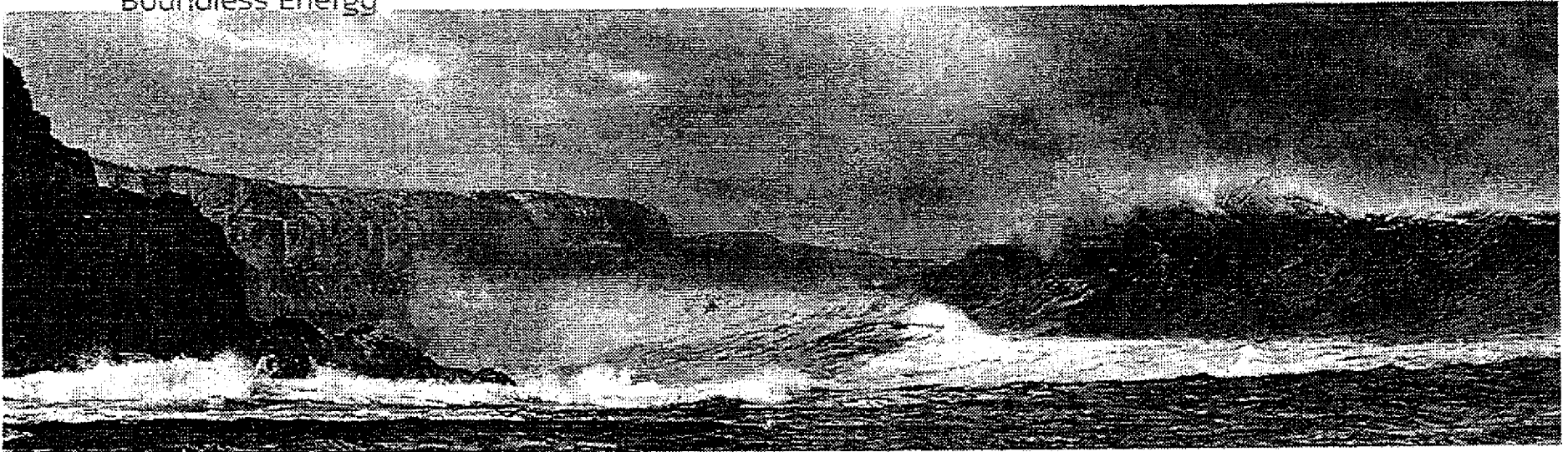


Combustion Turbine (CT)

Project Briefing
September, 2014

Boundless Energy



Agenda

Presentation

- Frequently Asked Questions
- Technical/Construction Overview

Combustion Turbine - Holyrood

FREQUENTLY ASKED QUESTIONS

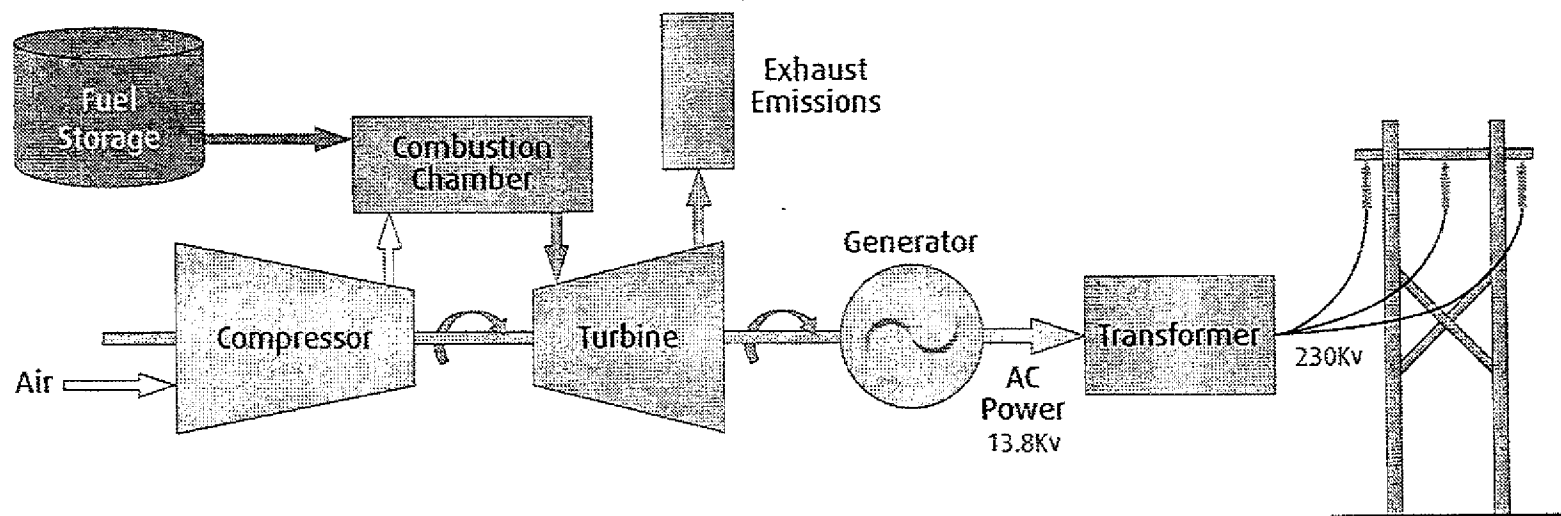
Why do we need the CT?

- A component of our capital planning – originally planned to be in place for 2015
- More power is needed in 2015 to support growing electrical demand
- Following the events of January, Hydro reassessed the timing for installation

What will the CT do?

- It will be used for high demand periods and emergency purposes not base power generation
- It will support security of electricity supply to the island for the winter 2014/2015 and beyond
 - Add 120 MW (nominal) of peaking generation capacity to the Island Generation System
 - Support forecasted load requirements in 2015
 - Support high peak winter demand periods
 - Act as back up after completion of LCP during transmission line contingencies
 - Provide blackstart capability at Holyrood until 2021

How does the CT work exactly?



Combustion Turbine Electrical Power Generation

How often will the CT be in service?

- Expected to operate infrequently - will not exceed 500 hours per year
- Used to meet high peak winter load
- Unit will be tested 2 hours per month
- Used as a blackstart at the Holyrood plant during emergency situations.

What is meant by “new unused”?

- The unit is “new unused” meaning it was not used, never installed
- It has been stored since 2008 in accordance with OEM (original equipment manufacturer’s) standards

What was the inspection process?

- The CT was inspected by a third party independent engineer who has expertise in condition assessments of gas turbines
- Reviewed all of the maintenance records from when in storage
- Hydro engineers also travelled to the US to view the turbine and the Contractor's facilities

What is the cost?

- An EPC (engineering, procurement, construction) contract was awarded at \$99M
- The cost of the turbine generator itself (about 23M US) is only a portion of the project cost
- The total cost of the project is approximately \$119M

What is the cost? (cont.)

- The rest of the EPC contract includes the balance of the plant equipment and facilities:
 - fuel offloading and storage
 - civil works and underground utilities
 - demineralized water plant
 - transformers and electrical switch gear
 - building enclosure and associated systems
 - transportation; and construction facilities

What is the cost (cont.)

- The remainder of the costs (outside the EPC contract) include:
 - transmission lines
 - terminal station interconnection
 - internal engineering
 - project management costs

How will this cost impact rates?

- Capital investment does not immediately affect rates
- Impact on rates occurs when the projects are completed and Hydro applies to the PUB for the costs to be recovered
- The anticipated impacts of the CT investment (1% - 2%) will be included in the revised general rate application

What was the procurement process?

- Followed the Public Tender Act
- Received four proposals from vendors
- Reviewed by procurement, legal and engineering teams for commercial and technical compliance
- Conducted reference checks
- Completed due diligence review (including a review of audited financial statements)

Did Hydro do an environmental assessment?

- Provincial environmental assessment process
- Undertook emission dispersion modeling
- Meets and exceeds all environmental standards
- No exceedance of ambient air standard
- Consultation/Community mail-out
 - Facilitated through Community Liaison Committee (CLC)

Other environmental considerations?

- Waste water
 - Directed to oil/water separation system
- Transformer oil spill containment
 - Concrete containment sump drain to oil/water separation system
- Fuel spill containment
 - New vertical storage tanks in lined earth dyke
 - Fuel truck offloading containment provided

Will it be noisy?

- Noise levels produced by the CT are not expected to increase noise levels already present at the Holyrood industrial site

Will the CT be used post Muskrat Falls?

- Act as back up during transmission line contingencies

Are we ready for winter?

- Generation Availability
 - New CT in Holyrood completed in December
 - Maintenance, upgrades and testing on generation equipment on track to be completed by Nov.
 - This includes major capital work in Holyrood, Bay d'Espoir, Hardwoods, Stephenville
 - Critical Spares Strategy targeted to be finalised by November
 - Interruptible contracts with industrial customers

Are we ready for winter? (cont.)

- Transmission
 - Terminal station transformers
 - Sunnyside replacement
 - Western Avalon repair/refurbishment
 - Accelerated circuit breaker replacement program
- Revised severe weather preparedness protocol
- Overall expected investment this year: \$264M

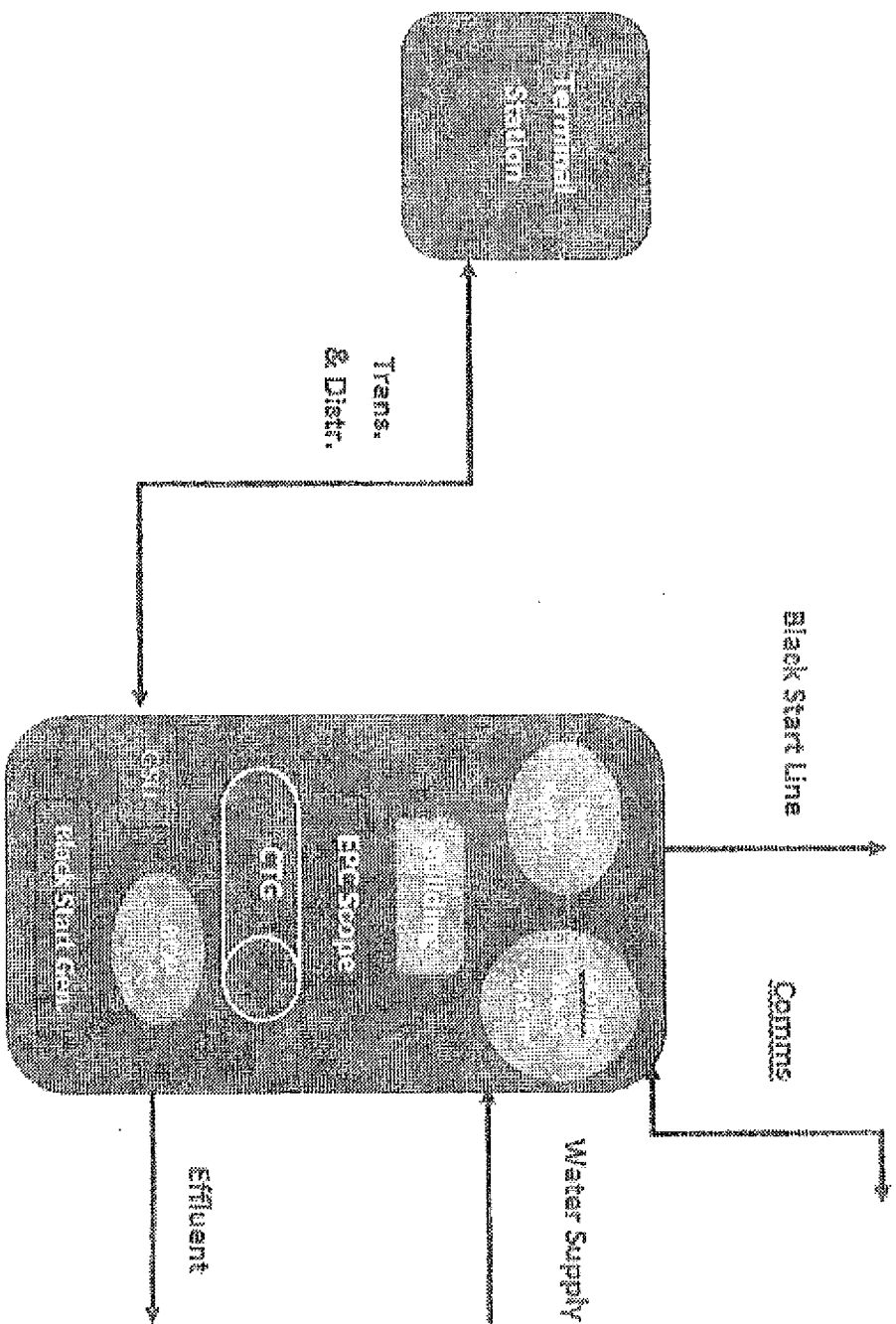
Combustion Turbine - Holyrood

TECHNICAL/CONSTRUCTION OVERVIEW

Scope of work

- 120 MW (nominal) Combustion Turbine Generator
- Liquid Fueled - Diesel
- Balance of Plant and Building Enclosure
- Generator Step Up (GSU) Transformer
- Fuel Offloading and Storage (2.5M Litres)
- Demineralized Water Plant/Storage
- Interconnection to Holyrood Terminal Station
- Remote Operation Capability
- Black Start Capability

Scope of Work: Block Diagram



Project location

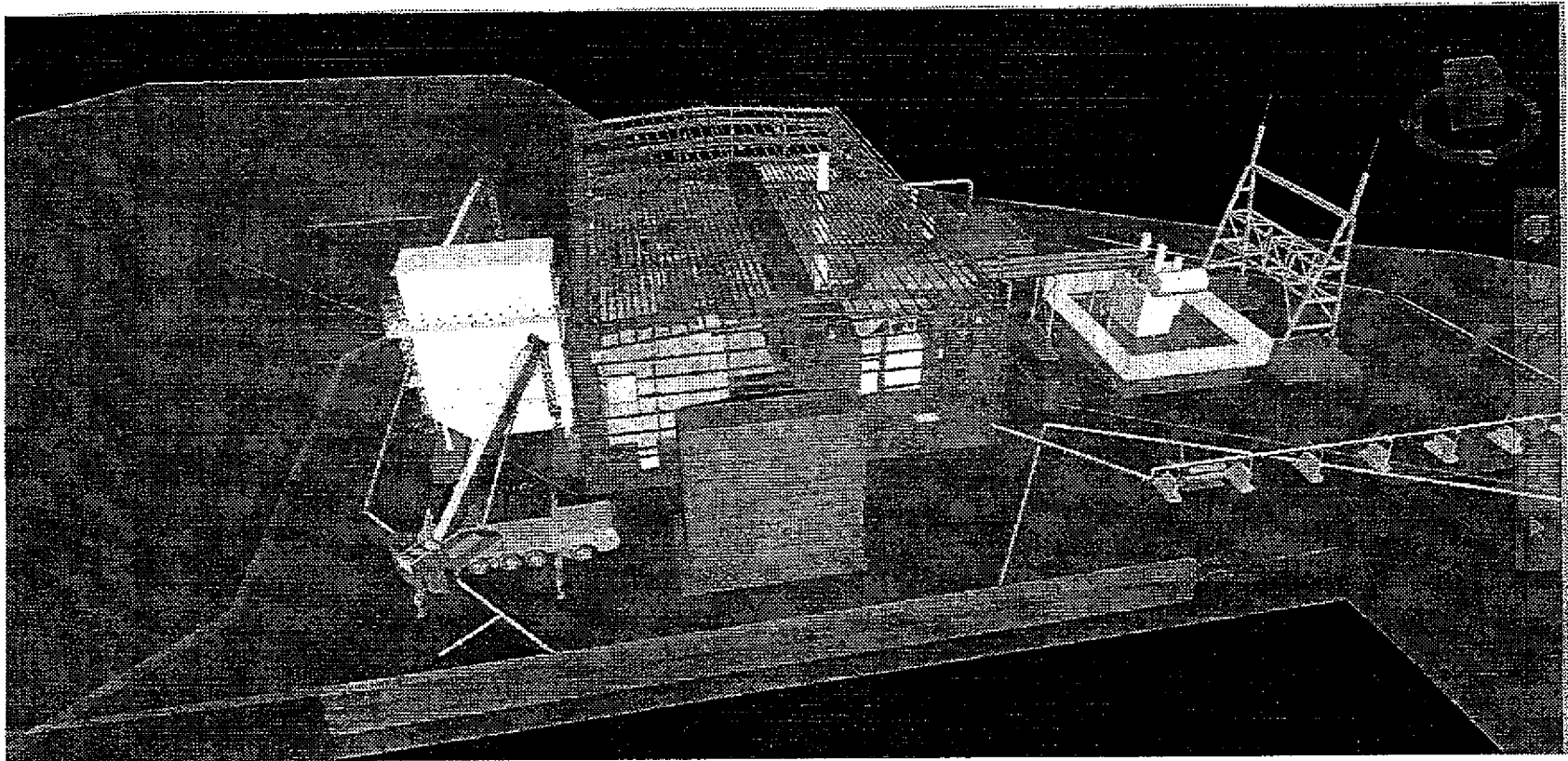
Existing Generating Station



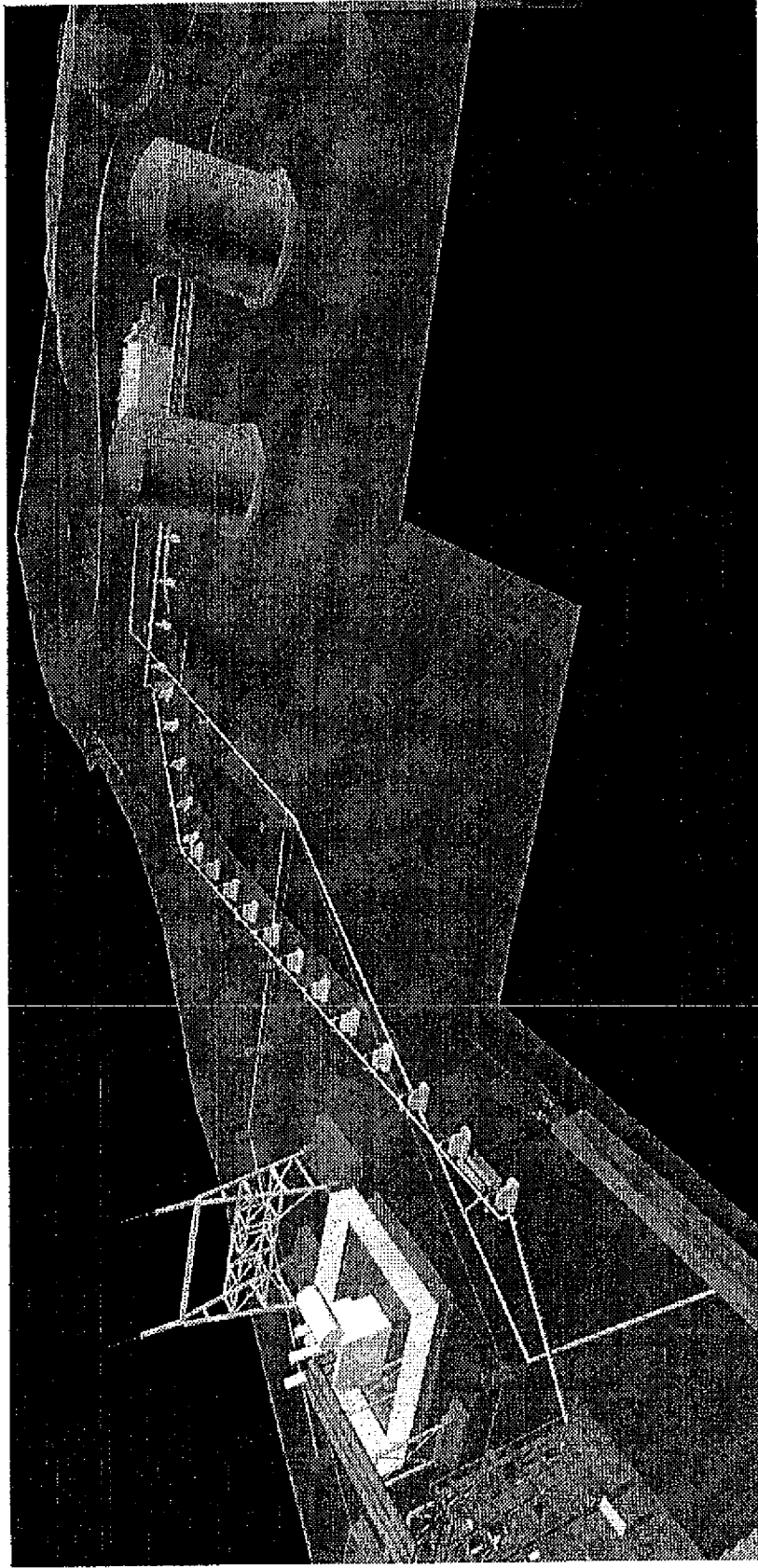
New CT Project Site boundary

Existing Terminal Station

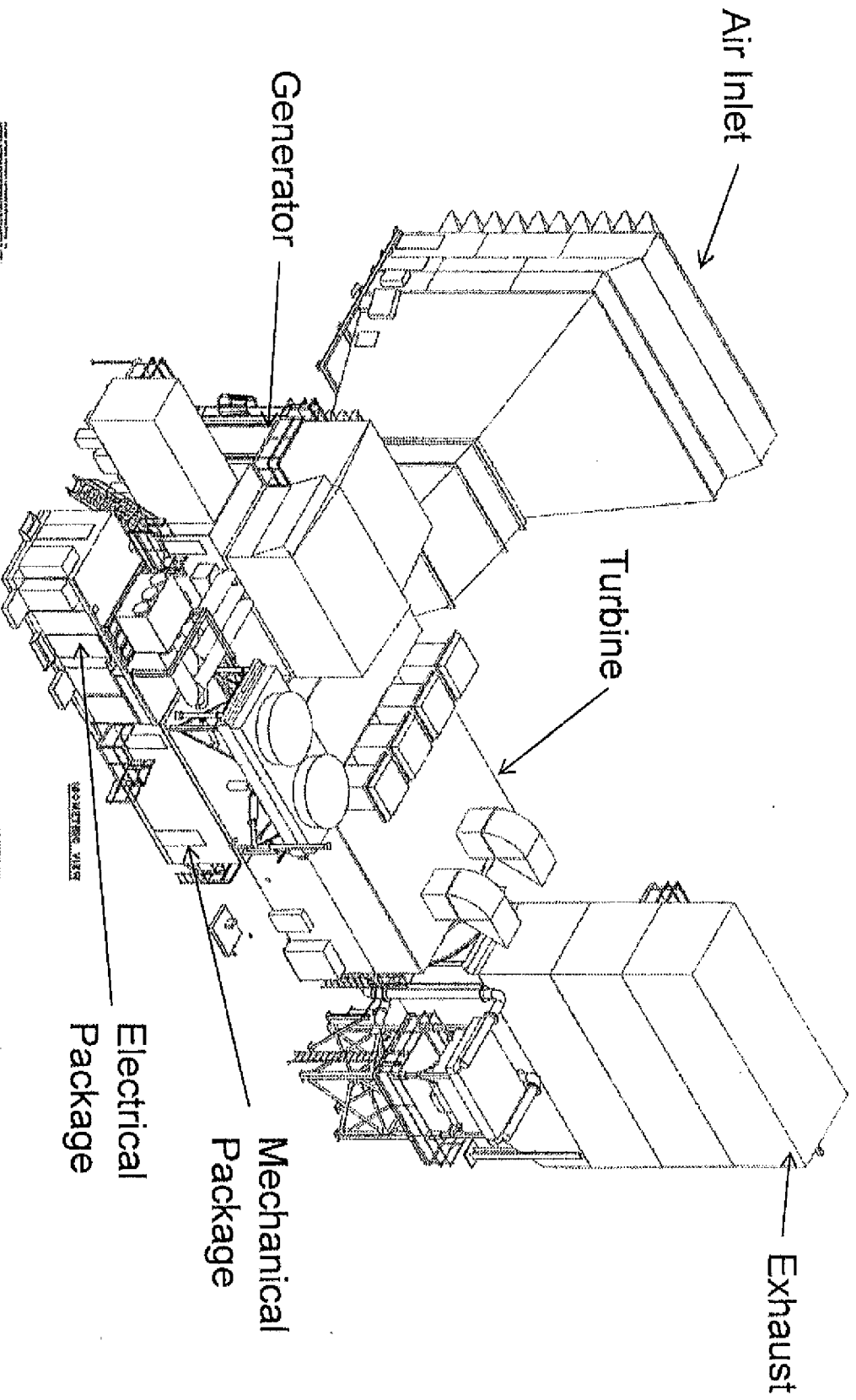
3D Model – CT Area



3D Model - Fuel Storage Area



CT Isometric view



Milestone schedule

Submit Environmental Registration Documentation	April 2014
Tender EPC Contract	April 2014
Geotechnical & Topographical Surveys	April 2014
Environmental Assessment Release	June 2014
Start Construction	June 2014
In-Service Date	December 2014

1. Fast Track Project – 8 Month Schedule - Conventional approach would take 18 to 24 months
2. Engineering, Procurement, Construction happening in parallel
3. Working 7 days per week for project duration.
4. 65,000 hours worked to date (>90% local contractor work force)

Progress summary

- Presently, schedule is tracking to plan. Target in-service: December 2014
- Site excavation complete
- Major foundations (CT, Tanks, GSU transformer) are complete
- Turbine, generator, and GSU transformer transported from Bay Bulls to Holyrood and placed on foundations

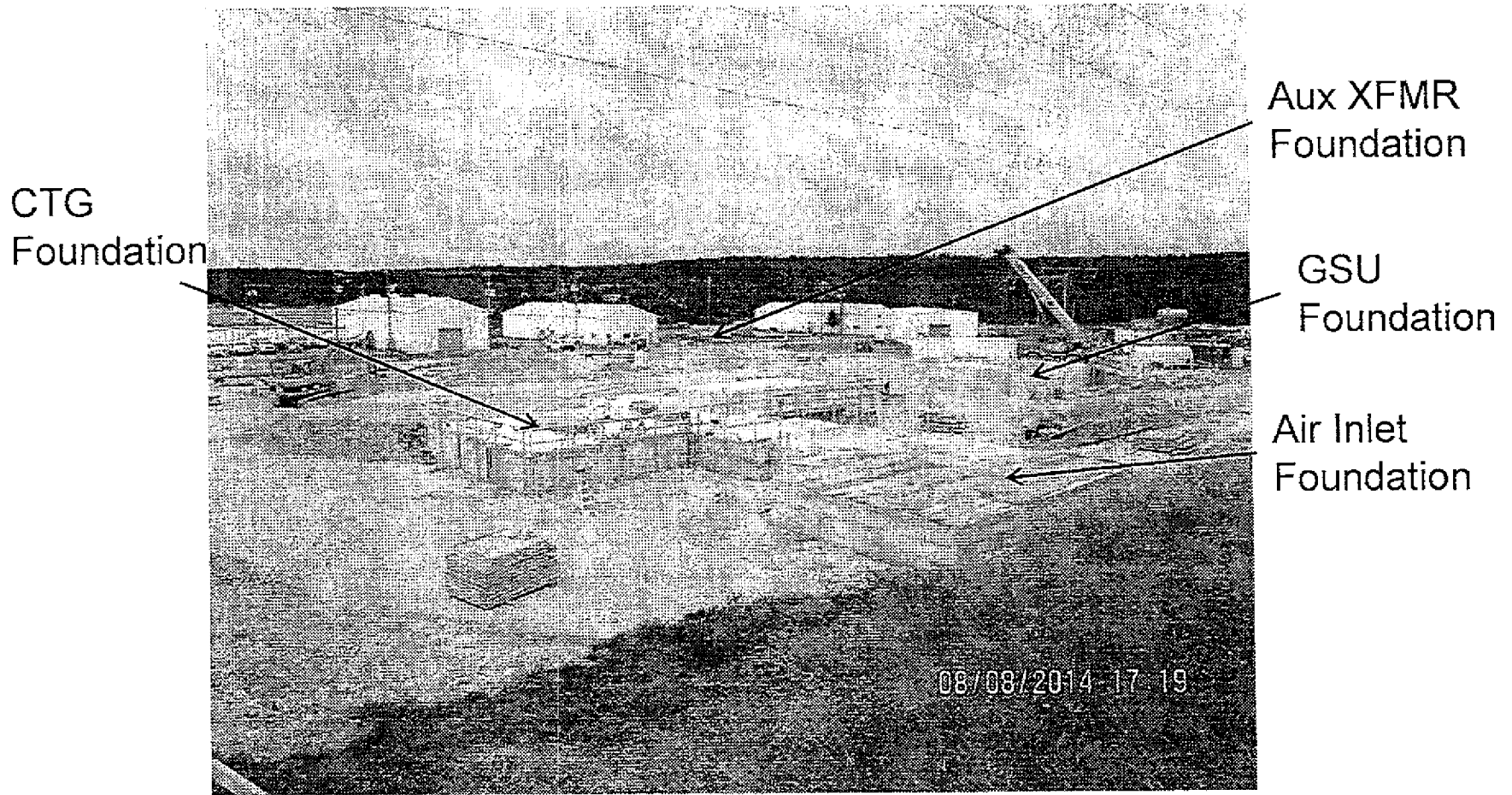
Ongoing work

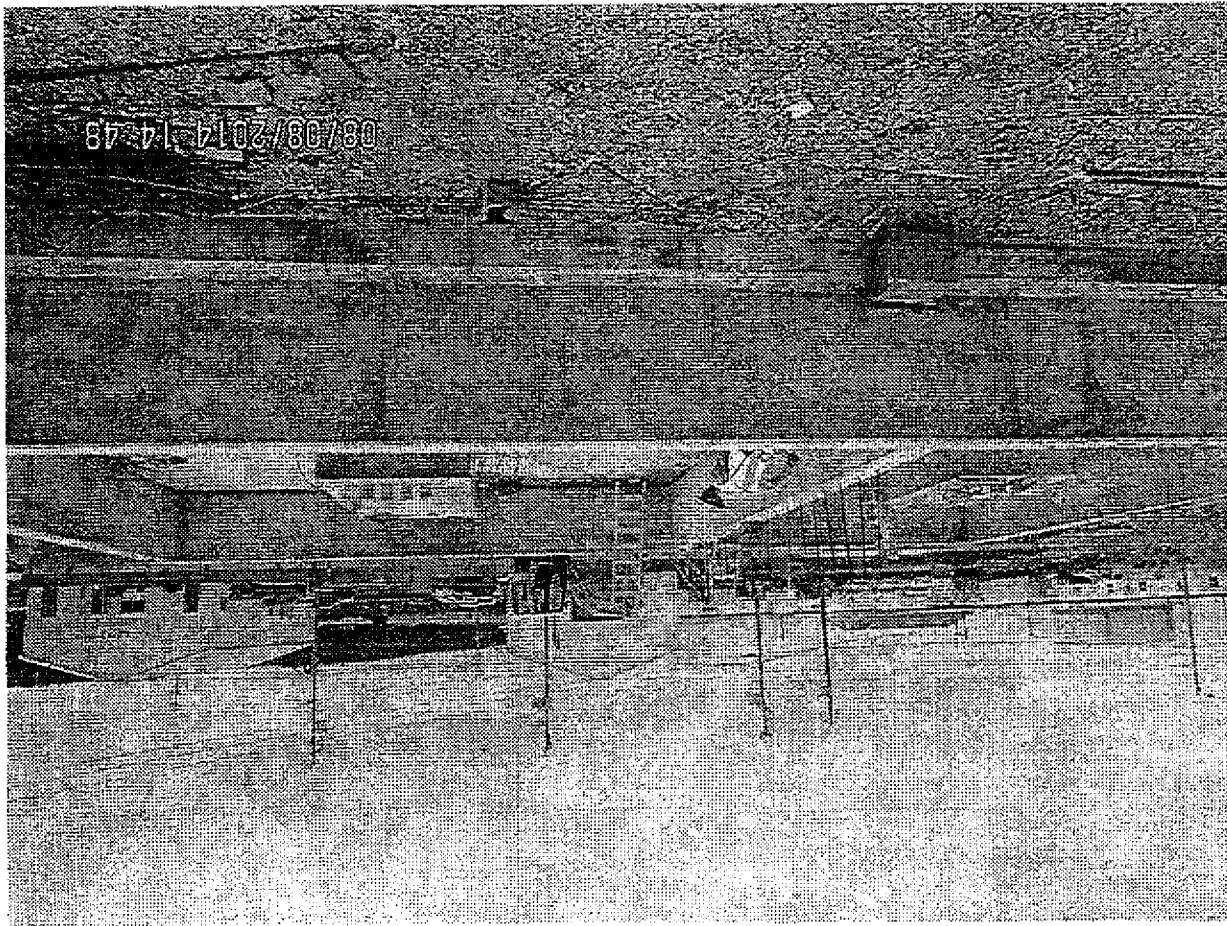
- Underground utility installation
- Installation of various duct banks
- Air inlet filter house construction
- Fuel unloading station construction
- Transmission line construction
- Retaining wall construction
- CT mechanical hookup /transformer hookup
- Terminal station interconnection work

Combustion Turbine - Holyrood

PROJECT PHOTOGRAPHS

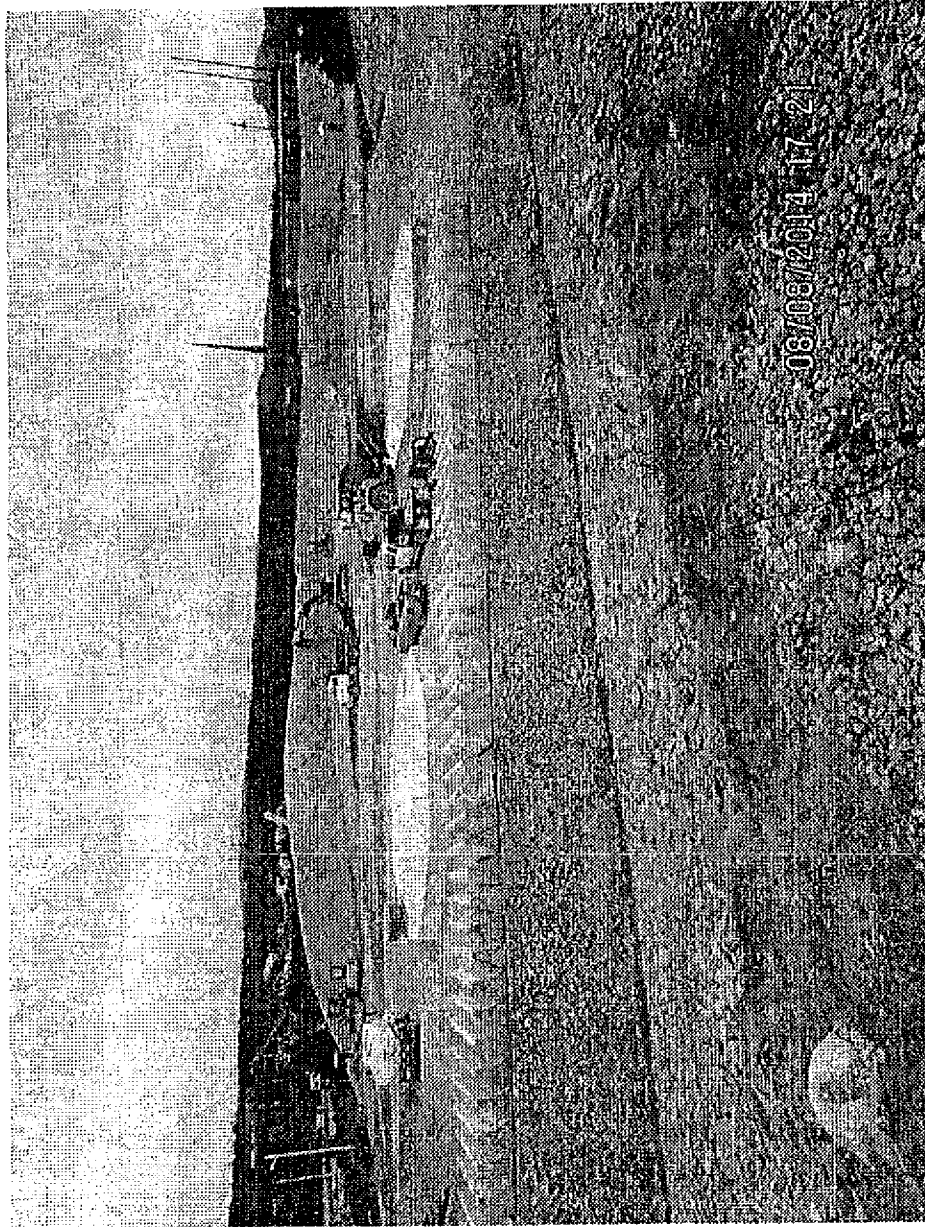
Foundation construction



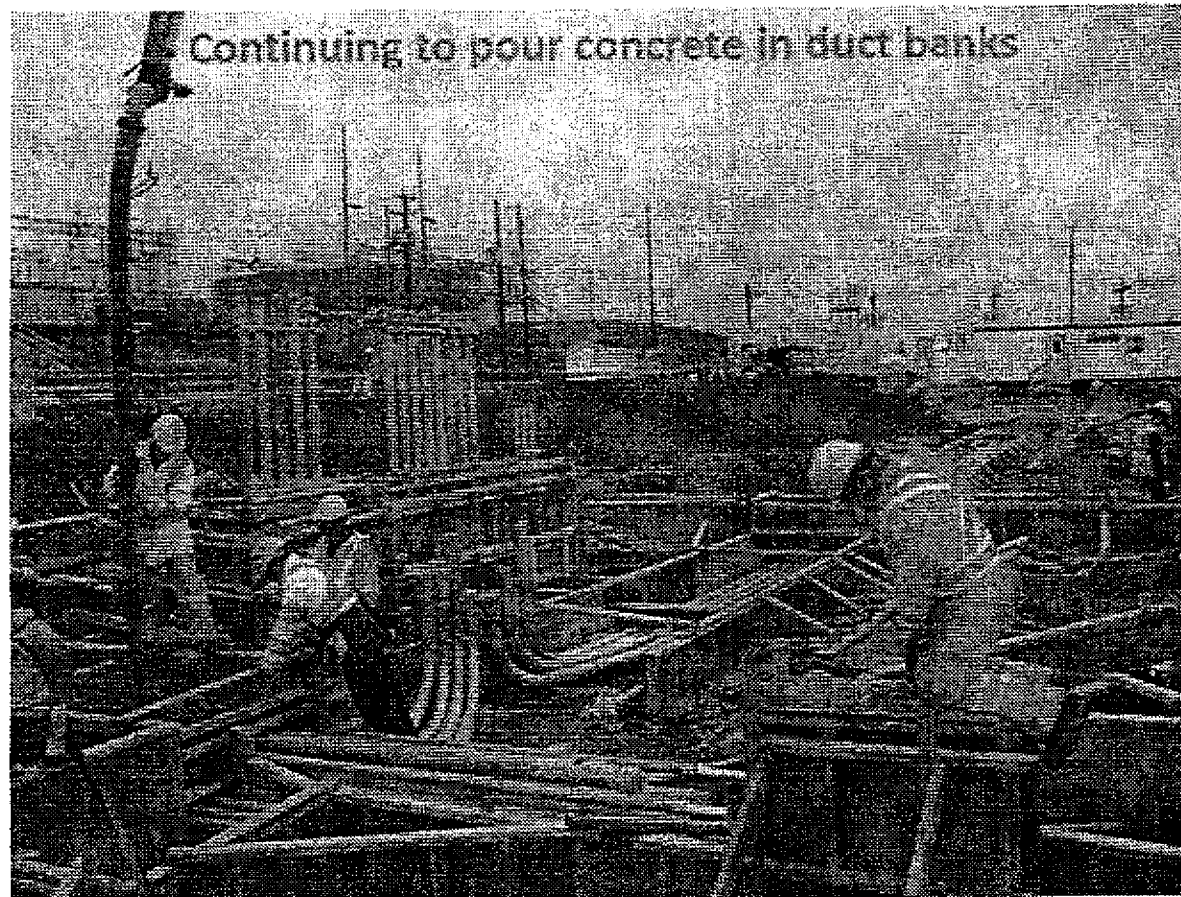


Auxiliary transformer foundations

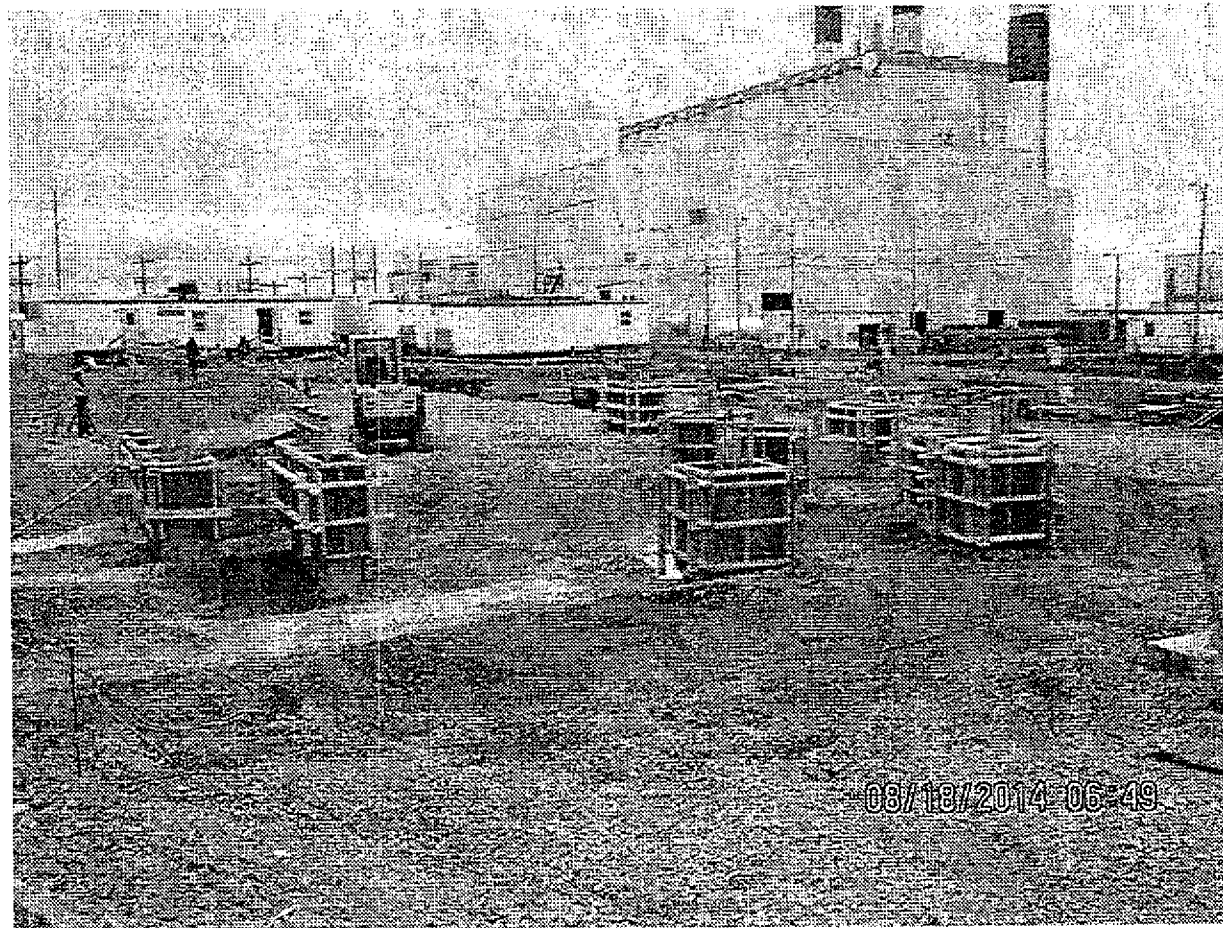
Fuel tank area foundations

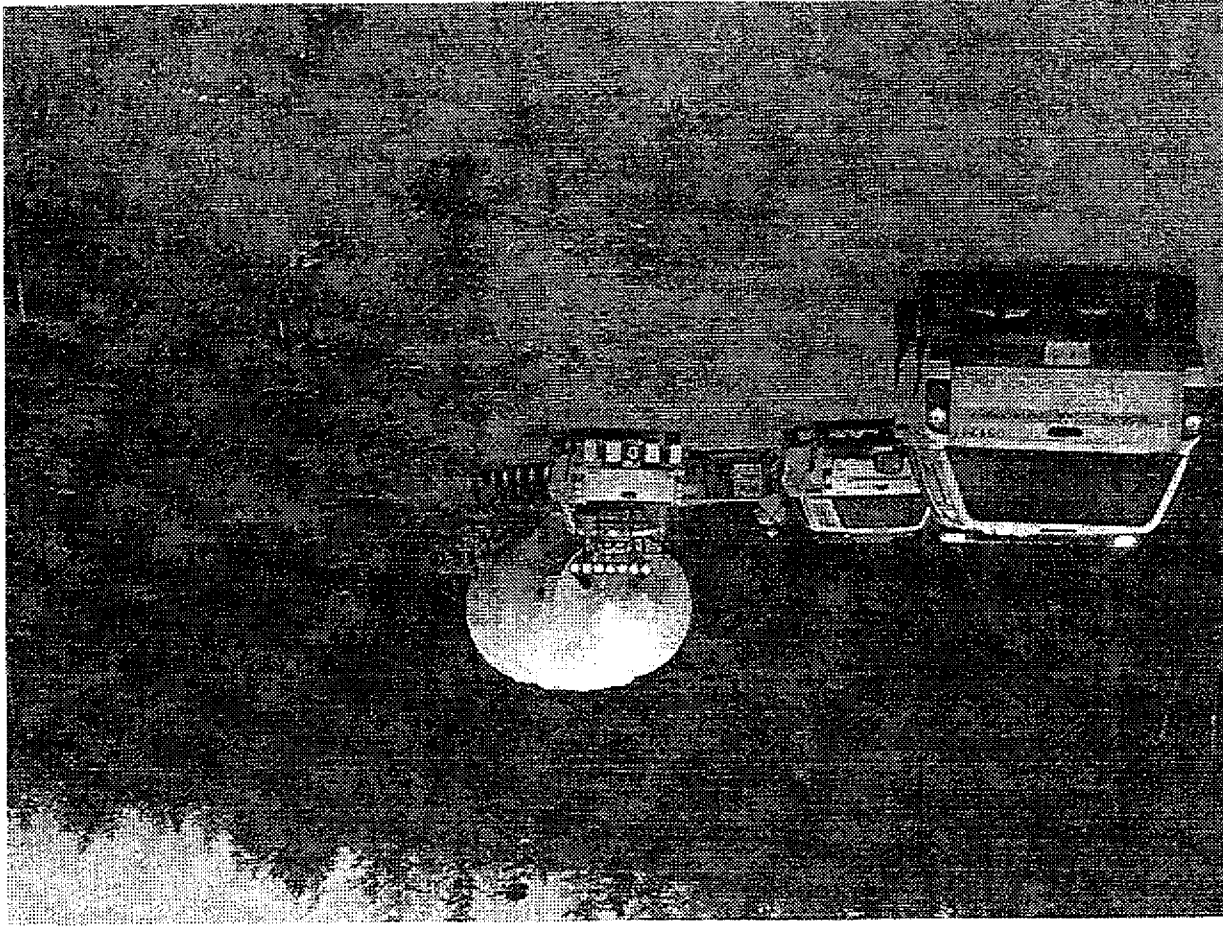


Duct bank construction

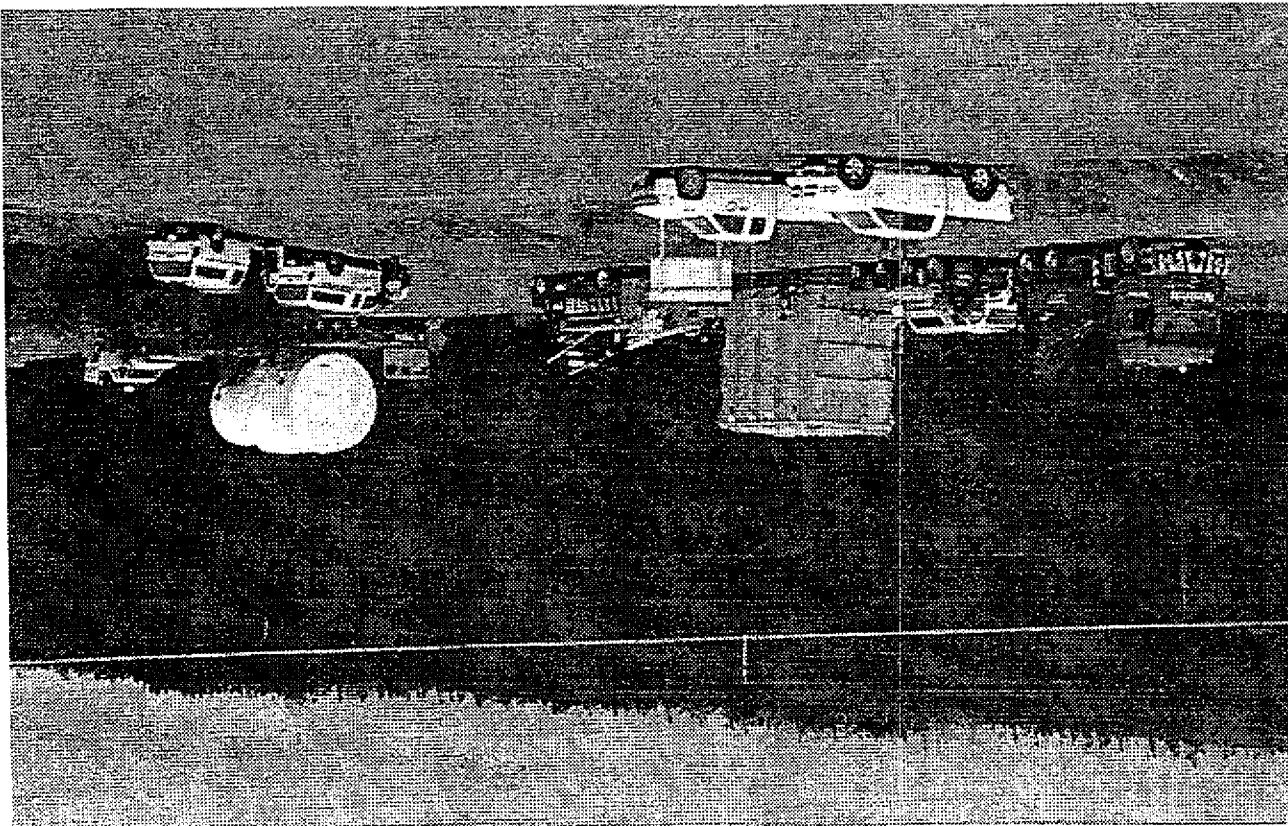


Duct banks - backfilled



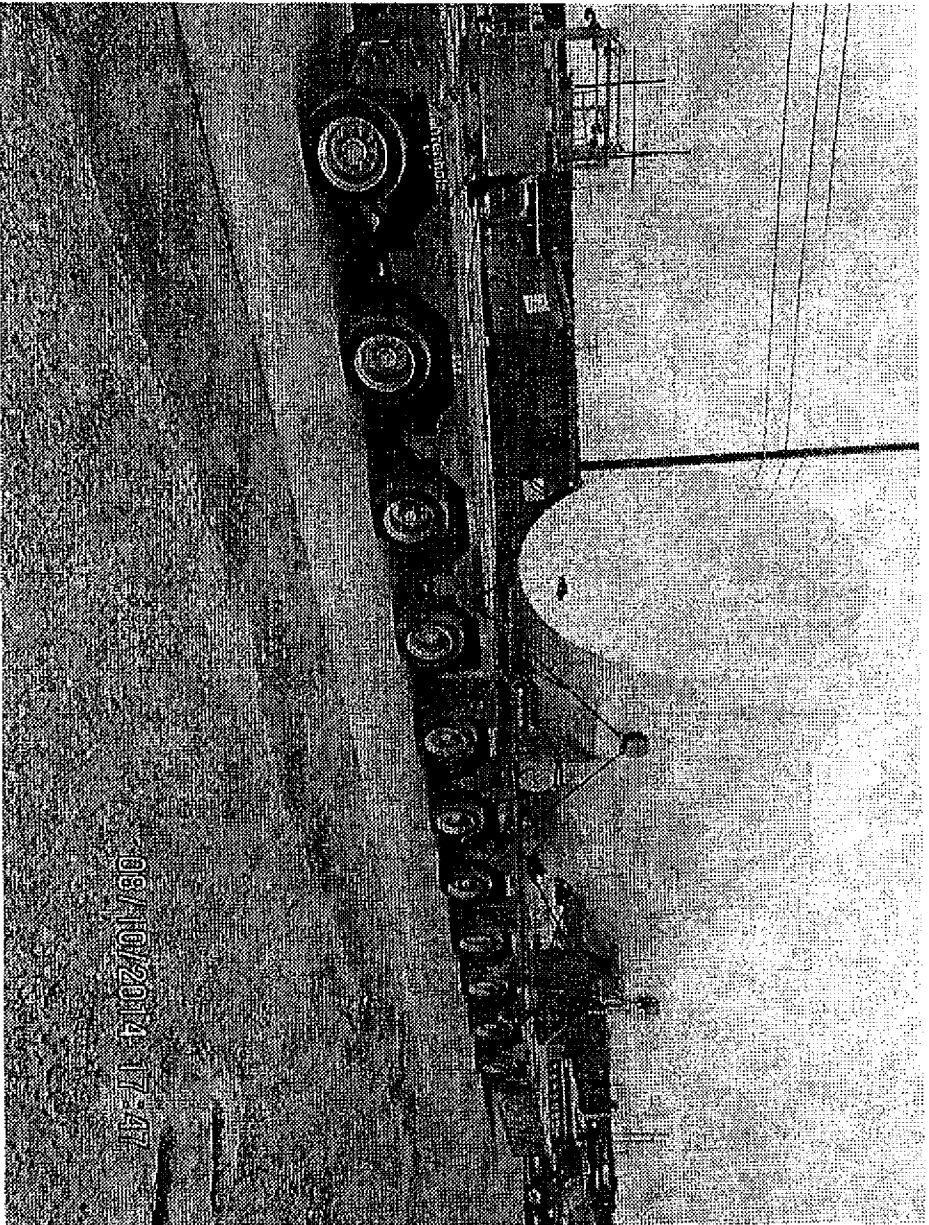


Turbine transport



Arriving at Holyrood

Turbine up close

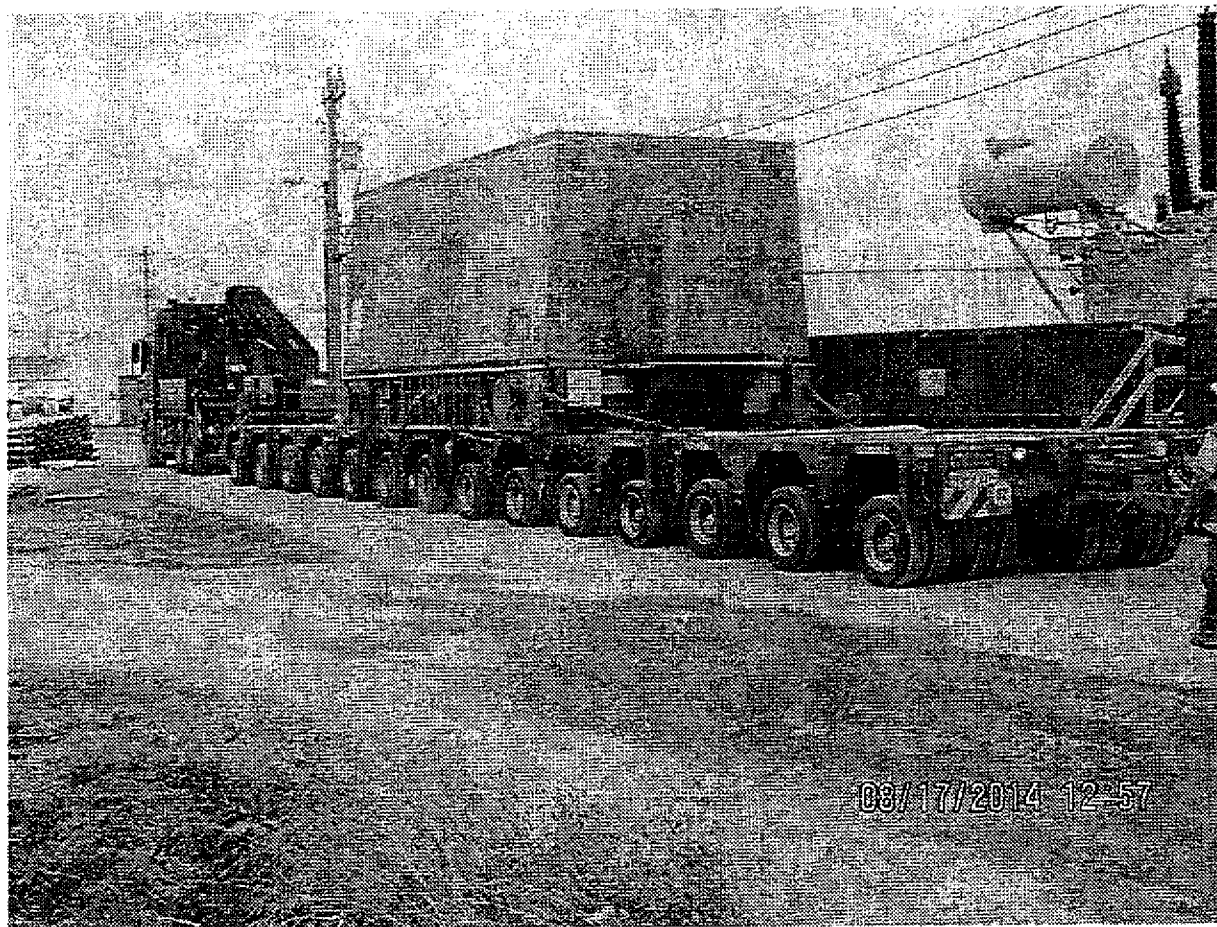


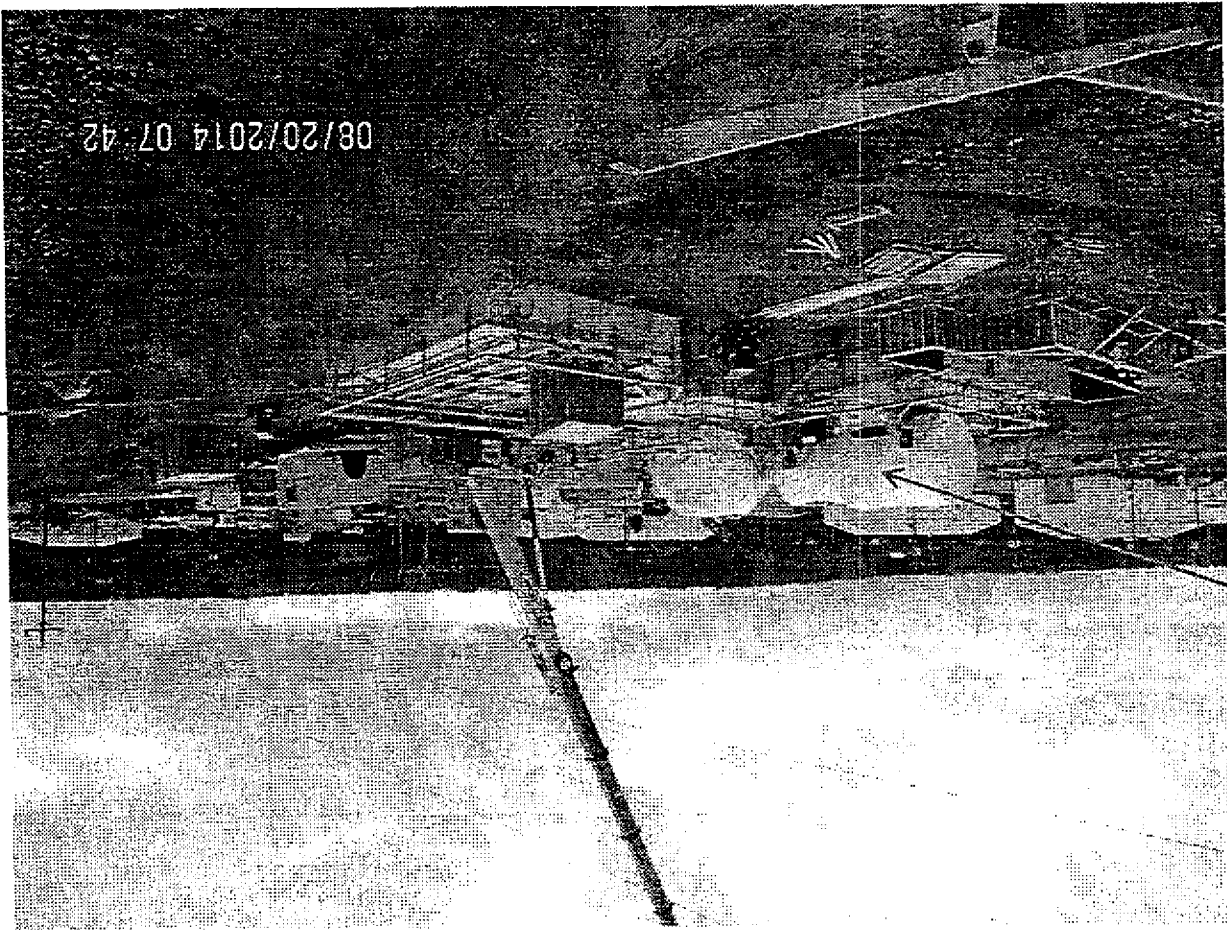
Generator transport



Generator transport

Generator arriving at Holyrood



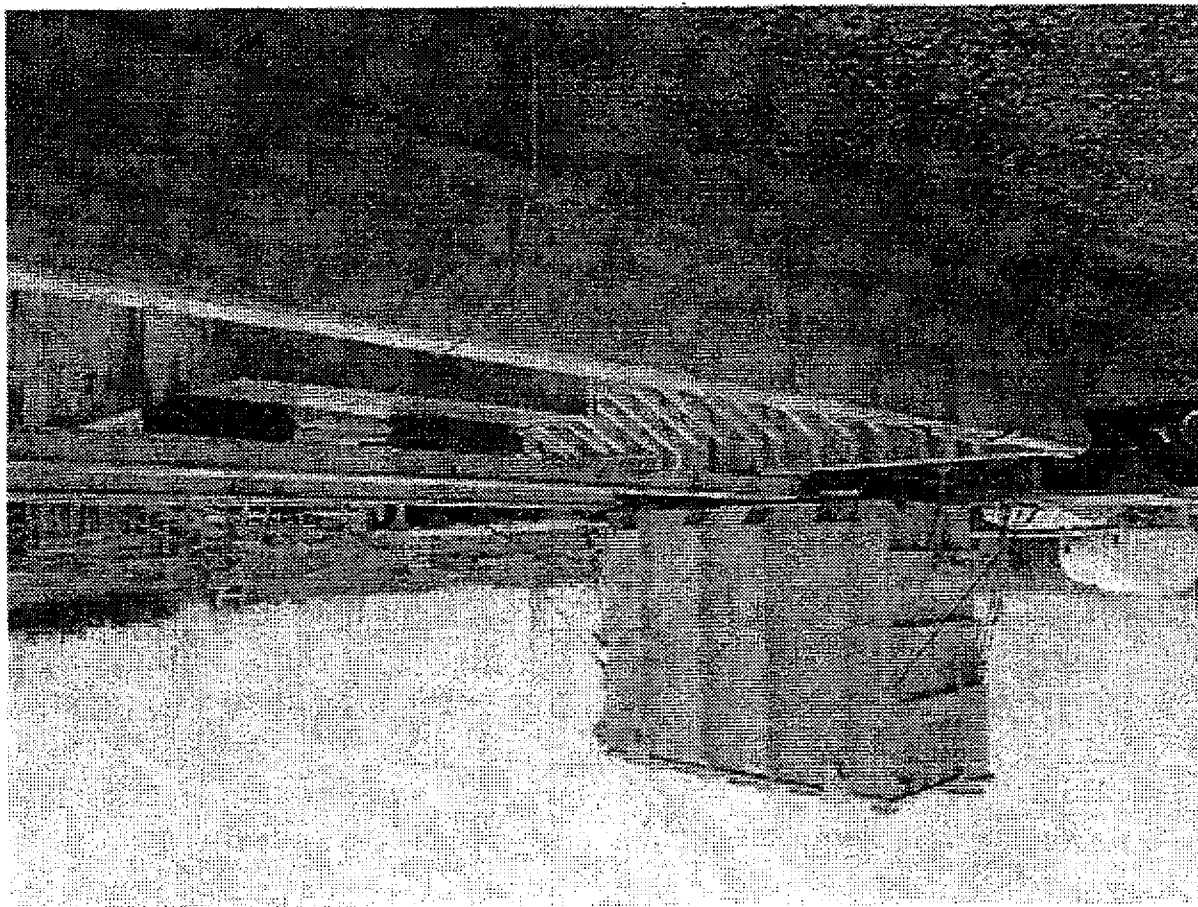


Air Inlet
Foundation

Exhaust Stack
Foundation

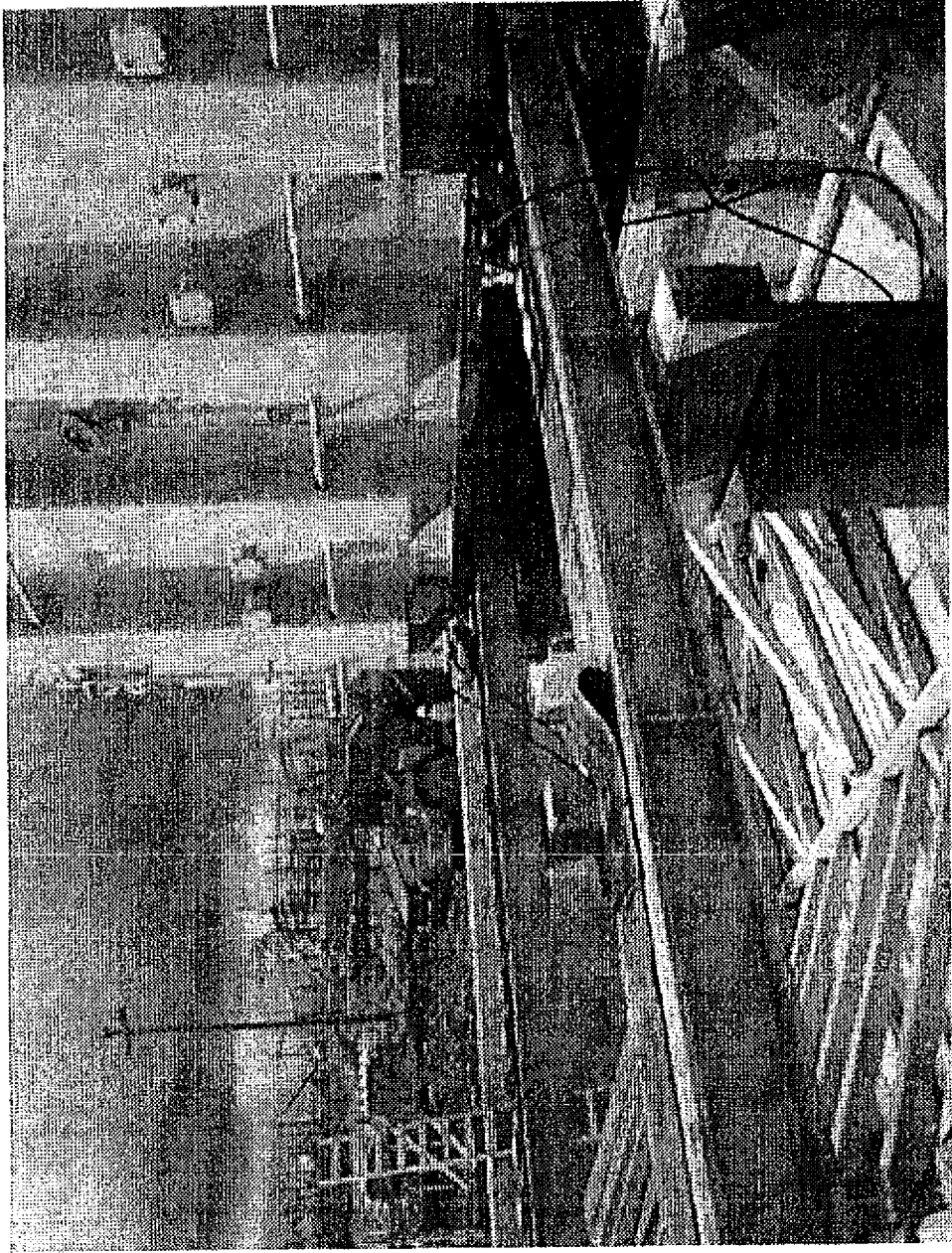
Turbine

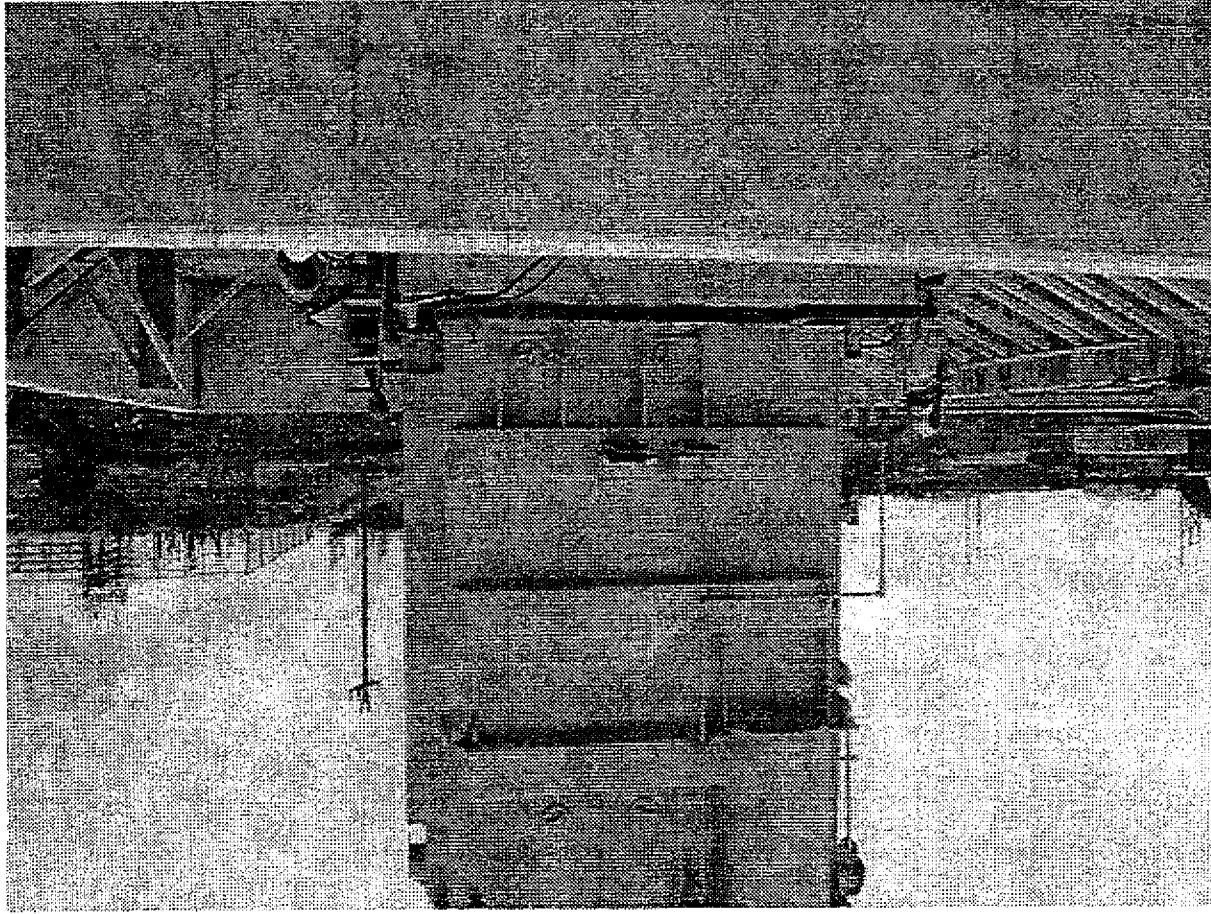
The site



GSU Transformer

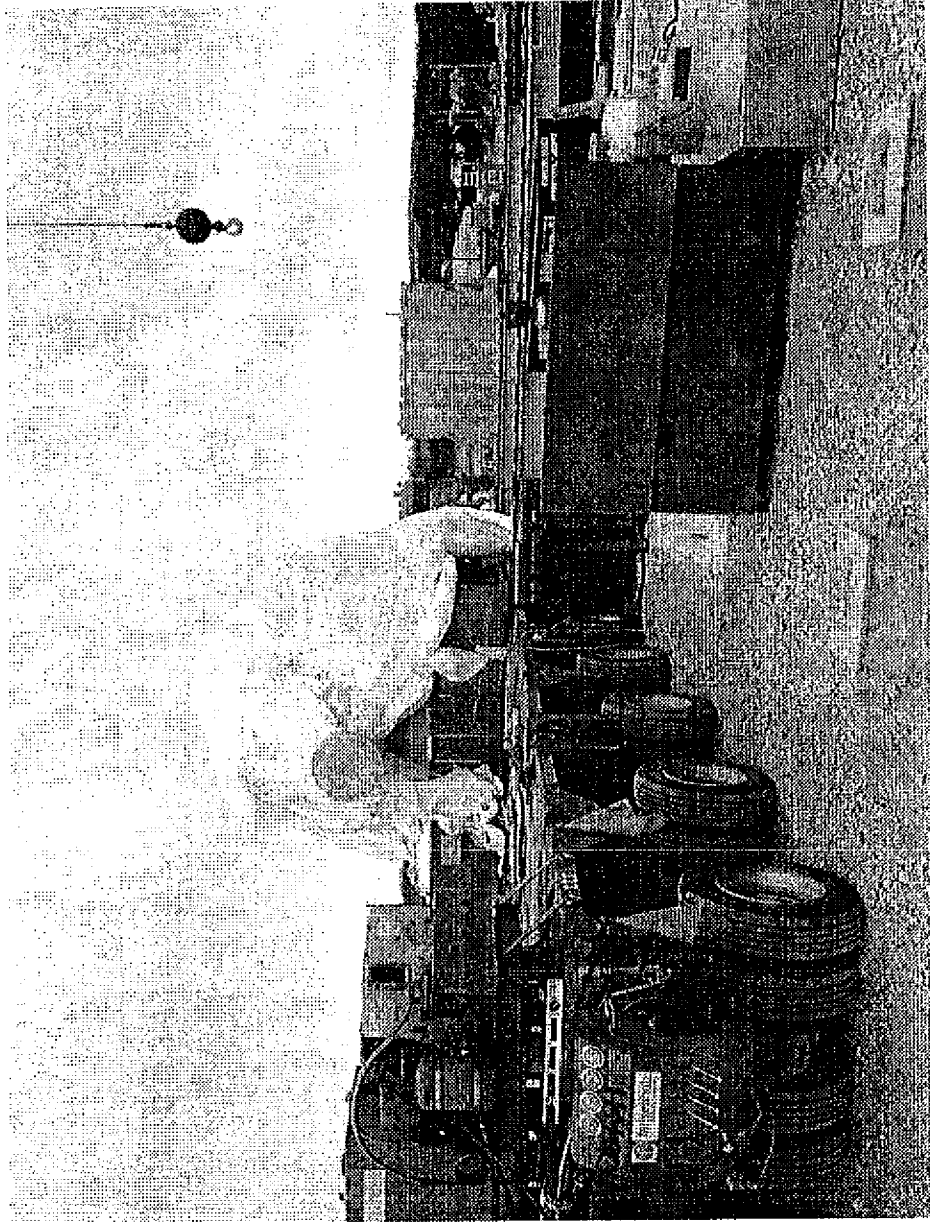
Transformer being placed on foundation



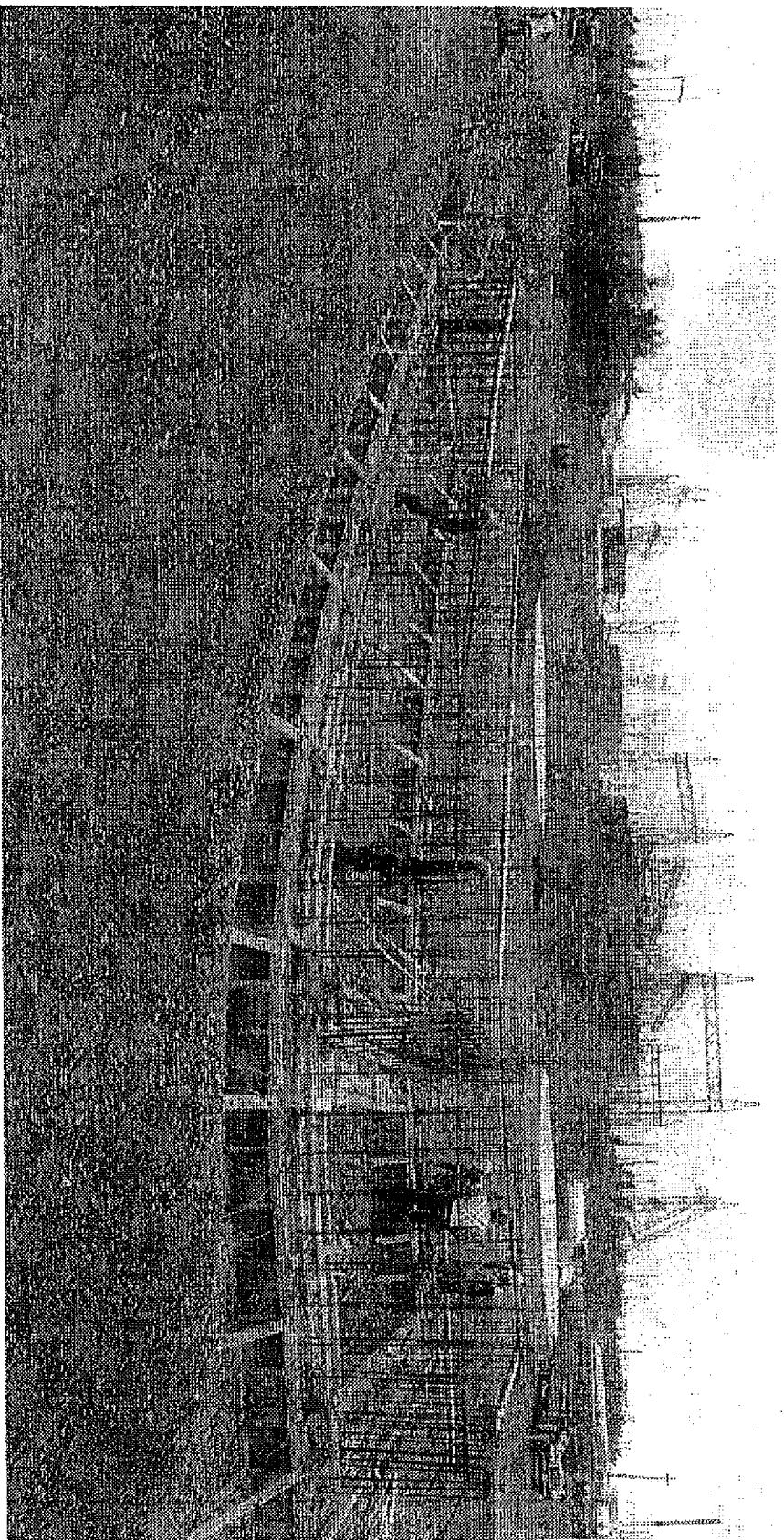


Transformer in place

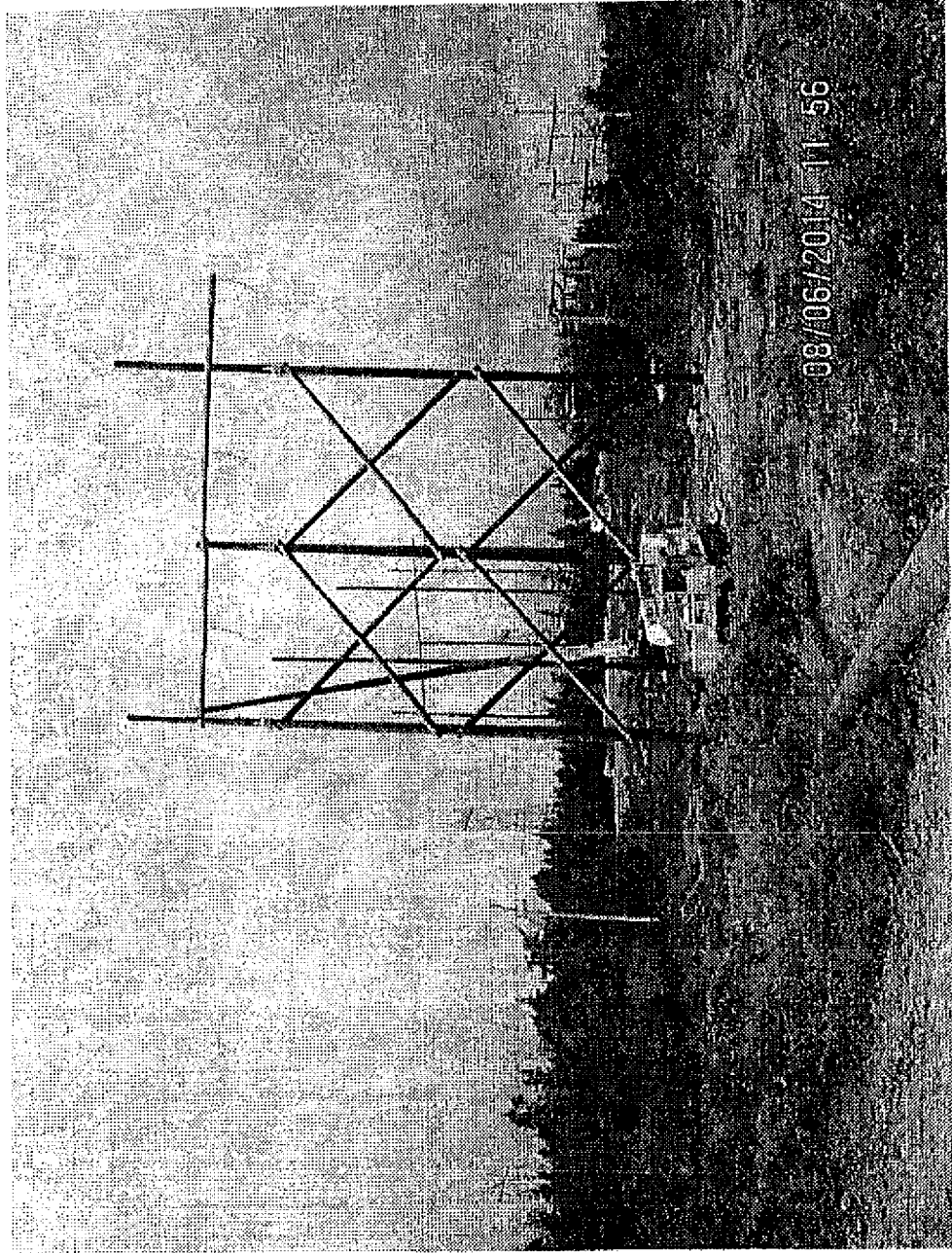
Generator - Jack and Slide



Fuel offloading pumphouse foundation

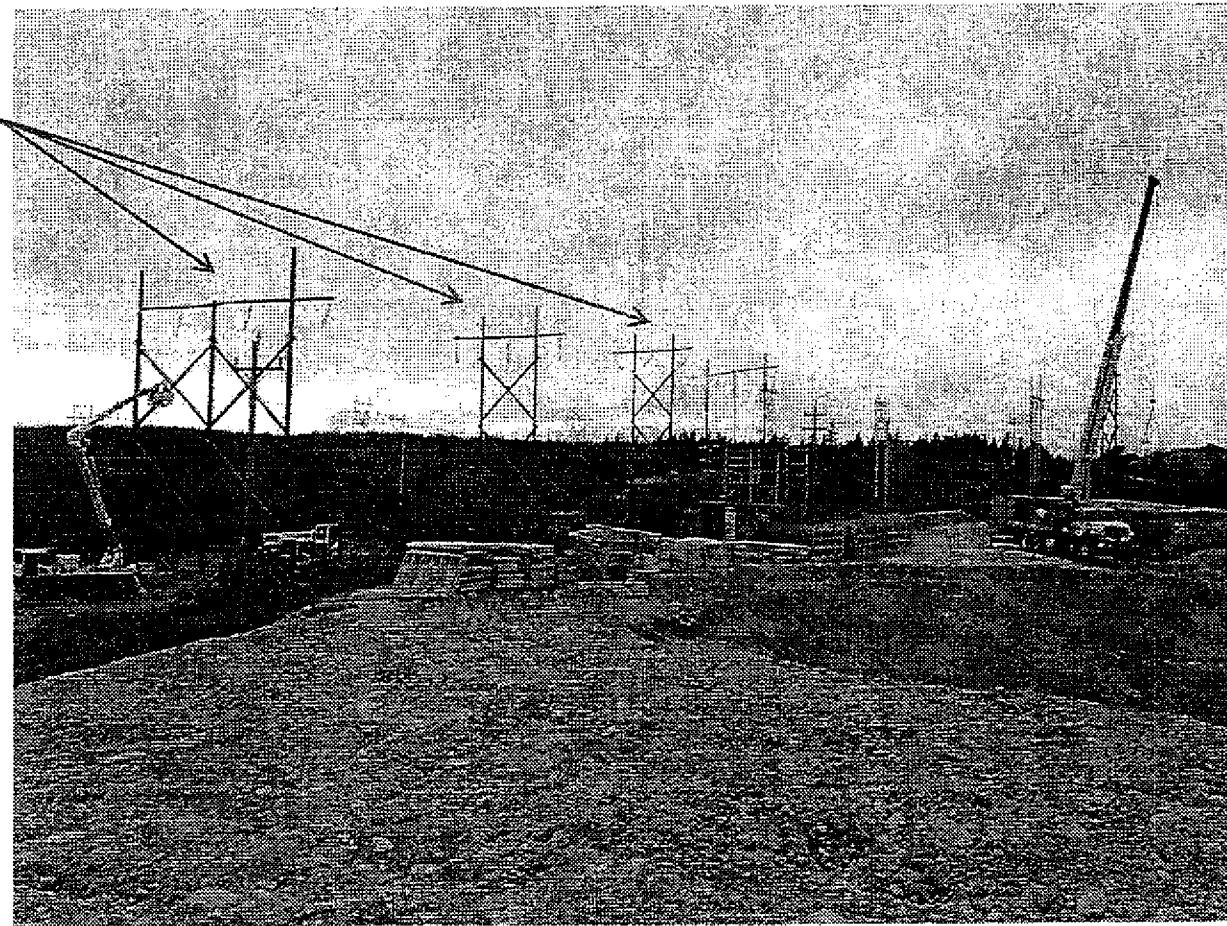


New transmission line construction

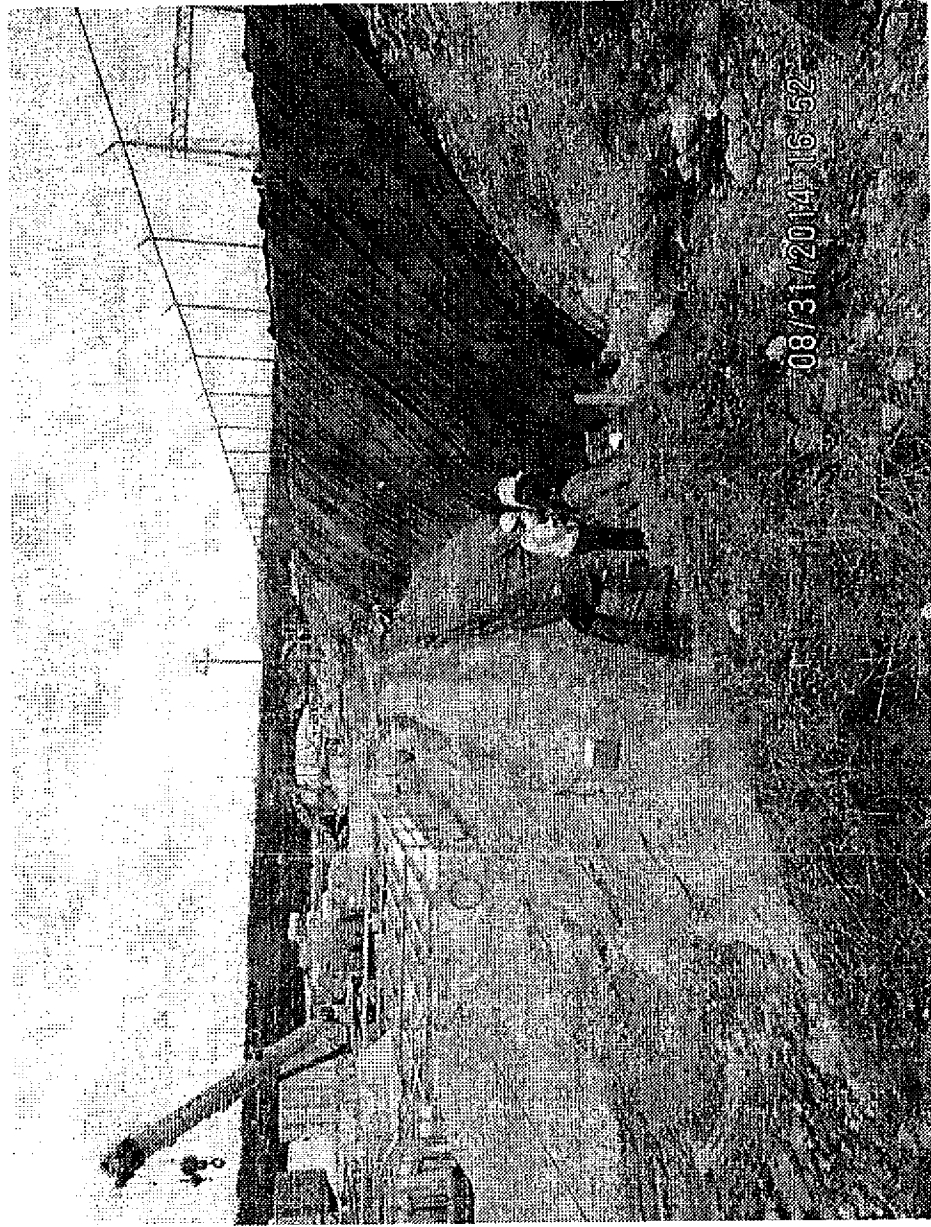


Transmission line structures

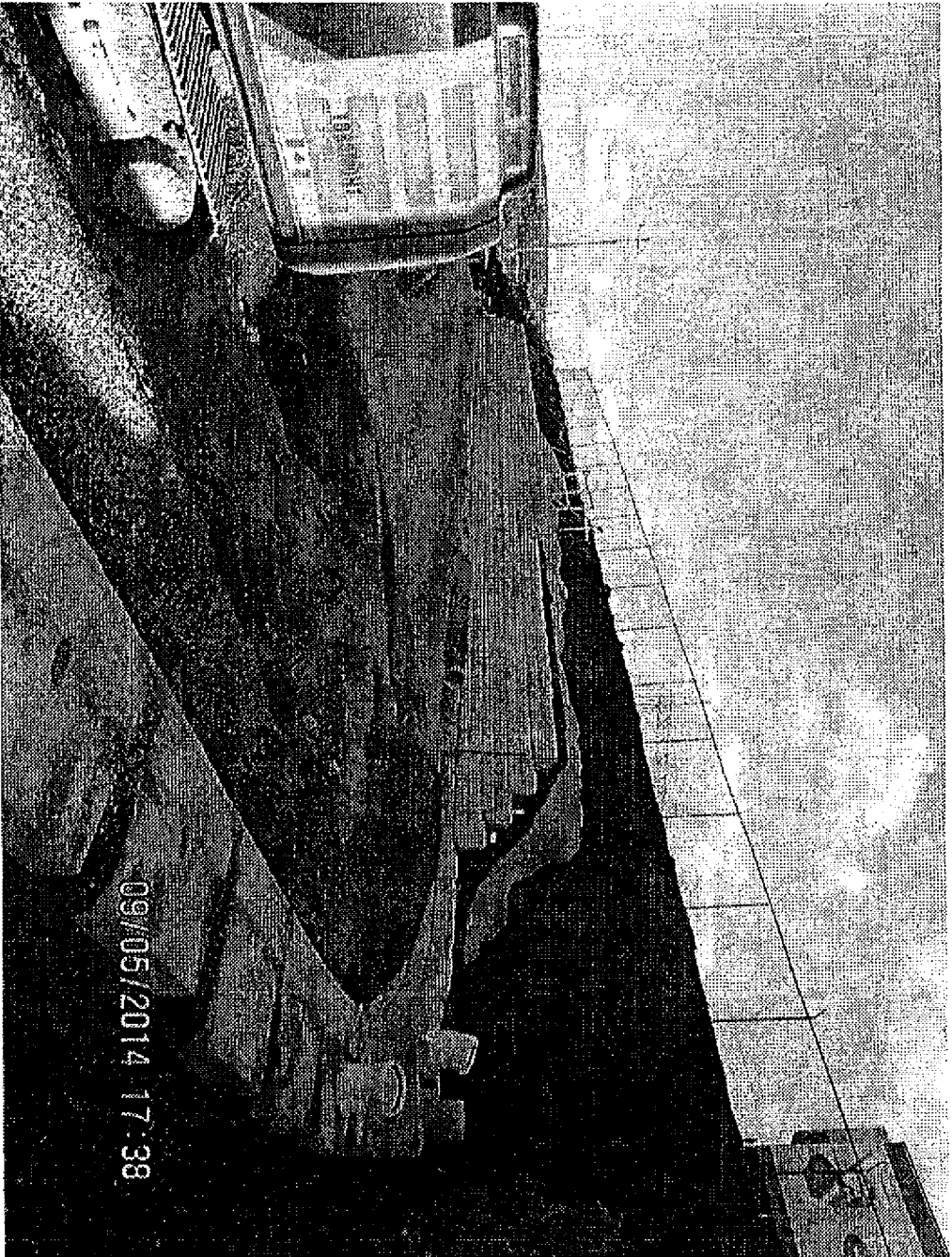
New
Structures



Prep for new retaining wall

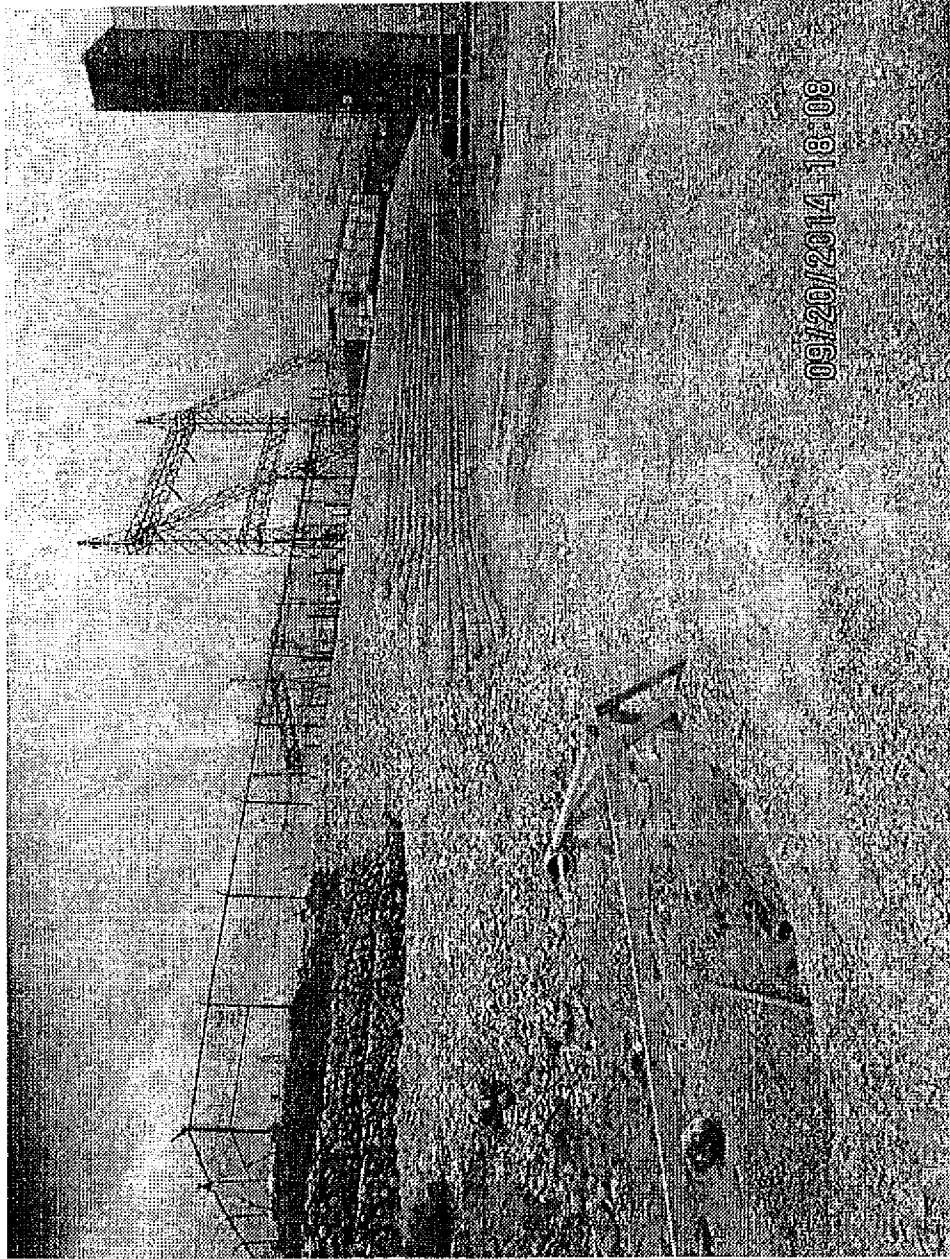


New retaining wall construction

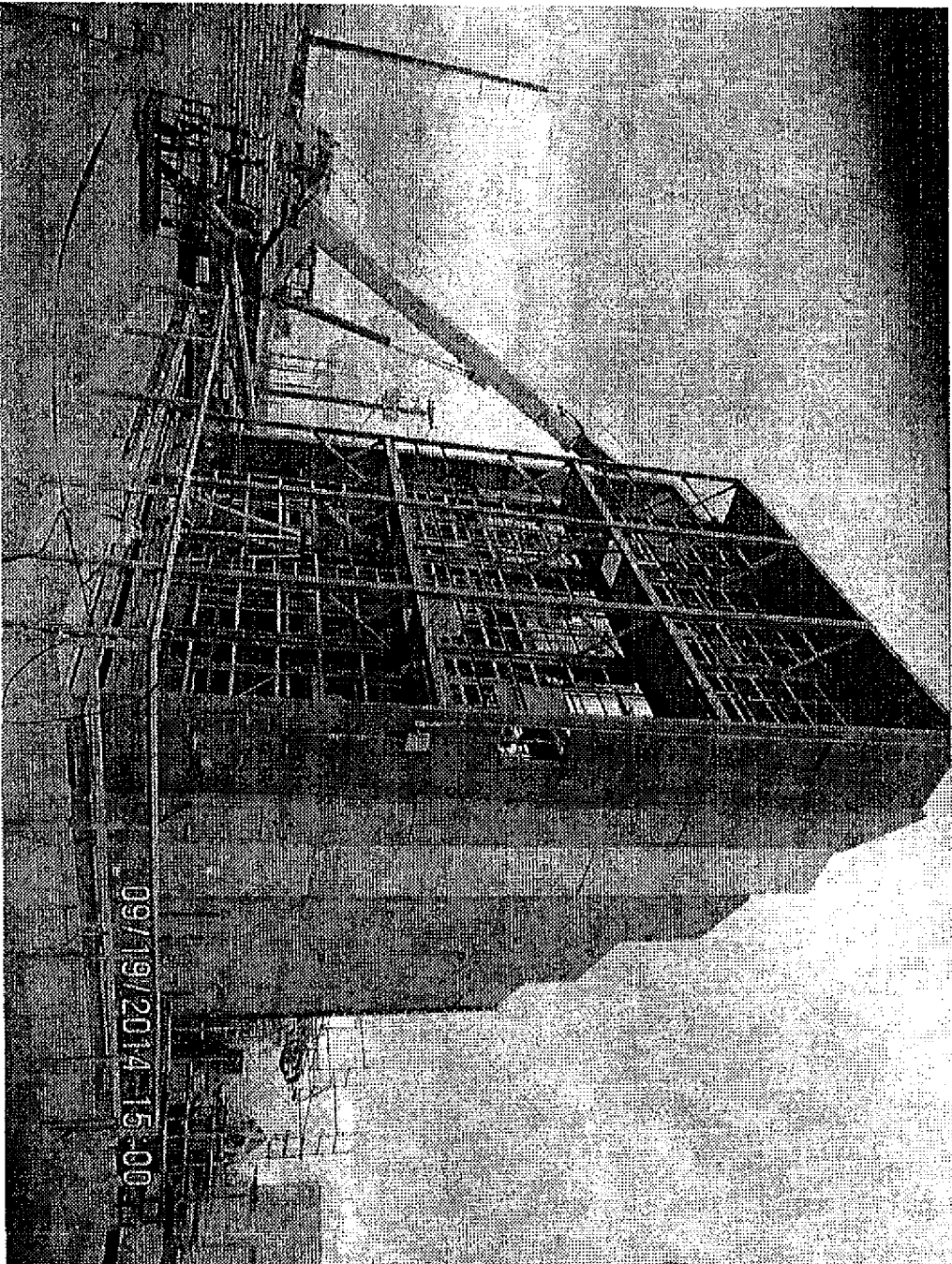


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New retaining wall construction



Air Inlet Filter House

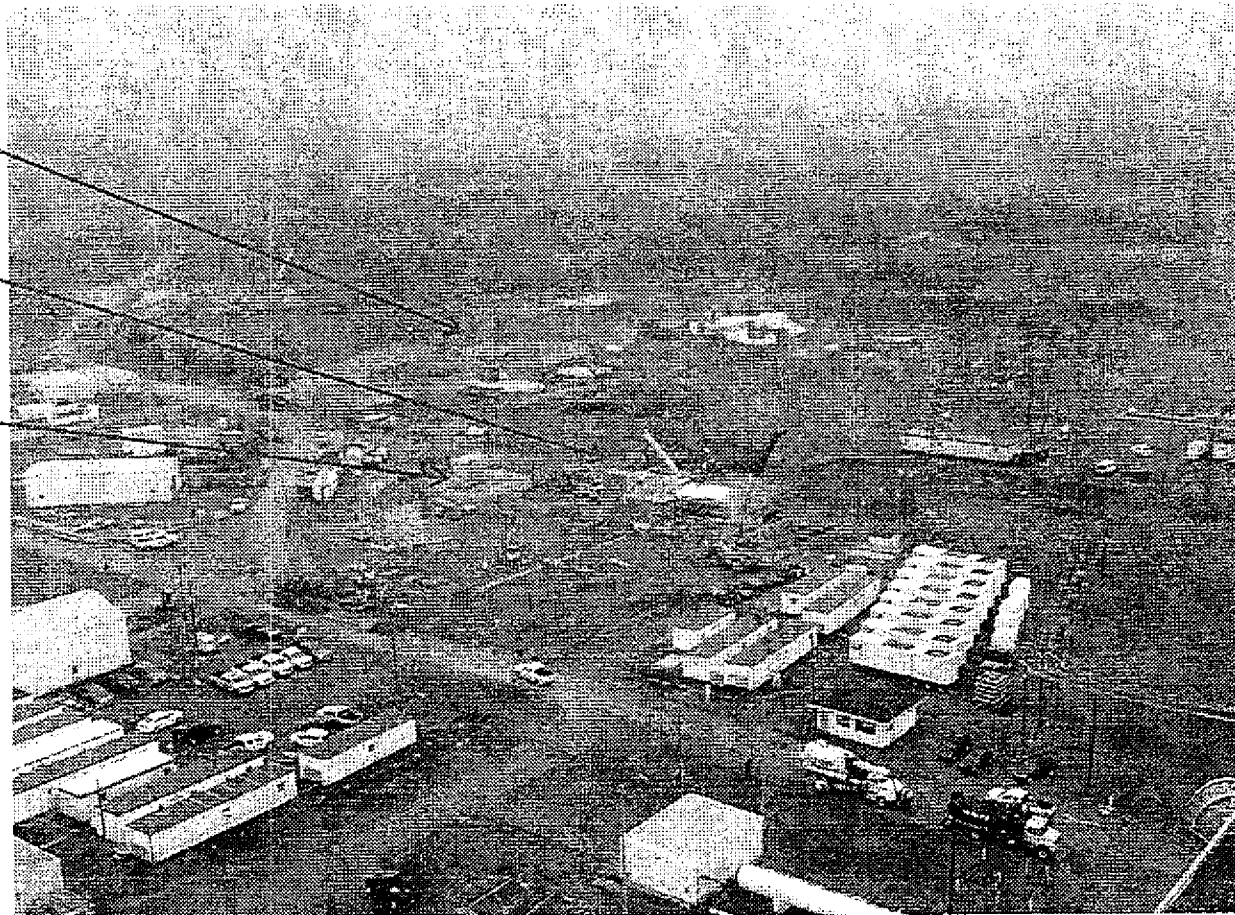


Aerial view

New Fuel
Storage Area

Turbine
and
Generator

New GSU



Questions?

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