

SEISMIC SAFETY & DISASTER READINESS

**CALIFORNIA STATE UNIVERSITY,
POMONA**

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ABBREVIATIONS

BOT	Board of Trustees, The California State University
CCR	California Code of Regulations
CPB&G	Committee on Campus Planning, Buildings and Grounds, CSU Board of Trustees
CSTI	California Specialized Training Institute in San Luis Obispo
CSU	California State University
CSPU	California State Polytechnic University
DRP	Disaster Recovery Plan
EH&S	Environmental Health and Safety
EMEP	Earthquake/Major Emergency Preparedness – (a CSU task force formed in spring 1985 and disbanded in 1990)
EO	Executive Orders from the Chancellor
EOC	Emergency Operations Center
FEMA	Federal Emergency Management Agency
ICS	Incident Command System protocols required by SEMS regulations
IS	Information Systems
OES	Office of Emergency Services, State of California - Governor's Office
PP&D	Physical Planning and Development, Chancellor's Office
SEMS	Standardized Emergency Management System regulations issued by OES in September 1994
SRB	Seismic Review Board of The CSU formed in 1992
UPS	Uninterruptible Power Supply

INTRODUCTION

PURPOSE

Our overall audit objective was to furnish an independent appraisal of the seismic safety and disaster readiness functions (including violence prevention), to ascertain compliance with established policies and procedures, to determine adequacy of internal controls, and to identify opportunities for operational improvements which would help better achieve goals and objectives.

Within the overall audit objective, specific goals included determining whether:

- ▶ necessary seismic retrofitting has been done so facilities meet the relevant building standards in Title 24 of the California Code of Regulations;
- ▶ new construction complies with Board of Trustee policy for seismic peer review (RCPBG 05-93-13);
- ▶ reasonable facility measures for disaster avoidance and prevention have been implemented, e.g., anchoring unsecured furniture and equipment or providing for fire suppression - automatic sprinklers and portable extinguishers;
- ▶ there has been coordinated campuswide planning and preparation for disaster preparedness and response, development and promulgation of sound plans and strategies, and continued vigilance to maintain and update plans;
- ▶ campuses have effective response capabilities to the most probable incidents that may affect the safety of personnel, damage assets, or cause significant business interruption;
- ▶ buildings can be evacuated during disasters/emergencies;
- ▶ reasonable provisions have been made for the availability of equipment, information systems, records, supplies, and trained personnel when needed; and
- ▶ tests/exercises have been conducted to prove plan viability and identify deficiencies or weaknesses in response instructions.

SCOPE AND METHODOLOGY

The review emphasized but was not limited to compliance with state laws, Board of Trustee policy, and Chancellor's Office and campus policies, letters, and directives.

Various campus functions and offices were involved including, for example, facilities management, environmental health and safety, public safety, student health center and computer center. Auxiliary organizations were generally excluded from the audit except for the seismic safety of buildings that they occupy which have been prioritized by CSU's Seismic Review Board for retrofitting.

The 1995/96 and 1996/97 fiscal years were the primary periods reviewed for disaster preparedness and planning. However, other earlier years were also included as needed, in part, because the seismic safety action plan for the system dates back to the Board of Trustees resolution in May 1993.

During the course of the audit, we:

- ▶ interviewed responsible personnel;
- ▶ inspected certain facilities such as the emergency operations center, the computer center, and telephone switch rooms;
- ▶ reviewed various plans and documents;
- ▶ examined emergency equipment and supplies; and
- ▶ tested selected devices and features integral to the campus system for disaster mitigation, preparedness, response and recovery.

BACKGROUND

As indicated in the May 1993 Agenda Item 7 of the Board of Trustees' Committee on Campus Planning, Buildings and Grounds, the CSU relies upon the requirements of Title 24 of the California Code of Regulations (CCR) for seismic safety building standards. From a structural standpoint, the CSU has been specifically involved in a seismic retrofitting program since 1992. In the 1992/93 Budget Act, funds were provided for seismic reviews of CSU facilities. In implementing this program, the CSU formed a Seismic Review Board (SRB) which has been active with essentially the same membership since its original formation. The focus of this program has been to identify and mitigate the highest life safety risks. Part of the program has been for the SRB to rank order facilities on the degree of seismic risk, subject the highest risks to further engineering investigation and, if warranted, capital outlay retrofit projects. The resolution of the committee in May 1993 (RCPBG 05-93-13) also provided for independent technical peer reviews of the seismic aspects of all construction projects from their design initiation, including both new construction and remodeling.

Appendix I_a of the 7/19/95 Report of the Ad Hoc Committee on Emergency Preparedness contains a recent history of emergency planning in the CSU. This report indicates that much of what is in place within the CSU at the current time can be traced to the Task Force on Earthquake/Emergency Preparedness

INTRODUCTION

(EMEP) formed in the spring of 1985. The EMEP Task Force was instrumental in development of Executive Order (EO) 524 issued April 5, 1988. While this EO is dated, it is still in effect as systemwide policy.

In April 1994 (approximately three months after the Northridge earthquake), the CSU convened the Ad Hoc Emergency Preparedness Committee. The July 19, 1995 report of the committee was circulated to the campuses but not implemented on a systemwide basis.

In September 1994, the governor's Office of Emergency Services issued "new Standardized Emergency Management System (SEMS) regulations with which the CSU and all other state agencies as well as local governments and special districts must comply."

Disaster readiness terminology varies. Disaster is associated with emergency management or emergency operations and sometimes with other terms such as business continuity. The "3 R's" of business continuity planning have been described as readiness, recovery, and restoration and defined as follows:

READINESS

- Disaster Prevention and Avoidance
- Emergency Preparedness
- Corporate-wide Planning
- Business Unit Recovery Planning

RECOVERY

- Incident Management and Initial Recovery

RESTORATION

- Long-term Business Recovery

OPINION

We visited the California State Polytechnic University, Pomona campus from November 13, 1997 to January 9, 1998 and reviewed the seismic safety and disaster readiness functions in effect at that time.

We found that most structural hazards posing the highest life safety risk have been retrofitted and that buildings are reevaluated as needed and new construction has been subjected to independent technical peer review for seismic safety. Various actions have been taken to address non-structural falling hazards. Some specific improvements to environmental controls in the computer center, the uninterruptible power supply (UPS) room and the telecommunications switching rooms are recommended.

We further conclude that the campus has drafted an emergency operations plan with provisions such as an emergency operations center (EOC) and integrated team structure as required by state Standardized

Emergency Management Regulations. Required evacuations drill with concomitant evaluations of successes and failures have taken place. However, it is our opinion that the plan and the degree of preparedness require improvements in several areas. These deficiencies are addressed in both the executive summary below and in the body of the report.

EXECUTIVE SUMMARY

The purpose of this section is to provide management with an overview of conditions requiring their attention. Areas of review not mentioned in this section were found to be satisfactory. Numbers in brackets [] refer to page numbers in the report.

ENVIRONMENTAL AND FACILITY CONTROLS

FIRE SUPPRESSION SYSTEMS [6]

Water alternate fire suppression systems were not used in at least three areas containing sensitive data and equipment.. Installing alternate fire suppression systems in these locations could save the campus from significant financial losses resulting from water to sensitive computing and telecommunication equipment.

WATER INTRUSION DETECTORS [7]

The campus had not installed water sensors in two primary telecommunications switching rooms and in the data center universal power supply room. The use of water detectors with remote notification alarms help ensure timely response and reduces the risk of equipment damage and disruption of telecommunications and data communications operation on campus.

DISASTER PLANNING

NEW EMPLOYEE ORIENTATION [7]

New employees were not receiving orientation on the emergency action plan for the campus. Such orientation reduces the exposure of new employees to unnecessary safety risks and mitigates potential legal liabilities for the campus.

PLAN APPROVAL [8]

There was no written approval of the campus Emergency Management Plan by the campus president or his designee. Approval by campus administration signifies both endorsement and commitment to emergency planning.

PLAN UPDATING [8]

The campus Emergency Management Plan was not up to date. The plan was last revised in May of 1989. Timely updates will help assure the effective deployment of disaster response resources.

ALTERNATE SITE PROCESSING [9]

Formal written arrangements for an alternate computer-processing site had not been made. Securing an alternative-processing site before a disaster occurs will help ensure that a suitable site is available and reduces the time it takes to restore and resume computer operations after a disaster.

PLAN VALIDATION AND MAINTENANCE

REGISTERING VOLUNTEERS [10]

The campus did not have the authority to register disaster service worker volunteers. Obtaining this authority will clarify questions of liability.

EMERGENCY GENERATORS [10]

The campus records documenting inspections and maintenance of backup generators were not up-to-date. Documenting and retaining inspections and maintenance records of backup generators assures their proper functioning.

TAPE BACKUPS [11]

Weekly backup tapes for academic and administrative applications and data were kept in the computer room three to four days before being transferred to an on campus storage site. Temporary storage of backup records outside of the data center minimizes the risk of both data and hardware loss and the disruption of campus operations.

OBSERVATIONS, RECOMMENDATIONS, AND CAMPUS RESPONSES

ENVIRONMENTAL AND FACILITY CONTROLS

FIRE SUPPRESSION SYSTEMS

Water alternate fire suppression systems were not used in at least three areas containing sensitive data and equipment.

Overhead water sprinklers were installed in the campus data center, in the data center room for the universal power supply (UPS), and in the telecommunication switching room.

Alternate fire suppressions systems, such as Heptafloro Propane commonly referred to as FM200 and Inergen heavy gas systems are available. These systems are designed specifically for use around sensitive data processing and telecommunication equipment.

Instructional and Information Technology staff stated that during the construction of the new administration building several change order requests were made to remove the water sprinklers from the computer room but the requests were denied. The campus has not explored alternate fire suppression systems because damage to equipment and data is anticipated to be minimal.

The campus may be exposed to damage or losses to its computing equipment and interruption of its operations by not installing an alternate fire suppression system.

Recommendation 1

We recommend that the campus analyze the risks of having overhead sprinklers in the data center, UPS, and telecommunication switching rooms and evaluate the potential cost and benefits of replacing that system with an alternate fire suppression system.

Campus Response

The campus concurs with the recommendation. Following is a summary of our reevaluation:

The overhead water sprinklers installed in the campus data center and in the telecommunications switching room are of the “dry” type and activate on a “nozzle-by-nozzle” basis as fire or other intense heat sources reach them. There are portable fire fighting extinguishers in each of these rooms that could be used by personnel to extinguish small fires. If the fires were not controllable by individuals present in the room the fire sprinkler systems would engage. Although there is some risk associated with the use of water on the equipment, the advantage of quickly extinguishing any fire is seen as a countervailing factor. The campus appreciates the potential risks but believes the system installed in

this relatively new building is consistent with codes and will perform with more reliability than an alternate fire suppressant system where health risks can be an issue.

WATER INTRUSION DETECTORS

The campus had not installed water sensors in two primary telecommunications switching rooms and in the data center universal power supply (UPS) room.

At each location, the equipment was located in the basement and was at risk of water intrusion. The rooms were not normally occupied, so water accumulations could go unnoticed until communications were disrupted.

The lack of water intrusion detection increases the risk of equipment damage and disruption of telecommunication and data communication capabilities on campus.

Recommendation 2

We recommend that water detectors with remote notification features be installed in the telecommunications switching rooms and the data center UPS room.

Campus Response

The campus concurs with the recommendation within three months the campus will have completed the installation of a system of water intrusion detectors in the telecommunications switching rooms (building 1 and building 98) and in the uninterruptible power supply room (building 98). These detectors will be integrated with a telephone dialing system so that telecommunications personnel and campus police will be notified as soon as minor amounts of water are detected.

DISASTER PLANNING

NEW EMPLOYEE ORIENTATION

New employees were not receiving orientation on the emergency action plan for the campus.

8CCR3220(e)(3) states:

The employer shall review with each employee upon initial assignment those parts of the plan which the employee must know to protect the employee in the event of an emergency.

The emergency services coordinator stated the campus human resources office provides a copy of the emergency plan to new employees and that building marshals were expected to provide orientation during evacuation drills.

The absence of orientation temporarily exposes new employees to unnecessary safety risks and creates potential legal liabilities for the campus in the window period between the hiring date and the next scheduled evacuation exercise.

Recommendation 3

We recommend that the campus incorporate information on the emergency action plan into the new employee orientation process.

Campus Response

We concur. The first phase of a New Employee Orientation is scheduled to be developed this spring and summer, with an implementation goal of September 1, 1998. Phase I includes an orientation to Cal Poly Pomona's disaster preparedness.

PLAN APPROVAL

There was no written approval of the campus Emergency Management Plan by the campus president or his designee.

Executive Order (EO) 524 delegate to the campus presidents the responsibility for maintenance and regular updating of the institution's plan but, it does not specifically require that the plan be approved by them. This EO further indicates that the emergency preparedness plan should "be regarded as a permanent and important element in the policy structure of the institution."

The vice president for administration stated that the campus executive cabinet had reviewed and concurred with the Emergency Management Plan. However, the document was not formally signed.

The absence of campus administration approval of the emergency operations plan may result in inconsistent actions by the various campus departments in executing their responsibilities.

Subsequent to the audit fieldwork, the campus provided documentation that he president had approved the existing plan.

PLAN UPDATING

The campus Emergency Management Plan was not up to date. The plan was last revised in May of 1989.

Executive Order (EO) 524 provides that the emergency preparedness plan developed by each CSU campus should be regarded as a permanent and important element in the policy structure of the institution and that is should be reviewed on a regular basis and amended to reflect changes in local circumstances.

The emergency services coordinator stated that she was in the process of updating the emergency management plan but, other campus matters needing her attention had delayed the updating effort.

Without an up-to-date emergency management plan, disaster response delays may occur, resulting in decreased effectiveness in the deployment of disaster response resources.

Recommendation 4

We recommend that the campus finalize the updating procedure for the Emergency Management Plan.

Campus Response

We concur with this recommendation and were in the process of updating our campuses' plan when this audit was conducted. The plan update has been completed.

ALTERNATE SITE PROCESSING

Formal written arrangements for an alternate computer-processing site had not been made.

The Interim Vice President for Instructional and Information Technology stated that there was no formal written agreement in place but, a verbal commitment existed with another CSU campus using similar computing software.

Without a formal written commitment, the campus faces extended downtime after a disaster due to the availability and compatibility of the alternate computer processing site.

Recommendation 5

We recommend that the campus evaluate the need for a formal written agreement for alternate site information processing.

Campus Response

We concur. With three months the campus will have written agreements for alternate site processing with several CSU SCT Banner campuses. These mutual aid agreements are the outgrowth of our ongoing efforts to share expertise across the system.

PLAN VALIDATION AND MAINTENANCE

REGISTERING VOLUNTEERS

The campus did not have the authority to register disaster service worker volunteers.

The State OES has a program for delegating authorization to register these volunteers thus providing access to workers compensation coverage if they are injured while performing disaster duties.

Section 3363.5 of the State Workers' Compensation Law provides that a person who performs voluntary service without pay for a public agency, as designated and authorized by the governing body of the agency or its designee, shall upon adoption of a resolution by the governing body of the agency so declaring, be deemed to be an employee of the agency. The person would then be covered under the worker compensation provisions if injured while performing volunteer services.

Section 3352.94 of the State Workers' Compensation Law excludes disaster service workers from the provisions of Section 3363.5.

The emergency services coordinator stated that the campus had not made a request to OES to register disaster services workers because, in her opinion, it was unnecessary; the campus automatically had that authority.

In the absence of OES authorization, the campus is exposed to potential liability resulting from injury to disaster service volunteers.

Subsequent to the audit fieldwork, the campus furnished a statement from the City of Pomona indicating that they had authority to register volunteers.

EMERGENCY GENERATORS

The campus records documenting inspections and maintenance of backup generators were not up-to-date.

Executive Order (EO) 524 delegates to the campus presidents the responsibility for ensuring that management activities are accomplished in support of multi-hazard emergency preparedness including:

Determination, acquisition and maintenance of facilities, equipment, and related supplies required for emergency preparedness contingent upon provision of the necessary state financial resources via the Office of the Chancellor.

Campus procedures call for monthly inspections and maintenance testing.

The manager of mechanical and building trades stated that because of the deferred maintenance system in place, the work was being done but not documented. He further stated that they were in the process of converting to a fully automated work order tracking system.

The campus risks backup generator failures from improper maintenance by not having documentation of planned inspections and periodic maintenance performed.

Subsequent to the audit fieldwork, the campus provided additional documentation that generator maintenance records had been updated.

TAPE BACKUPS

Weekly backup tapes for academic and administrative applications and data were kept in the computer room three to four days before being transferred to an on campus storage site.

According to the operations, systems and network analyst, the tapes were kept in the computer room as a matter of convenience.

In the event of a fire or other disaster, one week's worth of academic and financial data entered into the mainframe computer could be lost resulting in disruptions to operations and the cost and effort to recreate the data.

Recommendation 6

We recommend that daily backups be stored at a location outside of the main computer room.

Campus Response

We concur with this recommendation. The tape backups have been moved out of the data center to an adjacent room. A new tape storage cabinet is on order to provide a more secure environment.

APPENDIX A: PERSONNEL CONTACTED

<u>Name</u>	<u>Title</u>
Bob H. Suzuki	President
Calvin Allsup	Manager, Mechanical and Building Trades
Linda Bruner	Telecommunications Data Analyst
Patricia Chiappetta	Administrative Operations Analyst, Library
Stephanie Doda	Director, Telecommunications
Patricia Farris	Vice President for Administration
Gary Frederickson	Director, Student Health Center
Donald Green	Director, Procurement and Support Services
Edward Hohmann	Interim Vice President for Instructional and Information Technology
George Lwin	Associate Director, Facilities Management
Harmick Marcarian	Energy Services Manager
Chris McAlary	Director, Facilities Management
Debbie McFall	Emergency Services Coordinator
Alex Myerman	Operations, Systems, and Network Analyst
David Patterson	Director, Environmental Health and Safety
Gail Pipal	Director, Capital Planning and Project Development
Kimberly Plater	Chief of Police
Harold Schleifer	Director, Library
G. Paul Storey	Executive Director, Cal Poly Pomona Foundation