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 FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
 AUTH. NAME AUTHOR AFFILIATION
 LEMPGES, T.E. Niagara Mohawk Power Corp.
 RECIP. NAME RECIPIENT AFFILIATION
 SCHWENCER, A. Licensing Branch 2

SUBJECT: Forwards App 2M containing addl info re Trench 1 & absence of indication of cooling tower fault in trench. App will be incorporated in FSAR Amend 16. Info resolves SER Open Items 9-12. W/three oversize drawings. Aperture cards in PDR.

DISTRIBUTION CODE: B001D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 25
 TITLE: Licensing Submittal: PSAR/FSAR Amdts & Related Correspondence

NOTES: PNL 1cy FSAR'S & AMDTS ONLY.

05000410

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	NRR/DE/EHEB	1 1	NRR/DE/EQB 13	2 2
	NRR/DE/GB 28	2 2	NRR/DE/MEB 18	1 1
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	NRR/DE/SGEB 25	1 1	NRR/DHFS/HFEB40	1 1
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	NRR/DL/SSPB	1 0	NRR/DSI/AEB 26	1 1
	NRR/DSI/ASB	1 1	NRR/DSI/CPB 10	1 1
	NRR/DSI/CSB 09	1 1	NRR/DSI/ICSB 16	1 1
	NRR/DSI/METB 12	1 1	NRR/DSI/PSB 19	1 1
	NRR/DSI/RAB 22	1 1	NRR/DSI/RSB 23	1 1
	REG ETL 04	1 1	RGN1	3 3
	RM/DDAMI/MIB	1 0		
EXTERNAL:	BNL (AMDTS ONLY)	1 1	DMB/DSS (AMDTS)	1 1
	FEMA-REP DIV 39	1 1	LPDR 03	1 1
	NRC PDR 02	1 1	NSIC 05	1 1
	NTIS	1 1		
NOTES:		1 1		

*Aperture Card Dist.
 Drawings to: PM*

Handwritten text at the bottom of the page, possibly a signature or date, appearing as "1942" and "1943".

November 8, 1984
(NMP2L 0228)

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Schwencer:

Re: Nine Mile Point Unit 2
Docket No. 50-410

On November 1, 1984, Niagara Mohawk met with the NRC Licensing Project Manager and NRC geology branch staff representative in order to discuss the geology open issues in the Safety Evaluation Report. As a result of discussions at this meeting, we are providing an advanced copy of a new Appendix 2M, which will be incorporated in the FSAR in Amendment 16. This appendix contains additional information related to Trench 1 and the absence of indication of the cooling tower fault in this trench. This material was reviewed during the meeting and was determined by the NRC staff geologist to provide the information necessary to satisfactorily resolve Safety Evaluation Report open items 9-12.

In addition to this appendix, we discussed several photographs which were used for determining lineaments at the Nine Mile Point 2 site. These photographs may be obtained from Lockwood Support Services, Inc., 36 Karlan Drive, Rochester, New York 14617. The photographs are all dated 6/28/38 and consist of the following numbers: ARY-2-20, ARY-2-21, ARY-2-22, ARY-2-27 and ARY-2-28.

Very truly yours,

T. E. Lempges

T. E. Lempges
Vice President
Nuclear Generation

B411130458 B411108
PDR ADDCK 05000410
E PDR

TEL/AFZ:ja
xc: R. Gramm, Resident Inspector
Project File (2)

*Bool
1/1
Appendix
Card Dist
Drawings
to: PA*

L115

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
Niagara Mohawk Power Corporation)
(Nine Mile Point Unit 2))

Docket No. 50-410

AFFIDAVIT

T. E. Lempges, being duly sworn, states that he is Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

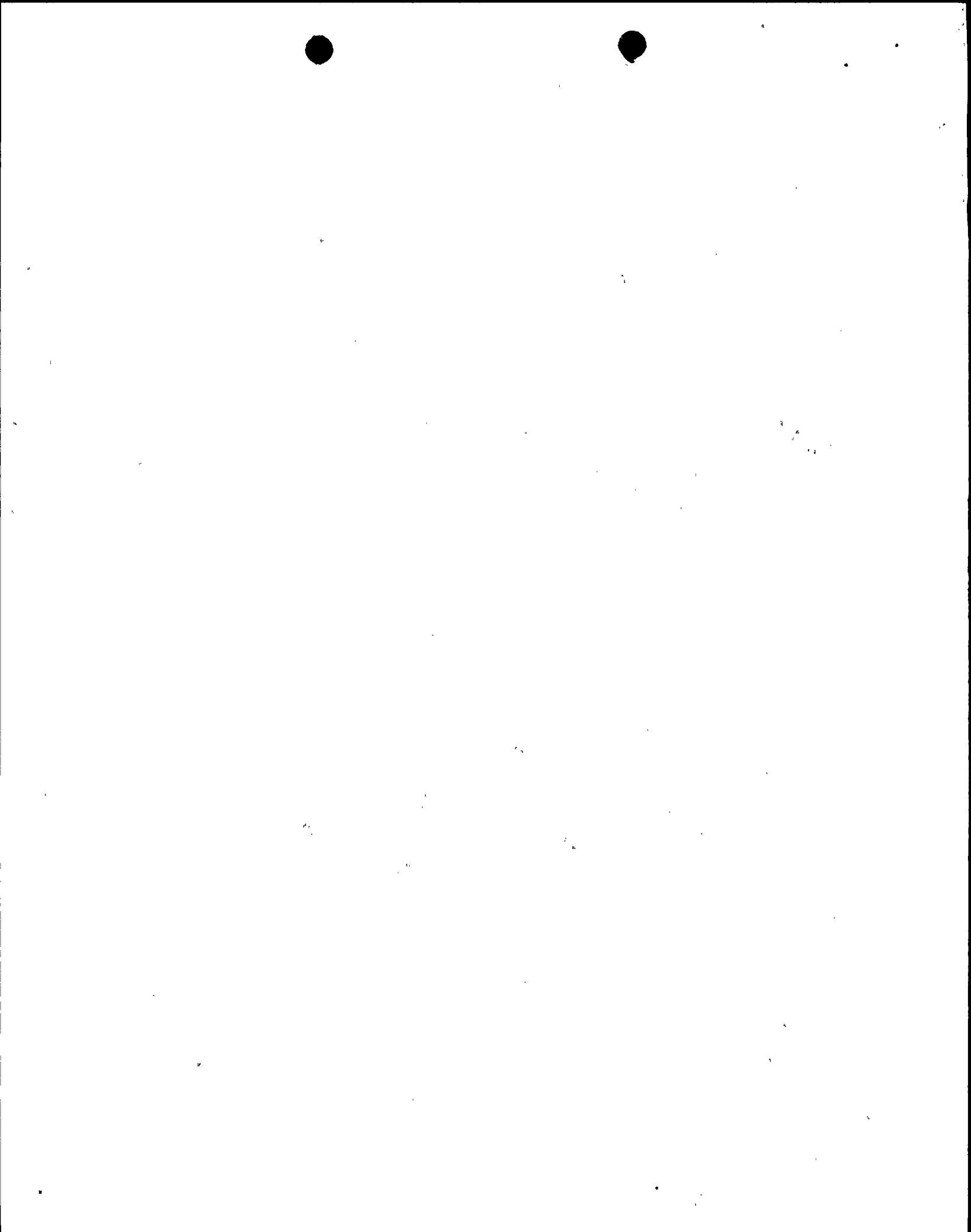
Thomas E. Lempges

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 8 day of November, 1984.

Janis M. Macro
Notary Public in and for
Onondaga County, New York

My Commission expires:
JANIS M. MACRO

Notary Public in the State of New York
Qualified in Onondaga County No. 4784555
My Commission Expires March 30, 1985...



APPENDIX 2M
ADDITIONAL INFORMATION
ON
TRENCH 1.



11

11

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- A. Handwritten Notes of Conference with NRC on
December 22, 1976
- B. Affidavit of Douglas E. Isler
- C. Affidavit of John J. Markham
- D. Affidavit of John H. Pecki
- E. Final Field Sketch of Trench 1. (4 Sheets)

NOTE: A set of color slides showing the bedrock surface
in Trench 1 was provided to the NRC by a letter
from T. E. Lemppes to A. Schwencer dated
November 8, 1984.



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is essential for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for consistent data collection practices and the use of advanced analytical techniques to derive meaningful insights from the data.

3. The third part of the document focuses on the role of technology in data management and analysis. It discusses how modern software solutions can streamline data collection, storage, and analysis, thereby improving efficiency and accuracy.

4. The fourth part of the document addresses the challenges associated with data management, such as data quality, security, and privacy. It provides strategies to mitigate these risks and ensure that the data is reliable and protected.

5. The fifth part of the document concludes by summarizing the key findings and recommendations. It stresses the importance of ongoing monitoring and evaluation to ensure that the data management processes remain effective and up-to-date.

NOTED JAN 5 1977 J.H. Peck

NRC Site Visit 12/22/76 Mine Mill 2

Attendance list attached.

For full notes of conference ~~see notes~~
of J. H. Mullin CHOC, attachedRECEIVED VIA TELECOPIER
DATE 10-15-84
TIME 2:40

R. Jackson of NRC asked J. Peck of S&W what his opinion was in regard to ^{the} Cooling Tower Trench fault being a seismic safety hazard to the existing plants. A lengthy response was given which concluded that at the present state of knowledge concerning the feature, it does not constitute a seismic safety hazard to the existing plants. The major points covered in reaching that conclusion were the following:

1. Faulting in rock at Cooling Tower shows left lateral movement, horizontal slickensides, and $1\frac{1}{2}$ " of apparent vertical displacement. Rock surface in fracture zone is glacially rounded indicating pre-glacial age for bedrock faulting. Horizontal displacement not determined; based on dip of rock and all strike slip motion, vertical offset can be accounted for by $2\frac{1}{2}$ ' of horizontal movement.
2. Soil profile over bedrock fault shows



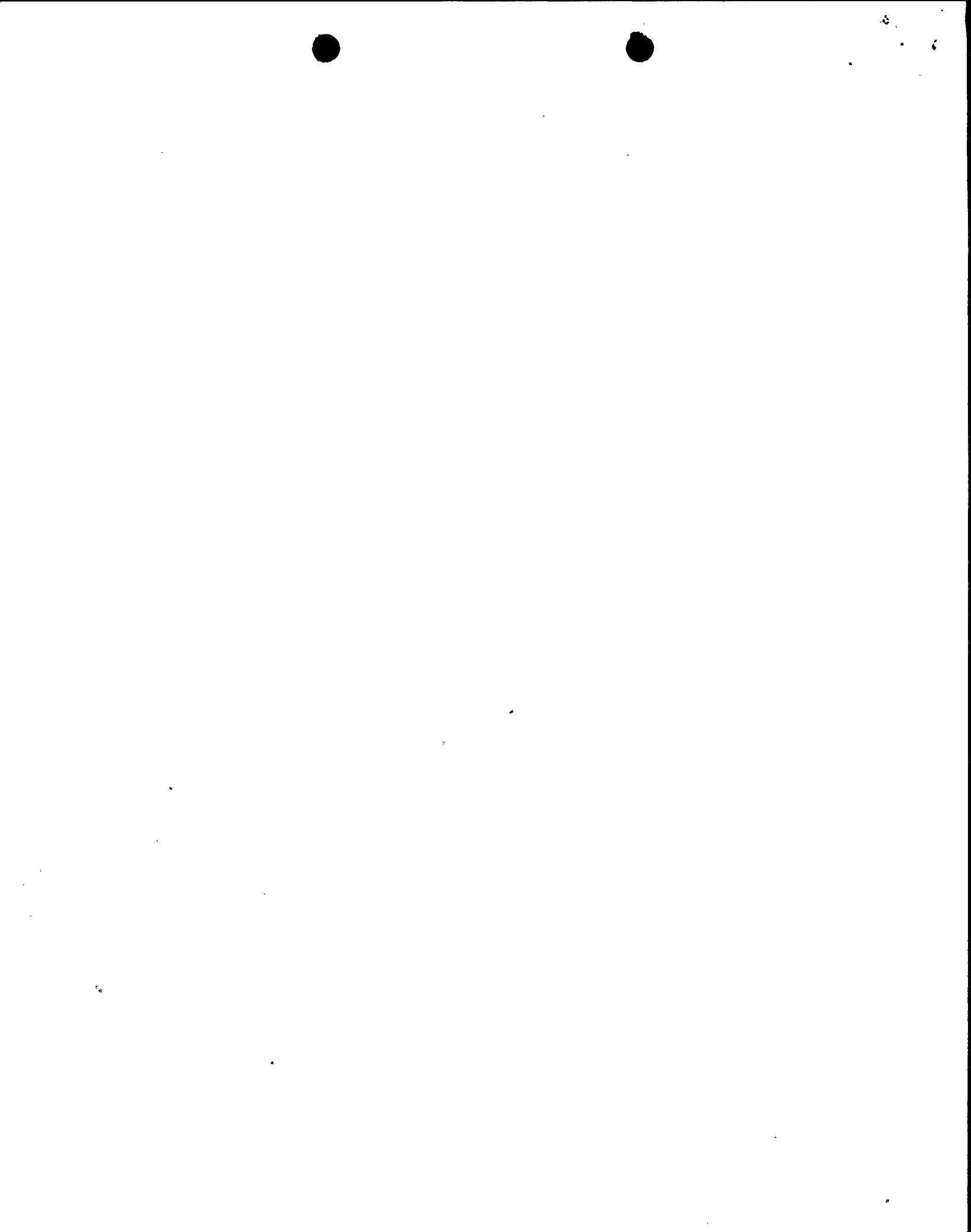
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(2)

discontinuous grabens forming shears in lacustrine deposits overlying till. Max. vertical offset is about 1 cm. The till shows no shearing. Peat soil overlies the lacustrine deposits and is not disturbed.

3. In the pit excavated about 40 feet NW of the cooling tower trench, the rock is fractured, shows horizontal slickensides and apparent left lateral movement of unknown amount. Horizontal slickensides are coated with crystalline calcite which is undisturbed. The fracture zone in rock is topographically low (about 6-10' compared to the undisturbed rock on either side and shows glacial polish and striations along edges of the zone

4. The soil profile in the pit consists of till over rock, lake bed silts, rippled and cross laminated sands, and peat soil. Small grabens occur in the lake bed deposits but not in the rippled sand or the till. Displacement is about 1 cm on gravity-type shears. Compaction folding over boulders in the till is shown in the lake bed silts but not in the rippled sands. The contact between lake bed deposits and rippled sand is an



unconformity.

5. Trenches to the NW of the pit at 800' and 1600'. along strike show no faulting in rock or soil disturbance. Some jointing is present.

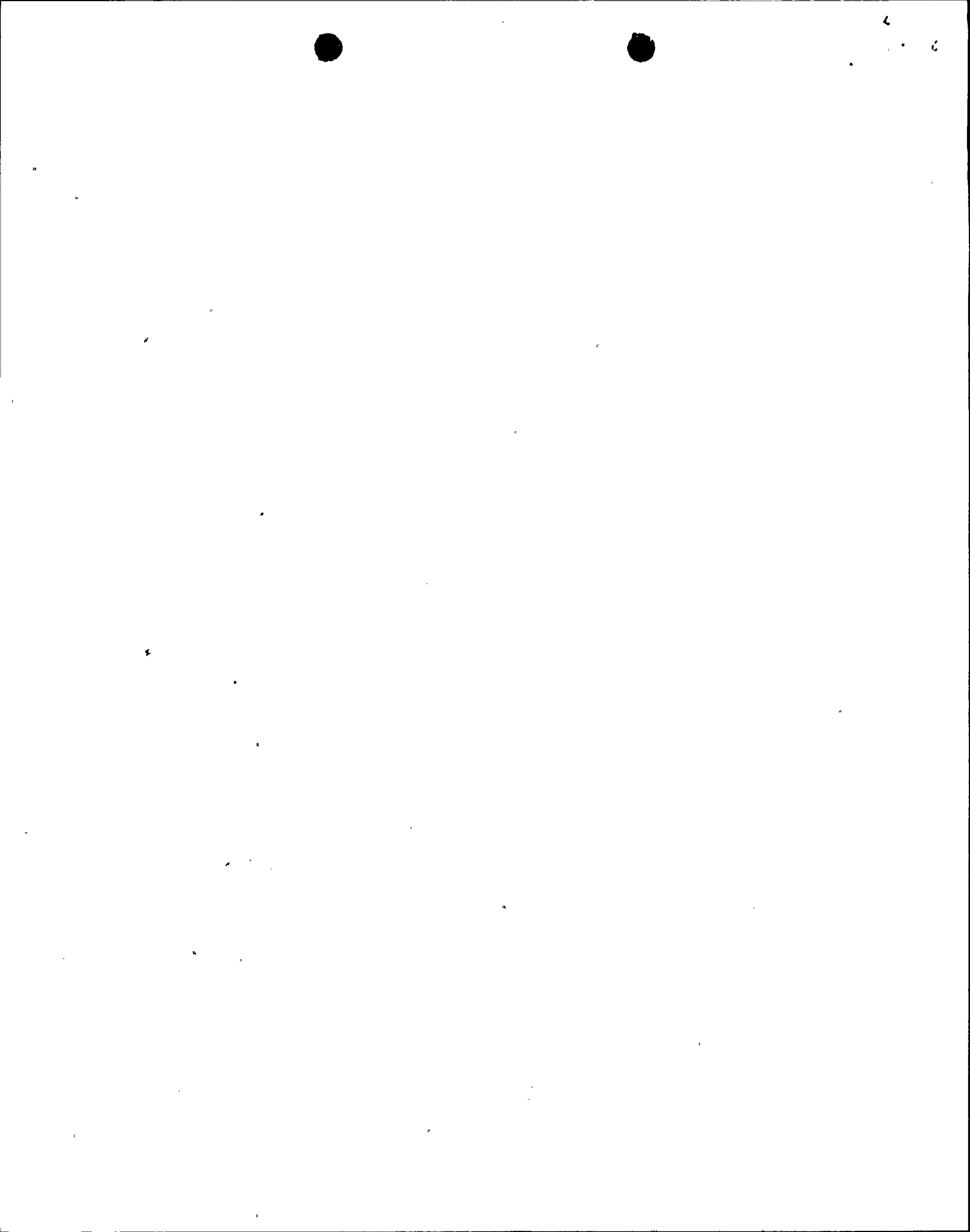
6. In Trench #3 (600 ft. SW of cooling tower trench) The rock shows apparent vertical offset of at least 2 1/2 ft. possibly more with south side down. The rock also shows a topographic low on the south side of the fracture zone which shows steep dip to the south and evidence of glacial plucking. The topographic relief is about 4 1/2 feet. The fracture zone shows horizontal and vertical slickensides with vertical younger than horizontal and crystalline calcite smeared into vertical slickensides. Rock surface dips gently north, north of the pulverize zone and steeply south, south of the zone. No clay gouge is evident but sandstone is brecciated and pulverized in a zone about 6" to 1 foot wide and rock is badly fractured in a zone about 3 feet wide.

7. Soil overlying rock in Trench #3 consists in ascending order of bouldery till, dark gray laminated lake bed silts, and light brown



ripple marked sands and silty sands, with a dark brown peat soil capping the sand. Artificial fill covers the peat. The till, lake bed deposits and rippled sand show a monoclinial fold structure over the fracture zone in bedrock with reverse shears in the sand and the sand-lake bed contact. The displacement on these shears is a max of 2.5 inches. The shears are discontinuous and become lower angle upward. Correlation of beds from south side to north on the monocline show that south side is $2\frac{1}{2}$ ft. lower than north side. No thrusting shears in till, lake beds and sand are evident. No displacement of peat is evident. The contact between lake bed deposits and sand is an unconformity, and another unconformity within the sand is also evident. The peat soil is also unconformable on the sand, it does not conform to the fold below.

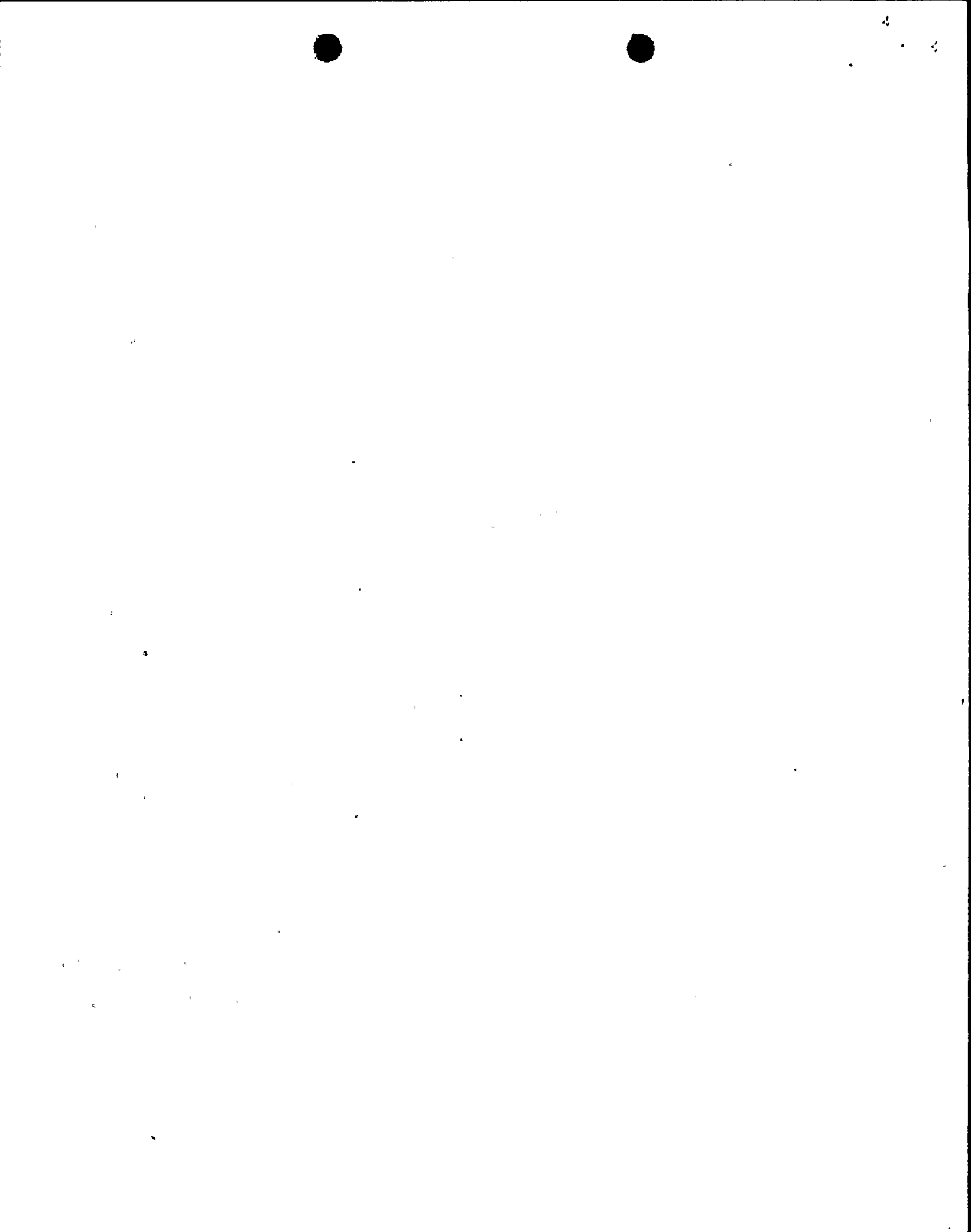
8. In Trench #4 (about 700 ft southeast of Trench #3) the bedrock shows a zone of brecciation and pulverized sandstone about 1 foot wide, trending $N 75^{\circ} W$ and dipping steeply. The rock surface on the south side is



about 3 feet lower than the rock surface on the north and dips about 25° south. Glacial plucking is evident south of the fracture zone. Glacial disturbance of large blocks of sandstone north of the zone has resulted in blocks surrounded with till, but more or less in a normal open jointed configuration. That is, the joints are filled with till and till occurs under the blocks. The rock north of the zone dips slightly north.

Vertical slickensides are present along joints parallel to the broken zone south of the zone. Vertical displacement of the rock, if any, is not yet determined. Change in dip on both sides of crush zone would suggest some sort of near-surface buckling.

9. Soil profile overlying the bedrock in Trench # is mostly till which shows irregular oxidation and includes pockets of structurally disturbed sand, silt and gravel south of the fracture zone in bedrock. Fold & shear structures of the sand bodies in the till indicate overriding by ice or other material. Within the till, no shear zones are evident over the bedrock zone. A large sandstone block is fractured and its north side moved up about 6 inches relative to south side, but thin slab of sandstone



beneath is not broken. The crack in the sand is filled with till in the upper open part.

A wedge of post-till soil is present just to the north of the bedrock fracture zone on the west wall. The top of till is a pavement surface, very hard and smooth, dipping north at about 25°. Overlying the till pavement is a thin wedge of lake bed silt which shows a 1/2 inch gravity shear with south down, coincident with a 2 1/2 inch topographic feature on the till surface. Above the lake bed deposits are rippled sand and gravel deposits which appear to be unconformable on the lake bed silts, do not show shearing, and thicken northward. Unconformable on the sands is wood-bearing peat soil.

- 10. The relationships seen in the trenches and pits seem to indicate that a pop-up or glacial rebound feature has occurred along a pre-existing bedrock fault. The timing of the pop-up is uncertain but is either late glacial or early post-glacial. The condition of excavation walls and the history of plant construction including tunnels at the Nine Mile and

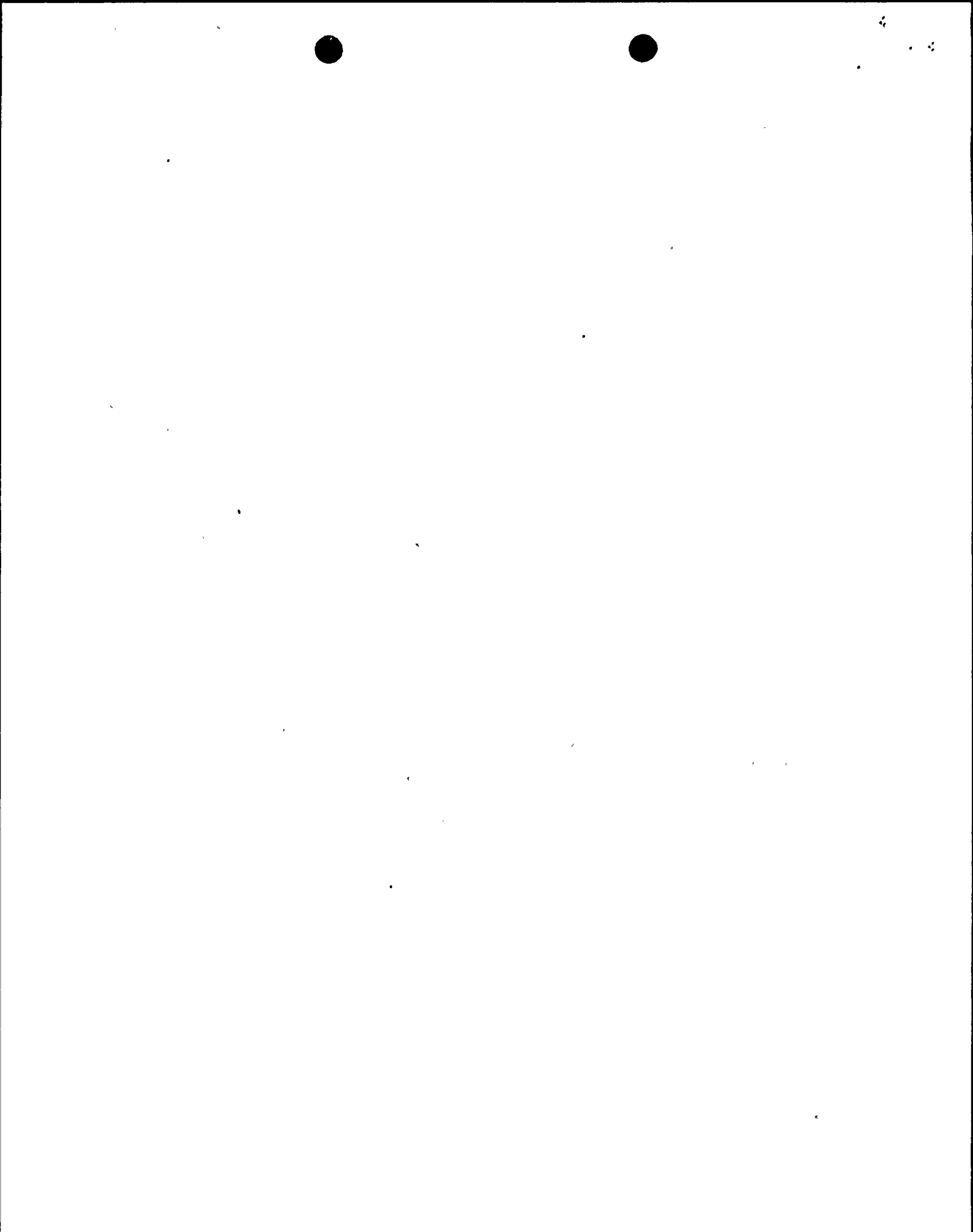


4
4

(7)

Fitzgibbon sites indicates no obvious high rock stress condition. Therefore, it seems likely that conditions which could cause a repeat of the pop-up do not now exist at the plant site and that the feature does not constitute a seismic safety hazard to the existing plants.

NOTED JAN 5 1977 J.H. Peck



12/22/76

NRC Meeting

NOTED JAN 5 1977 J.H. Peck

Meeting Attendance

Name

Company

Norm Lademo

Nuclear Power

J. Mullin

S&W

J.E. McWhorter

DAMES & MOORE

FRICKS

S&W

J.H. Haybrook

NRC (Contract)

James O. Donnell

NRC

JOHN KELLNER

NRC

A. Senior

D&M

J. J. MARKHAM

D&M

R. B. McWhorter

NRC

P. E. Jackson

NRC

John H. Peck

S&W

JERZY SZYMAŃSKI

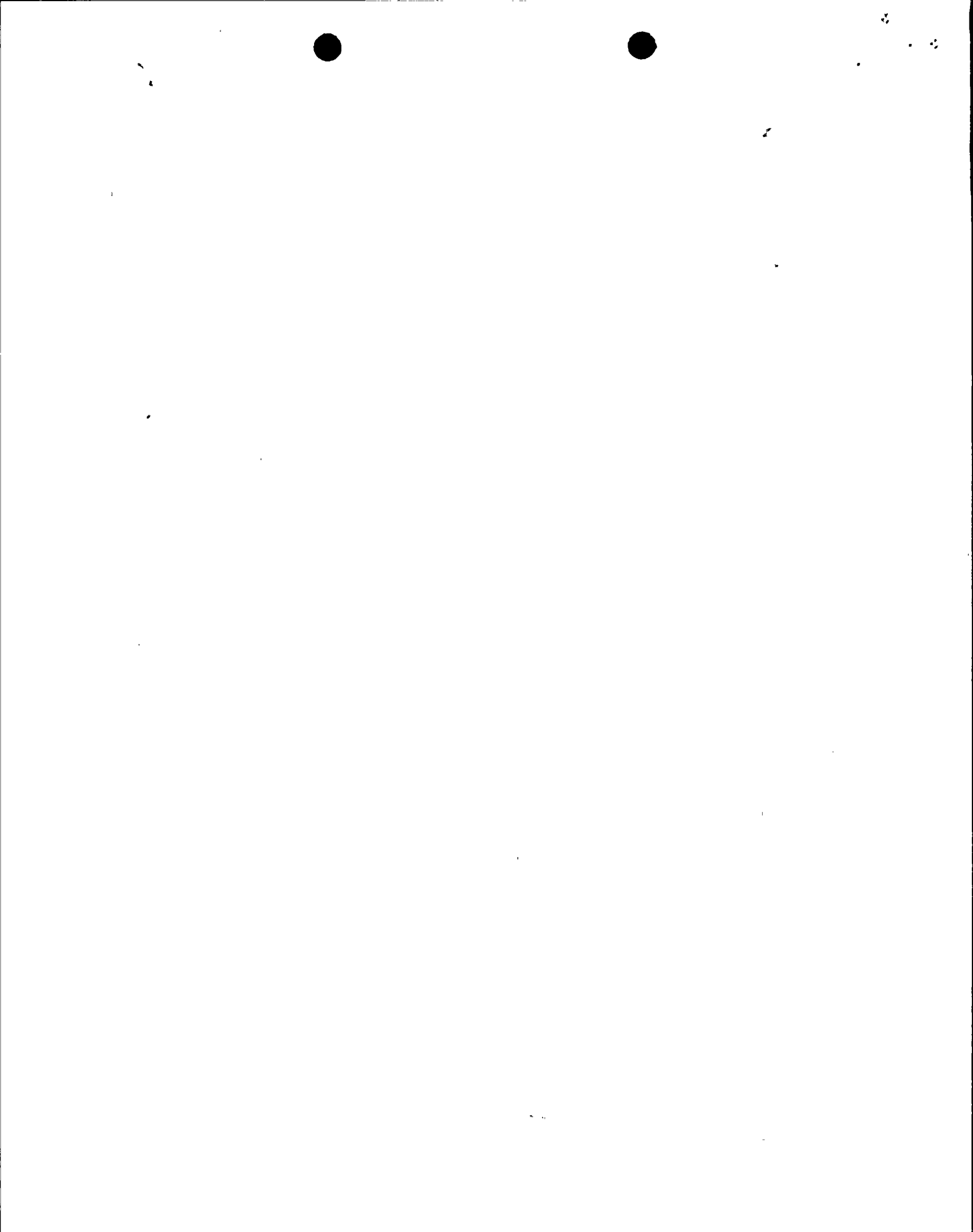
Dames and Moore

J. Edward Tillman

Dames + Moore

G. W. Page

S&W



Mtg @ Site

JM
23 Dec 76

NOTED JAN 12 1977 J.H. Peck

D 311

270

NMPPo

NRC

McWhorter

Peck

Rodewacher

Jackson

Markham

Fuicks

Heybroake

McKellan

Szymanski

Mollen

O'Donnell

Scanlon

Page

Kellener

Tillman

(1) Visit to R.R. Trench, ⁽⁴⁾ Access Rd Pit, ⁽³⁾ Circ Water Trench
Access Pit destroyed. Circ Water Pit snow covered

(2) NRC given 1) Plan showing location
2) Sketch of Access Rd. Sew. Pipe

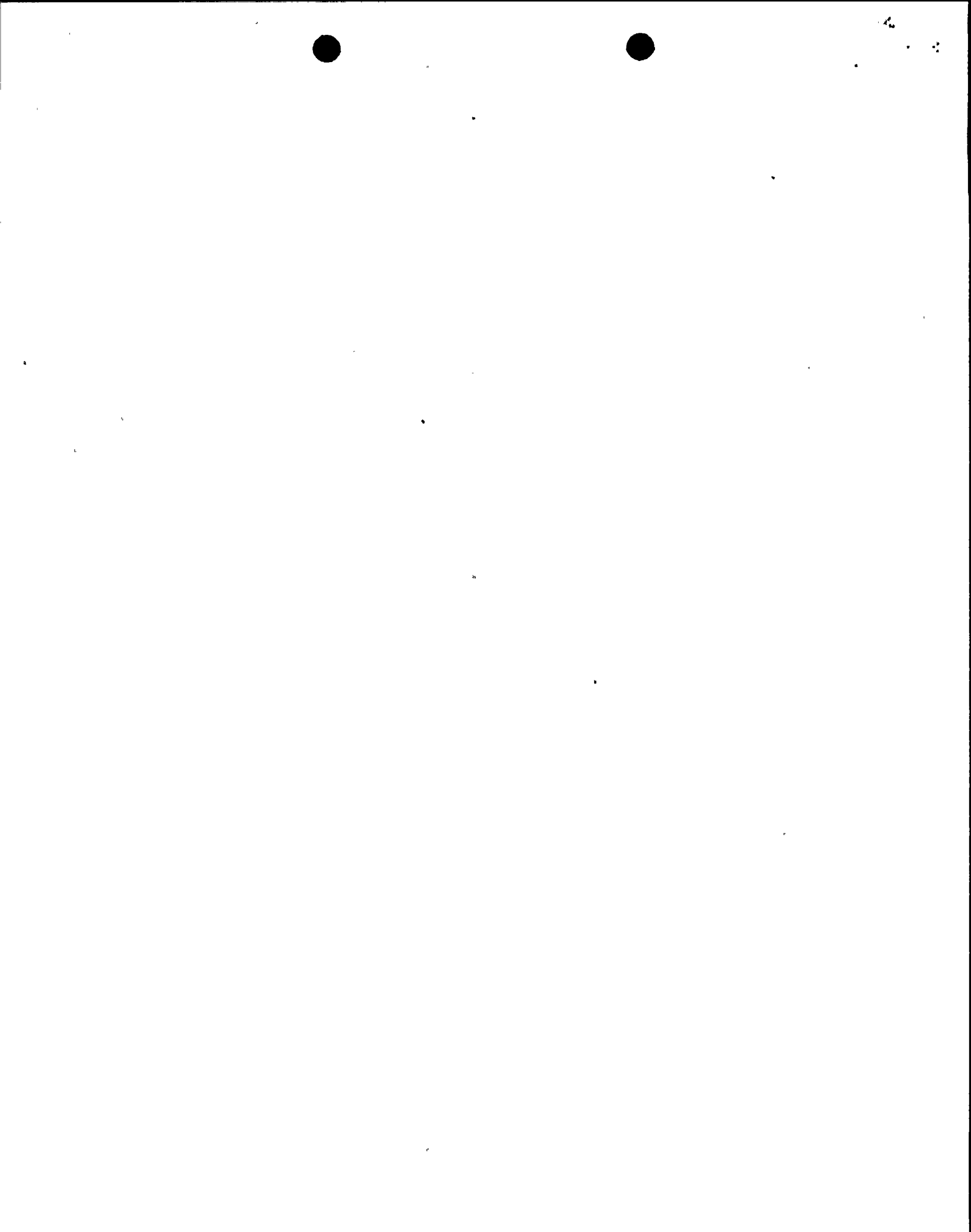
(3) Markham discussed data to date
R.R. Pit shows Telling

(4) Jackson: Is this a safety hazard to 3 Units

Jackson While investigating - What about 1.5 Fdy?
Do we have a chimney?

(3a) - Markham did not wish to discuss program w/o NRC
permission

S/Syz = Hazard is not as great as looks
postulates third "glacial" source



4. NRC - What is mechanism?

IS - Hinge line theories

⑤ Rodonicher - ~~the~~ We have a program
Can not state rapidly beyond yet.

⑥ McMillan - Is this related to "helter boy"

Peck - No

⑦ Jackson - Seismic potential?

McWhorter - Need to know geometry

Have not looked at it yet.

NRC - Are photos?

McW. Yes - Many lineations show on photos
Mentioned Teepee fold

~~NRC - Relation to~~

J.P. - Discussed Faty Teepee, stress

McMill - will stress be studied

Peck - Part of proposed program Jackson 90' hole indicates

no stress, hasn't moved Peck agreed

Jackson - What is immediate feeling on safety beyond

90' holes indicates good indicator of stress

Have we studied it

NRC will have to report on it

Disagreed w/ T. statistics of adjustment Theory



•
•

Tschum - Area review

Ji. 110 - west base, D 3, 21 - some @ Hydro. Bay
2.000/yr here.

J.P. - Many problems in soil factors

1) frost 2) relation of soils deposits sample.

3)

3) general discussion of rock movement

a) 2 meters 1st Hor
2nd ver

Upward in rock surface along pre existing
fractures which disturbed overlying soils
and additional soils later deposited.

Indicates movement early in post glacial

Rock expansion, Fifty measurements indicate
low stresses at site i. low seismic hazard?
for initial appraisal.

Tschum - This is what he wants

NRC - Schedules

Podemacher will inform



NRC - Met Previews

(4)

NRC M. Mullan

due
2 weeks
today

Send letter report summarizing John's interpretation. Also proposed ~~proposal~~ program

Main
point

Basis (to date) of not considering this a safety hazard. Short summary report of John Peck's argument.

More trenching to STE. Total offset seems to be increasing, several feet of offset may work against glacial rebound ~~area~~.

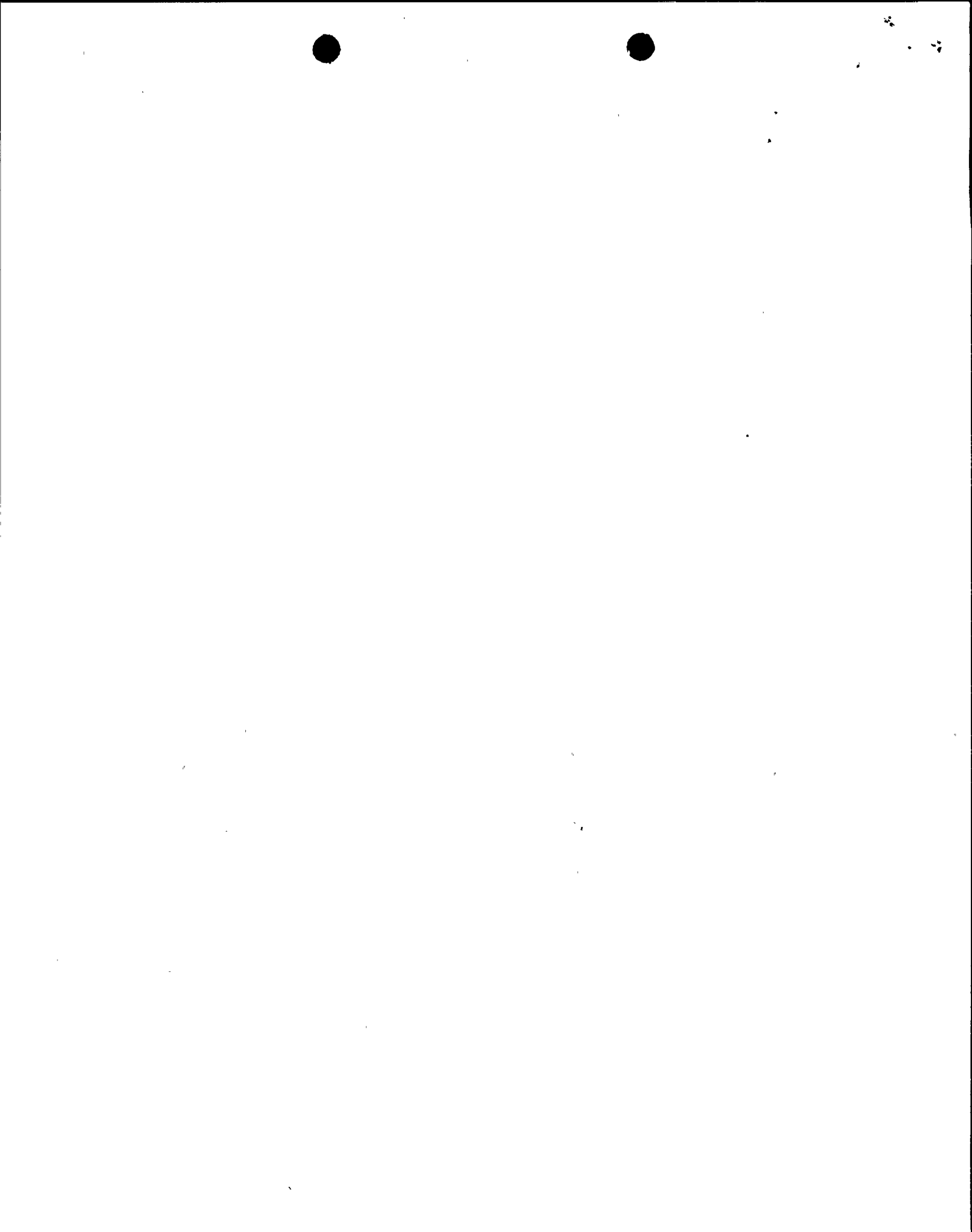
Drill in cooling tower area. (probably included in scope.)

Useful to discuss consultants & setup of study.

Why it is reasonable to not take action now re. 1st & 2nd
Tachan needs a piece of paper.

Now -

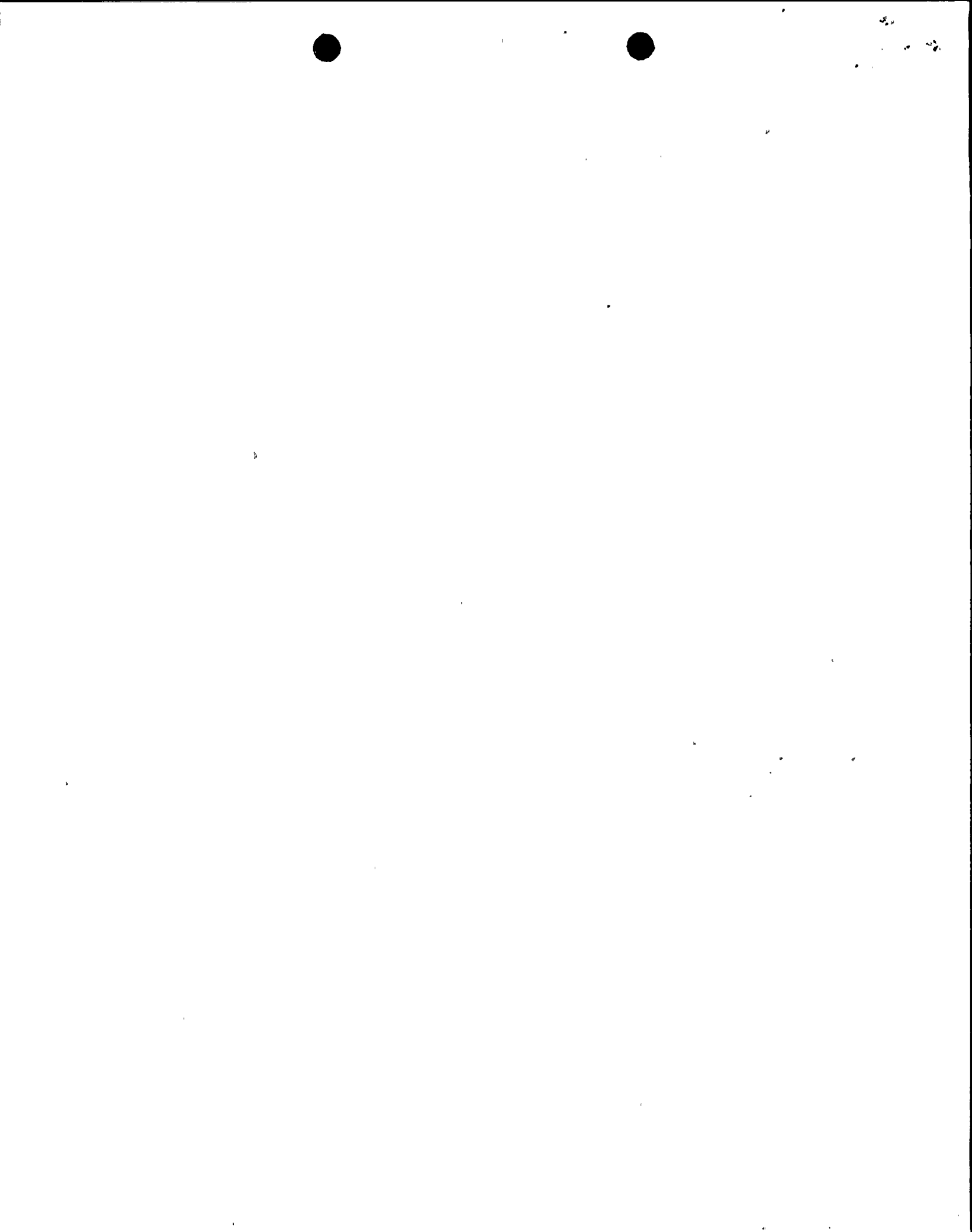
M. Mullan requested a look @ Unit 1 photos
Now will check



12/22/76

Meeting Attendance

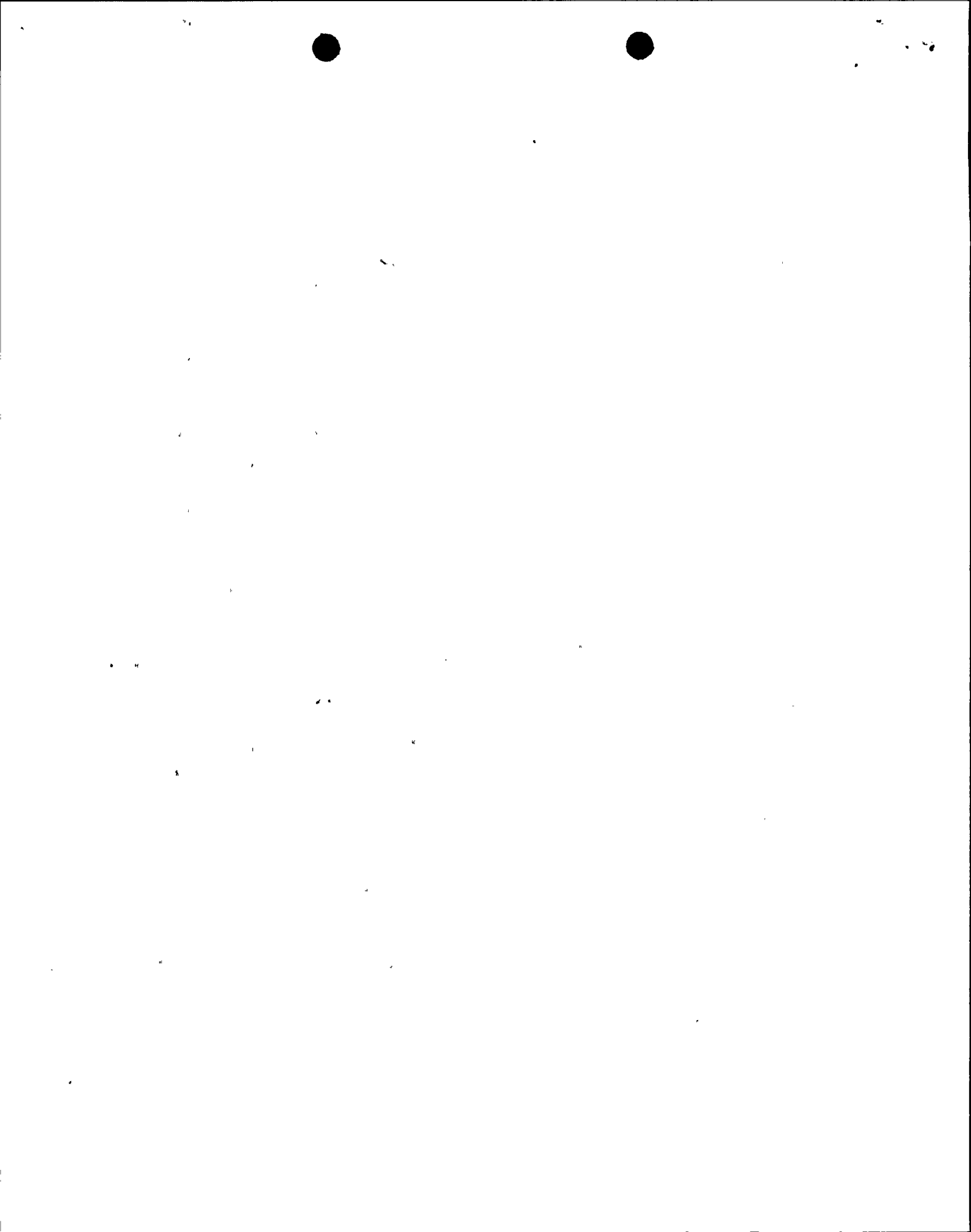
Name	Company
Norm Madenscher	Niagara Mohawk
J. Mullin	S&W
J.E. McWhorter	DAMES & MOORE
E.E. FRICKS	S&W
J.H. Haybrood Jr	NMP&C (Const)
Edward O'Donnell	NRC
JOHN KELLNER	NRC
A. SENIOR	DEM
J. J. MARKHAM	DEM
R. B. McNeill	NRC
P. E. Jackson	NRC
John H. Peck	S&W
JERZY SZYMAŃSKI	DAMES and MOORE
J. Edward Tillman	DAMES + MOORE
G.W. Page	S&W



12/22/76

Meeting Attendance

Name	Company
Norm Rademacher	Niagara Mohawk
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J. E. McWhorter	DAMES & MOORE
E. E. FRICKS	S&W
J. H. Haybrook	NMP (Const)
Edward O'Donnell	NRC
JOHN KELLNER	NRC
A. Seavor	DEM
J. J. MARKHAM	DEM
R. B. McNeill	NRC
P. E. Jackson	NRC
John H. Peck	S&W
JERZY SZYMAŃSKI	DAMES and MOORE
J. Edward Tillman	DAMES + MOORE
G. W. Page	S&W



Notes copied from field notebook 76-2 of
JOHN H. Peck, Stone & Webster
With reference to observations in "TRENCH #2"

Site Visit 12/17/76

Trench in front of Mine
Mile 1 Switchyard was
practically all cleaned
but no indication of
any faulting or joints
parallel to the trend of
the rock fractures to the
SE. A few sets of
closely spaced relatively tight
joints trend N 70° E =
No indication of any motion
along these joints. May
be part of regional set.
Indications are that this
trench is beyond any

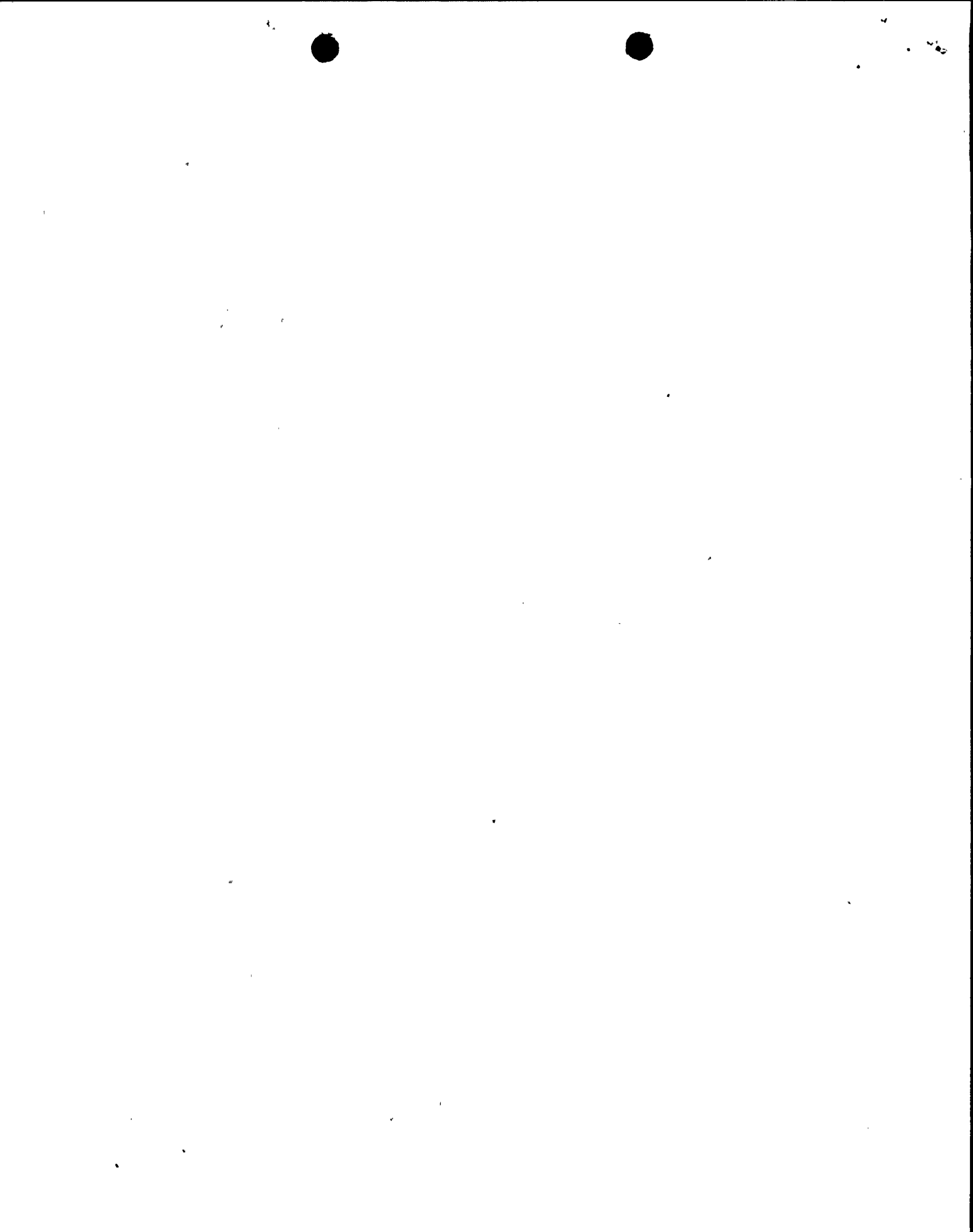
Copy made 10/15/84 John H. Peck



MP2


Northwest extension of the
cooling tower bedrock fan
This trench gives us a
conservative Northwest trend
of faulting. At this time
it is probably not
necessary to trench close
to the cooling tower eff.
to document the exact
location of the terrace

The new trench, ^(Trench 4) is on
which shows depression in
the bedrock along a trend abt.
N 73-75° W. Bedrock dips 6°
to south and also some-
less to north. Gives a

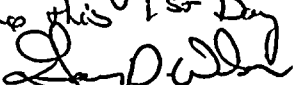


AFFIDAVIT OF JOHN H. PECK of Amarillo, Texas, being duly sworn comes forward and states that the following is true and correct to the best of his knowledge, information and belief:

1. My name is JOHN H. PECK. My address is 514 NORTH FILLMORE STREET AMARILLO, TEXAS.
2. During the period from September 30, 1976 to December 22, 1976 as an employee of Stone & Webster Engineering Corporation I was engaged in geological consultation regarding mapping of the excavations and/or trenches at the Nine Mile Point 2 site and adjacent property to the west. Based upon the mapping of Trench No. 1 and No. 2 which I reviewed in the field; and based upon my observations in Trench No. 2, it is my professional opinion that such mapping did not reveal the so-called "cooling tower fault".
3. I have made all notes and written memoranda and evaluations of the trench No. 1 and No. 2 observations available to my employer, Stone & Webster Engineering Corporation, and I have no other information in my possession that was not previously provided that bears on the western termination of the fault in question.


JOHN H. PECK

*Acknowledged and sworn before
me this 1st Day of November 1984*


GARY D. WILSON
Notary Public in the State of New York
Qualified in Onon. Co. No. 4756957
My Commission Expires March 30, 1986

2002
1000 4500 1000
6000 1000 1000
1000 1000

Sworn to before me this 23rd day of October, 1984.

Michelle A. Goldsberg Notary Public

CONFIDENTIAL

CONFIDENTIAL

CONFIDENTIAL

AFFIDAVIT OF JOHN J. MARKHAM

John J. Markham, being duly sworn comes forward and states that the following is true and correct to the best of his knowledge, information and belief.

1. My name is John J. Markham. My address is 1901 Deer Hill Drive, Wayzata, Minnesota.

2. During the period September 1976 to February 1977 as an employee of Dames & Moore, I was engaged in the observation of Trenches 1 and 2 at the Nine Mile Point Unit 2 site as shown on Figure 2.5-28A of the FSAR. Based upon the observation which I performed, it is my professional opinion that the so-called "Cooling Tower Fault" was not revealed in these trenches.

3. I have made all of my logs, notes, photographs, memoranda and evaluations of the trench features available to Dames & Moore, and I have no other information in my possession, not previously provided, that bears on the length or termination of the fault in question.

John J. Markham

Sworn to before me this 1st day of November 1984

Gary D. Wilson
GARY D. WILSON
Notary Public in the State of New York
Qualified in Onon. Co. No. 4756957
My Commission Expires March 30, 1988



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AFFIDAVIT of Douglas E. Isler

_____, being duly sworn comes forward and states that the following is true and correct to the best of his knowledge, information and belief:

1. My name is Douglas E. Isler. My address is 5276 Church St., Mexico, New York.

2. During the period from 10/1/76 to 12/31/76 as an employee of Stone and Webster Eng. Corp., I was engaged in the geologic mapping of excavations in so-called Trench 1 and Trench 2 at the Nine Mile Point Unit 2 site. Based upon the mapping which I performed, it is my professional opinion that such mapping did not reveal the so-called "cooling tower fault."

3. I have made all my logs, notes, photographs, written memoranda and evaluations of the trench features available to my employer, Stone and Webster, and I have no other information in my possession that was not previously provided that bears on the length or termination of the fault in question.

Douglas E. Isler

Sworn to before me this 24th day of October, 1984. Amy L. Durant

AMY L. DURANT
Notary Public in the State of New York,
Qualified in Onon. Co. No. 4748938
My commission expires March 30, 1985

