

United States
NUCLEAR REGULATORY COMMISSION
Washington, D. C. 20555

Knapp
File

November 15, 1983

MEMORANDUM FOR: Robert E. Browning, Director
Division of Waste Management

FROM: F. Robert Cook
Senior on-Site Licensing Representative
Basalt Waste Isolation Project (BWIP)

SUBJECT: BWIP SITE REPORT FOR WEEK OF NOVEMBER 7, 1983

1. Because of budget cuts that DOE headquarters made for BWIP in FY84 a large portion of the geological scientific testing that BWIP had planned to accomplish in 1984 has been deferred. This changes the scope of testing (particularly hydrologic testing) agreed to by the NRC staff at a meeting with RHO and DOE in July 1983. These changes were briefly identified in a meeting of the Hydrology Working Group (PNL, RHO, DOE and USGS) on November 7, 1983. They were subsequently described to the NRC staff (R. Wright et al) on 11/10/83 by G. Hunt (RHO) via telephone. In summary testing which was retained in the FY84 activities is testing necessary to establish baseline hydrologic conditions.
2. RHO described rotary air-mist drilling operations at DC-20. They noted the large discharge of water (800 gpm) occurring at DC-20. RHO presented a view graph showing the record of the discharges and how these correlate to hydrologic head reductions seen at other wells as far as 10 Km away. The zone described was in the Priest Rapids Basalt. RHO (Baker) pointed out that previous estimates of hydraulic parameters of the zone from which water was being drawn were about correct based on the preliminary data coming from DC-20 and draw down at other affected wells. This point was also made to the DOE/Weston group reviewing the BWIP test program on 11/9/83.
3. The USGS presented a model for recharge which they believe should be included in the Working Group model development since conductivity and recharge rates are linearly related. PNL will consider this model in its Pasco Basin hydrologic model development.
4. USGS (Meyer) wanted to get copies of existing water level maps on the Hanford reservation to supplement their data base. RHO provided copies of maps which were completed and in Gephart's file. (In discussion with Verma I confirmed the staff (Verma) already had the maps discussed above.)

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5. The USGS discussed two other programs they are working on-the RASA program and the Sodium program. The RASA program looks at recharge to the region. The Sodium program is trying to determine the source of increasing sodium levels in waters being pumped for irrigation in the Yakima valley and in the Horse Heaven Hills. Meyer speculates that the increased sodium concentrations is caused by deeper ground waters being sucked to the surface as the upper zones are depleted by pumping. The deeper waters have higher sodium concentrations as a result of the higher age of the water. (Older water has had more time to leach sodium from the basaltic rocks.)
6. The final topic on the Working Group's agenda was to plan a presentation on 11/17/83 for the States and Indians on results of the Working Group's actions. Planning resulted in deciding on a one hour presentation with PNL, RHO and USGS each scheduled to talk 15 to 20 minutes. (Note the WRC staff's attendance would not appear profitable considering the scope of the information to be presented.)
7. USGS (Denver) began testing in RRL-6 and DC-4 to evaluate in-situ stress and local features in the rock around these bore holes. An ultrasonic probe is used to locate a smooth (unspalled and unpocked) surface in the bore holes for the purpose of doing a hydrofrac test to determine in-situ stress. USGS is doing the UT logging. They are also performing a "tubular" ultrasonic probe test, the purpose of which I do not know. Peter Stevens at USGS in Denver is cognizant of the testing. K. Kim is cognizant for RHO.
8. An earthquake of $M_c 3$ occurred 14.5 NNE of the RRL at 0.5 Km deep on 10/20/83. RHO indicated the earthquake was a Coyote Rapids Event.
9. A hydraulic conductivity test on "basalt mix" (powder) for waste packages has indicated that conductivities range from 3×10^{-7} to 3×10^{-9} cm/sec. The test was accomplished for 70 days at 90°C and 1600 psi. The change was attributed to the formation of nontronite at the downstream end of the sample. The nontronite cemented the sample and shut flow down. (Note I am not sure whether the "mix" contained bentonite clay or not. This should be pursued with RHO (Smith) if there is interest. Cementation will be important if it occurs since cracking of cemented packing may also occur and could result in a much increased conductivity of the packing in the long run.
10. Large amounts of CH_4 have been observed in various hydrologic wells drilled by RHO for the BWIP project in the past. I have given specific information on this item to the staff separately.
11. New geologic structure maps were recently completed by RHO. They cover the Grand Ronde--Rocky Coulee, Cohasset, McCoy Canyon and Umtanum flows.
 1. See attached charts for hydrologic data collected from various documents.

F. Robert Cook
Sr. On-Site Licensing Rep., BWIP

attachment: as
cf: HJMiller
JTGreeves
JOBunting
MRKnapp ✓
FRCook

HYDROLOGIC DATA

DATE	WELL	ZONE	TRANSMISSIVITY	TYPE OF TEST	OTHER MEASUREMENT	REFERENCE
4/15/83	RRL-2	McCoy Canyon flow top 3466 to 3521 ft.	10^2 to 10^1 ft ² /day	Construction dis- charge with lift pumping		align line to Cochran 4/15/83
9/10/82	RRL-2	Montanum Interior 3762 - 3805 ft	10^6 to 10^5 ft ² /day			↓ 9/10/82
9/02/82	RRL-2	Mid Central Bluffs Cohasset	10^6 to 10^5 ft ² /day	?	Conductivity 10^8 to 10^7 ft/day	↓ 9/02/82
7/23/82	RRL-2				CHA discharge 11 ft ³ /hr at water discharge of 1.4 gal/min	↓ 7/23/82
8/26/82	RRL-2	Cohasset Vascular zone 3057 to 3175 ft	10^4 to 10^5 ft ² /day	?		↓ 8/26/82
10/07/82	RRL-4	Montanum flow top 3723 to 3791			67 ft above	↓ 10/07/82
5/06/83	DC-4	low interior above Cohasset flow 2894 to 2942 ft	10^8 to 10^6 ft ² /day	Over pressure pulse	DC	align to Cochran 5/06/83
10/14/83	DC-4/5	mountain		Vertical per- meability testing.		10/14/83 CSD-BWI-TI-1
10/21/83	DC-5	low interior Cohasset 3163 to 3204 ft	10^6 to 10^5 ft ² /day	Over pressure pulsed test and construction head injection		10/21/83 same. Act 1 Cochran

HYDROLOGIC DATA

DATE	WELL	ZONE	TRANSMISSIVITY	TYPE OF TEST	OTHER MEASUREMENT	REFERENCE
10/07/83	DC-5	Cohasset Interior		Open measure	3163 to 3203 ft	10/07/83 Ack to Cokeram
11/07/82	DC-5	Cohasset flow top			Produced 0.3 gal/minute	Deju to Cokeram 11/04/82
1/21/83	RRL-6	Montanum interior 3827 to 3938 ft	10^4 to 10^6 ft ² /day	?		Deju to Cokeram 1/21/83
12/02/82	RRL-6	Cohasset flow bottom	10^3 to 10^2 ft ² /day	slug test		Deju to Cokeram 12/02/82
11/04/82	RRL-6	Cohasset interior 3129 to 3332 ft	10^7 to 10^9 ft ² /day	?		Deju to Cokeram 11/04/82
10/29/82	RRL-6	Sentinel Bluffs through tunnel and terin vascular zone 3129 to 3332 ft	10^6 ft ² /day			Deju to Cokeram 10/29/82
10/22/82	RRL-6	Sentinel Bluffs through tunnel near flow top	10^3 to 10^4 ft ² /day			10/22/82
9/16/82	RRL-6	Montanum flow			flow thickness 230 ft; flow top 93.5 interior 137.5	9/16/83
4/15/83	RRL-14	Montanum interior 3819 to 3907 ft	10^4 to 10^5 ft ² /day	Overpress pulse test		Deju Deju to Cokeram 4/15/83

HYDROLOGIC DATA

DATE	WELL	ZONE	TRANSMISSIVITY	TYPE OF TEST	OTHER MEASUREMENT	REFERENCE
12/02/82	RRL-14	Cohasset flow bottom	10' to 10 ⁰ ft ² g/day	?		Deju to Cochran 12/02/82
10/15/82	RRL-14	Montanum 3723 to 3920 ft			flow interior length 5ft	10/15/82
4/15/83	DC-16A	Cohasset Vascular zone 3088 to 3256 ft	10' to 10 ⁰ ft ² g/day	?	Head 399 ft	Deju to Cochran 4/15/83
4/15/83	DC 16C	Cohasset Vascular zone 3088 to 3256 ft	10 ² to 10 ¹ ft ² g/day	?		Deju to Cochran 4/15/83
4/01/83	RRL-2	McCoy Canyon Interior 3568 to 3593 ft	10 ⁵ to 10 ⁷ ft ² g/day	Over pressure pulse and Construction head injection		Deju to Cochran 4/01/83
4/15/83	McCree Well	Grand Ronde flow top 1846 to 1942 ft	10' to 10' ft ² g/day	?		Deju to Cochran 4/15/83
3/25/83	McCree	thantage interbed	10' ft ² g/day	Air lift pumping test	300ft head below Whapug head in McCree	Deju to Cochran 3/25/83
8/06/82	?	Montanum flow top 3725 to 3781 ft	10' to 1 ft ² g/day	?	3 gpm flow production	8/06/82
8/06/82	?	Montanum flow top 3653 to 3781 ft	10 ² to 10 ³ ft ² g/day		9.1 gpm production	8/06/82

**BASALT WASTE ISOLATION PROJECT
NOVEMBER 1983**

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F. A. SPANE (FRANK)	STAFF HYDROLOGIST/MO-029	3-4225	E65700

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I. L. COLLETT (LEE)	SR. DRILLING ENG./MO-029	3-4341	E66624
L. D. DIEDIKER (LYLE)	SCIENTIST/MO-029	3-4719	E64971
Z. G. JACKSON (ZELMA)	SCIENTIST/MO-029	3-4719	E69127
J. M. JIMENEZ (JOE)	SCIENTIST/MO-029	3-4522	E67199
G. W. MCLELLAN (GREG)	DRILLING SPECIALIST/MO-029	3-4542	E6A023
G. PARKS (GENE)	PRIDE/MO-029	3-4421	
J. K. PATTERSON (JIM)	SCIENTIST/MO-029	3-4719	E67324
D. E. SKOGLIE (DAVE)	DRILLING SPECIALIST/MO-029	3-4342	N6A417
T. M. WINTCZAK (TOM)	SENIOR GEOLOGIST/MO-029	3-4055	E66368
T. J. WOOD (TED)	SENIOR DRILLING ENG./MO-029	3-4719	E61342

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W. H. CHAPMAN-RIGGSBEE	SR. SCIENTIST/MO-410	3-4372	E64579
C. S. CLINE (CHUCK)	PNL HYDROLOGIST/MO-410	3-1969	
C. A. HUCKLEBERRY (CAROL)	TECHNICAN/MO-029	3-4622	N65835
R. L. JACKSON (RON)	SR. HYDROLOGIST/MO-410	3-4545	E67021
B. A. LEVENTHAL (BRUCE)	HYDROLOGIST/MO-410	3-4371	E67904
G. S. MACK (GREG)	HYDROLOGIST/MO-410	3-4371	E78356
M. D. MCELROY (MATT)	TECHNICAN/MO-029	3-4622	N65287
R. B. MERCER (RICH)	SCIENTIST/MO-029	3-4151	E67219
W. W. PIDCOE (BILL)	SENIOR SCIENTIST/MO-410	3-4226	E66687
G. L. SETBACKEN (GARY)	TECHNICIAN/MO-029	3-4622	N66950
P. D. THORNE (PAUL)	PNL HYDROLOGIST/MO-410	3-4447	
S. E. WILCOX (SCOTT)	TECHNICIAN/MO-029	3-4718	N64200

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T. O. EARLY (TOM)	STAFF SCIENTIST/PBB	6-2721	E69555
R. E. GEPHART (ROY)	STAFF HYDROLOGIST/PBB	6-7787	E63521
D. L. GRAHAM (DAVE)	ADVANCED HYDROLOGIST/PBB	6-6258	E67610
L. S. LEONHART (LEO)	STAFF HYDROLOGIST/PBB	6-2655	E66100
J. T. LILLIE (JOHN)	ADVANCED GEOLOGIST/PBB	6-5450	E63980
A. H. LU (ALLEN)	STAFF HYDROLOGIST/PBB	6-8218	E66514
R. D. MUDD (ROGER)	MODELING TECH./PBB	6-4516	N67789
R. M. SMITH (RON)	STAFF HYDROLOGIST/PBB	6-6881	E65466
D. L. STARR (DONNA)	TECHNICIAN/PBB	6-8596	N66887

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G. S. BARNEY (SCOTT)	PRIN. SCIEN./MO-407	3-2634/3-4112	E62058
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K. L. TOMAC (KAREA)	CLERK/2101-M	3-1037	N6A669

GEOCHEMICAL TESTING UNIT

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T. E. JONES (TOM)	TEAM LEADER/2101-M	3-2267	E67398
M. O. BAECHLER (MARVINE)	ENG. TECHNICIAN/2101-M	3-4100	N64399
J. R. PAYNE (JACK)	SR. ENG. TECHNICIAN/2101-M	3-4100	N62222
J. F. RELYEA (JOHN)	SR. CHEMIST/2101-M	3-1037	E6A430

HYDROTHERMAL TESTING TEAM

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C. W. HOBBICK (CHUCK)	SR. CHEM./2101-M/222-S	3-4320/3-1415	E61331
K. B. KASPER (BOB)	SR. SCIENTIST/2101-M	3-4320	E65593
M. M. SARTAIN (MARY)	ENG. TECH./222-S/2101-M	3-1415	N60379
D. R. SCHATZ (DARLENE)	SR. ENG. TECH/222-S/2101-M	3-4320/ 3-1415	N63567

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R. G. JOHNSTON (RICK)	SR. SCIENTIST/2101-M	3-4001	E65884
S. B. KUNKLER (SADIE)	SR. ENG. TECH./2101-M	3-3267	N60368
S. K. SHOWALTER (SIDNEY)	CLERK	3-3267	N67221
J. R. SMITH (JOHN)	ENG. TECHNICIAN/2101-M	3-3267	N65286
M. B. STROPE (BRUCE)	SR. SCIENTIST/2101-M	3-2660	E67740

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BACKFILL TESTING TEAM

R. A. CARLSON (RICK)	ADVANCED ENGINEER/2101-M	3-3722	E67438
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T. F. JOHNSON (TIM)	ENGINEERING TECH./2101-M	3-1234	E63741

BOREHOLE SEALING TESTING TEAM

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P. A. CRAIG (PENNY)	GEOLOGIST (TEMP.)/2101-M	3-2639	E69097
L. J. GIBSON (LYNN)	ENGINEERING TECH./2101-M	3-1234	N69518
A. L. SCHATZ (AARON)	GEOLOGICAL TECH.(TEMP)2101-M	3-3347	N69245

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D. R. DREWES (DENNIS)	SR. ENGINEER/MO-407	3-3646	E69578
C. F. MCLANE (CHARLIE)	SR. SCIENTIST/MO-407	3-4013	E6A689
J. MYERS (JON)	SR. GEOCHEMIST/MO-407	3-4112	E69564
M. I. WOOD (MARC)	SR. SCIENTIST/MO-407	3-4013	E67066

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M. K. ALTENHOFEN (MARTY)	ADV. ENGINEER/MO-407	3-4113	E67444
R. P. ANANTATMULA (MO)	STAFF SCIENTIST/2101-M	3-7853	E69800
W. J. ANDERSON (BILL)	STAFF ENGINEER/MO-407	3-4012	E65651
L. G. CLAYTON (LEROY)	STAFF ENGINEER/MO-407	3-1756	E67994
R. L. FISH (BOB)	STAFF ENGINEER/MO-407	3-3817	E69821
E. H. RANDKLEV (ED)	STAFF ENGINEER/MO-407	3-2853	E69540

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A. M. DOMAN (AVA)	SECRETARY/1135 JAD	6-7510	N69092
B. J. MUDD (BRENDA)	ANALYST/1135 JAD	6-7508	E67036

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D. A. KENWORTHY (DOLORES)	CLERK/1135 JAD	6-7347	N64376
R. C. ARNETT (RON)	STAFF HYD/1135 JAD	6-7716	E64023
M. S. BENSKY (MARTY)	STAFF ENG/1135 JAD	6-7005	E66411
P. M. CLIFTON (PETER)	HYDROLOGIST/1135 JAD	6-7354	E69293
J. D. DAVIS (JERRY)	SR. ENG/1135 JAD	6-7404	E66337
K. A. JONES (KEITH)	ADV. ENG/1135 JAD	6-7209	E66464
D. H. SANDOZ (DAVE)	ENGINEER/1135 JAD	6-7354	E67445
J. C. SONNICHSEN (JACK)	STAFF ENG/1135 JAD	6-7209	E69755

ENGINEERING MANAGEMENT SYSTEMS (10220)

R. T. WILDE (DICK)	ACTING MANAGER/1130 JAD	6-7207	E64281
L. A. JAMESON (LINDA)	CLERK/1135 JAD	6-7393	N65655
J. M. LUDWICK (JO)	CLERK/1135 JAD	6-7439	N66487
B. A. CALICOAT (BEVERLY)	ILLUSTRATOR/1135 JAD	6-7104	N69623
W. H. CROWLEY (BILL)	ILLUSTRATOR-SCIEN/PBB	6-2322	N66176
L. L. DANIEL (LINDA)	ILLUSTRATOR/PBB	6-9638	N65987
J. L. MAFFEO (JANA)	CORRESP. CLERK/1135 JAD	6-7439	N67463
D. B. MILL (DEAN)	TECH. ILLUSTRATOR/MO-407	3-4655	N65292

TECHNICAL COMPUTER SYSTEMS UNIT (65360)

C. K. ROSNICK (CHUCK)	ACTING MANAGER/GM	3-2893	E62264
U. R. ACHENBACH (UEL)	SECRETARY/GM	3-2823	N63025
E. E. BYRON (ED)	ADVANCED ANALYST/GM	3-3639	E67908
A. J. CALAPRISTI (GUS)	ADVANCED ANALYST/PBB	6-7370	E67557
C. G. CHAPMAN (GREG)	TEAM LEADER/GM	3-3930	E66485
H. L. HOBBS (HOLLY)	TECHNICIAN/GM	3-2885	E67926
J. J. LANE (JAMES)	ANALYST/GM	3-1373	E67401
B. L. NELSON (BRYAN)	PRIME SYSTEMS ADMIN/PBB	6-8213	E69587
W. R. OWEN (BILL)	ANALYST/GM	3-2897	E66625
J. R. PETRARCA (JAMES)	SENIOR ANALYST/GM	3-2395	E69041
J. W. SHRADER (JAMES)	DG SYSTEMS ANALYST/GM	3-2885	E67947
J. L. STARR (JERRY)	SENIOR ANALYST/PBB	6-2123	E64494

CONFIGURATION MANAGEMENT (65520)

P. J. REDER (PETE)	SR. SPEC./1135 JAD	6-7393	E65527
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DATA MANAGEMENT (65510)

J. E. FERGUSON (EARL)	MANAGER/1135 JAD	6-7133	E61359
VACANT	SECRETARY/1135 JAD	6-7273	
A. E. CLARK (ANNE)	TECHNICIAN/2101-M	3-2136	N63907
M. D. CONNOR (MARK)	TEAM LEADER/1135 JAD	6-7273	E65760
K. B. DAVIS (KATHY)	TEAM LEADER/1135 JAD	6-9092	E64188
A. H. FRANCE (ALMA)	COORDINATOR/1135 JAD	6-7390	N64131
P. J. HAMACHER (PAUL)	TECHNICIAN/2101-M	3-2136	
L. R. HEMPHILL (LEORA)	COORDINATOR/1135 JAD	6-7390	N62862
K. P. KELLY (KEVIN)	TECHNICIAN (TEMP)/2101-M	3-2136	
B. J. KING (BETTY)	LIBRARIAN/PBB LIBRARY	6-6898	N69584
S. M. RICHEY (SANDY)	COORDINATOR (TEMP)/1135 JAD	6-9095	N69584
B. S. SPROUSE (BRYAN)	COORDINATOR/1135 JAD	6-9979	N69586
D. L. STEGER (DANA)	COORDINATOR/1135 JAD	6-9095	N69593
R. N. TARR (ROSE)	COORDINATOR/1135 JAD	6-7274	N66902
W. F. TODISH (WILMA)	COORDINATOR/1135 JAD	6-7274	N66465
E. D. WEBER (EVELYN)	COORDINATOR/1135 JAD	6-9092	N62855

PUBLICATIONS SERVICES (14300)

VACANT

D. B. ATTERBERRY (DOBIE)	SR. TECH. EDITOR/PBB		
K. C. FREEMAN (KATHY)	LEAD COMPOSITOR/PBB	6-1043	N63485
L. J. OLSON (LINDA)	COMPOSITOR/PBB	6-1350	N6A311
J. W. RUST (JOYCE)	COMPOSITOR/PBB	6-1350	N69453
D. R. SIMPSON (DARTHA)	COMPOSITOR/PBB	6-1350	N66942
N. A. TRENTMAN (NORA)	TECH. EDITOR/PBB	6-7919	E6A654
	TECH. EDITOR/PBB	6-1324	E69894

PROJECT INTEGRATION GROUP (10230)

H. BABAD (HARRY)	ACTING MANAGER/PBB	6-7984	E63680
D. G. BLACK (DALE)	ADV. ENGINEER/1135 JAD	6-7715	E66533
D. W. EVANS (DAVE)	STAFF ENGINEER/1135 JAD	6-7039	E66533
G. C. EVANS (GEORGE)	INTEG.-SITE/PBB	6-8807	E65405
W. H. HENEVELD (BILL)	PRINCIPAL ENGINEER/1135 JAD	6-1237	E66099
K. H. HENRY (KEN)	STAFF ENGINEER/1135 JAD	6-7039	E61949
R. E. JOHNSON (RALPH)	STAFF ENG./1135 JAD	6-7039	E66295
M. J. LAUTERBACH (MERL)	SCIENTIST/1135 JAD	6-7612	E66967
J. F. MARRON (JOHN)	INTEG.-REPOSITORY/PBB	6-8979	E65300
J. G. REISER (JOE)	STAFF ENGINEER/1135 JAD	6-7943	E69262
D. T. ROMINE (TED)	STAFF ENGINEER/1135 JAD	6-7715	E69633
T. W. WOODS (TOM)	STAFF ENGINEER/1135 JAD	6-7612	E69423

ENGINEERING DEVELOPMENT DEPARTMENT (10400)

D. A. TURNER (DAVE)	MANAGER/GM/PBB	3-2889/6-8731	E63115
J. C. STEWARD (JOAN)	SECRETARY/GM	3-1864	N6A408
A. E. COTTAM (BILL)	PRINCIPAL ENGINEER/PBB	6-8216	E65706
K. KIM (KUNSOO)	PRINCIPAL ENGINEER/GM	3-4181/6-9093	E67295
TELECOPIER	GM	3-1399	
	VERIFICATION	3-1864	

GEOMECHANICS MODELING AND ANALYSIS GROUP (10410)

A. C. JONES (AL)	ACTING MANAGER/GM/PBB	3-2886/6-1621	E65362
R. M. MOORE (ROSE)	CLERK/GM	3-2880	N67209
R. R. AMES (RANDALL)	ENGINEER/GM	3-3829	E66750
J. T. BAXTER (JOHN)	STAFF ENGINEER/GM	3-9203	E67654
D. R. BONIN (DANIEL)	ENGINEER/GM	3-3825	E69089
W. J. KARWOSKI (BILL)	STAFF ENGINEER/GM	3-3419	E6A389
D. L. SOUTH (DAVE)	SENIOR ENGINEER/GM	3-9206	E6A548
W. R. SUBLETTE (BILL)	STAFF ENGINEER/GM	3-3548	E69802

TEST GROUP (10420)

N. A. STEGER (NORM)	MANAGER/GM	3-2889	E65304
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IN SITU TEST TEAM

R. J. BIELEFELD (DICK)	TEAM LEADER/GM	3-4185	E66973
M. L. CRAMER (MICHAEL)	ADV. ENGINEER/GM	3-9205/3-2918	E69141
J. P. CUNNINGHAM (JOHN)	ENGINEER/GM	3-9205	E69060
S. A. DISCHLER (STEVE)	ENGINEER/GM	3-1877	E6A508
E. C. GREGORY (CHRISTINE)	SENIOR ENGINEER/GM	3-2888	E67374

D. C. LANIGAN (DAVID)	ENGINEER/GM	3-2886	E67339
W. M. MCCABE (MARTY)	STAFF ENGINEER/GM	3-4188	E69328
T. A. RUNDLE (TOM)	ENGINEER/GM	3-4182	E69195
W. A. SKELLY (BILL)	SENIOR ENGINEER/GM	3-1749	E6A390

LARGE-SCALE TEST TEAM

A. D. KRUG (ALAN)	TEAM LEADER/PBB	6-9093	E65706
J. M. MCHENRY (JIM)	ENGINEER/PBBB	6-9093	E69221
J. G. PATRICIO (JAN)	SENIOR ENGINEER/PBB	6-9093	E66425

ENGINEERING DESIGN DEPARTMENT (10800)

J. L. ASH (JIM)	MANAGER/PBB	6-6396	E6A024
H. L. SPEER (HELEN)	SECRETARY/PBB	6-2866	N66666
D. A. HOOVER (DALLAS)	STAFF ENGINEER/PBB	6-1447	E64958
K. M. LARUE (KARL)	A-E LIAISON/PBB	6-8949	E66997

NWRB ENGINEERING DESIGN GROUP (10810)

Vacant	MANAGER/PBB		
H. L. SPEER (HELEN)	SECRETARY/PBB	6-2866	N66666
D. L. BECKER (DAVE)	STAFF ENGINEER/PBB	6-2621	E66706
M. T. BLACK (MICHAEL)	PROJECT ENGINEER/PBB	6-8774	E65988
R. E. BROOKS (BOB)	STAFF ENGINEER/PBB	6-7283	E69482
C. T. WEBSTER (JAKE)	PRINCIPAL ENGINEER/PBB	6-1919	E65412

FACILITY AND TEST DESIGN GROUP (10820)

R. M. YBARRA (ROQUE)	MANAGER/MO-410	3-1528	E65910
K. A. DIAMANTI (KATHY)	SECRETARY/MO-410	3-1323	N6A729
R. W. CARLSON (DICK)	STAFF ENGINEER/MO-410	3-1806	E65202
J. E. CHRISTENSON (JOHN)	ADV. ENGINEER/PBB	6-8949	E69123
D. F. HANLEN (DON)	STAFF ENGINEER/MO-410	3-1672	E66144
R. B. LAWS (RICHARD)	STAFF ENGINEER/MO-410	3-1807	E60936
S. M. MCKINNEY (STEVE)	STAFF ENGINEER/MO-410	3-1664	E6A345
B. K. SCHROEDER (BRYAN)	STAFF ENGINEER/MO-410	3-1664	E64859

EXPLORATORY SHAFT PROGRAM (10600)

H. B. DIETZ (BERNIE)	MANAGER/MO-408	3-3992	E65424
C. C. BOHRN (CHRIS)	SECRETARY/MO-408	3-3505	N65749

REPOSITORY PROGRAM

VACANT	MANAGER		
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NSTF SUPPORT FACILITY (10500)

G. S. DINTSCH (GARY)	PROJECT MANAGER/GM	3-4022	E69312
R. MCGEE (ROSEMARY)	CLERK/GM	3-3375/3-3164	N6A231
D. H. UNDERWOOD (DAVE)	STAFF ENGINEER/GM	3-3551	E60801

NSTF VISITORS CENTER		3-3443	
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NSTF OPERATIONS

J. M. THURMAN (JACK)	TEAM LEADER/GM	3-3382	E63743
R. MCGEE (ROSEMARY)	CLERK/GM	3-3164	N6A231
T. F. JOHNSON (TIM)	TECHNICIAN/GM	3-3382	N63741
B. E. SALAZAR (BEN)	TECHNICIAN/GM	3-3380	N63647
T. W. SPICER (TOM)	TECHNICIAN/GM	3-2891	N67599

NSTF FACILITIES MAINTENANCE

D. G. HERT (DENNY)	MANAGER/GM	3-3381	U65949
J. A. ALDRIDGE (JOE)	DRIVER/SERVICEMAN/GM	3-3381	U67930
S. E. BEVANS (SID)	INSTRUMENT TECHNICIAN/GM	3-2025	U66909
G. G. BEDDO (GLEN)	PLANNER/SCHEDULER/GM	3-4239	E60603
J. R. HARRIS (JIM)	ELECTRICIAN/GM	3-4867	U69513
T. R. HYDE (TOM)	MILLWRIGHT/GM	3-4867	U64760
D. W. KEGLEY (DAVE)	ELECTRICIAN/GM	3-4867	U6A419
D. M. KORTE (DAN)	PIPE FITTER/GM	3-4867	U6A351
W. T. NEWMAN (BILL)	INSTRUMENT SPEC/GM/2101-M	3-2460	U63446
G. A. TARANTO (GREG)	INSTRUMENT TECHNICIAN/GM	3-4867	U69659
R. E. TROXEL (ROLLEN)	INSTRUMENT TECHNICIAN/GM	3-4867	U69514
D. D. WHEELWRIGHT (DEXTER)	INSTRUMENT SPECIALIST/GM	3-2882	U62343

FACILITIES CONSTRUCTION DEPARTMENT (10900)

H. W. BRANDT (HANK)	MANAGER/MO-410	3-1430	E69451
K. A. DIAMANTI (KATHY)	SECRETARY/MO-410	3-1323	N6A729

SUPPORT SERVICES

BWIP PLANNING, SCHEDULING AND CONTROL DEPARTMENT (16700)

J. R. KIRKENDALL (JANE)	MANAGER/PBB	6-6903	E65248
S. J. MILLER (SANDI)	SECRETARY/PBB	6-7212	N69447

RESEARCH AND LICENSING PLANNING AND CONTROL (B16710)

D. M. EDER (DAVE)	MANAGER/PBB	6-8510	E66219
R. S. CLAESON (SKIP)	SCHEDULER/PBB	6-9274	E6A652
H. R. GOUGE (ROD)	PROG.REP./PBB/2101-M	6-7958/3-3841	E6A640
L. C. MERCADO (CHRIS)	SCHED ANLST/PBB/MO-407	6-7370/3-4654	N69179
D. A. MOORE (DEBBIE)	PROGRAM BUSINESS REP.	6-1685	E65707
S. L. PAYTON (STEVE)	SCHEDULER/2101-M	3-3841	E67689
C. S. RANSOM (CAROL)	SR. PROGRAM ANALYST/PBB	6-1164	E6A643
D. E. RIENDEAU (DEE)	SCHEDULER/PBB/2101-M	6-8556	E67882
N. D. STERNBERG (NEAL)	PROGRAM BUSINESS REP./PBB	6-1721	E66172

REPOSITORY ENGINEERING PLANNING AND CONTROL (10720)

R. B. GERTH (RICH)	MANAGER/PBB	6-1720	E64875
R. L. BARR (BECKY)	PROGRAM ANALYST/PBB	6-2622	E69216
D. L. BORDERS (DAVE)	BUDGET ANALYST/PBB	6-8948	E59342
W. M. BRANTLEY (BILL)	SCHEDULER/PBB	6-1862	E68383
J. K. FISH (JIM)	SCHEDULER/PBB/MO-408	6-7370/3-3642	E64878
K. D. MARSHALL (KEN)	PROGRAM BUSINESS REP./PBB	6-9430	E66885
R. L. NEAL (ROBIN)	PROGRAM BUSINESS REP./PBB	6-6177	E6A653
J. L. PLAISTED (JIM)	SCHEDULER/PBB	6-6840	E69351
C. E. THOMPSON (CLIFF)	PBR/MO-408	3-3744	E66369

CONTROL AND ADMINISTRATION

C. E. SULLENGER (CHARLIE)	ACTING MANAGER/PBB	6-7958	E65799
J. M. ALLEN (JOAN)	TECHNICAL ILLUSTRATOR/PBB	6-2311	N67205
P. A. ANDERSON (PATTY)	SR. TECH. ILLUSTRATOR/PBB	6-2311	N68710
V. L. ARMSTRONG (VICKY)	CLERK TYPIST/PBB	6-1684	N6A582
N. L. ESTABROOK (NORMA)	BUDGET ANALYST/PBB	6-1057	E65446
E. M. GAY (EVA)	BUDGET COST ANALYST/PBB	6-7907	E6A639
J. B. PACKARD (JUDY)	PROGRAM ANALYST/PBB	6-8930	E6A678
M. M. ROBERTS (MARY)	PROGRAM ANALYST/PBB	6-7949	E64466

QUALITY ASSURANCE (12010)

M. F. NICOL (MIKE)	MANAGER/PBB	6-8358	E66075
G. ORTON (GAYLE)	CLERK/PBB	6-8816	N65883
W. F. DAVIS (BILL)	SR. ENGINEER/PBB	6-8720	E65980
J. I. FEASTER (JEAN)	ANALYST/PBB	6-8817	E66011
M. J. GOSS (MYRNA)	SPEC. POL. & PROC./PBB	6-8455	E66092
W. A. GRESS (WILL)	SR. ENGINEER/GM/PBB	3-9202/6-8817	E64322
W. A. HERBER (WILLIE)	SR. ENGINEER/PBB	6-9278	E67951
C. D. MORISSETTE (DENNIS)	SR. ENGINEER/PBB	6-8720	E65866
L. T. MURPHY (LARRY)	SR. ENGINEER/PBB	6-8181	E65859
D. G. PRICE (DOUG)	SR. ENGINEER/PBB	6-8655	E69420
B. D. SLONECKER (BRUCE)	ENGINEER/PBB	6-8655	E69433

COMMUNICATIONS AND PUBLIC AFFAIRS (20300)

B. C. K. MORAVEK (BARRY)	PROGRAM REP/PBB	6-7551	E66515
L. E. ENGELSMAN (LOIS)	CLERK/PBB	6-2014	N6A693
M. C. BROWN (MADELEINE)	SPECIALIST/PBB	6-9094	E67714
H. J. WASHKOSKA (HOLLY)	SPECIALIST/PBB	6-8456	E6A444

MATERIALS (57500)

G. W. RIFE (GEORGE)	MAT.REP/1166 BLDG/1100 AREA	6-1554	
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HEALTH, SAFETY AND ENVIRONMENT (72000)

J. V. MOHATT (JIM)	BWIP PROGRAM REP/MO-410	3-1456	E66558
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DUPLICATING

R. T. LORENZEN (RICHARD)	DUPLICATING/PBB	6-1830	N66350
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