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NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION UNIT 2

ELECTRICAL PREVENTIVE MAINTENANCE PROCEDURE

N2-EPM-GEN-0692

REVISION 00

OBTAINING OIL SAMPLES FROM OUTDOOR TRANSFORMERS FOR ANALYSIS

FOR INFO. ONLY

Approved By:
R. B. Abbott for
Joseph F. Firlit

RB Abbott
Vice President - Nuclear Generation

8/16/96
Date

CONTROLLED

THIS PROCEDURE SUPERSEDES N2-EPM-Q2

Effective Date: 8/27/90

NOT TO BE USED AFTER AUGUST 1992
SUBJECT TO PERIODIC REVIEW

9305100312

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1.0 PURPOSE

To provide direction in performing preventive maintenance on the Outdoor Power Transformers.

1.1 Operational Conditions When Equipment is Required to be Operable

The equipment tested during the performance of this procedure is non tech spec related, non safety related, and no specific operational condition requirements apply.

1.2 Frequency

1.2.1 This procedure shall be performed as stated OR more frequently as required.

1.2.2 Semi-annually: Sample for Dielectric Strength and Quality Index Analysis.

1.2.3 Quarterly: Sample for Gas-In-Oil - Total Combustible Gas Analysis.

1.3 Instrument/Equipment List

	Component ID #	Safety Class	EQ	Location	Elevation	WTS/LAS Number
•	2MTX-XM1A	NSR	NONE	345 KV Switchyard	261'	P10533
•	2MTX-XM1B	NSR	NONE	345 KV Switchyard	261'	P11738
•	2MTX-XM1C	NSR	NONE	345 KV Switchyard	261'	P11739
•	2MTX-XM1D	NSR	NONE	345 KV Switchyard	261'	P11740
•	2STX-XNS1	NSR	NONE	115 KV Switchyard	261'	P11741
•	2RTX-XSR1A	NSR	NONE	115 KV Switchyard	261'	P11742
•	2RTX-XSR1B	NSR	NONE	115 KV Switchyard	261'	P11743
•	2ABS-X1	NSR	NONE	115 KV Switchyard	261'	P11744
•	2ATX-XS1	NSR	NONE	115 KV Switchyard	261'	P11745
•	2ATX-XS3	NSR	NONE	115 KV Switchyard	261'	P11746

1.4 Discussion

None

2.0 REFERENCES AND COMMITMENTS

NOTE: The revision numbers listed below do not necessarily reflect the latest revision issued, but was the revision used for procedural development/revision.

2.1 Technical Specifications

Section 3/4.8.1, AC Sources

2.2 Licensee Documentation

None

2.3 Standards, Regulations, and Codes

None

2.4 Policies, Programs, and Procedures

2.4.1 NMPC EOP-401, (Maintenance Procedures for Power Transformers and Reactors)

2.4.2 NMPC EOP-412, (Oil Sampling of Station Electrical Equipment)

2.4.3 AP-5.4.1, Station Housekeeping and Inspections, Revision 00

2.4.4 AP-5.5.1, Work Request, Revision 00

2.5 Technical Information

2.5.1 Drawings

DOCNO: 12177 EE-M0001A, Plant Master One Line Diagram Normal Power Distribution

2.5.2 Instruction Manuals

a. File Sequence Number N20445, McGraw-Edison Power Transformer Instruction Manual (Main Transformers)

b. File Sequence Number N20448, General Electric Power Transformer Instruction Book (Normal Station Service Transformers)

c. File Sequence Number N20814, General Electric Power Transformer Instruction Book (Reserve Station Transformers)

d. File Sequence Number N20234, Westinghouse Instruction Book for Type SL Core Form Substation Transformer (Auxiliary Boiler Transformers)

e. File Sequence Number N20567, General Electric Transformer Instruction Book (Auxiliary Stepdown Transformer - 13.8KV/4.16KV)

2.6 Supplemental References

2.6.1 NMPC Internal Correspondence: Document on Oil Analysis in Power Transformers

2.6.2 File Code NMP53949, NMPC Internal Correspondence: NEIL Exit Meeting Minutes

2.7 Implementing References

None

2.8 Commitments

Sequence Number	NCTS Number	Description
None		

3.0 TEST EQUIPMENT, SPECIAL TOOLS, AND MATERIALS

3.1 Test Equipment

None

3.2 Special Tools

3.2.1 Quart Sampler Container (quality index sample)

3.2.2 Steel Cylinder (gas-in-oil sample)

3.3 Materials

NOTE: NMPC Part Numbers are for information only.

3.3.1 Bucket for Waste or Spillage (92-32-648).

3.3.2 Safety Goggles (80-23-423)

3.3.3 Wash Bottle (squeeze bottle) (95-10-506)

3.3.4 Tygon Tubing - approximately 3 feet long (91-01-974)

4.0 PRECAUTIONS

4.1 Oil samples shall not be taken from any transformer which is in a vacuum condition.

4.2 Oil sample containers shall be clean.

4.3 Drain pipes and valves shall be flushed prior to obtaining oil samples.

4.4 Clogged valves shall be closed prior to cleaning.

4.5 Transformer oil drain valves shall be determined closed after sample is taken.

4.6 Goggles shall be worn for duration of maintenance.

5.0 LIMITATIONS AND ACTIONS

5.1 This procedure shall be followed directly at the job site.

5.2 During the performance of this procedure only the lead man shall direct the procedural steps.

5.3 The steps contained in Section 6.0 do not have to be performed in the sequence indicated.

5.4 Any step in the procedure that cannot be completed as stated, the Station Shift Supervisor (SSS) THEN Electrical Department supervision shall be contacted immediately.

5.5 Procedure steps are to be marked N/A only if the procedure specifically allows for use of the annotation OR where only a portion of the procedure is performed (such as PMT, a retest to verify questionable data, or other testing). Reason for marking a step N/A shall be documented in the Remarks Section.

5.6 The work area should be clean to prevent entry of foreign matter into Transformer or sample container.

5.7 All cleanup of equipment and space within the work area shall be done in accordance with AP-5.4.1.

Equipment ID No. _____ Initials/Date

6.0 PREREQUISITES

6.1 Plant/System Conditions

6.1.1 Plant Condition

This procedure may be performed in any operating condition.

6.1.2 System Condition

This procedure may be performed in any operating condition or as determined by SSS.

6.2 Administrative

6.2.1 Specify reason for procedure performance below:

(__) Routine Scheduled
(__) Post Maintenance Testing
Work Request Number_____
(__) Other, (Specify reason) _____
_____ _____ / _____

NOTE: The following step is to be performed by all personnel performing this procedure.

6.2.2 Read this procedure. If there is any information contained within this procedure which you do not understand, contact Supervision for clarification. When the information contained within this procedure is understood, acknowledge your understanding by printing your name and signing your initials below.

PRINTED NAME	INITIALS	
_____	_____	
_____	_____	
_____	_____	
_____	_____	_____ / _____

6.2.3 Record Equipment ID in space provided at top of each page. _____ / _____

6.3 Notifications

Notify QA Department of intent to perform procedure. Record name of person contacted, time, and date. If message is left on answering machine, enter "machine" in the "Person Contacted" space below.

_____ _____ / _____ _____ / _____
Person Contacted Time Date

Equipment ID No. _____ Initials/Date

7.0 PROCEDURE

NOTE: Safety glasses shall be worn for duration of maintenance.

7.1 Preliminary Actions

PLANT IMPACT: NONE

7.1.1 Obtain SSS and CSO permission to perform procedure by obtaining their signatures below.

_____ _____
SSS Signature Date

_____ _____ _____/
CSO Signature Date

7.1.2 Notify CSO of commencement and record Start Time/Date.

_____/_____ _____/
Start Time Date

7.2 Obtaining Oil Sample for Dielectric Strength and Quality Index Analysis

Sections 7.2 N/A, Dielectric Strength and Quality Index Analysis not required..... (__) _____/

NOTE: Sample form 419-11 shown on Attachment 3 is larger than actual form used.

* *

CAUTION

Oil samples shall not be taken from transformers in a vacuum condition.

* *

7.2.1 Record all essential information on Tag Form 419-11 (Like that shown on Attachment 3). _____/

NOTES: 1. Oil drain valve is located on side and near bottom of transformer.

2. Sample outlet is located on side of drain valve. _____/

7.2.2 Locate oil drain.

7.2.3 Remove protective cap from sample outlet. _____/

Equipment ID No. _____ Initials/Date

7.2.4 Connect tygon tubing to sample outlet. ____/____

7.2.5 Place waste bucket under tygon tubing. ____/____

7.2.6 Open sample outlet slowly to allow approximately one quart of oil to flow through tubing OR UNTIL oil is clear AND sediment free. ____/____

7.2.7 Close sample outlet. ____/____

7.2.8 Place quart sample container under tygon tubing. ____/____

7.2.9 Open sample outlet UNTIL quart sample container is completely full THEN close outlet. ____/____

7.2.10 Seal sample container. ____/____

7.2.11 Remove tygon tubing from sample outlet WHILE draining tubing into waste bucket. ____/____

7.2.12 Ensure sample outlet closed completely (no leaking). ____/____

7.2.13 Clean sample outlet AND replace protective cap. ____/____

7.2.14 Place waste oil in drum labeled "Transformer Oil Only" located in yard area just south of Unit 1 Storage Room. ____/____

7.2.15 Attach form 419-11 to sample container. ____/____

7.2.16 Send sample to chemical lab at Henry Clay Boulevard #1 Syracuse for quality index and dielectric strength analysis. ____/____

NOTE: Acceptance criteria is stated in Section 9.0.

7.2.17 Review Analysis Test Report (from chemistry lab).

If test results: (Check a or b):

a. Are within limits of acceptance criteria, proceed with Step 7.2.18..... (__)

b. Are outside limits of acceptance criteria. Notify Electrical Supervision..... (__) ____/____

7.2.18 Obtain results of most recent previous sample analysis from files. ____/____

7.2.19 Compare previous analysis results to current analysis results of corresponding samples.

IF current analysis results (check a or b):

a. Are comparable to previous analysis results, attach a copy of current analysis results to procedure..... (__)

b. Vary significantly from previous analysis results, Notify Electrical Supervision..... (__) _____/_____

7.3 Obtaining Oil Sample for Gas-In-Oil - Total Combustible Gases Analysis

Section 7.3 N/A, Gas-In-Oil - Total Combustible Gases Analysis not required..... (__) _____/_____

NOTES: 1. Attachment 1 contains Oil Sample Information forms.

2. Attachment 2 contains illustration for obtaining Gas-In-Oil oil sample.

* *

CAUTION

Obtaining oil samples from transformers in a vacuum condition is contrary to vendor recommendations.

* *

7.3.1 Record all essential information on transformer Oil Sample Information form (Attachment 1). _____/_____

7.3.2 Locate AND clean oil drain valve. _____/_____

7.3.3 Remove rubber protective caps from sample cylinder tubing valves. _____/_____

7.3.4 Connect inlet tygon tubing to transformer bottom drain valve. _____/_____

7.3.5 Connect outlet tygon tubing to waste pail. _____/_____

7.3.6 Open Bottom Valve THEN Top Valve of steel cylinder. _____/_____

7.3.7 Open transformer bottom drain valve to allow steel cylinder to fill with oil. _____/_____

Equipment ID No. _____ Initials/Date

7.3.8 Overflow steel cylinder with oil WHILE tapping on cylinder lightly to remove air bubbles. ____/____

7.3.9 Close top valve to sample cylinder for ample time to build up oil pressure in steel cylinder. ____/____

7.3.10 Close bottom valve of steel cylinder. ____/____

7.3.11 Close transformer bottom drain valve. ____/____

7.3.12 Disconnect tygon tubing from sample cylinder WHILE draining oil from tubing into waste bucket. ____/____

7.3.13 Place rubber protective caps on sample cylinder tubing connectors. ____/____

7.3.14 Place waste oil in drum labeled "Transformer Oil Only" located in yard area just south of Unit 1 Storage Room. ____/____

7.3.15 Attach Transformer Sample Information Sheet to steel cylinder. ____/____

7.3.16 Send steel cylinder to chemical lab at Henry Clay Boulevard #1 Syracuse for analysis. ____/____

7.3.17 Review Analysis Test Report (from chemistry lab).

IF test results: (check a or b):

a. Are within limits of acceptance criteria, continue with Step 7.3.18..... (__)

b. Are outside limits of acceptance criteria, Notify Electrical Supervision..... (__) ____/____

7.3.18 Obtain results of most recent previous sample analysis from files. ____/____

7.3.19 Compare previous analysis results to current analysis results of corresponding samples.

IF current analysis results (check a or b):

a. Are comparable to previous analysis results, attach a copy of current analysis results to procedure..... (__)

b. Vary significantly from previous analysis results or exceed acceptance criteria. Notify Electrical Supervision..... (__) ____/____

9.2 Gas-In-Oil Analysis (Steel Cylinder)

Total Combustible Gases less than OR equal to Parts Per Million (PPM) listed below:

	Step-up and Auxiliary Transformers	Transmission Transformers (Incl. Substations)
Hydrogen (H_2)	240 PPM	100 PPM..... (__)
Methane(CH_4)	160 PPM	120 PPM..... (__)
Carbon Monoxide (CO)	580 PPM	350 PPM..... (__)
Ethylene (C_2H_4)	190 PPM	30 PPM..... (__)
Ethane (C_2H_6	115 PPM	65 PPM..... (__)
Acetylene (C_2H_2)	11 PPM	35 PPM..... (__) _____/____

10.0 RECORD REVIEW AND DISPOSITION

10.1 Record remarks concerning procedure performance including ORs, WRs, problems that occurred and method of resolution or recommended resolution, as applicable. Attach a copy of any ORs or WRs generated as a result of this procedure.

Remarks:_____

Equipment ID No. _____ Initials/Date

7.4 Maintenance Testing

Check transformer oil level.

Satisfactory..... (__)
Unsatisfactory..... (__) _____/_____

8.0 RETURN TO NORMAL

8.1 Perform a general cleanup of all equipment and space within the work area. _____/_____

8.2 Notify CSO and SSS of maintenance completion. No Post Maintenance Testing is recommended. _____/_____

8.3 Record stop time/date and have CSO and SSS acknowledge completion by obtaining their initials.

_____/_____	_____	_____	_____/_____
Stop Time Date	CSO Initials	SSS Initials	

8.4 Place copy of test results in file for reference. _____/_____

8.5 Notify Electrical Supervision of any unsatisfactory items, THEN initiate a Work Request to correct any unsatisfactory items.

N/A, no unsatisfactory items..... (__) _____/_____

9.0 ACCEPTANCE CRITERIA

9.1 Dielectric Strength and Quality Index Analysis (Quart Sample Container)

9.1.1 Dielectric Strength greater than or equal to 28 KV. _____/_____

9.1.2 Quality Index greater than OR equal to 60. _____/_____

10.2 Personnel who performed portions of this procedure sign initials, print name, and sign name below:

	Initials	Printed Name	Signature
Performed by	_____	_____	_____
Performed by	_____	_____	_____
Performed by	_____	_____	_____
Performed by	_____	_____	_____

10.3 Electrical Supervision shall review data resulting from performance of the procedure for completeness, accuracy, and acceptability.

(__) Satisfactory (__) Unsatisfactory

_____ / _____

Supervision Date

10.4 Electrical supervision shall ensure records (completed maintenance or test data) are included in Work Request Package and sent to Records Management for Permanent Plant File retention.

ATTACHMENT 1
SHEET 1 OF 10
NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: / /

1. STATION Nine Mile Pt. Unit 2 BANK NO. 2MTX-XM1A
LOCATION Lycoming
INDOOR _____ OUTDOOR * SUBWAY _____

2. SAMPLE CONTAINER ID NMPC - _____

3. MANUFACTURER'S NAME McGraw-Edison

4. SERIAL NO. C-06607-5-1 from nameplate

5. MAXIMUM KVA/MVA RATING 408000 from nameplate

6. PRIMARY VOLTAGE, KV 24.9 from nameplate

7. SINGLE PHASE * THREE PHASE _____

8. TRANSFORMER TYPE G S U (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)

9. COOLING: AIR * WATER _____

10. PRESENT USAGE _____ (STORAGE, ENERGIZED, ETC.)
% LOAD _____ AT TIME OF SAMPLING

11. DATE OF MANUFACTURE # 3-84 DATE OF INSTALLATION 10-85 (at site)

12. TOP OIL TEMP. _____ °C MAX. OIL TEMP. _____ °C.

13. TOTAL OIL VOLUME 9935 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)

14. WHERE SAMPLED: BOTTOM * TOP _____

15. TYPE OF SEAL Conservator (Nitrogen) (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)

16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)

17. GAS PRESSURE _____ psi

18. REMARKS _____

19. SEND REPORT TO: Steve Doty (Name)
Nine Mile Pt. 2 (Location)

*1

ATTACHMENT 1
SHEET 2 OF 10
NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: / /

1. STATION Nine Mile Pt. Unit 2 BANK NO. 2MTX-XM1B
   LOCATION Lycoming
   INDOOR _____ OUTDOOR * SUBWAY _____
2. SAMPLE CONTAINER ID NMPC - _____
3. MANUFACTURER'S NAME McGraw-Edison
4. SERIAL NO. C-06607-5-2 from nameplate
5. MAXIMUM KVA/MVA RATING 408000 from nameplate
6. PRIMARY VOLTAGE, KV 24.9 from nameplate
7. SINGLE PHASE * THREE PHASE _____
8. TRANSFORMER TYPE GSU (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)
9. COOLING: AIR * WATER _____
10. PRESENT USAGE _____ (STORAGE, ENERGIZED, ETC.)
    % LOAD _____ AT TIME OF SAMPLING
11. DATE OF MANUFACTURE 3-84 DATE OF INSTALLATION 10-85 (at site)
12. TOP OIL TEMP. _____°C MAX. OIL TEMP. _____°C.
13. TOTAL OIL VOLUME 9935 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)
14. WHERE SAMPLED: BOTTOM * TOP _____
15. TYPE OF SEAL Conservator (Nitrogen) (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)
16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)
17. GAS PRESSURE _____ psi
18. REMARKS _____
19. SEND REPORT TO: Steve Doty (Name)
    Nine Mile Pt. 2 (Location)

NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: / /

1. STATION Nine Mile Pt. Unit 2 BANK NO. 2MTX-XM1C
   LOCATION Lycoming
   INDOOR _____ OUTDOOR ** SUBWAY _____

2. SAMPLE CONTAINER ID NMPC - _____

3. MANUFACTURER'S NAME McGraw-Edison

4. SERIAL NO. C-06607-5-3 from nameplate

5. MAXIMUM KVA/MVA RATING 408000 from nameplate

6. PRIMARY VOLTAGE, KV 24.9 from nameplate

7. SINGLE PHASE ** THREE PHASE _____

8. TRANSFORMER TYPE GSU (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)

9. COOLING: AIR ** WATER _____

10. PRESENT USAGE _____ (STORAGE, ENERGIZED, ETC.)
    % LOAD _____ AT TIME OF SAMPLING

11. DATE OF MANUFACTURE 3-84 DATE OF INSTALLATION 10-85 (at site)

12. TOP OIL TEMP. _____ °C MAX. OIL TEMP. _____ °C.

13. TOTAL OIL VOLUME 9935 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)

14. WHERE SAMPLED: BOTTOM ** TOP _____

15. TYPE OF SEAL Conservator (Nitrogen) (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)

16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)

17. GAS PRESSURE _____ psi

18. REMARKS _____

19. SEND REPORT TO: Steve Doty (Name)
    Nine Mile Pt. 2 (Location)

ATTACHMENT 1
SHEET 4 OF 10
NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: / /

1. STATION Nine Mile Pt. Unit 2 BANK NO. 2MTX-XM1D
   LOCATION Lycoming
   INDOOR _____ OUTDOOR ** SUBWAY _____
2. SAMPLE CONTAINER ID NMPC - _____
3. MANUFACTURER'S NAME McGraw-Edison
4. SERIAL NO. C-06607-5-4 from nameplate
5. MAXIMUM KVA/MVA RATING 408000 from nameplate
6. PRIMARY VOLTAGE, KV 24.9 from nameplate
7. SINGLE PHASE ** THREE PHASE _____
8. TRANSFORMER TYPE GSU (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)
9. COOLING: AIR ** WATER _____
10. PRESENT USAGE _____ (STORAGE, ENERGIZED, ETC.)
    % LOAD _____ AT TIME OF SAMPLING
11. DATE OF MANUFACTURE 3-84 DATE OF INSTALLATION 10-85 (at site)
12. TOP OIL TEMP. _____ °C MAX. OIL TEMP. _____ °C.
13. TOTAL OIL VOLUME 9935 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)
14. WHERE SAMPLED: BOTTOM *** TOP _____
15. TYPE OF SEAL Conservator (Nitrogen) (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)
16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)
17. GAS PRESSURE _____ psi
18. REMARKS _____
19. SEND REPORT TO: Steve Doty (Name)
    Nine Mile Pt. 2 (Location)

NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: / /

1. STATION Nine Mile Pt. Unit 2 BANK NO. 2STX-XNS1
   LOCATION Lycoming
   INDOOR _____ OUTDOOR **** SUBWAY _____
2. SAMPLE CONTAINER ID NMPC - _____
3. MANUFACTURER'S NAME G.E.
4. SERIAL NO. 547151 from nameplate
5. MAXIMUM KVA/MVA RATING 112000 from nameplate
6. PRIMARY VOLTAGE, KV 24.9 from nameplate
7. SINGLE PHASE _____ THREE PHASE _____
8. TRANSFORMER TYPE STEP DOWN (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)
9. COOLING: AIR ***** WATER _____
10. PRESENT USAGE _____ (STORAGE, ENERGIZED, ETC.)
    % LOAD _____ AT TIME OF SAMPLING
11. DATE OF MANUFACTURE 1973 DATE OF INSTALLATION 10-85 (at site)
12. TOP OIL TEMP. _____°C MAX. OIL TEMP. _____°C.
13. TOTAL OIL VOLUME 12106 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)
14. WHERE SAMPLED: BOTTOM **** TOP _____
15. TYPE OF SEAL Conservator (Nitrogen) (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)
16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)
17. GAS PRESSURE _____ psi
18. REMARKS _____
19. SEND REPORT TO: Steve Doty (Name)
    Nine Mile Pt. 2 (Location)

ATTACHMENT 1
SHEET 6 OF 10
NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: __/__/__

1. STATION Nine Mile Pt. Unit 2 BANK NO. 2RTX-XSR1A
   LOCATION Lycoming
   INDOOR ____ OUTDOOR **** SUBWAY ____
2. SAMPLE CONTAINER ID NMPC - ____
3. MANUFACTURER'S NAME G.E.
4. SERIAL NO. K547152 from nameplate
5. MAXIMUM KVA/MVA RATING 70000 from nameplate
6. PRIMARY VOLTAGE, KV 115 from nameplate
7. SINGLE PHASE ____ THREE PHASE ****
8. TRANSFORMER TYPE STEP DOWN (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)
9. COOLING: AIR ***** WATER ____
10. PRESENT USAGE ____ (STORAGE, ENERGIZED, ETC.)
    % LOAD ____ AT TIME OF SAMPLING
11. DATE OF MANUFACTURE 1973 DATE OF INSTALLATION 6-85 (at site)
12. TOP OIL TEMP. ____ °C MAX. OIL TEMP. ____ °C.
13. TOTAL OIL VOLUME 15690 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)
14. WHERE SAMPLED: BOTTOM ***** TOP ____
15. TYPE OF SEAL Nitrogen (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)
16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)
17. GAS PRESSURE ____ psi
18. REMARKS ____
19. SEND REPORT TO: Steve Doty (Name)
    Nine Mile Pt. 2 (Location)

ATTACHMENT 1
SHEET 7 OF 10
NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: / /

1. STATION Nine Mile Pt. Unit 2 BANK NO. 2RTX-XSR1B
   LOCATION Lycoming
   INDOOR _____ OUTDOOR **** SUBWAY _____
2. SAMPLE CONTAINER ID NMPC - _____
3. MANUFACTURER'S NAME G.E.
4. SERIAL NO. K547153 from nameplate
5. MAXIMUM KVA/MVA RATING 70000 from nameplate
6. PRIMARY VOLTAGE, KV 115 from nameplate
7. SINGLE PHASE _____ THREE PHASE *****
8. TRANSFORMER TYPE STEP DOWN (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)
9. COOLING: AIR ******* WATER _____
10. PRESENT USAGE _____ (STORAGE, ENERGIZED, ETC.)
    % LOAD _____ AT TIME OF SAMPLING
11. DATE OF MANUFACTURE 1973 DATE OF INSTALLATION 6-85 (at site)
12. TOP OIL TEMP. _____ °C MAX. OIL TEMP. _____ °C.
13. TOTAL OIL VOLUME 15690 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)
14. WHERE SAMPLED: BOTTOM ***** TOP _____
15. TYPE OF SEAL Nitrogen (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)
16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)
17. GAS PRESSURE _____ psi
18. REMARKS _____
19. SEND REPORT TO: Steve Doty (Name)
    Nine Mile Pt. 2 (Location)

ATTACHMENT 1
SHEET 8 OF 10
NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: __/__/__

1. STATION Nine Mile Pt. Unit 2 BANK NO. 2ABS-X1
   LOCATION Lycoming
   INDOOR _____ OUTDOOR **** SUBWAY _____
2. SAMPLE CONTAINER ID NMPC - _____
3. MANUFACTURER'S NAME WESTINGHOUSE
4. SERIAL NO. RCS21551 from nameplate
5. MAXIMUM KVA/MVA RATING 30870 from nameplate
6. PRIMARY VOLTAGE, KV 115 from nameplate
7. SINGLE PHASE _____ THREE PHASE ****
8. TRANSFORMER TYPE STEP DOWN (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)
9. COOLING: AIR **** WATER _____
10. PRESENT USAGE _____ (STORAGE, ENERGIZED, ETC.)
    % LOAD _____ AT TIME OF SAMPLING
11. DATE OF MANUFACTURE 1979 DATE OF INSTALLATION 6-85 (at site)
12. TOP OIL TEMP. _____ °C MAX. OIL TEMP. _____ °C.
13. TOTAL OIL VOLUME 6030 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)
14. WHERE SAMPLED: BOTTOM **** TOP _____
15. TYPE OF SEAL Nitrogen (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)
16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)
17. GAS PRESSURE _____ psi
18. REMARKS _____
19. SEND REPORT TO: Steve Doty (Name)
    Nine Mile Pt. 2 (Location)

ATTACHMENT 1
SHEET 9 OF 10
NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: / /

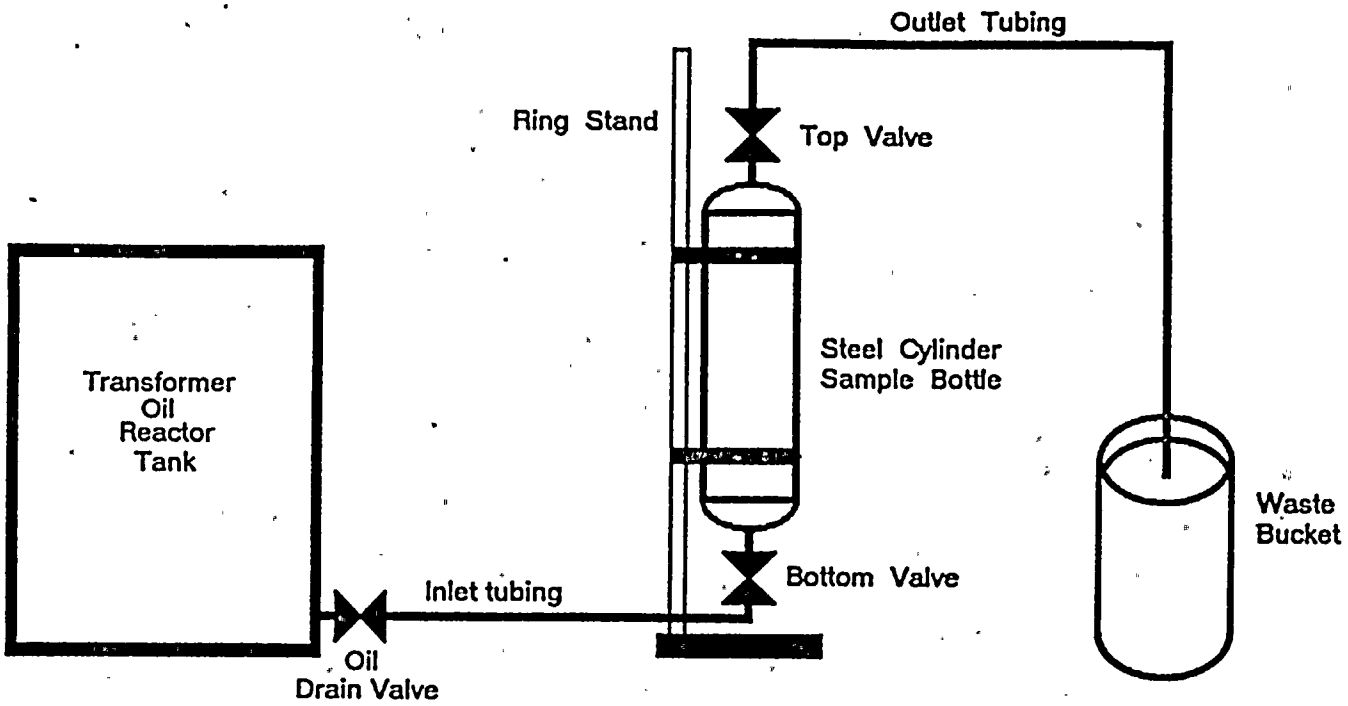
1. STATION Nine Mile Pt. Unit 2 BANK NO. 2ATX-XS1
   LOCATION Lycoming
   INDOOR _____ OUTDOOR **** SUBWAY _____
2. SAMPLE CONTAINER ID NMPC - _____
3. MANUFACTURER'S NAME G.E.
4. SERIAL NO. H-880011A from nameplate
5. MAXIMUM KVA/MVA RATING 11900 from nameplate
6. PRIMARY VOLTAGE, KV 13.2 from nameplate
7. SINGLE PHASE _____ THREE PHASE ****
8. TRANSFORMER TYPE STEP DOWN (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)
9. COOLING: AIR **** WATER _____
10. PRESENT USAGE _____ (STORAGE, ENERGIZED, ETC.)
    % LOAD _____ AT TIME OF SAMPLING
11. DATE OF MANUFACTURE 1977 DATE OF INSTALLATION 6-85 (at site)
12. TOP OIL TEMP. _____ °C MAX. OIL TEMP. _____ °C.
13. TOTAL OIL VOLUME 1560 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)
14. WHERE SAMPLED: BOTTOM **** TOP _____
15. TYPE OF SEAL Nitrogen (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)
16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)
17. GAS PRESSURE _____ psi
18. REMARKS _____
19. SEND REPORT TO: Steve Doty (Name)
    Nine Mile Pt. 2 (Location)

ATTACHMENT 1
SHEET 10 OF 10
NIAGARA MOHAWK POWER CORPORATION
OIL SAMPLE INFORMATION

DATE: / /

1. STATION Nine Mile Pt. Unit 2 BANK NO. 2ATX-XS3
   LOCATION Lycoming
   INDOOR _____ OUTDOOR **** SUBWAY _____
2. SAMPLE CONTAINER ID NMPC - _____
3. MANUFACTURER'S NAME G.E.
4. SERIAL NO. H-880011b from nameplate
5. MAXIMUM KVA/MVA RATING 11900 from nameplate
6. PRIMARY VOLTAGE, KV 13.2 from nameplate
7. SINGLE PHASE _____ THREE PHASE *****
8. TRANSFORMER TYPE STEP DOWN (GSU, SHUNT REACTOR, AUTOTRANSFORMER, ETC.)
9. COOLING: AIR ***** WATER _____
10. PRESENT USAGE _____ (STORAGE, ENERGIZED, ETC.)
    % LOAD _____ AT TIME OF SAMPLING
11. DATE OF MANUFACTURE 1977 DATE OF INSTALLATION 6-85 (at site)
12. TOP OIL TEMP. _____ °C MAX. OIL TEMP. _____ °C.
13. TOTAL OIL VOLUME 1560 GALLONS (INCLUDE VOLUME IN ATMOSEAL, EXCLUDE TAP CHANGER COMP.)
14. WHERE SAMPLED: BOTTOM **** TOP _____
15. TYPE OF SEAL Nitrogen (ATMOSEAL, CONSERVATOR, NITROGEN BLANKET)
16. REASON FOR SAMPLING Routine (ROUTINE, GAS ALARM, PRESSURE RELAY, ETC.)
17. GAS PRESSURE _____ psi
18. REMARKS _____
19. SEND REPORT TO: Steve Doty (Name)
    Nine Mile Pt. 2 (Location)

ATTACHMENT 2
OIL SAMPLING ILLUSTRATION (GAS-IN-OIL)



ATTACHMENT 3
OIL SAMPLE FOR TEST TAG (FORM 419-11, R6-79)

OIL SAMPLE FOR TEST

RETURN TO: METER & LABORATORY FACILITIES
SYRACUSE, NY

Station _____
Location _____
Bank No. _____ Phase No. _____
Trans. Mfg. _____
Serial No. _____
Date Sample Taken _____
Free Breather _____ Indoor _____
Conservator _____ Outdoor _____
Nitrogen Filled _____ Subway _____
K.V.A. Rating _____
Single Phase _____ Three Phase _____
Sample Drawn From: Top _____ Bottom _____
Age of Transformer _____ years
Water Cooled _____ Air Cooled _____
Oil Capacity _____ Badge No. _____

Sampling, Refer to: ASTM D923 (ANSI C59.21)
And NM Operating Practices Bulletin for Electric
Stations, No. 401.

FOR OTHER THAN TRANSFORMERS - USE OTHER SIDE

NIAGARA
MOHAWK

419-11 R6-79