DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N392050368

FACILITY: Consumers Energy - Freedom Compressor Station		**SRN / ID:** N3920
LOCATION: 12201 PLEASANT LAKE RD, MANCHESTER		**DISTRICT:** Jackson
CITY: MANCHESTER		**COUNTY:** WASHTENAW
CONTACT: Vince Hittoe , Senior Field Lead		**ACTIVITY DATE:** 09/12/2019
STAFF: Mike Kovalchick	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Full Compliance Inspection-Announced.		
RESOLVED COMPLAINTS:		

Major Source for NOX/CO-Major Source for HAPs-Full Compliance Evaluation (FCE)

Facility Contact

Vince Hittie, Field Leader: 734-428-2050

Frank Rand, Field Environmental Coordinator: 734-848-2610

Purpose

On September 12, 2019, I conducted an announced compliance inspection of Consumers Energy Freedom Compressor Station (Company) located near Manchester, Michigan in Washtenaw County. The purpose of the inspection was to determine the facility's compliance status with the applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules, the Company's Renewable Operating Permit (ROP) No. MI-ROP-N3920-2014b and Permit to Install (PTI) 202-15A.

Facility Location

The facility is in a rural area. Residential homes are located about 1200 feet to the east of the facility on the shores of a small lake.

Facility Background

The facility was last inspected on March 18, 2016 and found to be in compliance.

The primary function of the Company is to transport natural gas primarily from the Panhandle Eastern Pipeline Company's supply lines to Consumers Energy's and Panhandles' pipeline systems. The Freedom Station uses natural gas fired reciprocating engines to power their natural gas compressors. The compressors are used to raise the pressure of the gas along the distribution pipeline system.

The original equipment at Freedom Compressor Station was not subject to require a Permit to Install (PTI) during the time of installation. (Plant 1 & 2). The oldest equipment on site was installed between 1946 and 1955. More recently, several small boilers were added starting in 1994 as well as a large natural gas fired compressor engine in 1995. The company received approved PTI 202-15 in January 2016 for two (2) new compressor engines rated at 3,750 HP. PTI 202-15 is one of two phases that the company has planned to update the equipment currently on site. (Replace Plant 1& 2 with a Plant 3.) The initial start-up of these engines occurred on October 24, 2016 and were installed in a temporary location. PTI 202-15A was issued on November 30, 2017. This PTI covers Phase 2. First, three new natural gas fired, 4-stroke lean burn (4SLB) reciprocating internal combustion engines (RICE) will be installed along with auxiliary equipment. Secondly, the 2 newer compressor engines will be moved from their temporary location to inside the Plant 3 building along side the other 3 engines of similar size and make. Finally, after all 5 engines are operating, the existing engines in Plant 1 & 2 will be decommissioned.

Regulatory Applicability

Plant 1 & 2 currently operates under ROP No. MI-ROP-N3920-2014b that was last revised on December 6, 2017 and is currently under renewal. (Renewal application received November 16, 2018.)

EUENGINE3-1 and EUENGINE3-2 currently operate under PTI 202-15A.

The facility is considered a major source under the Prevention of Significant Deterioration (PSD) regulations because the PTE of the facility for one or more regulated pollutants is greater than 250 tpy. None of the emission units at the source have gone through PSD review. Most recently, changes under PTI 202-15A were able to

"net-out" of PSD by showing a net decrease in NOx emissions after the competition of Phase 2 of the rebuild of the facility.

The facility is a major source of both NOx and CO under Title 40 CFR, Part 70 emitting above the major source thresholds of 100 tpy. After completion of Plant 3 and the decommissioning of Plant's 1 &2, it will no longer be a major source of CO.

The facility is considered a major source of Hazardous Air Pollutants (HAPs) because the potential to emit for a single HAP is greater than 10 tons per year, and the potential to emit for all HAPs is greater than 25 tons per year. (Mostly of the HAPs consist of formaldehyde.)

The compressor engines and emergency backup generators are subject to federal standards under 40 CFR 63 Subpart ZZZZ for reciprocating internal combustion engines (RICE).

The boilers located on site are subject to 40 CFR 63 Subpart DDDDD for boilers and process heaters located at a major source.

The new compressor engines are subject to 40 CFR Part 60, Subpart JJJJ-Standards of Performance for Stationary Spark Ignition Internal Combustion engines. (Requirements for non-emergency engines greater than 500 brake HP, commencing construction after June 12, 2006 and manufactured on or after July 2, 2010.)

Arrival & Facility Contact

Visible emissions or odors were not observed upon my approach to the Company's facility. I arrived at 9:00 am, proceeded to the Company's front office to request access for an inspection, provided my identification and meet with Vince Hittie (VH).

I informed him of my intent to conduct a facility inspection and to review the various records as necessary.

VH extended his full cooperation during my visit and fully addressed my questions.

Pre-Inspection Meeting

The pre-inspection meeting focused on outline which processes were currently active at the facility. We were joined by Frank Rand (FR), the Field Environmental Coordinator during the meeting.

VH outlined the status of the following equipment:

EUENGINE3-1 (Temporarily down for repairs)

EUENGINE3-2 (Temporarily down for repairs)

EUENGINE3-3, EUENGINE3-4, EUENGINE3-5, EUGEN-3-25-01, EUBOIL-3-09-01, EUFGHT-3-04-01, EUTANK-3-07-01, EUTANK-3-07-02, EUTANK-3-07-03, EUTANK-3-07-04, EUTANK-3-07-05, EUTANK-3-22-01, EUTANK-3-22-02, EUTANK-3-24-01, EUTANK-3-24-02 (Under construction)

EUENGINETLA-10 (Retired in place)

EUENGINE13 (On during inspection)

EUENGINE14 (Off during inspection)

EUENGINE23 (On)

EUENGINE28 (On)

EUENGINE29 (On)

EUENGINE57 (Removed and disconnected.)

EUENGINE58 (On)

EUENGINE59 (Off)

EUENGINE60 (Off)

EUAUXGEN1 (Off)

EUAUXGEN2 (Off)

EULINEHEATER1 (Off)

EUBOILER1 (On)

EUBOILER2 (On)

EUBOILER3 (On)

EUBOILER5 (Off)

VH indicated that are normally 10 to 15 full time employees with some of the employees also working at other stations. The station is manned between 7:00 am to 3:30 pm M-F. Otherwise, activity at the station is monitored at of the gas control office in Jackson.

VH indicated that the facility handles between 80 million scfm to 400 million scfm with much more being pumped during the Summer. This is because natural gas located south of the facility is pumped through the facility during the Summer on the way to underground storage fields to stockpile gas for Winter.

VH discussed causes of natural gas releases at the facility. VH noted that each plant is tested once per year to do a "Fire Gate" test. The Fire Gate system automatically detects natural gas leaks, fires, smoke etc. If triggered, the plant is automatically shut-in and natural gas in the process equipment is vented. During the test, less one million scfm is released. Last Winter during a period of subzero weather, the fire gate system failed to properly function as a valve froze open. Additional heating equipment was installed to prevent this problem from occurring again.

I noted to VH that I had email Amy Kapuga of their corporate environmental office requesting the following records be provided no later than September 23th.

"1) For ROP FGENGINES flexible group: Condition VI. MONITORING/RECORDKEEPING 1. Total calendar month natural gas consumption in 2018 and 2019 through August.

2) For ROP FGAUXGENS flexible group: Conditions VI. MONITORING/RECORDKEEPING 1-6. All required records for 2019 through August for both EUAUXGEN1 and EUAUXGEN2.

3) For ROP FGBLRSHTRS flexible group: Conditions V. TESTING/SAMPLING 1-3. All maintained records to show compliance with TESTING/SAMPLING Conditions 1-3 for ELINEHEATER1, EUBOILER1, EUBOILER2, EUBOILER3 and EUBOILER5.

4) For PTI 202-15A FGENGINES-P3 flexible group (EUENGINE3-1, EUENGINE3-2): Conditions VI. MONITORING/RECORDKEEPING Conditions 1-2. All required records for each condition through August 2019.

5) For PTI 202-15A FGNSPSJJJJ flexible group (EUENGINES3-1, EUENGINE3-2): Conditions VI. MONITORING/RECORDKEEPING Conditions 1a) – 1d). All required records to show compliance for each condition through August 2019 for the non-certified engines.

6) For PTI 202-15A FGNESHAPZZZZ flexible group (EUENGINES3-1, EUENGINE3-2): Conditions VI. MONITORING/RECORDKEEPING Conditions 5 a), 5 b). All required records for each condition through August 2019. Explain any out of range values and corrective action taken if any.

7) Current estimated project timeline and anticipated plant operations for Phase 2. Should include all the emission units in PTI 202-15A that are being installed as part of Phase 2. Should also note anticipated date of when EUGENGINES3-1 and 2 will be relocated.

8) For Preventative Maintenance/Malfunction Abatement Plan (PM/MAP)-Freedom Compressor Station Phase I Compressor Engines dated March 2017. Explain why Section 10 notes no replacements parts in the inventory. Explain what the manufacture's specifications are to physically inspect the catalyst. Has vacuuming been conducted to reduce ash build up and associated increased pressure? If so, when? How often must the oxidative catalyst be changed out? Please provide manufacture's specifications for the catalyst itself. What triggers the need to replace the catalyst? Failed stack test? Excessive inlet catalyst temperature? Fouling? Specific time interval? I note that there are four catalyst modules installed on each stack for each engine. How much catalyst in each module? Are these modules arranged in parallel or series? Is catalyst used up unevenly in the various modules due to the configuration?"

This information was provided on 9/24/2019. See Attachment (1). It shows compliance.

Onsite Inspection

We then conducted a general tour of the facility including Plants 1 & 2, the temporary location housing EUENGINE3-1 and EUENGINE3-2 and the very active construction of Plant 3. We also visited the control room of the facility. Attachment (2) are print outs from the control display generally showing what equipment was operating and which wasn't. (Engine 28 on at Plant 1, Engine 58 & Engine 60 on at Plant 2. It erroneously showed EUENGINE3-1 as active.) Attached photo shows the engines that were operating were at Plant 1 which differ for some reason than the control display. (Engines 13, 28 and 29)

The control display showed that natural gas entered the facility at 340.4 MMSCFD with a pressure of 620 (psi ?) and temperature 59.3 F. The gas leaves the facility in 3 separate lines at a pressure of just above 700.

See attached photos of Plant 1, Plant 2, EUENGINE3-1, EUENGINE3-2, the existing tank farm, and the some of the newly installed equipment associated with Plant 3. No opacity was noted at the facility and odors were minimal. Inspection of EUENGINE3-1 and EUENGINE3-2 showed that they were not operating and partially open due to some maintenance activity. Some oil was spilled on the floor from one of the engines. VN showed me the ports on the stacks for EUENGINE3-1 and EUENGINE3-2 where the catalyst is located inside the stacks.

Recordkeeping/Permit Requirements Review

-MAERS Review

Following emissions were reported with almost all of it coming from the engines (Grandfathered engines plus the 2 new compressor engines.). NOx emission remained very high due to uncontrolled emissions coming from the older engines.

CO 59.3 tons

NOx 484 tons

PM10 7.3 tons

VOC 21.13 tons

Formaldehyde (AQD calculated) 9.3 tons.

Overall, 2018 MAERS shows compliance.

-Permit Requirements Review (ROP & PTI 202-15A)

ROP Source-Wide Conditions (**Compliance**)

The facility has been following the requirements of this section regarding the submittal of annual and semiannual certification and deviation reports. Additionally, they are aware of the procedures that must be followed to report the venting of natural gas for both routine maintenance and emergency release as outlined in permit exemption Rule 285(mm).

FGENGINES (**Compliance**)

This flexible group covers nine existing natural gas fired reciprocating internal combustion compressor engines (2SLB).

This is the flexible group for existing natural gas fired reciprocating internal combustion compressor engines. They have one rated at 24MMBTU/hr and eight rated for 10MMBTU/hr. There are no emission or material limits associated with these pieces of equipment. The operational restriction permits the use of natural gas only, which is being adhered to. Additionally, the natural gas usage records are being kept and were reviewed while at the location. The gas is metered in two separate sheds, one for each plant area. Review of MAERS reports indicates fairly consistent emissions from year to year, with just less than 220 tons of NOx being emitted during the 2015 reporting year.

FGAUXGENS (**Compliance**)

This flexible group covers existing (CI) emergency stationary reciprocating internal combustion engines (RICE) that have a maximum site rating of 500 brake horsepower (HP).

This is the flexible group for the existing emergency compression ignition engines located on site since 1955.

These engines do not have any emission or material limits associated with their operation. Process/operational restrictions limit the use of these engines to 100 hours per year for maintenance and testing. Also, the facility chooses to comply with Subpart ZZZZ by implementing an oil analysis program as described in 63.6625(i) of the Subpart.

FGBLRSHTRS (**Compliance**)

This flexible group covers industrial boilers and process heaters fired by natural gas.

This is the flexible group for boilers and process heaters fired by natural gas. There are no emission or material limits with these units. On 1/28/2016 AQD received the Notification of Compliance Status (NOCS) that was submitted according to 40 CFR 63.7550 for boilers located at a major source subject to Subpart DDDDD. The initial tune-up and one-time energy assessment were conducted by Monarch Welding & Engineering.

FGCOLDCLEANERS (**Compliance**)

This flexible group covers one small cold cleaner located in Aux Building 1. The cold cleaner was not visited during this inspection.

EUEGEN-3-25-01 (**Under Construction**)

This emission unit includes one natural gas fired RICE with maximum rating of 1818 HP for emergency power generation. Requirements were not reviewed since this emission unit is not yet operational.

EUBOIL-3-09-01 (**Under Construction**)

This emission unit includes a natural gas fired auxiliary boiler with a maximum rating of 12.5 MMBtu/hr. Requirements were not reviewed since this emission unit is not yet operational.

EUFGHT-3-04-01 (**Under Construction**)

This emission unit includes a natural gas fired heater with maximum heat input rating of 0.63 MMBtu/hr. Requirements were not reviewed since this emission unit is not yet operational.

FGTANKS (**Under Construction**)

This flexible group includes nine above ground storage tanks for holding oils, natural gas condensate, coolant and wash down water. Requirements were not reviewed since this emission unit is not yet operational.

FGENGINES-P3 (**Compliance**)

This flexible group includes 5 natural gas fired, 4-stroke lean burn (4SLB) reciprocating internal combustion engines (RICE) with maximum rating of 3750 HP each. Each engine is equipped with oxidation catalyst. EUENGINE3-3, EUENGINE3-4 and EUENGINE3-5 have yet to be fully installed.

FGNSPSJJJJ (**Compliance**)

This flexible group includes NSPS Subpart JJJJ subject non-emergency engines greater than 500 brake HP. (EUENGINE3-X)

FGNESHAPZZZZ (**Compliance**)

This flexible group includes NESHAP Subpart ZZZZ subject non-emergency engines greater than 500 brake HP. (EUENGINE3-X)

FGNESHAPDDDDD (**Under Construction**)

This flexible group covers new boilers/process heaters at major source of hazardous air pollutants. (EUBOIL-3-09-01, EUFGHT-3-04-01). Requirements were not reviewed since the emission units that are subject to these requirements are not yet operational.

Post-Inspection Meeting

There was no post-inspection meeting. I thanked VH and FR for their time and corporation and departed the facility around 10:30 am.

Compliance Summary

The Company is in compliance with all their ROP/PTI permit requirements.

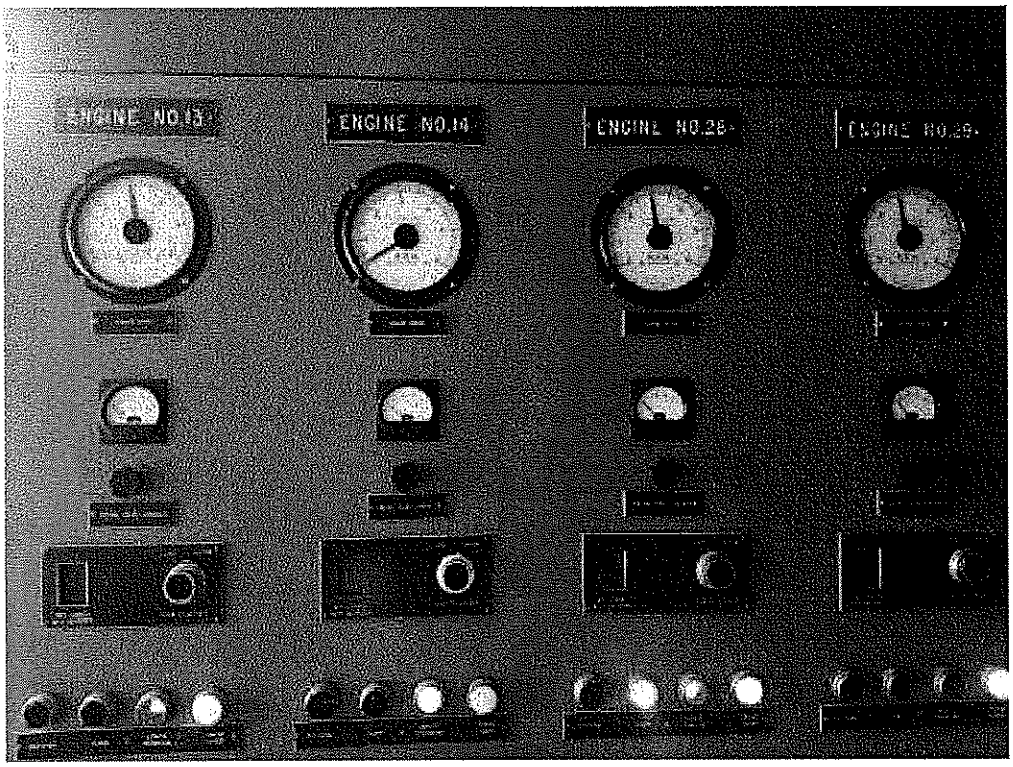


Image 1(Plant 1) : Plant 1 Control Panel

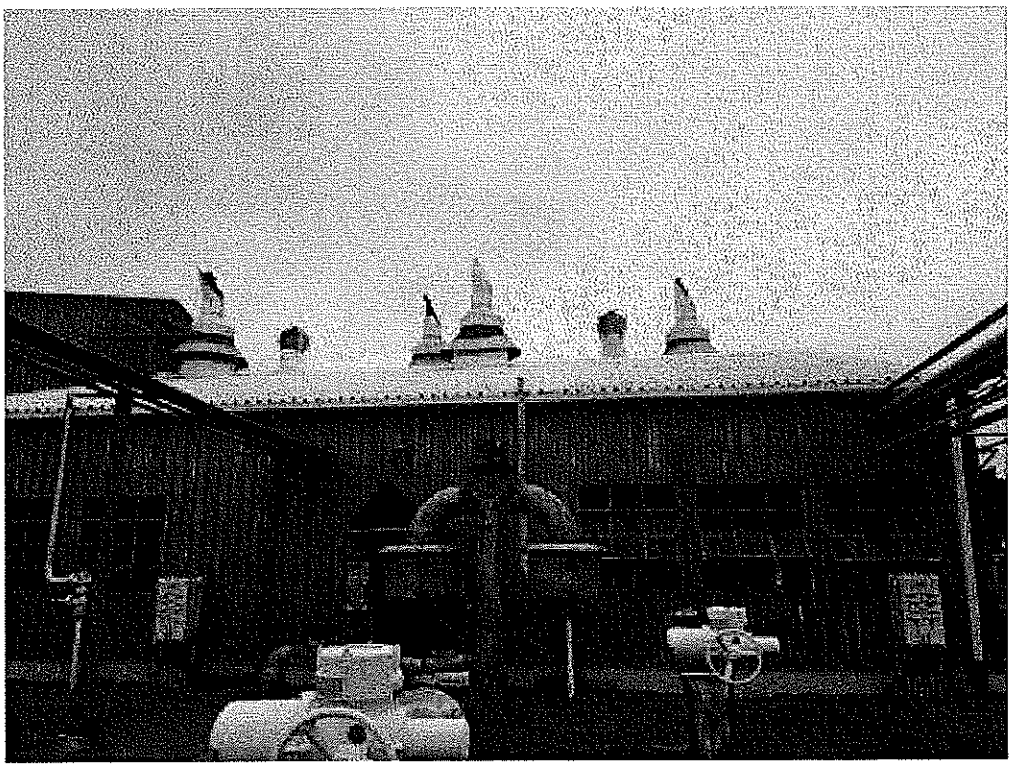


Image 2(Plant 2) : Plant 2

Image 3(Engine 1 & 2) : Engine 3-1 & 3-2-temporary location

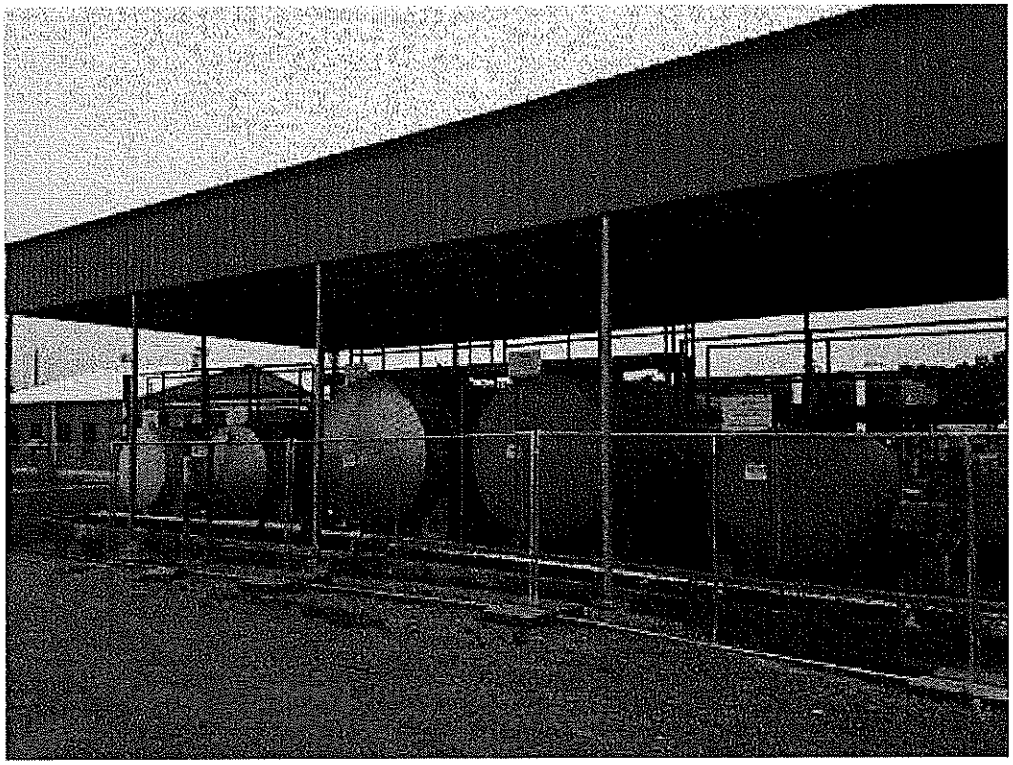


Image 4(Existing tank farm) : Existing tank farm

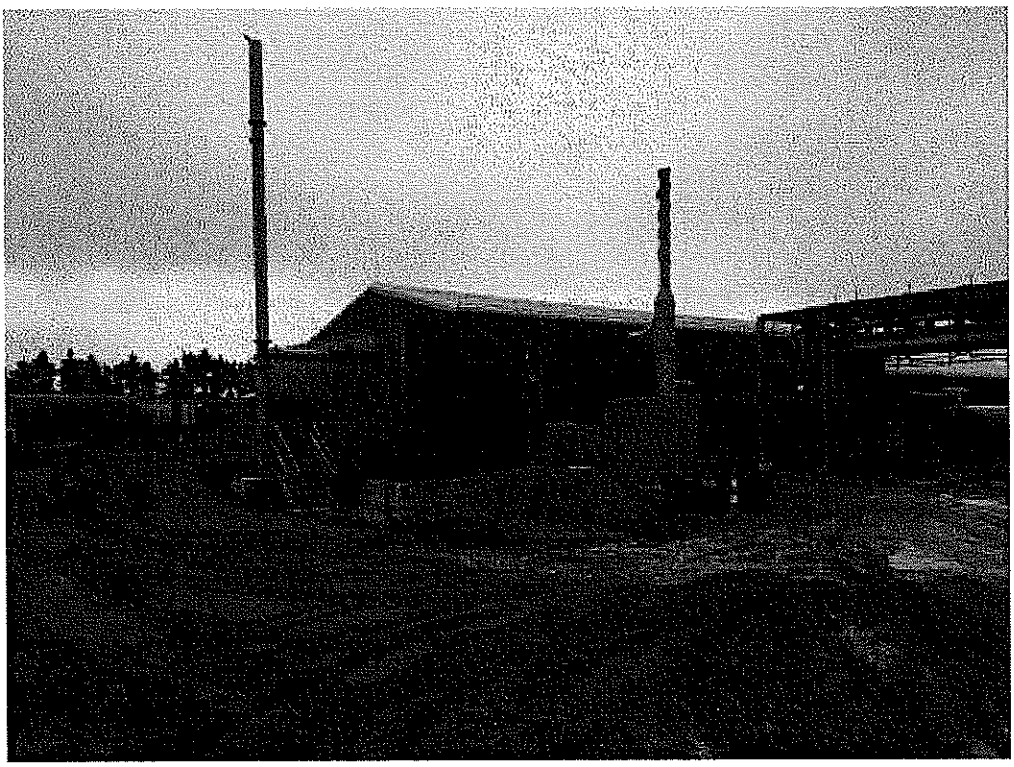


Image 5(New generator) : New emergency generator

Image 6(Plant 1) : Plant 1

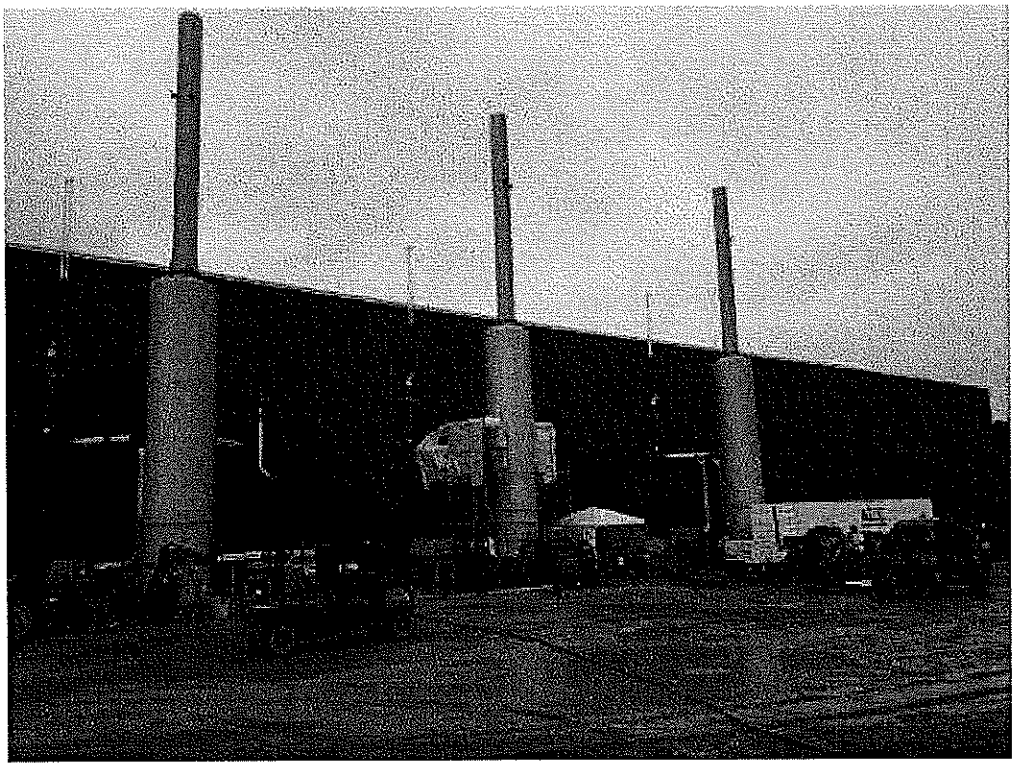
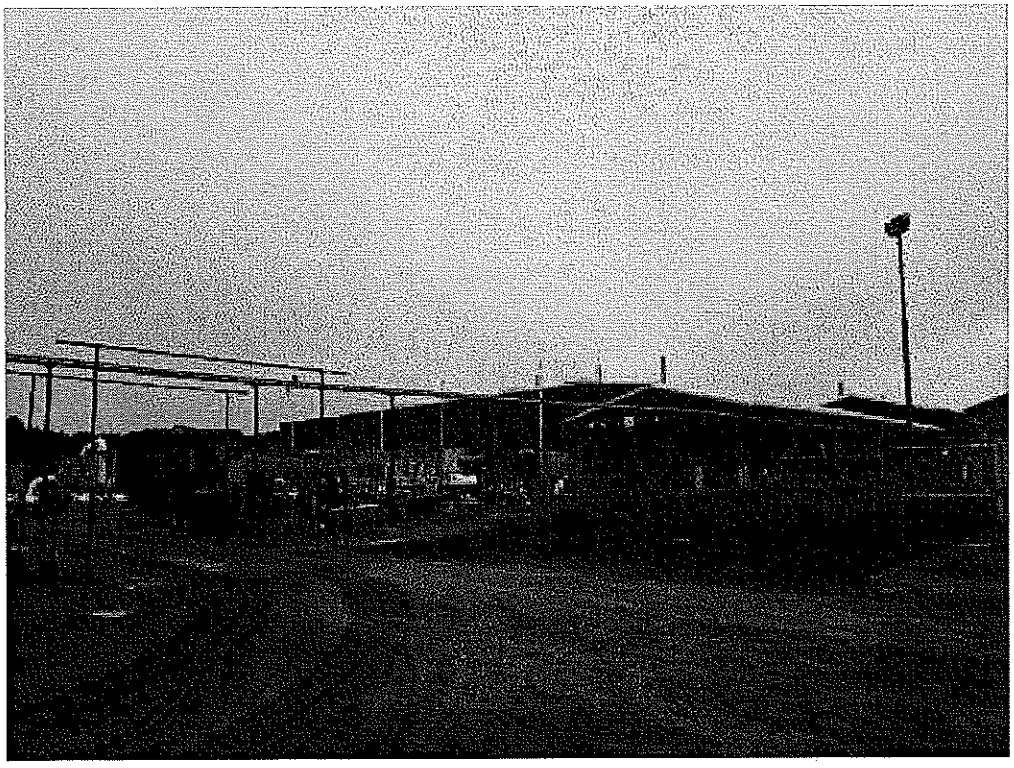


Image 7(New Plant 3) : New Plant 3 that is undergoing construction. It will replace Plant 1 and 2.



NAME M. Kowalchuk DATE 9/24/2019 SUPERVISOR