

A REPORT TO
THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

	Electrical
	Mechanical <i>NS.</i>
	Civil
	Protection & Control
	Transmission & Distribution
	Telecontrol
	System Planning

REFURBISHMENT OF THE FUEL OIL STORAGE FACILITY

Holyrood Thermal Generating Station

July 2011

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1 INTRODUCTION

The purpose of this project is to refurbish components of the Oil Storage Facility for No. 6 fuel at the Holyrood Thermal Generating Station (Holyrood) to reinstate the facility to a more reliable condition. There are four large storage tanks installed at Holyrood. Two tanks have been refurbished in recent years and are considered to be in good, reliable condition. The other two tanks are in poor condition and require similar upgrades.

A study completed by SGE Acres entitled *“Evaluation of Fuel Oil Storage Tanks, Associated Pipelines and Dyked Drainage System, Holyrood Thermal Generating Station”* dated March 2006 identifies a number of deficiencies requiring corrective action. This study was filed as part of Newfoundland and Labrador Hydro’s (Hydro’s) 2008 Capital Budget Application, Section H, Tab 2. It describes the condition of the four tanks and makes recommendations to extend service life. Since 2008, Tanks 2 and 4 have undergone major refurbishments and are now in good reliable condition. This project is the next step in a multi-year plan to upgrade the storage facility by refurbishing Tank 3. When this project is complete, three tanks will be in good reliable condition. An application will be made to the Board of Commissioners of Public Utilities (the Board) later in 2012, to refurbish Tank 1 in 2013 thereby reinstating the full storage capacity to reliable condition.

A leak or spill of No. 6 fuel from Tank 3 could cause major environmental and operational issues. The fuel oil storage tanks have deteriorated due to corrosion and require immediate attention to provide a useful life comparable to that of the rest of Holyrood generating station.

Upgrade work previously approved by the Board for the Fuel Oil Storage Facility includes:

- A 2008 capital project approved by Board Order No. P.U. 30 (2007) for the refurbishment of Tank 2;

- A 2009 capital project approved by Board Order No. P.U. 36 (2008) to upgrade the drainage system and pipe supports; and
- A 2010 capital project approved by Board Order No. P.U. 1 (2010) to refurbish fuel oil storage Tank 4 and is now complete.

2 PROJECT DESCRIPTION

This project involves the upgrade of existing components within the Fuel Oil Storage Facility at Holyrood for the purpose of extending its useful life, ensuring system reliability, increasing the level of safety and reducing environmental risks within the facility. The scope of the work is to clean, inspect, replace floor plates, paint the floor and install a roof platform for Tank 3. A similar project to upgrade Tank 4 was approved by Board Order No. P.U. 1 (2010) and is now complete. Table 1 provides the direct cost to upgrade Tank 3 which is based on the actual tendered pricing associated with the upgrade of Tank 4.

The project will also include the installation of a fuel oil level indication system on Tank 3 that will provide accurate fuel tank level feedback to the Holyrood control room and reduce or eliminate the need to complete manual fuel reconciliations. In addition, the project will also include the installation of access steps over the fuel oil and steam piping system that runs north and south between Tanks 1 and 2 and also between Tanks 3 and 4 in order to enable plant personnel to safely access the roadway located on the west side of the tank farm.

Table 1: Refurbishment of Fuel Oil Tank 3 and Miscellaneous Works

Description	Cost (\$000)
Floor Coating	239
Replace Floor Plate	881
Tank Cleaning	320
Roof Platform	136
Third Party Inspection	29
Fuel Oil Level Indication System	190
Access Steps	81
Total:	1,876

Fuel oil storage tanks and associated components are inspected and upgraded in accordance with American Petroleum Institute (API) Standard 653 "Tank Inspection, Repair,

Alteration, and Reconstruction” which is the upgrade standard for tanks specified under API Standard 650 “Welded Steel Tanks for Oil Storage”. Inspections are made after the fuel has been drained from the tank and the tank has been cleaned.

As outlined in the SGE Acres report internal tank inspections were completed on the four storage tanks at Holyrood between 1997 and 2005 and repairs were made during that time to extend the life of each tank until more extensive refurbishments could be planned. In the case of Tank 3, 195 patches were installed when the tank was inspected in 2003 extending the life of the floor by five to six years. In the intervening eight years, it is anticipated that more deterioration has occurred.

The Board stated in Order No. P.U. 1(2010) that updated information would be expected in relation to a 2011 capital budget proposal for another tank refurbishment project:

“The Board notes that Hydro has stated that it plans similar projects in relation to Tank 3 and Tank 1 in the next two years. The Board would expect Hydro to support these proposals with updated engineering evidence given the timeframe since the inspection and recommendations as well as the developing circumstances in relation to the intended use of this equipment.”

To provide updated engineering evidence an internal inspection of the tank is required. To acquire this additional evidence, the tank will need to be drained and cleaned in preparation to perform a comprehensive internal inspection. It is estimated that this work will cost \$375,000 and will be performed under the scope of work for this project. However, additional information on the conditions found in 2003 is discussed in Section 3.4 below.

The developing circumstances in relation to the intended use of the equipment are included in Section 3.

A large portion of the project budget is associated with replacing the floor of Tank 3, estimated to be in excess of \$1.0 million. This is in line with the scope of work and budget

that was approved by the Board for Tanks 4 in 2010 and in line with the SGE Acres report prepared in 2006. That report considered the findings of a comprehensive internal tank inspection performed in 2003 by AITEC (Appendix A), a non-destructive examination company, and API standards. The scope of work for this project includes draining and opening up the tank, internal cleaning, and performing a comprehensive floor inspection by a certified API consultant. A decision on the extent of work to be completed related to the floor, will be made after considering the new inspection findings and the latest consultant recommendations to extend the service life of Tank 3 to 2020.

3 EXISTING SYSTEM

There are four above-ground fuel oil storage tanks containing No. 6 fuel (Bunker C) and associated pipelines at Holyrood. Each tank has a storage capacity of 200,000 barrels and is 55 metres (180 feet) in diameter and 15 metres (48 feet) high. A significant concern identified by the SGE Acres' inspection in 2003 was corrosion of the floor in Tank 3.

All four fuel storage tanks require upgrades to correct corrosion problems. Also, the SGE Acres report recommends continuous monitoring for corrosion of the roof plate. The evidence of water ponding on the roof of the tanks indicates a deflection in the roof and flexibility of the rafters.

The Holyrood Thermal Generating Station is a critical facility for the least cost reliable supply to the Island Interconnected power system. This role will continue until 2017 when the interconnection to Labrador and Muskrat Falls is complete. Following the interconnection, the plant will continue to be required in a standby mode for two to three years to provide backup generation.

Over the next six years, 2011 to 2016, the Holyrood plant will be operated to supply demand and energy at increasing amounts due to load growth on the island system. The following table provides the anticipated production at the plant based on current load forecasts, prepared by Hydro in June 2011, and expected supplies from other sources.

Table 2: Anticipated Production/Consumption

Year	Net Production (kWh)	Fuel Consumption (bbls)
2011	894,212,166	1,487,911
2012	1,219,980,000	1,961,382
2013	1,430,120,000	2,245,085
2014	1,557,150,000	2,448,350
2015	1,658,460,000	2,595,399
2016	1,695,810,000	2,666,367

A critical aspect of the plant with respect to reliability is the high seasonal energy supply from October through May. During this period, the plant is required to supply daily peak demands and energy requirements in excess of the capability of other sources and in particular the hydroelectric sources. As a result of these requirements, the plant must be capable of operating continuously at very high output levels.

There are three main conditions that would require continuous operation at high output levels: low hydroelectric production due to sustained low inflows, significant loss of hydroelectric production capacity due to equipment failure, and loss of transmission capacity to the Avalon Peninsula due to equipment failure. Under the latter two circumstances, the plant could be required to operate at full output for periods of several weeks. For sustained dry periods, the plant is planned to operate at 3,000 GWh annually with all units operating at maximum output when available. This requirement remains in place up to the time of the interconnection with Muskrat Falls.

Fuel Supply and Storage Requirements

Critical to continuous operation at full output is a secure supply of No. 6 fuel. Fuel is supplied by tankers carrying between 200,000 and 250,000 barrels of fuel that are ordered 28 days in advance of delivery. The plant consumes approximately 17,000 barrels per day when operating at full load. Therefore a shipment is required every 11 to 14 days to sustain a full output level.

The plant has 840,000 barrels of fuel storage in order to ensure a secure supply under various conditions. Within the 840,000 barrels of storage, there is approximately 100,000 barrels of dead storage. The dead storage is established by the fact that when the storage is at or below that level the head in the storage tanks cannot sustain a fuel flow to maintain the plant operating at full load. When the dead storage is considered, the fuel storage facility can sustain the plant at full output for 43.5 days.

Tanker supply can be disrupted for various reasons for varying durations. The most onerous of these is ice blockage in Conception Bay when the bay can be blocked with ice for several weeks in late winter. To manage this risk, the storage at Holyrood is filled in late fall and maintained at this level to the end of March. Outside of the period of ice blockage risk, the storage is maintained at a lower level but sufficient to protect against a risk of shipping and docking delays typically ranging from one to two weeks.

Operating Experience

The Holyrood fuel storage is managed to align with forecast production requirements while considering production variance uncertainty, delivery delay risks and shipment sizes. The following charts show the weekly storage levels for the four-month period; for the four-year (2002-2005) period; when production levels were similar to the forecast for 2015 to 2016.

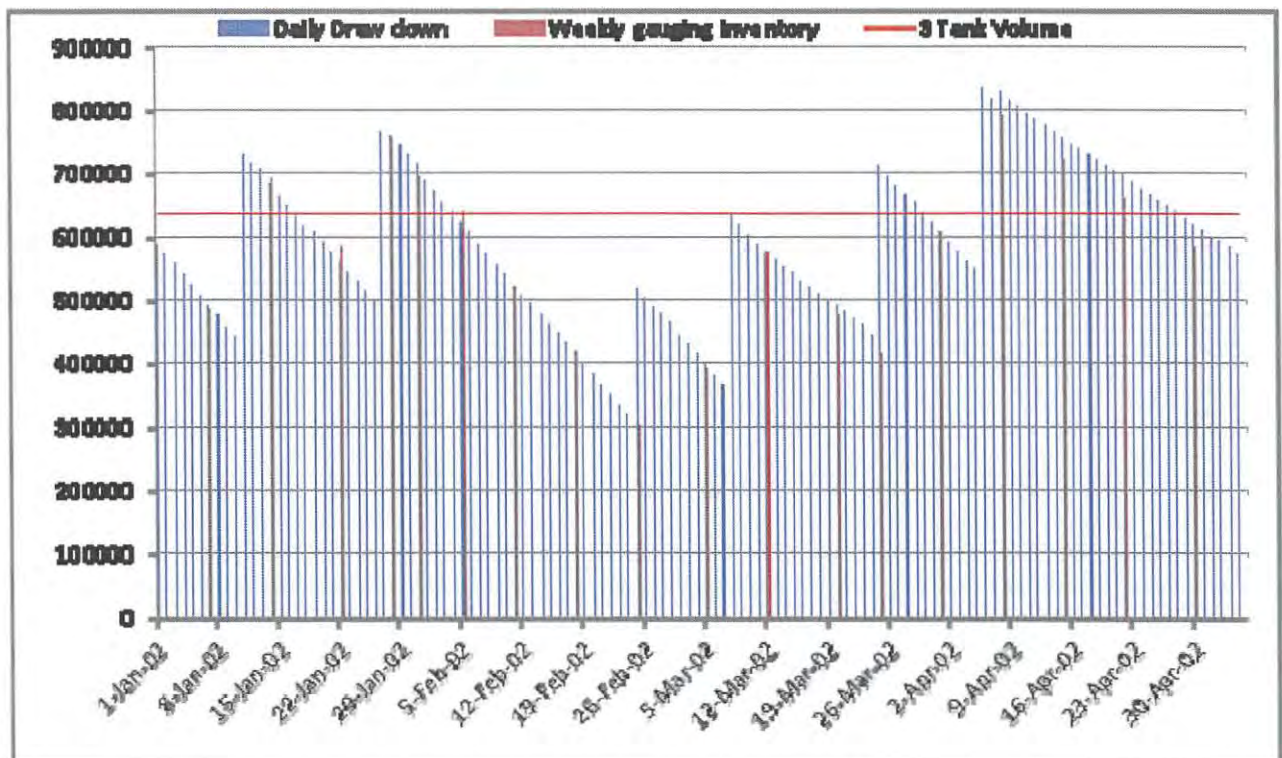


Figure 1: Holyrood Fuel Storage Levels 2002

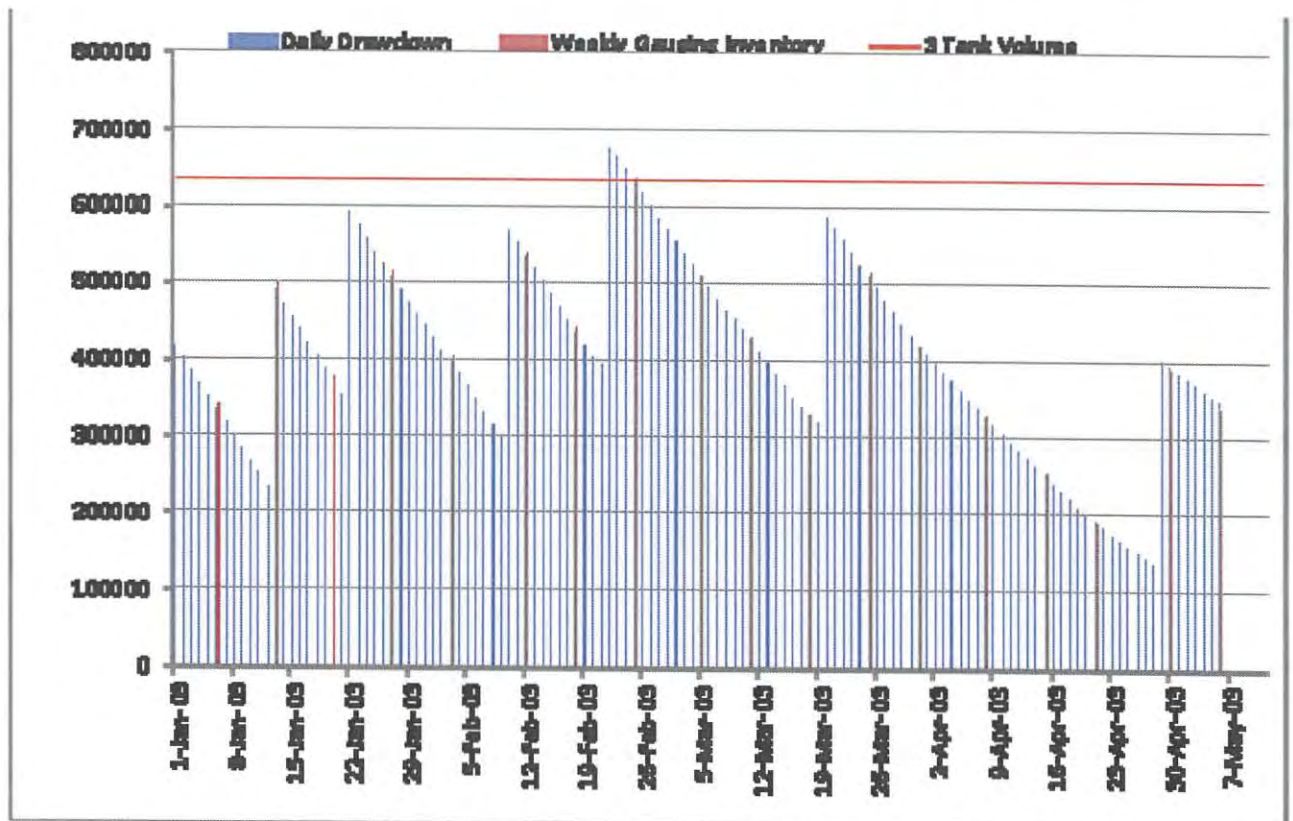


Figure 2: Holyrood Fuel Storage Levels 2003

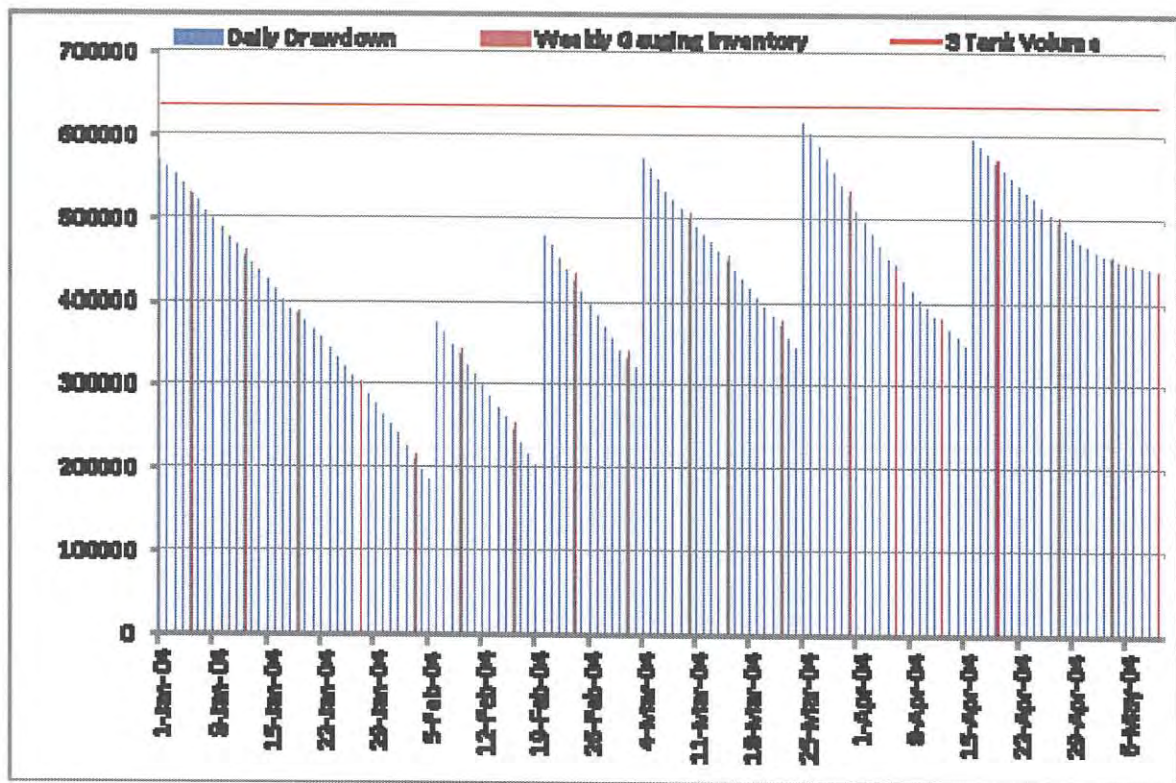


Figure 3: Holyrood Fuel Storage Levels 2004

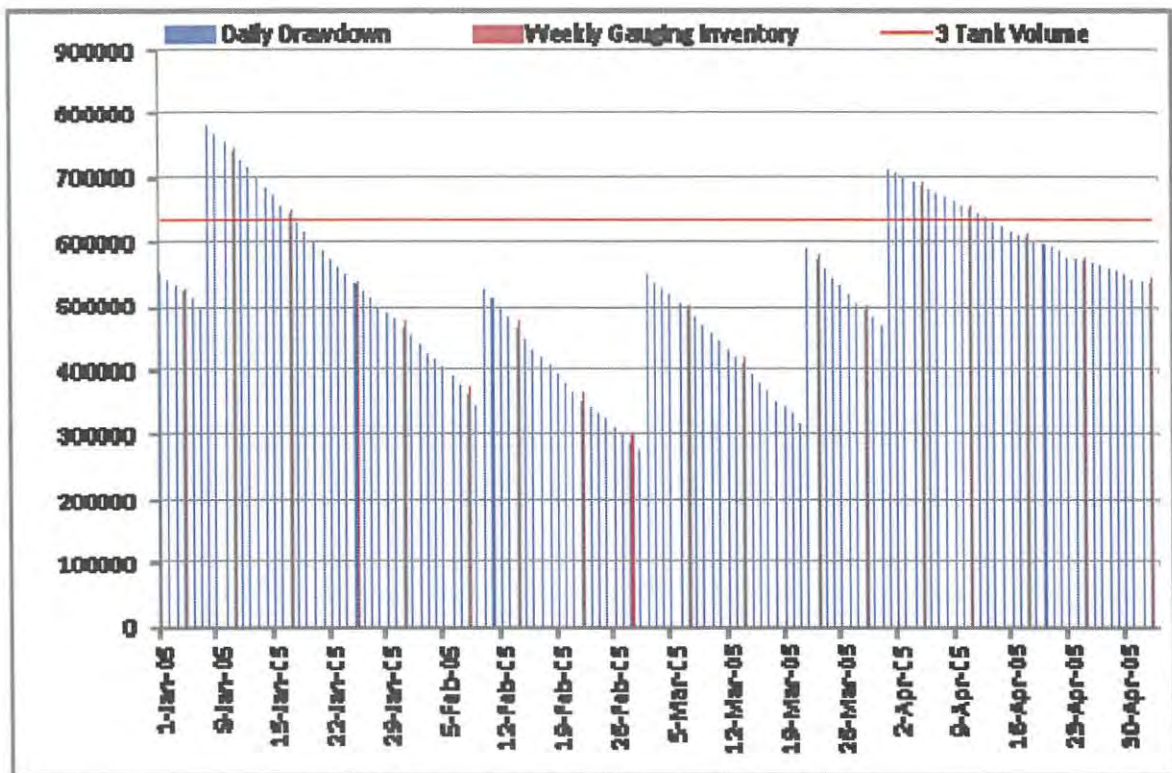


Figure 4: Holyrood Fuel Storage Levels 2005

As can be seen, the storage level varies but generally operates higher during the spring period and often it exceeds the three tank capability. There are many weeks well above the storage capacity of three full tanks (660,000 bbls) and this tends to trend up near the pack-ice high risk period March/April of each year. Losing a tank for operational reasons, and having another permanently out of service, will result in a situation whereby there is no contingency, and effectively forces the plant to run on a two-tank storage scenario. As illustrated by the charts, drawing a line through the graph at 440,000 bbls, there are few weeks where volumes were below that amount.

Justification for Four Tank Operation at Holyrood

If the storage facility at Holyrood is downgraded to three tanks, then the total storage capability is reduced to 630,000 barrels and an effective storage of 555,000 barrels due to 75,000 barrels of dead storage.

In the event of an ice blockage in Conception Bay occurring immediately prior to a scheduled shipment date when the storage is reduced to 380,000 barrels, there would be 18 days of full load capability. Ice blockages in Conception Bay have occurred in the past which have exceeded this duration.

3.1 Age of Equipment or System

The first phase of the construction of the Holyrood tank farm was completed in 1969, including the construction of fuel storage Tanks 1 and 2, all the associated supply and delivery pipelines and the earth dyke. The second phase of the construction of the Holyrood tank farm was completed in 1977, including the construction of fuel storage Tanks 3 and 4. Tank 3 is now 34 years old.

3.2 Major Work and/or Upgrades

An inspection by SGE Acres in 2003, identified the requirement for the installation of patch plates to repair the floor of Tank 3. This work was completed in 2003 and extended the life of the floor on Tank 3 for five years. SGE Acres recommended replacement of the floor plate and the installation of a protective coating in 2010. No further inspection of Tank 3 has been carried out since 2003.

3.3 Anticipated Useful life

The anticipated useful life of the fuel storage facility is 35 years. The existing facilities are at the end of their useful lives. The recommended upgrades to the tanks are expected to extend the useful life of the storage facility by ten years, or at least until the fuel storage facility is no longer required if the Lower Churchill Project receives sanction. Should the Lower Churchill Project proceed, this facility must remain in reliable operating condition until 2020.

3.4 Maintenance History

Tank 3 was cleaned and inspected in 2003 at a cost of \$538,140. The work included:

- internal cleaning;
- internal inspection;
- installation of 195 patch plates on the tank floor;
- repair of holes in the roof plates;
- installation of bird screens on storage tank roof vents; and
- exterior painting.

As stated previously, the floor patches installed in 2003 extended the service life of the floor by five to six years. We are now two to three years past that time period.

The internal tank inspection performed by AITEC in 2003 was the basis for the recommendations made in the SGE Acres Report for Tank 3. These recommendations are the basis of the scope of work for this capital project.

A copy of the AITEC inspection report prepared in 2003 is attached as Appendix A. It was prepared by a certified API inspector as recognized by the provincial Department of Environment. The report recommends opening the tank after six years, cleaning the tank, and if necessary doing a complete floor scan and full API inspection. In 2003, these recommendations were put forth because 195 floor patches were required to cover areas where 50 percent of floor plate thickness had been lost due to corrosion. There were other areas that also had significant plate thickness loss but not to the 50 percent mark that required patching.

3.5 Outage Statistics

There was an internal valve failure on Tank 2 in 2007 necessitating the tank to be taken out of service, thereby reducing the winter storage capacity and increasing the risk of reduced

fuel supply during customer peak load periods. A project to upgrade Tank 2 was approved by Board Order No. P.U. 30 (2007) for \$500,000 and this work was completed in 2008 at a cost of \$776,000.

In 2010, a similar valve malfunctioned and an internal tank heater problem put Tank 4 at risk of being removed from service. Although Tank 4 did not have to be removed from service, the internal valve problem limited the capability to isolate the tank and increased environmental risk during the operating months. A project to upgrade Tank 4 was approved by Board Order No. P.U. 1 (2010) for \$2,500,200 and was completed in 2010.

The valves in question are used to isolate oil supply to the suction heaters which are immersed in fuel oil inside the tanks. On April 12, 2007, when the suction inlet heater valve inside Tank 2 seized open, it created a situation whereby in the event of a downstream failure of the fuel line the flow of product from the tank could not be isolated using this valve. A decision was taken to consume the fuel oil to minimum level and remove the tank from service until repairs could be completed in 2008 so the tank could be placed back in service for the 2009 winter season. As part of this project, it is planned to refurbish/replace the corresponding valve inside Tank 3 to minimize the risk of a valve failure that would necessitate removing the tank from service.

When Tank 2 was taken out of service, due to the internal valve failure, fuel storage was limited to what could be stored in the three remaining tanks. This decision to take the tank out of service was not taken lightly as it limited the amount of storage available during the winter season and the critical period when pack ice is a risk for disrupting deliveries in the late winter months.

3.6 Industry Experience

Industry experience with above-ground fuel oil storage tanks indicates that typically, the floors and ceilings of the tanks are affected the most by oxidation. Trapped water within the

tank, and the air void above the fuel oil level, subject the tank floor and ceiling to oxidation. Generally, the walls of the steel storage tanks do not oxidize from the inside because they are continuously coated with oil. The main protection against oxidation for the exterior surfaces is an epoxy paint coating system.

3.7 Maintenance or Support Arrangements

General maintenance for the fuel oil storage facility has been performed by Hydro personnel. Major maintenance, such as epoxy coating and steel work, has been performed by outside contractors specializing in professional paint work and steel fabrication.

3.8 Vendor Recommendations

There are no relevant vendor recommendations with respect to the improvements to the fuel oil storage facility.

3.9 Availability of Replacement Parts

The availability of replacement parts is not applicable to this project because a complete refurbishment is required and not just the replacement of parts.

3.10 Safety Performance

There are no safety issues associated with the operation of Tank 3.

3.11 Environmental Performance

The deterioration of the tank floors and the settling of tank floor support rings is a result of corrosion. This increases the risk of environmental spills and leakage of No. 6 fuel from the storage tanks. Although the surrounding dyke, if void of water, has the ability to retain the volume of fuel, this environmental risk needs to be addressed.

3.12 Operating Regime

Holyrood is seasonally operated, however, the fuel storage facility is in continuous operation since fuel is always present in the fuel oil storage tanks.

4 JUSTIFICATION

This project is justified on the requirement to replace a failing and deteriorated fuel oil storage infrastructure in order for Holyrood to provide safe, environmentally responsible, least-cost, reliable electrical service. Tank 3 has deteriorated to a point where there is a significant risk for oil leakage and inoperability. Corrective action must be taken.

The installation of a fuel oil level indication system on Tank 3 will provide accurate fuel tank level feedback to the Holyrood control room and reduce or eliminate the need to complete manual fuel reconciliations. In addition, the installation of access steps between Tanks 1 and 2 and also between Tanks 3 and 4 will enable Holyrood personnel to safely access the roadway located on the west side of the tank farm as opposed to climbing over steam/fuel oil piping and a berm to access the roadway from these locations.

At present, only two storage tanks, in a total complement of four, are known to be in reliable condition at Holyrood. At full generating capacity, the plant can consume the equivalent of one tanker ship load of fuel oil every 12-14 days, roughly equating to 250,000 bbls or 1-1/4 fuel storage tanks in volume. Recognizing that the required electricity generation at Holyrood is heavily dependent on the power generation capability at hydro generating stations and local weather patterns that affect reservoir water levels, demands for increased production from Holyrood and its available storage capacity can directly influence the number of fuel deliveries required by tanker ships during the winter months. Having less than normal capacity in service translates into more deliveries with increased risk of docking/transfer disruptions during the winter season.

Fuel storage is normally maximized by utilizing four tanks leading up to the winter period so icing conditions in and around Conception Bay will have minimum impact on the reliable generation of electricity at Holyrood. Since 2008, winter generation requirements have been lower than the historic norm due primarily to the shut down of paper mills on the

island. With associated reduced fuel consumption during that time period, the frequency of fuel deliveries was reduced accordingly. The island load forecast however for the coming years, indicates a rise in generation requirements from Holyrood to meet the needs of new industrial customer growth, most notably the nickel processing plant presently under construction at Placentia. To achieve reliability of fuel supply to the boilers during the winter season, all four storage tanks need to be maintained in good condition to the year 2020.

4.1 Net Present Value

A net present value calculation was not performed in this instance as there are no viable alternatives to refurbishing Tank 3.

4.2 Levelized Cost of Energy

This project does not involve analyzing a new energy generation source or enhancing the existing plant at Holyrood.

4.3 Cost Benefit Analysis

A cost benefit analysis is not applicable for this project because there are no quantifiable benefits.

4.4 Legislative or Regulatory Requirements

Section 8 of the Storage and Handling of Gasoline and Associated Products Regulations (GAP) states in part that an owner or operator shall not directly or indirectly cause pollution of the soil or water by causing, suffering or permitting leakage or spillage of gasoline or associated product from a storage tank system.

4.5 Historical Information

Table 3 shows the history of the fuel oil storage facilities refurbishment projects for the past three years.

Table 3: Historical Information

Year	Budget (\$000)	Actual (\$000)	Comments
2010	2,500	2,560	Tank 4 upgrade
2009	2,867	2,086	Drainage system and pipe supports
2008	500	776	Tank 2 upgrade

The upgrade to Tank 4 in 2010 is more extensive than the upgrade to Tank 2 in 2008. The upgrade to Tank 2 involved patch work replacement to the tank floor while the complete floor of Tank 4 was replaced in 2010.

4.6 Forecast Customer Growth

The generation requirements at Holyrood are forecast to increase annually between 2011 and when the Lower Churchill infeed comes into operation. Table 4 shows the five-year fuel consumption forecast with reference to the past three years.

Table 4: Five Year Fuel Consumption Forecast

Year	Fuel Consumption (bbls)
2008	1,728,681
2009	1,534,707
2010	1,363,179
2011	1,487,911
2012	1,961,382
2013	2,245,085
2014	2,448,350
2015	2,595,399
2016	2,666,367

4.7 Energy Efficiency Benefits

There are no energy efficiency benefits that can be expected from this project.

4.8 Losses during Construction

There are no losses during construction as this project will not require Holyrood to be out of service.

4.9 Status Quo

The status quo is not an acceptable option. The existing system has deteriorated components that require upgrades to extend their useful lives and to ensure compliance with regulatory requirements established by GAP and API. Table 6.2 of the SGE Acres Report recommends the upgrades to be completed in 2010. The project will already be one year behind the recommended completion date and should not be delayed any further.

4.10 Alternatives

The existing system can be refurbished and this is the only viable alternative. Although full replacement of the whole facility is possible, the cost of replacement is much greater than refurbishment and, thus, not a viable alternative.

Refurbishment of Tank 4 was considered an alternative to refurbishing Tank 3, however, the estimated cost to refurbish the roof of Tank 4, the main problem area, is greater than the estimated cost to refurbish the floor of Tank 3. Other refurbishment costs related to each tank are similar. In addition, the cost estimate to refurbish Tank 4 does not allow for any floor repairs. Although the floor of Tank 4 was determined to be in better condition when inspected in 2005 than that of Tank 3, it would be prudent to take the opportunity in 2011, if Tank 1 was being refurbished and while the tank was internally accessible, to scan the floor to determine thickness readings. It is expected that some patching may be required.

Estimated costs are identified in the SGE Acres report prepared in 2006.

If Tank 3 is not refurbished in 2011, Hydro has great concern that problems will develop in the near future that will necessitate taking the tank out of service as was required recently with Tank 2 and threatened with Tank 4. This will involve draining fuel from the tank, cleaning the tank internally, and securing it such that it cannot be filled inadvertently. It is estimated that this work will cost \$350,000.

5 CONCLUSION

The fuel storage system has deteriorated to a point where action must be taken to correct deficiencies. Tank 3 will be upgraded in accordance with API Standard 653 to minimize the risk of any leaks or spills.

5.1 Budget Estimate

The budget estimate for this project is \$2.7 million. Table 5 summarizes the costs.

Table 5: Budget Estimate

Project Cost: (\$ x1,000)	<u>2011</u>	<u>2012</u>	<u>Beyond</u>	<u>Total</u>
Material Supply	0.0	0.0	0.0	0.0
Labour	160.0	44.5	0.0	204.5
Consultant	165.0	43.0	0.0	208.0
Contract Work	1,399.5	476.5	0.0	1,876.0
Other Direct Costs	1.5	0.5	0.0	2.0
O/H, AFUDC & Escln.	85.4	89.7	0.0	175.1
Contingency	0.0	229.1	0.0	229.1
TOTAL	1,811.4	883.3	0.0	2,694.7

A large portion of the budget is associated with replacing the floor of Tank 3, estimated to be in excess of \$1.0 million. As stated earlier, this is in line with the scope of work that was required and approved by the Board in recent years, for Tanks 2 and 4 and in line with the SGE Acres report prepared in 2006. The project provides for the budget to open Tank 3, perform internal cleaning, and complete a comprehensive floor inspection by a certified API consultant. However, a decision on the final scope of work to be completed related to the floor will be made after considering the new inspection findings and the latest consultant recommendations to extend the life of the tank to 2020.

5.2 Project Schedule

Table 6 provides the anticipated project schedule.

Table 6: Project Schedule

Activity	Milestone
Prepare Tender Documents	July 2011
Invite Tenders	August 2011
Award Tender	September 2011
Complete Construction	March 2012
Closeout Project	April 2012

HTGS Refurbishment of the Fuel Oil Storage Facility

APPENDIX A

AITEC – Tank No. 3 Bunker C Inspection Report



Newfoundland And Labrador Hydro Holyrood, NL



NO.3 Bunker "C" Tank



**API 653 Out-of- Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003**

**API 653 Out-of-Service Inspection Report
Newfoundland And Labrador Hydro Tank Farm
Holyrood NL.**

Tank NO. 3 Bunker "C"

**Submitted by: Ronald Burton
API 653 Inspector
Certification No.2127**



**API 653 Out-of- Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003**

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**API 653 Out-of- Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003**

**Newfoundland And Labrador Hydro Tank Farm
Holyrood NL.
API 653 Out Of Service Inspection Report
Tank # 3 Bunker "C"**

1.1 Description

Nominal Diameter:	180'
Number of Courses:	6
Nominal Height:	48
Nominal Capacity:	217,000 Barrels (42Gal.)
Construction:	Carbon Steel Butt Welded
Roof Type:	External Cone
Grounded:	No
Nameplate:	Yes (Painted Over)
Designed by:	Shawmont Nfld. Ltd.
Erected By:	McNamara Industries Ltd.,
Construction Date:	1977
Contract No.:	3/4400
Containment Dyke:	Yes, Sand/Gravel/Rock
Foundation:	Concrete Ring Wall/Gravel
Present Service:	Bunker "C"

1.2 Introduction

As requested by Mr. Paul Woodford of Newfoundland And Labrador Hydro, AITEC Inc. conducted an out-of-service inspection of Tank No.3 Bunker "C" at its Holyrood tank farm. The inspection was performed in accordance to the latest edition of API 653 standards and was supplemented with ultrasonic shell thickness measurements as well as roof plate thickness measurements and a Magnet Flux Leakage inspection of the floor plates.

1.3 Access

External access was granted by means of the stairway in order to perform ultrasonic thickness readings on the upper shell plates, the bottom course was done from ground level. No access was available to do an inspection on the underside of the roof plates and rafters. However from ground level no rafters seemed out of place and all columns were in good condition and plumb.



API 653 Out-of- Service Inspection

Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003

2.0 Internal Inspection

2.1 Visual on Floor Plates and Shell

A visual inspection was carried out on all floor plates and on the internal lower shell plates, paying special attention to the corner weld and the first 12" of the shell. An epoxy coating was present on the floor, and minor top side pitting in the range of 0.040"-0.050" was noted in some areas, however there are several localized areas ranging from 0.100"-0.180" deep, the localized areas are identified on the floormap plate report which is in the appendix section of this report. There is one other area that was noted visually and is located on plate No. 1-7, this is a depression that was measured to be 0.310" deep, and is in 2 3/4" from the shell plate and 16" from the end of the floor plate. Due to the fact that this is within the critical zone this area will have to be repaired in accordance to section 9.10.1.2 of API 653 code.

The floor plates are dipped down on the West Side from row No. six (6) to row No. thirteen (13) and also on the south side on row No. one (1) for the entire length. These will be addressed on the floor settlement survey later in this report. There are patch plates covering floor plates No. 3-1, 15-6, 16-1 and partial end of 15-5 and there is a weld pass half way across plate 15-2 and two weld passes all the way across plate 16-2. these appear to be from original construction.

There are two sumps in the tank, one located on the north and one on the south side, these appear to be in good condition, ultrasonic thickness readings were taken on both sumps to confirm plate thickness and integrity. **See Figure 1 in section 6.0 photographs; See 5.0 Non-destructive Testing** for location and readings.

There are four areas in the tank that were marked and scanned by ultrasonic in order to establish a short term corrosion rate, these areas are on plate nos. 2.3, 6.3, 11.6 and 13.4. Each plate was measured in 2' from the East Side and 2' in from the south side of the plate and a 6" square was scanned. These areas are to be re-inspected in 6 years to establish a corrosion rate. **See attached sketch in appendix "D" in section seven (7) for location.**

A visual inspection of the shell plates on the inside revealed no areas of severe pitting or corrosion on the lower shell plate courses, the bottom 3'-4' is also coated with an epoxy coating that is approximately 0.030" thick and is in good condition.



API 653 Out-of- Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003

2.2 Magnetic Flux Leakage Inspection of Floor Plates

A Magnetic Flux Leakage Inspection was carried out on all accessible areas of floor plates starting on the South Side and proceeding toward the North Side. General bottom side pitting in the range of 0.100" and up was observed on the bottom side on some plates as well as general and localized corrosion and pitting on the topside.

For results of the Magnetic Flux Leakage inspection please refer to **Appendix "A" & "B" in section seven (7)**. For Floormap calibration Procedures refer to **Appendix "C" also in section seven (7) of this report.**

2.3 Floor To Shell Weld

The floor to shell fillet weld appears to be in good condition, no pitting or undercutting was noted.

2.4 Roof Plates, Rafters.

No access was available to do an inspection on the underside of the roof plates and rafters, however as could be seen from the floor there were no rafters that were twisted or deflected.

2.5 Tank columns

There are twenty-five columns in this tank, which are ten inch (10") standard wall pipe (nominal wall .365") The columns appear to be in fair to good condition, no corrosion or pitting was noted. One ultrasonic thickness reading was taken at random on each column to confirm the thickness and integrity of the pipe. See **5.0 Non-destructive Testing** for results.

2.6 Floor Settlement Survey

The floor plates have several areas where they are buckled and bulged in certain places with some give in the plates when walking on them. For results refer to the attached floor settlement report from SGE Acres in **Appendix "D" in section 7 of this report.**



API 653 Out-of- Service Inspection

Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003

3.0 External Inspection

3.1 Annular Ring (Sketch Plates)

The sketch plates are in good condition with no topside corrosion noted. The outside edge of the sketch plate where it is sitting on the concrete ring wall is sealed with some type of caulking therefore a view of the bottom edge to check for underside corrosion was not possible. See **Figure 2 in section 6.0**

Photographs

3.2 Shell Visual

The external shell appear to be in good condition, minor bulking and bulging was noted around the tanks circumference at some elevations.

The paint coating is in good condition with very little scaling or blistering noted.

See Figure 3 And Figure 4 in section 6.0 Photographs.

Ultrasonic thickness readings were taken on the bottom shell course in the North, South, East and West quadrants. Four readings were taken on each course starting at the bottom and proceeding to the top. Four readings were taken on each of the other shell courses along a vertical profile up the access stairway. See **5.0 Non-destructive Testing** for locations and readings.

3.3 Shell Appurtenances and Stairway

The manways and all shell nozzles are in fair to good condition with no scaling and only minor corrosion noted. The stairway is in fair to good condition, minor corrosion was noted on the stair threads and railing.

See figure 5 in section 6.0 photographs. See 5.0 Non-Destructive Testing for ultrasonic readings on nozzles



API 653 Out-of- Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003

3.0 External Inspection (Cont.)

3.4 Roof Plates

The roof plates are in fair to good condition, there was a considerable amount of minor bulking and bulging noted in several areas, there were five (5) locations where minor leaks were noted in the lap joint welds. These areas were marked for repair and are located on plate row No. 5, 8, 12, 17, and 20 starting at the north side and proceeding to the south. The paint on the roof is in good condition. All vents are in fair to good condition however there are no screens in place. Ultrasonic thickness readings were taken on the roof plates in the north, south, east and west quadrants with the first reading taken at the rim angle and at approx. four foot intervals proceeding toward the center of the tank, **See Figure 6 in section 6.0 photographs, See 5.0 Non-Destructive Testing** for results.

3.5 Rigid Tilt Survey

A rigid tilt survey was carried out on the tank on the outside, twenty stations were marked off, and the elevations were done in a clockwise direction around the tank. For results refer to the rigid band report in Appendix "D" in **section seven (7) of this report.**

3.6 Compound

The compound surrounding this tank is in relatively poor condition with a great amount of large rock on the West Side of the tank, water is holding up in large amounts all around the tank and vegetation is growing in some areas close to the concrete ring wall. **See Figures 7&8 in section 6.0 photographs.**



API 653 Out-of-Service Inspection

Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003

4.0 Summary and Recommendations

- 1) The MFL Floor scan revealed general bottom side pitting and corrosion in the range of 0.100" and up, with topside pitting in the range of 0.040"-0.050", and isolated areas that were 0.160"-0.180" deep. But generally the pitting ranged between 0.110"- 0.130". In general most areas of pitting were topside with some areas of bottom side corrosion evident.

The average pitting that was recorded in order to establish a long term corrosion rate was 0.130", therefore given the age of the tank is 26 years the calculated corrosion rate is 0.005" Based on this rate there are a total of 66 plates that has wall loss of 50% and greater which will require patches in order to give the tank floor a six (6) year life span (approx.)

My recommendations are, 1) Refer to the attached floor map report and patch all areas that are shown in red and dark blue, (0.125" and greater pits) and as well as the depression in plate 1-7 near the shell plate on the south side.

- 2) Even though the tank is sitting on a concrete ring wall, I feel that the water which has been lying in the compound, has been rising high enough to filter up under the tank bottom thus causing some of the bottom side corrosion that was recorded on the floor scan. In order to avoid this problem in the future, repairs should be made to the compound so the water will filter away from the tank, and to a common sump area.
- 3) Sand blast the corner weld from point # 9 clockwise to point #17, as per SGE Acres tank lay out sketch and do a wet continuous magnetic particle inspection to check for any rejectable indication in the areas where the floor plates are dipped down.
- 4) Review the bottom settlement survey report from SGE Acres which is contained in the appendix Section of this report, and if it is determined that settlement as occurred beyond the permissible limits, which can be found in section B3.3 and figure B-9 in the appendix Section of API 653 consideration should be given to making repairs, or a rigorous stress analysis should be performed by an engineering firm to evaluate these areas.
- 5) Review the rigid tilt survey report from SGE Acres and make adjustments if require.



API 653 Out-of- Service Inspection

Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003

4.0 Summary and Recommendations (Cont.)

- 6) Do repairs to roof plates as noted in section 3.4 of this report.
- 7) Replace the screens on all the roof vents.
- 8) When all repairs have been completed drill and cut a hole within the undermined area on the west side and establish a moisture and hydrocarbon content in the soil under the tank.
- 9) Install a new data plate on the tank.
- 10) Do a 5-year external inspection in 2008.
- 11) Open the tank in six (6) years, clean the tank and establish a short term corrosion rate, and if necessary do a complete floor scan and a full API inspection, or at lease establish when a full internal is to be done.

We trust that this report will be to your satisfaction. If any questions arise regarding this matter, please contact the undersign at (709) 745-1818 or by fax at (709) 745-5401.

Report Submitted by: 

Ronald Burton

API 653 Inspector Reg. NO. 2127

Date: December 05, 2003

5.0 NON-DESTRUCTIVE TESTING



REPORT NO.:
DATE: Dec. 5/03
JOB NO.: 0312-2208-1-1
P. O.: 111150B

REPORT TO: **Holyrood Generating Station**
P.O. Box 29
Holyrood, NL
A0A 2R0

Attention: **Mr. Paul Woodford**

Work Location: Holyrood, NL

Type of Inspection: RT UT PT MT VT BHT PMI

Part No. of Description: **TANK # 3 BUNKER "C"**

Results: See attached report

Procedure N0.: UT-GP-01 REV.2

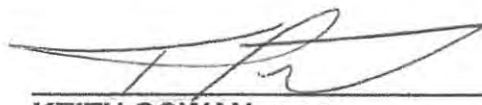
Specifications: API 653

AITEC Inspector(s): GLENN MELINDY/JASON WALL

Certification(s): C.G.S.B. LEVEL I

Registration No.: 10096/8329

Aitec Inc.
Report Approved By:



KEITH GOWAN, C.E.T.
C.G.S.B. LEVEL III, REG.#135
Area Manager

001 RF R1



API 653 Out-of Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003

5.0 Non- Destructive Testing Results

Ultrasonic Thickness Readings on Bottom Shell Plates

Course #1	North	South	East	West
A	1.198	1.249	1.249	1.232
B	1.222	1.244	1.237	1.238
C	1.214	1.252	1.243	1.239
D	1.217	1.247	1.235	1.238

Ultrasonic Thickness Readings on Shell Plates Going Up Stairway

Course # 2	West Side
A	1.033
B	1.041
C	1.036
D	1.018

Course # 3	West Side
A	.832
B	.838
C	.829
D	.868

Course # 4	West Side
A	.656
B	.680
C	.667
D	.682

NOTE: Reading "A" is at the bottom and reading "D" is at the top of each Course.
Readings are in 0.000"
Readings were taken through the paint



API 653 Out-of Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003

Non-destructive Testing Results (Cont.)

Course # 5	West Side
A	.486
B	.529
C	.485
D	.515

Course # 6	West Side
A	.374
B	.380
C	.377
D	.377

NOTE: Reading "A" is at the bottom and reading "D" is at the top of each Course.
Readings are in 0.000"
Readings were taken through the paint



**API 653 Out-of Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003**

5.0 Non-destructive Testing Results (Cont.)

Ultrasonic Readings on Shell Manway Northwest Side

Nozzle Size	East	West	Top	Bottom
24"	1.200	1.227	1.211	1.218

Ultrasonic Readings on Shell Manway Northeast Side

Nozzle size	North	South	Top	Bottom
24"	1.190	1.162	1.178	1.189

Ultrasonic Readings on Shell Manway Southeast Side

Nozzle size	East	West	Top	Bottom
24"	1.207	1.193	1.229	1.188

Ultrasonic Readings on South Side Nozzles

Nozzle Size	East	West	Top	Bottom
2"	.395	.353	.376	.380
14"	.546	.559	.534	.568

NOTE: Readings are in 0.000"
Readings were taken through the paint



**API 653 Out-of Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003**

5.0 Non-destructive Testing Results (Cont.)

Ultrasonic Thickness Readings On Northside Shell Nozzles

Nozzle Size	East	West	Top	Bottom
1.5"	.200	.183	.190	.197
18" West	.653	.676	.669	.587
18" East	.625	.632	.623	.623
12"	.558	.517	.605	.580
1.5"	.200	.185	.187	.180
1.5"	.165	.151	.167	.187
2"	.387	.355	.376	.390

Ultrasonic Thickness Readings On Northside Sump

Location	Bottom	Side
North	.348	.330
South	.330	.334
East	.305	.338
West	.341	.340

Ultrasonic Thickness Readings On Southside Sump

Location	Bottom	Side
North	.325	.335
South	N/A	.335
East	.310	.335
West	.331	.336

NOTE: Readings are in 0.000"
Readings were taken through the paint.



**API 653 Out-of Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003**

5.0 Non-destructive Testing Results (Cont.)

Ultrasonic Thickness Readings On Roof Plates

Location	North	South	East	West
Rim 1	.189	.189	.179	.179
2	.187	.184	.164	.167
3	.184	.197	.177	.201
4	.187	.175	.189	.194
5	.178	.173	.176	.202
6	.178	.189	.195	.179
7	.177	.172	.187	.197
8	.173	.169	.182	.194
9	.198	.190	.147	.196
10	.197	.197	.187	.198
11	.191	.185	.202	.201
12	.192	.190	.188	.201
13	.197	.173	.172	.186
14	.193	.191	.191	.173
15	.189	.181	.185	.185
16	.188	.184	.174	.180
17	.174	.179	.191	.196
18	.187	.178	.208	.194
19	.192	.173	.192	.201
20	.197	.188	.205	.202

**NOTE: Readings were taken starting at the rim of the tank and proceeding to the center.
Readings were taken through the paint.
Readings are in 0.000"**



**API 653 Out-of Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003**

5.0 Non-destructive Testing Results (Cont.)

Ultrasonic Thickness Readings On Columns

Column Number	Reading
1	.366
2	.374
3	.362
4	.361
5	.364
6	.364
7	.367
8	.362
9	.360
10	.351
11	.377
12	.352
13	.353
14	.361
15	.368
16	.358
17	.358
18	.385
19	.379
20	.357
21	.379
22	.366
23	.366
24	.364
25	.377

**NOTE: One reading was taken at a random location on each column.
Readings are in 0.000"**



**API 653 Out-of Service Inspection
Tank # 3 Bunker "C" Newfoundland And Labrador Hydro November 2003**

5.0 Non-destructive Testing Results (Cont.)

Random Ultrasonic Thickness Readings on Floor Plates

Plate Number	Thickness	Plate Number	Thickness	Plate Number	Thickness	Plate Number	Thickness
1.1	.285	6.2	.271	10.3	.282	14.4	.288
1.2	.291	6.3	.272	10.4	.282	14.5	.265
1.3	.269	6.4	.274	10.5	.276	14.6	.277
1.4	.262	6.5	.273	10.6	.285	15.1	.285
1.5	.268	6.6	.272	10.7	.265	15.2	.278
1.6	.265	7.1	.287	11.1	.279	15.3	.290
1.7	.267	7.2	.284	11.2	.289	15.4	.289
2.1	.286	7.3	.253	11.3	.284	15.5	.273
2.2	.266	7.4	.270	11.4	.270	15.6	.269
2.3	.270	7.5	.279	11.5	.263	16.1	.294
2.4	.265	7.6	.264	11.6	.274	16.2	.284
3.1	.281	7.7	.278	11.7	.273	16.3	.265
3.2	.277	8.1	.279	12.1	.279	16.4	.270
3.4	.279	8.2	.275	12.2	.272	16.5	.279
3.5	.276	8.3	.287	12.3	.271	17.1	.270
4.1	.289	8.4	.266	12.4	.265	17.2	.279
4.2	.280	8.5	.281	12.5	.275	17.3	.266
4.3	.284	8.6	.263	12.6	.280	17.4	.287
4.4	.287	8.7	.278	12.7	.281	18.1	.263
4.5	.270	9.1	.288	13.1	.273	18.2	.279
4.6	.273	9.2	.257	13.2	.280	18.3	.298
5.1	.270	9.3	.278	13.3	.289	18.4	.277
5.2	.271	9.4	.270	13.4	.287	18.5	.277
5.3	.288	9.5	.274	13.5	.288	18.6	.272
5.4	.274	9.6	.272	13.6	.273	18.7	.260
5.5	.267	9.7	.274	14.1	.276		
5.6	.270	10.1	.288	14.2	.273		
6.1	.278	10.2	.272	14.3	.278		

**Note: Readings were taken through the coating.
Readings are in 0.000"**

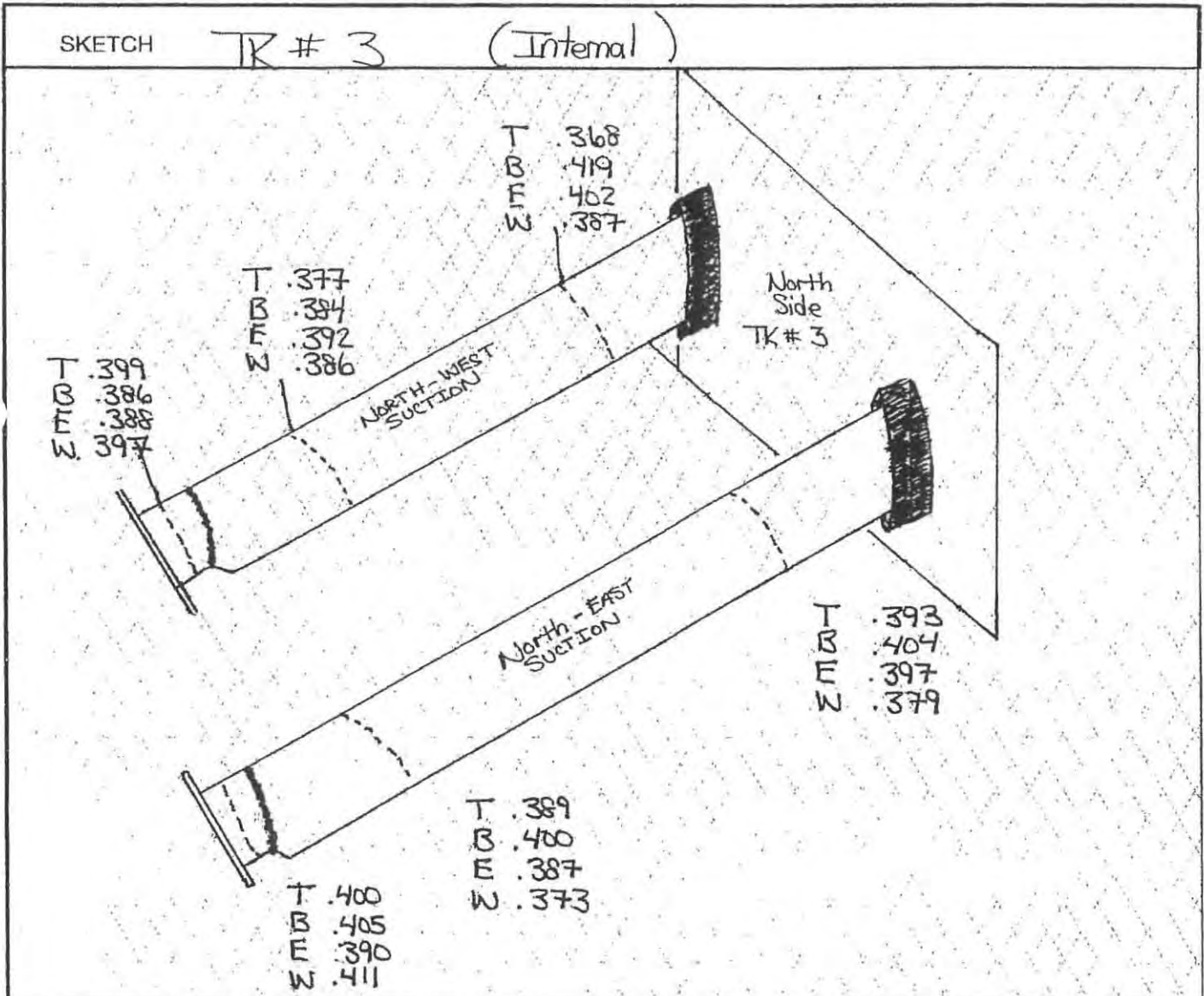
AITEC INC.

INSPECTION REPORT



Job Number 200311-2208-3-1 Client Specifications API 653
Client name NF Hydro
Work Location Holycroft, NL Procedure/Technique UT-GP-01 Rev.2
Date of Inspection November 21/2003 P.O. Number 11150 B

☐ Oakville ☐ Kitchener ☐ Whitby ☐ St. Catharines ☐ Samia ☐ Thunder Bay ☐ Dartmouth, NS ☒ Mount Pearl, NL



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AITEC Inspector Jason Wall Client Representative Jason Wall
Certification CG.S.B. UT Level I Reg # 2329

AITEC INC.

INSPECTION REPORT

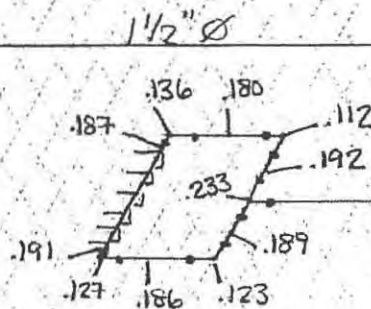
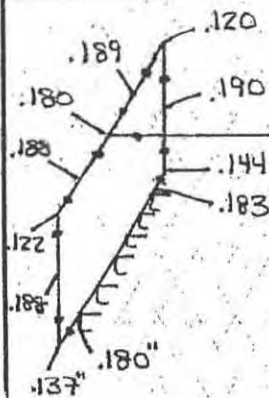
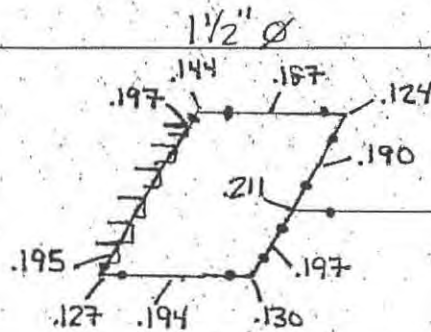
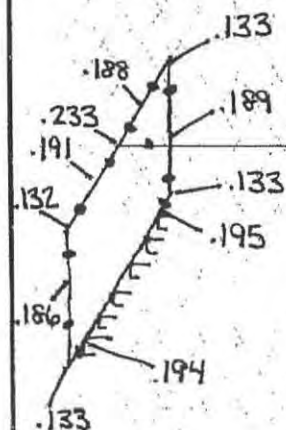


Job Number 200311-2208-3-1 Client Specifications API 653
 Client name NF Hydro
 Work Location Holyrood ; NL Procedure/Technique UT-GP-01 Rev.2
 Date of Inspection November 21/2003 P.O. Number 111150 B

☐ Oakville ☐ Kitchener ☐ Whitby ☐ St. Catharines ☐ Sarnia ☐ Thunder Bay ☐ Dartmouth, NS ☒ Mount Pearl, NL

SKETCH

TK # 3

NORTH SIDE
EAST COILNORTH SIDE
WEST COIL

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AITEC Inspector Jason Walt Client Representative [Signature]

Certification C.G.S.B. UT Level I Reg # 8329

HEAD OFFICE

389 Davis Road, Oakville, Ontario L6J 2X2

005 GR



REPORT NO.:
DATE: Dec. 5/03
JOB NO.: 0312-2208-1-1
P. O.: 111150B

REPORT TO: Holyrood Generating Station
P.O. Box 29
Holyrood, NL
A0A 2R0

Attention: **Mr. Paul Woodford**

Work Location: Holyrood, NL

Type of Inspection: RT UT PT MT VT BHT PMI

Part No. of Description: **TANK # 3 BUNKER "C"**

Results: See attached report

Procedure NO.: MT-GP-01 REV.2

Specifications: API 653

AITEC Inspector(s): RONALD BURTON/CYRIL PRETTY
GLENN MELINDY

Certification(s): C.G.S.B. LEVEL II

Registration No.: 5031/4353/10096

Aitec Inc.
Report Approved By:



KEITH GOWAN, C.E.T.
C.G.S.B. LEVEL III, REG.#135
Area Manager



MAGNETIC PARTICLE EXAMINATION REPORT



Branch Office: 41 Sagona Ave, Mount Pearl, NL A1N 4P9 Tel. (709) 745-1818 * Fax (709) 745-5401

Job Number: 200312-2208-1-1	Client Specifications: API 653
Client Name: Nfld & Labrador Hydro	Acceptance: ASME VIII
Date Of Examination: Dec. 05/03	Procedure: MT-GP-01 REV.2
Work Location: Holyrood	Technique: ASME V
	P.O. Number: 111150B

Type of Fabrication:	Weld X	Casting	Forging	Plate	Other
Part/Assy No.: Tank No. 3	Dwg No.:	Heat No.:	Pattern No.:		

Scope: This report covers the magnetic particle inspection of welds on one hundred and ninty five patch plates on the floor of tank No. 3 Bunker "C" at the Holyrood Generation Station tank farm.

The wet continuous method of inspection was performed using a white paint to aid contrast and a black ink as the indicating medium.

Results: At the time of inspection no rejectable indications were noted and all welds were acceptable to the above mentioned code.

Total Parts Inspected 195	Total Parts Accepted 195	Total Parts Rejected 0
---------------------------	--------------------------	------------------------

Magnetizing Equipment			Inspection Medium		Demagnetize	
Equipment	Current	Serial No.	Product	Batch No.	Yes	No X
Permanent Magnet	N/A	980192	Ely white contrast	2614		
			Ely supramor 4	2384		No. of Oersteds
Additional Equipment Used:						N/A

This Certificate or Report is valid only for that work which was specifically requested. The Company is not responsible for any views or opinions expressed by employees performing this work which fall outside the exact terms of reference. All certificates and/or reports are the result of work performed in conformance with applicable specifications and standards to the best of our ability and intent. However, the company will not be responsible for deviations within the normal limits of accuracy in accordance with the standard practices. Final Code acceptance shall require Client/Manufacture representatives signature.

AITEC TECHNICIAN: Print Name: R. Burton G. Melinck Signature: [Signature] Certification: 5031/1998 ACCP Level II ☒ CGSB 48.9712 Level 2 ☒ SNT-TC-1A Level II ☐	CLIENT REPRESENTATIVE FINAL ACCEPTANCE: Print Name: _____ Signature: _____ Date: _____
--	--

HEAD OFFICE

389 Davis Road, Oakville, Ontario L6J 2X2
Telephone: (905) 845-9542 * Fax (905) 845-9551

Page 1 of 1

011 MT R1



MAGNETIC PARTICLE EXAMINATION REPORT



Branch Office: 41 Sagona Ave, Mount Pearl, NL A1N 4P9 Tel. (709) 745-1818 * Fax (709) 745-5401

Job Number: 200312-2208-1-1	Client Specifications: API 653
Client Name: Nfld & Labrador Hydro	Acceptance: ASME VIII
Date Of Examination: Dec. 05/03	Procedure: MT-GP-01 REV.2
Work Location: Holyrood	Technique: ASME V
	P.O. Number: 111150B

Type of Fabrication: Weld X Casting Forging Plate Other

Part/Assy No.: Tank No. 3	Dwg No.:	Heat No.:	Pattern No.:
---------------------------	----------	-----------	--------------

Scope: This report covers the magnetic particle inspection on the floor to corner fillet weld from point # 9 to Point # 17 as per SGE Acres tank layout plan in section 7 appendix "D" of this report on the floor of tank No. 3 Bunker "C" at the Holyrood Generation Station tank farm.

The wet continuous method of inspection was performed using a white paint to aid contrast and a black ink as the indicating medium.

Results: At the time of inspection no rejectable indications were noted and all welds were acceptable to the above mentioned code.

Total Parts Inspected 1	Total Parts Accepted 1	Total Parts Rejected 0
-------------------------	------------------------	------------------------

Magnetizing Equipment			Inspection Medium		Demagnetize	
Equipment	Current	Serial No.	Product	Batch No.	Yes	No X
Permanent Magnet	N/A	980192	Ely white contrast	2614		
			Ely supramor 4	2384		
Additional Equipment Used:					N/A	

This Certificate or Report is valid only for that work which was specifically requested. The Company is not responsible for any views or opinions expressed by employees performing this work which fall outside the exact terms of reference. All certificates and/or reports are the result of work performed in conformance with applicable specifications and standards to the best of our ability and intent. However, the company will not be responsible for deviations within the normal limits of accuracy in accordance with the standard practices. Final Code acceptance shall require Client/Manufacture representatives signature.

AITEC TECHNICIAN: Cyril PreHy	Print Name	Signature	Certification: 4353 CGSB 48.9712 Level 2 ☒	ACCP	Level II ☐
				SNT-TC-1A	Level II ☐
CLIENT REPRESENTATIVE FINAL ACCEPTANCE:			Signature	Date	

HEAD OFFICE

389 Davis Road, Oakville, Ontario L6J 2X2
Telephone: (905) 845-9542 * Fax (905) 845-9551

Page 1 of 1

011 MT R1



MAGNETIC PARTICLE EXAMINATION REPORT



Branch Office: 41 Sagona Ave, Mount Pearl, NL A1N 4P9 Tel. (709) 745-1818 * Fax (709) 745-5401

Job Number: 200312-2208-1-1	Client Specifications: API 653
Client Name: Nfld & Labrador Hydro	Acceptance: ASME VIII
Date Of Examination: Dec. 05/03	Procedure: MT-GP-01 REV.2
Work Location: Holyrood	Technique: ASME V
	P.O. Number: 111150B

Type of Fabrication:	Weld X	Casting	Forging	Plate	Other
Part/Assy No.: Tank No. 3	Dwg No.:	Heat No.:	Pattern No.:		

Scope: This report covers the magnetic particle inspection on five (5) areas of repair on the roof of tank No.3 Bunker "C" at the Holyrood Generation Station tank farm.
The wet continuous method of inspection was performed using a white paint to aid contrast and a black ink as the indicating medium.

Results: At the time of inspection no rejectable indications were noted and all welds were acceptable to the above mentioned code.

Total Parts Inspected 5	Total Parts Accepted 5	Total Parts Rejected 0
-------------------------	------------------------	------------------------

Magnetizing Equipment			Inspection Medium		Demagnetize	
Equipment	Current	Serial No.	Product	Batch No.	Yes	No X
Permanent Magnet	N/A	980192	Ely white contrast	2614		
			Ely supramor 4	2384	No. of Oersteds	
Additional Equipment Used:					N/A	

This Certificate or Report is valid only for that work which was specifically requested. The Company is not responsible for any views or opinions expressed by employees performing this work which fall outside the exact terms of reference. All certificates and/or reports are the result of work performed in conformance with applicable specifications and standards to the best of our ability and intent. However, the company will not be responsible for deviations within the normal limits of accuracy in accordance with the standard practices. Final Code acceptance shall require Client/Manufacture representatives signature.

AITEC TECHNICIAN: <i>Print Name</i> <i>Signature</i>	Certification: <i>5031</i> CGSB 48.9712 Level 2 ☒ ACCP Level II ☒ SNT-TC-1A Level II ☒
CLIENT REPRESENTATIVE FINAL ACCEPTANCE:	<i>Print Name</i> <i>Signature</i> <i>Date</i>

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Page 1 of 1

011 MT R1



M & M ENGINEERING LIMITED

TANK FLOOR PATCH PLATES VACUUM TEST REPORT

CLIENT	Newfoundland and Labrador Hydro
TANK DESCRIPTION	Fuel Oil Storage Tank #3
COMMENTS	(195) 12"X12" Floor Patch Plates were installed. All fillet welded lap joints were inspected using a vacuum box.
OPERATORS	TOM HICKEY , LEO MAHONEY , Ray HAWCO
RESULT	PASS - NO DEFECTS

SUPERVISOR: M. J. Haddad

DATE: Dec 8/03

6.0 PHOTOGRAPHS



Newfoundland And Labrador Hydro Holyrood, NL



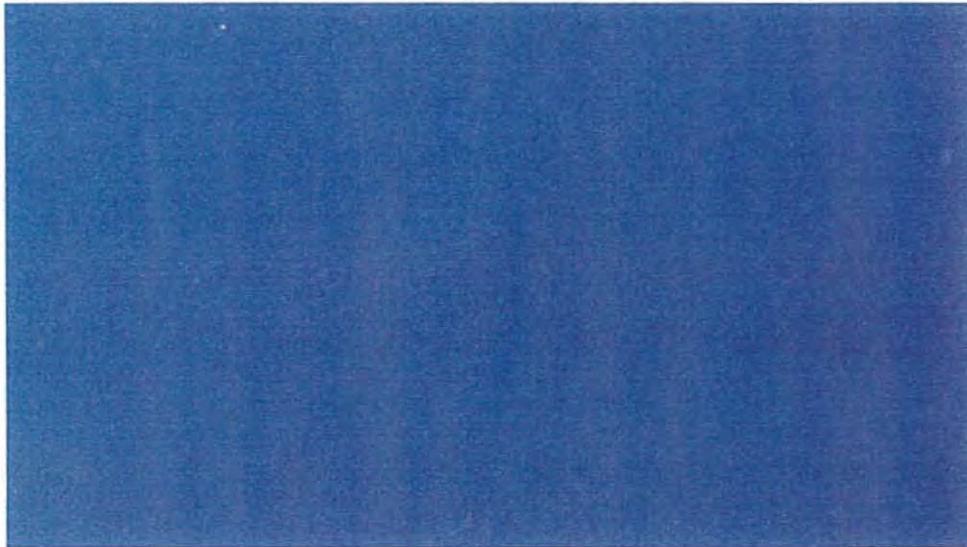
Figure No. 1 Floor sump



**Figure No.2 Annular ring
(Sketch plate)**



Newfoundland And Labrador Hydro Holyrood, NL



**Figure No. 3 Paint Blister
On Outside Of Shell**



**Figure No.4 Bulges In Shell
Plates**



Newfoundland And Labrador Hydro Holyrood, NL

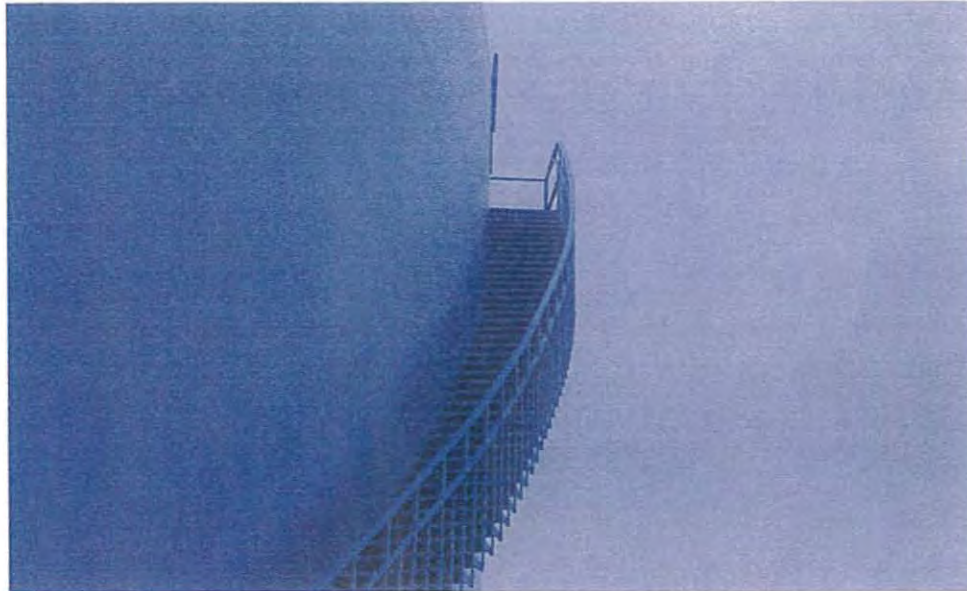


Figure No. 5 Access Stairway



Figure No.6 Roof Plate Profile



Newfoundland And Labrador Hydro Holyrood, NL



**Figure No. 7 Rocks In
Compound On West Side**



**Figure No.8 Water In Compound
On West Side**

AITEC INC.

INSPECTION REPORT

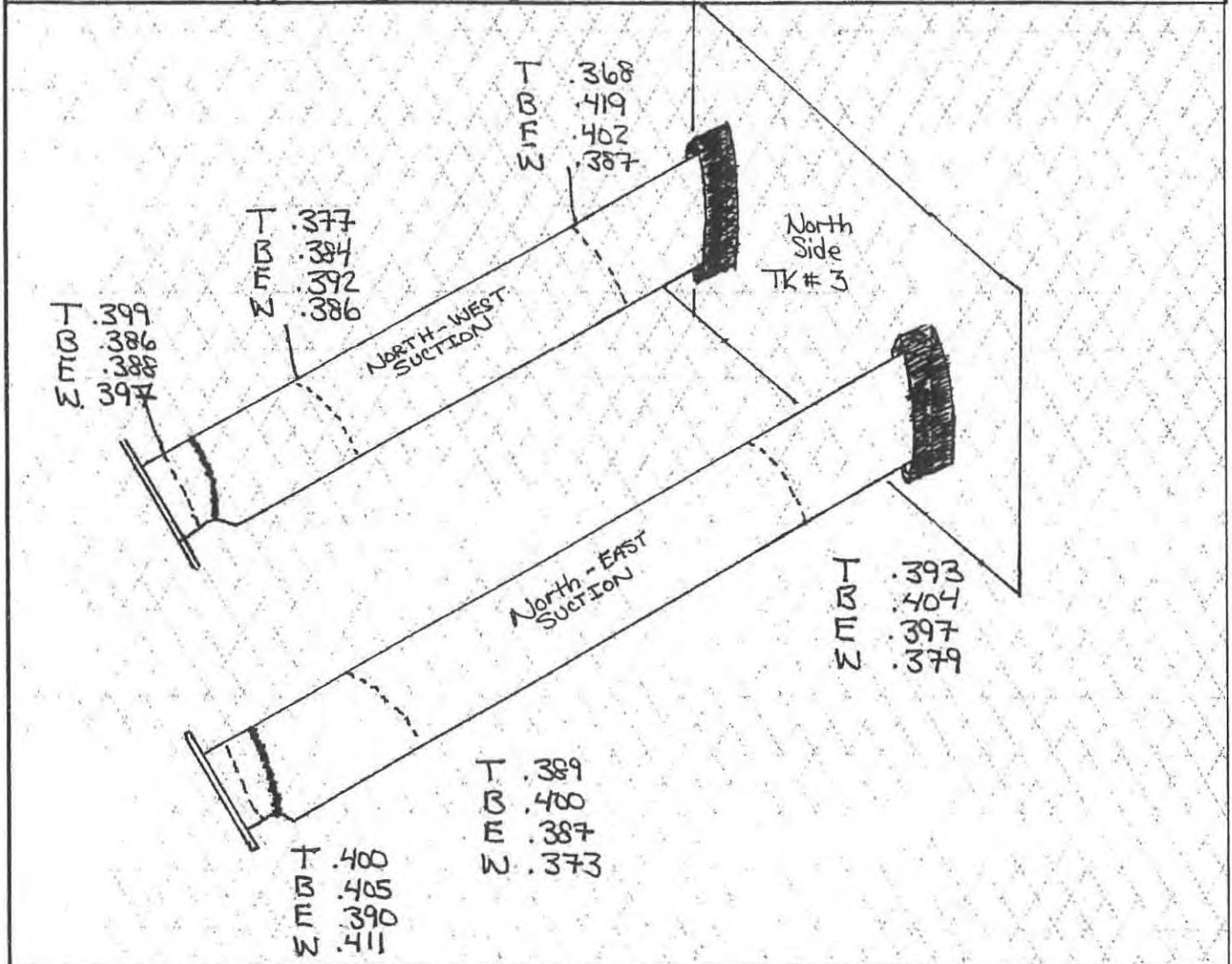


Job Number 200311-2208-3-1 Client Specifications API 653
 Client name NF Hydro
 Work Location Holyrood, NL Procedure/Technique UT-GP-01 Rev.2
 Date of Inspection November 21/2003 P.O. Number 11150 B

☐ Oakville ☐ Kitchener ☐ Whitby ☐ St. Catharines ☐ Sarnia ☐ Thunder Bay ☐ Dartmouth, NS ☒ Mount Pearl, NL

SKETCH

TK # 3 (Internal)



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AITEC Inspector Jason Wall Client Representative _____

Certification CG.S.B. UT Level I Reg # 8329

HEAD OFFICE

389 Davis Road, Oakville, Ontario L6J 2X2

005 GR

AITEC INC.

INSPECTION REPORT



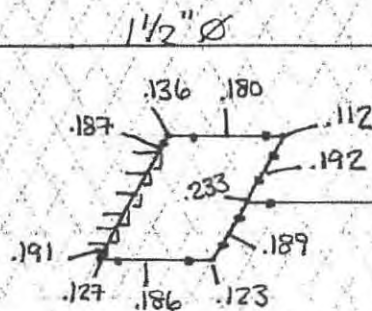
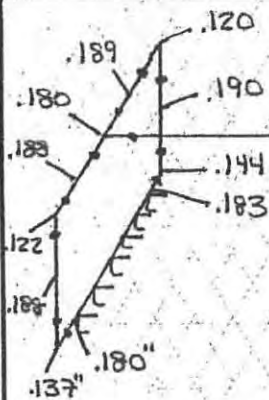
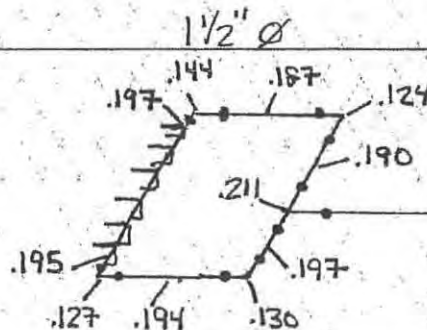
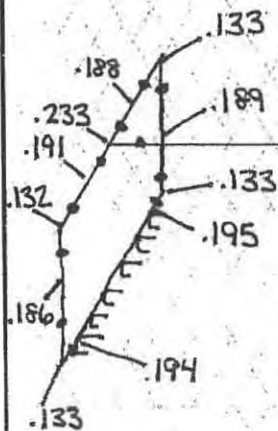
ISO 9001

Job Number 200311-2208-3-1 Client Specifications API 653
 Client name NF Hydro
 Work Location Holyrood ; NL Procedure/Technique UT-GP-01 Rev.2
 Date of Inspection November 21/2003 P.O. Number 111150 B

☐ Oakville ☐ Kitchener ☐ Whitby ☐ St. Catharines ☐ Sarnia ☐ Thunder Bay ☐ Dartmouth, NS ☒ Mount Pearl, NL

SKETCH

TK # 3

NORTH SIDE
EAST COILNORTH SIDE
WEST COIL

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AITEC Inspector Jason Wall Client Representative _____

Certification C.G.S.B. UT Level I Reg # 8329

HEAD OFFICE

389 Davis Road, Oakville, Ontario L6J 2X2

005 GR

7.0 APPENDICES

APPENDIX "A"



Appendix A

Tank Floor Inspection Report

Owner:	Newfoundland and Labrador Hydro
Tank Number:	TK # 3 Bunker "C"
Erected by:	McNamara Industries Ltd.
Date of Fabrication:	1977
Fabrication Standard:	N/A
Dimensions:	180 ft. X 48 ft.
Serial / Contact No:	3/4400
Nominal Floor Thickness	0.250 inches

Introduction

In November 2003 an inspection of the above noted tank located at the Holyrood Generation Station tank farm was conducted as per client's request.

The inspection consisted of a Magnetic Flux Leakage (MFL) inspection of the floor in conjunction with an API 653 out of service inspection.

Equipment

The MFL inspection was performed with the floormap inspection system, which was developed by Silver Wing Limited.

Scope of Work

The Floormap system was used to monitor the accessible floor plates in order to locate, position and quantify areas of floor corrosion.

Equipment Calibration

The calibration procedures used for the Floormap equipment are shown in Appendix C to this report.



Inspection Procedure

The main floor plates were numbered sequentially in accordance with the numbering system shown in Appendix B. the inspection was carried out on row by row, each plate in the row being scanned in turn.

The Floormap system was used in the mapping mode on the main floor plates to detect, position and quantify all flux leakage indications in excess of the set threshold and record their position. The findings are reported in the colour-coded report Appendix B.

Ultrasonic inspection was done in some areas which had recorded underside corrosion in order to locate and prove up these indications.



Limitations

The following limitations should be taken into consideration when planning any action that may result from this survey:

- i) **WELDS** – At welds between adjacent plates the floormap is able to scan to the edge of the upper plate, but in some instances it is not able to scan closer than 25mm to the weld of the lower plate. Any areas on the plate surface which have been subjected to welding, grinding, or any other application that would cause a change in the material structure.
- ii) **PLATE GEOMETRY** – The floormap is unable to examine annular or sketch plates if the width of the plate is less than approximately 400mm. This is because the floormap unit becomes wedged between the tank side and the weld to the main floor.
- iii) **PATCH PLATES**
- iv) **FRP LINERS** – When scanning is performed over FRP liners, the unevenness of the liner may cause the sensor head to lift resulting in erroneous indications. Care should be taken to ensure that the resultant data is not a result of this.



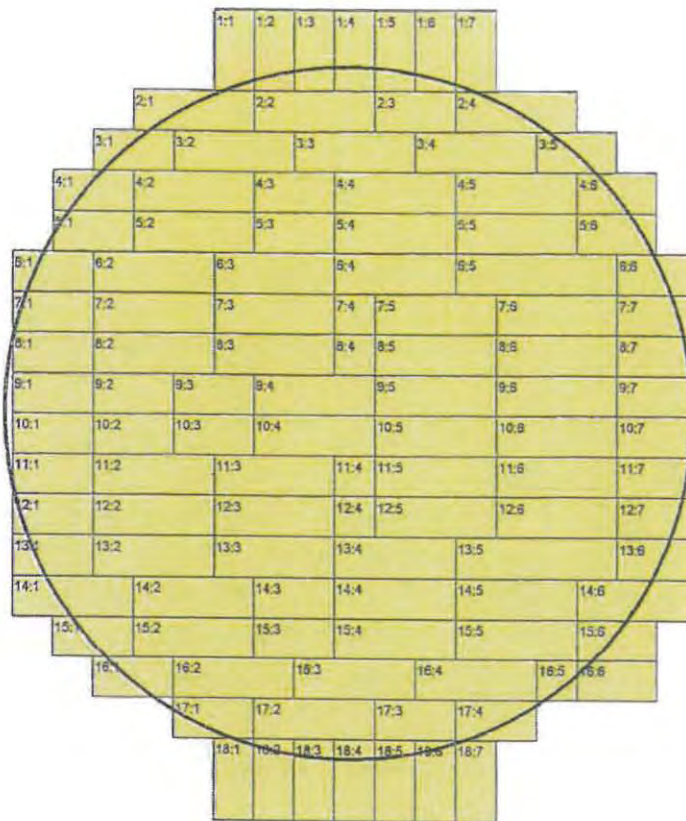
Results

Approximately 95% of the floor plate area was scanned using the Floormap MFL inspection system, areas in close proximity to the shell plate could not be scanned due to the limitations of the equipment. The majority of the examined plates showed indications in excess of 50% and greater wall loss. Please refer to appendix B for All MFL inspection data.

APPENDIX "B"

TANKFLOOR CORROSION SURVEY.

SILVER WING LTD.



* Tank Datum Point.

NORTH.



Tank Layout

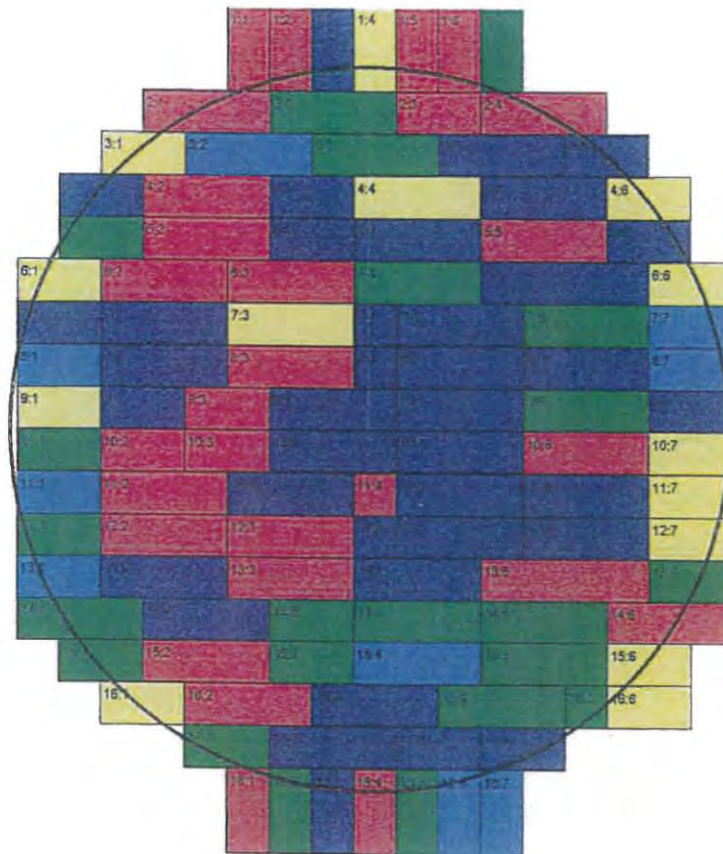
Tank ID: TANK 3

Client:

LOCATION: Holyrood

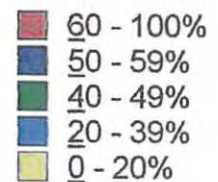
DATE: November 24, 2003

TANKFLOOR CORROSION SURVEY. SILVER WING LTD.



* Tank Datum Point.

NORTH.



Tank Layout

Tank ID: TANK 3

Client: NF HYDRO

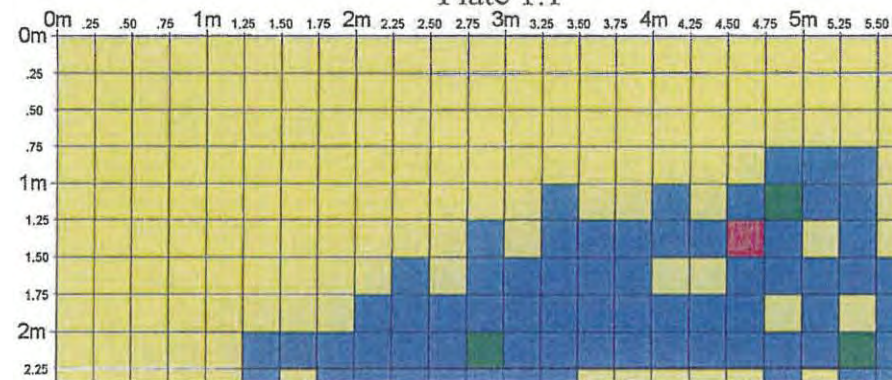
LOCATION: Holyrood

DATE: November 24, 2003

AITEC INC.

PLATEMAP.

Plate 1:1



* TANK DATUM.

North

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



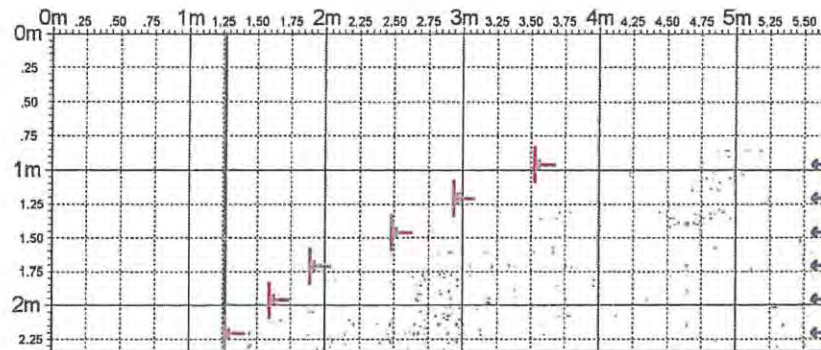
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 10 (Plate 1:1)



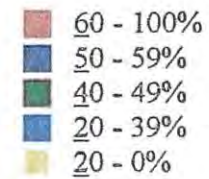
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



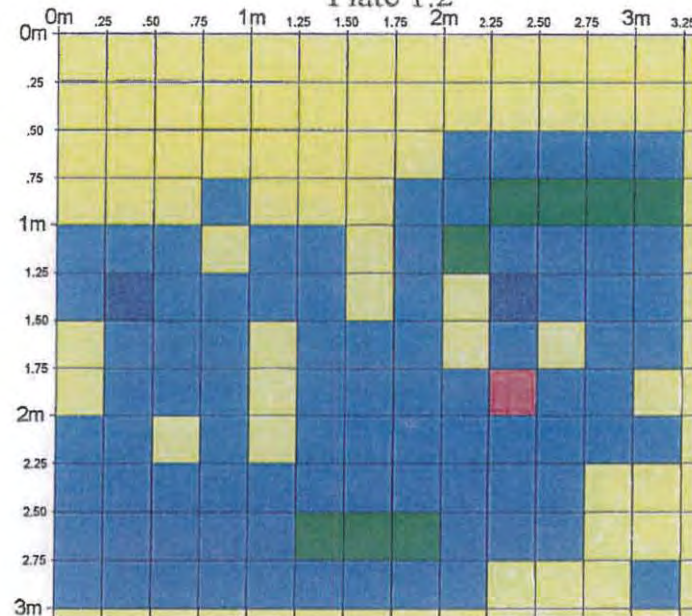
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 1:2



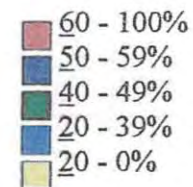
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



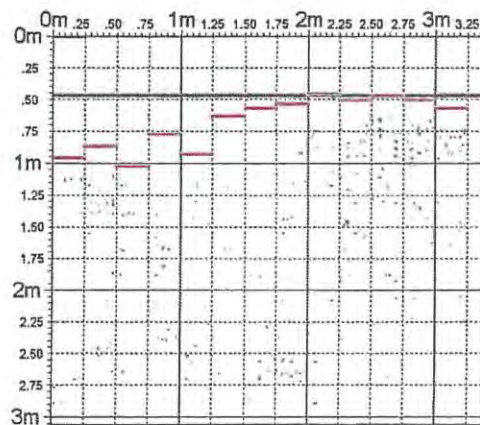
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 14 (Plate 1:2)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



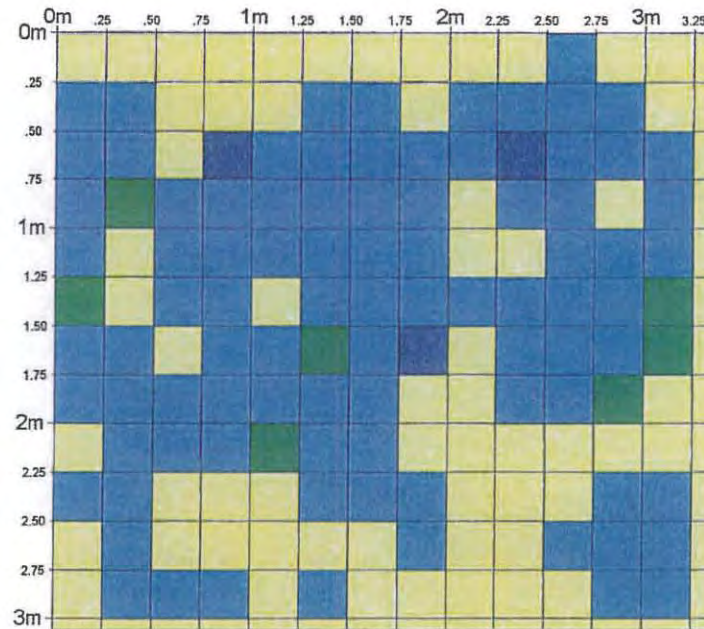
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 1:3



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



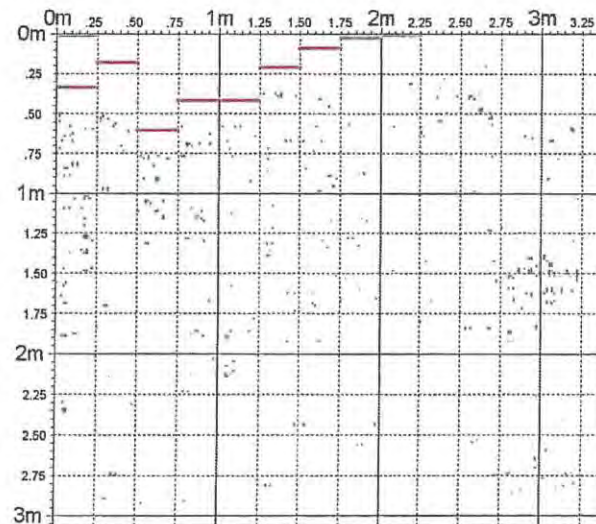
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 14 (Plate 1:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



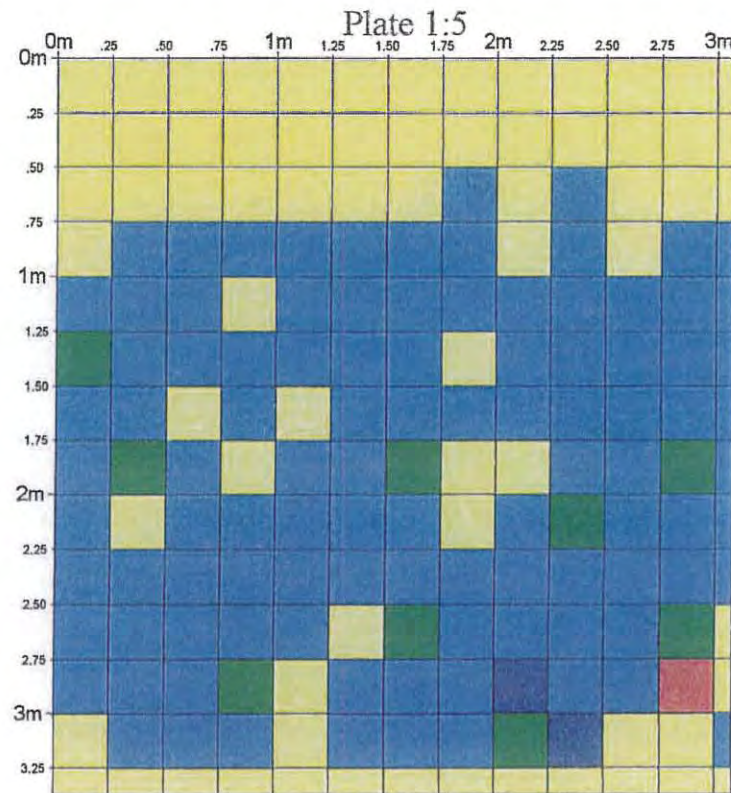
North

Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



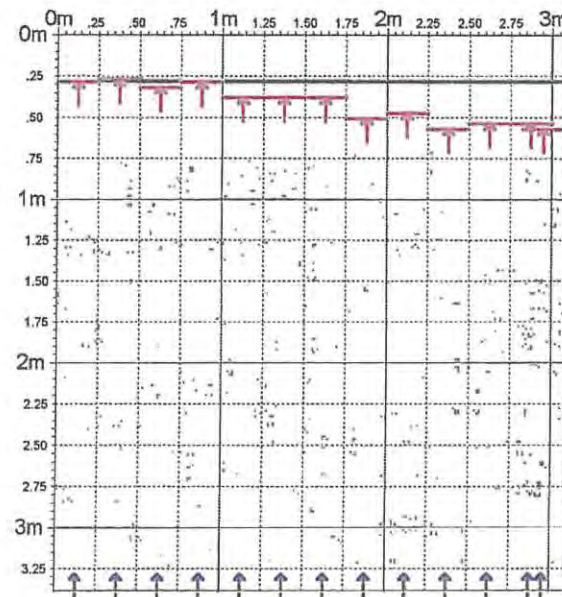
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 1:5)

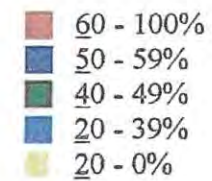


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

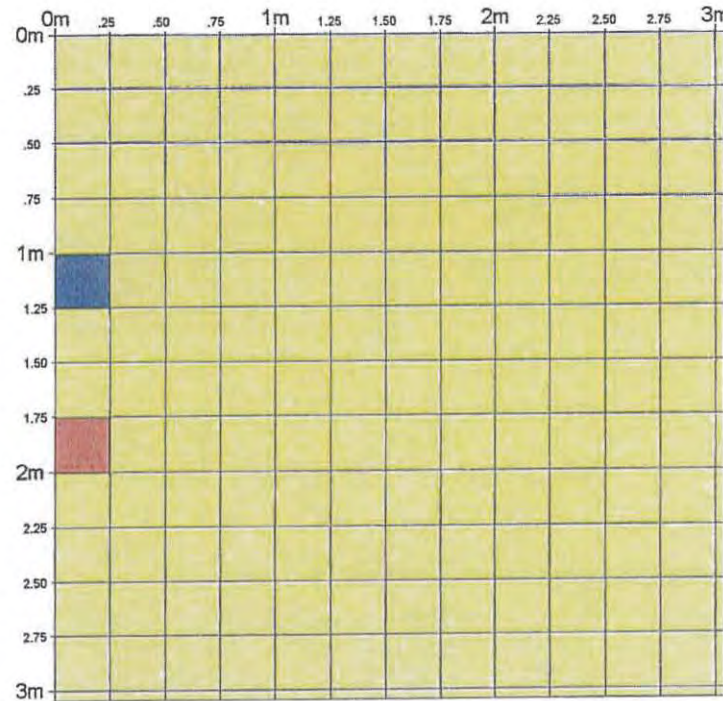
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 1:6



Operator: RON BURTON
November 24, 2003

* TANK DATUM.

Client: NF Hydro

Location: Holyrood

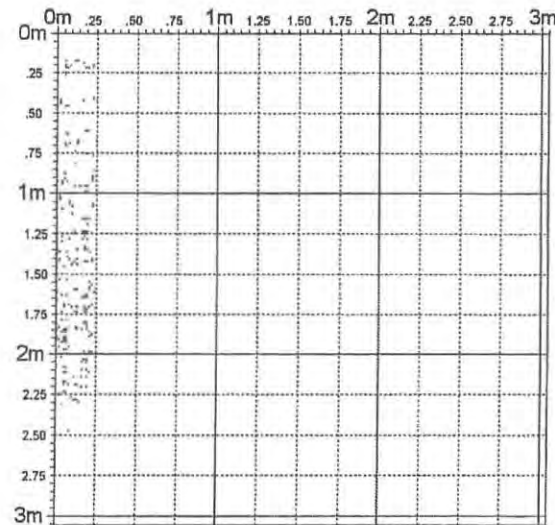
Tank ID: TANK 3

North

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 1:6)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

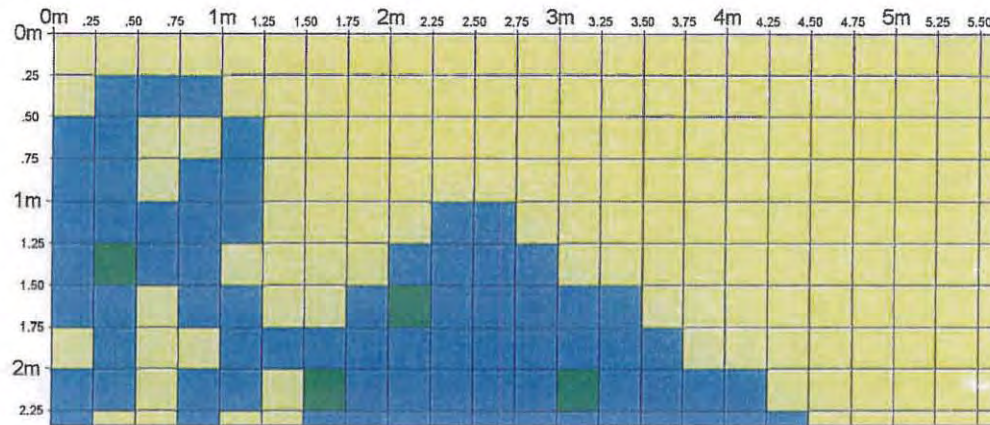
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 1:7



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



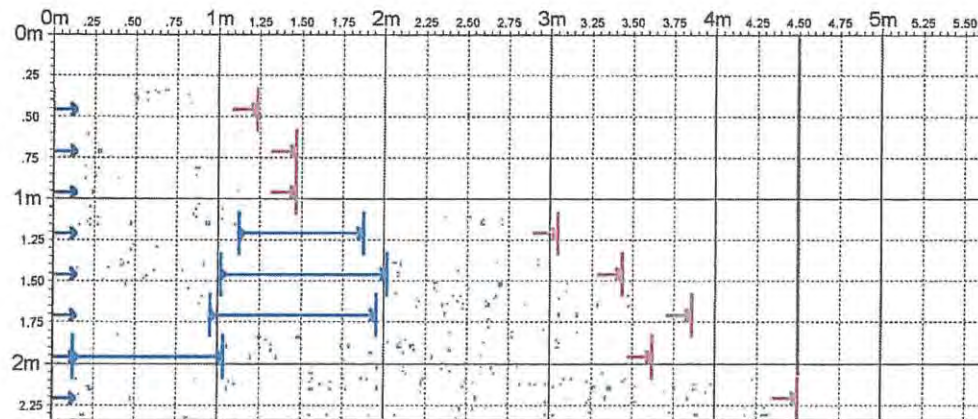
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 10 (Plate 1:7)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

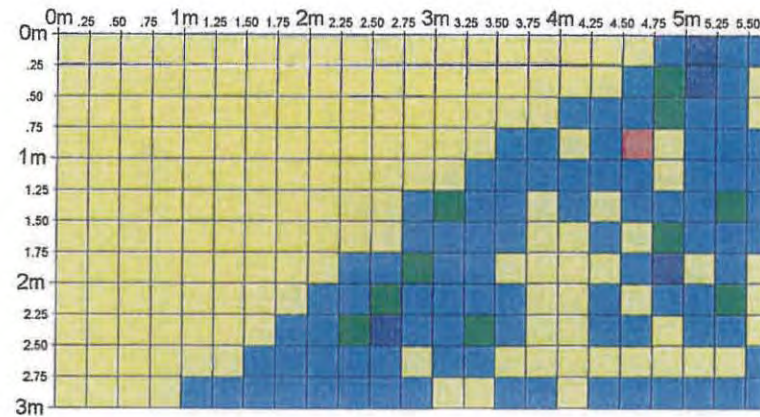


Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 2:1



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



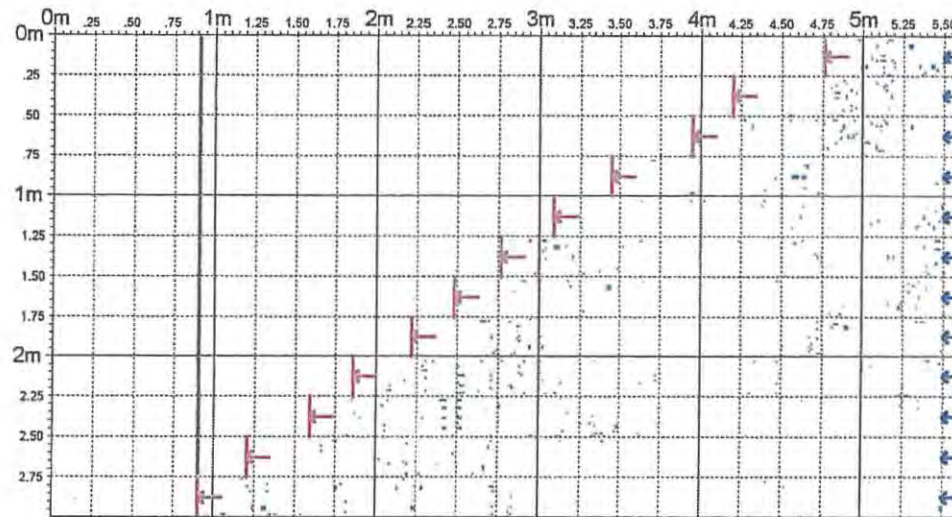
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 2:1)

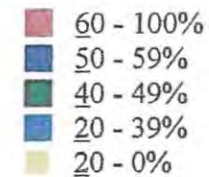


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

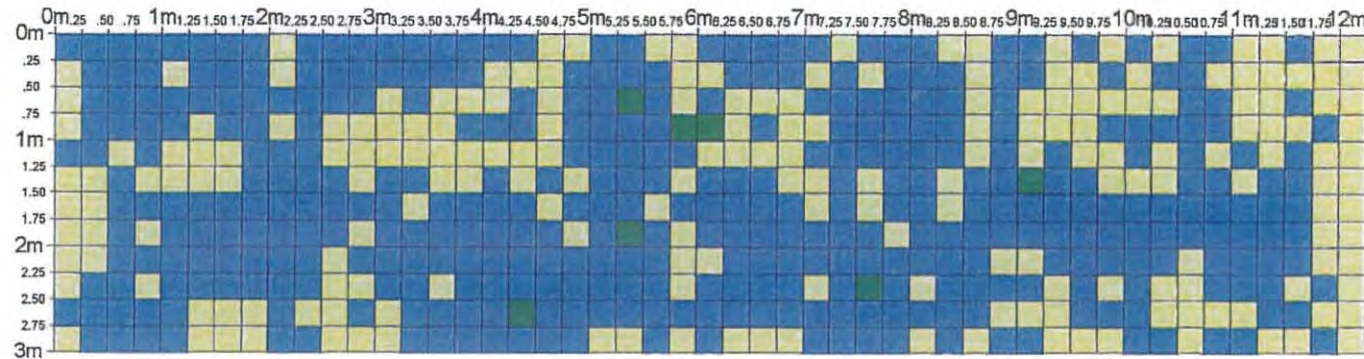
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 2:2



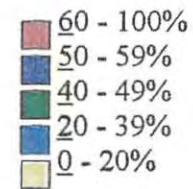
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



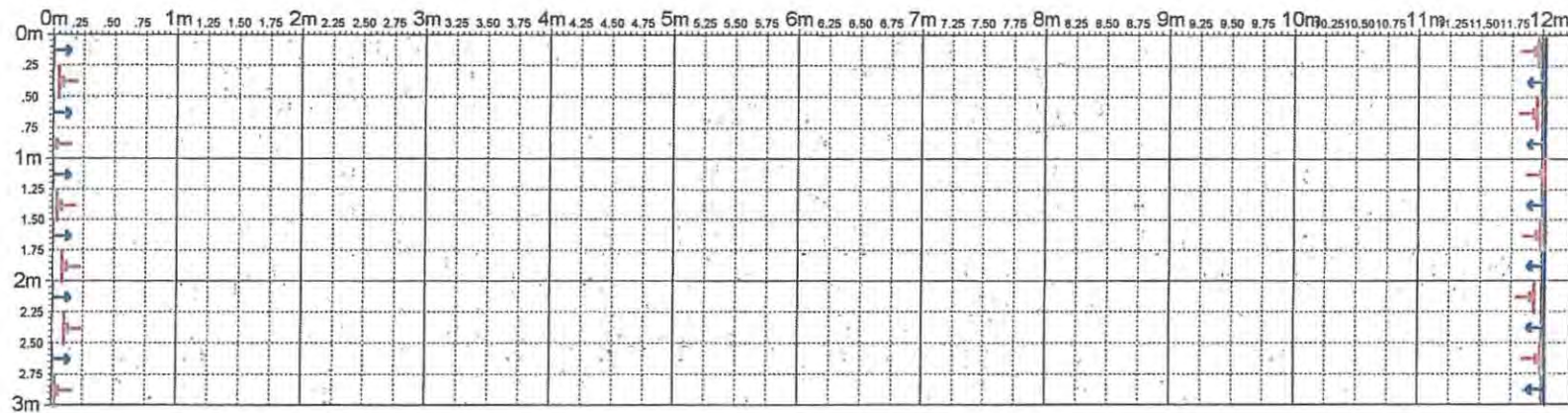
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 2:2)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

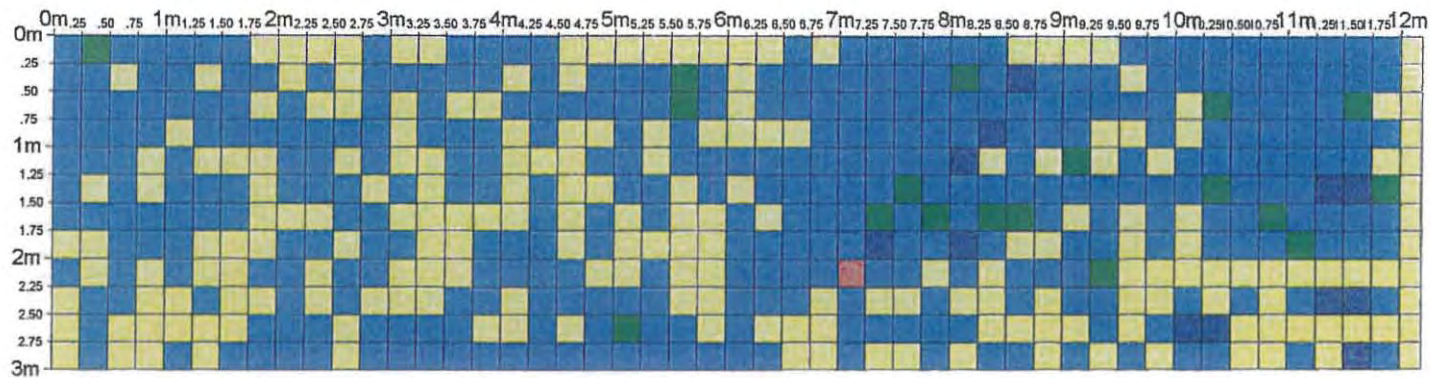


Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 2:3



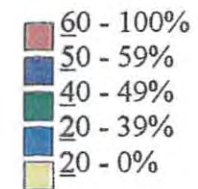
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Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



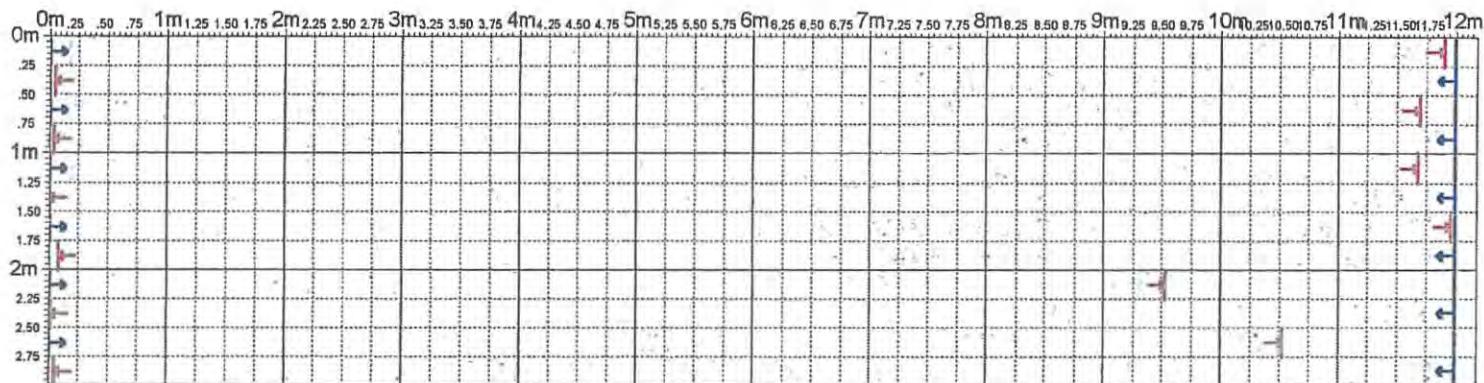
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 2:3)

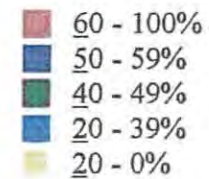


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



Operator: RON BURTON

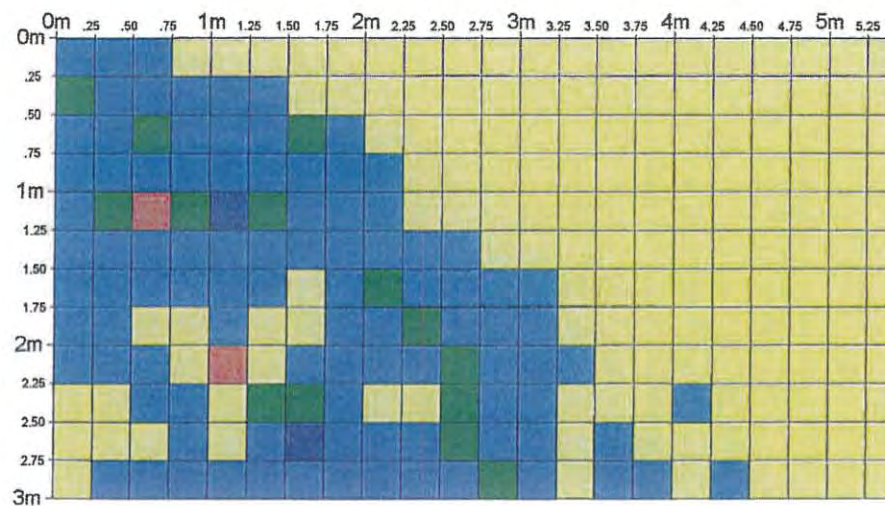
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 2:4



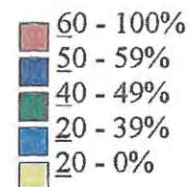
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Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



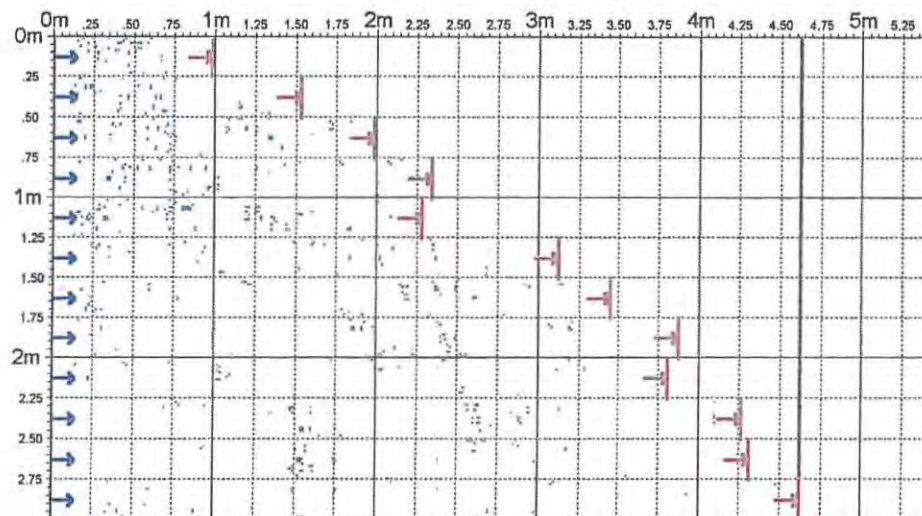
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 2:4)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

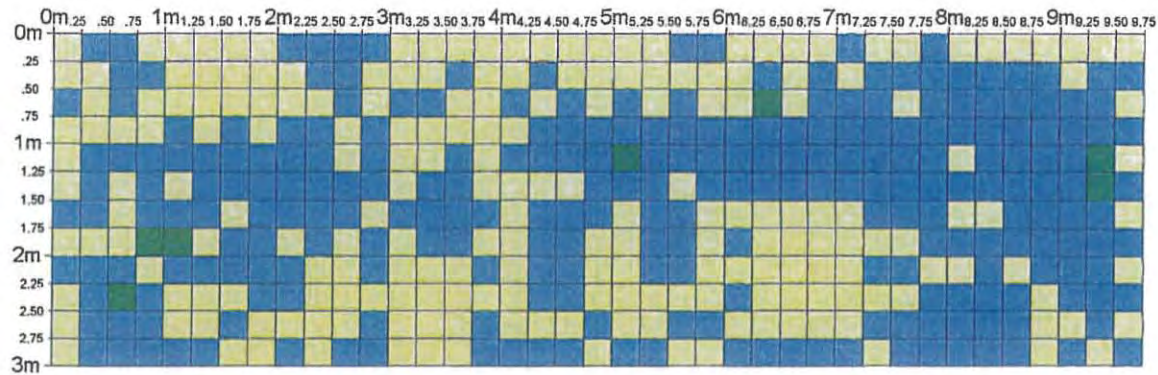
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 3:3



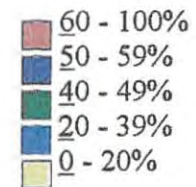
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Location: Holyrood

Tank ID: TANK 3

North



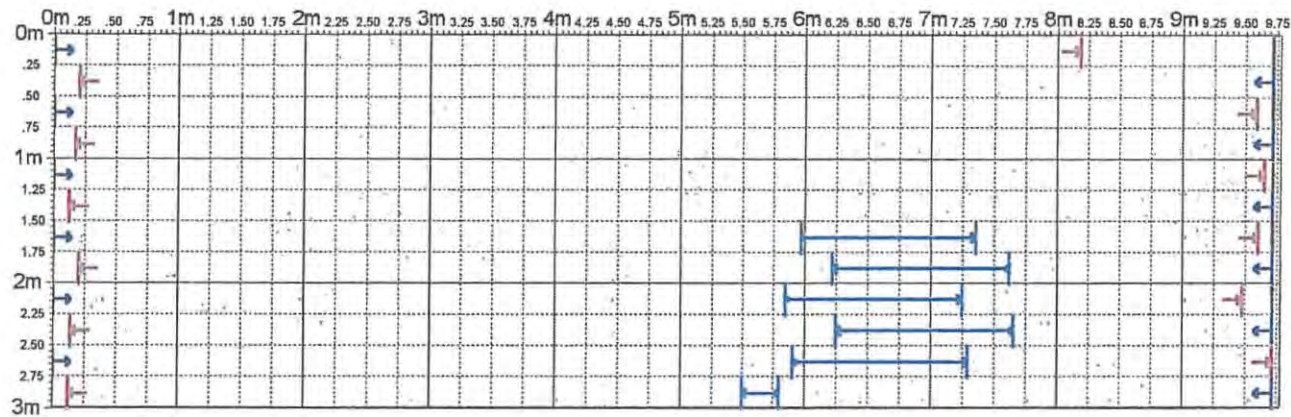
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 3:3)



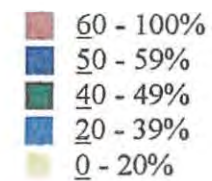
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Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

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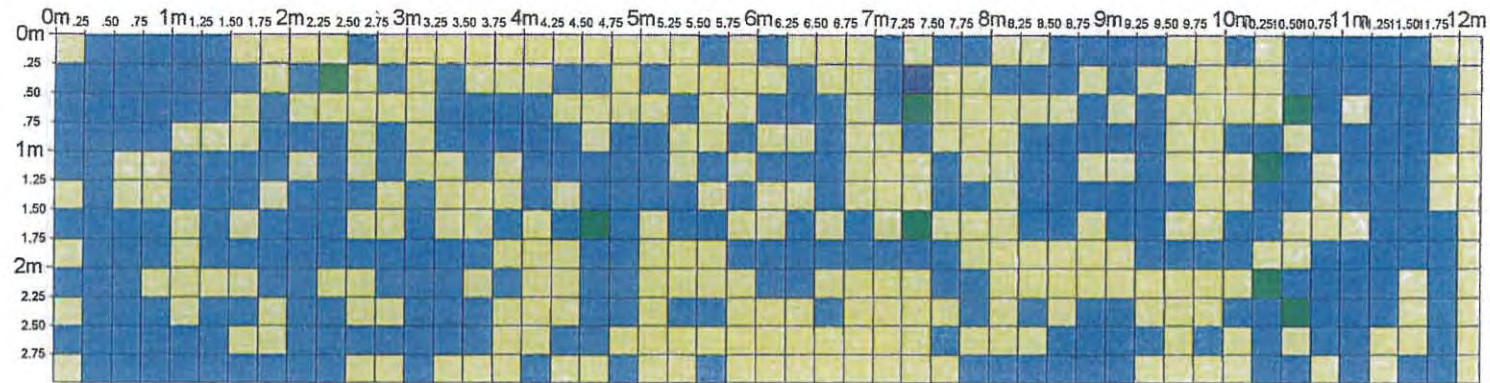


Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 3:4



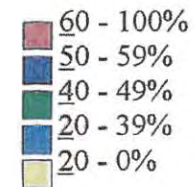
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



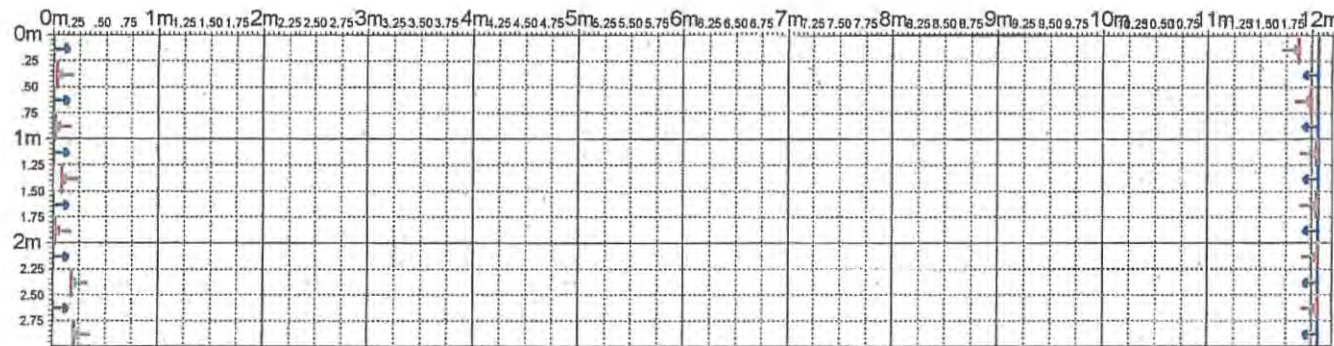
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 3:4)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

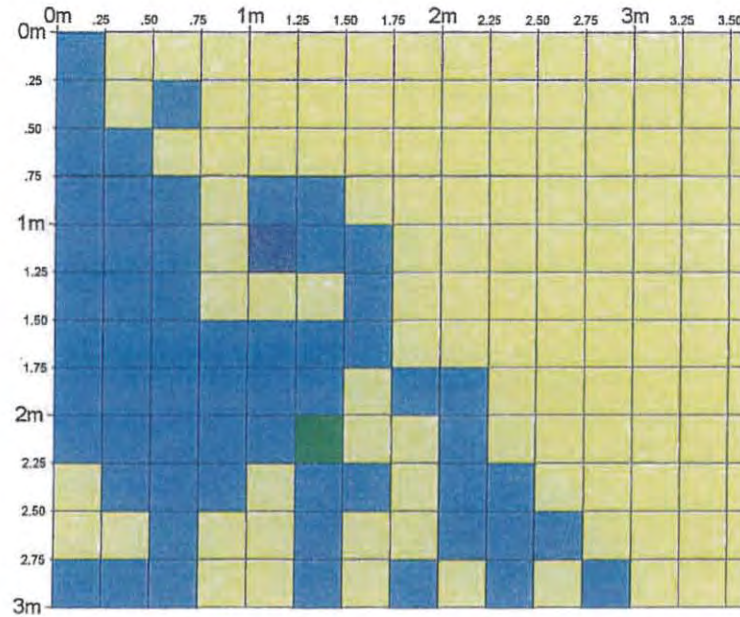
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 3:5



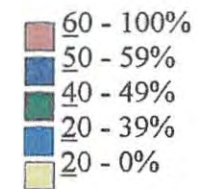
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

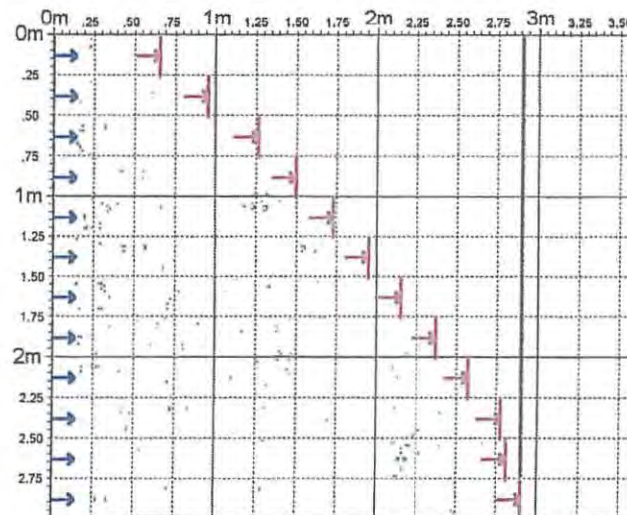


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 3:5)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

60 - 100%
50 - 59%
40 - 49%
20 - 39%
0 - 20%

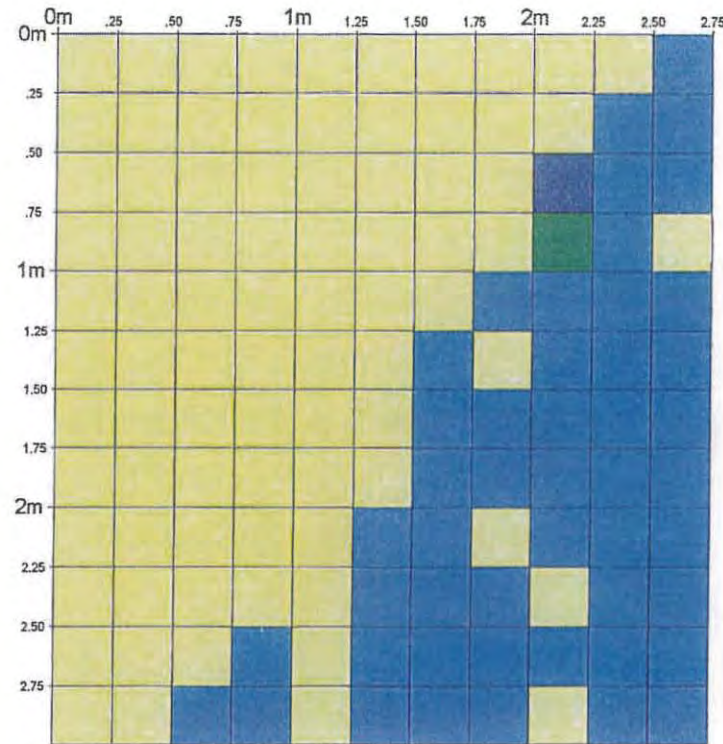
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 4:1



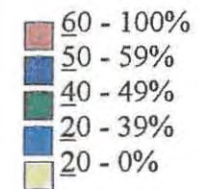
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



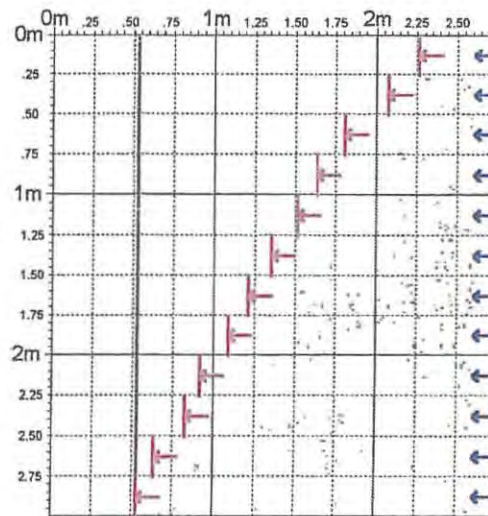
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 4:1)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



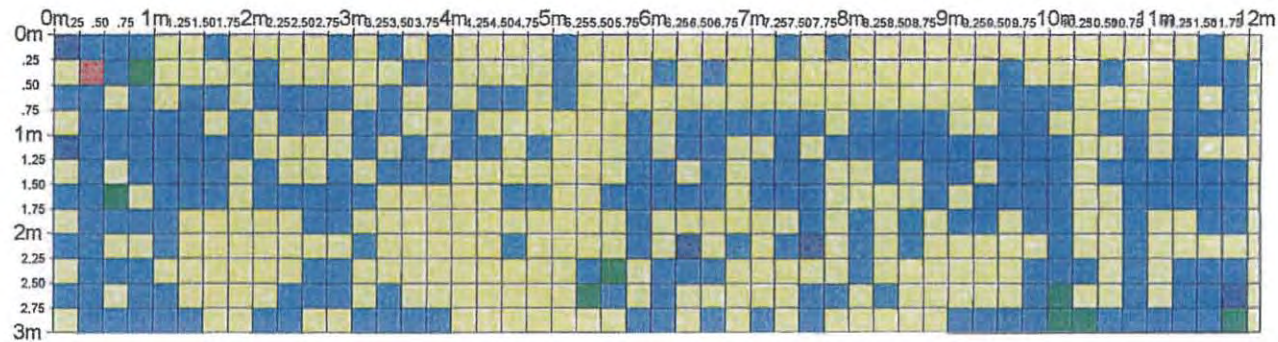
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 4:2



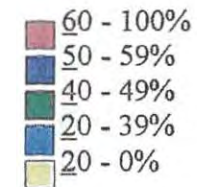
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



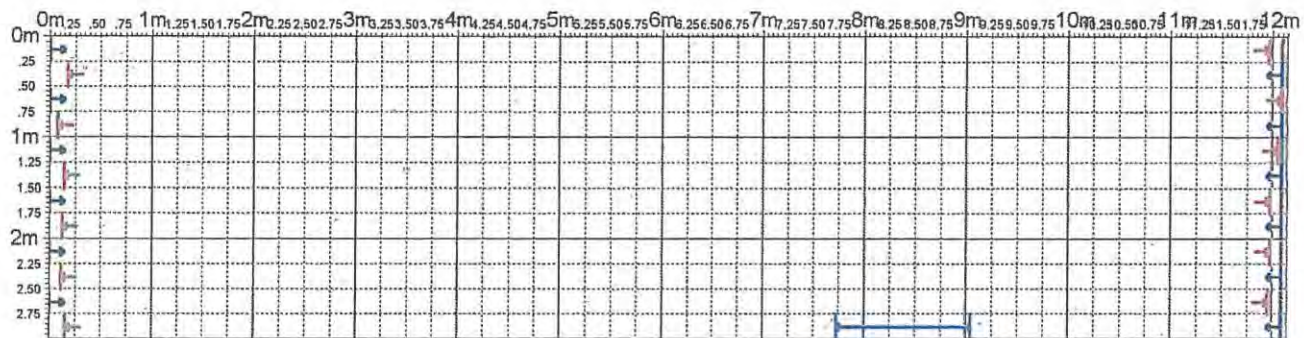
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 4:2)

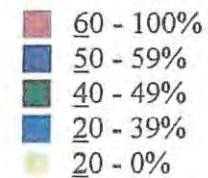


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

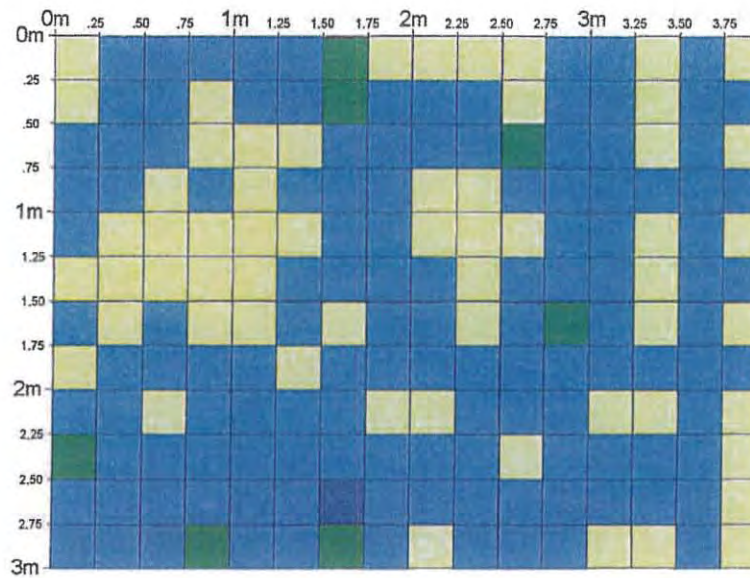
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 4:3



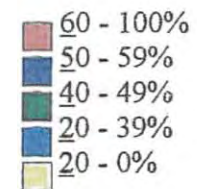
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



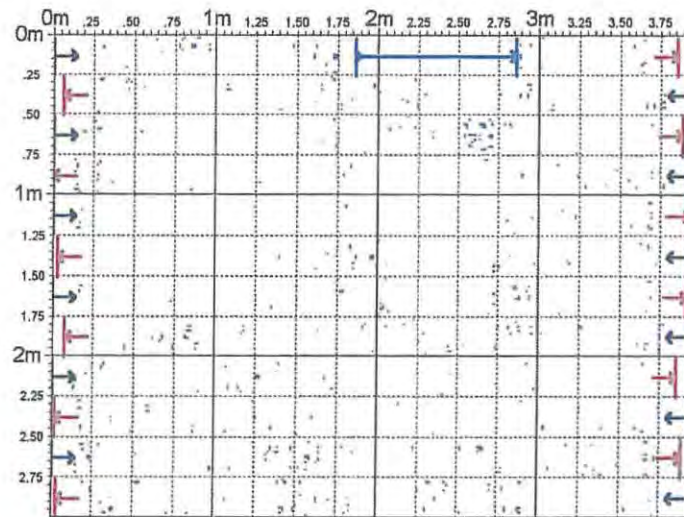
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 4:3)

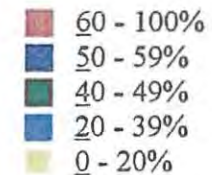


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

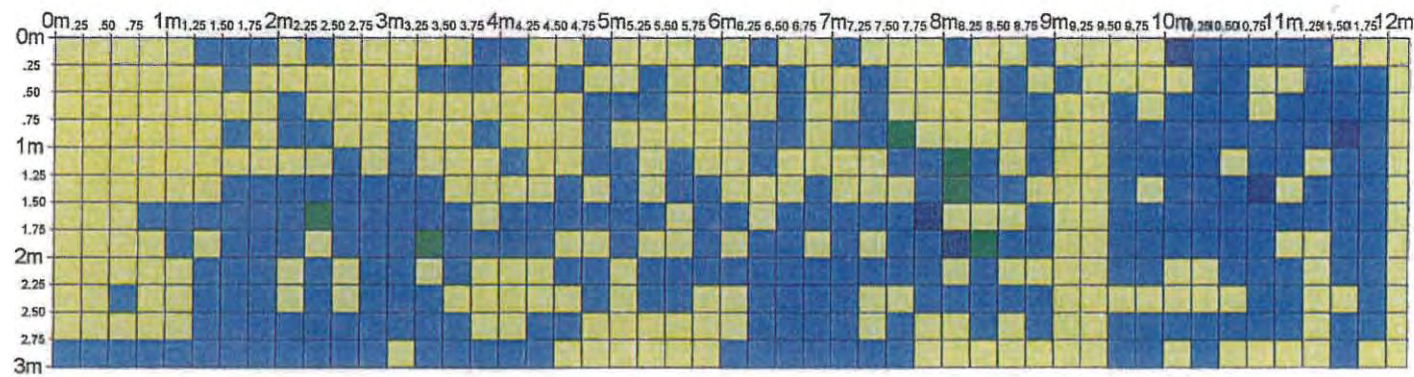
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 4:5



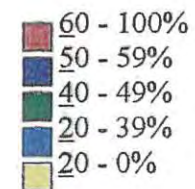
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



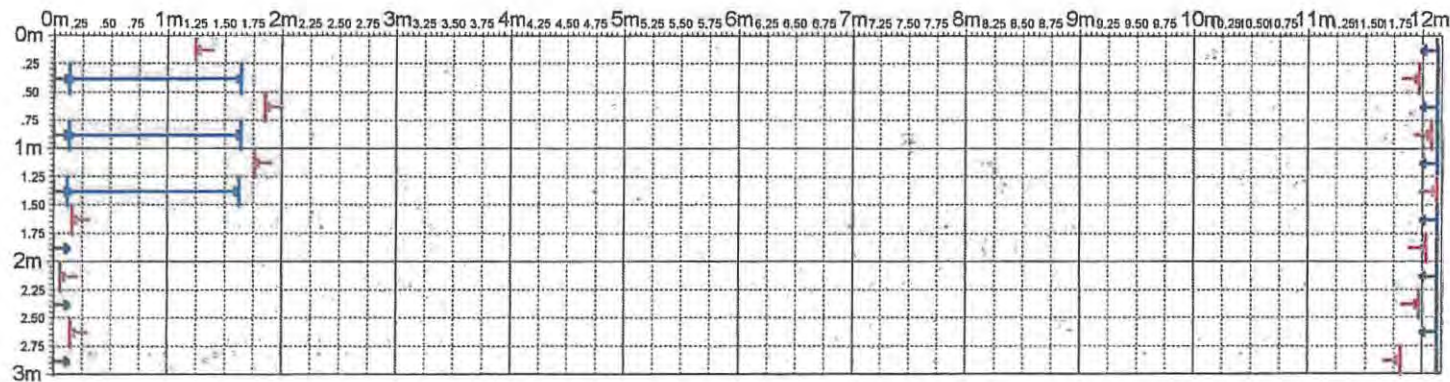
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 4:5)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

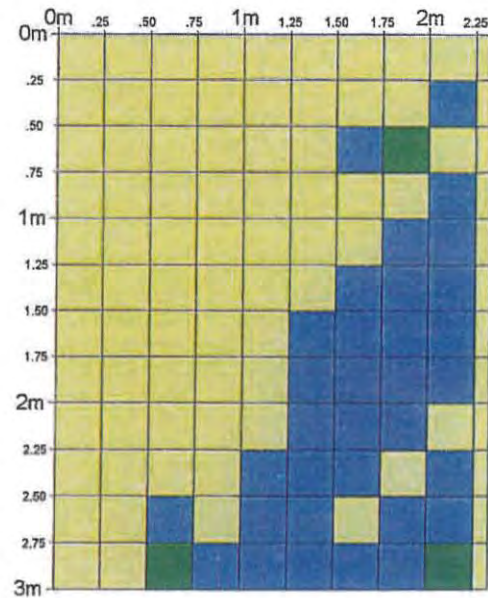
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 5:1



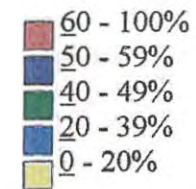
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



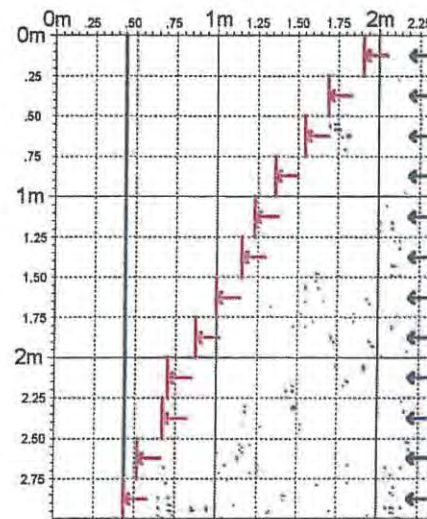
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 5:1)



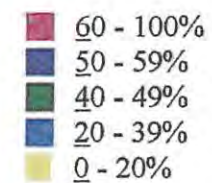
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

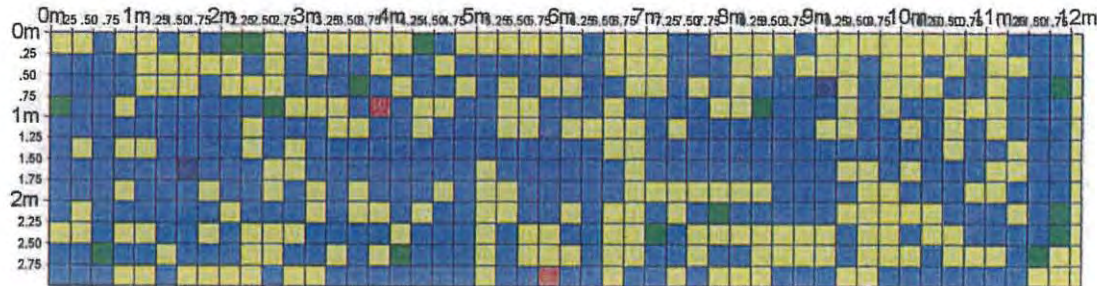


Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 5:2



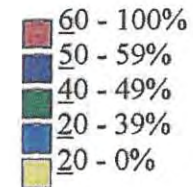
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



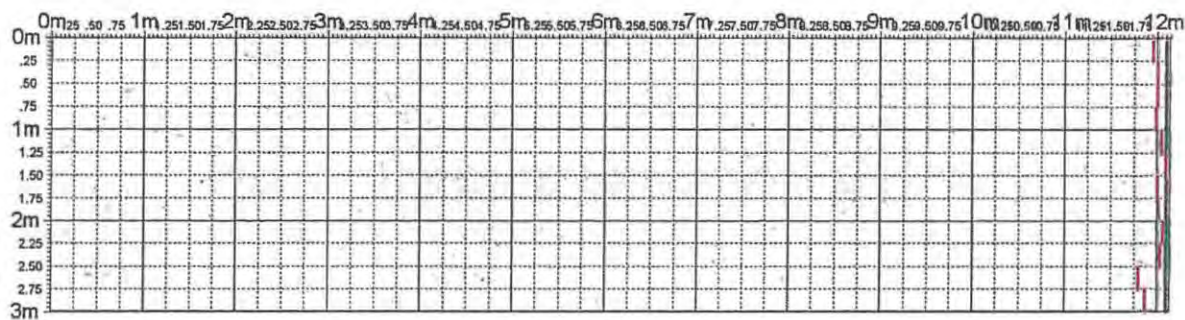
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 5:2)

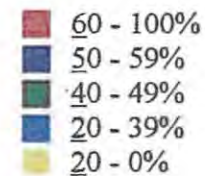


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

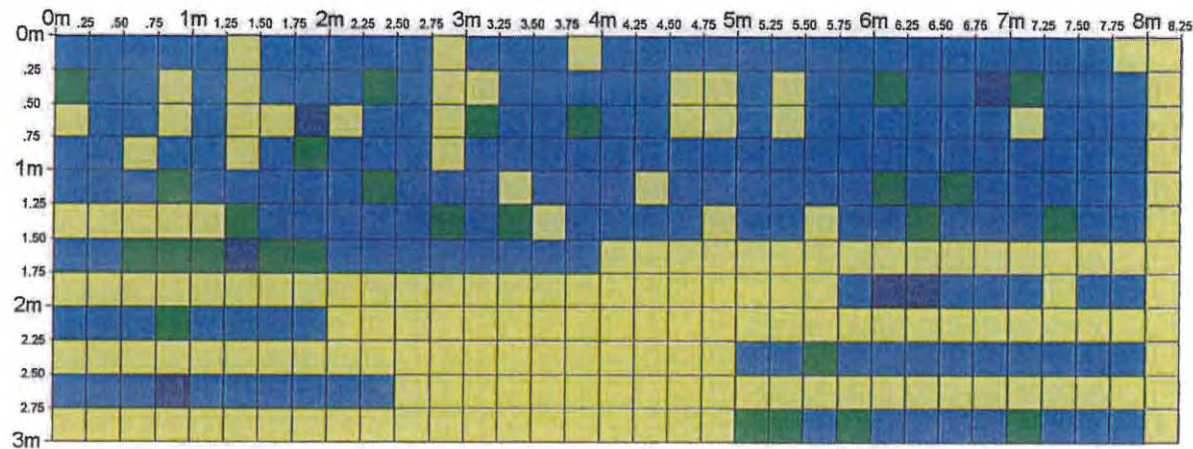
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 5:3



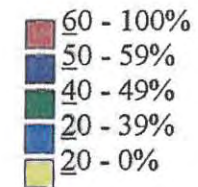
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



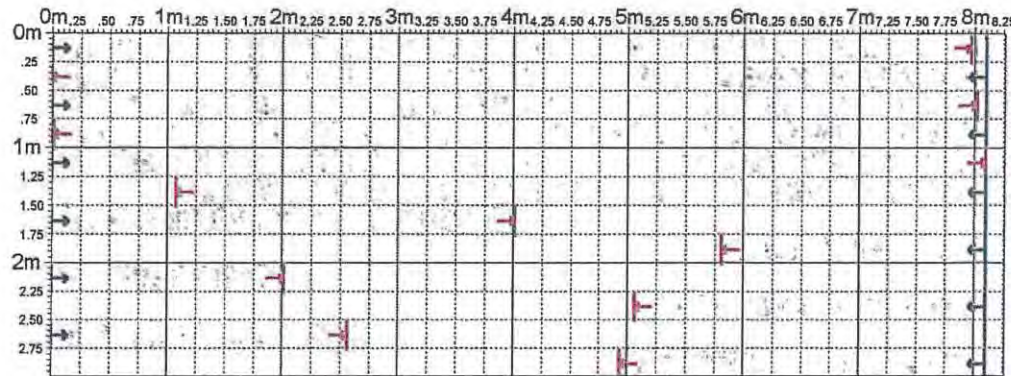
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 5:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

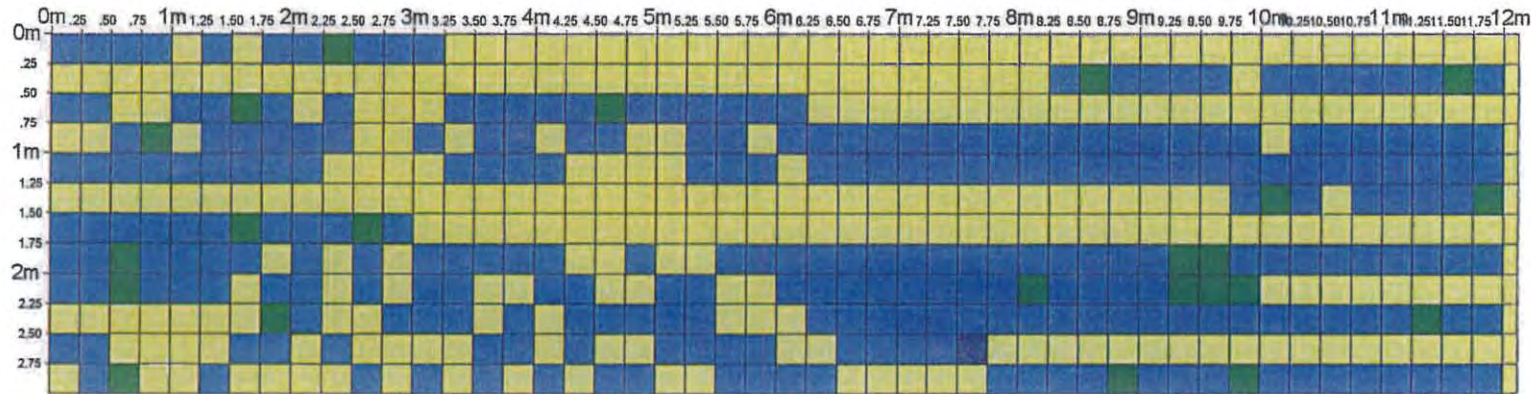
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 5:4



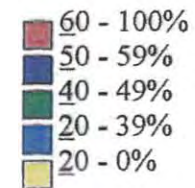
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



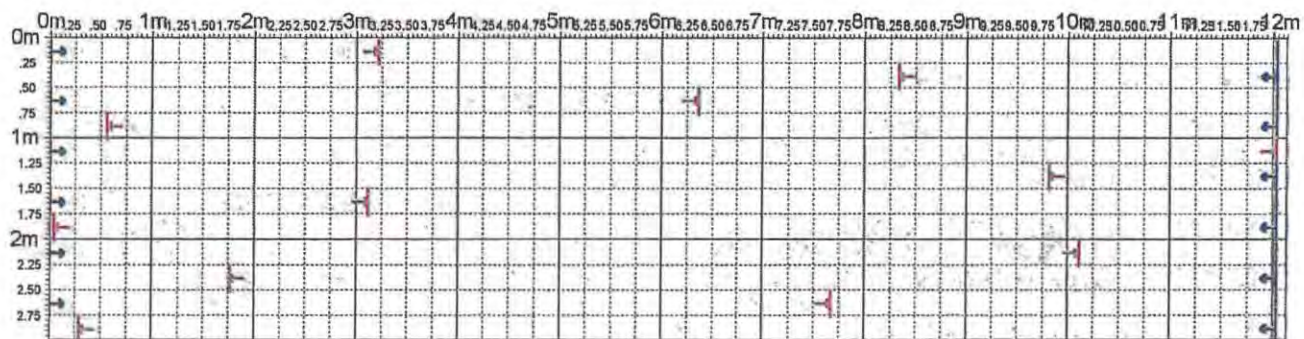
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 5:4)

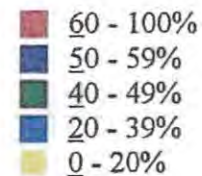


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

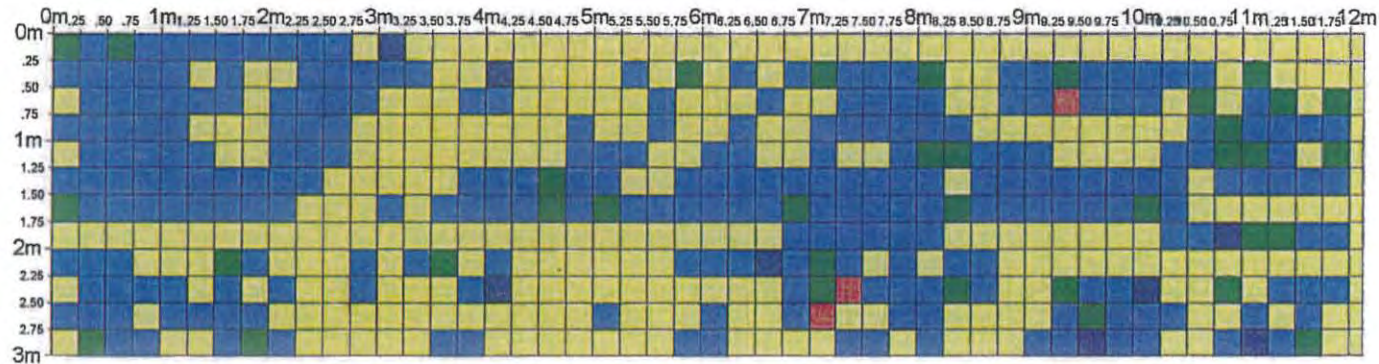
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 5:5



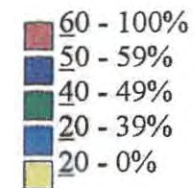
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

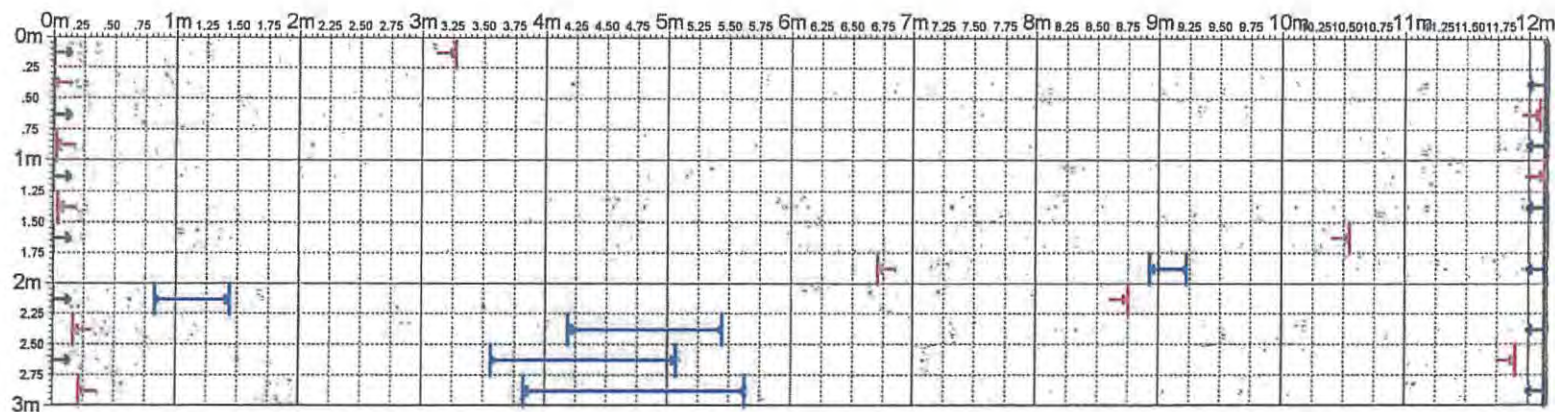


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 5:5)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

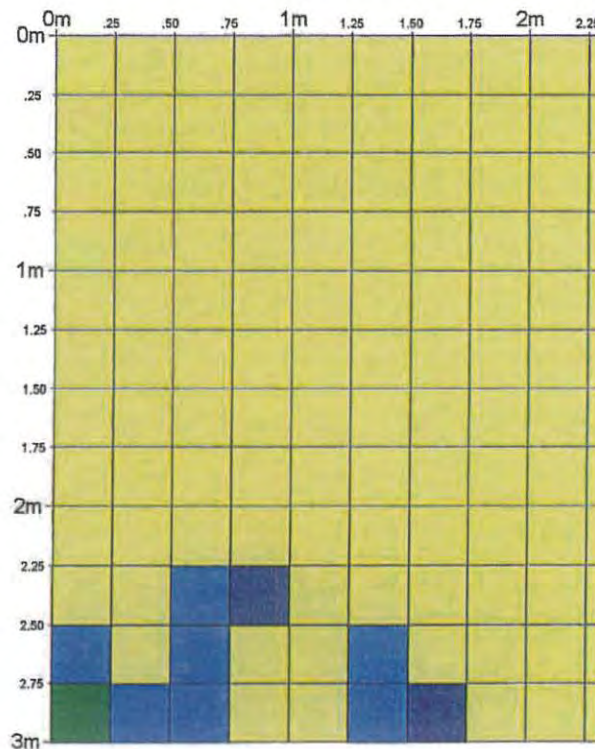
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 5:6



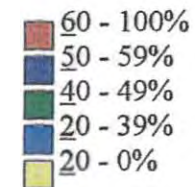
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



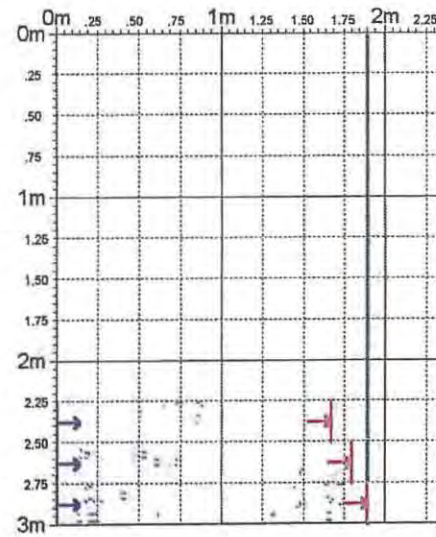
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 5:6)

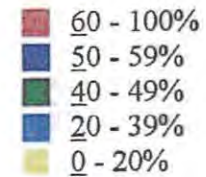


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

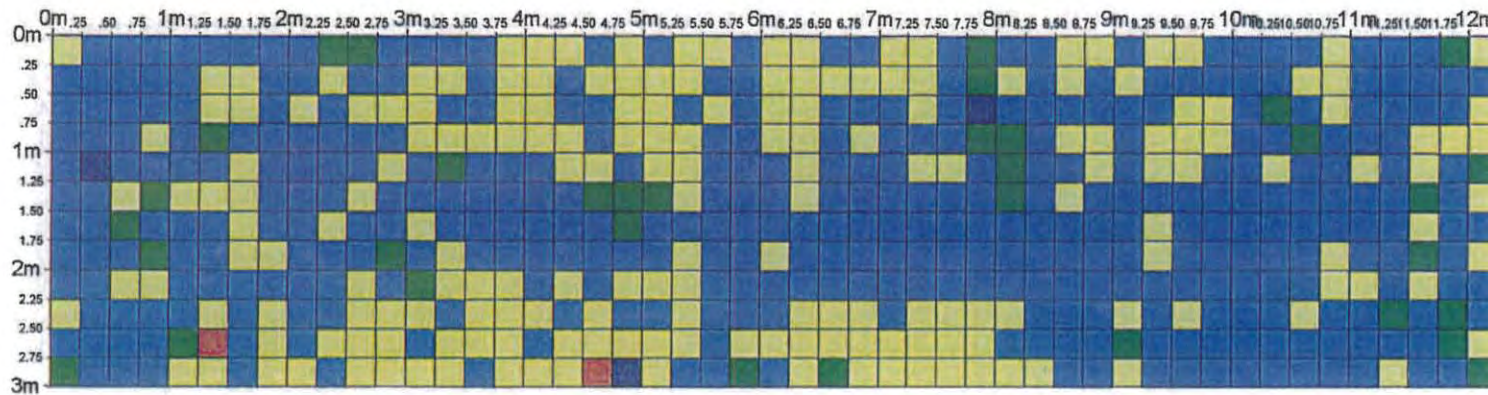
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 6:2



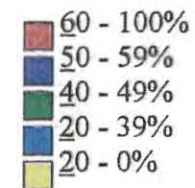
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



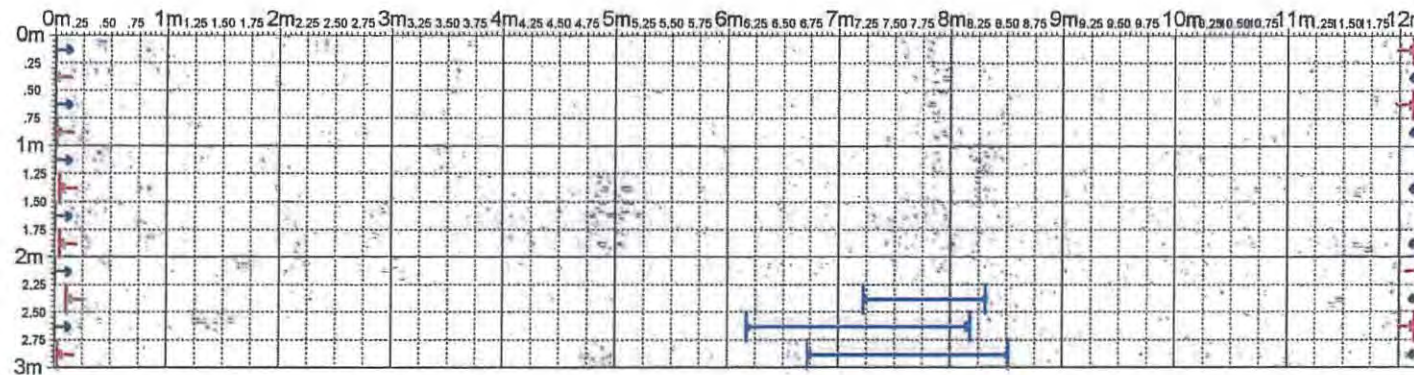
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 6:2)

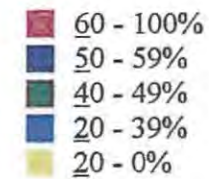


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

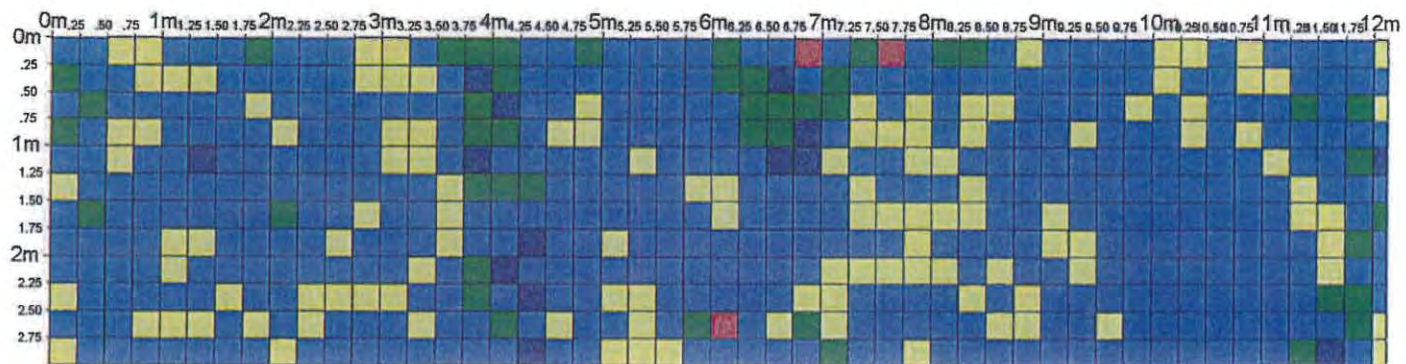
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 6:3



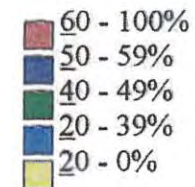
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



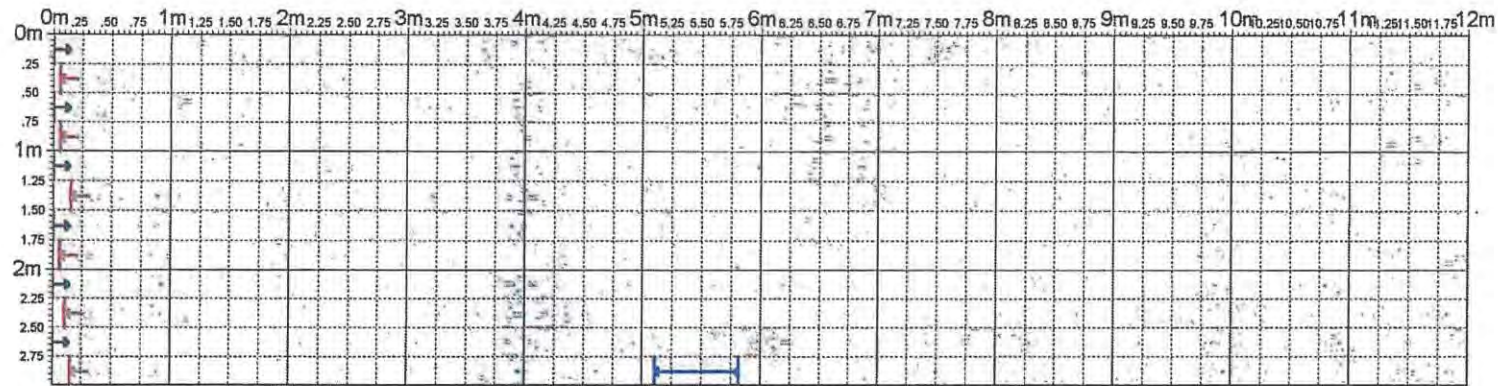
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 6:3)

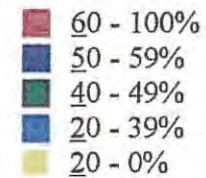


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

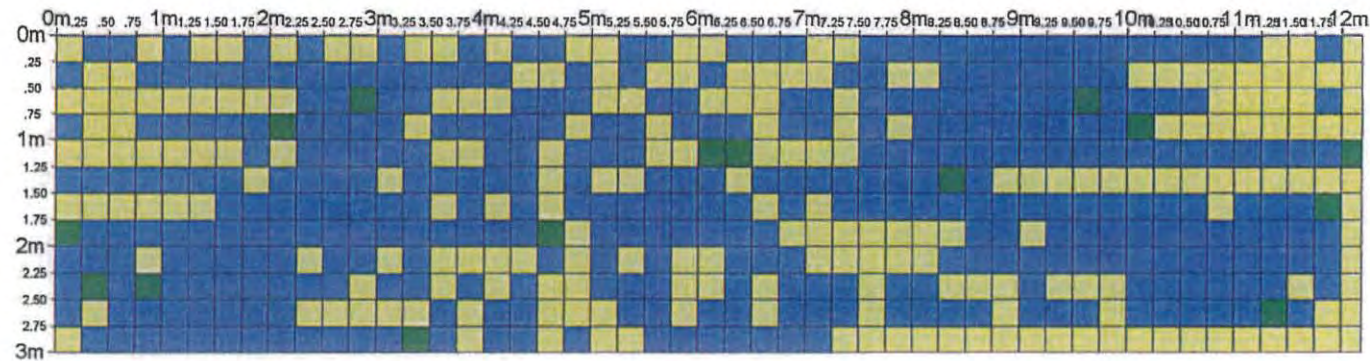
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 6:4



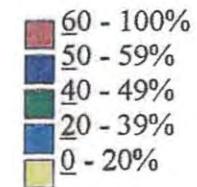
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

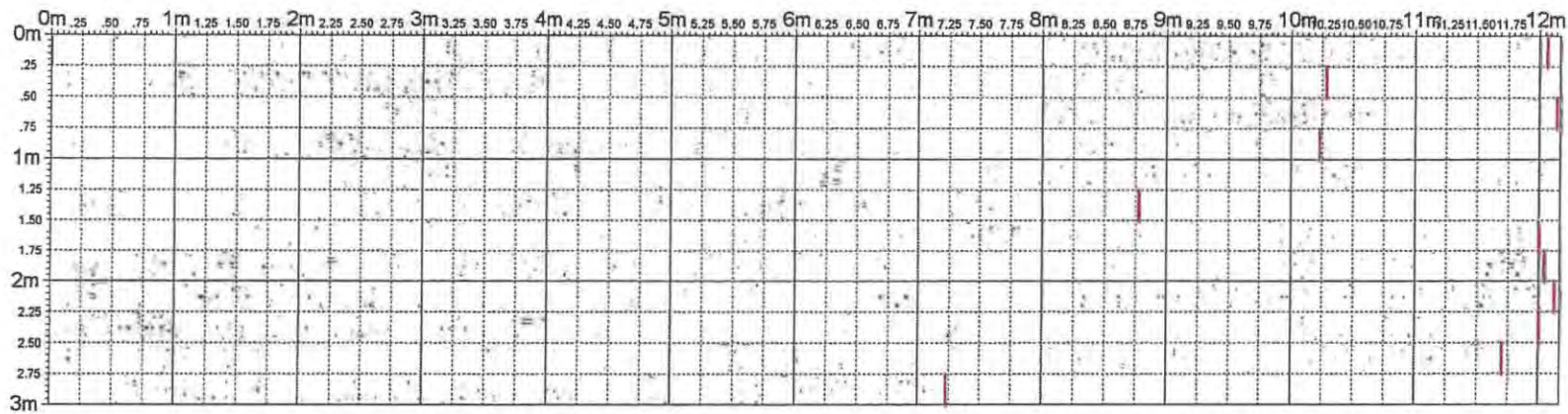


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 6:4)



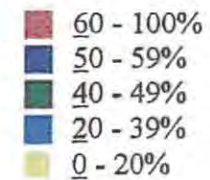
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

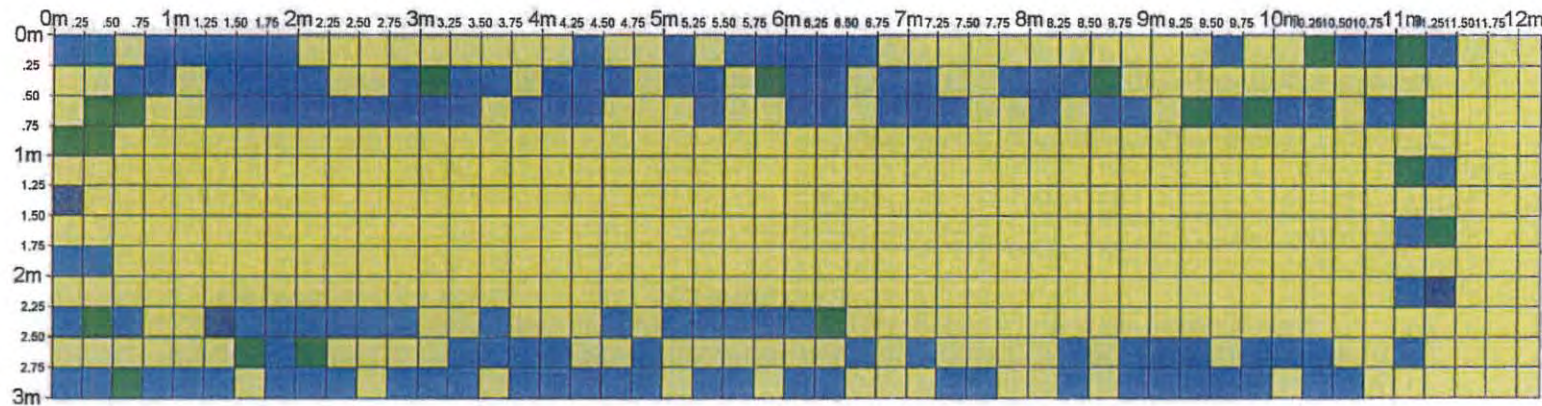


Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 6:5



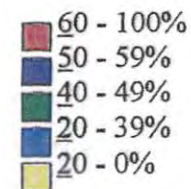
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



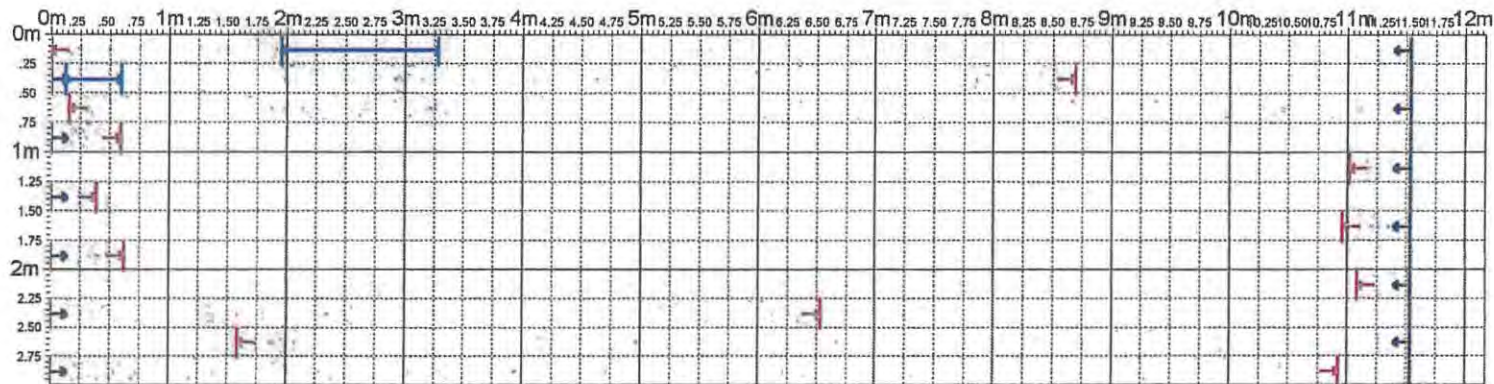
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 6:5)

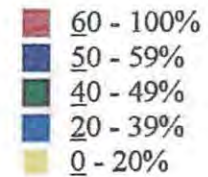


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



Operator: RON BURTON

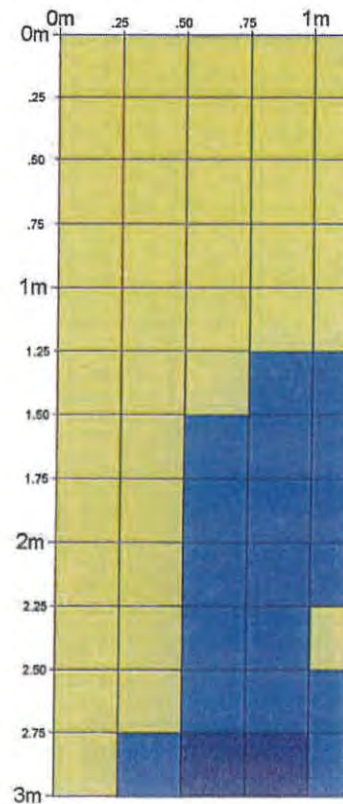
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 7:1



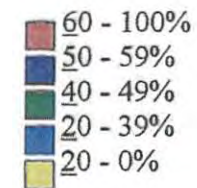
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



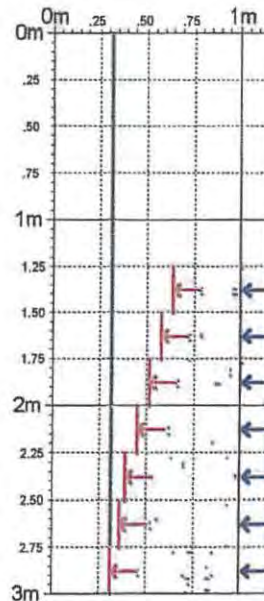
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 7:1)

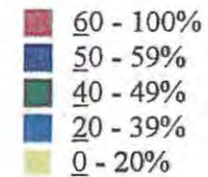


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



Operator: RON BURTON

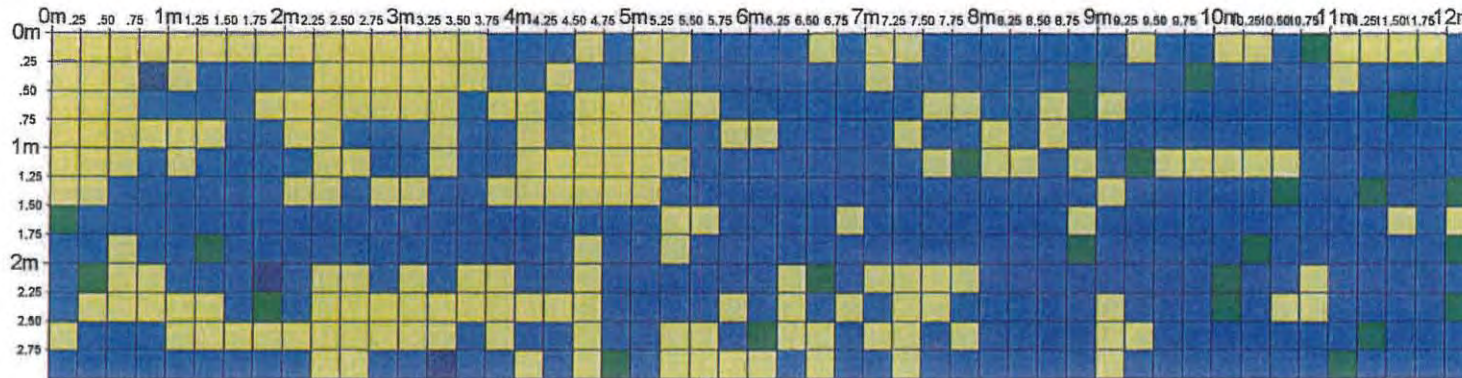
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 7:2



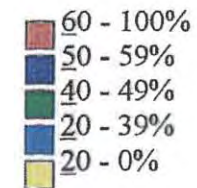
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



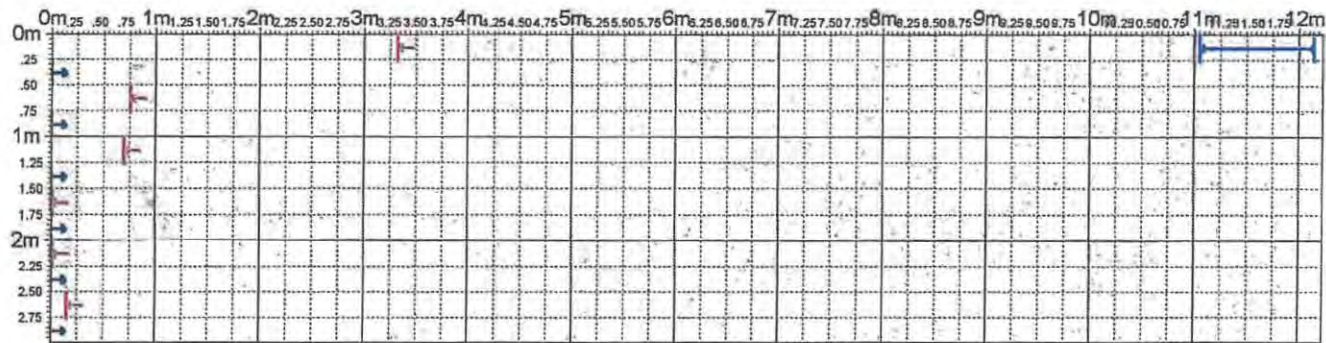
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 7:2)

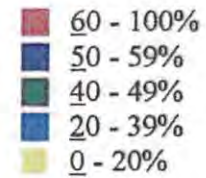


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

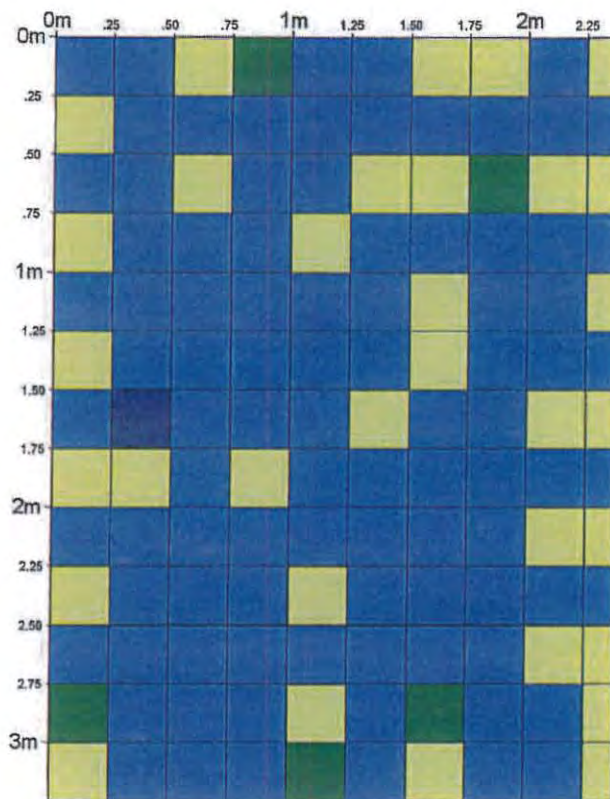
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 7:4



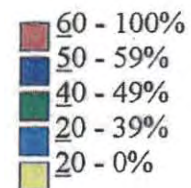
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



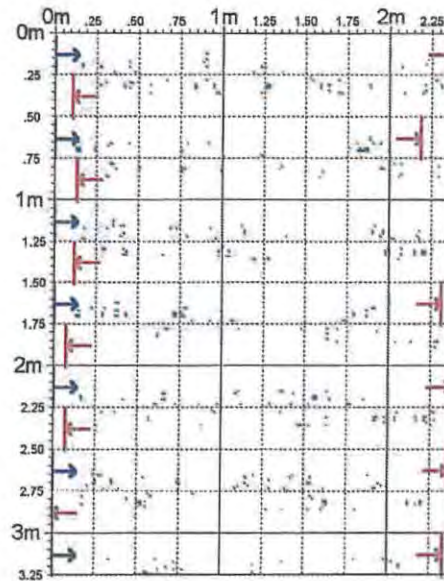
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 7:4)



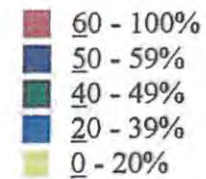
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



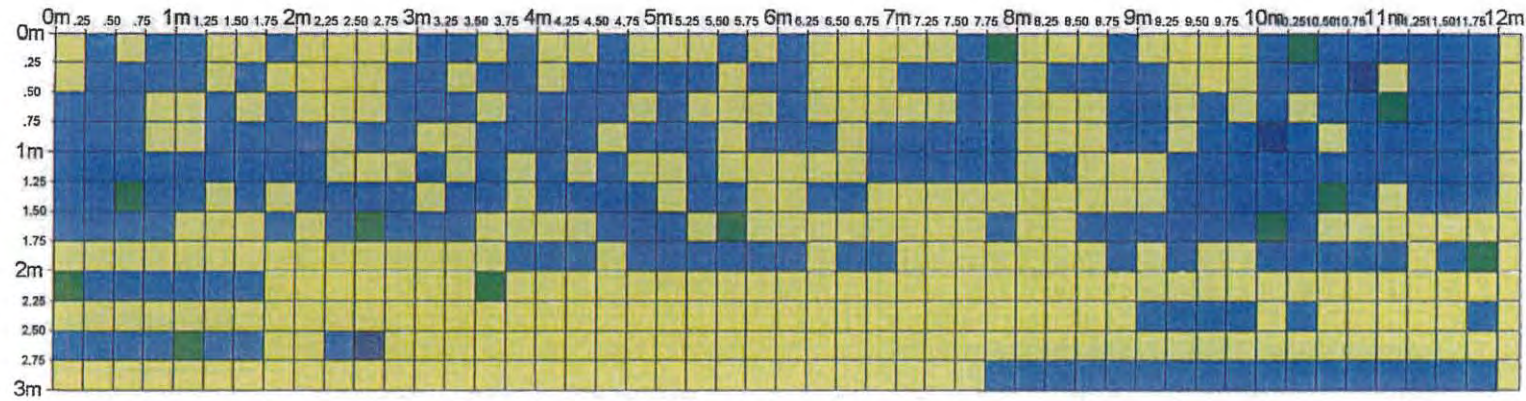
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 7:5



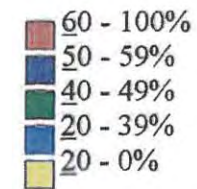
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



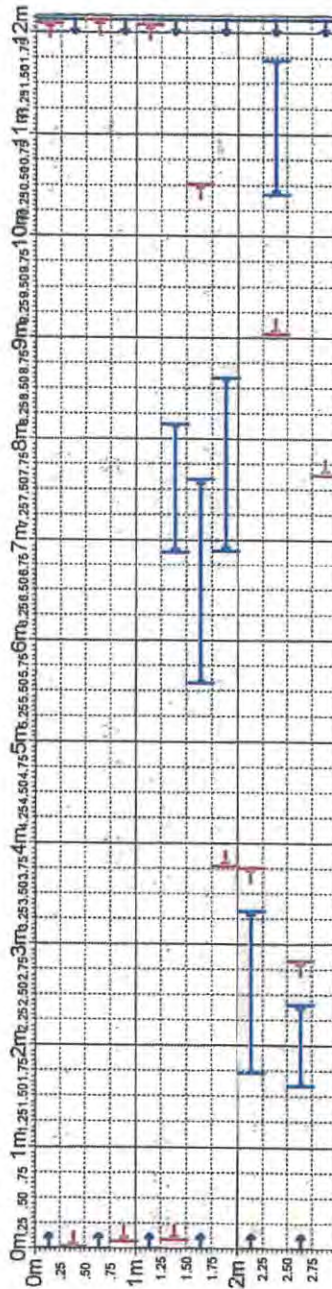
Operator: RON BURTON

November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 7:5)



* TANK DATUM.

Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

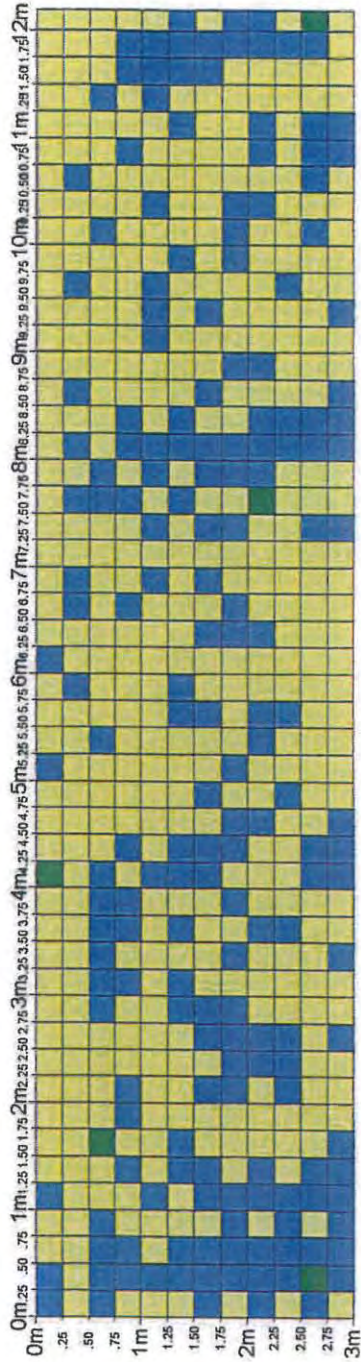
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 7:6



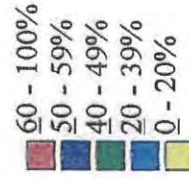
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

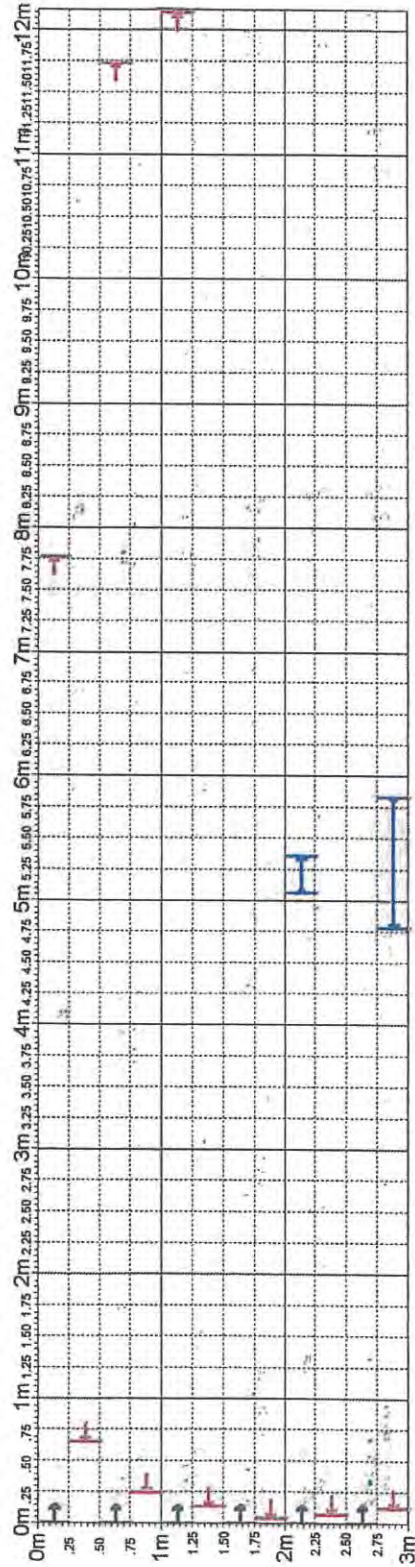


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP

Tracks 1 - 12 (Plate 7:6)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

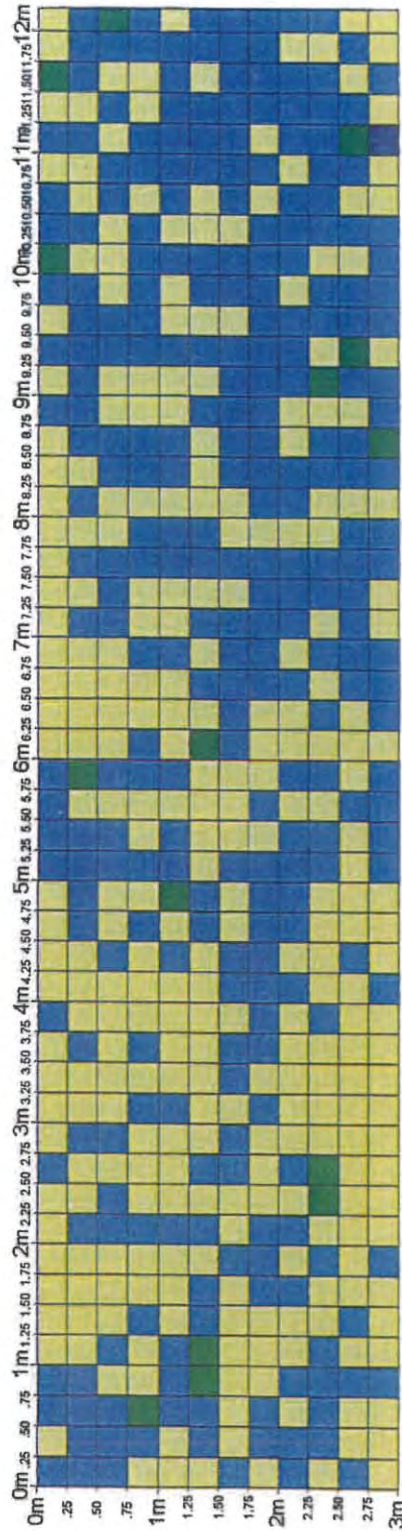
North

Operator: RON BURTON
 November 24, 2003

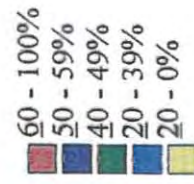
AITEC INC.

PLATEMAP.

Plate 8:2



* TANK DATUM.



Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

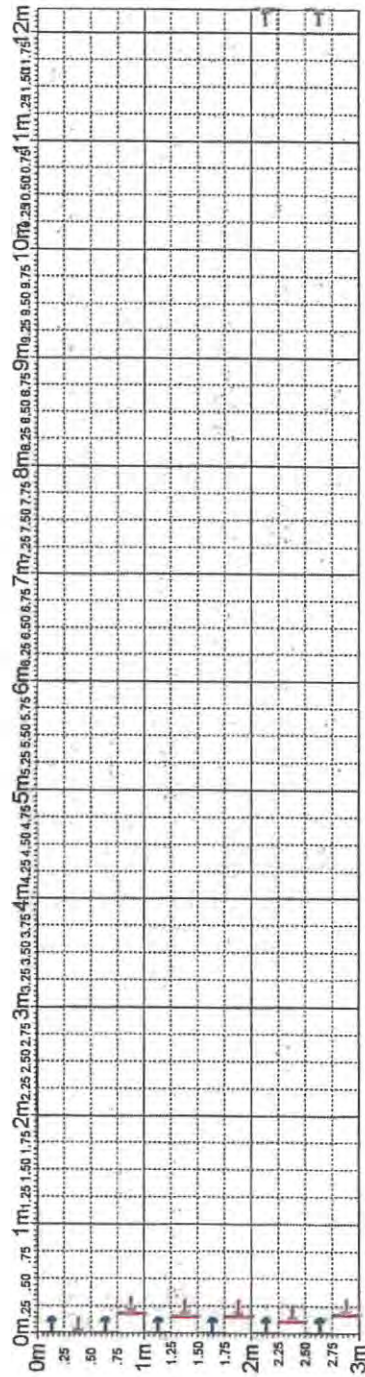
North

Operator: RON BURTON
 November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 8:2)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

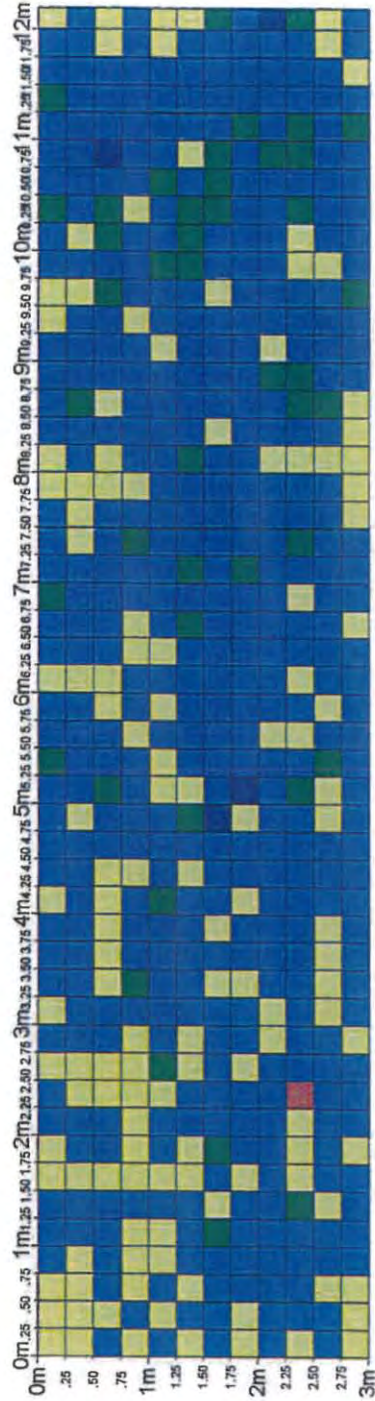
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 8:3

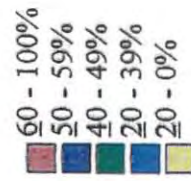


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



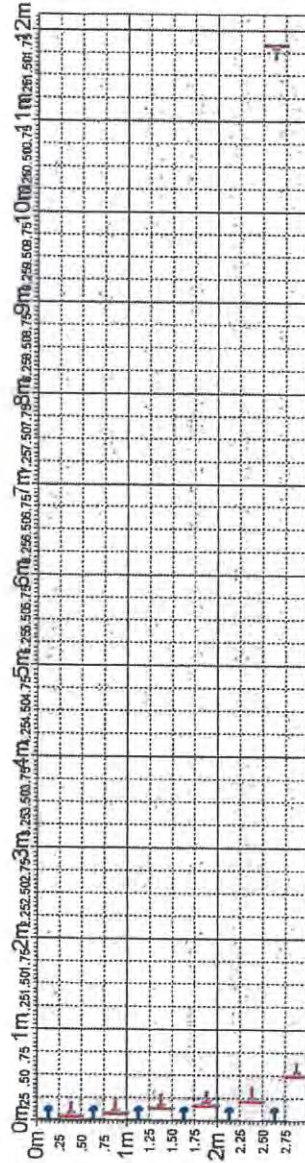
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 8:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



North

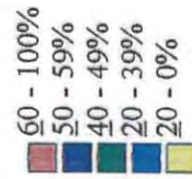
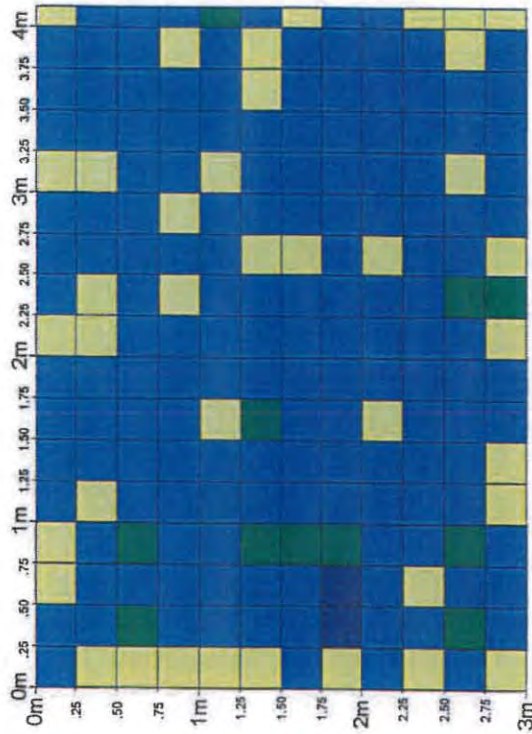
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP

Plate 8:4



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

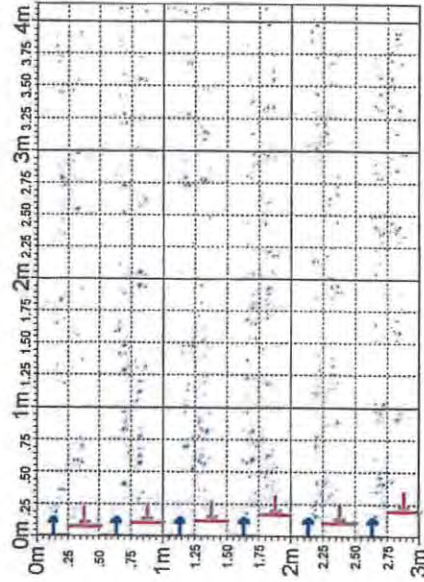
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 8:4)



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

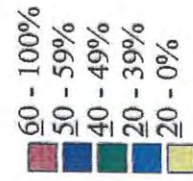
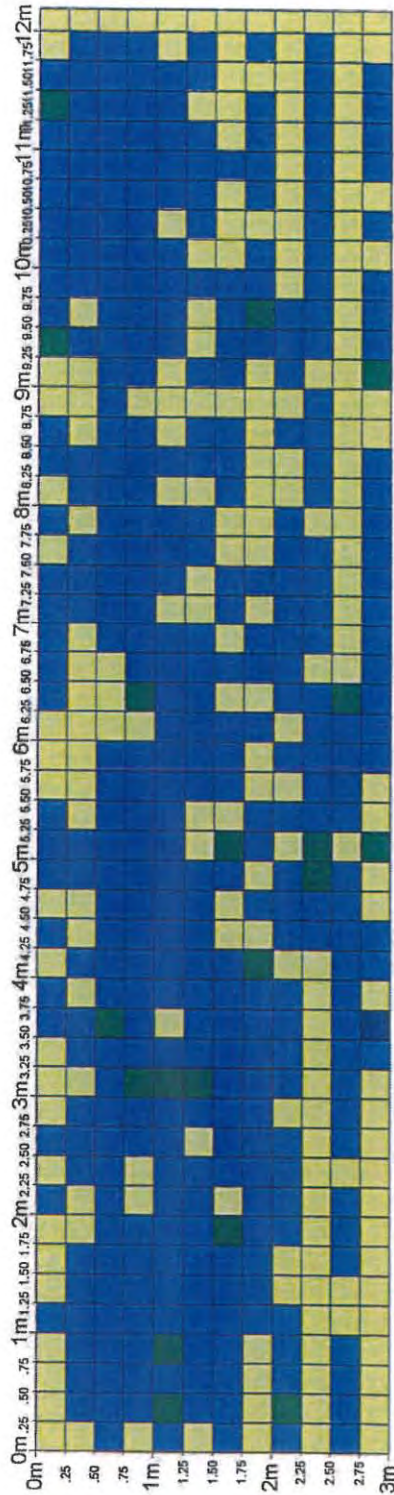
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 8:5



North

Operator: RON BURTON
November 24, 2003

* TANK DATUM.

Client: NF Hydro

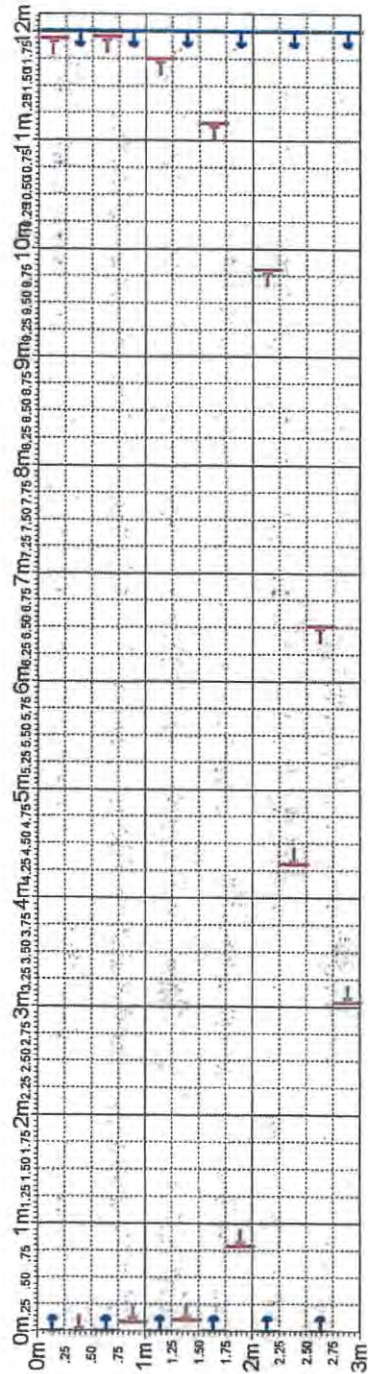
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 8:5)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

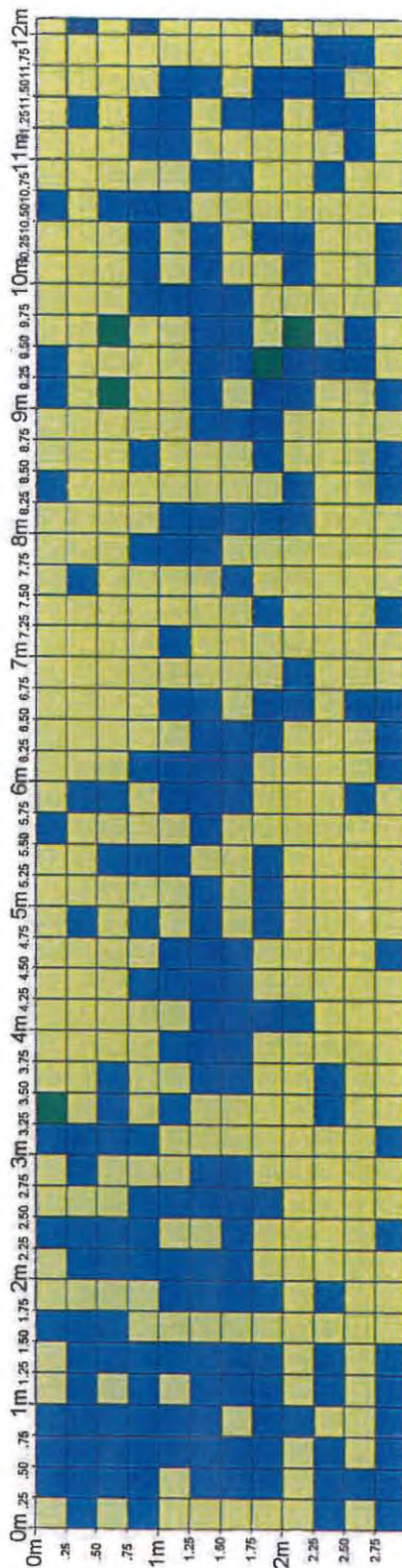
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 8:6



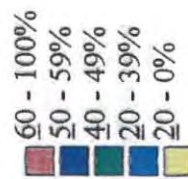
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North



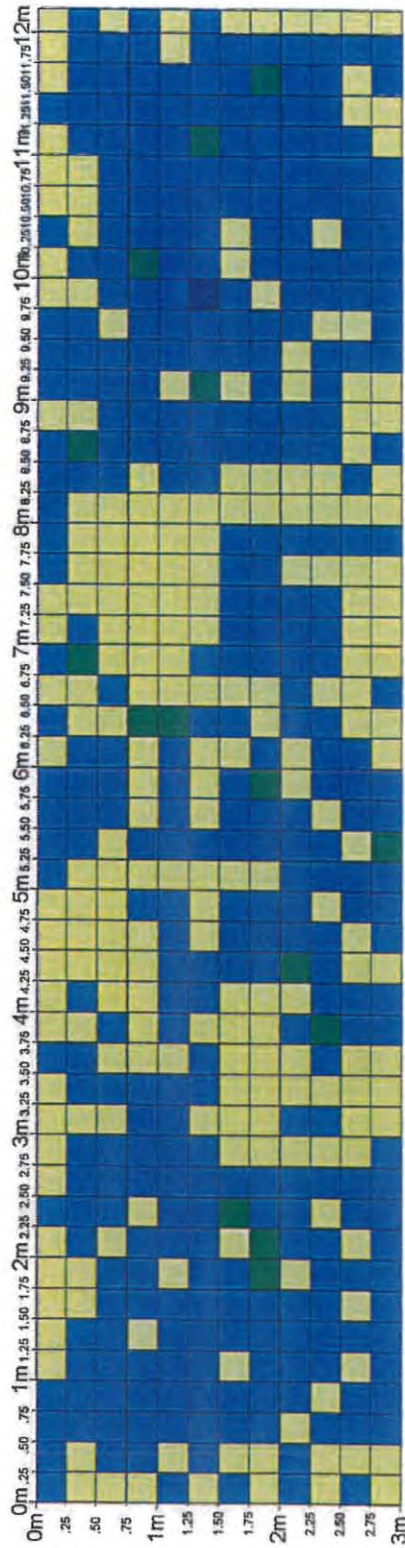
Operator: RON BURTON
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 9:2



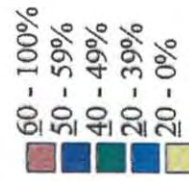
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

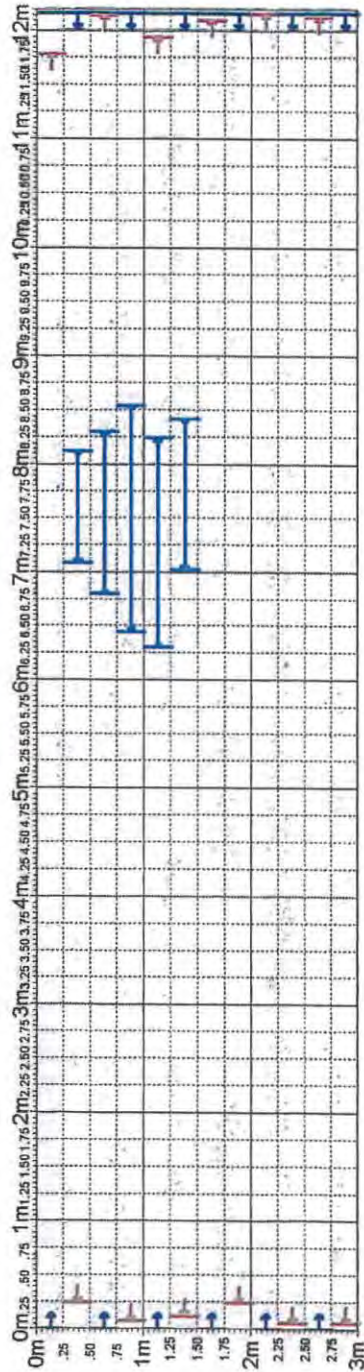


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 9:2)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

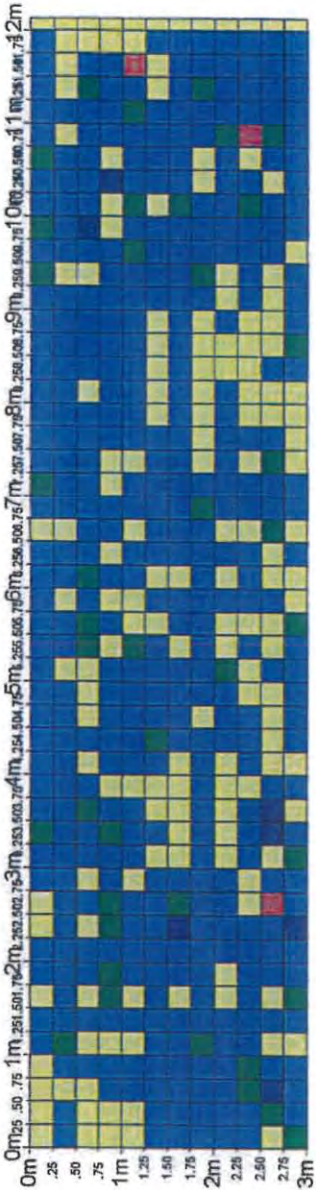
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

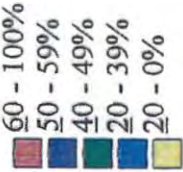
PLATEMAP

Plate 9:3



* TANK DATUM.

Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3



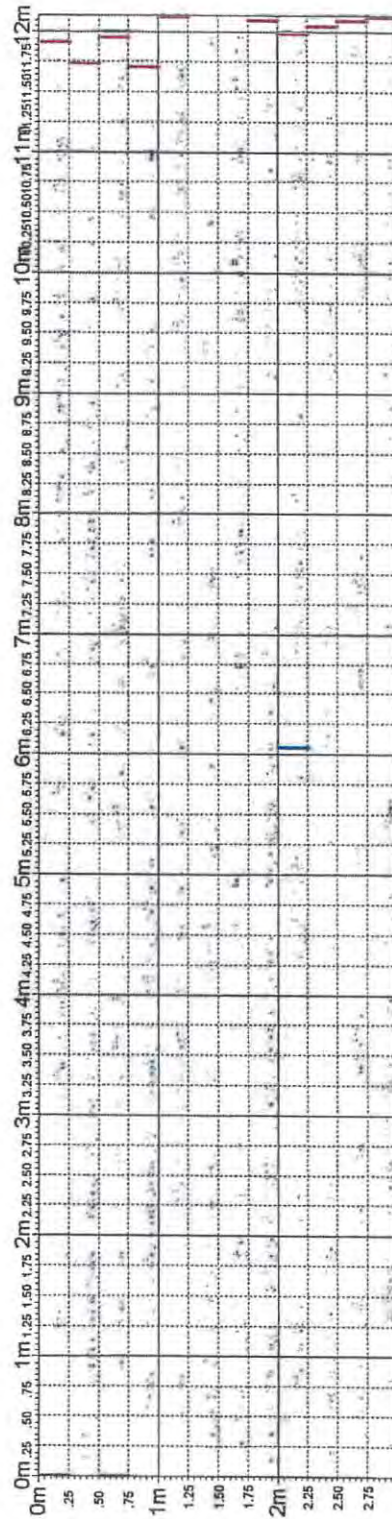
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 9:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

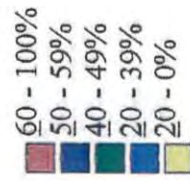
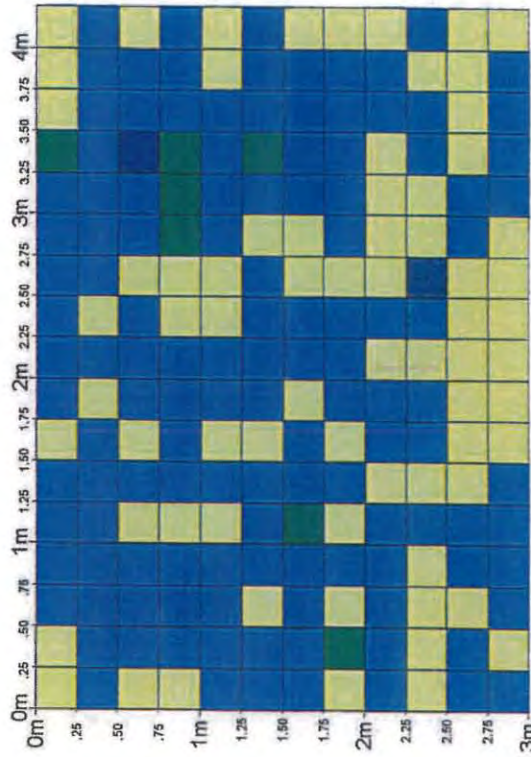
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 9.4



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

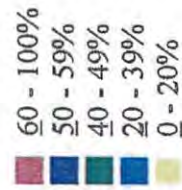
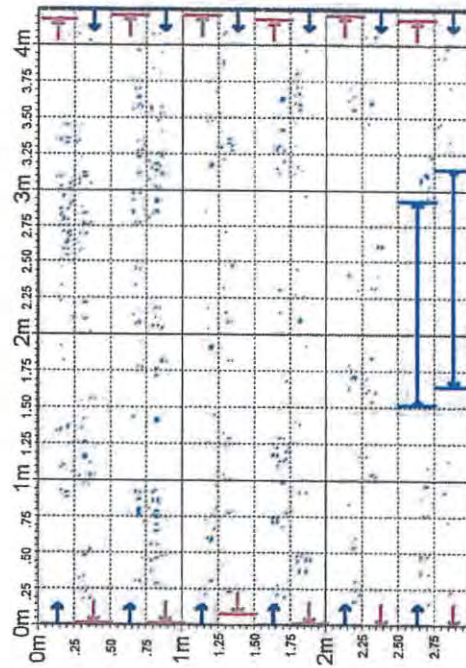
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 9:4)



Operator: RON BURTON
 November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

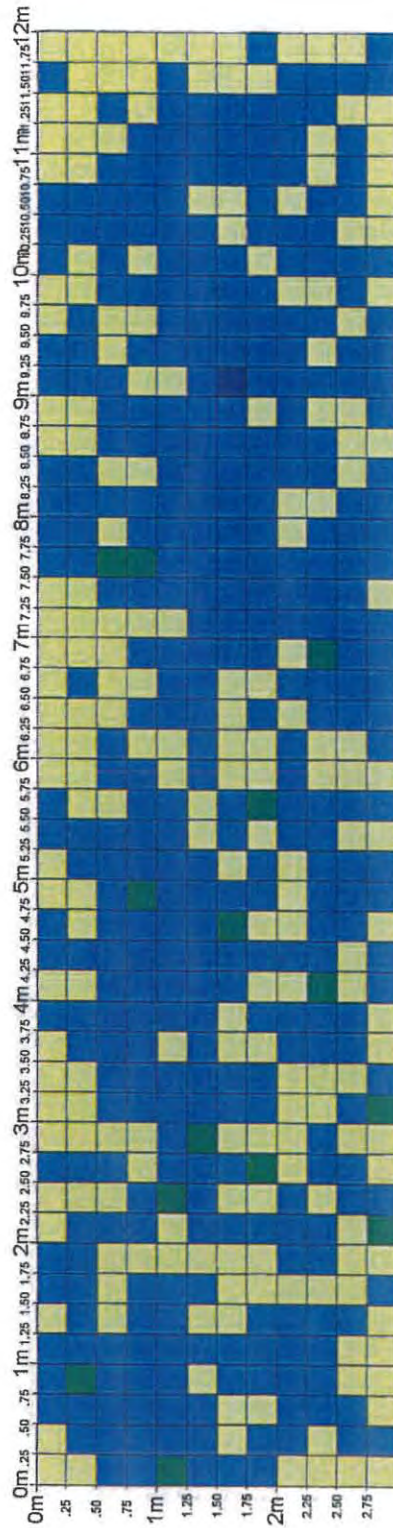
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 9:5



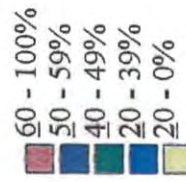
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

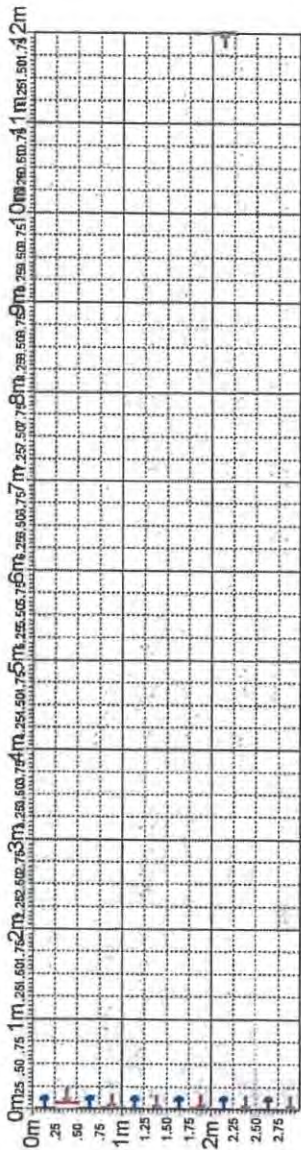


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP

Tracks 1 - 12 (Plate 9:5)



* TANK DATUM.

Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3



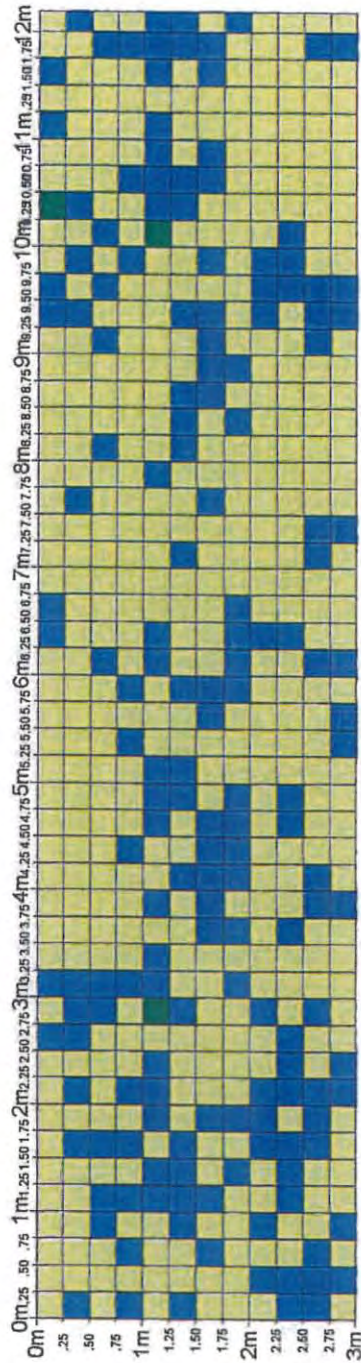
Operator: RON BURTON
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 9:6



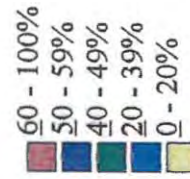
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

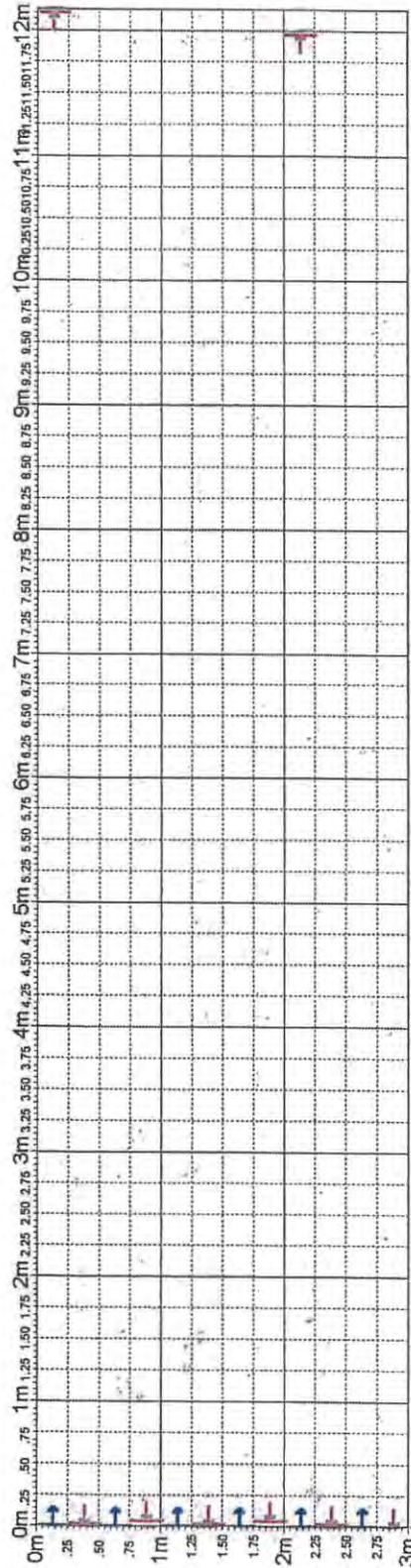


Operator: RON BURTON
 November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 9:6)



60 - 100%
50 - 59%
40 - 49%
20 - 39%
0 - 20%

Operator: RON BURTON
November 24, 2003

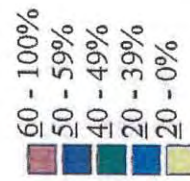
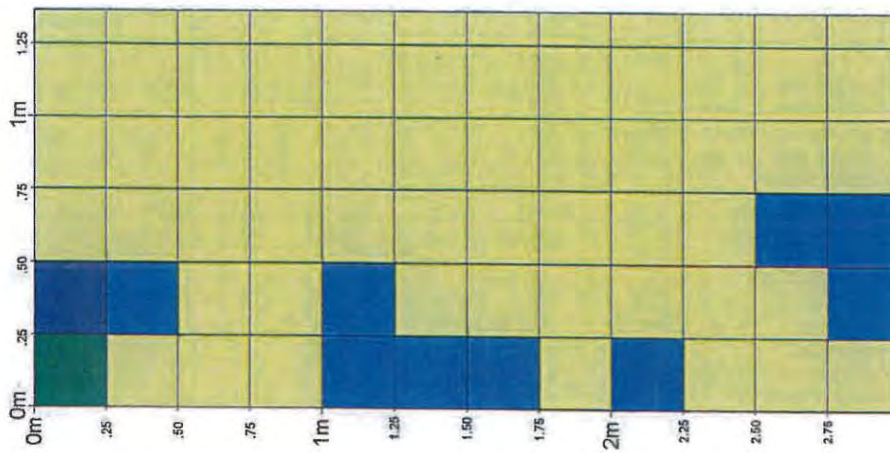
North

* TANK DATUM.
Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 9:7



Operator: RON BURTON
 November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

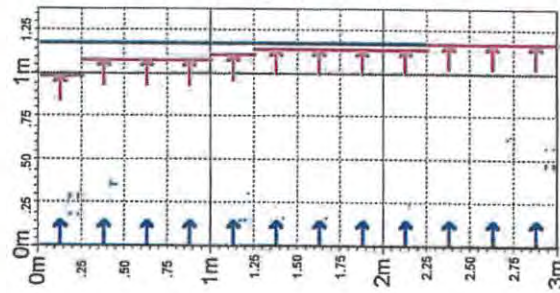
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 9:7)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

Operator: RON BURTON

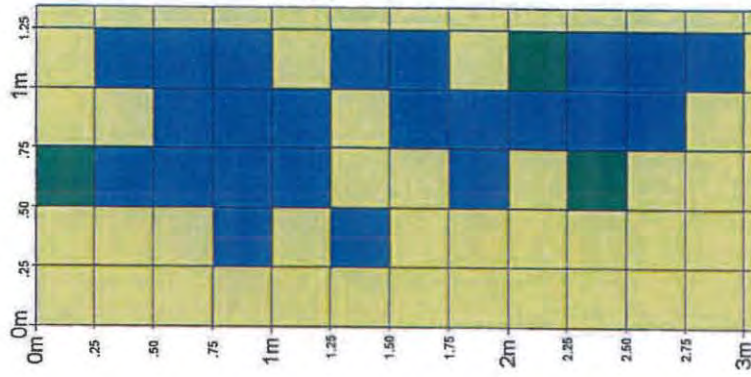
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 10:1



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

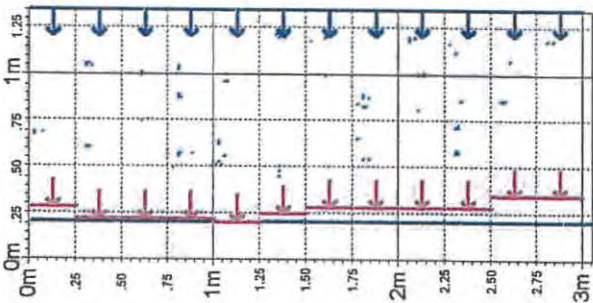
Tank ID: TANK 3

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 10:1)



* TANK DATUM.
Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

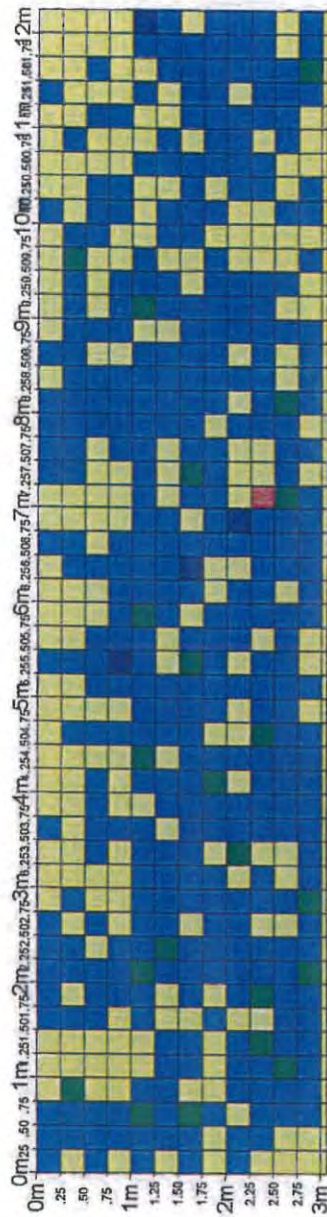
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 10:2



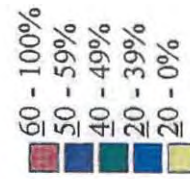
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

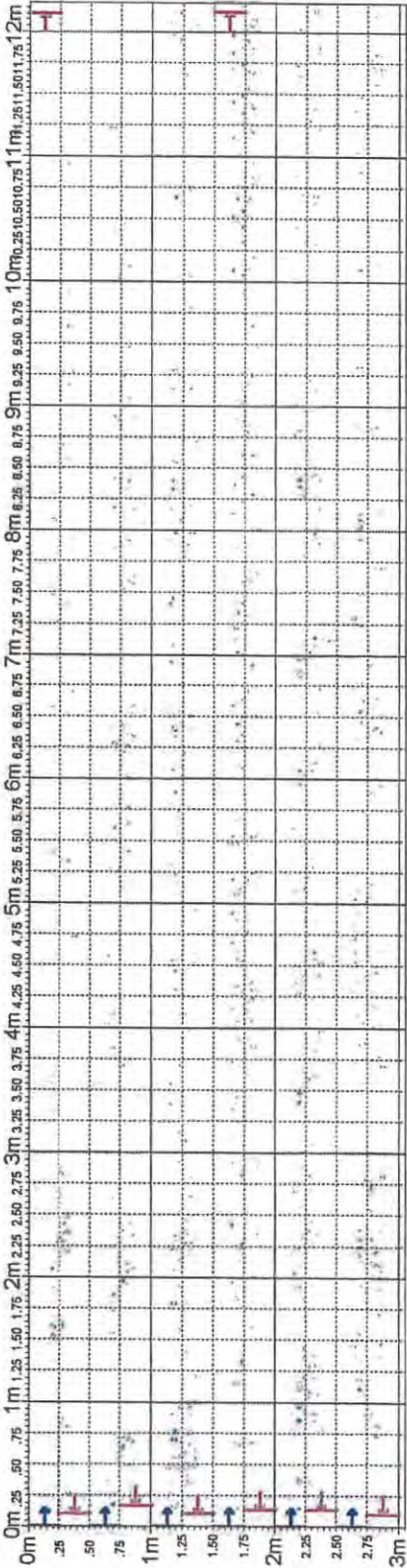


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 10:2)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

Operator: RON BURTON

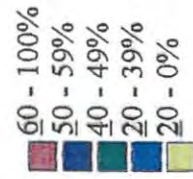
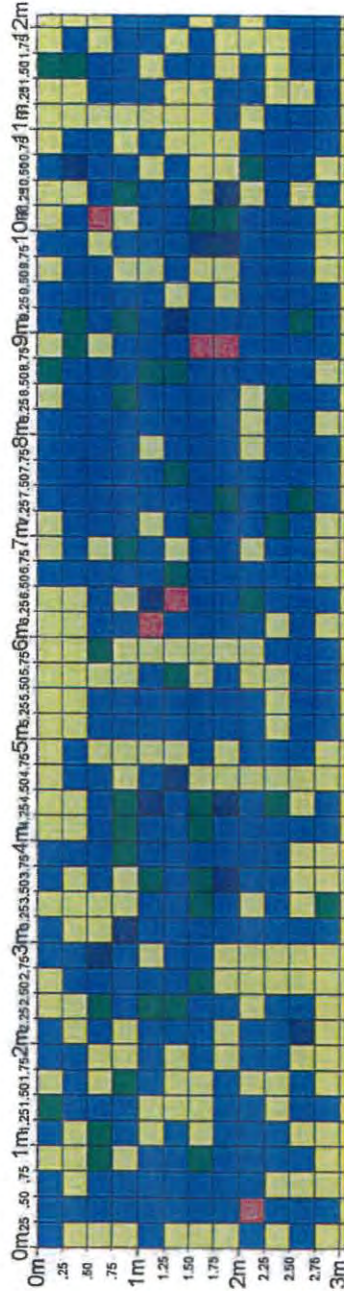
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 10:3



North

Operator: RON BURTON
November 24, 2003

* TANK DATUM.

Client: NF Hydro

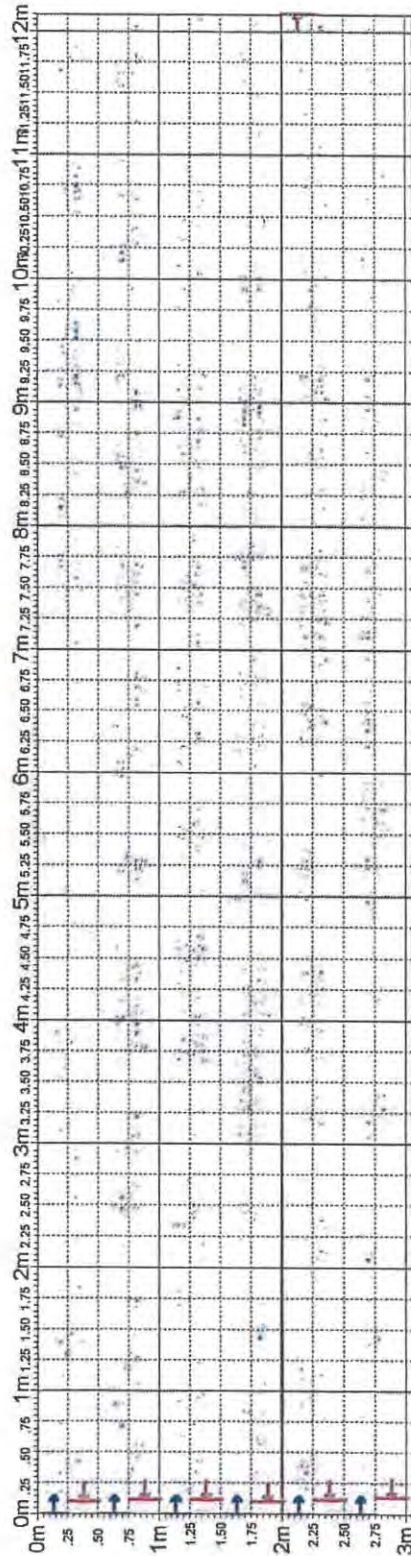
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 10:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

Operator: RON BURTON

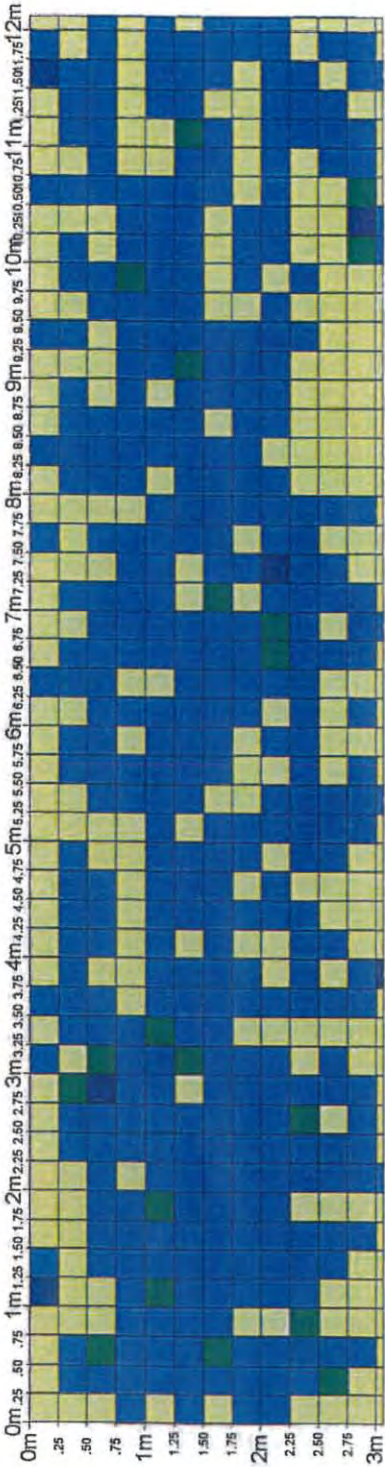
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 10:4



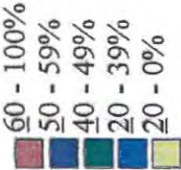
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

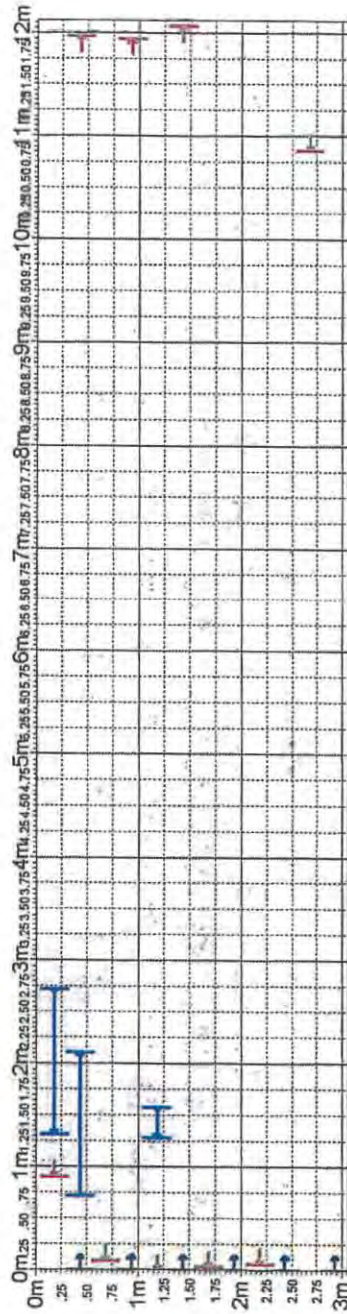


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 10:4)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

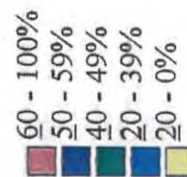
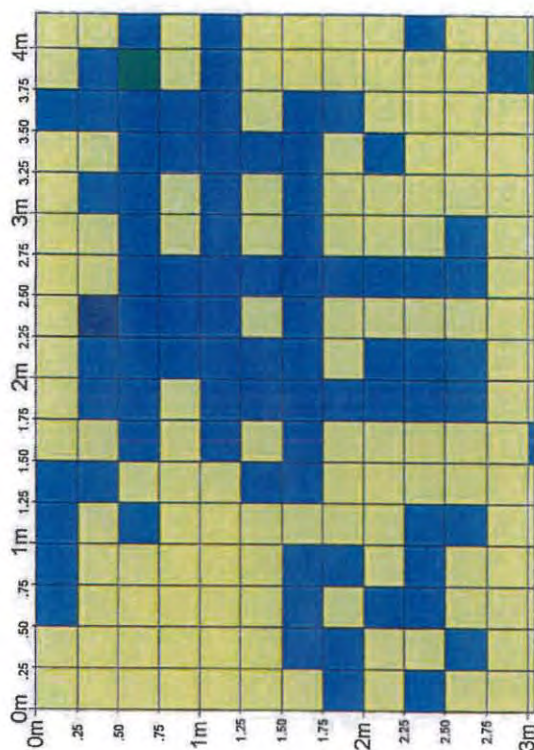
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 10:5



Operator: RON BURTON
 November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

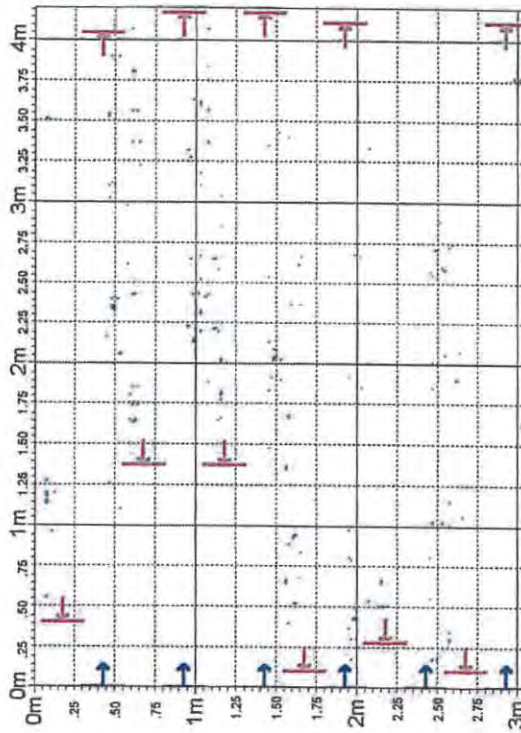
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 10:5)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

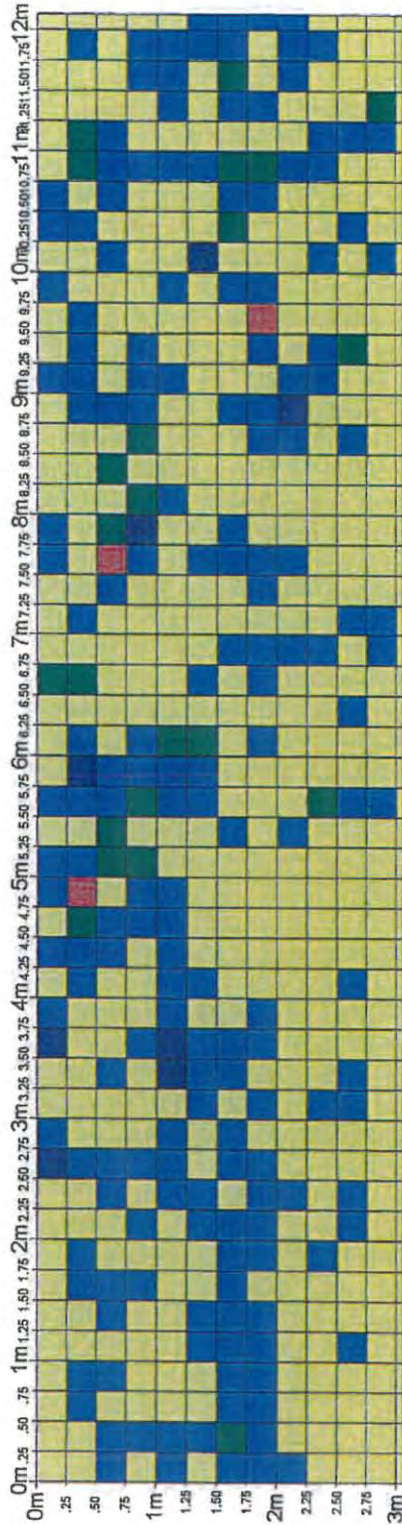
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 10:6



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

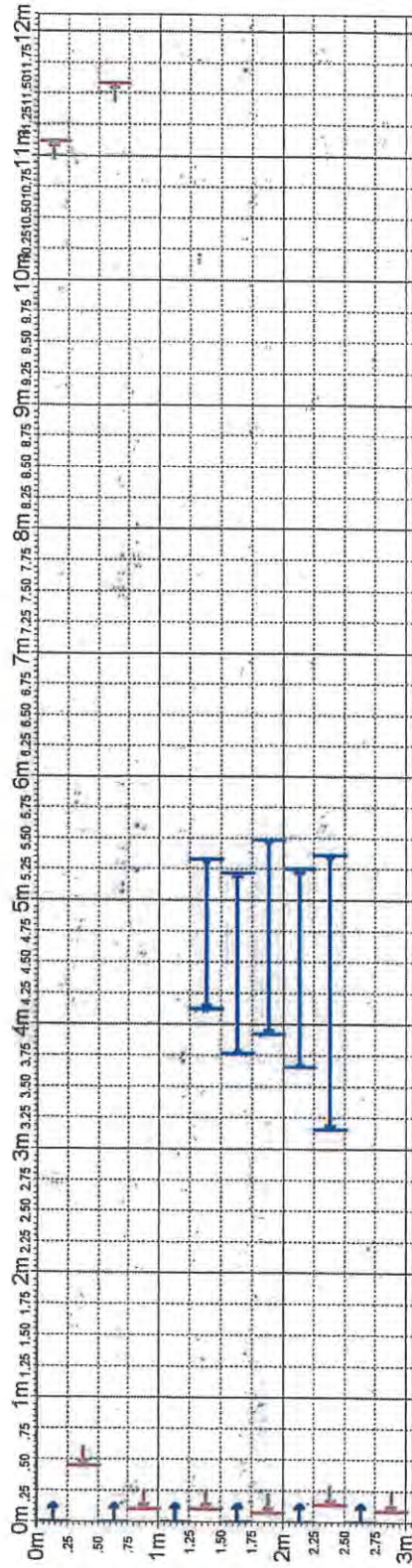


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 10:6)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

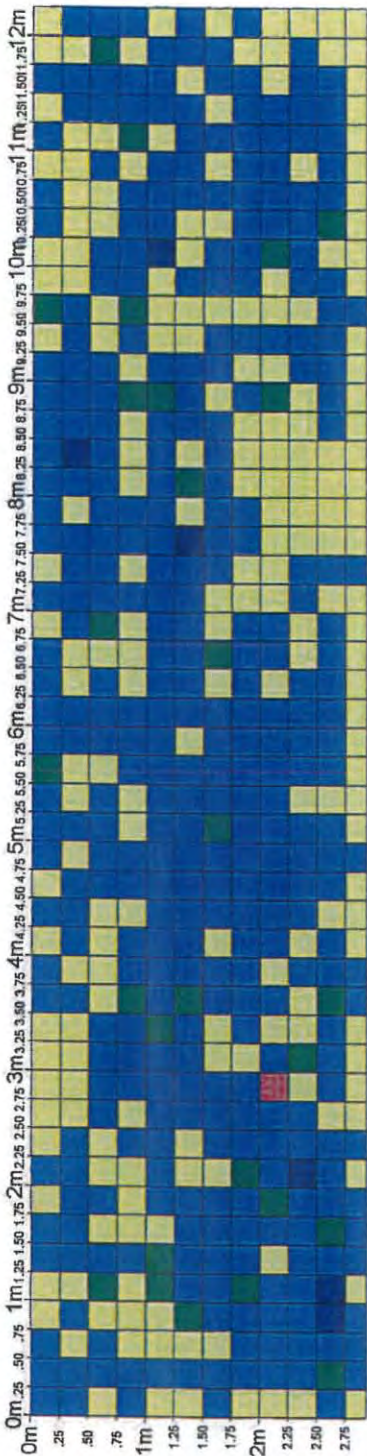
Operator: RON BURTON

November 24, 2003

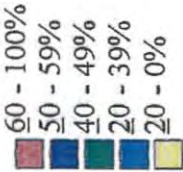
AITEC INC.

PLATEMAP.

Plate 11:2



* TANK DATUM.



North

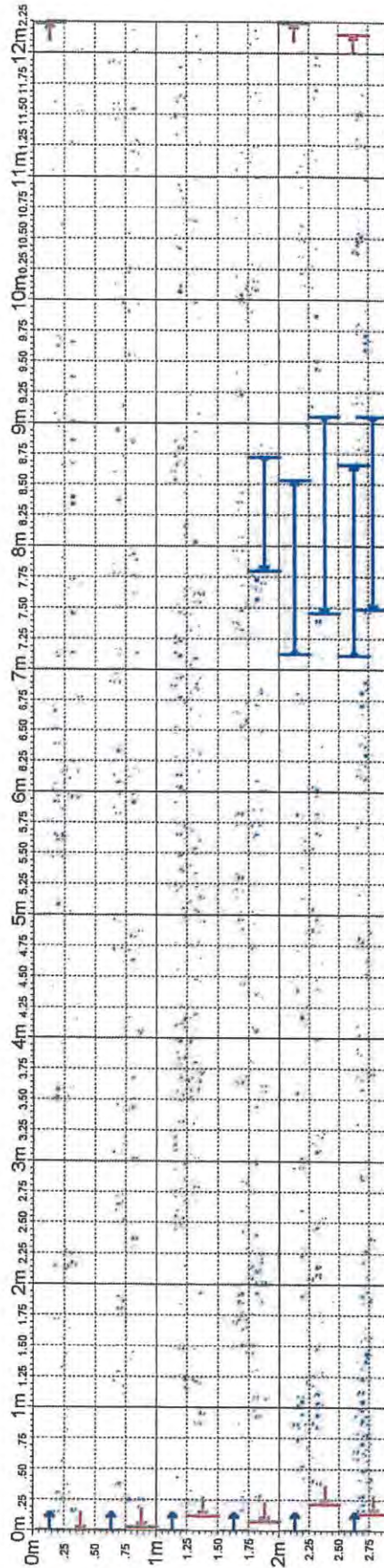
Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 11:2)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

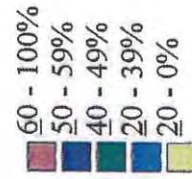
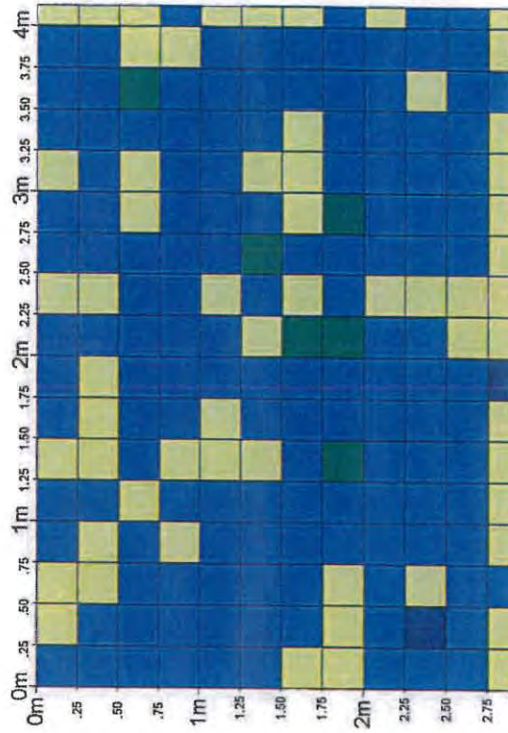
Operator: RON BURTON

November 24, 2003

AITEC INC.

PLATEMAP.

Plate 11:3



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

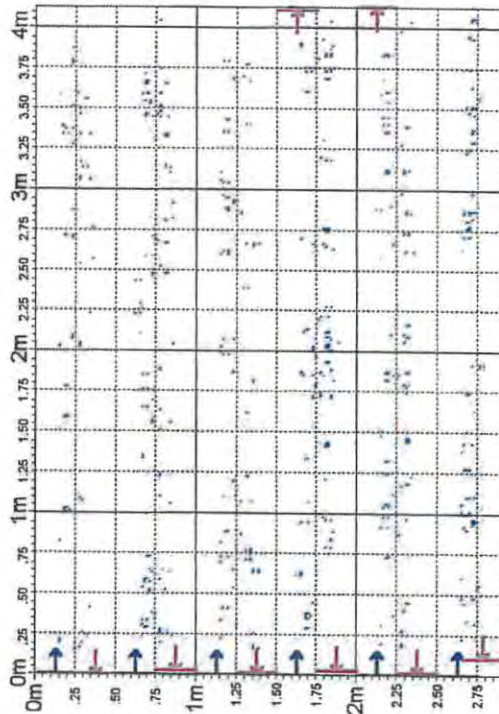
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 11:3)



Operator: RON BURTON
 November 24, 2003

North

* TANK DATUM.

Client: NF Hydro
 Location: Holyrood
 Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 11:4



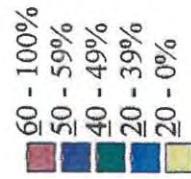
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

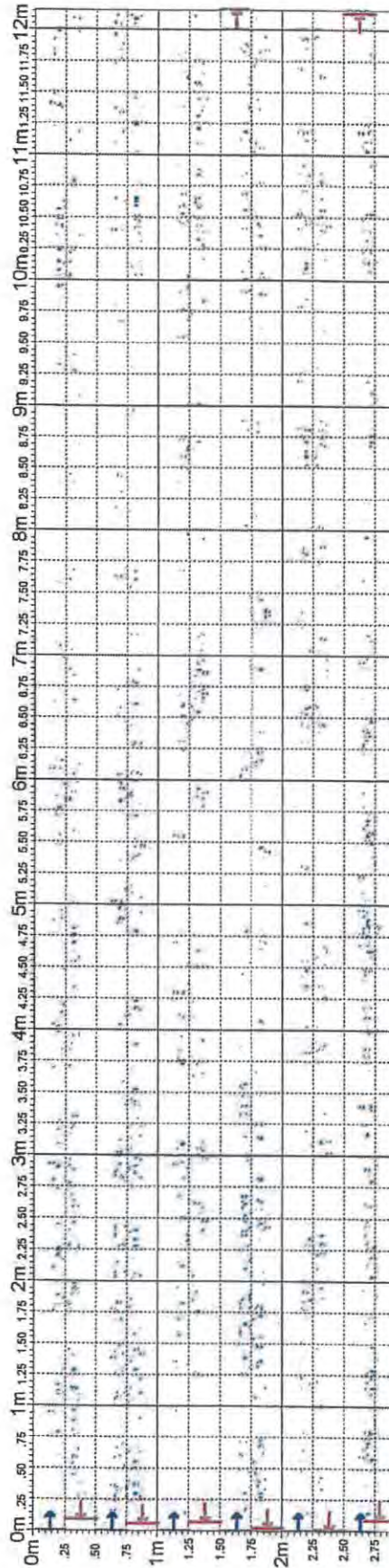


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 11:4)



60 - 100%
50 - 59%
40 - 49%
20 - 39%
20 - 0%

Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

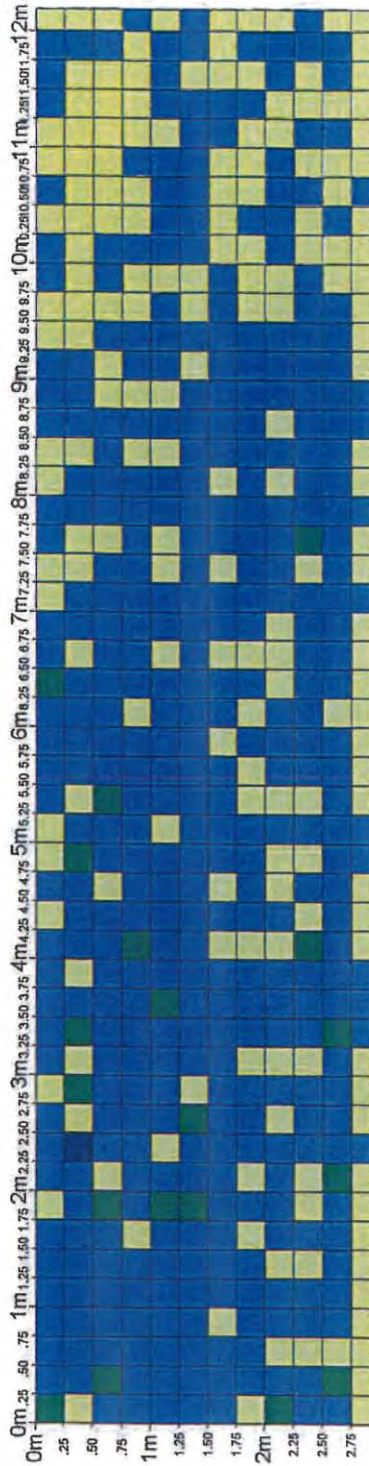
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 11:5



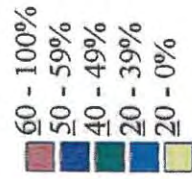
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

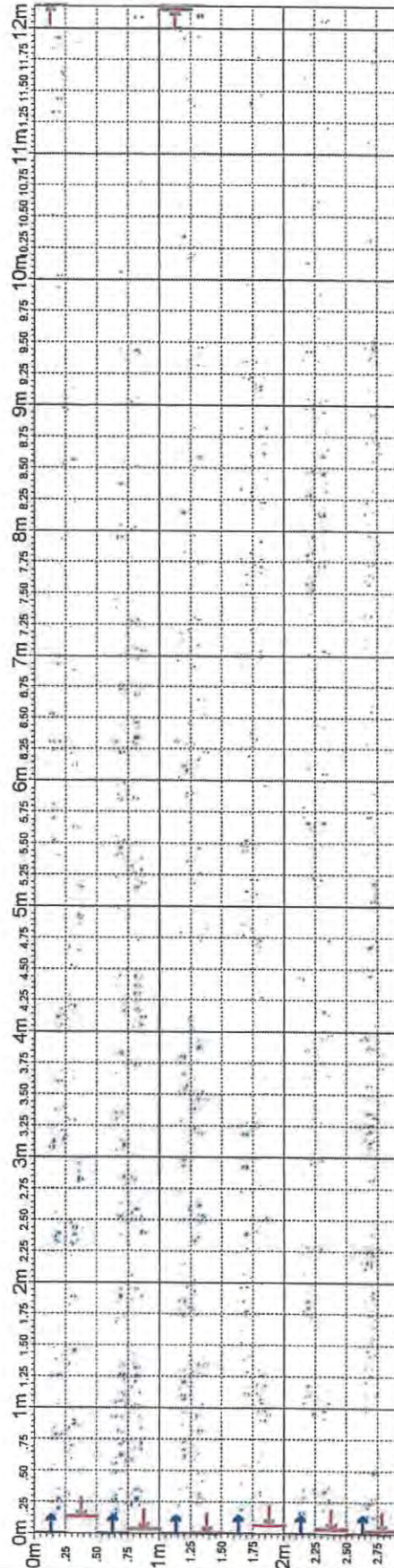


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 11:5)



- 60 - 100%
- 50 - 59%
- 40 - 49%
- 20 - 39%
- 0 - 20%

* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

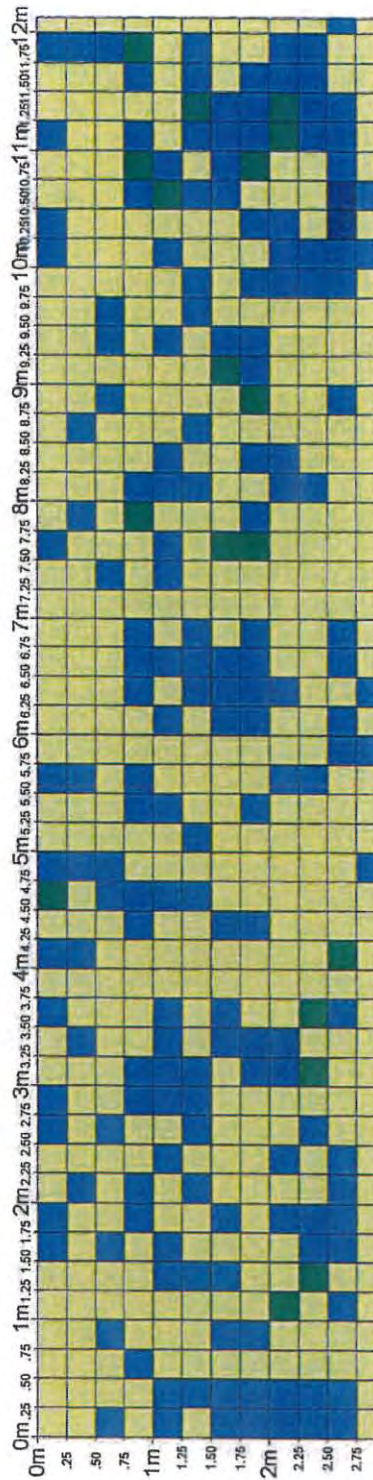
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 11:6

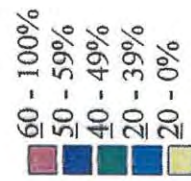


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



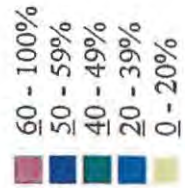
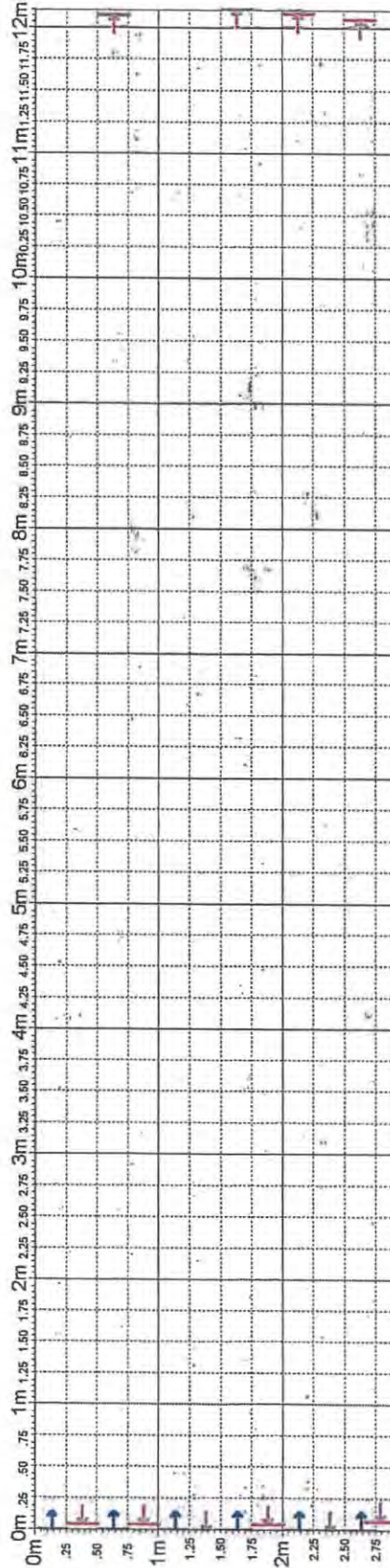
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 11:6)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

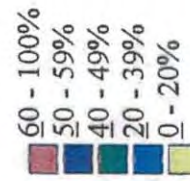
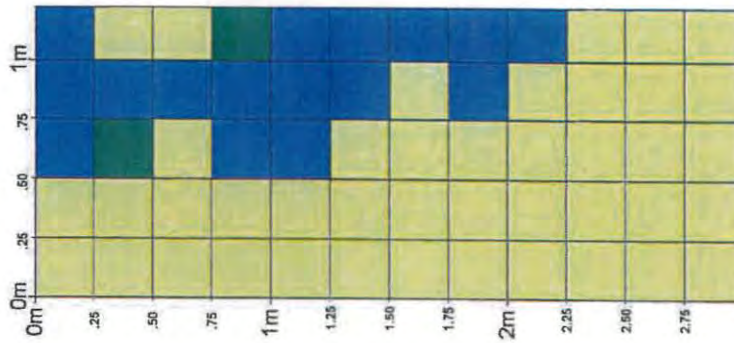
North

Operator: RON BURTON
 November 24, 2003

AITEC INC.

PLATEMAP.

Plate 12:1



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

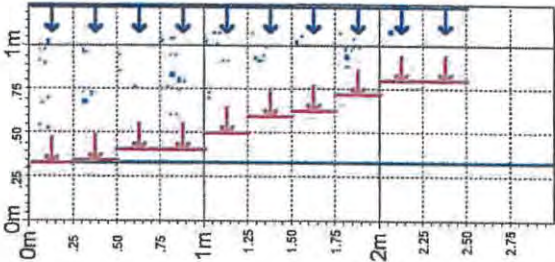
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 12:1)



Operator: RON BURTON
November 24, 2003

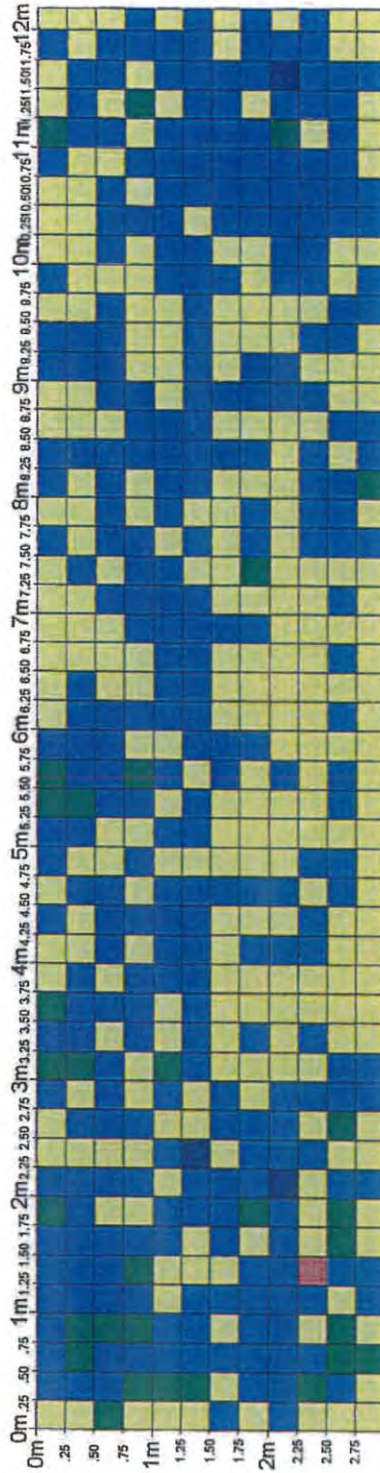
North

* TANK DATUM.
Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 12:2



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



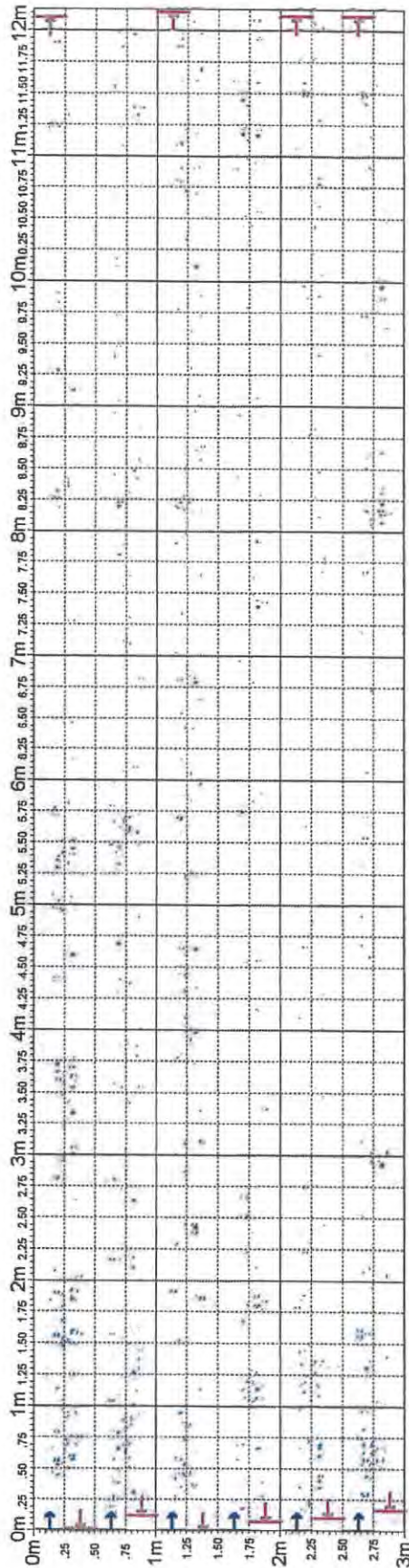
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 12:2)



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

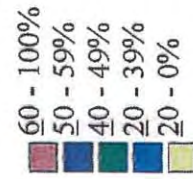
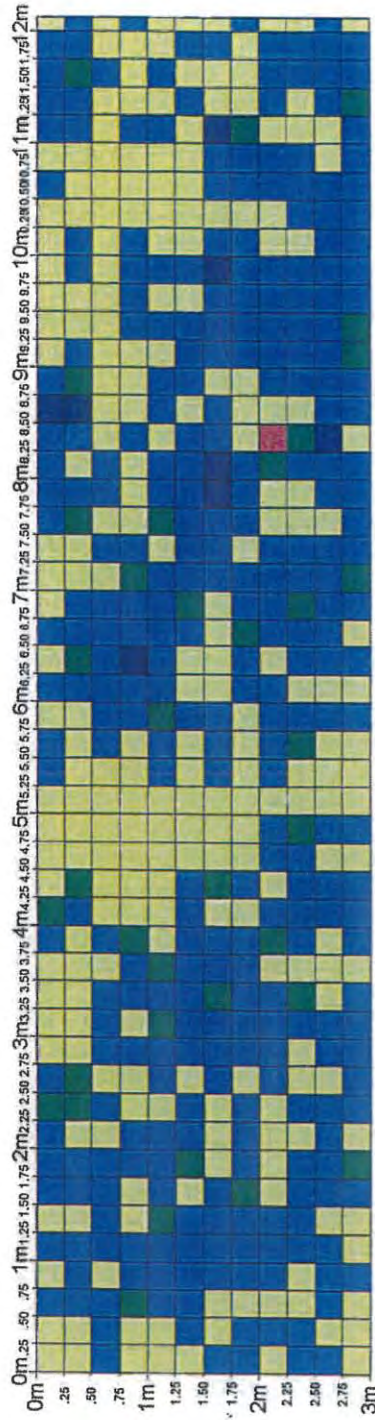
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 12:3



North

Operator: RON BURTON
November 24, 2003

* TANK DATUM.

Client: NF Hydro

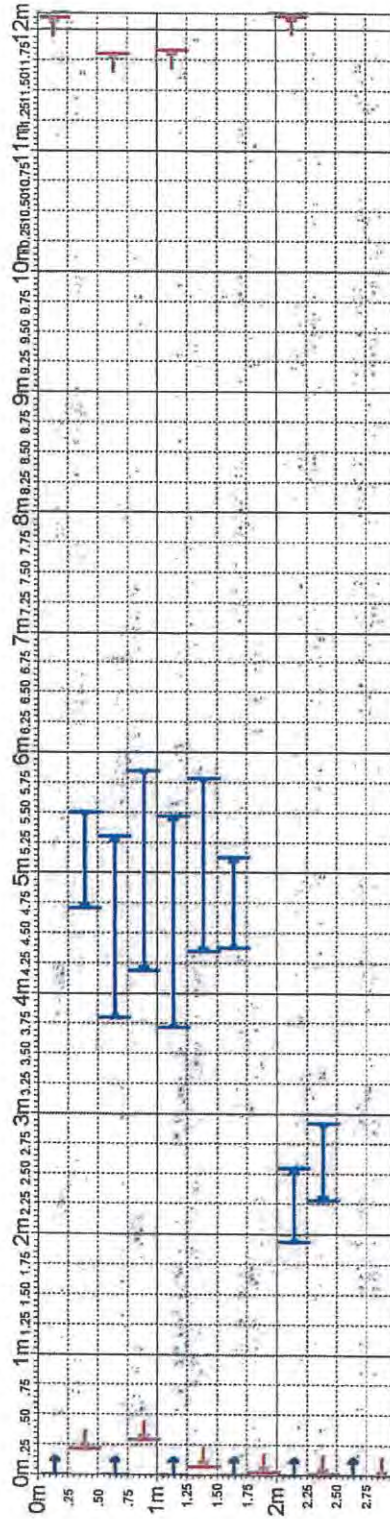
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 12:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

Operator: RON BURTON

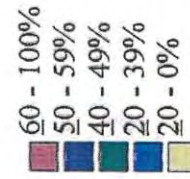
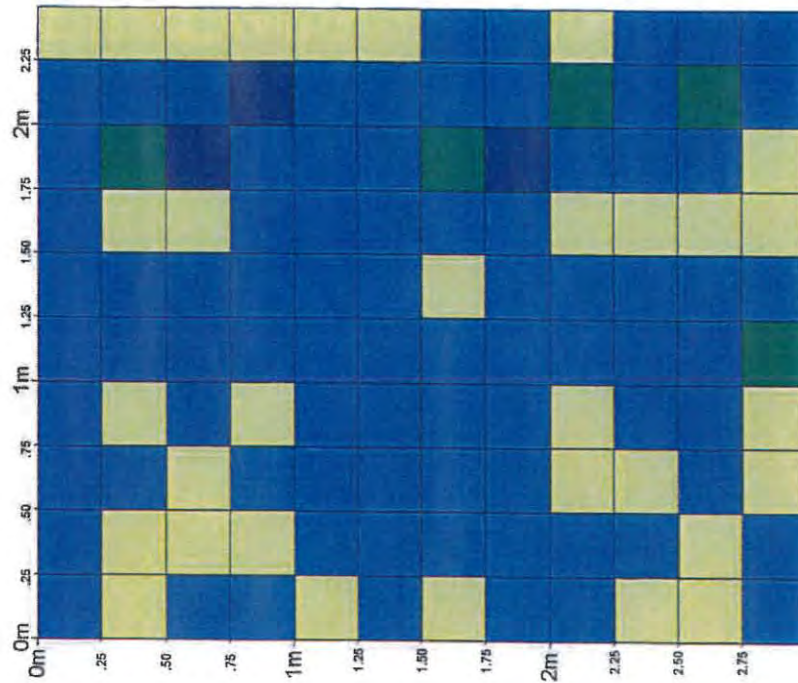
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 12:4



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

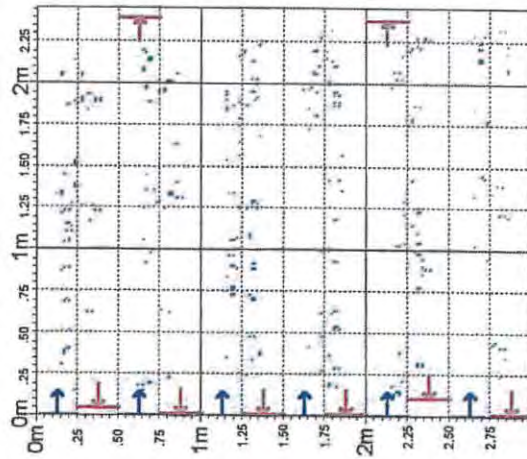
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 12:4)



Operator: RON BURTON
 November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

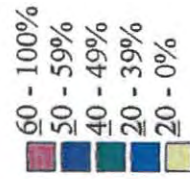
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 12:5



Operator: RON BURTON
 November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

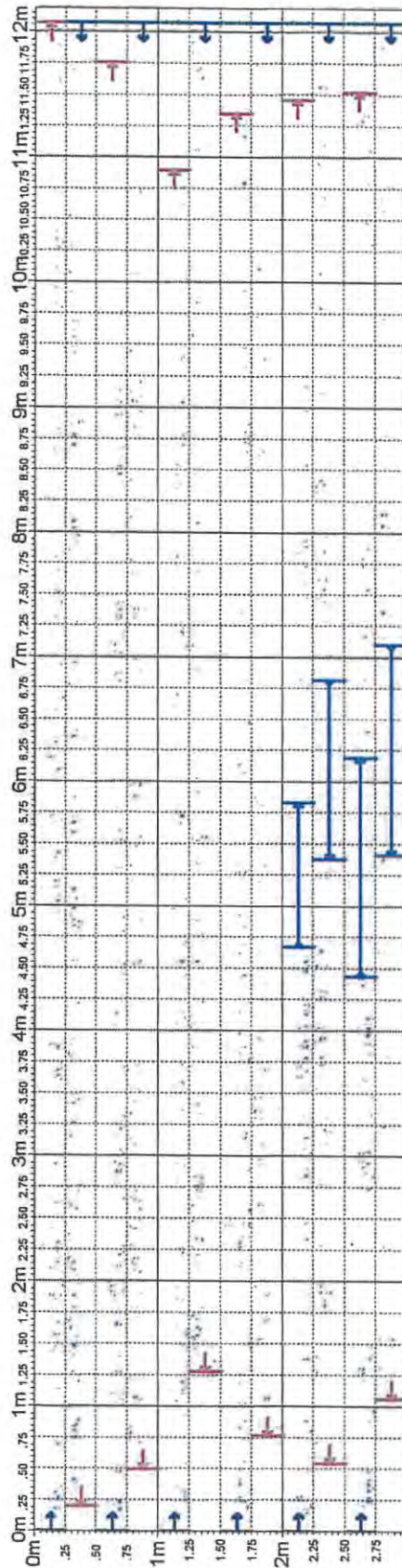
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 12:5)



60 - 100%
50 - 59%
40 - 49%
20 - 39%
0 - 20%

* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

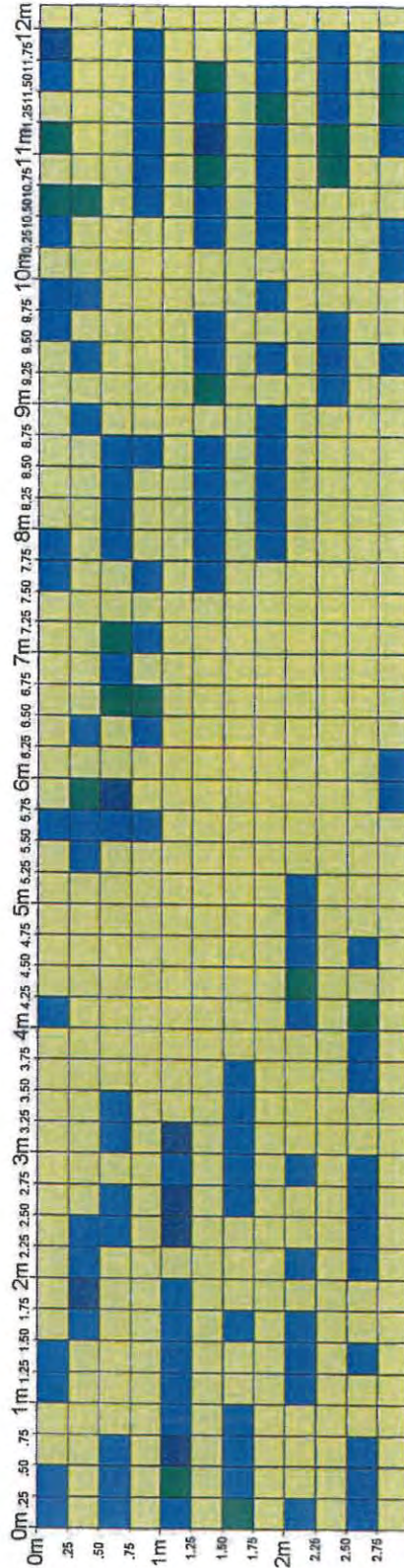
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 12:6



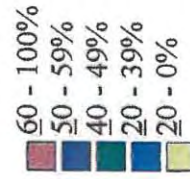
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

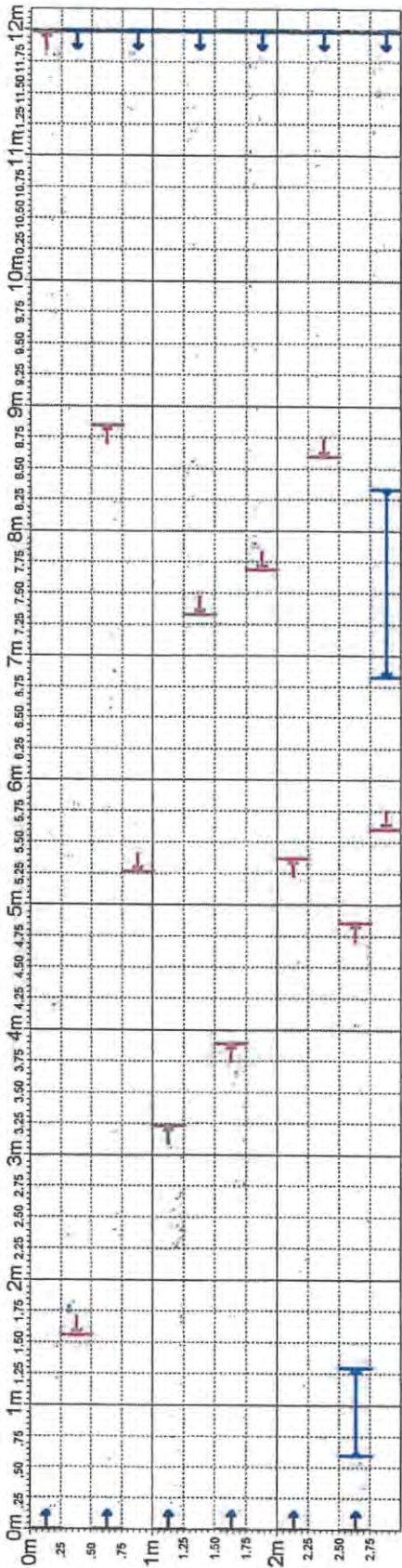


Operator: RON BURTON
 November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 12:6)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

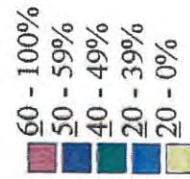
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 13:2



Operator: RON BURTON
 November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

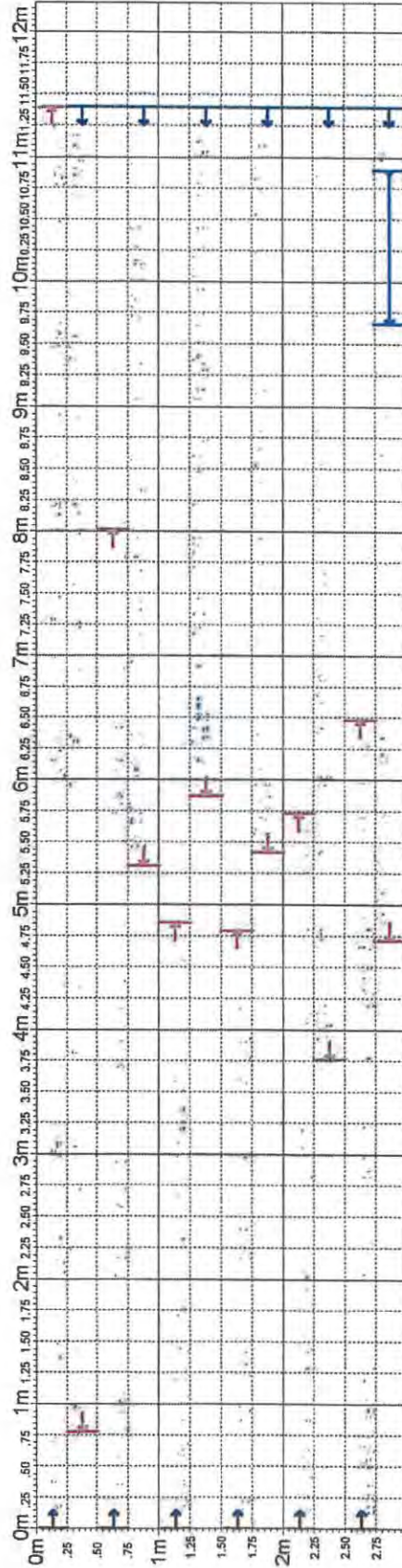
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 13:2)



- 60 - 100%
- 50 - 59%
- 40 - 49%
- 20 - 39%
- 0 - 20%

* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

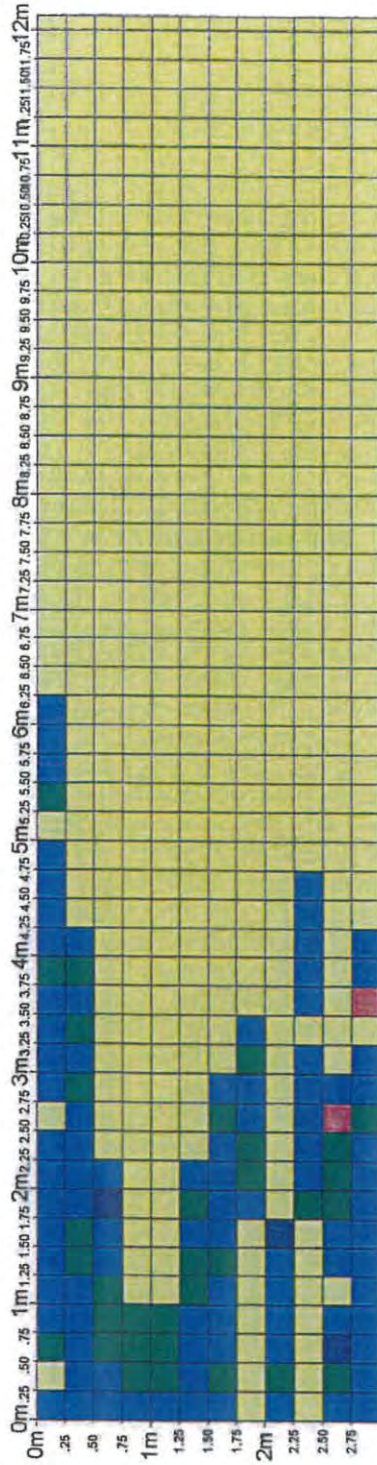
North

Operator: RON BURTON
 November 24, 2003

AITEC INC.

PLATEMAP.

Plate 13:3



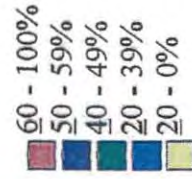
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

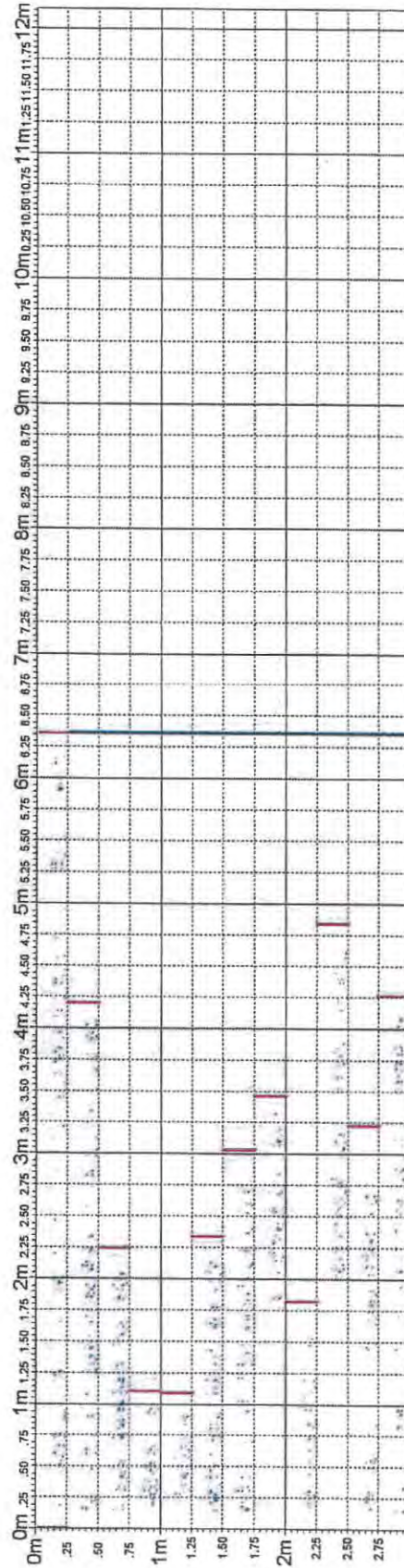


Operator: RON BURTON
 November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 13:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

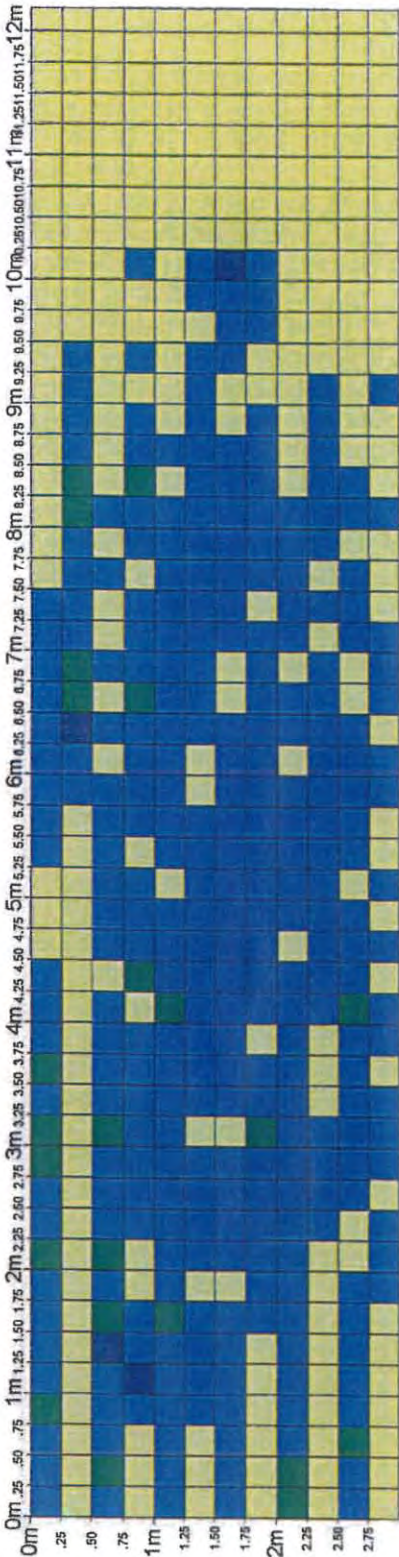
Tank ID: TANK 3

North

Operator: RON BURTON
November 24, 2003

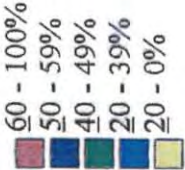
AITEC INC.
PLATEMAP.

Plate 13:4



* TANK DATUM.

Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3



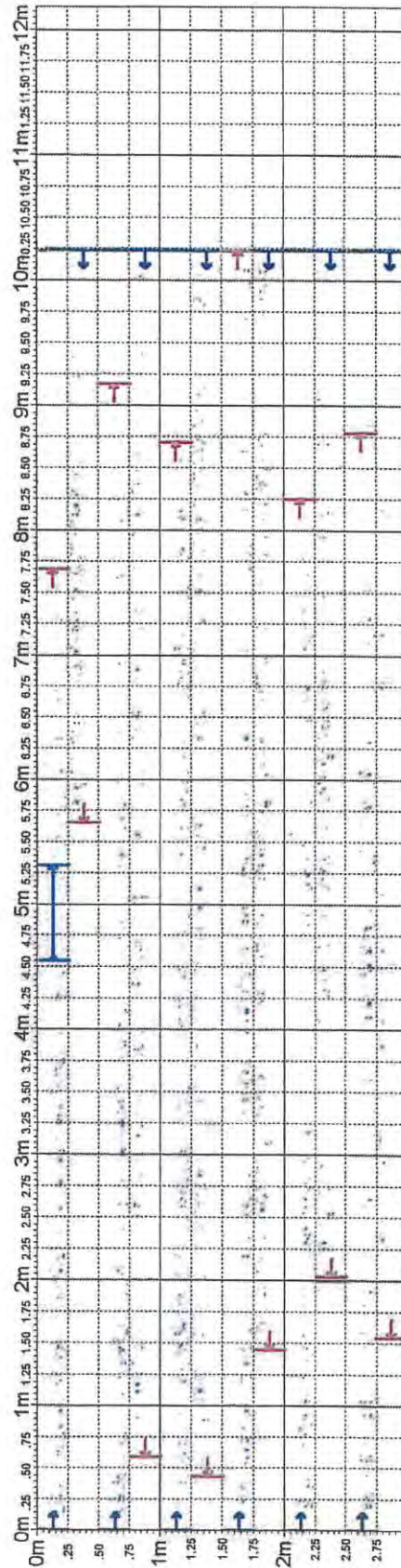
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 13:4)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

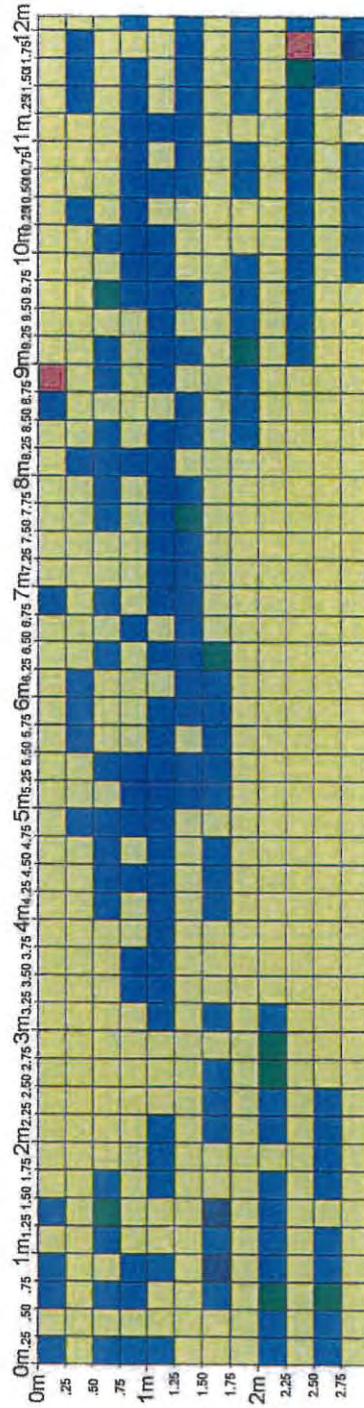
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 13:5



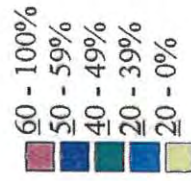
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

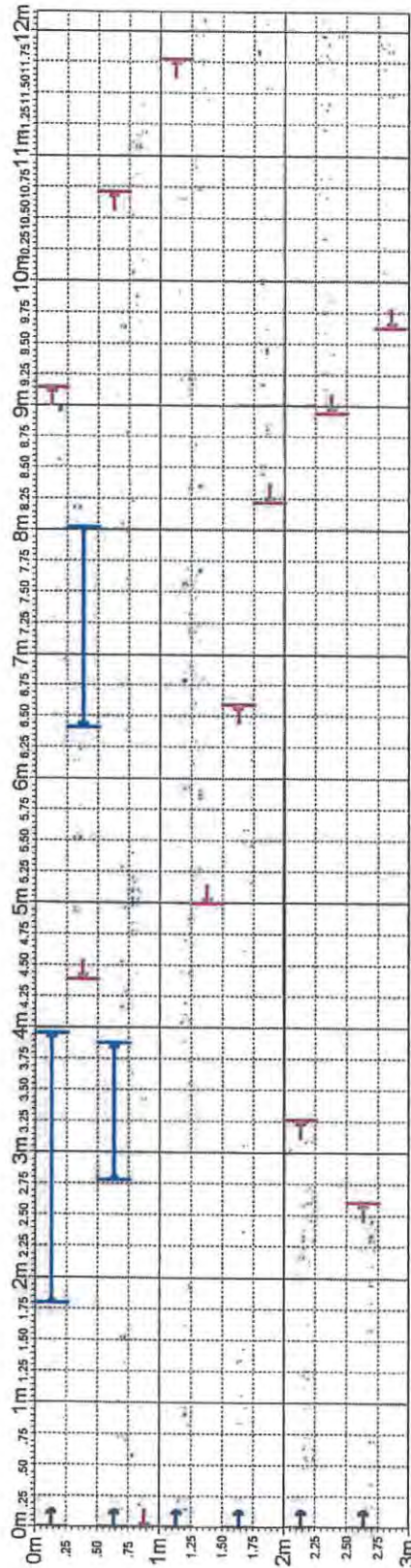


Operator: RON BURTON
 November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 13:5)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



Operator: RON BURTON

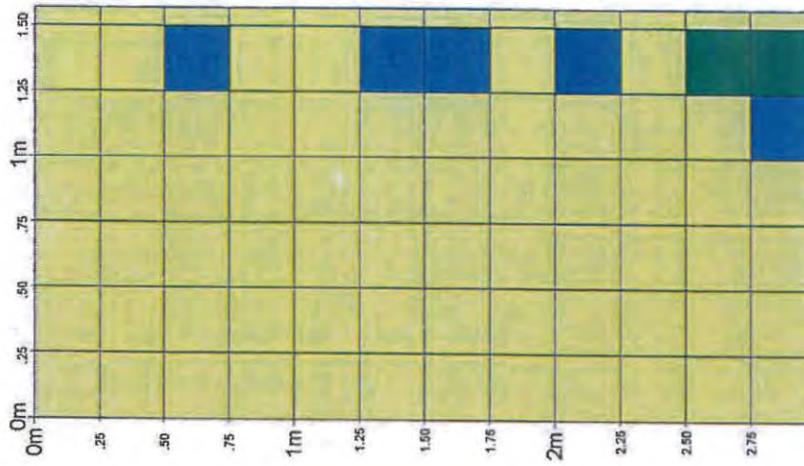
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 13:6



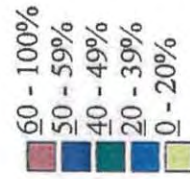
North

* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

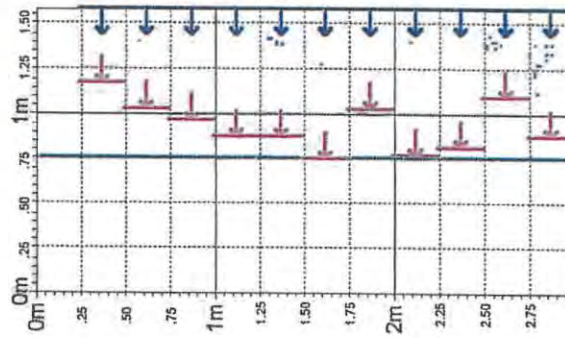


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 13:6)



Operator: RON BURTON
 November 24, 2003

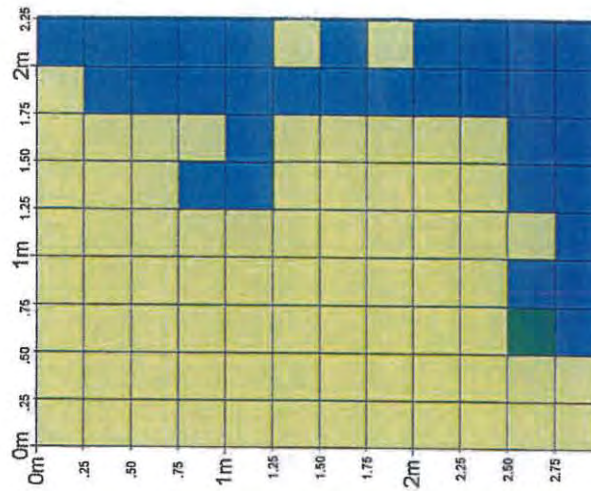
North

* TANK DATUM.
 Client: NF Hydro
 Location: Holyrood
 Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 14:1

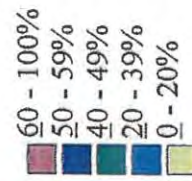


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



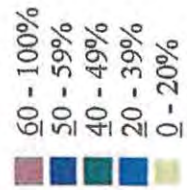
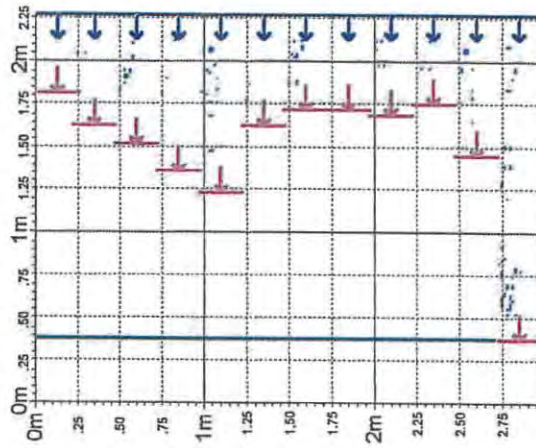
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 14:1)



Operator: RON BURTON
 November 24, 2003

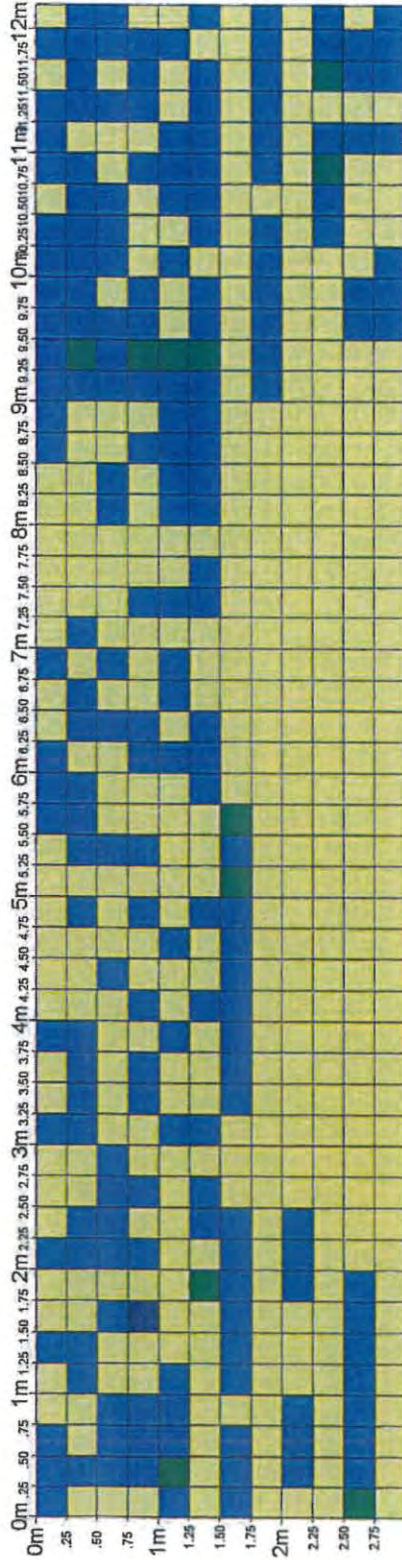
North

* TANK DATUM.
 Client: NF Hydro
 Location: Holyrood
 Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 14:2



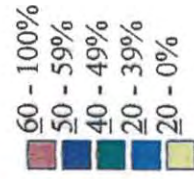
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

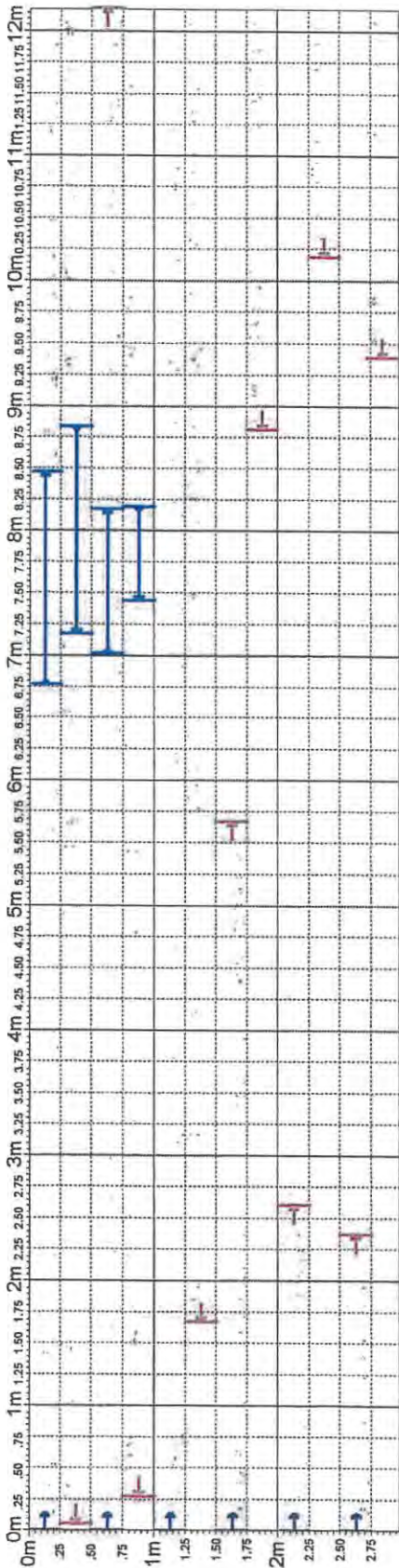


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 14:2)



* TANK DATUM.
Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 14:3



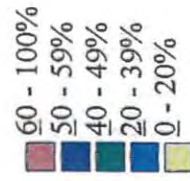
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

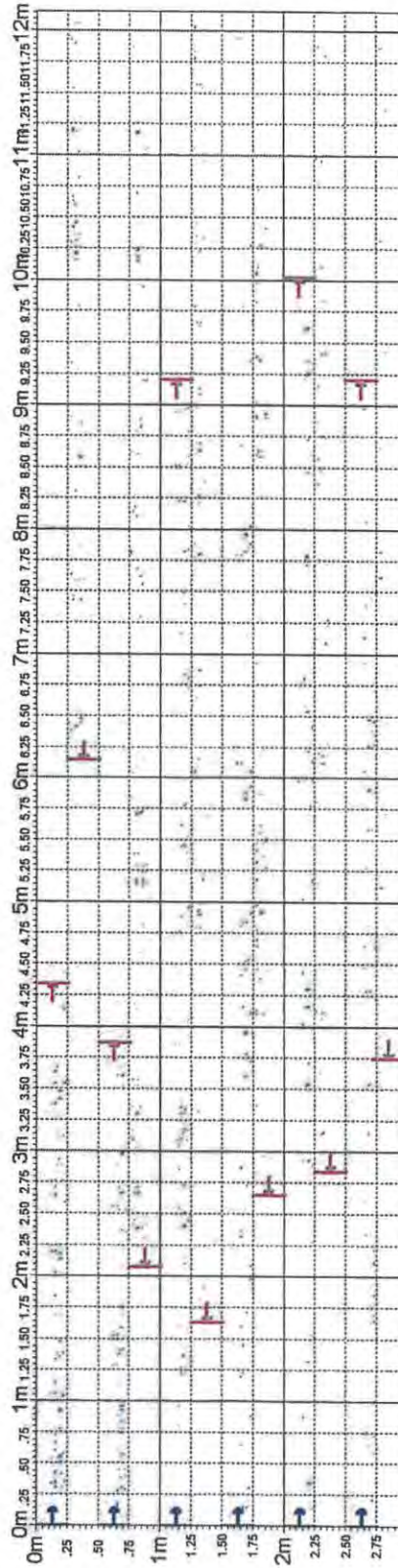


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 14:3)



60 - 100%
50 - 59%
40 - 49%
20 - 39%
0 - 20%

Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

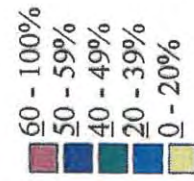
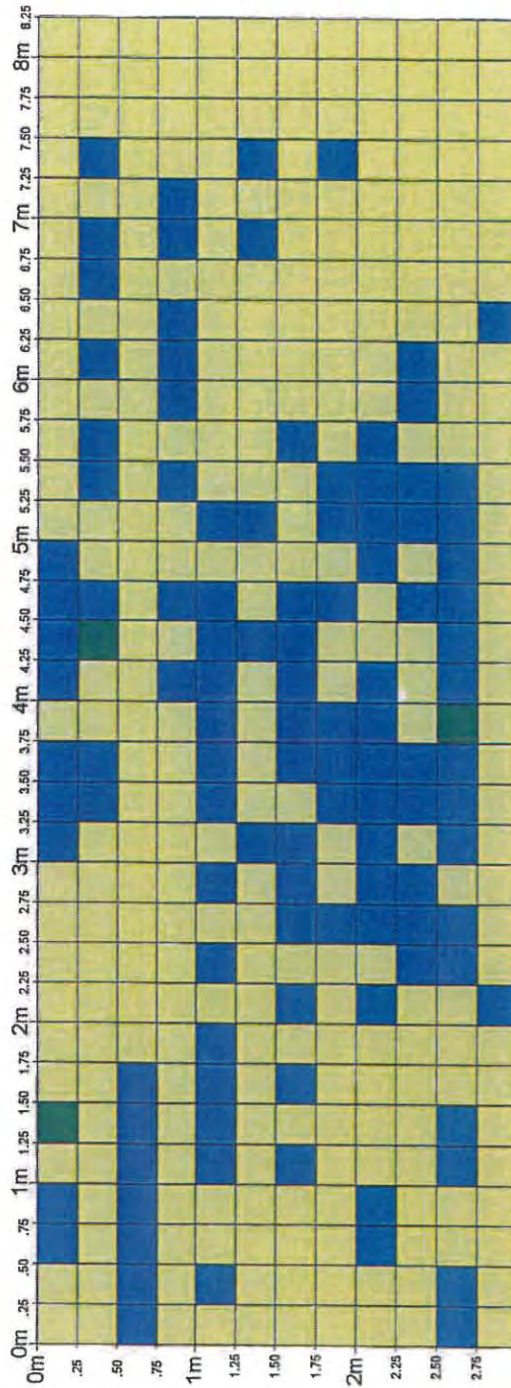
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 14:4



North

Operator: RON BURTON
November 24, 2003

* TANK DATUM.

Client: NF Hydro

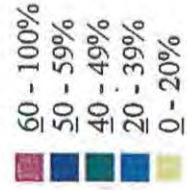
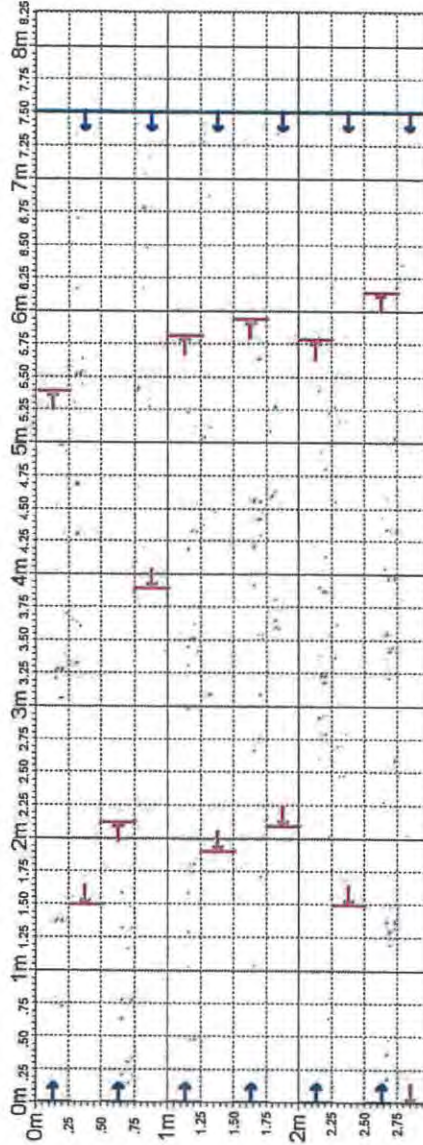
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 14:4)



Operator: RON BURTON
 November 24, 2003

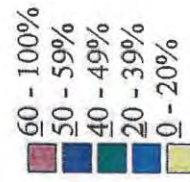
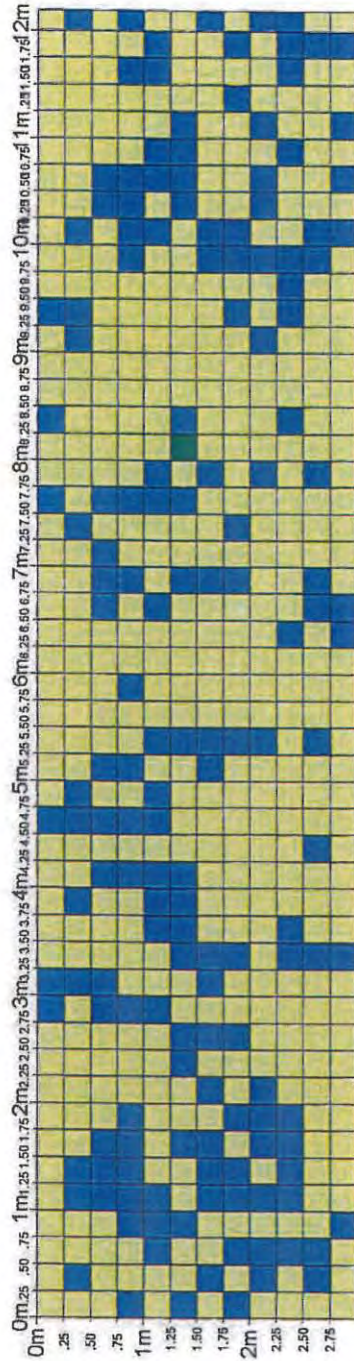
North

* TANK DATUM.
 Client: NF Hydro
 Location: Holyrood
 Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 14:5



North

Operator: RON BURTON
November 24, 2003

* TANK DATUM.

Client: NF Hydro

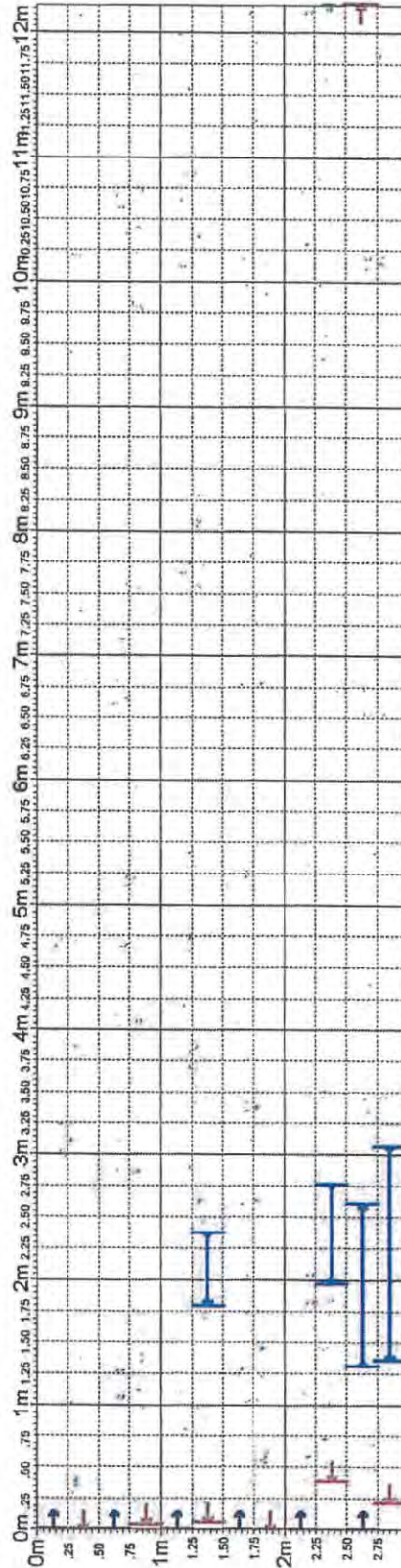
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 14:5)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

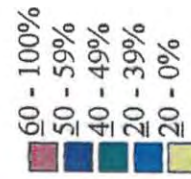
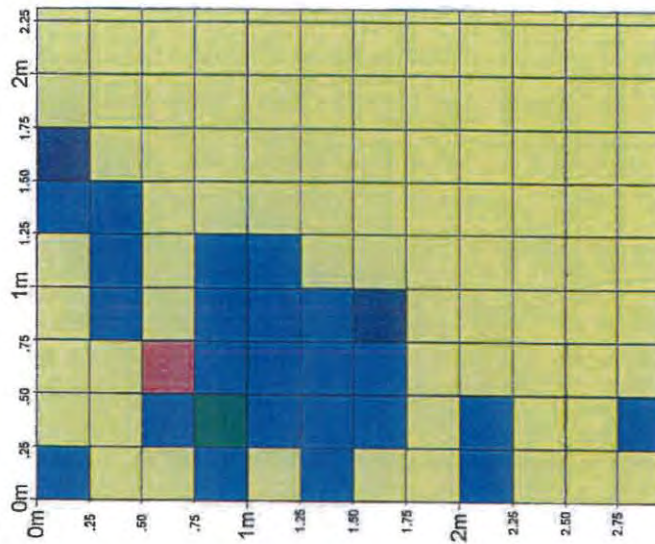
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 14:6



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

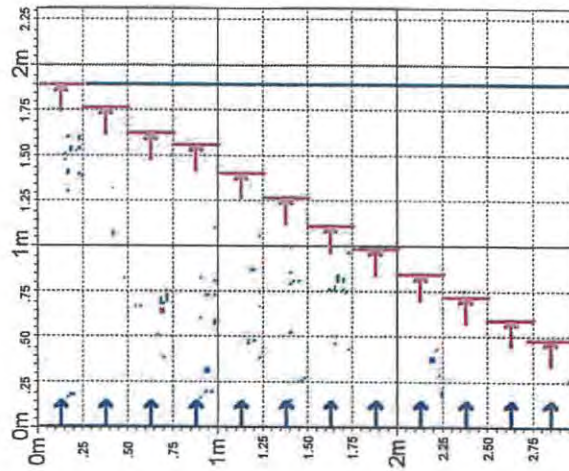
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 14:6)



Operator: RON BURTON
 November 24, 2003

North

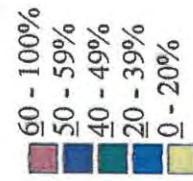
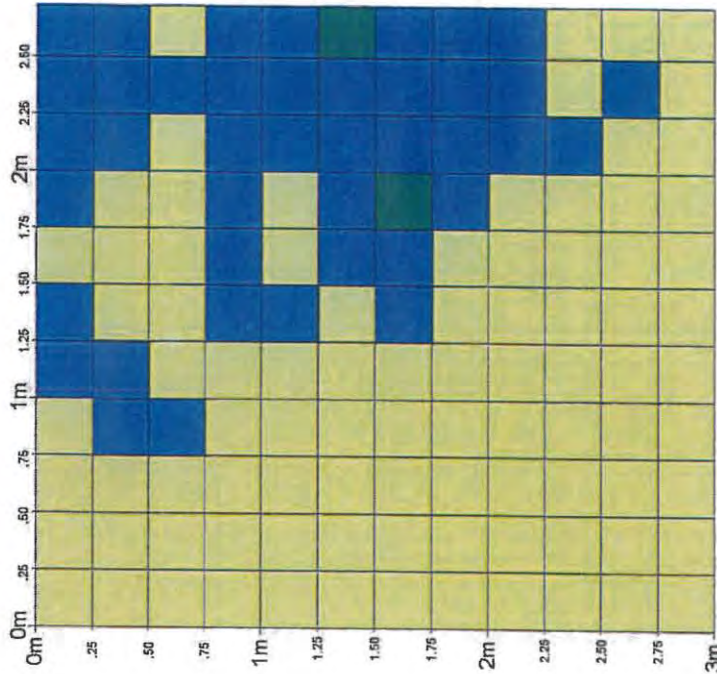
* TANK DATUM.

Client: NF Hydro
 Location: Holyrood
 Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 15:1



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

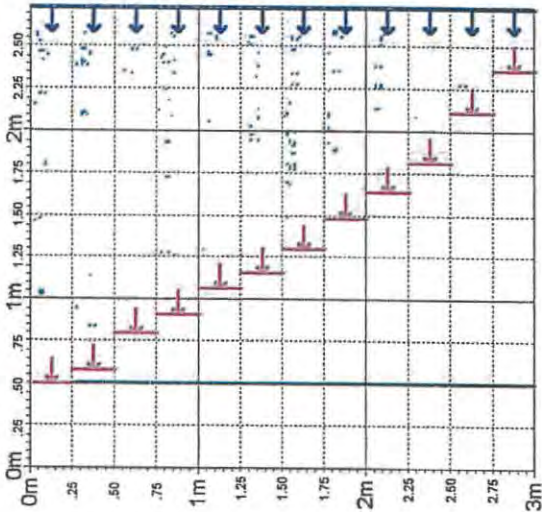
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 15:1)



North

Operator: RON BURTON
November 24, 2003

* TANK DATUM,
Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 15:2



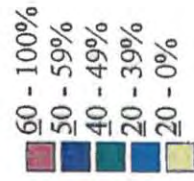
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

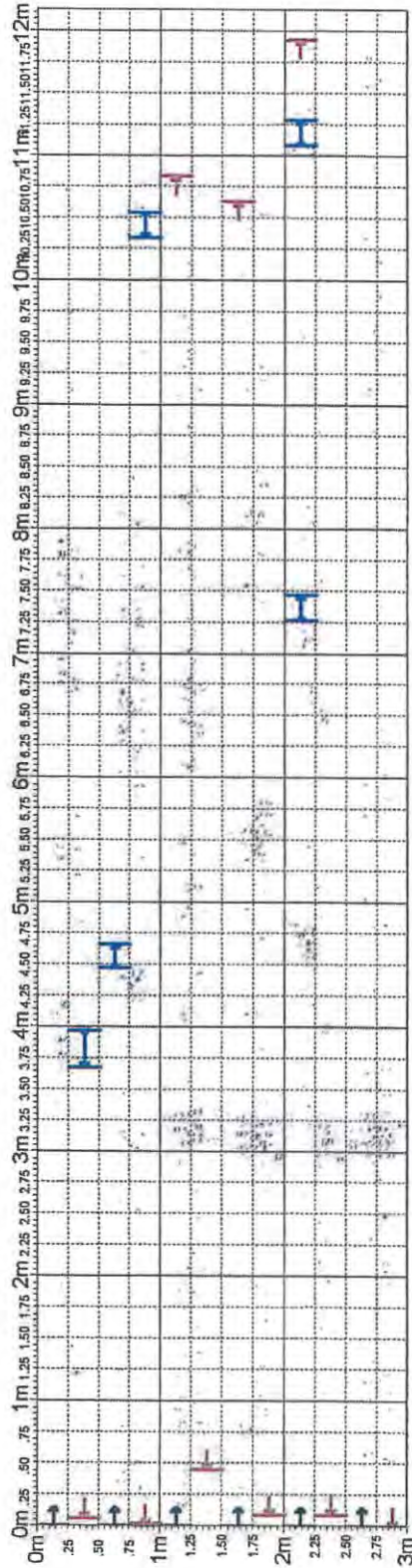


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 15:2)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



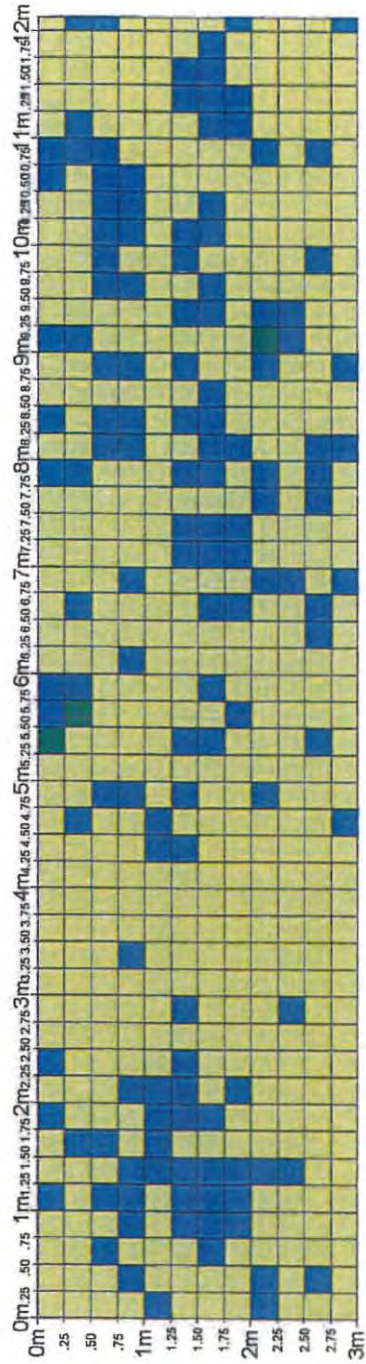
Operator: RON BURTON
 November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 15:3



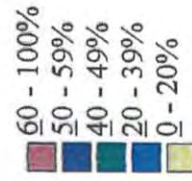
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

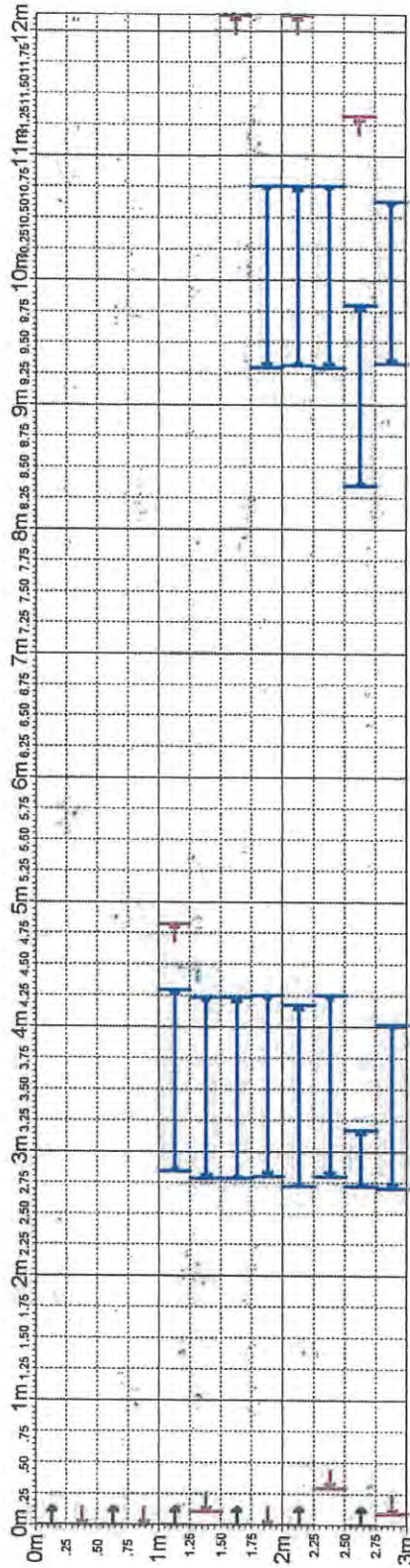


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 15:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

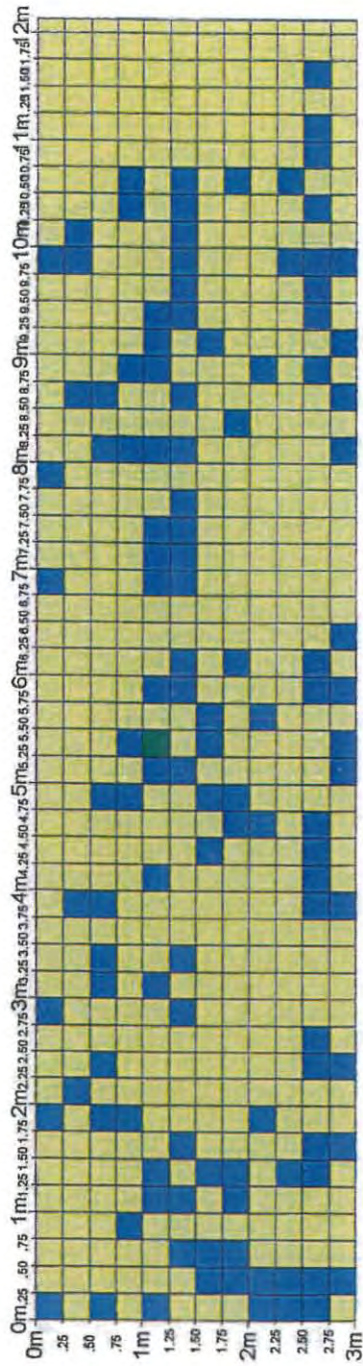
North

Operator: RON BURTON
 November 24, 2003

AITEC INC.

PLATEMAP.

Plate 15:5

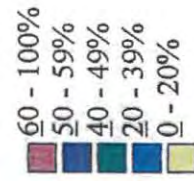


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



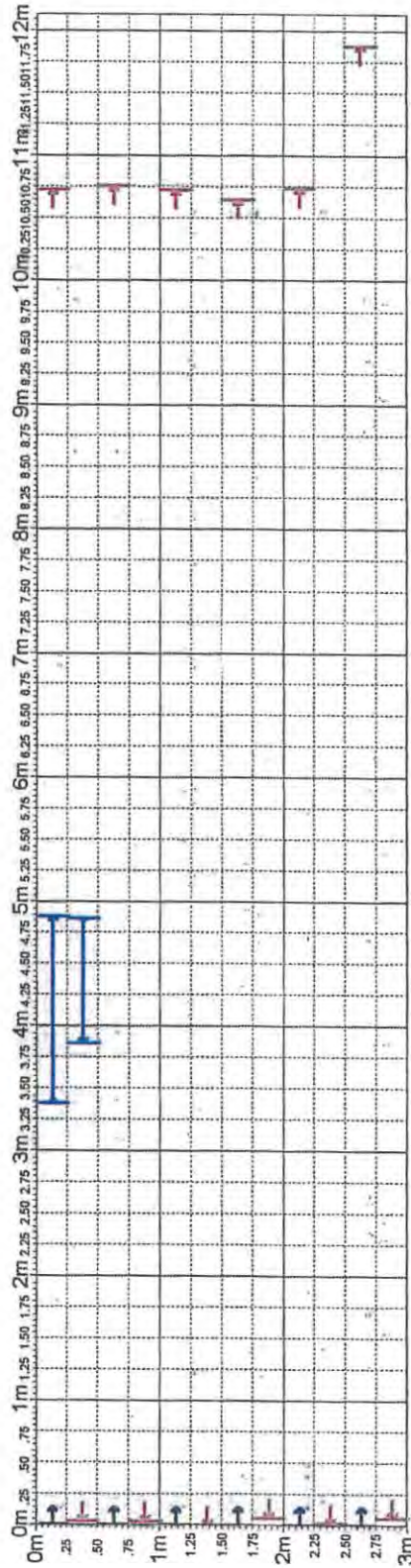
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 15:5)



* TANK DATUM.
 Client: NF Hydro
 Location: Holyrood
 Tank ID: TANK 3

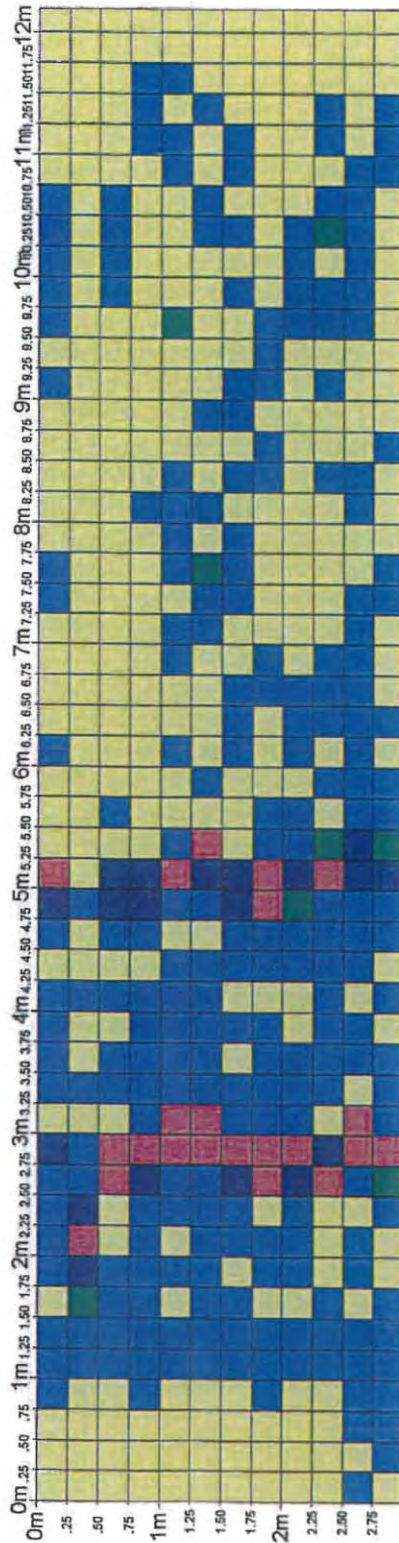
Operator: RON BURTON
 November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 16:2



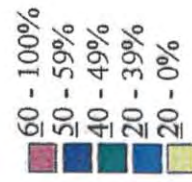
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

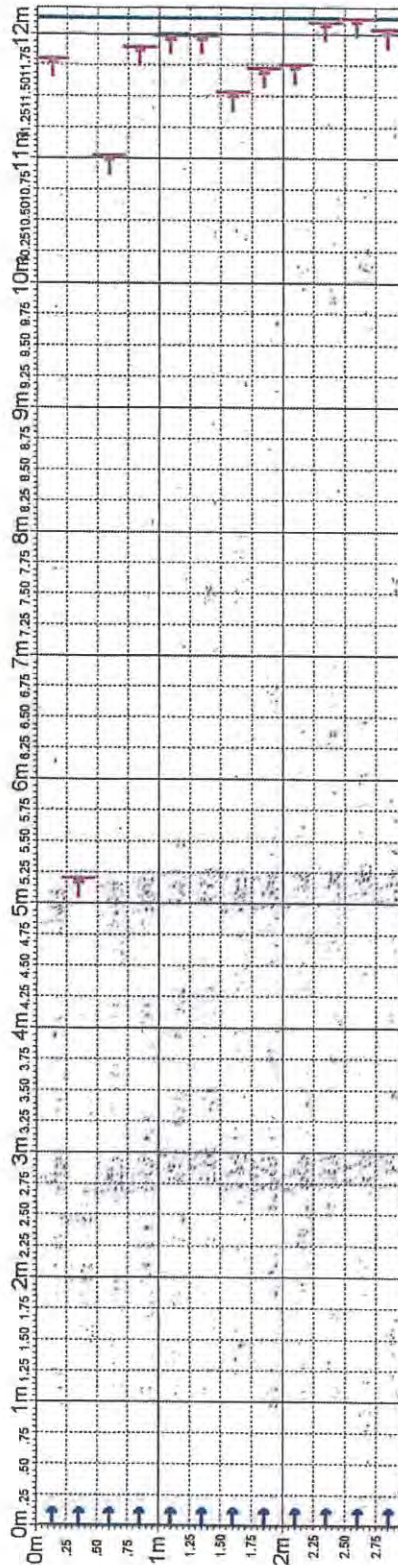


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 16:2)



60 - 100%
50 - 59%
40 - 49%
20 - 39%
20 - 0%

Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

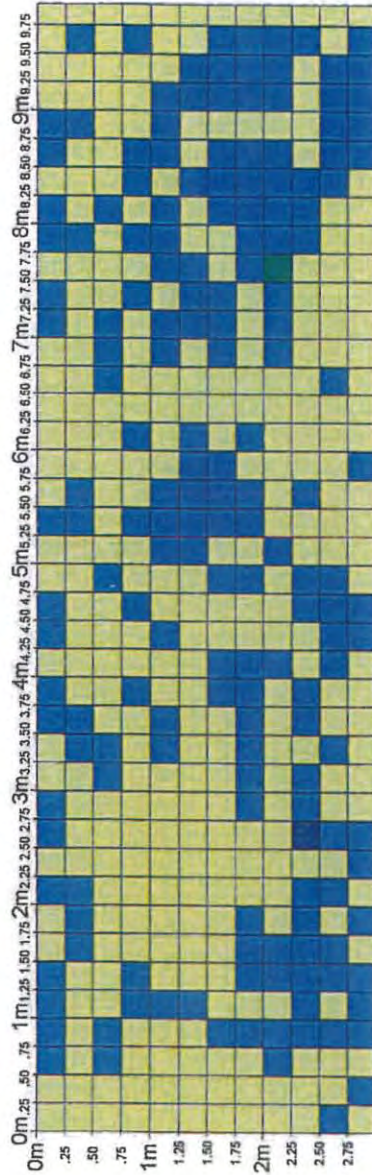
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 16:3



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



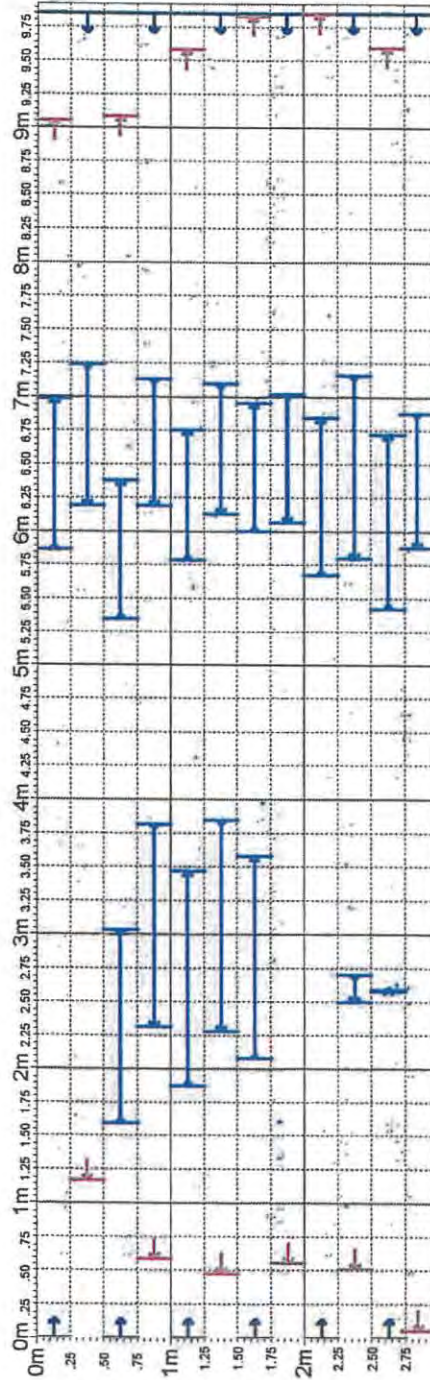
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 16:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

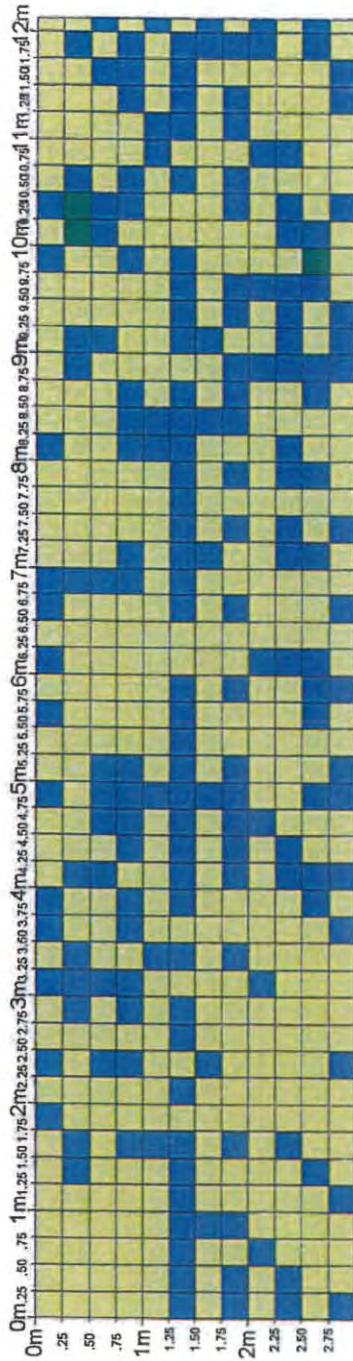
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 16:4

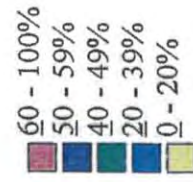


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



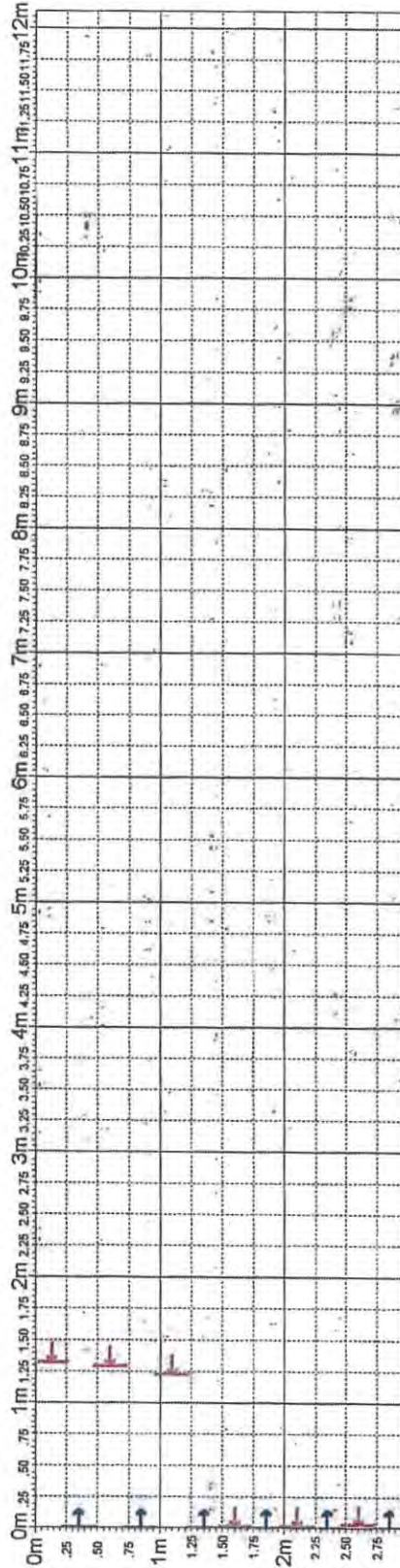
North

Operator: RON BURTON
 November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 16:4)



60 - 100%
50 - 59%
40 - 49%
20 - 39%
0 - 20%

* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

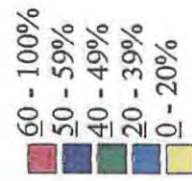
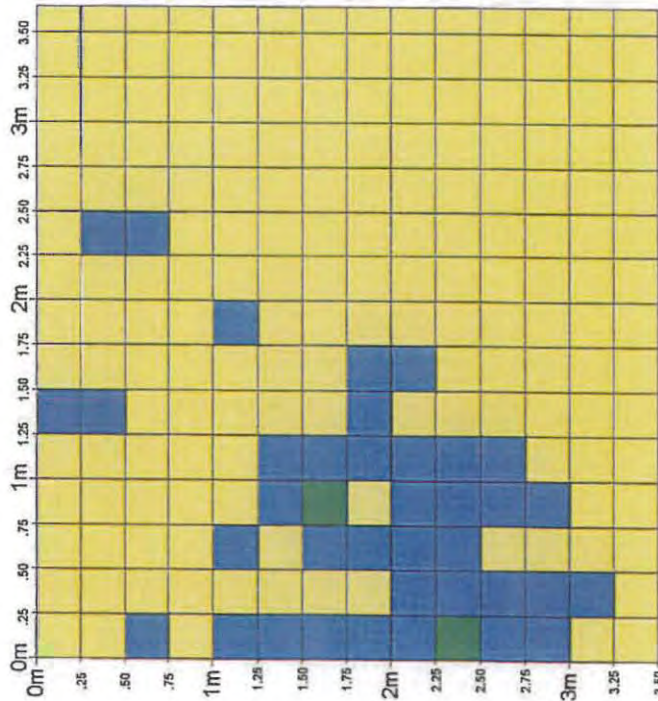
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

PLATEMAP.

Plate 16:5



Operator: RON BURTON
November 24, 2003

North

*** TANK DATUM.**

Client: NF Hydro

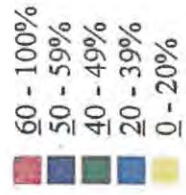
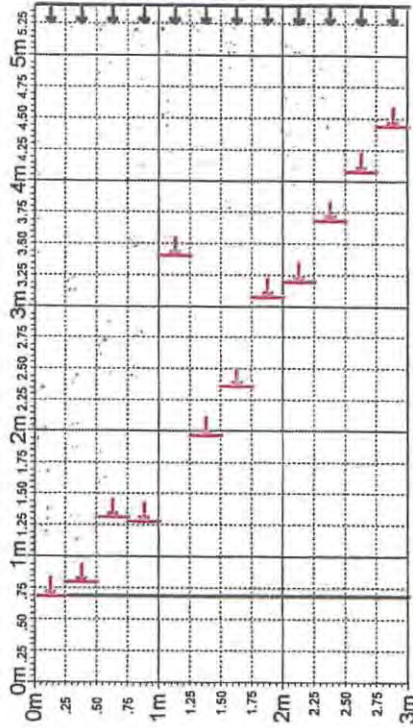
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 17:1)



Operator: RON BURTON
 November 24, 2003

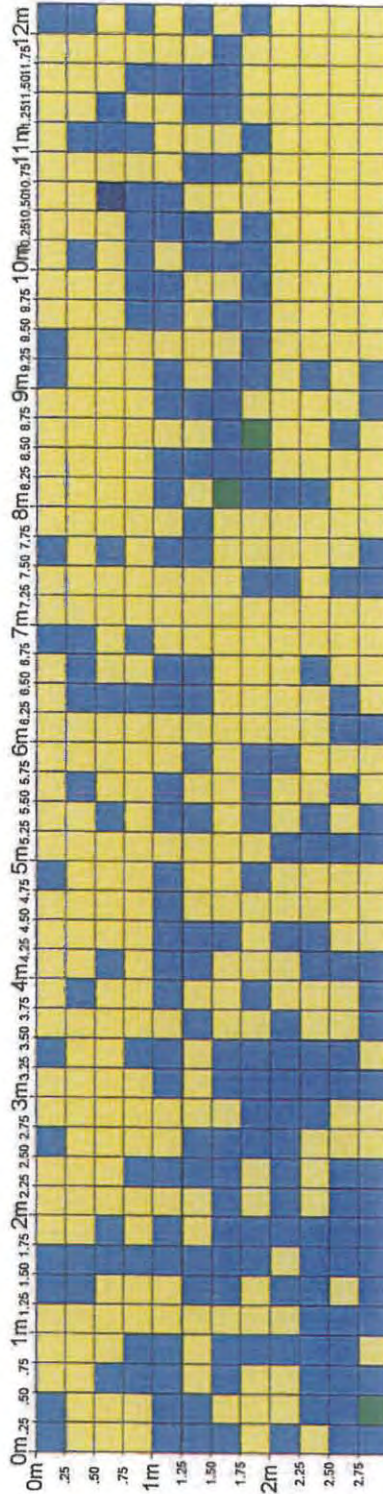
North

* TANK DATUM.
 Client: NF Hydro
 Location: Holyrood
 Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 17:2



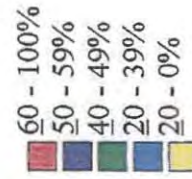
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

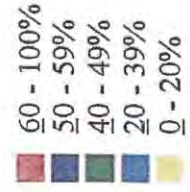
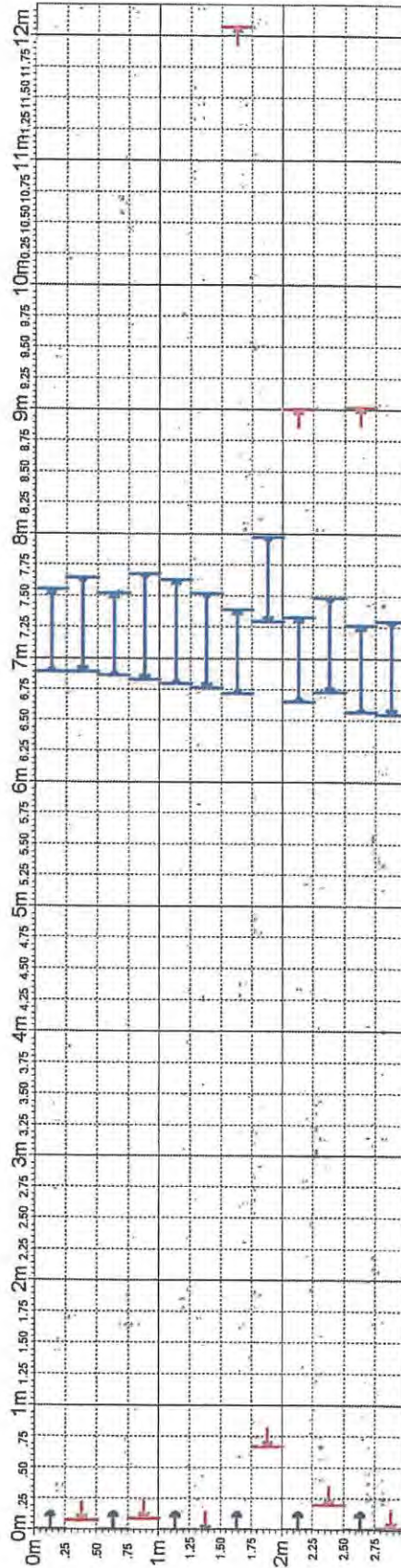


Operator: RON BURTON
 November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 17:2)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

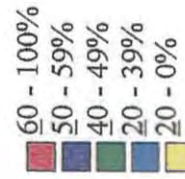
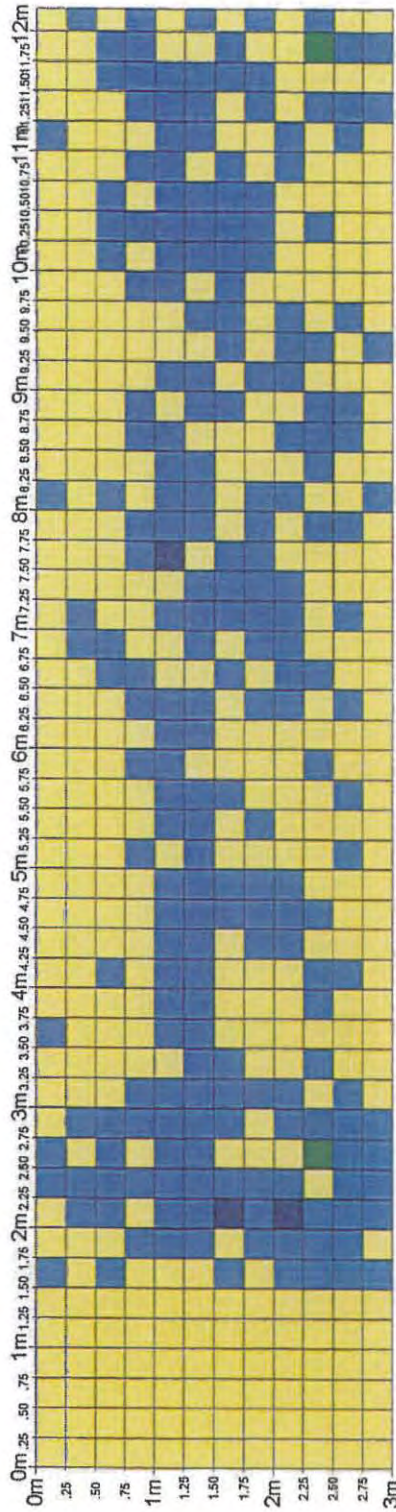
North

Operator: RON BURTON
 November 24, 2003

AITEC INC.

PLATEMAP.

Plate 17:3



Operator: RON BURTON
 November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

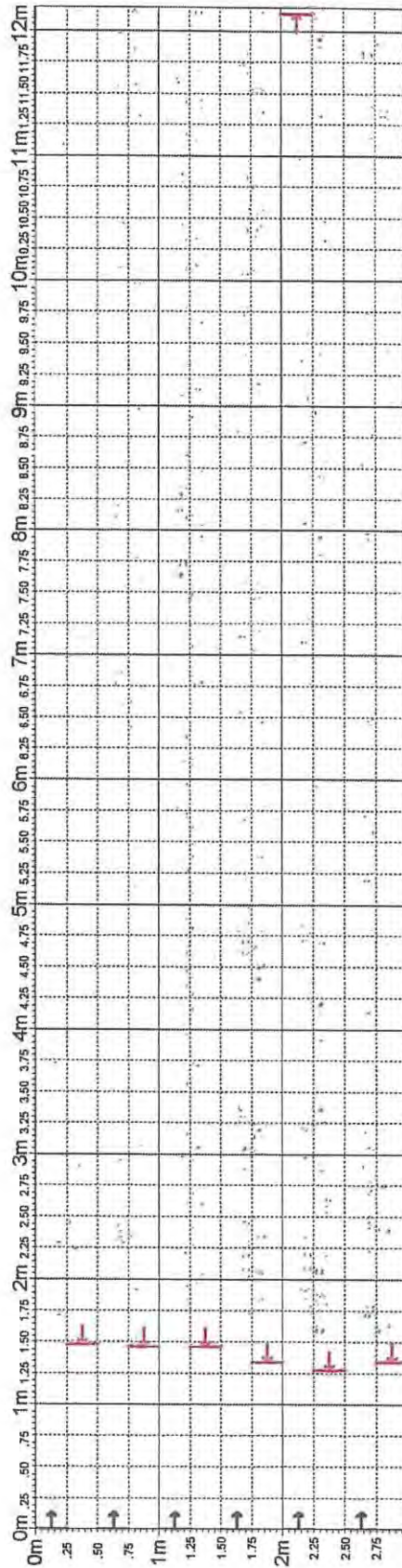
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 17:3)



* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

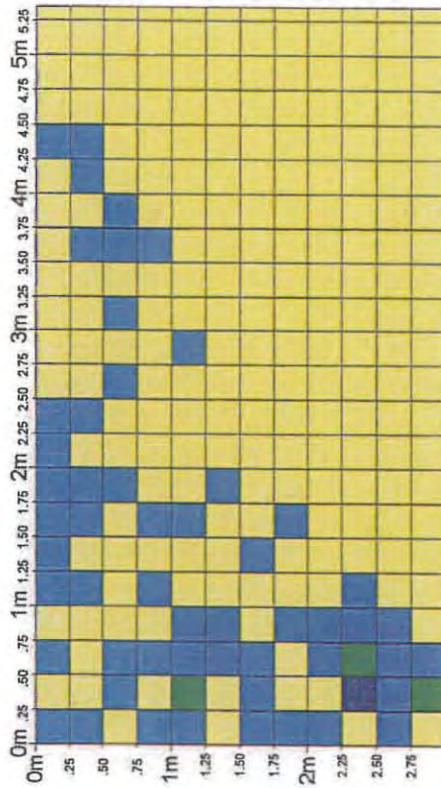
North

Operator: RON BURTON
 November 24, 2003

AITEC INC.

PLATEMAP.

Plate 17:4

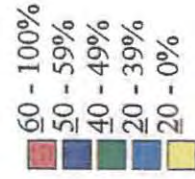


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



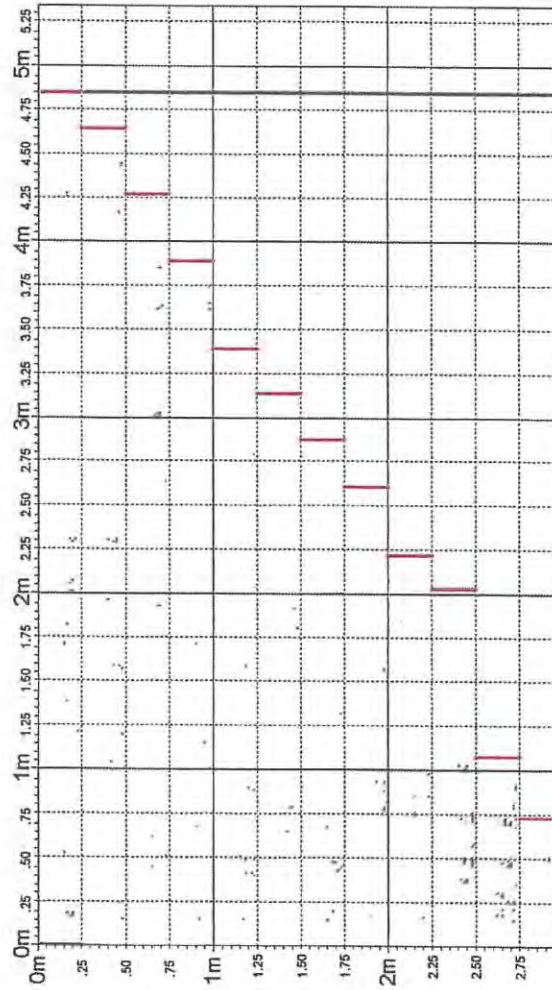
Operator: RON BURTON
 November 24, 2003

North

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 17:4)



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

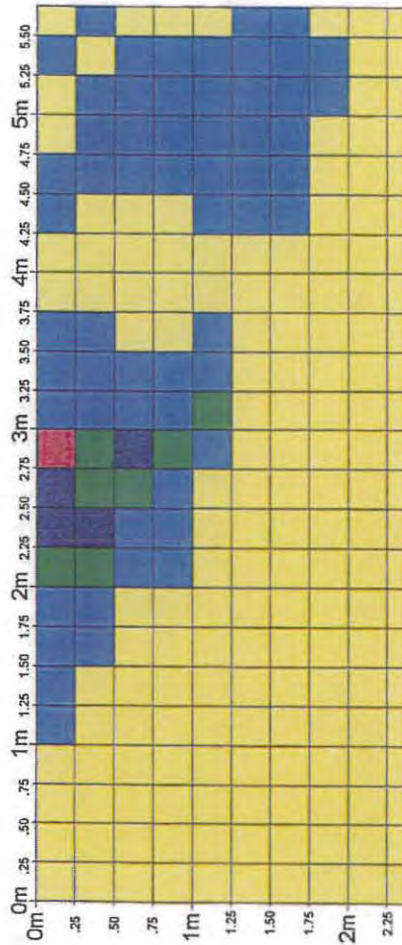
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 18:1

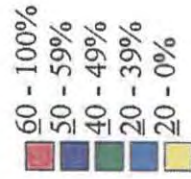


* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3



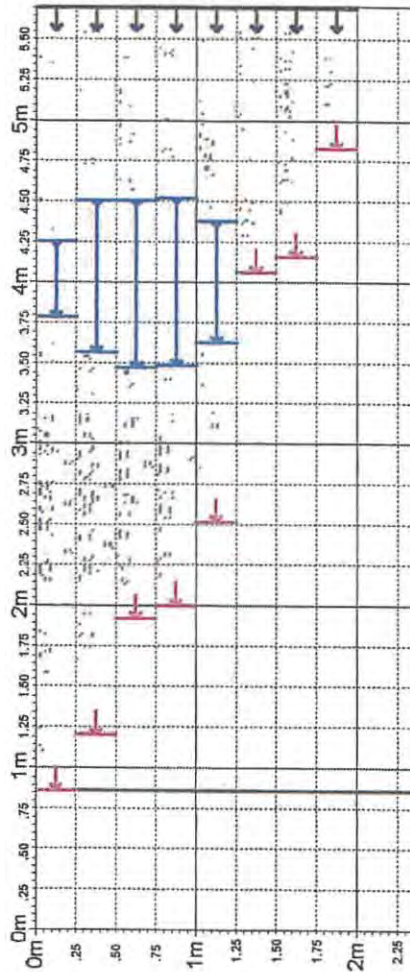
North

Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 10 (Plate 18:1)



* TANK DATUM.

Client: NF Hydro
 Location: Holyrood
 Tank ID: TANK 3

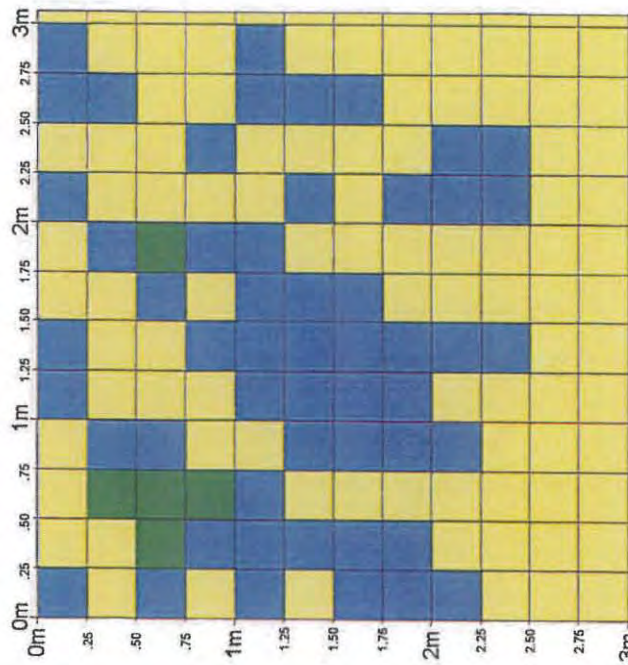
Operator: RON BURTON
 November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 18:2



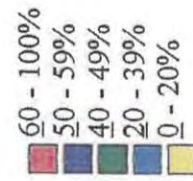
* TANK DATUM.

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

North

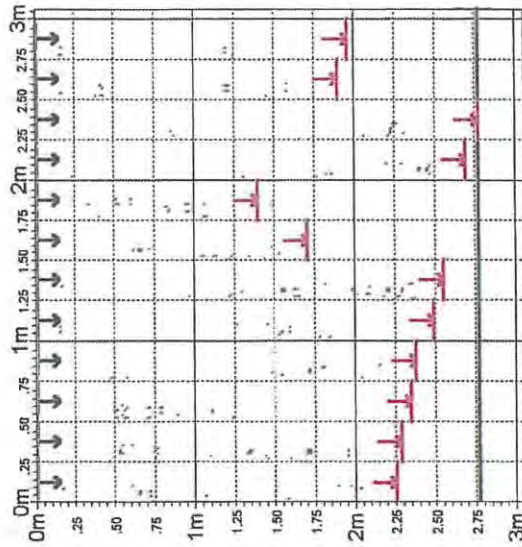


Operator: RON BURTON
November 24, 2003

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 18:2)



North

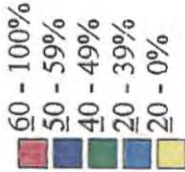
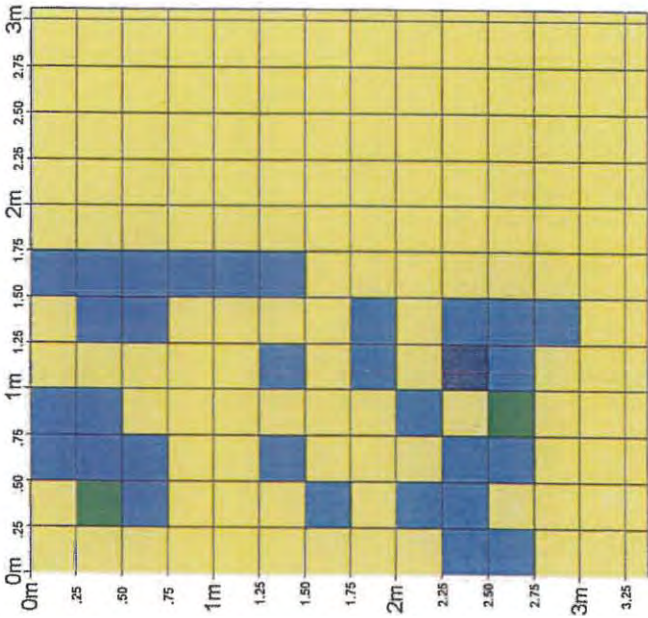
Operator: RON BURTON
November 24, 2003

* TANK DATUM.
Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 18:3



North

Operator: RON BURTON
November 24, 2003

* TANK DATUM.

Client: NF Hydro

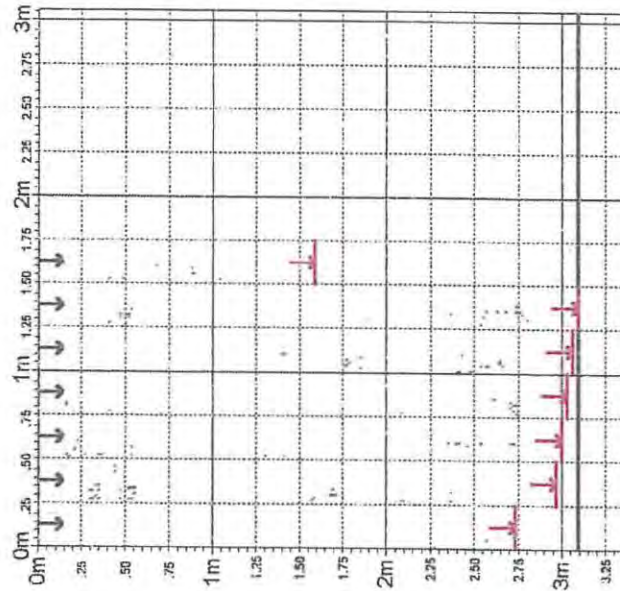
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 18:3)



Operator: RON BURTON
 November 24, 2003

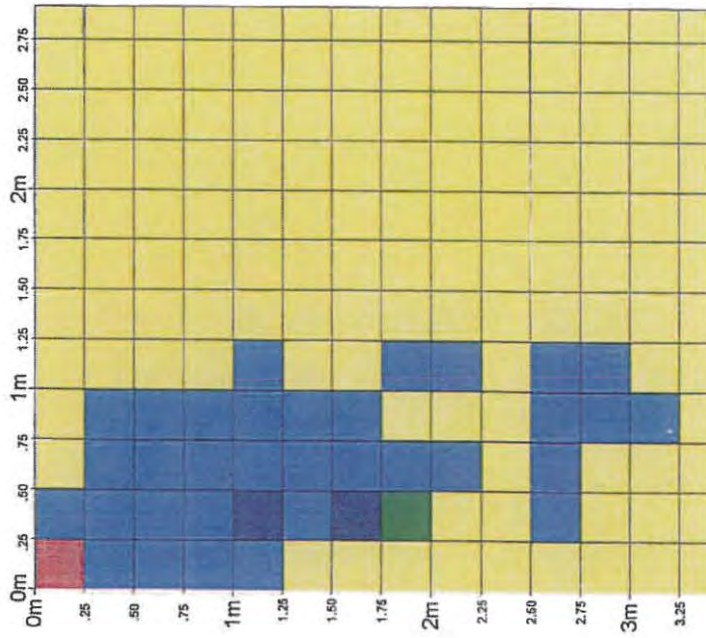
North

* TANK DATUM.
 Client: NF Hydro
 Location: Holyrood
 Tank ID: TANK 3

AITEC INC.

PLATEMAP.

Plate 18:4



*** TANK DATUM.**

Client: NF Hydro

Location: Holyrood

Tank ID: TANK 3

60 - 100%
50 - 59%
40 - 49%
20 - 39%
20 - 0%

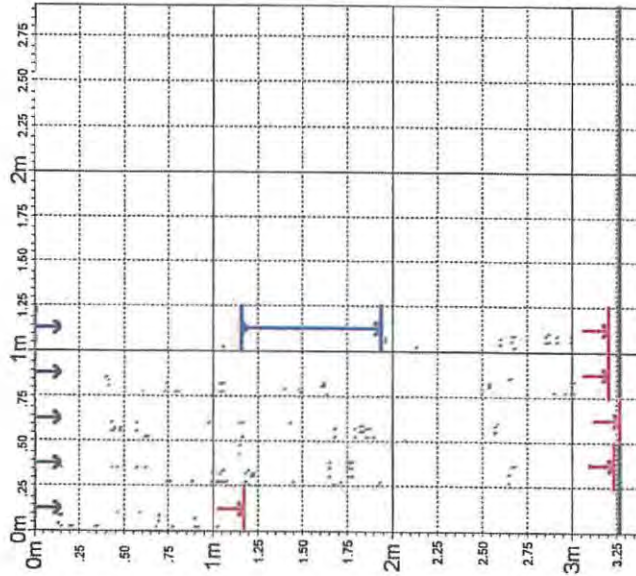
Operator: RON BURTON
November 24, 2003

North

AITEC INC.

TRACKMAP.

Tracks 1 - 12 (Plate 18:4)



* TANK DATUM.

Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

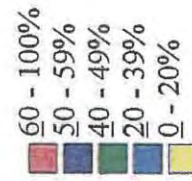
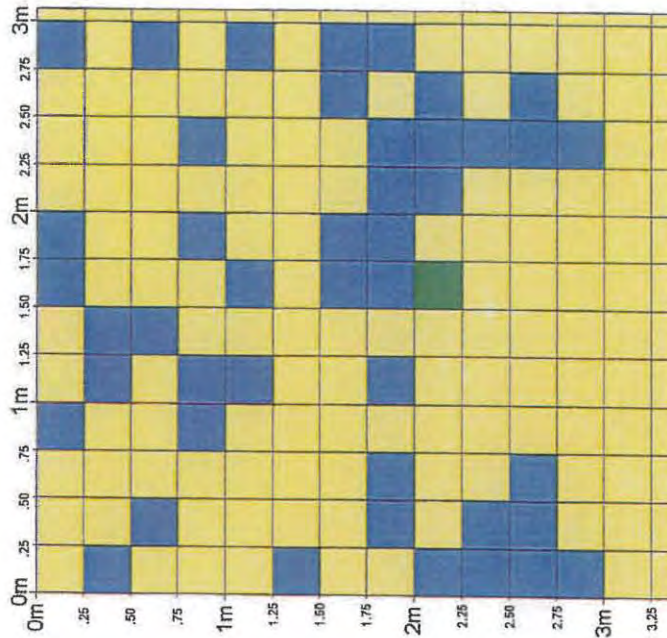
Operator: RON BURTON
November 24, 2003

North

AITEC INC.

PLATEMAP.

Plate 18:5



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.

Client: NF Hydro

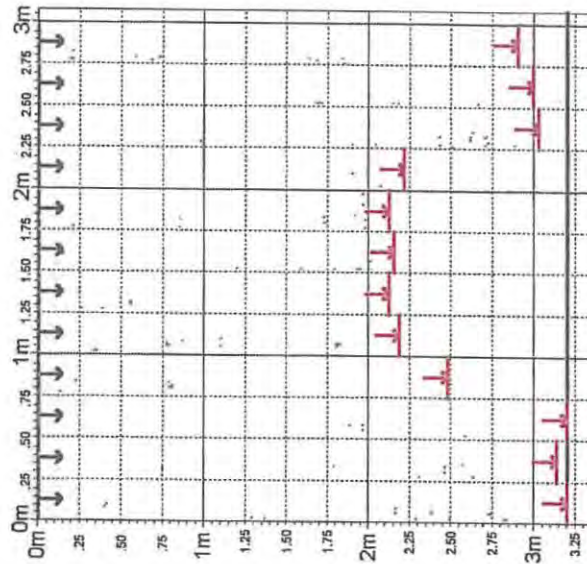
Location: Holyrood

Tank ID: TANK 3

AITEC INC.

TRACKMAP.

Tracks 1 - 13 (Plate 18:5)



Operator: RON BURTON
November 24, 2003

North

* TANK DATUM.
Client: NF Hydro
Location: Holyrood
Tank ID: TANK 3

APPENDIX "C"



Appendix C

Floormap Calibration Procedure

The Floormap system was calibrated using a carbon steel calibration plate that contains four simulated corrosion pits as follows:

- 1) A 136-degree stepped conical pit penetrating 20% through the plate thickness from the bottom surface.
- 2) A 136-degree stepped conical pit penetrating 40% through the plate thickness from the bottom surface.
- 3) A 136-degree stepped conical pit penetrating 60% through the plate thickness from the bottom surface.
- 4) A 136-degree stepped conical pit penetrating 80% through the plate thickness from the bottom surface.

The floor map systems record all indications and quantify them in relation to the calibration data.

Note: Due to the presents of an epoxy coating on the floor which was approximately 0.030", a layer of plastic, which measured approximately 0.032" thick was laid over the calibration plate to simulate the epoxy coating, and the floor scanner was calibrated to this procedure.

APPENDIX "D"

**FLOOR SETTLEMENT
SURVEY REPORT**

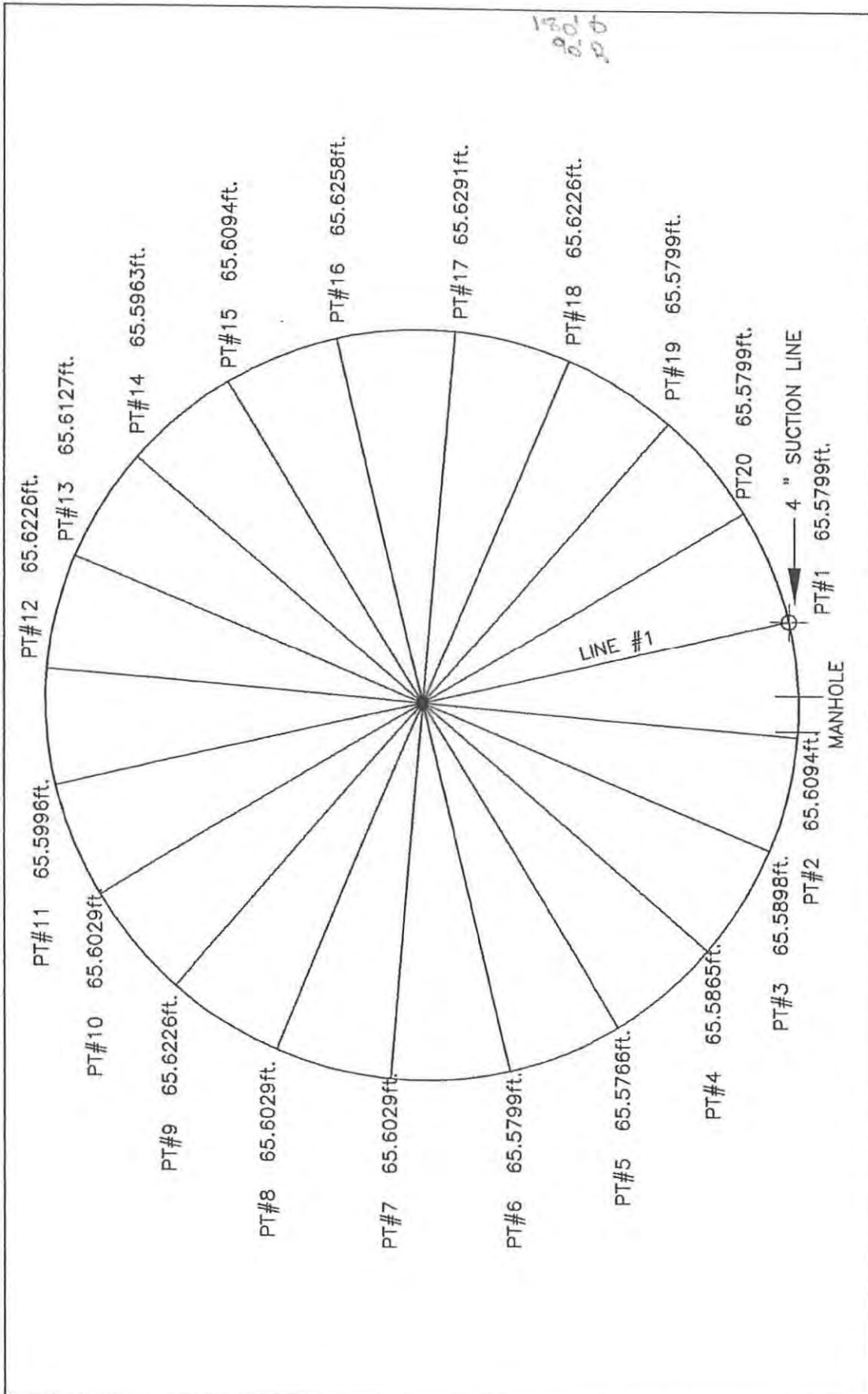
**TANK # 3 HOLYROOD
GENERATING STATION**

SURVEY CONSULTANT:

SGE Acres Limited
45 Marine Drive
Clareville, NL
A5A 1M5

SGE Acres Project Number: P15035.00

TANK 3 - RIGID BAND SETTLEMENT	
Point #	Elevation (ft.)
1	65.5799
2	65.6094
3	65.5898
4	65.5865
5	65.5766
6	65.5799
7	65.6029
8	65.6029
9	65.6226
10	65.6029
11	65.5996
12	65.6226
13	65.6127
14	65.5963
15	65.6094
16	65.6258
17	65.6291
18	65.6226
19	65.5799
20	65.5799
NOTE: ALL ELEVATIONS ARE ASSUMED AND ARE INDEPENDENT OF ANY CONTROL ELEVATION WITHIN THE GENERATING STATION. POINT NUMBER ONE IS LOCATED ON THE RIGID BAND AT THE CENTER OF THE FOUR INCH SUCTION LINE ON THE NORTH SIDE OF THE TANK, NEXT TO THE VALVE BUILDING.	



 SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY	P. HOLLOWAY
	DRAWING TITLE	TANK 3 RIGID BAND CHECK POINTS		APP. BY	
DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.	1
				SCALE	N.T.S

TANK 3 FLOOR ELEVATIONS

	ELEVATION (ft.)		ELEVATION (ft.)	
LINE #1		LINE #2		
POINT 1.00	65.5471	POINT 2.00	65.5504	
1.01	65.5012	2.01	65.4585	
1.02	65.5176	2.02	65.3732	
1.03	65.5012	2.03	65.3535	
1.04	65.5110	2.04	65.3765	
1.05	65.5143	2.05	65.4323	
1.06	65.5340	2.06	65.4651	
1.07	65.5307	2.07	65.5077	
1.08	65.5963	2.08	65.5438	
1.09	65.6390	2.09	65.5668	
1.10	65.6750	2.10	65.5733	
1.11	65.7866	2.11	65.7078	
1.12	65.7407	2.12	65.7177	
1.13	65.8850	2.13	65.7964	
1.14	65.9769	2.14	65.9506	
1.15	66.0261	2.15	65.9703	
1.16	66.0720	2.16	66.1048	
1.17	66.1540	2.17	66.1409	
1.18	66.2361	2.18	66.2361	
	ELEVATION (ft.)		ELEVATION (ft.)	
LINE #3		LINE #4		
POINT 3.00	65.5241	POINT 4.00	65.5504	
3.01	65.5143	4.01	65.5176	
3.02	65.4421	4.02	65.5143	
3.03	65.4651	4.03	65.5044	
3.04	65.4979	4.04	65.4979	
3.05	65.5044	4.05	65.5143	
3.06	65.5438	4.06	65.5176	
3.07	65.6127	4.07	65.5832	
3.08	65.6652	4.08	65.5733	
3.09	65.6685	4.09	65.5668	
3.10	65.6619	4.10	65.5635	
3.11	65.6357	4.11	65.6324	
3.12	65.7407	4.12	65.7439	
3.13	65.9047	4.13	65.8260	
3.14	65.8850	4.14	65.8752	
3.15	66.0031	4.15	66.0392	
3.16	66.0687	4.16	66.1672	
3.17	66.1475	4.17	66.1737	
3.18	66.2361	4.18	66.2361	

5 ft. intervals

TANK 3 FLOOR ELEVATIONS

	ELEVATION (ft.)			ELEVATION (ft.)	
LINE #5			LINE #6		
POINT 5.00	65.5504		POINT 6.00	65.5537	
5.01	65.5176		6.01	65.5143	
5.02	65.4651		6.02	65.5012	
5.03	65.4716		6.03	65.5044	
5.04	65.5077		6.04	65.5110	
5.05	65.5143		6.05	65.5077	
5.06	65.5340		6.06	65.5241	
5.07	65.5504		6.07	65.5766	
5.08	65.5701		6.08	65.6029	
5.09	65.5996		6.09	65.6127	
5.10	65.6061		6.10	65.5897	
5.11	65.6554		6.11	65.6357	
5.12	65.7308		6.12	65.7538	
5.13	65.8916		6.13	65.7964	
5.14	65.9572		6.14	65.9277	
5.15	66.0491		6.15	65.9605	
5.16	66.1475		6.16	66.0556	
5.17	66.1737		6.17	66.1934	
5.18	66.2361		6.18	66.2361	
	ELEVATION (ft.)			ELEVATION (ft.)	
LINE #7			LINE #8		
POINT 7.00	65.5438		POINT 8.00	65.5635	
7.01	65.5241		8.01	65.5241	
7.02	65.4585		8.02	65.5176	
7.03	65.4815		8.03	65.5077	
7.04	65.4651		8.04	65.5143	
7.05	65.4618		8.05	65.4979	
7.06	65.5143		8.06	65.5044	
7.07	65.5340		8.07	65.5143	
7.08	65.5471		8.08	65.5241	
7.09	65.5569		8.09	65.5438	
7.10	65.5471		8.10	65.5372	
7.11	65.6029		8.11	65.6718	
7.12	65.7078		8.12	65.7866	
7.13	65.8719		8.13	65.8653	
7.14	65.9277		8.14	65.9113	
7.15	65.9933		8.15	65.9736	
7.16	66.0589		8.16	66.0950	
7.17	66.1803		8.17	66.1704	
7.18	66.2361		8.18	66.2361	

TANK 3 FLOOR ELEVATIONS

	ELEVATION (ft.)			ELEVATION (ft.)	
LINE #9			LINE #10		
POINT 9.00	65.5668		POINT 10.00	65.5635	
9.01	65.4684		10.01	65.3798	
9.02	65.4060		10.02	65.3142	
9.03	65.4027		10.03	65.3207	
9.04	65.4979		10.04	65.3502	
9.05	65.5110		10.05	65.4585	
9.06	65.5733		10.06	65.5438	
9.07	65.6291		10.07	65.5832	
9.08	65.6652		10.08	65.6029	
9.09	65.7046		10.09	65.5996	
9.10	65.7243		10.10	65.5766	
9.11	65.7308		10.11	65.6882	
9.12	65.7144		10.12	65.7439	
9.13	65.8620		10.13	65.8292	
9.14	65.9638		10.14	65.8981	
9.15	66.0228		10.15	66.0425	
9.16	66.0917		10.16	66.0687	
9.17	66.1737		10.17	66.1737	
9.18	66.2361		10.18	66.2361	
	ELEVATION (ft.)			ELEVATION (ft.)	
LINE #11			LINE #12		
POINT 11.00	65.5635		POINT 12.00	65.5832	
11.01	65.4519		12.01	65.4257	
11.02	65.4159		12.02	65.3830	
11.03	65.4159		12.03	65.3371	
11.04	65.4519		12.04	65.3437	
11.05	65.4684		12.05	65.3699	
11.06	65.5110		12.06	65.3863	
11.07	65.5635		12.07	65.4421	
11.08	65.5799		12.08	65.4979	
11.09	65.5799		12.09	65.5340	
11.10	65.6127		12.10	65.5668	
11.11	65.6324		12.11	65.6554	
11.12	65.7538		12.12	65.6783	
11.13	65.8292		12.13	65.7800	
11.14	65.9441		12.14	65.8522	
11.15	65.9605		12.15	65.9277	
11.16	66.0950		12.16	66.0884	
11.17	66.1901		12.17	66.1901	
11.18	66.2361		12.18	66.2361	

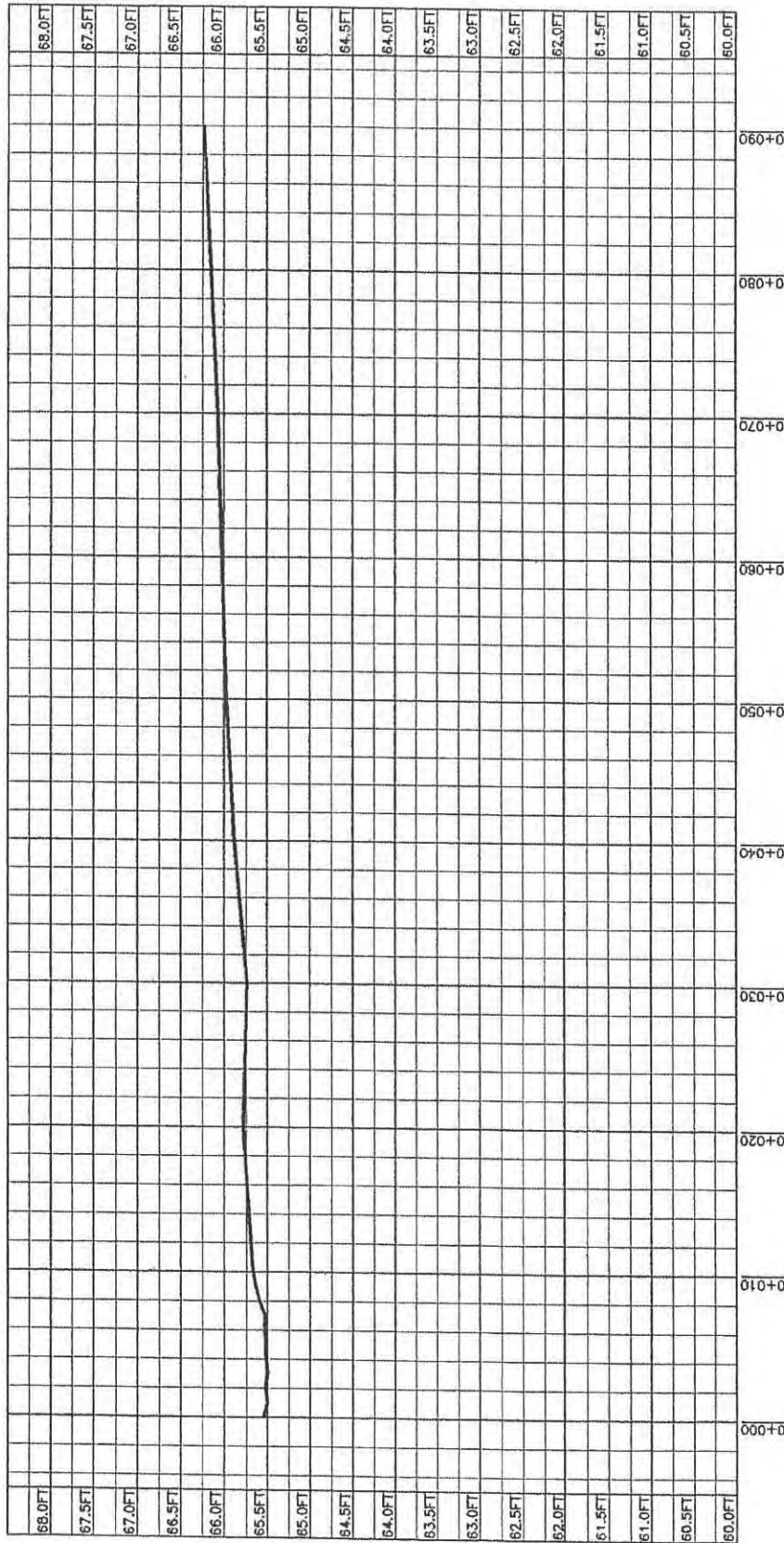
TANK 3 FLOOR ELEVATIONS

	ELEVATION (ft.)			ELEVATION (ft.)	
LINE #13			LINE #14		
POINT 13.00	65.5766		POINT 14.00	65.5701	
13.01	65.4651		14.01	65.4454	
13.02	65.3863		14.02	65.3404	
13.03	65.3732		14.03	65.3404	
13.04	65.4027		14.04	65.3404	
13.05	65.4487		14.05	65.3470	
13.06	65.5077		14.06	65.3798	
13.07	65.5537		14.07	65.4388	
13.08	65.5897		14.08	65.5077	
13.09	65.6029		14.09	65.5668	
13.10	65.6061		14.10	65.5996	
13.11	65.6455		14.11	65.6980	
13.12	65.7636		14.12	65.7767	
13.13	65.8292		14.13	65.8260	
13.14	65.8981		14.14	65.9080	
13.15	65.9605		14.15	65.9736	
13.16	66.0917		14.16	66.0589	
13.17	66.1737		14.17	66.1311	
13.18	66.2361		14.18	66.2361	
	ELEVATION (ft.)			ELEVATION (ft.)	
LINE #15			LINE #16		
POINT 15.00	65.5504		POINT 16.00	65.5569	
15.01	65.3830		16.01	65.3929	
15.02	65.2748		16.02	65.3338	
15.03	65.2551		16.03	65.2715	
15.04	65.2682		16.04	65.2682	
15.05	65.2879		16.05	65.3043	
15.06	65.3371		16.06	65.3765	
15.07	65.3798		16.07	65.4651	
15.08	65.4355		16.08	65.5799	
15.09	65.5044		16.09	65.6455	
15.10	65.5241		16.10	65.6750	
15.11	65.6324		16.11	65.6324	
15.12	65.7538		16.12	65.7111	
15.13	65.8752		16.13	65.8358	
15.14	65.9834		16.14	65.8949	
15.15	65.9736		16.15	66.0064	
15.16	66.0983		16.16	66.0589	
15.17	66.1606		16.17	66.1573	
15.18	66.2361		16.18	66.2361	

TANK 3 FLOOR ELEVATIONS

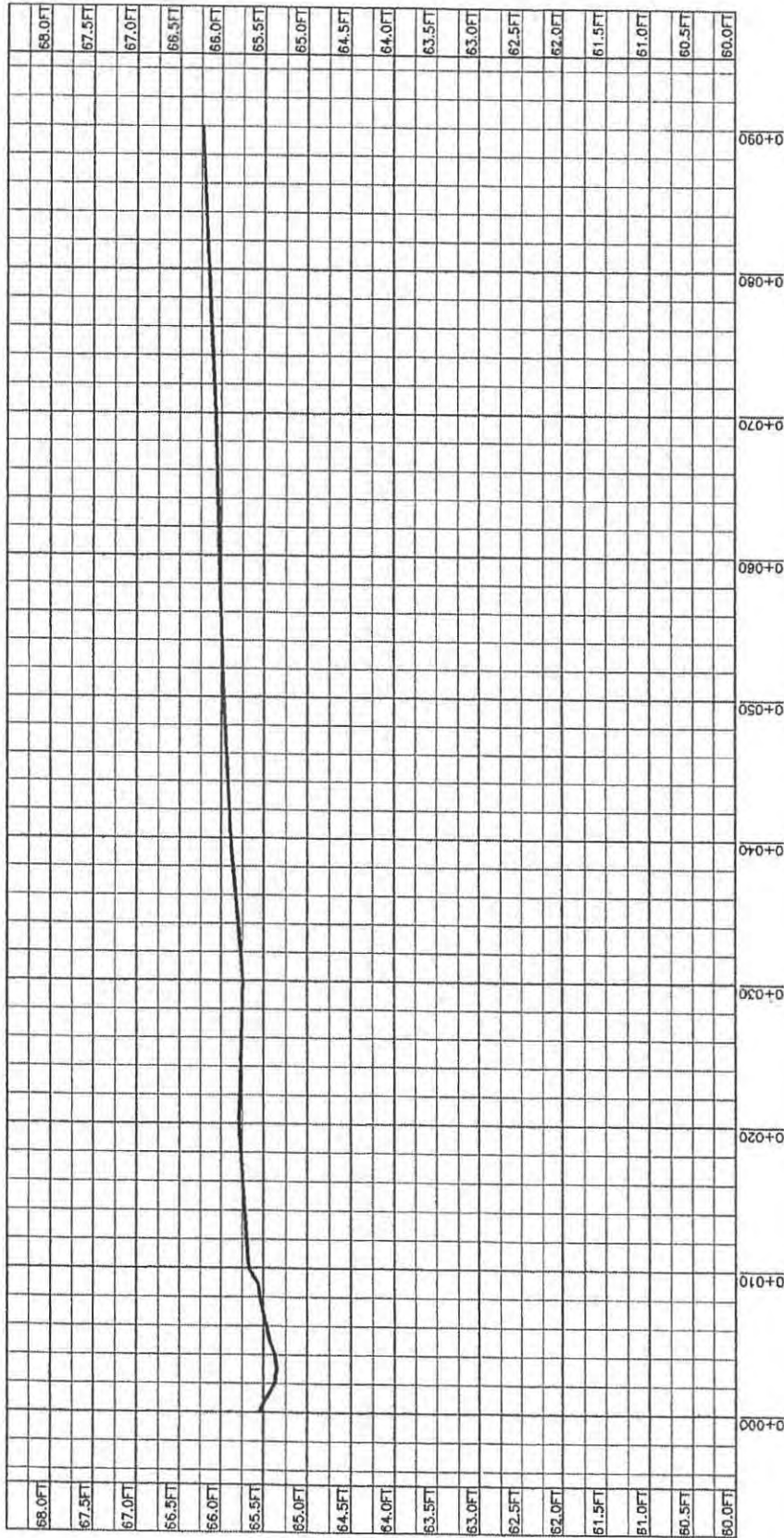
	ELEVATION (ft.)			ELEVATION (ft.)	
LINE #17			LINE #18		
POINT 17.00	65.5766		POINT 18.00	65.5766	
17.01	65.4815		18.01	65.4585	
17.02	65.4126		18.02	65.4487	
17.03	65.4487		18.03	65.4848	
17.04	65.4684		18.04	65.5110	
17.05	65.4913		18.05	65.5340	
17.06	65.5143		18.06	65.5569	
17.07	65.5635		18.07	65.5701	
17.08	65.5799		18.08	65.5832	
17.09	65.5832		18.09	65.5963	
17.10	65.6094		18.10	65.6422	
17.11	65.6357		18.11	65.6390	
17.12	65.7603		18.12	65.7669	
17.13	65.8620		18.13	65.8194	
17.14	65.9638		18.14	65.9375	
17.15	66.0162		18.15	66.0917	
17.16	66.1048		18.16	66.1212	
17.17	66.1540		18.17	66.1803	
17.18	66.2361		18.18	66.2361	
	ELEVATION (ft.)			ELEVATION (ft.)	
LINE #19			LINE #20		
POINT 19.00	65.5733		POINT 20.00	65.5766	
19.01	65.4487		20.01	65.5077	
19.02	65.3798		20.02	65.4979	
19.03	65.3830		20.03	65.5012	
19.04	65.4454		20.04	65.4979	
19.05	65.5044		20.05	65.5372	
19.06	65.5701		20.06	65.5569	
19.07	65.6094		20.07	65.5799	
19.08	65.6357		20.08	65.5996	
19.09	65.6455		20.09	65.5701	
19.10	65.6488		20.10	65.5897	
19.11	65.7407		20.11	65.6750	
19.12	65.8424		20.12	65.7931	
19.13	65.8292		20.13	65.8555	
19.14	65.9900		20.14	65.8916	
19.15	66.0359		20.15	65.9900	
19.16	66.0917		20.16	66.1015	
19.17	66.2197		20.17	66.1704	
19.18	66.2361		20.18	66.2361	

TANK 3 - LINE #1



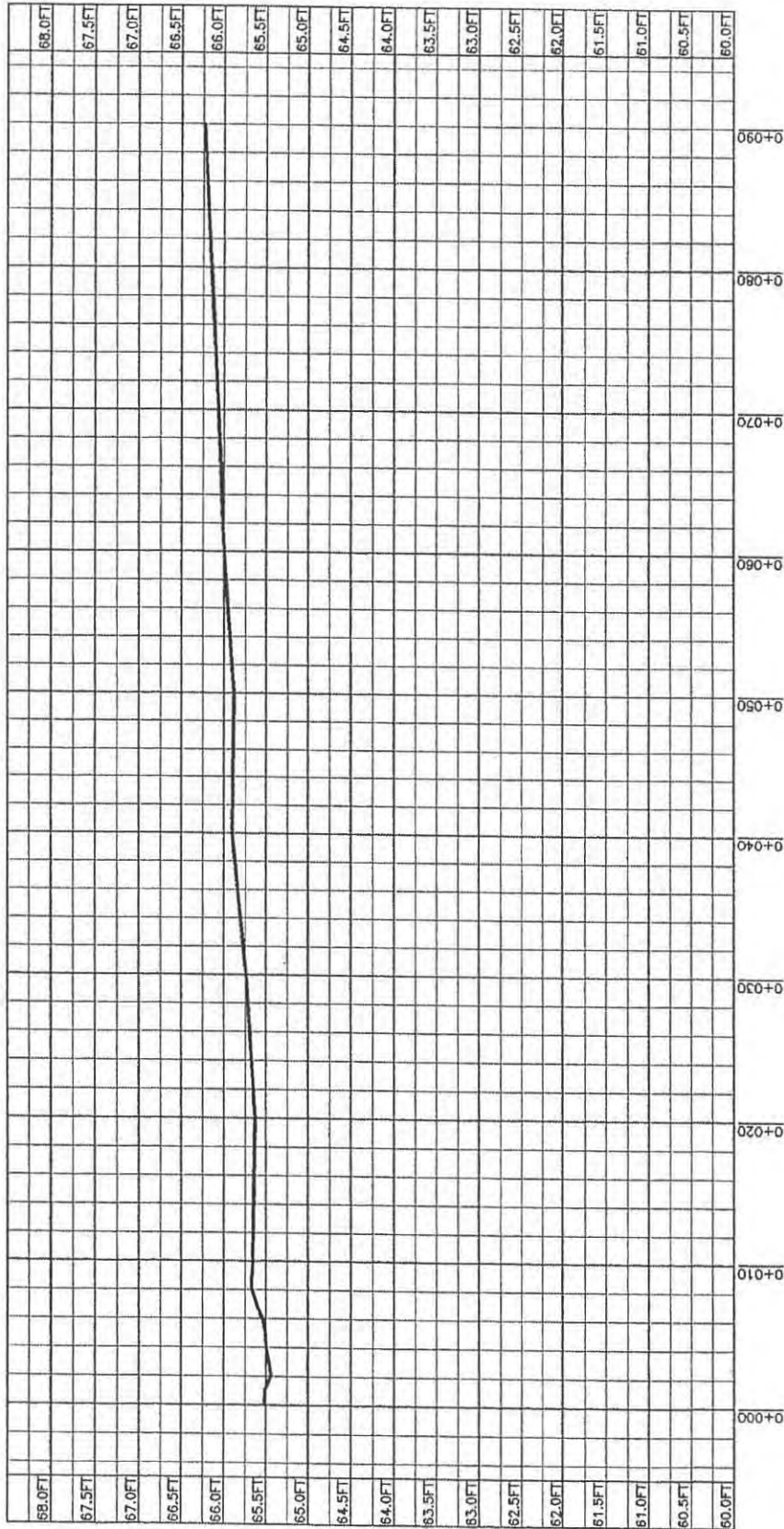
 SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY	P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
	DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.

TANK 3 - LINE #2



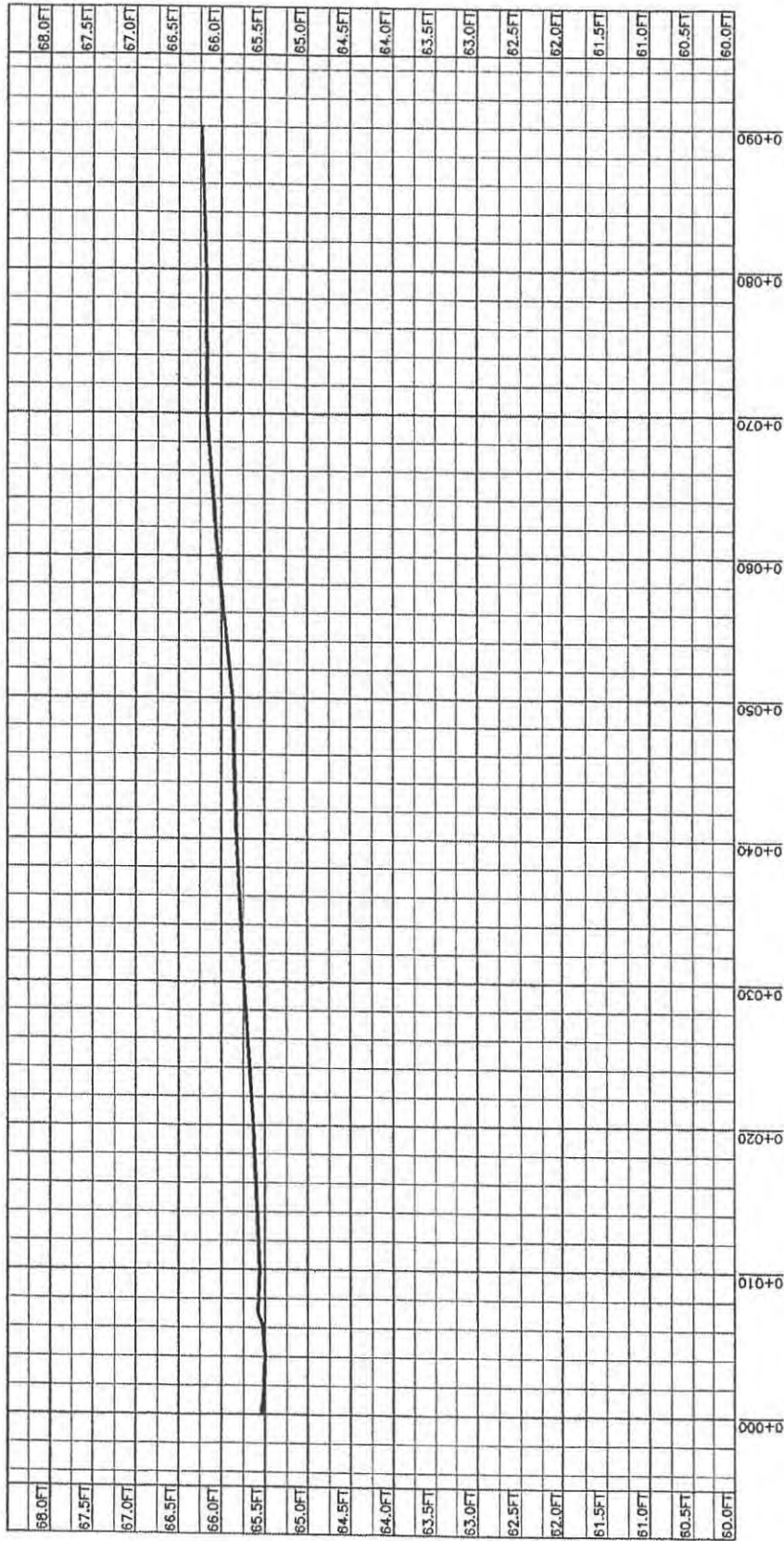
 SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT		SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY P. HOLLOWAY
	DRAWING TITLE		TANK 3 FLOOR SETTLEMENT		APP. BY
DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.	SCALE HOR.: 1" = 12' VER.: 1" = 2'

TANK 3 - LINE #3



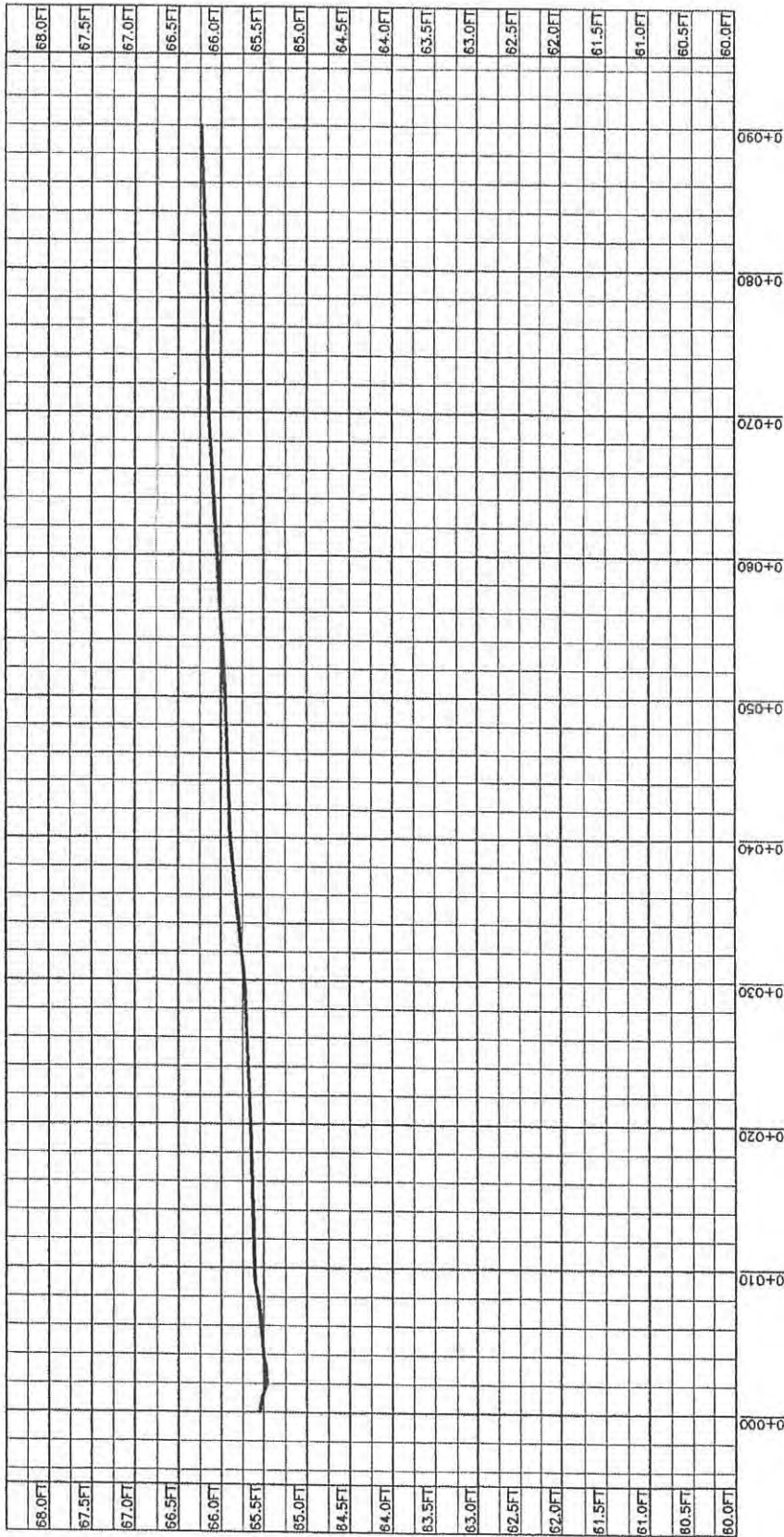
 SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY	P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.	SCALE HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #4



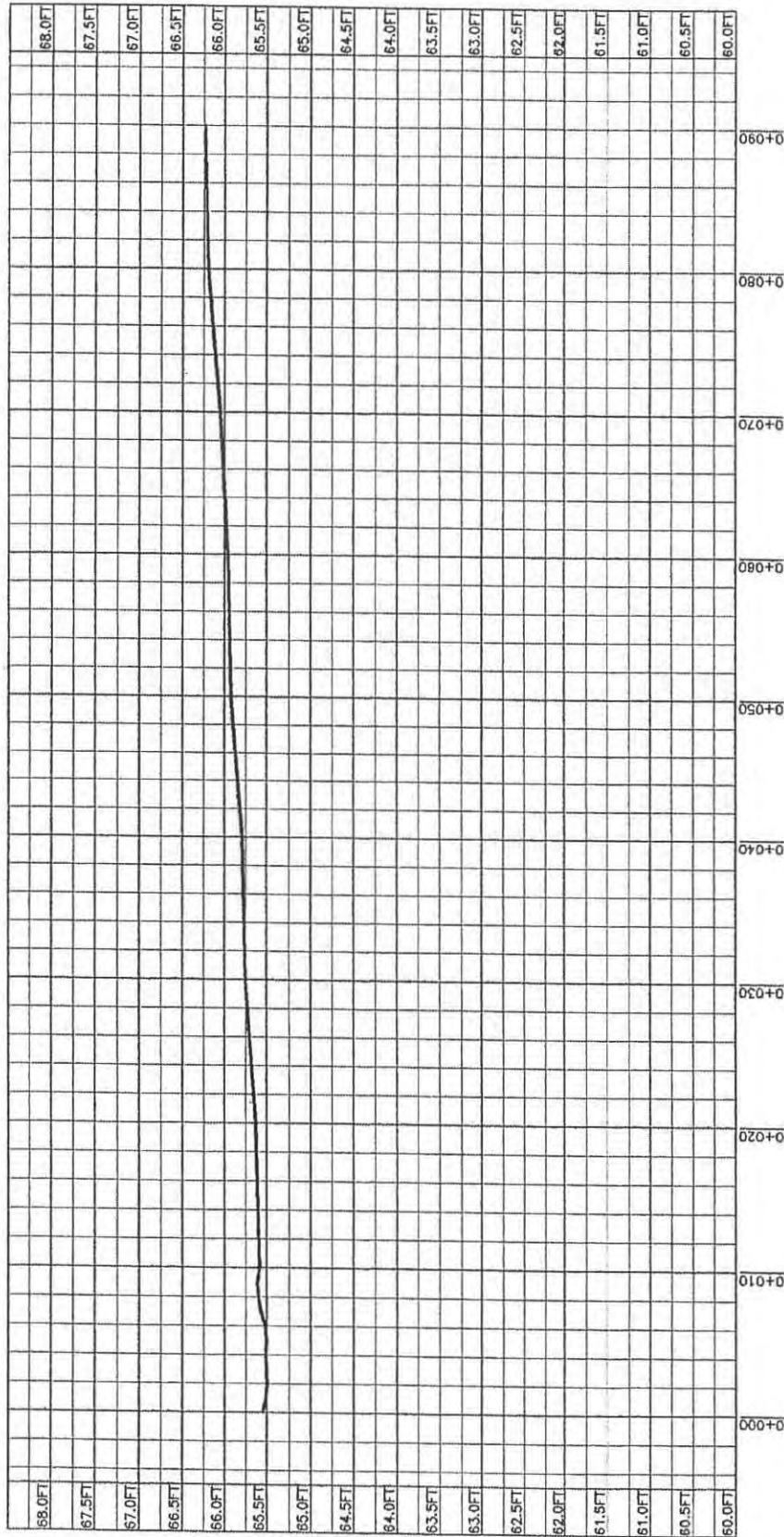
 SGE SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY
	DWG. NO. P15035.00	DATE NOV. 29, 2003	REV. NO. 	SCALE HOR.: 1" = 12' VER.: 1" = 2'

TANK 3 - LINE #5



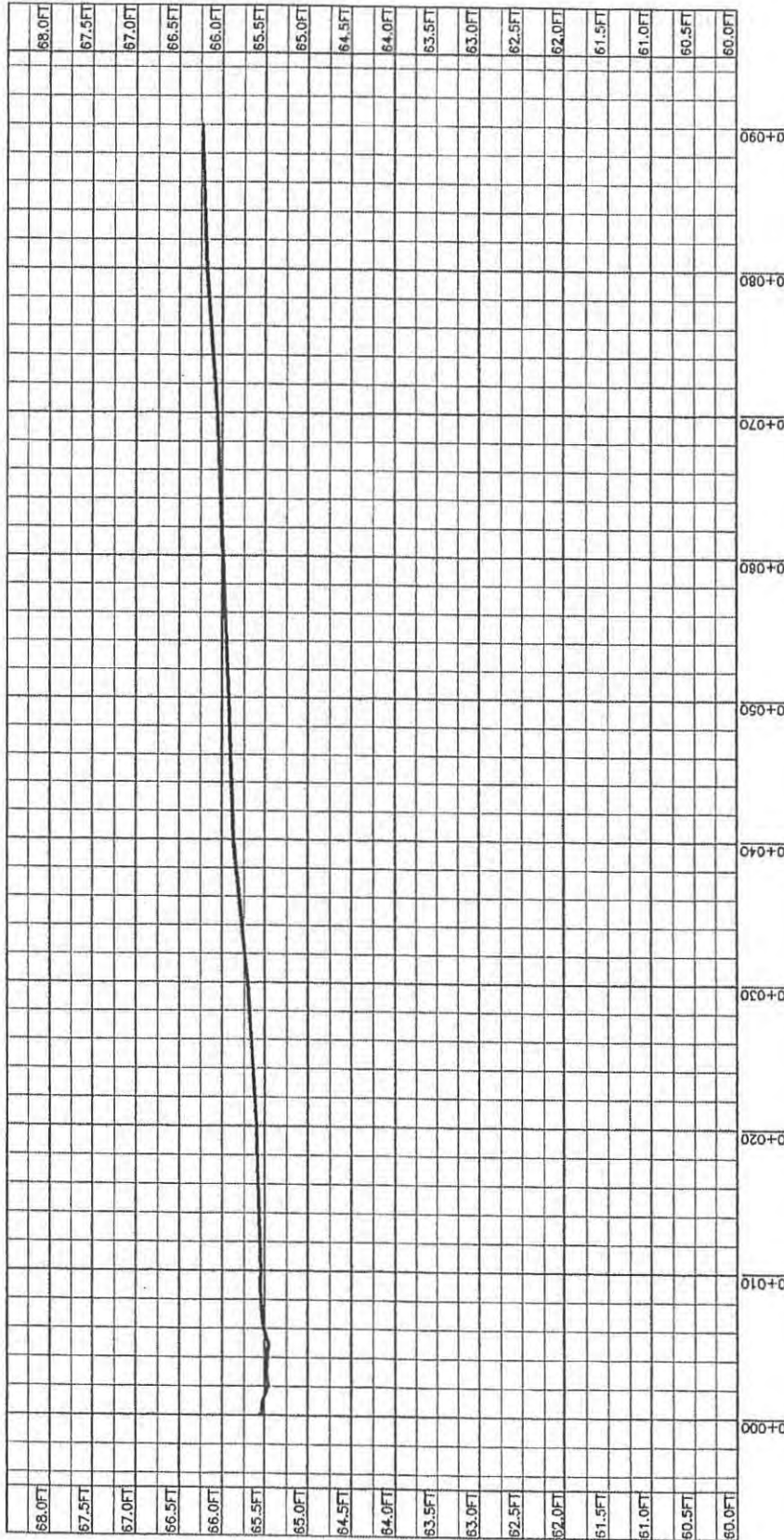
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	DRAWING TITLE		TANK 3 FLOOR SETTLEMENT			
	DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.	
			SCALE	HOR.: 1"=12' VER.: 1"=2'		

TANK 3 - LINE #6



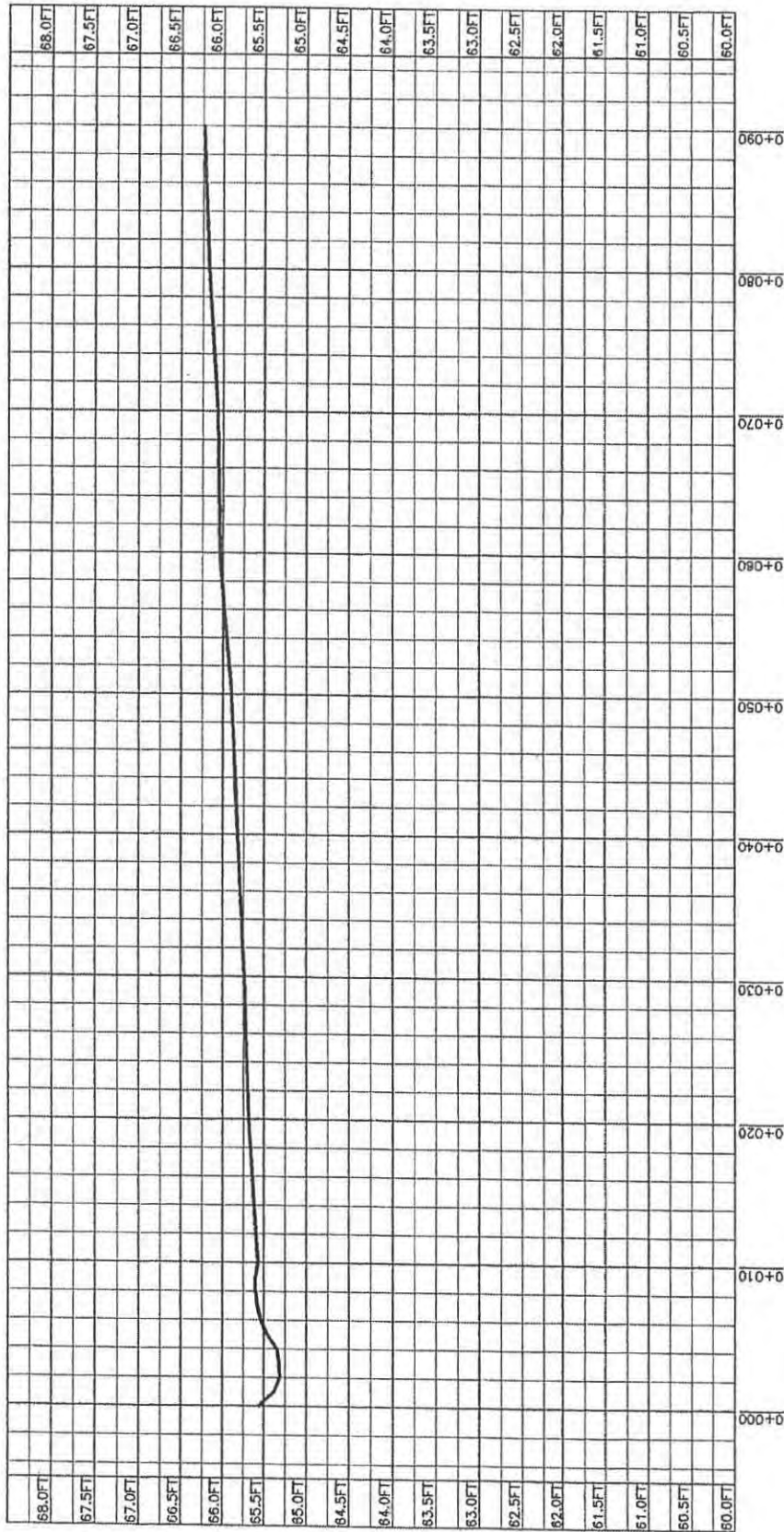
 SCE SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY
	DWG. NO.	DATE	REV. NO.	SCALE
	P15035.00	NOV. 29, 2003	8	HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #7



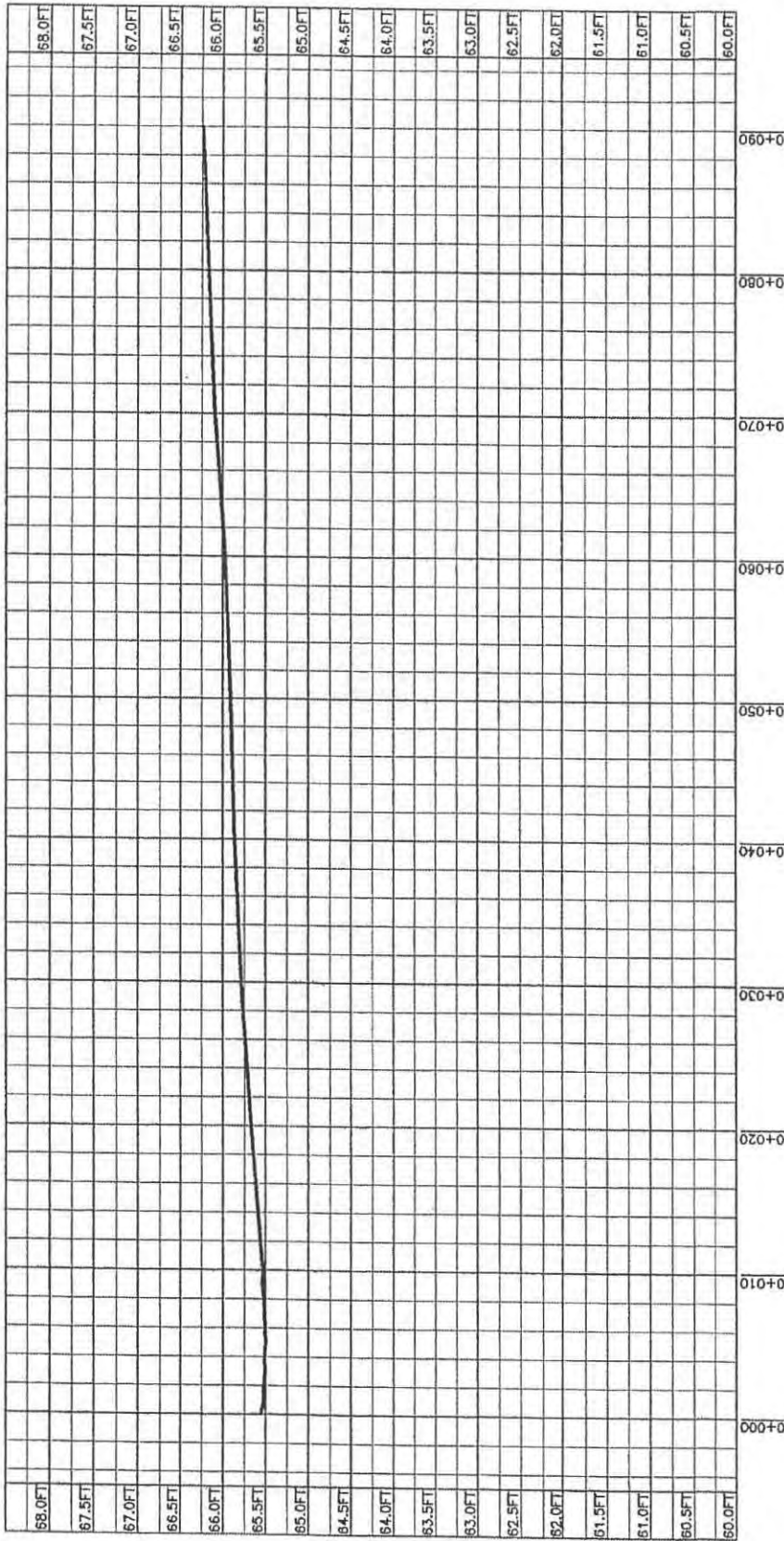
 SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY
	DWG. NO.	DATE	REV. NO.	SCALE
	P15035.00	NOV. 29, 2003	10	HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #10



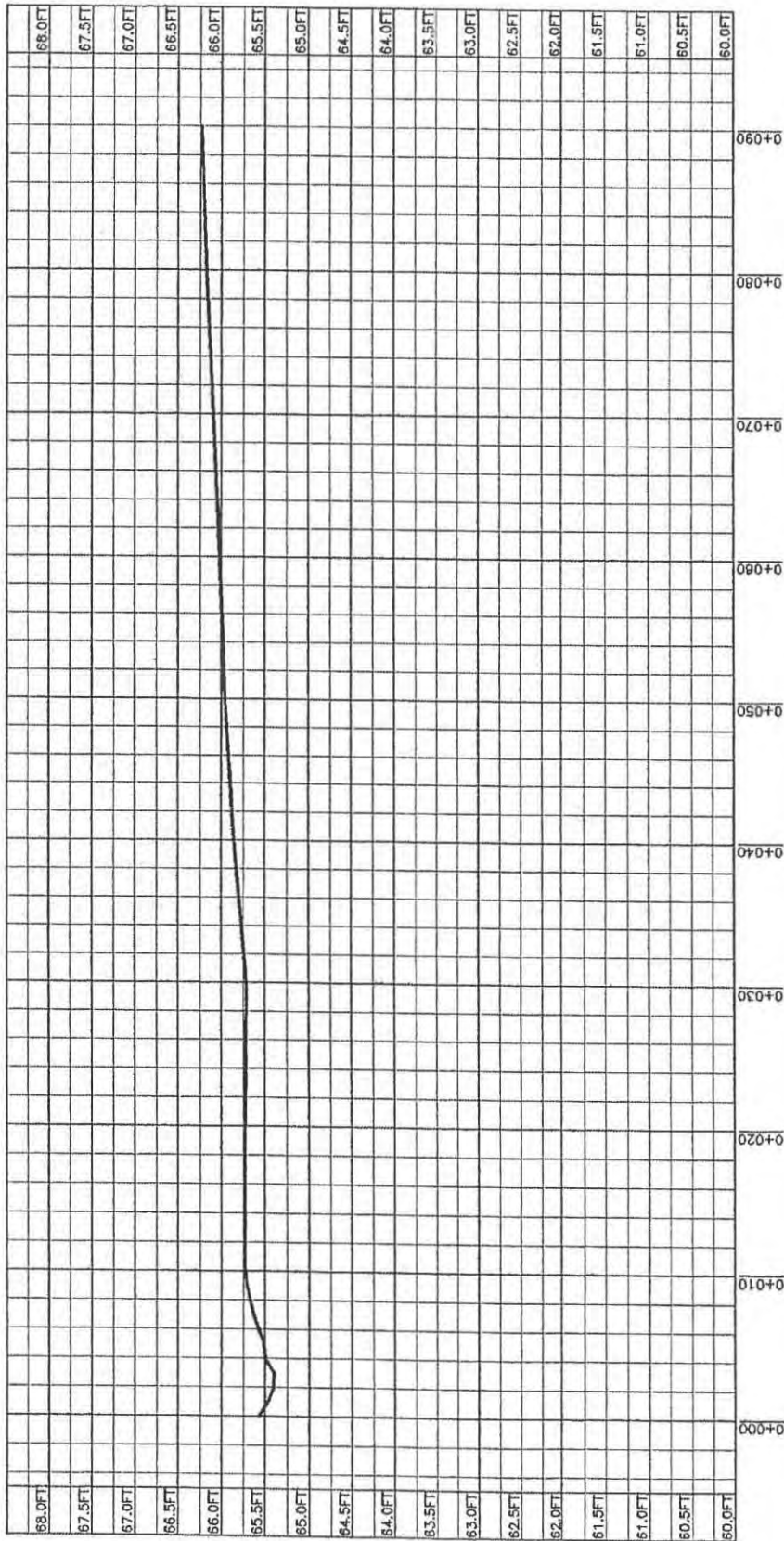
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	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT			APP. BY	
	DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.	10
		SCALE	HOR.: 1"=12'		VER.: 1"=2'	

TANK 3 - LINE #8



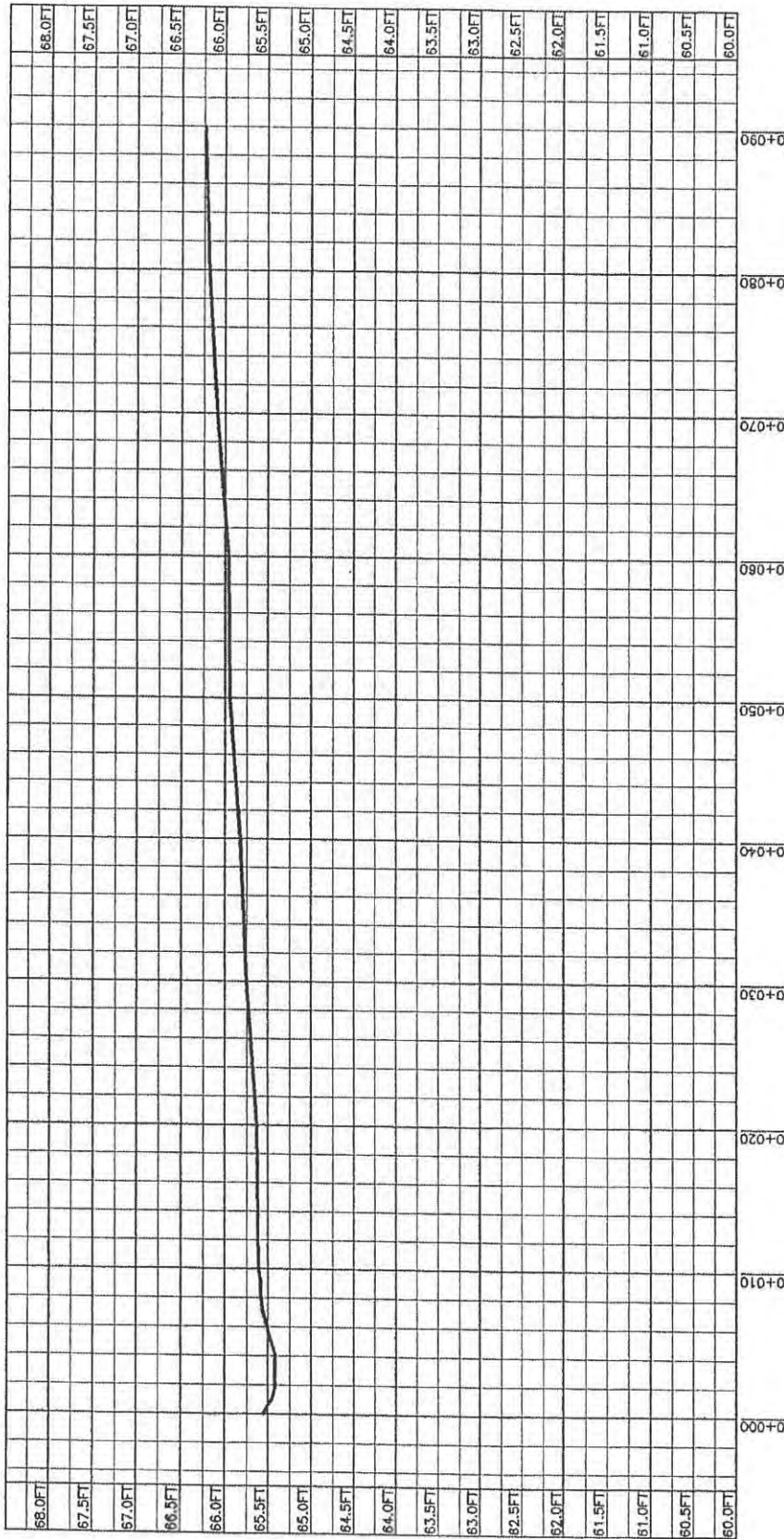
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	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY
	DWG. NO.	DATE	REV. NO.	SCALE
	P15035.00	NOV. 29, 2003	✓	HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #9



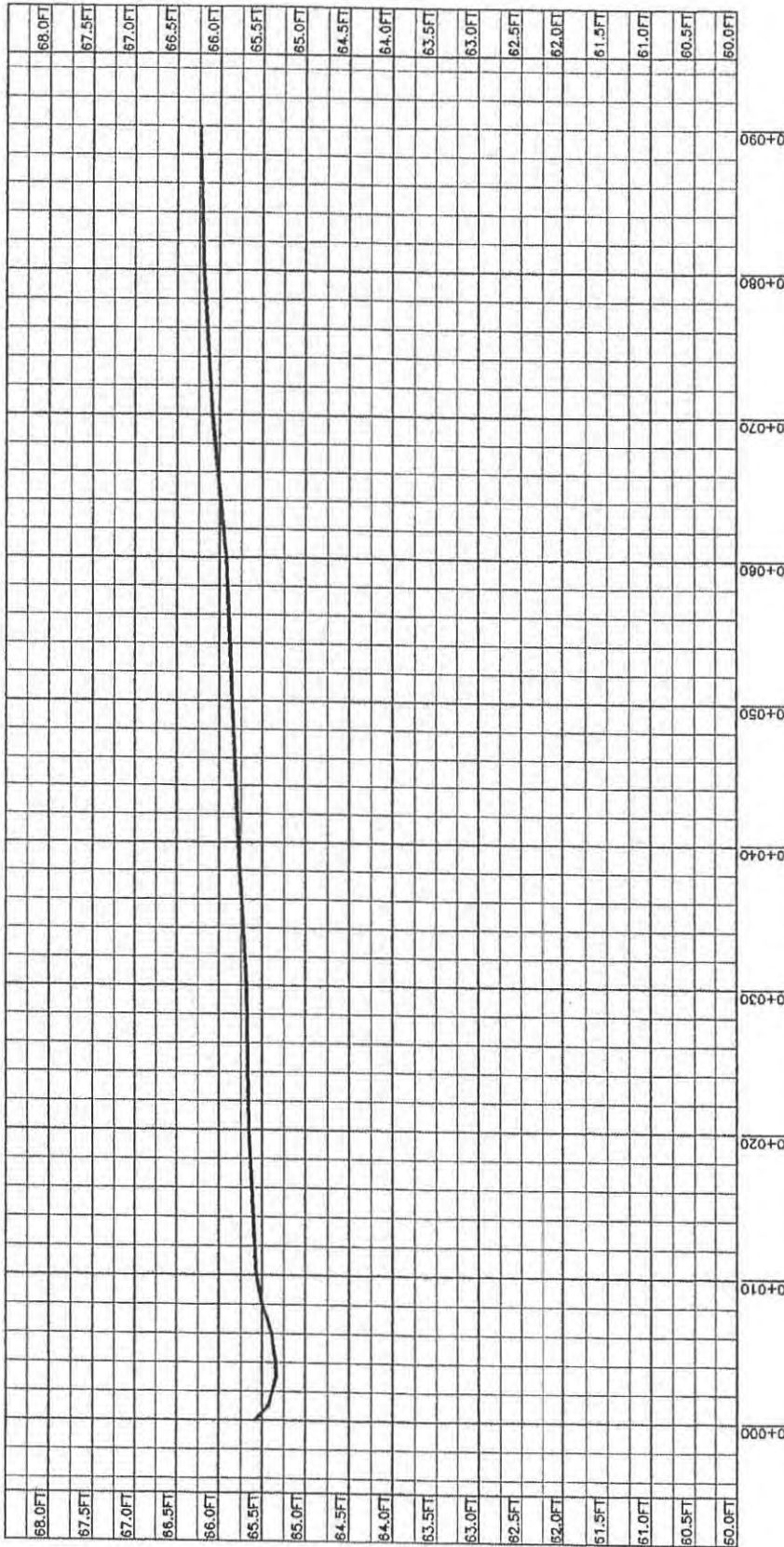
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	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
	DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.

TANK 3 - LINE #11



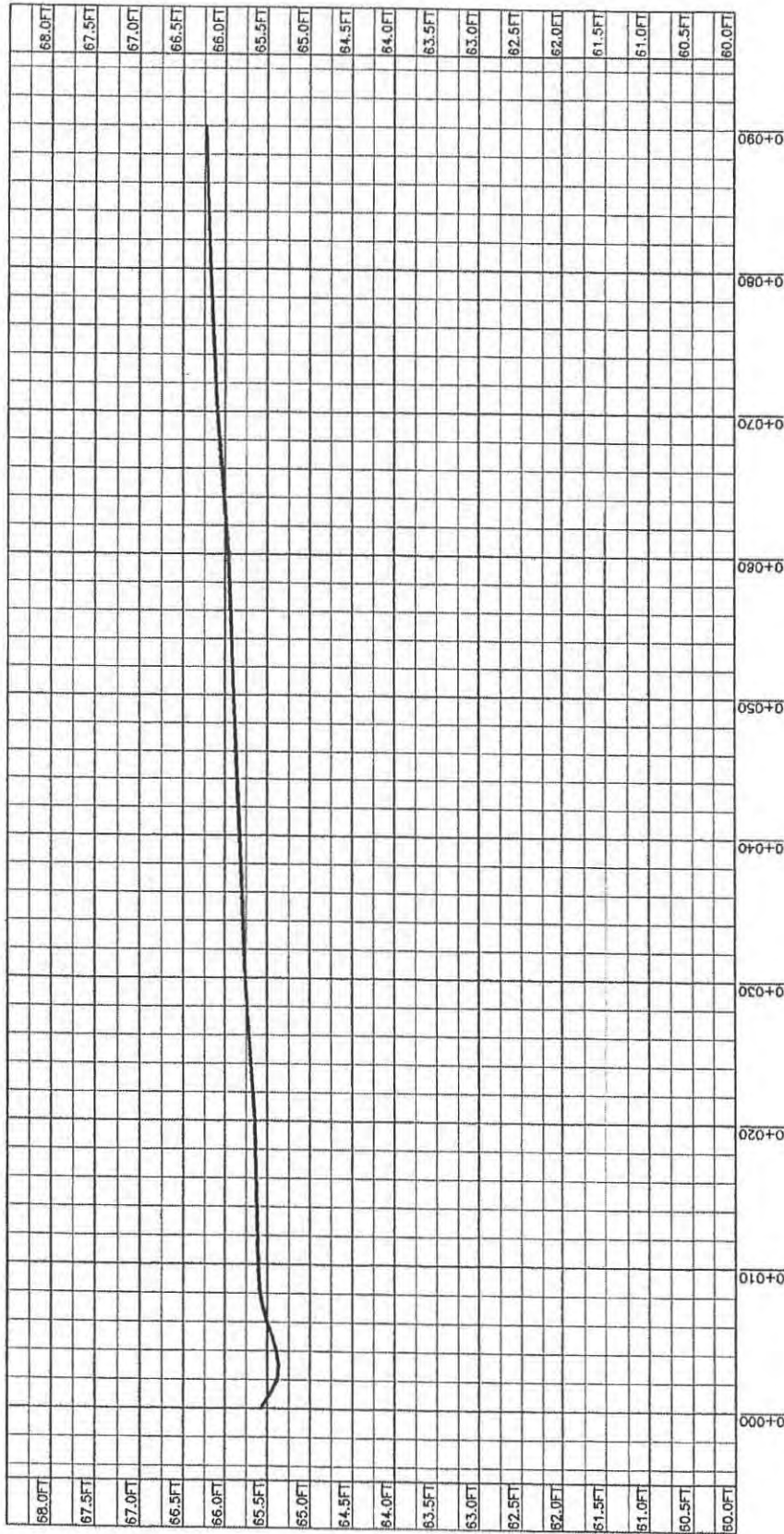
 SGE SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY	P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
	DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.
				SCALE	HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #12



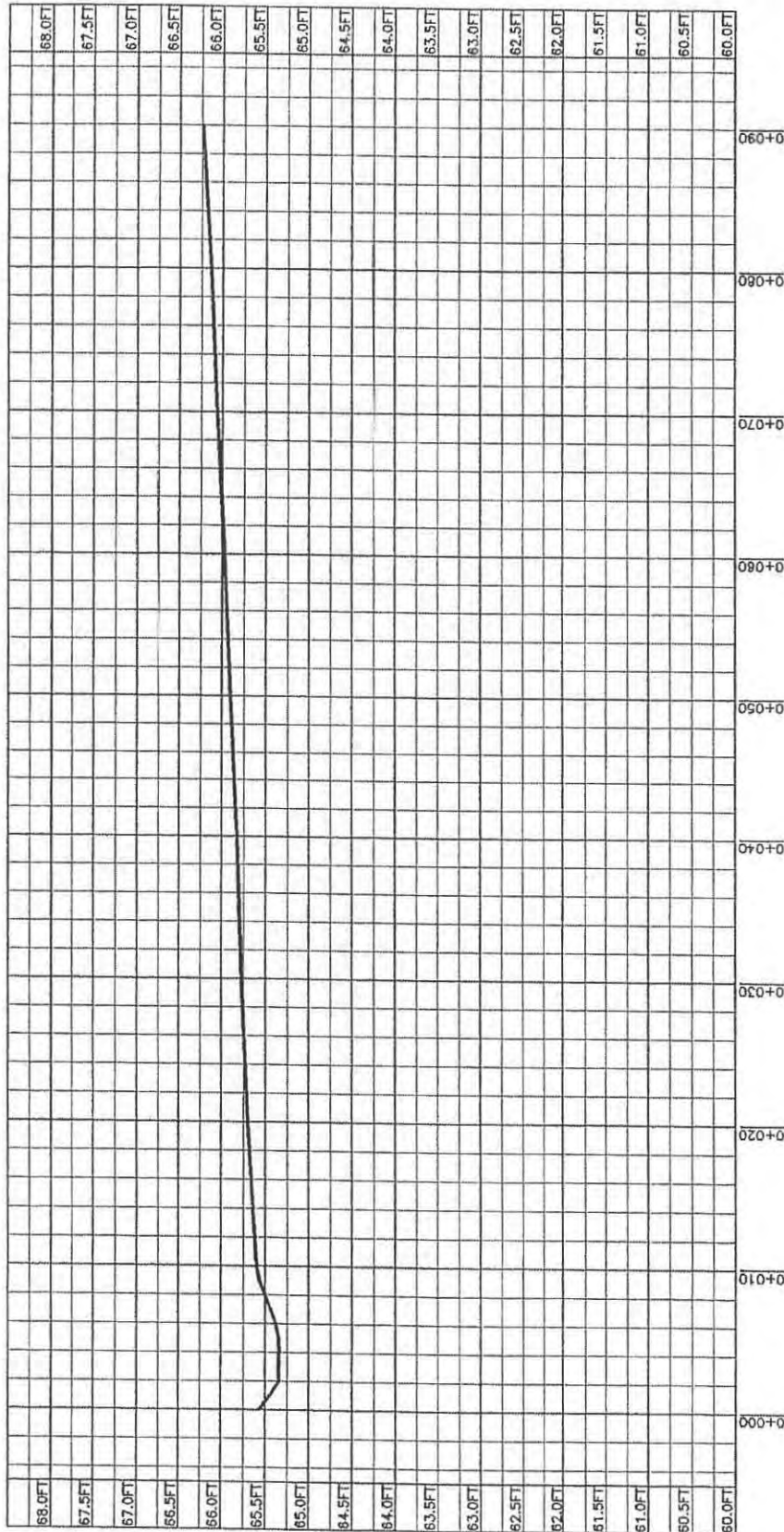
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	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
	DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.
				SCALE	HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #13



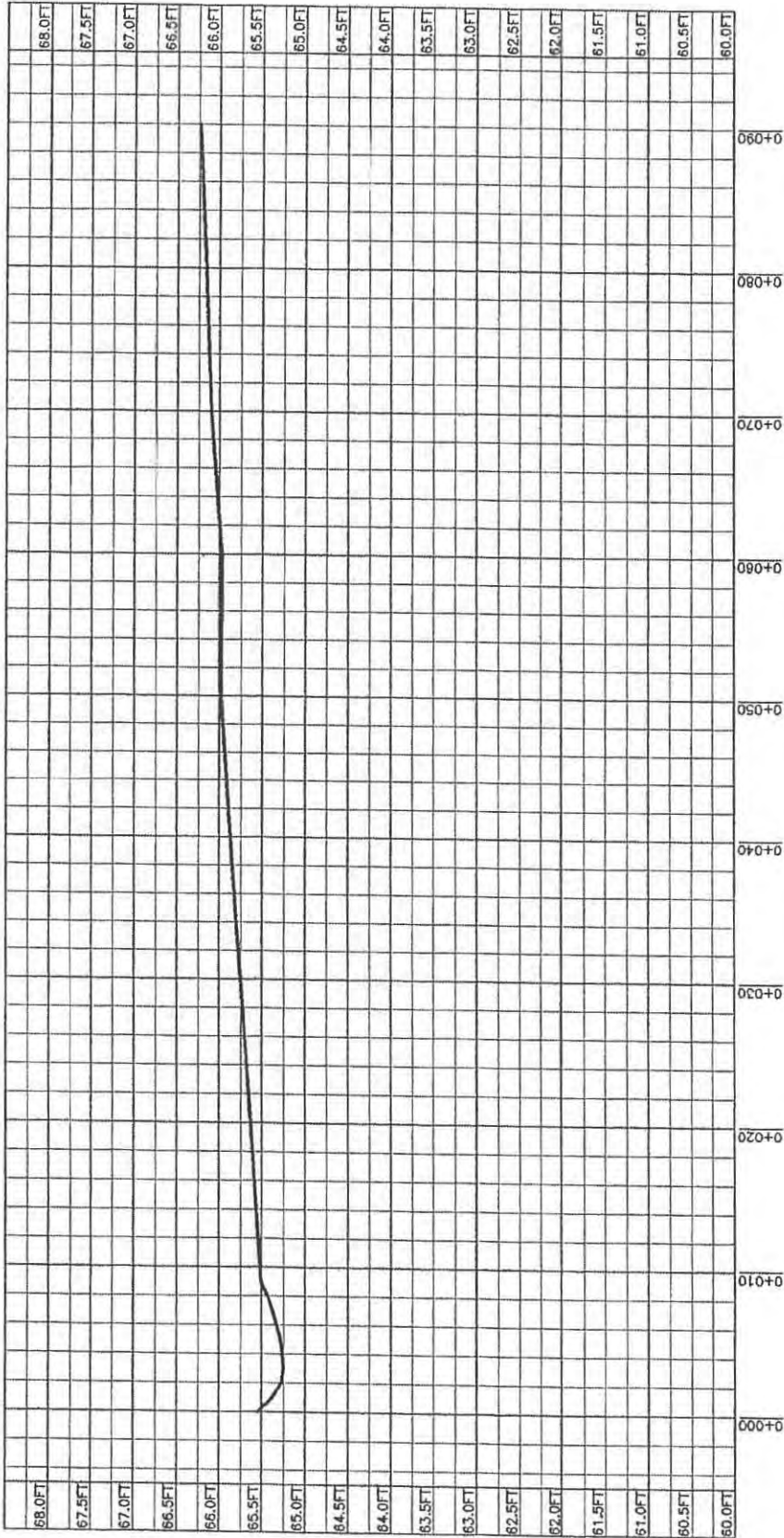
 SCE SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY	P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.	SCALE HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #14



 SFE SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY	P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.	0
				SCALE	HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #15



SGE Acres Ltd.
Engineers, Planners & Project Managers

PROJECT

**SURVEY SUPPORT
AITEC @ HOLYROOD**

DWN. BY

P. HOLLOWAY

DRAWING TITLE

TANK 3 FLOOR SETTLEMENT

APP. BY

DWG. NO.

P15035.00

DATE

NOV. 29, 2003

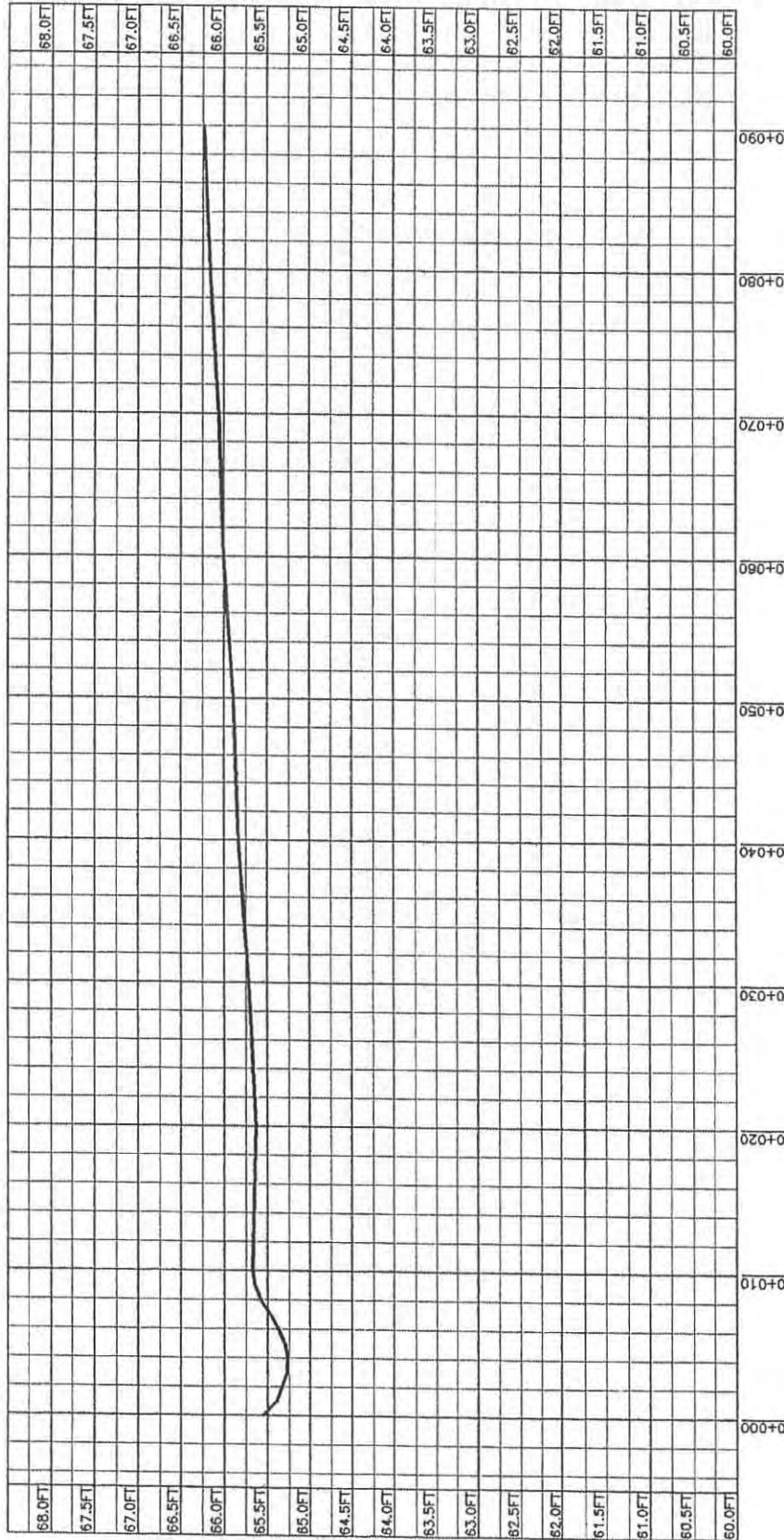
REV. NO.



SCALE

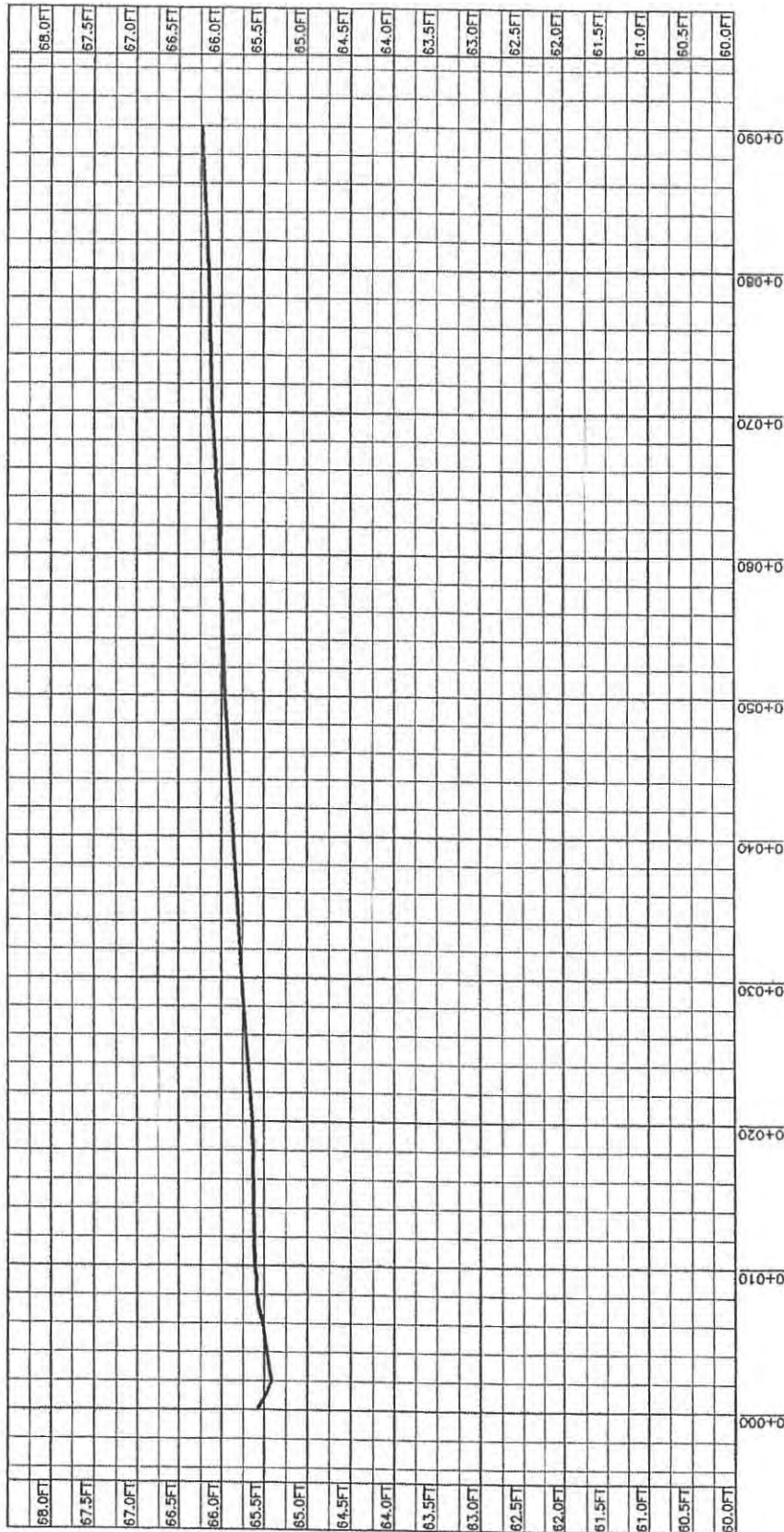
HOR.: 1" = 12'
VER.: 1" = 2'

TANK 3 - LINE #16



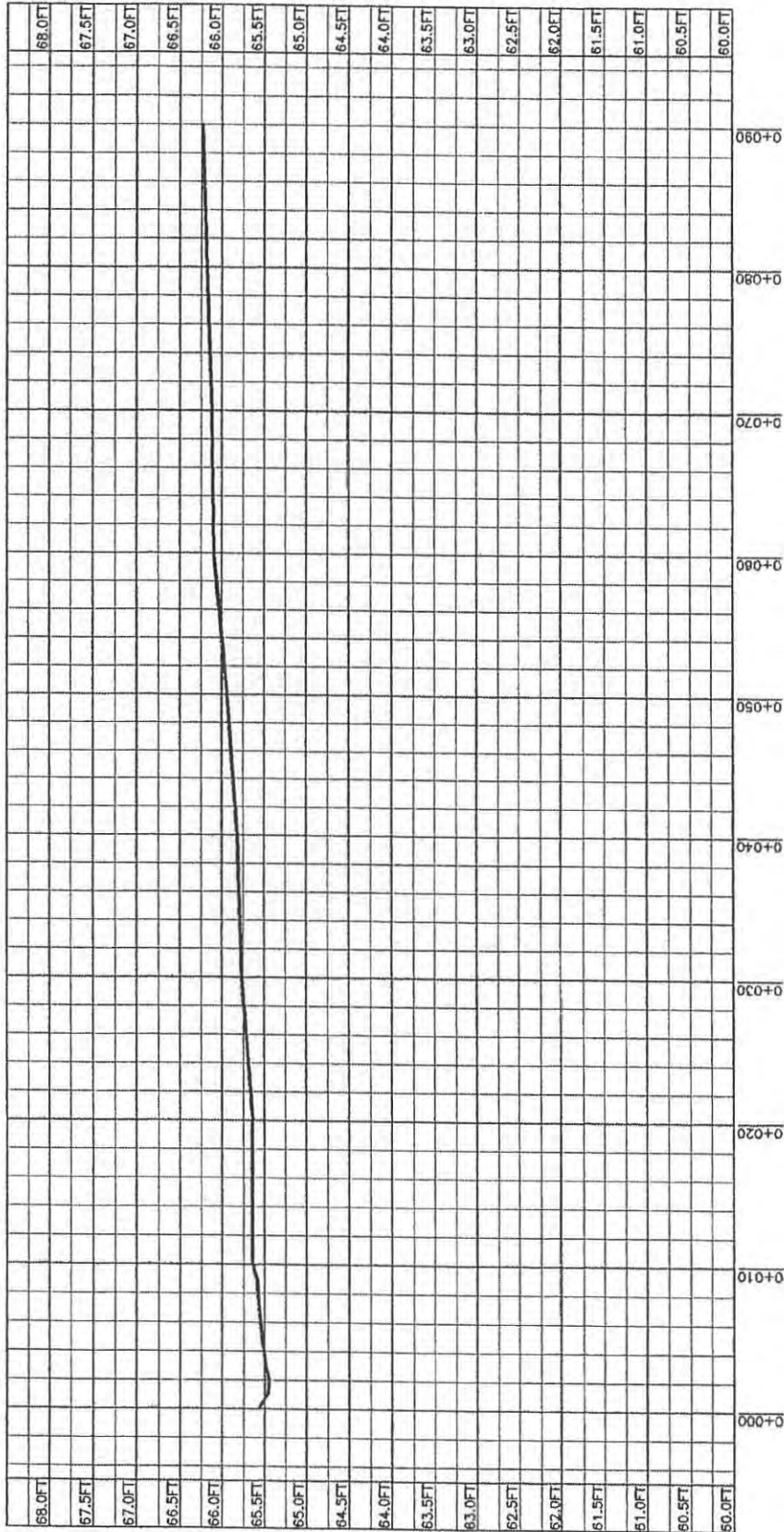
 SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY	P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.	SCALE HOR.: 1" = 12' VER.: 1" = 2'

TANK 3 - LINE #17



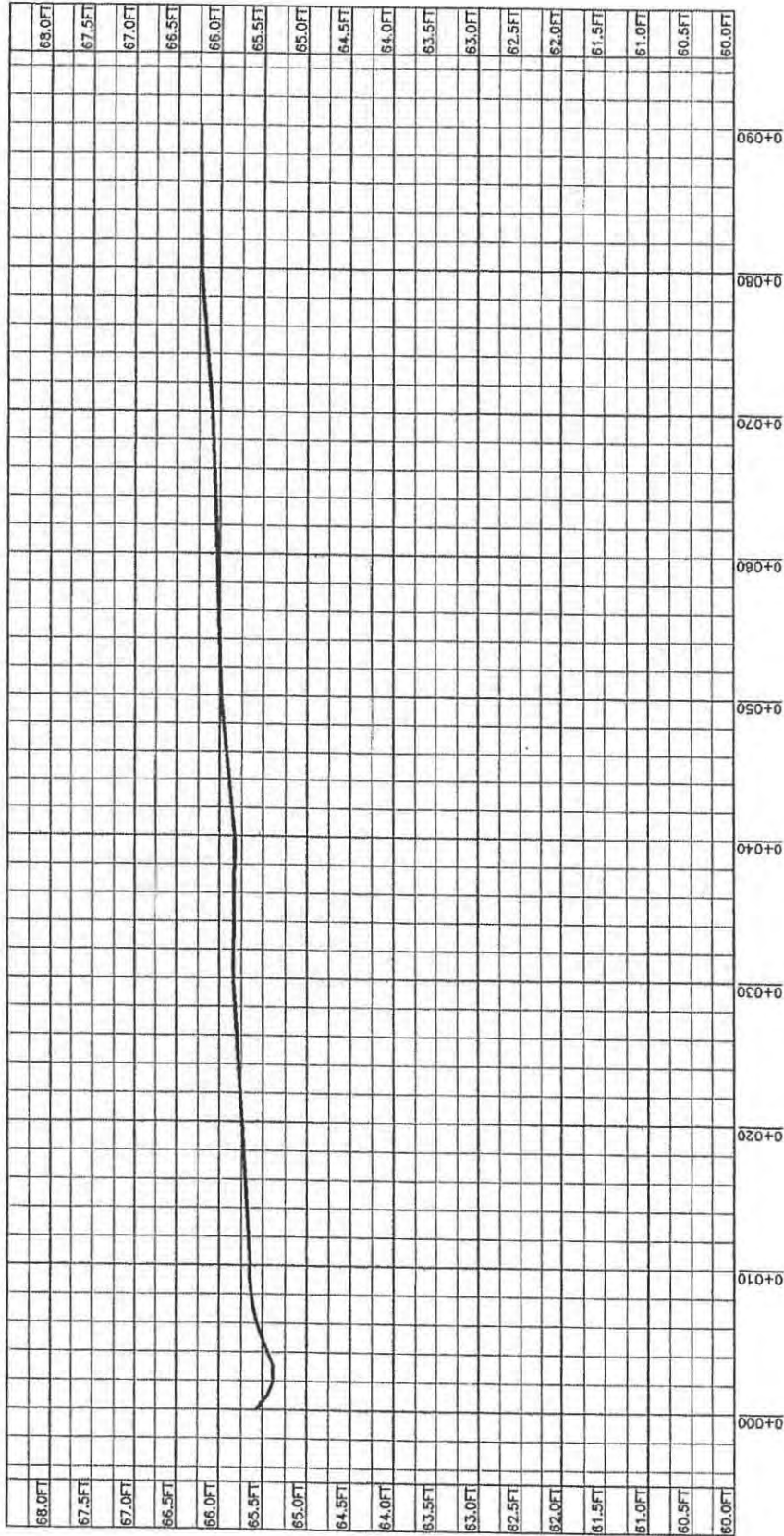
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	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
	DWG. NO.	P15035.00	DATE	NOV. 29, 2003	REV. NO.
				SCALE	HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #18



 SGE SGE Acres Ltd. Engineers, Planners & Project Managers	PROJECT	SURVEY SUPPORT AITEC @ HOLYROOD		DWN. BY	P. HOLLOWAY
	DRAWING TITLE	TANK 3 FLOOR SETTLEMENT		APP. BY	
DWG. NO.	DATE	REV. NO.		SCALE	HOR.: 1"=12' VER.: 1"=2'

TANK 3 - LINE #19



SGE Acres Ltd.
Engineers, Planners & Project Managers

PROJECT

**SURVEY SUPPORT
AITEC @ HOLYROOD**

DWN. BY

P. HOLLOWAY

DRAWING TITLE

TANK 3 FLOOR SETTLEMENT

APP. BY

DWG. NO.

P15035.00

DATE

NOV. 29, 2003

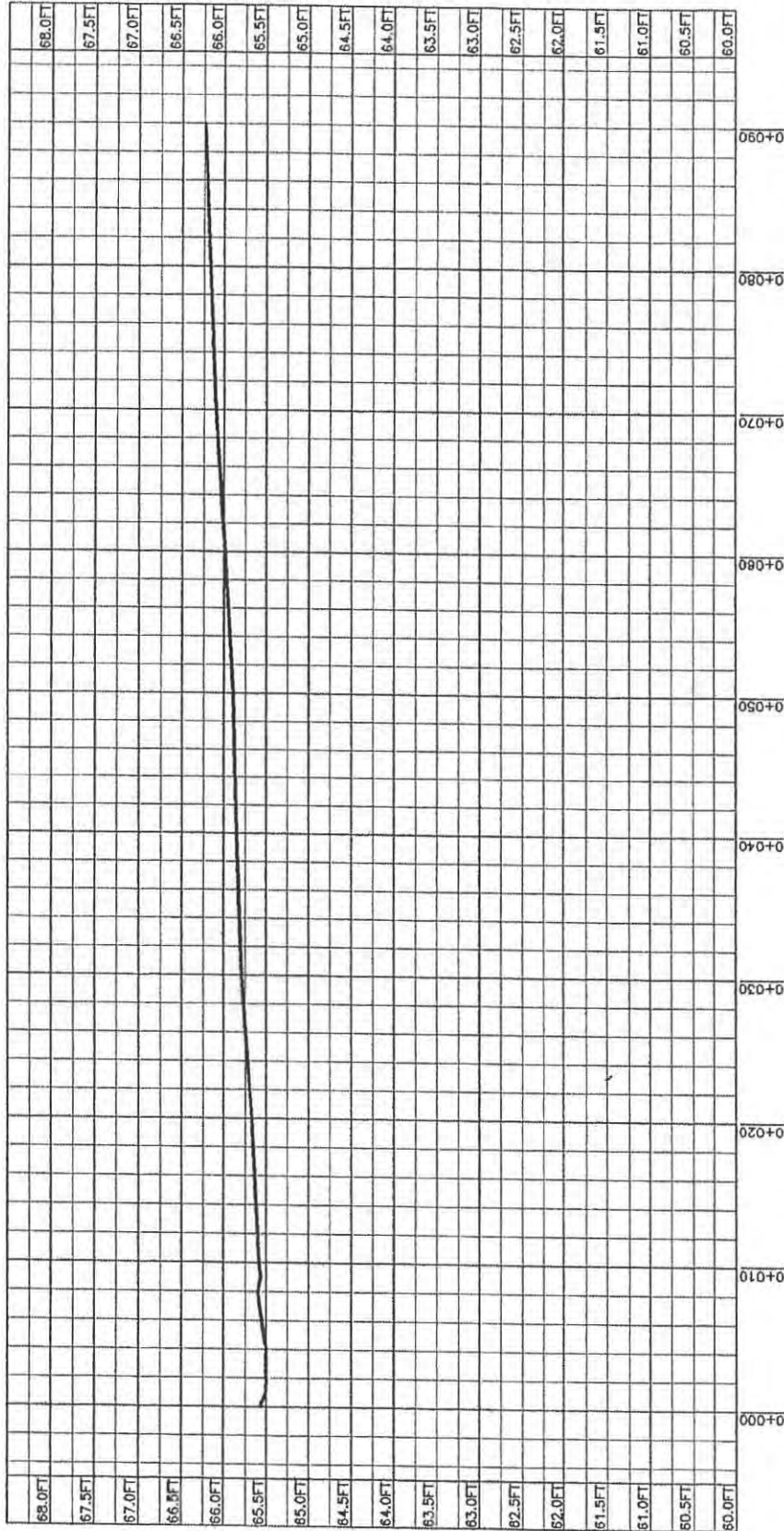
REV. NO.



SCALE

HOR.: 1" = 12'
VER.: 1" = 2'

TANK 3 - LINE #20



PROJECT

**SURVEY SUPPORT
AITEC @ HOLYROOD**

DWN. BY

P. HOLLOWAY

DRAWING TITLE

TANK 3 FLOOR SETTLEMENT

APP. BY

DWG. NO.

P15035.00

DATE

NOV. 29, 2003

REV. NO.

10

SCALE

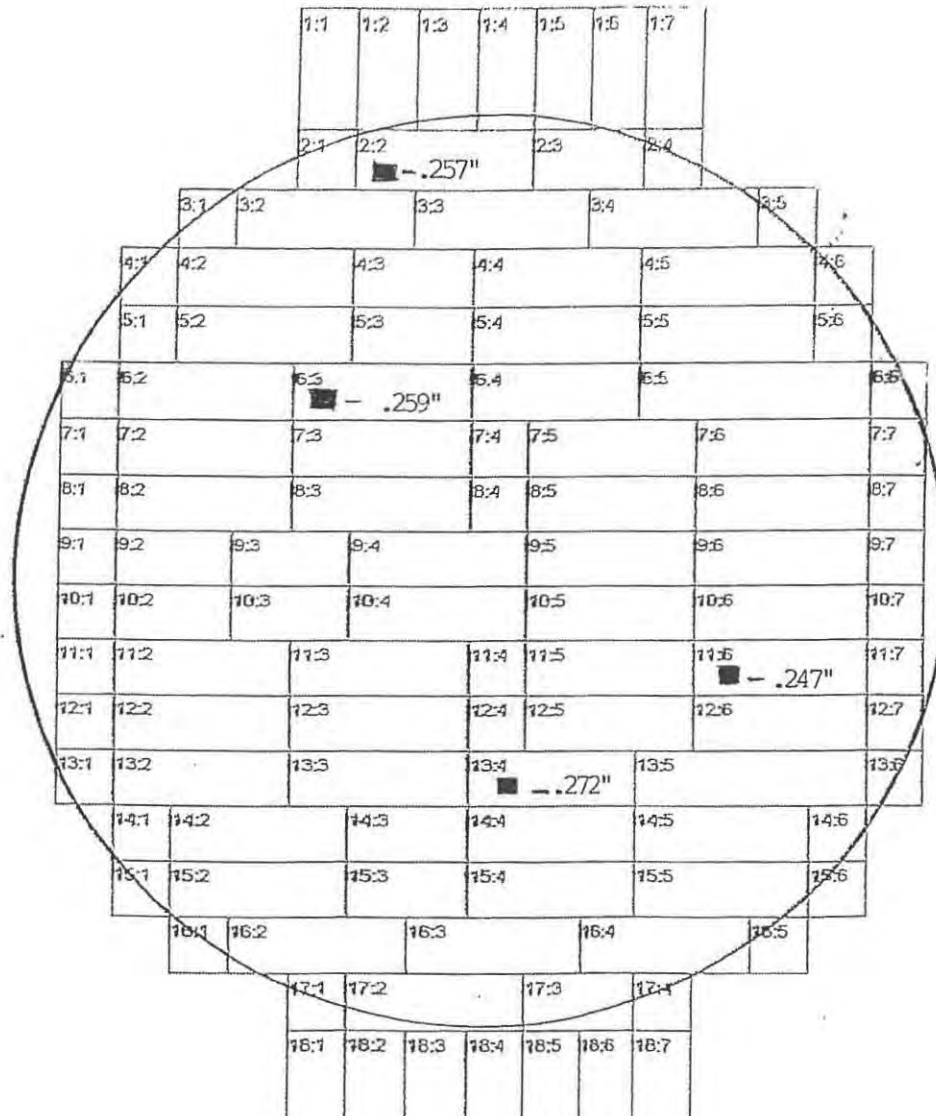
HOR.: 1" = 12'
VER.: 1" = 2'



SGE Acres Ltd.
Engineers, Planners & Project Managers

NEWFOUNDLAND & LABRADOR HYDRO

TANK #3 BUNKER "C"



$\blacksquare$ — DENOTES AREA ON THE FLOOR PLATE WHICH WAS UNTRASONIC
SCANNED IN ORDER TO ESTABLISH A SHORT TERM CORROSION
RATE.

NORTH