIVOLCS has a continuing collaboration with TITECh/Dr. Kinugasa for monitoring the rates of slip along the creeping segment of VFS.

Ground deformation studies conducted through GPS since 2004 up to present includes the following areas:

- Ragay-Bondoc-Sibuyan
- GPS campaign in Philippine Fault- Southern Leyte and Southern Mindanao; network stations have been put up in northern and southern Mindanao; there is a plan to put up GPS network stations along the VFS

Liquefaction hazard maps and earthquake-induced landslide susceptibility maps, and ground-shaking hazard maps (1: 50K based) have been updated for the following areas (thru REINA Project and UNDP READY Project)

- Real, Infanta, and General Nakar, Quezon Province
- Surigao Del Norte Province
- Surigao Del Sur Province
- Southern Leyte Province
- Leyte Province
- Dingalan, Aurora Province
- Bohol Province
- On-going for the following provinces: Cavite, Aurora

Thru funding grant from DOST, the following areas have 1:10,000 to 1:50,000 scale Tsunami Inundation Maps with respective models of near-field tsunami source zone:

- Vigan, Ilocos Sur (1:10,000)
- Northern Mindoro (1:50,000)
- Iloilo Province (1:50,000)
- Pagadian City (Moro Gulf) (1:50,000)
- Nation-wide tsunami inundation map (1:50,000)

Multi-hazards mapping have been conducted in Surigao del Sur, Surigao del Norte, Southern Leyte, Leyte, Cavite, and Aurora. This will be conducted in the following areas from 2008-2009 under the READY II Project funded by United Nations Development Programme (UNDP)

- Pampanga
- Catanduanes
- Eastern Samar
- Northern Samar
- Zambales/Subic
- Antique
- Ilocos-Sur-Vlgan
- Abra

- Zamboanga del Sur- Zamboanga City
- Laguna
- Quirino
- Agusan Del Sur
- Nueva Vizcaya
- Cagayan
- Isabela
- Zamboanga Sibuguey
- Rizal
- Iloilo
- Ilocos Norte- Laoag
- Benguet- Baguio and La Trinidad

(5) Seismic research and social vulnerability research

(6) Risk evaluation and vulnerability research

4. Other Current Situations and the Issues and Challenges on Disaster Management

4.1 Nationwide: Cooperating system with municipality and community in the volcanic and seismic areas

4.2 Educational campaign to communities (Before disaster / In time of disaster After disaster)

4.3 Cooperating system with local office of OCD/PDCC/MDCC/BDCC, Local Government Units, Barangays and other local communities, and NGOs

The occurrence of natural hazards like earthquake and volcanic eruptions cannot be prevented but their effects on lives and properties could be reduced by two methods: the structural which requires large capital investment and non-structural which focuses on building awareness and education and enhancement of capacity of the people vulnerable to disasters.

PHIVOLCS has been doing information and education activities for the public and will continue do so and to strive for a more efficient and effective disaster prevention system. However, PHIVOLCS effort alone is not enough. Disaster management should be concern of everybody from the national, provincial, municipal, barangay levels down the family and individual. Only in so doing would we be able to minimize the loss of life and property when a major disaster strikes. PHIVOLCS activities are closely coordinated with the Office of Civil Defense, the local government through the disaster coordinating councils at various levels, teachers and the community.

To complement the education campaigns, print (e.g. flyers, brochures, posters) and audio

visual materials are being produced and distributed

So far, education campaigns to communities have been well-received. But it has been observed that communities rely too much on the government when disaster strikes. So, the real challenge is the commitment of the communities to continue and sustain education campaigns and implement activities geared toward the reduction/prevention of the effects of earthquakes and volcanic hazards.

4.4 In / By PHIVOLCS:

(1) Activities in recent three years and/or examples:

- REINA Project

The project "*Strengthening the Disaster Preparedness Capacities of the Municipalities of Real, Infanta and Nakar to Geologic and Meteorological Hazards (REINA Project)*" is multi-hazard and a multi-agency initiative which tackled various aspects in the whole disaster mitigation cycle, especially mitigation and preparedness, in order to strengthen the disaster preparedness capacities of these three municipalities from geologic and meteorological hazards. The agencies involved in the implementation of this project are the Philippine Institute of Volcanology and Seismology (PHIVOLCS), Philippine Atmospheric Geophysical Astronomical Services Administration (PAGASA), Mines and Geosciences Bureau (MGAB, the Office of Civil Defense (OCD) and the municipalities of Real, Infanta and General Nakar, Quezon Province. The REINA Project is funded by the United Nations Development Programme (UNDP) and the United Nations – Office for the Coordination of Humanitarian Affairs (UN-OCHA). After the projects completion in 2005, PHIVOLCS has produced earthquake related hazards maps (ground rupture, ground shaking, liquefaction, tsunami, earthquake-induced landslide) for these three towns. Community-based early warning systems were established and public awareness and education campaigns were also conducted in these towns.

- READY Project

Taking the REINA Project as a model, the project on "Hazards Mapping and Assessment for Effective Community-Based Disaster Risk Management (READY Project) was implemented in 2006. This is an inter-agency collaborative project with PHIVOLCS as the program coordinator for READY Phase I. Other collaborating agencies were PAGASA, MGB, NAMRIA (National Mapping and Resource Information Authority), and OCD. Funded by UNDP, The READY Project Phase will run from 2007 to 2009.

Under this project, hazard maps on ground rupture, ground shaking, liquefaction,

earthquake-induced landslide and tsunami for Surigao del Norte and Surigao del Sur were generated in 2006. For 2007, mapping activities were conducted in the provinces of Leyte, Southern Leyte, Bohol, Cavite, Aurora and Pampanga.
In order to increase awareness of local communities about natural hazards they face and learn about the mitigating measures, information and education campaigns were conducted and community-based tsunami early warning systems were established in coastal project areas. .

- Tsunami Finland Project

The Finland Government funded the project entitled *"Establishment of a Local Tsunami Warning System for Manila Bay and Vicinity"* was implemented in July 2005 to December 2006. The objective of the project was to establish an inexpensive local tsunami warning system aimed at warning high risk coastal communities facing the Manila Trench, particularly the coastal towns and cities of Metro Manila. If the Manila Trench segment fronting the Manila Bay will generate a tsunami, the strategic point for early detection of tsunami wave is Lubang Island. Thus, tsunami wet sensors were developed, installed and operated at the island. With the installation of the tsunami detection station, early information on the generation of tsunami wave could be made available and the severity of impact could be quickly assessed for warning the coastal communities of Manila Bay, the economic/industrial zone along the coast of Subic Bay, the petroleum depot along the coast of Batangas and Balayan Bays and the important tourist areas in Northern Palawan.

Information, education and communications campaign on tsunami hazards was conducted for the residents, teachers and LGUs of Lubang, Oriental Mindoro in October 2006. Information and directional signages were installed along the routes leading to the evacuation sites as part of the community preparedness on tsunami hazards.

- Tsunami Risk Mitigation Program

Under the DOST-GIA funded project *"Tsunami Risk Mitigation Program"*, PHIVOLCS conducted tsunami hazards mapping activities in four areas prone to tsunamis, namely: Western Luzon, Mindoro, Western Visayas and Moro Gulf. Through this project, PHIVOLCS generated Tsunami Wave Height and Inundation Hazard Maps for pilot areas in Vigan, Iloilo, Mindoro and Pagadian.

- Public awareness and education

PHIVOLCS is in the forefront in the promotion of disaster preparedness and risk mitigation in the country. PHIVOLCS has been conducting massive information campaign on earthquakes and tsunamis as well as volcanic hazards thru lectures drills,

trainings, workshops, and production and dissemination of information materials.

(2) Activities in disaster that occurred in recent three years

- Volcanic Activities

  The status of the eight of the most active volcanoes of the country are being monitored continuously by PHIVOLCS thru the operation of manned observatories in each of the six active volcanoes, namely, Pinatubo, Taal, Mayon, Bulusan, Kanlaon and Hibok-hibok. The General Santos Seismic Station is monitoring the other two nearby active volcanoes, Matutum and Parker, thru radio-telemetry.

  In 2005, PHIVOLCS issued an advisory confirming the lava accumulation within the summit of Mayon volcano's crater and PHIVOLCS recommended to the public to keep away from the six kilometer danger zone. Mayon Volcano erupted in 2006 which was characterized by continuous lava extrusion and falling lava blocks along the Bonga Gully in the southeast flank of the volcano's slopes. Within a period of three weeks, the edge of the lava flow reached the volcano's six-kilometer Permanent danger Zone.

  Kanlaon, Taal and Bulusan Volcanoes also showed signs of restiveness since 2005 characterized by ash explosions or high seismicity. In 2006, Bulusan and Kanlaon Volcanoes manifested 17 and 24 ash explosion occurrences, respectively. Bulusan Volcano continued to manifest eight ash explosions in 2007.

  In all these events, PHIVOLCS closely monitored the volcanoes and made credible forecasts and issued appropriate hazard warnings with ample lead time resulting to zero casualty.

- Earthquake Events

  PHIVOLCS maintains a National Seismic network composed of 29 manned stations and 29 satellite-fed remote seismic observations points.

  From 2005 to present, PHIVOLCS has recorded 37 moderately-sized earthquakes with magnitudes ranging from 5.0 to 6.6. These earthquakes were felt in the epicentral areas with intensities ranging from I to VI. No significant damaging earthquake occurred in the country since 2005 to present. However, several earthquakes generated intensities of up to VI, the most recent ones are June 2007 and July 2007 in Southern Leyte, and November 2007 in Pangasinan.

(3) Issues and lessons fro the past disaster management activities
(4) The coordination / collaborations disaster management including emergency responses / the preparations concerned Regulations, Guidelines and By-Laws

3 Other Topics related to PHIVOLCS

3.1 Cooperation / Coordination with NGOs

(1) Current situations

PHIVOLCS closely work with NGO's as based on experience, the sustainability of PHIVOLCS efforts in the community is better through locally based NGOs. PHIVOLCS has likewise been asked by NGOs for briefings on hazards, awareness, monitoring and preparedness.

(2) List of NGOs that participate / entry/ commit to PHIVOLCS

Accord (formerly CARE Philippines)
Corporate Network for Disaster Response
Center for Disaster Preparedness
TAO-Pilipinas Inc.
Smart Communications, Inc. –Sweep Program
ICDAI –based at Infanta, Quezon

3.2 Current Situations on Training Program for Capacity Building

3.2.1 House Training

Regular in-house training for volcano and seismic observers on various hazards and preparedness measures, instrumentation and operation.

3.2.2 Other Specific Programs by PHIVOLCS

PHIVOLCS sends staff for attendance to training, seminars and workshops locally and internationally.

3.3 Assistance / Support to Communities

3.3.1 Current Situations

PHIVOLCS provide technical information, if available, and serves as a resource person to communities. These are done either directly by PHIVOLCS if requested directly to PHIVOLCS and also in collaboration with Office of Civil Defense or with the Disaster Coordinating Councils at various levels.

In the REINA Project and the on-going READY Project (the details of these projects were discussed earlier), assistance and support to the communities involve 1) multi-hazard mapping and risk assessment 2) capacity building through information/education campaign with provincial, municipal and barangay disaster coordinating council members, especially the barangay captains, 3) setup of early warning systems, including tsunami preparedness signages and evacuation plans for tsunami in pilot barangays, or tsunami and 4) provision and training on the PHIVOLCS generated Rapid Earthquake Damage Assessment System (REDAS – a software simulation tool for hazards mapping and risk assessment on earthquakes) for municipal and provincial planning officers and disaster managers.

3.4 Annual expenditures

3.4.1 Budgets for recent five years

Year	Budget (in pesos)
2007	96,476,000.00
2006	83,845,000.00
2005	86,307,000.00
2004	95,791,000.00
2003	82,782,000.00

3.4.2 The uses and the actual performance

a. Warning and advisory services on volcanic and earthquake hazards
b. Hazard mapping and risk assessment services
c. Research and development
d. Disaster preparedness and risk mitigation services

3.4.3 The procedures

Following the government's annual budget cycle:

a. Budget Preparation

b. Budget Legislation
c. Budget Execution

4 Disaster Statistics

QUESTIONNAIRE

Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)

Attention: **DR. PRISCO D. NILO, Director**

Address: **PAGASA Science Garden Complex, Agham Road, Dilman, Quezon City**

Telephone No.: **632-9294865, 9287731**

E-mail address: **pdnilo@pagasa.dost.gov.ph**

Date: **19 November 2007**

Please provide us with the answers to the following questions, in particular preparedness phase, during our meeting or, if possible, beforehand in order to conduct fruitful discussion.

For each question, please:
- Fill in a blank, or
- Mark ⬭ on **Yes** or **No**, or
- Provide separate data and information which show reply to the question, or
- Correct/add if provided description is wrong

1. ORGANIZATION

1.1 General Information / Data

Please provide the following documents:

(1) Organization chart

Please refer to Figure 1.

(2) Financial Statements for the last 5 years (PhP in Million)

	2002	2003	2004	2005	2006	2007
Budget	346.696	390.050	334.810	324.158	322.835	558.971

(3) Number of total personnel for the last 5 years

	2002	2003	2004	2005	2006	2007
Personnel	1,163	1,175	1,139	1,103	1,078	1,017

(4) Brochure of introduction of your organization (if any)

1.2 Role and Functions

Please explain your organization's role and functions. We understand that your organization is responsible for the following:

(1) For flood preparedness

PAGASA is at the forefront, among other agencies in issuing flood bulletins and warning in the event of an impending flood, particularly in monitored major river basins and reservoirs in Luzon. In non-telemetered river basins in the Philippines, the PAGASA issues flood advisories.

(2) For landslide preparedness

The PAGASA issues advisory for rain-induced landslides. The advisory is incorporated in Severe Weather Bulletins.

(3) For typhoon preparedness

For typhoon preparedness, the PAGASA issues Severe Weather Bulletins when a tropical cyclone threatens to affect the country or is within the Philippine Area of Responsibility.

(4) For storm surge preparedness

At present, the PASASA is conducing hazard mapping in areas of the country which are prone to storm surges. These hazard maps will be provided to local government units as reference for their planning and development plans. A storm surge advisory or warning is incorporated in the typhoon bulletins issued.

(5) For volcanic disaster preparedness

This activity is under the Philippine Institute of Volcanology and Seismology (PHIVOLCS).

(6) For earthquake preparedness

This activity is under PHIVOLCS.

(7) Please indicate other responsibilities, if any

As far as flood forecasting and waning system for dam operation is concerned, PAGASA provides all meteorological updates in the form of forecast rainfall to the agencies who manage dam operation activities such as the National Irrigation Administration (NIA) and the National Power Corporation (NPC). The NPC and NIA are in charge of pre-release operation and dam discharge warning activities while PAGASA issues flood bulletins for the communities living downstream of the dams. However, in late CY2006, the PAGASA was directed by the Office of the President to decide on the pre-release operation of Magat dam. This additional mandate of PAGASA is stipulated in a Presidential directive.

1.3 Financial Status

(1) What are the major financial sources for the implementation of the projects?

The financial sources for the implementation of projects come from grants from donor countries such as Japan, Korea, US, Australia and international NGOs. Some projects are also funded by the Department of Science and Technology Grant –in-Aid (DOST-GIA).

(2) What kind of major expenditure exists?

Major expenditures include the purchase of new equipment, cost of operation and maintenance of monitoring equipment and facilities and acquisition of spare parts.

(3) Please describe financial conditions on O & M of FFWS

During the past 5 years, the allocated budget for O&M of FFWS is sufficient to operate and maintain the equipment and facilities. Because of the high cost of imported water level sensors, the PAGASA replaced the defective sensors utilizing locally fabricated ones.

1.4 Your Task in NDCC (National Disaster Coordinating Council)

(1) Management of natural disaster preparedness

PAGASA provides all weather and flood advisories and bulletins to the NDCC to forewarn the residents in threatened communities. These bulletins will enable the local government units in the endangered areas to plan and to act accordingly in the event of an impending disaster.

1.5 Current Status of Follow-up Activities of OECF's SAPs Report in 1999

(1) Information flow

Before 1999, flood bulletins for the monitored river basins were issued at the PAGASA Flood Forecasting Center in Quezon City. In consideration of the SAPS recommendation, flood bulletins are now issued by the Flood Warning Centers located within the monitored river basins so that said warnings will be disseminated directly to the Provincial Disaster Coordinating Council (PDCC) and the concerned municipalities. These flood bulletins are also issued to the PAGASA Central Office for dissemination to the OCD main office and the national media offices.

(2) Quality of information

There is not much progress in terms of improvement in the quality of the flood bulletins. Although improvements are underway, these are on experimental stage. The

experimental improvements include the inclusion of maps showing the areas of intense rainfall that would result to flooding. The forecast height of flooding are in qualitative terms such as alert, alarm and critical, however, the corresponding levels or height of water in the river will soon be incorporated once the assessment levels for warning have been updated. In addition, future versions of flood bulletins will include maps showing the extent of inundation or flood limits.

(3) Equipment improvement

The difficulty of equipment acquisition and the high cost of imported spare parts especially water level sensors have increased the downtime of monitoring facilities. However, the PAGASA replaced the defective sensors with locally fabricated equipment. This has greatly improved the data monitoring system of PAGASA. In addition, to address the problem on interference, the SMS technology was adopted as a temporary solution in the transmission of data from the field centers to the PAGASA Central Office.

(4) Institutional improvement

The PAGASA is undergoing rationalization aimed at enhancing the services of the Agency by increasing the personnel in the field centers.based on the approved plantilla positions. The existing and proposed manning chart of the Flood Forecasting Branch of PAGASA are shown in Figures 1 and 2.

(5) Community-based disaster management

There has been considerable improvement in community-based disaster management during the past five (5) years. The increased frequency of flooding in the Philippines has prompted local government units to be interested in community based flood early warning system (CBFEWS). Before 2006, all community based activities were LGU initiated. Through the regular public information drives conducted by PAGASA, LGUs became aware of the feasibility of CBFEWS as an important component of mitigating the impacts of flood hazards. To date several CBFEWS have been established in several areas in the country such as Iloilo, Bulacan, Quezon City, Olongapo City Surigao provinces and Leyte provinces.

1.6 Laws and Regulations

Please indicate the laws and regulation, relating to natural disaster preparedness, regarding the basis of your organization's foundation. And also related laws and regulation when implementing the projects?

This item is a concern of the OCD.

1.7 Superior Plans

What are your superior plans relating to natural disaster preparedness?

In terms of flooding, PAGASA envisions to establish flood forecasting and warning using telemetry in all major river basins. For principal or small river basins, the community based approach will be established. This medium to long-term plan has been stipulated in the PAGASA Investment Portfolio.

1.8 Involvement of UNDP Projects

Please describe PAGASA's roles of the projects.

The PAGASA is one of the government agencies that are currently implementing the UNDP Ready Project entitled "Hazard Mapping and Assessment for Effective Community Based Disaster Risk Management. The PAGASA activities in this project include flood (1:10K scale map) and storm surge (1:50K) hazard mapping in selected areas and the establishment of community based flood early warning system (CBFEWS) in thirteen provinces. PAGASA also participates in the IEC component of the project.

1.9 Projects and Programs

Please describe your projects and programs in operation & management relating to natural disaster preparedness.

Projects and programs in operation and management relating to natural disasters are focused on improving the forecasts. To undertake this, the trust on research activities relates to the use of remote sensing data in for rainfall estimation and forecasting. The use of GIS that shows the limits of flooding or inundation in a flood prone locality is also underway. Quantitative rainfall forecast is pursued to come up with a probabilistic forecast.

The PAGASA is taking a proactive approach in disaster risk reduction through provision of timely forecasts.

1.10 Public Information Drive

(1) Please describe details of activities, areas, issues and problems.

Public information drives are carried out regularly by PAGASA or with other agencies such as the Office of Civil Defense and other concerned agencies. In the PIDs, lectures on hydrometeorological hazards are provided including the precautionary measures that the affected residents should undertake before, during and after the occurrence of a disaster. Maps of hazard prone areas, posters and handouts are also provided.

(2) Please provide materials of PID

1.11 Guidelines and manuals

What kind of guideline and/or manual, relating to natural disaster preparedness, does your organization have? Who is targeted?

The PAGASA has a Flood Operation Manual for flood forecasting and warning separately for basin and dam operations. An Operational Manual for weather and tropical cyclone forecasting is also used by forecasters. These manuals serve as guide to operational weather and flood forecasters.

1.12 Future Plans and Projects

Do you have your future plans and projects relating to natural disaster preparedness?

Short-term to long term projects and programs of PAGASA in the operation and management relating to natural disaster preparedness are clearly outlined in the PAGASA Investment Portfolio (January 2007). These medium-term programs are geared towards upgrading the forecasting capability of PAGASA in line with the Four Point Action Plan of the NDCC issued in January 2005. The on-going programs include the setting up of infrastructures of monitoring facilities such as a network of radars and ground observation stations coupled with capacity building of PAGASA's work force.

In the field of flood disaster preparedness, the key investment areas are focused in establishing telemeterized flood forecasting and warning system for all major river basins in the country and a community based early warning system for smaller river basins.

1.13 Information Flow

(1) Please describe information flow down to residents.

Upon issuance of the advisories and warnings, such information are disseminated to OCD and concerned agencies and the media for further dissemination to the public. Usually the broadcast media is a fast and effective medium for the warnings to reach the threatened communities. Even if dissemination of information is the mandate of OCD, the PAGASA upon issuance of warnings also provide the same information to the public. For flood bulletins, the dissemination network is shown in Figure 2.

(2) Areas recently improved

For weather warnings, the PAGASA has recently employed a hotline or a three digit

number which the public can dial to access the latest warning or advisory. Weather and flood advisories are also posted on the internet or through SMS.

(3) Issues & problems

Despite of the availability of internet and SMS in addition to terrestrial communication, people in the remote areas cannot access information on time. The coverage of internet and SMS providers are still limited in some areas. PAGASA has yet to acquire a VSAT communication system in order to increase the accessibility of forecasts and warnings.

1.14 Flood Bulletin

(1) Issues and problems

The flood bulletin format has not been improved for the past 10 years. The flood bulletin is still too technical and limits the understanding by a local resident. The flood hazard map of the low-lying flood prone areas needs to be updated.

(2) Plans of improvement

The use of GIS showing the limits of flooding or inundation can very well improved the readability of the flood bulletins that are being issued by PAGASA. Tools that provide accurate rainfall forecast will also be a great help in flood forecasting such as the use of satellite and radar data in rainfall estimation.

(3) Criteria of warning

With the unprecedented development within the flood plain including the geomorphological changes in the monitored river basins, assessment water levels must be modified. Such revision should be based on the recent longitudinal profile and cross section of the river, rate of rise of water in the river and enough time for warning the community. Updating the stage and discharge relationship must be carried out every time new information are available.

1.15 Coordination with Other Central Government Organizations

How are you making coordination with other central government organizations relating to natural disaster preparedness?

The PAGASA is an active member of the NDCC. During NDCC meetings which are held regularly (weekly, bi-monthly or monthly depending on the situation), issues and problems are discussed. The PAGASA always presents the updates on the weather as

well as the water levels of major reservoirs.

The PAGASA also has ongoing collaboration with the Department of Agriculture in the provision of climate advisories and farm weather. It is also the lead agency in the Joint Operation and Management Committee (JOMC) for Flood Forecasting and Warning System for Dam Operation (FFWSDO). The member agencies include the National Power Corporation (NPC), the National Irrigation Administration (NIA), the Department of Public Works and Highways (DPWH), the National Water Resources Board (NWRB), the Office of Civil Defense (OCD), the Metropolitan Waterworks and Sewerage Services (MWSS) and the Metro Manila Development Authority (MMDA).

1.16 Coordination with Local Government Organizations

How are you making coordination with local government organizations relating to natural disaster preparedness?

The PAGASA field centers and stations are members of the Regional or Provincial DCCs and are always invited in meetings of the PDCC. Pre and post disaster meetings are usually conducted by the PDCC.

To pursue its initiative of bringing flood forecasting and warning services to the countryside, the PAGASA is undertaking several projects in collaboration with local government units (LGUs) through the establishment of community-based flood early warning system (CBFEWS). This highlights the participation and commitment of the community in flood disaster risk management.

1.17 Coordination with International Organizations

How are you making coordination with international organizations relating to natural disaster preparedness?

The PAGASA is a member of the World Meteorological Organization (WMO), the UNESCAP-WMO Typhoon Committee and the International Civil Aviation Organization (ICAO). The PAGASA is also a preferred partner in international level programs, particularly those activities geared towards disaster risk management and has established affiliations with international organizations such as the United Nations Education Program (UNEP), United Nations Development Program (UNDP) and the Intergovernmental Panel on Climate Change (IPCC). It also has linkages with the Asia Pacific Climate Network (APCN), International Center for Theoretical Physics (ICTP), National Committee on Marine Sciences (NCMS), International Oceanographic

Commission (IOC) and the Asian Disaster Preparedness Center (ADPC) among others.

1.18 Partnership Activities with NGO

Do you have any partnership activities with NGO relating to natural disaster preparedness?

The PAGASA is also involved in a number of projects funded by international organizations such as the Asian Disaster Preparedness Center (ADPC) in Bangkok, Thailand, CARE Philippines, SMART Philippines, Philippine National Red Cross and Philippine Climate Network.

2. BASIC POLICY

(1) What are your organization's expected roles to overcome the major existing constraints (if any) on natural disaster preparedness sectors in the Philippines?

The PAGASA is expected to provide timely and accurate forecasts and warnings in order to mitigate the losses of lives and damage to properties before and during the occurrence of natural hazards such as tropical cyclones, tsunamis, floods and flashfloods. However, there are still areas that cannot access the bulletins and advisories and that there is a need to improve the format of the warnings that will suit the level of understanding of the public so that they will be able to act and respond accordingly.

(2) How is your organization tackling those issues?

To address those issues, the Agency is on the process of enhancing its monitoring facilities through the implementation of projects as well as collaboration with international and local funding institutions.

(3) From your point of view, do you think that your organization itself is capable of operating and managing projects, programs or facilities relating to natural disaster preparedness? Yes No

(a) If yes, please provide the reason.

The Agency has a long experience of implementing local and foreign-assisted projects starting with the establishment of the FFWS in the Pampanga river basin in 1973 under the JICA Grant, the enhancement of upper air stations by Germany, and other foreign-assisted projects. There are also various projects implemented that are funded by the DOST-GIA.

(b) If no, what kind of assistance is necessary?

(4) Please explain the prioritized principles within your organization's policies relating to NDCC task?

Aside from PHIVOLCS, the PAGASA undertakes early warning activities for the NDCC (Figure 3).

3. NEEDS FOR FOREIGN AIDS

Please describe your needs for foreign aids.

The frequency of flood has increased during the past decades hence more and more people are now affected. At present, only four (4) among the eighteen (18) major river basins in the country are telemetered, hence one of the areas where foreign aid is requested is to establish telemetered FFWS in the fourteen (14) ungauged major river basins in the country particularly in the Visayas and Mindanao (Figure 4).

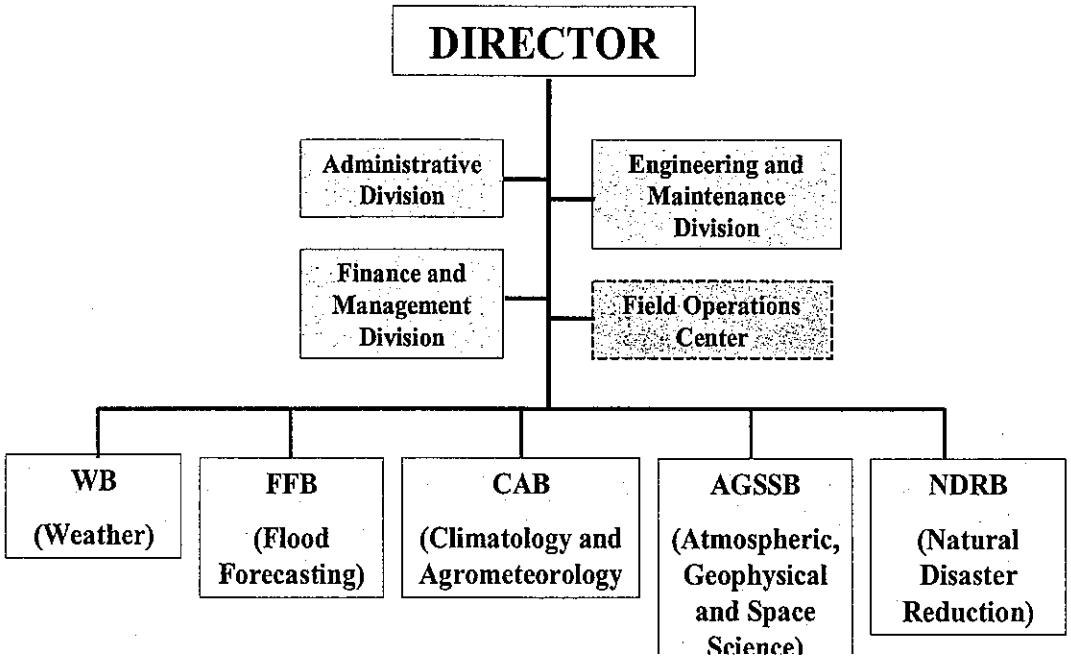


Figure 1. Organizational Chart of PAGASA

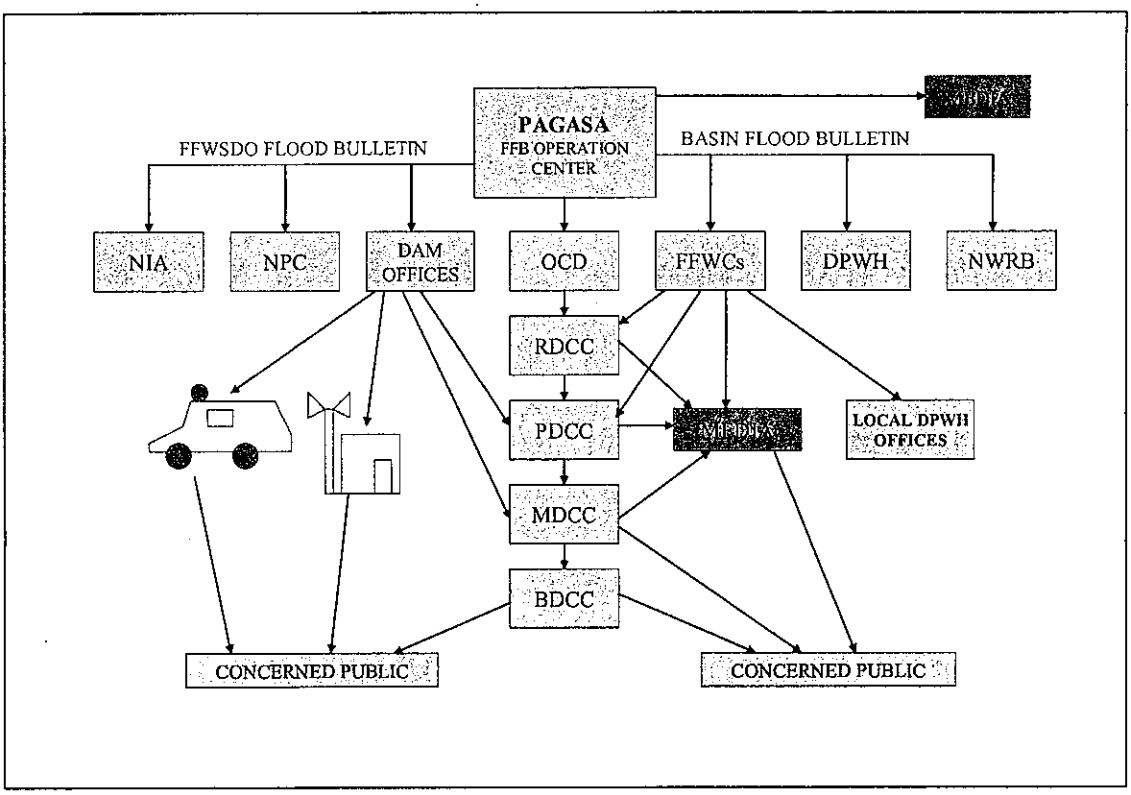


Figure 2. Dissemination Network of Flood Bulletins

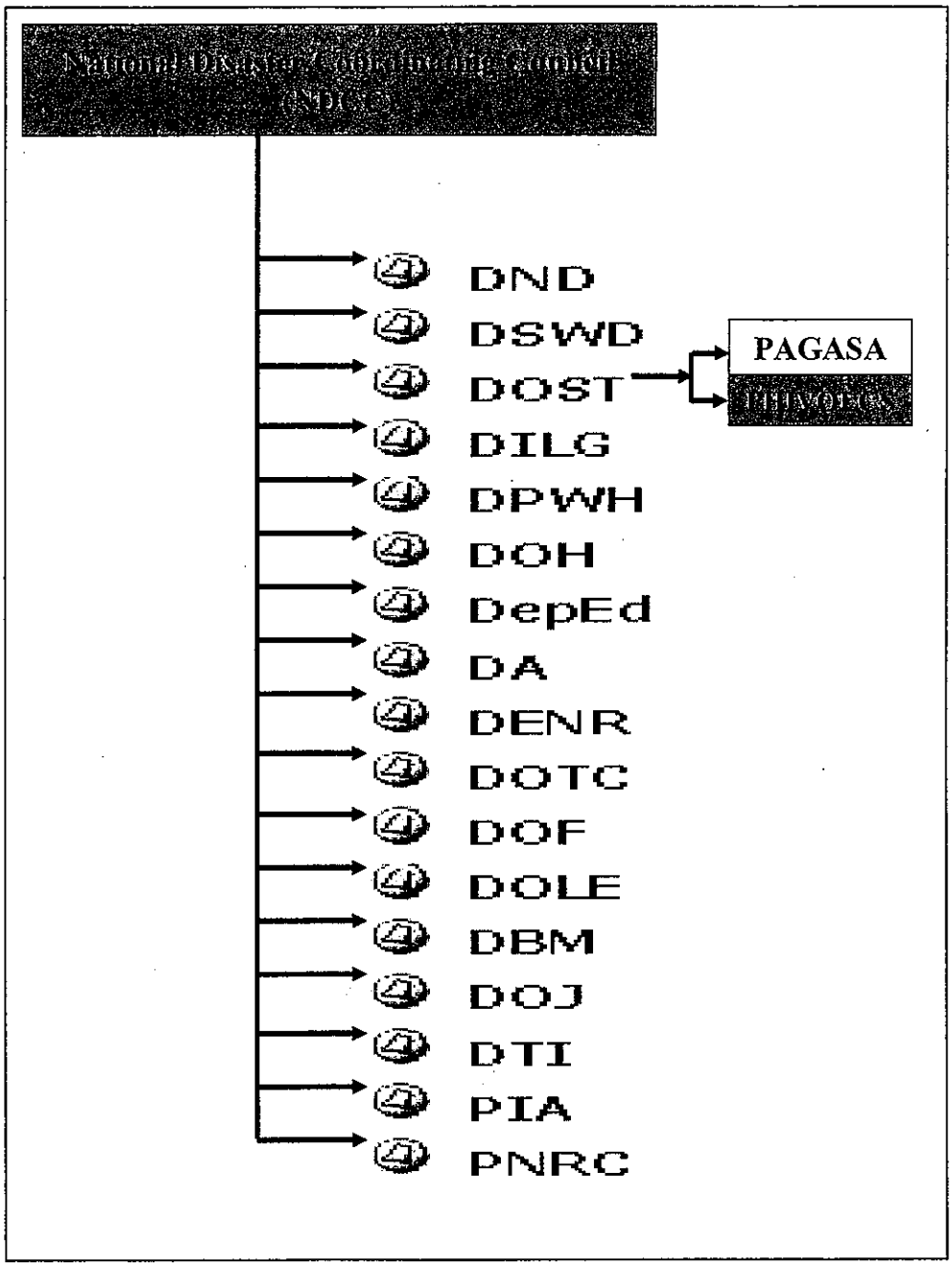


Figure 3. Organizational Set-up of the NDCC

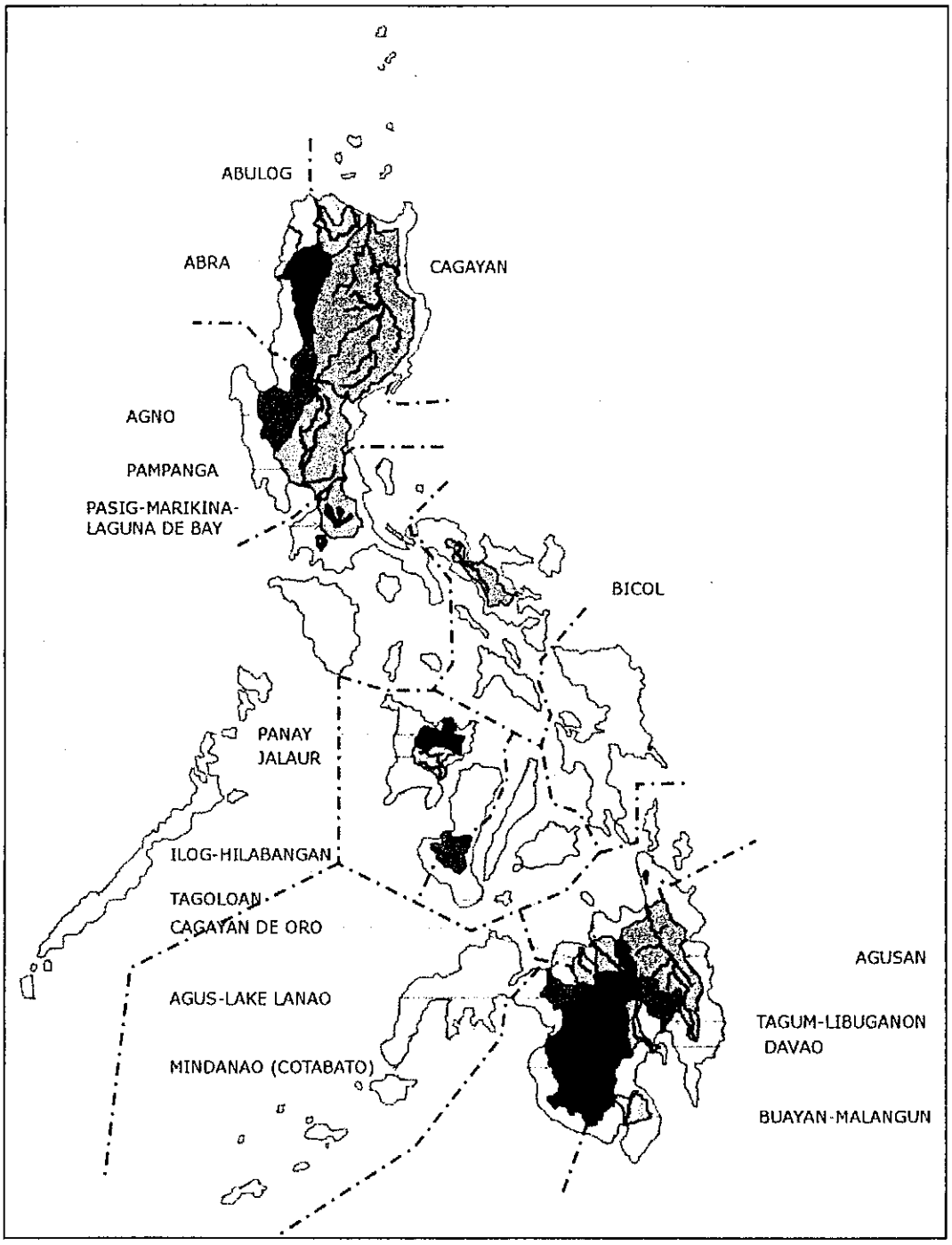


Figure 4. Major River Basins in the Philippines

A-Package

Pinatubo, Mayon, Bulusan, Kanlaon and Hibok-Hibok Existing Volcano Observatories

Equipment	Specification	Quantity	Condition of Equipment	Purpose
Middle-period Seismic Sensor (3- component)	-Transducer type: force balance - 50 or longer seconds to 0.02 second (frequency range 0.02 to 50 Hertz)	1 set	Non-Operational VMEPD	For detecting low-frequency volcanic tremors associated with magmatic intrusion and ascent
GPS Timing System	-GPS signal synchronization - Timing accuracy for signal receiving: better than 100 microseconds	1 set	Operational Note: Used at VKUP (Converted to mobile seismic station) VMEPD	For timing control of the seismic equipment and system by GPS signals
Data Recorder	- 6 channels, gain adjustable input amplifiers suitable for accepting the outputs of seismometer - 24 bit AD converter, 200sps for each channel - Removable solid state memory - Digital interface: 10 Base-T	1 set	Operational Note: Used at VKUP (Converted to mobile seismic station) VMEPD	For digital data recording of components of seismic motion
Power Supply	- DC power supply: 1 - AVR (5kVA):1 - Lead acid battery	1 set	Operational VMEPD	For uninterrupted and suitable power supply to the equipment and system

Pasuquin, Roxas, Palo, Puerto Princesa, Tagbilaran, Cagayan de Oro, and Bislig Existing Seismic Observation Stations

Equipment	Specification	Quantity	Condition of Equipment	Purpose
Broadband Seismometer (3-component)	- Transducer type: force balance (feedback type with automatic mass position adjustment) - Three orthogonal components vertical, north/south and east/west - 360 or longer seconds to 0.02 second frequency range 0.0027 to 50 Hertz)	1 set	Four sets are operational and in good condition Bislig and Roxas has one-component of sensor permanently defective. Cagayan de Oro scheduled for its regular maintenance work SOEPD	For understanding better the faulting mechanisms of large magnitude and damaging earthquakes For detecting a wide range of periods and a wide-range frequency content

GPS Timing System	- GPS signal synchronization - Timing accuracy for signal receiving: better than 100 microseconds	1 set	Operational and in good condition SOEPD	For timing control of the seismic equipment and system by GPS signals

Data Recorder	6 channels, gain adjustable input amplifiers suitable for accepting the outputs of seismometer 24 bit AD converter, 200sps for each channel Removable solid state memory Digital Interface: 10 Base-T	1 set	Operational and in good condition SOEPD	For digital data recording of 3 components of seismic motions
Data Processing & Analyzing Unit for Broadband Seismometer	Pentium IV 2GHZ processor 512 Mbytes Memory, 400Gbytes hard drive CD-RW, DVD RAM, 17" monitor LAN interface: 10BASE-T/100BASE-TX Data processing & analyzing software	1 set	Operational and in good condition SOEPD	For data processing and analyzing for broadband seismometer
Power Supply	DC power supply: 1 Isolation Transformer (5kVA): 1 AVR (5kVA): 1 Lead Acid Battery (65AH, 12V):1	1 set	Operational and in good condition SOEPD	For uninterrupted and suitable power supply to the equipment and system

Basco Existing Seismic Observation Station

Equipment	Specification	Quantity	Condition of Equipment	Purpose
Satellite Transceiver	Receive frequency: 10.95GHz to 11.7GHz Transmit frequency: 14.0GHz to 14.5 GHz Receiving data rate: 32kbps at ½ FEC Transmission modulation: QPSK Transmission data rate: 38.4kbps at ½ FEC rate Receiving Demodulation: BPSK/QPSK	1 set	Operational SOEPD	For transmitting observational data of short period seismic motion and communicating with the Head Office and the Mirror Center
Parabolic Antenna (1.8m) with Support structure	Frequency range: 10.95 -14.5 GHz Transmit gain: 53dBi at 14.2GHz	1 set	Operational SOEPD	
Satellite GPS Timing System	Synchronization of transmitted carrier frequency Timing accuracy: 100 microseconds	1 set	Operational SOEPD	For timing control of the satellite equipment and system by GPS signals

Satellite Seismic Data Recorder	6 channels 24 bit AD converter, 200sps for each channel Periodic logging of state of health information for performance analysis Digital Buffering: one day for six ADC inputs continuously sampled at 100Hertz	1 set	Operational SOEPD	For recording observational data of short period seismic motion (3 components) to transmit through satellite communication system to the Head Office and Mirror Center
Power Supply	DC Power Supply: 1 Charger Unit: 1 Connection Terminal Switch: 1 Isolation Transformer (5kVA): 1 AVR (5kVA): 1 Lead Acid Battery (420AH, 12V): 1	1 set	Defective power supply and battery New unit already available and scheduled for replacement SOEPD	For uninterrupted and suitable power supply to the equipment and system

Buco Existing Volcano Observatory				
Equipment	**Specification**	**Quantity**	**Condition of Equipment**	**Purpose**
Data Processing & Analyzing Unit	Pentium IV 2GHz processor 512 Mbytes Memory, 40 Gbytes hard drive CD-RW drive, DVD RAM, 17" LCD monitor LAN Interface: 10BASE-T/100BASE-TX Data processing & analyzing software	2 sets	Operational VMEPD	For seismic observational processing and analyzing as existing station
Peripheral Equipment	Inkjet Printer (A4):1 Modem:2 Automatic Telephone Line Switch, Phone Line Protection, Fax Machine: 1 for each	1 set	Operational VMEPD	For computing system
Communications Control Intelligent Switch	Backbone LAN interface: IEEE802.3 Ethernet (CSMA/CD), 100 Base-FX LAN Interface: 100Base-TX/10Base-T Ethernet switching features: store and forward	1 set	Operational VMEPD	For data frame switching
T0=1sec Short Period Seismometer (3-component)	Transducer type: Moving coil Three component: east/west & north/south motions and vertical (up/down) short period motions 0.5 – 20Hertz (period 2 – 0.05 seconds)	1 set	Operational VMEPD	For observation of 3 components of short period seismic motion
Middle-period Seismic Sensor (3-component)	Transducer type: force balance 50 or longer seconds to 0.02 second	1 set	Non-Operational – Phase IIA. Equipment were not	For detecting low-frequency volcanic tremors associated with magmatic

	(frequency range 0.02 to 50 Hertz)		configured and installed. Training conducted was not sufficient. VMEPD	intrusion and ascent)
Accelerometer (3 components)	Transducer type: force balance orthogonally oriented Three-Component: acceleration of seismic motions of east/west & north/south motions and vertical (up/down)	1 set	Non-Operational – Phase IIA. Equipment were not configured and installed. Training conducted was not sufficient. VMEPD	For using in characterizing strong ground-motion site response in areas affected by large magnitude earthquakes
Data Recorder	6 channels, gain adjustable input amplifiers suitable for accepting the outputs of seismometer 24 bit AD converter, 200sps for each channel Removable solid state memory Digital interface: 10 Base-T	3 set	Operational Note: Used at VKUP (Converted to mobile seismic station) VMEPD	For digital data recording of 3 components of seismic motion
Drum Recorder	Recording capacity: 24 hours/sheet of paper Recording media: curvilinear ink pen Seismic and pen amplifier input: differential or single-ended	3 sets	Operational VMEPD	For analog data recording of 3 components of seismic motion
GPS Timing System	GPS signal synchronization Timing accuracy for signal receiving: better than 100 microseconds	1 set	Operational Note: Used at VKUP (Converted to mobile seismic station) VMEPD	For timing control of the seismic equipment and system by GPS signals
Power Supply	DC power: 1 Power Distribution Board: 1 Surge Diverter: 1 UPS: (1.0 kVA): 2 AVR (5kVA): 1 Lead Acid Battery	1 set	Operational VMEPD	For uninterrupted and suitable power supply to the equipment and system

PHIVOLCS Head Office

Equipment	Specification	Quantity	Condition of Equipment	Purpose
Master Satellite Transceiver	Receive frequency: 10.95GHz to 11.7GHz Transmit frequency: 14.0GHz to 14.5 GHz	1 set	Operational	For communicating with all the unmanned seismic observation points in

	Receiving data rate: 64kbps at ½ FEC Transmission modulation: BPSK/QPSK Transmission data rate: 38.4kbps at ½ FEC rate Interface for connection with computers: 10BASE-T Satellite Signal Frequency Analyzer		SOEPD	the seismic observation network and mirror center as Hub Center
Parabolic Antenna (3.8m) with Support structure	Frequency range: 10.95 -14.5 GHz Transmit gain: 53dBi at 14.2GHz	1 set	Operational SOEPD	
Satellite GPS Timing System	Synchronization of transmitted carrier frequency Timing accuracy: 100 microseconds	1 set	Operational SOEPD	For timing control of the satellite equipment and system by GPS signals
Satellite Communication Network Master Control Unit	Pentium IV 2 GHz processor 512 Mbytes memory, 40 Gbytes hard drive CD-RW drive, RAM, 17" color monitor LAN Interface: 10BASE-TX/10BASE-TX Satellite communication network control software	1 set	Operational SOEPD	For controlling all the satellite communication systems at the unmanned seismic observation points as the Hub Center
Communication Control Intelligent Switch	Backbone LAN interface: IEEE802.3 Ethernet (CSMA/CD), 100BASE-FX LAN interface: 100BASE-T/100BASE-TX Data archiving software	1 set	Operational SOEPD	For data frame switching
Data Archiving Server	Pentium III 2 GHz processor 512 Mbytes memory, 40 Gbytes hard drive CD-RW drive, RAM, 21" color monitor LAN Interface: 10BASE-TX/10BASE-TX Data archiving software	1 set	Operational Monitor showing signs of display problems after continuous operation since 2004 Scheduled for replacement SOEPD	For seismic observational data arching
Seismic Data Processing & Analyzing Unit	Pentium IV 2 GHz processor 512 Mbytes memory, 40 Gbytes hard drive CD-RW drive, RAM, 17" color monitor LAN Interface: 10BASE-TX/10BASE-TX Seismic data analysis & plotting software	1 set	Operational Monitor showing signs of display problems after continuous operation since 2004	For seismic data processing and analyzing

			Scheduled for replacement SOEPD	
Deformation Data Analysis & Plotting Unit	Pentium IV 2GHz processor 512 Mbytes Memory, 40 Gbytes hard drive CD-RW drive, DVD RAM, 17" color monitor LAN Interface: 10BASE-T/100BASE-TX Scientific data analysis and visualization software Deformation data analysis & plotting software	1 set	Good operating condition VMEPD	For deformation data analyzing and plotting
Volcano Data Receiving Server	Pentium III 2 GHz processor 512 Mbytes memory, 80 Gbytes hard drive CD-RW drive, RAM, 17" color monitor LAN Interface: 10BASE-TX/10BASE-TX Data storage software Volcano data receiving software	1 set	Good operating condition VMEPD	For data receiving and serving
Volcano Waveform Data Analysis & Plotting Unit	Pentium IV 2GHz processor 512 Mbytes Memory, 40 Gbytes hard drive CD-RW drive, DVD RAM, 21" color monitor LAN Interface: 10BASE-T/100BASE-TX Scientific data analysis and visualization software Volcano waveform data analysis & plotting software	1 set	Good operating condition VMEPD	For volcano waveform data analyzing and plotting
Peripheral Equipment	Laser printer (A3) Inkjet printer (A3): 1 for each Scanner (A3): 2 Plotter, Digitizer: 1 for each Modem, Automatic Telephone Line Switch, Phone Line Protection: 1 for each	1 set	Good operating condition VMEPD	For the computing system
Power supply	Generator Change-over Switch: 1 Isolation Transformer (10kVA): 1	1 set	Good operating condition	For uninterrupted and suitable power supply to the equipment and system

	AVR (10kVA): 1 UPS (1.0kVA) : 4 UPS (1.5kVA) : 3		VMEPD	

Quick Response Mobile System Seismic Sensors				
Equipment	**Specifications**	**Quantity**	**Condition of Equipment**	**Purpose**
T0=1sec Short Period Seismometer (Convertible Type, 3-component	Transducer type: Moving coil Three-Component: east/west & north/south motions and vertical (up/down) short period motions Convertible: horizontal and vertical (up/down) Frequency range: 0.5 – 20Hertz (period 2 – 0.05 seconds)	30 sets	Good operating condition VMEPD	For either regional earthquake or volcano monitoring and for an emergency survey of two simultaneous crises (1 volcano related and one tectonic earthquake related)
T0=1sec Short Period Seismic Sensor (Convertible Type, 3-component	3-component (Up-down, North-South and East-West) Transducer type: force balance (feedback type with automatic mass position adjustment) or equivalent Three orthogonal components vertical, north/south and east/west 20 or longer seconds to 0.02 second (frequency range 0.05 to 50Hertz)	5 sets	Good operating condition VMEPD	For the effective detection of low-frequency volcanic quakes that indicate magma ascent
Accelerometer (3 components	Transducer type: force balance orthogonally oriented Three-Component: acceleration of seismic motions of east/west & north/south motions and vertical (up/down) Maximum acceleration capability – 2g Frequency range DC to 50Hertz)	10 sets	75% operational due to partly worn out spare parts and old age VMEPD	For using in characterizing strong ground-motion site response in areas affected by large magnitude earthquakes
Data Recorder	6 channels, gain adjustable input amplifiers suitable for accepting the outputs of seismometer 24 bit AD converter, 200sps for each channel Removable solid state memory Digital Interface: 10Base-T Waterproof	30 sets	75% operational due to partly worn out spare parts and old age VMEPD	For recording observational data of the mobile monitoring systems
GPS Timing System	GPS signal synchronization	30 sets	75% Operational due to	For timing control of the seismic

	Timing accuracy for signal receiving: better than 100 microseconds		partly worn out spare parts and old age VMEPD	equipment and system by GPS signals
Tiltmeter	Platform-type with biaxial sensors, suitable for geophysical/volcanological application Resolution: 0.1 microradian Repeatability: 1 microradian (static) Linearity: 2% of full span Time Constant: 0.5 seconds Switch-able gain (Hi & Low) Mounting: Three adjustable invar legs Power supply: approximately 11 to 15Volts DC Scale core: Ks = +0.05%C typical Digital Tiltmeter Balance Unit (1 set for all)	10 sets	8 Units are operational. The rest needs repair due to partly worn out spare parts and old age VMEPD	For detecting minute shifts in ground angle or tilt, usually for determining intrusion of magma into the volcano edifice
Tiltmeter Data Logger	9 channels Data Sample rate: 1sps for each channel Removable solid state memory Digital interface: 10 Base-T Waterproof	10 sets	8 Units are operational, some were already worn out. VMEPD	For recording observational data of tiltmeter
Laptop Data Processing Unit for Tiltmeter	Pentium III 1 GHz processor 256 Mbytes memory, 20 Gbytes hard drive CD-RW drive, DVD RAM, 14" color monitor LAN Interface: 10BASE-TX/10BASE-TX Data processing and analyzing software Mobile Inkjet Printer (A4)	2 sets	Good operating condition VMEPD	For observational data of tiltmeter processing at a site
Mobile Satellite Transceiver	Receive frequency: 10.95GHz to 11.7GHz Transmit frequency: 14.0GHz to 14.5 GHz Receiving data rate: 32kbps at ½ FEC Transmission modulation: BPSK/QPSK Transmission data rate: 38.4kbps at ½ FEC rate Receiving Demodulation: BPSK/QPSK	2 sets	Under repair covered by warranty SOEPD	For communicating with the Head Office Hub Center and the Mirror Center and for data transmission to the Head Office to interpret the data and make a collective decision for issuing the appropriate warnings

Parabolic Antenna (1.2m) with Support structure	Frequency range: 10.95 – 14.5GHz Transmit gain: 46dBi at 14.25GHz	2sets	Operational and in good condition SOEPD	
Satellite GPS Timing System	Synchronization of transmitted carrier frequency Timing accuracy: 100 microseconds	2 sets	Operational and in good condition SOEPD	For timing control of the satellite equipment and system by GPS signals
Communication Control Intelligent Switch	Backbone LAN interface: IEEE802.3 Ethernet (CSMA/CD), 100BASE-FX LAN interface: 100BASE-T/100BASE-TX Ethernet switching features : Store and forward	1 set	Operational and in good condition SOEPD	For data frame switching
Mobile Satellite Communication Laptop Data Processing Unit	Pentium III 1 GHz processor 256 Mbytes memory, 20 Gbytes hard drive CD-RW drive, DVD RAM, 14" color monitor LAN Interface: 10BASE-TX/10BASE-TX Data processing and analyzing software	2 sets	Operational and in good condition SOEPD	For processing observational data from various quick response mobile monitoring systems deployed at critical sites during emergencies
Accessories	Satellite Phone SIM Card Mobile Inkjet printer (A4)	2 sets	Good operating condition; 1 set VMEPD and 1 set SOEPD	For the mobile satellite communication data processing unit and for voice communication from anywhere
GPS Deformation Receiver Kit	Tracking channels: 20 L1/L2 channels High Precision GPS groundplane antenna (Frequency GPS L1 and L2, antenna gain: 50dB)	10 sets	Good operating condition VMEPD	For determining horizontally-dominated movement along faults, either as fault creep or rapid movement along a fault plane and for detecting an accumulated strain over a large area even when no fault rupture has taken place
GPS Deformation Radio Communication Unit	Transmission distance : 10km Transmission data rate : 9,600bps (Digital) Omni directional antenna	10 sets	Good operating condition VMEPD	
GPS Antenna/Receiver Tripod with Adapter	Light weight, hand-carried type Leg length extendable	10 sets	Good operating condition VMEPD	

GPS Antenna/Receiver Mount Pole	Light weight, hand carried type RTK antenna	2 sets	Good operating condition VMEPD	
Receiver and Data Controller	RTK GPS Data logging Data exchange with GPS Deformation Processing & Analyzing Mobile Unit Continuous RTK surveying feature RS-232C, 38,400bps: 1 port	2 sets	Good operating condition VMEPD	For receiving and controlling observational data of GPS deformation system
10Base-T Real-Time Converter	Serial interface: RS-232C, 9,600bps: 1 LAN interface: 10Base-T	10 sets	Good operating condition VMEPD	For converting from serial data to IP packets
Portable Battery with Charger for GPS Deformation System	Input power: AC 220Volts, 60Hz Output power: DC 10-36Volts Battery capacity: 6AH	10 sets	Good operating condition VMEPD	For uninterrupted and suitable power supply to the equipment
GPS Deformation Processing & Analyzing Mobile Unit	Pentium III 1 GHz processor 256 Mbytes memory, 20 Gbytes hard drive CD-RW drive, DVD RAM, 14" color monitor LAN Interface: 10BASE-TX/10BASE-TX GPS deformation processing and analyzing software	2 sets	Good operating condition VMEPD	For processing and analyzing observational data of GPS deformation system at a site
Power Supply	AVR(5kVA): 2 Generator Change-over Switch: 2 Engine Generator (1kVA): 2	1 set	Good operating condition VMEPD	For uninterrupted and suitable power supply to the equipment and system
Mobile Carrying Case	Weather-proof	For each system	Good operating condition VMEPD	For carrying the quick response mobile system

Quick Response Mobile System
25 Sets of Data Communication Principle-I Systems

Equipment	**Specification**	**Quantity**	**Condition of Equipment**	**Purpose**
Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	1 set	Good operating condition VMEPD	For transmitting and receiving observational data

High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi Portable Mast (3m)	1 set	Good operating condition VMEPD	
Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Good operating condition VMEPD	For data exchange and flow control
Power Supply	Connection Terminal Switch: 2 Solar Power Controller: 2 Solar Panel (100W): 2 Mobile Solar Panel Frame: 2 Lead Acid Battery (140AH, 12V): 2	1 set	Good operating condition VMEPD	For uninterrupted and suitable power supply to the equipment and system
Mobile Carrying Case	Weather-proof	For each system	Good operating condition VMEPD	For carrying the quick response mobile system

Quick Response Mobile System
5 Sets Data Communication Principle II Systems

Equipment	Specification	Quantity	Condition of Equipment	Purpose
Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	1 set	Good operating condition VMEPD	For transmitting and receiving observational data
High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi Portable Mast (3m)	1 set	Good operating condition VMEPD	
Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Good operating condition VMEPD	For data exchange and flow control
Uninterrupted Data Storage	Internal data capacity: 1 week data of all 3-channel, 100sps continuous waveform data from 3 Volcano Array Observation Points Input: Continuous 3-channel 100sps data in a compressed format from 3 Volcano Array Observation Points/a Volcano Observation Point Digital Interface: 10 Base-T	1 set	Good operating condition VMEPD	For receiving and saving volcano observational data transmitted by each unmanned observation point
Power Supply	Connection Terminal Switch: 1 Solar Power Controller: 1	1 set	Good operating condition	For uninterrupted and suitable power supply to the equipment and system

	Solar Panel (150W): 1 Lead Acid Battery (210AH, 12V): 1 AVR (1kVA): 1 Generator Change-over Switch: 1 Engine Generator (1kVA): 1		VMEPD	
Laptop Mobile Data Receiving Server	Pentium III 1 GHz processor 256 Mbytes memory, 20 Gbytes hard drive CD-RW drive, DVD RAM, 14" color monitor LAN Interface: 10BASE-TX/10BASE-TX Mobile data receiving software	1 set	Good operating condition VMEPD	For data receiving and storage at a site
Mobile Carrying Case	Weather-proof	For each system	Good operating condition VMEPD	For carrying the quick response mobile system

Quick Response Mobile System
Instrumentation Tool Kit

Equipment	**Specification**	**Quantity**	**Condition of Equipment**	**Purpose**
Instrumentation Tool Kit	High Gain Yagi Antenna Antenna Tripod Power ATT Multimeter Spectrum Analyzer Personal Computer Software Packages Maintenance Tool Carrying Case (weather-proof)	2 sets	Good operating condition VMEPD	For maintaining and setting the mobile spread spectrum data communication system

Mt. Matutum and Mt. Parker Observation Network General Santos Existing Seismic Observation Network				
Equipment	**Specification**	**Quantity**	**Condition of Equipment**	**Purpose**
Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	2 sets	Operational but temporarily shut down due to building renovation. VMEPD	For transmitting and receiving observational data
High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi	2 sets	Temporarily shut down due to building renovation. VMEPD	
Multi Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Temporarily shut down due to building renovation. VMEPD	For data exchange and flow control
Power Supply	Connection Terminal Switch: 1 Charger Unit: 1 DC Power Supply: 1 Isolation Transformer (5kVA): 1 AVR (5kVA): 1 Generator Change-over Switch: 1 Engine Generator (1kVA): 1 Lead Acid Battery (420AH, 12V): 1	1 set	Temporarily shut down due to building renovation. VMEPD	For uninterrupted and suitable power supply to the equipment and system
Uninterrupted Data Storage	Internal data capacity: 1 week data of all 3-channel, 100sps continuous waveform data from 3 Volcano Array Observation Points Input: Continuous 3-channel 100sps data in a compressed format from 3 Volcano Array Observation Points/a Volcano Observation Point Digital Interface: 10 Base-T	1 set	Temporarily shut down due to building renovation. VMEPD	For receiving and saving volcano observational data transmitted by each unmanned observation point
Drum Recorder	Recording capacity: 24 hours/sheet of paper Recording media: curvilinear ink pen Seismic and pen amplifier input: differential or single-ended	1 set	Temporarily shut down due to building renovation. VMEPD	For analog recording of volcano observational data transmitted by each unmanned volcano observation point

Volcano Data Archiving Server	Pentium III 1 GHz processor 256 Mbytes memory, 20 Gbytes hard drive CD-RW drive, DVD RAM, 14" color monitor LAN Interface: 10BASE-TX/10BASE-TX Volcano data archiving software	1 set	Temporarily shut down due to building renovation. VMEPD	For volcano data archiving
Volcano Data Processing Unit	Pentium IV 2GHz processor 512 Mbytes Memory, 40 Gbytes hard drive CD-RW drive, DVD RAM, 17" color monitor LAN Interface: 10BASE-T/100BASE-TX Volcano data processing software Scientific data analysis and visualization software	1 set	Temporarily shut down due to building renovation. VMEPD	For computing system
Peripheral Equipment	Inkjet printer (A4): 1 Modem, Automatic Telephone Line Switch, Phone Line Protection: 1 for each	1 set	Temporarily shut down due to building renovation. VMEPD	For computing system
Guyed Mast	30m	1	Temporarily shut down due to building renovation. VMEPD	For mounting spread spectrum high gain yagi antenna

Unmanned Volcano Observation Points of Mt. Parker and Mt. Matutum Observation Networks
Bagong Silang Observation Point (Mt. Parker) and Alnamang Observation Point (Mt. Matutum)

Equipment	Specification	Quantity	Condition of Equipment	Purpose
Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	2 sets	Temporarily shut down due to building renovation. VMEPD	For transmitting and receiving observational data
High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi	2 sets	Temporarily shut down due to building renovation. VMEPD	

Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Temporarily shut down due to building renovation. VMEPD	For data exchange and flow control
Self Support Pole	Mt. Parker		Temporarily shut down due to building renovation. VMEPD	For mounting spread spectrum high gain yagi antenna
	San Jose Repeater Point: 4M	1	Temporarily shut down due to building renovation. VMEPD	
	Mt. Matutum		Temporarily shut down due to building renovation. VMEPD	
	Upper Klinan Repeater Point: 4m	1	Temporarily shut down due to building renovation. VMEPD	
	Silway Repeater Point: 4m	1	Temporarily shut down due to building renovation. VMEPD	
Power Supply	Connection Terminal Switch: 1 Solar Power Controller: 1 Solar Panel (180W): 1 Lead Acid Battery (265AH, 12V): 1	1 set	Temporarily shut down due to building renovation. VMEPD	For uninterrupted and suitable power supply to the equipment and system
Spare Parts	Data Modulation/Demodulation Module and Splitter & Combiner for Master/Mirror Satellite Transceiver, Satellite Seismic Data Recorder: 1 for each Satellite Communication Network Master Control Unit: 1 Solar Panel (100W), (110W), (150W), (180W): 1 for each High Gain Yagi Antenna: 2 Receiver Unit, Transmitter Unit, 10Base-T Interface Unit, Power Unit for Spread Spectrum Transceiver: 3 for each Surge Diverter: 1 Main Board for Data Recorder, Digitizing	1 set	Temporarily shut down due to building renovation. VMEPD	Necessary spare parts for all of the equipment in A-Package

	Board for Data recorder, Power Board for Data Recorder: 6 for each T0=1sec Short Period Seismometer (3-component, convertible type): 3 Pulse Calibrator for Convertible Type Short Period Seismometer: 3		VMEPD	

PHIVOLCS Head Office				
Equipment	**Specification**	**Quantity**		**Purpose**
Vehicles	Four-wheel drive (4WD) model pick-up truck vehicle Double Cab model seats five adults Diesel engine (available type in the local market) Transmission type: 5-Speed Manual Transmission/Part-Time 4WD (5 speed manual floor shift, 2/4 wheel gear shifter)	3	Operational FAD	For deployment of the Quick Response Mobile Monitoring Systems, together with heavy batteries, solar panels and ancillary equipment far from existing observatories or stations and for maintenance of the equipment

B-Package

Unmanned Seismic Observation Points
Cagua, Abra, Apayao, Palanan, Cauayan, Baler, Bolinao, Sta. Cruz, Polilio, Lubang, Boac, Aurora, Virac, San Jose, Tablas, Busuanga, Cuyo Island, Guimaras, Ormoc, Catarman, Borongan, Maasin, Butuan, Ipil, Pagadian, Central Mindanao University, Mati, Bataraza, and El Nido

Equipment	**Specification**	**Quantity**	**Condition of Equipment**	**Purpose**
Mobile Satellite Transceiver	Receive frequency: 10.95GHz to 11.7GHz Transmit frequency: 14.0GHz to 14.5 GHz Receiving data rate: 32kbps at ½ FEC Transmission modulation: QPSK Transmission data rate: 38.4kbps at ½ FEC rate Receiving Demodulation: BPSK/QPSK	1 set	Operational and in good condition SOEPD	For transmitting observational data of short period seismic motion and communicating with the Head Office and the Mirror Center
Parabolic Antenna (1.8m) with Support structure	Frequency range: 10.95 – 14.5GHz Transmit gain: 46dBi at 14.25GHz	1 set	Operational and in good condition SOEPD	
Satellite GPS Timing System	Synchronization of transmitted carrier frequency Timing accuracy: 100 microseconds	1 set	Operational and in good condition SOEPD	For timing control of the satellite equipment and system by GPS signals
Satellite Seismic Data Recorder	6 channels 24 bit AD converter, 200sps for each	1 set	Operational and in good condition	For recording observational data of short period seismic motion (3 components) to

	channel Digital Interface: 10 Base-T Periodic logging of state of health information for performance analysis Digital Buffering: one day for six ADC inputs continuously sampled at 100Hertz		SOEPD	transmit through satellite communication system to the Head Office and Mirror Center
T0=1sec Short Period Seismometer (Convertible Type, 3-component	Transducer type: moving coil Three-Component: east/west/ & north/south motions and vertical (up/down) short period motions Covertible: horizontal and vertical (up/down) 0.05 - 20Hertz (period 2 – 0.05 seconds)	1 set	Operational and in good condition SOEPD	For observation of 3 components of short period seismic motion
Power Supply	Connection Terminal Switch: 1 Solar Power Controller: 1 Solar Panel (180W): 1 Lead Acid Battery (265AH, 12V): 1	1 set	Set in twenty-seven (27) sites is operational and in good condition; Sets in Boac and Apayao have battery problems and are scheduled for replacement within the month SOEPD	For uninterrupted and suitable power supply to the equipment and system

Mt. Taal Array Observation Network **Buco Existing Volcano Observatory**
Mt. Mayon Array Observation Network **Mayon Existing Volcano Observatory**
Mt. Bulusan Array Observation Network **Bulusan Existing Volcano Observatory**
Mt. Hibok-Hibok Array Observation Network **Hibok-Hibok Existing Volcano Observatory**
Mt. Pinatubo Array Observation Network **Pinatubo Existing Volcano Observatory**

Equipment	Specification	Quantity	Condition of Equipment	Purpose

Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	2 sets	Good Operating condition VMEPD	For transmitting and receiving observational data
High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi	2 sets	Good Operating condition VMEPD	
Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Good Operating condition VMEPD	For data exchange and flow control
Network Management Unit	Pentium IV 2 GHz processor 512 Mbytes memory, 40 Gbytes hard drive CD-RW drive, RAM, 17" color monitor LAN Interface: 10BASE-TX/10BASE-TX Network Supervising software Network Management software	1 set	Good Operating condition VMEPD	For supervising and managing the volcano observation array network
Power Supply	Connection Terminal Switch: 1 Charger Unit: 1 DC Power Supply: 1 Isolation Transformer (5kVA): 1 AVR (5kVA): 1 UPS (1.0kVA): 1 Generator Change-over Switch: 1 Engine Generator (1kVA): 1 Lead Acid Battery (420AH, 12V): 1	1 set	Good Operating condition VMEPD	For uninterrupted and suitable power supply to the equipment and system
Uninterrupted Data Storage	Internal data capacity: 1 week data of all 3-channel, 100sps continuous waveform data	1 set	Good Operating condition	For receiving and saving volcano observational data transmitted by each unmanned observation point

	from 3 Volcano Array Observation Points Input: Continuous 3-channel 100sps data in a compressed format from 3 Volcano Array Observation Points/a Volcano Observation Point Digital Interface: 10 Base-T		VMEPD	
Drum Recorder	Recording capacity: 24 hours/sheet of paper Recording media: curvilinear ink pen Seismic and pen amplifier input: differential or single-ended	3 sets	Good Operating condition VMEPD	For analog recording of volcano observational data transmitted by each unmanned volcan3 o observation points
GPS Timing System	GPS signal synchronization Timing accuracy for signal receiving: better than 100 microseconds	1 set	Good Operating condition VMEPD	For timing control of the satellite equipment and seismic system by GPS signals
Volcano Data Archiving Server	Pentium III 1 GHz processor 256 Mbytes memory, 20 Gbytes hard drive CD-RW drive, DVD RAM, 14" color monitor LAN Interface: 10BASE-TX/10BASE-TX Volcano data archiving software	1 set	Good Operating condition VMEPD	For volcano data archiving
Volcano Data Processing Unit	Pentium IV 2GHz processor 512 Mbytes Memory, 40 Gbytes hard drive CD-RW drive, DVD RAM, 17" color monitor LAN Interface: 10BASE-T/100BASE-TX Volcano data processing software Scientific data analysis and visualization software	1 set	Good Operating condition VMEPD	For computing system

Peripheral Equipment	Inkjet printer (A4): 1 Modem, Automatic Telephone Line Switch, Phone Line Protection: 1 for each	1 set	Good Operating condition VMEPD	For computing system
Self Support Pole	Mt. Taal Array Observation Network Buco Existing Volcano Observatory	1	Good Operating condition VMEPD	For mounting spread spectrum high gain yagi antenna
	Mt. Mayon Array Observation Network Mayon Existing Volcano Observatory	1	Good Operating condition VMEPD	
	Mt. Bulusan Array Observation Network Bulusan Existing Volcano Observatory	1	Good Operating condition VMEPD	
	Mt. Hibok-Hibok Array Observation Network Hibok-Hibok Existing Volcano Observatory	1	Good Operating condition VMEPD	
	Mt. Pinatubo Array Observation Network Pinatubo Existing Volcano Observatory	1	Good Operating condition VMEPD	

Mt. Kanlaon Array Observation Network
Kanlaon Existing Volcano Observatory

Equipment	Specification	Quantity	Condition of Equipment	Purpose

Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	2 sets	Good Operating condition VMEPD	For transmitting and receiving observational data
High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi	2 sets	Good Operating condition VMEPD	
Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Good Operating condition VMEPD	For data exchange and flow control
Network Management Unit	Pentium IV 2 GHz processor 512 Mbytes memory, 40 Gbytes hard drive CD-RW drive, RAM, 17" color monitor LAN Interface: 10BASE-TX/10BASE-TX Network Supervising software Network Management software	1 set	Good Operating condition VMEPD	For supervising and managing the volcano observation array network
Power Supply	Connection Terminal Switch: 1 Charger Unit: 1 DC Power Supply: 1 Isolation Transformer (5kVA): 1 AVR (5kVA): 1 UPS (1.0kVA): 1 Generator Change-over Switch: 1 Engine Generator (1kVA): 1 Lead Acid Battery (420AH, 12V): 1	1 set	Good Operating condition VMEPD	For uninterrupted and suitable power supply to the equipment and system

Uninterrupted Data Storage	Internal data capacity: 1 week data of all 3-channel, 100sps continuous waveform data from 3 Volcano Array Observation Points Input: Continuous 3-channel 100sps data in a compressed format from 3 Volcano Array Observation Points/a Volcano Observation Point Digital Interface: 10 Base-T	1 set	Good Operating condition VMEPD	For receiving and saving volcano observational data transmitted by each unmanned observation point
Drum Recorder	Recording capacity: 24 hours/sheet of paper Recording media: curvilinear ink pen Seismic and pen amplifier input: differential or single-ended	3 sets	Good Operating condition VMEPD	For analog recording of volcano observational data transmitted by each unmanned volcan3 o observation points
GPS Timing System	GPS signal synchronization Timing accuracy for signal receiving: better than 100 microseconds	1 set	Good Operating condition VMEPD	For timing control of the satellite equipment and seismic system by GPS signals
Volcano Data Archiving Server	Pentium III 1 GHz processor 256 Mbytes memory, 20 Gbytes hard drive CD-RW drive, DVD RAM, 14" color monitor LAN Interface: 10BASE-TX/10BASE-TX Volcano data archiving software	1 set	Good Operating condition VMEPD	For volcano data archiving
Volcano Data Processing Unit	Pentium IV 2GHz processor 512 Mbytes Memory, 40 Gbytes hard drive CD-RW drive, DVD RAM, 17" color monitor LAN Interface: 10BASE-T/100BASE-TX Volcano data processing software	1 set	Good Operating condition VMEPD	For computing system

	Scientific data analysis and visualization software		VMEPD	
Peripheral Equipment	Inkjet printer (A4): 1 Modem, Automatic Telephone Line Switch, Phone Line Protection: 1 for each	1 set	Good Operating condition VMEPD	For computing system
Self Support Pole	Mt Kanlaon Array Observation Network Kanlaon Exisitng Volcano Observatory	1	Good Operating condition VMEPD	For mounting spread spectrum high gain yagi antenna

Mt. Taal Array Observation Network **Binintiang Munti Hill Observation Point, Taal Main Crater Observation Point and Calauit Observation Point**
Mt. Mayon Observation Network **]Upper Anoling Observation Point, Upper Santa Misericordia Observation Point and Mayon Resthouse Observatory**
Mt. Bulusan Array Observation Network **Upper Inlagadian Hill Observation Point, Upper Mayonpayong Hill Observation Point, and Upper San Roque**
Mt. Hibok-Hibok Array Observation Network **Mt. Vulcan Observation Point, Upper Slope Observation Point and Mainit Observation Point**
Mt. Kanlaon Array Observation Network **Santo-Bama Observation Point, Canlaon District Hospital Observation Point and Manghumay Observation Point**
Mt. Pinatubo Array Observation Network **CRAZ Observation Point and FNGZ Observation Point**

Equipment	Specification	Quantity	Condition of Equipment	Purpose
Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	2 sets	Good Operating condition VMEPD	For transmitting and receiving observational data

High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi	2 sets	Good Operating condition VMEPD	
Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Good Operating condition VMEPD	For data exchange and flow control
T0=1sec Short Period Seismometer (Convertible Type, 3-component	Transducer type: moving coil Three-Component: east/west/ & north/south motions and vertical (up/down) short period motions Covertible: horizontal and vertical (up/down) 0.05 - 20Hertz (period 2 – 0.05 seconds)	1 set	Good Operating condition VMEPD	For observation of 3 components of short period seismic motion
Data Recorder	6 channels, gain adjustable input amplifiers suitable for accepting the outputs of seismometer 24 bit AD converter, 200sps for each channel Removable solid state memory Digital interface: 10 Base-T	1 set	Good Operating condition VMEPD	For digital data recording of 3 components of seismic motion
GPS Timing System	GPS signal synchronization Timing accuracy for signal receiving: better than 100 microseconds	1 set	Good Operating condition VMEPD	For timing control of the satellite equipment and seismic system by GPS signals
Power Supply	Connection Terminal Switch: 1 Solar Power Controller: 1 Solar Panel (200W): 1 Lead Acid Battery (280AH, 12V): 1	1 set	Good Operating condition VMEPD	For uninterrupted and suitable power supply to the equipment and system

Self Support Pole	Mt. Taal Array Observation Network Binintiang Munti Hill Observation Point: 2m Taal Main Crater Observation Point: 2m Calauit Observation Point: 2m	1 1 1	Good Operating condition VMEPD	For mounting spread spectrum high gain yagi antenna
	Mt. Mayon Observation Network Upper Anoling Observation Point: 2m Upper Santa Misericordia Observation Point: 2m Mayon Resthouse Observatory: 6m	1 1 1	Good Operating condition VMEPD	
	Mt. Bulusan Array Observation Network Upper Inlagadian Hill Observation Point: 4m , Upper Mayonpayong Hill Observation Point: 4m	1 1 1	Good Operating condition VMEPD	
	Mt. Hibok-Hibok Array Observation Network Mt. Vulcan Observation Point: 2m Upper Slope Observation Point: 2m Mainit Observation Point: 4m	1 1 1	Good Operating condition VMEPD	
	Mt. Kanlaon Array Observation Network Santo-Bama Observation Point: 2m Canlaon District Hospital Observation Point: 2m Manghumay Observation Point: 10m	1 1 1	Good Operating condition VMEPD	

	Mt. Pinatubo Array Observation Network CRAZ Observation Point: 6m FNGZ Observation Point: 6m	 1 1	Good Operating condition VMEPD
Guyed Mast	Mt Mayon Observation Network Upper San Roque Observation Point: 20m	1	Good Operating condition VMEPD

Mt. Pinatubo Array Observation Observation Network PI2Z Observation & Repeater Station				
Equipment	**Specification**	**Quantity**	**Condition of Equipment**	**Purpose**
Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	2 sets	Good Operating condition VMEPD	For transmitting and receiving observational data
High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi	2 sets	Good Operating condition VMEPD	
Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Good Operating condition VMEPD	For data exchange and flow control
T0=1sec Short Period Seismometer (Convertible Type, 3-component	Transducer type: moving coil Three-Component: east/west/ & north/south motions and vertical (up/down) short period motions Covertible: horizontal and vertical (up/down) 0.05 - 20Hertz (period 2 – 0.05 seconds)	1 set	Good Operating condition VMEPD	For observation of 3 components of short period seismic motion
Data Recorder	6 channels, gain adjustable input amplifiers suitable for accepting the outputs of seismometer 24 bit AD converter, 200sps for each channel Removable solid state memory Digital interface: 10 Base-T	1 set	Good Operating condition VMEPD	For digital data recording of 3 components of seismic motion

GPS Timing System	GPS signal synchronization Timing accuracy for signal receiving: better than 100 microseconds	1 set	Good Operating condition VMEPD	For timing control of the satellite equipment and seismic system by GPS signals
Power Supply	Connection Terminal Switch: 1 Solar Power Controller: 1 Solar Panel (200W): 1 Lead Acid Battery (280AH, 12V): 1	1 set	Good Operating condition VMEPD	For uninterrupted and suitable power supply to the equipment and system
Self Support Pole	Mt. Pinatubo Observation Network PI2Z Observation & Repeater Point: 6m	1	Good Operating condition VMEPD	For mounting spread spectrum high gain yagi antenna

Mt. Taal Array Observation Network **Daan Kastila Repeater Point and Tagbakin Repeater Point**
Mt. Mayon Array Observation Network **Tabaco Municipal Building Repeater Point and Mt. Bariw Repeater Point**
Mt. Bulusan Array Observation Network **Salvacion Slope Repeater Point**
Mt. Hibok-Hibok Array Observation Network **Napo Repeater Point, Baylao Repeater Point and Lawigan Repeater Point**
Mt. Kanlaon Array Observation Network **Calvary Hill Repeater Point, Mansalanao Hill Repeater Point and Pinamintigan Hill Repeater Point**
Mt. Pinatubo Array Observation Network **ODNZ Repeater Point, Malasa Repeater Point, Tarukan Repeater Point, Nabuklod Repeater Point, Porac Repeater Point and Sapang Bato Repeater Point**

Equipment	Specification	Quantity	Condition of Equipment	Purpose
Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	2 sets	Good Operating condition VMEPD	For transmitting and receiving observational data
High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi	2 sets	Good Operating condition VMEPD	
Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Good Operating condition VMEPD	For data exchange and flow control

Power Supply	Connection Terminal Switch: 1 Solar Power Controller: 1 Solar Panel (200W): 1 Lead Acid Battery (280AH, 12V): 1	1 set	Good Operating condition VMEPD	For uninterrupted and suitable power supply to the equipment and system
Self Support Pole				For mounting spread spectrum high gain yagi antenna
	Mt. Taal Array Observation Network		Good Operating condition	
	Daan Kastila Repeater Point: 4m	1	Good Operating condition	
	Tagbakin Repeater Point: 4m	1	Good Operating condition VMEPD	
	Mt. Mayon Array Observation Network		Good Operating condition	
	Tabaco Municipal Building Repeater Point: 2m	1	Good Operating condition	
	Mt. Bariw Repeater Point: 4m	1	Good Operating condition	
	Mt. Bulusan Array Observation Network		Good Operating condition	
	Salvacion Slope Repeater Point: 6m	1	Good Operating condition VMEPD	
	Mt. Hibok-Hibok Array Observation Network		Good Operating condition	
	Napo Repeater Point: 6m	1	Good Operating condition	
	Baylao Repeater Point: 4m	1	Good Operating condition VMEPD	
	Mt. Kanlaon Array Observation Network		Good Operating condition	
	Calvary Hill Repeater Point: 4m	1	Good Operating condition	
	Mansalanao Hill Repeater Point: 4m	1	Good Operating condition	
	Pinamintigan Hill Repeater Point: 2m	1	Good Operating condition VMEPD	
	Mt. Pinatubo Array Observation Network		Good Operating condition	
	ODNZ Repeater Point: 6m	1	Good Operating condition	
	Malasa Repeater Point: 6m	1	Good Operating condition	
	Tarukan Repeater Point: 6m	1	Good Operating condition	
	Nabuklod Repeater Point: 6m	1	Good Operating condition	
	Porac Repeater Point: 6m	1	Good Operating condition	

	Sapang Bato Repeater Point: 6m	1	Good Operating condition VMEPD	
Guyed Mast	**Mt. Hibok-Hibok Array Observation Network**		Good Operating condition	
	Lawigan Repeater Point: 30m	1	Good Operating condition	
			Good Operating condition VMEPD	

Mt. Taal Array Observation Network **Napayung Repeater Point**				
Mt. Mayon Array Observation Network **Upper Santo Domingo Repeater Point**				
Mt. Bulusan Array Observation Network **Mt. Jormajan Repeater Point**				
Mt. Hibok-Hibok Array Observation Network **Mt. Vulcan Repeater Point**				
Equipment	**Specification**	**Quantity**	**Condition of Equipment**	**Purpose**
Spread Spectrum Transceiver	Frequency range: 2.4GHz ISM band Tx/Rx radio standard: IEEE802.1 1b Transmission power: 10mW/MHz or less Wire connection interface: 10 BASE-T Supervising function of instruments health & settings	3 sets	Good Operating condition VMEPD	For transmitting and receiving observational data
High Gain Yagi Antenna	Frequency range: 2.4GHz ISM band Gain: 19 dBi	3 sets	Good Operating condition VMEPD	
Communication Control Unit	Interface: IEEE802.3 Ethernet Access Method: CSMA/CD Wire connection IF: 10Base-T	1 set	Good Operating condition VMEPD	For data exchange and flow control
Power Supply	Connection Terminal Switch: 1	1 set	Good Operating condition	For uninterrupted and suitable power supply to the equipment and system

	Solar Power Controller: 1 Solar Panel (220W): 1 Lead Acid Battery (315AH, 12V): 1		VMEPD	
Self Support Pole	Mt. Taal Array Observation Network		Good Operating condition	For mounting spread spectrum high gain yagi antenna
	Napayung Repeater Point: 10m	1	Good Operating condition	
	Mt. Mayon Array Observation Network1		Good Operating condition	
	Upper Santo Domingo Repeater Point: 15m	1	Good Operating condition	
	Mt. Bulusan Array Observation Network		Good Operating condition	
	Mt. Jormajan Repeater Point: 15m	1	Good Operating condition	
	Mt. Hibok-Hibok Array Observation Network		Good Operating condition	
	Mt. Vulcan Peak Repeater Point: 2m	1	Good Operating condition VMEPD	

Mirror Center
Tagaytay Existing Seismic Observation Station

Equipment	Specification	Quantity	Condition of Equipment	Purpose
Mirror Satellite Transceiver	Receive frequency: 10.95GHz to 11.7GHz Transmit frequency: 14.0GHz to 14.5 GHz Receiving data rate: 32kbps at ½ FEC Transmission modulation: BPSK/QPSK Transmission data rate: 38.4kbps at ½ FEC rate Interface for connection with computers: 10Base-T Satellite Signal Frequency Analyzer	1 set	Operational and in good condition SOEPD	For communicating with all the unmanned seismic observation points in the seismic observation networks
Parabolic Antenna (3.8m) with Support structure	Frequency range: 10.95 – 14.5GHz Transmit gain: 53dBi at 14.25GHz	1 set	Operational and in good condition SOEPD	

Satellite GPS Timing System	Synchronization of transmitted carrier frequency Timing accuracy: 100 microseconds	1 set	Operational and in good condition SOEPD	For timing control of the satellite equipment and system by GPS signals
Satellite Communication Network Mirror Control Unit	Pentium IV 2GHz processor 512 Mbytes Memory, 80 Gbytes hard drive CD-RW drive, DVD RAM, 17" color monitor LAN Interface: 10BASE-T/100BASE-TX Data archiving software	1 set	Operational and in good condition SOEPD	For controlling all the unmanned seismic observation points in the seismic observation as Head Office Mirror Center
Communication Control Intelligent Switch	Backbone LAN interface: IEEE802.3 Ethernet (CSMA/CD), 100BASE-FX LAN interface: 100BASE-T/100BASE-TX Ethernet switching features : Store and forward	1 set	Operational and in good condition SOEPD	For data frame switching
Data Archiving Server	Pentium III 1.2 GHz processor 512 Mbytes memory, 80 Gbytes hard drive CD-RW drive, RAM, 17" color monitor LAN Interface: 10BASE-TX/10BASE-TX Data archiving software	2 sets	One server defective and was replaced in 2006 Both are currently operational and in good condition SOEPD	For seismic observational data arching
Peripheral Equipment	Inkjet Printer (A4): 1	1 set	Operational and in good condition SOEPD	For computing system
Power Supply	Generator Change-over Switch: 1 Isolation Transformer (5kVA): 1 AVR (5kVA): 1 Engine Generator (5kVA): 1 UPS (1.0kVA): 1 UPS (1.5kVA): 2	1 set	Operational and in good condition SOEPD	For uninterrupted and suitable power supply to the equipment and system

PHIVOLCS Head Office				
Equipment	**Specification**	**Quantity**	**Condition of Equipment**	**Purpose**
Spare Parts	Data Modulation/Demodulation Module and Splitter & Combiner for Master/Mirror Satellite Transceiver: 1 for each Satellite Seismic Data Recorder: 3 Satellite Communication Network Master Control Unit: 1 Satellite Transceiver for Unmanned Observation Points: 3 Satellite GPS Timing System: 3 Solar Panel (100W) (110W) (150W): 3 for each Solar Panel (180W): 2 High Gain Yagi Antenna: 2 Receiver Unit, Transmitter Unit, 10BASE-T Interface Unit, Power Unit for Spread Spectrun Transceiver: 3 for each Main Board for Data Recorder, Digitizing Board for Data Recorder, Power Board for Data Recorder: 5 for each T0=1sec Short Period Seismometer (3-component convertible type), Pulse Calibrator for Convertible Type Short Period Seismometer: 2 for each	1 set	Operational and in good condition VMEPD / SOEPD	Necessary spare parts for all of the equipment in B-Package

All the specifications describe minimum requirements of each component

VMEPD – Volcano Monitoring and Eruption Prediction Division
SOEPD - Seismological Observation and Earthquake Prediction Division
FAD - Finance and Administrative Division

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY

Detailed Balance Sheet

As of December 31, 2002

ASSETS

Current Assets			
Cash			
Petty Cash Fund		108,909.94	
Cash-Collecting Officers		0.54	
Cash-Disbursing Officers		12,371.72	
Cash in Bank-Local Currency, Current Account		1,295,798.65	1,417,080.85
Receivables			
Due from Officers and Employees		470,528.70	
Due from NGAs		121,354.63	
Due from National Treasury		440,388.68	
Receivables-Disallowances/Charges		10,117,737.10	
Other Receivables		17,457.13	11,167,466.24
Inventories			
Office Supplies Inventory			180,719.77
Prepaid Expenses			
Prepaid Insurance		163,180.79	
Other Prepaid Expenses		154,550.07	
Advances to Contractors		202,942.70	520,673.56
Long Term Investments			
Other Long Term Investments			51,730.00
Property, Plant and Equipment			
Buildings		162,476,368.94	
Other Structures		576,630.18	
Firefighting Equipment and Accessories		15,195.00	
Technical and Scientific Equipment		369,748,948.32	
IT Equipment and Software		234,945.16	
Telegraph, Tel., Cable, TV and Radio Equipt.		137,745.00	
Motor Vehicles	5,073,786.04		
Less: Accumulated Depreciation-Motor Vehicles	(3,795,985.93)	1,277,800.11	
Watercrafts		379,830.00	
Office Equipment		15,140,113.27	
Other Equipment		3,749,458.90	
Furniture and Fixtures		84,177.67	
Books		32,901.54	
Other Property, Plant and Equipment		12,111,992.34	
Construction in Progress-Agency Assets		25,252,001.13	
Items in Transit		2,646,740.46	593,864,848.02
TOTAL ASSETS			**607,202,518.44**

LIABILITIES AND EQUITY

Liabilities		
Current Liabilities		
Accounts Payable	1,836,039.90	
Due to Officers and Employees	3,498,504.52	
Due to NGAs	2,928,588.04	
Due to GOCCs	60.00	
Withholding Taxes Payable	414,660.22	
GSIS Payable	2,718,240.70	
PAG-IBIG Payable	144,650.70	
PHILHEALTH Payable	(1,371.56)	
Performance/Bidders/Bail Bonds Payable	2,463,519.81	
Other Payables	27,659.94	14,030,552.27
Long-Term Liabilities		
Retirement Gratuity Payable		1,723,936.83
Equity		
Government Equity		591,448,029.34
TOTAL LIABILITIES AND EQUITY		**607,202,518.44**

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY

Detailed Balance Sheet

As of December 31, 2003

ASSETS

Current Assets			
Cash			
Cash-Collecting Officers		1,101.25	
Petty Cash Fund		149,956.21	
Cash in Bank-Local Currency, Current Account		1,635,477.39	1,786,534.85
Receivables			
Accounts Receivable		5,000.00	
Due from Officers and Employees		783,802.40	
Due from National Treasury		1,266,124.52	
Due from NGAs		77,774.78	
Receivables-Disallowances/Charges		10,117,737.10	
Other Receivables		17,457.13	12,267,895.93
Inventories			
Office Supplies Inventory			168,110.43
Prepayments			
Prepaid Insurance		220,562.65	
Advances to Contractors		202,942.70	
Other Prepaid Expenses		222,025.07	645,530.42
Investments			
Investments in Securities			
Other Investments and Marketable Securities			51,730.00
Property, Plant and Equipment			
Buildings			
Office Buildings	187,072,753.20		
Less: Accumulated Depreciation-Office Buildings	3,903,150.46	183,169,602.74	
Other Structures		822,740.43	183,992,343.17
Office Equipment, Furniture and Fixtures			
Office Equipment		14,139,066.42	
Furniture and Fixtures		7,430.12	
IT Equipment and Software		337,341.16	
Library Books		32,901.54	14,516,739.24
Machineries and Equipment			
Communication Equipment		200,845.00	
Firefighting Equipment and Accessories		15,195.00	
Technical and Scientific Equipment		666,133,290.01	666,349,330.01
Transportation Equipment			
Motor Vehicles	8,411,338.04		
Less: Accumulated Depreciation-Motor Vehicles	4,517,060.05	3,894,277.99	
Watercrafts		379,830.00	4,274,107.99
Other Property, Plant and Equipment			
Other Property, Plant and Equipment			6,811,483.15
Construction in Progress			
Construction in Progress-Agency Assets			796,964.87
Other Assets			
Items in Transit			2,646,740.46
TOTAL ASSETS			**894,307,510.52**

LIABILITIES AND EQUITY

Liabilities		
Current Liabilities		
Accounts Payable	16,661,908.06	
Due to Officers and Employees	836,695.04	
Due to BIR	612,621.80	
Due to GSIS	2,008,969.48	
Due to PAG-IBIG	(14,153.87)	
Due to PHILHEALTH	25,734.69	
Due to Other NGAs	4,054,686.88	
Due to Other GOCCs	60.00	
Performance/Bidders/Bail Bonds Payable	2,462,995.81	
Other Payables	27,659.94	26,677,177.83
Equity		
Government Equity		867,630,332.69
TOTAL LIABILITIES AND EQUITY		**894,307,510.52**

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY & SEISMOLOGY

Detailed Balance Sheet

December 31, 2004

ASSETS

Current Assets	
Cash *(note 7)*	
Cash-Collecting Officers	12,619.50
Petty Cash Fund	282,921.31
Cash in Bank-LC, CA (Acct. #0662-1001-70)	147,156.97
Cash in Bank-LC, CA (Acct. #0702-1044-32)	26,434.91
Total Cash	469,132.69
Receivables *(note 8)*	
Due from Officers and Employees	386,263.62
Due from National Treasury	2,794,076.44
Due from NGAs	80,449.08
Receivables-Disallowances/Charges	10,117,737.10
Other Receivables	17,618.81
Total Receivables	13,396,145.05
Inventories *(note 9)*	
Office Supplies Inventory	747,032.63
Total Inventories	747,032.63
Prepayments	
Prepaid Insurance	298,430.58
Other Prepaid Expenses	473,737.12
Total Prepayments	772,167.70
Investments	
Investments in Securities	
Other Investments and Marketable Securities	51,730.00
Total Investments	51,730.00

Property, Plant and Equipment (note 10)	
Office Buildings	186,931,405.20
Other Structures	1,695,356.10
Office Equipment	13,850,600.63
Furniture and Fixtures	83,243.72
IT Equipment and Software	505,021.50
Library Books	32,901.54
Communication Equipment	1,971,584.50
Firefighting Equipment and Accessories	15,195.00
Technical and Scientific Equipment	665,405,494.71
Motor Vehicles	8,159,529.85
Watercrafts	379,830.00
Other Property, Plant and Equipment	4,956,788.15
Construction in Progress-Agency Assets	796,964.87
Total Property, Plant and Equipment	884,783,915.77
Less: Accumulated Depreciation	27,214,173.09
Property, Plant and Equipment - Net	857,569,742.68
Other Assets	
Items in Transit	2,646,740.46
TOTAL ASSETS	875,652,691.21
Liabilities	
Current Liabilities	
Accounts Payable	15,430,260.33
Due to Officers and Employees	2,530,872.72
Due to National Treasury	1,360.27
Due to BIR	438,401.16
Due to GSIS	859,493.51
Due to PAG-IBIG	(13,440.09)
Due to PHILHEALTH	25,240.94
Due to Other NGAs	4,240,525.85
Due to Other GOCCs	(2,869.51)
Performance/Bidders/Bail Bonds Payable	429,308.71
Other Payables	27,789.94
Total Current Liabilities	23,966,943.83
Equity	

Government Equity, January 01, 2004	867,630,332.69
Retained Operating Surplus	
Current Operations	(14,336,909.92)
Prior Years' Adjustments	(1,607,675.39)
	(15,944,585.31)
Government Equity, December 31, 2004	851,685,747.38
TOTAL LIABILITIES AND EQUITY	875,652,691.21

See Accompanying Notes to Financial Statements

\012804jcf

\DBS04

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY & SEISMOLOGY

Detailed Balance Sheet

December 31, 2005

ASSETS

Current Assets	
Cash (note 7)	
Cash-Collecting Officers	683.00
Petty Cash Fund	261,207.47
Cash in Bank-LC, CA (Acct. #0662-1001-70)	147,156.97
Cash in Bank-LC, CA (Acct. #0702-1045-72)	56,407.78
Cash in Bank-LC, CA (Acct. #0702-1046-61)	33,677.23
Total Cash	499,132.45
Receivables (note 8)	
Due from Officers and Employees	870,751.80
Due from National Treasury	8,239,775.28
Due from NGAs	128,720.48
Receivables-Disallowances/Charges	10,117,737.10
Other Receivables	17,793.96
Total Receivables	19,374,778.62
Inventories (note 9)	
Office Supplies Inventory	1,094,011.76
Total Inventories	1,094,011.76
Prepayments	
Prepaid Insurance	282,372.23
Other Prepaid Expenses	644,165.59
Total Prepayments	926,537.82
Investments	
Investments in Securities	
Other Investments and Marketable Securities	51,730.00
Total Investments	51,730.00

Property, Plant and Equipment (note 10)	
Office Buildings	186,931,405.20
Other Structures	1,830,288.51
Office Equipment	12,515,077.26
Furniture and Fixtures	60,818.72
IT Equipment and Software	498,806.05
Library Books	32,901.54
Communication Equipment	1,630,897.50
Firefighting Equipment and Accessories	15,195.00
Technical and Scientific Equipment	658,332,132.37
Motor Vehicles	8,081,222.13
Watercrafts	379,830.00
Other Property, Plant and Equipment	4,956,788.15
Construction in Progress-Agency Assets	796,964.87
Total Property, Plant and Equipment	876,062,327.30
Less: Accumulated Depreciation	64,542,760.25
Property, Plant and Equipment - Net	811,519,567.05
Other Assets	
Items in Transit	2,646,740.46
TOTAL ASSETS	836,112,498.16
Liabilities	
Current Liabilities	
Accounts Payable	97,395.52
Due to Officers and Employees	354,959.54
Due to BIR	432,944.84
Due to GSIS	8,788.31
Due to PAG-IBIG	4,743.76
Due to PHILHEALTH	7,558.82
Due to Other NGAs	9,964,311.21
Due to Other GOCCs	483.34
Due to Other GOCCs	244,524.39
Performance/Bidders/Bail Bonds Payable	494,850.71
Other Payables	25,914.94
Total Current Liabilities	11,636,475.38
Equity	
Government Equity, January 01, 2005	851,685,747.38

Retained Operating Surplus	
Current Operations	(17,722,134.38)
Prior Years' Adjustments	(9,487,590.22)
	(27,209,724.60)
Government Equity, December 31, 2005	824,476,022.78
TOTAL LIABILITIES AND EQUITY	836,112,498.16

See Accompanying Notes to Financial Statements

\012706jcf

\DBS05

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY & SEISMOLOGY

Detailed Balance Sheet

December 31, 2006

ASSETS

Current Assets	
Cash (note 7)	
Cash-Collecting Officers	(6.00)
Petty Cash Fund	188,130.09
Cash in Bank-LC, CA (Acct. #0662-1001-70)	147,156.97
Cash in Bank-LC, CA (Acct. #0702-1046-61)	24,870.73
Total Cash	360,151.79
Receivables (note 8)	
Due from Officers and Employees	816,950.56
Due from National Treasury	10,164,545.34
Due from NGAs	139,917.03
Receivables-Disallowances/Charges	10,117,713.90
Other Receivables	232,219.31
Total Receivables	21,471,346.14
Inventories (note 9)	
Office Supplies Inventory	924,758.68
Total Inventories	924,758.68
Prepayments	
Prepaid Insurance	327,113.73
Other Prepaid Expenses	685,644.98
Total Prepayments	1,012,758.71
Other Current Assets	
Guaranty Deposit	200,000.00
Total Other Current Assets	200,000.00

Investments	
Investments in Securities	
Other Investments and Marketable Securities	51,730.00
Total Investments	51,730.00
Property, Plant and Equipment (note 10)	
Office Buildings	186,931,405.20
Other Structures	1,830,288.51
Office Equipment	10,534,410.11
Furniture and Fixtures	50,364.14
IT Equipment and Software	923,336.05
Library Books	32,901.54
Communication Equipment	1,715,702.30
Firefighting Equipment and Accessories	54,345.00
Medical, Dental and Laboratory Equipment	16,172.80
Technical and Scientific Equipment	655,198,694.06
Motor Vehicles	8,081,222.13
Watercrafts	379,830.00
Other Transportation Equipment	2,150.00
Other Property, Plant and Equipment	4,950,788.15
Construction in Progress-Agency Assets	796,964.87
Total Property, Plant and Equipment	871,498,574.86
Less: Accumulated Depreciation	136,685,129.64
Property, Plant and Equipment - Net	734,813,445.22
Other Assets	
Items in Transit	2,646,740.46
TOTAL ASSETS	761,480,931.00

Liabilities	
Current Liabilities	
Accounts Payable	316,148.68
Due to Officers and Employees	771,001.77
Due to National Treasury	21,715.63
Due to BIR	24,919.88
Due to GSIS	14,295.43
Due to PAG-IBIG	(8,789.15)
Due to PHILHEALTH	24,246.32
Due to Other NGAs	11,523,426.01
Due to Other GOCCs	483.36
Performance/Bidders/Bail Bonds Payable	349,681.21
Other Payables	211,013.54
Total Current Liabilities	13,248,142.68
Equity	
Government Equity, January 01, 2006	824,476,022.78
Retained Operating Surplus	
Current Operations	(48,870,551.05)
Prior Years' Adjustments	(27,372,683.41)
	(76,243,234.46)
Government Equity, December 31, 2006	748,232,788.32
TOTAL LIABILITIES AND EQUITY	761,480,931.00

\012606jcf

\DBS06

See Accompanying Notes to Financial Statements

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY

DETAILED STATEMENT OF INCOME AND EXPENSES

For the Fiscal Year Ended December 31, 2002

Income				
Subsidy Income from National Government	Php	79,974,092.54		
Less: Reversion of Unused Notice of Cash Allocation		2,196,802.72	Php	77,777,289.82
Less Expenses:				
Salaries and Wages-Regular Pay	Php	32,784,038.30		
Salaries and Wages-Casual/Contractual		337,683.55		
Personnel Economic Relief Allowance		1,332,252.10		
Additional Compensation		1,332,252.10		
Representation Allowance		255,776.18		
Transportation Allowance		204,299.99		
Clothing Allowance		892,000.00		
Hazard Pay		4,988,167.44		
Overtime and Night Pay		1,133,976.82		
Christmas Bonus		2,716,242.50		
Cash Gift		1,120,000.00		
Productivity Incentive Benefits		444,000.00		
Other Bonuses and Allowances		1,130,000.00		
Life and Retirement Insurance Contributions		3,961,279.43		
PAG-IBIG Contributions		246,646.72		
PHILHEALTH Contributions		168,012.50		
ECC Contributions		66,990.00		
Pension and Retirement Benefits		1,723,936.83		
Terminal Leave Benefits		815,711.92		
Subsistence and Quarters' Allowance		3,684,950.00		
Longevity Pay		1,357,580.15		
Traveling Expenses-Local		2,329,109.95		
Traveling Expenses-Foreign		356,880.70		
Training and Seminar Expenses		143,200.00		
Water		656,499.18		
Electricity		5,496,025.30		
Cooking Gas		25,363.25		
Telephone/Telegraph and Internet		3,576,766.94		
Postage and Deliveries		527,864.73		
Subscription Expenses		253,910.82		
Advertising Expenses		45,804.00		
Rent Expenses		4,060.00		
Insurance Expenses		31,352.09		
Fidelity Bond Premiums		12,007.50		
Office Supplies Expenses		2,706,755.87		
Gasoline, Oil and Lubricants Expenses		701,177.44		
General Services		458,635.36		
Security and Janitorial Services		2,018,877.90		
Taxes, Duties and Licenses		33,719.25		
Buildings Maintenance		113,332.75		

Technical and Scientific Equipment Maintenance	241,866.00	
IT Equipment Maintenance	29,943.38	
Telegraph, Tel., Cable, T.V. & Radio Equipt. Maintenance	39,865.00	
Motor Vehicles Maintenance	564,231.08	
Watercrafts Maintenance	2,670.00	
Office Equipment Maintenance	290,380.06	
Other Equipment Maintenance	3,864.00	
Representation Expenses	27,932.14	
Extraordinary and Miscellaneous Expenses	52,067.86	
Depreciation-Motor Vehicles	506,517.36	
Loss of Assets	121,000.00	
Other Expenses	1,425,850.76	
Bank Charges	8,226.66	83,501,553.86
Excess of Expenses Over Income	Php	(5,724,264.04)

Certified Correct:

ALFREDITO D. AGUILAR
Accountant III

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY

DETAILED STATEMENT OF INCOME AND EXPENSES

For the Fiscal Year Ended December 31, 2003

Income				
Subsidy Income from National Government	Php	86,891,112.70		
Less: Reversion of Unused Notice of Cash Allocation		1,033,819.05	Php	85,857,293.65
Less Expenses:				
Salaries and Wages-Regular Pay	Php	33,068,896.32		
Salaries and Wages-Casual		60,016.49		
Salaries and Wages-Contractual		138,420.00		
Personnel Economic Relief Allowance		1,319,575.80		
Additional Compensation		1,319,575.80		
Representation Allowance		250,185.22		
Transportation Allowance		203,207.96		
Clothing/Uniform Allowance		880,000.00		
Subsistence, Laundry and Quarter Allowance		2,888,775.00		
Productivity Incentive Allowance		448,000.00		
Hazard Pay		3,332,968.21		
Longevity Pay		1,046,889.10		
Overtime and Night Pay		1,070,397.69		
Cash Gift		2,232,500.00		
Year End Bonus		2,742,547.00		
Life and Retirement Insurance Contributions		4,831,300.78		
PAG-IBIG Contributions		267,400.00		
PHILHEALTH Contributions		167,075.00		
ECC Contributions		73,530.00		
Terminal Leave Benefits		379,944.81		
Traveling Expenses-Local		2,710,519.18		
Traveling Expenses-Foreign		351,009.88		
Training Expenses		245,489.80		
Office Supplies Expense		1,890,804.73		
Gasoline, Oil and Lubricants Expenses		645,593.63		
Water Expenses		733,810.82		
Electricity Expenses		5,376,437.97		
Cooking Gas Expenses		28,608.50		
Telephone Expenses - Landline		2,167,158.91		
Telephone Expenses - Mobile		750,080.55		
Internet Expenses		320,613.44		
Cable, Satellite, Telegraph and Radio Expenses		578,337.15		
Postage and Deliveries		429,533.74		
Advertising Expenses		17,820.00		
Printing and Binding Expenses		23,046.80		
Rent Expenses		12,730.00		

Representation Expenses	64,849.65		
Subscriptions Expenses	93,915.68		
Auditing Services	17,389.08		
General Services	214,440.95		
Janitorial Expenses	1,267,086.78		
Security Services	1,008,000.00		
Repair and Maintenance - Office Buildings	292,619.89		
Repair and Maintenance - Other Structures	35,785.82		
Repair and Maintenance - Office Equipments	447,426.02		
Repair and Maintenance - IT Equipment & Software	750,230.65		
Repair and Maintenance - Communication Equipment	74,879.86		
Repair and Maintenance - Firefighting Equipment & Accessories	2,000.00		
Repair and Maintenance - Technical & Scientific Equipment	1,029,016.07		
Repair and Maintenance - Motor Vehicles	588,839.69		
Repair and Maintenance - Watercrafts	2,378.75		
Taxes, Duties and Licenses	76,651.50		
Fidelity Bond Premiums	42,416.25		
Insurance Expenses	809,092.01		
Depreciation-Office Buildings	407,952.24		
Depreciation-Motor Vehicles	721,074.12		
Other Maintenance and Operating Expenses	38,681.85		
Bank Charges	115,608.79		81,103,135.93
Excess of Income Over Expenses		Php	4,754,157.72

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY

Detailed Statement of Income and Expenses

For the Year Ended December 31, 2004

Income	
Subsidy Income from National Government	85,403,268.56
Less: Reversion of Unused NCA	296,241.71
Total Income	85,107,026.85
Expenses	
Personal Services	
Salaries and Wages-Regular	31,872,053.68
Salaries and Wages-Casual	143,968.00
Salaries and Wages-Contractual	138,420.00
Personnel Economic Relief Allowance	1,285,045.77
Additional Compensation	1,285,045.77
Representation Allowance	226,837.51
Transportation Allowance	177,037.49
Clothing/Uniform Allowance	876,000.00
Subsistence, Laundry and Quarter Allowance	6,381,440.16
Productivity Incentive Allowance	442,000.00
Other Bonuses and Allowances	419,431.96
Hazard Pay	5,628,351.62
Longevity Pay	363,370.15
Overtime and Night Pay	627,915.10
Cash Gift	1,090,000.00
Year End Bonus	2,697,227.50
Life and Retirement Insurance Contributions	2,736,837.00
PAG-IBIG Contributions	260,200.00
PHILHEALTH Contributions	162,812.50
ECC Contributions	78,390.00
Terminal Leave Benefits	1,228,828.54
Terminal Leave Benefits	25,746.00
Total Personal Services	58,146,958.75

Maintenance and Other Operating Expenses	
Traveling Expenses-Local	2,061,169.92
Traveling Expenses-Foreign	25,500.00
Training Expenses	90,108.14
Office Supplies Expenses	1,211,973.41
Accountable Forms Expenses	4,400.00
Gasoline, Oil and Lubricants Expenses	628,562.32
Other Supplies Expenses	148,640.22
Water Expenses	1,109,866.68
Electricity Expenses	6,100,826.07
Cooking Gas Expenses	24,930.01
Postage and Deliveries	269,066.89
Telephone Expenses-Landline	2,701,701.17
Telephone Expenses-Mobile	523,188.31
Internet Expenses	116,689.58
Cable, Satellite, Telegraph and Radio Expenses	1,117,681.25
Advertising Expenses	68,640.00
Printing and Binding Expenses	17,170.40
Rent Expenses	6,400.00
Representation Expenses	8,911.20
Transportation and Delivery Expenses	38,201.00
Subscriptions Expenses	44,430.36
Auditing Services	66,474.22
General Services	112,235.00
Janitorial Services	1,255,569.51
Security Services	1,017,360.00
Other Professional Services	38,025.00
Repair and Maintenance-Office Buildings	495,888.87
Repair and Maintenance-Other Structures	1,800.00
Repair and Maintenance-Office Equipments	195,648.00
Repair and Maintenance-Furniture and Fixtures	3,117.00
Repair and Maintenance-IT Equipment and Software	456,040.00
Repair and Maintenance-Communication Equipment	5,142.79
Repair and Maintenance-Technical and Scientific Equipment	684,267.50
Repair and Maintenance-Motor Vehicles	335,165.83
Repair and Maintenance-Watercrafts	24,745.00
Extraordinary Expenses	2,725.00
Taxes, Duties and Licenses	100,713.12
Fidelity Bond Premiums	188,003.25
Insurance Expenses	669,980.43

Depreciation-Office Buildings	5,587,096.10
Depreciation-Communication Equipment	51,750.00
Depreciation-Motor Vehicles	785,747.16
Other Maintenance and Operating Expenses	52,816.80
Total MOOE	28,448,367.51
Total Expenses	86,595,326.26
Excess of Income Over Expenses	**(1,488,299.41)**

See Accompanying Notes to Financial Statements

\022805jcf
\CDSIE0304

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY

Detailed Statement of Income and Expenses

For the Year Ended December 31, 2005

Income	
Subsidy Income from National Government	105,836,385.99
Less: Reversion of Unused NCA	1,424,379.55
Total Income	104,412,006.44
Expenses	
Personal Services	
Salaries and Wages-Regular	30,840,564.78
Salaries and Wages-Casual	152,716.00
Salaries and Wages-Contractual	154,191.00
Personnel Economic Relief Allowance	1,226,071.64
Additional Compensation	1,226,071.64
Representation Allowance	275,904.54
Transportation Allowance	218,454.53
Clothing/Uniform Allowance	828,000.00
Subsistence, Laundry and Quarter Allowance	4,507,962.03
Productivity Incentive Allowance	424,000.00
Other Bonuses and Allowance	208,000.00
Hazard Pay	4,911,587.22
Overtime and Night Pay	597,873.22
Cash Gift	1,024,024.00
Year End Bonus	2,649,141.50
Life and Retirement Insurance Contributions	4,110,497.25
PAG-IBIG Contributions	249,900.00
PHILHEALTH Contributions	155,000.00
ECC Contributions	81,340.00
Terminal Leave Benefits	1,917,303.20
Other Personnel Benefits	1,847,403.11
Total Personal Services	57,606,005.66

Maintenance and Other Operating Expenses

Traveling Expenses-Local	1,978,823.22
Traveling Expenses-Foreign	3,000.00
Training Expenses	24,269.25
Office Supplies Expenses	979,294.93
Accountable Forms Expenses	13,490.00
Medical, Dental and Lab. Supplies Expenses	4,575.00
Gasoline, Oil and Lubricants Expenses	702,060.83
Other Supplies Expenses	196,734.02
Water Expenses	657,298.81
Electricity Expenses	4,937,247.43
Cooking Gas Expenses	36,108.85
Postage and Deliveries	234,451.46
Telephone Expenses-Landline	2,308,250.17
Telephone Expenses-Mobile	422,175.56
Internet Expenses	31,941.00
Cable, Satellite, Telegraph and Radio Expenses	1,240,440.20
Advertising Expenses	21,560.00
Printing and Binding Expenses	1,680.00
Rent Expenses	10,060.00
Representation Expenses	28,911.75
Transportation and Delivery Expenses	29,754.48
Subscriptions Expenses	15,075.50
Auditing Services	2,772.00
General Services	23,216.00
Janitorial Services	1,224,716.89
Security Services	1,131,960.00
Other Professional Services	2,040.00
Repair and Maintenance-Office Buildings	397,119.30
Repair and Maintenance-Office Equipment	321,737.50
Repair and Maintenance-IT Equipment and Software	541,062.00
Repair and Maintenance-Communication Equipment	4,657.99
Repair and Maintenance-Technical and Scientific Equipment	562,957.65
Repair and Maintenance-Motor Vehicles	590,822.08
Repair and Maintenance-Watercrafts	1,430.00
Extraordinary Expenses	15,900.10
Taxes, Duties and Licenses	7,515,646.00
Fidelity Bond Premiums	189,879.75

Insurance Expenses	644,922.52
Depreciation-Office Buildings	5,588,220.60
Depreciation-Other Structures	54,073.55
Depreciation-Communication Equipment	47,437.50
Depreciation-Technical and Scientific Equipment	30,871,075.92
Depreciation-Motor Vehicles	785,747.16
Other Maintenance and Operating Expenses	129,818.19
Bank Charges	3,720.00
Total MOOE	64,528,135.16
Total Expenses	122,134,140.82
Excess of Income Over Expense	(17,722,134.38)

See Accompanying Notes to Financial Statements

\012706jcf
\DSIE05

Department of Science and Technology

PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY

Detailed Statement of Income and Expenses

For the Month Ended December 31, 2006

Income	
Subsidy Income from National Government	88,322,206.96
Less: Reversion of Unused NCA	5,044,705.76
Total Income	83,277,501.20
Expenses	
Personal Services	
Salaries and Wages-Regular	30,268,503.39
Personnel Economic Relief Allowance	1,184,371.23
Additional Compensation	1,184,371.23
Representation Allowance	329,318.18
Transportation Allowance	269,318.18
Clothing/Uniform Allowance	752,000.00
Subsistence, Laundry and Quarter Allowance	5,359,000.00
Productivity Incentive Allowance	388,000.00
Hazard Pay	6,011,608.81
Overtime and Night Pay	803,821.28
Cash Gift	990,000.00
Year End Bonus	2,532,932.50
Life and Retirement Insurance Contributions	3,646,094.65
PAG-IBIG Contributions	237,500.00
PHILHEALTH Contributions	166,137.50
ECC Contributions	71,157.00
Retirement Benefits-Civilian	78,000.00
Terminal Leave Benefits	1,019,720.83
Other Personnel Benefits	3,807,196.81
Total Personal Services	59,099,051.59
Maintenance and Other Operating Expenses	
Traveling Expenses-Local	2,550,967.80
Training Expenses	20,444.80
Office Supplies Expenses	2,026,413.03
Accountable Forms Expenses	16,750.00
Medical, Dental and Laboratory Supplies Expenses	3,000.00
Gasoline, Oil and Lubricants Expenses	1,145,430.58
Other Supplies Expenses	299,127.99

Water Expenses	724,876.75
Electricity Expenses	4,838,242.09
Cooking Gas Expenses	61,924.36
Postage and Deliveries	205,452.03
Telephone Expenses-Landline	2,271,870.77
Telephone Expenses-Mobile	541,053.50
Internet Expenses	254,090.44
Cable, Satellite, Telegraph and Radio Expenses	1,252,100.27
Membership Dues and Contributions to Organizations	9,600.00
Rent Expenses	2,200.00
Representations Expenses	2,537.92
Transportation and Delivery Expenses	46,837.92
Subscriptions Expenses	26,082.35
Auditing Services	28,197.68
General Services	116,445.50
Janitorial Services	1,264,798.74
Security Services	1,235,304.12
Repair and Maintenance-Office Buildings	725,311.02
Repair and Maintenance-Office Equipment	304,991.00
Repair and Maintenance-IT Equipment and Software	293,248.00
Repair and Maintenance-Communication Equipment	96,830.00
Repair and Maintenance-Technical and Scientific Equipment	525,591.00
Repair and Maintenance-Motor Vehicles	875,229.66
Extraordinary Expenses	23,567.46
Miscellaneous Expenses	46,800.00
Taxes, Duties and Licenses	95,387.52
Fidelity Bond Premiums	108,313.24
Insurance Expenses	605,781.35
Depreciation-Office Buildings	5,588,220.60
Depreciation-Other Structures	56,360.88
Depreciation-Technical and Scientific Equipment	43,973,873.13
Depreciation-Motor Vehicles	785,747.16
Total MOOE	73,049,000.66
Total Expenses	132,148,052.25
Excess of Income Over Expense	(48,870,551.05)

\012907jcf

\DSIE06

See Accompanying Notes to Financial Statements