

FEMA IG

Federal Emergency Management Agency

Office of Inspector General

Audit Division

Audit of FEMA's Seismic Hazard Mitigation Program for Hospitals Damaged by the Northridge Earthquake



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PREFACE

This report responds to a request by Senator Christopher S. "Kit" Bond, Chairman, Subcommittee on VA, HUD, and Independent Agencies of the Senate Committee on Appropriations, for an audit of FEMA's Seismic Hazard Mitigation Program for Hospitals that was developed after the Northridge earthquake. Questions concerning this report should be directed to Nancy L. Hendricks, Assistant Inspector General for Audit, at (202) 646-3911.

George J. Opfer
Inspector General

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EXECUTIVE SUMMARY

On March 31, 1997, Senator Christopher S. "Kit" Bond, Chairman, Subcommittee on VA, HUD, and Independent Agencies of the Senate Committee on Appropriations, asked FEMA's Office of Inspector General (OIG) to audit FEMA's Seismic Hazard Mitigation Program for Hospitals (SHMPH) developed by FEMA after the Northridge earthquake. Specifically, the Senator asked the OIG to review: (1) FEMA's plans for future use of the algorithm concept and its effect on disaster costs, (2) the process used to ensure that grant awards were reasonable and within SHMPH guidelines, and (3) the rationale for providing Section 404 mitigation funds and the intended use of those funds.

The purpose of the SHMPH is to fund measures that are likely to improve significantly the seismic performance of certain hospital buildings damaged by the Northridge earthquake of January 17, 1994. The goal of seismically upgrading these buildings was to avoid the need to evacuate non-ambulatory patients and to improve post disaster operations so that the hospitals could serve disaster victims immediately following an earthquake. Three primary criteria must be met by hospital buildings to be eligible for the SHMPH: (1) buildings must have been built prior to 1973, (2) structural damage must have been sustained, and (3) more than 50 percent of the building area must have been devoted to acute patient care (the functional use test) at the time of the earthquake.

In addition to the SHMPH grants, the State of California is planning to award funds under the Section 404 Hazard Mitigation Grant Program (Section 404 grants) to the hospitals. During the development of the SHMPH, FEMA worked with four large hospitals, called the "prototypes". There are 18 hospitals participating in the SHMPH (see Exhibit A). The Federal share of the grants to be disbursed (including both SHMPH and Section 404 grants) is approximately \$1.7 billion.

1. Future Use of The SHMPH And Its Impact on Disaster Costs

FEMA officials advised us that they do not have any immediate plans to use the SHMPH again. FEMA indicated, however, that other mechanisms may be used to simplify the public assistance process (see Appendix IV). FEMA stated in its response to the draft audit report that "the use of a program similar to the SHMPH in the future should depend on the degree of hazard and risk, and the projected benefits of feasible mitigation strategies."

Based on initial damage repair estimates made by FEMA for six hospitals, the SHMPH had a dramatic impact on disaster costs. Since FEMA did not prepare detailed damage repair estimates for all participating hospitals, however, we were not able to ascertain the actual impact that the SHMPH had on disaster costs. Based on a sample of hospitals, including FEMA's four prototype hospitals and two other non-prototypes, the approximate difference between FEMA's initial damage repair estimates and SHMPH grants is \$820 million (see Exhibit B). Cost estimates could have risen, however, because of such factors as code upgrades, hidden damage revealed by repairs, or mitigation measures. We are recommending that FEMA develop policies and procedures governing the use of Section 406 funds for mitigation initiatives.

FEMA Comments

FEMA concurred with our recommendation and agreed to give prompt attention to establishing a policy for the application of Section 406 mitigation initiatives. However, FEMA believed that the SHMPH had a minimal impact on disaster costs and stated that the OIG reached inaccurate conclusions. FEMA estimated the Federal cost of facilities listed in Exhibit B could be close to \$1 billion.

OIG Response

We disagree with the statement that our conclusions were inaccurate. The initial damage estimates, shown in Exhibit B and totaling \$68 million, were provided by FEMA and were acknowledged by the OIG to be preliminary and subject to contingencies. Furthermore, FEMA provided us with rough estimates of costs under the standard Damage Survey Report (DSR) process, taking into account code upgrades and Memorandum of Understanding (MOU) triggers (although other contingencies remained). This figure was roughly estimated at \$184 million, which was \$704 million less than SHMPH costs. FEMA did not provide a documented basis to compare the SHMPH costs of \$888 million in Exhibit B with the \$1 billion figure and conclude that the SHMPH had a minimal impact on disaster costs.

2. Process Used to Ensure That Grant Awards Were Reasonable

The process followed by FEMA before and after the development of the SHMPH did not provide adequate assurance that costs were either warranted or reasonable. FEMA did not formally compare costs of the SHMPH versus those of the standard DSR approach. Preliminary assessments indicated that damages at some hospitals would generate code upgrade requirements, although damages at some larger hospitals would not.

In determining whether hospital buildings met the SHMPH's functional use criteria, i.e., provided the basic services of a general acute care hospital or an acute psychiatric hospital, FEMA failed to adequately evaluate the four prototypes, which account for \$845 million or 57 percent of total SHMPH dollars. FEMA also inconsistently applied the functional use criteria to the hospitals we sampled. These inconsistencies could result in ineligibility of buildings for the SHMPH. We are recommending that FEMA perform functional use tests at all the participating hospitals to ensure that eligibility criteria are consistently applied. Based on the results of the functional use tests, FEMA should then recompute award amounts for the hospitals.

FEMA Comments

FEMA nonconcurrent with our recommendation. FEMA disagreed that the process followed with the SHMPH did not provide adequate assurance that the costs were either warranted or reasonable. With respect to the functional use tests, FEMA did not agree that functionality should be reassessed at the hospitals. FEMA stated that it was not aware of any instance where the prototype hospitals were treated in an inconsistent manner.

OIG Response

We disagree with FEMA's decision not to perform its functional reviews again at the SHMPH hospitals – particularly at the prototypes. Our review of FEMA's implementation of the SHMPH found buildings that either appeared to not meet the functional use criteria or were close enough to the 50 percent threshold to warrant further examination. The lack of a thorough and consistent functional analysis for all of the hospitals in our sample, using FEMA's specific criteria, may lead to the possible expenditure of more than \$230 million for buildings that may not meet FEMA's specific functional use criteria. Accordingly, we reaffirm our recommendation that the functional use tests be performed again at all hospitals.

3. Rationale for Section 404 Mitigation Awards

FEMA agreed with the State of California's authorization of \$221 million of Section 404 funds to be awarded to participating hospitals. FEMA, however, cannot provide a clear rationale as to why

Section 404 funds should be awarded for buildings already receiving mitigation funds through the SHMPH. FEMA officials did not provide a significant distinction between Section 404 grants and the SHMPH grants. As a result, FEMA cannot demonstrate what specific mitigation measures will be implemented using Section 404 funds that are not already contemplated by the SHMPH grants. We are recommending that FEMA withhold approval of the grants totaling \$221 million until it is clearly demonstrated that the funds will not duplicate the purposes of the SHMPH grants and will serve legitimate mitigation objectives.

FEMA Comments

FEMA proposed the combination of the current Federal shares of the Section 406 and Section 404 grants into a new Section 406 grant to address our concerns and simplify program administration. FEMA stated that “the result [would be] no change in Federal funds for SHMPH” and FEMA would ensure that Section 404 funds generated “from the SHMPH 406 program [would] be subtracted from the 404-fund balance”.

OIG Response

FEMA proposed funding the \$221 million Federal share of Section 404 grants for the hospitals under Section 406. We confirmed with FEMA officials that there would be no corresponding decrease in SHMPH grants. The net Federal funds to be awarded to the hospitals would remain the same under the proposed arrangement.

FEMA's proposal still does not provide a clear rationale for the awarding of these funds. FEMA has not answered the question of what the \$221 million – whether funded under Section 404 or Section 406 – would accomplish in addition to the SHMPH grants. We continue to question the need for the additional \$221 million and reaffirm our recommendation.

FEMA's response to the draft audit report is included as Appendix V.

BACKGROUND

FEMA created the Seismic Hazard Mitigation Program for Hospitals (SHMPH) for hospitals damaged by the Northridge earthquake of January 17, 1994, as an alternative to its standard process of awarding public assistance grants to hospitals. The SHMPH will make available \$1.7 billion in Federal grants to participating hospitals. These grants account for almost 25 percent of the total estimated cost of the Northridge earthquake.

Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (P.L. 93-288, as amended) authorizes FEMA to award grants to State and local governments and private nonprofit organizations to repair, restore, reconstruct or replace facilities damaged or destroyed by a major disaster. Section 406 of the Stafford Act also gives FEMA discretionary authority to fund mitigation measures in conjunction with the repair of damaged facilities. "Mitigation measures" are actions that will reduce future disaster damages. The SHMPH was developed under this authority. Mitigation measures can also be funded under Section 404. This section does not restrict the use of mitigation funds to damaged structures as does Section 406.

The purpose of the SHMPH is to fund measures that are likely to improve significantly the seismic performance of older hospital buildings damaged by the Northridge earthquake. The goal of seismically upgrading these older buildings was to avoid the need to evacuate non-ambulatory patients and to improve post-disaster operations so that these buildings could serve disaster victims immediately following an earthquake. Three primary criteria must be met by hospital buildings to be eligible for the SHMPH:

1. Buildings must have been built prior to 1973. FEMA chose that year because hospitals built before 1973 were not designed to the more stringent seismic standards found in the post-1973 code. They were also not constructed under the jurisdiction of the Office of Statewide Health Planning and Development (OSHPD).
2. Structural damage must have been sustained during the Northridge earthquake. Structural damage is defined as damage to the "primary vertical and/or lateral force resisting structural system" of a building. FEMA did not set a threshold for structural damage. Even a relatively minor crack in a structural wall would make a building eligible for the SHMPH. FEMA required damage because Section 406, under which the SHMPH is authorized, requires that mitigation measures relate to damaged facilities.
3. The SHMPH required that eligible buildings be an integral part of a general acute care hospital or acute psychiatric hospital, as defined by Section 1250 of California's Health and Safety Code. General acute care hospitals were defined as providing "24 hour in-patient care, including the following basic services [for the in-patients]: medical, nursing, surgical, anesthesia, laboratory, radiology, pharmacy, and dietary services." Psychiatric hospitals were defined as providing "24-hour in-patient care for mentally disordered...." FEMA stipulated that more than 50 percent of the area of a building had to be directly related to the above-mentioned services at the time of the earthquake to be eligible for the SHMPH.

Once a building qualified for inclusion in the SHMPH, a fixed dollar rate per square foot was applied to the floor space of that building. This rate was calculated using an algorithm, or formula. The resulting amount, plus relocation expenses, would then become the amount of the Section 406 grant.

There are two different funding rates for eligible buildings: \$175 per square foot for an "immediate occupancy" level of upgrade, and \$72 per square foot for the lesser "damage control" level of

protection. To qualify for the higher immediate occupancy rate, building units must have a post-disaster emergency function and, therefore, need to be in service immediately following a disaster. Buildings primarily used for acute psychiatric hospital functions are eligible for the damage control rate. FEMA also may offer damage control funding to buildings lacking a post-disaster emergency function if damage to them during an earthquake would threaten the functioning of an immediate occupancy type structure.

Circumstances Leading to Development of The SHMPH

Early in the recovery process, FEMA became involved with the issue of code upgrades to damaged facilities, which the Stafford Act allows. The Act authorizes FEMA to restore facilities to their pre-disaster condition and “in conformity with current applicable codes, specifications, and standards...” FEMA’s regulations also allow FEMA to accept codes as current if they were adopted after a disaster but prior to project approval.

Experience gained from the Loma Prieta earthquake (October 1989) with code issues led to FEMA’s signing a Memorandum of Understanding (MOU) with the State of California shortly after the Northridge earthquake. The MOU specified code upgrade “triggers” in the event a jurisdiction did not already have them in place for earthquake damage. Code upgrade triggers are provisions in a jurisdiction’s building code that set certain thresholds for when owners must bring buildings into compliance with certain standards. The MOU specified: (1) structural damage totaling less than 10 percent of replacement cost would only be repaired to pre-disaster condition and FEMA would not pay for code upgrades, (2) structural damage totaling between 10 percent and 50 percent of replacement cost would be repaired in conformance with the structural requirements of current codes for the damaged area only, and (3) structural damage equal to or greater than 50 percent of replacement cost would require an upgrade to current code of the entire facility. The threshold for essential service facilities, such as hospitals, was lowered to 30 percent for requiring a full building upgrade.

The MOU also provided that FEMA would pay for architectural/engineering (A&E) services for projects requiring engineering work. These studies were to provide a conceptual project design and preliminary cost estimate. The applicant’s engineer was to make code requirement determinations and recommend appropriate mitigation measures. FEMA and California’s Office of Emergency Services would then make any necessary code triggering decisions and approve appropriate mitigation work.

Although an MOU existed with the State, hospitals were also under the jurisdiction of California’s Office of Statewide Health Planning and Development (OSHPD). OSHPD issued Policy Intent Notice Number 3 (PIN 3) in July 1994 (its precursor was issued in March 1994, shortly after the earthquake), that put in place triggers for code upgrades for hospital structures built prior to 1973. These triggers were based on damage to a facility and not repair cost, as were the MOU triggers.

PIN 3 provided that if a building’s lateral load resisting capacity (ability to resist wind or earthquake forces) at any level was reduced by more than 10 percent because of earthquake damage, the primary structural system and the seismic bracing of other components and systems had to conform to the 1992 California Building Code. Essentially, these damaged structures had to be upgraded to 1992 standards if they did not already meet them. For a five-to-ten percent loss of lateral load resisting capacity at any level, only the repairs had to meet the requirements of the 1992 code.

Since hospitals were subject to OSHPD, they prepared A&E reports based on compliance with PIN 3. As a result, hospitals were requesting full building code upgrades, and even replacement buildings, based on calculations of loss of lateral capacity. FEMA took issue with paying for these

code upgrades. FEMA's Office of General Counsel held that, according to FEMA's regulations, FEMA could only recognize the California Building Code, not PIN 3. Since the California Building Code did not contain either repair or damage triggers, FEMA's position was that the MOU triggers would apply.

Hospitals were faced with costly upgrades to old buildings for which FEMA would not pay. After discussions with hospital representatives, FEMA agreed to recognize PIN 3 if the California Building Code were amended to include it. The California Building Standards Commission adopted an ordinance incorporating PIN 3 in September 1995. Documents submitted to the Commission stated that adoption of PIN 3 potentially would make \$2 billion in FEMA funds available for hospitals to repair and upgrade facilities to current codes.

Further, California enacted Senate Bill 1953 (effective January 1995), putting additional financial pressure on hospitals. This law required that any general acute care hospital buildings with a potential risk of collapse or loss of life could be used only for nonacute care purposes after January 1, 2008. By the year 2030, all hospital buildings had to be in substantial compliance with hospital seismic standards or be used for nonacute care purposes. The Los Angeles Times Valley Edition on April 20, 1995, reported an effort to speed up code compliance to 2008, "a schedule that industry lobbyists protested would lead to financial ruin for hospitals."

Although the adoption of PIN 3 took care of the legal problems, the technical questions remained. PIN 3 required that hospitals calculate the loss of lateral capacity, but FEMA took the position that there was "currently no precise, reliable or generally accepted procedure for analyzing capacity loss in structures as a whole based on the inspection of earthquake damage" and that reaching consensus among the various parties involved would be difficult, particularly when it came to defining and verifying a five or ten percent loss. Much of the argument boiled down to how much loss of lateral capacity was represented by cracks in concrete. Since then, FEMA has sponsored a study through the Applied Technology Council (ATC) to establish and document criteria for the evaluation and repair of earthquake damage, including cracks in concrete.

By July 1995, the press reported difficulties between the State of California and FEMA. In the July 19, 1995, Los Angeles Times, California's Office of Emergency Services expressed concern about the time it was taking FEMA to make decisions and the decisions themselves. FEMA responded that the region was [then] in the long-term recovery phase and FEMA engineers would scrutinize the "remaining big-ticket quake projects." The Los Angeles Times, August 10, 1995, reported FEMA's position that California's policy intent notices were "defining damage in such a way as to qualify sparsely-damaged buildings for vast federal assistance, sometimes entailing total reconstruction." California's Office of Emergency Services responded that "FEMA standards would lead to California having less-safe buildings than they had before the earthquake."

In this environment, FEMA officials began searching for an alternative to the standard Damage Survey Report (DSR) process to resolve the deadlock. FEMA engineers reported that some hospitals would not meet PIN 3 triggers and, therefore, would not be eligible for seismic upgrades. FEMA anticipated long, drawn-out appeals, based on prior experience from the Loma Prieta earthquake and the strong disagreements at Northridge. On the other hand, FEMA's goal was to establish a program using Section 406 mitigation funds to seismically upgrade structurally deficient hospital buildings. As a result, FEMA began development of the SHMPH in August 1995.

The SHMPH was an attempt to standardize seismic upgrade costs for all hospitals without considering the extent of damage or complexity factors. Hospitals could choose to participate in the SHMPH or opt for the standard DSR process. The standard DSR process offered hospitals reimbursement of actual costs of code upgrades (up to the 90 percent Federal cost share) if they

met the appropriate triggers, whereas the SHMPH did not. Instead, the SHMPH offered a fixed grant amount, and participants in the SHMPH had to voluntarily waive their appeal rights under the standard DSR process for SHMPH-eligible buildings.

By the end of September 1995, FEMA had basically worked out the algorithm in its present form. Through October 1995, efforts continued to develop SHMPH guidelines and eligibility criteria. FEMA also began working with four hospitals, called the "prototypes," to work out details of the SHMPH. The four prototypes were Cedars-Sinai Medical Center (Cedars-Sinai), Los Angeles County/University of Southern California Medical Center (LAC/USC), St. John's Hospital and Health Center (St. John's) and University of California Los Angeles Center for the Health Sciences (UCLA). These hospitals represented different environments in which to test the SHMPH. FEMA negotiated with these hospitals until March 1996, when it made offers to them. FEMA then opened the SHMPH to other interested hospitals.

The application period for participation in the SHMPH ended on March 4, 1997. FEMA qualified 18 hospitals for the SHMPH (see Exhibit A). FEMA is still evaluating two hospitals for inclusion in the program.

Exhibit A
Summary of SHMPH Grants to Hospitals
(Federal Share)

Hospital (1)	SHMPH Grant (2) (In thousands)	Section 404 Grant (3) (In thousands)	Total Federal Award (In thousands)
Cedars-Sinai	\$ 25,157	\$ 3,774	\$ 28,931
Childrens	86,344	12,952	99,296
City of Hope	31,074	4,661	35,735
Glendale	40,273	6,041	46,314
Granada Hills	12,806	1,921	14,727
Kaiser	123,418	18,513	141,931
LAC/USC	367,021	55,053	422,074
Mercy	11,912	1,787	13,699
Northridge	24,714	3,707	28,421
Orthopaedic	26,442	3,966	30,408
Queen of Angels	34,090	5,113	39,203
San Fernando (4)	15,232	2,285	17,517
Santa Monica	36,257	5,438	41,695
St. John's	76,725	11,509	88,234
St. Joseph	72,348	10,852	83,200
UCLA	376,321	56,448	432,769
Valley	36,625	5,494	42,119
White Memorial	<u>77,611</u>	<u>11,642</u>	<u>89,253</u>
Total (5)	<u>\$ 1,474,370</u>	<u>\$ 221,156</u>	<u>\$ 1,695,526</u>

- (1) See Appendix II for full names of hospitals.
- (2) SHMPH grants are the amounts calculated by the algorithm plus relocation allowances. The relocation allowance is fixed for hospitals selecting an improved project involving a replacement building. The relocation amount is only estimated (at the fixed rate) for other hospitals, which are eligible for actual relocation expenses. The Federal cost-share of the SHMPH grant is calculated as 90 percent of the combined algorithm amount and relocation allowance.
- (3) The Federal cost-share for the Section 404 grant is calculated as 15 percent of the Federal share of the SHMPH grant.
- (4) The grant amount has been set but the DSR is still being processed.
- (5) FEMA is in the process of evaluating two additional hospitals for SHMPH grants: Kaiser (Sunset) and Simi Valley.

OBJECTIVE, SCOPE, AND METHODOLOGY OF AUDIT

FEMA's Office of Inspector General (OIG) received a request on March 31, 1997, from Senator Christopher S. "Kit" Bond, Chairman, Subcommittee on VA, HUD, and Independent Agencies of the Senate Appropriations Committee (Appendix I), to review FEMA's Seismic Hazard Mitigation Program for Hospitals (SHMPH) developed after the Northridge earthquake. Specifically, the Senator asked the OIG to review:

- FEMA's plans for future use of the algorithm concept and its effect on disaster costs,
- The process used to ensure that grant awards were reasonable and within SHMPH guidelines, and
- The rationale for providing Section 404 mitigation funds and the intended use of those funds.

Our audit focused on circumstances surrounding the development of the SHMPH and how FEMA implemented it. We visited four hospitals as part of our assessment of FEMA's decision-making process in developing and applying the criteria of the SHMPH. The hospitals visited were Cedars-Sinai, Glendale, St. Joseph, and UCLA. Since the hospitals were not the focus of this audit, we did not validate the merits of the technical arguments that arose between FEMA and the applicants.

At the four hospitals, we evaluated how FEMA applied the functional use criteria outlined in the SHMPH. We also reviewed the criteria relating to the age of buildings and existence of damage. These hospitals have been approved for \$591 million, which represents approximately 35 percent of the estimated \$1.7 billion for all participating hospitals. We toured buildings that were deemed eligible for the SHMPH. We also held discussions with hospital officials and, in some instances, requested additional supporting documentation relating to the functional use of buildings.

During the course of the audit, we reviewed records and correspondence relating to the four hospitals. We also held discussions with officials of the State of California. To understand the circumstances surrounding the development of the SHMPH, we held discussions with FEMA officials in Pasadena, California as well as headquarters. We also reviewed the SHMPH methodology and records and correspondence relating to its development. A chronology of significant events before and after development of the SHMPH is shown in Appendix III.

We conducted the audit under the authority of the Inspector General Act of 1978, as amended, and according to generally accepted government auditing standards.

RESULTS OF AUDIT

We determined that the SHMPH significantly increased disaster costs for the Northridge earthquake, based on a comparison of FEMA initial damage repair estimates and SHMPH costs for six participating hospitals. The decision-making process followed by FEMA prior to development of the SHMPH, as well as the procedures followed in applying the functional use criteria of the SHMPH, does not provide adequate assurance that costs are either warranted or reasonable. Finally, the rationale for providing Section 404 mitigation grants in addition to Section 406 grants is not clear and may duplicate funding already contemplated in the SHMPH.

FEMA needs to take a close look at its policy for mitigation initiatives undertaken through Section 406. Although FEMA possesses discretionary authority to take mitigation action under Section 406, there are no limits on funds that can be expended under Section 406 for code upgrades or mitigation. FEMA's Public Assistance Guide provides that the benefits of mitigation measures must exceed the costs, and those costs may not be cost-effective until they can be made part of repairs. In the case of the SHMPH, mitigation costs exceeded estimated damages significantly. The SHMPH made repairs a part of a mitigation program rather than mitigation a part of repairs. This may have set a precedent for future disasters. The question is not whether these hospital buildings needed to be seismically upgraded, but whether Section 406 contemplated the magnitude of expenditures for code upgrades and mitigation compared to actual damage.

The experience of Northridge with the hospitals and related code issues also illustrates the legal and technical disagreements that can occur between FEMA and grant applicants. These disagreements and the prospect of long, drawn-out appeals influenced FEMA's decision to develop the SHMPH. At the time of the disagreements over the applicability of PIN 3, FEMA's General Counsel pointed out that "only FEMA is authorized to interpret and implement the Stafford Act and regulations issued pursuant to the Stafford Act. Accordingly, only FEMA has the authority to determine which repairs (code-mandated or otherwise) it will fund pursuant to the Stafford Act. The Stafford Act and applicable regulations cannot be read or interpreted as authorizing state or local building officials or agencies to determine the amount of federal disaster assistance funds FEMA must contribute to a project." The General Counsel further stated that "disaster assistance funding under the Stafford Act is a discretionary spending program, not an entitlement program....Section 406 of the Stafford Act...does not require the funding of eligible damage restoration projects but provides simply that the President may authorize funds for eligible projects."

Although the State of California, OSHPD, and FEMA have a significant interest in improving the seismic safety of hospital facilities throughout the State, these interests must be balanced against the supplemental nature of disaster assistance as contemplated by the Stafford Act.

1. Future Use of The SHMPH And Its Impact on Disaster Costs

Future Use

FEMA developed the SHMPH specifically for the hospitals affected by the Northridge earthquake. It was intended as a means of expediting the delivery of discretionary mitigation funds. FEMA officials advised us that they do not have any immediate plans to use the SHMPH again, but added that this decision does not preclude the use of some other mechanism to simplify the Disaster Survey Report (DSR) process (see Appendix IV). FEMA stated in its response to the draft audit report that "the use of a program similar to the SHMPH in the future should depend on the degree of hazard and risk, and the projected benefits of feasible mitigation strategies."

FEMA's use of the SHMPH may have set a precedent for future disasters. The SHMPH provided a rationale and a means for distributing large amounts of funds for mitigation through the Section 406 Public Assistance Program. Even if the SHMPH is not used again, other applicants in other jurisdictions affected by earthquakes or other disasters also may request funds for large-scale mitigation projects through the Section 406 Public Assistance Program because of a special status, such as that of a hospital.

Impact on Disaster Costs

We measured the impact on disaster costs by taking the difference between initial damage estimates and the amount of SHMPH grants. For hospitals in our sample and the prototypes (two of which were in our sample), the increase attributable to the SHMPH was approximately \$820 million (see Exhibit B). This is based on initial damage repair estimates and observations gathered by FEMA. It was not possible to measure the actual dollar impact of the SHMPH, however, because once it was implemented, FEMA did not complete damage estimates or calculate the cost of code upgrades for which hospitals otherwise might have been eligible under the standard DSR process.

Exhibit B
Comparison of Estimated Costs

Hospital	FEMA's Initial Damage Repair Estimate (1) (In millions)	SHMPH Cost (2) (In millions)	A&E Study Estimate(3) (In millions)
Cedars-Sinai(4)	\$ 4	\$ 23	\$ 37
Glendale	4	39	24
LAC/USC	24	339	1,031
St. John's (5)	24	71	149
St. Joseph	2	71	2
UCLA(6)	<u>10</u>	<u>345</u>	<u>933</u>
Total	\$ 68	\$ 888	\$ 2,176

- (1) FEMA's initial damage repair estimates include rough estimates and do not take into account any cost increases due to code or MOU upgrade triggers. Cost estimates could change because of code and MOU triggers, applicant input, hidden damage revealed by repairs, other unexpected costs, mitigation measures or a more detailed analysis by FEMA.
- (2) SHMPH cost is the amount calculated by the SHMPH's algorithm (formula), which includes both FEMA and applicant cost shares. Section 404 grants and the relocation allowance are not included, and anticipated insurance proceeds have been deducted.
- (3) A&E study estimates come from architectural and engineering (A&E) study reports in FEMA's possession. The amounts shown in this column are either the A&E estimated cost of repairs (including code upgrades if the A&E study presented those figures) or the cost of improved projects (including replacement facilities). These estimates were not necessarily compiled in the same manner (e.g., some may include "soft costs" or certain fees while others may not). We did not make any adjustments for these types of inconsistencies.
- (4) For Cedars-Sinai, FEMA's initial damage repair estimate and the SHMPH cost include relatively small amounts for the Brown building. The Brown building was not part of the A&E estimate.
- (5) For St. John's, the SHMPH cost contains a relatively small amount for the Xavier building, which is not part of FEMA's initial damage repair estimate or in the A&E study estimate. Also, FEMA's initial damage estimate does not include the cost of correcting certain code problems arising from the initial repairs done to the facility. FEMA had not made a determination on further funding amounts for the correction of these problems prior to the implementation of the SHMPH.
- (6) For UCLA, the A&E study estimate includes the CHS Parking Structure and the Louis Factor Building, neither of which qualified for the SHMPH and therefore are not included in the SHMPH cost figure. FEMA's initial damage repair estimate also included the CHS Parking Structure. Further, the A&E study estimate does not include some buildings which are participating in the SHMPH and therefore are included in the SHMPH cost figure.

As seen in Exhibit B, FEMA's initial damage estimates for hospitals varied significantly from the amounts ultimately provided by the SHMPH grants. We do not know what grants FEMA might have awarded through the standard DSR process had it been used. PIN 3 triggers could have led to full building structural upgrades for some buildings. Cost estimates could have risen also because of applicant input, hidden damage revealed by repairs, mitigation measures and other unexpected costs. Further, some hospitals likely would have disagreed with the FEMA estimates and appealed.

Events That Increased The SHMPH Costs

On March 4, 1996, FEMA made grant offers to the prototypes. FEMA offered a total of \$755 million to the four hospitals. UCLA objected, however, that its square-foot reimbursement rate was too low. UCLA had the lowest reimbursement rate at \$129 per square foot because FEMA determined that it had nine buildings. This rate resulted from a statistical element (called "confidence factor") built into the algorithm to account for variation of actual construction costs from the mean cost estimate. The mean cost estimate was derived from a study performed by FEMA in 1988 and revised in 1994. The confidence factor provided a smaller "cost cushion" per building for owners that planned to seismically upgrade more buildings. This was true because the more building upgrades undertaken by an owner, the greater the chance that project cost underruns would offset project cost overruns. FEMA and UCLA disagreed over the number of buildings in UCLA's facility.

At the written request of four members of Congress, FEMA asked the Earthquake Engineering Research Institute (EERI) to convene a panel of experts to review FEMA's application of the SHMPH to UCLA. In July 1996, the panel concluded that the overall intent of the SHMPH would be met better by considering UCLA as one building rather than nine separate buildings as FEMA contended. As a result, FEMA eliminated the building count differential for all hospitals and raised the immediate occupancy rate to a standard \$175, which was the rate for one to two buildings. The rationale for doing so was that other hospitals had several buildings and FEMA sought to maintain consistency in SHMPH application since it still considered UCLA as having nine separate buildings. This change increased SHMPH costs by approximately \$172 million, half of which was due to the increase in UCLA's rate from \$129 to \$175 per square foot.

FEMA convened the EERI panel again in October 1996, to address UCLA's request for the addition of four buildings to the SHMPH at the immediate occupancy rate. UCLA considered these buildings to be part of the same building rather than separate. FEMA requested that the panel determine whether these buildings needed to be "structurally upgraded in order to achieve immediate occupancy level in the rest of the qualifying hospital facility." The EERI panel responded that the buildings should be "viewed as a single facility" and, therefore, be upgraded to the immediate occupancy category. FEMA, however, only allowed damage control funding for these buildings under its discretionary authority. The addition of these four buildings increased SHMPH costs by \$50 million.

Recommendation 1. Develop policy and procedures governing the use of Section 406 funds for mitigation initiatives.

FEMA Comments

FEMA concurred with the recommendation. However, FEMA stated that the OIG reached conflicting, ambiguous and inaccurate conclusions regarding the impact of the SHMPH on disaster costs. They stated that initial damage estimates shown in Exhibit B did not "include damage that would be discovered during the repair construction...costs for code and standards upgrades, building permits, inspections, contractor overhead and profit, inflation to mid-point of construction, etc." nor consider mitigation. FEMA estimated the Federal cost of facilities listed in Exhibit B could be close to \$1 billion "based upon past experience with large projects in the standard DSR process subjected to third level appeals." FEMA concluded that the SHMPH had a minimal impact on disaster costs. Furthermore, FEMA stated that the enhanced life safety of these hospitals in future earthquakes supported any increased costs.

OIG Response

We disagree with the statement that our conclusions were conflicting, ambiguous, and inaccurate. The initial damage estimates, shown in Exhibit B and totaling \$68 million, were provided by FEMA and were acknowledged by the OIG to be preliminary and subject to contingencies. FEMA cited in its comments that "it would not be surprising if the Federal cost for the facilities listed in [the] IG Draft Report (Exhibit B) would be close to about \$1 billion...." FEMA provided no basis for this estimate except to cite its experience with "large projects in the standard DSR process subjected to third level appeals." In contrast, FEMA provided us with rough estimates of costs under the standard DSR process, taking into account code upgrades and MOU triggers (although other contingencies remained). This figure was roughly estimated at \$184 million, which was \$704 million less than SHMPH costs.

2. Process Used to Ensure Grant Awards Were Reasonable

The process followed by FEMA before and after the SHMPH does not provide adequate assurance that costs were either warranted or reasonable. The SHMPH eliminated the process of making detailed damage repair estimates, providing instead a fixed grant for the seismic upgrade of hospital buildings based on an algorithm. Also, the SHMPH required FEMA to verify only that structural damage occurred and not the extent of that damage.

FEMA did not complete a formal cost comparison of the SHMPH versus the standard DSR approach. FEMA knew that some hospitals might have triggered PIN 3 code upgrades but did not develop cost estimates for these projects. FEMA technical staff said that the seismic upgrade costs should have been approximately the same as the SHMPH grant for the hospitals, but use of the regular DSR process might have paid for additional costs such as functional upgrades required by code (functional upgrades include items such as increased room size).

FEMA evaluated some of the damage to the prototypes before the development of the SHMPH. FEMA technical staff estimated that Cedars-Sinai and St. John's probably would have triggered at least parts of PIN 3. FEMA did not make any final determinations at that time as to code upgrade costs or whether they would have been eligible for replacement buildings. In the case of LAC/USC and UCLA, FEMA technical staff estimated that, based on verified damage, most, if not all, buildings did not suffer any significant loss of lateral capacity and, therefore, did not trigger PIN 3. This assessment contradicted the position of these hospitals. Nevertheless, based on the initial damage estimates by FEMA's technical staff, FEMA will pay far more under the SHMPH to these two hospitals than it would pay under the standard DSR process.

FEMA's response to the LAC/USC Psychiatric Hospital first appeal, which LAC/USC filed in 1995, demonstrates how FEMA might have handled some of these disagreements over damage if the standard DSR process had been followed. LAC/USC requested funding for a replacement building for its Psychiatric Hospital based on its assessment of loss of lateral capacity and the cost to make the required code upgrades. LAC/USC's position was that, since these costs exceeded 50 percent of replacement cost, the Psychiatric Hospital qualified under FEMA regulations for a replacement building. FEMA's response to the appeal stated in detail why it legally and technically could not accept PIN 3 code upgrade triggers. Further, FEMA found that the Psychiatric Hospital damages would not have met PIN 3 triggers even if FEMA had accepted them. Instead of granting LAC/USC's appeal request for a \$64 million replacement building, FEMA set damage reimbursement at \$3.9 million and added \$2.9 million for mitigation. FEMA prepared a similar response to LAC/USC's appeal for its Pediatrics Hospital. FEMA denied the request for a \$72 million replacement building and instead authorized \$8.1 million for repairs and \$2 million for mitigation.

Many other appeals were anticipated to follow from the hospitals. One of FEMA's motives in developing the SHMPH was to minimize disagreements with the hospitals and expedite the disaster assistance process. We do not know what the result would have been had FEMA handled all appeals such as the example above. It would appear, however, that disaster costs may have been significantly lower.

Functional Test

The four prototypes, which account for \$845 million or 57 percent of total SHMPH dollars (Federal share), were not adequately reviewed for compliance with the functional use criteria. Decisions were made on an *ad hoc* basis that potentially increased SHMPH costs substantially. Also, our walk-

throughs of hospitals and examination of the functional reviews performed at sample hospitals revealed that the functional guidance was inconsistently applied.

FEMA allows two different funding rates for hospitals meeting its functional requirements: \$175 for immediate occupancy buildings, and \$72 for damage control buildings. To qualify for the immediate occupancy rate, buildings must have a post-disaster emergency function and, therefore, need to be in service immediately following a disaster. At the time of the earthquake, those buildings must have been classified as a "General Acute Care Hospital" building, as defined in California's Health and Safety Code, "providing '24-hour in-patient care, including medical, nursing, surgical, anesthesia, laboratory, radiology, pharmacy, and dietary services.'" Primary use means that more than 50 percent of a building's floor space is devoted to the above functions. For purposes of this functionality test, FEMA defined individual buildings as those with separate superstructures regardless of a common foundation.

Buildings primarily used for acute psychiatric hospital functions are eligible for the damage control rate. FEMA also may offer damage control funding to buildings lacking a post-disaster emergency function if damage to them during an earthquake would threaten the functioning of an immediate occupancy type structure.

FEMA applied the functionality test differently to the prototypes than it did to the other hospitals. FEMA used the prototypes to help develop the SHMPH rules. It did not have detailed criteria as to what should be included in the functional use determinations, which FEMA later developed for other hospitals. The walk-throughs by FEMA were not well documented, and decisions were made that substantially increased SHMPH costs without adequate documentation. These decisions included:

- Inclusion of four buildings at one hospital into the SHMPH at immediate occupancy status with no written justification of the reason(s). These buildings were originally excluded or were primarily rated at damage control because of activities not considered those of a general acute care hospital, such as research. This action resulted in an increase of approximately \$95 million in SHMPH costs.
- SHMPH rules required that psychiatric hospitals were to be funded at the lower damage control rate of \$72 per square foot. These hospitals, however, were funded at the immediate occupancy rate of \$175 with no written justification or analysis. This resulted in an increase of approximately \$21 million in SHMPH costs.

After FEMA made offers to the prototypes in March 1996, it opened the SHMPH for participation by other hospitals. FEMA then instituted a formalized process to evaluate hospital eligibility. In our review of two non-prototype hospitals, we found hospital floor plans that were color-coded according to eligible functions. We saw calculations of eligible space for each floor. No such documentation was prepared for the prototypes. FEMA considered revisiting the prototypes and doing a more formalized functionality review, but since it had already made offers to the prototypes in March 1996, FEMA did not want to backtrack.

FEMA prepared more specific guidance on what should be considered eligible space by November 1996, and again reviewed its functional analysis of non-prototype hospitals. The guidance was based on the experience gained by FEMA staff. The State of California also performed its own functional review of the same buildings. Most buildings were determined to satisfy the functionality test. FEMA's calculations did show some buildings close to the 50 percent threshold, however. Our reviews confirmed this. The guidance finally prepared by FEMA is shown in Exhibit C.

Exhibit C
SHMPH Functional Analysis - Allowable Areas

Area Function	Allowable	Not-Allowable
Patient Support: (Generally are allowable, with some exceptions)	x-ray Rooms Examination Rooms Surgery Rooms Intensive Care Unit Rooms Pharmacy Dietary Services Kitchen/Cafeteria (used for preparing patient meals) Pot Washing Recovery Rooms Morgue Laundry/Linen Rooms Bathrooms	Quiet Room Waiting Room/Lobby One-day Surgery Outpatient Surgery Dietitians Office Chaplains Office Family Room
Doctor Support:	Decontamination Room Small Storage/Supply Room Dirty Tool Room (surgical) Preparation Room Small Conference Rooms	Doctors Office Doctors Lounge Dictation Bathrooms/Showers Locker Rooms Physician Computer Area
Nurse Support:	Decontamination Room Small Storage/Supply Room Nurses Station Preparation Room	Nurses Lounge Locker Rooms Bathrooms/Showers Nurses Office
Hospital Support: (Generally are not allowable)		Administration Large Storage Rooms Electrical/Mechanical Rooms Conference Rooms Engineers Rooms Auditoriums Research Trash Rooms Custodian Rooms Medical Records Library Data Processing
<p>For elevators and stairways on each floor:</p> <ul style="list-style-type: none"> • If 100% of the rooms are allowable, then 100% of the elevator and stairway area is allowable. • If <100% of the rooms are allowable, then 50% of the elevator and stairway area is allowable. <p>For corridors:</p> <ul style="list-style-type: none"> • If corridor is surrounded by allowable rooms, then 100% of corridor is eligible. • If corridor is partially bounded by allowable rooms, then use an appropriate percentage. 		

FEMA used this list only for the functionality test. Once a building qualified, FEMA applied the reimbursement rate to the entire square footage of the building regardless of functionality. For example, administrative areas were not allowable space for the functionality test, but once a building qualified, those areas were funded for seismic upgrade.

The functional reviews performed by FEMA's inspectors were not consistent at the hospitals in our sample. Cumulatively, these inconsistencies could possibly affect the eligibility of some buildings. Examples of the inconsistencies follow:

- Outpatient versus inpatient: Space devoted to outpatient activities was either deemed eligible or was not documented (in terms of eligibility) at some buildings.
- Research and clinical research activities: These activities were not considered and/or documented adequately at two hospitals.

- Office space: Office space at some buildings was either allowed contrary to use criteria or was not documented (in terms of eligibility).
- Skilled nursing care: Skilled nursing care areas deemed eligible at two hospitals were ineligible at another hospital. This other hospital was not included in our sample.

As the foregoing shows, functional use criteria were not consistently applied at the hospitals. As a result, there is no assurance that all buildings would qualify for the SHMPH.

Recommendation 2. Perform functional use tests at all the participating hospitals to ensure that eligibility criteria are consistently applied. Based on the results of the functional use tests, recompute award amounts for the hospitals.

FEMA Comments

FEMA nonconcurred with the recommendation. FEMA disagreed that the process followed with the SHMPH did not provide adequate assurance that the costs were either warranted or reasonable. In support of its statement, FEMA contended that the dollar per square foot figures based on the algorithm were credible and reasonable. With respect to the functional use tests, FEMA did not agree that functionality should be reassessed at the hospitals. FEMA stated that it was “aware of no instance in which the prototype hospitals were treated and analyzed in an inconsistent or unequal manner.” FEMA, however, acknowledged that “evaluation of space usage for the prototype hospitals may not have been adequate as compared to procedures developed in the ensuing months....” Further, FEMA stated that for one hospital, an independent panel convened to resolve a dispute and “its conclusions with respect to the functionality of hospital buildings were generally reflected in the resolution settlement.”

OIG Response

We disagree with FEMA’s decision not to perform functional reviews to ensure the consistent application of criteria at the SHMPH hospitals – particularly at the prototypes. At the onset, FEMA contended that the algorithm was based on a “professional assessment, evaluation, and review of 2,088 seismic upgrade projects.” We have not contested the algorithm. We are questioning the consistent application of SHMPH rules, specifically, the functional use test.

FEMA stated that it was aware of no instance where the prototype hospitals were treated and analyzed in an inconsistent or unequal manner, yet it acknowledged that functional use data was less carefully documented for them. We pointed out in the draft audit report that the detailed criteria used for other hospitals were not developed when FEMA reviewed the prototypes. We also listed several examples of our concerns.

Our review of FEMA’s implementation of the SHMPH found buildings that either appeared to not meet the functional use criteria or were close enough to the 50 percent threshold to warrant further examination. To illustrate, the following table shows a FEMA estimate of eligible space for some of the SHMPH buildings at UCLA, which was one of the prototypes and hospitals we sampled. FEMA could not provide us documentation that supported the inclusion of these buildings in the SHMPH at the immediate occupancy rate, although FEMA had considered these buildings ineligible or shown them as borderline.

<u>Building Name</u>	<u>SHMPH Award (1)</u>	<u>FEMA Estimate of</u>
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	(Federal Share) (In millions)	Eligible Space
Brain Research Institute	\$ 16	0%
Jules Stein Eye Hospital	17	51%
Marion Davies Pediatric Center	14	51%
Neuropsychiatric Institute and Hospital	52	40%
School of Medicine East	66	40%
School of Medicine West	<u>27</u>	40%
Total	\$ 192	

(1) Excludes Section 404 grants.

FEMA was not able to provide us functional use information for the other prototype hospitals. However, at Cedars-Sinai, the other prototype hospital in our sample, we found that parts of the Schuman Building (one of two Cedars-Sinai buildings in the SHMPH) housed significant amounts of out-patient activities or were office areas. FEMA could not provide documentation showing whether these areas were excluded for purposes of the functional use test. The significance of this space warrants a documented review to support the building's inclusion in the SHMPH. Cedars-Sinai is to receive \$24 million in SHMPH funds (Federal share not including the Section 404 grant) for the Schuman Building.

We also found that two SHMPH buildings at Glendale, one of the non-prototype hospitals in our sample, had areas that housed significant amounts of outpatient activities. Based on our evaluation of FEMA's documented reviews, FEMA did not exclude these specific areas. The significance of these areas warrants further examination, especially since FEMA's analysis classified these two buildings as relatively close to the 50 percent threshold. Glendale is to receive \$23 million in SHMPH funds (Federal share not including Section 404 grants) for these two buildings.

Finally, FEMA stated that an independent panel (convened by the Earthquake Engineering Research Institute) considered the functionality of buildings at one hospital (UCLA). Upon further questioning, FEMA officials stated that they did not think this functionality referred to functional use/general acute care criteria or that such a functional use analysis was within the panel's scope of work.

The lack of a thorough and consistent functional analysis for all of the hospitals in our sample, using FEMA's specific criteria, may lead to the possible expenditure of more than \$230 million for buildings that may not meet FEMA's specific functional use criteria. Therefore, we disagree with FEMA's position not to perform the functional use analyses and reaffirm our recommendation.

3. Rationale for Providing Section 404 Mitigation Awards

FEMA authorized \$221 million under the Section 404 Hazard Mitigation Grant Program for hospital buildings in the SHMPH. Section 404 allows FEMA to contribute an additional 15 percent of a disaster's estimated total grants (less any associated administrative costs) to mitigation measures that are cost-effective and that will substantially reduce the risk of future damage, hardship, loss, or suffering. States administer the Section 404 program. In the case of the SHMPH, the State of California deemed the seismic upgrade of hospitals a priority and plans to award hospitals an amount equal to 15 percent of their SHMPH grant.

The purpose of the SHMPH was to provide seismic upgrades to general acute care hospital facilities to enable them to serve disaster victims immediately after an earthquake. The SHMPH provided a methodology by which to estimate seismic upgrade costs and expedite the public assistance grant.

We asked FEMA officials to articulate what Section 404 grants would accomplish in addition to the SHMPH grants. FEMA was unable to provide a clear rationale for the award of Section 404 funds to buildings already receiving mitigation funds through the SHMPH.

One response was that Section 404 grants might fund mitigation work that SHMPH grants would not fund, such as strapping and bracing of building contents. FEMA, however, does not attempt to differentiate between these grants at the hospitals. The mitigation work eligible under the SHMPH also would be eligible for Section 404 grants.

FEMA officials also stated that Section 404 grants would be used to fund the incorporation of new earthquake-resistant utilities, such as mechanical and electrical equipment. The SHMPH program description states, however, that the SHMPH envisages “seismic risk mitigation to internal non-structural elements, such as light fixtures, piping and mechanical equipment.”

Another response was that Section 404 funds provided an extra cost “cushion” and an inducement for hospitals to enter the SHMPH. However, the SHMPH already had built some “safety room” into the algorithm. The algorithm calculated an estimated mean cost of seismic upgrade of \$99 per square foot (based on a 1988 study conducted by FEMA and revised in 1994). FEMA added another \$76 to this mean rate to “cushion” against variations in cost from this mean.

For some hospitals, FEMA will not be able to verify that the extra Section 404 cost “cushion” is necessary. These particular hospitals are considering improved projects, including the demolition of old buildings and the construction of new ones. These construction costs could not be compared against SHMPH estimates, which are based on seismic upgrade costs, not new construction.

Further, the \$175 rate of reimbursement under the SHMPH compared to a range of \$106 to \$238 per square foot for the cost of constructing a new hospital building in southern California, according to Means Square Foot Costs (base year 1996 adjusted for Los Angeles at 13 percent). Although FEMA technical staff said this figure was low, we saw documentation submitted by hospitals that used rates at or below \$175 for per-square-foot-costs of new construction. The cost per square foot allowed by the SHMPH (including Section 404 grants but excluding the relocation allowance) is approximately \$213 (\$186 Federal cost share) for buildings receiving the immediate occupancy rate.

We also were told that awarding the Section 404 grants to the hospitals provided an easier way to distribute the large amount of mitigation funds that were being generated by the SHMPH. The Section 404 grant pool would grow by 15 percent of the Federal share of the SHMPH total grants. Another reason given was that Section 404 grants would fund functional upgrades, i.e., meeting standards other than seismic ones for hospitals; but other FEMA officials disagreed. Examples of such upgrades include increases in capacity, such as better air ventilation systems or larger room sizes. Functional upgrades do not meet the intent of the Section 404 grant program.

Our discussions with FEMA officials did not provide any real distinction between the use of Section 404 and SHMPH grants. As a result, we could not determine what items Section 404 funds specifically would pay for that were not already contemplated by the SHMPH grants.

Recommendation 3. Withhold approval of the \$221 million in grants until it is clearly demonstrated that the funds will not duplicate the purpose of the SHMPH grants and will serve legitimate mitigation objectives.

FEMA Comments

FEMA proposed the combination of the current Federal shares of the Section 406 and Section 404 grants into a new Section 406 grant to address our concerns and simplify program administration. FEMA stated that “the result [would be] no change in Federal funds for SHMPH” and FEMA would ensure that Section 404 funds generated “from the SHMPH 406 program [would] be subtracted from the 404-fund balance”.

OIG Response

FEMA's proposal to convert the \$221 million Federal share of Section 404 grants to Section 406 grants still does not provide a clear rationale for the awarding of these funds. FEMA has not answered the question of what the \$221 million – whether funded under Section 404 or Section 406 – would accomplish in addition to the SHMPH grants. The purpose of the SHMPH was to provide seismic upgrades to general acute care hospital facilities, and it provided a methodology by which to estimate seismic upgrade costs. FEMA stated in its response that the algorithm was based on the professional assessment, evaluation, and review of 2,088 seismic upgrade projects. We continue to question the need for the additional \$221 million and reaffirm our recommendation.

FEMA's response to the draft audit report is included as Appendix V.

OTHER MATTERS

Hospitals participating in the SHMPH also are receiving other FEMA grants, including grants for debris clearance, emergency protective measures, and buildings and equipment. Exhibit D shows non-SHMPH DSRs approved for these hospitals. Funds obligated for repairs or A&E costs for SHMPH buildings will not be deducted from SHMPH grants if the work was executed on or before March 4, 1996, the date when the SHMPH was formalized. Otherwise, FEMA will deobligate those funds or deduct them from SHMPH funding. The rationale for allowing hospitals to keep those funds was that some hospitals had already done significant repairs. Any deduction for repairs would reduce the funds for mitigation work.

Exhibit D
Non-SHMPH FEMA Grants to Participating Hospitals
(Excludes Section 404 Grants)

Hospital	Non-SHMPH DSRs ⁽¹⁾ (in thousands)
Cedars-Sinai	\$ 13,724
Childrens	765
City of Hope	186
Glendale	985
Granada Hills	1,547
Kaiser Foundation	8,067
LAC / USC	47,142
Mercy	555
Northridge	25,348
Orthopaedic	114
Queen of Angels	248
San Fernando	47
Santa Monica	6,435
St. John's	82,973
St. Josephs	5,307
UCLA	4,546
Valley	3,511
White Memorial	160
Total	\$ 201,660

(1) Includes only DSRs for large projects. According to FEMA regulations, a large project costs \$42,400 or more and a small project costs less than \$42,400.

APPENDIX I

Letter from Senator Christopher S. "Kit" Bond, Chairman, Subcommittee on VA, HUD, and Independent Agencies of the Senate Committee on Appropriations, to Mr. George Opfer, Inspector General, Federal Emergency Management Agency

TED STEVENS, ALASKA, CHAIRMAN
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BOB HARKIN, IOWA
BARBARA A. WELLS, MARYLAND
HARRY REID, NEVADA
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STEVEN J. EDWARDS, STAFF DIRECTOR
JAMES H. ENGLISH, MINORITY STAFF DIRECTOR

United States Senate
COMMITTEE ON APPROPRIATIONS
WASHINGTON, DC 20510-6025

March 31, 1997

Mr. George Opfer *Handwritten initials*
Inspector General
Federal Emergency Management Agency
500 C Street, S.W.
Washington, DC 20472

Dear Mr. Opfer:

As Chairman of the Subcommittee with oversight for FEMA funding, I am a strong advocate of controlling disaster spending. In this respect, I am concerned about the significant amount of money being targeted for assistance to hospitals and critical care facilities in California under the Seismic Hazard Mitigation Program (SHMP) which was developed after the Northridge earthquake. The SHMP is a new approach being tested by FEMA to calculate estimates for damages that were formerly made under the Disaster Survey Report process. Under the program, the funding level is determined through use of a formula, known as the algorithm. The algorithm provides for both repairs and seismic mitigation under Section 406 of the Stafford Act.

I understand that a least \$2 billion will be provided to 22 hospitals for repairs and seismic mitigation under Section 406. It is also my understanding that an additional \$200 million will be provided from Section 404 mitigation funds. The significance of these amounts seems to suggest that use of the algorithm may increase disaster costs as compared with the Disaster Survey Report process.

In view of the magnitude of assistance being provided to these hospitals and the novelty of the program for determining amounts of assistance, I am writing to request that you undertake a review of FEMA's implementation of the SHMP. In particular, please examine (1) FEMA's plans for future use of the algorithm concept and the impact its use will have on disaster costs, (2) the process used to arrive at the damage estimates for the hospitals in California to ensure that the estimates are reasonable and in accord with the SHMP guidelines, and (3) the rationale for providing Section 404 mitigation funds and the intended use of those funds.

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Mr. George Opher.
Page Two

I appreciate your prompt attention to this request. Should you have questions, please contact Carrie Apostolou of the Subcommittee staff at (202) 224-7238.

Sincerely,

A handwritten signature in black ink that reads "Kit Bond". The signature is written in a cursive, slightly slanted style.

Christopher S. "Kit" Bond
Chairman
VA, HUD and Independent Agencies
Subcommittee

APPENDIX II

Hospital Names As Used in Report

FULL NAME OF HOSPITAL	AS USED IN REPORT
Cedars-Sinai Medical Center	Cedars-Sinai
Childrens Hospital of Los Angeles	Childrens
City of Hope National Medical Center	City of Hope
Glendale Adventist Medical Center	Glendale
International Philanthropic Hospital Foundation aka Granada Hills Community Hospital	Granada Hills
Kaiser Foundation Hospitals (3 Campuses)	Kaiser Kaiser (Sunset)(1)
Los Angeles County/University of Southern California Medical Center	LAC/USC
Mercy Healthcare Ventura County	Mercy
Northridge Hospital Medical Center	Northridge
Orthopaedic Hospital	Orthopaedic
Queen of Angels-Hollywood Presbyterian Medical Center	Queen of Angels
San Fernando Community Hospital (2 Campuses)	San Fernando
Santa Monica Hospital Medical Center	Santa Monica
Simi Valley Hospital and Healthcare Services (2)	Simi Valley
St. John's Hospital and Health Center	St. John's
Sisters of Providence in California St. Joseph Medical Center	St. Joseph
University of California Los Angeles Center for the Health Sciences	UCLA
Valley Presbyterian Hospital	Valley
White Memorial Medical Center	White Memorial

- (1) Kaiser (Sunset) is currently being evaluated for participation in the SHMPH.
(2) Simi Valley is currently being evaluated for participation in the SHMPH.

APPENDIX III

Chronology of Significant Events

<u>DATE</u>	<u>EVENT</u>
Jan. 1994	Northridge Earthquake
Mar. 1994	Expediting Infrastructure Grants (DR-1008-CA) Memorandum of Understanding (MOU between FEMA and the California Governor's Office of Emergency Services)
Mar. 1994	Policy on Repairing Hospitals And Skilled Nursing Facilities Damaged by Northridge Earthquake (Precursor to PIN 3)
Jul. 1994	Policy Intent Notice Number 3 - Policy on Repairing Hospitals and Skilled Nursing Facilities Damaged by Earthquakes
Apr. 1995	Appeal to the Regional Director of FEMA Region IX, County of Los Angeles Appeal from Revised Damage Survey Report #37276, Psychiatric Hospital, LAC+USC Medical Center
Aug. 1995	Development of algorithm starts
Sep. 1995	PIN 3 adopted into code
Oct. 1995	FEMA First Appeal Response Findings for Los Angeles County/University of Southern California
Oct. 1995	Discussions with prototypes begin
Mar. 1996	Grant offers made to prototypes
Mar. 1996	Letter from four Members of Congress to the Honorable James Lee Witt requesting that the Earthquake Engineering Research Institute (EERI) conduct an independent evaluation of the UCLA Center for Health Sciences

APPENDIX III – Page 2

Jul. 1996	Independent Review Panel Report on Application of FEMA's "Seismic Hazard Mitigation Program for Hospitals" to The UCLA/Center for Health Sciences
Oct. 1996	Letter from James L. Witt, Director, to EERI requesting that the independent panel answer the question whether

Oct. 1996	four buildings needed to be structurally upgraded to achieve immediate occupancy level in the rest of the qualifying hospital facility. Independent Review Panel's Response to An Additional Question Posed on The Application of FEMA's "Seismic Hazard Mitigation Program for Hospitals" as It Pertains to The UCLA Center for Health Sciences
Nov. 1996	FEMA's functional use guidelines formalized
Mar. 1997	SHMPH application period ends for hospitals
Mar. 1997	Letter from Senator Christopher S. "Kit" Bond to Mr. George Opfer requesting a review of the SHMPH by FEMA's Office of Inspector General

APPENDIX IV

Memorandum from Lacy E. Suiter, Executive Associate Director, Response and Recovery
Directorate, FEMA

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2

**I hope that this answers Senator Bond's question concerning future use of the algorithm.
If you should need any further information, please do not hesitate to contact me on
extension x3692.**

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APPENDIX V

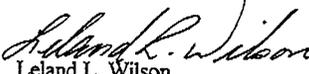
FEMA's Response to OIG Draft Audit Report



Federal Emergency Management Agency
Northridge Long-Term Recovery Area Office
P.O. Box 6020
Pasadena, CA 91102-6020
Telephone: (818) 431-3722 Fax: (818) 431-3892

August 28, 1997

MEMORANDUM FOR: Nancy L. Hendricks
Assistant Inspector General
for Audit

FROM: 
Leland L. Wilson
Federal Coordinating Officer
Northridge Earthquake

SUBJECT: Draft Audit Report on FEMA's Seismic Hazard Mitigation
Program for Hospitals Damaged by the Northridge Earthquake

Attached is our response to the draft audit report that you provided to us. As you can see, we have given it considerable thought and review. If you have questions on our reply, please contact me at the Northridge DFO or Brian Cowan in the Headquarters office.

I would also like to take this opportunity to express my appreciation for the professionalism of your staff in the conduct of this audit. They reflected well on your organization.

cc: Lacy Suiter

Overview Comments on Draft Audit Report

The Northridge earthquake was the single largest disaster FEMA faced in the last 4 years. The magnitude of the impact this earthquake had on a major metropolitan area raised new issues and required creative and innovative solutions to hasten recovery. The Seismic Hazard Mitigation Program for Hospitals (*SHMPH* or the *Program*) is one such solution.

The Inspector General's report does not dispute the factors that led FEMA to formulate the Program and implement it. FEMA knew, in light of the seismic hazard in the area, that the hospitals would be affected by another major earthquake. Mitigation expenses are critical where it is not a question of if, but when. Secondly, the criticality of hospitals in an earthquake disaster is enormous. Hospitals must not only be available to help victims, but must also not be the sites of disasters themselves. As we experienced in the San Fernando earthquake of 1971, collapsed hospitals have tragic ripple effects throughout a community. And third, the Damage Survey Report process, judging from the Agency's experience after the Loma Prieta earthquake, was likely to be protracted, involving three levels of appeals and causing antagonistic relationships with the State, the localities, and the non-profit organizations. The contentious atmosphere can be attributed as much to the unique nature of earthquakes and their effects on buildings, as it can to any other aspect of dispute resolution under FEMA's disaster assistance programs.

Due to the unique and pioneering aspects of some of the fundamental concepts of the Program, it was discussed with a range of organizations and individuals. These included the FEMA Office of the General Counsel, FEMA Office of the Inspector General, members of appropriations committees of the Congress and other members, State of California emergency services officials, and the four prototype hospital owners. Each group gave FEMA support and encouragement to go forward. Members of Congress, for example, wrote to the FEMA Director on March 21, 1996 in order to request a review of the application of the Program to the UCLA Center for Health Sciences. In that letter the Members wrote "...we applaud you for developing the mitigation algorithm...we believe that algorithm is a positive and creative approach to expedite much needed mitigation..." Similar comments have been made by all that have reviewed the Program and its aspects.

As with any new approach, ongoing review and evaluation during implementation is warranted and provides opportunity to improve and refine the evolving process. In this context we welcome the chance to address the issues raised in the Inspector General's draft audit report.

It is worth noting that the Program can and is making positive contributions to both the Northridge recovery and the delivery of programs under the Stafford Act. There are three major advantages that are being gleaned from the implementation of the Program:

1. It makes the program actions under the Stafford Act that are construction oriented more consistent with the standard cost estimation practices of the industry and more

objective in the identification of eligible funding for the priority earthquake mitigation projects in the Northridge disaster area. The simplified method it employs for determining the amount of funds for each mitigation project, and the flexibility of the Program to provide for Applicant implementation of the mitigation construction, have been recognized as strong points.

2. It addresses the critical life and public health needs of the southern California region that are being threatened by the unpredictable and devastating earthquake hazard. Functioning acute hospital care is vital for the welfare of the citizens of an earthquake disaster area. As is well documented in news reports, the Northridge earthquake left hospitals using parking lots to treat patients. The Program provides funds for increasing the seismic resistance of older, vulnerable hospital buildings to a level that will ensure their continued operation after the next major earthquake in southern California; and
3. It serves as an effective pilot for methods that can ultimately improve the delivery of infrastructure recovery programs under the Stafford Act. In fact, some of the same programmatic concepts of the Program are now being tested for the Northridge earthquake disaster area for simplifying the delivery of disaster public assistance. This "grant acceleration program" has been looked at favorably by grants management staff and experts.

As with any new program, the development of the SHMPH exposed several policy issues that require greater attention and resolution. The draft audit highlighted several of these areas:

- The need for a policy on the application of Section 406 mitigation in a non-crisis atmosphere;
- The need for an improved definition of the difference between Sections 404 and 406 authorities in the funding of mitigation projects; and
- A better coordination among FEMA staff administering these 404 and 406 mitigation programs.

Specific Comments on Draft Audit Report

Future Use of the SHMPH and its Impact on Disaster Costs

Future Use of SHMPH Type Programs

The level of earthquake hazard in Southern California is extremely high. The southern California region is crisscrossed with earthquake faults. There is a very real potential for

an earthquake with far more devastating results than the Northridge event. The degree of exposure to losses is also very high. Over 16 million people reside within the greater Los Angeles area—approximately 9 million of those live in Los Angeles County. In such a high hazard, densely populated area, the requirement to treat individuals who may be injured in a future earthquake event are significant. Recognizing this, FEMA has determined that seismic mitigation for hospitals in this region is absolutely critical.

To demonstrate the potential impacts of an earthquake and thus the potential need for future use of SHMPH type programs, we used a recently developed earthquake loss estimation tool, HAZUS (Hazards U.S.). In the event scenario, a magnitude 6.9 earthquake on the Verdugo fault¹, HAZUS estimates that 54,000 people would be injured and 1000 would be killed. All of the 54,000 injured people are victims potentially needing medical attention and 9000 of this number would also require hospitalization². Clearly there would be a large demand for medical facilities. We also used the model to estimate the improvement in performance for the kinds of hospitals eligible under the SHMPH. Looking exclusively at upgraded pre-1970 hospital buildings, zero rather than 3 would experience complete damage, 2 rather than 8 would experience extensive damage and 13 rather than 17 would experience moderate damage.

Moreover, we can expect hospitals upgraded or replaced in accordance with SHMPH to perform better than HAZUS conservatively estimates. This can be illustrated by the performance of the Los Angeles County Olive View Hospital. This hospital had complete damage from a 1971 earthquake. It was demolished and replaced by a new hospital in 1976. This new hospital withstood severe earthquake shaking³ during the Northridge earthquake. Hospitals built to the SHMPH level of construction should perform at a level equal to or better than the Olive View Hospital.

In addition, the long term cost savings from the SHMPH should not be calculated in terms of one earthquake event. Several such earthquakes are envisaged over the next fifty years. Still, the assessment of the potential consequences of one postulated future earthquake in the Los Angeles area clearly substantiates FEMA's conclusion that mitigation of pre-1973 hospital buildings through SHMPH is a wise and prudent use of public funds. The use of a program similar to the SHMPH in the future should depend on the degree of hazard and risk, and the projected benefits of feasible mitigation strategies.

¹ Comparable in magnitude to the Northridge event but with an epicenter closer to the populated region.

² As a comparison, the Northridge earthquake which caused an estimated 12,000 injuries, with 1,000 of these requiring hospitalization, severely strained the area's medical treatment capacity. Fifty-seven deaths were reported.

³ Horizontal accelerations of 0.9 times the force of gravity at its base and 1.7 times the force of gravity at its roof. The hospital building was briefly evacuated due to a loss of municipal water supply and water damage caused by broken pipes and a damaged fire sprinkler branch line, but did not suffer significant structural damage.

Impact on Disaster Costs

The IG Draft Report reaches conflicting, ambiguous and, in FEMA's view, inaccurate conclusions on the impact of the SHMPH on disaster costs. The difficulty arises both from the complexity of cost estimation in seismic hazard related actions and from the difference between disaster recovery costs and mitigation costs. Exhibit B clearly evidences this fault:

- The first column of numbers, the FEMA initial cost estimate, which totals about \$70M for the four prototypes, does not include damage that would be discovered during the repair construction as is usually the case in earthquake damaged facilities. In addition, costs for code and standards upgrades, building permits, inspections, contractor overhead and profit, inflation to mid-point of construction, etc are not traditionally included in FEMA's initial cost estimates. These estimates are clearly a lower bound, and are generated initially with that purpose in mind. These particular estimates were even more preliminary in nature since the Program was put in place before the usual process of more detailed cost estimates was undertaken. These estimate numbers do not reflect Section 406 mitigation, and it is highly likely that pre-1973 vulnerable hospital buildings would have received mitigation funds absent the SHMPH.
- The second column of numbers lists the Program amounts. These are Section 406 mitigation values with the non-federal ten percent cost share included; and
- The applicants' estimates for repairs (i.e., prior to implementation of the hospital Program) are given in the third column of numbers, which totals more than \$2,000 million. Most of these estimates include hospital replacement projects "triggered" by Applicant's code upgrade costs. Architectural and Engineering firms prepare the applicant's interpretations⁴.

FEMA believes the SHMPH has had a minimal effect on the overall cost impact of the disaster recovery. The enhanced life safety and functionality of these hospitals in future earthquakes support any increased costs. More importantly, the SHMPH has significantly shortened the time necessary to deliver the Federal support to these hospitals. Based upon past experience with large projects in the standard DSR process subjected to third level appeals, it would not be surprising if the Federal cost for the facilities listed in IG Draft Report (Exhibit B) would be close to about \$1 billion, or about half of the applicants' interpretations. This needs to be compared with the \$888 million for these facilities under SHMPH. Moreover, this \$1 billion decision would be reached

⁴ The California Office of Emergency Services usually supports these interpretations. In addition, these interpretations generally become the State's position when there are appeals with respect eligible costs under the Stafford Act for repair, etc.

after many years of bitter appeals and appeals reviews, and with no construction underway.

Process Used to Ensure that Grant Awards Were Reasonable.

FEMA disagrees that the process followed before and after the SHMPH does not provide adequate assurance that the costs were either warranted or reasonable. SHMPH is primarily a mitigation program whose target is the immediate occupancy of vulnerable acute care hospitals damaged by the Northridge earthquake. The development of the dollar per square foot costs as described below clearly shows that they are credible and reasonable. The postulated scenario earthquake at one location in the Los Angeles basin described above also demonstrates that this Program to mitigate the earthquake vulnerability of acute care hospitals in this region was both wise and prudent use of Federal disaster funds.

Base Dollar/SF Amount of SHMPH

All of the parties involved with the SHMPH development, including congressional members, agreed that the appropriate goal for acute care hospital mitigation should be immediate occupancy, rather than just life safety. The reasons for this agreement have already been cited: hospitals need to be functioning if they are to be a part of the disaster response. Seismic upgrade work of older existing buildings, in order to have them achieve immediate occupancy performance capability, depends significantly on the type of structure, its functions, the initial design and construction quality, and its maintenance to the present date. The cost of complete seismic upgrades of severely deficient buildings can exceed the cost of building a comparable new building. The algorithm used to establish the dollar per square foot basis for the SHMPH funding is based on professional assessment, evaluation, and review of 2088 seismic upgrade projects. This professionally established procedure to determine seismic upgrade cost estimates was followed, judicious application of the variables which impact the Program allowable cost was carried out by the FEMA Program development team, and the final product was reviewed by California OES and the prototype hospitals. Utilizing such an extensive database, and subjecting the results to review by potential users gives us considerable confidence that the dollar per square foot figures reached are credible and reasonable.

The IG Draft Report used national average hospital construction costs and applied a local cost adjustment factor for the local construction costs to estimate costs for new hospital buildings in southern California. This resulted in a cost range of \$106 to \$238 per square foot. This approach does not include the additional costs associated with satisfying the seismic design and performance requirements regulated by the California Office of Statewide Planning and Development (OSHPD). These increased costs may be only a few percentage points for the structural system, but the added costs for supports of the mechanical, electrical, plumbing, and utility services are significantly more. Assuming a ten-percent differential, the southern California new hospital costs could range from \$117

to \$262 per square foot. The SHMPH allowance for seismic upgrading (excluding relocation costs) of \$207 per square foot (see item 3 below) falls within the range of expected new building costs (just above the mean cost). This comparison provides additional evidence that the Program funding dollar per square foot values are credible and reasonable.

Functional Test

FEMA is aware of no instance in which the prototype hospitals were treated and analyzed in an inconsistent or unequal manner. We are aware of an instance in which one of the hospitals questioned the application of the SHMPH guidelines to its facility. In that case, an independent panel provided a resolution to the dispute. As mentioned previously, there is a very complex nature to seismic programs and to the measures that can be taken to address their risks. These were at the root of the dispute. The suggestion of an independent expert panel to provide an alternative approach to resolving the dispute was accepted by FEMA and the prototype hospital. The impact of the resolution on the other hospitals was also implemented.

The evaluation of the medical usage of the four prototype hospitals was not conducted with the assistance of an engineer or architect who was experienced in the health and medical field. It is fair to indicate that the differing analyses of functionality would have been, at least, diminished had such expertise been available for the prototypes. FEMA will seek to include such expertise in the future. The independent panel cited above did include that expertise and its conclusions with respect to the functionality of hospital buildings were generally reflected in the resolution settlement.

The evaluation of space usage for the prototype hospitals may not have been adequate as compared to procedures developed in the ensuing months, but the evaluation was carried out with a team of employees, including experienced construction and earthquake engineers. The four prototype hospitals were of varying sizes in order to provide a range of potential application of the Program. The four prototype hospitals worked closely with the FEMA team during the development of the Program requirements. Acute care functional analysis data were less carefully documented during Program development since the focus was on broad eligibility issues. After the Program was established the eligibility determinations were specified and the decision process included precise data analyses. It was not apparent that revisits to the four prototype hospitals were necessary at that later date.

Rationale for Section 404 Mitigation Awards.

Normally, there is little conflict between cost effective mitigation measures funded under Section 406 (which is limited to structures damaged in a declared disaster) and Section 404 (which is limited to 15% of total disaster funding, including 406). In this case, confusion arose because the mitigation expenses required by damaged hospitals were so

substantial. Shortly after the Northridge earthquake, it became clear that the amount of Section 404 eligible work on the hospitals would far exceed the availability of 404 funds. In the development of the Program, FEMA also recognized that, using only 406 funds would trigger an additional 15% pool of 404 funds. FEMA chose to combine Section 404 and 406 mitigation funds in order to achieve a reasonable total funding level for the hospital mitigation measures. Since it was sensible from a construction engineering perspective to avoid the need to identify and execute separate 404 and 406 eligible work products, SHMPH implementation envisaged the use of a common statement of eligible work for the combination of 404 and 406 eligibility. Reimbursement for all eligible work would be taken proportionally from each fund as the project construction progressed and its eligible costs were reimbursed. This simplifies data recording and subsequent auditing of eligible expenses.

A desire for definitive differences between the 404 and 406 mitigation eligible work and a concern for potential inadvertent duplication of eligible reimbursements have been expressed in the IG Draft Report. This together with the recognition that administration of the Program could be simplified by using only 406 funds leads to the conclusion that the entire Program should be funded through Section 406. The State of California, while fully supporting the SHMPH, expressed a desire during the Program development to keep SHMPH 404 funds to support the Program within Section 406. In order to avoid duplication of funding they suggested that if this were done, Section 404 funds accrued from Section 406 SHMPH expenditures should be subtracted from the available DR-1008-CA Section 404-fund balance. Implementation of this would take the current 404 Federal share and add it to the current 406 Federal share to establish the new 406 Federal share. The result is no change in Federal funds for SHMPH. In addition, FEMA will ensure that the procedure is such that the 404 funds earned from the SHMPH 406 program will be subtracted from the 404-fund balance.

Conclusions and Recommendations

1. FEMA agrees that it should establish a Policy for application of Section 406 mitigation initiatives. This shall receive prompt attention. Implementation of a comprehensively effective policy may require modification of the Stafford Act.
2. FEMA feels that the time and effort necessary to reassess the functionality of all potentially eligible acute care hospital buildings is not sufficiently beneficial to disrupt the ongoing program.
3. FEMA agrees to relook collapsing the 404 portion of this program into the 406 portion in such a manner that there is a zero net change in the Federal share of the program.

Recommended Editorial Changes to IG Draft

Circumstances Leading to Development of the SHMPH. Reword the 4th paragraph from the end to read: The SHMPH established a constant eligible seismic upgrade cost reimbursement for all hospitals without inclusion of damage or complexity factors. FEMA engineers anticipated that damage at hospitals participating in the SHMPH would have already repaired the damage or the damage would have been so minimal that the repairs could be subsumed by the upgrade work. . . . The standard DSR process offered hospitals reimbursement of actual repair costs and code upgrades . . .

Results of Audit, paragraphs 3 and 4: delete these paragraphs as not responsive to Senator Bond's request for the IG review.

Results of Audit, 1. Future Use, Impact on Disaster Costs, 1st paragraph: Correct \$888 million to \$821 million

Results of Audit, 2. Process Used, 4th paragraph, line one: insert "first appeal" to read "FEMA's response to the LAC/USC Psychiatric Hospital first appeal demonstrates . . ."

Results of Audit, 2. Process Used, Functional Test, 5th paragraph [first bullet]: The inclusion of these four buildings was at damage control, not immediate occupancy.

Results of Audit, 3. Rationale for Providing, 6th paragraph: The paragraph which starts "Several hospitals are considering improved projects . . ." needs to be restructured for clarity. The intent of the current version is not clear.

Exhibit format: Exhibit A provides data in \$1,000 increments; Exhibit B provides data in \$1,000,000 increments; and Exhibit D provides data in \$1 increments. All exhibits should use the same data format.