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MACHINES CORPORATION

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EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

Bureau of Hazardous Waste  
Facility Permitting  
Division of Hazardous  
Substances Regulation

# 6 NYCRR PART 373 PERMIT APPLICATION

## APPENDIX I - 1 CLOSURE PLANS AND COSTS

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS



HARRISBURG, PENNSYLVANIA

Appendix I-1 of the permit application is bound in two volumes entitled Appendix I-1 and Appendix I-1 (Continued). The following is a listing of the closure plans included in each volume:

APPENDIX I-1

Container Storage Areas

Building 309, Room 2  
Building 309, Room 7  
Building 309, Room 8  
Building 309, Room 9  
Building 309, Room 23

Sludge Operations

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INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 2

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA



## INTRODUCTION

This Closure Plan has been developed for Room 2, located inside the Chemical Storage Building, Building 309, at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The general location of the room is shown in Figure 1. The room is designated as a Containerized Hazardous Waste Storage Area. The types of wastes stored in this room include: MLC waste liquid (F003, F005), resist + solvent (F003), waste solvents (F001, F002, F003, F005), crushed wafers/lead (D008), moly paste (F002), copper paste (F002), potassium iodide and iodine (D002), organic contaminated soil (F002, F003, F005), carbon + perchloro-ethylene (F002), mercury (D009) contaminated glassware, J-100 full 55-gallon drums (D002), J-100 empty 55-gallon drums (D002), etching acids (D002), corrosive solids and liquids (D002), flammable solids and liquids (F003), hydrogen peroxide (D001, D003), mercury (D009) wastes, and others. Most of these wastes are generated in other buildings at the facility and are drummed and delivered to Building 309. Wastes delivered in smaller non-shipping containers are consolidated into drums and stored until shipped off site. It should be noted that the types of wastes stored in this room of the time of closure could be different than those described above.

The room measures approximately 70 feet by 75 feet. Its floor is coated with a chemical resistant material and is sloped toward a 500-gallon sump in the center of the room. A spill trench is provided in the floor at the room entrance. The trench is covered with metal grating. The room is equipped with an automatic sprinkler system and ventilation, and is suitable for storage of ignitable wastes.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and the NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the room will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Operation

As a first step in closing the room, deliveries will be ceased and any stored wastes will be shipped off-site following normal operating practices. The room will be reclassified as inactive and will no longer accept any hazardous waste.

### 3. Contamination Assessment

The operation history of the room will be reviewed with the intent of determining the type and amount of hazardous constituents stored in the room at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, an assessment of the room's contamination will be made by sampling and analyzing the surfaces that have been in contact with hazardous constituents. Sampling will consist of collecting direct evidences of contamination (e.g., presence of liquid or solid residues in the sump) or collecting indirect evidences of contamination (e.g., surface wipe or rinse samples). These samples will be analyzed for organic constituents using EPA Method 8240, and for toxic metals, such as lead and mercury, using the EP Toxicity Test. Approved methods will be used for the analysis of other hazardous constituents identified during the historical information gathering.

### 4. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan.

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform to approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the room contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which will satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste storage areas.

5. Room Decontamination and Closure

- a. If present, hazardous waste materials, such as residues, sludges, and small size contaminated parts which are difficult to decontaminate economically, will be removed and placed into suitable containers and disposed of using a permitted hazardous waste disposal vendor.
- b. The walls, floor, metal grating, sump, and spill trench will be cleaned using hot water/steam, which may be accompanied by an appropriate detergent. The water/steam condensate will be allowed to flow into the sump. From there it will be pumped into suitable containers. Samples will be collected and analyzed for the constituents identified during the assessment. If the analytical results indicate that the condensate collected is a hazardous waste, then the containers will be transported off-site using a permitted waste disposal vendor. Otherwise, the waste will be sent to the on-site Industrial Wastewater Treatment Plant for processing.

- c. The walls, floor, metal grating, sump, and spill trench will be rinsed three times using pressurized water jets. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results of the samples are known. If warranted, water from the three rinse cycles will be stored separately. The samples of each rinse cycle will be analyzed using the methods identified in the Sampling and Analysis Protocol. If at the end of the third cycle, the concentration of the hazardous constituents does not meet the criteria set forth in the Decontamination Plan, rinsing will continue until the criteria are met. The rinse water will then be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. During the closure activities, the tank trailer will be parked in an area suitable for handling any accidental spills.
- d. After decontamination, the 500-gallon sump and the spill trench will be filled with concrete or reused. Depending on specific circumstances, the room may be totally demolished or refurbished for a different use.
- e. The equipment used to decontaminate the room will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- f. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679



ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the room will be estimated during the contamination assessment phase. For cost estimating purposes, it is expected that the equivalent of approximately ten 55-gallon drums of hazardous waste will be generated during the closure activities, including waste residue, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 2,500 gallons of hazardous wastewater will be generated during decontamination of the room, and cleaning equipment.

# CLOSURE COST ESTIMATE

Task Description	Cost, K\$
Contamination Assessment	8
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	12
Room Decontamination and Closure:	
Engineering/Specs	18
Removal of Remaining Hazardous Waste	4
Room Decontamination	23
Filling/Sealing Sump and Spill Trench	6
Equipment Decontamination	4
Analytical Work	7
Transportation/Disposal of Hazardous Waste Produced	11
Documentation	14
	<hr/>
	107
15% Administrative Charges	16.1
	<hr/>
Total	123.1
20% Contingency	24.6
	<hr/>
Grand Total	147.7

The above estimate includes all labor, equipment rentals, and materials required to assess and decontaminate the room, and dispose of the waste produced.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum and bulk waste are as follows:

- o Drum Waste                               \$155.00 to \$518.00 per drum  
  (dependent upon type of waste  
  discarded and vendor used)
- o Bulk Waste                               \$0.30 to \$1.00 per gallon  
  (dependent upon type of waste  
  discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at the time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION OF CLOSURE AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the room has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Laboratory Test Results
2. A copy of the manifests for disposal of hazardous waste.

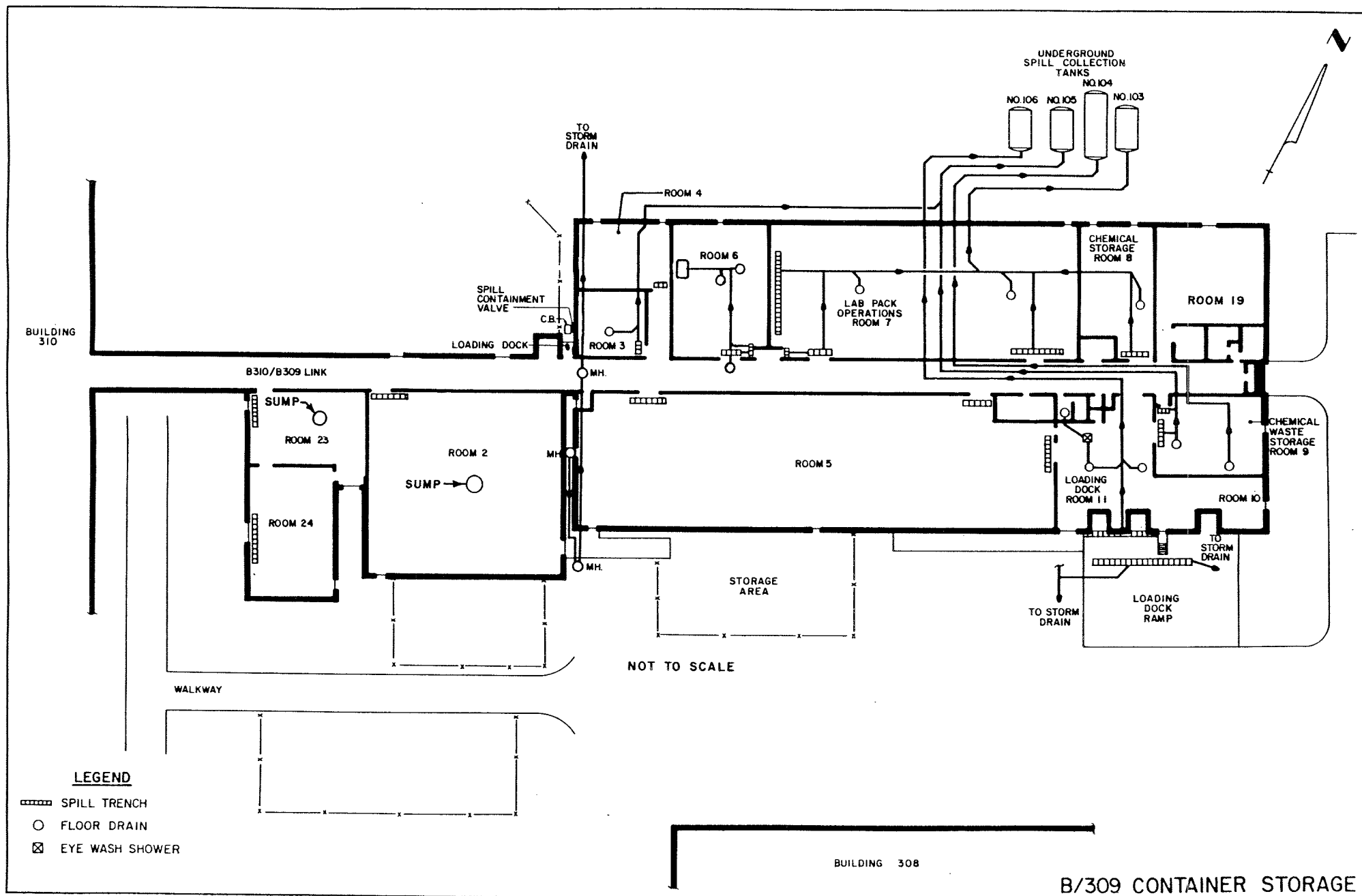


FIGURE 1

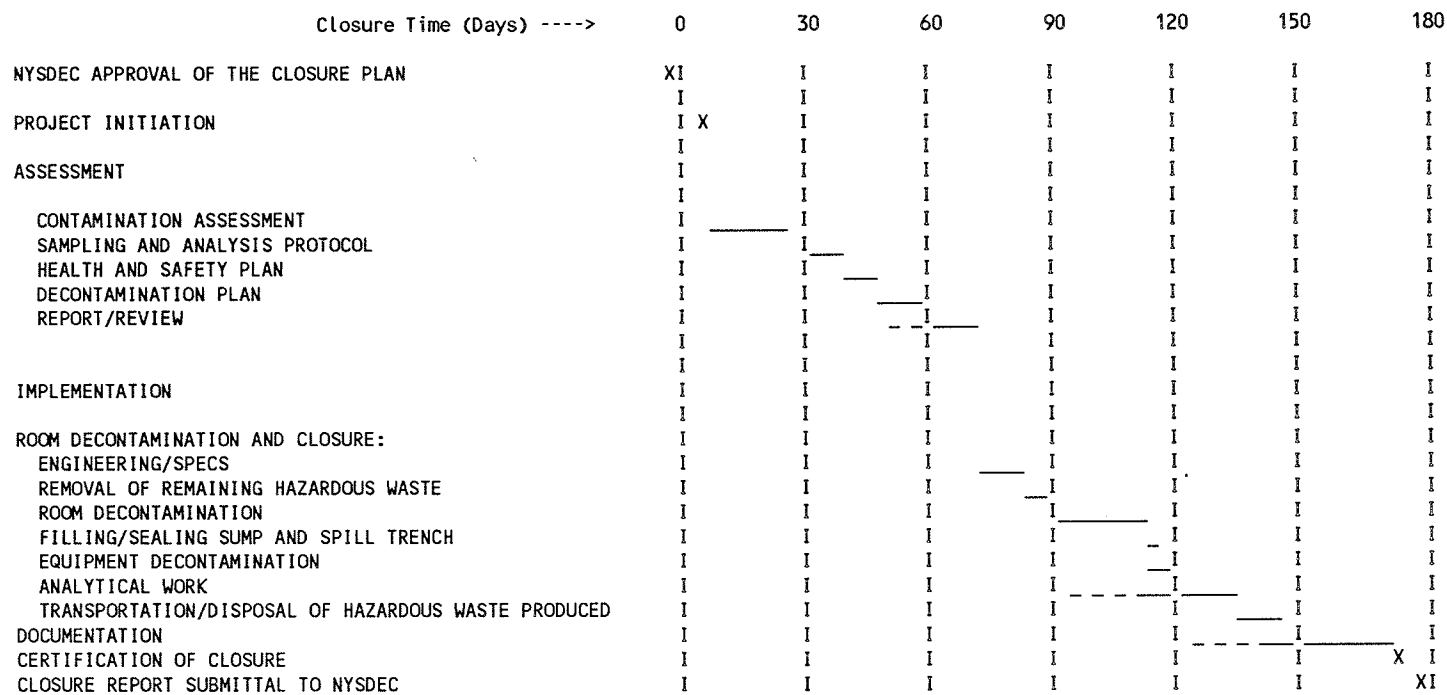


FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
BUILDING 309, ROOM 2

## SCHEDULE



ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 2

CERTIFICATION OF CLOSURE

I certify that the work to close Room 2 in Building 309 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 2

CERTIFICATION OF CLOSURE

I certify that the work to close Room 2 in Building 309 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 7

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Room 7, located inside the Chemical Storage Building, Building 309, at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices. The plan also addresses the closure of Spill Tank 103 outside Building 309.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The general locations of the room and spill tank are shown in Figure 1. The room is designated as a Cyanide/Incompatible Waste Drum Storage Area. The types of wastes stored in this room include: potassium ferricyanide and cyanide (D002, D003), cyanide + gold (F007), cyanide solids (D003), gold filters + solids contaminated with cyanide (D003), and arsenic contaminated solids (D004). Most of these wastes are generated in other buildings at the facility and are drummed and delivered to Building 309. Wastes delivered in smaller non-shipping containers are consolidated into drums and are stored until shipped off site. It should be noted that the types of wastes stored in this room at the time of closure could be different than those described above.

The room measures approximately 50 feet by 125 feet. Its floor is coated with a chemical resistant material and is sloped toward spill trenches at the room entrances and in front of the drum consolidation bays, and toward two floor drains. The trenches are covered with metal grating. The room is equipped with an automatic sprinkler system and ventilation, and is suitable for storage of containerized ignitable, reactive, and incompatible wastes.

The floor drains and spill trenches discharge into Spill Tank 103 outside the building. The tank is underground and has a capacity of 550 gallons. Spills in Room 8 are also drained to this tank. Spill Tank 103 and its ancillary piping and equipment will be closed in connection with Room 7 or Room 8, depending on which room is closed last. This closure plan assumes the tank system will be closed in connection with Room 7.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and the NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the room will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Operation

As a first step in closing the room, deliveries will be ceased and any stored wastes will be shipped off-site following normal operating practices. The room will be reclassified as inactive and will no longer accept any hazardous waste. The spill tank contents will be drained, except for some residual liquid and sludge.

### 3. Contamination Assessment

The operation history of the room and tank system will be reviewed with the intent of determining the type and amount of hazardous constituents stored in the room or tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, an assessment of the room's contamination will be made by sampling and analyzing the surfaces that have been in contact with hazardous constituents. Sampling will consist of collecting direct evidences of contamination (e.g., presence of liquid or solid residues in the spill trenches) or collecting indirect evidences of contamination (e.g., surface wipe or rinse samples). These samples will be analyzed for organic constituents using EPA Method 8240, and for toxic metals, such as lead and mercury, using the EP Toxicity Test. Approved methods will be used for the analysis of other hazardous constituents identified during the historical information gathering.

The liquid residue and any solid residue (sludge) remaining in the tank will be sampled and analyzed in a similar manner.

### 4. Assessment of Tank System Integrity

The spill tank and its associated piping will be pressure tested to determine the presence and location of any leaks.



5. Soil Investigation

If the pressure testing shows evidence of leaks, or if there is a history of releases, a Soil Investigation Plan will be prepared and executed to determine the extent of soil contamination.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan.

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform to approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the room and tank system contamination and integrity assessments will be used to prepare a Decontamination Plan and a Health and Safety Plan which will satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of all hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks and storage areas.

7. Room and Tank Decontamination and Closure

- a. If present, hazardous waste materials, such as soils, residues, and sludges, and small size contaminated parts which are difficult to decontaminate economically, will be removed and placed into suitable containers and disposed of using a permitted hazardous waste disposal vendor.

b. The tank will be isolated from the room by temporarily plugging the pipes at the floor drains and trenches. The walls, floor, metal grating, floor drains and spill trenches will be cleaned using hot water/steam, which may be accompanied by an appropriate detergent. The water/steam condensate will be collected and pumped into suitable containers. Samples will be collected and analyzed for the constituents identified during the assessment. If the analytical results indicate that the condensate collected is a hazardous waste, then the containers will be transported off-site using a permitted waste disposal vendor. Otherwise, the waste will be sent to the on-site Industrial Wastewater Treatment Plant for processing.

c. The walls, floor, metal grating, floor drains, and spill trenches will be rinsed three times using pressurized water jets. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results of the samples are known. If warranted, water from the three rinse cycles will be stored separately. The samples of each rinse cycle will be analyzed using the methods identified in the Sampling and Analysis Protocol. If at the end of the third cycle, the concentration of the hazardous constituents does not meet the criteria set forth in the Decontamination Plan, rinsing will continue until the criteria are met. The rinse water will then be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. During the closure activities, the tank trailer will be parked in an area suitable for handling any accidental spills.

d. After decontamination of the room, the spill tank and its associated piping will be decontaminated according to the procedures set forth in the Decontamination Plan.

The underground piping leading to the spill tank will be accessed through excavations in order to isolate straight lengths of pipe for cleaning. The inside of the spill tank will also be accessed using an excavation. Decontamination of the piping and spill tank will essentially follow the same steps described above for the room.

e. After decontamination, if the spill tank and its associated piping are to remain in place, they will be filled with an inert material and capped. Otherwise, they will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

The spill trenches and floor drains will be filled with concrete or reused. Depending on specific circumstances, the room may be totally demolished or refurbished for a different use.

f. The equipment used to decontaminate the room and the spill tank will be decontaminated using steam and detergent. This equipment may consist of the high pressure water jet cleaning unit, pumps, wet vacuum unit, and the tank trailer, after it is emptied.

g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

h. Contaminated soil, if any exists, will be removed and disposed of off-site using a permitted waste disposal vendor. Clean fill will be used to replace any soil that is removed.

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the room and tank system will be estimated during the contamination assessment phase. For cost estimating purposes, it is expected that the equivalent of approximately fifteen 55-gallon drums of hazardous waste will be generated during the closure activities, including waste residue, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 6,500 gallons of hazardous wastewater will be generated during decontamination of the room, tank, tank system, and cleaning equipment. The quantity of contaminated soil, if any exists, will be determined during the soil investigation work.

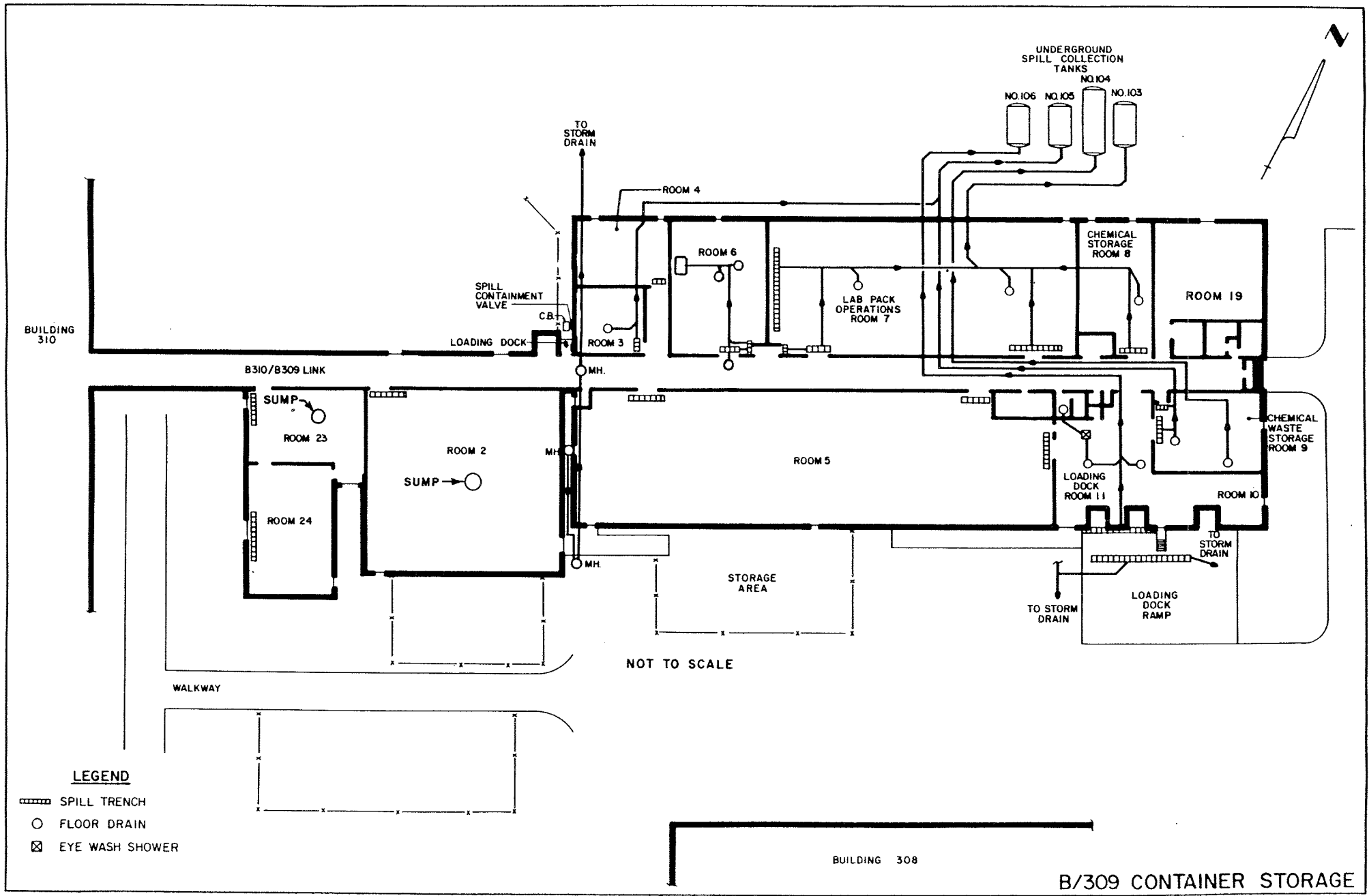
# CLOSURE COST ESTIMATE

Task Description	Cost, K\$
Contamination Assessment	8
Tank Integrity Test	18
Soil Investigation Plan	--
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	12
Room and Tank Decontamination and Closure:	
Engineering/Specs	23
Removal of Remaining Hazardous Waste	8
Excavations (four)	8
Room and Spill Tank Decontamination	77
Filling and Capping	15
Equipment Decontamination	6
Analytical Work	11
Transportation/Disposal of Hazardous Waste Produced	11
Documentation	14
	<hr/>
	211
15% Administrative Charges	31.6
	<hr/>
Total	242.6
20% Contingency	48.5
	<hr/>
Grand Total	291.1

The above estimate includes all labor, equipment rentals, and materials required to assess and decontaminate the room and tank, dispose of the waste produced, and abandon the decontaminated tank and underground piping in place. An estimate of costs associated with the preparation and execution of the Soil Investigation Plan and removal of contaminated soils will be determined at a later date if a soil investigation is warranted.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum and bulk waste are as follows:

- o Drum Waste                      \$155.00 to \$518.00 per drum  
   (depending upon type of waste  
   discarded and vendor used)
  
- o Bulk Waste                        \$0.30 to \$1.00 per gallon  
   (depending upon type of waste  
   discarded and vendor used)



**LEGEND**

- SPILL TRENCH
- FLOOR DRAIN
- EYE WASH SHOWER

FIGURE 1

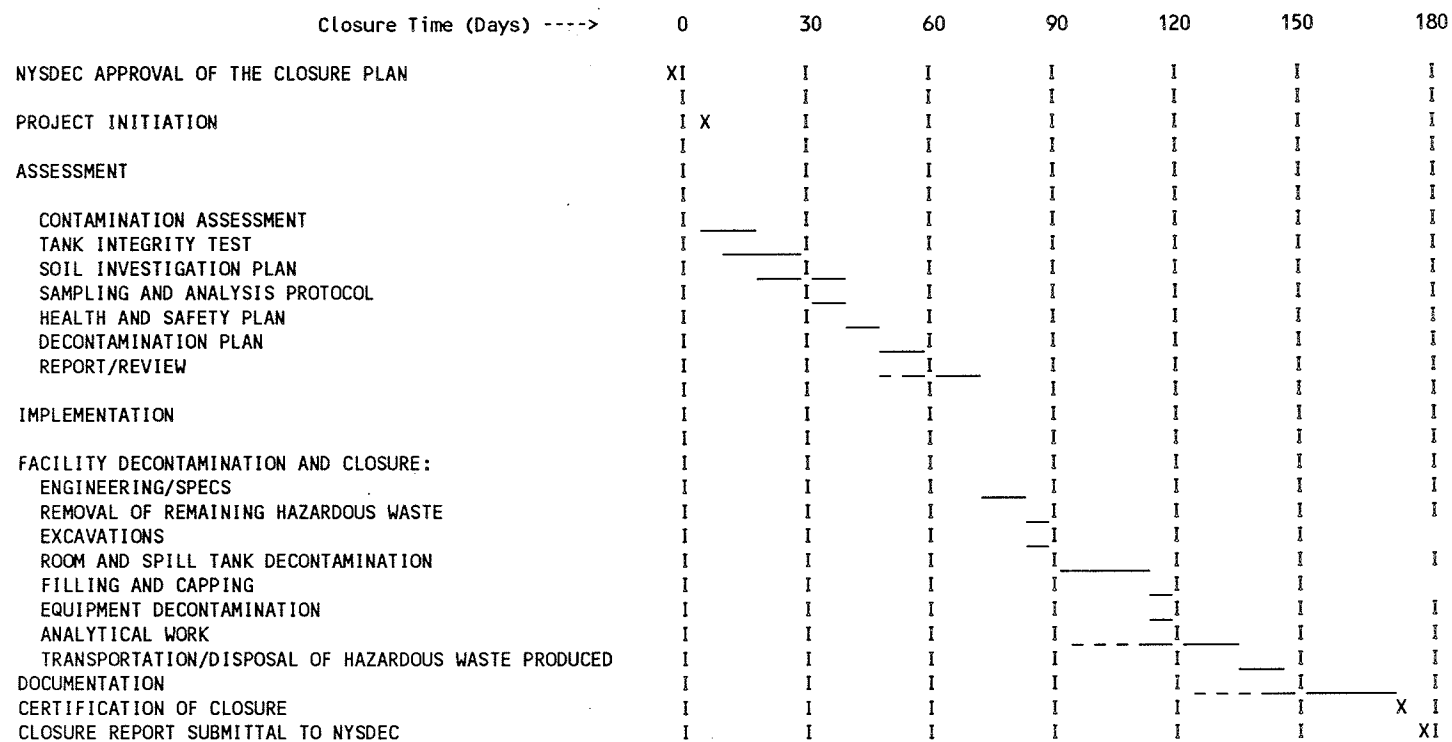
B/309 CONTAINER STORAGE

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
BUILDING 309, ROOM 7

## SCHEDULE



ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 8

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA



## INTRODUCTION

This Closure Plan has been developed for Room 8, located inside the Chemical Storage Building, Building 309, at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices. The plan also addresses the closure of Spill Tank 103 outside Building 309.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The general locations of the room and spill tank are shown in Figure 1. The room is designated as a Corrosive Waste Storage Area. The types of wastes stored in this room include: corrosive wastes, acids (D002), and batteries (D002). Most of these wastes are generated in other buildings at the facility and are drummed and delivered to Building 309. Wastes delivered in smaller non-shipping containers are consolidated into drums and are stored until shipped off site. It should be noted that the types of wastes stored in this room at the time of closure could be different than those described above.

The room measures approximately 30 feet by 50 feet. Its floor is coated with a chemical resistant material and is sloped toward a spill trench at the room entrance and toward a floor drain in the middle of the room. The spill trench is covered with metal grating. The room is equipped with an automatic sprinkler system and ventilation, and is suitable for storage of containerized corrosive wastes.

The floor drain and spill trench discharge into Spill Tank 103 outside the building. The tank is underground and has a capacity of 550 gallons. Spills in Room 7 are also drained to this tank. Spill Tank 103 and its ancillary piping and equipment will be closed in connection with Room 7 or Room 8, depending on which room is closed last. This closure plan assumes the tank system will be closed in connection with Room 8.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and the NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the room will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Operation

As a first step in closing the room, deliveries will be ceased and any stored wastes will be shipped off-site following normal operating practices. The room will be reclassified as inactive and will no longer accept any hazardous waste. The spill tank contents will be drained, except for some residual liquid and sludge.

### 3. Contamination Assessment

The operation history of the room and tank system will be reviewed with the intent of determining the type and amount of hazardous constituents stored in the room or tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, an assessment of the room's contamination will be made by sampling and analyzing the surfaces that have been in contact with hazardous constituents. Sampling will consist of collecting direct evidences of contamination (e.g., presence of liquid or solid residues in the spill trench) or collecting indirect evidences of contamination (e.g., surface wipe or rinse samples). These samples will be analyzed for organic constituents using EPA Method 8240, and for toxic metals, such as lead and mercury, using the EP Toxicity Test. Approved methods will be used for the analysis of other hazardous constituents identified during the historical information gathering.

The liquid residue and any solid residue (sludge) remaining in the tank will be sampled and analyzed in a similar manner.

### 4. Assessment of Tank System Integrity

The spill tank and its associated piping will be pressure tested to determine the presence and location of any leaks.

5. Soil Investigation

If the pressure testing shows evidence of leaks, or if there is a history of releases, a Soil Investigation Plan will be prepared and executed to determine the extent of soil contamination.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan.

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform to approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the room and tank system contamination and integrity assessments will be used to prepare a Decontamination Plan and a Health and Safety Plan which will satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of all hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks and storage areas.

7. Room and Tank Decontamination and Closure

- a. If present, hazardous waste materials, such as soils, residues, and sludges, and small size contaminated parts which are difficult to decontaminate economically, will be removed and placed into suitable containers and disposed of using a permitted hazardous waste disposal vendor.

- b. The tank will be isolated from the room by temporarily plugging the pipes at the floor drain and trench. The walls, floor, metal grating, floor drain, and spill trench will be cleaned using hot water/steam, which may be accompanied by an appropriate detergent. The water/steam condensate will be collected and pumped into suitable containers. Samples will be collected and analyzed for the constituents identified during the assessment. If the analytical results indicate that the condensate collected is a hazardous waste, then the containers will be transported off-site using a permitted waste disposal vendor. Otherwise, the waste will be sent to the on-site Industrial Wastewater Treatment Plant for processing.
- c. The walls, floor, metal grating, floor drains, and spill trench will be rinsed three times using pressurized water jets. The water from each rinse cycle will be collected in the spill tank and pumped into a tank trailer where it will be stored until the analytical results of the samples are known. If warranted, water from the three rinse cycles will be stored separately. The samples of each rinse cycle will be analyzed using the methods identified in the Sampling and Analysis Protocol. If at the end of the third cycle, the concentration of the hazardous constituents does not meet the criteria set forth in the Decontamination Plan, rinsing will continue until the criteria are met. The rinse water will then be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. During the closure activities, the tank trailer will be parked in an area suitable for handling any accidental spills.
- d. After decontamination of the room, the spill tank and its associated piping will be decontaminated according to the procedures set forth in the Decontamination Plan.

The underground piping leading to the spill tank will be accessed through excavations in order to isolate straight lengths of pipe for cleaning. The inside of the spill tank will also be accessed using an excavation. Decontamination of the piping and spill tank will essentially follow the same steps described above for the room.

- e. After decontamination, if the spill tank and its associated piping are to remain in place, they will be filled with an inert material and capped. Otherwise, they will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

The spill trench and floor drain will be filled with concrete or reused. Depending on specific circumstances, the room may be totally demolished or refurbished for a different use.

f. The equipment used to decontaminate the room and the spill tank will be decontaminated using steam and detergent. This equipment may consist of the high pressure water jet cleaning unit, pumps, wet vacuum unit, and the tank trailer, after it is emptied.

g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

h. Contaminated soil, if any exists, will be removed and disposed of off-site using a permitted waste disposal vendor. Clean fill will be used to replace any soil that is removed.

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the room and tank system will be estimated during the contamination assessment phase. For cost estimating purposes, it is expected that the equivalent of approximately ten 55-gallon drums of hazardous waste will be generated during the closure activities, including waste residue, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 4,500 gallons of hazardous wastewater will be generated during decontamination of the room, tank system, and cleaning equipment. The quantity of contaminated soil, if any exists, will be determined during the soil investigation work.

# CLOSURE COST ESTIMATE

Task Description	Cost, K\$
Contamination Assessment	8
Tank Integrity Test	18
Soil Investigation Plan	--
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	12
Room and Tank Decontamination and Closure:	
Engineering/Specs	23
Removal of Remaining Hazardous Waste	5
Excavations (four)	8
Room and Spill Tank Decontamination	72
Filling and Capping	15
Equipment Decontamination	6
Analytical Work	11
Transportation/Disposal of Hazardous Waste Produced	9
Documentation	14
	<hr/>
	201
15% Administrative Charges	30.2
	<hr/>
	Total 231.2
20% Contingency	46.2
	<hr/>
Grand Total	277.4

The above estimate includes all labor, equipment rentals, and materials required to assess and decontaminate the room and tank, dispose of the waste produced, and abandon the decontaminated tank and underground piping in place. An estimate of costs associated with the preparation and execution of the Soil Investigation Plan and removal of contaminated soils will be determined at a later date if a soil investigation is warranted.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum and bulk waste are as follows:

- o Drum Waste \$155.00 to \$518.00 per drum  
(depending upon type of waste discarded and vendor used)
- o Bulk Waste \$0.30 to \$1.00 per gallon  
(depending upon type of waste discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at the time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION OF CLOSURE AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the room and tank system have been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test Results
2. A copy of the manifests used for disposal of hazardous waste.
3. Soil Investigation Plan/Report, if warranted, including information on the sources and analysis of the clean fill used after excavation is completed.

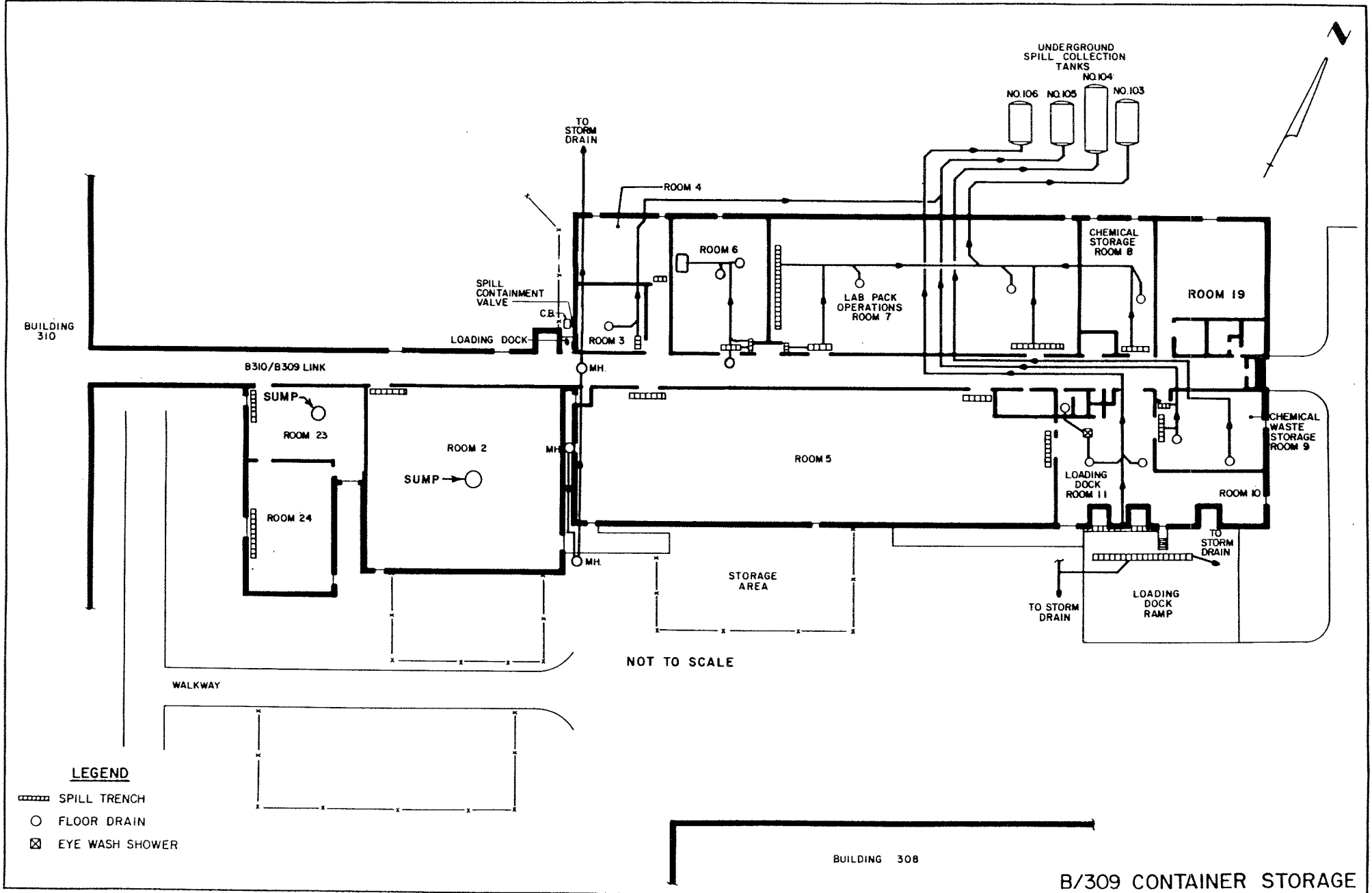


FIGURE 1

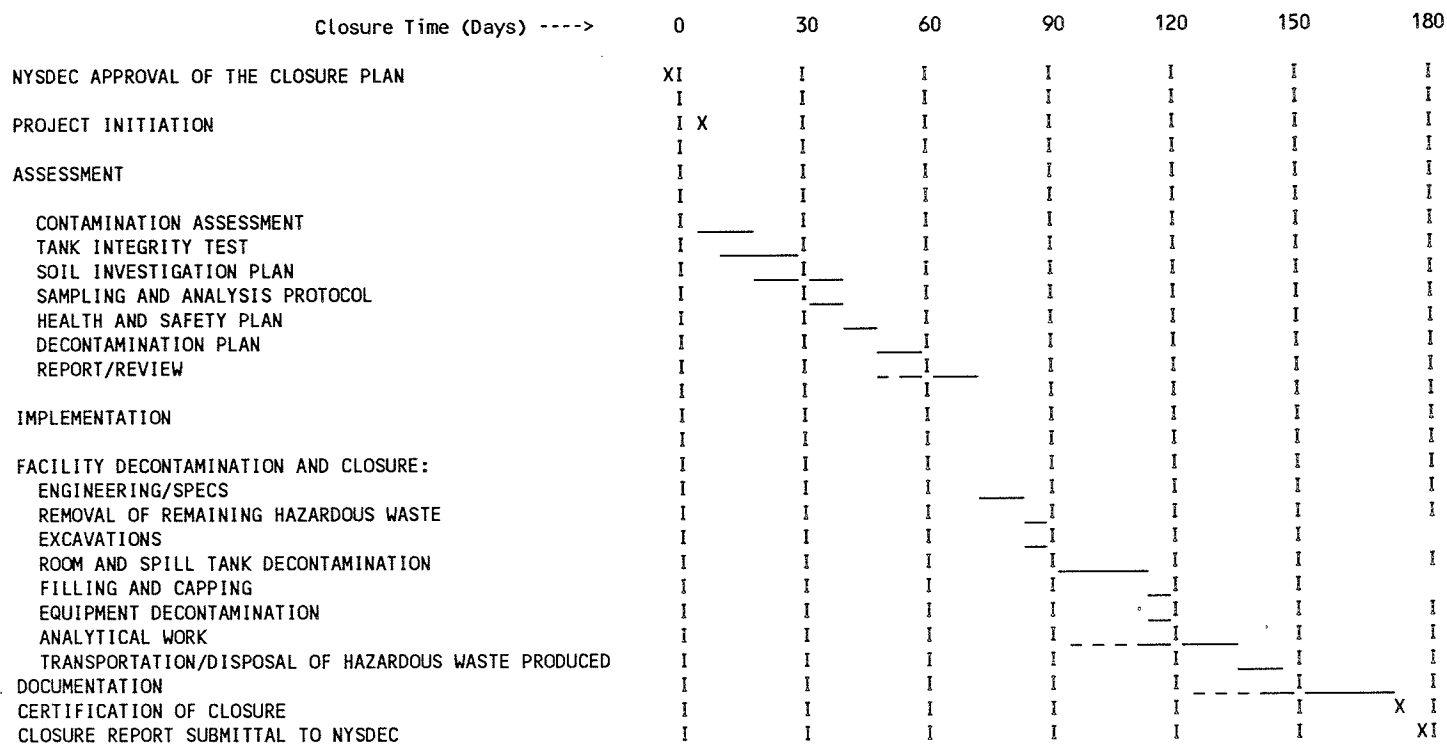


FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
BUILDING 309, ROOM 8

## SCHEDULE



ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 8

CERTIFICATION OF CLOSURE

I certify that the work to close Room 8 in Building 309 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 8

CERTIFICATION OF CLOSURE

I certify that the work to close Room 8 in Building 309 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- \* o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 9

SEPTEMBER, 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Room 9, located inside the Chemical Storage Building, Building 309, at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices. The plan also addresses the closure of Spill Tanks 104 and 105 outside Building 309.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The general locations of the room and spill tanks are shown in Figure 1. The room is designated as a Drum Staging Area and Containerized PCB Waste Storage Area. Containers staged in this area may contain reactive, ignitable or incompatible wastes (Waste Codes: D001, D002). Other types of wastes stored in this room include PCBs (B002, B003, B004, and B006). Most of these wastes are generated in other buildings at the facility and are drummed and delivered to Building 309. It should be noted that the types of wastes stored in this room at the time of closure could be different than those described above.

The room measures approximately 30 feet by 45 feet. Its floor is coated with a chemical resistant material and is sloped toward spill trenches at the room entrances and toward two floor drains. The trenches are covered with metal grating. The room is equipped with an automatic sprinkler system and ventilation.

The Containerized PCB Waste Storage Area is within a concrete diked area in the room and measures 3'6"W x 8'L x 6"H.

The trenches and one of the floor drains discharge into Spill Tank 105 which has a capacity of 550 gallons. The other floor drain discharges into Spill Tank 104 which has a capacity of 2,000 gallons. Both spill tanks are located underground outside the building.

Spill Tank 104 will be closed at the same time as Room 9. Since spills in Room 3 are also drained to Spill Tank 105, Spill Tank 105 and its ancillary piping and equipment will be closed in connection with Room 3 or Room 9, depending on which room is closed last. This closure plan assumes the tank system will be closed in connection with Room 9.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and the NYSDEC hazardous waste regulations: The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which this partial closure is expected to begin. The notification will include the expected date when the room will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Operation

As a first step in closing this room, deliveries will be ceased and any stored wastes will be shipped off-site following normal operating practices. The room will be reclassified as inactive and will no longer accept any hazardous waste. The contents in the spill tanks will be drained, except for some residual liquid and sludge.

### 3. Contamination Assessment

The operation history of the room and tank systems will be reviewed with the intent of determining the type and amount of hazardous constituents stored in the room or tanks at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, an assessment of the room's contamination will be made by sampling and analyzing the surfaces that have been in contact with hazardous constituents. Sampling will consist of collecting direct evidences of contamination (e.g., presence of liquid or solid residues in the spill trenches) or collecting indirect evidences of contamination (e.g., surface wipe or rinse samples). These samples will be analyzed for organic constituents using EPA Method 8240, and for toxic metals, such as lead and mercury, using the EP Toxicity Test. Approved methods will be used for the analysis of other hazardous constituents identified during the historical information gathering.

The liquid residue and any solid residue (sludge) remaining in the tanks will be sampled and analyzed in a similar manner.

### 4. Assessment of Tank System Integrity

The spill tanks and their associated piping will be pressure tested to determine the presence and location of any leaks.



5. Soil Investigation Plan

If the pressure testing shows evidence of leaks, or if there is a history of releases, a Soil Investigation Plan will be prepared and executed to determine the extent of soil contamination.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan.

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform to approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the room and tank system contamination and integrity assessments will be used to prepare a Decontamination Plan and a Health and Safety Plan which will satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of all hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks and storage areas.

7. Room and Tanks Decontamination and Closure

- a. If present, hazardous waste materials, such as soils, residues, and sludges, and small size contaminated parts which are difficult to decontaminate economically, will be removed and placed into suitable containers and disposed of using a permitted hazardous waste disposal vendor.

- b. The tanks will be isolated from the room by temporarily plugging the pipes at the floor drains and trenches. The walls, floor, metal grating, floor drains, and spill trenches will be cleaned using hot water/steam, which may be accompanied by an appropriate detergent. The water/steam condensate will be collected and pumped into suitable containers. Samples will be collected and analyzed for the constituents identified during the assessment. If the analytical results indicate that the condensate collected is a hazardous waste, then the containers will be transported off-site using a permitted waste disposal vendor. Otherwise, the waste will be sent to the on-site Industrial Wastewater Treatment Plant for processing.
- c. The walls, floor, metal grating, floor drains, and spill trenches will be rinsed three times using pressurized water jets. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results of the samples are known. If warranted, water from the three rinse cycles will be stored separately. The samples of each rinse cycle will be analyzed using the methods identified in the Sampling and Analysis Protocol. If at the end of the third cycle, the concentration of the hazardous constituents does not meet the criteria set forth in the Decontamination Plan, rinsing will continue until the criteria are met. The rinse water will then be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. During the closure activities, the tank trailer will be parked in an area suitable for handling any accidental spills.
- d. After decontamination of the room, the spill tanks and their associated piping will be decontaminated according to the procedures set forth in the Decontamination Plan.

The underground piping leading to the spill tanks will be accessed through excavations in order to isolate straight lengths of pipe for cleaning. The inside of the spill tanks will also be accessed using an excavation. Decontamination of the piping and spill tanks will essentially follow the same steps described above for the room.

- e. After decontamination, if the spill tanks and their associated piping are to remain in place, they will be filled with an inert material and capped. Otherwise, they will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

The spill trenches and floor drains will be filled with concrete or reused. Depending on specific circumstances, the room may be totally demolished or refurbished for a different use.

- f. The equipment used to decontaminate the room and the spill tanks will be decontaminated using steam and detergent. This equipment may consist of the high pressure water jet cleaning unit, pumps, wet vacuum unit, and the tank trailer, after it is emptied.
- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal TSD facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blenville  
Quebec, Canada J7C3V4  
NYD980756415

- h. Contaminated soil, if any exists, will be removed and disposed off-site using a permitted waste disposal vendor. Clean fill will be used to replace soil that is removed.

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the room and tank systems will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated during the closure activities, including waste residue, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 8,500 gallons of hazardous wastewater will be generated during decontamination of the room, tank systems, and cleaning equipment. The quantity of contaminated soil, if any exists, will be determined during the soil investigation work.

# CLOSURE COST ESTIMATE

Task Description	Cost, K\$
Contamination Assessment	12
Tank Integrity Tests	33
Soil Investigation Plan	-
Sampling and Analysis Protocol, Decontamination Plan, Health and Safety Plan	14
Room and Tank Decontamination Closure:	
Engineering/Specs	38
Removal of Remaining Hazardous Waste	12
Excavations (six)	18
Room and Spill Tanks Decontamination	135
Filling and Capping	22
Equipment Decontamination	8
Analytical Work	17
Transportation/Disposal of Hazardous Waste Produced	19
Documentation	20
	<hr/>
	348
15% Administrative Charges	52.2
	<hr/>
	Total 400.2
20% Contingency	80.0
	<hr/>
Grand Total	480.2

The above estimate includes all labor, equipment rentals, and materials required to assess and decontaminate the room and tanks, dispose of the waste produced, and abandon the decontaminated tank and underground piping in place. An estimate of costs associated with the preparation and execution of the Soil Investigation Plan and removal of contaminated soils, will be determined at a later date if a soil investigation is warranted.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum and bulk waste are as follows:

- o Drum Waste                      \$155.00 to \$518.00 per drum  
   (depending upon type of waste  
   discarded and vendor used)
- o Bulk Waste                      \$0.30 to \$1.00 per gallon  
   (depending upon type of waste  
   discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at the time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION OF CLOSURE AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the room and tank system have been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test Results
2. A copy of all manifests used for the disposal of hazardous waste.
3. Soil Investigation Plan/Report, if warranted, including information on the source and analysis of the clean fill used after excavation is completed.

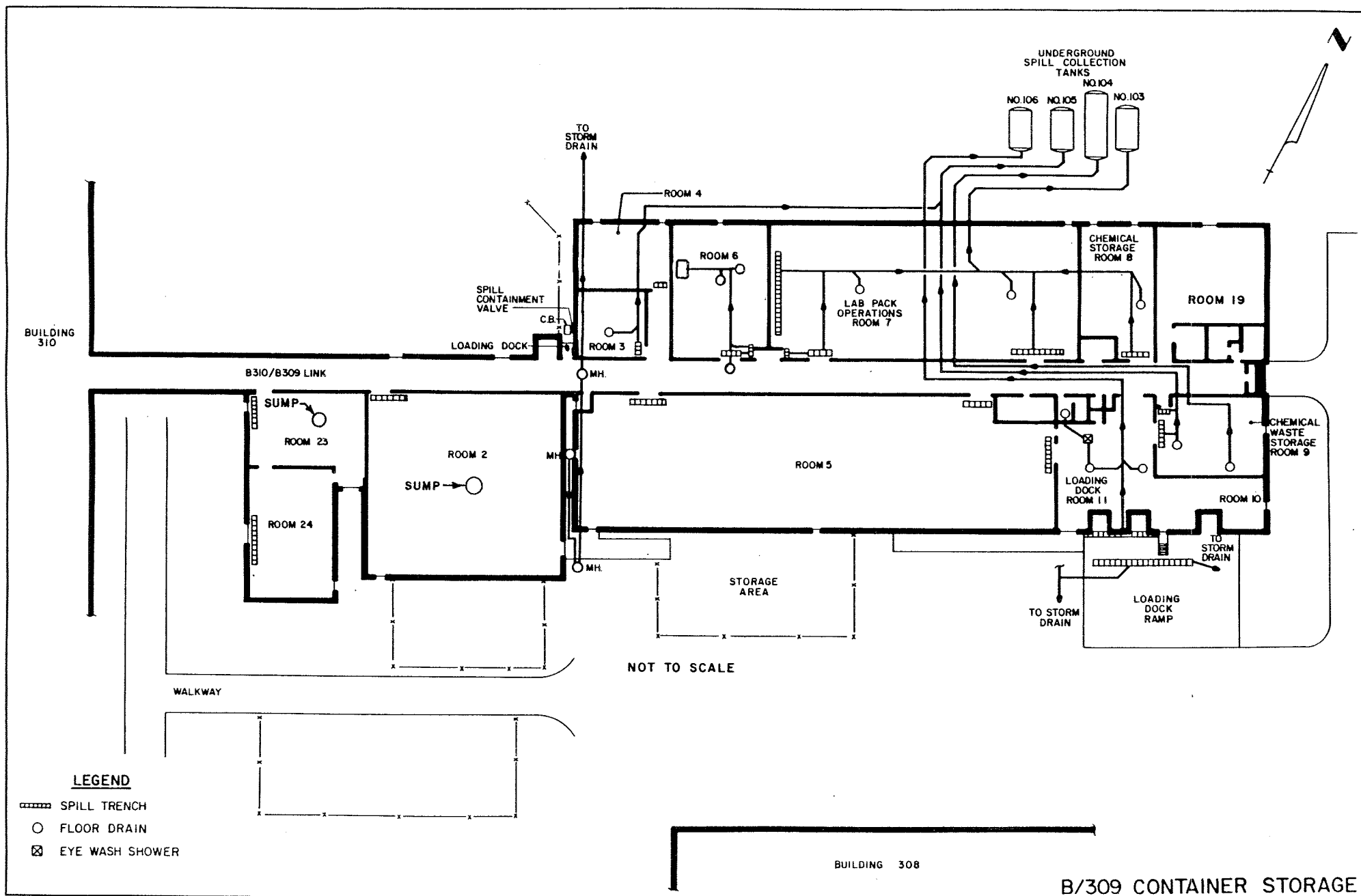
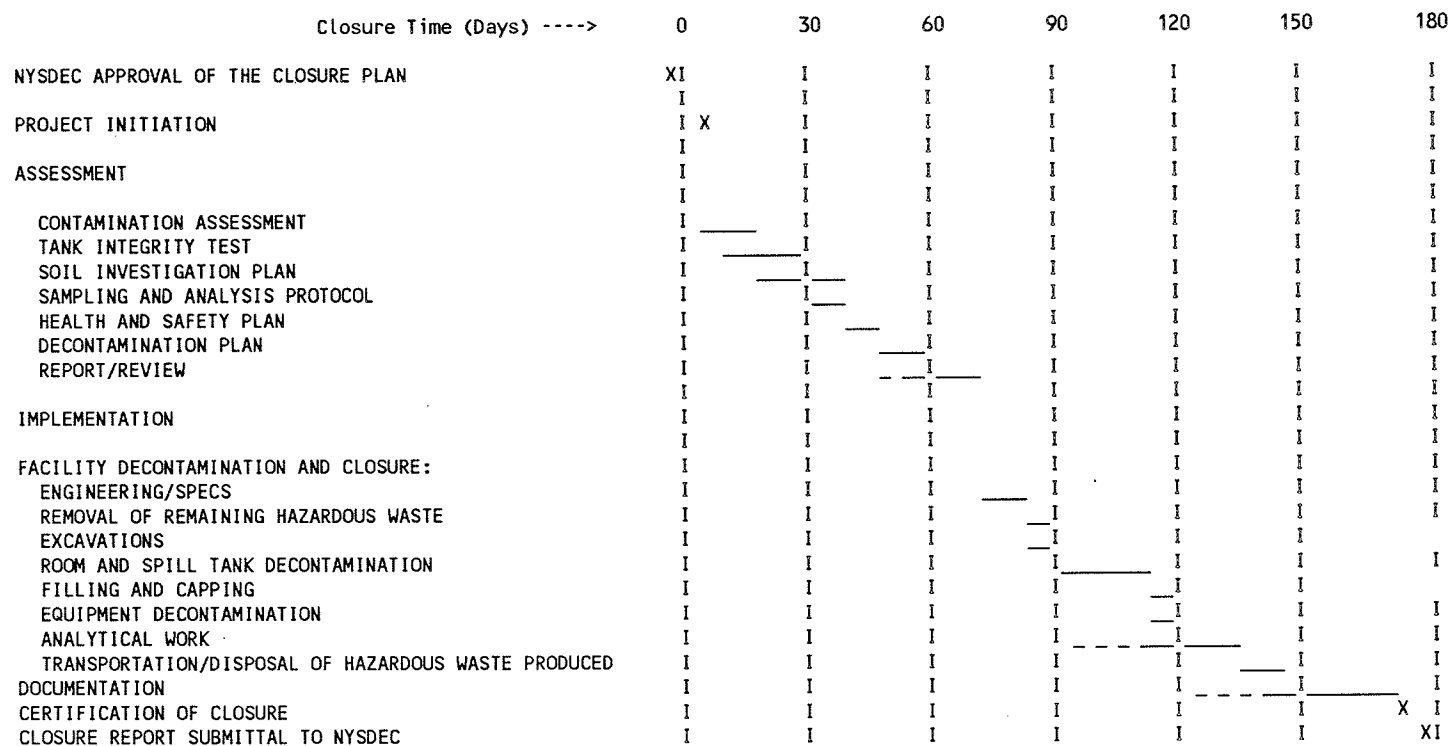


FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
BUILDING 309, ROOM 9

## SCHEDULE



IBM CORPORATION

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 9

CERTIFICATION OF CLOSURE

I certify that the work to close Room 9 in Building 309 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 23

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Room 23, located inside the Chemical Storage Building, Building 309, at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The general location of the room is shown in Figure 1. The room is designated as a Containerized Hazardous Waste Storage Area. The types of wastes stored in this room include: potassium ferricyanide and cyanide (D002, D003), cyanide and gold (F007), cyanide solids (D003), gold filters and solids contaminated with cyanide (D003), and arsenic contaminated solids (D004). Most of these wastes are generated in other buildings at the facility and are drummed and delivered to Building 309. Wastes delivered in smaller non-shipping containers are consolidated into drums and stored until shipped off site. It should be noted that the types of wastes stored in this room of the time of closure could be different than those described above.

The room measures approximately 30 feet by 50 feet. Its floor is coated with a chemical resistant material and is sloped toward a 500-gallon sump in the center of the room. A spill trench is provided in the floor near the room entrance. The trench is covered with metal grating. The room is equipped with an automatic sprinkler system and ventilation, and is suitable for storage of reactive, ignitable, or incompatible wastes.

The results of the room contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which will satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste storage areas.

## 5. Room Decontamination and Closure

- a. If present, hazardous waste materials, such as residues, sludges, and small size contaminated parts which are difficult to decontaminate economically, will be removed and placed into suitable containers and disposed of using a permitted hazardous waste disposal vendor.
- b. The walls, floor, metal grating, sump, and spill trench will be cleaned using hot water/steam, which may be accompanied by an appropriate detergent. The water/steam condensate will be allowed to flow into the sump. From there it will be pumped into suitable containers. Samples will be collected and analyzed for the constituents identified during the assessment. If the analytical results indicate that the condensate collected is a hazardous waste, then the containers will be transported off-site using a permitted waste disposal vendor. Otherwise, the waste will be sent to the on-site Industrial Wastewater Treatment Plant for processing.

- c. The walls, floor, metal grating, sump, and spill trench will be rinsed three times using pressurized water jets. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results of the samples are known. If warranted, water from the three rinse cycles will be stored separately. The samples of each rinse cycle will be analyzed using the methods identified in the Sampling and Analysis Protocol. If at the end of the third cycle, the concentration of the hazardous constituents does not meet the criteria set forth in the Decontamination Plan, rinsing will continue until the criteria are met. The rinse water will then be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. During the closure activities, the tank trailer will be parked in an area suitable for handling any accidental spills.
- d. After decontamination, the 500-gallon sump and the spill trench will be filled with concrete or reused. Depending on specific circumstances, the room may be totally demolished or refurbished for a different use.
- e. The equipment used to decontaminate the room will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- f. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the room will be estimated during the contamination assessment phase. For cost estimating purposes, it is expected that the equivalent of approximately ten 55-gallon drums of hazardous waste will be generated during the closure activities, including waste residue, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 2,500 gallons of hazardous wastewater will be generated during decontamination of the room, and cleaning equipment.

# CLOSURE COST ESTIMATE

Task Description	Cost, K\$
Contamination Assessment	8
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	12
Room Decontamination and Closure:	
Engineering/Specs	18
Removal of Remaining Hazardous Waste	4
Room Decontamination	23
Filling/Sealing Sump and Spill Trench	6
Equipment Decontamination	4
Analytical Work	7
Transportation/Disposal of Hazardous Waste Produced	11
Documentation	14
	<hr/>
	107
15% Administrative Charges	16.1
	<hr/>
	Total 123.1
20% Contingency	24.6
	<hr/>
Grand Total	147.7

The above estimate includes all labor, equipment rentals, and materials required to assess and decontaminate the room, and dispose of the waste produced.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum and bulk waste are as follows:

- o Drum Waste \$155.00 to \$518.00 per drum  
(depending upon type of waste discarded and vendor used)
- o Bulk Waste \$0.30 to \$1.00 per gallon  
(depending upon type of waste discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at the time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION OF CLOSURE AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the room has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a closure report:

1. Laboratory Test Results
2. A copy of the manifests for disposal of hazardous waste.



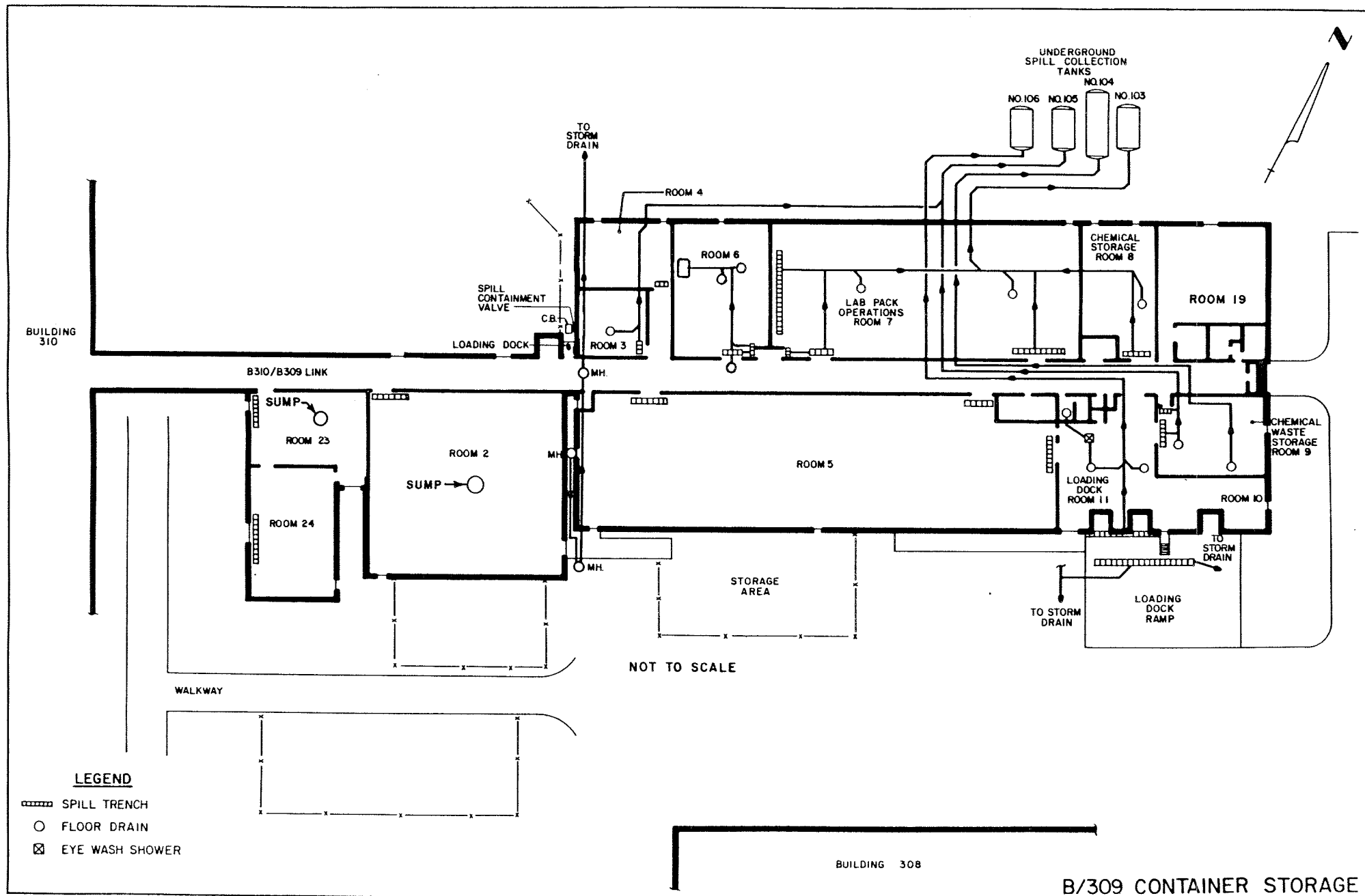


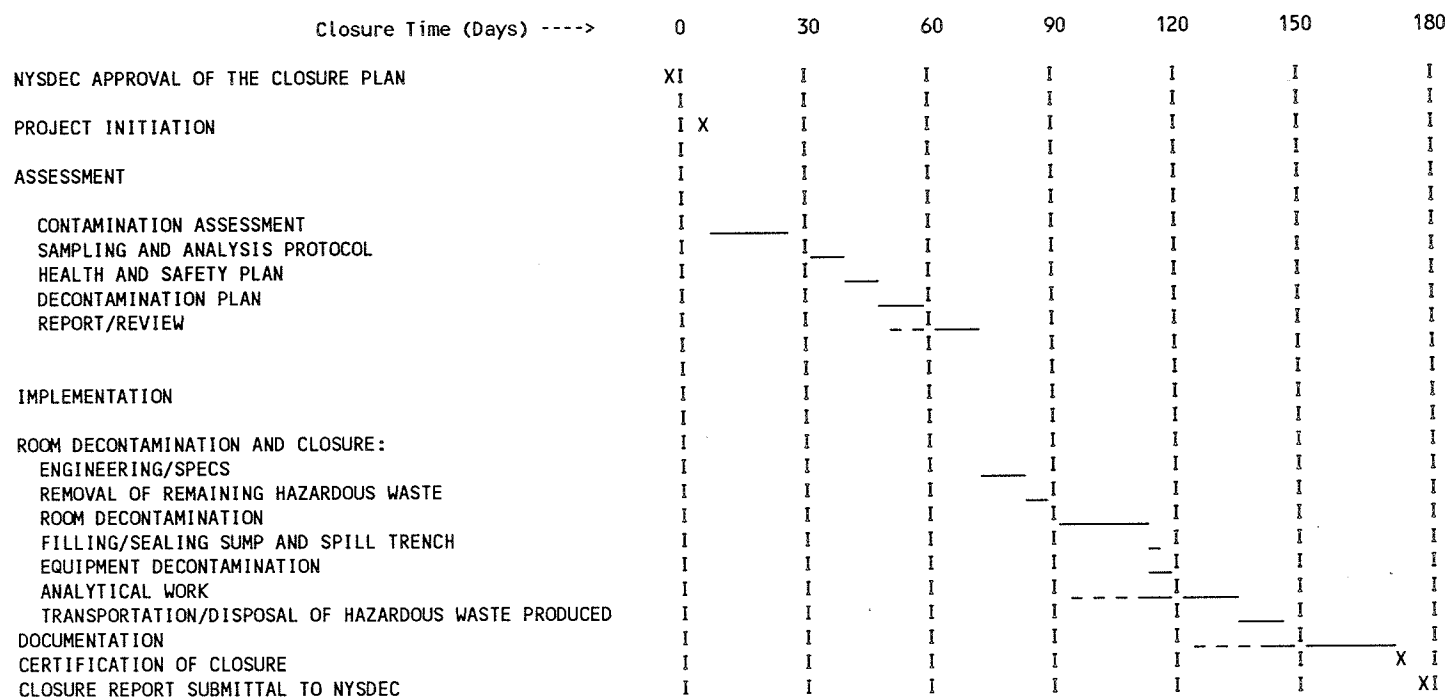
FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
BUILDING 309, ROOM 23

SCHEDULE



ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 23

CERTIFICATION OF CLOSURE

I certify that the work to close Room 23 in Building 309 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

CONTAINER STORAGE AREA  
BUILDING 309, ROOM 23

CERTIFICATION OF CLOSURE

I certify that the work to close Room 23 in Building 309 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

DUMPSTER BAY  
BUILDING 386

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been prepared for the dumpster bay, located inside Building 386 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The dumpster bay location is shown in Figure 1. The types of wastes stored in the bay include: industrial waste and fluoride/heavy metal waste sludge (Waste Codes: D002, D007, and F006). These wastes are generated by two filter presses in Building 386.

The bay is comprised of two areas which measure approximately 9 feet by 35 feet each. The bay is served by a stainless steel lined concrete dike, equipped with a sump and pumps controlled by a float switch. Drainage collected in the sump is pumped to Tank 3063. The dumpster bay is equipped with an eye wash and safety shower. The dumpsters used in this area are constructed of steel and measure 7'W x 22'8"L x 5'H.

The diked area will be closed at the same time and in the same manner as the dumpster bay.



## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and the NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the dumpster bays will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Operation

As a first step in closing the dumpster bay, discharges from Filter Presses B/386 FP-1 and B/386 FP-2 will be ceased and any stored wastes will be shipped off-site following normal operating practices. The bay will be reclassified as inactive and will no longer accept any hazardous waste.

### 3. Contamination Assessment

The operation history of the dumpster bay will be reviewed with the intent of determining the type and amount of hazardous constituents stored in the bay at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, an assessment of the bay's contamination will be made by sampling and analyzing the surfaces that have been in contact with hazardous constituents. Sampling will consist of collecting direct evidences of contamination (e.g., presence of liquid or solid residues in the sump) or collecting indirect evidences of contamination (e.g., surface wipe or rinse samples). These samples will be analyzed for total fluorides, using EPA Method SM 413A or SM 413B, and for heavy metals, using the EP Toxicity Test. Approved methods will be used for the analysis of other hazardous constituents identified during the historical information gathering.

### 4. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan.

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform to approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the bay contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which will satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste areas.

5. Dumpster Bay Decontamination and Closure

- a. If present, hazardous waste materials, such as residues, sludges, and small size contaminated parts which are difficult to decontaminate economically, will be removed and placed into suitable containers and disposed of using a NYSDEC-approved hazardous waste disposal vendor.
- b. The walls, concrete floor, dike, and sump will be cleaned using hot water/steam, which may be accompanied by an appropriate detergent. The water/steam condensate will be allowed to flow into the sump. From there it will be pumped into suitable containers. Samples will be collected and analyzed for the constituents identified during the assessment. The waste will be sent to the on-site Fluoride/Heavy Metals Waste Treatment Plant or the Industrial Wastewater Treatment Plant for processing.

- c. The walls, floor, dike, and sump will be rinsed three times using pressurized water jets. The water from each rinse cycle will be collected in the sump and pumped into a tank trailer where it will be stored until the analytical results of the samples are known. The samples of each rinse cycle will be analyzed using the methods identified in the Sampling and Analysis Protocol. If at the end of the third cycle, the concentration of the hazardous constituents does not meet the criteria set forth in the Decontamination Plan, rinsing will continue until the criteria are met. The rinse water will then be processed at the on-site Fluoride/Heavy Metals Waste Treatment Plant or the Industrial Wastewater Treatment Plant. During the closure activities, the tank trailer will be parked in an area suitable for handling any accidental spills.
- d. After decontamination, and depending on specific circumstances, the dumpster bay may be totally demolished or refurbished for a different use.
- e. The equipment used to decontaminate the bay will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- f. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the bay will be estimated during the system contamination assessment phase. For cost estimating purposes, it is expected that the equivalent of approximately fifteen 55-gallon drums of hazardous waste will be generated during the closure activities, including waste residue, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 3,500 gallons of hazardous wastewater will be generated during decontamination of the bay, dike, sump, and cleaning equipment.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Contamination Assessment	6
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	8
Unit Decontamination and Closure:	
Engineering/Specs	16
Removal of Remaining Hazardous Waste	5
Unit Decontamination	41
Equipment Decontamination	4
Analytical Work	7
Transportation/Disposal of Hazardous Waste Produced	9
Documentation	11
	<hr/>
	107
15% Administrative Charges	16.1
	<hr/>
	Total 123.1
20% Contingency	24.6
	<hr/>
Grand Total	147.7

The above estimate includes all labor, equipment rentals, and materials required to assess and decontaminate the dumpster bays, and dispose of the waste produced.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum and bulk waste are as follows:

- o Drum Waste \$155.00 to \$518.00 per drum  
(depending upon type of waste discarded and vendor used)
- o Bulk Waste \$0.30 to \$1.00 per gallon  
(depending upon type of waste discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at the time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION OF CLOSURE AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the dumpster bays have been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test Results
2. A copy of the manifests used for disposal of hazardous waste.

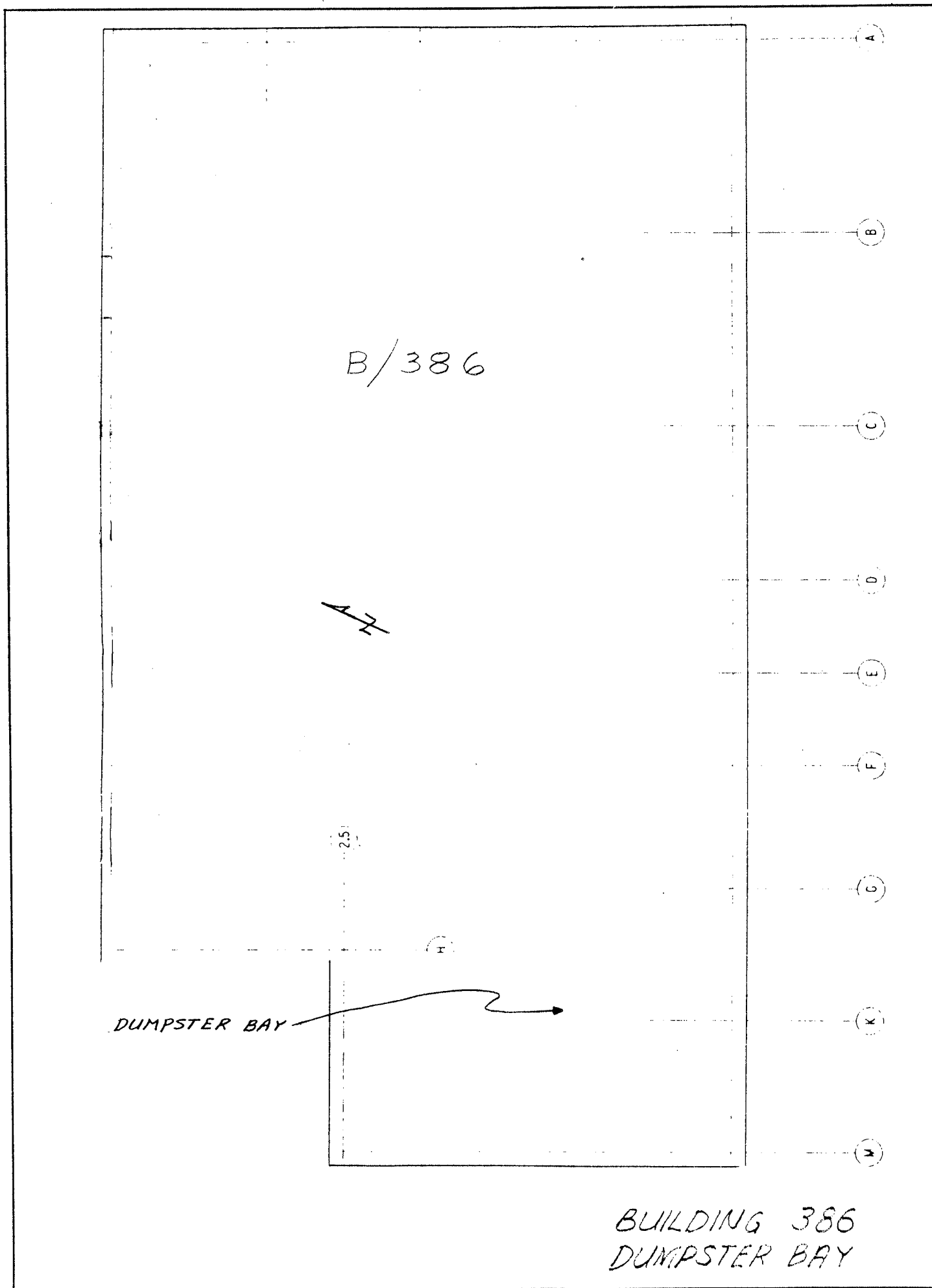


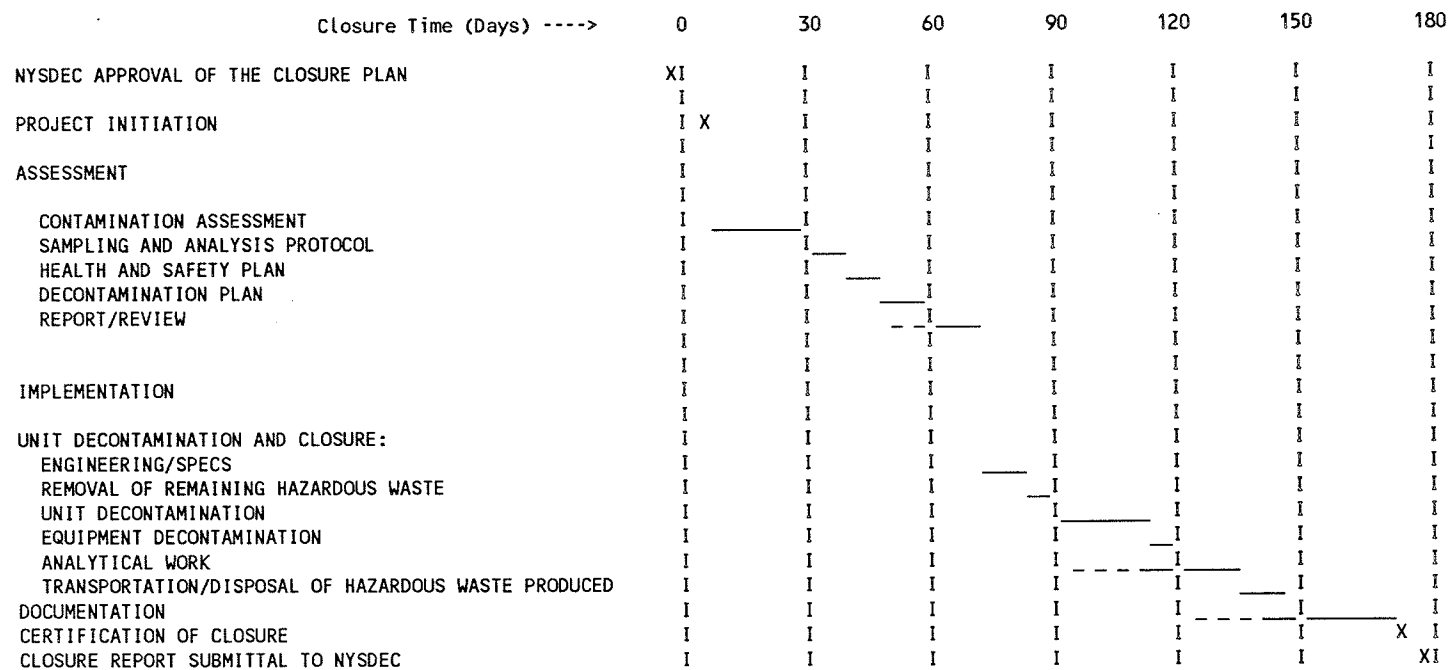
FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
DUMPSTER BAY, BUILDING 386

## SCHEDULE





ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

DUMPSTER BAY  
BUILDING 386

CERTIFICATION OF CLOSURE

I certify that the work to close the dumpster bay in Building 386 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

DUMPSTER BAY  
BUILDING 386

CERTIFICATION OF CLOSURE

I certify that the work to close the dumpster bay in Building 386 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

DUMPSTER STORAGE AREA  
BUILDING 386

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for the dumpster storage area, located outside Building 386 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The dumpster storage area is shown in Figure 1. The types of wastes stored in the area include: industrial waste and fluoride/heavy metal sludge (Waste Codes: D002, D007, and F006). These wastes are generated by the filter presses in Building 386. In addition, the area is used to transfer other materials to and from facilities at Building 386.

The area is constructed of concrete. The concrete has a chemical resistant coating. The storage area measures 48 feet by 52 feet and is sloped two feet toward the rear. The storage area is equipped with a sump and a float-controlled pump, an eye wash station, and a safety shower. The dumpsters stored in this area are constructed of steel and measure 7'W x 22'8"L x 5'H.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and the NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the storage area will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Operation

As a first step in closing the storage area, any stored wastes will be shipped off-site following normal operating practices. The storage area will be reclassified as inactive and will no longer accept any hazardous waste.

### 3. Contamination Assessment

The operation history of the storage area will be reviewed with the intent of determining the type and amount of hazardous constituents stored in the area at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, an assessment of the storage area's contamination will be made by sampling and analyzing the surfaces that have been in contact with hazardous constituents. Sampling will consist of collecting direct evidences of contamination (e.g., presence of liquid or solid residues in the sump) or collecting indirect evidences of contamination (e.g., surface wipe or rinse samples). These samples will be analyzed for total fluorides, using EPA Method SM 413A or SM 413B, and for heavy metals, using the EP Toxicity Test. Approved methods will be used for the analysis of other hazardous constituents identified during the historical information gathering.

### 4. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan.

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform to approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the storage area contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which will satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste areas.

5. Dumpster Storage Area Decontamination and Closure

- a. If present, hazardous waste materials, such as residues, sludges, and small size contaminated parts which are difficult to decontaminate economically, will be removed and placed into suitable containers and disposed of using a NYSDEC-approved hazardous waste disposal vendor.
- b. The walls, floor, and sump will be cleaned using hot water/steam, which may be accompanied by an appropriate detergent. The water/steam condensate will be allowed to flow into the sump. From there it will be pumped into suitable containers. Samples will be collected and analyzed for the constituents identified during the assessment. The waste will be sent to the on-site Fluoride/Heavy Metal Waste Treatment Plant or the Industrial Wastewater Treatment Plant for processing.



- c. The walls, floor, and sump will be rinsed three times using pressurized water jets. The water from each rinse cycle will be collected in the sump and pumped into a tank trailer where it will be stored until the analytical results of the samples are known. The samples of each rinse cycle will be analyzed using the methods identified in the Sampling and Analysis Protocol. If at the end of the third cycle, the concentration of the hazardous constituents does not meet the criteria set forth in the Decontamination Plan, rinsing will continue until the criteria are met. The rinse water will then be processed at the on-site Fluoride/Heavy Metals Waste Treatment Plant or the Industrial Wastewater Treatment Plant. During the closure activities, the tank trailer will be parked in an area suitable for handling any accidental spills.
- d. After decontamination, the sump will be filled with concrete or reused. Depending on specific circumstances, the storage area may be totally demolished or refurbished for a different use.
- e. The equipment used to decontaminate the storage area will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- f. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blaville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the storage area will be estimated during the contamination assessment phase. For cost estimating purposes, it is expected that the equivalent of approximately five 55-gallon drums of hazardous waste will be generated during the closure activities, including waste residue, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 1,500 gallons of hazardous wastewater will be generated during decontamination of the storage area, sump, and cleaning equipment.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Contamination Assessment	4
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	6
Facility Decontamination and Closure:	
Engineering/Specs	10
Removal of Remaining Hazardous Waste	2
Area Decontamination	10
Filling/Sealing Sump	3
Equipment Decontamination	3
Analytical Work	3
Transportation/Disposal of Hazardous Waste Produced	4
Documentation	6
	<hr/>
	51
15% Administrative Charges	7.7
	<hr/>
Total	58.7
20% Contingency	11.7
	<hr/>
Grand Total	70.4

The above estimate includes all labor, equipment rentals, and materials required to assess and decontaminate the storage area, and dispose of the waste produced.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum and bulk waste are as follows:

- o Drum Waste                               \$155.00 to \$518.00 per drum  
(depending upon type of waste  
discarded and vendor used)
- o Bulk Waste                               \$0.30 to \$1.00 per gallon  
(depending upon type of waste  
discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at the time of closure.

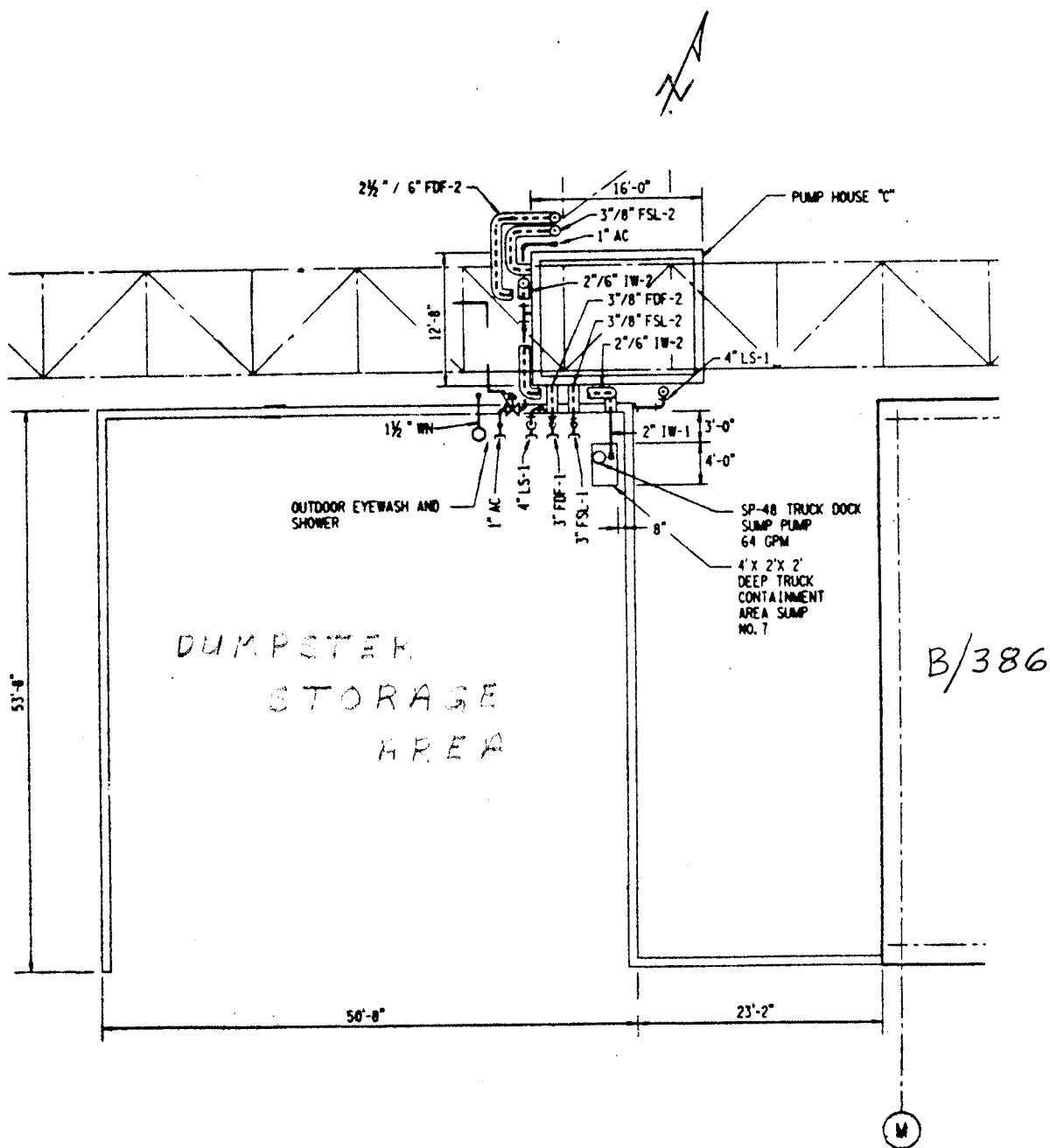
IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION OF CLOSURE AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the dumpster storage area has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test Results
2. A copy of the manifests used for disposal of hazardous waste.



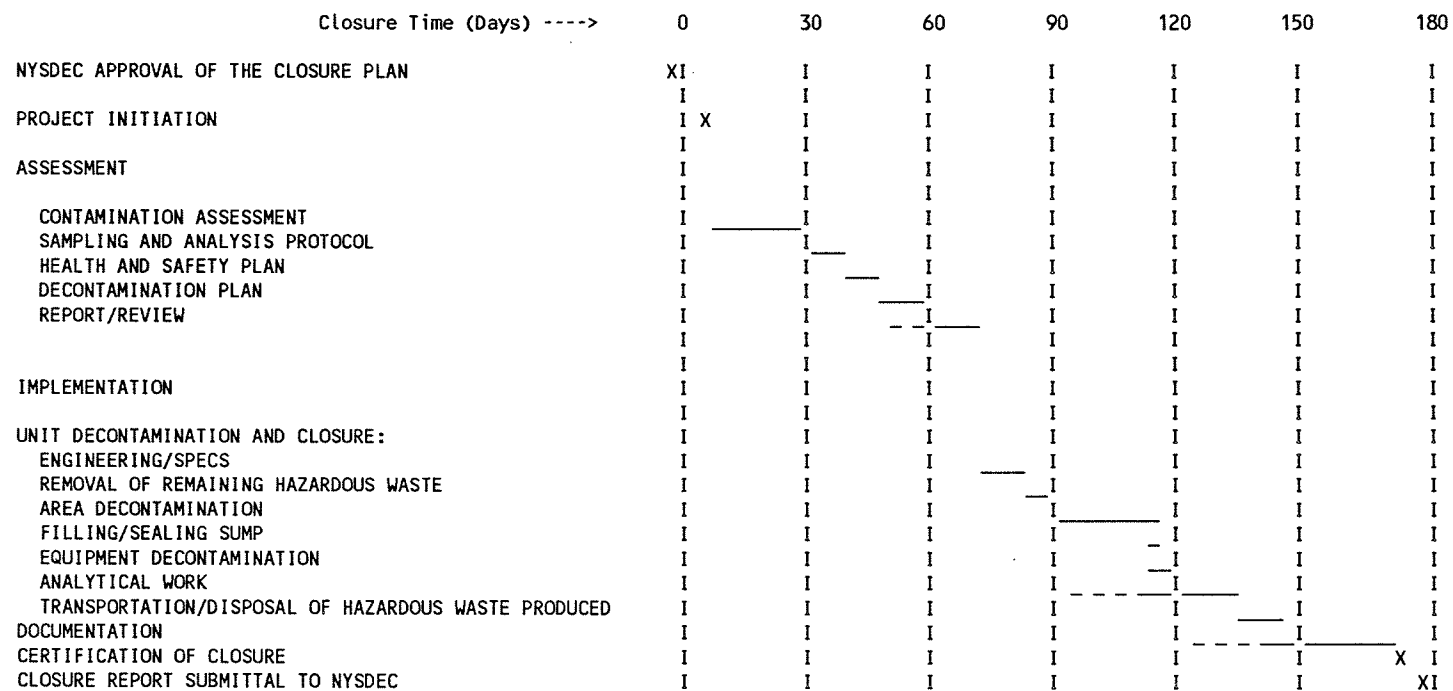
BUILDING 386  
DUMPSTER STORAGE AREA

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
DUMPSTER STORAGE AREA, BUILDING 386

SCHEDULE



INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

DUMPSTER STORAGE AREA  
BUILDING 386

CERTIFICATION OF CLOSURE

I certify that the work to close the dumpster storage area at Building 386 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

DUMPSTER STORAGE AREA  
BUILDING 386

CERTIFICATION OF CLOSURE

I certify that the work to close the dumpster storage area at Building 386 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

DUMPSTER BAY  
BUILDING 690

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been prepared for the dumpster bay, located inside Building 690 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The dumpster bay is shown in Figure 1. Construction of the dumpster bay has been completed; however, the dumpster bay has not been placed into service. The types of wastes that will be stored in the bay include: industrial waste and fluoride/heavy metal waste sludge (Waste Codes: D002, D007, F006). These wastes will be generated by the filter press in Building 690.

The bay measures approximately 15 feet by 37 feet and is constructed of concrete covered with stainless steel. The bay has 6-inch curbing and three 16-inch by 30-inch open spill trenches. The trenches are covered with metal grating. The bay is also equipped with ventilation and an eye wash/safety shower station and has fire extinguishing capabilities. The dumpsters that will be used in this area are constructed of steel and measure 7'W x 22'8"L x 5'H.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and the NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the dumpster bay will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Operation

As a first step in closing the dumpster bay, discharges from Filter Press B/690 FP-1 will be ceased and any stored wastes will be shipped off-site following normal operating practices. The bay will be reclassified as inactive and will no longer accept any hazardous waste.

### 3. Contamination Assessment

The operation history of the dumpster bay will be reviewed with the intent of determining the type and amount of hazardous constituents stored in the bay at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, an assessment of the bay's contamination will be made by sampling and analyzing the surfaces that have been in contact with hazardous constituents. Sampling will consist of collecting direct evidences of contamination (e.g., presence of liquid or solid residues in the spill trenches) or collecting indirect evidences of contamination (e.g., surface wipe or rinse samples). These samples will be analyzed for total fluorides, using EPA Method SM 413A or SM 413B, and for heavy metals, using the EP Toxicity Test. Approved methods will be used for the analysis of other hazardous constituents identified during the historical information gathering.

### 4. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan.

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform to approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the bay contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which will satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste areas.

5. Dumpster Bay Decontamination and Closure

- a. If present, hazardous waste materials, such as residues, sludges, and small size contaminated parts which are difficult to decontaminate economically, will be removed and placed into suitable containers and disposed of using a NYSDEC-approved hazardous waste disposal vendor.
- b. The walls, floor, metal grating, and spill trenches will be cleaned using hot water/steam, which may be accompanied by an appropriate detergent. The water/steam condensate will be allowed to flow into the spill trenches. From there it will be pumped into suitable containers. Samples will be collected and analyzed for the constituents identified during the assessment. The waste will be sent to the on-site Fluoride/Heavy Metals Waste Treatment Plant or the Industrial Wastewater Treatment Plant for processing.

- c. The walls, floor, metal grating, and spill trenches will be rinsed three times using pressurized water jets. The water from each rinse cycle will be collected in the spill trenches and pumped into a tank trailer where it will be stored until the analytical results of the samples are known. The samples of each rinse cycle will be analyzed using the methods identified in the Sampling and Analysis Protocol. If at the end of the third cycle, the concentration of the hazardous constituents does not meet the criteria set forth in the Decontamination Plan, rinsing will continue until the criteria are met. The rinse water will then be processed at the on-site Fluoride/Heavy Metals Waste Treatment Plant or the Industrial Wastewater Treatment Plant. During the closure activities, the tank trailer will be parked in an area suitable for handling any accidental spills.
- d. After decontamination the spill trenches will be filled with concrete or reused. Depending on specific circumstances, the dumpster bay may be totally demolished or refurbished for a different use.
- e. The equipment used to decontaminate the bay will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- f. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 99730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blainville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the bay will be estimated during the system contamination assessment phase. For cost estimating purposes, it is expected that the equivalent of approximately ten 55-gallon drums of hazardous waste will be generated during the closure activities, including waste residue, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 2,500 gallons of hazardous wastewater will be generated during decontamination of the bay, metal grating, spill trenches, and the cleaning equipment.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Contamination Assessment	6
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	8
Unit Decontamination and Closure:	
Engineering/Specs	14
Removal of Remaining Hazardous Waste	4
Unit Decontamination	29
Filling/Sealing Sump and Trenches	6
Equipment Decontamination	4
Analytical Work	7
Transportation/Disposal of Hazardous Waste Produced	8
Documentation	11
	<hr/>
	97
15% Administrative Charges	14.6
	<hr/>
Total	111.6
20% Contingency	22.3
	<hr/>
Grand Total	133.9

The above estimate includes all labor, equipment rentals, and materials required to assess and decontaminate the dumpster bay, and dispose of the waste produced.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum and bulk waste are as follows:

- o Drum Waste \$155.00 to \$518.00 per drum  
(depending upon type of waste discarded and vendor used)
- o Bulk Waste \$0.30 to \$1.00 per gallon  
(depending upon type of waste discarded and vendor used)



## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at the time of closure.

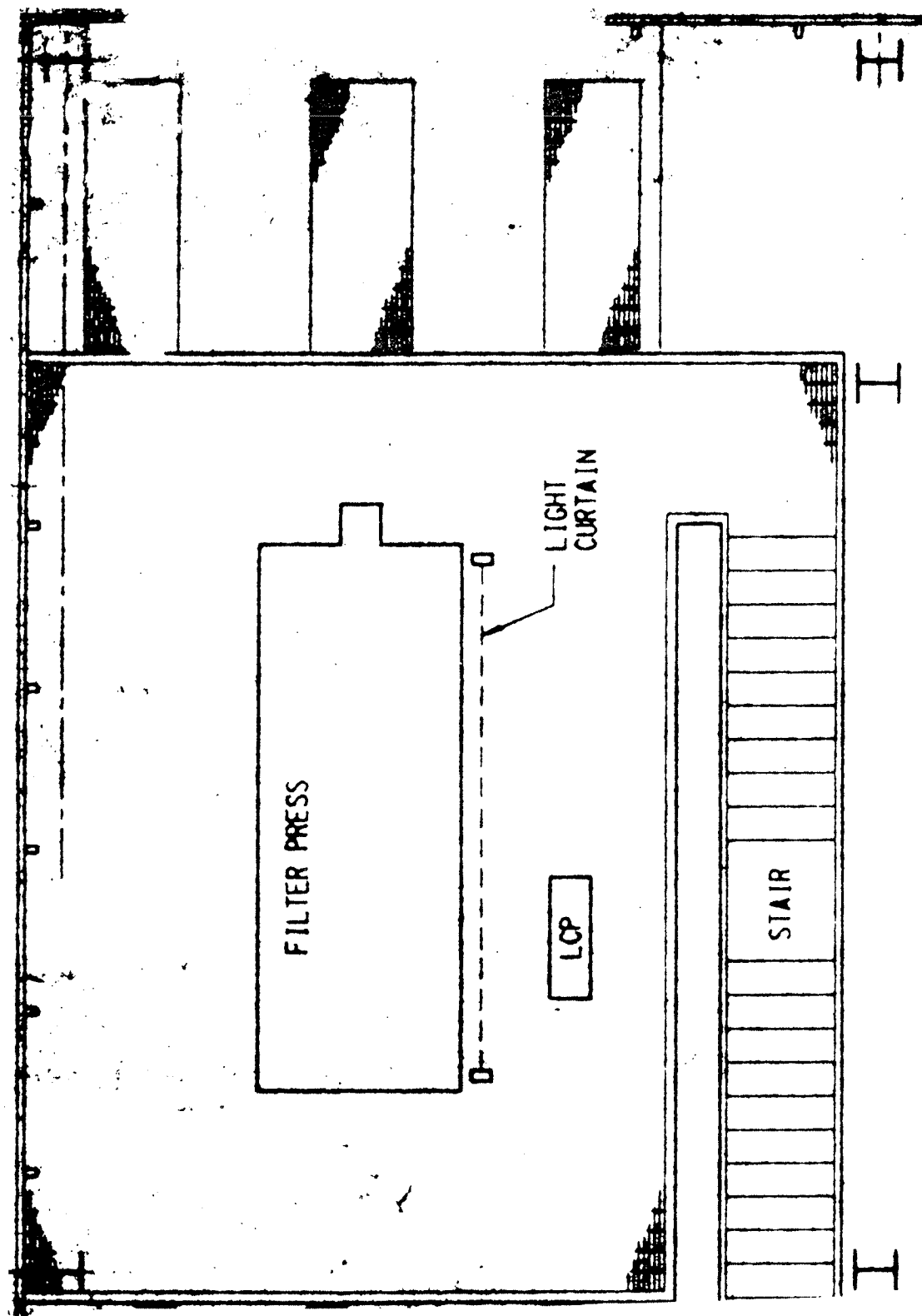
IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION OF CLOSURE AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the dumpster bay has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test Results
2. A copy of the manifests used for disposal of hazardous waste.



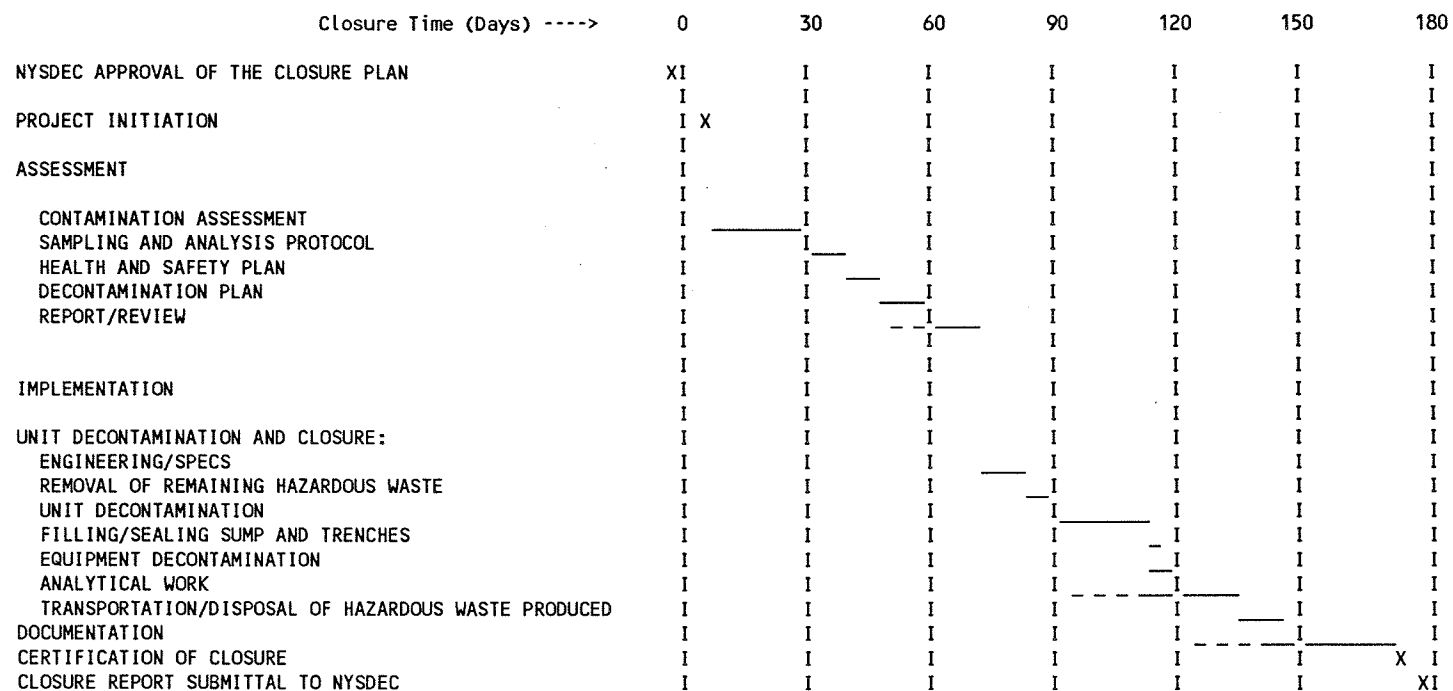
BUILDING 690  
DUMPSTER BAY

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
DUMPSTER BAY, BUILDING 690

## SCHEDULE



ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

DUMPSTER BAY  
BUILDING 690

CERTIFICATION OF CLOSURE

I certify that the work to close the dumpster bay in Building 690 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

DUMPSTER BAY  
BUILDING 690

CERTIFICATION OF CLOSURE

I certify that the work to close the dumpster bay in Building 690 was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

DUMPSTER STORAGE AREA  
BUILDING 690  
(L/UL AREA #32)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA



## INTRODUCTION

This Closure Plan has been prepared for the dumpster storage area (L/UL Area #32), located outside Building 690 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The dumpster storage area is shown in Figure 1. Construction of the dumpster storage area has been completed; however the area is not in use yet. The types of wastes that will be stored in the area include: industrial waste and fluoride/heavy metal sludge (Waste Codes: D002, D007, F006). These wastes will be generated by the filter press in Building 690. In addition, the area will be used to transfer other materials to and from facilities at Building 690.

The area is constructed of concrete. The concrete has a chemical resistant coating. The storage area measures 34 feet by 52 feet and is sloped toward the rear. The storage area is equipped with a sump, an eye wash station, a safety shower, and is enclosed by a fence. The dumpsters that will be stored in this area are constructed of steel and measure 7'W x 22'8"L x 5'H.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and the NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the storage area will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Operation

As a first step in closing the storage area, any stored wastes will be shipped off-site following normal operating practices. The storage area will be reclassified as inactive and will no longer accept any hazardous waste.

### 3. Contamination Assessment

The operation history of the storage area will be reviewed with the intent of determining the type and amount of hazardous constituents stored in the area at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, an assessment of the storage area's contamination will be made by sampling and analyzing the surfaces that have been in contact with hazardous constituents. Sampling will consist of collecting direct evidences of contamination (e.g., presence of liquid or solid residues in the sump) or collecting indirect evidences of contamination (e.g., surface wipe or rinse samples). These samples will be analyzed for total fluorides, using EPA Method SM 413A or SM 413B, and for heavy metals, using the EP Toxicity Test. Approved methods will be used for the analysis of other hazardous constituents identified during the historical information gathering.

### 4. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan.

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform to approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the storage area contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which will satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste areas.

5. Dumpster Bay Decontamination and Closure

- a. If present, hazardous waste materials, such as residues, sludges, and small size contaminated parts which are difficult to decontaminate economically, will be removed and placed into suitable containers and disposed of using a NYSDEC-approved hazardous waste disposal vendor.
- b. The walls, floor, and sump will be cleaned using hot water/steam, which may be accompanied by an appropriate detergent. The water/steam condensate will be allowed to flow into the sump. From there it will be pumped into suitable containers. Samples will be collected and analyzed for the constituents identified during the assessment. The waste will be sent to the on-site Fluoride/Heavy Metals Waste Treatment Plant or the Industrial Wastewater Treatment Plant for processing.

- c. The walls, floor, and sump will be rinsed three times using pressurized water jets. The water from each rinse cycle will be collected in the sump and pumped into a tank trailer where it will be stored until the analytical results of the samples are known. The samples of each rinse cycle will be analyzed using the methods identified in the Sampling and Analysis Protocol. If at the end of the third cycle, the concentration of the hazardous constituents does not meet the criteria set forth in the Decontamination Plan, rinsing will continue until the criteria are met. The rinse water will then be processed at the on-site Fluoride/Heavy Metals Waste Treatment Plant or the Industrial Wastewater Treatment Plant. During the closure activities, the tank trailer will be parked in an area suitable for handling any accidental spills.
- d. After decontamination, the sump will be filled with concrete or reused. Depending on specific circumstances, the storage area may be totally demolished or refurbished for a different use.
- e. The equipment used to decontaminate the storage area will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- f. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJDO53288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 99730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blainville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the storage area will be estimated during the contamination assessment phase. For cost estimating purposes, it is expected that the equivalent of approximately five 55-gallon drums of hazardous waste will be generated during the closure activities, including waste residue, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 1,500 gallons of hazardous wastewater will be generated during decontamination of the storage area, sump, and cleaning equipment.

## CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Contamination Assessment	4
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	6
Facility Decontamination and Closure:	
Engineering/Specs	10
Removal of Remaining Hazardous Waste	2
Area Decontamination	10
Filling/Sealing Sump	3
Equipment Decontamination	3
Analytical Work	3
Transportation/Disposal of Hazardous Waste Produced	4
Documentation	6
	<hr/>
	51
15% Administrative Charges	7.7
	<hr/>
	Total
	58.7
20% Contingency	11.7
	<hr/>
	Grand Total
	70.4

The above estimate includes all labor, equipment rentals, and materials required to assess and decontaminate the storage area, and dispose of the waste produced.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum and bulk waste are as follows:

- o Drum Waste \$155.00 to \$518.00 per drum  
(depending upon type of waste  
discarded and vendor used)
- o Bulk Waste \$0.30 to \$1.00 per gallon  
(depending upon type of waste  
discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at the time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION OF CLOSURE AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the dumpster storage area has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test Results
2. A copy of the manifests used for disposal of hazardous waste.

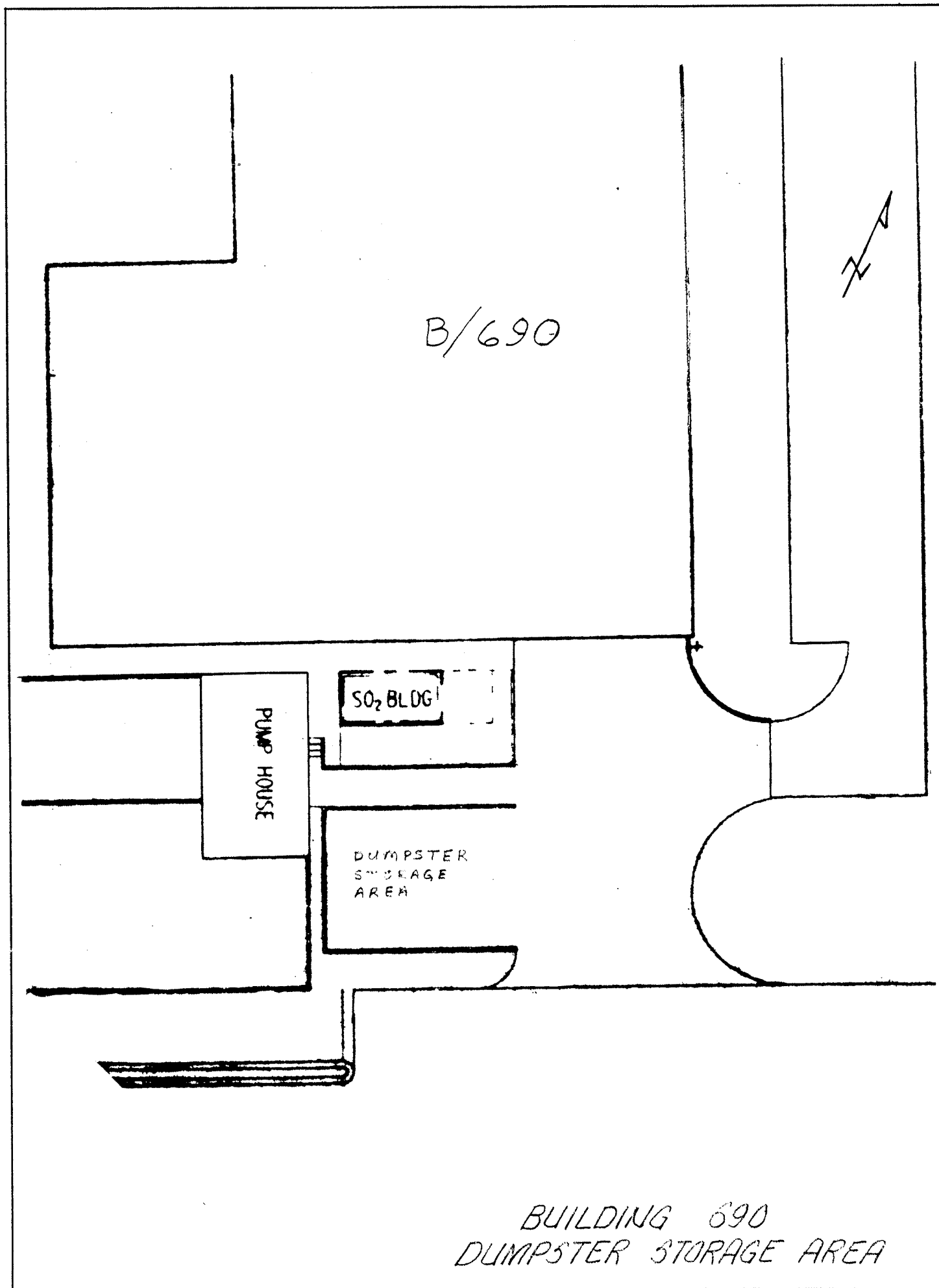


FIGURE 1



FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
DUMPSTER STORAGE AREA, BUILDING 690  
(L/UL AREA #32)

## SCHEDULE

Closure Time (Days) ---->	0	30	60	90	120	150	180
NYSDEC APPROVAL OF THE CLOSURE PLAN	XI	I	I	I	I	I	I
	I	I	I	I	I	I	I
PROJECT INITIATION	I X	I	I	I	I	I	I
	I	I	I	I	I	I	I
ASSESSMENT	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
CONTAMINATION ASSESSMENT	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
SAMPLING AND ANALYSIS PROTOCOL	I	I	I	I	I	I	I
HEALTH AND SAFETY PLAN	I	I	I	I	I	I	I
DECONTAMINATION PLAN	I	I	I	I	I	I	I
REPORT/REVIEW	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
IMPLEMENTATION	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
UNIT DECONTAMINATION AND CLOSURE:	I	I	I	I	I	I	I
ENGINEERING/SPECS	I	I	I	I	I	I	I
REMOVAL OF REMAINING HAZARDOUS WASTE	I	I	I	I	I	I	I
AREA DECONTAMINATION	I	I	I	I	I	I	I
FILLING/SEALING SUMP	I	I	I	I	I	I	I
EQUIPMENT DECONTAMINATION	I	I	I	I	I	I	I
ANALYTICAL WORK	I	I	I	I	I	I	I
TRANSPORTATION/DISPOSAL OF HAZARDOUS WASTE PRODUCED	I	I	I	I	I	I	I
DOCUMENTATION	I	I	I	I	I	I	I
CERTIFICATION OF CLOSURE	I	I	I	I	I	I	X
CLOSURE REPORT SUBMITTAL TO NYSDEC	I	I	I	I	I	I	XI

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

DUMPSTER STORAGE AREA  
BUILDING 690  
(L/UL AREA #32)

CERTIFICATION OF CLOSURE

I certify that the work to close the dumpster storage area at Building 690 (L/UL Area #32) was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

DUMPSTER STORAGE AREA  
BUILDING 690  
(L/UL AREA #32)

CERTIFICATION OF CLOSURE

I certify that the work to close the dumpster storage area at Building 690 (L/UL Area #32) was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

MIXED SOLVENTS  
WASTE STORAGE TANK  
(I.D. #168)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 168, located underground south of Building 330C at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank has been active since 1980 and is used to store mixed solvents waste (Waste Codes: F001, F002, F003, and F005). However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown on Figure 1:

- |                             |                          |
|-----------------------------|--------------------------|
| o Tank Capacity:            | 5,000 gallons            |
| o Tank and Piping Material: | Steel                    |
| o Tank Configuration:       | Below ground, horizontal |
| o Dimensions:               | 6'8" Dia x 19'L          |
| o Secondary Containment:    | Double Walled.           |

The ancillary piping and equipment, and secondary containment facilities, will be closed at the same time and in the same manner as Tank 168.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

The tank and the associated piping will be pressure tested to determine the presence and location of any leaks.

### 5. Soil Investigation

If the pressure testing shows evidence of leaks, or if there is a history of releases, a Soil Investigation Plan will be prepared and executed to determine the extent of soil contamination

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination and integrity assessments will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.



- b. If practical, the aboveground piping will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.

The underground piping will be accessed through excavations in order to isolate straight lengths of pipe for cleaning. Decontamination will be performed following the same steps described below for the tank.

- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the aboveground piping will be disposed of as non-hazardous waste or will be sold as scrap metal.

If the tank and the underground piping are to remain in place, they will be filled with an inert material and capped. Otherwise, they will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and the tank trailer, after it is emptied.

- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal facility (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

- h. Contaminated soil, if any exists, will be removed and disposed of off-site using a permitted waste disposal vendor. Clean fill will be used to replace any soil that is removed.

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of fifteen to twenty 55-gallon drums of hazardous waste will be generated during the closure activities, including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 6,500 gallons of hazardous wastewater will be generated during the tank system decontamination. The quantity of contaminated soil, if any exists, will be determined during the soil investigation work.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	12
Integrity Test	25
Soil Investigation Plan	--
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	14
Facility Decontamination and Closure:	
Engineering/Specs	35
Removal of Remaining Hazardous Waste	4
Excavations (Five)	11
Decontamination of Tank and Piping	110
Filling, Capping	8
Equipment Decontamination	6
Analytical Work	12
Transportation/Disposal of Hazardous Waste Produced	17
Dismantling and Disposal of Piping	12
Documentation	20
	-----
	286
15% Administrative Charges	42.9
	-----
Total	328.9
20% Contingency	65.8
	-----
Grand Total	394.7

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the aboveground piping and other pertinent equipment as non-hazardous wastes and abandoning the decontaminated tank and underground piping in place. An estimate of costs associated with the preparation and execution of the soil investigation plan and removal of contaminated soils will be determined at a later date if a soil investigation is warranted.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.
3. Soil Investigation Plan/Report, if warranted, including information on the sources and analysis of the clean fill used after excavation is completed.

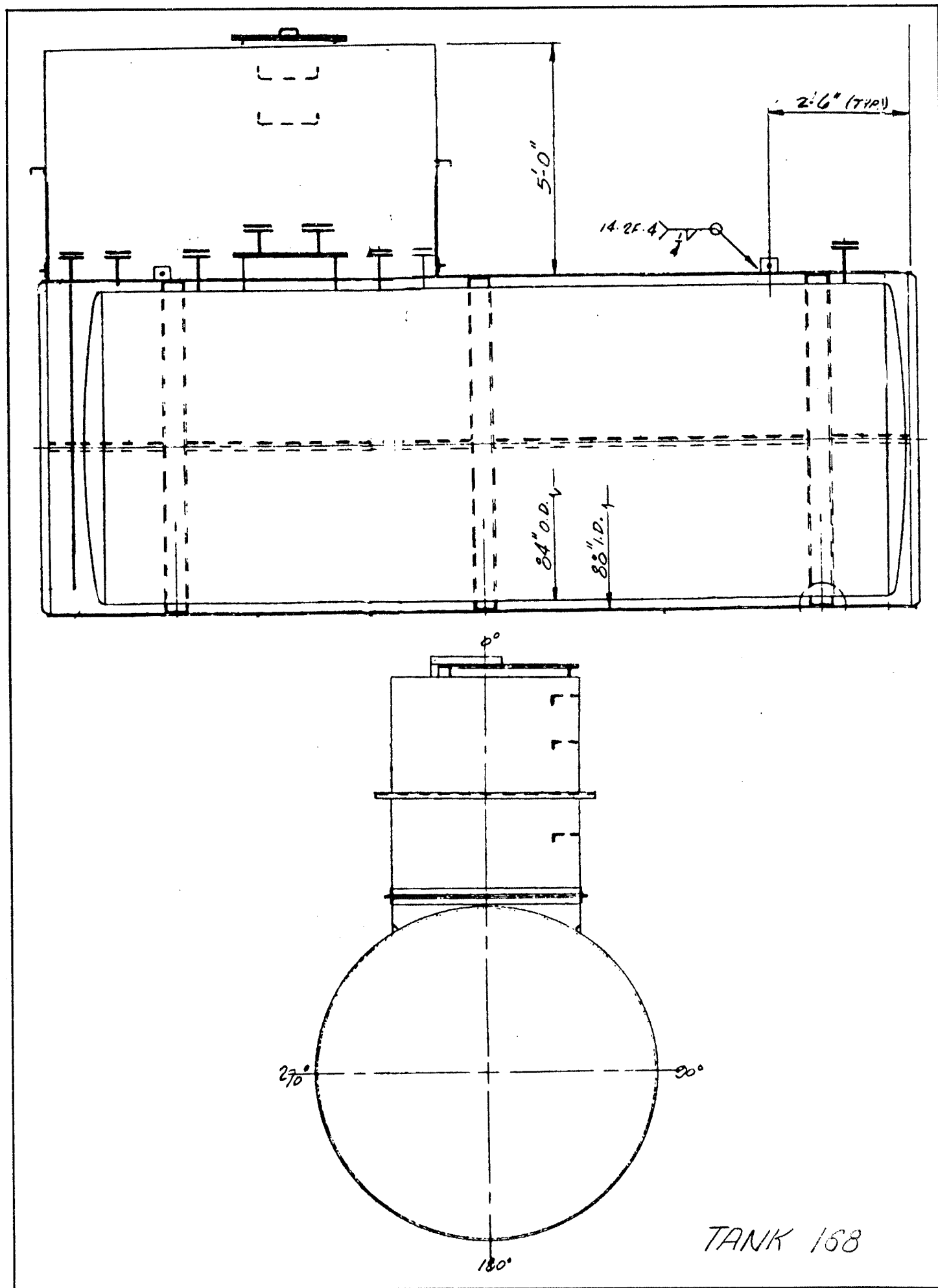


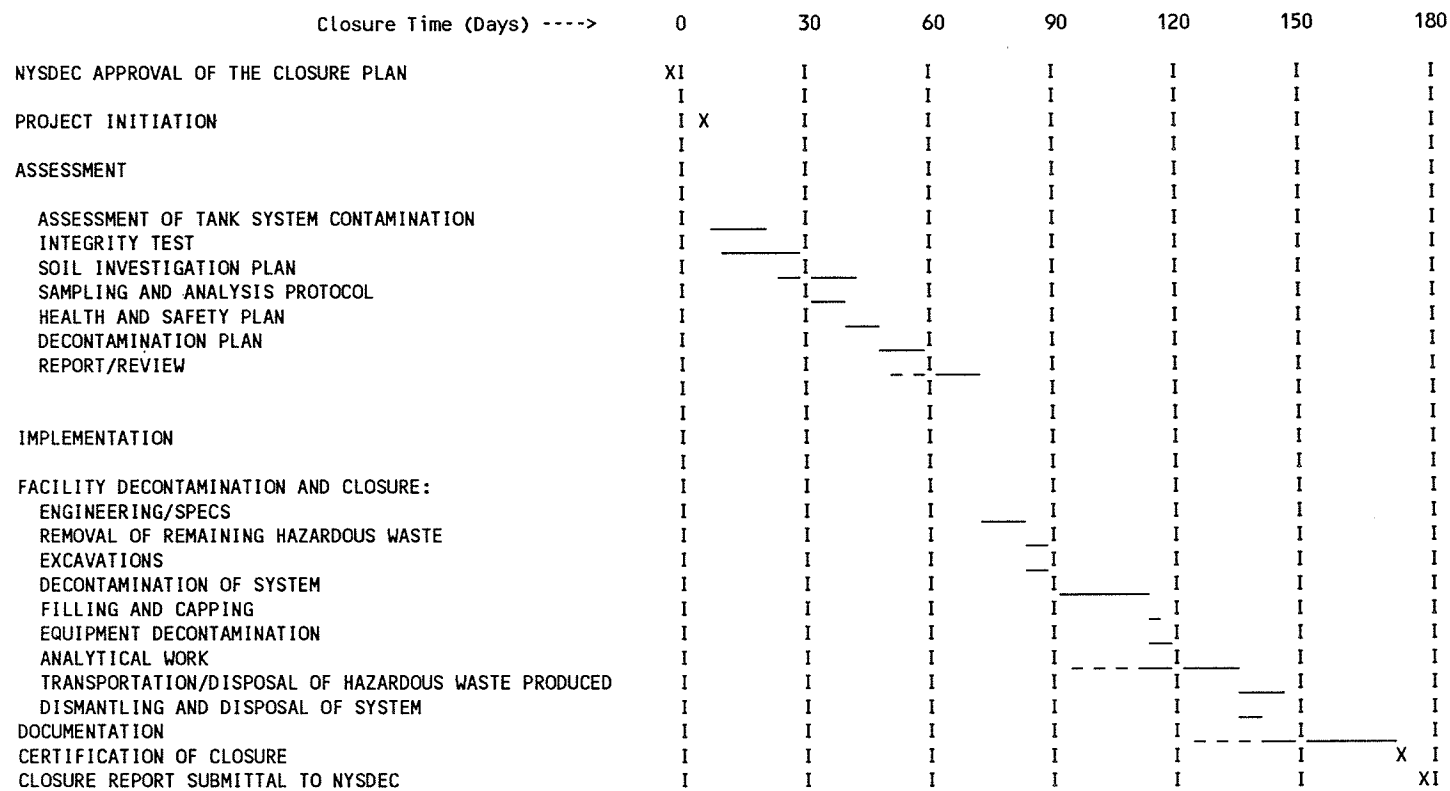
FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 168

## SCHEDULE



ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #168)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #168) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_



IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #168)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #168) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

MIXED SOLVENTS  
WASTE STORAGE TANK  
(I.D. #169)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 169, located underground south of Building 330C at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank has been active since 1980 and is used to store mixed solvents waste (Waste Codes: F001, F002, F003, and F005). However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown on Figure 1:

- |                             |                          |
|-----------------------------|--------------------------|
| o Tank Capacity:            | 5,000 gallons            |
| o Tank and Piping Material: | Steel                    |
| o Tank Configuration:       | Below ground, horizontal |
| o Dimensions:               | 6'8" Dia x 19'L          |
| o Secondary Containment:    | Double Walled.           |

The ancillary piping and equipment, and secondary containment facilities, will be closed at the same time and in the same manner as Tank 169.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

The tank and the associated piping will be pressure tested to determine the presence and location of any leaks.

### 5. Soil Investigation

If the pressure testing shows evidence of leaks, or if there is a history of releases, a Soil Investigation Plan will be prepared and executed to determine the extent of soil contamination

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination and integrity assessments will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.

- b. If practical, the aboveground piping will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.

The underground piping will be accessed through excavations in order to isolate straight lengths of pipe for cleaning. Decontamination will be performed following the same steps described below for the tank.

- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the aboveground piping will be disposed of as non-hazardous waste or will be sold as scrap metal.

If the tank and the underground piping are to remain in place, they will be filled with an inert material and capped. Otherwise, they will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and the tank trailer, after it is emptied.

- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal facility (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

- h. Contaminated soil, if any exists, will be removed and disposed of off-site using a permitted waste disposal vendor. Clean fill will be used to replace any soil that is removed.

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of fifteen to twenty 55-gallon drums of hazardous waste will be generated during the closure activities, including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 6,500 gallons of hazardous wastewater will be generated during the tank system decontamination. The quantity of contaminated soil, if any exists, will be determined during the soil investigation work.



# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	12
Integrity Test	25
Soil Investigation Plan	--
Sampling and Analysis Protocol,	
Health and Safety Plan, Decontamination Plan	14
Facility Decontamination and Closure:	
Engineering/Specs	35
Removal of Remaining Hazardous Waste	4
Excavations (Five)	11
Decontamination of Tank and Piping	110
Filling, Capping	8
Equipment Decontamination	6
Analytical Work	12
Transportation/Disposal of Hazardous Waste Produced	17
Dismantling and Disposal of Piping	12
Documentation	20
	-----
	286
15% Administrative Charges	42.9
	-----
	Total 328.9
20% Contingency	65.8
	-----
Grand Total	394.7

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the aboveground piping and other pertinent equipment as non-hazardous wastes and abandoning the decontaminated tank and underground piping in place. An estimate of costs associated with the preparation and execution of the soil investigation plan and removal of contaminated soils will be determined at a later date if a soil investigation is warranted.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.
3. Soil Investigation Plan/Report, if warranted, including information on the sources and analysis of the clean fill used after excavation is completed.

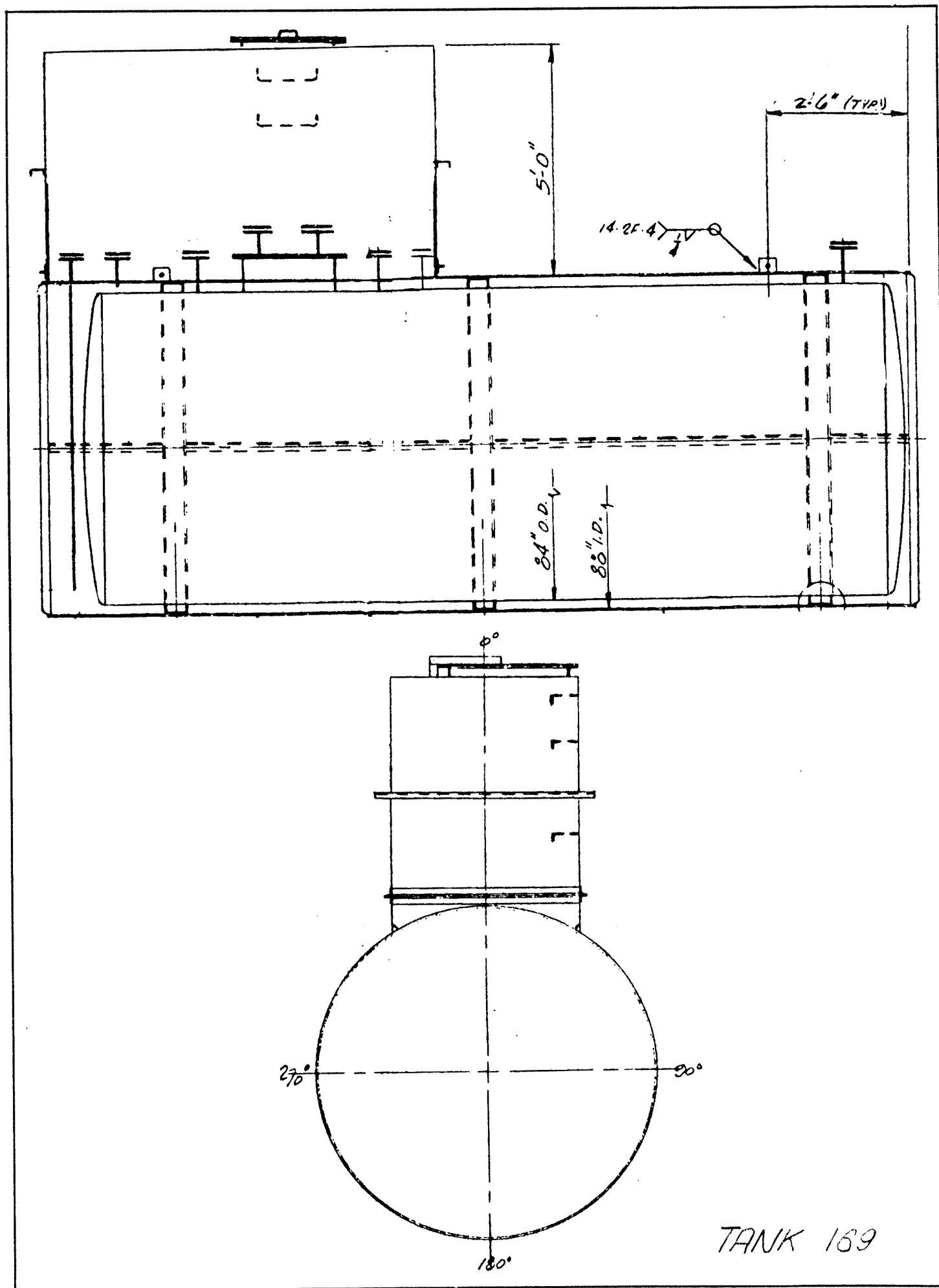


FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK #169

## SCHEDULE

Closure Time (Days) ---->	0	30	60	90	120	150	180
NYSDEC APPROVAL OF THE CLOSURE PLAN	XI	I	I	I	I	I	I
	I	I	I	I	I	I	I
PROJECT INITIATION	I X	I	I	I	I	I	I
	I	I	I	I	I	I	I
ASSESSMENT	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
ASSESSMENT OF TANK SYSTEM CONTAMINATION	I	I	I	I	I	I	I
INTEGRITY TEST	I	I	I	I	I	I	I
SOIL INVESTIGATION PLAN	I	I	I	I	I	I	I
SAMPLING AND ANALYSIS PROTOCOL	I	I	I	I	I	I	I
HEALTH AND SAFETY PLAN	I	I	I	I	I	I	I
DECONTAMINATION PLAN	I	I	I	I	I	I	I
REPORT/REVIEW	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
IMPLEMENTATION	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
FACILITY DECONTAMINATION AND CLOSURE:	I	I	I	I	I	I	I
ENGINEERING/SPECS	I	I	I	I	I	I	I
REMOVAL OF REMAINING HAZARDOUS WASTE	I	I	I	I	I	I	I
EXCAVATIONS	I	I	I	I	I	I	I
DECONTAMINATION OF SYSTEM	I	I	I	I	I	I	I
FILLING AND CAPPING	I	I	I	I	I	I	I
EQUIPMENT DECONTAMINATION	I	I	I	I	I	I	I
ANALYTICAL WORK	I	I	I	I	I	I	I
TRANSPORTATION/DISPOSAL OF HAZARDOUS WASTE PRODUCED	I	I	I	I	I	I	I
DISMANTLING AND DISPOSAL OF SYSTEM	I	I	I	I	I	I	I
DOCUMENTATION	I	I	I	I	I	I	I
CERTIFICATION OF CLOSURE	I	I	I	I	I	I	X
CLOSURE REPORT SUBMITTAL TO NYSDEC	I	I	I	I	I	I	XI

ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #169)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #169) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #169)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #169) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

MIXED SOLVENTS  
WASTE STORAGE TANK  
(I.D. #204)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 204, located outside Building 322 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1983 and is used to store mixed solvents waste (Waste Codes: F001, F002, F003, and F005). However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown in Figure 1:

- |                             |   |
|-----------------------------|---|
| o Tank Capacity:            | 5,000 gallons                                     |
| o Tank and Piping Material: | Steel   |
| o Tank Configuration:       | Aboveground, horizontal                           |
| o Dimensions:               | 8' Dia x 13'L                                     |
| o Secondary Containment:    | Coated concrete vault,<br>21,600 cu. ft. capacity |

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 204.

The concrete vault serving Tank 204 also serves Tanks 205, 206, and 207. The vault will be closed in connection with Tank 204, 205, 206, or 207, depending on which tank is closed last. This closure plan assumes the vault will be closed in connection with Tank 204.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

The underground piping will be pressure tested to determine the presence and location of any leaks.

### 5. Soil Investigation

If the pressure testing shows evidence of leaks, or if there is a history of releases, a Soil Investigation Plan will be prepared and executed to determine the extent of soil contamination.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination and integrity assessments will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.

- b. If practical, the aboveground piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.

The underground piping will be accessed through excavations in order to isolate straight lengths of pipe for cleaning. Decontamination will be performed following the same steps described below for the tank. The concrete vault will also be decontaminated following the same steps.

- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be hauled off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and aboveground piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

If the underground piping is to remain in place, it will be filled with an inert material and capped. Otherwise, it will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.

- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

- h. Contaminated soil, if any exists, will be removed and disposed of off-site using a permitted waste disposal vendor. Clean fill will be used to replace any soil that is removed.

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 7,500 gallons of hazardous wastewater will be generated during the tank system decontamination. The quantity of contaminated soil, if any exists, will be determined during the soil investigation work.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Integrity Test	18
Soil Investigation Plan	--
Sampling and Analysis Protocol,	
Health and Safety Plan, Decontamination Plan	10
Facility Decontamination and Closure:	
Engineering/Specs	23
Removal of Remaining Hazardous Waste	4
Excavations	8
Decontamination of Tank and Piping	73
Filling, Capping	5
Equipment Decontamination	6
Analytical Work	7
Transportation/Disposal of Hazardous Waste Produced	14
Dismantling and Disposal of the Tank and Piping	17
Documentation	20
	-----
	213
15% Administrative Charges	32
	-----
	Total 245
20% Contingency	49
	-----
Grand Total	294

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, aboveground piping, and appurtenant equipment as non-hazardous waste and abandoning the decontaminated underground piping in place. An estimate of costs associated with the preparation and execution of the soil investigation plan and removal of contaminated soils will be determined at a later date if a soil investigation is warranted.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.
3. Soil Investigation Plan/Report, if warranted, including information on the sources and analysis of the clean fill used after excavation is completed



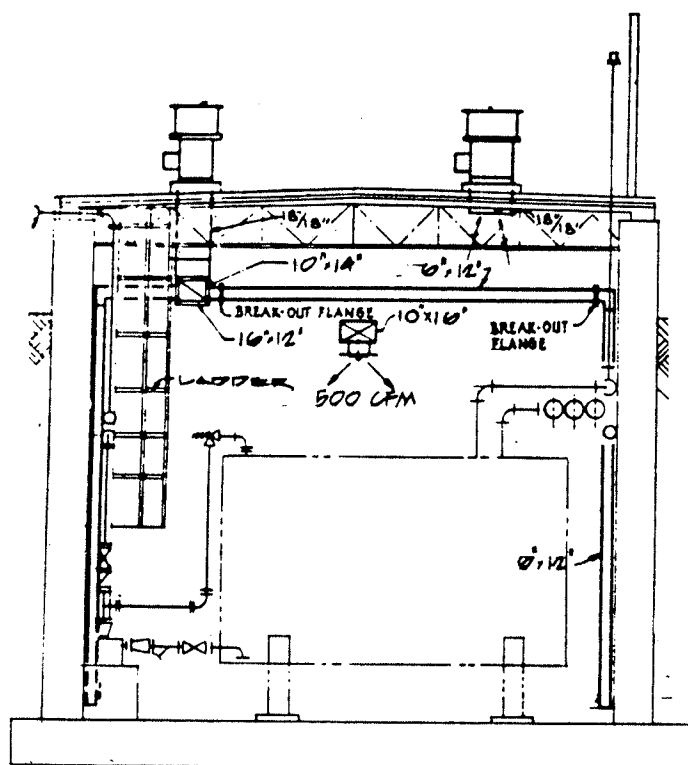


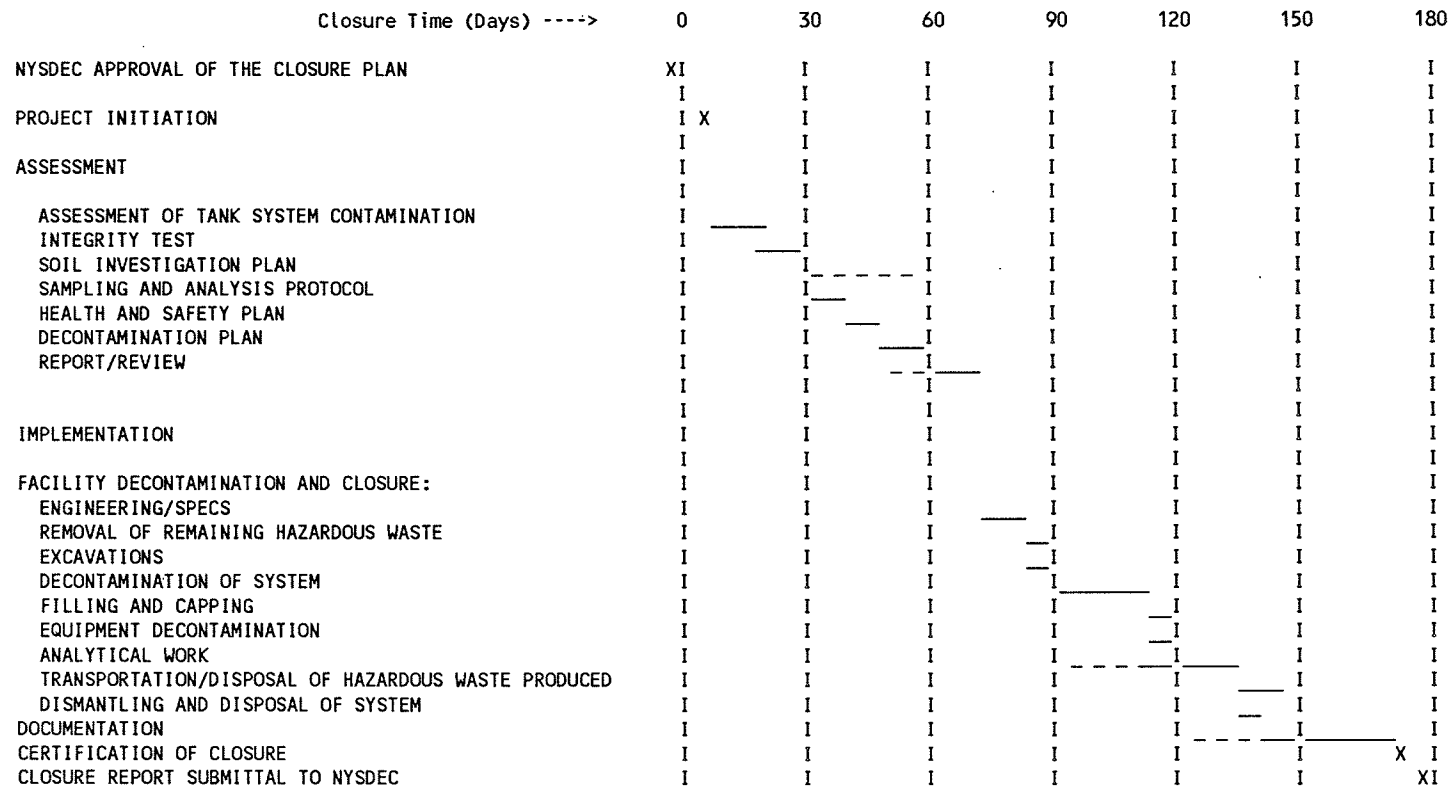
FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 204

## SCHEDULE



ATTACHMENT A .

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #204)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #204) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #204)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #204) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

N-BUTYL ACETATE  
WASTE STORAGE TANK  
(I.D. #205)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 205, located outside Building 322 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1983 and is used to store organic solvent waste (Waste Codes: F001, F002, F003, and F005) containing mostly n-butyl acetate, plus varying amounts of other solvents. However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown in Figure 1:

- |                             |   |
|-----------------------------|---|
| o Tank Capacity:            | 5,000 gallons                                     |
| o Tank and Piping Material: | Steel   |
| o Tank Configuration:       | Aboveground, horizontal                           |
| o Dimensions:               | 8' Dia x 13'L                                     |
| o Secondary Containment:    | Coated concrete vault,<br>21,600 cu. ft. capacity |

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 205.

The concrete vault serving Tank 205 also serves Tanks 204, 206, and 207. The vault will be closed in connection with Tank 204, 205, 206, or 207, depending on which tank is closed last. This closure plan assumes the vault will be closed in connection with Tank 205.



## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

The underground piping will be pressure tested to determine the presence and location of any leaks.

### 5. Soil Investigation

If the pressure testing shows evidence of leaks, or if there is a history of releases, a Soil Investigation Plan will be prepared and executed to determine the extent of soil contamination.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination and integrity assessments will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.

- b. If practical, the aboveground piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.

The underground piping will be accessed through excavations in order to isolate straight lengths of pipe for cleaning. Decontamination will be performed following the same steps described below for the tank. The concrete vault will also be decontaminated following the same steps.

- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and aboveground piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

If the underground piping is to remain in place, it will be filled with an inert material and capped. Otherwise, it will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.

- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

- h. Contaminated soil, if any exists, will be removed and disposed of off-site using a permitted waste disposal vendor. Clean fill will be used to replace any soil that is removed.

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 7,500 gallons of hazardous wastewater will be generated during the tank system decontamination. The quantity of contaminated soil, if any exists, will be determined during the soil investigation work.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Integrity Test	18
Soil Investigation Plan	--
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	10
Facility Decontamination and Closure:	
Engineering/Specs	23
Removal of Remaining Hazardous Waste	4
Excavations	8
Decontamination of Tank and Piping	73
Filling, Capping	5
Equipment Decontamination	6
Analytical Work	7
Transportation/Disposal of Hazardous Waste Produced	14
Dismantling and Disposal of the Tank and Piping	17
Documentation	20
	-----
	213
15% Administrative Charges	32
	-----
Total	245
20% Contingency	49
	-----
Grand Total	294

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, aboveground piping, and appurtenant equipment as non-hazardous waste and abandoning the decontaminated underground piping in place. An estimate of costs associated with the preparation and execution of the soil investigation plan and removal of contaminated soils will be determined at a later date if a soil investigation is warranted.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

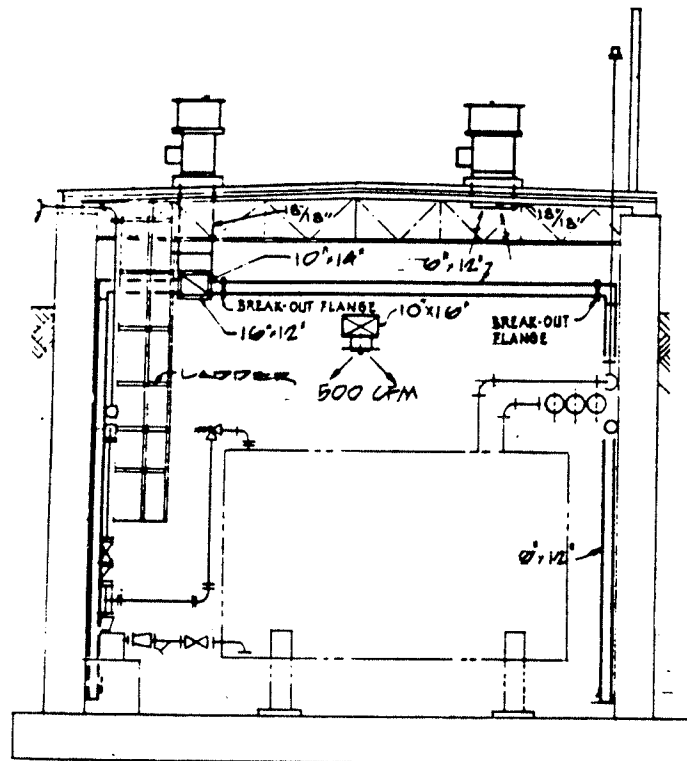
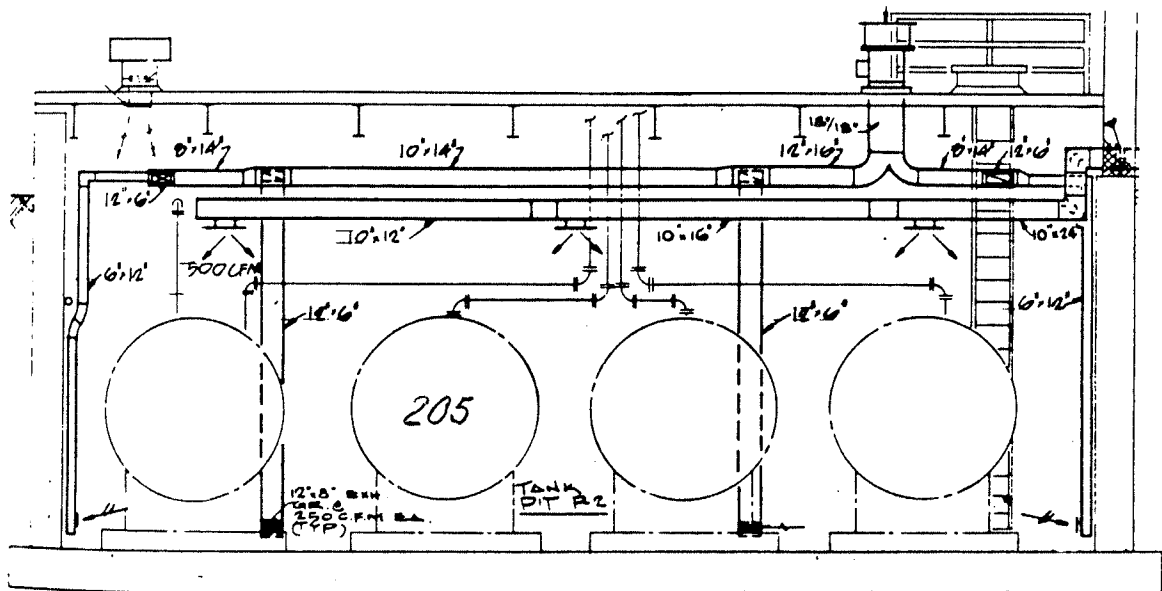
IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.
3. Soil Investigation Plan/Report, if warranted, including information on the sources and analysis of the clean fill used after excavation is completed



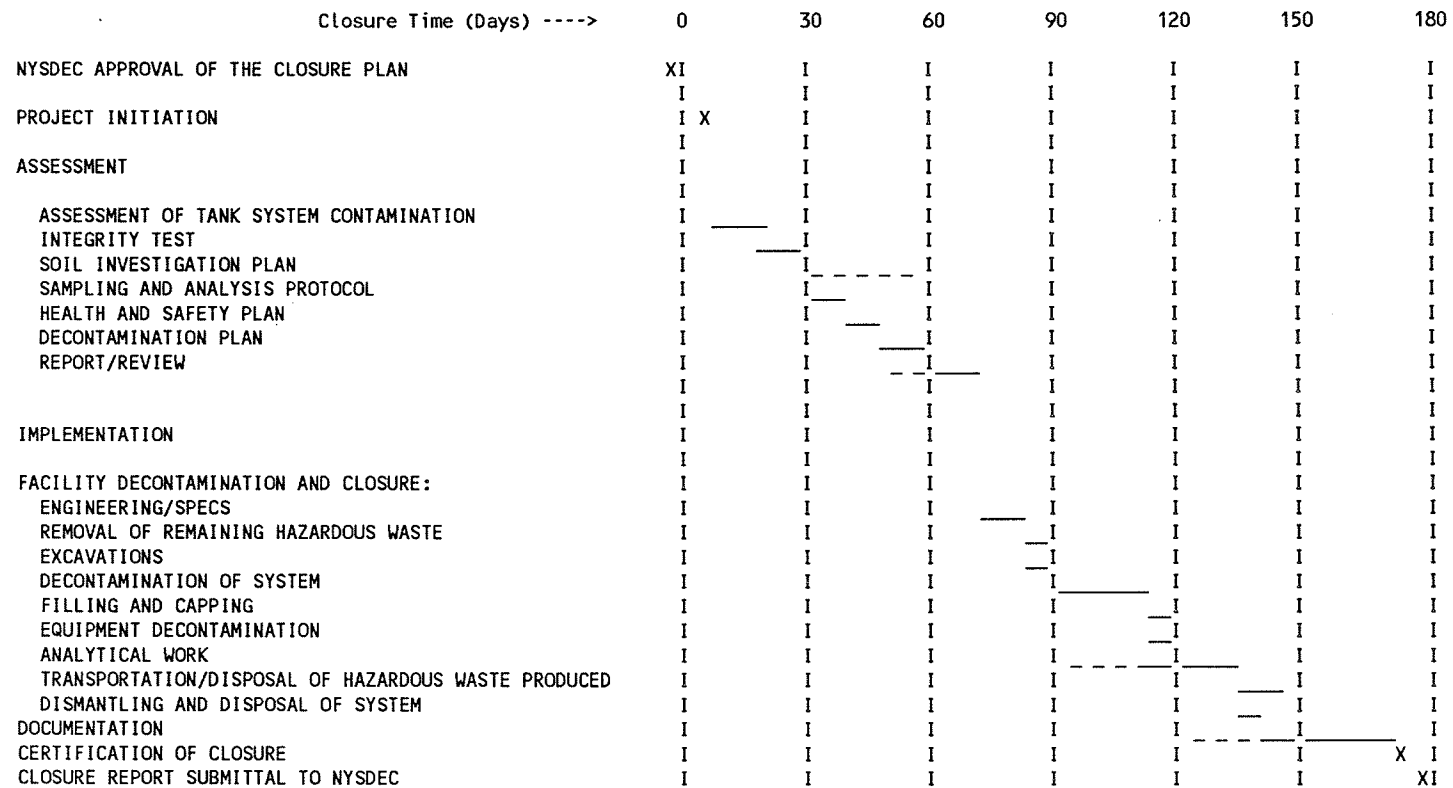
TANK 205

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 205

## SCHEDULE





ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

N-BUTYL ACETATE  
WASTE STORAGE TANK (I.D. #205)

CERTIFICATION OF CLOSURE

I certify that the work to close the N-Butyl Acetate Waste Storage Tank (I.D. #205) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

N-BUTYL ACETATE  
WASTE STORAGE TANK (I.D. #205)

CERTIFICATION OF CLOSURE

I certify that the work to close the N-Butyl Acetate Waste Storage Tank (I.D. #205) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

ISOPROPYL ALCOHOL  
WASTE STORAGE TANK  
(I.D. #206)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 206, located outside Building 322 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1983 and is used to store organic solvent waste (Waste Codes: F001, F002, F003, and F005) containing mostly isopropyl alcohol, plus varying amounts of other solvents. However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown in Figure 1:

- |   |                           |   |
|---|---------------------------|---|
| o | Tank Capacity:            | 5,000 gallons                                     |
| o | Tank and Piping Material: | Steel   |
| o | Tank Configuration:       | Aboveground, horizontal                           |
| o | Dimensions:               | 8' Dia x 13'L                                     |
| o | Secondary Containment:    | Coated concrete vault,<br>21,600 cu. ft. capacity |

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 206.

The concrete vault serving Tank 206 also serves Tanks 204, 205, and 207. The vault will be closed in connection with Tank 204, 205, 206, or 207, depending on which tank is closed last. This closure plan assumes the vault will be closed in connection with Tank 206.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

The underground piping will be pressure tested to determine the presence and location of any leaks.

### 5. Soil Investigation

If the pressure testing shows evidence of leaks, or if there is a history of releases, a Soil Investigation Plan will be prepared and executed to determine the extent of soil contamination.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination and integrity assessments will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.



- b. If practical, the aboveground piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.

The underground piping will be accessed through excavations in order to isolate straight lengths of pipe for cleaning. Decontamination will be performed following the same steps described below for the tank. The concrete vault will also be decontaminated following the same steps.

- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and aboveground piping system will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

If the underground piping is to remain in place, it will be filled with an inert material and capped. Otherwise, it will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.

- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

- h. Contaminated soil, if any exists, will be removed and disposed of off-site using a permitted waste disposal vendor. Clean fill will be used to replace any soil that is removed.

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 7,500 gallons of hazardous wastewater will be generated during the tank system decontamination. The quantity of contaminated soil, if any exists, will be determined during the soil investigation work.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Integrity Test	18
Soil Investigation Plan	--
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	10
Facility Decontamination and Closure:	
Engineering/Specs	23
Removal of Remaining Hazardous Waste	4
Excavations	8
Decontamination of Tank and Piping	73
Filling, Capping	5
Equipment Decontamination	6
Analytical Work	7
Transportation/Disposal of Hazardous Waste Produced	14
Dismantling and Disposal of the Tank and Piping	17
Documentation	20
	-----
	213
15% Administrative Charges	32
	-----
Total	245
20% Contingency	49
	-----
Grand Total	294

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, aboveground piping, and appurtenant equipment as non-hazardous waste and abandoning the decontaminated underground piping in place. An estimate of costs associated with the preparation and execution of the soil investigation plan and removal of contaminated soils will be determined at a later date if a soil investigation is warranted.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.
3. Soil Investigation Plan/Report, if warranted, including information on the sources and analysis of the clean fill used after excavation is completed

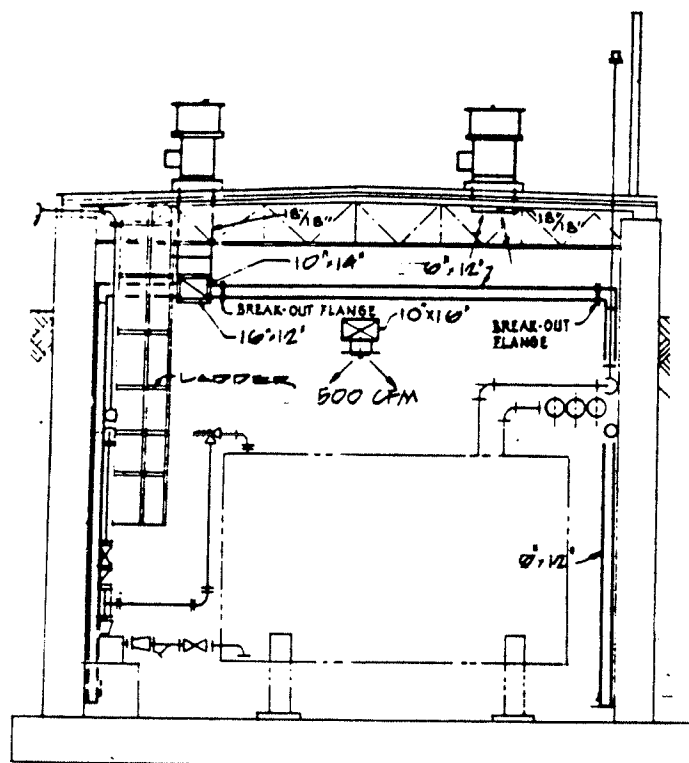


FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 206

## SCHEDULE

Closure Time (Days) ---->	0	30	60	90	120	150	180
NYSDEC APPROVAL OF THE CLOSURE PLAN	XI	I	I	I	I	I	I
	I	I	I	I	I	I	I
PROJECT INITIATION	I X	I	I	I	I	I	I
	I	I	I	I	I	I	I
ASSESSMENT	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
ASSESSMENT OF TANK SYSTEM CONTAMINATION	I	I	I	I	I	I	I
INTEGRITY TEST	I	I	I	I	I	I	I
SOIL INVESTIGATION PLAN	I	I	I	I	I	I	I
SAMPLING AND ANALYSIS PROTOCOL	I	I	I	I	I	I	I
HEALTH AND SAFETY PLAN	I	I	I	I	I	I	I
DECONTAMINATION PLAN	I	I	I	I	I	I	I
REPORT/REVIEW	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
IMPLEMENTATION	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
FACILITY DECONTAMINATION AND CLOSURE:	I	I	I	I	I	I	I
ENGINEERING/SPECS	I	I	I	I	I	I	I
REMOVAL OF REMAINING HAZARDOUS WASTE	I	I	I	I	I	I	I
EXCAVATIONS	I	I	I	I	I	I	I
DECONTAMINATION OF SYSTEM	I	I	I	I	I	I	I
FILLING AND CAPPING	I	I	I	I	I	I	I
EQUIPMENT DECONTAMINATION	I	I	I	I	I	I	I
ANALYTICAL WORK	I	I	I	I	I	I	I
TRANSPORTATION/DISPOSAL OF HAZARDOUS WASTE PRODUCED	I	I	I	I	I	I	I
DISMANTLING AND DISPOSAL OF SYSTEM	I	I	I	I	I	I	I
DOCUMENTATION	I	I	I	I	I	I	I
CERTIFICATION OF CLOSURE	I	I	I	I	I	I	X
CLOSURE REPORT SUBMITTAL TO NYSDEC	I	I	I	I	I	I	XI

ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

ISOPROPYL ALCOHOL  
WASTE STORAGE TANK (I.D. #206)

CERTIFICATION OF CLOSURE

I certify that the work to close the Isopropyl Alcohol Waste Storage Tank (I.D. #206) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_



IBM CORPORATION

ISOPROPYL ALCOHOL  
WASTE STORAGE TANK (I.D. #206)

CERTIFICATION OF CLOSURE

I certify that the work to close the Isopropyl Alcohol Waste Storage Tank (I.D. #206) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

N-METHYL-2-PYRROLIDONE  
WASTE STORAGE TANK  
(I.D. #207)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 207, located outside Building 322 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1983 and is used to store organic solvent waste (Waste Codes: F001, F002, F003, and F005) containing mostly n-methyl-2-pyrrolidone, plus varying amounts of other solvents. However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown in Figure 1:

- |                             |   |
|-----------------------------|---|
| o Tank Capacity:            | 5,000 gallons                                     |
| o Tank and Piping Material: | Steel   |
| o Tank Configuration:       | Aboveground, horizontal                           |
| o Dimensions:               | 8' Dia x 13'L                                     |
| o Secondary Containment:    | Coated concrete vault,<br>21,600 cu. ft. capacity |

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 207.

The concrete vault serving Tank 207 also serves Tanks 204, 205, and 206. The vault will be closed in connection with Tank 204, 205, 206, or 207, depending on which tank is closed last. This closure plan assumes the vault will be closed in connection with Tank 207.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

The underground piping will be pressure tested to determine the presence and location of any leaks.

### 5. Soil Investigation

If the pressure testing shows evidence of leaks, or if there is a history of releases, a Soil Investigation Plan will be prepared and executed to determine the extent of soil contamination.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination and integrity assessments will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.

- b. If practical, the aboveground piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.

The underground piping will be accessed through excavations in order to isolate straight lengths of pipe for cleaning. Decontamination will be performed following the same steps described below for the tank. The concrete vault will also be decontaminated following the same steps.

- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and aboveground piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

If the underground piping is to remain in place, it will be filled with an inert material and capped. Otherwise, it will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.

- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.

- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

- h. Contaminated soil, if any exists, will be removed and disposed of off-site using a permitted waste disposal vendor. Clean fill will be used to replace any soil that is removed.

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 7,500 gallons of hazardous wastewater will be generated during the tank system decontamination. The quantity of contaminated soil, if any exists, will be determined during the soil investigation work.



# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Integrity Test	18
Soil Investigation Plan	--
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	10
Facility Decontamination and Closure:	
Engineering/Specs	23
Removal of Remaining Hazardous Waste	4
Excavations	8
Decontamination of Tank and Piping	73
Filling, Capping	5
Equipment Decontamination	6
Analytical Work	7
Transportation/Disposal of Hazardous Waste Produced	14
Dismantling and Disposal of the Tank and Piping	17
Documentation	20
	-----
	213
15% Administrative Charges	32
	-----
Total	245
20% Contingency	49
	-----
Grand Total	294

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, aboveground piping, and appurtenant equipment as non-hazardous waste and abandoning the decontaminated underground piping in place. An estimate of costs associated with the preparation and execution of the soil investigation plan and removal of contaminated soils will be determined at a later date if a soil investigation is warranted.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.
3. Soil Investigation Plan/Report, if warranted, including information on the sources and analysis of the clean fill used after excavation is completed

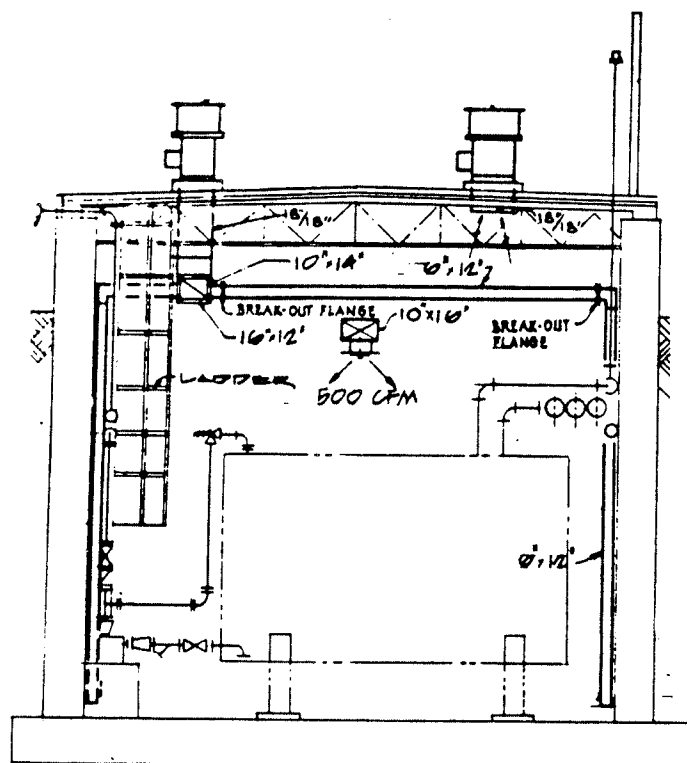


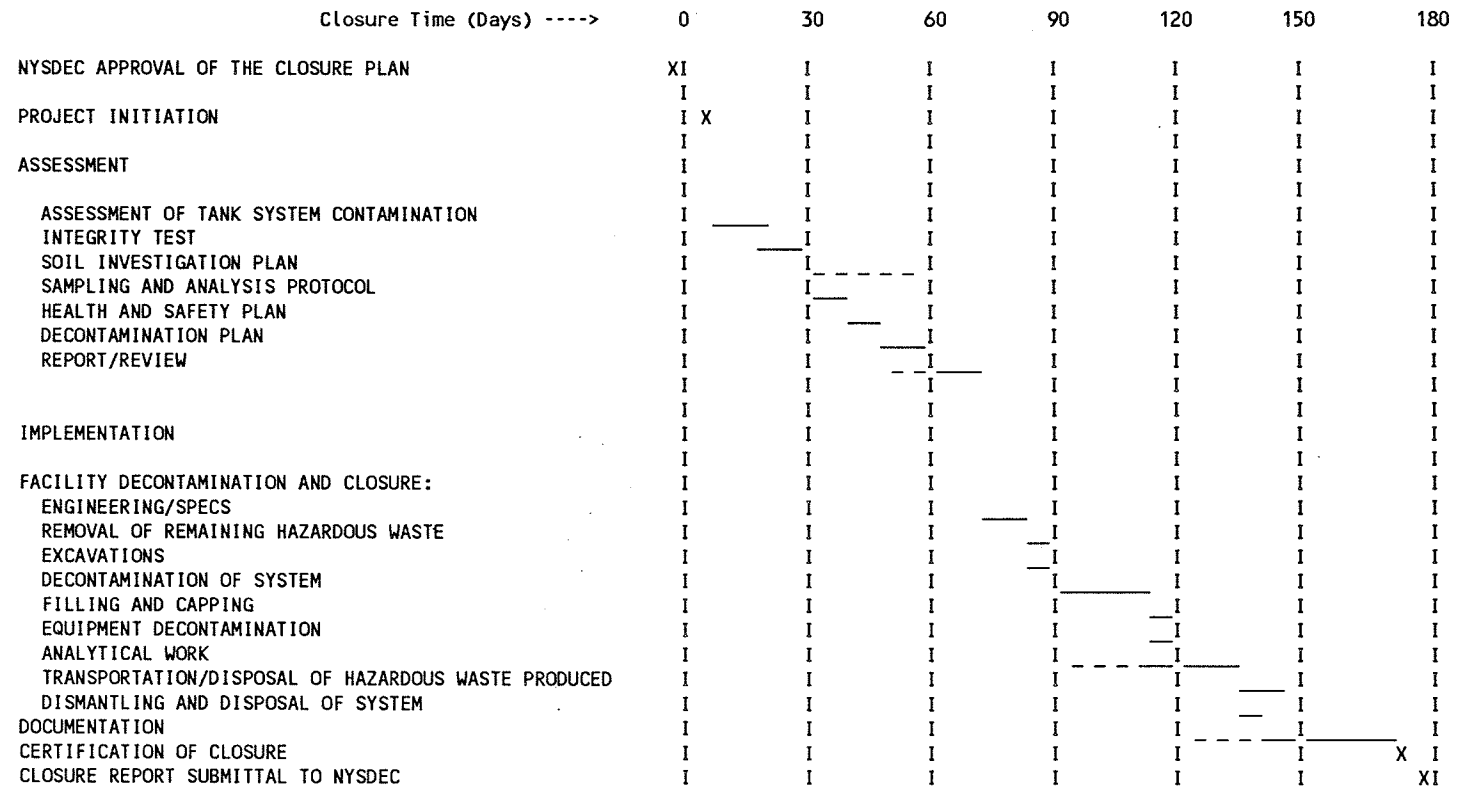
FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 207

## SCHEDULE



ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

N-METHYL-2-PYRROLIDONE  
WASTE STORAGE TANK (I.D. #207)

CERTIFICATION OF CLOSURE

I certify that the work to close the N-Methyl-2-Pyrrolidone Waste Storage Tank (I.D. #207) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

N-METHYL-2-PYRROLIDONE  
WASTE STORAGE TANK (I.D. #207)

CERTIFICATION OF CLOSURE

I certify that the work to close the N-Methyl-2-Pyrrolidone Waste Storage Tank (I.D. #207) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

MIXED SOLVENTS  
WASTE STORAGE TANK  
(I.D. #219)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 219, located inside Building 303 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1985 and is used to store mixed solvents waste (Waste Codes: F001, F002, F003, and F005). However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown on Figure 1:

- o Tank Capacity: 10,000 gallons
- o Tank and Piping Material: Stainless steel
- o Tank Configuration: Aboveground, vertical
- o Dimensions: 10'8" Dia x 17'3"H
- o Secondary Containment: Epoxy coated steel dike,  
15.9'W x 46'L x 3.2'H  
with leak detection.

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 219.

The steel dike serving Tank 219 also serves Tanks 220 and 221. The dike will be closed in connection with Tank 219, 220, or 221, depending on which tank is closed last. This closure plan assumes the dike will be closed in connection with Tank 219.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

Integrity testing is not anticipated since this tank system has no underground components and has complete secondary containment.

### 5. Soil Investigation

A soil investigation is not anticipated since this tank system has no underground components and has complete secondary containment.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.

- b. If practical, the piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.
- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and the piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.
- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated during the closure activities, including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 9,500 gallons of hazardous wastewater will be generated during the tank system decontamination.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	8
Facility Decontamination and Closure:	
Engineering/Specs	25
Removal of Remaining Hazardous Waste	4
Decontamination of Tank and Piping	75
Equipment Decontamination	6
Analytical Work	8
Transportation/Disposal of Hazardous Waste Produced	16
Dismantling and Disposal of the Tank and Piping	20
Documentation	20
	-----
	190
15% Administrative Charges	28.5
	-----
	Total 218.5
20% Contingency	43.7
	-----
Grand Total	262.2

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, piping, and appurtenant equipment as non-hazardous waste.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

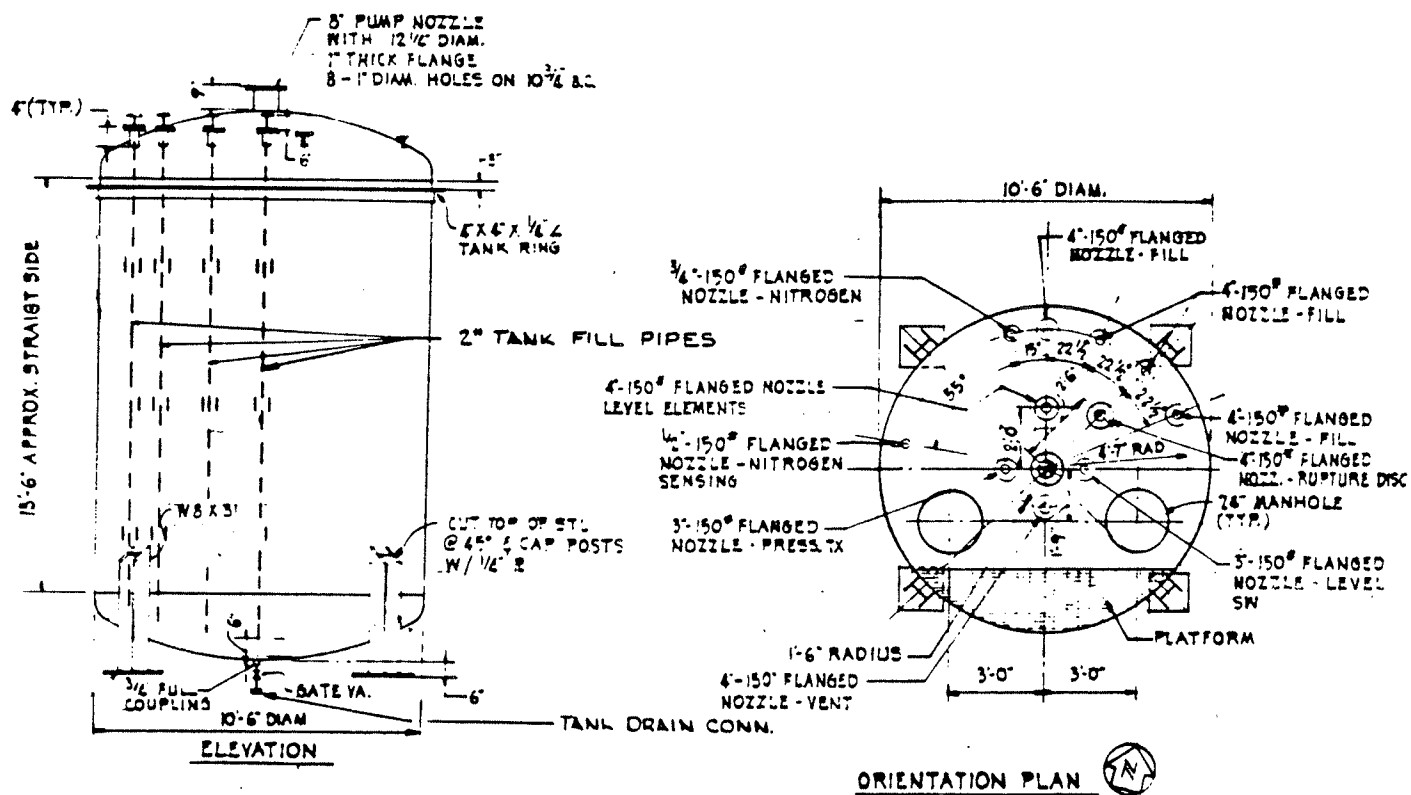
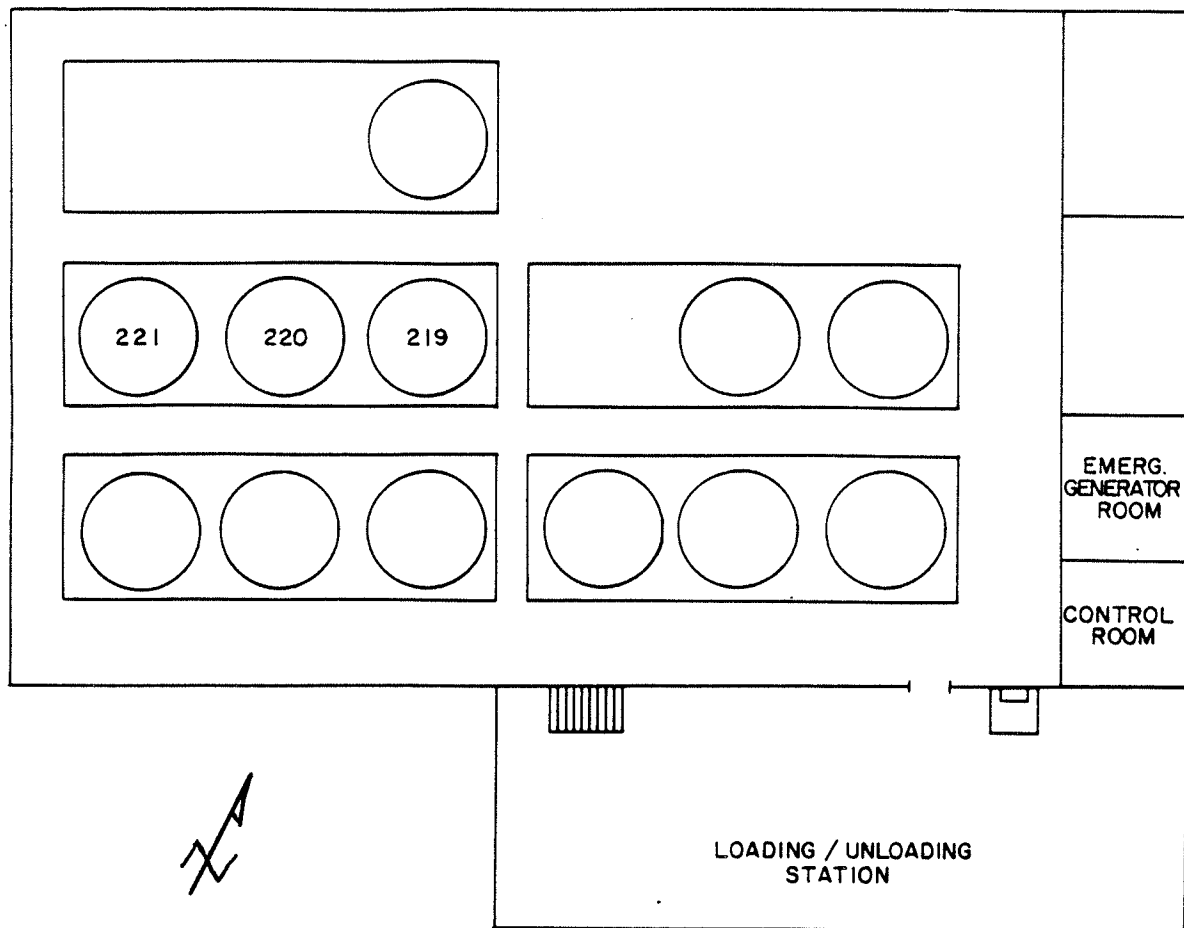
## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.





TANK 219

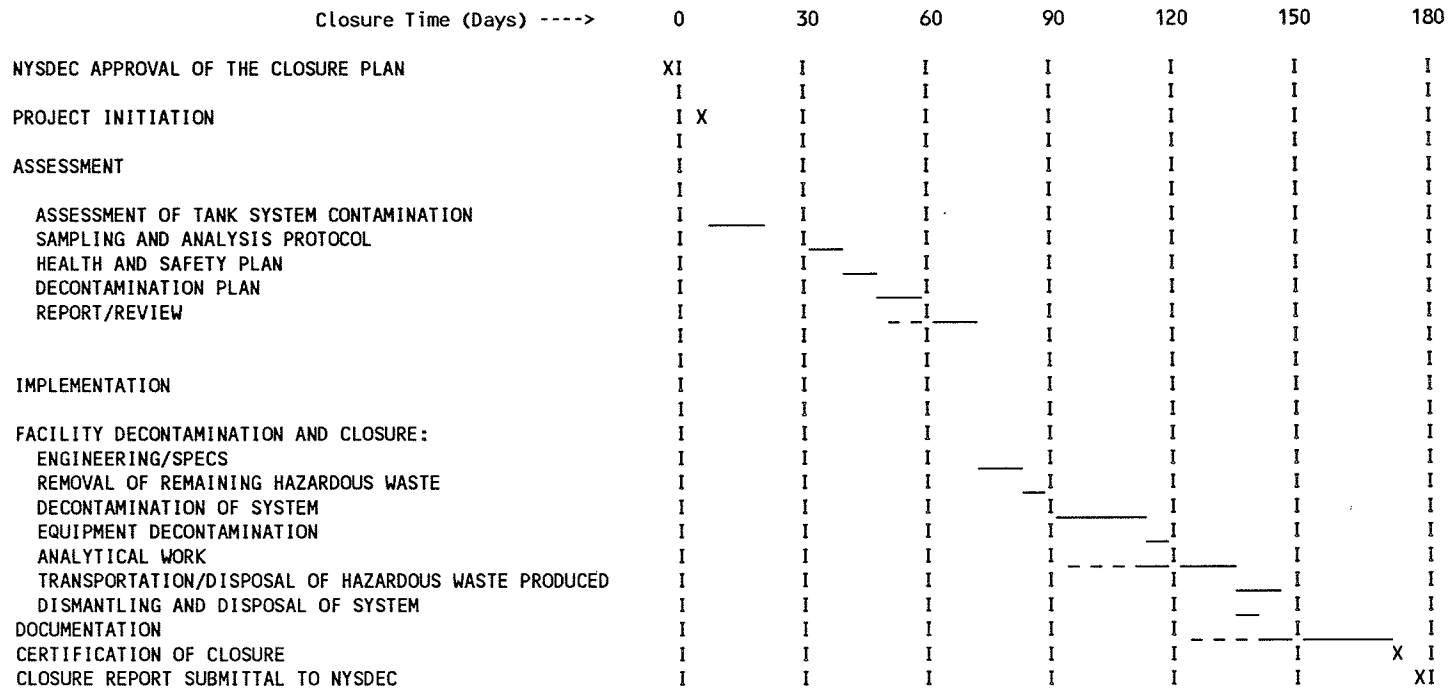
FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 219

## SCHEDULE



ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #219)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #219) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #219)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #219) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

MIXED SOLVENTS  
WASTE STORAGE TANK  
(I.D. #220)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 220, located inside Building 303 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1985 and is used to store mixed solvents waste (Waste Codes: F001, F002, F003, and F005). However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown on Figure 1:

- o Tank Capacity: 10,000 gallons
- o Tank and Piping Material: Stainless steel
- o Tank Configuration: Aboveground, vertical
- o Dimensions: 10'8" Dia x 17'3"H
- o Secondary Containment: Epoxy coated steel dike,  
15.9'W x 46'L x 3.2'H  
with leak detection.

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 220.

The steel dike serving Tank 220 also serves Tanks 219 and 221. The dike will be closed in connection with Tank 219, 220, or 221, depending on which tank is closed last. This closure plan assumes the dike will be closed in connection with Tank 220.



## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

Integrity testing is not anticipated since this tank system has no underground components and has complete secondary containment.

### 5. Soil Investigation

A soil investigation is not anticipated since this tank system has no underground components and has complete secondary containment.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.

- b. If practical, the piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.
- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and the piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.
- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated during the closure activities, including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 9,500 gallons of hazardous wastewater will be generated during the tank system decontamination.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	8
Facility Decontamination and Closure:	
Engineering/Specs	25
Removal of Remaining Hazardous Waste	4
Decontamination of Tank and Piping	75
Equipment Decontamination	6
Analytical Work	8
Transportation/Disposal of Hazardous Waste Produced	16
Dismantling and Disposal of the Tank and Piping	20
Documentation	20
	-----
	190
15% Administrative Charges	28.5
	-----
Total	218.5
20% Contingency	43.7
	-----
Grand Total	262.2

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, piping, and appurtenant equipment as non-hazardous waste.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.

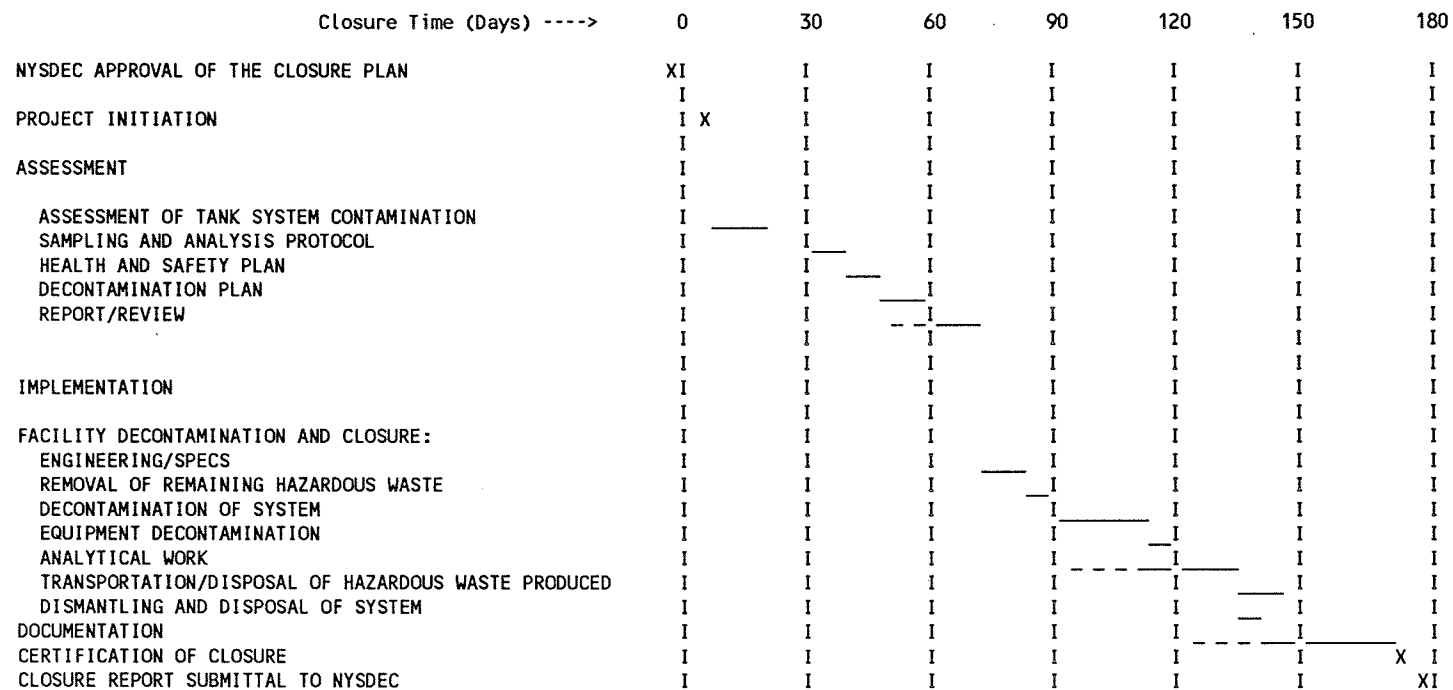


FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 220

## SCHEDULE





ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #220)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #220) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #220)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #220) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

MIXED SOLVENTS  
WASTE STORAGE TANK  
(I.D. #221)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 221, located inside Building 303 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1985 and is used to store mixed solvents waste (Waste Codes: F001, F002, F003, and F005). However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown on Figure 1:

- o Tank Capacity: 10,000 gallons
- o Tank and Piping Material: Stainless steel
- o Tank Configuration: Aboveground, vertical
- o Dimensions: 10'8" Dia x 17'3"H
- o Secondary Containment: Epoxy coated steel dike,  
15.9'W x 46'L x 3.2'H  
with leak detection.

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 221.

The steel dike serving Tank 221 also serves Tanks 219 and 220. The dike will be closed in connection with Tank 219, 220, or 221, depending on which tank is closed last. This closure plan assumes the dike will be closed in connection with Tank 221.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

Integrity testing is not anticipated since this tank system has no underground components and has complete secondary containment.

### 5. Soil Investigation

A soil investigation is not anticipated since this tank system has no underground components and has complete secondary containment.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.



- b. If practical, the piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.
- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and the piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.
- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blainville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated during the closure activities, including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 9,500 gallons of hazardous wastewater will be generated during the tank system decontamination.

## CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	8
Facility Decontamination and Closure:	
Engineering/Specs	25
Removal of Remaining Hazardous Waste	4
Decontamination of Tank and Piping	75
Equipment Decontamination	6
Analytical Work	8
Transportation/Disposal of Hazardous Waste Produced	16
Dismantling and Disposal of the Tank and Piping	20
Documentation	20
	-----
	190
15% Administrative Charges	28.5
	-----
Total	218.5
20% Contingency	43.7
	-----
Grand Total	262.2

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, piping, and appurtenant equipment as non-hazardous waste.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- |   |                     |   |
|---|---------------------|---|
| o | Drum Waste Solvents | \$155.00 to \$518.00 per drum<br>(depending upon type of<br>solvent discarded and vendor<br>used) |
| o | Bulk Waste Solvents | \$0.30 to \$1.00 per gallon<br>(depending upon type of<br>solvent discarded and vendor<br>used)   |

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

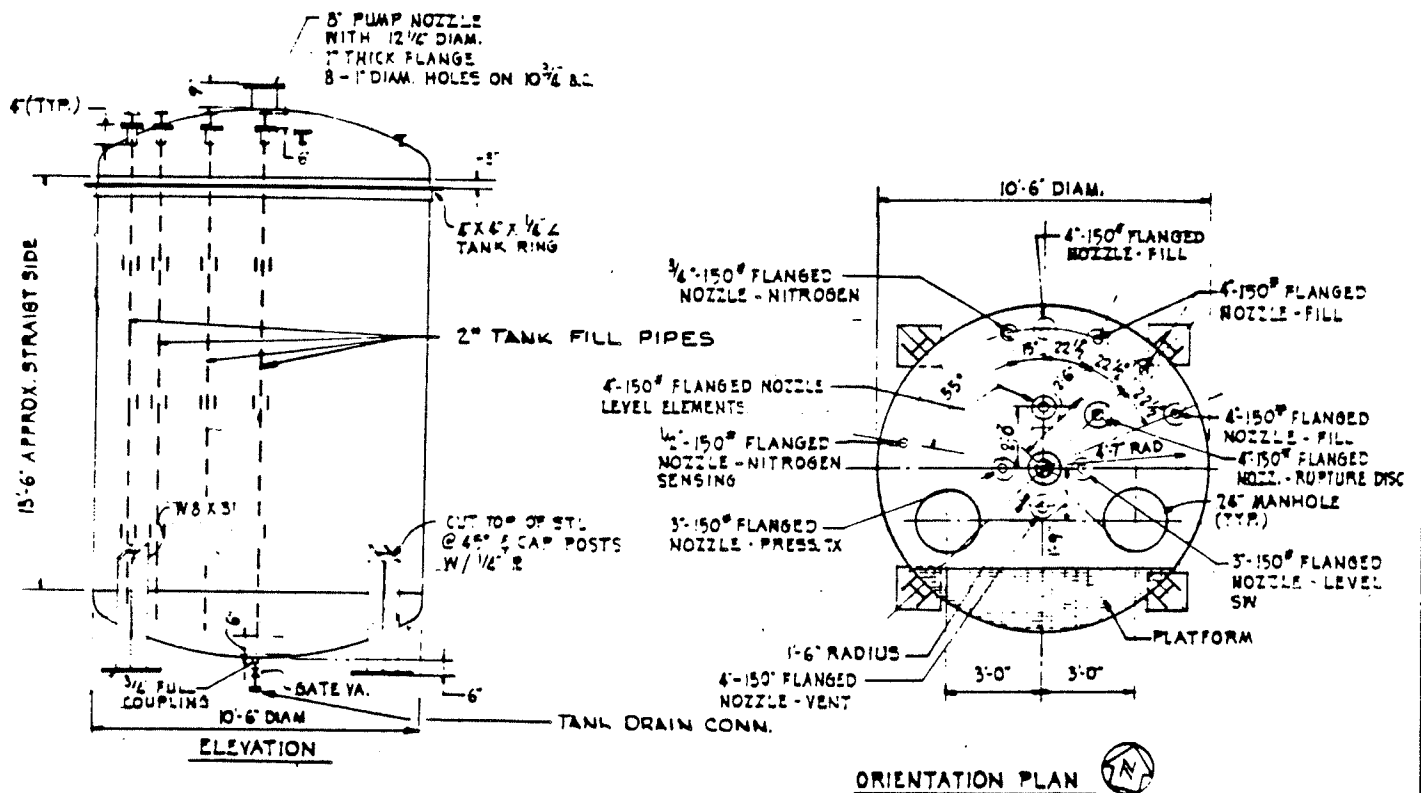
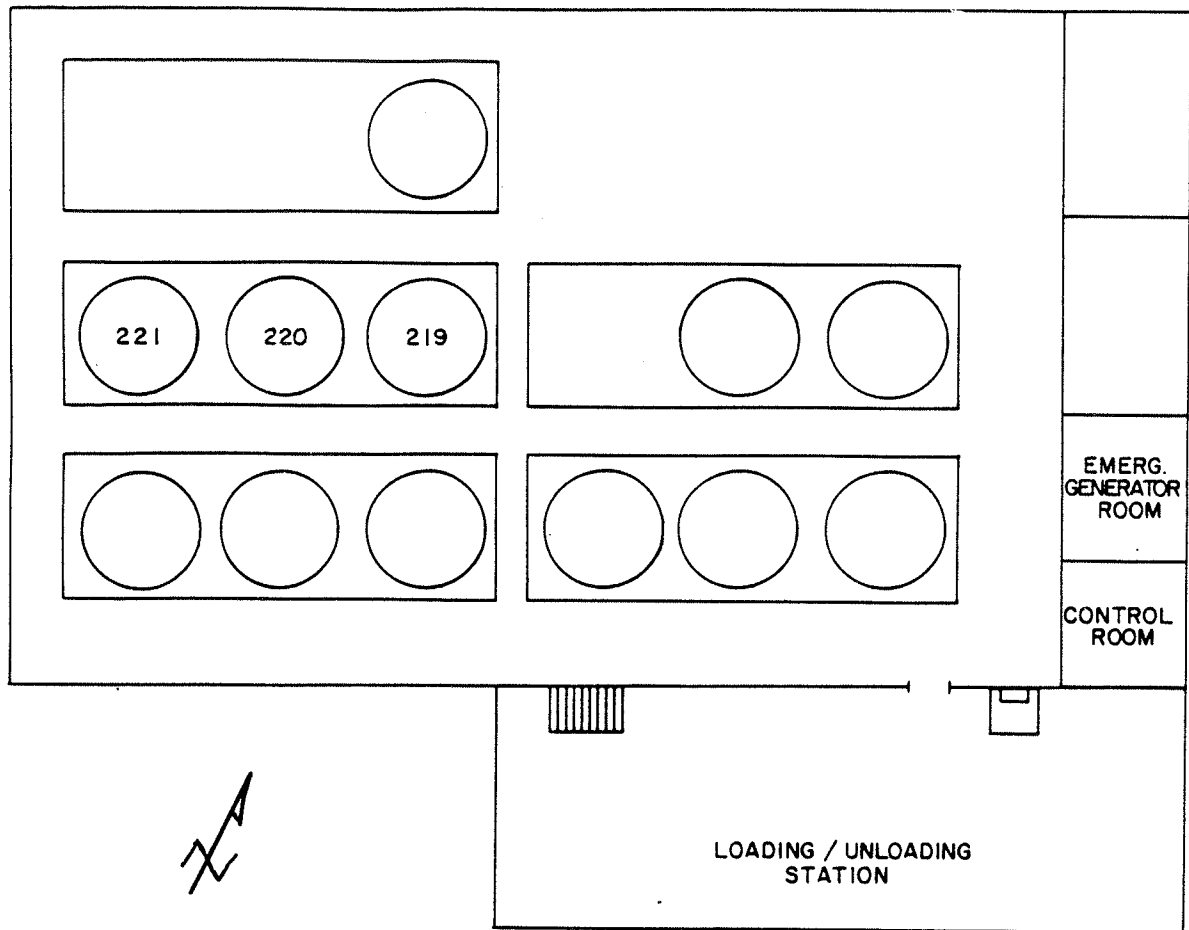
IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.



TANK 221

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 221

## SCHEDULE

Closure Time (Days) ---->	0	30	60	90	120	150	180
NYSDEC APPROVAL OF THE CLOSURE PLAN	XI	I	I	I	I	I	I
PROJECT INITIATION	I X	I	I	I	I	I	I
ASSESSMENT	I	I	I	I	I	I	I
ASSESSMENT OF TANK SYSTEM CONTAMINATION	I	I	I	I	I	I	I
SAMPLING AND ANALYSIS PROTOCOL	I	I	I	I	I	I	I
HEALTH AND SAFETY PLAN	I	I	I	I	I	I	I
DECONTAMINATION PLAN	I	I	I	I	I	I	I
REPORT/REVIEW	I	I	I	I	I	I	I
IMPLEMENTATION	I	I	I	I	I	I	I
FACILITY DECONTAMINATION AND CLOSURE:	I	I	I	I	I	I	I
ENGINEERING/SPECS	I	I	I	I	I	I	I
REMOVAL OF REMAINING HAZARDOUS WASTE	I	I	I	I	I	I	I
DECONTAMINATION OF SYSTEM	I	I	I	I	I	I	I
EQUIPMENT DECONTAMINATION	I	I	I	I	I	I	I
ANALYTICAL WORK	I	I	I	I	I	I	I
TRANSPORTATION/DISPOSAL OF HAZARDOUS WASTE PRODUCED	I	I	I	I	I	I	I
DISMANTLING AND DISPOSAL OF SYSTEM	I	I	I	I	I	I	I
DOCUMENTATION	I	I	I	I	I	I	I
CERTIFICATION OF CLOSURE	I	I	I	I	I	I	X I
CLOSURE REPORT SUBMITTAL TO NYSDEC	I	I	I	I	I	I	XI

ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #221)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #221) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_



IBM CORPORATION

MIXED SOLVENTS  
WASTE STORAGE TANK (I.D. #221)

CERTIFICATION OF CLOSURE

I certify that the work to close the Mixed Solvents Waste Storage Tank (I.D. #221) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

FREON TF  
WASTE STORAGE TANK  
(I.D. #222)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 222, located inside Building 303 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1985 and is used to store organic solvent waste (Waste Codes: F001, F002, F003, and F005), containing mostly freon TF, plus varying amounts of other solvents. However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown on Figure 1:

- o Tank Capacity: 5,000 gallons
- o Tank and Piping Material: Stainless Steel
- o Tank Configuration: Aboveground, vertical
- o Dimensions: 7'4" Dia x 15'H
- o Secondary Containment: Epoxy coated steel dike,  
15.9'W x 46'L x 3.2'H  
with leak detection.

The ancillary piping and equipment, and secondary containment facilities, will be closed at the same time and in the same manner as Tank 222.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

Integrity testing is not anticipated since this tank system has no underground components and has complete secondary containment.

### 5. Soil Investigation

A soil investigation is not anticipated since this tank system has no underground components and has complete secondary containment.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.

- b. If practical, the piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.
- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and the piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.
- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJDO53288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYDO49836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately ten 55-gallon drums of hazardous waste will be generated during the closure activities, including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 7,500 gallons of hazardous wastewater will be generated during the tank system decontamination.



# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	8
Facility Decontamination and Closure:	
Engineering/Specs	21
Removal of Remaining Hazardous Waste	4
Decontamination of Tank and Piping	60
Equipment Decontamination	6
Analytical Work	7
Transportation/Disposal of Hazardous Waste Produced	14
Dismantling and Disposal of the Tank and Piping	17
Documentation	20
	-----
	165
15% Administrative Charges	24.8
	-----
Total	189.8
20% Contingency	38
	-----
Grand Total	227.8

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, piping, and appurtenant equipment as non-hazardous waste.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

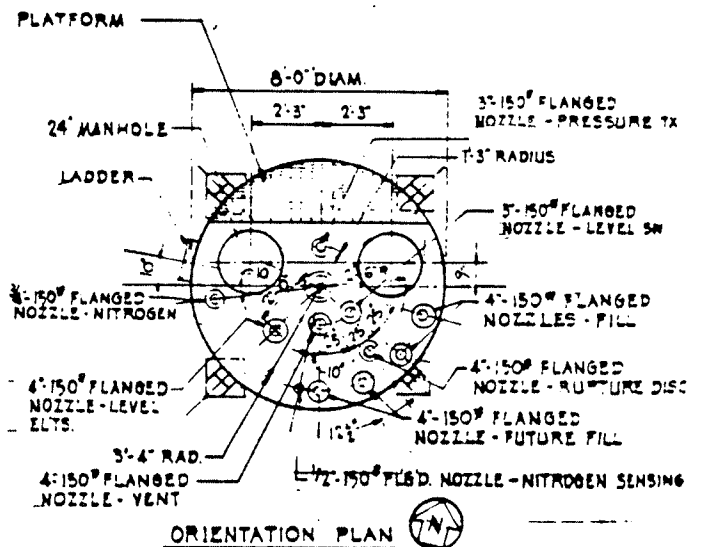
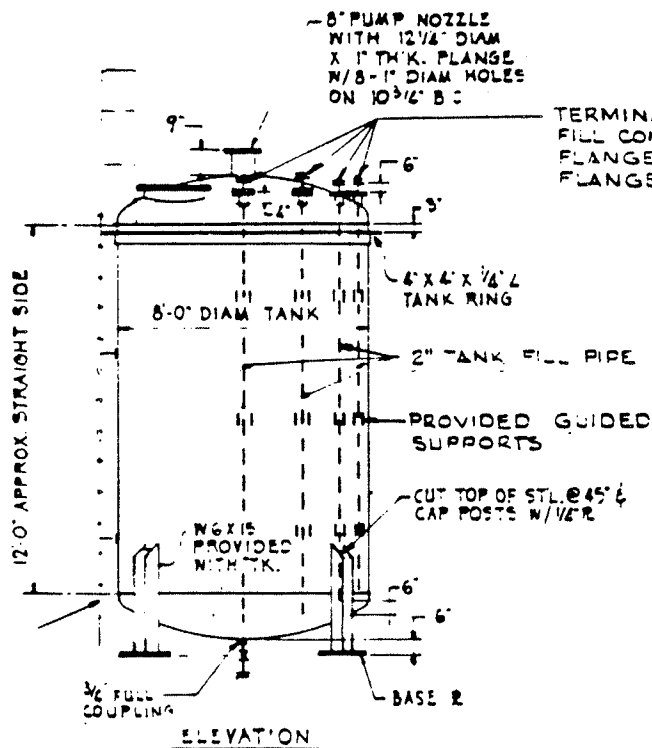
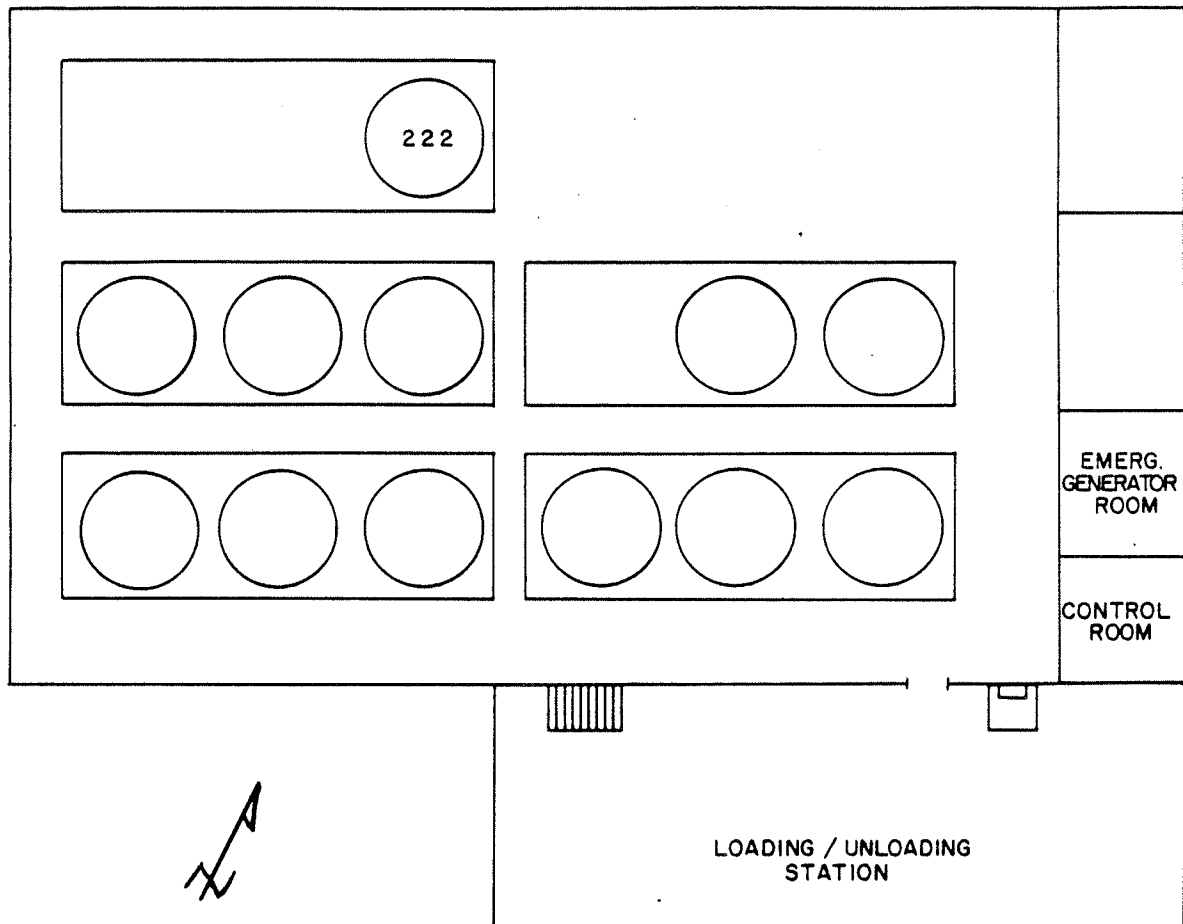
IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.



TANK 222

FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 222

## SCHEDULE

Closure Time (Days) ---->	0	30	60	90	120	150	180
NYSDEC APPROVAL OF THE CLOSURE PLAN	XI	I	I	I	I	I	I
PROJECT INITIATION	I X	I	I	I	I	I	I
ASSESSMENT	I	I	I	I	I	I	I
ASSESSMENT OF TANK SYSTEM CONTAMINATION	I	I	I	I	I	I	I
SAMPLING AND ANALYSIS PROTOCOL	I	I	I	I	I	I	I
HEALTH AND SAFETY PLAN	I	I	I	I	I	I	I
DECONTAMINATION PLAN	I	I	I	I	I	I	I
REPORT/REVIEW	I	I	I	I	I	I	I
IMPLEMENTATION	I	I	I	I	I	I	I
FACILITY DECONTAMINATION AND CLOSURE:	I	I	I	I	I	I	I
ENGINEERING/SPECS	I	I	I	I	I	I	I
REMOVAL OF REMAINING HAZARDOUS WASTE	I	I	I	I	I	I	I
DECONTAMINATION OF SYSTEM	I	I	I	I	I	I	I
EQUIPMENT DECONTAMINATION	I	I	I	I	I	I	I
ANALYTICAL WORK	I	I	I	I	I	I	I
TRANSPORTATION/DISPOSAL OF HAZARDOUS WASTE PRODUCED	I	I	I	I	I	I	I
DISMANTLING AND DISPOSAL OF SYSTEM	I	I	I	I	I	I	I
DOCUMENTATION	I	I	I	I	I	I	I
CERTIFICATION OF CLOSURE	I	I	I	I	I	I	X I
CLOSURE REPORT SUBMITTAL TO NYSDEC	I	I	I	I	I	I	XI

ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

FREON TF  
WASTE STORAGE TANK (I.D. #222)

CERTIFICATION OF CLOSURE

I certify that the work to close the Freon TF Waste Storage Tank (I.D. #222) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

FREON TF  
WASTE STORAGE TANK (I.D. #222)

CERTIFICATION OF CLOSURE

I certify that the work to close the Freon TF Waste Storage Tank (I.D. #222) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

N-METHYL-2-PYRROLIDONE  
WASTE STORAGE TANK  
(I.D. #223)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 223, located inside Building 303 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1985 and is used to store organic solvent waste (Waste Codes: F001, F002, F003, and F005) containing mostly n-methyl-2-pyrrolidone, plus varying amounts of other solvents. However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown on Figure 1:

- o Tank Capacity: 10,000 gallons
- o Tank and Piping Material: Stainless steel
- o Tank Configuration: Aboveground, vertical
- o Dimensions: 10'8" Dia x 17'3"H
- o Secondary Containment: Epoxy coated steel dike,  
15.9'W x 46'L x 3.2'H  
with leak detection.

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 223.

The steel dike serving Tank 223 also serves Tank 224 and 225. The dike will be closed in connection with Tank 223, 224, or 225, depending on which tank is closed last. This closure plan assumes the dike will be closed in connection with Tank 223.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

Integrity testing is not anticipated since this tank system has no underground components and has complete secondary containment.

### 5. Soil Investigation

A soil investigation is not anticipated since this tank system has no underground components and has complete secondary containment.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.

- b. If practical, the piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.
- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and the piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.
- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated during the closure activities, including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 9,500 gallons of hazardous wastewater will be generated during the tank system decontamination.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Sampling and Analysis Protocol, Health and Safety Plan, Decontamination Plan	8
Facility Decontamination and Closure:	
Engineering/Specs	25
Removal of Remaining Hazardous Waste	4
Decontamination of Tank and Piping	75
Equipment Decontamination	6
Analytical Work	8
Transportation/Disposal of Hazardous Waste Produced	16
Dismantling and Disposal of the Tank and Piping	20
Documentation	20
	-----
	190
15% Administrative Charges	28.5
	-----
Total	218.5
20% Contingency	43.7
	-----
Grand Total	262.2

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, piping, and appurtenant equipment as non-hazardous waste.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

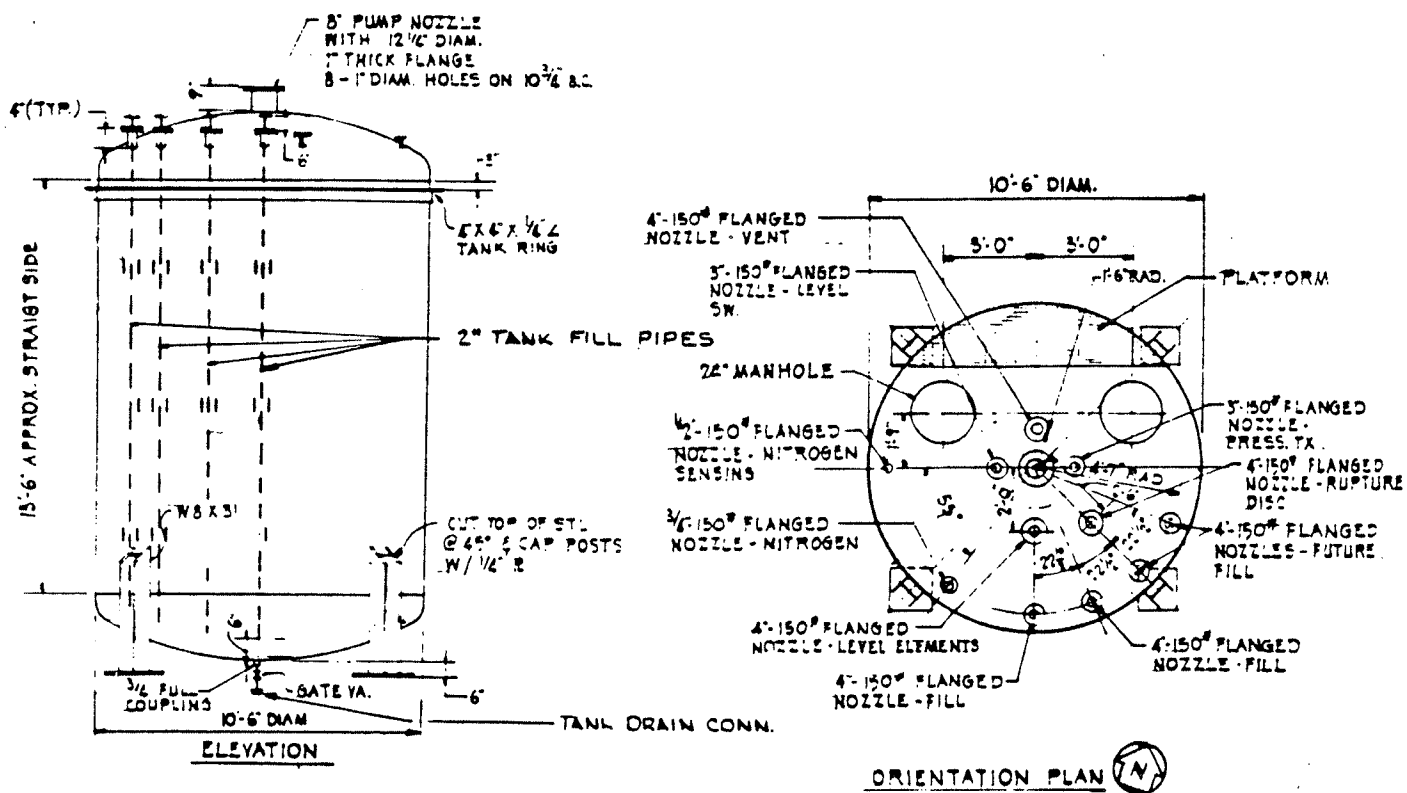
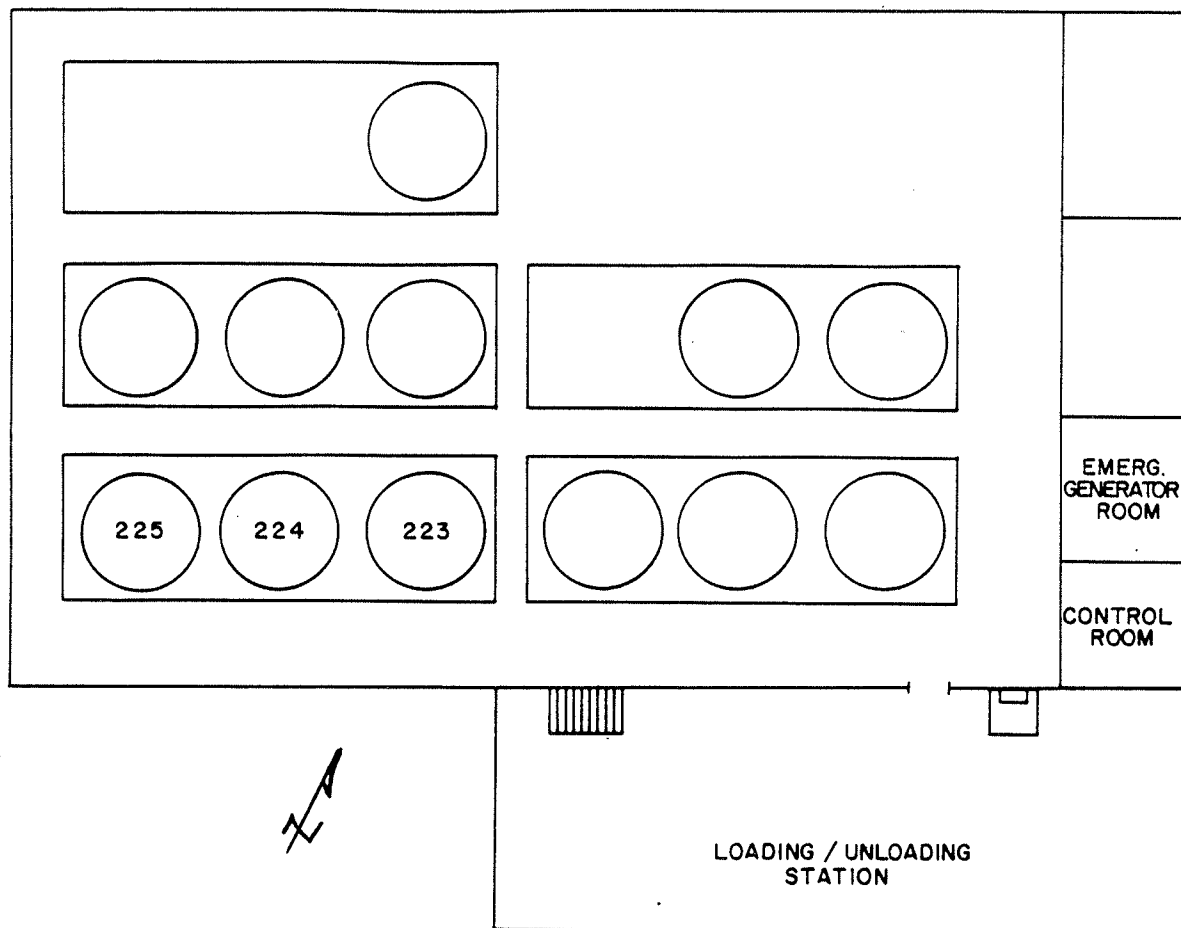
## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.





TANK 223

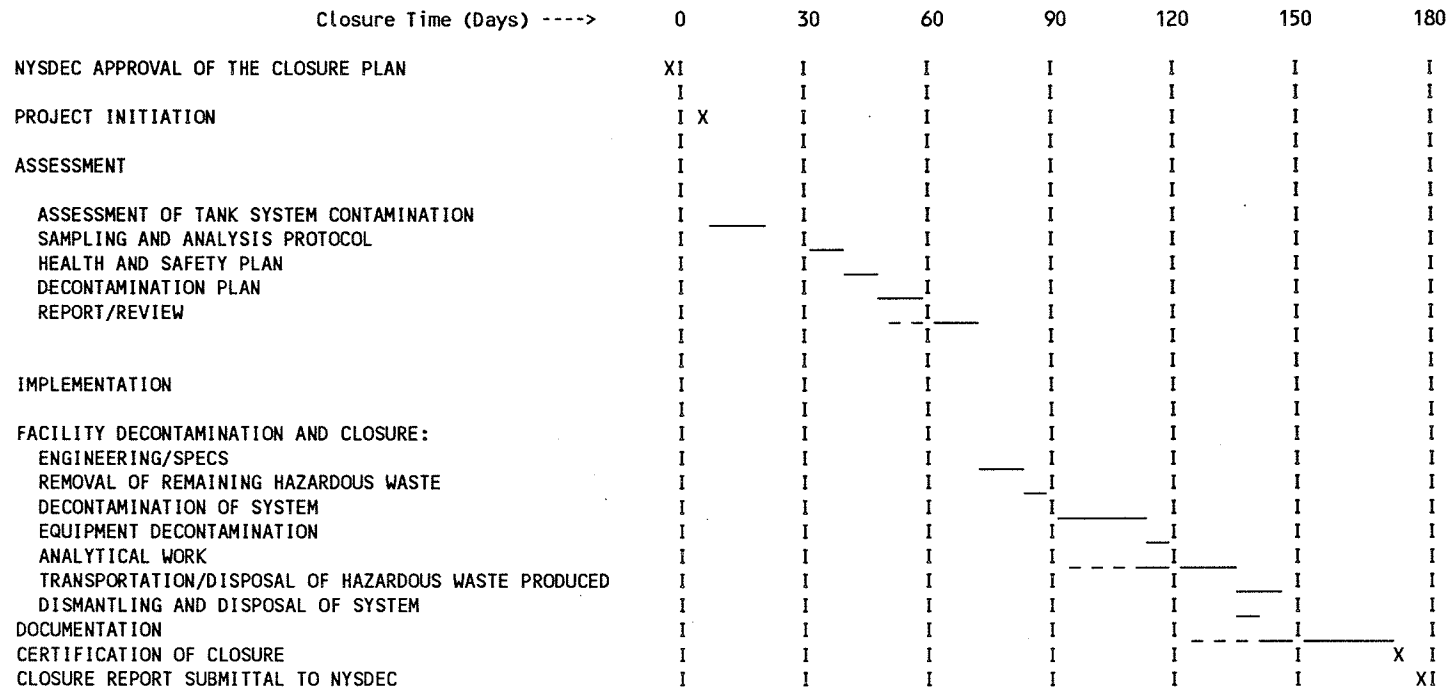
FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 223

SCHEDULE



ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

N-METHYL-2-PYRROLIDONE  
WASTE STORAGE TANK (I.D. #223)

CERTIFICATION OF CLOSURE

I certify that the work to close the N-Methyl-2-Pyrrolidone Waste Storage Tank (I.D. #223) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

N-METHYL-2-PYRROLIDONE  
WASTE STORAGE TANK (I.D. #223)

CERTIFICATION OF CLOSURE

I certify that the work to close the N-Methyl-2-Pyrrolidone Waste Storage Tank (I.D. #223) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

N-BUTYL ACETATE  
WASTE STORAGE TANK  
(I.D. #224)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 224, located inside Building 303 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1985 and is used to store organic solvent waste (Waste Codes: F001, F002, F003, and F005) containing mostly n-butyl acetate, plus varying amounts of other solvents. However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown on Figure 1:

- |   |                           |   |
|---|---------------------------|---|
| o | Tank Capacity:            | 10,000 gallons  |
| o | Tank and Piping Material: | Stainless steel   |
| o | Tank Configuration:       | Aboveground, vertical   |
| o | Dimensions:               | 10'8" Dia x 17'3"H  |
| o | Secondary Containment:    | Epoxy coated steel dike,<br>15.9'W x 46'L x 3.2'H<br>with leak detection. |

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 224.

The steel dike serving Tank 224 also serves Tanks 223 and 225. The dike will be closed in connection with Tank 223, 224, or 225, depending on which tank is closed last. This closure plan assumes the dike will be closed in connection with Tank 224.



## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

Integrity testing is not anticipated since this tank system has no underground components and has complete secondary containment.

### 5. Soil Investigation

A soil investigation is not anticipated since this tank system has no underground components and has complete secondary containment.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.

- b. If practical, the piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.
- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and the piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.
- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

The maximum inventory of hazardous waste present in the tank system will be estimated during the system contamination assessment. For cost estimating purposes, it is expected that the equivalent of approximately twenty 55-gallon drums of hazardous waste will be generated during the closure activities, including the waste residue, small parts and pipes difficult to clean, contaminated clothing, and miscellaneous small items. All containerized liquid waste will be segregated from solid waste. In addition, it is expected that approximately 9,500 gallons of hazardous wastewater will be generated during the tank system decontamination.

# CLOSURE COST ESTIMATE

<u>Task Description</u>	<u>Cost, K\$</u>
Assessment of Tank System Contamination	8
Sampling and Analysis Protocol,	
Health and Safety Plan, Decontamination Plan	8
Facility Decontamination and Closure:	
Engineering/Specs	25
Removal of Remaining Hazardous Waste	4
Decontamination of Tank and Piping	75
Equipment Decontamination	6
Analytical Work	8
Transportation/Disposal of Hazardous Waste Produced	16
Dismantling and Disposal of the Tank and Piping	20
Documentation	20
	-----
	190
15% Administrative Charges	28.5
	-----
Total	218.5
20% Contingency	43.7
	-----
Grand Total	262.2

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, piping, and appurtenant equipment as non-hazardous waste.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.

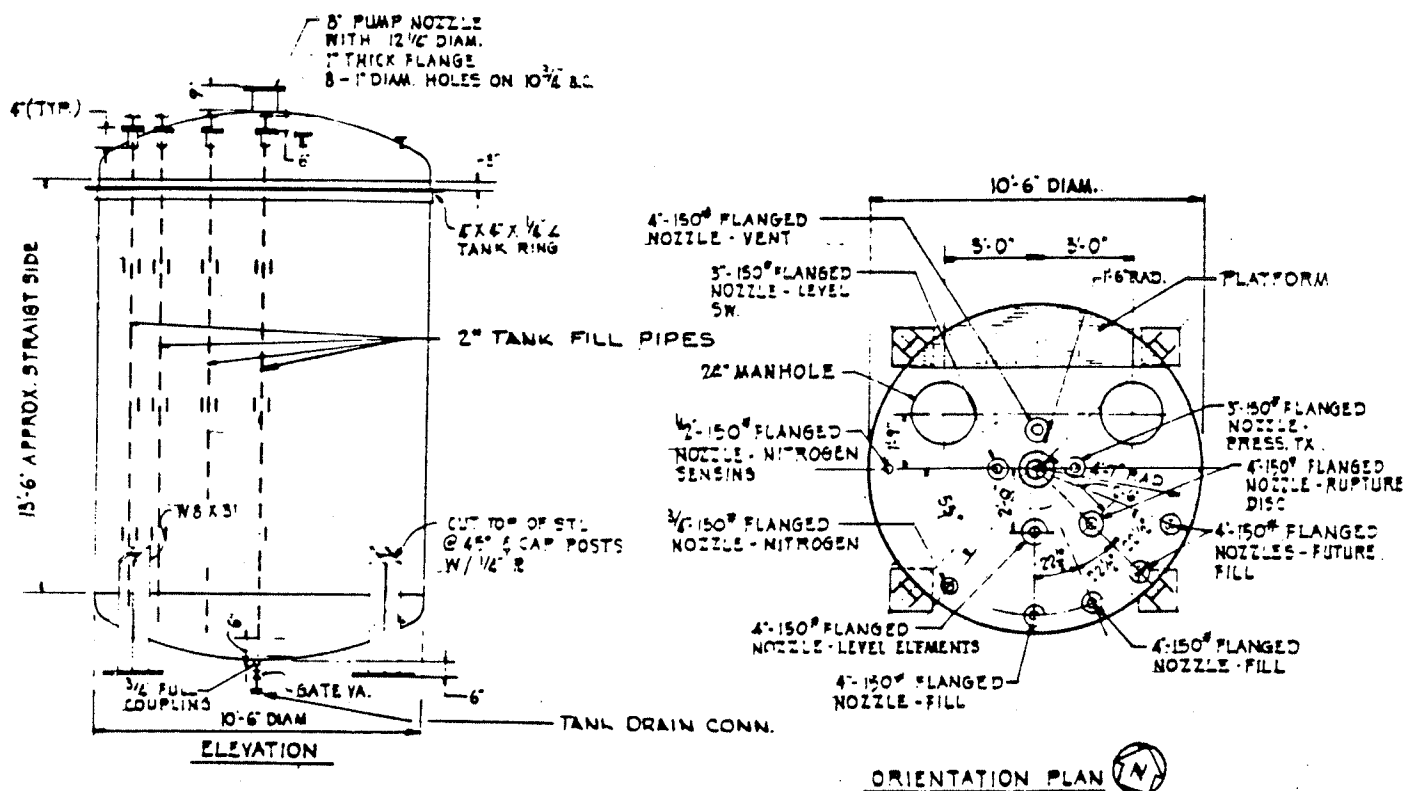
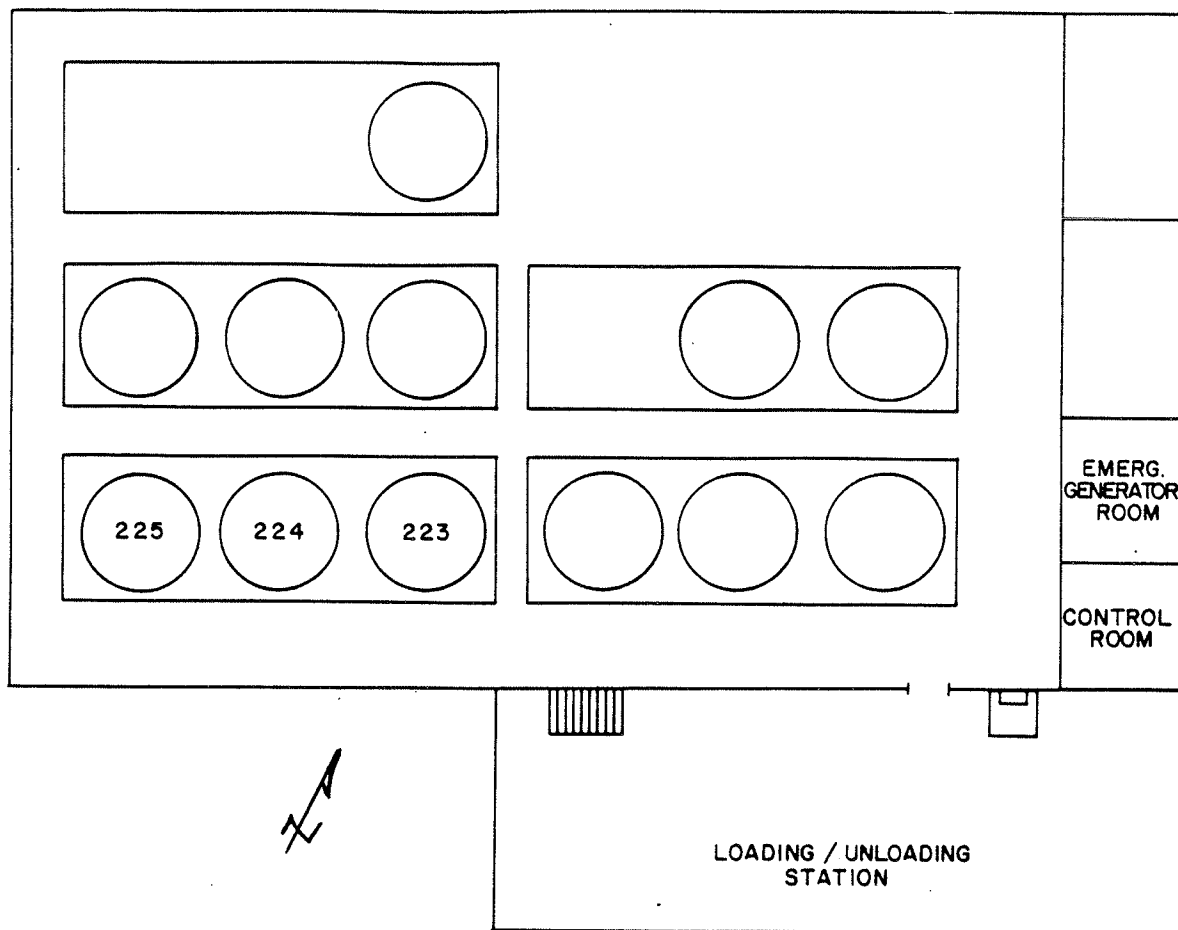


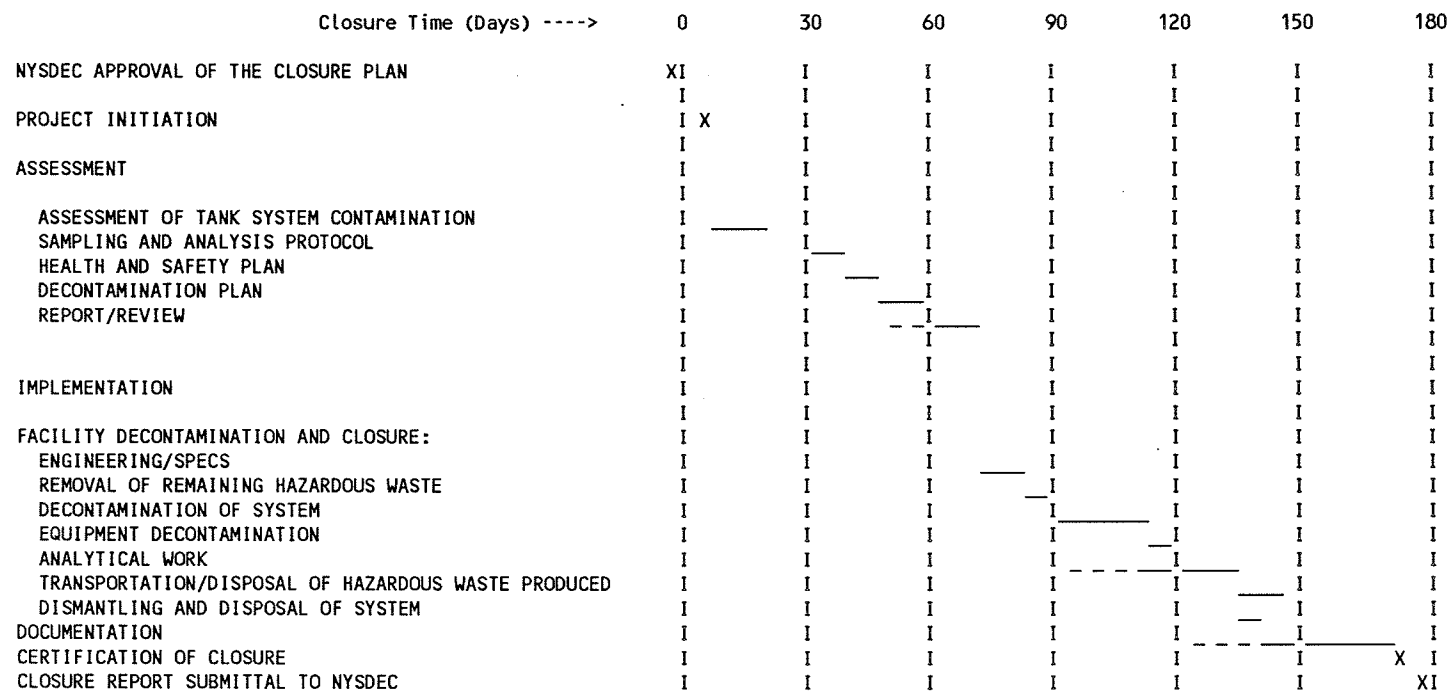
FIGURE 1

FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 224

## SCHEDULE





ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

N-BUTYL ACETATE  
WASTE STORAGE TANK (I.D. #224)

CERTIFICATION OF CLOSURE

I certify that the work to close the N-Butyl Acetate Waste Storage Tank (I.D. #224) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_

IBM CORPORATION

N-BUTYL ACETATE  
WASTE STORAGE TANK (I.D. #224)

CERTIFICATION OF CLOSURE

I certify that the work to close the N-Butyl Acetate Waste Storage Tank (I.D. #224) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



INTERNATIONAL BUSINESS  
MACHINES CORPORATION

EAST FISHKILL FACILITY  
DUTCHESS COUNTY, NEW YORK

6 NYCRR PART 373

CLOSURE PLAN

FOR

ISOPROPYL ALCOHOL  
WASTE STORAGE TANK  
(I.D. #225)

SEPTEMBER 1989

CORDDRY CARPENTER DIETZ AND ZACK  
ENGINEERS AND PLANNERS

HARRISBURG, PENNSYLVANIA

## INTRODUCTION

This Closure Plan has been developed for Tank 225, located inside Building 303 at the IBM Corporation, East Fishkill Facility. The facility is located along Route 52 in East Fishkill, New York. Production centers around the manufacture of semi-conductor devices.

The plan has been prepared in accordance with CFR 265.112 of the Hazardous Waste and Consolidated Permit Regulations and with 6 NYCRR Part 373, Requirements for Hazardous Waste Management Facilities. These regulations were promulgated by the United States Environmental Protection Agency (USEPA), pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA); and by the New York State Department of Environmental Conservation (NYSDEC), pursuant to Article 27, Title 9 of the Environmental Conservation Law.

The tank system has been active since 1985 and is used to store organic solvent waste (Waste Codes: F001, F002, F003, and F005) containing mostly isopropyl alcohol, plus varying amounts of other solvents. However, it should be noted that the type of waste stored in this tank at the time of closure could be different. Additional information about the system is listed as follows and is shown on Figure 1:

- o Tank Capacity: 10,000 gallons
- o Tank and Piping Material: Stainless steel
- o Tank Configuration: Aboveground, vertical
- o Dimensions: 10'8" Dia x 17'3"H
- o Secondary Containment: Epoxy coated steel dike,  
15.9'W x 46'L x 3.2'H  
with leak detection.

The ancillary piping and equipment will be closed at the same time and in the same manner as Tank 225.

The steel dike serving Tank 225 also serves Tanks 223 and 224. The dike will be closed in connection with Tank 223, 224, or 225, depending on which tank is closed last. This closure plan assumes the dike will be closed in connection with Tank 225.

## DESCRIPTION OF CLOSURE ACTIVITIES

The following closure activities will be performed to comply with the EPA and NYSDEC hazardous waste regulations. The activities are listed in sequential order.

### 1. Notification of Closure

IBM East Fishkill will notify the NYSDEC Commissioner, in writing, at least 60 days prior to the date on which closure is expected to begin. The notification will include the expected date that the tank system will be taken out of service and the date that closure activities are expected to begin. If the Commissioner requires a revision of the Closure Plan, the date when closure begins will be within 30 days after approval of the revised Closure Plan.

### 2. Cessation of Flow

The first step of the Closure Plan will be to stop the flow of any material through the system. The tank contents will then be drained, except for some residual liquid and sludge.

### 3. Assessment of Tank System Contamination

The tank system history will be reviewed with the intent of determining the hazardous constituents stored in the tank at any time and whether any leaks or spills have ever occurred.

On the basis of the historical findings, the liquid residue remaining in the tank and piping will be sampled and analyzed to determine the extent of contamination, if any exists. The samples will be analyzed for organic constituents using EPA Method 8240 and for toxic metals using the EP Toxicity Test.

Any solid residue (sludge) remaining in the tank will also be sampled and analyzed for the same constituents.

### 4. Assessment of Tank System Integrity

Integrity testing is not anticipated since this tank system has no underground components and has complete secondary containment.

### 5. Soil Investigation

A soil investigation is not anticipated since this tank system has no underground components and has complete secondary containment.

6. Preparation of Sampling and Analysis Protocol, Decontamination Plan and Health and Safety Plan

A Sampling and Analysis Protocol will be prepared. The protocol will provide the specific details required to carry out sampling and analytical tasks to conform with approved norms, including providing the proper Quality Assurance/Quality Control (QA/QC) procedures.

The results of the tank system contamination assessment will be used to prepare a Decontamination Plan and a Health and Safety Plan which satisfy the requirements of the IBM Corporation Safety and Industrial Hygiene Department. The Decontamination Plan will establish the criteria for decontamination and the step by step procedures to be followed during the closure activities. The Health and Safety Plan will set forth the proper precautions and procedures to be followed by all field personnel, based on the assessment of the hazards (chemical, physical, and toxicological) present.

Generally, the Decontamination Plan and the Health and Safety Plan will be developed with consideration given to the following documents:

- a. IBM Chemical Precaution Sheets or Material Safety Data Sheets
- b. The Confined Space Entry Section (4-01-05A) of the IBM East Fishkill Safety Manual.

The Chemical Precaution and Material Safety Data Sheets prescribe safety and health measures in handling specific chemicals used at the plant. The Confined Space Entry Section of the Safety Manual sets forth proper practices and protection measures (e.g., breathing apparatus, protective clothing, safety procedures, and other measures) for safely entering and performing activities within confined spaces, including hazardous waste tanks.

7. Facility Decontamination and Closure

The tank, piping, and appurtenant equipment (including the secondary containment facilities, if warranted) will be decontaminated according to the Decontamination Plan. The following tasks will be performed:

- a. Hazardous waste materials remaining in the tank and piping will be removed using appropriate means (such as loosening any incrustation using pressurized water jets and pumping out the contents) and will be disposed of using a permitted hazardous waste disposal vendor.



- b. If practical, the piping system will be cleaned in-situ and then removed. Otherwise, it will be disassembled and cut into sections for ease in transporting and cleaning. The cut pipe segments will be placed in an area suitably prepared for decontamination of such materials and will undergo the same decontamination steps described below for the tank.
- c. The tank will be cleaned in place with steam, which may be accompanied by an appropriate detergent. The steam condensate will be collected and stored temporarily in suitable containers while samples are analyzed. The analysis will be performed using EPA Method 8240 for organic constituents and the EP Toxicity Test for toxic metals. If found to be a hazardous waste, the steam condensate will be transported off-site using a permitted waste disposal vendor. Otherwise, it will be processed at the on-site Industrial Wastewater Treatment Plant.
- d. The tank will then be rinsed three times with pressurized water jets. Each rinse cycle will be sampled and analyzed following the same methods mentioned above. If at the end of the third rinse, the concentration of hazardous constituents does not meet the criteria established in the Decontamination Plan, rinsing will continue until the criteria are met. The water from each rinse cycle will be collected and pumped into a tank trailer where it will be stored until the analytical results are known. If warranted, water from the rinse cycles will be stored separately. The rinse water will be transported off-site using a permitted waste disposal vendor or will be processed at the on-site Industrial Wastewater Treatment Plant, depending on the analytical results. The tank trailer will be parked in an area suitably prepared to contain accidental spills.
- e. After decontamination, the tank and the piping will be removed and disposed of as non-hazardous waste or will be sold as scrap metal.
- f. The equipment used to decontaminate the tank system will be decontaminated using steam and detergent. This equipment may include the high pressure water jet cleaning unit, pumps, wet vacuum unit, and tank trailer, after it is emptied.
- g. The hazardous waste produced during the closure activities will be sent to an approved treatment, storage, and disposal (TSD) facility. Some of the facilities used by IBM are listed below:

Safety Clean Environmental Systems Co.  
State Highway 146  
New Castle, KY 40050  
KYD053348108

Rollins Environmental Services, Inc.  
Incinerator Complex  
Bridgeport, NJ 08014  
NJD053288239

Chemical Waste Management  
1550 Balmer Road  
Model City, New York 14107  
NYD049836679

ENSCO  
American Oil Road  
El Dorado, AK 71730  
ARD069748192

Stablex Canada, Inc.  
760 Boulevard Industrial  
Santa Teresa de Blanville  
Quebec, Canada J7C3V4  
NYD980756415

#### MAXIMUM INVENTORY OF HAZARDOUS WASTE

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Assessment of Tank System Contamination	8
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Engineering/Specs	25
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Analytical Work	8
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Dismantling and Disposal of the Tank and Piping	20
Documentation	20
	-----
	190
15% Administrative Charges	28.5
	-----
Total	218.5
20% Contingency	43.7
	-----
Grand Total	262.2

The above estimate includes all labor, equipment rentals, and materials required to assess, decontaminate, and dispose of the tank system. The estimate is based on disposing of the tank, piping, and appurtenant equipment as non-hazardous waste.

The hazardous waste produced will be sent off-site for treatment/disposal. Typical treatment/disposal charges for drum waste and bulk waste solvents are as follows:

- o Drum Waste Solvents \$155.00 to \$518.00 per drum  
(depending upon type of solvent discarded and vendor used)
- o Bulk Waste Solvents \$0.30 to \$1.00 per gallon  
(depending upon type of solvent discarded and vendor used)

## CLOSURE SCHEDULE

Figure 2 presents the closure schedule. The schedule addresses the two main phases of the closure activities: assessment and implementation. Some of the activities listed may or may not be carried out, depending on the particular situation at time of closure.

IBM East Fishkill will initiate closure activities within 30 days of receiving official approval of the Closure Plan from the NYSDEC and will complete the closure within 180 days.

## CERTIFICATION AND SUPPORTING DOCUMENTS

When the closure activities have been completed, IBM will submit to the NYSDEC a certification by the owner and by an independent professional engineer registered in the State of New York, that the tank system has been closed in accordance with the approved Closure Plan. Sample certification forms, one to be signed by IBM and the other to be signed by the professional engineer, are found in Attachment A. The activities of the independent professional engineer are indicated in the certification form.

In addition to the certifications, the following documents will be submitted to the NYSDEC in a Closure Report:

1. Test results
2. A copy of the manifests for disposal of hazardous waste.



FIGURE 2

IBM CORPORATION  
EAST FISHKILL FACILITY

HAZARDOUS WASTE MANAGEMENT UNITS  
CLOSURE PLAN  
TANK 225

SCHEDULE

Closure Time (Days) ---->	0	30	60	90	120	150	180
NYSDEC APPROVAL OF THE CLOSURE PLAN	XI	I	I	I	I	I	I
	I	I	I	I	I	I	I
PROJECT INITIATION	I X	I	I	I	I	I	I
	I	I	I	I	I	I	I
ASSESSMENT	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
ASSESSMENT OF TANK SYSTEM CONTAMINATION	I	I	I	I	I	I	I
SAMPLING AND ANALYSIS PROTOCOL	I	I	I	I	I	I	I
HEALTH AND SAFETY PLAN	I	I	I	I	I	I	I
DECONTAMINATION PLAN	I	I	I	I	I	I	I
REPORT/REVIEW	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
IMPLEMENTATION	I	I	I	I	I	I	I
	I	I	I	I	I	I	I
FACILITY DECONTAMINATION AND CLOSURE:	I	I	I	I	I	I	I
ENGINEERING/SPECS	I	I	I	I	I	I	I
REMOVAL OF REMAINING HAZARDOUS WASTE	I	I	I	I	I	I	I
DECONTAMINATION OF SYSTEM	I	I	I	I	I	I	I
EQUIPMENT DECONTAMINATION	I	I	I	I	I	I	I
ANALYTICAL WORK	I	I	I	I	I	I	I
TRANSPORTATION/DISPOSAL OF HAZARDOUS WASTE PRODUCED	I	I	I	I	I	I	I
DISMANTLING AND DISPOSAL OF SYSTEM	I	I	I	I	I	I	I
DOCUMENTATION	I	I	I	I	I	I	I
CERTIFICATION OF CLOSURE	I	I	I	I	I	I	X I
CLOSURE REPORT SUBMITTAL TO NYSDEC	I	I	I	I	I	I	XI

ATTACHMENT A

Certification of Closure Forms:

- o Independent Professional Engineer
- o IBM Corporation

INDEPENDENT PROFESSIONAL ENGINEER

IBM CORPORATION

ISOPROPYL ALCOHOL  
WASTE STORAGE TANK (I.D. #225)

CERTIFICATION OF CLOSURE

I certify that the work to close the Isopropyl Alcohol Waste Storage Tank (I.D. #225) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
- o Verification of Adherence to the Approved Sampling and Analysis Protocol
- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm: \_\_\_\_\_

New York State Professional Engineer Registration Number: \_\_\_\_\_



IBM CORPORATION

ISOPROPYL ALCOHOL  
WASTE STORAGE TANK (I.D. #225)

CERTIFICATION OF CLOSURE

I certify that the work to close the Isopropyl Alcohol Waste Storage Tank (I.D. #225) and its associated piping was carried out in accordance with the NYSDEC-approved Closure Plan and the other pertinent documents listed below. The following was completed:

- o Verification of Adherence to the Approved Health and Safety Plan
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- o Verification of Adherence to the Approved Decontamination Plan
- o Review of the Data Collected
- o Review of Analytical Reports and Manifests
- o Witness Part of the Work on Site at IBM.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

