Appendix

Disaster Reporting at the AID/OFDA

As stated in Chapter 4, when a particular disaster assistance operation is completed, the AID/OFDA staff reviews all available documentary material on that operation. This includes Mission disaster summary reports, cables, field reports, scientific and technical data from outside agencies, and reports received from international organizations and voluntary agencies. It then prepares a case report on the disaster. These reports were compiled first as semiannual reports (1964-1968), then as annual reports (1969-1971), and then as individual reports (1971-present). The Committee has not had sufficient time to assess all the data inputs for disaster reporting since 1965. But since the framework for writing case reports directly follows the guidelines provided to the AID Missions for their preparation of Mission disaster summary reports, they are the most standardized and potentially the most comprehensive data base available. We therefore decided to direct our initial assessment of the reporting process to Mission disaster summary reports. We further restricted ourselves to reports issued after 1971. This was done principally because earlier reports were unavailable and because the Committee assumed that as the Missions acquired greater experience in the use of the Mission guidelines, the quality of these later reports would be improved.

A total of 26 Mission disaster summary reports for the period 1971-1975 were located. The following table provides a yearly listing of the number of U.S. disaster responses, the number of case reports produced, and the number of Mission summaries that could be found in the AID/OFDA files.

Year	No. of Disaster Responses	No. of Case Reports	No. of Mission Disaster Summary Reports
1971	51	9	2
1972	30	21	8
1973	25	20	6
1974	27	23	8
1975	34	4	2

A few qualifications about this table merit attention. First, the number of case reports for 1971 does not represent the number completed for that year;

rather it is the total number published as individual reports. Second, we suspect that an unknown number of Mission summary reports for 1971 have already been stored or discarded; thus the total number listed may not be correct. Third, it is also possible that an unknown number of Mission disaster summaries for the years 1972-1975 have been selectively stored or discarded, although we know of no reasons for taking such actions. In any event, the Committee had no way of determining the total number of Mission summaries for the period 1971-1975. The Committee has been informed by several AID/OFDA staff members that at least a few of these Mission summaries under review represent the best that have been submitted over the years. The sample of 26 therefore provides a sufficient number to give a general description of their content and to undertake an initial assessment of their adequacy. The following recommendations are based on this assessment.

1. *The primary emphases of the AID Mission disaster reporting should be to collect data on (1) disaster impacts, (2) disaster assistance programs within countries (types and amounts), and (3) external assistance programs (types and amounts). The Mission disaster summary report form should be simplified to reflect this narrowed focus.*

The present mission disaster-reporting form is a formidable document. These forms appear to have been written with large-scale disasters in mind, but the majority of disasters to which AID/OFDA responds are of small or moderate scale. The present form requests detailed information in the following areas: (1) a large number of quantitative measurements reflecting agent impacts; (2) detailed descriptions of the history of the disaster event, operations by the impacted country, U.S. government relief programs, and the activities of U.S. voluntary agencies; and (3) a multifaceted appraisal of the assistance provided by other countries and international organizations.

The organization and quality of Mission reports vary a great deal: a few provide reasonably detailed comments as well as quantified data and many are notably inadequate, but most fall between these extremes and are difficult to label. It should also be added that an unknown but probably large number of Mission disaster summaries are never initiated or completed. There appears to be a slight positive relationship between the magnitude of the disaster and the quality of the Mission summary, but that conclusion only applies to the extremes of the distribution, i.e., to the very large versus the very small disasters.

The most complete data provided are measurements of U.S.-based contributions and those of other international donors. Beyond these, there are several measurements of disaster (e.g., number killed, injured, property damage, etc.) generally given, but their validity and reliability are uncertain. They present little or no systematic information on the problems of identifying and verifying victim needs. One can learn little about the problems relating to the

delivery of goods and services. There is practically no analysis on the use of these goods and services. There is seldom an accounting of activities or capabilities of the impacted country.

We assume that the principal purposes of disaster reporting are to document disaster events and to provide a basis for evaluating performance. There is some evidence to suggest that the Mission reports provide *one* resource to document disaster events. However, these reports clearly do not provide an adequate basis to evaluate performance at any level of response. At best they provide some descriptive insight into the actions taken by the U.S. government since 1965.

Our analysis suggests that the types of information listed in the recommendation are the only ones that the Missions are capable of collecting for purposes of disaster reporting. The majority of Mission reports are either never completed or, if completed, are very inadequate. We do not imply that the information requested by the report form is not important. However, the effort required to get it appears to exceed Mission staff time or motivation. Moreover, the Missions appear to have no real incentive to be thorough. We therefore recommend a simplified reporting form that relates directly to the data requirements of the Office's computerized historical file. This suggests that if a descriptively detailed accounting of within-country or external disaster response is desired, the AID/OFDA will have to undertake the effort on its own resources.

2. *The final case reports for 1965-1975 should be evaluated by the AID/OFDA staff.*

There are a total of 72 final disaster case reports for the period 1971-1975, and, as noted, we have been able to locate 26 Mission disaster summaries for the same period. The *relative* importance of Mission summaries for preparing the final case reports is not known. We do know that Mission summaries have historically been potentially the most comprehensive information resource. There are published case reports for all 26 Mission summaries that we have analyzed. This overlap permitted us to compare the two types of reports to determine the degree to which the Mission summaries contributed to the preparation of the final case reports.

The Mission summaries appeared to be the primary information resource in 69 percent of the cases. Of those remaining, Red Cross reports appeared to be used for writing both Mission summaries and case reports in two instances, the itemized categorizations of assistance provided by the summaries were used in two other final case reports, and narrative descriptions of disaster impacts or local responses were used in three other final case reports. Finally, there was only one instance in which the Mission summary was not used at all.

The above pattern does *not* suggest that Mission reports are major contributors to the quality of case reports. That issue should be the subject of

additional research, which makes explicit the AID/OFDA objectives for writing case reports, identifies user needs, and then evaluates the reports in terms of these kinds of criteria. What this pattern does suggest, however, is that the Mission summaries that are submitted are utilized to a substantial degree in the preparation of case reports by the AID/OFDA. The fact that gaps in Mission reporting have historically been a problem implies that the result is reduced effectiveness in the entire reporting system.

The implication of this recommendation is that the entire disaster-reporting system of the AID/OFDA should be thoroughly re-evaluated. Effective disaster reporting requires well-defined purposes, a logically stated rationale, focused data requirements and the resources to meet those requirements, methodological guidelines for data collection, and a well-developed dissemination and feedback system. The present U.S.-based disaster-reporting system is deficient in all these areas. Chapter 4 makes explicit the kinds of data that are relevant to international disaster assistance. That chapter should be given careful attention, because it dictates possible AID/OFDA reporting requirements for both pre- and postdisaster contexts. However, we presently know little about how other groups and organizations involved in international disaster assistance use disaster information for purposes other than public relations. For example, the AID/OFDA has a dissemination list of over 400 entries for its various report categories. For what purposes are the reports used? What impressions about the disaster context are created? Are these individuals, groups, and organizations aware of the unreliability of the numbers presented in the reports? One should note that disaster information has external as well as internal uses and misuses. Not only must the AID/OFDA make its own objectives and uses of information explicit, it needs to give some attention to the external effects of its reporting system.

Use of the Computerized Data Bank

The general purpose of the AID/OFDA computerized data system is to meet the information requirements of its disaster relief and preparedness assistance programs. When completed, the projected system will contain a data bank composed of historical data, country profiles, and a variety of procurement, logistics, and other operational data. The findings and recommendations discussed below summarize the Committee's response to three specific questions:

1. Can this system be used for purposes of modeling disaster impacts using integrated hazard analysis and vulnerability analysis?
2. Does this system provide for adequate baseline country profiles?
3. Can this system lead to improved operational performance of the AID/OFDA?

1. *It is not realistic for the AID/OFDA to undertake on its own a major disaster modeling effort. Planning for this kind of effort should be discontinued.*

The historical file is to contain data on specific disasters—their natures, locations, effects, and response requirements—in order to provide a basis for understanding the destructive forces that cause disasters so that their effects can be predicted. In effect, it is hoped that the historical file will provide the foundation for predictive models of disaster effects—i.e., it would contain data on the occurrence of potentially dangerous phenomena combined with data on the vulnerability of particular human settlements to those phenomena.

The present contents of the historical file are not configured to fulfill this goal. The file is inadequate for determining the frequency and occurrence of potentially damaging natural phenomena because it only records those events that have actually coincided with vulnerable settlement patterns. More broadly, for events of long recurrence cycles, such as earthquakes and volcanoes, the file has insufficient historical coverage on which to anticipate future patterns of occurrence. In general, hazard analysis involves very complex and expensive data gathering and analysis, which can be more appropriately undertaken by such organizations as the U.S. Geological Survey or the National Oceanic and Atmospheric Administration.

The system also does not have much potential for assessing the vulnerability of particular human settlements to particular disaster agents. As stated earlier, according to current methodology, the probability of loss is the product of the probability of occurrence of an event of given magnitude and the conditional probability of damage experienced by various structural types and materials at that level of magnitude. Thus the probability of damage at a given level of intensity for a given type of construction may be expressed in the form of a Damage Probability Matrix (DPM). Damage can also be translated in terms of the probability of injuries, fatalities, and property loss costs. With vulnerability expressed in a DPM, it becomes possible, using an estimate of an event probability, to estimate potential loss. In addition, in the immediate postdisaster period, it becomes possible, with prior knowledge of the distribution of populations and structures and the event intensity, to estimate rapidly the probable level of damage. DPM's are developed on the basis of observed damage that occurred in previous disasters. As stated earlier, such damage analyses have thus far been carried out only on modern and sophisticated building structures. There has been little effort to apply DPM's in assessing damage in the developing countries.

As now constituted, the historical file in no way provides the data on damage needed for developing damage probability matrices. The categories of impact are generally ill-defined and apparently have been subjected to differing interpretations from case to case. The data available include the follow-

ing: country, disaster agent, date, number killed, number of victims, and dollar damage. There is no record of the precise location of the impact areas, no record of the level of intensity, and no record of the total population exposed. This means that there are insufficient data for even the crudest estimates of vulnerability. To repeat: with no indication of the total exposed population (people, buildings, etc.), the simple recording of deaths or property loss does not provide the basis for vulnerability assessment.

The new disaster-history computer-program file provides for a far more detailed description of impacts, including quantifiable measurements of location and intensity. It is important to note that concern is limited to geophysical phenomena, fire, and health disasters. Civil strife and accident-caused disasters are not included, because they are not subject to the same predictive methodology. But, as pointed out earlier, the major expenditure of funds in the past 11 years has been for civil strife disasters. It is also interesting to note that the AID/OFDA has indicated its future intent to collect data that is designed to verify model predictions. Specifically, the data to be collected will compare the verified number of people killed, the number of victims, and the monetary value of damage with original estimates.

Another improvement in the AID/OFDA computerized data file is to distinguish between damaged and destroyed housing and to compare the proportion of damaged structures to the total number of structures. This is an appropriate but preliminary step toward developing vulnerability estimates. The new format would compare the percentage of damaged structures to total transportation, communications, and other public facilities. All of these dimensions represent major improvements. However, it remains to be seen whether there are valid data that will permit that kind of detailed analysis. And, in the case of damage to buildings, it will be necessary to acquire more detailed information if useful DPM's are to be developed. In this analysis, it will be necessary to distinguish between the major types of structures and materials and to subdivide damage statistics accordingly.

In sum, the data requirements and measurement problems related to disaster modeling are immense and extremely costly. The more detailed format for data collection is only a preliminary step in the right direction for vulnerability analysis, and it should be noted that most of the detailed information needed for this modeling is missing for the 900 historical events on file. Moreover, the modeling capacity is presently confined to a very narrow range of disaster agents—a range that does not cover the major proportion of the past assistance expenditures of the U.S. government. For these and other reasons, the Committee suggests that it is unrealistic for the AID/OFDA to undertake a major disaster-modeling effort as a part of its own information management system. Although this kind of research is clearly important, the present data file is insufficient for these purposes, and the costs to the AID/

OFDA to obtain the necessary data and perform the necessary analyses exceed the benefits the Office will derive from the effort.

One should not conclude that the historical file has no value. That file is a reasonably accurate expression of the work performed under the aegis of U.S. and other international disaster assistance programs, particularly since 1965. Much more can be done in a descriptive fashion to analyze recent expenditure patterns. With modest improvements in assessments of agent impact and victim needs, the AID/OFDA will have a better basis for isolating relationships between disaster-induced needs and disaster response. Combined with readily available measures of development, it will also be possible to make better estimates of the long-term developmental effects of disasters. These are worthy and manageable objectives for this historical file that should, in the long run, prove to be cost effective. We therefore believe that the historical file should be maintained and updated and that the costs of developing that portion of the computerized data file are justified.

Recommendations 2-6 relate to the potential of this system for providing predisaster baseline country profiles. As outlined in Chapter 4, a predisaster baseline profile logically includes information on hazard analysis, vulnerability analysis, and disaster-relevant resource analysis. We have already suggested that the potential of this system for integrated hazard and vulnerability analyses is very limited and that the necessary research should be pursued by specialist organizations better equipped to do that work. It is still essential to assess the potential of this system for disaster-relevant resource analysis in terms of the level of disaster preparedness and the general resource profile of countries subject to disasters. The present country profiles provide several types of information: descriptive data on the social and political structure, data on transportation and communications logistics, data on health conditions and the structure of health services, and limited data on disaster planning and preparedness. Thus it is clear that most of the currently available AID/OFDA data relates to what we have referred to as the general resource profile of these societies rather than disaster preparedness. Approximately 30 profiles have been completed out of a projected total of 35. The Committee's overall impression of these profiles is that considerable time and money have been expended in their development and that they provide a variety of potentially useful data. Although our impression of the profile data is generally favorable, we are particularly concerned with the question of how various elements of these profiles can be used most effectively. That question, so far as we can determine, has never been seriously raised by the AID/OFDA. We raise it now and hope that our response will provide direction for subsequent action.

2. *That portion of the country profiles related to disaster preparedness and planning should be regularly updated, and the task of keeping these profiles current should be assigned to the Technical Assistance Branch.*

As stated in Chapter 4, the level of disaster planning and preparedness in other countries is not something that can be readily documented. It was previously noted that there is no necessary relationship between the existence of disaster plans and the utility of the planning process. We suggested that profiles should contain descriptions of planning contents and the basic organization of disaster response in order to provide insights into the problems being considered, that preparedness and mitigation measures should be documented where they exist, and that any standby emergency facilities and equipment and their locations should be recorded. Our present reading of these profiles suggests that, at least for the national level, the AID/OFDA is collecting and storing information on these various dimensions.

This is useful, because all of these dimensions refer to the level of societal preparedness that outside agencies should be aware of in organizing their own response. However, we also noted that preparedness is a constantly changing process that must be continuous to be effective. The monitoring of that process must also be continuous. The implication is that the AID/OFDA must be committed to making the necessary effort to keep this preparedness profile up to date. This function could be routinely assigned to the Technical Assistance Branch, because it will require frequent contact with the appropriate officials in recipient countries. It should also be noted that disaster experience and its historical timing also potentially relate to preparedness. Since those data are readily available from the historical file, they should be integrated with any continuing assessment of societal preparedness.

3. *That portion of the profiles related to the county's languages, ethnic groups, political organizations, and political relations represents useful supplemental briefing material for the AID/OFDA staff making site visits. However, these data need not have been computerized to serve this purpose. No further efforts should be expended to update this portion of the country profiles.*

We believe that the more important practical information involves close and continuing contact with relevant organizations and officials of the disaster-stricken society and an assessment of the current political, social, and cultural realities of dealing with the government and its citizens. That kind of detailed, informal knowledge is possessed by the AID Mission personnel, and it cannot adequately be computerized. This implies that heavy reliance should be placed on the knowledge and interpersonal skills contained in the staff of the AID Mission. It also suggests that direct field contact between the AID/OFDA and the AID Mission staff should be a normal requirement for all major U.S. disaster response efforts.

4. *That portion of the country profiles related to general level of societal development has little direct operational use, and the AID/OFDA is not well equipped to utilize the data for purposes of examining the effects of disaster on societal development. We therefore recommend that the data on development variables not be updated and that information on disaster impacts and*

responses (from the historical file) be made available to development research experts who, in turn, can undertake the rigorous statistical analyses required.

Standardized data on the level of societal development have at least two potential functions in the disaster area. First, for *operational* purposes, it is reasonable to assume that the more highly developed a society the greater its capacity to meet its own disaster-generated needs. Second, for *research* purposes, developmental data provide the necessary baseline for estimating the long-term effects of disaster on societal development. In both cases, if the data are to be of value they must be longitudinal rather than cross-sectional. Particularly in the latter case, it is not enough merely to update the information; periodic iterations of the measurements must be regularly stored so that time-series comparisons can be made.

The present country profiles contain many development measurements and therefore represent a start toward serving both operational and research purposes. If there is a problem, it results from the fact that the selection of variables was not guided by the existing corpus of development theory. Before undertaking any further updating of this file, developmental specialists should be consulted about identifying key developmental variables. However, we have a far more basic concern here. Although both operational and research functions are arguably important, it does not appear to us to be either appropriate or practical for the AID/OFDA to pursue them. The operational function is of minimal utility, because it is difficult, if not impossible, to make decisions on the basis of very fine statistical distinctions among societies that are all generally underdeveloped. Finally, the AID/OFDA is simply not well equipped to perform the research function. It would be more appropriate, practical, and valuable for the Office to furnish the available impact and response data to development research experts who, in turn, can undertake the rigorous statistical analyses that will be needed. It should be added that the link between disasters and general development is an issue with which the entire agency should be concerned. The initiative and leadership in developing contacts with the research community on this linkage should come from the top echelons of AID.

5. *Those portions of the country profiles pertaining to topography, climatology, transportation systems, communications systems, and power sources are important for anticipating the logistical problems of disaster response. These data should be maintained as a basic planning and management tool.*

We believe that the above data are of substantial importance for anticipating a whole series of logistical problems in disaster response. They should be used by the AID/OFDA as a basic planning tool and as a management frame of reference for postdisaster response. The data are well organized and usefully presented. We believe that the costs involved in generating this part of the profile were justified.

6. *Those portions of the country profiles pertaining to basic health conditions and the structure of health services should be maintained and updated.*

We believe that information on *basic health conditions* is of sufficient importance for disaster preparedness and response to justify the costs needed to collect, store, and update this information. For example, measurements of mortality and morbidity have relevance for both predisaster planning of general medical needs and for general epidemiological surveillance purposes. More specifically, disease prevalence has implications for emergency medical-supply needs. Communicable disease patterns have relevance for postimpact outbreaks, long-term rehabilitation problems, and for possible protection of expatriate personnel. Regional patterns of disease have potential import for the logistics of relief. Nutritional habits and nutritional status are important inputs for both short- and long-term food and general health requirements. However, it should be recognized that the validity and reliability of epidemiological data vary from country to country. This should be borne in mind when making intercountry comparisons. In any event, general health information, wherever possible, should be standardized for comparative purposes.

The storage of data on the *structure of health services* illustrates quite well the point made in Chapter 4 about the need to gather data on disaster-relevant organizations, i.e., organizations whose tasks and involvement in disasters can be anticipated before the fact. The Committee agrees that collection of this type of information is appropriate. However, data on the number of hospitals, number of beds, and number of health personnel as a proportion of total population is of insufficient specificity for direct operational use. Rather, much more detailed knowledge is needed on their location and distribution in relation to the disaster site. Thus, as suggested in Chapter 4, hospitals should be grouped at least by districts or provinces, and preferably by cities. Geographic (rural versus urban) and administrative (public versus private) distinctions should also be made on a regional basis. Perhaps even more importantly, personnel and facilities should be cross-linked so that the types and numbers of medical personnel available in various hospitals can be determined. In addition, details should be given, wherever possible, on specific equipment available in medical facilities. It should also be noted that health organizations are not the only disaster-relevant organizations that can furnish knowledge useful in planning external responses. Unfortunately, data on disaster-relevant organizations in developing nations cannot generally be retrieved at modest cost.

Recommendations 7 and 8 represent the Committee's assessment of the operational potential of the remaining two elements of the computer system: namely, the procurement file[1] and the crisis management (operations) file.

[1]The procurement file contains a logistics element that will not be discussed here because it has only tangential relevance to the activities of the AID/OFDA. The logistics

The AID/OFDA has given the above systems very little attention thus far, and they are virtually devoid of data.

7. *The costs of developing and updating a procurement file are likely to be high. In light of the diffuse nature of needs assessment, we think that a major development effort at this time is inappropriate. We therefore recommend a small-scale feasibility study—one that selectively examines commodities that have previously been donated in large amounts.*

The purpose of the *procurement file* is to provide data on the commodities that can be furnished by various suppliers, together with data on availability, cost, and packaging considerations. On the face of it, one would be very hard pressed to think of more useful information that could be retrieved quickly during the emergency period. Of course, until needs assessment becomes a more refined art, a commodity repository must necessarily be underdeveloped. In spite of this basic problem, we believe that the very effort to make explicit the kinds of services the United States is capable of providing will lead to a far more organized U.S. response. Not only is assessment of victim needs a problem, but disaster-stricken societies have the basic requirement of knowing what is available. It would do little good to send an AID/OFDA staff member to a major disaster site with very imprecise knowledge about what the United States has to offer. A procurement file can potentially provide that kind of specific information quickly.

The costs of developing and updating a procurement file may be substantial. And, in light of the diffuse nature of needs assessment, the Committee believes that a major development effort is inappropriate at this time. A relatively small-scale feasibility study—one that examines selected commodities that in the past have been donated in large amounts—may be more useful.

8. *The crisis management file has little potential to "automate" disaster response. However, the crisis management concept is potentially both a useful postdisaster reporting methodology and a basic learning tool for future responses. We recommend a feasibility study to assess the crisis management concept for these functions.*

The basic data inputs for the *crisis management file* are to be obtained from a continuous monitoring of any disaster in terms of requests or offers of assistance and their disposition. On the basis of these inputs the Office would then be able to program a continuous process of transactions. Thus the

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element was not developed under the aegis of this Office, but was adapted from a Department of Defense transportation logistics model designed for broader use at AID. The model appears to have its greatest potential for long-term food distribution and recovery programs in regions affected by famine. The Committee believes that impetus and support for the model's further refinement should come from the regional assistance bureaus at AID.

system would supposedly expedite a rational link between available resources and disaster-generated needs. The idea is conceptually elegant, but we think practically untenable as an operational guide. It should be clear that the disaster context is far too complex and fluid to be simply programmed. In view of the large number of participants involved, the multiplicity of interests, and the diffuse nature of needs assessment, it is naive to think that international disaster assistance can be "automated." However, the crisis management concept provides a potentially useful postdisaster reporting methodology and a basic learning tool to improve future responses. Both of these functions require a reasonably accurate accounting of what happened during the emergency period.[2]

Although we have not evaluated the present AID/OFDA system of recording requests for and offers of disaster aid during emergency operations, we think that the present system of manually recording these requests and offers should be maintained. The follow-up requirement is to develop a coding system for the data so that they can be stored in the computer. Once that programming requirement is accomplished, efforts can then be undertaken to identify transaction patterns and processes in various types of disasters. The key to this entire effort is, once again, adequate data collection. We therefore suggest the need for a feasibility study to assess the potential of the crisis management system.

[2] As stated earlier, the AID/OFDA has four regional stockpiles. Implementation of the procurement and crisis management files should also shed considerable light on the relative costs/benefits of alternative stockpiling arrangements.