PB90-112509

Engineering, Design, and Construction for Earthquakes

An Annotated Bibliography

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ENGINEERING, DESIGN AND CONSTRUCTION FOR EARTHQUAKES

PB89-868293/XAB
Earthquake Engineering: Concrete Construction. January 1970-July 1989 (Citations from the Compendex Database)
(Rept. for Jan 70-Jul 89)
National Technical Information Service, Springfield, VA.
Corp. Source Codes: 055665000
Aug 89 100p
Languages: English Document Type: Bibliography
Journal Announcement: GRAI8921
See also PB89-868301.
NTIS Prices: PC N01/MF N01
Country of Publication: United States
This bibliography contains citations concerning the use of concrete and reinforced concrete construction in the seismic design of buildings and other structures. Construction techniques, structural analysis, failure and damage analysis, and structural design are discussed. Seismic testing of buildings is considered. Bridges, walls, buildings, dams, underground structures, and other concrete construction are described. Modelling of structures for seismic event resistance is considered. Earthquake prediction, steel construction for earthquake engineering, and pipeline seismic studies are discussed in separate bibliographies. (Contains 219 citations fully indexed and including a title list.)
Descriptors: *Bibliographies; *Earthquake resistant structures; *Concrete construction; Earthquakes; Structural design
Identifiers: Published Searches; *Seismic design; *Earthquake engineering ; NTISNTISI; NTISNERACD
Section Headings: 89D* (Building Industry Technology--Structural analyses); 50B* (Civil Engineering--Civil Engineering); 88E (Library and Information Sciences--Reference Materials)

PB89-216584/XAB
Bridge Design and Testing
Transportation Research Board, Washington, DC.
Corp. Source Codes: 044780000;
Sponsor: Minnesota Univ., Minneapolis.
Report No.: TRB/TRR-1180; ISBN-0-309-04720-X
1988 111p
Languages: English
Journal Announcement: GRAI8921
Library of Congress catalog card no. 89-12150. Prepared in cooperation with Minnesota Univ., Minneapolis.
NTIS Prices: PC A06/MF A01
Country of Publication: United States
The 13 papers in the report deal with the following areas: Methods of strengthening existing highway bridges; Bridge strengthening with epoxy-bonded steel plates; Analytical investigation for shell structures utilized as emergency bypass bridges; Bridge replacement cost analysis; Bridge performance prediction model using the Markov chain; The girder fracture in Siouxland Veterans Memorial Bridge; Experimental study of Washington State precast girders without end blocks; Seismic design of high-strength-concrete bridge piers and columns; Beam model for nonlinear and time-dependent analysis of curved prestressed concrete box girder bridges; Design and construction of transversely posttensioned concrete bulb tee beam bridge; Transverse load distribution in a 536-ft deck arch bridge; Behavior of open steel grid decks under static and fatigue loads.
Descriptors: *Highway bridges; *Girder bridges; *Prestressed concrete; Bridge piers; Shells(Structural forms); Design standards; Earthquake resistant structures; Cost analysis; Loads(Forces); Static loads;

P.a-1

Fractures(Materials); Graphs(Charts)
Identifiers: NTISNASTRB
Section Headings: 50A (Civil Engineering--Highway Engineering); 89D (Building Industry Technology--Structural analyses); 71D (Materials Sciences--Ceramics, Refractories, and Glass)

PB89-205744/XAB
Development of Earthquake and Microtremor Isolation Floor System Utilizing Air Springs and Laminated Rubber Bearings
Tanaka, M. ; Kashiwazaki, A. ; Tokuda, N. ; Kobayashi, M. ; Yokozawa, J.
Ishikawajima-Harima Heavy Industries Co. Ltd., Tokyo (Japan).
Corp. Source Codes: 076737000
c1989 5p
Languages: Japanese Document Type: Journal article
Journal Announcement: GRAI8918
Text in Japanese.
Pub. in IHI Engineering Review, v29 n1 p8-12 1989.
NTIS Prices: (Order as PB89-205736, PC E04/MF A01)
Country of Publication: Japan
An earthquake and microtremor isolation floor system has been developed for high-tech facilities such as computer rooms, VLSI factories and those manufacturing laser-technology-applied products. The system consists of three-dimensional isolators, air dampers, viscous dampers and leveling controllers which automatically maintain the level of the floor. The three-dimensional isolator, made of compound construction of an air spring and a laminated rubber bearing, absorbs vertical vibration with the air spring and horizontal vibration primarily with the laminated rubber bearing. To examine the effectiveness of the system, seismic-shaking tests and microtremulous tests on the floor model weighing 20 tons were conducted. The results are satisfactory and effective isolation of both earthquake and microtremor is confirmed. Furthermore, it is observed that numerical predictions are in good agreement with experimental results. (Copyright (c) 1989, Ishikawajima-Harima Heavy Industries Co., Ltd.)
Descriptors: *Floors; *Vibration isolators; Earthquake resistant structures; Vibration damping; Damping tests; Seismic waves
Identifiers: NTISTFIHI
Section Headings: 89D (Building Industry Technology--Structural analyses)

PB89-194435/XAB
Experimental and Finite Element Studies of a Large Arch Dam
(Doctoral thesis)
Duron, Z. H.
California Inst. of Tech., Pasadena. Earthquake Engineering Research Lab.
Corp. Source Codes: 005100084
Sponsor: National Science Foundation, Washington, DC.
Report No.: EERL-87-02
11 Sep 87 193p
Languages: English Document Type: Thesis
Journal Announcement: GRAI8917
See also PB86-139672 and PB89-194443. Sponsored by National Science Foundation, Washington, DC.
NTIS Prices: PC A09/MF A01
Country of Publication: United States
Contract No.: NSF-EAR83-17257; NSF-CES86-19908
Forced vibration field tests and finite element studies have been conducted on Morrow Point (arch) Dam in order to investigate dynamic dam-water interaction and water compressibility. Design of the data acquisition system incorporates several special features to retrieve both amplitude and phase of the response in a low signal to noise environment. These features contributed to the success of the experimental program

which, for the first time, produced field evidence of water compressibility; this effect seems to play a significant role only in the symmetric response of Morrow Point Dam in the frequency range examined. In the accompanying analysis, frequency response curves for measured accelerations and water pressures as well as their resonating shapes are compared to predictions from the current state-of-the-art finite element model for which water compressibility is both included and neglected.
Descriptors: *Arch dams; *Dynamic response; *Fluid mechanics; Water pressure; Vibration; Compressibility; Field tests; Loads(Forces); Dynamic structural analysis; Graphs(Charts)
Identifiers: *Earthquake engineering; NTISNSFENG
Section Headings: 50B (Civil Engineering--Civil Engineering); 89D (Building Industry Technology--Structural analyses); 46B (Physics--Fluid Mechanics)

PB89-863864/XAB
Radon Detection and Measurement. January 1970-May 1989 (Citations from the Compendex Database)
(Rept. for Jan 70-May 89)
National Technical Information Service, Springfield, VA.
Corp. Source Codes: 055665000
Jun 89 112p
Languages: English Document Type: Bibliography
Journal Announcement: GRAI8915
Supersedes PB88-868880.
NTIS Prices: PC N01/MF N01
Country of Publication: United States
This bibliography contains citations concerning the measurement of radon and radon daughter isotopes in various environments. Radon measurement in homes and buildings, mines, rainwater, groundwater, soils, in the Arctic and other atmosphere, and in exhaled air is discussed. Radon exhalation rates of building materials and mine tailings are noted. Analytic methods and equipment used to measure radon and radon isotopes are described. Radon detection as an earthquake prediction tool is briefly presented. (This updated bibliography contains 250 citations, 11 of which are new entries to the previous edition.)
Descriptors: *Bibliographies; *Radon; *Radioactive contaminants; *Natural radioactivity; *Radiation measuring instruments; Houses; *Construction materials
Identifiers: Published Searches; *Indoor air pollution; Radon 222; Radiation monitoring; Mill tailings; NTISNTISI; NTISNERACD
Section Headings: 68F* (Environmental Pollution and Control--Radiation Pollution and Control); 68A (Environmental Pollution and Control--Air Pollution and Control); 77E (Nuclear Science and Technology--Nuclear Instrumentation); 89G* (Building Industry Technology--Construction Materials, Components, and Equipment); 88E (Library and Information Sciences--Reference Materials)

DE89007670/XAB
Dynamic Properties of Reinforced Concrete Shear Wall Structures
(Thesis (Ph.D.))
Farrar, C. R.
Los Alamos National Lab., NM.
Corp. Source Codes: 072735000; 9512470
Sponsor: Department of Energy, Washington, DC.
Report No.: LA-11426-T
Mar 89 169p
Languages: English Document Type: Thesis
Journal Announcement: GRAI8914; NSA1400
Portions of this document are illegible in microfiche products.

NTIS Prices: PC A08/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-36
The purpose of this work was to determine the structural properties (stiffness and damping) of low aspect ratio shear wall structures that can be used in lumped mass models to predict their dynamic response. Instrumentation was used to separate the deformation of the structures into components caused by shear and components caused by bending so that individual components of stiffness can be examined. Results from these experiments showed that the current industry standard of using a stiffness based on an uncracked cross-section, strength-of-materials analysis, neglecting the reinforcement, and including shear deformation is appropriate prior to cracking. After cracking, the stiffness was shown to be a function of load level, past load history, and the amount of reinforcement. 96 refs., 53 figs., 12 tabs. (ERA citation 14:020064)
Descriptors: *Reinforced Concrete; *Stresses; *Walls; Aspect Ratio; Bending; Buildings; Cracks; Damping; Deformation; Dynamics; Experimental Data; Finite Element Method; Mechanical Properties; *Seismic Effects; Shear
Identifiers: ERDA/360603; ERDA/420200; Theses; NTISDE
Section Headings: 89D (Building Industry Technology--Structural analyses); 89G (Building Industry Technology--Construction Materials, Components, and Equipment); 46E (Physics--Structural Mechanics); 50C (Civil Engineering--Construction Equipment, Materials, and Supplies)

DE89006440/XAB
Laboratory Prototype of In situ Cyclic and Dynamic Geotechnical Testing System
Henke, R. ; Henke, W.
Dynamic In Situ Geotechnical Testing, Inc., Lutherville, MD.
Corp. Source Codes: 089977000; 9525601
Sponsor: Department of Energy, Washington, DC.
Report No.: CONF-8706370-1
1987 8p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8914; NSA1400
International conference on soil dynamics and earthquake engineering, Princeton, NJ, USA, 1 Jun 1987.
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A02/MF A01
Country of Publication: United States
Contract No.: FG01-87CE15305
This paper presents selected elements of a laboratory prototype of a new in situ geotechnical testing system. The testing system, currently under construction, is intended to provide improved measures of the in situ nonlinear shear stress-strain characteristics of the upper layers of a soil deposit. Such information is needed for earthquake site response analysis procedures used to predict the behavior of sites during earthquakes. Such procedures are commonly used at the advanced stages of the earthquake resistant design of critical soil-structure-equipment systems (offshore structures, hospitals, dams, etc.) The elements of the testing system described in this paper are elements intended to help preserve in situ conditions. 5 refs., 3 figs. (ERA citation 14:018463)
Descriptors: *Soil-Structure Interactions; Design; Earthquakes; Mechanical Structures; Soil Mechanics; Strains; Stresses; Testing
Identifiers: ERDA/580200; ERDA/580300; ERDA/420200; NTISDE
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 48E (Natural Resources and Earth Sciences--Soil Sciences); 89D (Building Industry Technology--Structural analyses)

PB89-154835/XAB

Wind and Seismic Effects. Proceedings of the Joint Meeting of the U.S.-Japan Cooperative Program in Natural Resources Panel on Wind and Seismic Effects (20th) Held in Gaithersburg, Maryland on May 17-20, 1988 (Final rept.)
Raufaste, N. J.
National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Building Technology.
Corp. Source Codes: 092731004
Report No.: NIST/SP-760
Jan 89 486p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8910
Also available from Supt. of Docs. as SN003-003-02917-3. See also PB88-183983. Library of Congress catalog card no. 88-600610.
NTIS Prices: PC A21/MF A01
Country of Publication: United States
The 20th Joint Meeting of the U.S.-Japan Panel on Wind and Seismic Effects was held at the National Bureau of Standards, Gaithersburg, Maryland from May 17-20, 1988. The proceedings of the Joint Meeting, includes the program, list of members, panel resolutions, task committee reports, and technical papers. The papers covered five themes: Wind engineering, Earthquake engineering, Storm Surge and Tsunamis, Summary of U.S.-Japan Cooperative Research Program, and Two decades of accomplishments and challenges for the future.
Descriptors: *Meetings; *Bridges(Structures); *Buildings; *Earthquakes; *Wind pressure; *Ocean waves; Tsuamis; Forecasting; Seismic waves; Earth movements; Dynamic structural analysis; Storm surges; Design criteria; Dynamic loads; Soil mechanics; Standards; Structural engineering
Identifiers: *Seismic design; *Earthquake engineering; Ground motion; Risk assessments; NTISCOMNBS
Section Headings: 89D* (Building Industry Technology--Structural analyses); 50A* (Civil Engineering--Highway Engineering); 55B* (Atmospheric Sciences--Dynamic Meteorology); 48F* (Natural Resources and Earth Sciences--Geology and Geophysics); 47B* (Ocean Technology and Engineering--Dynamic Oceanography)

DE89004984/XAB
Seismic Hazard Characterization of the Savannah River Plant Site (SRP)
Savy, J.
Lawrence Livermore National Lab., CA.
Corp. Source Codes: 068147000; 9513035
Sponsor: Department of Energy, Washington, DC.
Report No.: UCID-21596
Nov 88 117p
Languages: English
Journal Announcement: GRAI8910; NSA1400
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A06/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-48
The scope of this study is to perform for the Savannah River site the same kind of calculation as performed for the Nuclear Regulatory Commission (NRC), using the same methods and data, as those used for all the active Nuclear Power Plant (NPP) sites located east of the Rocky Mountains. The study was specifically designed to provide a set of tools with which the hazard at all the plant sites in the Eastern United States (EUS) could be estimated. However it must be noted that the very specific characteristics of each plant site are only accounted for in a generic fashion. For example, the local site corrections used eight different site categories rather than any site specific factors. In addition, the models of

seismicity developed did not concentrate on any specific site locations, but were provided for the entire EUS. Similarly, the ground motion models used in the analysis did not concentrate on small regions, rather, they were separated in four different groups of models applicable to the four areas in the EUS, namely the Northeast, the Southeast, North central, and South central EUS. The results provided by the NRC/LLNL methods with the present data banks are accurate enough that they can be used in screening techniques and for preliminary types of analyses. If a detailed site specific analysis were deemed necessary at a site, a careful revisiting and possibly updating of each of the links in the chain of analyses leading to the final data base would be appropriate. 2 refs., 105 figs., 1 tab. (ERA citation 14:009617)

Descriptors: *Ground Motion; *Savannah River Plant; Compiled Data; Forecasting; Mathematical Models; Monte Carlo Method; *Seismic Events; *Site Characterization

Identifiers: ERDA/580201; ERDA/052002; *Engineering geology; NTISDE

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 77H (Nuclear Science and Technology--Reactor Engineering and Nuclear Power Plants); 89D (Building Industry Technology--Structural analyses)

PB89-148035/XAB

Fire Ignitions from the Whittier Narrows Earthquake of October 1, 1987

Wiggins, J. H.

Crisis Management Corp., Redondo Beach, CA.

Corp. Source Codes: 093789000

Sponsor: National Science Foundation, Washington, DC. Directorate for Engineering.

Report No.: REPT-2020.1; NSF/ENG-88019

8 Nov 88 63p

Languages: English

Journal Announcement: GRAI8909

See also PB88-130331. Sponsored by National Science Foundation, Washington, DC. Directorate for Engineering.

NTIS Prices: PC A04/MF A01

Country of Publication: United States

Contract No.: NSF-CES88-03595

The purpose of the investigation was to examine the fire ignitions that took place as a result of the Whittier Narrows earthquake and determine ignition rates as a function of Modified Mercalli Intensity. Using this information and a complex fire modeling algorithm, the potential for conflagration can be developed. The objectives of the study were to: (1) count the number of ignitions; (2) describe them as to intensity region and location about the epicenter; and (3) identify the sources of the ignitions, such as electrical, gas, or flammable liquid spills.

Descriptors: *Earthquakes; *Fires; Intensity; Forecasting; Statistical data; Graphs(Charts); California; Ignition; Mathematical models; Sources

Identifiers: Conflagration; Whittier(California); Los Angeles County(California); NTISNSFENG

Section Headings: 89G (Building Industry Technology--Construction Materials, Components, and Equipment); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

AD-A201 728/3/XAB

Nonlinear Dynamic Analysis of Embedded Structures

(Final rept. Jun 86-Aug 87)

Finn, W. D.

Cork Geotechnics Ltd., Castlemartyr (Ireland).

Corp. Source Codes: 080757000; 414717

Sponsor: Army Research Development and Standardization Group (United

Kingdom), FPO New York 09510.
Report No.: R/D-5491-EN-01-F
7 Mar 88 87p
Languages: English
Journal Announcement: GRAI8909
NTIS Prices: PC A05/MF A01
Country of Publication: Ireland
Contract No.: DAJA45-86-C-0033; 1L161102BH57; 01

A computer program, TARA-3, developed for conducting nonlinear hysteretic dynamic response analysis is presented. The program can operate in either a total or effective stress mode. It may be used to analyze the seismic response of earth structures and soil-structures interaction systems such as nuclear containment structures. Validation studies of TARA-3 using data from seismic tests on centrifuged models are described. These studies confirm the capability of TARA-3 to predict accelerations, porewater pressures, and displacements in complex soil-structures systems during seismic loading with acceptable accuracy and reliability for engineering design. Keywords: Earth quake engineering; Nonlinear dynamic analysis; Hysteretic stress strain model; Seismic centrifuge tests; Seismic porewater pressures; Seismic settlements; Accelerations; Displacements. (jhd)

Descriptors: Acceleration; Accuracy; Centrifuges; Computer programs; Containment(Nuclear reactors); Displacement; *Earth movement; Structural response; Embedding; *Earthquake engineering; *Hysteresis; Models; Nonlinear analysis; Reliability; Response; Seismic detection; Seismology; *Stress strain relations; Stresses; Structures; Test methods

Identifiers: *Foreign technology; TARA-3 computer program; NTISDODXA

Section Headings: 50B (Civil Engineering--Civil Engineering); 89D (Building Industry Technology--Structural analyses); 46E (Physics--Structural Mechanics)

DE88014937/XAB

Natural Phenomena Hazards Modeling Project: Preliminary Flood Hazards Estimates for Screening Department of Energy Sites, Albuquerque Operations Office

McCann, M. W. ; Boissonnade, A. C.
Department of Energy, Washington, DC. Office of Nuclear Safety.
Corp. Source Codes: 052661334; 9519998
Sponsor: Lawrence Livermore National Lab., CA.; Department of Energy, Washington, DC.
Report No.: UCRL-21045
May 88 425p
Languages: English
Journal Announcement: GRAI8905; NSA1300
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A18/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-48

As part of an ongoing program, Lawrence Livermore National Laboratory (LLNL) is directing the Natural Phenomena Hazards Modeling Project (NPHMP) on behalf of the Department of Energy (DOE). A major part of this effort is the development of probabilistic definitions of natural phenomena hazards; seismic, wind, and flood. In this report the first phase of the evaluation of flood hazards at DOE sites is described. Unlike seismic and wind events, floods may not present a significant threat to the operations of all DOE sites. For example, at some sites physical circumstances may exist that effectively preclude the occurrence of flooding. As a result, consideration of flood hazards may not be required as part of the site design basis. In this case it is not necessary to perform a detailed flood hazard study at all DOE sites, such as those conducted for other natural phenomena hazards, seismic and wind. The scope of the preliminary flood hazard analysis is

restricted to evaluating the flood hazards that may exist in proximity to a site. The analysis does involve an assessment of the potential encroachment of flooding on-site at individual facility locations. However, the preliminary flood hazard assessment does not consider localized flooding at a site due to precipitation (i.e., local run-off, storm sewer capacity, roof drainage). These issues are reserved for consideration by the DOE site manager. 11 refs., 84 figs., 61 tabs. (ERA citation 13:051370)

Descriptors: *Floods; *Hazards; Emergency Plans; Environmental Transport; Forecasting; Human Populations; LASL; Mathematical Models; Missouri; Mound Laboratory; Pantex Plant; Pinellas Plant; Radionuclide Migration; Risk Assessment; Rocky Flats Plant; Sandia Laboratories; Site Characterization; US DOE

Identifiers: ERDA/290300; NTISDE

Section Headings: 89D (Building Industry Technology--Structural analyses); 48E (Natural Resources and Earth Sciences--Soil Sciences); 97GE (Energy--General)

AD-A200 576/7/XAB

Non-Linear Material Three Degree of Freedom Analysis of Submarine Drydock Blocking Systems

(Master's thesis)

Hepburn, R. D.

Naval Postgraduate School, Monterey, CA.

Corp. Source Codes: 019895000; 251450

May 88 244p

Languages: English Document Type: Thesis

Journal Announcement: GRAI8905

NTIS Prices: PC A11/MF A01

Country of Publication: United States

U.S. Naval shipyards where submarines are dry-docked are located in regions of the United States where significant earthquakes are known to occur. The graving dry-docks at these shipyards are currently designed to withstand earthquake accelerations up to 0.26 g's. This thesis develops a nonlinear material model for wood drydock block caps which more closely represents its actual behavior than linear elastic material models used previously. Using this non-linear model, it is determined that submarine drydock blocking systems would fail at even lower earthquake accelerations than that predicted by linear material models. This confirms that submarine drydock blocking systems would fail at accelerations which are significantly lower than the Navy's 0.2 g survival requirement. New blocking materials are then analyzed using non-linear models developed in this thesis in order to determine their potential for increasing system survivability. The materials analyzed are natural rubber and dynamic isolators. It is determined that when these materials are incorporated in the blocking systems, significant increases in survivability occur; however, all the systems still fall well below the required 0.2 g level. This thesis makes it clear that the current submarine drydock blocking systems provide inadequate protection of the submarines from accelerations caused by highly probable earthquakes, but the use of new blocking materials can reduce the risk of blocking failure. (KT/AW)

Descriptors: Acceleration; Blocking; Drydocks; Dynamics; Earthquakes; Elastic properties; Failure; Isolation; Linearity; Materials; *Mathematical models; Natural rubber; Navy; *Nonlinear systems; Probability; Protection; Risk; Shipyards; *Submarines; Survivability; United States; Wood

Identifiers: SUBMARINE DRYDOCK BLOCKING SYSTEMS; THREE DEGREES OF FREEDOM; Theses; *Seismic engineering; NTISDODXA

Section Headings: 50B (Civil Engineering--Civil Engineering); 89D (Building Industry Technology--Structural analyses); 72E (Mathematical Sciences--Operations Research)

PB89-852180/XAB
Earthquake Engineering: Buildings, Bridges, Dams, and Related Structures. January 1988-December 1988 (Citations from the NTIS Database)
(Rept. for Jan 88-Dec 88)
National Technical Information Service, Springfield, VA.
Corp. Source Codes: 055665000
Dec 88 52p
Languages: English Document Type: Bibliography
Journal Announcement: GRAI8904
Supersedes PB88-854567. See also PB89-852172.
NTIS Prices: PC N01/MF N01
Country of Publication: United States
This bibliography contains citations concerning the dynamic response of buildings, bridges, and dams to earth movements and seismic waves. Topics include structural design considerations in active areas, soil-structure interactions during seismic events, and mathematical models used to predict structural response. Seismic evaluations for structural adequacy at specific sites, and seismic upgrading methods are also treated. (This updated bibliography contains 70 citations, all of which are new entries to the previous edition.)
Descriptors: *Bibliographies; *Structural engineering; *Earthquake resistant structures; Buildings; Bridges(Structures); Dams
Identifiers: *Earthquake engineering; Published searches; NTISNTISN; NTISNERACD
Section Headings: 89D* (Building Industry Technology--Structural analyses); 50B* (Civil Engineering--Civil Engineering); 88E (Library and Information Sciences--Reference Materials)

PB88-868880/XAB
Radon Detection and Measurement. January 1970-September 1988 (Citations from the Compendex Database)
(Rept. for Jan 70-Sep 88)
National Technical Information Service, Springfield, VA.
Corp. Source Codes: 055665000
Sep 88 135p
Languages: English Document Type: Bibliography
Journal Announcement: GRAI8822
Supersedes PB87-866083.
NTIS Prices: PC N01/MF N01
Country of Publication: United States
This bibliography contains citations concerning the measurement of radon and radon daughter isotopes in various environments. Radon measurement in homes and buildings, mines, rainwater, groundwater, soils, in the Arctic and other atmosphere, and in exhaled air is discussed. Radon exhalation rates of building materials and mine tailings are noted. Analytic methods and equipment used to measure radon and radon isotopes are described. Radon detection as an earthquake prediction tool is briefly presented. (This updated bibliography contains 271 citations, 37 of which are new entries to the previous edition.)
Descriptors: *Bibliographies; *Radon; *Radioactive contaminants; *Natural radioactivity; Radiation measuring instruments; Houses; Construction materials
Identifiers: *Indoor air pollution; Radon 222; Radiation monitoring; Mill tailings; NTISNTISI; NTISNERACD
Section Headings: 68F* (Environmental Pollution and Control--Radiation Pollution and Control); 68A (Environmental Pollution and Control--Air Pollution and Control); 77E* (Nuclear Science and Technology--Nuclear Instrumentation); 89E* (Building Industry Technology--Building Standards and Codes); 88E (Library and Information Sciences--Reference Materials)

PB88-235643/XAB
Seismic Design of Monolithic Bridge Abutments
Crouse, C. B. ; Hushmand, B. ; Liang, G. ; Martin, G. ; Wood, J.
Earth Technology Corp., Long Beach, CA.
Corp. Source Codes: 082992000
Sponsor: National Science Foundation, Washington, DC. Directorate for Engineering.
Report No.: NSF/ENG-86062
Jul 86 127p
Languages: English
Journal Announcement: GRAI8822
Proceedings of Joint U.S.-New Zealand workshop on Seismic Resistance of Highway Bridges held at San Diego, CA., May 8-10 1985. Sponsored by National Science Foundation, Washington, DC. Directorate for Engineering.
NTIS Prices: PC A07/MF A01
Country of Publication: United States
Contract No.: NSF-ECE83-16976
The objective of the research was to investigate the soil-structure interaction characteristics between monolithic bridge abutments and the surrounding soil. The investigation consisted of: (1) vibration tests on the Horsethief Bridge, a single span structure with monolithic abutments, located near Corona, California; and (2) static and dynamic tests on a 1/100 scale model of this bridge in the centrifuge at the California Institute of Technology. The test results, which revealed significant soil-structure interaction, were predicted reasonably well by finite element models of both bridge-soil systems. Further research would be helpful to: (1) complete the understanding of the behavior of monolithic abutments during lateral seismic loading; and (2) translate the results into a design guide suitable for direct use by the bridge engineer.
Descriptors: *Highway bridges; *Abutments; Seismic effect; Soil mechanics ; Dynamic tests; Vibration tests
Identifiers: Earthquake engineering; NTISNSFENG
Section Headings: 50A (Civil Engineering--Highway Engineering); 50D (Civil Engineering--Soil and Rock Mechanics)

PB88-232590/XAB
Prediction of Seismic Design Response Spectra Using Ground Characteristics
(Technical rept.)
Malushte, S. R. ; Singh, M. P.
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Engineering Science and Mechanics.
Corp. Source Codes: 032784036
Sponsor: National Science Foundation, Washington, DC.
Report No.: VPI-E-87-31
Sep 87 328p
Languages: English
Journal Announcement: GRAI8821
Sponsored by National Science Foundation, Washington, DC.
NTIS Prices: PC A15/MF A01
Country of Publication: United States
Contract No.: NSF-CEE82-14070; NSF-CEE84-12830
For seismic design of structures, earthquake input is usually defined in terms of pseudo acceleration response spectra. However, recent research has identified the need of defining the design input in terms of the relative velocity and relative acceleration response spectra as well. Furthermore, for the equivalent linear analysis of hystertically behaving structures, one also needs to define the response spectra of a massless oscillator. Based on the analysis of available earthquake records, the study defines the above mentioned response spectra as the seismic design input for

various site conditions. The available earthquake records are classified into five groups according to their site stiffness and epicentral distance as the grouping parameters. The motion parameters of average frequency and significant duration are obtained for each group and their effect on the response spectra is studied. Correlation analyses between various ground motion characteristics such as peak displacement, velocity, acceleration and root mean square acceleration are also carried out for each group. It is shown that the relative spectra can be reliably estimated from the pseudo spectra. The site dependent design spectra are defined for a wide range of oscillator periods and damping ratios.

Descriptors: *Earthquakes; *Seismic waves; Statistical analysis; Graphs(Charts); Tables(Data); Earth movements; Acceleration(Physics); Spectras; Predictions; Seismic reflection method; Earthquake resistant structures; Velocity measurements

Identifiers: NTISVPISU; NTISNSFG

Section Headings: 48F* (Natural Resources and Earth Sciences--Geology and Geophysics); 89D (Building Industry Technology--Structural analyses); 50D (Civil Engineering--Soil and Rock Mechanics)

PB88-178983/XAB

Analytical Models for Predicting the Lateral Response of R C Shear Walls: Evaluation of Their Reliability

Vulcano, A. ; Bertero, V. V.

California Univ., Richmond. Earthquake Engineering Research Center.

Corp. Source Codes: 005432007

Sponsor: National Science Foundation, Washington, DC.

Report No.: UCB/EERC-87/19; NSF/ENG-87042

Nov 87 91p

Languages: English

Journal Announcement: GRAI8812

Sponsored by National Science Foundation, Washington, DC.

NTIS Prices: PC A05/MF A01

Country of Publication: United States

Contract No.: NSF-CEE80-09478

Attention is focused on a wall model recently proposed by Japanese researchers. The model, based on a macroscopic approach, idealizes the generic wall member as three vertical line elements with infinitely rigid beams at the top and bottom floor levels. The two outside elements are truss elements to represent the axial stiffness of the boundary columns; the central element is a one-component model constituted by horizontal, vertical and rotational springs to represent, respectively, the shear stiffness of the wall, the vertical axial stiffness and the flexural stiffness of the central panel. Modifications of the wall model are developed in the studies reported. The main modification is aimed at improving the simulation of the hysteretic behavior of the axial elements adopted by the Japanese. These axial elements are replaced by new elements which simulate more closely the hysteretic behavior of a reinforced concrete (R C) column member under axial load reversals. In order to check the effectiveness and reliability of the modified wall model, a numerical investigation is carried out by calibrating the results against measured behavior of a series of R C structural walls that have been tested at the University of California at Berkeley. The modified wall model proves to be effective and suitable for incorporation in a practical nonlinear analysis of R C multistory structural systems.

Descriptors: *Earthquake resistant structures; *Reinforced concrete; Models; Lateral pressure; Shear stress; Stiffness; Structural analysis; Walls; Numerical analysis; Mechanical hysteresis

Identifiers: *Earthquake engineering; NTISNSFENG

Section Headings: 89D (Building Industry Technology--Structural analyses); 89G (Building Industry Technology--Construction Materials, Components,

and Equipment)

PB88-166707/XAB
Earthquake Simulation Tests and Associated Studies of a 0.3-Scale Model of a Six-Story Eccentrically Braced Steel Structure
Whittaker, A. S. ; Uang, C. M. ; Bertero, V. V.
California Univ., Richmond. Earthquake Engineering Research Center.
Corp. Source Codes: 005432007
Sponsor: National Science Foundation, Washington, DC.
Report No.: UCB/EERC-87/02; NSF/ENG-87030
Jul 87 425p
Languages: English
Journal Announcement: GRAI8811
Sponsored by National Science Foundation, Washington, DC.
NTIS Prices: PC A18/MF A01
Country of Publication: United States
Contract No.: NSF-ECE82-08141; NSF-ECE84-19739
The report summarizes the research conducted in the Six-Story Eccentrically Chevron Braced Steel Building Structures Phase of the U.S.-Japan Cooperative Earthquake Research Program. The selection, design and testing of the prototype are discussed and a review of the design of the eccentrically chevron braced prototype, in accordance with the 1985 UBC, 1984 ATC 3-06 and 1986 SEAOC, is presented. The results of the static and dynamic analyses of the prototype are discussed. The design, construction and instrumentation of the model are described and its mechanical characteristics are compared with those results predicted by DRAIN-2DX. The experimental program, the earthquake simulator tests and the data acquisition and processing techniques, in addition to the predicted strength and response of the model, are discussed in detail.
Descriptors: *Earthquakes; *Earth resistant structures; Steels; Design criteria; Prototypes; Simulators; Engineering; Damage; Collapse; Evaluation ; Tests; Mathematical models
Identifiers: NTISNSFENG
Section Headings: 89D* (Building Industry Technology--Structural analyses); 48F* (Natural Resources and Earth Sciences--Geology and Geophysics)

AD-A188 659/7/XAB
Strain Rate Effects for Concrete and Fiber Reinforced Concrete Subjected to Impact Loading
(Final rept. Sep 82-Aug 87)
Shah, S. P.
Northwestern Univ., Evanston, IL. Center for Concrete and Geomaterials.
Corp. Source Codes: 007740151; 418452
Sponsor: Army Research Office, Research Triangle Park, NC.
Report No.: ARO-19311.6-PMS
Oct 87 84p
Languages: English
Journal Announcement: GRAI8811
NTIS Prices: PC A05/MF A01
Country of Publication: United States
Contract No.: DAAG29-82-K-0171
Despite it's extensive use, low tensile strength has been recognized as one of the major drawbacks of concrete. Although one has learned to avoid exposing concrete structures to adverse static tensile loads, these structures cannot be shielded from short duration dynamic tensile loads. Such loads originate from sources such as impact from missiles and projectiles, wind gusts, earthquakes and machine vibrations. In addition, modern computer-aided analysis and use of concrete for special structures such as reactor containment vessels, missile storage silos and fall-out

shelters, has led to a growing interest in the cracking behavior of concrete. Experimental results indicate that the fracture strength and cracking behavior of concrete are affected by the rate of loading. To accurately predict the structural response under impact conditions, the knowledge of behavior of concrete at high rates of loading is essential. Using a two degree of freedom model guidelines were developed for designing an impact test setup, thus enabling one to conduct impact tests free of adverse inertial effects. Based on these guidelines, the author has developed an instrumented modified Charpy impact testing system. This experimental test setup was used to obtain basic information such as load-deflection relationship, fracture toughness, crack velocity (measured using 'Krak Gages'), and load-strain history during an impact fracture event of plain concrete and SFRC.

Descriptors: Adverse conditions; *Charpy impact tests; Computer aided diagnosis; *Concrete; Cracking(Fracturing); Cracks; Earthquakes; Experimental design; Fallout; Fiber reinforced composites; Fiber reinforcement; Flexural properties; *Fracture(Mechanics); Guided missile silos; Gusts; High rate; Inertia; Loads(Forces); Low strength; Microcracking; Projectiles; *Reinforced concrete; Shelters; Static loads; Storage; *Strain rate; Structural response; Structures; Tensile properties; Tensile strength; Test and evaluation; Toughness; Velocity; Wind; Impact strength

Identifiers: NTISDODXA; NTISDODA

Section Headings: 50C (Civil Engineering--Construction Equipment, Materials, and Supplies); 89G (Building Industry Technology--Construction Materials, Components, and Equipment)

PB88-157276/XAB

Seismic Design of Highway Bridge Foundations. Volume 2. Design Procedures and Guidelines

(Final rept. Sep 83-Jun 86)

Lam, I. ; Martin, G. R.

Earth Technology Corp., Long Beach, CA.

Corp. Source Codes: 082992000

Sponsor: Federal Highway Administration, McLean, VA. Office of Engineering and Highway Operations Research and Development.

Report No.: FHWA/RD-86/102

Jun 86 184p

Languages: English

Journal Announcement: GRAI8809

See also Volume 1, PB87-133062, and Volume 3, PB88-157284. Sponsored by Federal Highway Administration, McLean, VA. Office of Engineering and Highway Operations Research and Development.

NTIS Prices: PC A09/MF A01

Country of Publication: United States

Contract No.: DTFH61-83-C-00138

The report provides specific procedures for the seismic design of bridge foundations and abutments based on hand-calculation methods using design charts and computer methods. The report supplements the Seismic Design Guidelines For Highway Bridges published as a design specification by the American Association of State Highway and Transportation Officials (AASHTO) in 1983. Design procedures are presented for footings, piles, drilled shafts, and abutments. Comments on site investigation procedures and in situ and laboratory testing are also provided in relation to determination of site soil parameters for analyses. Additional comments are provided on earthquake-induced liquefaction and slope stability as they affect bridge foundation design. The selected design procedures were verified by comparing analytical predictions with experimental data.

Descriptors: *Highway bridges; *Bridge foundations; Guidelines; Footings; Pile structures; Abutments; Soil mechanics; Slopes

Identifiers: *Seismic design; Earthquake engineering; NTISDOTFHA
Section Headings: 50A (Civil Engineering--Highway Engineering)

PB88-130943/XAB
Incorporation of Azimuthal Dependence in a Model of Strong Ground Motion
Shusto, L. M. ; Schoof, C. C.
Failure Analysis Associates, Palo Alto, CA.
Corp. Source Codes: 062517000
Sponsor: National Science Foundation, Washington, DC. Div. of Industrial Science and Technological Innovation.
Report No.: FAAA-PA-R-85-07-17; NSF/CEE-85010
Jul 85 67p
Languages: English
Journal Announcement: GRAI8806
Includes one sheet of 24X reduction microfiche. Sponsored by National Science Foundation, Washington, DC. Div. of Industrial Science and Technological Innovation.
NTIS Prices: PC E05/MF A01
Country of Publication: United States
Contract No.: NSF-CEE84-60624
A necessary design element for buildings and other structures subjected to strong ground motions due to earthquakes is an estimate of the frequency and intensity of earthquakes expected to occur in the region during the economic life of the structure. It is also necessary to estimate the ground motion response at a site, given that an earthquake of a certain size and a certain distance away from the site occurs. Recognizing the random nature of earthquake occurrences, and the limited understanding of the physical processes leading to seismic loading at a site, analytical models have been developed to predict the probability of exceeding a given level of ground motion during a specified period. The report presents the results of initial (Phase I) efforts to refine and improve state-of-the-art models for predicting ground motion responses, and ultimately, to improve subsequent seismic hazard estimates.
Descriptors: *Earthquake resistant structures; *Seismology; Mathematical models; Design criteria; Earthquakes; Azimuth
Identifiers: Ground motion; Seismic effects; NTISNSFISI
Section Headings: 89D (Building Industry Technology--Structural analyses) ; 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

NUREG/CR-4987/XAB
Simulated Seismic Tests on 1/42- and 1/14-Scale Category I, Auxiliary Building
(Informal rept.)
Bennett, J. G. ; Dove, R. C. ; Dunwoody, W. E. ; Endebrock, E. ; Farrar, C.
Los Alamos National Lab., NM.
Corp. Source Codes: 072735000
Sponsor: Nuclear Regulatory Commission, Washington, DC. Office of Nuclear Regulatory Research.
Report No.: LA-11093-MS
Oct 87 48p
Languages: English
Journal Announcement: GRAI8804
Also available from Supt. of Docs. Sponsored by Nuclear Regulatory Commission, Washington, DC. Office of Nuclear Regulatory Research.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Two scale-model structures representing an idealized auxiliary building were seismically tested. The scales (1/42, 1/14) were chosen so that both structures were models of the prototype, and the 1/42-scale model was a

1/3-scale model of the 1/14-scale structure. Both models were constructed out of microconcrete. The 1/42-scale used wire mesh to simulate reinforcing, and the 1/14 scale used model deformed bars. The general result verified previous test experience in the program: the frequency response of these structures, when subjected to seismic design loads, will be below that predicted from the structural analysis. The implication of the result for equipment and piping is under investigation. The recommendation of the program, based on testing thus far, is to verify the conclusions on larger real concrete structures of a geometry that will be agreed upon by the technical review group for the program.

Descriptors: *Nuclear power plants; *Seismic effects; Structural engineering; Model tests; Loads(Forces); Piping systems

Identifiers: Earthquake engineering; NTISNUREG; NTISDE

Section Headings: 77H (Nuclear Science and Technology--Reactor Engineering and Nuclear Power Plants)

PB88-107842/XAB

In situ Testing Procedure for Obtaining Dynamic and Cyclic Properties

Henke, W. K.

Dynamic In Situ Geotechnical Testing, Inc., Lutherville, MD.

Corp. Source Codes: 089977000

Sponsor: National Science Foundation, Washington, DC. Div. of Industrial Science and Technological Innovation.

Report No.: NSF/CEE-85001

Jul 85 247p

Languages: English

Journal Announcement: GRAI8803

Sponsored by National Science Foundation, Washington, DC. Div. of Industrial Science and Technological Innovation.

NTIS Prices: PC A11/MF A01

Country of Publication: United States

Contract No.: NSF-CEE84-60719

Studies are presented which indicate the feasibility of an in situ testing procedure for determining in situ cyclic and dynamic soil properties. The properties are to be described in the detail and with the accuracy appropriate for later stages of the analysis and design of important, earthquake-resistant, soil-structure-equipment systems. The procedure is intended to allow more effective use of analysis procedures used to predict system behavior during earthquakes. One study in which tests were simulated analytically indicates theoretical feasibility. A second study indicates operational and economic feasibility. Items were identified which could create added uncertainty in inferring soil properties, but the added uncertainty was judged to be only modest.

Descriptors: *Soil properties; *Soil dynamics; *Soil tests; Structural analysis; Earthquakes; Soil mechanics; Shear tests; Shear properties

Identifiers: NTISNSFISI

Section Headings: 48A (Natural Resources and Earth Sciences--Mineral Industries); 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 89D (Building Industry Technology--Structural analyses)

AD-A185 232/6/XAB

Effects of Band-Limited White Noise Excitation on Liquefaction Potential in Large-Scale Tests

(Master's thesis)

Jasinski, D. L.

Air Force Inst. of Tech., Wright-Patterson AFB, OH.

Corp. Source Codes: 000805000; 012200

Report No.: AFIT/CI/NR-87-58T

1987 154p

Languages: English Document Type: Thesis

Journal Announcement: GRAI8803
NTIS Prices: PC A08/MF A01
Country of Publication: United States
During earthquakes, ground movement can cause soils to lose strength or stiffness resulting in structures settling and embankments sliding. A phenomenon contributing to this loss in strength and subsequent failures is called soil liquefaction. This title, however, does not refer to a single well-defined event, but rather to a complex set of interrelated phenomena which contribute to the occurrence of damage and and failures during an earthquake. Numerous investigators have tried to model and predict the potential and probability of liquefaction occurring in soils. Since the early 1960's considerable attention has been given to the development of laboratory testing procedures to provide improved methods of characterizing the liquefaction properties of soils. Various test apparatus have been designed or modified in an attempt to provide an accurate representation of the stress state generated in-situ by earthquakes. To this end a number of experimental devices including the cyclic triaxial, and cyclic simple shear with repeatable representation of conditions in-situ during an actual earthquake.
Descriptors: *Soil mechanics; *Earthquake engineering; Liquefaction; Shear stresses; Static loads; Soils; Experimental design; Data reduction; Graphs; Pore pressure; Ground water; Models; White noise; Theses
Identifiers: NTISDODXA
Section Headings: 50D (Civil Engineering--Soil and Rock Mechanics); 89D (Building Industry Technology--Structural analyses)

NTN87-0971
Engineering Data Being Collected to Predict Performances of Security Sensors
(NTIS Tech Note)
Department of the Navy, Washington, DC.
Corp. Source Codes: 001840000
Oct 87 1p
Languages: English
Journal Announcement: GRAI8802
FOR ADDITIONAL INFORMATION: Contact: Navy Domestic Technology Fact Sheet Reader Reply Service, Code E211, Naval Surface Weapons Center, Dahlgren, VA 22448-5000; (703)663-8921. Refer to 120401/TN.
NTIS Prices: Not available NTIS
Country of Publication: United States
This citation summarizes a one-page announcement of technology available for utilization. Ninety-seven percent of all security alarms triggered each year in the country are false because of improperly designed sensor systems and faulty sensor installations, according to security experts at the Naval Civil Engineering Laboratory (NCEL). Sensors are set off by non-threatening, unintended disturbances. A motion sensor could be triggered by a sudden gust of wind, or a vibration sensor could be activated by a small earthquake or a passing vehicle. Most alarms detect only the physical presence of intruders inside a building but fail to sound warnings when intruders are still outside attempting to gain entry. NCEL is developing data that will determine the capabilities of various sensors for use in formulating building design guidance. The new test data could lead to development of a new technology featuring more sophisticated early warning sensors. The advancement could result in increased alarm reliability (perhaps 50 percent in the far future compared to today's meager 3 percent) and overall improved security. NCEL's investigation into sensors and their sensitivities focuses on a unique structure constructed of four different building materials (wood, brick, concrete block, and concrete).
Descriptors: *Sensor characteristics; *Security; *Warning systems

Identifiers: NTISNTND
Section Headings: 41I (Manufacturing Technology--Job Environment); 94E (Industrial and Mechanical Engineering--Environmental Engineering)

PB88-109863/XAB
Building Technology Project Summaries 1987
Raufaste, N. J.
National Bureau of Standards (NEL), Gaithersburg, MD. Center for Building Technology.
Corp. Source Codes: 081915002
Report No.: NBSIR-87/3565
May 87 90p
Languages: English
Journal Announcement: GRAI8801
See also report for 1986, PB87-140216.
NTIS Prices: PC A05/MF A01
Country of Publication: United States
The Center for Building Technology (CBT) of the National Bureau of Standards (NBS) is the national building research laboratory. It works cooperatively with other organizations, private and public, to improve building practices. It conducts laboratory, field, and analytical research. It develops technologies to predict, measure, and test the performance of building materials, components, systems, and practices. The knowledge is required for responsible and cost-effective decisions in the building process and cannot be obtained through proprietary research and development. CBT provides technologies needed by the building community to achieve the benefits of advanced computation and automation. CBT does not promulgate building standards or regulations, but its technologies are widely used in the building industry and adopted by governmental and private organizations that have standards and codes responsibilities. The report summarizes the projects underway in the Center during 1987.
Descriptors: Concretes; Construction materials; Technology; Projects; Buildings; Roofing
Identifiers: *Building technology; Earthquake engineering; Seismic design ; Computer aided design; NTISCOMNBS
Section Headings: 89GE* (Building Industry Technology--General); 50B (Civil Engineering--Civil Engineering)

B87-227716/XAB
Dynamic Testing of Homogeneous Embankment Models
Luehring, R. W.
Bureau of Reclamation, Denver, CO. Engineering and Research Center.
Corp. Source Codes: 005117032
Report No.: REC-ERC-87-4
May 87 183p
Languages: English
Journal Announcement: GRAI8724
NTIS Prices: PC A09/MF A01
Country of Publication: United States
Physical model tests were performed on homogeneous cohesionless embankments subjected to idealized ground motion. During the testing, the response of model embankments to a sinusoidal input motion was monitored, and acceleration and displacement data were collected. An analytical model, based on Newmark's sliding block theory, was used to estimate the permanent displacement of sliding blocks subjected to input dynamic motion. Analytical results were compared with physical model test results to assess the validity of the mathematical model. It was concluded that the mathematical model did not accurately predict the deformation of homogeneous cohesionless embankment models because of difficulty in determining the effective shear strength of the material at low normal

stresses.
Descriptors: *Embankments; *Dynamic tests; Earth dams; Shaking; Model tests
Identifiers: *Earthquake engineering; Seismic design; NTISDIBR
Section Headings: 50B (Civil Engineering--Civil Engineering); 89D (Building Industry Technology--Structural analyses)

DE87011800/XAB
STS (Supernatant Treatment System) Confinement Barrier Integrity Review for the West Valley Demonstration Project
Gates, W. E.
West Valley Nuclear Services Co., Inc., NY.
Corp. Source Codes: 078754000; 9516245
Sponsor: Department of Energy, Washington, DC.
Report No.: DOE/NE/44139-27
Jun 87 109p
Languages: English
Journal Announcement: GRAI8724; NSA1200
Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted.
NTIS Prices: PC A06/MF A01
Country of Publication: United States
Contract No.: AC07-81NE44139
The primary Supernatant Treatment System (STS) confinement barriers have sufficient reserve capacity, due to the inherent safety factors associated with this type of construction, to survive extreme environmental loading (e.g., design basis earthquake and tornado events) without structural failure and leakage of high-level wastes into the environment. The primary confinement barriers of highest reliability under earthquake and tornado loading are the reinforced concrete vaults and chambers that enclose the STS process vessels and piping. These buildings and tank vaults have been designed to higher structural safety standards than required for life safety by local building codes used in the design of industrial process plants in New York state. The radiological shielding requirements generally resulted in structural member sizes and wall thicknesses that were larger and consequently stronger than found in conventional industrial plant building design. The margin of safety against failure of the reinforced concrete barriers is conservatively estimated at 2 to 4 times the design basis earthquake. The least predictable element in the building barrier is the PVC water stop between the STS building and the shield structure on tank vault 8D-1. Tests and analysis indicate the water stop has an estimated safety factor against rupture under earthquake of 3 or greater. In terms of the internal piping and vessel systems that confine the raw supernatant in its process flow path, the connecting piping between the valve aisle, pipeway and shield structure appears to be the most vulnerable under earthquake. The safety factor for the piping appears to be on the order of 3. 26 refs. (ERA citation 12:036507)
Descriptors: *Containment; *High-Level Radioactive Wastes; *Purex Process ; *Radioactive Waste Processing; Containment Buildings; Design; Failure Mode Analysis; Liquids; Processing; Reviews; Separation Processes; Solid Wastes; Solids; Vitrification; Volume; West Valley Processing Plant
Identifiers: ERDA/052001; NTISDE
Section Headings: 77G (Nuclear Science and Technology--Radioactive Wastes and Radioactivity)

PB87-222535/XAB
Proceedings of the US-PRC (Peoples Republic of China) Joint Workshop on Seismic Resistance of Masonry Structures Held at Harbin, China on May 21-23, 1986
State Seismological Bureau, Beijing (China).

Corp. Source Codes: 072302000
Sponsor: National Science Foundation, Washington, DC.
1986 470p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8723
Color illustrations reproduced in black and white. Sponsored by National Science Foundation, Washington, DC.
NTIS Prices: PC E15/MF A01
Country of Publication: China
The workshop has discussed six subject areas through presentations and open discussions. (1) Methods for seismic design of new masonry construction and strengthening of exisiting buildings. (2) Behavior and response of brick masonry structures and measures for mitigating damage. (3) Behavior and response of block masonry structures and measures for mitigating potential damage. (4) Earthquake simulation tests of model block structures. (5) Evaluation and strengthening techniques for brick and block structures. (6) Damage prediction and reliability analysis for masonry structures.
Descriptors: *Masonry; *Earthquake resistant structures; *Meetings; Reinforced concrete; Buildings; Construction materials; Structural design; United States; China
Identifiers: *Foreign technology; Joint ventures; NTISTFSOLO
Section Headings: 89D (Building Industry Technology--Structural analyses); 89G (Building Industry Technology--Construction Materials, Components, and Equipment); 50C (Civil Engineering--Construction Equipment, Materials, and Supplies)

PB87-206272/XAB
Siting and Geotechnical Program Focus and Directions. Report upon the Deliberations of a Workshop Held at the Illinois Institute of Technology, Chicago, Illinois on August 4-5, 1986
Saxena, S. K.
Illinois Inst. of Tech., Chicago.
Corp. Source Codes: 002114000
Sponsor: National Science Foundation, Washington, DC. Directorate for Engineering.
Report No.: NSF/ENG-86050
1986 185p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8722
Sponsored by National Science Foundation, Washington, DC. Directorate for Engineering.
NTIS Prices: PC A09/MF A01
Country of Publication: United States
Contract No.: NSF-ECE86-12728
The report reviews the status of the Siting and Geotechnical Systems Area of the Earthquake Hazard Mitigation Program, and recommends future directions for research in the area. Participants at the workshop were divided into four working groups concentrating on the following topics: (1) soil and rock properties and constitutive laws; (2) ground motion predictions and the effects of soil conditions on near surface motions, and influence of soil properties on ground failure hazards; (3) ground motion measurements, arrays, and instrumention; and (4) soil-structure interaction and design aspects.
Descriptors: *Meetings; Soil mechanics; Rock mechanics; Ground motion; Earth movements; Failure; Hazards; Soil dynamics; Construction; Buildings
Identifiers: *Earthquake engineering; NTISNSFENG
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 89D (Building Industry Technology--Structural analyses)

AD-A182 901/9/XAB
State-of-the-Art for Assessing Earthquake Hazards in the United States. Report 24. WES RASCAL Code for Synthesizing Earthquake Ground Motions (Miscellaneous paper)
Silva, W. J. ; Lee, K.
Woodward-Clyde Consultants, Walnut Creek, CA.
Corp. Source Codes: 079675000; 415101
Sponsor: Army Engineer Waterways Experiment Station, Vicksburg, MS.
Report No.: WES-MP-S-73-1-24
May 87 120p
Languages: English
Journal Announcement: GRAI8722
See also Report 23, AD-A181 209.
NTIS Prices: PC A06/MF A01
Country of Publication: United States
Contract No.: DACW39-85-M-1585

A computer code (RASCAL) has been developed to provide realistic predictions of ground motion parameters for applications to earthquake engineering risk assessment. The code incorporates random vibration theory (RVT) to calculate peak value of acceleration and velocity in addition to response spectra for specified earthquake source and propagation path parameters. To generate synthetic time histories, the code combines the phase spectra from observed strong motion records to a theoretical Brune modulus. The above techniques are also employed to produce an acceleration time history whose response spectrum matches a specified target or design response spectrum.

Descriptors: *Earthquakes; *Ground motion; Acceleration; History; Time; Computer programs; *Hazards; Peak values; Paths; Propagation; Response; Spectra; *Earthquake engineering; Risk; Sources; Motion; Records; Random vibration; Ground motion; Seismic data; Phase; Synthesis; Mathematical prediction; Threat evaluation; Velocity; Wave propagation; United States

Identifiers: RASCAL Computer Program; Earthquake Hazards; NTISDODXA; NTISDODA

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 89D (Building Industry Technology--Structural analyses)

PB87-163564/XAB
U.S.-Japan Cooperative Earthquake Research Program: Earthquake Simulation Tests and Associated Studies of a 0.3-Scale Model of a Six-Story Concentrically Braced Steel Structure
Uang, C. M. ; Bertero, V. V.
California Univ., Richmond. Earthquake Engineering Research Center.
Corp. Source Codes: 005432007
Sponsor: National Science Foundation, Washington, DC.
Report No.: UCB/EERC-86/10; NSF/ENG-86017
Dec 86 387p
Languages: English
Journal Announcement: GRAI8715
See also PB84-239409. Sponsored by National Science Foundation, Washington, DC.
NTIS Prices: PC A17/MF A01
Country of Publication: United States
Contract No.: NSF-ECE84-19739

The report summarizes the University of California, Berkeley part of the Six-Story Concentrically K-braced Steel Structure Phase of the U.S. -Japan Cooperative Earthquake Research Program. The design of the full-scale test building is reviewed and its behavior predicted analytically. The scale of the largest model that could be tested on the U.C. Berkeley earthquake simulator is determined. The reduced-scale model is designed, fabricated, instrumented and, finally, tested on the earthquake simulator. The test

results and their implications regarding earthquake-resistant design and construction of concentrically K-braced steel structures are evaluated. The reliability of computer programs to predict the seismic response of steel structures is also evaluated. Recommendations for improving the design and construction of such braced steel frames are formulated.

Descriptors: *Structural engineering; Simulation; Earthquakes; Earthquake resistant structures; Models; Concrete construction; Seismic waves; Graphs(Charts); Superstructures

Identifiers: *Earthquake engineering; Tall buildings; NTISNSFENG; NTISUCEERC

Section Headings: 89D (Building Industry Technology--Structural analyses); 50B (Civil Engineering--Civil Engineering)

PB87-148847/XAB

Japanese Private Sector Earthquake Programs and Their Applicability in the United States. Volume 2. Earthquake Emergency Preparedness of Japanese Industries

Selvaduray, G.

Scientific Service, Inc., Redwood City, CA.

Corp. Source Codes: 100778000

Sponsor: National Science Foundation, Washington, DC. Directorate for Engineering.

Report No.: REPT-8503-FR-2; NSF/ENG-86036

c1986 125p

Languages: English

Journal Announcement: GRAI8710

See also Volume 1, PB87-148839 and Volume 3, PB87-148854. Sponsored by National Science Foundation, Washington, DC. Directorate for Engineering.

NTIS Prices: PC A06/MF A01

Country of Publication: United States

Contract No.: NSF-ECE84-16400

The study focuses on the measures Japanese industries and businesses are implementing to reduce their earthquake risk. Japan's historic seismic activity is discussed as well as perception of earthquakes, prediction of earthquakes, and the public education program. Attention is directed to the regulations pertaining to disaster preparedness in Japan. Activities of the government of Shizuoka Prefecture are discussed, in particular the role this prefectural government plays in promoting earthquake hazard reduction among industries by providing financial incentives, and both planning and technical guidance. The organizational and engineering measures implemented at the Shizuoka General Hospital are discussed. The hospital, in the Tokai Region, was designed and built after the prediction of a major earthquake in the region. Earthquake damage incurred by the petroleum industry and measures taken by this industry to minimize damage in the future are discussed. Products developed by private industry specifically for earthquake hazard reduction are identified.

Descriptors: *Earthquakes; *Research projects; *Industries; Japan; Petroleum industry; Earthquake warning systems; Safety engineering; Hospitals; Businesses

Identifiers: *Emergency preparedness; Public education; NTISNSFENG

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 89D (Building Industry Technology--Structural analyses); 94H (Industrial and Mechanical Engineering--Industrial Safety Engineering); 91I (Urban and Regional Technology and Development--Emergency Services and Planning)

PB87-124780/XAB

Mathematical Model for Predicting the Nonlinear Response of Unreinforced Masonry Walls to In-Plane Earthquake Excitations

Mengi, Y. ; McNiven, H. D.

$20

California Univ., Richmond. Earthquake Engineering Research Center.
Corp. Source Codes: 005432007
Sponsor: North Atlantic Treaty Organization, Brussels (Belgium).
Report No.: UCB/EERC-86/07
May 86 123p
Languages: English
Journal Announcement: GRAI8706
Sponsored by North Atlantic Treaty Organization, Brussels (Belgium).
NTIS Prices: PC A06/MF A01
Country of Publication: United States

In the study a mathematical model is proposed to predict the nonlinear in-plane behavior of clay brick masonry walls when subjected to dynamic excitations. The study has two stages: the development of the form of the mathematical model, and the establishment of the parameter functions appearing in the model both using optimization and experimental data. The experimental work was carried out using the shaking table of the Earthquake Engineering Research Center, University of California, Berkeley. The experiments involved in-plane horizontal earthquake excitations. The intensity of excitation, starting with a small value, was increased gradually through the beginning of cracking until damage is complete. Time histories of accelerations and displacements relative to a fixed frame were recorded at the upper and lower edges, and at the mid-length of the wall specimen.

Descriptors: *Walls; *Earthquakes; *Masonry; *Brick structures; Dynamic pressure; Optimization; Experimental data; Cracks; Damage; Frequency response; Mathematical models
Identifiers: NTISUCEERC
Section Headings: 50C (Civil Engineering--Construction Equipment, Materials, and Supplies); 89D (Building Industry Technology--Structural analyses)

PB87-140216/XAB
Building Technology Project Summaries 1986
Wright, R. N.
National Bureau of Standards (NEL), Gaithersburg, MD. Center for Building Technology.
Corp. Source Codes: 081915002
Report No.: NBSIR-86/3490
Dec 86 68p
Languages: English Document Type: Bibliography
Journal Announcement: GRAI8705
See also PB85-240448.
NTIS Prices: PC A04/MF A01
Country of Publication: United States

The Center for Building Technology (CBT) of the National Bureau of Standards (NBS) is the national building research laboratory. It works cooperatively with other organizations, private and public, to improve building practices. It conducts laboratory, field, and analytical research. It develops technologies to predict, measure, and test the performance of building materials, components, systems, and practices. This knowledge is required for responsible and cost-effective decisions in the building process and cannot be obtained through proprietary research and development. CBT provides technologies needed by the building community to achieve the benefits of advanced computation and automation. CBT does not promulgate building standards or regulations, but its technologies are widely used in the building industry and adopted by governmental and private organizations that have standards and codes responsibilities. The report summarizes the projects underway in the Center during 1986.

Descriptors: Construction; Bibliographies; Technology; Projects; Abstracts; Buildings; Loads(Forces); Reliability; Thermal analysis; Thermal

measurements; Acoustics; Illuminating; Plumbing; Construction materials; Roofing; Concretes; Refrigerants

Identifiers: *Building technology; Earthquake engineering; Solar equipment; NTISCOMNBS

Section Headings: 89GE (Building Industry Technology--General); 97J (Energy--Heating and Cooling Systems); 89D (Building Industry Technology--Structural analyses); 97N (Energy--Solar Energy); 88E (Library and Information Sciences--Reference Materials)

AD-A168 715/1/XAB

Proceedings of West Coast Regional Coastal Design Conference Held on 7-8 November 1985 at Oakland, California

(Final rept. 1985-1986)

Corps of Engineers, San Francisco, CA. South Pacific Div.

Corp. Source Codes: 008643005; 406522

Apr 86 428p

Languages: English Document Type: Conference proceeding

Journal Announcement: GRAI8620

Cosponsored by the US Army Corps of Engineers, American Society of Civil Engineers and the American Shore and Beach Preservation Association.

NTIS Prices: PC A19/MF A01

Country of Publication: United States

The four session topics were: Harbors, Sedimentation and Material Disposal, Structures and Materials, and Coastal Processes. Partial Contents: Exact and Approximate Solutions for Breakwater Gap Diffraction, Beach Compartments, Littoral Drift, and Harbor Dredging, Shoaling of Port of Astoria, Oregon, by Sediment from Mt. St. Helens Eruption, Coastal Field Data Collection Program, Interactions between Water Waves and Currents in Shallow Water, Monitoring Sediment Transport at Ocean Disposal Sites, Geologic and Seismic Investigations of Dredge Disposal Sites off the Oregon Coast, Numerical Modeling of the Physical Fate of Dredged Material Dumped at Open Water Sites: San Francisco Bay and Puget Sound, Dredge Cutterhead Flow Processes, Sedimentation Rates and Channel Deepening, Mouth of Columbia River, Numerical Modeling, Testing and Analysis of Floating Breakwater behavior, Use of Steel Fiber Reinforced Concrete for Casting of Large Dolosse, Degradation of Rock Used in Erosion Control, Golden Gate Bridge Pier Ship Collision Study, Empirical Prediction of Wind-Generated Gravity Waves, Flushing of Entrance Channel for Coastal Lagoons--Mathematical Simulation, Net Shore-Drift along the Pacific Coast of Washington State.

Descriptors: *Coastal regions; *Breakwaters; *Dredged materials; *Harbors ; *Sediment transport; *Sedimentation; *Symposia; *Ocean waves; California; Control; Degradation; Disposal; Erosion; Fiber reinforcement; Floating bodies; Geology; Gravity waves; Littoral drift; Mathematical models; Monitoring; Oregon; Pacific ocean; Predictions; Puget sound; Reinforced concrete; Rock; San francisco bay; Sediments; Seismic waves; Shallow water; Sites; Solutions(General); Steel; Washington(State); Wind; Offshore structures; Diffraction; Beaches; Data acquisition; Bridges; *Ocean waste disposal; Volcanoes; Channels(Waterways); Rivers; Water traffic; Collisions ; Flushing

Identifiers: Coastal engineering; Coastal processes; Columbia River; Dolosse; NTISDODXA

Section Headings: 13B (Mechanical, Industrial, Civil, and Marine Engineering--Civil Engineering); 8C (Earth Sciences and Oceanography--Dynamic Oceanography); 8H (Earth Sciences and Oceanography--Hydrology and Limnology); 50B (Civil Engineering--Civil Engineering); 47B (Ocean Technology and Engineering--Dynamic Oceanography); 48G (Natural Resources and Earth Sciences--Hydrology and Limnology)

PB86-106655/XAB

Shimizu Technical Research Bulletin, No. 3, March 1984
(Annual rept)
Shimizu Construction Co. Ltd., Tokyo (Japan). Research Inst.
Corp. Source Codes: 084554001
Report No.: SCC/RI-84
c1984 77p
Languages: English
Journal Announcement: GRAI8605
See also PB86-106663 through PB86-106721, and PB85-244846.
NTIS Prices: PC E04/MF E01
Country of Publication: Japan
Contents: Applicability of nonlinear stress-strain model to undisturbed soils under cyclic loading; Deconvolution method between kinematic interaction and dynamic interaction of soil-foundation system based on observed data; Dynamic structure-soil-structure interaction analysis by boundary element method; Nonlinear behavior of a vertical pile subjected to a static lateral load; Prediction of wave height distribution in harbors; Experimental study on brittle fracture initiation characteristics of steel reinforcing bars at low temperatures; A construction planning method by computer simulation.
Descriptors: *Structural engineering; Mathematical models; Dynamic structural analysis; Water waves; Brittle fracturing; Reinforcing steels; Construction managment; Numerical analysis; Pile structures; Foundations
Identifiers: *Foreign technology; *Computer applications; NTISTFSOLO
Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 9B (Electronics and Electrical Engineering--Computers); 8K (Earth Sciences and Oceanography--Seismology); 8C (Earth Sciences and Oceanography--Dynamic Oceanography); 11F (Materials--Metallurgy and Metallography); 89D (Building Industry Technology--Structural analyses); 48E (Natural Resources and Earth Sciences--Soil Sciences); 47B (Ocean Technology and Engineering--Dynamic Oceanography); 71J (Materials Sciences--Iron and Iron Alloys); 89C (Building Industry Technology--Construction Management and Techniques)

PB85-240448/XAB
Building Technology Project Summaries, 1985
Raufaste, N. ; Olmert, M.
National Bureau of Standards (NEL), Gaithersburg, MD. Center for Building Technology.
Corp. Source Codes: 081915002
Report No.: NBS/SP-446/9
Jun 85 177p
Languages: English Document Type: Bibliography
Journal Announcement: GRAI8523
See also PB-261216.
NTIS Prices: PC A09/MF A01
Country of Publication: United States
The report summarizes CBT's research for 1985, and is arranged according to CBT's research programs. Each summary lists the project title, its activities, point of contact in CBT, and sponsor. Contents: computer-integrated construction; Structural loads and reliability; Geotechnical engineering; Earthquake engineering; Thermal analysis and measurements; Acoustics; Lighting research; Building controls; Non-Azeotropic refrigerant mixtures research; Test procedures for energy appliances; Solar equipment; Plumbing research; Quality of building materials; Performance of roofing systems; Predicting the performance and service-life of concretes.
Descriptors: *Construction; Bibliographies; Technology; Projects; Abstracts; Buildings; Loads(Forces); Reliability; Thermal analysis; Thermal measurements; Acoustics; Illuminating; Plumbing; Construction materials;

Roofing; Concretes; Refrigerants
Identifiers: *Building technology; Earthquake engineering; Solar equipment; NTISCOMNBS
Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 13A (Mechanical, Industrial, Civil, and Marine Engineering--Air Conditioning, Heating, Lighting, and Ventilating); 89GE* (Building Industry Technology--General); 88E (Library and Information Sciences--Reference Materials); 97N (Energy--Solar Energy)

DE85007684/XAB
Seismic Tests on Models of Reinforced-Concrete Category I Buildings
Dove, R. C. ; Endebrock, E. G. ; Dunwoody, W. E. ; Bennett, J. G.
Los Alamos National Lab., NM.
Corp. Source Codes: 072735000; 9512470
Sponsor: Department of Energy, Washington, DC.
Report No.: LA-UR-85-725; CONF-850809-17
1985 13p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8522; NSA1000
International conference on structural mechanics in reactor technology, Brussels, Belgium, 19 Aug 1985.
NTIS Prices: PC A02/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-36
The behavior of reinforced concrete (R/C), Category I noncontainment nuclear power plant structures subjected to seismic events of magnitude greater than used in their original design has been investigated using two sizes of scale models. Test results were analyzed to determine (1) maximum input for the response to remain linear/elastic; (2) changes in stiffness, damping, and modal frequency that are produced by seismic input greater than that causing linear elastic response; (3) changes in floor response spectra when the structure's response is nonlinear/inelastic; and (4) the magnitude of the seismic event necessary to fail (excessively crack) these structures. By constructing models of two sizes, it was possible to make two independent predictions of prototype behavior and to compare the results from the two models. 1 ref., 4 figs., 1 tab. (ERA citation 10:033804)
Descriptors: *Containment Buildings; *Nuclear Power Plants; *Reinforced Concrete; Benchmarks; Computerized Simulation; Damping; Floors; Materials Testing; Reactor Safety; Response Functions; Seismic Effects; Structural Models
Identifiers: ERDA/220900; ERDA/220200; ERDA/360603; *Eathquake engineering; *Seismic effects; NTISDE
Section Headings: 18F (Nuclear Science and Technology--Radiation Shielding and Protection); 18I (Nuclear Science and Technology--Reactor Engineering and Operation); 13C (Mechanical, Industrial, Civil, and Marine Engineering--Construction Equipment Materials and Supplies); 77F (Nuclear Science and Technology--Radiation Shielding, Protection, and Safety); 77H (Nuclear Science and Technology--Reactor Engineering and Nuclear Power Plants)

PB85-191450/XAB
Refined Physical Theory Model for Predicting the Seismic Behavior of Braced Steel Frames
Ikeda, K. ; Mahin, S. A.
California Univ., Richmond. Earthquake Engineering Research Center.
Corp. Source Codes: 005432007
Sponsor: National Science Foundation, Washington, DC.
Report No.: UCB/EERC-84/12; NSF/CEE-84023
Jul 84 196p

Languages: English
Journal Announcement: GRAI8516
NTIS Prices: PC A09/MF A01
Country of Publication: United States
Contract No.: NFS-CEE82-08079

This report presents a state-of-the-art model for inelastic response analysis of braced steel structures. This model achieves realism and efficiency by combining analytical formulations describing plastic hinge behavior with empirical formulae based on experimental data. Several empirical behavioral characteristics are implemented in this modeling including (1) the variation of the tangent modulus of elasticity during cycles, (2) the gradual plastification process of the plastic hinge, and (3) the residual displacement due to material nonlinearities in the nominal elastic range. Verification of the new model is performed on the basis of quasi-static analyses of individual struts and dynamic response analyses of a three-story X-braced steel frame, representative of offshore platforms. The model is applied to the study of the design of a real sized six-story K-braced steel building frame.

Descriptors: *Framed structures; Braces; Steel structures; Theories; Models; Elastic analysis; Predictions; Seismic waves; Dynamic response; Design; Tangent modulus

Identifiers: *Earthquake engineering; Offshore platforms; NTISNSFCEE; NTISUCEERC

Section Headings: 20K (Physics--Solid Mechanics); 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 46E (Physics--Structural Mechanics); 47GE (Ocean Technology and Engineering--General)

PB85-152155/XAB

Implementation of Base Isolation for the Foothill Communities Law and Justice Center

Tarics, A. G. ; Way, D. ; Kelly, J. M.

Reid and Tarics Associates, San Francisco, CA.

Corp. Source Codes: 082696000;

Sponsor: California Univ., Berkeley.; National Science Foundation, Washington, DC.

Report No.: NSF/CEE-84041

Nov 84 300p

Languages: English

Journal Announcement: GRAI8508

Prepared in cooperation with California Univ., Berkeley.

NTIS Prices: PC A13/MF A01

Country of Publication: United States

Contract No.: NSF-CEE82-17584

Base isolation, an approach to seismic structural design, is discussed, and its use in the design of the Foothill Communities Law & Justice Center (FCLJC) in Rancho Cucamonga, California, is described. FCLJC's design parameters are noted: it was designed for an 8.3 Richter event on the San Andreas Fault, with all structural members remaining in the elastic range and all functions remaining operational after the event. Additionally, because all the significant earthquake motion is concentrated at the bearings rather than encompassing hundreds of columns, beams, and walls, the overall system is more predictable. The base-isolated design resulted in a savings of $1 million in structural steel in comparison with the conventional steel frame that had been employed in a preliminary design. Finally, when compared to the preliminary design, the base isolated design exhibited a reduction of forces transmitted into the building by a factor of up to seven. Construction details are supplied, and appendices contain a technical report on design of bearings, computer plots from time history analyses, construction costs, fabrication descriptions, and a draft of the

code for base isolation design of buildings.
Descriptors: *Earthquake resistant structures; Buildings; Dynamic structural analysis; Design; Construction; Bearings; Graphs(Charts)
Identifiers: *Base isolation; Earthquake engineering; Computer aided testing; NTISNSFCEE
Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 89B (Building Industry Technology--Architectural Design and Environmental Engineering); 89C (Building Industry Technology--Construction Management and Techniques)

DE84012451
Experimental Investigation of Reinforced-Concrete Category I Structures at High Load Levels
Endebrock, E. G. ; Dove, R. C. ; Dunwoody, W. E.
Los Alamos National Lab., NM.
Corp. Source Codes: 072735000; 9512470
Sponsor: Department of Energy, Washington, DC.
Report No.: LA-UR-84-1634; CONF-840913-1
1984 22p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8426; NSA0900
Conference on structural engineering in operating nuclear facilities, Raleigh, NC, USA, 10 Sep 1984.
Portions are illegible in microfiche products.
NTIS Prices: PC A02/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-36
A US Nuclear Regulatory Commission-funded experimental program designed to obtain information on the structural behavior of reinforced-concrete buildings has been underway at the Los Alamos National Laboratory since 1980. This information will aid the NRC in evaluating the seismic capacities of existing Seismic Category I buildings. Scale models of reinforced-concrete shear walls and buildings were subjected to static and dynamic tests. Simulated seismic tests were conducted on model structures constructed to two scales (1/30 and 1/10), permitting an evaluation of the effect of scale in experimental investigations of reinforced-concrete structures. Monotonic and cyclic quasistatic tests provide information on strength, stiffness, strength and stiffness degradation, ductility, and general load-deflection behavior up to the ultimate load. The dynamic tests yielded information on natural frequencies, equivalent viscous damping values, initial stiffness and stiffness degradation, and general response behavior. These experimental investigations have indicated that sine-sweep tests are not suitable for reinforced-concrete structures and that the initial stiffness of shear wall structures is less than predicted when assuming an uncracked concrete section. (ERA citation 09:040911)
Descriptors: *Reinforced Concrete; Buildings; Dynamic Loads; Mechanical Tests; Scale Models; Seismic Effects; Static Loads; Walls
Identifiers: ERDA/420500; NTISDE
Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 89D (Building Industry Technology--Structural analyses)

PB84-239409
U.S.-Japan Cooperative Earthquake Research Program: Earthquake Simulation Tests and Associated Studies of A 1/5th-Scale Model of a 7-Story Reinforced Concrete Test Structure
Bertero, V. V. ; Aktan, A. E. ; Charney, F. A. ; Sause, R.
California Univ., Richmond. Earthquake Engineering Research Center.
Corp. Source Codes: 005432007
Sponsor: National Science Foundation, Washington, DC.

Report No.: UCB/EERC-84/05; NSF/CEE-84020
Jun 84 195p
Languages: English
Journal Announcement: GRAI8425
NTIS Prices: PC A09/MF A01
Country of Publication: United States
Contract No.: NSF-CEE80-09478

This report summarizes research conducted at Berkeley as part of the R/C(seven-story frame-wall) Building Structure Phase of the U.S.-Japan Cooperative Earthquake Research Program. Besides describing the studies conducted at Berkeley on a 1/5th-scale model of the test building, the report has the following main objectives: (a) to evaluate the results of these studies and discuss the degree of correlation between the experimental responses of the full-scale model tested in Japan and the 1/5th-scale model tested in Berkeley, and between analytically predicted and experimental responses; (b) to assess the states of art and practice of seismic resistant design and construction of reinforced concrete frame-wall structures in light of this evaluation; and (c) to formulate recommendations for improvement in the states of the practice and art.

Descriptors: *Structural engineering; Simulation; Earthquakes; Earthquake resistant structures; Models; Concrete construction; Seismic waves; Superstructures

Identifiers: Tall buildings; *Earthquake engineering; NTISNSFCEE; NTISUCEERC

Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 13B (Mechanical, Industrial, Civil, and Marine Engineering--Civil Engineering); 89D (Building Industry Technology--Structural analyses); 50B (Civil Engineering--Civil Engineering)

PB84-222249

Building Technology Project Summaries, 1983-1984 (of the National Bureau of Standards (NEL) Center for Building Technology)

(Final rept.)

Raufaste, N. J. ; Olmert, M.

National Bureau of Standards (NEL), Washington, DC. Center for Building Technology.

Corp. Source Codes: 080754004
Report No.: NBS/SP-446-8
Jun 84 141p
Languages: English
Journal Announcement: GRAI8422
See also PB83-259622.
NTIS Prices: PC A07/MF A01
Country of Publication: United States

The Center for Building Technology (CBT) of the National Bureau of Standards (NBS) is the national building research laboratory. It works cooperatively with other organizations, private and public, to improve building practices. It conducts laboratory, field, and analytical research. It develops technologies to predict, measure, and test the performance of building materials, components, systems, and practices. This knowledge is required for responsible and cost-effective decisions in the building process and cannot be obtained through proprietary research and development. CBT provides technologies needed by the building community to achieve the benefits of advanced computation and automation. CBT does not promulgate building standards or regulations, but its technologies are widely used in the building industry and adopted by governmental and private organizations that have standards and codes responsibilities. CBT programs include: computer-integrated construction, structural safety, earthquake hazards reduction, building physics, building equipment, quality

of building materials, and cement hydration.
Descriptors: *Construction industry; *Buildings; *Research projects; Structural engineering; Building codes; Earthquake resistant structures; Structural design; Environmental engineering; Technology innovation; Solar energy concentrators; Cost effectiveness; Quality assurance; Construction materials; Thermal insulation; Acoustics
Identifiers: Earthquake engineering; Energy conservation; Cement hydration; NTISCOMNBS
Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 89GE (Building Industry Technology--General)

PB84-200427
Fracture Safe Performance of LNG Storage Tanks Made of 9% Nickel Steel Based on Fracture Mechanics
Mitsubishi Heavy Industries Ltd., Tokyo (Japan).
Corp. Source Codes: 021763000
1984 8p
Languages: Japanese
Journal Announcement: GRAI8420
Text in Japanese.
Included in Mitsubishi Juko Giho, v21 n2 p175-182 1984.
NTIS Prices: (Order as PB84-200351, PC E11/MF E01)
Country of Publication: Japan
The fracture mechanics approach was applied to evaluate the structural integrity of 9% nickel steel tanks. An analysis was made of the side-wall and bottom plate constructions, each with a welded joint, and the side-wall to annular plate connection. The stress intensity factor (K) was calculated for each structural component under the most conceivably severe stress states coupled with the effects of probable seismic loads, assuming a surface defect of 100 mm in a 1/5 plate-thickness, and compared with the fracture toughness of appropriate welded joints determined from a number of notched wide-plate tests. Fracture tests were also carried out on models representing each structural component to confirm the predictions obtained from K-value analysis. These results showed that 9% nickel steel tanks provide sufficient safety margins in terms of brittle fracture under emergency loads such as in the LNG containers.
Descriptors: *Storage tanks; *Liquefied natural gas; *Fracture strength; *Structural analysis; Fracture tests; Dynamic loads; Plates; Walls; Nickel steels; Models; Seismic waves
Identifiers: NTISTFMHI
Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 20K (Physics--Solid Mechanics); 11F (Materials--Metallurgy and Metallography); 89D (Building Industry Technology--Structural analyses); 46E (Physics--Structural Mechanics); 71J (Materials Sciences--Iron and Iron Alloys)

PB84-191675
Direct Generation of Seismic Floor Response Spectra for Classically and Nonclassically Damped Structures
(Final rept.)
Sharma, A. M. ; Singh, M. P.
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Engineering Science and Mechanics.
Corp. Source Codes: 032784036
Sponsor: National Science Foundation, Washington, DC.
Report No.: VPI-83-44
Nov 83 324p
Languages: English
Journal Announcement: GRAI8418

NTIS Prices: PC A14/MF A01
Country of Publication: United States
Contract No.: NSF-CEE81-09100
Floor response spectra are commonly used as seismic inputs for the design of secondary systems. Here several direct approaches based on the method of mode displacement as well as mode acceleration have been developed for generation of floor spectra for classically and non-classically damped systems. The mode displacement approaches require pseudo acceleration and relative velocity spectra whereas the mode acceleration approaches require relative acceleration and velocity spectra as their seismic inputs. These proposed approaches have been validated by a comprehensive numerical simulation study involving several ensembles of time histories. For structural systems with dominant high frequency modes, the mode displacement approaches may give inaccurate results if only a first few modes are used in the analysis, whereas the mode acceleration approaches will still predict the response accurately. Therefore, the mode acceleration approaches are proposed as better alternatives to the mode displacement approaches which are currently used.
Descriptors: *Dynamic structural analysis; *Seismic waves; *Vibration damping; Damping; Linear; Nonlinear
Identifiers: *Earthquake engineering; NTISVPISU; NTISNSFCEE
Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 13M* (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 48A (Natural Resources and Earth Sciences--Mineral Industries); 89D* (Building Industry Technology--Structural analyses)

PB84-133917
Innovations in Earthquake and Natural Hazards Research: Unreinforced Masonry Buildings
(Case study no. 2)
Moore, G. B. ; Yin, R. K.
COSMOS Corp., Washington, DC.
Corp. Source Codes: 079315000
Sponsor: National Science Foundation, Washington, DC.
Report No.: NSF/CEE-83207
Jul 83 61p
Languages: English
Journal Announcement: GRAI8406
NTIS Prices: PC A04/MF A01
Country of Publication: United States
Contract No.: NSF-CEE82-03884
Results are presented of research on unreinforced masonry (URM) buildings. An extensive survey of URM buildings in six regions of the country was undertaken to identify the characteristics of those buildings. A computer model was developed to pretest and predict the responses of walls and diaphragms when subjected to simulated ground motion. Tests were conducted on specimen walls and diaphragms and on existing URM buildings to confirm and refine the methodology. A cost effective means was found for evaluating and retrofitting URM buildings to withstand earthquakes. Use of this innovation occurred as a result of important events during the life of the research project, including a series of workshops held for officials, engineers, and building owners to acquaint them with the research, and active dissemination of project results.
Descriptors: *Buildings; *Earthquakes; *Masonry; Earthquake resistant structures; Dynamic structural analysis; Technology innovation; Design criteria; Renovating; Cost effectiveness
Identifiers: *Ground motion; Earthquake engineering; NTISNSFCEE
Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 8K (Earth Sciences and Oceanography--Seismology); 89D (Building Industry Technology--Structural

analyses)

PB84-112812
Mechanics of Geomaterials: Rocks, Concretes, Soils. Preprints, William Prager Symposium Held on September 11-15, 1983
Bazant, Z. P.
Northwestern Univ., Evanston, IL. Technological Inst.
Corp. Source Codes: 007740040
Sponsor: National Science Foundation, Washington, DC.; International Union of Theoretical and Applied Mechanics.
Sep 83 669p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8403
Sponsored in part by International Union of Theoretical and Applied Mchanics.
NTIS Prices: PC A99/MF A01
Country of Publication: United States
Contract No.: NSF-CEE82-08208
Recent years have witnessed an intensified interest in the mechanics of soils and rocks, as well as concrete. Applications in geotechnical and structural engineering, mining and pretroleum engineering, nuclear power plant safety, underground excavation, earthquake predictions, structures in the ocean, and the mechanics of celestial bodies, abound with mechanics problems which call for more realistic and more accurate solutions. Work in this field has proceeded to a large extent separately within various professional groups, and communication among civil engineers, geophysicists, mining engineers and theoretical mechanicists have been quite limited, even though their problems are similar from the viewpoint of mechanics. Therefore, the primary objective of the William Prager Symposium was to bring together specialists from these various professional groups and disciplines, and thus promote interdisciplinary cooperation.
Descriptors: *Concretes; *Soil mechanics; *Rock mechanics; *Meetings; Soil properties; Rock properties; Fracture properties; Mathematical models; Plastic theory; Elastic theory; Continuum mechanics
Identifiers: *Geomaterials; NTISSOLO
Section Headings: 8M (Earth Sciences and Oceanography--Soil Mechanics); 8G (Earth Sciences and Oceanography--Geology and Mineralogy); 13C (Mechanical, Industrial, Civil, and Marine Engineering--Construction Equipment Materials and Supplies); 50D* (Civil Engineering--Soil and Rock Mechanics); 48F* (Natural Resources and Earth Sciences--Geology and Geophysics); 89G* (Building Industry Technology--Construction Materials, Components, and Equipment); 50C (Civil Engineering--Construction Equipment, Materials, and Supplies)

PB84-112697
Equivalent Seismic Design of Curved Box Girder Bridges
Heins, C. P. ; Lin, I. C.
Maryland Univ., College Park.
Corp. Source Codes: 005683000
Sponsor: National Science Foundation, Washington, DC.
Report No.: NSF/CEE-82202
Feb 82 179p
Languages: English
Journal Announcement: GRAI8403
NTIS Prices: PC A09/MF A01
Country of Publication: United States
Contract No.: NSF-CEE80-18729
The seismic response of steel composite curved box girder bridges has been predicted by computing the natural frequency of the bridge and using a response spectrum curve for both translation and rotational accelerations.

The natural frequencies have been predicted by simulation of the continuous curved bridge, restrained by equivalent springs. These natural frequencies are then utilized in conjunction with the response spectrum curves to evaluate the equivalent seismic force to be applied to the structure.

Descriptors: *Girder bridges; *Earthquake resistant structures; Design criteria; Dynamic response; Resonant frequency; Mathematical models

Identifiers: *Seismic design; Earthquake engineering; Computer applications; NTISNSFCEE

Section Headings: 13B (Mechanical, Industrial, Civil, and Marine Engineering--Civil Engineering); 8K (Earth Sciences and Oceanography--Seismology); 50A (Civil Engineering--Highway Engineering)

EARTHQUAKE PREDICTION AND FORECASTING

DE89010450/XAB

State of Stress and the Relation to Tectonics in the Central Savannah River Area of South Carolina

Zoback, M. D. ; Moos, D. ; Stephenson, D. E.

Du Pont de Nemours (E.I.) and Co., Aiken, SC. Savannah River Plant.

Corp. Source Codes: 009966003; 2205000

Sponsor: Department of Energy, Washington, DC.

Report No.: DP-MS-88-251; CONF-890628-11

1989 23p

Languages: English Document Type: Conference proceeding

Journal Announcement: GRAI8920; NSA0000

30. US symposium on rock mechanics, Morgantown, WV, USA, 19 Jun 1989.

Portions of this document are illegible in microfiche products.

NTIS Prices: PC A03/MF A01

Country of Publication: United States

Contract No.: AC09-76SR00001

An element of the seismic hazard assessment program at the Savannah River Plant (SRP), South Carolina, was the measurement of the in situ state-of-stress existing in the crystalline basement rock below the site. Hydraulic fracturing stress and related geophysical measurements including borehole televiewer logs were performed in a series of wells at various locations on the SRP site. Prior to the start of the field program, scoping studies using laboratory measured rock properties and the estimated regional stresses in a boundary element program were performed to predict if wellbore breakouts would occur in the borings depth. At the depths of the wells, the laboratory strength of the rock was great enough to prevent failure unless the in situ stresses were very high. The in situ stress field measured at the site is similar to that found at comparable depths in the region, where S(sub H) > S(sub h) > S(sub v) and the maximum horizontal stress is oriented NE-SW. The measured stress state indicated high horizontal stresses that could cause reverse faulting on favorably oriented pre-existing planes of weakness. This reverse faulting is consistent with the observed structure of the basement rock on site. 22 refs., 5 figs., 2 tabs.

Descriptors: *Savannah River Plant; *Seismic Events; *Tectonics; Detection; Evaluation; Forecasting; Hazards; Igneous Rocks; Metamorphic Rocks; Rock Mechanics; Seismic Sources; Site Characterization; South Carolina; Stress Analysis

Identifiers: ERDA/580300; ERDA/052002; NTISDE

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE89011336/XAB

Depth Estimation of Seismic Sources with Small Networks

Dowla, F. U.

Lawrence Livermore National Lab., CA.

Corp. Source Codes: 068147000; 9513035
Sponsor: Department of Energy, Washington, DC.
Report No.: UCID-21599
13 Dec 88 17p
Languages: English
Journal Announcement: GRAI8919; NSA1400
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-48

Since hypocenters of earthquakes are usually deeper than those of explosions, depth of focus measurement could be a valuable source discrimination parameter for test ban treaty verification. In this paper, we study the problem of determining depth of underground sources using a small planar network. By deriving analytical results and by verifying these results with computer simulation of seismic networks, we show that in terms of estimating source depths accurately, performance of a network can be improved using an appropriate distribution of stations. While it is desirable to place the stations close to the source, there might be physical limitations to this strategy in a verification scenario. We have shown for a given closest station-source radial distance, it is desirable to place some of the other stations about twice as far as this distance, from the source, for better depth estimation. Furthermore, a distribution of stations which results in a set of source-receiver distances which are all different from each other is desirable for accurate depth estimation of shallow sources. 10 refs., 6 figs. (ERA citation 14:027056)

Descriptors: *Depth; Earthquakes; Nuclear Explosions; Comparative Evaluations; Detection; Forecasting; Hypocenters; Mathematical Models; Nuclear Explosion Detection; Seismic Arrays; *Seismic Detection

Identifiers: ERDA/450300; ERDA/580201; NTISDE

Section Headings: 63I (Detection and Countermeasures--Seismic Detection); 92E (Behavior and Society--International Relations)

AD-A208 597/5/XAB
Geologic Study of Five Sites in the Western North Atlantic Ocean (Final rept.)
Grim, M. S. ; Bowles, F. A. ; Gettrust, J. F. ; Burns, D. A.
Naval Ocean Research and Development Activity, NSTL Station, MS.
Corp. Source Codes: 055026000; 392773
Report No.: NORDA-199
Feb 87 60p
Languages: English
Journal Announcement: GRAI8919
NTIS Prices: PC A04/MF A01
Country of Publication: United States
Contract No.: 00101; 100

For an accurate geoacoustic model to be constructed an area's geology must be well understood. In some areas modeling may not be successful because small-scale lithologic and topographic changes are not recognized from available data. Currently, we cannot obtain complete measurements of sediment properties such as velocity and density from a drill hole. Laboratory and in situ measurements do not agree, and attempts to reconcile the two have not been effective. In constructing our geoacoustic models we added high-velocity stringers which are almost always present in nature; e.g., worldwide occurrences of chert have been documented by DSDP cores. We constructed geoacoustic models for 5 areas in the western North Atlantic. For 2 areas we used laboratory and seismic data collected during DSDP studies, as well as published reports, to construct detailed models. For the remaining areas we tabulated generalized sediment velocity and lithology information from published reports. It became apparent that some

areas have such rugged topography and variable lithology that traditional modeling probably will be unsuccessful unless the geology is known in great detail. Some continental margin shallow-water sites and some deep ocean sites, such as DSDP site 417/418, are much more predictable and should be easier to model; however, even site 417/418 has unique geologic factors that will cause actual seismic propagation to differ from our model predictions. However, deviations from predicted values should be reasonably small at (5-50 Hz) frequencies. (EDC)

Descriptors: Accuracy; Deep depth; Deep oceans; Geoacoustics; *Marine geology; Lithology; Mathematical models; North Atlantic Ocean; Mathematical prediction; Propagation; Sediments; Seismic data; Seismic waves; Shallow water; Sites; Ocean bottom topography; Variables; Velocity; West(Direction) ; *Drilling; Acoustic velocity

Identifiers: Geoacoustic models; Deep Sea Drilling Project; Seismic velocity; Continental margins; NTISDODXA

Section Headings: 47E (Ocean Technology and Engineering--Marine Geophysics and Geology); 47GE (Ocean Technology and Engineering--General); 48C (Natural Resources and Earth Sciences--Natural Resource Surveys)

AD-A208 276/6/XAB

Pn from the Nevada Test Site

(Technical rept. 3-9 May 88)

Burdick, L. J. ; Saikia, C. K. ; Smith, N. F.

Woodward-Clyde Consultants, Pasadena, CA.

Corp. Source Codes: 073537000; 412520

Sponsor: Air Force Geophysics Lab., Hanscom AFB, MA.

Report No.: WCCP-R-88-03; SCIENTIFIC-3; AFGL-TR-89-0034

15 Dec 88 81p

Languages: English

Journal Announcement: GRAI8919

NTIS Prices: PC A05/MF A01

Country of Publication: United States

Contract No.: F19628-87-C-0081; DARPA Order-5307; 7A10; DA

A regional event discriminant is being developed and tested based on the waveform of high frequency Pn. The data base being used in the development consists of signals from explosions and earthquakes recorded on the western U.S. digital network. It has been discovered that at most stations the waveform of Pn onset is remarkably stable and different from the corresponding waveforms from earthquakes. A forward modeling study of broad band explosion Pn's revealed that the distinctive character of their waveform is caused by a strong pPn arrival. Depth phases from earthquakes arrive much later in the signal. It was found that a clear effective pPn arrival was present in all cases. However, it consistently arrives later than the predicted elastic time. For Pahute events, the amplitude of effective pP is close to the elastic predictions. For Yucca Valley, it is consistently larger indicating the effect of a site dependent nonlinear process in the source region. An appropriate value of t* for Pn appears to be in the range of 0.1 to 0.2 seconds. The frequency content of the explosion Pn energy indicates that it is caused by turning rays in the lid gradient rather than true head waves traveling on the crust mantle interface. The discrimination capacity of the Pn waveform was measured quantitatively by correlating the average explosion Pn trace with a data base of explosion and earthquake signals. Keywords: Synthetic seismograms, Nuclear explosion testing, Underground explosions. (JD)

Descriptors: Arrival; Capacity(Quantity); Data bases; Digital systems; Discrimination; Earth mantle; Earthquakes; Elastic properties; Energy; Forward areas; Head on orientation; Interfaces; Models; Networks; Nonlinear systems; *Nuclear explosion testing; Predictions; *Seismic data; Sites; Synthesis; Test facilities; Time; Underground explosions; Waveforms; Seismic waves

Identifiers: *Seismic discrimination; Synthetic seismograms; NTISDODXA; NTISDODAF
Section Headings: 74H (Military Sciences--Nuclear Warfare); 63I (Detection and Countermeasures--Seismic Detection)

N89-21436/5/XAB
Interpretation of Crustal Dynamics Data in Terms of Plate Motions and Regional Deformation Near Plate Boundaries. Semiannual Status Report No. 5, September 22, 1988-March 21, 1989
Solomon, S. C.
Massachusetts Inst. of Tech., Cambridge.
Corp. Source Codes: 001450000; MJ700802
Sponsor: National Aeronautics and Space Administration, Washington, DC.
Report No.: NAS 1.26:180077; NASA-CR-180077
6 Apr 89 91p
Languages: English
Journal Announcement: GRAI8917; STAR2714
NTIS Prices: PC A05/MF A01
Country of Publication: United States
Contract No.: NAG5-814
A particularly detailed set of observations in the vicinity of an intraplate, thrust earthquake (M 7.4) in Argentina, indicate a cyclic pattern of deformation very similar to that reported previously for interplate earthquakes. This deformation cycle, which may be characteristic of many seismically active areas, consists of: (1) steady strain accumulation, possibly punctuated by strain reversals; (2) coseismic strain release; (3) a period of continued strain release due to afterslip (persisting for perhaps a year or so); and (4) rapid postseismic strain accumulation which decreases exponentially and grades into steady strain accumulation. Deformation associated with three earthquakes in the U.S. (1940, M7.1 Imperial Valley California; 1964, M8.4 Alaska; 1959, M7.5 Hebgen Lake, Montana) are interpreted in light of this general earthquake cycle and are used to investigate the mechanics of strain release for these events. These examples indicate that large postseismic movements can occur for strike-slip, thrust, and normal fault events, and both viscoelastic relaxation and postseismic after-slip must be incorporated in models of earthquake related deformation. The mechanics of the strain release process revealed by these examples has implications for estimating earthquake repeat times from geodetic observations near active faults.
Descriptors: *Data processing; *Deformation; *Earth crust; *Earthquakes; *Geodynamics; *Plates (Tectonics); *Relaxation (Mechanics); *Seismology; *Stresses; Alaska; California; Montana; Predictions; Viscoelasticity
Identifiers: NTISNASA
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

AD-A207 418/5/XAB
Assessment of In-Situ Conditions Using Wave Propagation Techniques (Technical rept. Jan-Dec 87)
Maser, K. ; Halabe, U.
Massachusetts Inst. of Tech., Cambridge. Dept. of Civil Engineering.
Corp. Source Codes: 001450030; 220010
Sponsor: Army Research Office, Research Triangle Park, NC.
Report No.: ARO-24621.3-EG-UIE
Mar 88 44p
Languages: English
Journal Announcement: GRAI8917
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: DAAL03-86-G-0197

The overall objective of this research is to stimulate the development of wave propagation sensor techniques for the evaluation of in-situ conditions. Assessment of conditions in the built environments is critical to the management of infrastructure, and there are significant opportunities for developing such sensor technology which have yet to be fully exploited. This research has been directed towards providing a development framework, and an associated set of developmental tools, applicable to wave propagation techniques. Such techniques include seismics, sonics and ultrasonics, and impulse radar. The research has focused on the development of tools in two areas: (1) predictive analytic models and waveform synthesis techniques, and (2) laboratory evaluation techniques. The development of these tools has been specifically oriented towards applications involving identification, location, and characterization of regular and irregular subsurface anomalies. Originally this research was conceived in an effort to exploit commonalities between electromagnetic and mechanical wave propagation techniques. As we discussed in the summary of findings, this perspective was found to be too broad at this stage of the research. Such a perspective will be more meaningful when a better understanding of specific properties of the media is achieved. Keywords: Non destructive testing; Wave propagation; Sensor techniques; Infrastructure assessment and management; wave form synthesis techniques. (jhd)

Descriptors: Acoustics; Anomalies; Detectors; *Electromagnetic wave propagation; Laboratory procedures; Laboratory tests; Mathematical models; Mechanical engineering; Mechanical waves; Models; Nondestructive testing; Predictions; Pulses; Radar; Seismology; Subsurface; Synthesis; *Ultrasonics ; Waveforms; *Seismic waves; *Radar signals; *Test equipment

Identifiers: NTISDODXA; NTISDODA

Section Headings: 94K (Industrial and Mechanical Engineering--Laboratory and Test Facility Design and Operation); 63I (Detection and Countermeasures--Seismic Detection); 63A (Detection and Countermeasures--Ac oustic Detection); 63H (Detection and Countermeasures--Radiofrequency Detection)

DE89008994/XAB

Preliminary Seismic Design Cost-Benefit Assessment of the Tuff Repository Waste-Handling Facilities

Subramanian, C. V. ; Abrahamson, N. ; Hadjian, A. H. ; Jardine, L. J. ; Kemp, J. B.

Sandia National Labs., Albuquerque, NM.

Corp. Source Codes: 068123000; 9511100

Sponsor: Department of Energy, Washington, DC.

Report No.: SAND-88-1600

Feb 89 217p

Languages: English

Journal Announcement: GRAI8916; NSA1400

Portions of this document are illegible in microfiche products.

NTIS Prices: PC A10/MF A01

Country of Publication: United States

Contract No.: AC04-76DP00789

This report presents a preliminary assessment of the costs and benefits associated with changes in the seismic design basis of waste-handling facilities. The objectives of the study are to understand the capability of the current seismic design of the waste-handling facilities to mitigate seismic hazards, evaluate how different design levels and design measures might be used toward mitigating seismic hazards, assess the costs and benefits of alternative seismic design levels, and develop recommendations for possible modifications to the seismic design basis. This preliminary assessment is based primarily on expert judgment solicited in an interdisciplinary workshop environment. The estimated costs for individual

attributes and the assumptions underlying these cost estimates (seismic hazard levels, fragilities, radioactive-release scenarios, etc.) are subject to large uncertainties, which are generally identified but not treated explicitly in this preliminary analysis. The major conclusions of the report do not appear to be very sensitive to these uncertainties. 41 refs., 51 figs., 35 tabs. (ERA citation 14:024201)

Descriptors: *Hazards; *High-Level Radioactive Wastes; *Radioactive Waste Facilities; *Seismic Events; Cost Benefit Analysis; Damage; Design; Forecasting; Mitigation; Radioactive Waste Management; Recommendations; Tuff; Underground Disposal

Identifiers: ERDA/052002; ERDA/053000; NTISDE

Section Headings: 77G (Nuclear Science and Technology--Radioactive Wastes and Radioactivity)

AD-A205 986/3/XAB

Dynaflow User's Guide

Prevost, J. H. ; Slyh, R. ; Hager, K.

Naval Civil Engineering Lab., Port Hueneme, CA.

Corp. Source Codes: 014399000; 248150

Report No.: NCEL-UG-0014

Nov 88 485p

Languages: English

Journal Announcement: GRAI8915

Prepared in collaboration with Princeton University, NJ.

NTIS Prices: PC A21/MF A01

Country of Publication: United States

The Navy has $25 billion worth of facilities in seismically active regions. Each year $200 million of new facilities are added to those in seismically active areas. The Navy, because of its mission, must locate at the waterfront with a high watertable and often on marginal land. Seismically induced liquefaction is a major threat to the Navy. Presently, procedures do not exist to analyze the effect of liquefaction on structures. Developing an effective stress soil model will provide a tool for such analysis of waterfront structures. To understand the significance of liquefaction, it is important to note the damage caused in recent experiences. This study is directed toward examining the predictive capabilities of the numerical procedure proposed in a previous work titled studies of the capabilities of a soil model to predict axial drained/undrained responses of two sands. Keywords: Finite element analysis, User manuals, Plotting, Initial displacement/velocity data.

Descriptors: Displacement; Facilities; Finite element analysis; Induced environments; Liquefaction; Liquid phases; Computer programs; Mathematical models; Plotting; Computerized simulation; Sand; Soil models; Stresses; Structures; Threats; Seismic waves; Velocity; Waterfront structures; Mathematical prediction

Identifiers: *Liquefaction(Seismic); *Seismicity; Dynaflow computer program; *User manuals(Computer programs); *Naval shore facilities; NTISDODXA

Section Headings: 74E (Military Sciences--Logistics, Military Facilities, and Supplies); 50D (Civil Engineering--Soil and Rock Mechanics); 89D (Building Industry Technology--Structural analyses)

AD-A205 960/8/XAB

Stress-Induced Anisotropy in Sediment Acoustics

(Journal article)

Stoll, R. D.

Lamont-Doherty Geological Observatory, Palisades, NY.

Corp. Source Codes: 056312000; 404497

Report No.: LDGO-4395

Feb 89 9p

Languages: English Document Type: Journal article
Journal Announcement: GRAI8915
Pub. in Jnl. Acoustical Society of America, v85 n2 p702-708 Feb 89.
NTIS Prices: PC A02/MF A01
Country of Publication: United States
Contract No.: N00014-87-K-0204

A mathematical model to describe seismic wave propagation in both dry and water-saturated, particulate materials is derived on the basis of the response of a regular array of like elastic spheres. The theories of Hertz and Mindlin are used to model the normal and tangential compliances at the intergranular contacts and the overall response of the array is found to be governed by a set of nonlinear equations that depend on the quasistatic loading history. These equations are integrated over a particular stress history that simulates the normal buildup and relief of geostatic stress (overburden pressure) in nature. Wave velocities are evaluated at various stages during this stress history and the response is found to be anisotropic with respect to both p- and s-wave velocities. In order to simulate the response of marine sediments, the effects of water saturation are investigated by using the compliances calculated for the dry skeletal frame in conjunction with the Biot theory. Predictions of the model were compared with laboratory experiments and all the general trends in response were found to agree. Reprints. (EDC)

Descriptors: Acoustic properties; Anisotropy; Arrays; Elastic properties; Equations; Granules; History; Interfaces; Laboratory tests; Dry materials; Mathematical models; Nonlinear algebraic equations; Ocean bottom; Particulates; Patterns; Mathematical prediction; Reprints; Response; Saturation; Sediments; *Seismic waves; Spheres; Stresses; Velocity; Water; Wave propagation

Identifiers: Seismic velocity; Biot theory; NTISDODXR

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 47E (Ocean Technology and Engineering--Marine Geophysics and Geology)

DE89007357/XAB

Comprehensive Study of the Seismotectonics of the Eastern Aleutian Arc and Associated Volcanic Systems: Summary of Research for the Project Period 1987 to 1988

Taber, J. ; Jacob, K. H. ; Boyd, T. ; Estabrook, C.
Lamont-Doherty Geological Observatory, Palisades, NY.
Corp. Source Codes: 056312000; 1877000
Sponsor: Department of Energy, Washington, DC.
Report No.: DOE/ER/13221-T4
Nov 88 37p
Languages: English
Journal Announcement: GRAI8914; NSA1400
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: FG02-84ER13221

We have made significant progress in the past two years towards our goal of understanding fundamental processes of subduction. The results range in spatial dimensions from small scale details of the plate interface within the Shumagin seismic gap to updated probabilities of the occurrence of great earthquakes along the entire Aleutian arc, and in time from the earliest instrumentally recorded earthquakes to automatic processing of the most recent events. It is necessary to study the entire range of scale lengths because of the interaction between different tectonic elements. A simple kinematic model describing flow of material down the Aleutian subduction zone shows that arc geometry and current convergent directions and rates can explain the distribution of seismicity and volcanism along

the arc. Studies of the seismic source have begun to expand the frequency band over which seismic rupture can be analyzed. A comparison of short and long-period data from the Andreanoff Island earthquake raises fundamental questions about how decoupled in space and time can the radiation of high frequency energy be from the release of moment-rate producing slip during a dynamic rupture. The basic source parameters were modeled by inverting long-period P and SH waves while the high frequency characteristics were approximated by the superposition of many small earthquakes used as empirical Green's functions. Modeling of the earthquake source has also added insight into the mechanics of the transition from subduction zone to transform fault in the Gulf of Alaska region. 34 refs., 19 figs. (ERA citation 14:020789)

Descriptors: *Alaska; *Aleutian Islands; *Subduction Zones; Evaluation; Forecasting; Progress Report; Seismic Events; *Seismicity; Stresses; Volcanism

Identifiers: ERDA/580201; NTISDE

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE89001650/XAB

Savannah River Laboratory's Seismic Program

Stephenson, D. E. ; Steele, J. L.

Du Pont de Nemours (E.I.) and Co., Aiken, SC. Savannah River Lab.

Corp. Source Codes: 009966002; 2204000

Sponsor: Department of Energy, Washington, DC.

Report No.: DPST-88-470-REV.2

26 Apr 88 13p

Languages: English

Journal Announcement: GRAI8908; NSA1300

Portions of this document are illegible in microfiche products.

NTIS Prices: PC A03/MF A01

Country of Publication: United States

Contract No.: AC09-76SR00001

The decline of prototype developments and seasonal aspect of SRIC harvesting mandate examination of conventional logging machines. These machines can be practical provided sufficient stem size. (ERA citation 13:057638)

Descriptors: *Savannah River Plant; *Seismic Events; Aquifers; Drill Cores; Evaluation; Forecasting; Risk Assessment; Seismic Surveys; Seismicity

Identifiers: ERDA/580201; NTISDE

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

N89-11254/4/XAB

Effects of Seismic Waves, Part 2

De, S.

National Research Inst., Bankura (India).

Corp. Source Codes: 093432000; NL397201

Sponsor: National Aeronautics and Space Administration, Washington, DC.

Oct 88 18p

Languages: English

Journal Announcement: GRAI8905; STAR2702

In Vibration Inst., the Shock and Vibration Digest, Volume 20, No. 10 p 9-26.

NTIS Prices: (Order as N89-11252/8, PC A05/MF A01)

Country of Publication: India

The literature on the effects of seismic waves on ground motion and structures is reviewed. Mechanisms and predictions of earthquakes are also reviewed and will be published in the October issue. Abnormal animal and

plant behavior before earthquakes, and disturbances in the ionosphere will be published as Part 3 in the December issue. Some recent problems in seismology are described.
Descriptors: *Earthquakes; Predictions; Seismic waves; *Seismology; Animals; Behavior; Plants (Botany); Tectonics
Identifiers: *Foreign technology; Dynamic structural analysis; Vibration; NTISNASA
Section Headings: 89D (Building Industry Technology--Structural analyses); 50D (Civil Engineering--Soil and Rock Mechanics); 46E (Physics--Structural Mechanics)

DE88014697/XAB
Seismic Hazard Analysis of Western Venezuela Methodology and Data Collection Process
Savy, J.
Lawrence Livermore National Lab., CA.
Corp. Source Codes: 068147000; 9513035
Sponsor: Department of Energy, Washington, DC.
Report No.: UCID-21454
Jun 88 48p
Languages: English
Journal Announcement: GRAI8905; NSA1300
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-48
The purpose of this project, initiated by INTEVEP is to develop a seismic hazard characterization for the region of the Lake Maracaibo basin in Western Venezuela (WV) with an emphasis at the sites of dikes built on the eastern side of the lake. One task of the project was to assess the seismicity of this region and to describe it in a form which can be used as input to a seismic hazard analysis. The seismic parameters of interests were seismo-tectonic zonation, distribution of earthquake magnitudes, and the largest earthquake, i.e., upper magnitude cutoff. Because it is difficult, or perhaps impossible, to precisely quantify such seismic parameters using only the sparse historical record, expert judgment is crucial. Thus two panels of experts were assembled, to supplement the lack of opinions in the possible models of zonation, seismicity, (S-panel) and ground motion attenuation (G-panel). In addition to the ground motion models described in the ground motion questionnaire handed to the G-panel experts, we performed some analysis, at LLNL, to develop a new breed of models where the parameter of interest is now the number of cycles of a given fraction of the peak ground acceleration, as a function of magnitude and distance from the source of an earthquake, rather than the peak ground acceleration (PGA) as a function of magnitude and distance. 20 refs. (ERA citation 13:052457)
Descriptors: *Ground Motion; *Seismic Events; Dikes; Forecasting; Hazards; Mathematical Models; Site Characterization; Venezuela
Identifiers: ERDA/580201; NTISDE
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE88014991/XAB
Explosion Airblast Predictions on a Personal Computer and Application to the Henderson, Nevada, Incident
Reed, J. W.
Sandia National Labs., Albuquerque, NM.
Corp. Source Codes: 068123000; 9511100
Sponsor: Department of Energy, Washington, DC.
Report No.: SAND-88-0681C; CONF-880891-2

1988 13p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8904; NSA1300
23. DOD explosives safety seminar, Atlanta, GA, USA, 9 Aug 1988.
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: AC04-76DP00789

An airblast prediction program for explosions, called BLASTO, has been written for use with IBM-PC (or compatible) computers, to produce overpressure-distance curves for a variety of interactive input conditions. Several common units are allowed for each input, but calculation and output are in SAI metric units. Explosion yield (chemical or nuclear) and ambient atmospheric pressure are used to generate a referenced 'Standard' overpressure-distance curve. Explosives may be point charges at any height, above ground or depth below the earth surface. Buried charges may also be distributed in a sheet, or 'HEST' configuration. If upper air weather data or forecasts are available, they can be used to generate directed (wind effects) sound velocity versus height structures which are interpreted to give attenuated or enhanced overpressure-distance curves. These are calculated for directions around the compass or toward specified targets or communities. Evaluation of the recent accidental explosion at an ammonium perchlorate (A-P) plant in Henderson, Nevada, made use of BLASTO. Damage inspection gave some estimates for incident overpressure at various ranges. These showed considerable scatter, but they generally surrounded an overpressure versus distance curve calculated for 1-kt NE free-air burst. Weather data and directed sound velocity calculations showed that some of the closest residential damages were in directions of minimal weather-dependent blast distortion, allowing the conclusion that the largest explosion could be simulated by a 250-ton HE surface burst. Video-camera recordings, newspaper eye-witness accounts, post-accident aerial photographs, seismic recordings, and a report of the A-P storage pattern have been reviewed to show that this largest blast probably occurred in a 1500-ton A-P collection. This leads to 1:6 TNT airblast equivalence for A-P. 15 refs., 9 figs. (ERA citation 13:049473)

Descriptors: *Ammonium Perchlorates; *Blast Effects; *Chemical Plants; *Explosions; Accidents; B Codes; Buildings; Calculation Methods; Damage; Forecasting; Nevada; Numerical Data; Personal Computers
Identifiers: ERDA/450100; NTISDE
Section Headings: 79E (Ordnance--Detonations, Explosion Effects, and Ballistics)

DE88015058/XAB
Review of Historic and Instrumental Earthquake Activity and Studies of Seismic Hazards Near Los Alamos, New Mexico
House, L. S. ; Cash, D. J.
Los Alamos National Lab., NM.
Corp. Source Codes: 072735000; 9512470
Sponsor: Department of Energy, Washington, DC.
Report No.: LA-11323-MS
Jun 88 41p
Languages: English
Journal Announcement: GRAI8903; NSA1300
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-36

Several studies of seismic hazards and seismic risk have been done for the Los Alamos area. The most comprehensive one was completed in 1972 and was intended for design engineering for the TA-55 Plutonium Facility. This

study concluded that a peak horizontal acceleration of 0.33 g was appropriate for design of facilities at TA-55 since it was ''unlikely to be exceeded.'' Progress in several areas of earthquake studies in the past 15 years has provided an improved understanding of earthquake occurrence and recurrence, as well as an improved ability to estimate ground response resulting from possible local earthquakes. Because the results of the 1972 study are still being used for seismic design of new facilities at Los Alamos, the seismic hazards and risks for Los Alamos should be reevaluated in order to confirm that the 1972 results are still meaningful and valid. Such a reevaluation is, however, beyond the scope of this report. 49 refs., 9 figs., 1 tab. (ERA citation 13:047428)

Descriptors: *Earthquakes; *Hazards; *Seismic Events; Evaluation; Forecasting; Historical Aspects; LASL; New Mexico; Risk Assessment

Identifiers: ERDA/580201; NTISDE

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE88008873/XAB

Environmental Assessment of a Proposed Steam Flood of the Shallow Oil Zone, Naval Petroleum Reserve No. 1 (Elk Hills), Kern County, California

Williams Bros. Engineering Co., Tupman, CA.

Corp. Source Codes: 092454000; 9524014

Sponsor: Department of Energy, Washington, DC.

Report No.: DOE/EA-0261

Jan 85 100p

Languages: English

Journal Announcement: GRAI8822; NSA0000

Portions of this document are illegible in microfiche products.

NTIS Prices: PC A05/MF A01

Country of Publication: United States

The US Department of Energy proposes to develop a limited enhanced oil recovery project in the Shallow Oil Zone at Naval Petroleum Reserve No. 1 (NPR-1) Elk Hills. The project would employ steam forced into the oil-bearing formation through injector wells, and would involve two phases. The initiation of the second phase would be dependent on the economic success of the first phase. The total project would require the drilling of 22 new wells in a 45-acre area supporting seven existing production wells. It would also require construction of various surface facilities including a tank setting (gas-oil separation system), steam generators, and a water treatment plant. Adverse environmental impacts associated with the proposed steam flood project would include the effects on vegetation, wildlife and land-use resulting from the total reconfiguration of the topography within the project bondaries. Other adverse impacts include the emission of oxides of nitrogen, carbon monoxide, hydrocarbons and particulates from steam generators, vehicles and associated surface facilities. Minor adverse impacts include localized noise and dust during constuction, and reduction of visual quality. 48 refs., 7 figs., 10 tabs.

Descriptors: *Enhanced Recovery; Bats; Birds; California; Cats; Coyotes; Dogs; Endangered Species; Forecasting; Foxes; Frogs; Geology; Lizards; Mice ; Naval Petroleum Reserve; Plants; Seismic Events; Snakes; Squirrels; Toads

Identifiers: ERDA/510500; ERDA/510600; ERDA/290300; *Environmental surveys; NTISDE

Section Headings: 68GE (Environmental Pollution and Control--General); 48B (Natural Resources and Earth Sciences--Natural Resource Management); 57H (Medicine and Biology--Ecology); 48A (Natural Resources and Earth Sciences--Mineral Industries)

DE88007818/XAB

Evidence of Young Fault Movements on the Pajarito Fault System in the Area of Los Alamos, New Mexico

Wachs, D. ; Harrington, C. D. ; Gardner, J. N. ; Maassen, L. W.
Los Alamos National Lab., NM.
Corp. Source Codes: 072735000; 9512470
Sponsor: Department of Energy, Washington, DC.
Report No.: LA-11156-MS
Feb 88 25p
Languages: English
Journal Announcement: GRAI8821; NSA1300
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-36

Los Alamos lies along and upon the Pajarito fault system, a major intragraben structure of the Rio Grande rift. This fault system consists of over 100 km of interconnected fault zones and traces. Geomorphic evidence, including righ-lateral steps in stream valleys and disrupted drainages, as well as apparent vertical offset of alluvial units determined by seismic refraction, strongly suggests that the Pajarito fault zone is active. To evaluate seismic hazards in the Los Alamos area, values for recurrence intervals and characteristic earthquakes of the faults must be determined. We recommend the trenching of young alluvium in Rendija and Guaje canyons to obtain information regarding recurrence of the characteristic earthquake. 23 refs., 9 figs. (ERA citation 13:031094)

Descriptors: New Mexico; *Seismic Events; Forecasting; *Geologic Faults; *Ground Motion; Los Alamos; Recommendations; Rio Grande Rift; Seismicity
Identifiers: ERDA/510500; ERDA/580201; Los Alamos(New Mexico); NTISDE
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

N88-24114/6/XAB
Specific Features of Emanation, Temperature and Hydrodynamic Fields in the Epicentral Zone of Tectonic Earthquake
Ashirov, T. A. ; Ishankuliev, D. ; Ishankuliev, G. A. ; Dzholos, L. V. ; Merkina, K. I.
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Reactions.
Corp. Source Codes: 014897005; J0425482
Sponsor: National Aeronautics and Space Administration, Washington, DC.
Report No.: DE88-701140; JINR-18-86-708
1986 6p
Languages: Russian
Journal Announcement: GRAI8820; STAR2617
In Russian; English Summary.
NTIS Prices: PC A02/MF A01
Country of Publication: Union of Soviet Socialist Republics

The random field variation in loose deposits from the zone of the Cheleken-Kum-Dag fracture due to an earthquake with M = 5.6 was studied using the nuclear track technique. The complex analysis of the variations of emanation, temperature and hydrodynamical fields was carried out. Abnormal changes in all the three fields during the Burun earthquake have been found, due to changes in the rock structure of the central zone.

Descriptors: *Earthquakes; Forecasting; *Hydrodynamics; *Tectonics; *Temperature distribution; Pressure dependence; Rocks; Temperature dependence; Natural gas; Radioactivity; Radon; Time dependence
Identifiers: *Foreign technology; NTISNASAT
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE88751602/XAB
Geoprospective Study of Radioactive Waste Repositories Applied to a

Paleosite
Filippi, C. ; Fourniguet, J. ; Godefroy, P. ; Manigault, B. ; Peaudecerf, P.
Commission of the European Communities, Luxembourg.
Corp. Source Codes: 048489000; 1910850
Report No.: EUR-10933
1987 75p
Languages: French
Journal Announcement: GRAI8816; NSA1300
In French.
U.S. Sales Only.
NTIS Prices: PC A04/MF A01
Country of Publication: Other
The aim of this research is to valid the geoprospective approach elaborated previously in the framework of contracts with Commission of European Communities. The geoprospective approach is applied to a ''paleosite'' i.e. to a region the evolution of which can be reconstructed for the last 100.000 years. This work is performed on a part of Parisian Basin near the English Channel coast. It allows to simulate the combined effects of sea and river level variations, and tectonic activity. All these factors taken in a rather severe context, would not have changed significantly, the confining conditions of the geological barrier around a radioactive waste repository. (ERA citation 13:008568)
Descriptors: *Radioactive Waste Disposal; C Codes; Climates; Computerized Simulation; Erosion; Forecasting; France; Geologic Formations; Geomorphology; Glaciers; Ground Uplift; Ground Water; Permeability; Sea Level; Sedimentary Basins; Sedimentation; Seismicity; Stresses; Tectonics
Identifiers: *Foreign technology; ERDA/052002; NTISDEE
Section Headings: 77G (Nuclear Science and Technology--Radioactive Wastes and Radioactivity)

DE88701140/XAB
Specific Features of Emanation, Temperature and Hydrodynamic Fields in the Epicentral Zone of Tectonic Earthquake
Ashirov, T. A. ; Ishankuliev, D. ; Ishankuliev, G. A. ; Dzholos, L. V. ; Merkina, K. I.
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Reactions.
Corp. Source Codes: 014897005; 3475000
Report No.: JINR-18-86-708
1986 6p
Languages: Russian
Journal Announcement: GRAI8816
In Russian. Submitted to the journal Izv. Akad. Nauk SSSR, Fiz. Zemli.
U.S. Sales Only.
NTIS Prices: PC A02/MF A01
Country of Publication: Union of Soviet Socialist Republics
The radon field variation in loose deposits from the zone of the Cheleken-Kum-Dag fracture due to an earthquake with M=5.6 was studied using the nuclear track technique. The complex analysis of the variations of emanation, temperature and hydrodynamical fields was carried out. Abnormal changes in all the three fields during the Burun earthquake have been found, due to alternation in the rock structure of the central zone. 14 refs.; 4 figs. (Atomindex citation 19:012418)
Descriptors: *Earthquakes; *Radon; Forecasting; Geologic Deposits; Hydrodynamics; Medium Pressure; Medium Temperature; Natural Gas; Natural Radioactivity; Petroleum; Pressure Dependence; Sedimentary Rocks; Temperature Dependence; Time Dependence
Identifiers: *Foreign technology; ERDA/510300; ERDA/220500; ERDA/030200; ERDA/020200; NTISINIS

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE88005039/XAB
Comprehensive Study of the Seismotectonics of the Eastern Aleutian Arc and Associated Volcanic Systems: Technical Progress Report, April 1, 1984-March 31, 1987
Jacob, K. H. ; Taber, J. ; Boyd, T.
Lamont-Doherty Geological Observatory, Palisades, NY.
Corp. Source Codes: 056312000; 1877000
Sponsor: Department of Energy, Washington, DC.
Report No.: DOE/ER/13221-2
Jul 86 13p
Languages: English
Journal Announcement: GRAI8816; NSA1300
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: FG02-84ER13221
Peculiar stress anomalies in the descending slab have been documented by composite focal mechanisms to be associated with the zone that in 1978-80 slipped aseismically at depth. The exact geometry of the descending slab has been delineated with the help of three-dimensional ray tracing. The detailed seismicity, tectonics and seismic potential of the Unalaska seismic gap have been reviewed. It is believed to be presently capable of a Mw approx. = 8.6 earthquake. A thorough analysis of the volcano seismicity of Pavlof volcano indicates a close correlation of seismic signals with periods prior and during eruptions, probably related to degassing of mobile magma in the upper 1.6 km of the volcanic vent. After some quiescence in 1985 Pavlof erupted vehemently in spring 1986 and is still active at present. A strong (10%) low-velocity anomaly in the crust beneath Pavlof volcano and Emmons caldera has been detected. Strong-motion data for most of Alaska, including those collected by the Shumagin accelerometer array have been analyzed and indicate high peak accelerations and large scatter. A thorough review of the seismic and volcanic hazards in the Gulf of Alaska has been completed. Research results for the period 1984 to 1986 were reported in 18 publications some of which are reproduced in this report. 26 refs. (ERA citation 13:025251)
Descriptors: Alaska; *Aleutian Islands; Forecasting; Historical Aspects; *Plate Tectonics; Progress Report; Seismic Arrays; Seismic Events; Seismicity; Stresses; Subduction Zones; Volcanism; *Earthquakes; Volcanic ejecta
Identifiers: ERDA/580201; NTISDE
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

AD-A191 960/4/XAB
Low Frequency Seismo-Acoustic Propagation in a Sloping Ocean Environment: Measured Results and Numerical Predictions
(Final rept.)
Ali, H. B. ; Bibee, L. D. ; Authement, M. J. ; Stephen, R. A. ; Becklehimer, J.
Naval Ocean Research and Development Activity, NSTL Station, MS.
Corp. Source Codes: 055026000; 392773
Report No.: NORDA-220
Nov 87 20p
Languages: English
Journal Announcement: GRAI8816
Prepared in collaboration with Woods Hole Oceanographic Inst., Woods Hole, MA and ODSI Defense Systems, Inc., Rockville, MD.

NTIS Prices: PC A03/MF A01
Country of Publication: United States

As part of continuing program to investigate the characteristics of acoustic propagation and ambient noise in the very low frequency regime (20 Hz and less). Ninety -seven experiments were conducted off the Southeastern coast of the U.S. (Cape Fear) in 1985. Preliminary results of the Cape Fear data analysis have already shed some light on seismo-acoustic propagation. At the source-receiver ranges thus far considered, considerable penetration into the bottom is evident, particularly at frequencies below about 20 Hz. Both body and Scholte waves appear to contribute to the propagation in the sediment. Under certain conditions, the net S/N ratio of the vertical geophone sensor is at least 6 dB higher than that of the hydrophone. Although examination of the depth dependence of the waterborne transmission loss as a function of range is still in process, spot checks at several ranges do indicate agreement between the model (IFDPE) and measured results (hydrophone array). The SAFARI and IFDPE models provide some insight into certain aspects of the propagation, but alone, neither is sufficient for the environment considered. It is expected that models based on the finite difference method will be more appropriate.

Descriptors: Ambient noise; Arrays; Data processing; Detectors; *Fear; Finite difference theory; *Geophones; *Hydrophones; Mathematical prediction ; *Ocean bottom; Ocean environments; Ratios; Sea water; Sediments; *Seismic waves; Sound generators; Sound transmission; Transmission loss; Vertical orientation; Waterborne; *Acoustic velocity; Low frequencies; *Underwater acoustics; *Ocean bottom soils; Continental slopes; Comparison

Identifiers: Body waves; Scholte waves; Cape Fear; NTISDODXA

Section Headings: 47C (Ocean Technology and Engineering--Physical and Chemical Oceanography); 63A (Detection and Countermeasures--Acoustic Detection); 63I (Detection and Countermeasures--Seismic Detection)

DE87703145/XAB
Depth of Source from Long Period P-Waves
Roy, F.
Bhabha Atomic Research Centre, Bombay (India).
Corp. Source Codes: 004104000; 0807000
Report No.: BARC-1338
1986 16p
Languages: English
Journal Announcement: GRAI8813; NSA1300
U.S. Sales Only.
NTIS Prices: PC A03/MF A01
Country of Publication: India

Short-period (SP) seismograms are much better than long-period (LP) seismograms to get the time resolution needed for the focal-depth estimation. However, complex scattering effects due to crustal inhomogeneities and also the multi-pathing of signals usually complicate the short period records. On the other hand, the seismograms from long-period signals demonstrate clear coherent body waves. Therefore, for intermediate depths (15-60 km) prediction error filtering of LP signals will be useful for identifying the depth phases. Such a study was carried out in the first part of this report. In a group of 7 events, the p/sup p/ phases were extracted from LP signals and the depths so estimated compared well with the published data. For explosions at shallow depths (depth < 10 km), one expects that P and p/sup p/ phases will tend to cancel each other in LP seismograms. As the source depth increases, the cancellation becomes less effective. This feature can be used for the identification of an event as well as for getting an estimate of the source depth. This phenomenon can be successfully exploited for identifying multiple explosions, because at teleseismic distances (delta > 30/sup o/) no LP (around 20s period) P waves will be seen in the seismogram due to such events whereas relatively

strong SP signals and LP Rayleigh waves will be observed. This phenomenon was studied for 16 events. For three of these events having m/sub b/ as high as 6.1 and presumed to be underground explosions, one could not see any P wave on remaining 13 events (which were classified as earthquakes), it was possible to set a threshold value of m/sub b/ above which an earthquake should produce LP P-wave signals at a given distance. 8 references, 14 figures, 2 tables. (ERA citation 13:019099)

Descriptors: *Earthquakes; *Nuclear Explosion Detection; Nuclear Explosions; *Underground Explosions; Depth; Diagrams; Errors; Forecasting; Rayleigh Waves; Seismic Detection; Seismic P Waves

Identifiers: *Foreign technology; ERDA/450300; ERDA/450201; ERDA/580201; NTISDEE

Section Headings: 63E (Detection and Countermeasures--Nuclear Explosion Detection); 63I (Detection and Countermeasures--Seismic Detection); 77D (Nuclear Science and Technology--Nuclear Explosions and Devices)

DE87703144/XAB

Source-Depth Estimation by Prediction Error Filtering of Synthetic Explosion Signals

Roy, F.
Bhabha Atomic Research Centre, Bombay (India).
Corp. Source Codes: 004104000; 0807000

Report No.: BARC-1337
1986 76p
Languages: English
Journal Announcement: GRAI8813; NSA1300
U.S. Sales Only.
NTIS Prices: PC A05/MF A01
Country of Publication: India

For detecting the depth phases, a parametric model for P signal was adopted. In other words, the primary P pulse is characterised by numerical values of a few parameters (usually 10-20). As the reflected P phase will be almost identical to the P phase, the same model will be valid for such phases also. For seismic signals, a special type of parametric model called autoregressive (AR) model is found useful. It is shown that the prediction error filter (PEF) for a given order as computer by AR model of the time series is same for the primary P phase as well as for the composite wave comprising the primary P phase and several reflected and refracted phases. Therefore, when the composite wave is convolved with its PEF, there will be large local errors around the instants when the reflected or refracted phases start entering the seismogram, thereby facilitating the identification of such phases. It is shown that using any order of the PEF, not necessarily the optimum, the depth phases can be extracted from the seismograms. However, in order to detect the depth phases unambiguously, the delay time of the depth phases w.r.t. the P phase should be greater than or equal to 0.3s. The method could unambiguously detect the depth phases from the signals having signal-to-noise ratio greater than or equal to 4. For weaker signals, array beams may be used to extract the depth phases. It was also demonstrated that T/sup */ (travel time to quality factor ratio)= 0.6s tends to give better results than T/sup */ = 1.0s. 40 references, 19 figures, 3 tables. (ERA citation 13:019098)

Descriptors: *Nuclear Explosion Detection; Nuclear Explosions; *Underground Explosions; Depth; Diagrams; Errors; Forecasting; Seismic Detection; Seismic Noise; Seismic P Waves; Transfer Functions

Identifiers: *Foreign technology; ERDA/450300; ERDA/450201; NTISDEE

Section Headings: 63E (Detection and Countermeasures--Nuclear Explosion Detection); 63I (Detection and Countermeasures--Seismic Detection); 77D (Nuclear Science and Technology--Nuclear Explosions and Devices)

N88-16124/5/XAB

Effectiveness of Oceanographic Method in Earthquake Prediction (Abstract Only)
Yakushko, G. G.
Joint Publications Research Service, Arlington, VA.
Corp. Source Codes: 056306000; J1957394
Sponsor: National Aeronautics and Space Administration, Washington, DC.
30 Mar 87 2p
Languages: English Document Type: Translation
Journal Announcement: GRAI8811; STAR2608
In Its USSR Report: Earth Sciences p11-12. Trans. into English from Vulkanologiya I Seysmologiya (Moscow, USSR), No. 5, Sep. - Oct. 1985 p101-104.
NTIS Prices: (Order as N88-16119/5, PC A04/MF A01)
Country of Publication: Union of Soviet Socialist Republics
Tide gauges can be used in registering vertical movements of the land and also afford possibilities for predicting earthquakes, although much additional work must be done to realize these possibilities. The oceanographic method already makes it possible to detect anomalies in vertical movements of the land of not less than 1-2 cm. An expression has been derived for computing the effective radius of the method. The method can be used in predicting relatively close earthquakes and could probably be effective in predicting earthquakes with M greater than or = 7.0 if the distance between level stations does not exceed 80 km. It is highly important that the observation points be situated as close as possible to the epicentral zone of an anticipated earthquake. Bottom pressure sensors are now available which can measure ocean level distant from its shores with a high degree of accuracy, thereby making it possible to study vertical movements of both the land and ocean floor, in the latter case inaccessible for other observation methods. It is probably possible to detect earthquake precursors in this way. In the Far Eastern region especially, the use of bottom pressure detectors may become an effective method for predicting earthquakes.
Descriptors: *Earth tides; *Earthquakes; *Measuring instruments; *Predictions; Ocean bottom; Oceanography; Pressure sensors
Identifiers: *Foreign technology; Translations; NTISNASA
Section Headings: 47E (Ocean Technology and Engineering--Marine Geophysics and Geology); 47B (Ocean Technology and Engineering--Dynamic Oceanography)

N88-16103/9/XAB
Satellite Monitoring of Earthquake Precursor Effects in Magnetosphere
Zaytsev, Y. I.
Joint Publications Research Service, Arlington, VA.
Corp. Source Codes: 056306000; J1957394
Sponsor: National Aeronautics and Space Administration, Washington, DC.
c1987 8p
Languages: English Document Type: Translation
Journal Announcement: GRAI8811; STAR2608
In Its JPRS Report: Science and Technology. USSR: Space, p106-113. Trans. into English from Zemlya I Vselennaya (Moscow, USSR), No. 3, p45-50 May-Jun 1987.
NTIS Prices: (Order as N88-16063/5, PC A08/MF A01)
Country of Publication: Union of Soviet Socialist Republics
During satellite overflights of seismically active regions of the Earth, special equipment is recording bursts of electromagnetic radiation in the Earth's ionosphere and magnetosphere. These bursts frequently not only accompany a seismic shock, but also precede it. How these bursts can be used to predict earthquakes is addressed.
Descriptors: *Earth ionosphere; *Earthquakes; Electromagnetic radiation; *Magnetosphere; Predictions; Satellite observation; Seismic waves;

Seismology
Identifiers: *Foreign technology; Translations; NTISNASA
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE88004144/XAB
First Survey of Disruption Scenarios for a High-Level-Waste Repository at Yucca Mountain, Nevada: Nevada Nuclear Waste Storage Investigations Project
Ross, B.
Disposal Safety, Inc., Washington, DC.
Corp. Source Codes: 082355000; 9520452
Sponsor: Department of Energy, Washington, DC.
Report No.: SAND-85-7117
Dec 87 147p
Languages: English
Journal Announcement: GRAI8810; NSA1300
Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted.
NTIS Prices: PC A07/MF A01
Country of Publication: United States
Contract No.: AC04-76DP00789
A high-level-waste repository located in unsaturated welded tuff at Yucca Mountain, Nevada, would rely on six different, although not entirely independent, barriers to prevent escape of radioactivity. These barriers are the waste canister, fuel cladding, dissolution of the spent fuel itself, and movement of released contaminants in the unsaturated Topopah Spring welded tuff unit, the unsaturated Calico Hills nonwelded tuff unit, and the saturated tuff aquifer. Fifty-eight processes and events that might affect such a repository were examined. Eighty-four different sequences were identified by which these processes and events could lead to failure of one or more barriers. Sequences that had similar consequences were grouped into 17 categories: direct release, repository flooding, colloid formation, increased water flux through the repository, accelerated fracture flow, water diverted toward the waste package, accelerated dissolution mechanisms, accelerated cladding corrosion mechanisms, accelerated canister corrosion mechanisms, canister breakage, fracture flow in the Topopah Spring welded unit without increased moisture flux, reduced sorption in the Topopah Spring welded unit, water table rise above the Calico Hills nonwelded unit, fracture flow in the Calico Hills nonwelded unit, new discharge points, and faster flow in the saturated zone. 52 refs., 6 figs., 1 tab. (ERA citation 13:011020)
Descriptors: *High-Level Radioactive Wastes; *Radionuclide Migration; Comparative Evaluations; Forecasting; Ground Water; Intrusion; Multi-Parameter Analysis; Nevada; Response Modifying Factors; Risk Assessment; Safety; Seismic Events; Surface Waters; Systems Analysis; Underground Disposal; Variations; Yucca Mountain
Identifiers: ERDA/052002; ERDA/053000; ERDA/510300; NTISDE
Section Headings: 77G (Nuclear Science and Technology--Radioactive Wastes and Radioactivity)

AD-A187 701/8/XAB
AFGL (Air Force Geophysics Laboratory) Fiscal Year 1988 Air Force Technical Objectives Document
(Annual special rept. Oct 87-Sep 88)
Air Force Geophysics Lab., Hanscom AFB, MA.
Corp. Source Codes: 054815000; 409578
Report No.: AFGL-TR-87-0088; AFGL-SR-255
Oct 87 42p
Languages: English
Journal Announcement: GRAI8810

NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: 9991; XX
No abstract available.
Descriptors: *Geophysics; *Atmospheric physics; *Aerospace systems; Air force research; Air force planning; Research management; Earth sciences; Aerospace environment; Ionosphere; Optics; Infrared radiation; Electrooptics; Gravity; Weather; Earthquakes; Infrared detectors; Seismic detection; Computer applications; Technology forecasting; Defense planning
Identifiers: TOD(Technical Objective Documents); Ionospheric physics; Aerospace engineering; Space physics; NTISDODXA
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

N88-14455/5/XAB
USSR Report: Earth Sciences
Joint Publications Research Service, Arlington, VA.
Corp. Source Codes: 056306000; J1957394
Sponsor: National Aeronautics and Space Administration, Washington, DC.
Report No.: JPRS-UES-87-004
22 May 87 123p
Languages: English Document Type: Conference proceeding; Translation
Journal Announcement: GRAI8809; STAR2606
Trans. into English from various Russian articles.
NTIS Prices: PC A06/MF A01
Country of Publication: Union of Soviet Socialist Republics
No abstract available.
Descriptors: *Antarctic regions; *Arctic regions; *Atmospheric physics; Geophysics; *Meteorology; *Ocean bottom; *Oceanography; *U.S.S.R.; *Weather forecasting; Climate; Earthquakes; Ferrous metals; Manganese; Nodules; Remote sensing; Solar generators; Structural basins; Tectonics
Identifiers: *Foreign technology; Translations; NTISNASA
Section Headings: 55E (Atmospheric Sciences--Physical Meteorology); 55C (Atmospheric Sciences--Meteorological Data Collection, Analysis, and Weather Forecasting); 47E (Ocean Technology and Engineering--Marine Geophysics and Geology)

DE88700304/XAB
Detection of Depth Phase Onsets by Prediction Error Filtering of Synthetic Signals in Presence of Additive Noise after Prefiltering the Noise
Roy, F.
Bhabha Atomic Research Centre, Bombay (India).
Corp. Source Codes: 004104000; 0807000
Report No.: BARC-1341
1986 29p
Languages: English
Journal Announcement: GRAI8809
U.S. Sales Only.
NTIS Prices: PC A03/MF A01
Country of Publication: India
Prediction error filtering has been found very useful for the identification of the depth phases corresponding to weak and shallow events. Its applicability can be further improved provided the ambient seismic noise is reduced by some means. A parametric model based on autoregressive (AR) method has been shown to be suitable for this purpose. In this method, the noise preceding the signal is modelled as an AR process. The time series comprising pre-event noise and the composite waveform consisting of P and the P/sup P/ phases is filtered using the above AR model. Due to this filtering, the original time series is changed

into a new time series. Though the P signal structure changes, the structure of the reflected or the depth phase also changes the same way. The spectrum of the new modified signal will be close to S(w)/N(w), where S(w) is the P wave spectrum and N(w) is the spectrum corresponding to the preceding noise in the original time series. The modified signal will have predominant amplitudes around the frequencies w, for which S(w) happens to be large compared to N(w). However, the new time series will be contaminated with a band limited white noise series. By appropriate digital filtering of the new time series and after remodelling the filtered time series using AR method, it has been shown that the onsets of the depth phases from very weak signals can be successfully extracted. A signal having signal to noise ratio (SNR) of 2 or more can be successfully subjected to this method for locating the onsets of the depth phases. For even weaker signals (SNR approx. = 1), one can subject the array beams to this method for the extraction of the depth phases. 10 refs., 3 tables, 22 figures. (Atomindex citation 18:095221)

Descriptors: *Underground Explosions; Depth; Errors; Forecasting; Noise; Regression Analysis; *Seismic Detection; Seismic P Waves; Seismology; Time-Series Analysis

Identifiers: *Foreign technology; ERDA/450201; NTISINIS

Section Headings: 63E (Detection and Countermeasures--Nuclear Explosion Detection); 63I (Detection and Countermeasures--Seismic Detection); 77D (Nuclear Science and Technology--Nuclear Explosions and Devices)

DE88700303/XAB

Identification of Depth Phase Onsets from Some Presumed Underground Explosion Signals Using Prediction Error Filtering

Roy, F.
Bhabha Atomic Research Centre, Bombay (India).

Corp. Source Codes: 004104000; 0807000
Report No.: BARC-1340
1986 22p
Languages: English
Journal Announcement: GRAI8809
U.S. Sales Only.
NTIS Prices: PC A03/MF A01
Country of Publication: India

This report presents the applicability study of the prediction error filtering for the identification of depth phases corresponding to some presumed underground explosions in USSR region. For six events from eastern Kazakh, USSR (EKZ) region, the data of Warramunga array (WRA) and Gauribidanur array (GBA) have been analysed. The source depths as estimated from GBA and WRA data were in good agreement. Apart from these six events, a set of 23 events from various test sites in USSR as recorded in GBA were subjected to prediction error filtering and in each case the depth phase was identified. A time separation as small as 0.3s between P and the p/sup p/ phase could be resolved successfully. Several weak presumed explosion signals from USSR region were also analysed and a comparative study was done for these weak events using prediction error filtering with and without pre-filtering the noise. It was demonstrated that the pre-filtering of noise improved the depth phase identification capability substantially in case of weak signals. 39 figures, 9 refs. (Atomindex citation 18:095220)

Descriptors: *Nuclear Explosion Detection; Data Processing; Depth; Errors ; Forecasting; Noise; Nuclear Explosions; Seismic Detection; Seismic P Waves; Underground Explosions

Identifiers: *Foreign technology; ERDA/450201; NTISINIS

Section Headings: 63E (Detection and Countermeasures--Nuclear Explosion Detection); 63I (Detection and Countermeasures--Seismic Detection); 77D (Nuclear Science and Technology--Nuclear Explosions and Devices)

N88-12831/9/XAB
USSR Report: Earth Sciences
Joint Publications Research Service, Arlington, VA.
Corp. Source Codes: 056306000; J1957394
Sponsor: National Aeronautics and Space Administration, Washington, DC.
Report No.: JPRS-UES-86-006
22 Jul 86 77p
Languages: English Document Type: Conference proceeding; Translation
Journal Announcement: GRAI8807; STAR2604
Trans. into English from various Russian Articles.
NTIS Prices: PC A05/MF A01
Country of Publication: Union of Soviet Socialist Republics
No abstract available.
Descriptors: *Atmospheric physics; *Geophysics; *Meteorology; *Oceanography; *Polar regions; U.s.s.r.; Aerosols; Laser applications; Ocean currents; Precipitation (Meteorology); Seismology; Weather forecasting
Identifiers: *Foreign technology; Translations; NTISNASA
Section Headings: 55GE (Atmospheric Sciences--General); 47GE (Ocean Technology and Engineering--General); 48GE (Natural Resources and Earth Sciences--General)

N88-12206/4/XAB
Earthquake Source Mechanisms and Transform Fault Tectonics in the Gulf of California (Abstract Only)
Goff, J. A. ; Bergman, E. A. ; Solomon, S. C.
Massachusetts Inst. of Tech., Cambridge.
Corp. Source Codes: 001450000; MJ700802
Sponsor: National Aeronautics and Space Administration, Washington, DC.
20 Nov 87 2p
Languages: English
Journal Announcement: GRAI8806; STAR2603
In Its the Interpretation of Crustal Dynamics Data in Terms of Plate Motions and Regional Deformation Near Plate Boundaries, p4-5. Presented at the Iugg General Assembly, Vancouver, British Columbia, August 9-22, 1987.
NTIS Prices: (Order as N88-12205/6, PC A07/MF A01)
Country of Publication: United States
The source parameters of 19 large earthquakes in the Gulf of California were determined from inversions of long-period P and SH waveforms. The goal was to understand the recent slip history of this dominantly transform boundary between the Pacific and North American plates as well as the effect on earthquake characteristics of the transition from young oceanic to continental lithosphere. For the better recorded transform events, the fault strike is resolved to + or - 4 deg at 90 percent confidence. The slip vectors thus provide important constraints on the direction of relative plate motion. Most centroid depths are poorly resolved because of tradeoffs between depth and source time function. On the basis of waveform modeling, historical seismicity, and other factors, it is appropriate to divide the Gulf into three distinct zones. The difference in seismic character among the three zones is likely the result of differing levels of maturity of the processes of rifting, generation of oceanic crust, and formation of stable oceanic transform faults. The mechanism of an earthquake on the Tres Marias Escarpment is characterized by thrust faulting and likely indicates the direction of relative motion between the Rivera and North American plates. This mechanism requires revision in plate velocity models which predict strike slip motion at this location.
Descriptors: *Earthquakes; *Geological faults; *Gulf of California (Mexico); Mathematical models; *Plates (Tectonics); *Seismology; Earth movements; Lithosphere; Prediction analysis techniques; Vectors (Mathematics)

Identifiers: NTISNASA
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE87752564/XAB
State of the ART in the Calculation of a Reference Motion for Design Purposes. Modification of Bedrock Motion by Superficial, Young Deposit
Mohammadioun, B.
CEA Centre d'Etudes Nucleaires de Fontenay-aux-Roses (France). Dept. d'Analyse de Surete.
Corp. Source Codes: 056141019; 1290300
Report No.: CEA-CONF-8815; CONF-8605270-1
Oct 86 12p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8804; NSA1200
Franco-American workshop on practice of earthquake engineering, Paris, France, 26 May 1986.
U.S. Sales Only.
NTIS Prices: PC A03/MF A01
Country of Publication: France
Engineering seismology is aimed, among others, at predicting a strong reference motion for the site of a given critical structure to be used in the design of said installation. A common practice, when modal analysis is performed in view of the anti-seismic design of structures, is to use, as the input motion, a set of spectra with progressive values of damping. Such a practice is discussed. Parallel to those empirical predictions, attention has been drawn on strong motion studies. Progress has been made in the theoretical simulation of seismic sources and wave propagation. Reliability of inverse problems relating to type of rocks is discussed. Attempts of solutions are recalled. (ERA citation 12:048092)
Descriptors: *Ground Motion; Acceleration; Computerized Simulation; Earthquakes; Forecasting; Geologic Deposits; Risk Assessment; Seismic Waves ; Spectra; Wave Propagation
Identifiers: *Foreign technology; ERDA/420200; *Earthquake engineering; NTISDEE
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 77H (Nuclear Science and Technology--Reactor Engineering and Nuclear Power Plants)

DE87703314/XAB
Emanation Investigations in the Ashkhabad Seismic Zone
Ashirov, T. A. ; Ishankuliev, D. ; Dzholos, L. V. ; Merkina, K. I. ; Tret'yakova, S. P.
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Reactions.
Corp. Source Codes: 014897005; 3475000
Report No.: JINR-18-86-452
1986 10p
Languages: Russian
Journal Announcement: GRAI8804; NSA1200
In Russian.
U.S. Sales Only.
NTIS Prices: PC A02/MF A01
Country of Publication: Union of Soviet Socialist Republics
An improved technique for detecting subsoil radon in the Ashkhabad seismoactive zone in order to predict earthquakes in this region is described. Radon alpha -particles were recorded with a nitrocellulose detector. Chemical treatment was carried out in a 10% sodium hydroxide solution at 60 deg C temperature, and detector scanning was performed using an optical microscope and a spark counter. The optimal parameters of

stationary device for the irradiation of detectors in 70 cm deep pits have been determined experimentally. The points of observation of temporal variations of the radon have been chosen with the aid of emanation survey. Constant radon measurements were carried out at three observation points during the period from 1982 to 1983 at intervals of 5-7 days. The dependence of track density on calendar time and on atmospheric conditions has been found to be regular. A broken regularity may be due to the K greater than or equal to 10 energy class seismic event which took place in this region at a distance of 100-130 km from the observation point. 14 references, 11 figures. (ERA citation 12:048542)

Descriptors: *Earthquakes; *Radon 222; Air; Alpha Detection; Dielectric Track Detectors; Emanation Method; Forecasting; Ground Water; Particle Tracks; Time Dependence; Weather; Wells

Identifiers: *Foreign technology; ERDA/580201; NTISDEE

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

N87-28104/4/XAB

Forecasters of Earthquakes

Maximova, L.

Joint Publications Research Service, Arlington, VA.

Corp. Source Codes: 056306000; J1957394

Sponsor: National Aeronautics and Space Administration, Washington, DC.

9 Jul 87 3p

Languages: English Document Type: Translation

Journal Announcement: GRAI8724; STAR2522

In Its USSR Report: Earth Sciences, p53-55. Trans. into English from Novosti Nauki I Tekhniki (Moscow, USSR), n23(106), 5 Dec 86.

NTIS Prices: (Order as N87-28092/1 PC A06/MF A01)

Country of Publication: Union of Soviet Socialist Republics

For the first time Soviet scientists have set up a bioseismological proving ground which will stage a systematic extensive experiment of using birds, ants, mountain rodents including marmots, which can dig holes in the Earth's interior to a depth of 50 meters, for the purpose of earthquake forecasting. Biologists have accumulated extensive experimental data on the impact of various electromagnetic fields, including fields of weak intensity, on living organisms. As far as mammals are concerned, electromagnetic waves with frequencies close to the brain's biorhythms have the strongest effect. How these observations can be used to forecast earthquakes is discussed.

Descriptors: *Animals; *Biotelemetry; *Earthquakes; Forecasting; *Seismology; *Anxiety; Bioinstrumentation; Core sampling; Earth core; Sensitivity

Identifiers: *Foreign technology; *Translations; NTISNASA

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 57Z (Medicine and Biology--Zoology)

N87-28103/6/XAB

Seismic Focus Is Key to Seismic Danger Problem

Shebalin, N.

Joint Publications Research Service, Arlington, VA.

Corp. Source Codes: 056306000; J1957394

Sponsor: National Aeronautics and Space Administration, Washington, DC.

9 Jul 87 4p

Languages: English Document Type: Translation

Journal Announcement: GRAI8724; STAR2522

In Its USSR Report: Earth Sciences, p42-45. Trans. into English from Novosti Nauki I Tekhniki (Moscow, USSR), n15, 33 Oct 86.

NTIS Prices: (Order as N87-28092/1 PC A06/MF A01)

Country of Publication: Union of Soviet Socialist Republics

Earthquakes continue to be a terrible threat to humankind. Scientists often fail to predict them and protection against them is often ineffective. The reason for this is the inadequate knowledge of the formation and operation of sources of disastrous tremors known as seismic foci. How seismic foci can be used to forecast earthquakes is discussed along with different methods to study them.

Descriptors: *Earthquakes; Forecasting; *Geodynamics; *Seismology; Crustal fractures; Earth core; Earthquake resistant structures

Identifiers: *Foreign technology; *Translations; NTISNASA

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 89D (Building Industry Technology--Structural analyses)

DE87010282/XAB

Perspective and Trends: Future of Geothermal Exploration Technology

Goldstein, N. E.

Lawrence Berkeley Lab., CA.

Corp. Source Codes: 086929000; 9513034

Sponsor: Department of Energy, Washington, DC.

Report No.: LBL-22487; CONF-861147-2

Nov 86 31p

Languages: English Document Type: Conference proceeding

Journal Announcement: GRAI8724; NSA1200

Symposium on the future of geothermal energy, San Diego, CA, USA, 17 Nov 1986.

Portions of this document are illegible in microfiche products.

NTIS Prices: PC A03/MF A01

Country of Publication: United States

Contract No.: AC03-76SF00098

Some examples are given of where current research in seismic and electromagnetic imaging may eventually lead to practical technologies for exploration. These are technologies that will provide a relatively high resolution, 2-D and 3-D parameterized picture of the earth to depths of two to three km. Parameters discussed include P- and S-wave velocities and electrical resistivity. (ERA citation 12:034792)

Descriptors: *Geothermal Exploration; Cost; *Electromagnetic Surveys; Forecasting; *Seismic Surveys; Technology Assessment; Well Drilling

Identifiers: ERDA/150301; ERDA/150303; NTISDE

Section Headings: 97P (Energy--Geothermal Energy)

N87-27340/5/XAB

Altimetry Data and the Elastic Stress Tensor of Subduction Zones. Final Report, September 1, 1980-February 28, 1987

Caputo, M.

Texas A and M Univ., College Station.

Corp. Source Codes: 004736000; TQ431621

Sponsor: National Aeronautics and Space Administration, Washington, DC.

Report No.: NAS 1.26:181182; RF-4340; NASA-CR-181182

19 Aug 87 46p

Languages: English

Journal Announcement: GRAI8723; STAR2521

NTIS Prices: PC A03/MF A01

Country of Publication: United States

Contract No.: NAG5-94

The maximum shear stress (mss) field due to mass anomalies is estimated in the Apennines, the Kermadec-Tonga Trench, and the Rio Grande Rift areas and the results for each area are compared to observed seismicity. A maximum mss of 420 bar was calculated in the Kermadec-Tonga Trench region at a depth of 28 km. Two additional zones with more than 300 bar mss were also observed in the Kermadec-Tonga Trench study. Comparison of the calculated mss field with the observed seismicity in the Kermadec-Tonga

showed two zones of well correlated activity. The Rio Grande Rift results showed a maximum mss of 700 bar occurring east of the rift and at a depth of 6 km. Recorded seismicity in the region was primarily constrained to a depth of approximately 5 km, correlating well to the results of the stress calculations. Two areas of high mss are found in the Apennine region: 120 bar at a depth of 55 km, and 149 bar at the surface. Seismic events observed in the Apennine area compare favorably with the mss field calculated, exhibiting two zones of activity. The case of loading by seamounts and icecaps are also simulated. Results for this study show that the mss reaches a maximum of about 1/3 that of the applied surface stress for both cases, and is located at a depth related to the diameter of the surface mass anomaly.

Descriptors: *Altimetry; Anomalies; *Earth crust; *Earthquakes; *Geological faults; Seismology; *Shear stress; *Subduction (Geology); Geophysics; Plates (Tectonics); Predictions; Stress tensors

Identifiers: NTISNASA

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE87010568/XAB

US Geological Survey Research in Radioactive Waste Disposal: Fiscal Years, 1983, 1984, and 1985

Dinwiddie, G. A. ; Trask, N. J.

Geological Survey, Reston, VA.

Corp. Source Codes: 041619000; 9500728

Sponsor: Department of Energy, Washington, DC.

Report No.: DOE/ET/44802-T19

1986 14p

Languages: English

Journal Announcement: GRAI8723; NSA1200

Portions of this document are illegible in microfiche products.

NTIS Prices: PC A02/MF A01

Country of Publication: United States

Contract No.: AI08-78ET44802

The USGS has been assisting the DOE in evaluating the suitability of the Yucca Mountain area, located on and adjacent to the Nevada Test Site (NTS) and about 160 km northwest of Las Vegas, as a possible repository site for the disposal of commercially generated high-level radioactive wastes and wastes from DOE facilities. An essential part of this work is defining the geology and hydrology of the area in order to assess the potential for the transport of radionuclides from a repository to the human environment. In addition, the potential for disruption of a repository as a result of volcanic or tectonic activity or accelerated erosion is being evaluated. As part of the Nevada Nuclear Waste Storage Investigations (NNWSI) project, the USGS is performing multi-disciplinary studies involving detailed surface mapping, surface geophysics, exploratory drilling, borehole geophysics, and topical studies of hydrology, climate, and tectonics. Studies are being performed to assess the potential for faulting, damaging earthquakes, recurrence of volcanism, and local acceleration of erosion in parts of the southern Great Basin. Hydrologic investigations are directed to determination of present and past hydrologic regimes of the NTS and vicinity in order to predict the potential for ground-water transport of radioactive waste from a repository in Yucca Mountain to the accessible environment. Paleoclimatic studies are also being performed to aid in predicting future climate in the NTS vicinity. (ERA citation 12:032529)

Descriptors: *High-Level Radioactive Wastes; *Radioactive Waste Disposal; Aerial Surveying; Boreholes; Climates; Drill Cores; Forecasting; Geologic Faults; Geophysical Surveys; Gravity Surveys; Ground Water; Hydrology; Lineaments; Magnetic Surveys; Maps; Nevada Test Site; Permeability; Research Programs; Site Selection; Tectonics; US GS; Yucca Mountain

Identifiers: ERDA/052002; ERDA/580100; NTISDE
Section Headings: 77G (Nuclear Science and Technology--Radioactive Wastes and Radioactivity)

DE87010254/XAB
Radon in Groundwater of the Long Valley Caldera, California
Flexser, S. ; Wollenberg, H. A. ; Smith, A. R.
Lawrence Berkeley Lab., CA.
Corp. Source Codes: 086929000; 9513034
Sponsor: Department of Energy, Washington, DC.
Report No.: LBL-23301; CONF-8704123-1
Apr 87 32p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8723; NSA1200
Conference on radon, radium, and other radioactivity in ground water: hydrogeologic impact and application to indoor airborne contamination, Somerset, NJ, USA, 7 Apr 1987.
Portions of this document are illegible in microfiche products.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: AC03-76SF00098
In the Long Valley caldera, an area of recently (approx.550 y) active volcanism and current seismic activity, sup 222 Rn concentrations in hot, warm, and cold spring waters have been measured since 1982. Rn contents of the waters correlate inversely with temperature and specific conductance, with high concentrations (1500 to 2500 pCi/l) occurring in dilute cold springs on the margins of the caldera, and low concentrations (12 to 25 pCi/l) in hot to boiling springs. Rn correlates only slightly with the uranium contents of the wide range of rocks which host the hydrological system feeding the springs. These environmental effects on the radon record may mask responses to small or distant seismic, volcanic, or crustal deformation events. To date, anomalous changes in water-borne Rn have been observed in connection with at least one earthquake, which occurred close to the monitoring site. This continuing study points out that an understanding of the geological setting, its associated hydrological system, and environmental influences is necessary to properly evaluate concentrations and changes in groundwater radioactivity. (ERA citation 12:033752)
Descriptors: *Ground Water; *Radon; California; Earthquakes; Forecasting; Indoor Air Pollution; Radioactivity; Radioecological Concentration
Identifiers: ERDA/520300; ERDA/500300; ERDA/510300; ERDA/580200; NTISDE
Section Headings: 77G (Nuclear Science and Technology--Radioactive Wastes and Radioactivity); 68F (Environmental Pollution and Control--Radiation Pollution and Control); 68D (Environmental Pollution and Control--Water Pollution and Control)

AD-A183 097/5
AFAR (Azores Fixed Acoustic Range) Measurements of Acoustic Mutual Coherence Functions of Time and Frequency
Flatte, S. M. ; Reynolds, S. A. ; Dashen, R. ; Buehler, B. ; Maciejewski, P.
La Jolla Inst., CA. Center for the Study of Nonlinear Dynamics.
Corp. Source Codes: 070956001; 413605
May 85 9p
Languages: English Document Type: Journal article
Journal Announcement: GRAI8722
Pub in Jnl. of Acoustical Society of America, v77 n3 p1723-1731 May 85 (No copies furnished by DTIC/NTIS).
NTIS Prices: Not available NTIS
Country of Publication: United States

A joint acoustic-oceanographic experiment was performed near the Azores in 1975. Frequencies from 400-4670 Hz were transmitted over a 35 km wholly refracted path. In addition, a separate data set was gathered over a 3 km path in 1973. Measurements of the mutual coherence function of time and frequency, and measurements of the acoustic phase structure function are presented and compared with predictions of fluctuations due to internal waves. (Reprints)

Descriptors: Internal waves; *Underwater acoustics; Acoustics; Coherence; Azores; Predictions; Variations; Reprints; Acoustic measurement; *Sound transmission; Acoustic refraction; Acoustic data; Phase; Oceanographic data ; Mathematical prediction

Identifiers: NTISDODXR

Section Headings: 47B (Ocean Technology and Engineering--Dynamic Oceanography); 47C (Ocean Technology and Engineering--Physical and Chemical Oceanography); 63I (Detection and Countermeasures--Seismic Detection)

DE87751123/XAB

Geoprospective Study of a Nuclear Waste Repository. Prospective Tectonics: Convergent and Divergent Episodes, Evolution of Stress During the Next 100,000 Years

Gros, Y.

Commission of the European Communities, Luxembourg.

Corp. Source Codes: 048489000; 1910850

Report No.: EUR-9866-V.7; BRGM-83-SGN-210-GEO

1985 73p

Languages: French

Journal Announcement: GRAI8720; NSA1200

In French.

U.S. Sales Only.

NTIS Prices: PC A04/MF A01

Country of Publication: Other

Within the frame of a contract with the CEC, dealing with storage and disposal of radioactive wastes in geological formations, the BRGM has been involved in a research on prospective tectonics. Within the Western European continental plate, since Mesozoic times, one sees the alternation or succession of convergent and divergent tectonic episodes. These tectonic episodes, although representing geologically discontinuous phenomena, still have time periods of between 4 to 40 millions years. These tectonic phenomena are the cause of the formation or reactivation, at all scales in the continental plate, of brittle, fault-like structures. Tectonic analysis and the in situ measures of stress and the earthquake focal phenomena show that, from the lower Quaternary to the present, the Western European continental plate has been subjected to NNW to SSE convergent stress. A study of the arrangement of European and African plates in the Western Mediterranean shows that the entire region, is undergoing a period of continental collision. The change in the process implies a westerly continental drift of the Spanish plate, a movement which would take several million years. On the Western European scale, the most likely hypothesis during the next 100,000 years is the persistance of the present stress trending approximately N-5. On the other hand, on a local scale, reorganisations of this stress are possible, owing to the presence of tectonic or lithological heterogeneities. (ERA citation 12:022270)

Descriptors: *Geologic Formations; *Radioactive Waste Disposal; Earth Crust; Earthquakes; Europe; Forecasting; Fractures; Plate Tectonics; Stresses; Tectonics

Identifiers: *Foreign technology; ERDA/052002; NTISDEE

Section Headings: 77G (Nuclear Science and Technology--Radioactive Wastes and Radioactivity)

AD-A181 775/8/XAB

Tsunami Predictions for the Coast of Alaska Kodiak Island to Ketchikan (Final rept. May 85-Jul 86)
Crawford, P. L.
Coastal Engineering Research Center, Vicksburg, MS.
Corp. Source Codes: 081491000; 037050
Report No.: CERC-TR-87-7
Apr 87 137p
Languages: English
Journal Announcement: GRAI8719
NTIS Prices: PC A07/MF A01
Country of Publication: United States

The 100- and 500-year combined tsunami and tide elevations were predicted at sites along the coast of Alaska between Kodiak Island and Ketchikan. Lack of historical data at most sites necessitated the generation of a synthetic record of tsunami activity in the Gulf of Alaska. The geophysical and tectonic setting of the Gulf were used to synthesize a record of tsuamigenic, tectonic deformations of the seafloor. A numerical model was used to simulate the tsunamis resulting from each deformation. Numerical simulations of the 1964 Alaskan tsunami were made and compared with historical tide gage recordings. Historical data of tsunami activity along the entire Aleutian trench were used to assign probability of occurence to each tsunami in the synthetic record. A numerical procedure was used to combine the effects of astronomical tides and tsunamis and to produce to 100- and 500-year combined tsunami and tide elevations. (Author)

Descriptors: *Ocean waves; Aleutian islands; Trenches; Deformation; Geophysics; *Tectonics; Alaska gulf; Ocean bottom; Elevation; Tides; Coastal regions; Alaska; Astronomy; Gulfs; Mathematical models; Earthquakes ; Submarine trenches; Mathematical prediction

Identifiers: *Tsunamis; NTISDODXA

Section Headings: 47B (Ocean Technology and Engineering--Dynamic Oceanography); 47E (Ocean Technology and Engineering--Marine Geophysics and Geology)

AD-A181 209/8/XAB
State-of-the-Art for Assessing Earthquake Hazards in the United States. Report 23. Empirical Study of Attenuation and Spectral Scaling Relations of Response Spectra for Western United States Earthquakes
(Miscellaneous paper)
Nuttli, O. W. ; Shieh, C. F.
Saint Louis Univ., MO. Dept. of Earth and Atmospheric Sciences.
Corp. Source Codes: 023122015; 405292
Sponsor: Army Engineer Waterways Experiment Station, Vicksburg, MS.
Report No.: WES-MP-S-73-1-23
Feb 87 79p
Languages: English
Journal Announcement: GRAI8718
See also AD-A181 208.
NTIS Prices: PC A05/MF A01
Country of Publication: United States
Contract No.: DACW39-84-K-0001

This report is concerned with an empirical study so the response spectra of western United States earthquakes, principally in California. The basic data are logarithms of response spectral velocity as a function of period. They are the arithmetic average of the logarithm of the response spectral values for the two horizontal components of motion for 5 percent damping. The anelastic attention id determined empirically from the response spectra. It satisfies the relation Q(f) = 150 times f to the 0.6 power, where Q(f) is the specific quality factor at a frequency of f. The coefficient of anelastic attenuation k(f) is related to Q(f) by k(f) = pi times f/v Q(f), where V is the velocity of the wave. Observed response

spectra are extrapolated to a reference distance of 50 km for earthquakes of different magnitude. From these spectra a scaling relation is determined, which is expressed in the form of a set of equations. These equations enable one to predict response spectra for any body-wave magnitude for distances greater than 50 km. The predicted values agree well with observed ones at distances greater than 50 km, but show more variations at distance less than 50 km.

Descriptors: *Earthquakes; *Ground motion; *Seismic data; Intensity; Mathematical prediction; Seismic waves; Velocity; Spectra; Frequency; Response; Range(Distance); Near field; Far field; Attenuation; Coefficients ; Scaling factors; Hazards; California; United states; West(Direction); State of the art; Earthquake engineering

Identifiers: Earthquake hazards; Western United States; Response spectra; Engineering seismology; Seismic velocity; Seismic magnitude; NTISDODXA; NTISDODA

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 89D (Building Industry Technology--Structural analyses)

AD-A179 545/9/XAB

Vector Array Processor Computer Equipment

(Final rept. 1 Jan-31 Dec 85)

Toomre, J.

Colorado Univ. at Boulder. Dept. of Astrophysical Planetary and Atmospheric Sciences.

Corp. Source Codes: 068646034; 416032

Sponsor: Air Force Office of Scientific Research, Bolling AFB, DC.

Report No.: AFOSR-TR-87-0497

6 Feb 87 16p

Languages: English

Journal Announcement: GRAI8715

NTIS Prices: PC A02/MF A01

Country of Publication: United States

Contract No.: AFOSR-85-0070; 2917; A6

To support the on-going research on Solar Oscillations and Convective Flows as Probes of Structure in the Subphotosphere, a vector array processor system was acquired to augment the existing DEC VAX-11/750 computer system. The fifty-fold average increase in computing speed offered by the array processor would make it feasible to invert solar oscillation data on a regular basis, and thereby permit us to use the five-minutes oscillations of the Sun to probe the turbulent convection zone below the surface of this star. The array processor would also permit us to carry out detailed numerical experiments with compressible convection in the presence of magnetic fields, for the speed and memory of the machine makes it a formidable tool for direct numerical simulations of two- and three-dimensional fluid dynamics. Such theoretical simulations are also needed to study the solar dynamo and its ability to build and transform magnetic fields, an issue central to solar-terrestrial variablility and predictions of solar activity. Attached as Appendix A is a cover article in Science Magazine that describes the importance of the work on the Seismology of the Sun that is beginning to emerge from the class of array processors.

Descriptors: Sun; Seismology; Solar activity; Oscillation; Fluid dynamics ; Arrays; Compressible flow; Convection; Earth(Planet); Flow; Magnetic fields; Numerical analysis; Numerical methods and procedures; Predictions; Probes; Processing equipment; Simulation; Three dimensional; Turbulence

Identifiers: *Solar oscillations; NTISDODXA; NTISDODAF

Section Headings: 54C (Astronomy and Astrophysics--Astrophysics)

DE86703797/XAB

Use of Radon as a Detector of Volcanic Processes

Flerov, G. N. ; Tret'yakova, S. P. ; Dzholos, L. V. ; Merkina, K. I. ; Chirkov, A. M.
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Reactions.
Corp. Source Codes: 014897005; 3475000
Sponsor: AN SSSR, Obninsk. Otdelenie Inst. Fizicheskoj Khimii.
Report No.: JINR-18-85-379
1985 7p
Languages: Russian
Journal Announcement: GRAI8710
In Russian. Submitted to the journal Izv. Acad. Sci., USSR, Phys. Solid Earth.
U.S. Sales Only.
NTIS Prices: PC A02/MF A01
Country of Publication: Union of Soviet Socialist Republics
To control the volcanic activities of the Karym volcano (Kamchatka) and predict its eruption the systematic observation of the radon concentration in the soil air and in the gases from the Karym hot spring was carried out using the track detector technique. The obtained data on changes in radon concentration during the attenuation of the Karym volcano (in 1982) are in good agreement with the results for the explosive earthquakes at the seismic station ''Karym-skaya''. 9 refs.; 4 figs.; 1 tab. (Atomindex citation 17:058724)
Descriptors: *Earthquakes; *Radon; *Volcanoes; Air; Alpha Particles; Dielectric Track Detectors; Forecasting; Gases; Natural Radioactivity; Particle Tracks; Radioecological Concentration; Thermal Springs
Identifiers: *Foreign technology; ERDA/510300; ERDA/520300; NTISINIS
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

AD-A176 590/8/XAB
Design of the Digital Satellite Link Interface for a System That Detects the Precursory Electromagnetic Emissions Associated with Earthquakes
(Master's thesis)
Ebel, K. C.
Naval Postgraduate School, Monterey, CA.
Corp. Source Codes: 019895000; 251450
Dec 86 106p
Languages: English Document Type: Thesis
Journal Announcement: GRAI8710
NTIS Prices: PC A06/MF A01
Country of Publication: United States
The design, construction and implementation of a computer controlled radio frequency (RF) noise measurement and recording system in the 30.45 MHz and 150.MHz range and the interfacing of this system to a digital satellite link is presented. Earthquake prediction by the use of various physical precursors and the specific use of electromagnetic emissions in the RF range as a precursor to future earthquake activity is described.
Descriptors: Communication satellites; Radio links; Recording systems; Data links; Digital systems; *Earthquakes; *Electromagnetic radiation; Precursors; Radiofrequency; Computers; Control; Predictions; Emission; Measurement; Noise; Physical properties
Identifiers: NTISDODXA
Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 45C (Communication--Common Carrier and Satellite)

AD-A175 203/9/XAB
Simulating a Large Wasatch Front, Utah, Earthquake Using Small Earthquake Recordings as Green's Functions
(Environmental research papers Sep 83-Oct 85)

Johnston, J. C.
Air Force Geophysics Lab., Hanscom AFB, MA.
Corp. Source Codes: 054815000; 409578
Report No.: AFGL-TR-86-0120; AFGL-ERP-956
28 May 86 58p
Languages: English
Journal Announcement: GRAI8707
NTIS Prices: PC A04/MF A01
Country of Publication: United States
Contract No.: 7600

Several earthquake recordings at Golden, Colorado in the magnitude ranges 4-6, were digitized and were used to investigate the feasibility of adding them together to simulate a larger earthquake (magnitude 7.0-7.5). The test path of the Wasatch Front, Utah, to the WWSSN station at Golden was selected (distance = 400 - 500 km). The hypothetical causative fault was given dimensions on the order of 45 km long by 20 km wide and was divided into 'cells,' representative in size to the 'seed' events rupture dimensions and with other variations. The results were evaluated by total energy and amplitude criteria. The final waveforms were judged to be adequate predictions at the lower frequency end of the spectra. The high frequency content was controlled by the spectra of the seed earthquakes whose magnitudes were too large to adequately reproduce the Green's function response at these frequencies. It is recommended that this technique be used at smaller distance ranges or at stations whose sensitivity is set high enough so as to record the smaller magnitude earthquakes, more representative of impulse responses at all frequencies. Keywords: Seismic waves; Seismic data; Synthetic waveforms; Green's function addition; Wasatch front earthquake; Seismic hazard; Earthquake prediction.

Descriptors: *Earthquakes; *Simulation; *Earthquake warning systems; Addition; Amplitude; Colorado; Frequency; Greens function; Hazards; Low frequency; Paths; Predictions; Pulses; Recording systems; Response; Seismic data; Seismic waves; Synthesis; Utah; Waveforms

Identifiers: Wasatch Mountains; NTISDODXA

Section Headings: 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

PB87-103529/XAB
Limits of Survival: Forecasting the Future of Japan
Takahashi, K.
National Science Foundation, Washington, DC. Office of Climate Dynamics.
Corp. Source Codes: 019603001
Report No.: TT-75-52085
1985 195p
Languages: English
Journal Announcement: GRAI8702

Trans. from mono. Seizon no Genkai. Nihon no Mirai o Yosoku Suru, Tokyo, p1-191 1975.

NTIS Prices: PC A09/MF A01
Country of Publication: Union of Soviet Socialist Republics

Contents: The crisis of civilization; Population explosion; Shrinking resources; Energy revolution; Limited water resources; Nonrenewable biological resources; Increasing pollution; Ecology; Weather and social phenomena; Changing climate; The threat of earthquakes; Natural disasters; The role of information; National planning; Planning the future.

Descriptors: *Japan; Forecasts; Planning; Information; Disasters; Earthquakes; Climate; Ecology; Pollution; Resources; Population growth

Identifiers: NTISSFCSI; NTISNSFG

Section Headings: 96C (Business and Economics--International Commerce, Marketing, and Economics)

PB86-228608/XAB
Haiti: A Country Profile
Evaluation Technologies, Inc., Arlington, VA.
Corp. Source Codes: 057410000
Sponsor: Agency for International Development, Washington, DC. Office of Foreign Disaster Assistance.
Report No.: AID-PN-AAQ-451
May 84 55p
Languages: English
Journal Announcement: GRAI8623
Sponsored by Agency for International Development, Washington, DC. Office of Foreign Disaster Assistance.
NTIS Prices: PC A04/MF A01
Country of Publication: United States
Contract No.: AID/SOD/PDC-C-2112
The profile of Haiti was prepared by the Office of U.S. Foreign Disaster Assistance (OFDA) to provide baseline data in support of disaster planning and relief operations. The report is in outline form. General information is provided on government, ethnic and sociocultural groups, languages, religions, geography, population, health, economy, communications, and transportation. Haiti's disaster vulnerability is assessed in terms of the country's physical environment and of the incidence of hurricanes, earthquakes, environmental hazards, fire, erosion, and drought. Disaster preparedness and available assistance are evaluated, and information is provided on national, regional, and local disaster planning; health facilities; food resources and storage; airports and sea ports; communications; electricity; media networks; international, U.S., and voluntary agencies; and A.I.D. disaster mitigation activities.
Descriptors: *Disasters; *Haiti; Planning; Risk; Cyclones; Earthquakes; Prediction; Foreign countries
Identifiers: Developing country application; NTISAIDNE
Section Headings: 5A (Behavioral and Social Sciences--Administration and Management); 91I (Urban and Regional Technology and Development--Emergency Services and Planning)

AD-914 362/9/XAB
Calculation of Vertical Airblast-Induced Ground Motions from Nuclear Explosions in Frenchman Flat
(Technical rept. Jan 72-Apr 73)
Cooper, Jr., Henry F. ; Bratton, Jimmie 1.
R and D Associates, Marina del Rey, CA.
Corp. Source Codes: 066041000; 390124
Report No.: AFWL-TR-73-111
Oct 73 109p
Languages: English
Journal Announcement: GRAI8622
Distribution limitation now removed.
NTIS Prices: PC A06/MF A01
Country of Publication: United States
Contract No.: F29601-72-C-0048; DNA001-72-C-0197; AF-1302; DNA-NWED-QAXS; 130213; B144
This report discusses vertical airblast-induced ground motions produced by nuclear explosions over a dry soil medium taken to model Frenchman Flat of the Nevada Test Site (NTS). Material properties for use in first principle calculations were synthesized from very limited dynamic laboratory stress-strain data, various soil index characteristics, and seismic data. Parametric calculations with a one-dimensional, plane-strain finite difference code were used to define a theoretical simplified model that expresses peak vertical particle velocities and displacements as a

function of yield, peak overpressure and depth. Ground motions predicted by this model were then compared to ground motion data from nuclear explosions in Frenchman Flat. In particular, predictions of the simplified model were reasonably consistent with PRISCILLA data which were a primary basis of empirical prediction procedures widely used in the design and analysis of strategic structures during the past ten years. The theoretical model could be altered (where little or no dynamic soil property data exist) to provide even better agreement between calculated and measured ground motions. Conversely, study of qualitative features of the theoretical results provide insight into the basic wave propagation phenomena in Frenchman Flat that could improve the interpretation of the experimental data such that a more consistent comparison between theory and experiment may result. (Author)

Descriptors: *Nuclear explosions; Seismic waves ; Terrain; Motion; Airburst; Surface burst; Mathematical models; Mathematical prediction; Stresses; Strain(Mechanics); Shock waves; Propagation; Soil mechanics; Velocity; Pressure; Experimental data

Identifiers: *Ground motion; Air-to-underground; Priscilla shot; Yield(Nuclear explosions); Overpressure; NTISDODXD

Section Headings: 18C (Nuclear Science and Technology--Nuclear Explosions)

PB86-198942/XAB

Proposed Initiative for Capitalizing on the Parkfield, California, Earthquake Prediction

(Final rept)

National Research Council, Washington, DC. Commission on Physical Sciences Mathematics and Resources.

Corp. Source Codes: 019026409

Sponsor: Geological Survey, Reston, VA.; National Science Foundation, Washington, DC.

1986 38p

Languages: English

Journal Announcement: GRAI8617

Sponsored by Geological Survey, Reston, VA., and National Science Foundation, Washington, DC.

NTIS Prices: PC A03/MF A01

Country of Publication: United States

Contract No.: DI-14-08-0001-A0232; NSF-EAR83-20697

In June 1985 a committee of the Board on Earth Sciences asked the National Research Council/National Academy of Sciences to bring to the attention of officials of the federal government the scientifically endorsed recent prediction of a moderate earthquake at Parkfield, California, between 1986 and 1993. The prediction offers a unique opportunity to improve our understanding of earthquakes and our future ability to predict them. An augmented experimental program at Parkfield is needed to document this high-probability event more completely, including the detection of premonitory phenomena. The report contains the information that was presented to government officials. It is intended to stimulate their interest, understanding, and enthusiasm for augmenting an experimental program. If successful, the Parkfield experiment will eventually translate into decreasing the vulnerability of people to earthquake hazards.

Descriptors: *Earthquakes; *Predictions; California; Soil mechanics; Tectonics

Identifiers: NTISNASNRC; NTISDIG; NTISNSFG

Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE86001042/XAB

Hydraulic Fracture Model Analysis of the MWX Stimulation Treatments in the Paludal Interval
Layne, A.
Department of Energy, Morgantown, WV. Morgantown Energy Technology Center.
Corp. Source Codes: 055215002; 9512876
Report No.: DOE/METC-85/4054
Aug 85 29p
Languages: English
Journal Announcement: GRAI8616; NSA1100
Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Stimulation data that were measured at the Department of Energy's (DOE) Multi-well Experiment (MWX) are being analyzed with the Morgantown Energy Technology Center's (METC's) hydraulic fracture models. The results of the analysis will improve the stimulation technique efficiencies and the predictive capabilities of hydraulic fracture models for low permeability (tight) gas sandstones. Post-stimulation hydraulic fracture predictions that are made with data from the MWX paludal zones 3 and 4 sandstone formations are included in this report. Post-stimulation fracture diagnostics, hydraulic fracture model predictions, and ongoing and future model analyses are presented. Results from reservoir and hydraulic fracture modeling have shown that complex induced fracture behavior exists in tight gas formations. The hydraulic fracture models predict fracture geometries similar to those that are derived from seismic mapping of the induced fracture. However, disagreement between pressures recorded during the treatment and the predicted pressures indicate that significant model improvements are required to predict complex fracture behavior in tight sandstone formations. Stimulation treatments scheduled for the MWX coastal interval will provide additional data for western gas sands (WGS) model analysis and development. 9 refs., 12 figs., 5 tabs. (ERA citation 11:025356)
Descriptors: *Hydraulic Fractures; *Natural Gas Wells; *Sandstones; Computerized Simulation; Crack Propagation; Data Analysis; Forecasting; Fracture Mechanics; Geometry; Hydraulic Fracturing; Permeability; Well Stimulation
Identifiers: ERDA/030900; ERDA/580300; NTISDE
Section Headings: 8I (Earth Sciences and Oceanography--Mining Engineering); 21D (Propulsion and Fuels--Fuels); 8G (Earth Sciences and Oceanography--Geology and Mineralogy); 48A (Natural Resources and Earth Sciences--Mineral Industries); 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 97K (Energy--Fuels)

AD-A166 684/1/XAB
Tsunami Engineering
(Special rept.)
Camfield, Frederick E.
Coastal Engineering Research Center, Vicksburg, MS.
Corp. Source Codes: 081491000; 037050
Report No.: CERC-SR-6
Feb 80 224p
Languages: English
Journal Announcement: GRAI8616
NTIS Prices: PC A10/MF A01
Country of Publication: United States
Contract No.: F31234
This report provides a source of state-of-the-art information on tsunami engineering. The report summarizes available information, identifies gaps

in existing knowledge, and discusses methods of predicting tsunami flooding. The generating mechanisms of tsunamis and the method of determining the probability of occurrence are given. Because of the limited data available on tsunamis, numerical methods are commonly used to predict tsunami flooding of coastal areas. Finite-difference equations are presented for simulating the propagation of tsunamis, but computer programs are omitted because of the continuing work in progress and the availability of up-to-date computer programs from other sources. Known mathematical solutions, for tsunamis approaching the shoreline and tsunami-shoreline interaction, are given to illustrate the effects of tsunamis and provide means of verifying numerical results. The report discusses tsunami-structure interaction and illustrates various types of damage caused by tsunamis. (Author)

Descriptors: *Ocean waves; Mathematical prediction; Coastal regions; Computer programs; Difference equations; Finite difference theory; Flooding ; Numerical methods and procedures; Sources; State of the art

Identifiers: *Tsunamis; NTISDODXA

Section Headings: 8C (Earth Sciences and Oceanography--Dynamic Oceanography); 8K (Earth Sciences and Oceanography--Seismology); 9B (Electronics and Electrical Engineering--Computers); 47B (Ocean Technology and Engineering--Dynamic Oceanography); 62GE (Computers, Control, and Information Theory--General)

AD-A166 155/2/XAB

Measurement of Elastic Properties and Static Strength
(Final rept. 1 Jul 83-1 Oct 84)

Johnson, Tracy L.
Lamont-Doherty Geological Observatory, Palisades, NY.

Corp. Source Codes: 056312000; 404497
Sponsor: Air Force Office of Scientific Research, Bolling AFB, DC.
Report No.: AFOSR-TR-86-0055
1 Oct 84 52p
Languages: English
Journal Announcement: GRAI8615
NTIS Prices: PC A04/MF A01
Country of Publication: United States
Contract No.: F49620-83-C-0124; ARPA Order-4770; 2311; A1

Prediction of seismic coupling for nuclear monitoring requires theoretical models capable of calculating ground motions. The models must have a sound physical basis and be able to represent dynamic material behavior near the source. This portion of the study of stress wave propagation in low porosity rock is aimed at determining quasi-static properties of rock necessary to use in numerical models predicting wave propagation. Further, the failure process of low porosity rock under simulated shock loading is being studied to establish the failure mechanisms. Initial effort supported by the contract was devoted mainly to obtaining and preparing samples of Westerly granite for experiments. Preliminary experiments to characterize the properties of Westerly granite were performed on small samples obtained from the Bonner Monument Co. Material properties measured agreed well with previous determinations. Deformation of Westerly Granite was measured under standard triaxial loading conditions and under a loading path mimicing shock wave passage. Unlike high porosity rocks, the different loading paths did not substantially affect the strength of the low porosity granite. The failure envelope determined in standard triaxial tests agreed well with that measured under simulated shock loading.

Descriptors: *Rock mechanics; *Ground motion; *Granite; *Porosity; *Seismic waves; Failure(Mechanics); Monitoring; Nuclear explosions; Earth models; Dynamic response; Deformation; Triaxial stresses; Load distribution ; Dynamics; Materials; Failure; Paths; Elastic properties; Measurement;

Coupling(Interaction); Predictions; Envelope(Space); Porosity; Rock; Mathematical models; Shock waves; Loads(Forces); Simulation; Statics; Strength(Mechanics); Wave propagation; Sampling; Stress waves; Wave propagation; Models; Theory

Identifiers: *Seismic coupling; Low porosity rock; Westerly granite; NTISDODXA; NTISDODAF

Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 8G (Earth Sciences and Oceanography--Geology and Mineralogy); 18C (Nuclear Science and Technology--Nuclear Explosions); 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 77D (Nuclear Science and Technology--Nuclear Explosions and Devices); 64F (Earth Sciences--Geology and Mineralogy)

PB86-187507/XAB

Earthquake Loss-Prediction Methodology for High-Technology Industries

Yanev, P. I.

EQE, Inc., San Francisco, CA.

Corp. Source Codes: 085790000

Sponsor: National Science Foundation, Washington, DC. Directorate for Engineering.

Report No.: NSF/ENG-85058

Aug 85 207p

Languages: English

Journal Announcement: GRAI8614

Sponsored by National Science Foundation, Washington, DC. Directorate for Engineering.

NTIS Prices: PC A10/MF A01

Country of Publication: United States

Contract No.: NSF-ECE82-07028

A procedure for estimating the effects of a single, predefined, earthquake on a facility used by a high-technology industry has been developed. The procedure is capable of making four types of seismic damage predictions: building repair costs, equipment repair costs, length of business interruption, and total corporate financial losses. The component approach is used to make all four types of damage prediction.

Descriptors: *Earthquakes; *Buildings; Damage assessment; Estimates; Forecasting

Identifiers: NTISNSFENG

Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 8K (Earth Sciences and Oceanography--Seismology); 89D (Building Industry Technology--Structural analyses)

AD-A164 357/6/XAB

Design of a Space Based Sensor to Predict the Intensity and Location of Earthquakes from Electromagnetic Radiation

(Master's thesis)

Whyms, Michael L.

Naval Postgraduate School, Monterey, CA.

Corp. Source Codes: 019895000; 251450

Dec 85 84p

Languages: English Document Type: Thesis

Journal Announcement: GRAI8611

NTIS Prices: PC A05/MF A01

Country of Publication: United States

A proposed design for a space-based sensor to predict and detect earthquakes is presented. A free standing radiofrequency noise measurement and recording system is described to research the correlation between earthquakes and increased background electromagnetic noise at 30.45 MHz and 150.75 MHz. Keywords: Noise measurement; Electromagnetic radiation from

Earthquakes. (Theses)
Descriptors: *Earthquakes; Background noise; *Detectors; Electromagnetic radiation; Electromagnetism; Measurement; Noise; Recording systems; Space based; Space environments; Theses; Noise(Electrical and electromagnetic); Predictions; Very high frequency; Intensity; Position(Location)
Identifiers: NTISDODXA
Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 17J (Navigation, Communications Detection, and Countermeasures--Seismic Detection); 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 63I (Detection and Countermeasures--Seismic Detection)

AD-A162 614/2/XAB
M55 Rocket Disposal Program Study. M55-OD-7. Preliminary Assessment of the Public Health Impacts of M55 Rocket Disposal - Plant Operations (Final rept)
Carnes, S. A. ; Coleman, P. R. ; Hillsman, E. L. ; Griffin, G. D. ; Kornegay, F. C.
Oak Ridge National Lab., TN.
Corp. Source Codes: 021310000; 263050
Report No.: ORNL-6195
22 Nov 85 44p
Languages: English
Journal Announcement: GRAI8607
Microfiche copies only.
NTIS Prices: MF A01
Country of Publication: United States
Contract No.: DE-AC05-84-OR21400
This analysis of the potential public health impacts of M55 rocket disposal considered normal operations (with no release) and postulate accident for hypothetical incineration facilities at five CONUS M55 rocket storage depots (Anniston Army Depot, Lexington-Blue Grass Depot Activity, Pine Bluff Arsenal, Tooele Army Depot, and Umatilla Depot, Lexington Activity) and at Johnston Island in the Pacific Ocean. It also considered the Chemical Agent Munitions Disposal System (CAMDS) currently in operation at Tooele Army Depot. For each case, the postulated accidents were a severe earthquake that would result in the loss of containment of an agent holding tank, releasing a large quantity of liquid agent GB ro VX to the environment, and a fire stripping the carbon bed, releasing a smaller quantity of agent to the environment. The analysis calculate downwind hazard distances for each installation and accident considered using the vapor-depletion version of the D2B atomospheric dispersion code of the U.S. Army Chemical Research and Development Center, for accidents under conservative most likely and worst-case meteorological conditions. This code predicts distances to 50% lethality, 1% lethality, and no deaths. A modified-box approach to atmospheric dispersion was used to identify no-effects distances beyond 20 km for each accident scenario. Populations-at-risk and lethalities were calculated for each release scenario, based on the agent source strength, downwind hazard distances, and populations surrounding the subject depots. Keywords: Alabama; Kentucky; Arkansas; Utah; Oregon; Atmospheric dispersion; VX agent; GB agent.
Descriptors: *Nerve agents; *Disposal; *Public health; Incinerators; Chemical ordnance; Rockets; Environmental impact; Storage tanks; Meteorological phenomena; Dispersing; Mathematical prediction; Release; Threat evaluation; Accidents; Scenarios; Sources; Strength(General); Alabama; Army research; Chemistry; Atmospheres; Dispersions; Supply depots; Environments; Arkansas; Beds(Process engineering); Carbon; Hazards; Gb agent; Johnston island; Quantity; Containment(General); Losses; Pacific ocean; Vx agent; Wind direction; Combustion; Facilities; Kentucky; Lethality; Oregon; Population; Utah; Environments

Identifiers: M-55 rockets; Chemical rockets; CAMDS(Chemical Agent Munitions Disposal System); Atmospheric dispersion; Disposal plants; NTISDODXA

Section Headings: 15B (Military Sciences--Chemical, Biological, and Radiological Warfare); 6E (Biological and Medical Sciences--Clinical Medicine); 6F (Biological and Medical Sciences--Environmental Biology); 15E (Military Sciences--Logistics); 74D (Military Sciences--Chemical, Biological, and Radiological Warfare); 68GE (Environmental Pollution and Control--General); 68G (Environmental Pollution and Control--Environmental Health and Safety); 57H (Medicine and Biology--Ecology); 57U (Medicine and Biology--Public Health and Industrial Medicine); 74E (Military Sciences--Logistics, Military Facilities, and Supplies)

AD-A162 604/3/XAB

Empirical Development of Ground Acceleration, Velocity, and Displacement for Accidental Explosions at J5 or the Proposed Large Altitude Rocket Cell at Arnold Engineering Development Center

(Final rept. Oct 83-Sep 84)

Davis, Barbara C.
Lawrence Livermore National Lab., CA.

Corp. Source Codes: 068147000; 390999
Sponsor: Arnold Engineering Development Center, Arnold AFS, TN.
Report No.: AEDC-TR-85-50
Dec 85 44p
Languages: English
Journal Announcement: GRAI8607
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: MIPR-FY7483-83-0007

This study is an assessment of the ground shock which may be generated in the event of an accidental explosion at J5 or the proposed Large Altitude Rocket Cell (LARC) at the Arnold Engineering Development Center (AEDC). The assessment is accomplished by reviewing existing empirical relationships predicting ground motion from ground shock. These relationships are compared with data for surface explosions at sites with similar geology and with yields similar to expected conditions at AEDC. Empirical relationships are developed from these data and a judgment made whether to use existing empirical relationships or the relationships developed in this study. An existing relationship (Lipner et al.) is used to predict velocity; the empirical relationships developed in the course of this study are used to predict acceleration and displacement. The ground motions are presented in table form and as contour plots. Included also is a discussion of damage criteria from blast and earthquake studies. This report recommends using velocity rather than acceleration as an indicator of structural blast damage. It is recommended that v = 2 ips (v = .167 fps) be used as the damage threshold value (no major damage for v < or = 2 ips).

Descriptors: *Damage assessment; *Explosion effects; *Surface burst; Forecasting; Acceleration; Blast; Damage; Displacement; Geology; Ground motion; Ground shock; Contours; Plotting; Threshold effects; Earthquakes; Acceleration; Ground level; Altitude chambers

Identifiers: LARC(Large Altitude Rocket Cell); NTISDODXA; NTISDODAF

Section Headings: 19D (Ordnance--Explosions, Ballistics, and Armor); 79E (Ordnance--Detonations, Explosion Effects, and Ballistics)

DE84015214/XAB

Determination of Hydraulic Fracture Azimuth by Geophysical, Geological, and Oriented Core Methods at the Multi-Well Experiment Site, Rifle, Colorado

Teufel, L. W. ; Hart, C. M. ; Sattler, A. R. ; Clark, J. A.
Sandia National Labs., Albuquerque, NM.

P.68

Corp. Source Codes: 068123000; 9511100
Sponsor: Department of Energy, Washington, DC.
Report No.: SAND-84-0380C; CONF-8409104-5
1984 16p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8606; NSA0900
59. annual Society of Petroleum Engineers of AIME technical conference, Houston, TX, USA, 16 Sep 1984.
Paper copy only, copy does not permit microfiche production.
NTIS Prices: PC A02
Country of Publication: United States
Contract No.: AC04-76DP00789

A comprehensive program for prediction of hydraulic fracture azimuth is being conducted in the tight, lenticular, gas sandstone reservoirs of the Mesaverde Group in the Department of Energy's Multi-Well Experiment near Rifle, Colorado. Methods used in the program can be divided into two groups: (1) indirect, predictive techniques which determine either the principal paleo-stresses or in situ stresses prior to fracturing and (2) direct observation from either geophysical detection of hydraulic fracture propagation or wellbore impression-packers of open-hole hydraulic fractures. Predictive methods which determine the paleo-stress directions include geologic observations of the orientation of normal faults and fractures at the surface and in oriented core, and twinned calcite strain analysis of oriented core. These methods show a consistent direction of N75 exp 0 W plus or minus 10 exp 0 for the maximum horizontal paleo-stress. Predictive methods which determine the in situ stress directions include (1) oriented core analysis using anelastic strain recovery measurements and differential strain curve analysis, (2) oriented caliper and televiewer logs to infer stress directions from wellbore breakouts, and (3) computer modeling of the horizontal stress directions due to gravitational loading of topographic relief. The results of these methods are fairly consistent, and are in general agreement with the paleo-stress results, but also suggest a possible 20 exp 0 clockwise rotation with depth of the maximum horizontal in situ stress from N89 exp 0 W plus or minus 10 exp 0 at a depth of 1330 m to N68 exp 0 W plus or minus 9 exp 0 at a depth of 2450 m. The clockwise rotation of the horizontal stresses with depth may be due to large, local topographic relief superimposed on the regional stress field of the basin. 39 references, 6 figures, 5 tables. (ERA citation 09:039632)

Descriptors: Colorado; *Hydraulic Fracturing; *Natural Gas Deposits; *Sandstones; Crack Propagation; Drill Cores; Experimental Data; Forecasting ; Measuring Methods; Orientation; Seismic Surveys
Identifiers: ERDA/030900; NTISDE
Section Headings: 8I (Earth Sciences and Oceanography--Mining Engineering); 48A (Natural Resources and Earth Sciences--Mineral Industries)

AD-A162 192/9/XAB
Vibro-Acoustic Forecasts for STS (Space Transportation System) Launches at V23, Vandenberg AFB: Results Summary and the Payload Preparation Room (Environmental research papers)
Battis, James C.
Air Force Geophysics Lab., Hanscom AFB, MA.
Corp. Source Codes: 054815000; 409578
Report No.: AFGL-TR-85-0133; AFGL-ERP-922
8 May 85 85p
Languages: English
Journal Announcement: GRAI8606
NTIS Prices: PC A05/MF A01
Country of Publication: United States
Contract No.: 7600; 09

p.69

The launch induced vibro-acoustic environments have been forecast for several Ground Support System structures at V23, the STS launch facility at Vandenberg, AFB. These forecasts are based on site particular vibration and pressure responses determined by an explosive sounding program conducted at V23. The responses are coupled with an STS acoustic pressure term established by measurement of STS launches at KSC. This report provides a summary of the results of this effort and provides the forecasts for the vibration environment in the PPR. Motion levels in the PPR are found to be substantially below all levels of concern. However, companion studies have shown that high accelerations can be anticipated in the OFS Room and the PCR. In addition, pounding could occur between PCR and PPR. Strong reverberations on acoustic records from V23 indicate that launch overpressures at V23 will be significantly altered from those at KSC for the shuttle at altitude and clear of the ground. Finally, the potential of pounding due to earthquake ground motions is discussed.

Descriptors: *Launching sites; *Vibration; Acoustics; Earthquakes; Environments; Explosives; Forecasting; Ground motion; Ground support; High acceleration; Motion; Payload; Preparation; Pressure; Records; Response; Reverberation; Sites; Sound pressure; Sounding; Space transportation; Space(Room); Structures

Identifiers: Vandenberg Air Force Base; PPR(Payload Preparation Room); NTISDODXA

Section Headings: 16A (Missile Technology--Missile Launching and Ground Support); 22D (Space Technology--Spacecraft Launch Vehicles and Ground Support); 20K (Physics--Solid Mechanics); 75C (Missile Technology--Missile Launching and Support Systems); 84G (Space Technology--Unmanned Spacecraft); 46E (Physics--Structural Mechanics)

DE85015110/XAB

CR 204 Geomensor High-Precision Distance Meter: Operating Principle and Initial Field Trials

Scherer, M.

Stanford Linear Accelerator Center, CA.

Corp. Source Codes: 014489000; 5910000

Sponsor: Department of Energy, Washington, DC.

Report No.: SLAC-TRANS-0220

Apr 85 16p

Languages: English Document Type: Translation

Journal Announcement: GRAI8604; NSA1000

Translated from Zeitschrift fuer Vermessungswesen 110: No. 4, 135-145(Apr 1985).

Portions of this document are illegible in microfiche products.

NTIS Prices: PC A02/MF A01

Country of Publication: Germany, Federal Republic of

The Geomensor is the most advanced distance meter of high precision for ranges up to 5 km length (+-0.1 mm + 0.5 ppM). The handling of the new equipment and its electronic functions are described in detail. Results of the first investigations are presented as well as field-experiences with Geomensor measuring a network for earthquake prediction. 2 refs., 2 figs., 1 tab. (ERA citation 10:052255)

Descriptors: *Earthquakes; *Range Finders; Accuracy; Forecasting; Tectonics

Identifiers: *Foreign technology; ERDA/440300; ERDA/580201; Translations; NTISDET

Section Headings: 14B (Methods and Equipment--Laboratories, Test Facilities, and Test Equipment); 8K (Earth Sciences and Oceanography--Seismology); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

P.70

NUREG/CR-4432/XAB

Comparison of Dynamic Characteristics of Fukushima Nuclear Power Plant Containment Building Determined from Tests and Earthquakes
(Technical rept. Oct 83-Sep 85)
Srinivasan, M. G. ; Kot, C. A. ; Hsieh, B. J.
Argonne National Lab., IL.
Corp. Source Codes: 001960000
Sponsor: Nuclear Regulatory Commission, Washington, DC. Office of Nuclear Regulatory Research.
Report No.: ANL-85-67
Oct 85 29p
Languages: English
Journal Announcement: GRAI8603
Sponsored by Nuclear Regulatory Commission, Washington, DC. Office of Nuclear Regulatory Research.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Modal parameters determined from response measured in dynamic tests and from analytical models for simulating the tests and two subsequent earthquakes experienced by the containment building of Unit 1 of the Fukushima Power Station complex in Japan are compared for the purpose of evaluating the effectiveness of the dynamic tests in earthquake response prediction. The tests are found to have led to the correct identification of a fundamental frequency. The lack of agreement between test- and earthquake-determined modeshapes and damping is attributable more to the shortcomings of the simulation models than to differences in actual behavior.
Descriptors: *Nuclear power plants; Dynamic tests; Mathematical models; Earthquakes; Predictions; Frequencies
Identifiers: *Containment buildings; *Fukushima -1 reactor; BWR type reactors; NTISNUREG; NTISDE
Section Headings: 18F (Nuclear Science and Technology--Radiation Shielding and Protection); 18I (Nuclear Science and Technology--Reactor Engineering and Operation); 77F (Nuclear Science and Technology--Radiation Shielding, Protection, and Safety); 77H (Nuclear Science and Technology--Reactor Engineering and Nuclear Power Plants)

DE85781240/XAB
Future of Fission-Electric Power
Morowski, J. V.
Bechtel Power Corp., San Francisco, CA.
Corp. Source Codes: 057648000; 9500282
Report No.: INIS-MF-9614; CONF-830660-13
Jun 83 30p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8523
23. annual international conference of Canadian Nuclear Association, Montreal, Canada, 12 Jun 1983.
U.S. Sales Only.
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Future worldwide electricity supply needs dictate the necessity of maintaining a sound capability for electricity and electric power generating facilities, including nuclear, as viable export commodities. A survey of fission-power plant types and the status of worldwide nuclear electric power illustrates the primary emphasis on LWR's and HWR's as two leading types in the export market. This survey examines the factors affecting the market prospects for the next five to fifteen years and provides a discussion on some possible improvements to current market circumstances. A comparative description is provided for some of the types of LWR and CANDU characteristics such as quantities, schedules,

constructability factors, and equipment and system. Important factors in the selection process for future nuclear power plants are discussed. Some factors included are seismic design requirements; plant design description and possible site layout; plant protection, control and instrumentation; thermal cycle design and arrangement; and special construction and rigging requirements. (Atomindex citation 16:022331)

Descriptors: *Nuclear Power Plants; *USA; Candu Type Reactors; Construction; Design; Electric Power; Forecasting; Nuclear Energy; Power Demand; Specifications; Water Moderated Reactors

Identifiers: ERDA/290600; NTISINIS

Section Headings: 18E (Nuclear Science and Technology--Nuclear Power Plants); 97Q (Energy--Selected Studies In Nuclear Technology); 97G (Energy--Policies, Regulations, and Studies); 97I (Energy--Electric Power Production)

PB85-866804/XAB

Tsunamis. 1970-August 1985 (Citations from the NTIS Data Base)

(Rept. for 1970-Aug 85)

National Technical Information Service, Springfield, VA.

Corp. Source Codes: 055665000

Aug 85 127p

Languages: English Document Type: Bibliography

Journal Announcement: GRAI8521

Supersedes PB83-806984.

NTIS Prices: PC N01/MF N01

Country of Publication: United States

This bibliography contains citations concerning the causes, forecasting, and protective measures taken regarding the occurrence of tsunamis. Earthquake hazards in specific coastal areas, theoretical studies of wave propagation, hazards evaluations, and emergency planning and assistance programs are among the topics considered. Historical accounts, and analyses of specific events are also discussed. (This updated bibliography contains 147 citations, 12 of which are new entries to the previous edition.)

Descriptors: *Bibliographies; *Tsunamis; Ocean waves; Earthquakes; Seismic waves; Forecasting; Disasters

Identifiers: NTISNTISN; NTISNERACD

Section Headings: 8C (Earth Sciences and Oceanography--Dynamic Oceanography); 8K (Earth Sciences and Oceanography--Seismology); 47B* (Ocean Technology and Engineering--Dynamic Oceanography); 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 47E (Ocean Technology and Engineering--Marine Geophysics and Geology); 91I (Urban and Regional Technology and Development--Emergency Services and Planning); 43D (Problem Solving Information for State and Local Governments--Police, Fire, and Emergency Services); 88E (Library and Information Sciences--Reference Materials)

N85-27442/1/XAB

Symposium on Atmospheric Sciences in South Africa

National Physical Research Lab., Pretoria (South Africa).

Corp. Source Codes: 008681000; NK631462

Sponsor: National Aeronautics and Space Administration, Washington, DC.

Report No.: CSIR-S-331

1983 55p

Languages: English

Journal Announcement: GRAI8519; STAR2316

Symp. held in Pretoria, 18-20 Oct. 1983.

NTIS Prices: PC A04/MF A01

Country of Publication: South Africa

No abstract available.

Descriptors: *Agriculture; *Air pollution; *Cloud cover; *Gravity waves;

*Meteorology; *Oceanographic parameters; *Pollution monitoring; *Seismology ; *Weather forecasting; Annual variations; Cloud seeding; Computers; Environmental quality; Hydrocarbons; Mathematical models; Meteorological radar; Remote sensing; Smog

Identifiers: *Foreign technology; NTISNASAE

Section Headings: 4B (Atmospheric Sciences--Meteorology); 5B (Behavioral and Social Sciences--Documentation and Information Technology); 55GE (Atmospheric Sciences--General); 88E (Library and Information Sciences--Reference Materials)

AD-A155 070/6/XAB

Design of a Freestanding Noise Measurement and Recording System to Predict the Intensity and Location of Electromagnetic Radiation from Earthquakes

(Master's thesis)

Ross, M. V.

Naval Postgraduate School, Monterey, CA.

Corp. Source Codes: 019895000; 251450

Dec 84 83p

Languages: English Document Type: Thesis

Journal Announcement: GRAI8518

NTIS Prices: PC A05/MF A01

Country of Publication: United States

The design, construction, and testing of a freestanding radio frequency (RF) noise measurement and recording system in the 30 MHz and 150MHz range is presented. Placement of the system along the San Andreas fault to permit the establishment of a correlation between increased background RF noise to earthquake fault activity for potential as an earthquake prediction tool is described.

Descriptors: *Earthquakes; Background noise; Radiofrequency; Predictions; Measurement; Noise; Electromagnetic radiation; Emplacement; Recording systems; Noise(Radio); California; Faults(Geology); Seismic detection; Earthquake warning systems; Theses

Identifiers: San Andreas Fault; NTISDODXA

Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 17J (Navigation, Communications Detection, and Countermeasures--Seismic Detection); 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 63I (Detection and Countermeasures--Seismic Detection)

PB85-187854

Liquefaction of Sands during Earthquakes - The Cyclic Strain Approach

(Final rept.)

Yokel, F. Y. ; Dobry, R. ; Powell, D. J. ; Ladd, R. S.

National Bureau of Standards, Gaithersburg, MD.

Corp. Source Codes: 081914000

1980 10p

Languages: English Document Type: Journal article

Journal Announcement: GRAI8515

Pub. in Proceedings of Int. Symposium on Soils Under Cyclic and Transient Loading 2, Swansea, England, January 7-11, 1980, p571-580.

NTIS Prices: Not available NTIS

Country of Publication: United States

A method for evaluating the liquefaction potential of level sandy sites subjected to earthquake loads on the basis of anticipated cyclic shear strains is proposed. The data includes tests as well as test results. A method is proposed by which the maximum tangent shear modulus, which can be measured by shear wave propagation velocities, can be used to predict liquefaction potential.

Descriptors: *Liquefaction; *Sands; *Earthquakes; Velocity; Secondary waves; Shear strain; Soil properties; Shear modulus; Tangent modulus;

Evaluation; Predictions; Correlation
Identifiers: Earthquake engineering; Pore water pressure; NTISCOMNBS
Section Headings: 8M (Earth Sciences and Oceanography--Soil Mechanics); 50D (Civil Engineering--Soil and Rock Mechanics)

DE85008324/XAB
Empirical Development of Ground Acceleration, Velocity, and Displacement for Accidental Explosions at J5 or the Proposed Large Altitude Rocket Cell at Arnold Engineering Development Center
Davis, B. C.
Lawrence Livermore National Lab., CA.
Corp. Source Codes: 068147000; 9513035
Sponsor: Department of Energy, Washington, DC.
Report No.: UCRL-53591
Sep 84 41p
Languages: English
Journal Announcement: GRAI8513; NSA1000
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-48
This study is an assessment of the ground shock which may be generated in the event of an accidental explosion at J5 or the Proposed Large Altitude Rocket Cell (LARC) at the Arnold Engineering Development Center (AEDC). The assessment is accomplished by reviewing existing empirical relationships for predicting ground motion from ground shock. These relationships are compared with data for surface explosions at sites with similar geology and with yields similar to expected conditions at AEDC. Empirical relationships are developed from these data and a judgment made whether to use existing empirical relationships or the relationships developed in this study. An existing relationship (Lipner et al.) is used to predict velocity; the empirical relationships developed in the course of this study are used to predict acceleration and displacement. The ground motions are presented in table form and as contour plots. Included also is a discussion of damage criteria from blast and earthquake studies. This report recommends using velocity rather than acceleration as an indicator of structural blast damage. It is recommended that v = 2 ips (v = .167 fps) be used as the damage threshold value (no major damage for v less than or equal to 2 ips). 13 references, 25 figures, 6 tables. (ERA citation 10:019036)
Descriptors: *Chemical Explosions; *Ground Motion; *Missile Silos; Acceleration; Accidents; Damage; Forecasting; Shock Waves; TNT; Velocity
Identifiers: ERDA/450100; NTISDE
Section Headings: 19D (Ordnance--Explosions, Ballistics, and Armor); 79E (Ordnance--Detonations, Explosion Effects, and Ballistics)

AD-A150 793/8/XAB
Surface Pressure Produced by Space Transportation System Flight 41B (Rept. for Nov 83-Mar 84)
Crowley, F. A. ; Hartnett, E. B. ; Fisher, M. A.
Weston Observatory, MA.
Corp. Source Codes: 019186000; 376835
Sponsor: Air Force Geophysics Lab., Hanscom AFB, MA.
Report No.: SCIENTIFIC-1; AFGL-TR-84-0213
1 Aug 84 66p
Languages: English
Journal Announcement: GRAI8511
NTIS Prices: PC A04/MF A01
Country of Publication: United States
Contract No.: F19628-84-C-0011; 7600; 09
There is a need to measure and analyze the vibro-acoustic environment of Space Transportation System (STS) launches in order to forecast and verify

facility design and lifetime predictions for STS operations at Vandenberg Air Force Base (VAFB), and to accumulate flight vehicle performance data. Earlier measurements at Kennedy Space Center (KSC) pointed to an azimuthal dependence in the overall sound power level (OASPL) for STS launches. The immediate aim of this effort is to clarify the azimuthal properties of surface pressure around the time of the OASPL maximum for KSC launches. The study helps define and locate a site insensitive STS source pressure equivalent essential to vibro-acoustic forecasts at VAFB. The dense watercloud produced by STS main engine firing at KSC attenuates surface pressure levels directly south of Pad 39A by as much as 14db. Spectra at stations under the cloud are lower in level and frequency content than those in the clear. The phase velocity for acoustics early in the launch is insensitive to watercloud effects for stations at 300 meters. Spatial coherence of the pressure field is degraded between stations 100 meters or more apart.

Descriptors: *Launching sites; *Sound pressure; *Sound transmission; Space shuttles; Vibration; Pressure measurement; Vibration; Acoustic measurement; Forecasting; Acoustic velocity; Phase; Attenuation; Seismic waves; Florida; Coupling(Interaction); Air Force facilities; Azimuth; Launching; Exhaust plumes; Rocket exhaust; Coherence; Spatial distribution; Surface properties; Power levels; Space transportation

Identifiers: Surface pressure; Vibroacoustic forecasts; Kennedy Space Center; Acoustic coupling; Rocket plume acoustics; NTISDODXA; NTISDODAF

Section Headings: 22D (Space Technology--Spacecraft Launch Vehicles and Ground Support); 84E (Space Technology--Space Launch Vehicles and Support Equipment)

DE85900537/XAB

Control of Gas and Rock Burst Hazard Demonstrated by the Example of the Bituminous Coal Mine Nowa Ruda

Matuszewski, J. ; Kozlowski, B.
Health and Safety Executive, London (England).

Corp. Source Codes: 056458000; 2964600
Sponsor: Glowny Inst. Gornictwa, Katowice (Poland).
Report No.: HSE-TRANS-8466; CONF-7910234-5
Sep 79 14p
Languages: English Document Type: Conference proceeding; Translation
Journal Announcement: GRAI8510; NSA0000

Translation source information not available . 18. international conference on scientific research in the field of safety at work in mining industry, Dubrovnik, Yugoslavia, 7 Oct 1979.

U.S. Sales Only. Paper copy only, copy does not permit microfiche production.

NTIS Prices: PC A02
Country of Publication: Poland

The mine Nowa Ruda is the most dangerous mine in Poland with regard to gas and rock bursts. This special danger is due to the very complicated geological structure of the strata and the thick network of tectonic disturbances (folds, cracks). This tendency of the seams to outbursts is related not only to their high gas content (CH sub 4 : up to 7 m exp 3 /t; CO sub 2 : up to 35 m exp 3 /t) but also to the loose structure of the coal (approximately 30 to 80 kg/cm exp 2). Up to March, 1979, 1299 coal and gas outbursts were observed in Nowa Ruda. In order to control the outburst hazard in the mine, the following measures are applied: continuous prediction of the hazard based on measurement of the pressure; desorption and the gas emission in test boreholes; active methods for control of the hazard; limitation of the range of consequences of induced outbursts; system of warning to underground workers; and seismic and seismo-acoustic methods for prediction of outbursts. The multiplicity of the protective measures forms the main basis of safe working in districts subject to

$0.75

outbursts. Both the methods of prediction and also the measures applied to reduce the hazard may be unreliable. While these are being perfected one should also make strenous efforts to develop a system for safeguarding workers from unpredicted outbursts.
Descriptors: *Drilling Equipment; *Rock Bursts; *Underground Mining; Alarm Systems; Bituminous Coal; Boreholes; Carbon Monoxide; Coal Mining; Coal Seams; Control; Degassing; Forecasting; Longwall Mining; Measuring Methods; Methane; Mine Roadways; Poland; Remote Control; Seismic Waves; Stress Relaxation; Tectonics; Velocity
Identifiers: *Foreign technology; ERDA/012000; Translations; NTISDET
Section Headings: 8I (Earth Sciences and Oceanography--Mining Engineering); 13L (Mechanical, Industrial, Civil, and Marine Engineering--Safety Equipment); 48A (Natural Resources and Earth Sciences--Mineral Industries)

PB85-149631/XAB
Scale Relationships of Concrete Beam-Column Joints
Phillleo, P. R. ; Abrams, D. P.
Colorado Univ. at Boulder. Dept. of Civil, Environmental, and Architectural Engineering.
Corp. Source Codes: 068646003
Sponsor: National Science Foundation, Washington, DC.
Report No.: STRUCTURAL RESEARCH SER-8301; NSF/CEE-84035
Feb 84 99p
Languages: English
Journal Announcement: GRAI8508
NTIS Prices: PC A05/MF A01
Country of Publication: United States
Contract No.: NSF-CEE81-19385; NSF-PFR80-07094
Results are presented of a study undertaken to investigate the ability of reduced-scale models of reinforced concrete beam-column joints to predict the response of large-scale prototypes. Data from tests of large-scale (3/4 scale), medium-scale (1/4 scale), and small-scale (1/12 scale) specimens were compared. Comparisons were based on the strength, stiffness, and energy dissipation characteristics exhibited by the hysteretic load-rotation relationship of each test specimen.
Descriptors: *Columns(Supports); *Structural analysis; *Beams(Supports); *Joints(Junctions); Scale(Ratio); Predictions; Loads(Forces); Dynamic response; Tests; Reinforced concrete
Identifiers: Earthquake engineering; NTISNSFCEE
Section Headings: 13M (Mechanical, Industrial, Civil, and Marine Engineering--Structural Engineering); 50GE (Civil Engineering--General); 89D (Building Industry Technology--Structural analyses)

AD-A144 730/9
Rationalizing the Seismic Coefficient Method
(Final rept.)
Hynes-Griffin, M. E. ; Franklin, A. G.
Army Engineer Waterways Experiment Station, Vicksburg, MS. Geotechnical Lab.
Corp. Source Codes: 002621007; 411412
Report No.: WES/MP/GL-84-13
Jul 84 41p
Languages: English
Journal Announcement: GRAI8425
NTIS Prices: PC A03/MF A01
Country of Publication: United States
The seismic stability of embankment dams may be evaluated by a relatively simple method, originally proposed by N. M. Newmark, in cases where there is no threat of liquefaction or severe loss of shear strength under seismic

shaking. This method is based on idealization of the potential slide mass as a sliding block on an inclined plane which undergoes a history of earthquake-induced accelerations. The result is a computation of the expected final displacement of the block relative to the base. A necessary refinement is the consideration of amplification of the base motions in the embankment, which is evaluated by means of a linear elastic analysis. Sliding block analyses have been done for 348 horizontal components of natural earthquakes and 6 synthetic records. These computations, together with available results of amplification analyses, suggest that a pseudostatic seismic coefficient analysis would be appropriate for embankment dams where it is not necessary to consider (a) liquefaction or severe loss of shear strength, (b) vulnerability of the dam to small displacements, or (c) very severe earthquakes, of magnitude 8 or greater. A factor of safety greater than 1.0, with a seismic coefficient equal to one-half the predicted bedrock acceleration, would assure that deformations would not be dangerously large. (Author)

Descriptors: *Embankments; *Earth dams; *Earthquakes; Dams; Safety; Mathematical prediction; Displacement; Ground motion; Intensity; Soils; Stability; Sliding; Rock; Acceleration; Coefficients; Criticality(General); Seismic data

Identifiers: Seismic coefficient method; NTISDODXA

Section Headings: 13B (Mechanical, Industrial, Civil, and Marine Engineering--Civil Engineering); 8K (Earth Sciences and Oceanography--Seismology); 50B (Civil Engineering--Civil Engineering); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

B84-224914

Earthquake Prediction Response and Options for Public Policy
(Program on Technology, Environment and Man Monograph no. 31)

Mileti, D. S. ; Hutton, J. R. ; Sorensen, J. H.

Colorado Univ. at Boulder. Inst. of Behavioral Science.

Corp. Source Codes: 068646017;

Sponsor: Colorado Univ. at Boulder. Natural Hazards Research and Applications Information Center.; National Science Foundation, Washington, DC.

Report No.: ISB/TEAM-31

c1981 165p

Languages: English

Journal Announcement: GRAI8422

Prepared in cooperation with Colorado Univ. at Boulder. Natural Hazards Research and Applications Information Center. Library of Congress catalog card no. 81-82940.

NTIS Prices: PC A08/MF A01

Country of Publication: United States

Contract No.: NSF-AEN74-42079

This monograph reviews possible responses on the part of groups, organizations, and political bodies to scientifically credible earthquake predictions. Following a discussion of the status of earthquake prediction, the book describes the methods used to gather the data on which its determinations are based. A model of earthquake prediction and warning is presented, divided into three elements--giving information, interpreting information, and responding to information. The responses of people and groups are estimated with reference to the three elements. The final chapter suggests options for public policy and action to maximize benefits and minimize costs of earthquake prediction.

Descriptors: *Earthquakes; *Behavior; Forecasting; Responses; Organizations; Local government; Models; Government policies

Identifiers: NTISUCONHR; NTISNSFRA

Section Headings: 5A (Behavioral and Social Sciences--Administration and Management); 8K (Earth Sciences and Oceanography--Seismology); 70B

(Administration and Management--Management Practice); 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 43GE (Problem Solving Information for State and Local Governments--General)

DE84009530
Strong Ground Motion Studies for South Carolina Earthquakes. Final Report
Nuttli, O. W. ; Rodriguez, R. ; Herrmann, R. B.
Lawrence Livermore National Lab., CA.
Corp. Source Codes: 068147000; 9513035
Sponsor: Department of Energy, Washington, DC.
Report No.: UCRL-15594
30 Nov 83 106p
Languages: English
Journal Announcement: GRAI8417; NSA0900
NTIS Prices: PC A06/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-48
The strong ground motion that will result from damaging earthquakes that occur in South Carolina, varying in size from those that can produce only minor damage to those as large as the 1886 event, was estimated. The report is divided into three parts. Part I discusses acceleration, velocity and displacement modeling, using available observational data (accelerograms and non-strong motion seismographic) and response spectra obtained from those data. Part II uses MM intensity data for estimating strong ground motion. Part III presents surface-wave focal mechanism studies of South Carolina earthquakes. (ERA citation 09:021152)
Descriptors: *Ground Motion; *South Carolina; *Earthquakes; Forecasting; Seismic Waves
Identifiers: ERDA/580201; NTISDE
Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE81903444
Technique to Reliably Estimate Eqrthquake-Recurrence Intervals
Bloom, E. D.
Science Applications, Inc., Palo Alto, CA.
Corp. Source Codes: 100767000; 9501092
Report No.: EPRI-NP-1857
May 81 80p
Languages: English
Journal Announcement: GRAI8413; NSA0000
NTIS Prices: PC A05/MF A01
Country of Publication: United States
An analysis of the available world earthquake-occurrence data was completed and the existence of an upper bound on earthquake magnitude was demonstrated. The analysis demonstrated that the shape of the frequency-magnitude curve is statistically the same everywhere in the world for both seismically active and inactive regions. This universal shape was found to be valid for regions as small as tectonic zones, and good results (within the limits of data accuracy) were obtained for single-site excavations. The results can be used to derive best-estimate values for earthquake risk.
Descriptors: *Earthquakes; Risk assessment; Forecasting; Frequency analysis; Global aspects; Theoretical data
Identifiers: ERDA/580201; NTISDEP
Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

DE84750242
''Radon-Emanometry'' Applied to Internal Geophysics

p.78

(These (3e Cycle))
Seidel, J. L.
Clermont-Ferrand-2 Univ., Aubiere (France). Lab. de Physique Corpusculaire.
Corp. Source Codes: 059373001; 1767500
Sponsor: Clermont-Ferrand-2 Univ., 63 - Aubiere (France).
Report No.: PCCF-T-82-03
Feb 82 96p
Languages: French
Journal Announcement: GRAI8410; NSA0900
In French.
U.S. Sales Only. Portions are illegible in microfiche products.
NTIS Prices: PC A05/MF A01
Country of Publication: France
An experimental set-up for in ground radon 222 measurements has been realised with solid state track detectors (cellulose nitrates CN85 and LR115). A preliminary study of radon activity variations has been conducted over various sites using radon as one of the forerunner geophysical parameters of volcanic eruptions and earthquakes predictions. The first data obtained in the field are presented: Etna (Sicily), Krafla (Iceland), Poas and Arenal (Costa Rica), Colima and Paricutin (Mexico) for active volcanoes, Ech Cheliff (Algeria) and Alsace (France) for seismotectonic areas. (ERA citation 09:008658)
Descriptors: *Radon 222; Algeria; Concentration Ratio; Costa Rica; Dielectric Track Detectors; *Earthquakes; Emanometers; Forecasting; France; Ground Level; Iceland; Mexico; Sicily; Technology Assessment; *Volcanoes
Identifiers: *Foreign technology; ERDA/580202; NTISDEE
Section Headings: 8G (Earth Sciences and Oceanography--Geology and Mineralogy); 8K (Earth Sciences and Oceanography--Seismology); 18B (Nuclear Science and Technology--Isotopes); 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 77B (Nuclear Science and Technology--Isotopes)

PB84-152222
Natural Hazards Observer, Volume 7, Number 6, July 1983
Colorado Univ. at Boulder. Natural Hazards Research and Applications Information Center.
Corp. Source Codes: 068646014
Sponsor: National Science Foundation, Washington, DC.
Report No.: NSF/CEE-83216
Jul 83 15p
Languages: English
Journal Announcement: GRAI8409
See also PB83-193789.
NTIS Prices: PC A02/MF A01
Country of Publication: United States
Contract No.: NSF-ENV76-05682
This issue reports on the role of the National Oceanic and Atmospheric Administration (NOAA) in providing assistance in coastal hazards. NOAA's new Office of Ocean and Coastal Resource Management is involved in activities including: (1) assessing the future direction of coastal hazards in NOAA and making recommendations to NOAA's management; and (2) coordinating the National Weather Service storm surge modeling with state coastal zone management programs. Documents reviewed concern: (1) proceedings of a workshop on the California wetlands; (2) investigations of the 1886 Charleston, South Carolina earthquake; (3) improvements in flood forecast and warning services provided by the National Weather Service; and (4) ways in which 13 California jurisdictions planned and implemented seismic safety policies. Lists of recent publications, grants, and conferences are provided.

Descriptors: *Disasters; Hazards; Coastal zone management; Coasts; Weather forecasting; Storms; Earthquakes; Flood forecasting; Management; Warning systems
Identifiers: NOAA; NTISNSFCEE
Section Headings: 5K (Behavioral and Social Sciences--Sociology); 13L (Mechanical, Industrial, Civil, and Marine Engineering--Safety Equipment); 8H (Earth Sciences and Oceanography--Hydrology and Limnology); 8K (Earth Sciences and Oceanography--Seismology); 4B (Atmospheric Sciences--Meteorology); 91I (Urban and Regional Technology and Development--Emergency Services and Planning); 43D (Problem Solving Information for State and Local Governments--Police, Fire, and Emergency Services)

DE84001848
Combination of Earthquake Direction Effects
Morrone, A.
Westinghouse Electric Corp., Madison, PA. Advanced Energy Systems Div.
Corp. Source Codes: 016990004; 9516120
Sponsor: Department of Energy, Washington, DC.
Report No.: CONF-830805-61
1983 18p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8409; NSA0900
International conference on structural mechanics in reactor technology, Chicago, IL, USA, 22 Aug 1983.
NTIS Prices: PC A02/MF A01
Country of Publication: United States
Contract No.: AC15-76CL50003
The correct application of the square root of the sum of the squares (SRSS) rule is presented for obtaining the combined responses of a subsystem to seismic excitations given by orthogonal earthquake components represented by system response spectra. Alternate methods of applying the SRSS, which are sometimes used either for simplicity or due to different interpretation, are evaluated and compared with the correct method. The evaluations consider the following four cases: (1) the correct method which combines the responses in a particular direction given by each earthquake component as a last step, (2) a generally unconservative method whereby both the system response spectra and the resulting subsystem responses are combined by the SRSS, (3) a method which can be unconservative for unequal earthquake components where the system response spectra are combined by the absolute sum and the resulting responses by the SRSS, and (4) a conservative method which combines the system response spectra by the SRSS but adds the resulting responses absolutely. In addition, three conditions of directional coupling are considered for all cases. These are full directional coupling, only the system coupled, and no coupling. A comparison of the subsystem combined responses with the various SRSS methods is presented in tabular form which gives the applicable equations for each case and coupling condition. (ERA citation 09:006731)
Descriptors: *Earthquakes; Angular Correlation; Forecasting; Seismic Effects; Seismic Waves; Spatial Distribution; Statistical Models; Wave Propagation
Identifiers: ERDA/580200; NTISDE
Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

COO-2708T003-1
Predicting Earthquakes
National Academy of Sciences, Washington, DC.
Corp. Source Codes: 019025000; 4415000
Sponsor: Department of Energy, Washington, DC.
1976 70p

p.80

Languages: English
Journal Announcement: GRAI8408; NSA0000
Microfiche copies only.
NTIS Prices: MF A01
Country of Publication: United States
Contract No.: EY-76-C-02-2708-003
The state-of-the-art and future outlook of earthquake prediction was reviewed. A summary of the findings is presented.
Descriptors: *Earthquakes; Forecasting; Recommendations; Research programs; Reviews
Identifiers: ERDA/580201; NTISDE
Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 48F (Natural Resources and Earth Sciences--Geology and Geophysics); 63I (Detection and Countermeasures--Seismic Detection)

AD-P002 386/1
Probability of Liquefaction in a 3-D Soil Deposit
Haldar, A.
Georgia Inst. of Tech., Atlanta. School of Civil Engineering.
Corp. Source Codes: 010263012; 411354
Sep 83 73p
Languages: English
Journal Announcement: GRAI8407
This article is from 'Proceedings, Seminar on Probabilistic Methods in Geotechnical Engineering Held at Vicksburg, Mississippi on 21 September 1982,' AD-A136 497.
NTIS Prices: PC A04/MF A01
Country of Publication: United States
Historically, earthquake-induced liquefaction has caused an enormous amount of damage in terms of loss of human life, property damage, human suffering and environmental damage. A probabilistic three-dimensional liquefaction model is proposed here considering the damage aspect of the problem. Considerable uncertainty is expected in the estimation of several parameters in a liquefaction model. The estimation of in situ relative density is one of them. A new relationship, designated as the Haldar and Miller relationship, is proposed here between the Standard Penetration Test value and the in situ relative density. The in-situ shear resistance of a soil deposit is evaluated here by introducing a shear strength parameter R. Using large-scale shaking table test results, the relationship is corrected for the compliance effect, sample preparation methods, mean grain size, multidirectional shaking and some other secondary factors. There is also high uncertainty in the load parameters. Hence, the seismic activity of the region should bve given serious attention in a liquefaction study. This probabilistic model is a first step toward developing a comprehensive decision analysis framework. Recommendations are also made here for future research work in the area of liquefaction.
Descriptors: *Soil mechanics; *Failure(Mechanics); Soils; Earthquakes; Mathematical prediction; Mathematical models; Probability
Identifiers: *Liquefaction(Soils); Probabilistic models; Component Reports; NTISDODXA
Section Headings: 8M (Earth Sciences and Oceanography--Soil Mechanics); 8K (Earth Sciences and Oceanography--Seismology); 50D (Civil Engineering--Soil and Rock Mechanics)

AD-P002 384/6
Probabilistic Seismic and Geotechnical Evaluation at a Dam Site
Vanmarcke, E. H.
Massachusetts Inst. of Tech., Cambridge. Dept. of Civil Engineering.
Corp. Source Codes: 001450030; 220010
Sep 83 17p

p. 81

Languages: English
Journal Announcement: GRAI8407
This article is from 'Proceedings, Seminar on Probabilistic Methods in Geotechnical Engineering Held at Vicksburg, Mississippi on 21 September 1982,' AD-A136 497.
NTIS Prices: PC A02/MF A01
Country of Publication: United States
This report examines the use of probabilistic methods in dealing with the problem of potential earthquake-induced liquefaction of foundation soils at an example dam site located in the central United States, near the New Madrid earthquake zone. The example dam is assumed to be a 1-mile long rolled-filled embankment founded on a 100-ft deep deposit of interbedded alluvial gravels, sands, silts, and clays. The study is seen as an opportunity to examine probabilistic concepts and procedures in the framework of an example engineering project. In this context, the main practical value of a probabilistic approach is that it permits more informed decision making about further data acquisition, additional engineering analysis, and if necessary, remedial action. The specific aim of the study is to show how probabilistic procedures complement and help to reinterpret the results of deterministic (earthquake-induced) liquefaction analysis. The procedures focus on evaluating the impact of the different sources of variability (in the input parameters) on the uncertainty in performance predictions, and they permit results of the liquefaction analyses to be seen in the broader framework of assessment of earthquake-related dam failure risks.
Descriptors: *Earth dams; *Soil mechanics; Earthquakes; Soils; Failure(Mechanics); Mathematical prediction; Probability
Identifiers: Liquefaction(Soils); Component Reports; NTISDODXA
Section Headings: 8M (Earth Sciences and Oceanography--Soil Mechanics); 8K (Earth Sciences and Oceanography--Seismology); 13B (Mechanical, Industrial, Civil, and Marine Engineering--Civil Engineering); 50D (Civil Engineering--Soil and Rock Mechanics); 50B (Civil Engineering--Civil Engineering)

AD-A136 628/5
Ranging and Correlating Sensor Development Program
(Interim technical rept)
Scope Electronics, Inc., Reston, VA.
Corp. Source Codes: 029635000; 318650
Report No.: SEI-6038
Nov 83 259p
Languages: English
Journal Announcement: GRAI8407
NTIS Prices: PC A12/MF A01
Country of Publication: United States
Contract No.: DAAK70-82-C-0213
The document reports the findings of the study phase fo this contract, with conclusions and recommendations for advanced interior intrusion detection concepts to be tested in brassboard. The report discusses potential sources and properties of intrusion signals, measurement techniques, and signal processing methods to extract range and correlating data. It has been found that many techniques have the potential for ranging and correlation of intrusion signals, however few of these are accomplished in a straightforward, practical sense. Through the derivation and application of evaluation criteria, several candidates were selected for further study in breadboard experiments. The breadboard tests afforded a first hand opportunity to measure and compare the anticipated performance of these candidates. The outcome of the experiments then formed the basis for recommending concepts to be explored further in brassboard development.
Descriptors: *Intrusion detectors; Intrusion; Humans; Area security; Area

denial; Technology forecasting; Brassboard models; Passive systems
Identifiers: Interior areas; Human intruders; NTISDODXA
Section Headings: 15C (Military Sciences--Defense); 17F (Navigation, Communications Detection, and Countermeasures--Magnetic Detection); 17H (Navigation, Communications Detection, and Countermeasures--Optical Detection); 17I (Navigation, Communications Detection, and Countermeasures--Radar Detection); 17J (Navigation, Communications Detection, and Countermeasures--Seismic Detection); 17A (Navigation, Communications Detection, and Countermeasures--Acoustic Detection); 63G (Detection and Countermeasures--Personnel Detection)

AD-A136 497/5
Proceedings, Seminar on Probabilistic Methods in Geotechnical Engineering Held at Vicksburg, Mississippi on 21 September 1982
(Final rept.)
Hynes-Griffin, M. E. ; Buege, L. L.
Army Engineer Waterways Experiment Station, Vicksburg, MS. Geotechnical Lab.
Corp. Source Codes: 002621007; 411412
Report No.: WES/MP/GL-83-26
Sep 83 592p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8407
For sales information of individual items see AD-P002 382 - AD-P002 390.
NTIS Prices: PC A25/MF A01
Country of Publication: United States
Contents: Applications of Probabilistic Methods in Geotechnical Engineering; Probabilistic Seismic and Geotechnical Evaluation at a Dam Site; Probabilistic Slope Stability Methodology; Probability of Liquefaction in a 3-D Soil Deposit; Probabilistic Design of Flood Levees; Probabilistic and Statistical Methods for Determining Rock Mass Deformability Beneath Foundations: An Overview; Simple Statistical Methodology for Evaluating Rock Mechanics Exploration Data; New Developments in Statistical Techniques for Analyzing Rock Slope Stability.
Descriptors: *Soil mechanics; *Rock mechanics; *Meetings; Civil engineering; Soils; Rock; Mechanical properties; Statistical analysis; Failure(Mechanics); Mathematical prediction; Mathematical models; Probability; Earthquakes; Stability; Embankments; Deformation
Identifiers: Compilation Reports; Geotechnical engineering; Probabilistic models; Liquefaction(Soils); NTISDODXA
Section Headings: 8M (Earth Sciences and Oceanography--Soil Mechanics); 8K (Earth Sciences and Oceanography--Seismology); 8G (Earth Sciences and Oceanography--Geology and Mineralogy); 13B (Mechanical, Industrial, Civil, and Marine Engineering--Civil Engineering); 50D (Civil Engineering--Soil and Rock Mechanics); 50B (Civil Engineering--Civil Engineering); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

AD-D010 643/5
Acoustic Amplitude-Threshold Target Ranging System
(Patent)
Owen, T. E. ; Suhler, S. A. ; Peters, W. R.
Department of the Air Force, Washington, DC.
Corp. Source Codes: 000260000; 109850
Report No.: PAT-APPL-6-286 820; PATENT-4 408 533
Filed 27 Jul 81 patented 11 Oct 83 9p
Languages: English Document Type: Patent
Journal Announcement: GRAI8405
Supersedes PAT-APPL-6-286 820, AD-D008 951.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of

p.03

Patents, Washington, DC 20231 $1.00.
NTIS Prices: Not available NTIS
Country of Publication: United States
Munition actuation signals are generated by an acoustic target ranging system that predicts the time and distance of closest approach of a moving target to a munition. The predictive capability of the system is based on the rate of change of the sound level emanating from the target compared to its absolute magnitude. The system generates munition standby, arm and fire signals by differencing the received acoustic amplitude function signal and its first derivative and subsequently comparing the difference signal with various reference level signals. The reference level signals are a function of munition effective range and target conditions. Mechanization of the system is realized by simple circuitry consisting of an acoustic signal detector and processor, a differentiating operational amplifier, a progammable gain amplifier, a reference level signal source, an adder and a comparator circuit. (Author)
Descriptors: *Patents; *Firing circuits; *Acoustic detectors; *Range finding; *Proximity fuzes; Actuators; Acoustic signals; Signal processing; Differentiating circuits; Comparators; Operational amplifiers; Mathematical prediction; Amplitude; Acoustic signatures; Seismic signatures; Moving targets; Aircraft signatures; Aircraft detection; Range(Distance); Threshold effects; Target activated munitions; Safing and arming(Ordnance)
Identifiers: PAT-CL-102-211; Closest approach; Reference signals; NTISGPAF
Section Headings: 17A (Navigation, Communications Detection, and Countermeasures--Acoustic Detection); 19A (Ordnance--Ammunition, Explosives, and Pyrotechnics); 90I (Government Inventions For Licensing--Ordnance); 79A (Ordnance--Ammunition, Explosives, and Pyrotechnics); 63A (Detection and Countermeasures--Acoustic Detection)

AD-A133 143/8
Telemetered Seismic Network--'System 768'
Foreign Technology Div., Wright-Patterson AFB, OH.
Corp. Source Codes: 000550000; 141600
Report No.: FTD-ID(RS)T-1277-83
13 Sep 83 12p
Languages: English Document Type: Translation
Journal Announcement: GRAI8402
NTIS Prices: PC A02/MF A01
Country of Publication: United States
No abstract available.
Descriptors: *Seismometers; Networks; Seismic data; Telemeter systems; Data transmission systems; Earthquakes; Warning systems; Predictions; Translations
Identifiers: NTISDODXA
Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

AD-A132 893/9
State-of-the-Art for Assessing Earthquake Hazards in the United States. Report 20. The Contribution of Directivity Focusing to Earthquake Intensities
(Miscellaneous paper)
Bolt, Bruce A.
California Univ., Berkeley.
Corp. Source Codes: 005029000; 071850
Sponsor: Army Engineer Waterways Experiment Station, Vicksburg, MS.
Report No.: WES-MP-S-73-1-20
Aug 83 98p
Languages: English

Journal Announcement: GRAI8401
See also report 19, AD-A116 449.
NTIS Prices: PC A05/MF A01
Country of Publication: United States
Contract No.: DACW39-82-M-1125

This report describes available evidence for effects of moving sources in earthquakes and analyzes them in terms of the physics of wave emission. The study is addressed mainly to questions arising in geotechnical investigations for engineering purposes and suggestions are made on the significance of the effect in strong ground motion estimation. From a seismological point of view, the effect of the moving source has been clearly demonstrated in numerous studies using seismographs located at both moderate and great distances (i.e., the far field) from the source. Such studies, however, usually concern long-period seismic waves with periods above 2 to 5 seconds. Second, when seismic waves in the near field with a range of wave frequencies characteristic of engineered structures (i.e., 1 Hz to 10 Hz) are considered, there is as yet only limited definitive evidence available, and this is somewhat contradictory. Nevertheless, the likelihood is that the elementary predictions of the magnitude of the effects can be sometimes modified by other features of the source mechanism, the geological variations along the wave paths and within the fault zone. Third, the ratio of peak horizontal ground motion in the forward direction of fault rupture to the peak motion in the backwards direction is probably greatest for ground displacements and velocities and least for peak accelerations. High frequency ground accelerations show variations due to scattering, attenuation, and source asperities that mask directivity effects.

Descriptors: *Ground motion; *Earthquake engineering; *Seismic waves; Sources; Near field; Displacement; Intensity; Far field; Faults(Geology); Peak values; Horizontal orientation; Acceleration; Directional; Focusing; Hazards; Threat evaluation; Mathematical prediction; Seismic data; California

Identifiers: Coyote Lake Earthquake(1979); Imperial Valley Earthquake(1979); Livermore Earthquake(1980); Directivity focusing; Moving sources; Strong ground motion; NTISDODXA; NTISDODA

Section Headings: 8K (Earth Sciences and Oceanography--Seismology); 48F (Natural Resources and Earth Sciences--Geology and Geophysics)

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