

SEISMIC SAFETY & DISASTER READINESS

SAN JOSE STATE UNIVERSITY

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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
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
EPO	Emergency Power-off
FEMA	Federal Emergency Management Agency
ICS	Incident Command System protocols required by SEMS regulations
IS	Information Systems
ISC	Information Systems & Computing, San Jose State University
OES	Office of Emergency Services, State of California - Governor’s Office
PP&D	Physical Planning and Development, Chancellor’s Office
SAM	State Administrative Manual
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, 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 campus-wide 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. The Moss

Landing facility was not addressed in the emergency management plan and was, therefore, excluded from this review. 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/Major Emergency Preparedness (EMEP) formed in the spring of 1985. The EMEP Task Force was instrumental in development of

INTRODUCTION

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 San Jose State University campus from June 16, 1997 to August 7, 1997 and reviewed the seismic safety and disaster readiness functions in effect at that time.

We found that the structural hazards posing the highest life safety risk have been retrofitted and that buildings are reevaluated as needed. Various actions have been taken to address non-structural hazards, but continued vigilance is warranted.

We further found that the campus has a central disaster/emergency plan with provisions such as an emergency operations center and integrated team structure as required by the state's Standardized Emergency Management Regulations. However, in our opinion, the plan and the degree of preparedness would be improved by increased involvement of academic personnel, campus-wide coordination of disaster related spending, and receipt and storage of vital records in the Emergency Operations Center. We also

recommend specific improvements to environmental controls in the various computer and telecommunications rooms. Areas needing improvement are found in the Executive Summary.

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 CONSIDERATIONS

SEISMIC BRACING [8]

The campus had not seismically braced all computing and voice and data communications equipment and all library shelving. Proper bracing would reduce the risk of injury, damage, and disruption of operations resulting from equipment falling over in an earthquake.

COMPUTER ROOM SMOKE DETECTORS [9]

Smoke detectors did not cover all areas of the main computer and telecommunications room. Areas below the raised floor, above the suspended ceiling, and in the operator control room were not covered. Installing additional smoke detectors will ensure that smoke is detected at the earliest possible time before the fire spreads to other areas.

WATER INTRUSION DETECTORS [9]

The ancillary telecommunications and data communications equipment rooms lacked water intrusion detectors. In the event of water leakage and intrusion into the ancillary telecommunications rooms, water detectors with remote notification alarms would help ensure timely response and reduce the risk of equipment damage and disruption of telecommunications and data communications operation on campus.

HALON SYSTEMS INSPECTION [10]

The Halon fire suppression systems in the computer room and the telecommunication switch rooms had not been inspected for over one year. Regular inspections of fire suppression equipment helps ensure that the systems will perform as intended in the event of a fire.

DISTRIBUTED DATA COMMUNICATIONS NODE SITES [10]

Basic environmental controls, such as power and air conditioning, were missing from the 50 small data communications nodes or sites that support the campus-wide network. Installing basic environmental controls in the sites with the greatest environmental risks and which contain the most critical equipment will reduce the risk of equipment damage and disruptions to operations caused by network downtime.

EMERGENCY POWER-OFF SWITCH [11]

The main computer room lacked an emergency power-off switch (EPO). Installing an EPO would help ensure that the power could be turned off quickly in the event of an electrical fire, water intrusion, or electrocution.

DISASTER PLANNING

NEW EMPLOYEE ORIENTATION [12]

New employees did not receive orientation on the campus emergency action plan. Such orientation would reduce the exposure of new employees to unnecessary safety risks and mitigate potential legal liabilities for the campus.

ACADEMIC INVOLVEMENT [12]

Involvement of the academic community in the campus disaster planning and recovery process was minimal. Involving the academic community in disaster planning and recovery increases the pool of human resources available for use in the event of a disaster.

UTILITY CUT-OFF LOCATIONS [13]

The Emergency Preparedness Coordinator had not received updated information on utility cut-off locations. The risk of additional hazards following a disaster is reduced when utility cut-off information is readily available.

EXPENDITURES [14]

The campus did not track or coordinate disaster readiness expenditures. Tracking and coordinating disaster readiness expenditures provides a system of control for these funds and related acquisitions.

PLAN APPROVAL [14]

We found no evidence that either the campuswide *Multi-Hazard Emergency Operations Plan* or any of the business unit plans had been approved by campus administration. Approval by campus administration signifies both endorsement and commitment to emergency planning.

EMERGENCY LOCATOR RECORDS [15]

Records indicating the locations of faculty, staff, and students by day and time of day were not maintained in the emergency operations center (EOC). Maintaining this information in printed form in the EOC would ensure the availability of this data in the event the computer system is down.

ISC DISASTER RISK ANALYSIS [15]

A disaster risk analysis for Information Systems and Computing (ISC) had not been performed. Performing a disaster risk analysis helps ensure that disaster planning efforts are directed at the most likely disaster scenarios affecting the most critical resources and operations of the university.

ALTERNATE SITE PROCESSING [16]

Arrangements to ensure that an alternate computer processing site is available in the event of a disaster had not been made. Securing an alternate processing site before a disaster occurs will help ensure that a suitable site is available and reduce the time it takes to restore and resume computer operations after a disaster.

ISC DISASTER RECOVERY PLAN (DRP) [17]

The DRP for Information Systems and Computing (ISC) had not been subject to any scheduled tests or training sessions. Periodic testing and training would validate the feasibility of recovery plan details and help ensure the efficiency and timeliness of recovery operations.

HALON SYSTEM TRAINING [17]

The ISC computer operations staff had not received recent training on proper procedure and criteria to abort the Halon fire suppression system. Training operations staff would help ensure that the system is aborted for false alarms or small fires before the Halon gas is released.

MULTI-HAZARD EMERGENCY OPERATIONS PLAN

VITAL RECORDS [18]

Several key areas of the campus were not backing up and storing vital records at an off-site location as indicated in the emergency management plan. Backup and storage at an off-site location minimizes the risk of disruption to campus operations.

ISC OPERATIONS DOCUMENTATION [18]

Data recovery procedures, network configuration, and other information that would be needed to restore operations in the event the computer center is destroyed were not completely documented and stored off-site. Maintaining this documentation at an off-site location would increase the timeliness and efficiency of recovery and resumption of Information Systems and Computing (ISC) operations should the original documentation stored in the computer center be destroyed.

ELECTRONIC RECORDS BACKUP

LOCATION OF MAINFRAME BACKUP RECORDS [19]

Daily and weekly backups were not being stored at a site sufficiently far enough from the mainframe computer. Storing backup copies of computer data at off-site locations will reduce the risk of data loss and the resulting disruption to operations and cost to recreate the data.

LOCATION OF TELECOMMUNICATIONS BACKUP RECORDS [20]

Backup tapes for the main telecommunications switch, the call accounting system, and the voice mail system were stored in the same room as the telecommunications equipment. Storing the backups at a remote location will reduce the risk that both the original data (stored in the equipment room) and the backup copies will be destroyed by the same disaster.

OBSERVATIONS, RECOMMENDATIONS, AND CAMPUS RESPONSES

ENVIRONMENTAL AND FACILITY CONTROLS

SEISMIC BRACING

The campus had neither seismically braced all computing and telecommunication equipment nor all library shelving.

A 1992 falling hazard seismic survey conducted at the campus noted the lack of seismic bracing in the Information Systems and Computing (ISC) center and Wahlquist Library North.

The senior director of the computer center stated that a new mainframe computer had been purchased and indicated that the seismic bracing could take place soon after the installation. Library management stated that funds made available to the campus for seismic bracing of shelving under minor capital outlay allocations in 1995-96 were inadequate. A study done in March of 1995 of the Wahlquist Library North estimated bracing and bracketing costs at \$155,000.

Without proper bracing, critical computer and telecommunication equipment could topple and be damaged in an earthquake. Tall equipment, racks, cabinets, and library shelving could fall on personnel or critical equipment or block access paths and prevent timely building evacuation.

Recommendation 1

We recommend that the campus install seismic bracing for all computing and telecommunication equipment and library shelving.

Campus Response

Network and Telecommunications Services will work with the Facilities Development and Operations department and intecom, our switch vendor and service provider. A list of computing and telecommunications equipment will be prepared along with a statement as to whether each needs to be braced and whether it is braced. A plan to accomplish this work will be completed by 7/1/98.

The Wahlquist Library North Building was part of the Chancellor's office Seismic Retrofit Project. At that time, the building was considered seismically correct. Facilities Development and operations will investigate additional seismic needs to determine if there are safety/code violations. If necessary, the University will take appropriate action.

COMPUTER ROOM SMOKE DETECTORS

Smoke detectors did not cover all areas of the main computer and telecommunications room. Areas below the raised floor, above the suspended ceiling, and in the operator control room were not covered.

The lack of smoke detectors in these locations could delay the detection of a fire and the emergency response, resulting in greater damage to equipment.

Recommendation 2

We recommend that at least two additional smoke detectors be added for the Halon fire suppression system in the computer center, one above the suspended ceiling and one below the raised floor of the main computer and telecommunications room. We recommend that at least two smoke detectors be installed in the operator control room section, one below the floor and one above. As this latter room is not covered by the Halon system, the detectors should be connected to the building wide fire alarm system.

Campus Response

We concur with this audit recommendation. Network and Telecommunications Services will work this through the Facilities Development and Operations department. A plan on this is due February 11, 1998.

WATER INTRUSION DETECTORS

The ancillary telecommunications and data communications equipment rooms lacked water intrusion detectors.

Most of the rooms were located in basements and all were at risk of water intrusion from multiple sources. The rooms were not normally occupied, so water would not be noticed until communications were disrupted.

The lack of water intrusion detectors increases the risk of equipment damage and disruption of telecommunications and data communications capabilities on campus.

Recommendation 3

We recommend that water detectors with remote notification features be installed in the ancillary telecommunications rooms.

Campus Response

We concur with this audit recommendation. Network and Telecommunications Services will work this through the Facilities Development and Operations department. A plan on this is due February 11, 1998.

HALON SYSTEMS INSPECTION

The Halon fire suppression systems in the computer room and the telecommunication switch rooms had not been inspected for over one year.

Under a maintenance agreement with the campus, the telecommunication equipment vendor must ensure that the equipment is protected from fire damage by a fire suppression system and that the system be inspected on a regular basis.

The associate vice president of networking and telecommunications informed us that the telecommunications vendor had failed to renew the contract with the fire suppression systems subcontractor.

Regular inspections of fire suppression equipment helps ensure that the systems will perform as intended in the event of a fire.

Recommendation 4

We recommend that Information Systems and Computing enforce the contract with the telecommunications vendor that requires periodic inspections of the fire suppression system.

Campus Response

We concur with this audit recommendation. Network and Telecommunications Services has contracted with C. A. Sabah, Inc., a service provider in the field of fire protection systems. We have also established a calendar and scheduling system in Network and Telecommunications Services for maintenance work. The halon system was inspected in August 1997 and again in January 1998. Repeat inspections will be performed in accordance with the new maintenance agreement.

DISTRIBUTED DATA COMMUNICATIONS NODE SITES

Basic environmental controls, such as power and air conditioning, were missing from the 50 small data communications nodes or sites that support the campus-wide communications network.

The campus network analyst indicated that the equipment and installation were paid for out of the budgets of the individual departments served by the equipment. These departments were not required to provide environmental controls as recommended by Information Systems and Computing.

Power fluctuations and outages can cause equipment damage and disruptions to data communications. Excessive heat can cause equipment to operate incorrectly and/or be damaged.

Recommendation 5

We recommend that an analysis be performed of each data communications node location to determine if small UPS units and air conditioning, improved ventilation, and/or high temperature detectors should be installed in locations where these controls will provide the greatest benefit.

Campus Response

We concur with this audit recommendation. Network and Telecommunications Services will coordinate the analysis. A plan on this is due February 25, 1998. It must be noted that only some of the approximately 50 data communication sites on campus are managed by the Chief Information Officer's Division. The departments responsible for the sites will be consulted in responding to this item.

EMERGENCY POWER-OFF SWITCH

The computer room lacked an emergency power off switch (EPO). In addition, an obsolete and inoperative EPO left over from a prior computer installation had not been removed.

The senior director of the computer center stated that a new mainframe computer had been purchased and indicated that a new EPO switch would be installed at the time of installation.

Lack of an EPO switch prevents the power to electrical equipment to be shut off quickly in an emergency such as an electrical fire, water intrusion, or electrocution. In the event of water intrusion, shutting the power off quickly can reduce the risk of damage to the equipment. The obsolete and inoperative EPO provides false assurance that power has been shut off, thus delaying the emergency response process.

Recommendation 6

We recommend that the obsolete EPO be removed and a new one be installed in the computer room.

Campus Response

We concur with this audit recommendation. IBM is installing this switch and work will be completed by March 31, 1998.

DISASTER PLANNING

NEW EMPLOYEE ORIENTATION

New employees do not receive orientation on the campus emergency action plan.

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.

New employees were provided disaster readiness information via the employee handbook and during building 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 drill.

Recommendation 7

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

Campus Response

We concur with this audit recommendation. The comprehensive multi-hazard emergency procedures publication currently distributed to all employees will also be distributed to new employees by Human Resources at their New Employee Orientation Session effective immediately.

ACADEMIC INVOLVEMENT

Involvement of academic personnel in the campus disaster planning and recovery process was minimal.

In a June 1995 report to the chancellor, the Ad Hoc Committee on Emergency Preparedness recommended involvement of faculty, staff, and students in all phases of planning and simulation exercises.

The emergency preparedness coordinator and the executive assistant to the provost both indicated that disaster planning and recovery has historically been the domain of campus administrators and managers to the exclusion of the campus academic community. Plans for greater involvement by the campus academic community were underway at the time of this review.

The campus is not taking full advantage of its disaster planning resources and potential volunteer resources in the event of a disaster.

Recommendation 8

We recommend that the campus seek greater input and involvement of the academic community in disaster planning and recovery.

Campus Response

We concur with this audit recommendation. The Council of Deans is planning to develop a Business Recovery Plan in Spring 1998.

UTILITY CUT-OFF LOCATIONS

The emergency preparedness coordinator had not received updated information on utility cut-off locations. This information was not retained in the Emergency Operations Center (EOC).

Executive Order 524 requires each CSU president to ensure that management activities are accomplished in support of multi-hazard emergency preparedness, including distribution of the original plan and appropriate update materials to key employees and other significantly involved persons, both on and off campus.

The campus safety manager had recently completed the updating of information on utility cut-off locations but had not forwarded it to the emergency preparedness coordinator.

By not having updated utility cut-off information in the EOC, the campus risks exposure to additional hazards during and following a disaster.

Recommendation 9

We recommend that utility cut-off information be retained in the Emergency Operations Center.

Campus Response

We concur with this audit recommendation. The University Police Department has purchased a computer and is currently awaiting delivery of software compatible with the Facilities Computer-aided Facilities Management System (CAFM) to be assigned to the Incident Command Post (Field Operations). CAFM identifies the locations utility lines. A second computer will be acquired in FY 98/99 for use in the Emergency Operations Center.

EXPENDITURES

The campus did not track or coordinate disaster readiness expenditures.

SAM §20003 states that the elements of a satisfactory system of internal accounting and administrative control shall include a system of authorization and recordkeeping procedures adequate to provide effective accounting control over assets, liabilities, revenues, and expenditures.

The emergency preparedness coordinator indicated that he had not considered the need to coordinate emergency preparedness spending and that he lacked the resources to accomplish such a task.

The absence of a coordinated spending effort exposes the campus to ineffective control and accountability over disaster related acquisitions.

Recommendation 10

We recommend that the campus track and coordinate disaster readiness expenditures.

Campus Response

The University Police Department currently documents and tracks all Emergency Preparedness Program expenditures.

PLAN APPROVAL

We found no evidence that either the campuswide *Multi-Hazard Emergency Operations Plan* or any of the business unit plans had been approved by campus administration.

Executive Order (EO) 524 delegates 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 Director of Public Safety and the Emergency Preparedness Coordinator indicated that the Vice President for Administration, who is designated to direct the emergency planning effort, had given tacit approval of the plan.

The absence of plan approval by the president or his designee does not link the plan to the policies of the campus and execution of the responsibilities in EO 524.

Recommendation 11

We recommend that the campus president or designee formally approve emergency planning documents for the campus.

Campus Response

We concur with the audit recommendation. The extensively revised plan will be formally approved prior to the new fiscal year 1998/99.

EMERGENCY LOCATOR RECORDS

Records indicating the locations of faculty, staff, and students by day and time were not maintained in the Emergency Operations Center (EOC).

Class schedule records, student housing records, and employee location codes, which are available in on-line computerized files, are vital to rescue operations immediately after a disaster. However, if the disaster has brought the main computer or network down, this information will not be available. Storage of these records in the EOC at the start of each academic term would ensure their immediate availability.

The absence of readily accessible records documenting the location of faculty, staff, and students by day and time may delay search and rescue efforts in a major disaster.

Recommendation 12

We recommend that the campus consider documenting the location of faculty, staff, and students by day and time for each academic term and retain this information in the EOC.

Campus Response

The University has considered the concept of maintaining class schedule records, student housing records, and employee location codes in the EOC. However, due to the continuous change in the location of individuals on campus (including campus visitors) these files cannot be relied upon in ascertaining building occupancy during an emergency. University experience with the Loma Prieta and Northridge earthquakes demonstrates that the best method of determining building occupancy is through search of each building for which the University constantly trains.

ISC DISASTER RISK ANALYSIS

A disaster risk analysis for Information Systems and Computing (ISC) had not been performed.

The senior director of the computer center informed us that the ISC disaster recovery plan (DRP) was being rewritten to consolidate and include additional information and that, as the first step in this process, a risk analysis will be performed.

Without a risk analysis, disaster planning efforts may not be expended on the most likely disaster scenarios affecting the most critical resources and operations of the university.

Recommendation 13

We recommend that ISC perform a disaster risk analysis and ensure that the most likely disaster scenarios are adequately addressed in the ISC DRP.

Campus Response

We concur with the audit recommendation. An analysis will be scheduled and performed once the conversion to the new operating system is complete. The target date to begin the conversion to the new operating system is 1/17/98 and completion of the conversion is estimated for May/June 1998.

ALTERNATE SITE PROCESSING

An analysis had not been performed to determine the feasibility and detail requirements of the use of alternate processing sites.

The senior director of the computer center indicated that the analysis had been delayed until the conversion to a new operating system could be completed.

Without performing an analysis of alternate processing sites, the campus has increased the amount of time it will take to relocate should a disaster destroy or otherwise render the existing computer room unusable.

Recommendation 14

We recommend that the campus analyze alternate processing sites to ensure that an alternate site can be secured in the event the computer room is destroyed or temporarily unavailable because of a disaster.

Campus Response

We concur with this audit recommendation and will identify the alternate processing sites once the new operating system conversion is complete. The Computer Center has completed a Risk Analysis. A preliminary Disaster Recovery Plan will be completed in August 1998. It will contain identification of Alternate Site Processing location (s).

ISC DISASTER RECOVERY PLAN (DRP)

The DRP for Information Systems and Computing (ISC) had not been subject to any scheduled tests or training sessions.

Without periodic testing and training, the feasibility of recovery plan details and the efficiency and timeliness of recovery operations are not assured.

Recommendation 15

We recommend that the ISC recovery team perform a walk-through exercise first, a table-top exercise, and then periodic testing of various disaster scenarios in order of highest probability as determined by a risk analysis.

Campus Response

We concur with this audit recommendation and will conduct testing of various disaster scenarios after 1/31/98.

HALON SYSTEM TRAINING

The ISC computer operations staff had not received recent training on proper procedure and criteria to abort the Halon fire suppression system.

When the Halon system detects smoke it sounds a first-stage alarm. Operators have a predetermined amount of time to assess the reason why the alarm sounded and decide whether to abort the system or to evacuate and allow the system to progress to the second stage and release the Halon gas.

Without proper training and an appropriate time delay setting, the risk is increased that Halon gas will be released for a false alarm or for a fire that could be easily put out with a portable hand-operated extinguisher.

Recommendation 16

We recommend that ISC operations staff be trained on the proper procedure and criteria to abort the Halon fire suppression system.

Campus Response

We concur with the audit recommendation. We will work with our Halon service provider to establish a training plan by March 1, 1998.

MULTI-HAZARD EMERGENCY OPERATIONS PLAN

VITAL RECORDS

Several key areas of the campus were not backing up and storing vital records at an off-site location as indicated in the emergency management plan.

Enclosure 7 of the campus emergency management plan (p.49) addresses vital records protection through the definition of first-class records (irreplaceable/cannot be reconstructed) and policy provisions that state:

All records classified as “first class” shall be duplicated (preferably microfilmed) and stored at an off-site location known by the university administration.

The directors of human resources, student financial services, and logistical services, indicated that they were not aware of the policy statement in the emergency management plan requiring backup and off-site storage of vital records.

If a fire or other disaster destroys the primary campus records and backups are not stored off-site, these records may be permanently lost or may not be easily recreated in a timely manner. This could disrupt campus operations.

Recommendation 17

We recommend that the campus backup and store all vital (first-class) records at an off-site location.

Campus Response

We concur with this audit recommendation and will work with campus department to determine an off-site location for the storage of vital records by May/June 1998.

ISC OPERATIONS DOCUMENTATION

Data recovery procedures, network configuration, and other information that would be needed to restore and resume ISC operations in the event the computer center is destroyed were not completely documented and stored off-site.

The operations systems analyst for accounts and security indicated that ISC had been planning to prepare this documentation after the installation of the new computer.

Without ready access to documentation, the efficiency and timeliness of post-disaster restoration and resumption of ISC operations is not ensured.

Recommendation 18

We recommend that all documentation needed to restore and resume computer, telecommunications and data communications operations be stored at an off site location.

Campus Response

We concur with this audit recommendation. Currently, all documentation for the Computer Center Departments is copied and maintained off site at a storage facility. In addition, each manager of a Computer Center department keeps a copy of their procedures and documentation at their home. Telecommunications also has documentation for the telephone switch (and voice mail system) stored off site.

ELECTRONIC RECORDS BACKUP

LOCATION OF MAINFRAME BACKUP RECORDS

Daily and weekly backups are not being stored at a site sufficiently far enough from the mainframe computer.

The ISC mainframe computer was backed up to tape on a daily basis. However, if the computer is destroyed by a fire or other disaster, backup tapes stored in the same area as the computer would also likely be affected. For this reason, backup tapes were stored in the Institutional Research Building on another part of the campus on a weekly basis. To prevent loss of data in the event of an earthquake or other campus-wide disaster, backups were sent off site (off campus) on a monthly basis.

Campus emergency response planners believe the university is at a moderately high risk of an earthquake that would affect all buildings on the campus.

In the event of a disaster, one week to one month's worth of transactions entered into the mainframe computer could be lost resulting in disruption to operations and the cost and effort to recreate the data.

Recommendation 19

We recommend that:

- a. daily backups be stored on another part of the campus away from the computer room; and
- b. weekly backups be stored at an off-site location.

Campus Response

We concur with this audit recommendation. Daily system tapes are now stored off-site in another campus building. Weekly backups are now stored off-site at a Bramel Corporation storage facility.

LOCATION OF TELECOMMUNICATIONS BACKUP RECORDS

Backup tapes for the main telecommunications switch, the call accounting system, and the voice mail system were stored in the same room as the telecommunications equipment.

A fire or other disaster that destroys the telecommunications equipment is also likely to destroy the backup copies of data.

Recommendation 20

We recommend that telecommunication data backups be stored away from the equipment.

Campus Response

We concur with the audit recommendation. A backup tape is created each month and stored off-site in an Arcus facility. In addition, a tape is made and kept locally.

APPENDIX A: PERSONNEL CONTACTED

<u>Name</u>	<u>Title</u>
Robert L. Caret	President
Richard Abeyta	Director, Public Safety
Marlene Anderson	Director, Student Financial Services
Ray Balaora	Safety Manager, Facilities Development and Operations
Steve Bartz	Director, Human Resources
Colleen Brown	Interim Financial Aid Director
Florence Cappelloni	Business and Facilities Manager, Library
Marc Catto	Network Analyst, Telecommunications
Bonnie DeMalta	Production Control Supervisor
Alan Freeman	Director, Planning, Design and Construction, Facilities Development and Operations
Don Kassing	Vice President for Administration
Chandra Gowda	Hazardous Materials Specialist
Robert Latta	Director, Student Health Center
Veril Phillips	Executive Assistant to the Provost
Marilyn Radisch	Director, Records
James Schmidt	University Librarian
Aneeta Sharma	Associate Director, Environmental Health and Occupational Safety
Richard Sol	Senior Director of the Computer Center
Richard Staley	Emergency Preparedness Coordinator
Carl Vigil	Operations Systems Analyst for Accounts and Security
Mark Weisler	Associate Vice President, Networking and Telecommunications
Michael Werbach	Contracts Construction Coordinator
James Zavagano	Facilities Planner
Don Zitter	Chief Information Officer
Theodore Zsutty	Seismic Peer Reviewer