

# McCulloch Geothermal Corporation



February 7, 1979

RECEIVED  
FEB 13 1979  
WATER RIGHTS

Mr. Stanley Green  
Directing Engineer  
Division of Water Rights  
200 Empire Building  
231 East 400 South  
Salt Lake City, Utah 84111

SG.

Dear Mr. Green:

McCulloch Geothermal Corporation as operator for the group consisting of McCulloch Geothermal Corporation, Geo-Mac, Inc., and Roosevelt Hot Springs Corporation hereby requests permission to proceed with test drilling of a geothermal well, designated as Acord #1-26, at the following location:

Center of the SW/4, Section 26, T26S, R10W, SLBM, Beaver County, Utah.

A complete drilling plan information check sheet is attached.

McCulloch Geothermal Corporation has a bond, No. M 96 91 53 (xerox copy of which is enclosed) on file with the State of Utah, Division of Water Rights, covering the drilling of geothermal wells.

We the undersigned recognize that certain restrictions and regulations will be placed on us by the Utah State Engineer and agree to abide by those rules and regulations.

Sincerely,

MCCULLOCH GEOTHERMAL CORPORATION

*A. Jordan McNay*  
A. Jordan McNay  
Manager of Drilling

AJMcN/als

Enc.

## DRILLING PLAN FOR GEOTHERMAL TEST HOLE

Permission is hereby requested to commence drilling a Geothermal Test Hole in the center of the SW/4, Sec. 26, T 26 S, R 10 W, Salt Lake B and M, Beaver County, Utah. The well will be named Acord #1-26. McCulloch Geothermal Corporation will be the operator for the group (McCulloch Geothermal Corporation, Geo-Mac, Inc. and Roosevelt Hot Springs Corporation).

Elevation of the well from the Cedar City Quadrangle is estimated to be 5100'. All well depth measurements are taken from the top of the rotary Kelly bushing.

### Details of Work

The following equipment belongs to Republic Drilling Company, which is under contract to McCulloch Geothermal Corporation to drill the well:

1. Emsco J-750 drilling rig.
2. Two duplex mud pumps, one tail driven and one with independent power.
3. 133' mast with 550,000 lbs. capacity.
4. 13' substructure with 550,000 lbs. capacity.
5. Depth rating of 10,000', using 4-1/2" drill pipe.
6. 450 bbl. steel mud circulating tank.
7. 200 bbl. water storage.

The estimated depths to the top of important markers are:

0' - 4500'±	Intermountain Lake Beds - shale/clays, volcanics debris
4500'± - 6500'±	Limestone (Cambrian)
6500'± - 8500'±	Prospect Mountain Quartzites (Cambrian)
8500'±	Basement (Pre-Cambrian) Granites and Gneisses

The geothermal reservoir is anticipated to be in the Prospect Mountain Quartzite or Basement complex.

Proposed Casing and Drilling Program

1. Set 20" conductor pipe to consolidated ground. Conductor to be cemented in hole with "ready mix" concrete.
2. Drill 17-1/2" hole to an estimated depth of 1000'±. Mud logging and continuous temperature recording equipment will be installed at 500'±. Circulating fluids will be fresh water and bentonite with no water loss control.
3. Run 1000'± of 13-3/8" 54.5# K-55 buttress casing with regular guide shoe on bottom and float collar on top of first joint; threadlock guide shoe, float collar and all threads on bottom 3 joints. Place centralizers 5' above shoe and 5' above float collar and on every third joint to surface. Cement to surface using 40% excess, using 1:1 Class "G" cement and Perlite, plus 40% Silica Flour, 3% Gel and 0.5% CFR-2.  
If cement does not circulate to surface, run 1" pipe down the annulus and cement to surface using same cement plus 3% CaCl<sub>2</sub>.
4. Cut off 13-3/8" casing and install casing head and blow-out prevention equipment as shown in Exhibit A.  
Test BOPE and casing to 1000 psi for 15 minutes. Test results will be shown on daily drilling report.
5. Drill 12-1/4" and 8-3/4" hole to 8500'±. Deviation surveys to be taken every 500' and every bit change. Run desired electric logs and temperature surveys. If necessary, a 9-5/8" casing string will be run and cemented.
6. If indicated by logs and surveys, remove BOPE and install production wellhead and valves and rig up for production test.

### Details of Mud Program

#### Surface Hole - Surface to 1000'+

Gel and Lime Mud as required to drill hole.

#### Below Surface Casing - 1000'+ to Total Depth

Gel, Geo-Gel and Lignite as required to drill well.

#### Sampling

Ditch samples to be taken every 50' from surface to top of Limestone sediments and every 10' thereafter. Hot water samples to be taken twice daily during production test.

#### BOP Equipment & Tests

BOP equipment to conform to specifications as set forth in attached exhibits.

The following BOP equipment to be available:

Inside blow-out preventer; Kelly cock, top and bottom; and drill string safety valves.

The mud system shall be so equipped that an accurate measurement of mud volumes can be obtained during trips.

PROCEDURES IN THE EVENT OF AN UNCONTROLLED BLOWOUT

(To be posted in Change Room at Drill Site)

When a well control problem develops or is determined to be impending, the Tool Pusher is to:

1. Initiate control procedures. (The specific procedure will vary greatly depending on the nature of the problem.) If any injuries have occurred, make arrangements to care for the injured party or parties.

Ambulance	801/586-6600
	801/438-2201

Hospital: Milford Valley Memorial Hospital 801/387-2411

If there is a threat to any local residents, the Sheriff should be notified as soon as possible.

Beaver County Sheriff	801/438-2862
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2. Call McCulloch Geothermal Drilling Manager:

Jordan McNay	24 Hr. Office Phone	213/475-5429
	Office Phone	213/879-5252
	Home Phone	714/962-7966

Back Up: W. F. Bates	Home Phone	213/459-4766
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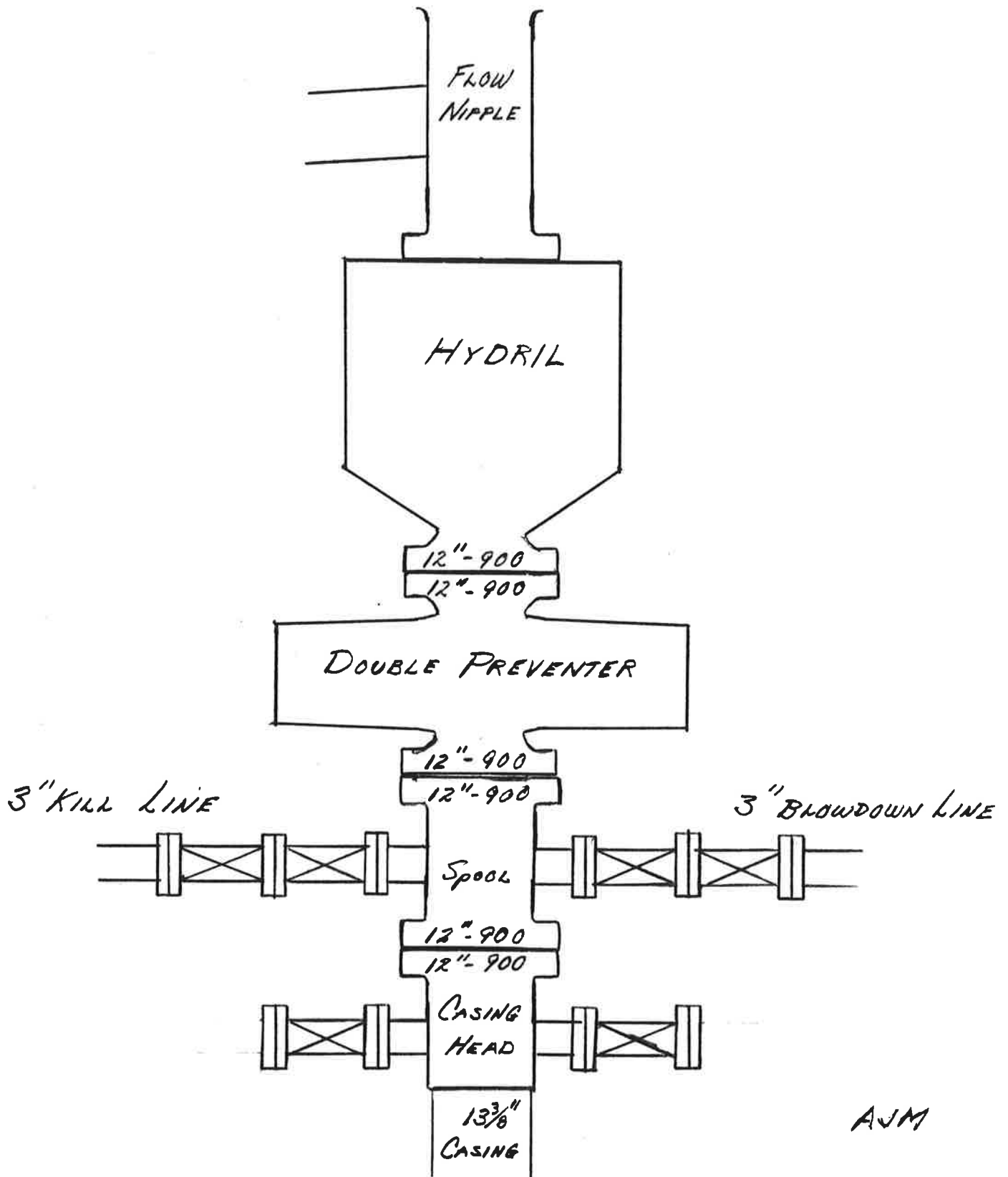
Drilling Foreman: A. J. Harris or	Phone unknown at
J. Hickman	this time

3. Contain any spills that may have occurred.

The Manager of Drilling is to notify the following agencies or regulatory bodies as soon as practical:

Department of Natural Resources	801/533-6071
Division of Water Rights	
State Engineer	
200 Empire Building	
231 East 400 South	
Salt Lake City, Utah 84111	

EXHIBIT "A"  
BOPE STACK





INSURANCE COMPANY OF NORTH AMERICA  
PHILADELPHIA, PA. 19101

Rider to be attached to and form a part of Bond Number M 96 91 53  
on behalf of McCULLOCH OIL CORPORATION  
(Name)  
10880 Wilshire Boulevard, Los Angeles, California 90024 (Principal),  
(Address)  
and in favor of the STATE OF UTAH (Obligee),  
executed by the INSURANCE COMPANY OF NORTH AMERICA, as  
Surety, in the amount of FIFTY THOUSAND AND NO/100----- (\$ 50,000.00)  
Dollars, effective January 21, 1976.

The Principal and the Insurance Company of North America hereby consent to changing the said bond as follows:

Effective December 29, 1976, McCULLOCH GEOTHERMAL CORPORATION was added as Principal liable under this bond.

Nothing herein contained shall vary, alter or extend any provision or condition of the bond other than as above stated.

Signed, Sealed and dated this

3rd day of January, 1977.

McCULLOCH OIL CORPORATION

McCULLOCH GEOTHERMAL CORPORATION

By Don G. Kircher

By W. F. Bates

Don G. Kircher  
Secretary

W. F. Bates, President  
INSURANCE COMPANY OF NORTH AMERICA

By Robert A. Oppelt

Robert A. Oppelt, Attorney-in-Fact

**INSURANCE COMPANY OF NORTH AMERICA**  
PHILADELPHIA, PA.

**Know all men by these presents:** That INSURANCE COMPANY OF NORTH AMERICA, a corporation of the Commonwealth of Pennsylvania, having its principal office in the City of Philadelphia, Pennsylvania, pursuant to the following Resolution adopted by the Board of Directors of the said Company on May 28, 1975, to wit:

"RESOLVED, pursuant to Articles 3.6 and 5.1 of the By-Laws, the following Rules shall govern the execution for the Company of bonds, undertakings, recognizances, contracts and other writings in the nature thereof:

(1) That the President, or any Vice-President, Assistant Vice-President, Resident Vice-President or Attorney-in-Fact, may execute for and in behalf of the Company any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof, the same to be attested when necessary by the Secretary, an Assistant Secretary or a Resident Assistant Secretary and the seal of the Company affixed thereto; and that the President or any Vice-President may appoint and authorize Resident Vice-Presidents, Resident Assistant Secretaries and Attorneys-in-Fact to so execute or attest to the execution of all such writings on behalf of the Company and to affix the seal of the Company thereto.

(2) Any such writing executed in accordance with these Rules shall be as binding upon the Company in any case as though signed by the President and attested by the Secretary.

(3) The signature of the President or a Vice-President and the seal of the Company may be affixed by facsimile on any power of attorney granted pursuant to this Resolution, and the signature of a certifying officer and the seal of the Company may be affixed by facsimile to any certificate of any such power, and any such power or certificate bearing such facsimile signature and seal shall be valid and binding on the Company.

(4) Such Resident Officers and Attorneys-in-Fact shall have authority to certify or verify copies of this Resolution, the By-Laws of the Company, and any affidavit or record of the Company necessary to the discharge of their duties.

(5) The passage of this Resolution does not revoke any earlier authority granted by Resolution of the Board of Directors on June 9, 1953."

does hereby nominate, constitute and appoint **ROBERT A. OPPELT, RAY E. MITCHELL and GILBERT L. HAYWARD**, all of the City of Los Angeles, State of California

, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof. And the execution of such writings in pursuance of these presents, shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office.

IN WITNESS WHEREOF, the said C. DANIEL DRAKE, Vice-President, has hereunto subscribed his name and affixed the corporate seal of the said INSURANCE COMPANY OF NORTH AMERICA this 25th day of November 1975.

INSURANCE COMPANY OF NORTH AMERICA

by C. Daniel Drake  
Vice-President

(SEAL)

STATE OF PENNSYLVANIA }  
COUNTY OF PHILADELPHIA } ss.

On this 25th day of November, A. D. 1975, before me, a Notary Public of the Commonwealth of Pennsylvania, in and for the County of Philadelphia, came

C. DANIEL DRAKE, Vice-President of the INSURANCE COMPANY OF NORTH AMERICA to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same; that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia, the day and year first above written.

Maurice Schell  
Notary Public



My commission expires **August 13, 1979**

The undersigned, Assistant Secretary of INSURANCE COMPANY OF NORTH AMERICA, do hereby certify that the foregoing is a full, true and correct copy, is in full force and effect. In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of said Corporation, this 3rd day of January 1977.

Gracie L. Young  
Assistant Secretary



B O N D

KNOW ALL MEN BY THESE PRESENTS,

That We: McCulloch Oil Corporation  
of the County of: Los Angeles, in the State of: California  
as Principal, and INSURANCE COMPANY OF NORTH AMERICA

as Surety, authorized to do business in this State, are held and firmly bound unto the State in the penal sum as indicated, lawful money of the United States, for which payment, will and truly be made to the State of Utah for the use and benefit of the Division of Water Rights, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns jointly and severally, firmly by these presents.

The condition of this obligation is that whereas the above bounded principal proposes to drill a well or wells for geothermal purposes in and upon the following described land situate within the State of Utah, to wit: \_\_\_\_\_

ALL WELLS

NOW THEREFORE, if the above bounded principal shall comply with all of the provisions of the laws of this State, and the rules and regulations and orders of the Division of Water Rights of the State, including but not limited to, the proper plugging of said well or wells, and filing with said Division of the State, all notices and records required by said office, then this office, then this obligation is void; otherwise, the same shall be and remain in full force and effect.

\*Penal Sum of FIFTY THOUSAND AND NO/100---- (\$50,000.00) STATE OF UTAH

Witness our hands and seals this 21st day of JANUARY, 1976

McCULLOCH OIL CORPORATION

BY: W. F. BatesPrincipal W. F. BATES  
VICE PRESIDENT

Witness our hands and seals this 21st day of JANUARY, 1976

INSURANCE COMPANY OF NORTH AMERICABY: Robert A. Oppelt

Robert A. Oppelt, Attorney-in-Fact

(If the principal is a corporation, the bond should be executed by its authorized officers, with the seal of the corporation affixed. When the principal or surety executes this bond by agent, power of attorney or other evidence of authority must accompany this bond.)