

20: Robert E. Browning MS 62355

see pocket 7
for enclosure

WM DOCKET CONTROL
CENTER

BWIPU UPCOMING EVENTS
JUNE 20, 1985

Copy to Brown
Miller/Linahan

'85 JUL -9 AIO:26 Event

Location

Date

Contact

Code

HQ Meetings

Environmental Coordinating Group
Kick-off Meeting

HQ

June 25

Mecca/
Whitfield

R

Coordinating Group Meetings

ISCG Meeting

Atlanta

July 1-2

Tinsley

O

Materials Steering Committee

HQ

July 9

LaMont

R

Licensing Coordination Group Meeting

HQ

TBD

Mecca/

R

Waste Package Coordination Group

Denver

TBD

LaMont

R

State/Indian/Public Interaction

CERT Contract, Grant Program Review

Denver

June 20

Adams

O

Nuclear Waste Board/Nuclear Waste
Advisory Committee

Olympia

June 21

Kovacs

O

Yakima Indian Nation Cultural
Exchange

Toppenish

June 20-21

Tinsley

?

State of Oregon Legislators

Richland

July 17

Olson

O

Other Meetings

A/E Coordination Meeting and
Liner Design Methodology

Oakland

June 25-27

Hudson

R

Rod Consolidation Workshop

Idaho Falls

June 25-27

Nicoll

?

CODE

O = Open

R = Restricted

? = at option of sponsoring org.

WM Record File

101

WM Project

10

Docket No.

PDR

LPDR

Distribution:

RFB MSR

Kennedy

LINEHAN

ASM KNAPP

(Return to WM, 623-SS)

Rec'd for Cook

8507220174 850620

PDR WASTE

WM-10

PDR

23 P.S.
O.J. ENY
1443



ANNOUNCEMENT

*see cover sheet
to RLO Am. Cool
6/20/85 101*

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

RL No.: 85-44
Issued: June 20, 1985
Expires: September 20, 1985

To: All RL Employees

Subject: REORGANIZATION OF THE RICHLAND OPERATIONS OFFICE

Effective June 23, 1985, the Richland Operations Office (RL) is being reorganized for the following reasons:

- o To implement an organizational philosophy emphasizing functional alignment of senior management responsibilities as contrasted to the existing predominantly programmatic focus.
- o To realign existing senior management responsibilities so that one senior manager's time is dedicated totally to the overall management and direction of RL's commercial nuclear waste program during a critical period of program development and accelerated growth.
- o To bring together under one senior manager those principal responsibilities for site and laboratory management in order to improve the coordination of these activities and the overall efficiency of operations.
- o To centralize those functional activities integral to identifying near- and long-term Hanford program requirements and facilitate more effective communication with external organizations and the public.
- o To incorporate several minor organizational changes to improve overall position management.

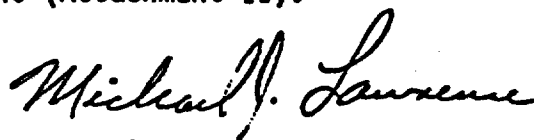
These organizational changes strengthen the overall RL management structure and enhance our ability to anticipate and deal effectively with long-term site development and program issues.

A summary of the principle features of the reorganization follows:

- o The Office of Assistant Manager for Defense (AMD) is abolished and in its place the Office of Assistant Manager for Operations (AMO) is established. AMO's primary mission is to manage and direct the daily activities of RL's major operating facilities. In addition to defense program functions of AMD, the responsibility for FFTF reactor operation and fuels development is assigned to the AMO.

the function reassigned from the Office of Assistant Manager for Administration.

A chart reflecting the new RL organization is attached (Attachment I). Those divisions and offices not specifically mentioned above will remain essentially as structured; however, there are many changes in the assignment of individuals within the new structure. A listing of personnel and resulting assignments are included in this Announcement (Attachment II).



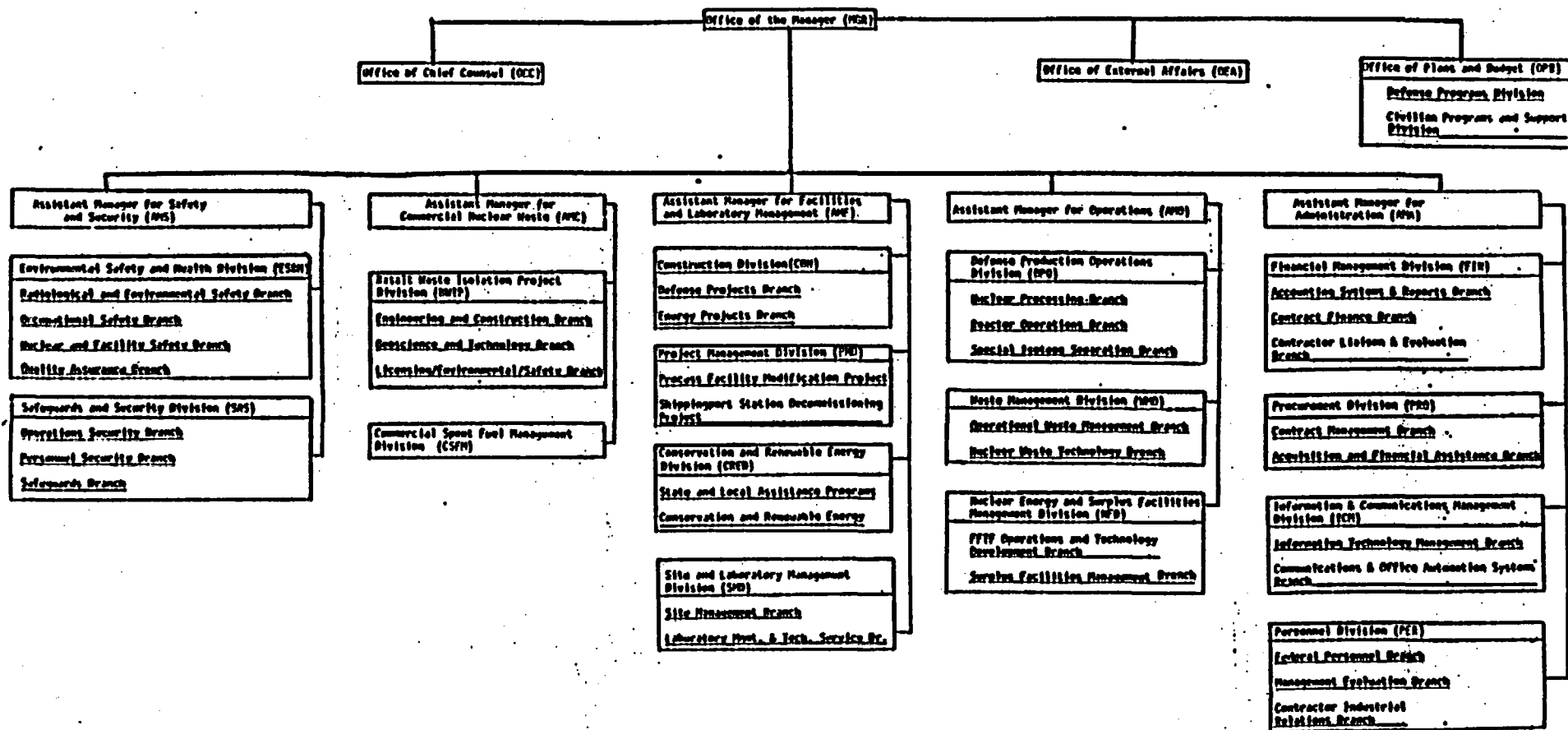
Michael J. Lawrence
Manager

Attachments:

1. Organization Chart
2. Listing of Personnel

Distribution

"D"



RL ORGANIZATION AND PERSONNEL ASSIGNMENTS

(Italicized print indicates: (1) a new organizational unit; or changes in unit name, or (2) an employee's reassignment to another organizational unit and/or position.)

Office of the Manager (MGR)

Manager - Lawrence, Michael J.
Deputy Manager - Goldberg, Edward S.
Assistant to the Manager - Barth, Dorothy A.
Smith, Lora M.

Office of Chief Counsel (OCC)

Sup. General Attorney - Pride, Eugene E.
Carosino, Robert M.
Fitz, Clyde T.
Hatcher, Melvin N.
Reeploeg, Carolyn E.
Southworth, Robert
Nypaver, Edward W.
Maupin, Elizabeth A.
Schreckhise, Nancy L.

Office of External Affairs (OEA)

Director - Leroy, Steven H.
Tokarz, Judy L.
Bauman, Thomas A.
Goldie, Mary L.
Wheless, Karen J.
Talbot, Michael L.
Rokkan, Gail M.
O'Hair, Nancy K.
Chief, Jr., Ferdinand

Office of Plans and Budget (OPB)

Manager - Sutey, Joseph J.
Daily, James L.
Best, Debra E.
Vercos, Melinda M.
Linville, John A.

Defense Programs Division

Director - Kautzky, James D.
Malcheski, David C.
Frindrich, Nadine S.
Morehouse, Patsy L.
Sours, Daniel L.

Civilian Programs and Support Division

Director - Tibbatts, Robert R.
Alford, Patricia A.
Kirk, Jerry D.
Tolman, Halsey R.
Nelson, Jeanne M.
Bowers, Fay L.
Walker, Marilyn L.

*Assistant Manager for Safety
and Security (AMS)*

Assistant Manager - Fitzsimmons, Ted R.
Henrich, Dianne L.

*Environmental Safety and Health
Division (ES&H)*

Director - Gerton, Ronald E.
Tiernan, Michael W.
Smith, Dorothy G.

*Radiological and Environmental
Safety Branch*

Chief - Elle, Donald R.
Erickson, Erik A.
Yesberger, Gerald R.
Krupin, Paul J.
Austin, Ralph E.
Turner, Patricia H.
Beecher, Kathy A.
Foster, Christine L.

Occupational Safety Branch

Chief - Mills, Marshall F.
Evans, David T.
Givens, J. Charles
Nelson, Russell L.
Musen, Larry G.
Schatzel, Kathryn M.

Nuclear and Facility Safety Branch

Chief - Smith, Doug M.
Gallagher, George R.
Engstrom, Sharon L.
Hiegel, Robert M.
Moy, Sen K.
Walchuk, Elizabeth W.

Quality Assurance Branch

Chief - Karol, Michael S.
Rast, John M.
Clark, John M.
Davies, Thomas H.

Safeguards and Security Division (SAS)

Director - Jackson, Kenneth H.
Myjak, Raymond Jr.

Operations Security Branch

Chief - Wiley, Joe W.
Mayo, Richard W.
Sieracki, Dennis G.
Marzette, Lynn A.
Spracklen, James
Charters, Robert L.
Wood, Marlene V...

Personnel Security Branch

Chief - Fredrickson, David M.
Crossman, Violet C.
Jones, Orville L.
Gilk, Lyle E.
Prewett, Leatrice
Long, G. Rosemary
Willis, Karen S.
Albertson, Anita B.
Snyder, Kathleen M.
Roelen, Sara L.
Akridge, Jennifer R.
Taylor, Lynn C.
Spargur, J. Jill

Safeguards Branch

Chief - Ransom, Harold E.
Walker, Alan C.
Johnson, Walter C.
Stutheit, Ricky L.
Risher, Annabelle S.
Ellis, Lila J.
Hansen, Phyllis C.
DeGrazia, Alan R.

*Assistant Manager for
Commercial Nuclear Waste (AMC)*

Assistant Manager - Anttonen, John H.
Deputy Assistant Manager* - Olson, Otto L.
Powell, Max L.
Wagnild, Kristi J.
Francis, Jon D.

*Basalt Waste Isolation Project
Division (BWIP)*

Director - Olson, Otto L.
Vale, Margery B.
Higgins, Eugene W.
McDonald, Wendy M.

Engineering and Construction Branch

Chief - Saget, R. Pierre
Hickman, Irene E.
Boileau, Patrick L.
Hudson, Richard D.
Nicol, Bruce L.
Petrie, Edgar H. (Ted)

Geoscience and Technology Branch

Chief - Dahlem, David H.
Thurmond, Susan R.
Furman, Marvin J.
Hurley, Bruce W.
Knepp, Anthony J.
Thompson, Kenneth M.
Lamont, Philip E.
Lassila, Arthur G.
Squires, David J.

Licensing/Environmental/Safety Branch

Chief - Mecca, James E.
Bell, Albert J.
Kovacs, John M.
Tinsley, C. Thomas
Whitfield, Stephen C.

*Commercial Spent Fuel Management
Division (CSFM)*

Director - Craig, Philip A.
Thompson, Audrey M.
Bracken, Gary J.
Crouter, Daniel E.
Langstaff, David C.

Program Manager for MRS -
Izatt, Ronald D.
Rokkan, George S.
Goranson, Richard B.
Dayani, Mostafa

*Assistant Manager for Facilities
and Laboratory Management (AMF)*

Assistant Manager - Rizzo, Alfred J.
Hobbs, Virgie L.
Plahuta, Maynard J.

**Construction Division
(CON)**

Director - Brown, Robert W.
Deutsch, Virgene A.

**Project Management Division
(PMD)**

Director - Williams, Larry C.
Smith, Hayden P.

**Conservation and Renewable
Energy Division (CRED)**

Director - Jones, David K.
Wilson, Connie S.

**Site and Laboratory Management
Division (SMD)**

Director - Bracken, Kenneth
Henshall, Ruth A.

Defense Projects Branch

Chief - Freeberg, Roger D.
Thompson, Rita E.
Stover, James C.
Mendel, Frank S.
Balding, David R.
Lucas, Ken K.

**Process Facility Modification
Programs**

Furubotten, James D.
Wisness, Steven H.

**Shippingport Station
Decommissioning Project**

Schreiber, John H.
Usher, Jr., James M.

**State and Local Assistance
Programs**

Riel, Julie A.
Haller, Thomas E.
Moorer, Norman D.
Nickola, Cheryl M.
Vega, Kathleen M.
Porath, Emily H.
Hinojosa, Juliet I.
King, David C.

Site Management Branch

Chief - Miller, Everett L.
Davis, Lee
Peterson, James M.
Shadel, Joanne R.
Arnold, Jack L.
Hitt, Marion B.
Palting, Garnett J.
Popp, Roberta J.
Ulseth, Ruby K.

Energy Projects Branch

Chief - Ketola, W. Stephen
Neath, John P.
Collantes, Cesar E.
Long, Jr., Robert L.
Lewis, Beverly F.
Slaughter, John H.

R&D Programs

Segna, Donald R.

**Laboratory Mgmt. & Tech.
Services**

Chief - Absher, Kenneth R.
Rising, Kitty H.
Sherwood, David J.
Anthony, Margo J.
Clark, Paula K.
White, William A.
Kenyon, Deborah E.
Downing, Lynette R.

Assistant Manager for Operations (AMO)

Assistant Manager - Rhoades, Jack L.
Deputy Assistant Manager - Keating, John J.
Rasmussen, Peter E.
Robertson, Betty J.
Jones, Sharyn L.

*Defense Production Operations
Division (DPO)*

Director - Simonson, David P.
Caylor, Johanna C.

Nuclear Processing Branch

Chief - Nelson, Rodney R.
Bowers, Elizabeth M.
Leeds, Thomas H.
Schmidtke, Gary C.
Sherrodd, Julie K.
Zamorski, Michael J.
Roesch, Rhoda E.
Nichols, Bonnie S.

Reactor Operations Branch

Chief - Hunter, John R.
Burns, William A.
Cawley, William E.
Clark, Suzanne S.
Davidson, Jerry D.
Filbert, Robert D.
Romine, Larry D.
Sidpara, Ami B.
Hatfield, Ruth L.

Special Isotope Separation Branch

Chief - Chenevert, Gary M.
Stewart, Robert K.
Templeton, David W.
Semmens, Lynn S.

*Nuclear Energy and Surplus Facilities
Management Division (NFD)*

Director - Patterson, II John
Castleberry, Connie J.

*FFTF Operations and Technology
Development Branch*

Chief - Norman, Edgar C.
Collado, Doroteo M.
Carter, Robert P.
Hendrickson, Waldemar
Almqvist, Rodney A.
Wahler, Jr., Vincent
Hennig, June M.

Surplus Facilities Management Program Branch

Chief - Miller, Jr. Clarence
Collins, Jack P.
Dunigan, Jr., Paul F. X.
Goodenough, James D.

Waste Management Division (WMD)

Director - White, Jerry D.
Erdman, Annette P.

Operational Waste Management Branch

Chief - Krupar, Jr., Joseph
Orton, Gayland T.
Thomas, Kenneth L.
Schwankoff, Albert R.
Delannoy, Charles R.

Nuclear Waste Technology Branch

Chief - Bracken, Elizabeth A.
Shupe, Melvin W.
Holten, Richard A.
Karagianes, Nick T.
Wukelic, Julie K. W.
Broderick, John J.
Gloria, Ofelia T.

Assistant Manager for
Administration (AMA)

Assistant Manager - Rosselli, Robert M.
Rutledge, Eileen S.

Financial Management Division
(FIN)

Director - Light, Ronald J.
Beyer, Dorothy L.

Accounting Systems & Reports Branch

Chief - Buckingham, William J.
Partida, Myrna A.
Lake, Alfred N.
Hartman, Julianne H.
Serier, Fredrick R.
Hickman, D. Jane
Palmer, Vicki K.
Goodnow, Rosemary B.
Tennet, Cynthia A.
Milton, Bettye J.
Engel, Gail K.
Beitz, Laurette D.
Ono, Irene K.
Smith, Mary D.
Clark, Pamela S.

Contract Finance Branch

Chief - Amidan, Gary L.
Stanko, Quentin
Hansen, Vicki K.
Kilthau, Sandra G.

Contractor Liaison & Evaluation
Branch

Chief - Murphy, John P.
Wicks, Melvin J.
Ollero, June E.
Zvonar, Frank S.

Information & Communications
Management Division (ICM)

Director - Highland, Nadine M.
DeHart, Judith A.
Carner, Debra S.

Information Technology
Management Branch

Chief - Hansen, Samuel M.
Baker, Daniel O.
McClure, Gail M.
Webb, Candis I.
Arreola, Angelita A.

Communications and Office
Automation Systems Branch

Chief - Smith, Jack W.
DeFord, Dennis H.
Rochelle, Philip A.
Small, Randy W.
Childs, Shirley J.
Noe, Raymond G.

Procurement Division (PRO)

Director - Larson, Robert D.

Contract Management Branch

Chief - Wilcynski, John M.
Bishop, Marshall L.
Chapman, Allan K.
Parker, Marji W.
Laughlin, Lela C.
White, Daniel L.
Skinner, Verneice
Davis, Ann E.

Acquisition and Financial
Assistance Branch

Chief - Lorenz, Anthony E.
Adams, Jerri J.
Calaway, Loui L.
Wallace, Richard B.
Lindberg, Lisa M.
Brown, Marjorie S.
Hodges, Sharon A.
Rush, Judy L.

Personnel Division (PER)

Director - Bateman, John D.
Oliver, Cindy L.
Pawlowski, Terisa M.

Federal Personnel Branch

Chief - Potter, Scott K.
Hathaway, Julie L.
Preston, Sigrid B.
Elsen, Patricia A.
Kranz, Dana S.
Taylor, Renee H.

Management Evaluation Branch

Chief - O'Toole, Daniel A.
Brady, Randy M.
Large, Kandi N.

Secretarial Trng. Center

Jones, Julie A.
Mosbrucker, Wendy K.
Watson, Nancy P.
Sonderman, Kathie S.
Herres, JoAnn E.
Billups, Terri M.
Zavaleta, Estelle

Contractor Industrial
Relations Branch

Chief - Rutt, Fredrick
Chandler, Charles F.
Sansotta, Dominic J.
Tudor, Diana J.

Robert E. Browning
MS 623 SS

Browning

**INSTITUTE OF NUCLEAR MATERIALS MANAGEMENT
TWENTY-SIXTH ANNUAL MEETING
JULY 21-24, 1985
ALBUQUERQUE, NEW MEXICO, USA**

PRELIMINARY PROGRAM ADDENDUM

MONDAY, JULY 22, 1985

8:30 a.m.-12:00 noon

PLENARY SESSION

Chairman, Yvonne M. Ferris
Rockwell International, Golden, CO 80401

"The U.S. Safeguards Program"

B. G. Cook—Deputy Assistant Secretary for Security Affairs, U.S. Department of Energy, Washington, DC

"A Congressional Perspective on Safeguards"

Hon. Manuel Lujan, Jr.—U.S. Representative, 1st District, New Mexico

"The Nonproliferation Treaty—Its Past and Future"

Ambassador Lewis A. Dunn—Assistant Director for Nuclear and Weapons Control, U.S. Arms Control and Disarmament Agency, Washington, DC

"New Trends in Safeguards"

Myron B. Kratzer—Director, International Energy Associates, Ltd., Washington, DC

"On Unlimited Frontiers"

John Graham—Washington Representative, American Nuclear Society, Arlington, Virginia

2:00 p.m.-5:15 p.m.

SESSION B—INTERNATIONAL PERSPECTIVES ON THE NONPROLIFERATION TREATY

Chairman, Thomas E. Shea
International Atomic Energy Agency, Vienna, Austria

R. M. Duncan—Head, Office of Safeguards and Physical Security, Canadian Atomic Energy Control Board, Ottawa, Canada

Sr. Martinez-Cobo—Secretary General, Organization for the Prohibition of Nuclear Weapons in Latin America, Mexico City, Mexico

R. Kiyose, Professor, Department of Nuclear Engineering, University of Tokyo, Japan

Ambassador Lewis A. Dunn—Assistant Director for Nuclear and Weapons Control, U.S. Arms Control and Disarmament Agency, Washington, DC

**INSTITUTE OF NUCLEAR MATERIALS MANAGEMENT
TWENTY-SIXTH ANNUAL MEETING
JULY 21-24, 1985
ALBUQUERQUE, NEW MEXICO, USA**

PRELIMINARY PROGRAM ADDENDUM- Continued

WEDNESDAY, JULY 24, 1985

2:00 p.m.-5:15 p.m.

SESSION D—WASTE MANAGEMENT

Chairman, Mr. George A. Townes
BE Inc., Barnwell, SC 29812

"Disposal of Non-Fuel Bearing Components"
George C. Jobson—Chem-Nuclear Systems, Inc.

"Spent Fuel Management Options at the Utility Site"
Burton F. Judson, John E. VanHoomissen—General Electric Company
Ray E. Hoskins, James B. Moegling—Tennessee Valley Authority

"Issues Related to the Monitored Retrievable Storage of Spent Nuclear Fuel"
E. R. Johnson—E. R. Johnson Associates, Inc.

"Analysis of Spent Fuel from Light Water Reactors"
R. K. Lane, K. A. Young, R. P. Morissette—GA Technologies, Inc.

"Prospective Yucca Mountain Repository Remote Handling Facilities"
George A. Townes—BE Inc.

**"DAW Volume Reduction (VR) Using the Newly Developed 20 MN (2200 tons)
Superpack - A New Generation of Supercompactor Equipment"**
Hans Baudisch, Michael Szukala—Hansa Projekt, West Germany
Herman Miller, Charles Sathrum—INET Corporation
Frank Karow, Kurt Grewe—NPS Brunsbuttel, West Germany

June 18, 1985

TO: NUCLEAR SAFEGUARDS PROFESSIONALS
Measurement Technology
Material Control & Accountability
Physical Security
Waste Management
Transportation
Containment & Surveillance
Confirmatory Measurements
International Safeguards

SUBJECT: INSTITUTE OF NUCLEAR MATERIALS MANAGEMENT
26TH ANNUAL MEETING
July 21-24, 1985
The Regent Hotel, Albuquerque, New Mexico, USA

The enclosed program and addendum outline the 150 technical papers to be presented at INMM's 26th Annual Meeting, July 21-24, 1985 in Albuquerque, New Mexico. These presentations represent our largest safeguards program and cover the broadest scope of expertise in this profession.

We urge you to make your hotel reservations early. Call The Regent Albuquerque (the headquarters hotel) for the special \$49.00 single/double rate — 800/545-4444 or the La Posada de Albuquerque (across the street) for the \$39.00 single/double rate — 800/621-7231.

INMM's special air travel program with American Airlines and Pacific Southwest Airlines can be reached at 800/433-1790. Identify your affiliation with INMM through STAR File #S6378.

Mail your Annual Meeting registration (form enclosed) directly to INMM Headquarters, 8600 W. Bryn Mawr Avenue, Chicago, IL 60631. Please note the preregistration deadline of July 1, 1985.

EXECUTIVE COMMITTEE
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VICE CHAIRMAN Charles Vaughan
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8600 West Bryn Mawr Avenue
Chicago, Illinois 60631 U.S.A.
312/693-0990
Telex: 910-221-5870

UNLIMITED FRONTIERS

PRELIMINARY PROGRAM

INMM

26TH

ANNUAL

MEETING

ALBUQUERQUE, NEW MEXICO, USA
JULY 21-24, 1985

 **INMM**
INSTITUTE OF NUCLEAR MATERIALS MANAGEMENT

LARGEST

SAFEGUARDS PROGRAM EVER!

DEAR MEMBERS AND FRIENDS OF THE INMM

I am excited about the 26th annual meeting of the Institute of Nuclear Materials Management and extend a hearty invitation to all members of the nuclear profession to attend. The meeting will be held July 21 through 24, 1985 in Albuquerque, New Mexico, USA. Last year INMM celebrated 25 years as a warm and technically stimulating professional organization which continually promulgated leading safeguards technology. The INMM is dedicated to this type of on-going support to the nuclear professional.

The program this year is under the very capable leadership of Chairman John Lemming and a host of dedicated volunteers. This year's theme "UNLIMITED FRONTIERS" is quite appropriate in view of the changing nuclear climate. No longer can a nuclear professional be satisfied as an expert in a limited aspect of the industry. Today's and more importantly tomorrow's nuclear leaders must develop a broad perspective of the tasks and technology required for success. This year's meeting with

quad- and quintcurrent sessions covering the multifaceted aspects of domestic and international nuclear activities represents an excellent opportunity for everyone to participate in their "special" area and at the same time develop a broadening perspective of the nuclear industry.

Again this year, the meeting will also provide a host of nuclear support vendors with informative exhibits. A poster session is also included and represents an excellent opportunity for small group discussions.

The meeting arrangements continue in the able hands of Tommy Sellers. He and local arrangements chairman Dennis Mangan are assuring a well organized and smoothly functioning meeting in The Albuquerque Regent and adjacent Convention Center.

The Convention Center has spacious meeting rooms, a convenient location for the exhibits and posters and a connecting shopping/restaurant mall. All of this adds up to the perfect setting for discussing new safeguards techniques, renewing past friendships and developing professional relationships. Kathie Mangan and Nina DeMontmollin are organizing an excellent spouses' and family program, once again confirming the Institute's goal to provide a complete program for all attendees.

Enclosed is the registration packet. It includes specific information on the technical program, the airlines program and the registration form. Please return the form as soon as possible noting the pre-registration deadline.

Y'all come to Albuquerque in July!

Sincerely,



Charles M. Vaughan
INMM Vice Chairman and
Annual Meeting Committee Chairman

TWENTY-SIXTH ANNUAL MEETING

SUNDAY, JULY 21, 1985

8:00 a.m.-3:00 p.m.

4:00 p.m.-8:00 p.m.

6:00 p.m.-8:00 p.m.

MONDAY, JULY 22, 1985

7:15 a.m.-8:00 a.m.

7:30 a.m.-5:00 p.m.

9:30 a.m.-4:00 p.m.

8:30 a.m.-10:30 a.m.

8:30 a.m.-12:00 noon

2:00 p.m.-5:15 p.m.

THE REGENT ALBUQUERQUE
ALBUQUERQUE, NEW MEXICO, USA
JULY 21-24, 1985

UNLIMITED FRONTIERS PRELIMINARY PROGRAM

EXECUTIVE COMMITTEE MEETING

REGISTRATION

INMM CHAIRMAN'S RECEPTION

SPEAKERS' BREAKFAST

REGISTRATION

EXHIBITS

SPOUSES' HOSPITALITY

PLENARY SESSION

Chairman, Yvonne M. Ferris
Rockwell International
Golden, Colorado

"The U.S. Safeguards Program"

Speaker from the U.S. Department of Energy

"A Congressional Perspective on Safeguards"

Speaker from the U.S. Congress

"Nonproliferation Treaty—Its Past and Future"

Louis Dunn—U.S. State Department

"New Trends in Safeguards"

Marvin Kratzer—International Energy Associates Ltd.

"On Unlimited Frontiers"

John Graham—American Nuclear Society

SESSION A

MEASUREMENT TECHNOLOGY

"NDA Measurement of the Enrichment of Uranium in the Product
Header Pipes in the Cascade Area"

S. Yokota, M. Hori, T. Iwamoto, M. Akiba, M. Omae—
Power Reactor and Nuclear Dev. Corp.

"Measurement of the Enrichment of Uranium in the Pipework of a
Gas Centrifuge Enrichment Plant"

T.W. Packer, E.W. Lees—AERE Harwell
D. Close, K.V. Nixon, J.C. Pratt, R. Strittmatter—
Los Alamos National Laboratory

"Gamma-Ray Spectrometry in the Cascade Area of a
Gas Centrifuge Enrichment Plant"

W.D. Lauppe, B. Richter, G. Stein—Kernforschungsanlage Julich GmbH

"A High Count Rate Gamma-Ray Spectrometer System for
Plutonium Isotopic Measurements"

John G. Fleissner, C.P. Oertel, A.G. Garrett—Rockwell International

"The Propagation of Errors in the Measurement of Plutonium Isotopic
Composition by Gamma Spectroscopy when Using Intrinsic Calibration"

M. Franklin—Commission of the European Communities



REGISTRATION FORM

INSTITUTE OF NUCLEAR MATERIALS MANAGEMENT

26TH ANNUAL MEETING—JULY 21-24, 1985
THE REGENT ALBUQUERQUE
ALBUQUERQUE, NEW MEXICO, USA
800/545-4444

Name

Company

Address

City

State

Zip

Country

Telephone/Telex

Please make check payable to:
INMM Annual Meeting

Mail Check and registration form to:
INMM
Sperry Univac Plaza
8600 West Bryn Mawr Avenue
Suite 720 South
Chicago, Illinois 60631 USA

Cancellations will not be honored and
money will not be refunded after Monday,
July 1, 1985.

My spouse plans to attend.
His/Her name is:

Please check:

Pre-registration through July 1, 1985
☐ Member—\$275
☐ Non-Member—\$375

Regular Registration after July 1, 1985
☐ Member—\$325
☐ Non-Member—\$425

Daily Registration	July 22	July 23	July 24
<input type="checkbox"/> Member	\$125	\$125	\$125
<input type="checkbox"/> Non-Member	\$175	\$175	\$175

☐ This registration is to be paid by
company or agency purchase order
(copy attached).

Daily registration does not include a
copy of the proceedings of the meeting.
Copies of the proceedings may be
obtained from:

INMM
Sperry Univac Plaza
8600 West Bryn Mawr Avenue
Suite 720 South
Chicago, Illinois 60631 USA
312/693-0990
Telex: 910-221-5870

☐ Please check if you are affiliated
with a Corporate/Sustaining
Member Company



2:00 p.m.-5:15 p.m.

2:00 p.m.-5:15 p.m.

2:00 p.m.-5:15 p.m.

6:30 p.m.-

"Interpretation of Neutron Signal Correlation Measurements
with Fast Neutron Multiplication"

W. Hage—Commission of the European Communities

D.M. Cifarelli—Universita L. Bocconi

"In-Line X-Ray Fluorescence Analysis of Special Nuclear Materials Dissolver
Solution: Materials Development, Laboratory Simulation and Parameterization"
Claude R. Hudgens—Monsanto Mound Laboratory

SESSION B

NONPROLIFERATION PANEL

Chairman, Thomas E. Shea

International Atomic Energy Agency

Vienna, Austria

Presentation and Discussion

SESSION C

PHYSICAL PROTECTION SYSTEMS

"The Essentials of a Physical Security System"

R.D. Hegele, G. McKenzie—Arvin/Diamond

W.H. Wunderlich—Wunderlich & Associates, Inc.

"Methods for Developing a Jam-Resistant Security Communications Network"
D.J. Gangel, J.E. Heustess, M.K. Snell—Sandia National Laboratories

"Results of Field and Laboratory Studies of Jam-Resistant
and Voice-Private Radios"

J.E. Heustess, M.K. Snell, D.J. Gangel—Sandia National Laboratories

"Protection Program Planning"

J. Allentuck—Brookhaven National Laboratory

"Simple Techniques for Optimizing Physical Protection System Design"

J.L. Darby, W.R. Thomas—Science & Engineering Associates, Inc.

"Discussion of Detection, Assessment, Communication, Delay
and Response for Physical Protection"

J.P. Indusi—Brookhaven National Laboratory

"The Design of a Dynamic Security System—The L.A. Olympics"

Donald G. Bruckner—Holmes & Narver, Inc.

"Security Exercise Readiness Program"

F. Crane—International Energy Associates, Ltd.

"Identification of Baseline Requirements for a Waterside Security System"

R.M. Lawson—Dynatrend Incorporated

SESSION D

WASTE MANAGEMENT

OLD TOWN EVENT

Chairman, Dennis L. Mangan

Sandia National Laboratories

Albuquerque, New Mexico

Margarita/Sangria Sip at The Regent sponsored by
Science & Engineering Associates

Transportation to and from Old Town via the "Mollie
Trolleys" courtesy of Integrated Security Systems

Mexican Fiesta at the Sheraton Old Town provided by
E G & G Albuquerque

INMM members and friends will enjoy this special evening in Albuquerque's
historic Old Town. The restaurants are delightful, the architecture is fascinating,
the shops are charming and the vendors selling their wares beneath the shade
of an old portal are colorful. This is a special evening for the entire family.
Dress is casual.

TUESDAY, JULY 23, 1985

7:15 a.m.-8:00 a.m.

7:30 a.m.-5:00 p.m.

9:30 a.m.-4:00 p.m.

8:30 a.m.-10:30 a.m.

8:30 a.m.-12:00 noon

SPEAKERS' BREAKFAST

REGISTRATION

EXHIBITS

SPOUSES' HOSPITALITY

SESSION A

MEASUREMENT CONTROL AND ASSURANCE

Chairman, Victor Lowe

Martin Marietta Energy Systems, Inc.

Oak Ridge, Tennessee

"The Blind Sample Submission Program at Rocky Flats"

James Frank—Rockwell International

"Chemical Analysis Quality Assurance at the Idaho

Chemical Processing Plant"

Rodney Hand—Westinghouse Idaho

"Performance Expectations for Measurement Control Programs"

Glenn Hammond—US Department of Energy/OSS, Germantown

"What the New Propagation of Error Procedure at Y-12 Needs
from the Measurement Control Program"

Denise Schmoyer—Martin Marietta Energy Systems, Inc.

"Measurement Control Programs for a Low Enriched Uranium
Fuel Fabrication Plant"

Richard Schneider—Exxon Nuclear Company

"Post-Implementation Review of the Interactive Measurement Evaluation
and Control System (IMECS) at Rocky Flats"

Violet Hunt—Rockwell International

"The Effects of Operating Environment on Performance
of Radiometric Calorimeters"

Richard L. Mayer, II—Monsanto Mound Laboratory

"Control and Accountability Plans for Inventory Measurements
at a Bulk Storage Facility"

A.M. Liebetrau—Battelle Pacific Northwest Laboratory

SESSION B

IAEA SAFEGUARDS

"Improved Technical Support to IAEA Safeguards"

Leon Green—Brookhaven National Laboratory

"A Fuel Cycle Approach to Safeguards Implementation and Evaluation"

R. Gerstler—Federal Ministry of Research and Technology, FRG

A. Reznicek—Unternehmensberatung Aachen, FRG

G. Stein, E. Muench, M.J. Canty—Kernforschungsanlage Julich GmbH

"Combustion Engineering's Safeguards Experience with the IAEA
at Its Fuel Fabrication Facility"

T.B. Bowie—Combustion Engineering, Inc.

"Variable Sampling in the Attribute Mode"

Rudolph Avenhaus—Hochschule der Bundeswehr Munchen

"Laboratory Information System and Data Network at the Safeguards
Analytical Laboratory of the International Atomic Energy Agency"

H. Aigner—International Atomic Energy Agency

"A Demonstration of the In-Field Use of Calorimetric Assay
for IAEA Inspection Purposes"

Walter W. Strohm—Monsanto Mound Laboratory

Sidney Fiarman—International Atomic Energy Agency

Ronald B. Perry—Argonne National Laboratory

8:30 a.m.-12:00 noon

8:30 a.m.-12:00 noon

"Quality Assurance Program Development for the
IAEA Department of Safeguards"
Georges Rubenstein—International Atomic Energy Agency
Peter L. Bussolini—Los Alamos National Laboratory
Neil L. Harms—Battelle Pacific Northwest Laboratory
"International Safeguards Are Based on Its Well Qualified
and Motivated Professionals"
Kenneth E. Sanders—U.S. Arms Control and Disarmament Agency

SESSION C

PHYSICAL PROTECTION HARDWARE AND ITS USE

"The Role of Fiber Optics in Physical Security Systems"
J.A. Rarick—U.S. Army Belvoir Research & Development Center
"CCTV for Radiation Environments"
R.A. Shaufl—Arvin/Diamond
"A Lighting Simulation and Design Program (LSDP)"
D.A. Smith—E G & G, Albuquerque
"Signal Transmission System Classification for Intrusion Detection Systems"
Robert Barnard—U.S. Army Belvoir Research & Development Center
Ric Blacksten—The McLean Research Center
"Summary of a Survey of Security Communications at Fixed-Site Facilities"
Mark K. Snell, J. Ellis Heustess, David J. Gangel—
Sandia National Laboratories
"A New Passive Helicopter Detector"
G.R. Elliott—Sandia National Laboratories
"Activities and Trends in Physical Protection Modeling with Microcomputers"
L.D. Chapman, C.P. Harlan—Sandia National Laboratories
"Application of a Portable Briefcase Personal Computer
to Research Reactor Safeguards"
R.D. Ryan—Australian Safeguards Office

8:30 a.m.-12:00 noon

SESSION D

WASTE MANAGEMENT

8:30 a.m.-12:00 noon

SESSION E

POSTERS

Co-Chairmen, R.G. Cardwell, C.W. Wilson
Martin Marietta Energy Systems, Inc.
Oak Ridge, Tennessee

"Results from Uranium Deposition Studies for Development of a
Limited Frequency-Unannounced Access Inspection Strategy for
Gas Centrifuge Enrichment Plants"
J.N. Cooley, L.W. Fields, D.W. Swindle, Jr.—
Martin Marietta Energy Systems, Inc.
"Special Nuclear Material Radiation Monitors for the 1980s"
P.E. Fehlau—Los Alamos National Laboratory
"Application of the Gravimetric Method to Closing the Material Balance
Around the Chop-Leach Cell of a Spent-Fuel Reprocessing Plant"
Leslie G. Fishbone—Brookhaven National Laboratory
"Interior Sensor and Environment Monitor"
J.J. Harrington—Sandia National Laboratories
"Near-Real-Time Accountability System at the Y-12 Plant"
S.W. Combs, C.P. Hall—Martin Marietta Energy Systems, Inc.
"The Y-12 Plant Model DT-14A Fissile Material Shipping Container"
H.E. Crowder—Martin Marietta Energy Systems, Inc.

2:00 p.m.-4:00 p.m.

SESSION A

MATERIAL CONTROL AND ACCOUNTABILITY

Chairman, Darryl B. Smith

Los Alamos National Laboratory

Los Alamos, New Mexico

"Inherent and Induced Complexity in Los Alamos/Plutonium Facility Accounting Data"

R.C. Bearse—University of Kansas

D.A. Longmire, N.A. Roberts—Los Alamos National Laboratory

"Good Data Protects Goodyear's Good Name"

Wayne Harbarger—Goodyear Atomic

"Audit Trails in an On-Line Accountability System"

Curt Jamison, Leo Wadle—Rockwell Hanford

2:00 p.m.-4:00 p.m.

SESSION B

MEASUREMENT TECHNOLOGY

"Simulation of Glove Box Nondestructive Assay to Aid in Error Estimation and Measurement Procedure Design"

R.F. Eggers, E.W. Giese, R.E. Kerns, R.A. Jones—

Rockwell Hanford Operations

"A Calibration Problem in Nuclear Waste Management"

E.J. Halteman—Rockwell International

"Elemental and Isotopic Assay of Actinide Materials in Complex Matrices by Optical Emission Spectroscopy"

M.C. Edelson, V.A. Fassel, E.L. DeKalb, R.M. Winge—Ames Laboratory

"Created Waste Assay Monitor (CWAM)"

J.T. Caldwell, H.F. Atwater, W. Bernard, J.M. Bieri, S.W. France,

R.D. Hastings, G.C. Herrera, W.E. Kunz, E.R. Shunk—

Los Alamos National Laboratory

Enzo Ricci, J.A. Russell, D.W. Swindle, Jr.—

Martin Marietta Energy Systems, Inc.

"A Critical Comparison of Mass- and Gamma-Ray Spectrometric Measurements of Plutonium Isotopic Reference Materials"

Carleton D. Bingham, Warren J. McGonnagle—

U.S. Department of Energy, New Brunswick Laboratory

2:00 p.m.-4:00 p.m.

SESSION C

PHYSICAL PROTECTION—VULNERABILITY,

SABOTAGE AND LEGAL ISSUES

Chairman, Jerry J. Cadwell

Brookhaven National Laboratory

Upton, New York

"Discussions of Sabotage Vulnerabilities"

Ling-Shih Lu—Brookhaven National Laboratory

"Outsider Threat Vulnerability Analysis"

L. Harris, Jr., W.R. Owel, J.H.L. Vrouwens, T.H. Koch, Jr., G.D. Smith,

J.D. Veatch—Science Applications International Corporation

"Training Protective Force Persons in Law Subjects"

Lin Livingston—Wackenhut Advance Technologies Corp.

"Comments of the Law of Riots and Dissent"

Jerry J. Cadwell—Brookhaven National Laboratory

"Integrated Security System Definition and Applications"

George K. Campbell, John R. Hall, II—

Analytical Systems Engineering Corporation

2:00 p.m.-4:00 p.m.

SESSION D

WASTE MANAGEMENT

Chairman, James R. Clark

Nuclear Fuel Services, Inc.

Rockville, Maryland

"Status of Overpacks for Uranium Hexafluoride (UF₆) Transport"

J.W. Arendt—JBF Associates, Inc.

W.A. Pryor—U.S. Department of Energy

"State Issues on Spent Fuel Transportation Update"

M. Pellettieri—International Energy Associates, Ltd.

"Drop and Puncture Testing of 1/4 Scale Model of NuPac 125B Rail Cask"

M.M. Warrant, B.J. Joseph—Sandia National Laboratories

R.T. Haelsig—Nuclear Packaging, Inc.

"The Fraction of Waste Contents Released from Secondary Containers to the TRUPACT-I Cavity During Type B Package Testing"

R.P. Sandoval—Sandia National Laboratories

"Transnuclear Spent Fuel Transportation and Storage Activities"

K. Goldman—Transnuclear, Inc.

2:00 p.m.-4:00 p.m.

SESSION E

CONTAINMENT AND SURVEILLANCE

"Clarification of the Technical Requirements for Fuel Assembly Seals—Experiments in the Kahl Reactor Demonstrate Compliance"

Chris. Brueckner—Kernforschungszentrum Karlsruhe

"Some Considerations for the Use of Seals on LWR Fuel Assemblies"

K. Taylor—International Atomic Energy Agency

"Development of a Sealing Bolt for the Safeguarding of Large Containers such as Multielement Bottles"

B.C. D'Agraves, J. Toornvliet—Commission of the European Communities

"A Simplified Operator Interface for a Safeguards Surveillance Television Recording System"

W.C. Fienning, R.C. Holt—Sandia National Laboratories

"LWR Seals—A Reactor Operator's Point of View"

L. Pacht—Versuchatomkraftwerke Kahl

4:00 p.m.-4:30 p.m.

ANNUAL BUSINESS MEETING

7:00 p.m.-8:00 p.m.

RECEPTION

8:00 p.m.-10:00 p.m.

26TH ANNUAL BANQUET & AWARDS

WEDNESDAY, JULY 24, 1985

7:15 a.m.-8:00 a.m.

7:30 a.m.-12:00 noon

9:30 a.m.-2:00 p.m.

8:30 a.m.-10:30 a.m.

8:30 a.m.-12:00 noon

8:30 a.m.-12:00 noon

SPEAKERS' BREAKFAST

REGISTRATION

EXHIBITS

SPOUSES' HOSPITALITY

SESSION A

CONTAINMENT AND SURVEILLANCE

"Experience with an Ultrasonic Sealing System for Nuclear Safeguards in Irradiated Fuel Bay Demonstrations"

B.F. White, M.T. Smith—Atomic Energy of Canada, Ltd.

G.B. Dillon—International Atomic Energy Agency

P.D. Dodgson, A.R. Perron—Ontario Hydro

R. Keeffe—Atomic Energy Control Board

"The CANDU Irradiated Fuel Safeguards Sealing System at the Threshold of Implementation"

A.J. Stirling, S. Kupca, R.E. Martin, R.J. West, A.E. Aikens, C.A. Cox,

B.F. White, M.T. Smith, W.E. Payne—

Atomic Energy of Canada, Ltd.

"Future Trends in Compact TV Surveillance Systems"

K. Gaetner, B. Fastman, P. Vodrazka—International Atomic Energy Agency

"Demonstration of IBM PC-Compatible Software for Manipulation, Archiving and Statistical Analysis of Seal Signature Data"

B.G. Self, J.M. McKenzie—Sandia National Laboratories

"U.K. Paper"

R. Dickinson—British Nuclear Fuels, Ltd.

"Statistical Evaluation of Set-up Errors in the ARC/SPAR System"

D.D. Sheldon, J.M. McKenzie—Sandia National Laboratories

M.T. Smith, B.F. White—Atomic Energy Company, Ltd.

"ELCOBOX I, A Modular Constructed Tamperrisistant and Integrity Controlled Container for Security Purposes"

H. Bueker, St. Nicolai—Kernforschungsanlage Julich

"Feasibility Study on an Underwater Sealing System for the Spent Fuel Storage Basket Container"

Saburou Takahashi, Kazuya Ochiai—Power Reactor and Nuclear Fuel Dev. Corp.

SESSION B

MC&A SYSTEMS AND AUDITS

Chairman, Donald E. Six

Rockwell Hanford

Richland, Washington

"Safeguards Accountability Network:

Accountability and Materials Management"

G.J. Carnival, E.M. Meredith—Rockwell International

"Materials Accountability and Safeguards Systems at Los Alamos"

N.J. Roberts, B.H. Erkkila, H.F. Kelso—Los Alamos National Laboratory

"QUINUMAC: The Key to the Future"

G.P. Kodman, D.L. Bouse—Rockwell Hanford

"Materials Control and Accountability at Idaho Chemical Processing Plant"

G.E. Denning—Westinghouse, Idaho

"EPIC—An Error/Propagation Inquiry Code"

Alice L. Baker—Los Alamos National Laboratory

"Data Verification and Materials Accountancy for Two Accounting Periods"

R. Beedgen—Kernforschungszentrum Karlsruhe

"Sequential Test Procedures for Inventory Differences"

A.S. Goldman, E.A. Kern—Los Alamos National Laboratory

C.W. Erneigh—U.S. Nuclear Regulatory Commission

8:30 a.m.-12:00 noon

"Improved Sample Size Determination for Attributes
and Variables Sampling"
D. Stirpe, R.R. Picard—Los Alamos National Laboratory

SESSION C

PHYSICAL PROTECTION AND ENTRY-CONTROL SYSTEMS

"The Status of Personnel Identity Verifiers"
R.L. Maxwell—Sandia National Laboratories

"An Intelligent Portal Monitor for Fast Suppression of
False Positives Due to Radiopharmaceuticals"
M. William Johnson, K.B. Butterfield—Los Alamos National Laboratory

"An Automated Entry Control System for Nuclear Facilities"
W.K. Ream, J. Espinoza—Sandia National Laboratories

"Foam Intruder Delay System"
R.G. Lampo—U.S. Army Construction Engineering Research Laboratory

"Improved Efficiency Access Control Equipment and
Explosive, Weapons and Drug Abuse Detection"
Anthony Jenkins, Andrew Milford, J. Woolven—Ion Track Instruments, Inc.

"Positive Identity Entry Control System with Geographically
Distributed Portals and Enrollment Stations"
J.M. McIntire—Sandia National Laboratories

"The Nuclear Employee Data System (NEDS)"
R. Sutton, J. Mark Elliott—International Energy Associates Ltd.

"Computer Information System Security Check List"
William Banks—Lawrence Livermore National Laboratory

"Multiagency Security Contingency Planning:
Mutual Support Against the 'High Threat'"
R. Kelly—International Energy Associates, Ltd.

8:30 a.m.-12:00 noon

SESSION D

WASTE MANAGEMENT

2:00 p.m.-5:15 p.m.

SESSION A

INTERNATIONAL SAFEGUARDS

"International Safeguards for a Geological Repository for the
Final Disposal of Spent Light-Water Power Reactor Fuel Elements"
R. Buttler, W.D. Lauppe, B. Richter, G. Stein—
Kernforschungsanlage Julich GmbH

"Long-Term Dry Storage of Spent Fuel: Techniques and
International Safeguards Aspects"
Rudolph Weh—Deutsche Gesellschaft für Wiederaufarbeitung, FRG
Ruediger Gerstler—Federal Ministry for Research and Technology, FRG

"A Concept for Fuel-Cycle-Based Safeguards"
James M. De Montmollin—Sandia National Laboratories
W.A. Higinbotham—Brookhaven National Laboratory
Dipak Gupta—Kernforschungszentrum Karlsruhe

"Installation of an Irradiated Fuel Bundle Discharge Counter
at Bruce NGS-B 3 000 MW(e) Candu Power Station"
A.M. Ironside—Ontario Hydro
C.B. Lawrence—Chalk River Nuclear Laboratories
G. Gordon—MONSERCO Ltd.

G.B. Dillon—International Atomic Energy Agency
J.J. Bogaards—Atomic Energy Control Board

"Does Safeguards Need Reactor Power Monitors?"
R.D. Ryan—Australian Safeguards Office

2:00 p.m.-5:15 p.m.

SESSION B

CONFIRMATORY MEASUREMENTS

Chairman, Wendell L. Belew

U.S. Department of Energy

Aiken, South Carolina

"Confirmatory Measurements of Special Nuclear Materials"

W.L. Belew, T.L. Williams—U.S. Department of Energy, Savannah River

"Neutron Counting for Confirmatory Measurements"

H.O. Menlove, N. Ensslin—Los Alamos National Laboratory

"Experiences with Confirmatory Measurements at the Savannah River Plant"

Paul Deason—E.I. duPont de Nemours, Savannah River

"Confirmatory Measurements Experience at Los Alamos National Laboratory"

R. Marshall, F. Hsue, R. Wagner—Los Alamos National Laboratory

"Design of an Instrument for Confirmatory Measurement of Plutonium in Shipping Containers"

J. Gilmer—Rockwell International

"Confirmatory Measurements of UF_6 Using the Neutron Self Interrogation Method"

I.R. Cowder, P.J. Polk—Los Alamos National Laboratory

"Safeguards Uses of Confirmatory Measurements"

C. Alton Coulter—Los Alamos National Laboratory

"A Plutonium Neutron Source Simulator"

Kendahl J. Johnson—International Atomic Energy Agency

2:00 p.m.-5:15 p.m.

SESSION C

PHYSICAL PROTECTION RELATED TO THE INSIDER, SAFETY AND TRAINING

"Future Developments in Physical Protection Against the Insider Threat"

A.E. Winblad—Sandia National Laboratories

"Integrated Systems Approach to Meet the Insider Threat"

L.D. Barnes—Los Alamos Technical Associates, Inc.

"Insider Threat Vulnerability Analysis—MAIT Update"

L.A. Goldman, T.L. McDaniel, J.A. Stoddard, J.W. James—Science Applications International Corporation

"Safety/Security Interface Assessments at Commercial Nuclear Power Plants"

Kenneth R. Byers—Battelle Pacific Northwest Laboratory

P.J. Brown—Comex Corporation

L.R. Norderhaug—U.S. Nuclear Regulatory Commission, Region V

"Safety/Safeguards Interactions During Safety-Related Emergencies at Nuclear Power Reactors"

Dale A. Moul—Wackenhut Advanced Technologies Corp.

"Enhancing the Usefulness of Vital Area Analyses for Nuclear Power Plants"

W.H. Horton, P.R. Lobner—Science Applications International Corporation

"A Training Program for CRISIS Management of Protective Force Persons at a Nuclear Facility"

D. Libengood—Wackenhut Advanced Technologies Corp.

"Proper Use of Engagement Simulation Equipment (Miles Gear) in Integrated Security Systems"

B.R. Ahrens, J.A. Milloy—Integrated Security Systems

2:00 p.m.-5:15 p.m.

SESSION D

WASTE MANAGEMENT

COME TO ALBUQUERQUE

...for INMM's 26th Annual Meeting. Join us for the "UNLIMITED FRONTIERS" program which encompasses the expanding expertise of safeguards professionals. Special sessions on measurement technology, physical protection, transportation, waste management, material control and accountability, containment and surveillance, confirmatory measurements and international safeguards have been arranged. Quad- and quintcurrent sessions will be held during the three day meeting at the Albuquerque Regent Hotel and Convention Center.

Albuquerque is located in America's great Southwest. Two of the nation's major interstate highways, I-40 and I-25, intersect in Albuquerque. The city is served by Amtrak and 17 commercial and commuter airlines (please note INMM's special program with American Airlines and Pacific Northwest Airlines).

Major attractions during non-meeting times include:

- Sandia Peak Tramway—a breathtaking 2.7 mile trip up to the top of Sandia Peak over some of the most awesome scenery in the U.S. This is the longest aerial tramway in the world.
- National Atomic Museum—located on Kirtland Air force Base, this museum houses a unique historical collection of nuclear weapons, including examples of the world's first two atomic bombs.
- Indian Pueblo Cultural Center—a complex operated by the 19 Indian pueblos in New Mexico including a museum, art gallery, restaurant and gift shop.
- Rio Grande Zoo—known for its program to breed and protect endangered species, the zoo has used adobe architecture extensively in the animal compounds and features a replication of a tropical rainforest and the very popular prairie dog town.

DRESS

Albuquerque weather in July is predictably warm with mean temperatures in the high 70's (minimum 63, maximum 92). Nights are slightly cooler, especially if a trip to the mountains is planned. Either business or casual attire is appropriate for INMM meeting sessions, with business attire for evening social activities on Sunday and Tuesday. The Monday evening event in Old Town is casual.

REGISTRATION

Registration will be available:

4:00 p.m.-8:00 p.m.	Sunday, July 21, 1985
7:30 a.m.-5:00 p.m.	Monday, July 22, 1985
7:30 p.m.-5:00 p.m.	Tuesday, July 23, 1985
7:30 a.m.-12:00 noon	Wednesday, July 24, 1985

ROOM RESERVATIONS

To reserve accommodations at our headquarters hotel, The Regent Albuquerque, simply call the Regent directly, identify your affiliation with INMM and request a confirmation. Special rates of \$49.00 single/double have been arranged at The Regent Albuquerque. Additional housing has been arranged at La Posada de Albuquerque, a quaint southwestern inn located one block from the Conference Center. La Posada rates are \$39.00 single/double.

The Regent Albuquerque
201 Marquette Avenue, NW
Albuquerque, NM 87103 USA
505/247-3344
800/545-4444

La Posada de Albuquerque
2nd and Copper Streets
Albuquerque, NM 87103 USA
505/232-9090
800/621-7231

SPECIAL INMM DISCOUNTED AIRFARES

American Airlines and Pacific Southwest Airlines have been selected as the official airlines for the 1985 INMM Annual Meeting. These air carriers can save you from **25% to 35%** on coach fares. Any other special fare will be credited to the INMM's record if reserved through our telephone file number.

American Airlines and Pacific Southwest Airlines offer you a special Meeting Saver Fare. To take advantage of this exclusive low fare, you must be travelling to the INMM Annual Meeting in Albuquerque, July 19-26, 1985 and...

A. Purchase your tickets up to seven days prior to departure. Tickets may be obtained from American Airlines or through your travel agent. If a lower fare becomes available after you have paid for your ticket and before you depart, the appropriate difference in cost will be refunded. A \$30.00 service charge will be required should you cancel after purchase of your Meeting Saver Fare tickets.

B. The special Meeting Saver Fare is valid for round-trip travel to Albuquerque on American Airlines and Pacific Southwest Airlines domestic segments—and is available only through the Meeting Services Desk.

Meeting Saver and other promotional fares vary between cities of departure and Albuquerque. To find out what special fares are available from your departure city, call the Meeting Services Desk toll free, weekdays 8:30 a.m. to 5:00 p.m. local time.

In the Continental USA, call:

800/433-1790

Ask for STAR File #S6378

CAR RENTALS

Budget Car and Truck Rental is offering INMM Annual Meeting attendees special rates and special services in Albuquerque.

Call their toll free reservation number to reserve any car from a Lynx to a Lincoln at discounted rates which include unlimited mileage.

In the Continental USA, call:

800/821-5799



ABOUT INMM...

The Institute of Nuclear Materials Management is a non-profit organization of individuals working in government, industry and academic institutions where nuclear materials are utilized. The Institute was formed in 1958. Membership in INMM has grown to almost 1,000 members worldwide. Approximately one-third of our membership is located outside of the United States.

Institute members have made a professional commitment to research and performance in the fields of nuclear materials accountancy, material control, physical protection, transportation and waste management.

Members of the Institute seek to advance nuclear materials management in all disciplines:

A. Application of principles of accounting, auditing, engineering, mathematics, physics, statistics and physical security for the safeguarding of nuclear fuel and fuel cycle facilities.

B. Promotion of research in the field of nuclear safeguards including: accounting, materials control, physical protection, transportation and waste management.

C. Encouragement, development, preparation and distribution of standards consistent with existing professional and regulatory requirements.

D. Development of the qualifications and usefulness of those individuals engaged in the nuclear materials safeguards profession.

HOW TO JOIN...

Applications for membership are available by writing or calling the INMM Headquarters.

INSTITUTE OF
NUCLEAR MATERIALS MANAGEMENT
Sperry Univac Plaza
Suite 720 South
8600 West Bryn Mawr Avenue
Chicago, Illinois 60631 USA
312/693-0990
Telex: 910-221-5870

Applications will be reviewed by the Membership Committee. Notifications of acceptance are generally received within 30 days.



INSTITUTE OF NUCLEAR MATERIALS MANAGEMENT

Sperry Univac Plaza

Suite 720 South

8600 West Bryn Mawr Avenue

Chicago, Illinois 60631 U S A

312/693-0990

Telex: 910-221-5870

To: John Linehan MS 62355
WMRP

Copy to Brewster
Miller/Linehan

BWIPO UPCOMING EVENTS
JUNE 20, 1985

<u>Event</u>	<u>Location</u>	<u>Date</u>	<u>Contact</u>	<u>Code</u>
<u>HQ Meetings</u>				
Environmental Coordinating Group Kick-off Meeting	HQ	June 25	Mecca/ Whitfield	R
<u>Coordinating Group Meetings</u>				
ISCG Meeting	Atlanta	July 1-2	Tinsley	O
Materials Steering Committee	HQ	July 9	LaMont	R
Licensing Coordination Group Meeting	HQ	TBD	Mecca/	R
Waste Package Coordination Group	Denver	TBD	LaMont	R
<u>State/Indian/Public Interaction</u>				
CERT Contract, Grant Program Review	Denver	June 20	Adams	O
Nuclear Waste Board/Nuclear Waste Advisory Committee	Olympia	June 21	Kovacs	O
Yakima Indian Nation Cultural Exchange	Toppenish	June 20-21	Tinsley	?
State of Oregon Legislators	Richland	July 17	Olson	O
<u>Other Meetings</u>				
A/E Coordination Meeting and Liner Design Methodology	Oakland	June 25-27	Hudson	R
Rod Consolidation Workshop	Idaho Falls	June 25-27	Nicoll	?

CODE

- O = Open
- R = Restricted
- ? = at option of sponsoring org.

R.P.S.
JEM
AST



To: John Linehan MS 62355
U M R P
Department of Energy

Richland Operations Office
P.O. Box 550
Richland, Washington 99352

JUN 25 1985

Mr. Donald Provost
State of Washington Department
of Ecology, MS PV-11
Olympia, WA 98504

Mr. Max S. Power
Joint Legislative Committee on
Science and Technology
B14 Institutions Building (AG-12)
Olympia, WA 98504

Mr. Roger R. Jim, Sr., Chairman
Yakima Tribal Council
Yakima Indian Nation
P. O. Box 151
Toppenish, WA 98948

Mr. Elwood H. Patawa, Chairman
Board of Trustees
Umatilla Confederated Tribes
P. O. Box 638
Pendleton, OR 97801

Mr. Allen V. Pinkham, Chairman
Nez Perce Tribal Executive Committee
Box 305
Lapwai, ID 83540

Gentlemen:

MONTHLY TRANSMITTAL OF "SCHEDULE FOR NEAR TERM BWIP SITE CHARACTERIZATION ACTIVITIES"

Enclosed for your use is our monthly update and schedule for Site and Engineered Barriers Department activities in this precharacterization phase.

As committed, we will continue to update this information on a regular basis. Should you have any questions relative to this transmittal, please contact Mr. C. Thomas Tinsley of my staff on (509) 376-8736.

Very truly yours,

ORIGINAL SIGNED BY
O. L. OLSON

O. L. Olson, Project Manager
Basalt Waste Isolation Project Office

BWI:CTT

Enclosure

*Send
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Knapp &
Miller/Linehan*

bcc's for letter, Olson to States/Indian Tribes, "Monthly Transmittal of
Schedule for Near Term BWIP Site Characterization Activities"

bcc, w/encl:

Russell Jim, Yakima Indian Nation

Ron Halfmoon, Nez Perce Tribe


Wyatt Rogers, CERT

Barry Gale, DOE-HQ

C. A. Peabody, DOE-HQ

Linda Lehman

James B. Hovis

F. R. Cook, NRC 

R. J. Wright, NRC

J. Graham, Rockwell

BWI Record Cy

SITE AND ENGINEERED BARRIERS DEPARTMENT ACTIVITIES

Activities	Date	Rev:*
<u>Site</u>		
o Install Westbay Packer in RRL-14	09/01-09/30/85	R6
o Run and grout liner in DC-3 (to support seismic monitoring	07/01-07/15/85	
o Remove bridge plugs from RRL-14	Complete	
o Groundwater monitoring of boreholes DC-19, DC-20, and DC-22	Daily	R6
o Monitoring of other boreholes	Weekly	
o Integrity testing, DB-14	Complete	
o Integrity testing, DB-1	Complete	R6
o Deepen Borehole DH-28	Complete	
o Drill cable tool start holes, RRL-2B, RRL-2C	Complete	
o Drill rotary hole RRL-2C	Complete	R6
o Surveying gravity at magnetic stations	Jan - April	
o Electronmicroprobe analysis of flow top samples	Ongoing	
o X-ray diffraction analysis of flow top samples	Ongoing	
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o Collection of magnetic and gravity data	Ongoing	
o Seismic data surveillance analysis	Ongoing	
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o Analysis of fault gauge	Ongoing	
o Analysis of sedimentary interbed minerals	Deferred	
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o	Density 100 tests	Ongoing	
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o	Possibility of (2) long-term flow through permeameter tests	Late-June	
o	Compaction tests on bentonite/basalt mixes/specific gravity	Ongoing	

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1. Hub Miller MS62355
WMBP

Copy to Brew
Miller/Luehman

BWIPD UPCOMING EVENTS
JUNE 20, 1985

<u>Event</u>	<u>Location</u>	<u>Date</u>	<u>Contact</u>	<u>Code</u>
<u>HQ Meetings</u>				
Environmental Coordinating Group Kick-off Meeting	HQ	June 25	Mecca/ Whitfield	R
<u>Coordinating Group Meetings</u>				
ISCG Meeting	Atlanta	July 1-2	Tinsley	O
Materials Steering Committee	HQ	July 9	LaMont	R
Licensing Coordination Group Meeting	HQ	TBD	Mecca/	R
Waste Package Coordination Group	Denver	TBD	LaMont	R
<u>State/Indian/Public Interaction</u>				
CERT Contract, Grant Program Review	Denver	June 20	Adams	O
Nuclear Waste Board/Nuclear Waste Advisory Committee	Olympia	June 21	Kovacs	O
Yakima Indian Nation Cultural Exchange	Toppenish	June 20-21	Tinsley	?
State of Oregon Legislators	Richland	July 17	Olson	O
<u>Other Meetings</u>				
A/E Coordination Meeting and Liner Design Methodology	Oakland	June 25-27	Hudson	R
Rod Consolidation Workshop	Idaho Falls	June 25-27	Nicoll	?

CODE

O = Open

R = Restricted

? = at option of sponsoring org

R.P.S.
J.E.M.
J.S.Z.



To: Hub Miller MS 62355
Wm RP
Department of Energy

Richland Operations Office
P.O. Box 650
Richland, Washington 99352

JUN 25 1985

Mr. Donald Provost
State of Washington Department
of Ecology, MS PV-11
Olympia, WA 98504

Mr. Max S. Power
Joint Legislative Committee on
Science and Technology
B14 Institutions Building (AG-12)
Olympia, WA 98504

Mr. Roger R. Jim, Sr., Chairman
Yakima Tribal Council
Yakima Indian Nation
P. O. Box 151
Toppenish, WA 98948

Mr. Elwood H. Patawa, Chairman
Board of Trustees
Umatilla Confederated Tribes
P. O. Box 638
Pendleton, OR 97801

Mr. Allen V. Pinkham, Chairman
Nez Perce Tribal Executive Committee
Box 305
Lapwai, ID 83540

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Is: Mel Knapp MS 6 23 SS
WDGT
Department of Energy

Richland Operations Office
P.O. Box 550
Richland, Washington 99352

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B015828

Send Copy to Knapp/Justin
START

Weston Geophysical

*To: Mr. Knapp/P. Justice
MS 623 SS WM 61*

September 17, 1982
WGC R-418-14

Rockwell International
Rockwell Hanford Operations
Energy Systems Group
2401 Stevens Drive
Post Office Box 800
Richland, Washington 99352

Attention: Mr. John Bourjeault

Subject: Seismic Data Evaluation - Hanford Site
Draft Submittal

Gentlemen:

We are submitting a second draft of the data evaluation report for work performed under Service Agreement SA-878. Included in this report is a discussion of the line by line results and tables of static correction times. Included under separate cover as an appendix are tables of refraction picks for lines 15, 16, 17, 18, 19, 20, 21, 22. The refraction time tables should be used in conjunction with Figures 3 through "Travel Times and Profiles".

This report and the accompanying tables are submitted for your review.

We will be pleased to provide any further information you may require.

Very truly yours,

WESTON GEOPHYSICAL CORPORATION

John Hogan

John Hogan
for Vincent J. Murphy

JH:VJM:eag

Permanent Record

FEB 1 1983

Index *BS*

DRAFT

INTERPRETATION OF
SEISMIC REFRACTION DATA

HANFORD SITE

Prepare for

ROCKWELL INTERNATIONAL
ROCKWELL HANFORD OPERATIONS

September 1982



Weston Geophysical

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DRAFT

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Figure 8	Line 20 Travel Times and Profile
Figure 9	Line 21 Travel Times and Profile
Figure 10	Line 22 Travel Times and Profile
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Figure 12	RRL-3 VSP Travel Times and Profile
Figure 13	RRL-4 VSP Travel Times and Profile

DRAFT

ABSTRACT

Twenty (20) line miles of seismic refraction data and three (3) vertical seismic profiles (VSP) collected on the Hanford Reservation were processed to produce interpreted cross sections (profiles) of the velocity layering and depth interfaces along the seismic refraction lines. The interpreted cross sections were used to compute static time corrections to a datum 550 feet elevation along the seismic refraction lines.

1.0 INTRODUCTION

Rockwell Hanford Operations collected 20 miles of seismic refraction data along eight lines at the Hanford site. Under terms of Service Agreement SA-878, Weston Geophysical has interpreted this data and prepared time-distance plots, interpreted cross sections (profiles) of the velocity layering and depth interfaces, and static time correction tables for each of the eight lines. The location of these refraction lines shown on Figure 1 which is a reproduction of Seismograph Service Corporation's plan map. Survey control information was provided to Weston Geophysical by Rockwell Hanford.

2.0 METHODS AND PROCEDURES

2.1 Interpretation Methods

The critical distance interpretation method was used to construct the profiles. Preliminary data analysis determined that the time delay method of interpretation was not applicable to this refraction data because continuous overlapping arrivals from the deep high velocity layer (8,000 to 10,000 ft/sec) were not identifiable.

Arrival times were picked from plots of the recorded data provided by Rockwell Hanford Operations. First and second wave arrivals from both forward and reverse shots were picked and plotted for Weston's data analysis. Apparent velocities were calculated and depths to the refracting horizons were computed using the critical distance method of interpretation.

2.2 Treatment of Second Arrivals

Second wave arrivals on all lines were plotted and reviewed by Weston to determine their usefulness in aiding interpretation. For Weston to consider the second wave arrivals of a quality sufficient for interpretation at least two of the following three conditions would have to exist:

1. Consistent time delays between first and second arrivals.
2. First and second arrivals show velocity inflection points at the same distance from the shot point.
3. At least three points available to define a velocity on the time-distance plot.

In Weston's review of second wave arrivals, it was found that these conditions did not consistently exist. An example taken from Line 17 demonstrating a lack of consistent time delays is given on Figure 2.

It was concluded that the second wave arrivals were not of a sufficient quality to migrate into the first arrival position for an accurate interpretation. The basis for this conclusion is:

1. The second arrivals were generally the same velocity as the first wave arrivals. Thus no additional seismic horizons were detected and no additional information was to be gained by using the second arrivals, except for a few instances.

2. In those few cases where second arrivals appeared to show higher velocities, there were insufficient continuous data to produce an non-ambiguous interpretation.

Second arrivals were useful in verifying velocities based on an insufficient number of or questionable first arrivals.

3.0 DISCUSSION OF RESULTS

3.1 General Results and Observations

The seismic refraction interpretation is presented as time distance plots and profiles (Figures 3 through 10). The time distance plots show shot locations, arrival times, and interpreted velocity lines. The profiles show cross line intersections, the calculated velocity interface depths, and the velocity ranges for each velocity layer. Velocity horizons have been dashed in areas of uncertain interpretations. These uncertain areas can be due to any or all of the following: poor or insufficient numbers of arrivals resulting in a poorly defined velocity curve; an inversion layer causing inaccurate depth or velocity calculations below the inversion layer; or zones of rapid lateral velocity changes.

Time statics were calculated from the profiles. A datum of 550 feet, requested by Rockwell, was used for the computation of static times. Thicknesses of each velocity layer were measured and travel times (to the datum) were calculated using the average velocities of the various layers above the datum.

Time statics were calculated at each detector location (every 50 feet) on Lines 15 and 19 and at each shot point (every 150 feet) on Lines 16, 17, 18, 20, 21, and 22 as requested by Rockwell.

The seismic refraction data was of varying quality. The data was recorded at 50 foot intervals for a distance of 2,400 feet (4 traces); however, good quality arrivals were never identifiable beyond 1,200 feet (24 traces) from the shot location. Generally, good quality arrivals existed for a distance of 500 to 950 feet from the shot location. In a few isolated cases, no good quality arrivals could be identified for a particular shot location.

Generally, four velocity layers were defined along these refraction lines. The velocity layering is a 1,000 to 1,600 ft/sec layer overlying a 2,000 to 2,600 ft/sec layer overlying a 4,600 to 5,800 ft/sec layer overlying a 8,000 to 11,000 ft/sec layer. Variations in this layering sequence did occur. Variations include velocity inversion zones (areas where a higher velocity overlies a low velocity), hidden layers (velocity horizon that are too thin to be detected), and lateral velocity variations. A discussion of the interpretation of each line is in the following sections.

3.2 Discussion of Individual Lines

3.2.1 Line 15

Line 15 is 17,400 feet long, starting at Station 1121 and extending southward to Station 1469. The four velocity

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horizons described in the General Results and Observations section were identified from Station 1121 to Station 1314. The 4,500 to 5,400 ft/sec layer pinches out near Station 1314 so that there are only three velocity horizons from Station 1314 to the end of the line (Station 1469). This pinch out layer is dashed from Station 1289 to Station 1314 as it becomes too thin to be clearly identified. As the 4,500 to 5,400 ft/sec layer pinches out, the 8,000 to 10,000 ft/sec velocity decreases to 6,400 to 7,400 ft/sec. A 3,000 to 3,800 ft/sec layer exists below the 2,100 to 2,800 ft/sec layer at Stations 1164 to 1189. The velocity horizons in this area are dashed to indicate an apparent irregular surface of the 3,000 to 3,800 ft/sec layer. A rapid lateral velocity change occurs at Station 1437 to 1443 where seismic velocities drop from approximately 5,900 ft/sec to 5,000 ft/sec. The top of the 5,400 to 6,600 ft/sec velocity horizon is dashed from Station 1448 to 1469 because poor record quality limited the number of arrivals available to well-define the 5,400 to 6,600 ft/sec layer.

3.2.2 Line 16

Line 16 is 6,550 feet long starting at Station 1101 and extending eastward to Station 1332. The four velocity horizons described in the General Results and Observations section were identified from Stations 1158 to 1258. Generally, only the first three velocity horizons were identifiable at the

beginning of the line (Stations 1101 to 1158). The data quality is poor from Station 1158 to 1308 with only the two surface layers being well defined. This poor quality data may be a result of a second layer lateral velocity change (2,300 to 2,700 ft/sec increasing to 3,330 to 4,700 ft/sec). At Stations 1314 to 1317 there is another lateral velocity change with the second layer velocity reverting back to 2,600 to 3,000 ft/sec. The four velocity horizons described in the General Results and Observations section again become identifiable east of Station 1314.

3.2.3 Line 17

Line 17 is 12,150 feet long starting at Station 1101 and extending southward to Station 1344. Three seismic velocity horizons were consistently identified along the entire length of the line. The seismic velocity layering consisted of a 1,000 to 1,400 ft/sec layer overlying a 2,200 to 2,800 ft/sec layer overlying a 5,000 to 7,000 ft/sec layer. A fourth high velocity horizon (8,000 to 10,000 ft/sec) was identified at Stations 1157, 1182 to 1212, 1217 and at Station 1318.

The top of the 5,000 to 7,000 ft/sec horizon is dashed from Station 1282 to Station 1312. In this area poor record quality permitted identification of only a few first arrivals and therefore, limited depth computations. Although the data are limited, the velocity of this layer appears to be locally higher in the range of 6,000 to 7,000 ft/sec. The dashed lines

with question marks for the 6,000 to 7,000 ft/sec horizon between Stations 1302 and 1309 indicates an irregular surface estimated with depth computations from the limited velocity data.

3.2.4 Line 18

Line 18 is 11,550 ft long, starting at Station 1101 and extending eastward to Station 1332. The four velocity horizons described in the General Results and Observations section were identified from Stations 1160 to 1193, Stations 1149 to 1264, and Stations 1295 to 1312. The dashed lines with question marks for the top of the 8,400 to 8,600 ft/sec velocity horizon at Stations 1108 to 1122 indicates that the velocity horizon is uncertain because it is based on arrivals from only one direction. At Station 1197 to 1204 the 8,000 \pm 10,000 ft/sec layer becomes shallower and lower in velocity (6,420 to 7,400). The lower horizon is unidentifiable in this transition area. An inversion zone, identified by dashes and question marks, starts at Station 1219 and continues to Station 1244. At Stations 1265 to 1281 the top of the 7,000 to 8,800 ft/sec layer is dipping and is dashed because this horizon is mainly based on arrival times from one direction. An inversion zone was identified from Station 1282 to Station 1294 and horizons beneath this inversion has been dashed and questioned. At the end of Line 18 the data quality becomes poor and only the top two layers can be identified.

1.2.5 Line 19

Line 19 is 8,250 feet long extending from Station 1101 eastward to Station 1266. The four velocity horizons described in the General Results and Observations section are present on Line 19 from Station 1143 to Station 1261. However, between Stations 1236 and 1253, the profile of the top of the 8,400 to 10,400 ft/sec layer is dashed because of the presence of a near surface inversion layer (a velocity of 3,400 ft/sec overlying a velocity of 2,000 to 2,500 ft/sec). This velocity inversion affects depth computations to underlying horizons. To the west of Station 1246, the deeper high velocity layer was not detected except for the shot point located at Station 1113 where an 8,000 ft/sec velocity was observed.

1.2.6 Line 20

Line 20 is 12,750 feet long extending eastward from Station 1101 to Station 1356. The four velocity horizons present throughout the area as described in the General Results and Observations section are present on Line 20 from Station 1190 to Station 1356. The deeper high velocity horizon was not detected west of Station 1190.

A near surface layer with a velocity of 2,900 to 3,700 ft/sec was detected between Stations 1264 and 1342. This layer overlies material with a lower velocity of approximately 2,000 to 2,500 ft/sec. Because this velocity inversion affects depth computations to underlying horizons, the tops of the 4,500 to 6,000 ft/sec horizon and the 8,000 to 9,500 ft/sec

horizon are shown as dashed horizons. Between Station 1210 and 1242 an intermediate layer, with a velocity of 4,000 ft/sec, was detected between the 2,200 to 2,600 ft/sec layer and the 5,000 to 6,000 ft/sec layer.

3.2.7 Line 21

Line 21 is 12,900 feet long extending from Station 1146 northwesterly to Station 1404. A few refraction records were obtained southeast of Station 1146 but were of such quality that no useful velocity information could be obtained. The four velocity horizons present throughout the area as described in the General Results and Observations section are present on Line 21 from Station 1168 to the end of the line. Southeast of shot point 1168, the higher velocity layer is not present except for the shot point at Station 1149 where a 9,000 ft/sec velocity was detected. However, the seismic data at shot point 1149 are not considered sufficient to extend the profile of the 5,000-5,600 ft/sec or 9,400 to 10,700 ft/sec horizons to the southeast. To the southeast of Station 1254, a layer with a seismic velocity of 3,100 to 4,500 ft/sec overlies the 2,200 to 3,000 ft/sec and gradually increases in thickness; it is our interpretation that southeast of Station 1204, the 2,200 to 3,000 ft/sec material is pinched out. Between Station 1204 and 1254 the velocity horizons below the 3,100 to 4,500 ft/sec layer have been dashed because of the observed velocity inversion.

An elevation change of more than 40 feet was detected on the top of the 8,000 to 10,000 ft/sec layer between Stations 1272 and 1276.

3.2.8 Line 22

Line 22 is 15,750 feet long extending from Station 1116 southwesterly to Station 1431. With the exception of the area between Stations 1367 and 1421, the four velocity horizons described in the General Results and Observations section are present on Line 22. In the area between Station 1367 and 1421, the velocity of the 4,500 ft/sec layer increases to 5,700 to 8,500 ft/sec. The 8,000 to 9,500 ft/sec horizon could not be profiled due to the apparent presence of a low velocity inversion layer beneath the 5,700 to 8,500 ft/sec material. This is evidenced by step out in first arrivals as shown on some of the time distance plots in this area.

A localized zone of 7,500 ft/sec material was detected within the 4,500 to 5,700 ft/sec at shot points 1320 and 1326.

Between Stations 1199 and 1252, a layer with a seismic velocity of 3,200 to 4,100 ft/sec overlies the 2,500 ft/sec material. Because this velocity inversion affects depth computations to underlying horizons, the top of the 4,400 to 5,000 ft/sec and 8,000 to 9,700 ft/sec layers are shown as dashed horizons.

4.0 RECOMMENDATIONS

The Hanford Reservation is a particularly difficult area for seismic refraction. In order to map refracting horizons on the Hanford Reservation in the 200- to 800-foot depth range, it would be necessary to use explosives and drilled shot holes.

5.0 REFERENCES

Telford, W. M. et al, Applied Geophysics, Cambridge University Press, 1976, 860 p.

Digital Tape Standards, Society of Exploration Geophysicists, 1980, 65 p.

Grant, F. S., West, G. F., Interpretation Theory in Applied Geophysics, McGraw-Hill, New York, 1965, 575 p.

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TABLES

TABLE 1

LINE 15 STATIC TIMES TO/FROM DATUM AT ELEVATION 550 FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1121	42	1217	41	1307	37
1127	42	1220	41	1310	37
1130	42	1223	42	1313	38
1133	43	1226	41	1316	40
1136	43	1229	41	1319	40
1139	43	1232	40	1322	40
1142	43	1235	40	1325	40
1145	43	1238	40	1328	39
1148	42	1241	40	1331	38
1151	41	1244	41	1334	39
1154	43	1247	39	1337	39
1157	45	1250	39	1340	40
1160	39	1253	39	1343	39
1163	40	1256	40	1346	38
1166	38	1259	40	1349	37
1169	36	1262	39	1352	38
1172	34	1265	39	1355	38
1175	34	1268	39	1358	38
1178	33	1271	40	1361	38
1181	31	1274	40	1364	38
1184	35	1277	40	1367	38
1187	39	1280	39	1370	39
1190	43	1283	39	1373	39
1193	43	1286	40	1376	39
1196	42	1289	40	1379	40
1199	41	1292	40	1382	39
1202	43	1295	40	1385	41
1205	42	1298	39	1388	39
1208	42	1301	38	1391	39
1211	41	1304	37	1394	39
1214	41				

TABLE 1 (Continued)

LINE 15 STATIC TIMES TO/FROM DATUM AT ELEVATION 550 FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1397	39				
1400	39				
1403	38				
1406	37				
1409	38				
1412	39				
1415	39				
1418	41				
1421	42				
1424	41				
1427	39				
1430	39				
1433	40				
1436	40				
1439	42				
1442	43				
1445	41				
1448	41				
1451	42				
1454	43				
1457	43				
1460	45				
1463	45				
1466	44				
1469	44				

TABLE 2

LINE 16 STATIC TIMES TO/FROM DATUM AT ELEVATION 551 FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1101	39	1182	39	1260	31
1107	40	1185	39	1263	34
1110	40	1188	38	1266	33
1113	40	1191	36	1269	33
1116	40	1194	38	1272	34
1119	40	1197	37	1275	36
1122	41	1200	39	1278	37
1125	40	1203	38	1281	40
1128	39	1206	38	1284	39
1131	40	1209	38	1287	42
1134	40	1212	40	1290	41
1137	41	1215	40	1293	42
1140	42	1218	40	1296	40
1143	41	1221	41	1299	43
1146	40	1224	42	1302	44
1149	40	1227	44	1305	44
1152	39	1230	44	1308	46
1155	39	1233	45	1311	46
1158	42	1236	47	1314	55
1161	43	1239	46	1317	55
1164	42	1242	47	1320	55
1167	41	1245	48	1323	54
1170	40	1248	49	1326	58
1173	40	1251	50	1329	61
1176	40	1254	50	1332	62
1179	39	1257	49		

TABLE 3

LINE 17 STATIC TIMES TO/FROM DATUM AT ELEVATION 5' FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1101	52	1185	44	1266	49
1107	54	1188	44	1269	48
1110	49	1191	45	1272	48
1113	41	1194	45	1275	47
1116	45	1197	45	1278	46
1119	44	1200	45	1281	46
1122	44	1203	44	1284	48
1125	43	1206	43	1287	47
1128	42	1209	43	1290	47
1131	42	1212	43	1293	46
1134	42	1215	44	1296	45
1137	41	1218	43	1299	46
1140	41	1221	46	1302	46
1143	41	1224	46	1305	46
1146	42	1227	47	1308	48
1149	43	1230	45	1311	49
1152	41	1233	45	1314	48
1155	41	1236	45	1317	47
1158	41	1239	46	1320	48
1161	41	1242	45	1323	48
1164	41	1245	45	1326	47
1167	42	1248	45	1329	47
1170	41	1251	45	1332	45
1173	41	1254	45	1335	45
1176	44	1257	45	1338	45
1179	45	1260	47	1344	42
1182	45	1263	48		

TABLE 4

LINE 18 STATIC TIMES TO/FROM DATUM AT ELEVATION 550 FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1101	52	1182	41	1260	45
1107	50	1185	40	1263	45
1110	48	1188	40	1266	45
1113	47	1191	42	1269	44
1116	47	1194	41	1272	42
1119	49	1197	40	1275	43
1122	47	1200	38	1278	43
1125	46	1203	41	1281	43
1128	43	1206	41	1284	39
1131	42	1209	41	1287	39
1134	47	1212	40	1290	41
1137	46	1215	40	1293	43
1140	46	1218	41	1296	41
1143	45	1221	41	1299	41
1146	44	1224	42	1302	41
1149	46	1227	42	1305	42
1152	45	1230	43	1308	44
1155	45	1233	44	1311	44
1158	44	1236	41	1314	44
1161	42	1239	41	1317	43
1164	41	1242	43	1320	44
1167	40	1245	43	1323	45
1170	41	1248	43	1326	42
1173	40	1251	43		
1176	41	1254	43		
1179	41	1257	43		

TABLE 5

LINE 19 STATIC TIMES TO/FROM DATUM AT ELEVATION 550 FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1101	42	1182	43	1260	43
1107	41	1185	42	1263	43
1110	41	1188	42	1266	43
1113	41	1191	41		
1116	40	1194	42		
1119	43	1197	43		
1122	44	1200	44		
1125	42	1203	44		
1128	41	1206	43		
1131	41	1209	43		
1134	42	1212	44		
1137	42	1215	45		
1140	43	1218	42		
1143	42	1221	41		
1146	43	1224	43		
1149	42	1227	42		
1152	42	1230	42		
1155	42	1233	41		
1158	42	1236	37		
1161	43	1239	38		
1164	43	1242	39		
1167	44	1245	41		
1170	43	1248	41		
1173	40	1251	41		
1176	41	1254	44		
1179	42	1257	43		

TABLE 6

LINE 20 STATIC TIMES TO/FROM DATUM AT ELEVATION 550 FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1101	41	1191	41	1278	41
1107	42	1194	41	1281	41
1110	42	1197	40	1284	41
1113	41	1200	43	1287	41
1116	40	1203	40	1290	40
1119	42	1206	38	1293	38
1122	38	1209	41	1296	42
1125	40	1212	40	1299	42
1128	38	1215	43	1302	39
1131	38	1218	40	1305	41
1134	40	1221	4	1308	42
1137	42	1224	41	1311	43
1140	41	1227	42	1314	40
1143	38	1230	42	1317	44
1146	38	1233	39	1320	44
1149	40	1236	38	1323	44
1152	41	1239	42	1326	44
1155	42	1242	39	1329	45
1158	37	1245	43	1332	45
1161	40	1248	43	1335	46
1164	39	1251	43	1338	47
1167	40	1254	43	1341	47
1170	39	1257	43	1344	52
1173	41	1260	43	1347	51
1176	41	1263	44	1350	51
1179	41	1266	38	1353	53
1182	40	1269	38	1356	56
1185	41	1272	39		
1188	41	1275	40		

TABLE 7

LINE 21 STATIC TIMES TO/FROM DATUM AT ELEVATION 550 FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1146	44	1230	33	1314	43
1149	47	1233	34	1317	43
1152	45	1236	34	1320	42
1155	46	1239	35	1323	43
1158	46	1242	35	1326	42
1161	46	1245	35	1329	44
1164	46	1248	34	1332	43
1167	45	1251	35	1335	42
1170	38	1254	39	1338	39
1173	38	1257	48	1341	41
1176	38	1260	47	1344	39
1179	38	1263	43	1347	39
1182	35	1266	41	1350	39
1185	35	1269	45	1353	38
1188	35	1272	45	1356	38
1191	35	1275	45	1359	39
1194	35	1278	45	1362	39
1197	34	1281	44	1365	39
1200	34	1284	43	1368	38
1203	37	1287	43	1371	38
1206	32	1290	43	1374	37
1209	31	1293	44	1377	36
1212	30	1296	45	1380	36
1215	29	1299	47	1383	37
1218	29	1302	44	1386	38
1221	29	1305	43	1389	38
1224	29	1308	42		
1227	31	1311	42		

TABLE 8

LINE 22 STATIC TIMES TO/FROM DATUM AT ELEVATION 550 FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1116	63	1212	49	1302	40
1122	65	1215	47	1305	40
1128	71	1218	47	1308	39
1131	74	1221	45	1311	39
1134	76	1224	46	1314	39
1137	77	1227	47	1317	40
1140	82	1230	44	1320	43
1143	84	1233	42	1323	43
1146	84	1236	40	1326	43
1149	84	1239	40	1329	44
1152	84	1242	39	1332	43
1155	82	1245	39	1335	43
1158	79	1248	39	1338	42
1161	76	1251	38	1341	42
1164	74	1254	41	1344	42
1167	71	1257	40	1347	42
1170	67	1260	39	1350	43
1173	63	1263	39	1353	43
1176	61	1266	39	1356	43
1179	62	1269	41	1359	43
1182	63	1272	40	1362	42
1185	65	1275	40	1365	46
1188	63	1278	40	1368	45
1191	62	1281	41	1371	45
1194	62	1284	40	1374	44
1197	61	1287	39	1377	44
1200	59	1290	38	1380	43
1203	55	1293	40	1383	44
1206	54	1296	40	1386	45
1209	55	1299	39	1389	45

TABLE 8 (Continued)

LINE 22 STATIC TIMES TO/FROM DATUM AT ELEVATION 550 FEET

<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>	<u>STATION</u>	<u>STATIC CORRECTION (MSEC)</u>
1392	45				
1395	44				
1398	45				
1401	45				
1404	45				
1407	45				
1410	45				
1413	46				
1416	47				
1419	46				
1422	47				
1425	46				
1428	46				
1431	46				