CLEAN HARBORS ENVIRONMENTAL SERVICES
Letter of Commitment to Respond
Equipment and Resources

CleanHarbors®
ENVIRONMENTAL SERVICES, INC.

17 Main Street
South Portland, ME 04106
207.799.8111
Fax 207.799.0349
www.cleanharbors.com

August 29, 2012

Nick Payeur
Portland Pipeline Corporation
30 Hill Street
P.O Box 2590
South Portland, ME 04106

Dear Nick:

Pursuant to our conversation, I am writing this letter to inform you that Clean Harbors Environmental Services, Inc. will provide emergency response services. Clean Harbors is one of the Nations leading environmental service companies, along with being recognized as New England's premier emergency response contractor.

Our Bangor and South Portland, Maine locations are staffed with expert emergency response personnel, including Health and Safety professionals, Field Chemists and Engineers. These two locations ensure an expeditious response time for incidents throughout the State of Maine. Both locations are thoroughly equipped for incidents requiring EPA Personal Protection Levels "D" through "B". Level "A" can be obtained through our Weymouth, MA. office.

Our local resources in South Portland, Maine can respond to an emergency in the Portland area within 2 hours. For other support we can have resources from our Bangor office in 3-4 hours as well as our Weymouth, MA and Bow, N.H. offices within 4 hours.

Emergency services will be provided at the request of, or under the direction of, an authorized representative, on a time and material basis in accordance with our prevailing rates.

Our 24-hour emergency response phone number is 207-799-8111 or 1-800-OIL-TANK We appreciate your business and look forward to servicing you in the future. Should you have any further questions please feel free to call.

Sincerely,

Matthew A. Quinn
General Manager

"People and Technology Creating a Better Environment"

SOUTH PORTLAND, ME SERVICE CENTER **17 Main Street** **South Portland, ME 04106**	**43.64 N 70.29 W**	**24-Hr. #** **24-Hr. #** **Fax #**	**207.799.8111** **800.645.8265** **207.799.0349**

[redacted]

EPA / Federal ID #: N/A

Personnel Authorized to release equipment / materials / manpower, etc:

[redacted]

40-Hour OSHA Trained Personnel:

Supervisor	6
Foreman	6
Field Technician	12
Equipment Operator	11
Site Safety Officer	1

Equipment List **Item Description / Manufacturer**	**Location**	**Capacity / Size / Key Features**	**# of Units**	**A**	**T**	**P**	**D**
(1) Vessels & Marine Support Equipment							
Power Workboat, Workskiff	South Portland	21', 115HP, V329	1	Y	Y	N	N
Power Workboat, Pointer	South Portland	21', 120 HP, ME 207SY, V120	1	Y	Y	N	N
Jon Boat w/ Motor, Alumaline	South Portland	12', 9.9 HP, ME 107CH, V201	1	Y	Y	N	N
Jon Boat w/ Motor	South Portland	12', 5 HP, SEAP7313M84G	1	Y	Y	N	N
Power Workboat, Trailboss	South Portland	20', 30 HP, ME10ZMM, V148	1	Y	Y	N	N
Power Workboat, Monarch	South Portland	22', 150 HP, ME 10ZML, V107	1	Y	Y	N	N
Power Workboat, Alumaline	South Portland	21', 130 HP, ME 2228Z, V201	1	Y	Y	N	N
(2) Motor Vehicles & Vacuum Equipment							
Vacuum Truck Straight	South Portland	3,000 gal.	2	Y	Y	N	N
Vacuum Split Trailers	South Portland	6,000 gal	1	Y	Y	N	N
Vacuum Trailer	South Portland	6,000 gal	3	Y	Y	N	N
High Powered Vacuum Loader, Cusco	South Portland	3,000 gal / 10 cu. yd.	1	Y	Y	N	N
Vacuum Skid	South Portland	3,000 gal	1	Y	Y	N	N
Vacuum Skid	South Portland	300 gal	1	Y	Y	N	N
Box Trailer	South Portland	40'	2	Y	Y	N	N
Box Truck	South Portland	10 wheel	1	Y	Y	N	N
Crew Cab Pickup	South Portland	F250	9	Y	Y	N	N
Frac Tanks	South Portland	20,000 gal	4	Y	Y	N	N
Drop Deck Trailer	South Portland	Roll Off Capable	1	Y	Y	N	N
Roll Off Trailer	South Portland	17 Yards	1	Y	Y	N	N
Tag along Trailer	South Portland		1	Y	Y	N	N
Spill Trailer	South Portland		1	Y	Y	N	N
10 Wheel Dump Truck	South Portland	10 yards	1	Y	Y	N	N
Roll Off Truck	South Portland	15 Yards	1	Y	Y	N	N
6 Wheel Dump Truck	South Portland	6 Yards	1	Y	Y	N	N

Equipment List Cont. Item Description / Manufacturer	Location	Capacity / Size / Key Features	# of Units	A	T	P	D
(3) Pumps and Pressure Equipment							
Wilden Diaphragm Pump	South Portland	2"	2	Y	Y	N	N
Wilden Diaphragm Pump	South Portland	2" Chemical	1	Y	Y	N	N
Wilden Diaphragm Pump	South Portland	3"	1	Y	Y	N	N
Adaps Hydraulic Pump	South Portland	4"	3	Y	Y	N	N
Bowie Pump (Hydraulic)	South Portland	3"	1	Y	Y	N	N
Hotsy on Trailer	South Portland	2,500 PSI	3	Y	Y	N	N
Lamor Hydraulic Pump	South Portland	3"	1	Y	Y	N	N
(4) Oil Spill Containment Booms							
Oil Containment Boom	South Portland	Global 14", In Water	2000	Y	Y	N	N
Oil Containment Boom	South Portland	American Marine 24", In Water at Sprague	2500	Y	Y	N	N
Oil Containment Boom	South Portland	Global 14", In Water	3400	Y	Y	N	N
Oil Containment Boom	South Portland	American Marine 18", In Van	19500	Y	Y	N	Y
Oil Containment Boom	South Portland	Global 24", In Water	1100	Y	Y	N	N
(5) Environmental Monitoring Equipment							
HNU Meter	South Portland	P101	1	Y	Y	N	N
MSA Gas Indicator	South Portland	Miniguard II	4	Y	Y	N	N
4-Gas/Passport Meter	South Portland	LEL, O2, Hyd. Sulf.	2	Y	Y	N	N
(6) Recovery Equipment							
Portable Tanks	South Portland	400 gallon Poly	2	Y	Y	N	N
Sea Slug Towable Fuel Bladder	South Portland	Model #FCB-43E, 4300 gallons	1	Y	Y	N	N
Disc Skimmer, Elastec	South Portland	ORD, 3", 50 GPM, 204195, S200	1	Y	Y	N	Y
Drum Skimmer, Crucial	South Portland	TDS118, 3", 35 GPM, TDS11899336, S214	1	Y	Y	N	Y
(7) Beach or Earth Cleaning and Excavating Equipment							
Excavator, CAT	South Portland	235 Track	1	Y	Y	N	N
Backhoe, CAT	South Portland	436	1	Y	Y	N	N
Bobcat	South Portland	843, Skidsteer	1	Y	Y	N	N
(8) Generators / Compressors / Light Towers							
Sullair Portable Compressor	South Portland	185 CFM; Diesel	3	Y	Y	N	N
Generator	South Portland	120 watt	3	Y	Y	N	N
(9) Health and Safety Equipment							
CSE Entry Gear	South Portland	Tripod, DBI	2	Y	Y	N	N
Coppus Blower	South Portland		2	Y	Y	N	N
Coppus Blower	South Portland	Electric	2	Y	Y	N	N
Supplied Air packs	South Portland	Scott	6	Y	Y	N	N
Breathing Air Tanks	South Portland		20	Y	Y	N	N

Equipment List Cont. Item Description / Manufacturer	Location	Capacity / Size / Key Features	# of Units	A	T	P	D
(10) Communications							
Portable marine radios	South Portland		7	Y	Y	N	N
Base Marine Radio	South Portland		1	Y	Y	N	N
2-way Mobile Radios	South Portland	Nextel	27	Y	Y	N	N
Company Base Radio	South Portland	Nextel	1	Y	Y	N	N
(11) Miscellaneous							
Emergency Response Subcontractors							

Portland Tugboat & Ship Docking Co., Inc. **Contact:** [redacted]
P.O. Box 15049
Portland, Maine 04112
(207) 774-2902
(207) 773-5659
Services Provided:
Tug Boat Services

Winslow Tugs **Contact:** [redacted]
26 Andrews Avenue
Falmouth, Maine 04105
(207) 780-8847
Services Provided:
Tug Boat Services

General Marine Constructers **Contact:** [redacted]
Deaks Wharf
Portland, ME 04101
(207) 772-5354
Services Provided:
Barge and tug boat

Industrial Welding & Machine, Inc. **Contact:**
430 Commercial Street - P.O. Box 1004
Portland, Maine 04104
(207) 773-8482
(207) 767-3561 Nights and Holidays
Services Provided:
Welding service

National Response Corp **Contact:** [redacted]
P.O. Box 7210
Portland, Maine 04112
(207) 767-7112
Services Provided:
Barge skimmer Service

Marine Spill Response Corp. **Contact:** [redacted]
14 Union Wharf
Portland, Maine 04101
(207) 780-8801
Services Provided:
Large boat , skimmer service

BANGOR, ME SERVICE CENTER	**44.78 N 68.81 W**	**24-Hr #**	**207.262.9504**
40B Carey Circle		**24-Hr #**	**800.645.8265**
Hampden, ME 04444		**Fax #**	**207.262.9560**

[redacted] EPA / Federal ID #: N/A

Personnel Authorized to release equipment / materials / manpower, etc:

[redacted]

40-Hour OSHA Trained Personnel:

Supervisor	2
Foreman	5
Equipment Operator	5
Field Technician	7

Equipment List **Item Description / Manufacturer**	**Location**	**Capacity / Size / Key Features**	**# of Units**	**A**	**T**	**P**	**D**
(1) Vessels & Marine Support Equipment							
Utility Workboat, Pointer	Bangor	115 HP, 21', 8' Beam, 2' Draft, ME1408V, V124 (PVT20784D787)	1	Y	Y	N	N
utility Workboat, Pointer	Searsport	175 HP V350	1	Y	Y	N	N
Jon Boats	Bangor	16 ft (3)14 ft (1) V390,V372, V379, V391	4	Y	Y	N	N
(2) Motor Vehicles & Vacuum Equipment							
Stake Body / Utility Truck	Bangor	6 wheel 5253	1	Y	Y	N	N
Crew Cab Pickup	Bangor	4x4 8921, 8652, 8779	3	Y	Y	N	N
Dump truck 1 ton	Bangor	4x4 3yrd dump ch5412 5412	1	Y	Y	N	N
Crew Cab Pickup	Bangor	3/4 Ton 8771, 8644, 8903	3	Y	Y	N	N
Pressvac, High Power Vacuum Truck	Bangor	250 GPM, 3000 Gal Capacity 4185	1	Y	Y	N	N
Vacuum Trailer	Bangor	5,000 Gal Capacity 333	1	Y	Y	N	N
Tractor power unit	Bangor	Tandem 1497	1	Y	Y	N	N
Tractor power unit	Bangor	Tandem	1	Y	Y	N	N
Vacuum Truck	Bangor	3,000 Gal Capacity 4109	1	Y	Y	N	N
(3) Pumps and Pressure Equipment							
Hotsy Pressure Washer	Bangor	3,000 PSI - trailer mounted	1	Y	Y	N	N
Wilden Diaphragm Pump	Bangor	2" Oil	5	Y	Y	N	N
Wilden Diaphragm Pump	Bangor	3" Oil	1	Y	Y	N	N
Air Driven Drum Pump	Bangor	2" Air Driven	2	Y	Y	N	N
Hotsy Pressure Washer	Bangor	3000 psi	2	Y	Y	N	N
(4) Oil Spill Containment Booms							
Oil Containment Boom	Bangor	Langelman 18" (10ft trailer)	1000	Y	Y	N	Y
Oil Containment Boom	Bangor	14"	500	Y	Y	N	Y
(5) Environmental Monitoring Equipment							
Drager Pump	Bangor	with Miscelaneous Tubes	1	Y	Y	N	N
Passport 5 gas meter	Bangor		3	Y	Y	N	N
(6) Recovery Equipment							
Portable Tanks	Bangor	300 Gallons Stainless Steel	2	Y	Y	N	N
Portable Tanks	Bangor	275 Gallon Poly tote	2	Y	Y	N	N
Skid Mount Vacuum Unit	Bangor	1000 gallon CH213	1	Y	Y	N	N

Equipment List Cont. Item Description / Manufacturer	Location	Capacity / Size / Key Features	# of Units	A	T	P	D
(7) Beach or Earth Cleaning and Excavating Equipment							
(8) Generators / Compressors / Light Towers							
Sullair Compressor	Bangor	Diesel 185 cfm	1	Y	Y	N	N
Generator	Bangor	Honda 2500 watt	1	Y	Y	N	N
Light Towers	Bangor	Electric 4' high	1	Y	Y	N	N
(9) Health and Safety Equipment							
Portable Eye Wash Unit	Bangor		1	Y	Y	N	N
Scott Supplied Air System	Bangor		3	Y	Y	N	N
Scott Pak	Bangor		2	Y	Y	N	N
Rogliss & Tripod	Bangor		2	Y	Y	N	N
Safety Harness	Bangor		12	Y	Y	N	N
DBI & Tripod	Bangor		2	Y	Y	N	N
(10) Communications							
Cellular Phones	Bangor		11	Y	Y	N	N
Marine Base Station	Searsport		1	Y	Y	N	N
(11) Miscellaneous							
Emergency Response Subcontractors							

Subcontractor Name **Contact:** **Services Provided:**
Address 1
Address 2
Phone #

Subcontractor Name **Contact:** **Services Provided:**
Address 1
Address 2
Phone #

Subcontractor Name **Contact:** **Services Provided:**
Address 1
Address 2
Phone #

Subcontractor Name **Contact:** **Services Provided:**
Address 1
Address 2
Phone #

BOSTON, MA AREA SERVICE CENTER **609 Pleasant Street** **Weymouth, MA 02189**	**42.19 N 70.93 W**	**24-Hr. #** **24-Hr. #** **Fax #**	**781.803.4100** **800.645.8265** **781.803.4168**

[redacted] EPA / Federal ID #: N/A

Personnel Authorized to release equipment / materials / manpower, etc:

[redacted]
Mark Purcell
John Barry

40-Hour OSHA Trained Personnel:

Supervisor	10
Foreman	20
Equipment Operator	23
Field Technician	25

Equipment List **Item Description / Manufacturer**	**Location**	**Capacity / Size / Key Features**	**# of Units**	**A**	**T**	**P**	**D**
(1) Vessels & Marine Support Equipment							
Power Workboat, Hanko	Weymouth	24', 150HP, RI 0303 CH, V303	1	Y	Y	N	N
Power Workboat, Carolina Skiff	Weymouth	21', 88HP, MS 2027 B, V158	1	Y	Y	N	N
Power Workboat, Minncraft	Weymouth	16', 25HP, MS 9181 KB, V156	1	Y	Y	N	N
Power Workboat, Sylvan	Weymouth	14', 9.9HP, MS 7121 AA, V206	2	Y	Y	N	N
Power Workboat, Seasquirt	Weymouth	18', 25HP, MS 5383 AC, V161	1	Y	Y	N	N
Workboat, Star Craft	Weymouth	14', No Motor, MS 6455 AP, V155	2	Y	Y	N	N
(2) Motor Vehicles & Vacuum Equipment							
Vacuum Tractor Trailers	Weymouth	4,000/5,000/6,000 gals	8	Y	Y	N	N
High Powered Vacuum Truck/Cusco	Weymouth		6	Y	Y	N	N
Cyclone Vactor/Guzzler	Weymouth		4	Y	Y	N	N
Vactor (Jet Rodder)	Weymouth		2	Y	Y	N	N
Vacuum Trucks S.S.	Weymouth	3,000 & 3,500 gals	5	Y	Y	N	N
Box Truck- Prime Mover	Weymouth	81 International	1	Y	Y	N	N
Straight Box Trucks	Weymouth	Ford	1	Y	Y	N	N
Frac Tanks	Weymouth	22,500 gallons	6	Y	Y	N	N
Rack Truck	Weymouth	5151, 5142, 552	3	Y	Y	N	N
10 Wheel Dump Truck	Weymouth	5252	1	Y	Y	N	N
6 Wheel Dump Truck	Weymouth	5403	1	Y	Y	N	N
Trailer (Lowboy)	Weymouth	50 TON	1	Y	Y	N	N
Crew Cab Pickup	Weymouth	Various Models	27	Y	Y	N	N
Roll-off frames	Weymouth	463, 4131	4	Y	Y	N	N

Equipment List Cont. Item Description / Manufacturer	Location	Capacity / Size / Key Features	# of Units	A	T	P	D
(3) Pumps and Pressure Equipment							
Wilden Diaphragm Pump	Weymouth	M-15 3"	3	Y	Y	N	N
Wilden Diaphragm Pump	Weymouth	M-8 2"	2	Y	Y	N	N
Wilden Diaphragm Pump	Weymouth	1 1/4 "Poly	1	Y	Y	N	N
Wilden Diaphragm Pump	Weymouth	1 1/2 " M-4	1	Y	Y	N	N
Wilden Diaphragm Pump	Weymouth	1 1/4 " M-2	0	Y	Y	N	N
Wilden Diaphragm Pump	Weymouth	2" Champ Poly (chemical)	2	Y	Y	N	N
6" Double Stage Hyd Super Pump	Weymouth	6"	1	Y	Y	N	N
Lutz Electric Barrel Pump	Weymouth	1"	3	Y	Y	N	N
Drum Vacuums	Weymouth		4	Y	Y	N	N
Van Hotsy	Weymouth	3000 psi Hot Water	2	Y	Y	N	N
Hot water Hotsy	Weymouth	3000 psi, trailer mounted	1	Y	Y	N	N
Hot water Hotsy	Weymouth	3000 psi, portable, skid mount	2	Y	Y	N	N
Cold Water Pressure Washer	Weymouth	2000 psi, electric, portable	5	Y	Y	N	N
Warren Rupp	Weymouth	1" SA1A/SB1A	2	Y	Y	N	N
Teel Pump	Weymouth	5H 2" Trash Pump	3	Y	Y	N	N
Vactor Hose	Weymouth		1,000'	Y	Y	N	N
Discharge Hose	Weymouth	6"	150	Y	Y	N	N
Discharge Hose	Weymouth	4"	500'	Y	Y	N	N
Teel Pump	Weymouth	3"	3	Y	Y	N	N
(4) Oil Spill Containment Booms							
Oil Containment Boom	Weymouth	American Marine 18"	2800	Y	Y	N	Y
Oil Containment Boom	Weymouth	Slickbar 18'	3000	Y	Y	N	Y
(5) Environmental Monitoring Equipment							
MSA Gas Indicator	Weymouth	Sirius 5 Gas	7	Y	Y	N	N
MSA Gas Indicator	Weymouth	Passport Quad	3	Y	Y	N	N
Draeger Pump	Weymouth	Accuru	5	Y	Y	N	N
MSA PIDs	Weymouth	Passport PIDs	3	Y	Y	N	N
(6) Recovery Equipment							
Skidmount Vacuum Unit	Weymouth	1000 gal	1	Y	Y	N	N
Slurp Skimmer, SkimPac	Weymouth	Static, 4200 Model, 2", S229	1	Y	Y	N	Y
Drum Skimmer, Elastec	Weymouth	Air, TDS118, 3", 35 GPM, S233	1	Y	Y	N	Y
Recovery Tank	Weymouth	1000 gal	1	Y	Y	N	N
Nilfisk Mercury Vacuum	Weymouth		2	Y	Y	N	Y
HEPA Filter Vacuum	Weymouth		3	Y	Y	N	N
HEPA Filter Vactor	Weymouth		1	Y	Y	N	N
(7) Beach or Earth Cleaning and Excavating Equipment							
Bobcat	Weymouth	Backhoe/Sweeper /Pavement Breaker	2	Y	Y	N	N
Backhoe	Weymouth	436 Cat	1	Y	Y	N	N
Cat Excavator	Weymouth	Cat 315 Track	1	Y	Y	N	N
Bobcat Mini Excavator	Weymouth	337 Mini	1	Y	Y	N	N

Equipment List Cont. Item Description / Manufacturer	Location	Capacity / Size / Key Features	# of Units	A	T	P	D
(8) Generators / Compressors / Light Towers							
Sullair Portable Compressor	Weymouth	185 Diesel	5	Y	Y	N	N
Winco Generator	Weymouth	K4800/A	3	Y	Y	N	N
Coppus Blower	Weymouth	4" Pneumatic	3	Y	Y	N	N
Coppus Blower	Weymouth	8" Pneumatic	1	Y	Y	N	N
Coppus Blower	Weymouth	10" Pneumatic	1	Y	Y	N	N
Coppus Fan	Weymouth	RF-20	2	Y	Y	N	N
(9) Health and Safety Equipment							
MSA S.C.B.A.	Weymouth	1 Hour/4500	10	Y	Y	N	N
Spare Air Cylinders	Weymouth	4500 PSI (1 HR)	8	Y	Y	N	N
MSA SAR	Weymouth	Pressure Demand	4	Y	Y	N	N
MSA Escape Units	Weymouth	5 Minutes	7	Y	Y	N	N
Encapsulating Suits	Weymouth	First Responder	0	Y	Y	N	N
Encapsulating Suits	Weymouth	Butyl	0	Y	Y	N	N
Mustang Suits	Weymouth	Foul Weather PFD	6	Y	Y	N	N
Flame Retardant Suits	Weymouth		0	Y	Y	N	N
Breathing Air Hose	Weymouth		600'	Y	Y	N	N
Hydraulic Hose	Weymouth		650'	Y	Y	N	N
Personal Floatation Devices	Weymouth		40	Y	Y	N	N
PFD Survival Suits	Weymouth		6	Y	Y	N	N
(10) Communications							
Nextel 2-Way Portable Radio/Phones	Weymouth		80	Y	Y	N	N
Nextel Base Station	Weymouth		1	Y	Y	N	N
Marine Radios	Weymouth	Portable	3	Y	Y	N	N
(11) Miscellaneous							
Leroi Jackhammer	Weymouth	30 / 60 / 90 lbs.	3	Y	Y	N	N
Stihl Chain Saw	Weymouth		1	Y	Y	N	N
Amida Light Stand	Weymouth	50600	2	Y	Y	N	N
Amida Towable Light Tower	Weymouth	GS-82	2	Y	Y	N	N
Lincoln Welder	Weymouth		1	Y	Y	N	N
Forklift	Weymouth	5 Ton	2	Y	Y	N	N

Emergency Response Subcontractors

Boston Line & Service Co.
Black Falcon Cruise Terminal
1 Black Falcon Ave.
Boston, MA 02210
(617) 951-9957

Contact: [redacted]

Services Provided:
Tug, Boom & Barge services

Boston Towing and Transportation
36 New Street
East Boston, MA 02128
(617) 567-9100
(617) 567-5896 FAX

Contact: [redacted]

Services Provided:
Tug Boat Services

City Lights Electrical Co., Inc.
556 East Broadway
South Boston, MA 02127
Tel # (617) 269-5777
Fax # (617) 269-7616

Contact: [redacted]

Services Provided:

Tino's Tow Service
61 Copeland Street
Quincy, MA 02169
(617) 472-0655

Contact:

Services Provided:
Transportation

Northeast Diving Services, Inc.
28 West Narragansett Avenue
Newport, RI 02840
(401) 841-0446

Contact:

Services Provided:
Divers

US – OTHER OIL SPILL RESPONSE SERVICES

Non OSRO classified contractors are listed in Section 2.0. These include waste disposal and transport companies, wildlife experts, vac truck operators/renters, etc. Additional resources should be located through the yellow pages located in local phone books or the internet.

Eastern Canada Response Corporation (ECRC)

Transport Canada / Transports Canada

This attests that / Ceci atteste que

Eastern Canada Response Corporation Ltd
Société d'intervention maritime, Est du Canada Ltée

is a Certified Response Organization pursuant to section 169.(1) of the *Canada Shipping Act, 2001*

est un Organisme d'intervention agréé en vertu de la section 169.(1) de la *Loi de 2001 sur la marine marchande du Canada*

Maximum capacity of / Capacité maximale de

10,000 Tonnes

Geographical Area of Response

Canadian waters south of 60°N latitude in the provinces of Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Québec, Ontario, Manitoba, Saskatchewan and Alberta, excluding the waters in the primary areas of response associated with the designated ports of Saint John, N.B. and Point Tupper, N.S.

Secteur géographique d'intervention

Les eaux canadiennes au sud du 60° parallèle de latitude nord dans les provinces de Terre-Neuve, de l'Île du Prince Edouard, de la Nouvelle Ecosse, du Nouveau Brunswick, du Québec, de l'Ontario, du Manitoba, de la Saskatchewan et de l'Alberta, excluant les eaux du secteur primaire d'intervention pour les ports désignés de St. John, N.B. et Point Tupper, N.S.

Donald Roussel

Director General - Marine Safety and Security - Directeur général - Sécurité et sûreté maritimes

Ottawa, Ontario

Issued at - Délivré à

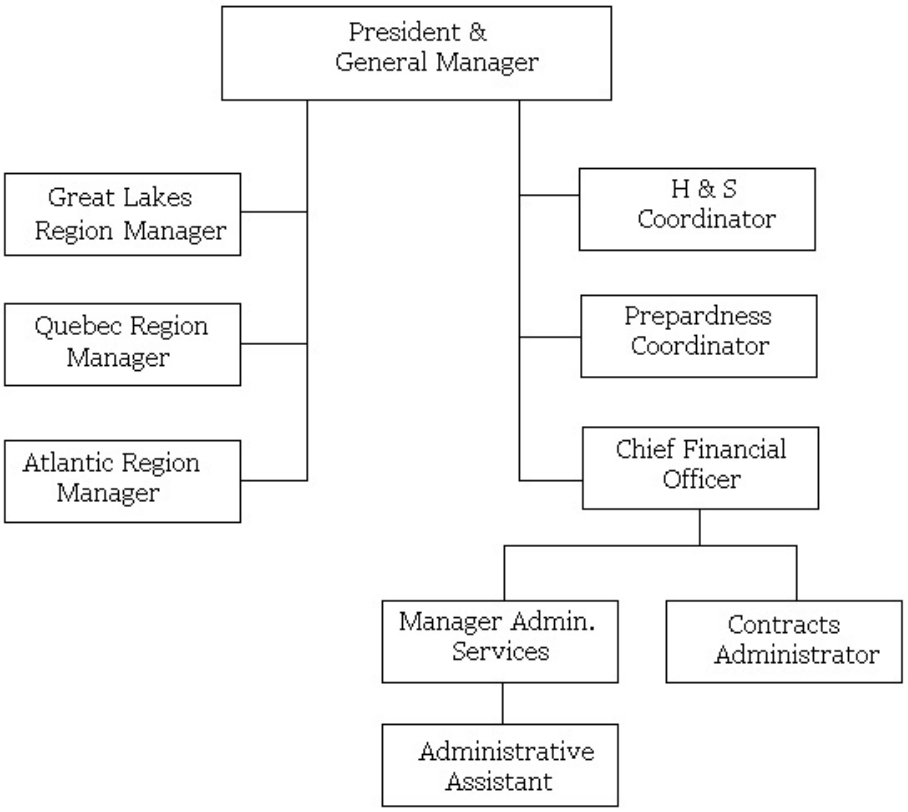
01-11-2016

Expiry date – Date d'expiration (dd-mm-yyyy/jj-mm-aaaa)

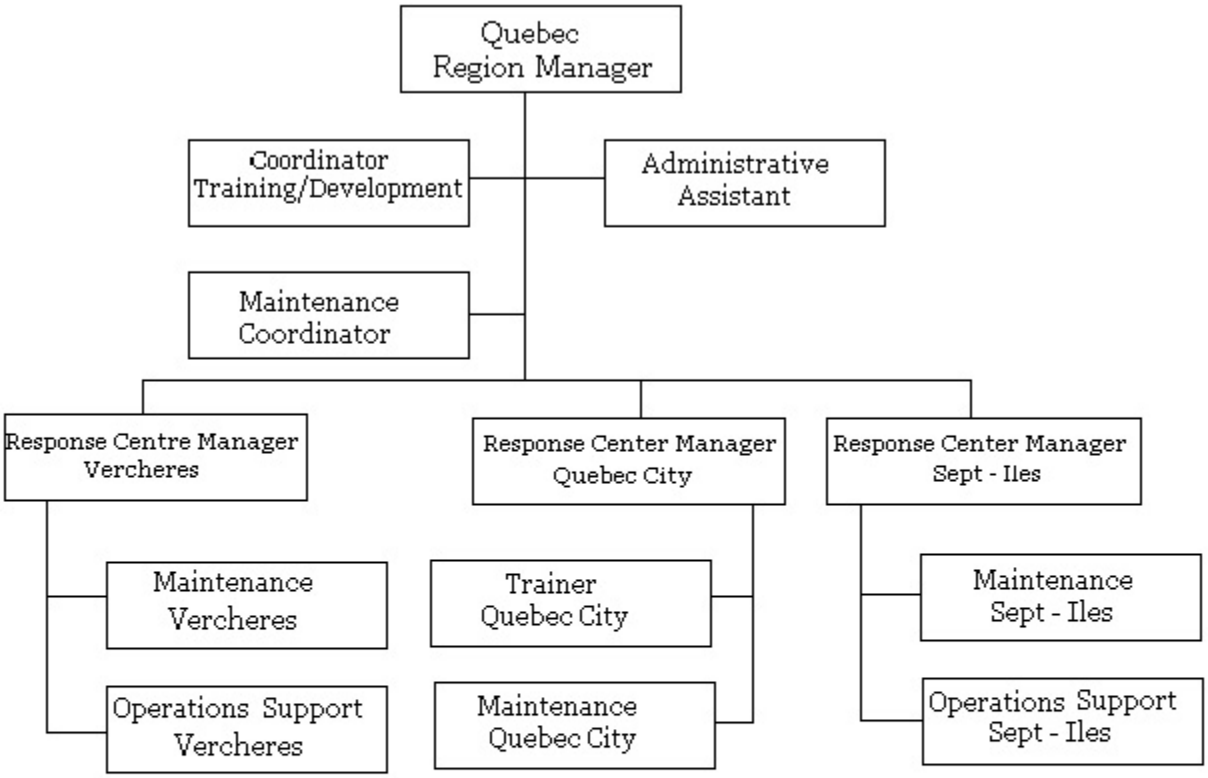
Canada

81-0024 (1309-04)

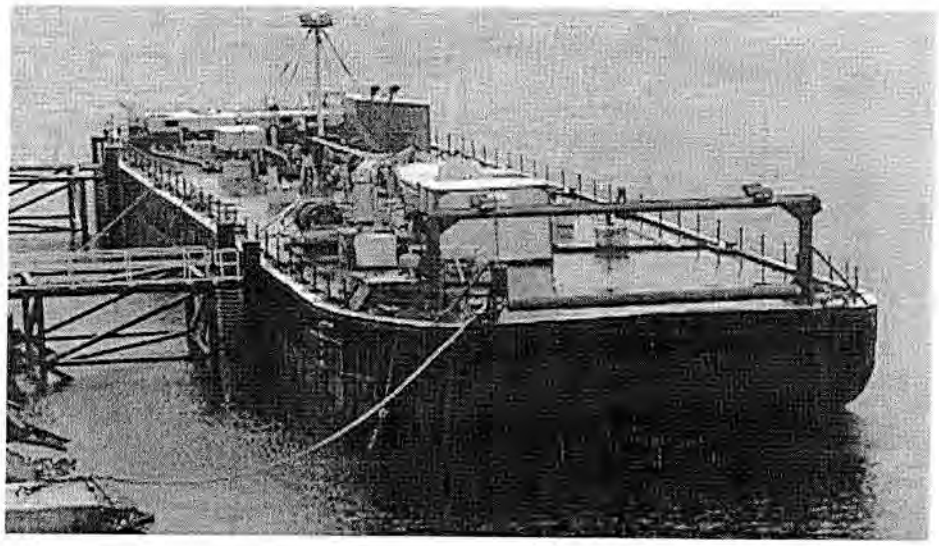
Eastern Canada Response Corporation
Organization Chart



Eastern Canada Response Organization Chart
Quebec Region



BARGE BASQUES



Inventory

	Great Lakes	Quebec	Atlantic	Total
Total	-	1	-	1

Application

Used as a primary and/or secondary storage unit during oil water recovery operation. It can also be used as a working platform for recovery operations using a NOFI Vee Sweep system in conjunction with a GT-185 skimmer. It can also serve as a simple deck working platform to carry material and equipment, supporting shoreline cleanup operations.

Description

The Basques is a single-hull steel barge. It has ten storage compartments for the oily water, allowing for natural decanting of water, with a total storage capacity of 2,600. It is a dedicated response vessel fitted with two diesel generators, one crane and a deck winch (for NOFI 600 cross-bridle). The barge is configured for sweep and recovery operation using a NOFI Vee Sweep and GT-185 skimmer.

Operating data

Storage Capacity:	2,600 m^3 (16,300 bbls)
Towing speed:	up to 12 knots

Ancillaries

NOFI 600 Vee Sweep system
GT-185 skimmer

Technical data

Length:	66.5 m (218 ft)
Breadth:	13.0 m (43 ft)
Depth:	4.3 m (14 ft)

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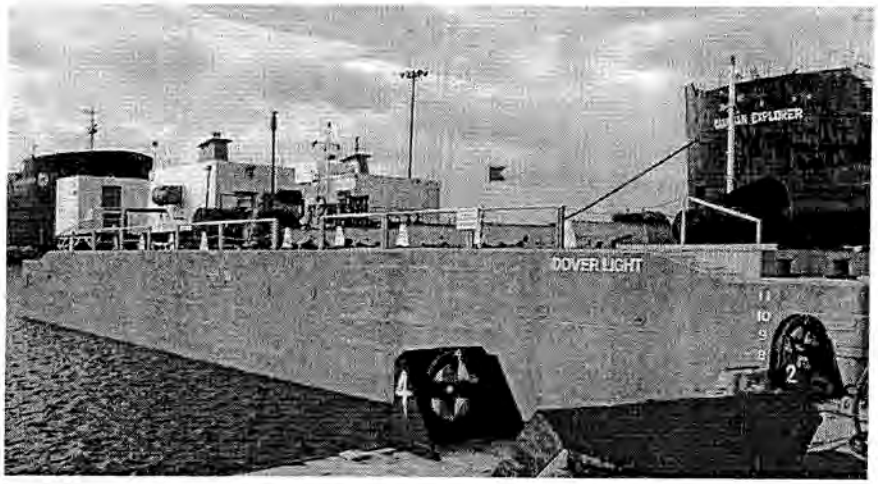
BARGE DOVER LIGHT



Inventory

	Great Lakes	Quebec	Atlantic	Total
Total	-	1	-	1

Application

Used as a primary and/or secondary storage unit during oil recovery operation. It can also be used as a working platform for recovery operations using NOFI Vee Sweep boom in conjunction with a GT-185 skimmer. It can also serve as a simple deck working platform to carry material and equipment, supporting shoreline cleanup operations.

Description

The Dover Light is a single-hull steel barge. It has four storage compartments for the oily water, allowing for natural decanting of water, with a total storage capacity of 1,600m^3. Two compartments are equipped with heating coils. It is a dedicated response vessel fitted with one diesel generator, one crane, one winch, one anchoring system, two cargo pumps and one cargo heating system.

Operating data

Storage capacity:	1,600 m^3 (10,000 bbls)
Towing speed:	up to 12 knots

Technical data

Length:	38.8 m (128 ft)
Beam:	15.1 m (50 ft)
Draught:	3.6 m (12 ft)

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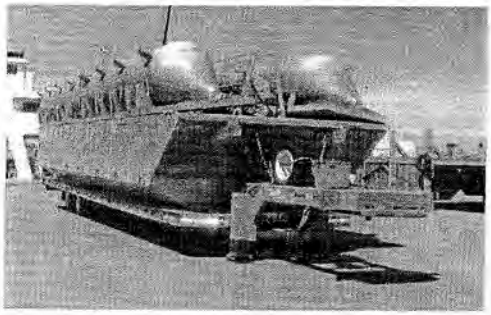
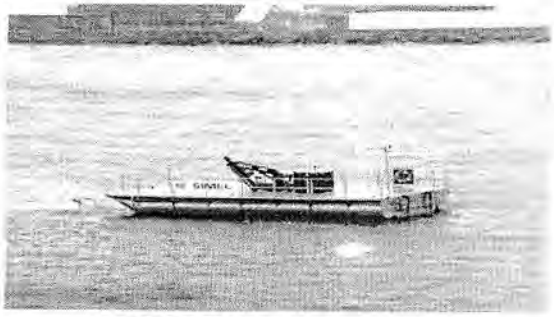
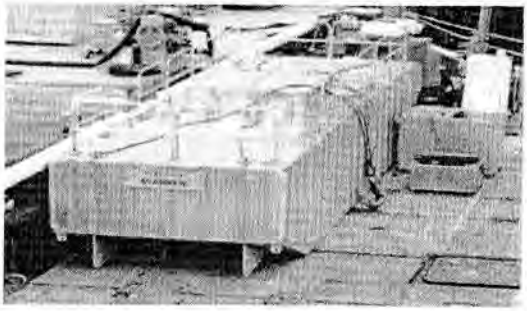
50 TON STORAGE BARGE







Inventory

	Great Lakes	Quebec	Atlantic	Total
50 tons (pontoons)	-	12	-	12
50 tons	-	-	9	9
Total		**12**	**9**	**21**

Application

Used to store recovered liquid and solid materials during on water recovery or shoreline cleanup operations. They can be used as platform to support shoreline clean up operations. Some units, mounted with a power pack and hiab crane, are equipped with a skimmer unit (LORI or Libra). All units are road transportable.

Description

Built in aluminium, the barges have eight compartments, for a total storage capacity of 50 m^3. Units in Quebec region are equipped with pontoons, giving a working area of 6 m x 12 m (20 ft x 40 ft).

Operating data

Towing speed:	up to 8 knots
Liquid storage capacity:	50 m^3 (310 bbls)
Road transportable	

Ancillaries

For some units:
- Power pack
- Skimmer

Technical data

	With pontoons	No pontoons
Length:	12.2 m (40 ft)	10.9 m (35 ft 9 in)
Width:	6.1 m (20 ft)	3.5 m (11 ft 6 in)
Draught:	0.9 m (3 ft 10 in)	2 m (6 ft 7 in)

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BARGE ORLEANS

Inventory

	Great Lakes	Quebec	Atlantic	Total
Total	-	1	-	1

Application

Used as a primary and/or secondary storage unit during oil recovery operation. It can also be used as a working platform for recovery operations using a NOFI Vee Sweep system, in conjunction with a GT-185 skimmer. It can also serve as a simple deck working platform to carry material and equipment, supporting shoreline cleanup operations.

Description

The Orleans is a single-hull steel barge. It has eight storage compartments for the oily water, allowing for natural decanting of water, with a total storage capacity of 2,100m^3. It also has fore and afterward trim compartments. It is a dedicated response vessel fitted with two diesel generators, one crane and a deck winch (for NOFI 600 cross-bridle). The barge is configured for sweep and recovery operation using a NOFI Vee Sweep and GT-185 skimmer.

Operating data

Storage Capacity:	2,100 m^3 (13,200 bbls)
Towing speed:	up to 12 knots

Ancillaries

NOFI 600 Vee Sweep system
GT-185 skimmer

Technical data

Length:	65.5 m (215 ft)
Breadth:	12.8 m (42 ft)
Depth:	3.1 m (10 ft)

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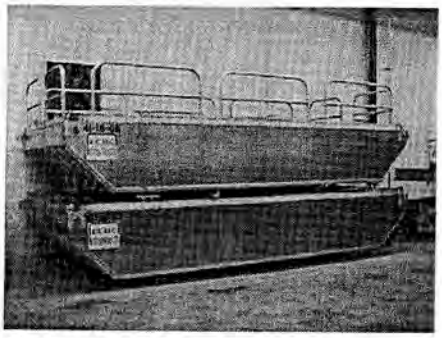
SHORELINE DECK BARGE



Inventory

	Greats Lakes	Quebec	Atlantic	Total
20 x 60	-	1	-	1
10 x 25	-	2	-	2
10 x 20	-	-	4	4
Total	-	3	4	7

Application

Used as a working platform during shoreline and dock face clean-up operation. Can be used to store equipment and material on deck.

Description

Built in steel or heavy grade aluminium to allow usage at close proximity of shoreline and in tidal zone areas.

Operating data

Towing speed: up to 8 knots

Technical data

	10 x 20	10 x 25	20 x 60
Length:	6.1 m (20 ft)	7.6 m (25 ft)	18.2 m (60 ft)
Width:	3.1 m (10 ft)	3.1 m (10 ft)	3.1 m (10 ft)
Draught:	1m (3 ft)	1m (3 ft)	1m (3 ft)

Société d'Intervention Maritime, Est du Canada Ltée
Bureau 1201, 275 rue Slater, Ottawa K1P 5H9
Tél.:(613)-230-7369 Fax :(613)-230-7344

PATROL BOAT 49FT

Inventory

	Great Lakes	Quebec	Atlantic	Total
49 ft patrol	-	2	-	2

Application

Used to assist in boom deployment and towing operations, for the transportation of equipment and responders and as a support vessel for surveillance and safety activities. Can be used in unsheltered water.

Description

This vessel is built of aluminium and is equipped with two 350 HP diesel engines. It can carry a crew of six. An open flat deck provides a working area of 28 sq metres (300 sq ft) at the rear of the vessel.

Operating data

Speed:	up to 17.5 knots
Run Time:	12 hrs at 2,800 rpm

Technical data

Class:	Home-Trade voyage, class III
Length:	15 m (49 ft)
Draft:	0.9 m (3 ft)
Beam:	5.5 m (17 ft)
Gross tonnage:	17 tons
Engines:	2 x 350 HP at 2800 rpm

Ancillaries

Radar
Electronic charts
GPS
Depth sounder
Radios

Safety equipment
- Survival suits
- Life rafts
- Misc. Equipment

Fresh water tank
Grey water tank
Ballast tank

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Phone (613)-230-7369 Fax (613)-230-7344

PATROL BOATS 21 – 24FT

Inventory

	Great Lakes	Quebec	Atlantic	Total
24 ft cabin	-	2	-	2
24 ft open	-	2	-	2
21 ft open	-	2	-	2
Total	-	**6**	-	**6**

Application

Used to assist in boom deployment and towing operations, for the transportation of equipment and responders and as a support vessel for surveillance and safety activities.

Description

All vessels are built of aluminium and equipped with outboard gasoline motors, 115 HP or 135 HP.

Operating data

Speed: up to 30 knots
Run Time: 6 hrs

Ancillaries

GPS
Depth sounder
Radios

Technical data

	21 ft open	24 ft open	24 ft cabin
Length:	6.4 m (21 ft)	7 m (24 ft)	7 m (24 ft)
Beam:	2.5 m (8 ft)	2.5 m (8 ft)	2.5 m (8 ft)
Draft:	0.2 m (8 in)	0.3 m (1 ft)	0.3 m (1 ft)
Engine:	1 x 135 HP	2 x 115 HP	2 x 135 HP

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RIGID HULL INFLATABLES

Inventory

	Great Lakes	Quebec	Atlantic	Total
Hurricane 590	-	-	2	2
Zodiac Mark IV	-	-	2	2
Sillinger 425UM	-	6	-	6
Sillinger 525UM	-	4	2	6
Sillinger 570UM	3	1	-	4
Total	**3**	**11**	**6**	**20**

Application

Inflatable boats provide versatility in response operations for both transportation and active duty in sheltered water operations.

Description

Rigid hull inflatable boats equipped with outboard motor (15 to 70 HP); molded fibreglass, plastic or metal hulls (including floor) with a fabric air filled flotation collar that makes up the bow and sides of the boat. The rigid hull provides stability for operation of the boat in most sea conditions. The flotation collar supplies buoyancy (with reserve), stability and absorbs wave energy to soften the ride in rough conditions.

Operating data

Speed: up to 30 knots

Ancillaries

VHF radio
Some equipped with radar

Technical data

	Hurricane	Zodiak Mark IV	Sillinger 425UM	Sillinger 525UM	Sillinger 570UM
Length:	5.9 m (21 ft)	5.3 m (17ft 5 in)	4.3 m (14 ft)	5.3 m (18 ft)	5.7 m (19 ft)
Width:	1.7 m (8 ft)	2.1 m (7 ft)	1.8 m (6 ft)	2.2 m (7 ft)	2.4 m (7ft 10 in)
Draft:	40 cm (16 in)	40 cm (16 in)	30 cm (12 in)	35 cm (14 in)	40 cm (16 in)

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SEATRUCKS 30 – 36FT

Inventory

	Great Lakes	Quebec	Atlantic	Total
36 feet	-	-	11	11
34 feet	2	11	-	13
32 feet	-	1	-	1
30 feet	6	6	-	12
Total	**8**	**18**	**11**	**37**

Application

Used mainly for deployment of boom in sheltered water or close to shoreline and for skimming operation. Also used for the transportation of personnel and equipment during shoreline clean-up operations. Having a shallow draft, they permit access to almost any shoreline. Units are road transportable, each unit having a dedicated trailer.

Description

Built of aluminium, the vessels vary in size from 30' x 10' to 36' x 12'. They are equipped with two outboard motors (135 to 200HP)

Operating data

Speed: up to 30 knots
Run Time: 6 hrs
Road transportable

Ancillaries

Radar
GPS
Depth sounder
Some units carry booms or skimmer

Technical data

	30 feet	32 feet	34 feet	36 feet
Length:	9.1 m (30 ft)	9.8 m (32 ft)	9.1 m (30 ft)	9.1 m (30 ft)
Beam:	3.1 m (10 ft)	3.7 m (12 ft)	3.7 m (12 ft)	3.7 m (12 ft)
Draught:	30 cm (12 in)	30 cm (12 in)	30 cm (12 in)	40 cm (16 in)

SEATRUCKS 30 – 36FT

SMALL BOATS 12 –18FT

Inventory

	Great Lakes	Quebec	Atlantic	Total
Small boat 12' alum	-	9	-	9
Small boat 14' alum	-	4	4	8
Small boat 16' punt	1	-	-	1
Small boat 16' alum	1	-	2	3
Small boat 18' alum	1	-	-	1
TOTAL	**3**	**13**	**6**	**22**

Application

These boats are primarily used for spill observation, transporting equipment, small material and personnel, for tending shoreline skinning and for shoreline treatment operations.

Description

For stability purposes these boats are typically flat bottom with slanted square bow, unsinkable filled with polyfoam at bow and under the seat.

Operating data

Speed: up to 10 knots
Outboard motor: 9.9 to 40 HP

Ancillaries

Rope, and anchor
Paddle

Technical data

Length: From 3.6 m to 5.5 m (12 to 18 ft)
Beam: From 1.5 m to 2.2 m (5 to 7 ft)
Draught: From 0.2 to 0.5 m (8 to 20 in)

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LIBRA BELT SKIMMER

Inventory

	Great Lakes	Quebec	Atlantic	Total
LIBRA	-	5	1	6

Application

Suitable for the recovery of medium to heavy oils from shoreline and in sheltered marine environments. Can be deployed from shoreline, dock, seatruck or recovery barge.

Description

An oleophilic skimmer, using a porous belt allowing water decanting. Three different types of belt can be used depending of the viscosity of the product to be recovered. Two small propellers, located underneath the front of the belt, pull oil toward the belt when the unit is not advancing on the water.

Operating data

Nominal recovery rate:	28 tons/hr
De-rated recovery rate:	6 tons/hr

Technical data

Length:	4.6 m (15 ft)
Width:	1.3 m (4 ft)
Height:	1.8 m (6 ft)
Weight:	1,600 kg (3,500 lbs)

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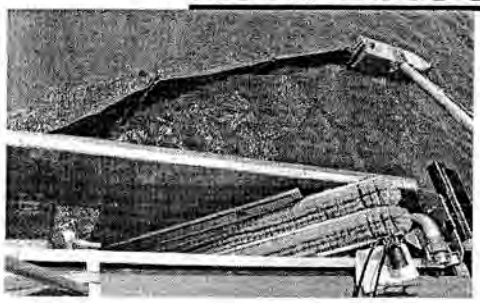
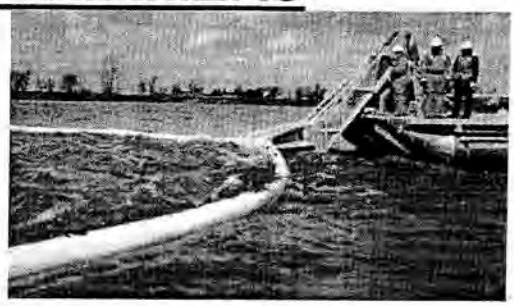
LORI BRUSH SKIMMERS





Inventory

	Great Lakes	Quebec	Atlantic	Total
LFS (6 brush)	-	1	-	1
LBC (3 brush)	-	2	-	2
LSC (4 brush)	-	-	1	1
LSC (2 brush)	2	-	1	3
Total	**2**	**3**	**2**	**7**

Application

Suitable for the recovery of medium to high viscosity oil.
Suitable for shoreline, sheltered and open water usage.
Depending of model can be deployed from shoreline, dock, vessel and recovery barge.
Suitable to be used in cold water.

Description

An oleophilic skimmer, equipped with brushes mounted on a rotating chain. Oil is scrapped off as the bristles pass through a comb-type cleaner located at the top.
Units have two to six brushes.

Operating data

Nominal recovery rate:	from 75 to 200 tons/hr
De-rated recovery rate:	from 15 to 40 tons/hr

Ancillaries

Power pack
Pump
Hoses

Technical data

	LFS	LBC	LSC – 4	LSC – 2
Length:	5.2 m (17 ft 1 in)	4.9 m (16 ft 1 in)	3.1 m (10 ft 2 in)	3.1m (10 ft 2 in)
Width:	3.6 m (11 ft 10 in)	2.6 m (8 ft 6 in)	1.3 m (4 ft 3 in)	0.75m (2 ft 4 in)
Height:	1.3 m (4 ft 3 in)	2.8 m (9 ft 2 in)	2.2 m (7 ft 3 in)	3.5m (11 ft 6 in)

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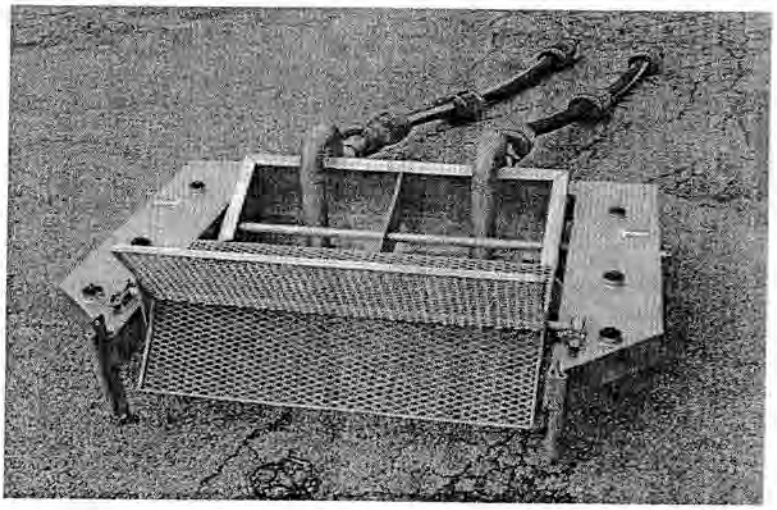
PEDCO SKIMMER



Inventory

	Great Lakes	Quebec	Atlantic	Total
PEDCO	1	8	5	14

Application

Suitable for the recovery of light to heavy oil.
Suitable for shoreline and shallow water.

Description

The PEDCO is a weir skimmer. The depth of the weir is adjusted by controlling the pumping rate of the pump. The recovery rate is dependant of the pumping capacity of the pump connected to it.

Operating data

Nominal recovery rate: 75 tons/hr
De-rated recovery rate: 15 tons/hr

Technical data

Length:	1.7 m (5 ft 6 in)
Width:	2.0 m (6 ft 5 in)
Height:	0.8 m (2 ft 7 in)
Weight:	55 kg (122 lbs)

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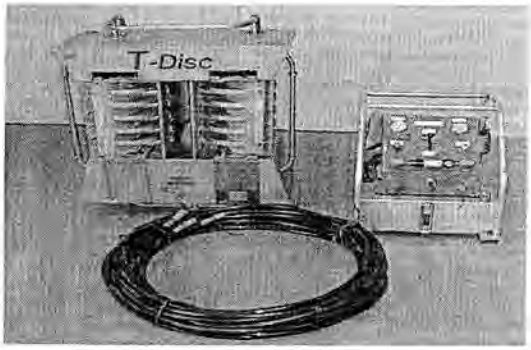
DISC SKIMMERS



Inventory

	Great Lakes	Quebec	Atlantic	Total
MI – 30	-	2	5	7
T – 12	2	5	-	7
T – 18	1	3	3	7
Total	**3**	**10**	**8**	**21**

Application

Suitable for the recovery of light to medium viscosity oil.
Suitable for shoreline and sheltered use.
Can be deployed from shoreline, dock or small boat.

Description

An oleophilic disk skimmer, either equipped with a diaphragm pump, installed in the middle section (MI-30, T-18) or using an external pumping mechanism (T-12). Hydraulically driven by an external power pack. The RPM of the disk is adjusted, according to the viscosity of oil, in order to minimise water pick up.

Operating data

	T-12	T-18	MI-30
Nominal recovery rate: (tons/hr)	12	18	23
De-rated recovery rate: (tons/hr)	2	4	5

Ancillaries

Hydraulic power pack – diesel
Hydraulic hoses
Discharge hoses

Technical data

	T-12	T-18	MI-30
Length:	1.2 m (3 ft 11 in)	1.3 m (4 ft x 3 in)	1.2 m (3 ft x 11)
Width:	1.0 m (3 ft x 4 in)	1.2 m (3 ft x 11 in)	1.2 m (3 ft x 11)
Height:	0.5 m (1 ft x 7 in)	0.6 m (1 ft x 11 in)	0.6 m (1 ft x 11)
Weight:	68 kg (150 lbs)	150 kg (330 lbs)	71 kg (155 lbs)

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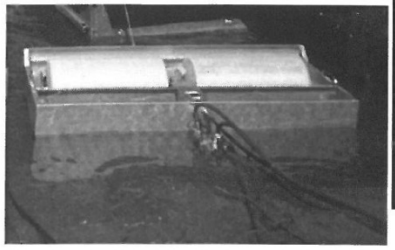
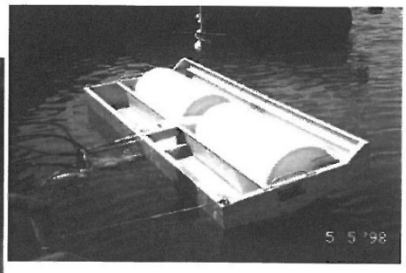
ELASTEC SKIMMER





Inventory	Great Lakes	Quebec	Atlantic	Total
Elastec TDS-136	-	3	3	6
Elastec TDS-118G	1	2	-	3

Application

Suitable for the recovery of light to high viscosity oil, but most useful in heavy oil recovery.
Suitable for shoreline and sheltered water usage.
Can be deployed from shoreline, vessel or recovery barge.

Description

An oleophilic drum skimmer, built of aluminium frame and moulded polyethylene drums. The oil is picked off the water by the rotating drum and scraped off into a sump. The 188G features a grooved drum providing improved recovery rate. An integrated or external pump moves the recovered oil to an external storage unit.

Operating Data

	118	136
Nominal recovery rate:	8tons/hr	15 tons/hr
De-rated recovery rate:	38tons/day	72tons/day

Ancillaries

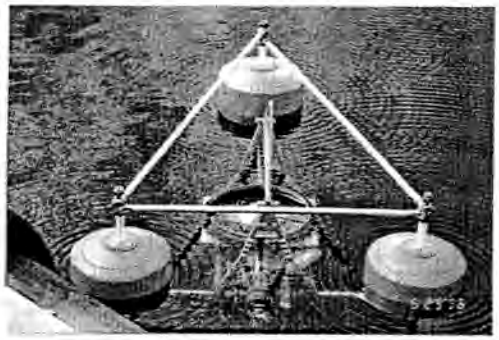
Power pack
118- External pump
136 – Onboard submersible pump (2 in)

Technical Data

	118	136
Length:	0.9 m	0.9 m (3 ft 0 in)
Width:	1.2 m	2.3 m (7 ft 8 in)
Height:	0.4 m	0.4 m (1 ft 3 in)
Weight:	27 kg	68 kg (150 lbs)

ECRC~SIMEC
Suite 1201, 275 Slater Street, Ottawa K1P 5H9
Phone (613)-230-7369 Fax (613)-230-7344
Website: www.ecrc.ca

GT-260 / GT-185 SKIMMERS



Inventory

	Great Lakes	Quebec	Atlantic	Total
GT-185	2	4	6	12
GT-260	-	-	2	2
Total	**2**	**4**	**8**	**14**

Application

Suitable for the recovery of light to high viscosity oil.
Suitable for shoreline, sheltered and open water usage.
Can be deployed from shoreline, dock, and vessel of opportunity or recovery barge. Used in conjunction with the NOFI Sweep system from a large recovery barge.

Description

A weir skimmer, equipped with an Archimedean screw pump, installed in the middle section. Hydraulically driven by an external power pack. The height of the weir is adjustable as well the pumping rate. This maximises the recovery of product with a minimum quantity of water.

Operating data

	GT-185	GT-260
Nominal recovery rate (tons/hre):	45	90
De-rated recovery rate (tons/hre):	9	18

Ancillaries

Hydraulic power pack – diesel
Remote control
Hydraulic hoses
Discharge hoses, with floaters

Technical data

	Skimmer head		Power pack	
	GT-185	GT-260	GT-185	GT-260
Length:	2.3 m (7 ft 7 in)	3.5 m (11 ft 6 in)	1.3 m (4 ft 3 in)	2.0 m (6 ft 7 in)
Width:	1.9 m (6 ft 3 in)	1.9 m (6 ft 3 in)	1.0 m (3 ft 3 in)	1.3 m (4 ft 3 in)
Height:	1.0 m (3 ft 3 in)	2.2 m (7 ft 3 in)	1.1 m (3 ft 7 in)	2.0 m (6 ft 7 in)
Weight:	182 kg (400 lbs)	220 kg (485 lbs)	640 kg (1,410 lbs)	865 kg (1,910 lbs)

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Suite 1201, 275 Slater Street, Ottawa K1P 5H9
Phone (613)-230-7369 Fax (613)-230-7344

OIL MOP SKIMMERS

Inventory

	Great Lakes	Quebec	Atlantic	Total
Small Rope Mop	4	11	8	23

Application

Suitable for the recovery of medium viscosity oils. Can also be used with light and heavy oils with acceptable results, depending of conditions.
Suitable for shoreline and shallow water.
Can also be used in the presence of ice and debris.

Description

This oleophilic skimmer is composed of an endless rope mop, a pulley and an electric roller wringer. The rope mop is pulled through the oil slick and returned through the roller where the oil is extracted and collected in a 45gal drum.

Operating data

Nominal recovery rate: 46 tons/hr
De-rated recovery rate: 1 ton/hr

Technical data

Skimmer:

Length:	0.6 m (1 ft 10 in)
Width:	0.4 m (1 ft 3 in)
Height:	0.6 m (1 ft 11 in)
Weight:	68 kg (150 lbs)

Rope mop:

Diameter:	10 cm (4 in)
Length:	15 m (50 ft) per section

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Suite 1201, 275 Slater Street, Ottawa K1P 5H9
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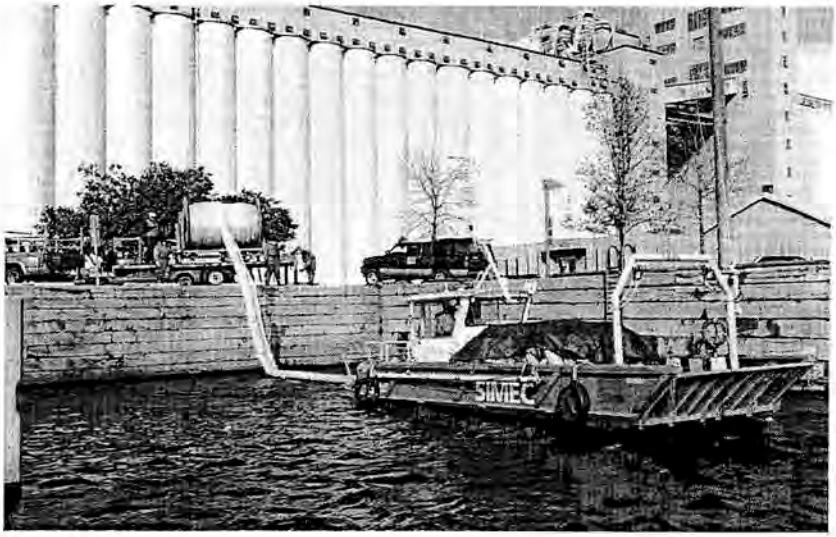
KEPNER BOOM



Inventory

	Great Lakes	Quebec	Atlantic	Total
Open Harbour	1 (450 m)	2 (900 m)	1 (450 m)	4 (1,800 m)

Application

Oil containment boom suitable for shoreline, sheltered and open water usage.
Can be deployed from a dock, from shore or from a vessel.
Mounted on a deployment reel, the boom self-inflates as it comes off the reel, allowing quick deployment.

Description

The Kepner boom is a self-inflating, self-compacting reel able boom constructed of heavy-duty polyurethane-coated polyester fabric. Each reel contains three sections of 150 meters each (500 ft), for a total of 450 meters (1 500 ft) per reel.

Operating data

Maximum current: 1.5 knots

Technical data

Boom Section:	150 m (500 ft)
Boom overall height:	0.66 m (26 in)
Boom freeboard:	0.25 m (10 in)
Boom draught:	0.41 m (16 in)
Total weight:	4,000 kg (8,800 lbs)

Ancillaries

Boom reel
Power pack (diesel)
Trailer

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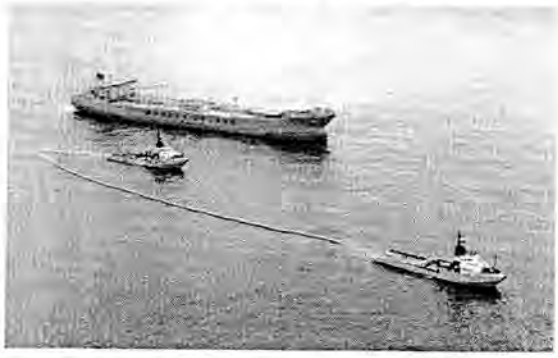
Suite 1201, 275 Slater Street, Ottawa K1P 5H9
Phone (613)-230-7369 Fax (613)-230-7344

NOFI SWEEP SYSTEMS



Inventory

	Great Lakes	Quebec	Atlantic	Total
NOFI-1000	-	-	1	1
NOFI-600	-	2	2	4
Total	-	2	3	5

Application

The NOFI Sweep System is a wide-swath oil containment system suitable for use in unsheltered waters. The sweep system is deployed from a vessel or large recovery barge, used as the platform for the operation of the skimmer and for storage of recovered liquid. A second vessel is required to pull the lead arm of the sweep.

Description

The system is comprised of two boom sections: 1) the v-shaped boom section that provides an oil collection point; and, 2) the guide boom section that deflects oil into the v-section. The NOFI system utilizes a cross bridle line and a trawl net in the v-section to control the shape of the sweep. The small area created by the v-section, results in a thicker layer of oil accumulating at the apex. The NOFI 600 is single container system that can be deployed from offshore support vessels, barges or tugs. The NOFI 1000 is designed as a two-container system that must be deployed from offshore support vessels that are large enough to accommodate 20' ISO containers.

Operating data

	NOFI-600	NOFI-1000
Advancing rate:	1.5 knots max.	1.5 knots max.
Swath width	100 m	200 m

Ancillaries

Diesel hydraulic power unit for NOFI-600
Gas powered boom inflators

Technical data

	NOFI-600	NOFI-1000
Boom overall height:	1.2 m (4 ft 0 in)	2.4 m (7 ft 9 in)
Boom draught:	0.6 m (2 ft 0 in)	1.0 m (3 ft 3 in)
Boom freeboard:	0.6 m (2 ft 0 in)	1.4 m (4 ft 6 in)
Length of guide boom:	100 m (330 ft)	270 m (900 ft)

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SOLID FLOTATION BOOM

Inventory (meters)

	Great Lakes	Quebec	Atlantic	Total
GP 20 in.	8,670	730	5,190	14,590
GP 24 in.	-	20,750	7,300	28,050
GP 36 in.	-	1,960	3,750	5,710
Total	**8,670**	**23,440**	**16,240**	**48,350**

Application

Oil containment boom suitable for shoreline and sheltered water. It is stored in trailers, containers and on deck of seatrucks and pontoons.

Description

It is a general purpose boom with a solid flotation core and made of polyurethane-coated polyester fabric.

Operating data

Maximum current: 1.5 knots

Ancillaries

Ropes
Anchors
Buoys

Technical data

	20 in	24 in	36 in
Boom section:	15 m (50 ft)	15 m (50 ft)	15 m (50 ft)
Boom overall height:	51 cm (20 in)	61 cm (24 in)	91 cm (36 in)
Boom freeboard:	15 cm (6 in)	20 cm (8 in)	30 cm (12 in)
Boom draught:	36 cm (14 in)	41 cm (16 in)	61 cm (24 in)

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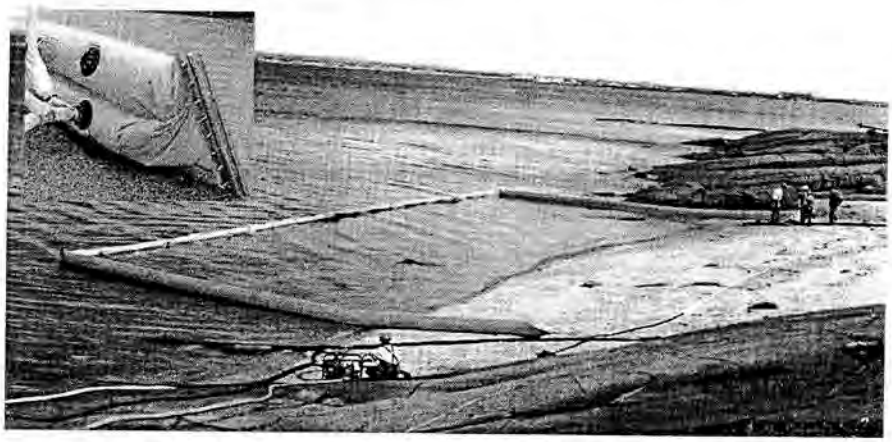
SHORE SEAL BOOM



Inventory (meters)

	Great Lakes	Quebec	Atlantic	Total
Shore Seal	180	1,270	180	1,630

Application

Mainly used in area where there is tidal effect, it provides seal to the bottom when the tides goes out.
It joins to conventional booms in deeper water.
Useful when doing shoreline cleaning, using water flooding method.

Description

The boom uses two water-filled lower chambers for ballast and stability. The top chamber is air inflated for buoyancy. It is made of a rugged urethane coated fabric for maximum abrasion and puncture resistance.

Technical data

Boom section:	15 m (50 ft)
Air chamber:	35 cm (14 in)
Water chambers:	25 cm (9 in)

Ancillaries

Ropes
Anchors
Buoys

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Phone (613)-230-7369 Fax (613)-230-7344

FIELD OPERATIONS CENTRE

Inventory

	Great Lakes	Quebec	Atlantic	Total
Trailer	1	2	2	5
Motorised unit	-	1	-	1
Total	**1**	**3**	**2**	**6**

Application

Used as a temporary Field Operations Centre/Communications Centre, equipped with communication equipment, including an 800 MHz repeater and mast antenna. Also utilised as a field division office deployed at/near the spill site.

Description

Fifth wheel trailer or motor home modified to support Spill Management Team. Units are equipped with heating / air conditioning units.

Operating data

Fifth wheel or motorised
Can be used in cold or warm climate

Technical data

Length: varying from 9 m to 12 m (30 to 40 ft)
Width: 2.4 m (8 ft)

Ancillaries

800 MHz radio system (dedicated frequencies)
VHF / UHF
Phone (Land, cell, satellite)
FAX, Photocopier

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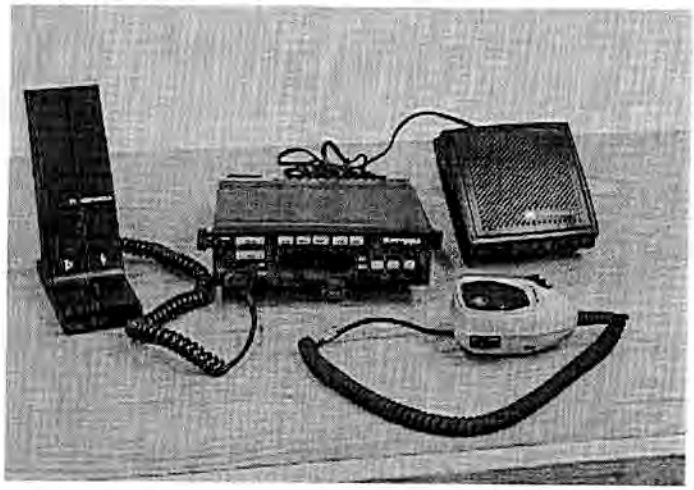
MOBILE UNIT / BASE STATION



Inventory

	Great Lakes	Quebec	Atlantic	Total
Total	2	5	4	11

Application

This type of unit is used to enhance the coverage area given its transmitting power is stronger than a typical handheld unit. It is utilised as a mobile unit (in truck, boats or field operation centre) or as a base station in the management centre.

Description

The Spectra mobile unit is a programmable radio operating in the UHF 800 MHz frequency range providing access to 48 pre-programmed channels, providing maximum flexibility for spill response communications requirements. This unit has a stronger output than handheld radios that increase the coverage area enhancing communications capability. Dedicated transportation cases, meeting air transportation specifications, are available for the transportation of the base stations.

Operating data

Range: +/- 20km radius in conventional mode
Output: 25 watts
Can operate in simplex, duplex (conventional) and trunking.

Ancillaries

Remote speaker
Microphone
Antenna (3dB or 9 dB gain)

Technical data

Frequency Range: 806-825 MHz
851-870 MHz
Four sets of frequency dedicated to ECRC for spill response operation

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Phone (613)-230-7369 Fax (613)-230-7344

PORTABLE RADIO

Inventory

	Great Lakes	Quebec	Atlantic	Total
Total	21	72	50	143

Application

The portable radio is the main communication tool for ECRC both in the field and within operational management. The radio is intrinsically safe and can be used in all environments. Response Centres maintain an inventory of radios that could be cascaded to any region and operated without having to be reprogrammed.

Description

The Motorola MTS 2000 portable radio operates in the UHF-800MHz frequency ranges, providing access to 48 pre-programmed channels, which allows greater flexibility for establishing a communication network when there is a lot of teams working in the field. It can be used in a simplex mode (radio to radio), through ECRC repeaters or through public carrier trunking systems. Dedicated transportation cases, meeting air transportation specifications, are available for the transportation of radios.

Operating data

Range: +/- 10 km radius in conventional mode
Output: 2 (intrinsic limit) watts
Can operate in simplex, duplex (conventional) and trunking

Technical data

Frequency Range: 806-825 MHz
851-870 MHz
Frequency dedicated to ECRC for spill response operation
Intrinsically safe

Ancillaries

Microphone
Optional headphone
Carrying case
Battery / Spare battery
Belt / Belt clip

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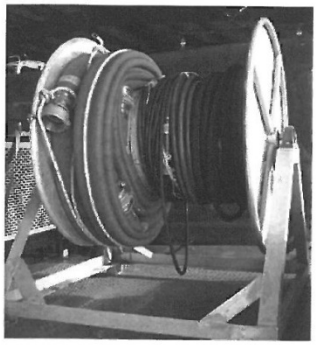
DESMI DOP - 160

Inventory

	Great Lakes	Quebec	Atlantic	Total
Total	2	3	2	7

Application

A submersible cargo offloading pump system, designed to pump high viscosity products (0 to > 1,000,000 cSt). The system is used for transferring product from temporary storage devices or can be deployed directly into areas where large volumes of oil may be collected for recovery.

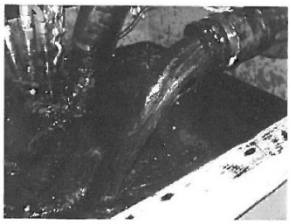
Description

The Desmi DOP-160 system is a modified design of the traditional archimedes screw pump. Unlike traditional archimedes screw pumps, the DOP-160 is self-feeding. Fluid is forced into the pump housing by the rotation of the screw. This self-feeding feature combined with the benefits of screw pump design enables the DOP-160 to operate as an effective offloading and transfer pump for products with higher viscosity ratings. The unit can be run with hot water injection on the inlet and/or outlet side of the pump. This lubricates the pump and/or product hose in order to handle the most viscous products.

Operating Data

Max. Pressure: 10 bar / 150 PSI

Max. Capacity: 30 m^3 /hr (132 gpm)



Ancillaries

Hydraulic power unit, powered by a 35 kW diesel motor.
Hose reel is complete with hoses for hydraulic fluid and water injection.

Technical Data

	Power pack	Reel	Pump
Length:	1.3 m (4' 6")	1.4 m (4' 6")	.39 m (15")
Width:	1 m (3' 4")	1.4 m (4' 6")	.24 m (9")
Height:	1.1 m (3' 8")	1.5 m (5')	.52 m (20")
Weight:	Full 830 Kg (1826 lbs)		31 Kg (68lbs)

DECONTAMINATION UNIT

Inventory

	Great Lakes	Quebec	Atlantic	Total
45 ft trailer	-	-	1	1
Tents and mat'l	1	3	1	**5**

Application

The decontamination unit is utilized for the cleaning of personnel and equipment during spill responses. It provides for the removal, storage and potential cleaning/reuse of personal protective equipment and tools. It is the point of entry/departure to and from the spill site by shoreline workers.

Description

The decontamination unit consists of one 45 ft. van trailer, four tents (see Information Sheet Tent–Shelter), wash trays, sorbents, deck matting, storage drums and portatanks. It is set up near or adjacent to the spill site as a component of the field camp. Trailer is to be moved to other region, when needed

Technical data

45 ft van trailer (fifth wheel), equipped with a propane fired water heater
Tents of 27 m^2 (300 ft^2)

Ancillaries

Cleaning agents
Personal protective equipment
Water tanks
Washroom
Toilet facilities
Water heater
Waste stream separation system (piping and tanks)

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HIGH PRESSURE WASHING UNIT

Inventory

	Great Lakes	Quebec	Atlantic	Total
Landa	-	3	2	5

Application

Portable high pressure washing unit, providing cold or warm water or steam. Can be used during shoreline cleanup operations to clean manmade structures.
Can be transported by road or on a seatruck to access remote shoreline areas

Description

Mounted on a trailer, the unit is equipped with a diesel heater, a diesel pump, a 500 gal reservoir for the water and two high-pressure pistols.

Operating data

Maximum pressure: 165 bar (2,300 psi)

Technical data

Length: 5 m (16 ft 8 in)
Width: 2.4 m (7 ft 9 in)
Height: 1.7 m (5 ft 7 in)

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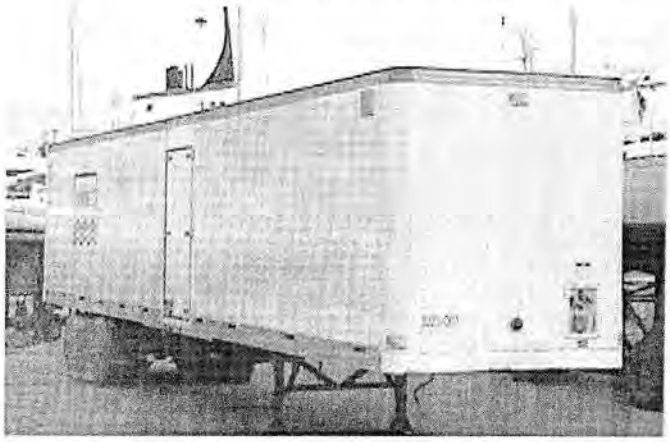
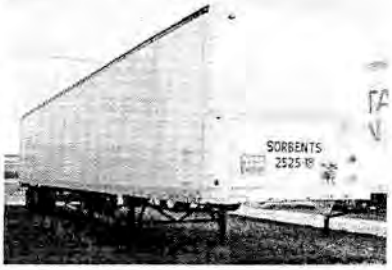
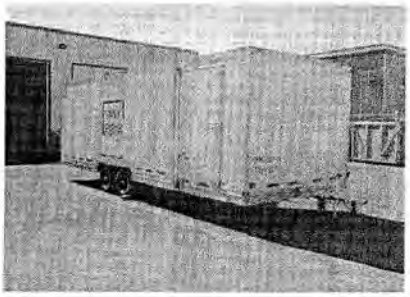
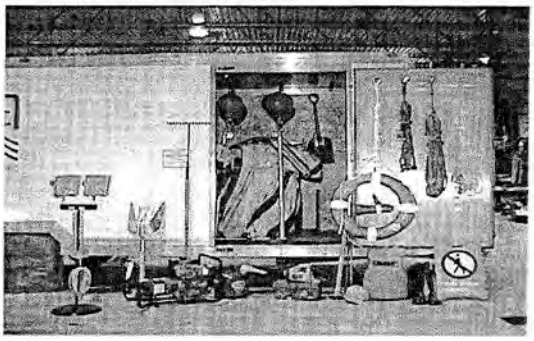
RESPONSE TRAILERS









Inventory

	Great Lakes	Quebec	Atlantic	Total
48 ft trailer	-	7	3	10
45 ft trailer	-	-	7	7
35 ft trailer	1	1	-	2
24 ft trailer	1	6	-	7
10 ft trailer	5	1	2	8
Total	**7**	**15**	**12**	**34**

Application

Quick deployment trailer, containing response equipment to start shoreline cleanup operations or to bring different response equipment on site. Can be used as a field store when on site.

Description

The box trailers vary in size from 10 ft to 48 ft. One unit per response centre is configured as a shoreline cleanup unit, containing booms, skimmer, pumps, hoses, portable storage, sorbents, generators, lights, etc. Other units carry boom, sorbents or configured as a field store.

Technical data

Varying in length from 10 ft (3m) to 48 ft (14.6m)

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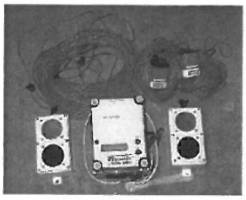
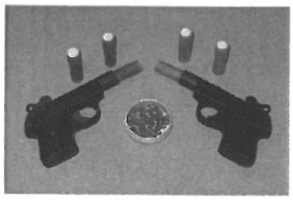
BIRD HAZING DEVICES


Breco Buoy


Propane Cannon


Phoenix Wailer


Starter Pistols

Inventory

	Great Lakes	Quebec	Atlantic	Total
Breco Buoy	1	5	2	8
Propane Cannons	-	-	5	5
Phoenix Wailer	-	-	1	1
Starter Pistol	2	-	14	16
Total	**3**	**5**	**22**	**30**

Application

Bird scaring devices are used to help move birds away from oiled areas to reduce the risk of contamination to the birds.

Description

The bird scaring devices listed above all use sound as the deterrent mechanism. The sounds are generated by electronic speakers (Breco Buoy, Phoenix Wailer), controlled gas explosion (propane cannon), and 6mm pistol blanks and "whizzers" (Starter Pistols). The range and effectiveness varies with each device. The electronic devices use a random sequence of sounds to reduce the habituation of the birds to the sounds. Each of the devices is designed to be operated on land or on a boat. The Breco Buoy is also a free floating unit designed to drift with an oil slick.

Operating data

	Deterrent Radius	Run Time
Breco buoy:	800 m	3 days
Propane cannon:	750 m	3-7 days
Phoenix wailer:	800 m	7 days
Starter pistol:	200 m	-

Technical data

Breco: 130 dB (max), 2-3.5 min blast cycles, 10-12 sounds/cycle
Cannon: 24 hour on/off programmable, 4 blast cycle settings
Wailer: 119dB (max), 0.5-32 min sound cycles, 16-64 sounds/cycle

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CLEAN HARBORS ENVIRONMENTAL SERVICES
Sainte-Catherine PQ Equipment List

Clean Harbors Sainte-Catherine PQ Equipment List

# Unité	Année	Modèle	Identification véhicule	# plaque	Description	Capacité
31062	1991	Kenworth T800	2XKDD29X0MM926591	LB59898	TRACTEUR POMPE VAC 1200CFM / HYD	
31067	1997	Kenworth T800	1XKDD99XXVJ948499	LC82401	TRACTEUR POMPE VAC 500 CFM	
31068	1997	Kenworth T800	1XKDD99X2VJ94500	LC82402	TRACTEUR POMPE VAC 500 CFM / HYD	
31069	2001	Petebilt 378	1XPFD69X81N565956	L214041	TRACTEUR ROLL-OFF HYD.	
31070	2002	Mack CX 613	1M1AE06Y22W012072	L241890	TRACTEUR POMPE VAC. 500 CFM / HYD.	
415371	2005	FREIGHT LINER	1FUJA6CKX5LU35611	L232139	TRACTEUR	
415372	2005	FREIGHT LINER	1FUJA6CK15LU35612	L270349	TRACTEUR	
415373	2005	FREIGHT LINER	1FUJA6CK35LU35613	L270350	TRACTEUR	
415374	2005	FREIGHT LINER	1FUJA6CK55LU35614	L270351	TRACTEUR	
415375	2005	FREIGHT LINER	1FUJA6CK75LU35615	L270377	TRACTEUR	
415376	2005	FREIGHT LINER	1FUJA6CK95LU35616	L270378	TRACTEUR	
415377	2005	FREIGHT LINER	1FUJA6CK05LU35617	L270379	TRACTEUR	
1316	2006	Kenworth	1XKDDBOX46J138257	L371761	TRACTEUR	
1317	2006	Kenworth	1XKDDBOX66J138258	L371762	TRACTEUR	
1336	2006	FREIGHT LINER	1FUJA6AV86LX00329	L346752	TRACTEUR	
1337	2006	FREIGHT LINER	1FUJA6AV46LX00330	L345753	TRACTEUR	
1292	2005	KENWORTH	1XKDDU0X95J104678	L201667	TRACTEUR	
32015	1991	Kenworth C550	2NJKX2TX8MM926611	LB33358	CAMION CITERNE 1200 CFM	12500L
4146	2004	Kenworth T800	1NKDLBOX94J063338	L308055	10 ROUE ROLL-OFF	25250KG
47001	1995	Deloupe pup 3 essieu	2D9TP29C2S1005433	RM14852	REMORQUE ROLL-OFF	26000KG
47002	1995	Deloupe 4 essieux	2D9TP46D6S1005430	RZ21362	REMORQUE ROLL-OFF	55500KG
7191	2005	Chagnon	2C9S81ACX5V057496	RZ39635	B TRAIN ROLL-OFF	47500KG
7191-2	2005	Chagnon	2C9S418B05V057497	RZ39636	B TRAIN ROLL-OFF	41500KG
7192	2005	Chagnon	2C9S418B45V057498	RZ74828	B TRAIN ROLL-OFF	47500KG
7192-2	2005	Chagnon	2C9S418B45V057499	RZ74829	B TRAIN ROLL-OFF	41500KG
40090	1978	Westank Willock	PV7802	RB25228	CITERNE PORTEUR	36000L
40091	1979	Westank Willock	PV7902T	RW19843	CITERNE PORTEUR	31000L
40092	1980	Westank Willock	PV8002T	RB99201	CITERNE VACUUM	22000L
40093	1980	Westank Willock	PV8004T	RB99202	CITERNE VACUUM 800 CFM	22000L
40097	1985	CUSCO	2C9T0462XFC005537	R858287	CITERNE	22000L
40098	1986	PRESVAC	2P9S25283G1005023	RA86448	CITERNE VACUUM 800 CFM	22000L
40099	1986	PRESVAC	2P9S25283G1005024	RB252277	CITERNE VACUUM	22000L
40101	1989	PRESVAC	2P9S25385K1005015	RB98827	CITERNE VACUUM 1200 CFM	29000L
40103	1988	PRESVAC	2D9KB28B5T1004183	RK97686	CITERNE VACUUM 800 CFM	13500L
40108	1995	DELOUPE CUSCO	2D9LP39B8S1005465	RJ79238	CITERNE VACUUM 1200 CFM	15000L
16042	1986	PETRO STEEL	1P9TBB204G1021055	RM147351	CITERNE VACUUM	27400L
2133	2006	Tremcar	2TLSL49406B001772	RZ39995	CITERNE POMPE A GEAR	34000L
2134	2006	Tremcar	2TLSL49406B001773	RZ29996	CITERNE POMPE A GEAR	34000L
6250	1999	MANAC	1M5921460470C4735		REMORQUE	
6251	2000	MANAC	2M5921469Y7064734	RE95697	REMORQUE	
6252	2000	MANAC	2M5921460Y7064735	RE95696	REMORQUE	
6253	2000	MANAC	2M5921464Y7064737	RE95720	REMORQUE	
6254	1999	MANAC	2M5921466Y7064740	RE95719	REMORQUE	
42205	1996	MANAC	2M5921377V1043339	RW61545	REMORQUE	
42206	1997	MANAC	2M5921375V1043338	RR83698	REMORQUE	
36100	1994	KENWORTH	2NKNLA9XXRM932580	LC32644	BOX VAN	
33201	1994	KENWORTH	1FVX3MDB1YLB64920	L411625	BOX VAN	
38007	2000	FORD F150	2FTRX17W6YCA90083	FX86559	CAMION DE SERVICE	

Contractor Response Resources
Highwater Station

CONTRACTORS AND EQUIPMENT

	Soudure Lessard		Excavation Saint- Pierre et Tremblay, Cowansville	Fred Korman inc., Mansonville		Location d'outily Knowlton	Allard et Allard inc., Lac Brome, Quebec	Oxygène de Granby Welding Suppliers inc.	Location Gauthier enr.
Telephone	514 640-9446 (24 h)		266-2100 359-7894 263-4555	292-5777 292-3335 878-1453		450-242-1644	800-816-2646 539-2646	378-9001-2-3	450-292-5585
Air Compr.	D								X
Back Hoe	D			D			D		
Dozer			D	D			D		
Crane	D			D					
Front End Loader			D				D		
Overhead Loader	D						D		
Shovel	X		D						
Tank Trailer									
Tractor Crawler									
Trucks			X				D		
Spark Arrestors			NON				NON		
Grader									
Vacuum Truck									
Float	D						D		
Welders & Pipe Fitters	X								

D – Denotes Diesel Power

X – Denotes Other type of Power

Pipeline Valves in Vicinity

[redacted]

Contractor Response Resources
Saint-Césaire Station

CONTRACTORS AND EQUIPMENT

	Excavation C.M.R., Farnham	Excavation St-Pierre et Tremblay	Soudure Lessard	Ostiguy et Robert	Excavation Choinière, Granby	Simplex Location d'outils
Telephone	450-293-5510 450-293-2293	450-293-6598	514 640-9446 (24 h)	450-469-3156 450-469-4472 (24 h) 800-363-8973	450-361-1769	450-293-3116
Air Compr.	D		D			X
Back Hoe	D	D	D		D	
Dozer	D	D		D	D	
Crane			D			
Front End Loader	D	D				
Overhead Loader	D					
Shovel	D	D	D		D	
Tank Trailer	D	D				
Tractor Crawler						
Trucks		D				
Spark Arrestors	N/A	N/A		N/A		
Grader		D		D		
Vacuum Truck						
Float	D	D	D	D		
Welders & Pipe Fitters			X			

D – Denotes Diesel Power
X – Denotes Other type of Power
N/A – Not Available

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[redacted]

Contractor Response Resources
Montreal-East Terminal

CONTRACTORS AND EQUIPMENT

	Germain Simard Ltee	Grue Fortier	Dickie Moore	Veolia	RSR Environement	McAllister Towing Ltd.	Soudure Lessard
Telephone	514-253-5211 (24 h)	514-259-1535 (24 h)	514-739-4791 514-333-4212 (24 h)	514-332-2000 (24 h)	450 922-2200 (24 h)	514-849-5511 514-849-2221 (24 h)	514 640-9446 (24 h)
Air Compr.	D		D X			D	D
Back Hoe	D						D
Dozer	D						
Crane		D X			D		D
Front End Loader	D						
Overhead Loader							
Shovel	D						
Tank Trailer				D			
Tractor Crawler	D						
Trucks	D			D			
Spark Arrestors	N/A	N/A	N/A	yes			
pollution				X	X	X	
Welders &Pipe Fitters							X

D – Denotes Diesel Power

X – Denotes Other Power

N/A – Not available

(b) (7)(F)

[redacted]

Contractor Response Resources
Montreal-East Terminal

CONTRACTORS AND EQUIPMENT

	Simplex	Dusseault Helio Services	J.L. Sorel et Frères	McAllister Towing Ltd.	Montreal Boatman	Veolia	RSR Environement	ECRC (SIMEC)
Telephone	514-331-7777	450-464-5290	514-524-9418	514-849-2221 514-849-5511 (24 h)	514-640-4970 (24 h)	514-645-1045	450-922-2200	613-930-9690 (24 h)
Vacuum Truck						D	D	D
Pump	D X			D X		D X		
Helicopter Service		X						
Driving Service			X	X				
Tugs				D				D
Service Boats				X	X	X	X	X
Outboards				X		X		X
Spark Arrestors	N/A	N/A	N/A	N/A	N/A	N/A		N/A
Pollution				X		X		X

D – Denotes Diesel Power
X – Denotes Other Power
N/A – Not Available

Contractor Response Resources
Montreal-East Terminal

CONTRACTORS AND EQUIPMENT

	Dickie Moore Rentals	Simplex location outils	McAllister Towing Ltd	Cartier Chemical Ltd.	Environement Rive Nord	RSR Environement
Telephone	514-333-1212 (24 h)	514-331-7777	514-849-2221 514-849-5511 (24 h)	514-637-4631	450-430-8666 514-975-4478	450-922-9200
Steam Generator	X	X	X			X
Elect. Generator	D X	X	D			D X
Portable Lights	X	X	X			X
Blower Fan	X	X	X			X
Chain Saw		X	X			X
Absorbent Material				X		X
Oil Dispersants	N/A	N/A	N/A	N/A		N/A
Spark Arrestors						

D – Denotes Diesel Power

X – Denotes Other Power

N/A – Not available

MPL LIST OF AGREEMENTS

- Simdev Construction
- Sécurité et Protection Sec-Pro Inc.
- Santinel Inc.
- National
- Fasken Martineau
- S.I.M.E.C.
- UDA Inc
- R.S.R. Environment
- Cargair Limitée
- Tetratech Inc.
- Amnor Inc
- St-Pierre Excavation Inc

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APPENDIX D

EVACUATION PROCEDURES

GENERAL EVACUATION PROCEDURES

All Locations

Decision to Evacuate

Decisions about whether or not to evacuate as well as evacuation distances are incident-specific and must be made at the time of an actual incident. The first evacuation consideration involves a comprehensive effort to identify and consider the nature of any circumstances surrounding the incident. For an oil spill incident, the factors that affect evacuation include the volume of the spill, the properties of the product spilled, rate of release, potential duration of release, dispersion pattern and the threat of injury or death posed by the spills.

Evacuation of the Facility

The need for evacuation of the facility would be determined by the Incident Commander and communicated to all employees, contractors, and other personnel in the facility, specifying the appropriate evacuation route and gathering location. Once the decision to evacuate is made, all personnel are required to exit the facility via the specified evacuation route, and check-in at the designated gathering location. Roll call will then be taken to ensure full facility evacuation. Areas immediately outside the gates would serve as regrouping areas from these routes. Ultimately, the selection of evacuation routes and shelters to be used is made by the individual in charge of the evacuation.

Emergency Response Personnel

Emergency Response Personnel will arrive and enter at the main gate, unless conditions preclude, in which case they will enter via any of the accessible gates located around the facility perimeter. Injured personnel will be taken to the nearest Hospital or Medical Facility as listed in the Local Emergency Services section of the plan.

Re-entry Procedures

When safe to do so, the Incident Commander, in cooperation with the representatives of the municipal fire department and local law enforcement, will give employees clearance to return to the site of the incident.

Neighborhood Evacuation

If the Incident Commander believes that part of the surrounding population should be evacuated, they will immediately call the local law enforcement for assistance (ex.: major leaks, fire, risk of explosion, etc.). Management shall cooperate with the local law enforcement in order to assess the extent of the evacuation required. They will also communicate the information relative to the emergency to Municipal Authorities.

Conducting an Evacuation

Should it be decided that an area is to be evacuated, the evacuation should be conducted in a well-coordinated, thorough, and safe manner. Evacuation involves a number of steps, which include assigning tasks to evacuation assistance personnel, informing potential evacuees, providing transportation as necessary, providing emergency medical care as necessary, providing security for evacuated areas and sheltering evacuees as necessary.

Neighborhood Evacuation (cont'd)

Populations in a Hazardous Area

When considering people who are actually located within a hazardous area, the responsible authority should address whether to order people to remain indoors, rescue individuals from the area, or order a general evacuation. The "remain indoors" option should be considered when the hazards are too great to risk exposure of evacuees. It may be necessary to rescue people from the hazardous area supplying protective equipment for evacuees to ensure their safety. The third option is to order a general evacuation. In this case, people should evacuate by means of private transportation or transportation provided by local or state government, private company, or volunteer group.

Population in a Threatened Area

For an area that is only threatened by a release, the responsible authority should determine whether potential evacuees can be evacuated before hazards reach the area. To safely evacuate the area, a significant amount of lead time may be required. The potential hazards and their movement should be thoroughly considered to determine if a population is at high risk of exposure and requires evacuation.

Required Resources

To accomplish a safe and effective evacuation, appropriate and sufficient resources, including personnel, vehicles, and equipment, should be provided, which is typically done by the local law enforcement, municipal fire department or local emergency management agency.

The type of equipment that will be necessary during an evacuation may include:

- Protective gear for evacuation assistance personnel.
- Protective gear for evacuees, who may have to be taken through areas where exposure to a hazard is possible.
- Communication equipment (eg. portable and mobile radios, mobile public address systems, bull horns).
- Evacuate tags (a tag or marker attached to a door to indicate that the occupants have been notified) for buildings that have been evacuated.

Re-entry Procedures

When safe to do so, the municipal fire department and local law enforcement, in conjunction with the Incident Commander, will give residents clearance to return to the site of the incident/accident.

Hazards Imposed by Spilled Material

Refer to Section 3 Figure 3.4 and 3.5 and PMPL Hazardous Material MSDS Inventory for specific hazards imposed by spilled material.

COMMAND POSTS

Response team activities will be conducted at designated operational centers. These centers include the Emergency Operations Center (EOC), the Field Command Posts, and in some cases, an offsite Command Center for Public Relations activities.

Emergency Operations Center

The EOC will act as the default primary command post during an incident (See also Section 3.1). The purpose of the EOC is to:

- Facilitate the creation of a tightly structured chain of command.
- Provide the flow of information needed for informed decision-making and planning.
- Provide accurate and timely information to government agencies and the news media, as well as, centralized accounting and documentation procedures.

The EOC will be located at the Portland Pipe Line Corporation's main office in the upstairs conference room. The equipment to be accessible at the EOC includes:

- Telephone with multiple lines
- Fax machines
- Portable radios
- A situation map
- Personal computer capability
- Visual aid equipment
- Administrative services

Field Command Posts

The Field Command Post (FCP) will be established near the incident location, preferably at a pump station or terminal. The purpose of the FCP is to:

- Coordinate all activities which are directed toward the reduction of the immediate hazard
- Containment
- Recovery
- Clean-up operations

Equipment that will be accessible at the FCP includes:

- Telephone with multiple lines
- Fax machines
- Portable radios
- Desks equipped with office supplies
- Personal computers
- Secretarial support services

Each pump station and Pier 2 is designated as a Field Command Post. Each station is equipped with office supplies, communications, and support for a field command staff.

LOCATION SPECIFIC EVACUATION PROCEDURES

SOUTH PORTLAND MARINE TERMINAL AND TANK FARM

Evacuation Routes

The following areas were identified as potential areas of evacuation in the event of a worst case discharge:

- Tank Farm facility and surrounding area
- Pier 1 and 2 facilities and surrounding areas

Potential evacuation routes and regrouping areas for the tank farm are shown in the drainage diagram at the end of this appendix. The preferable routes of evacuation from the pier facilities are direct routes that exit the main security gates.

- Spill Flow Direction: Spills will typically follow the drainage courses in the tank farm to the oil water separator and retention pond. Evacuation routes should be chosen to minimize exposure to oil and potential hazards such as H_2S or hazardous atmospheres.

- Prevailing Winds: Are out of the SW in summer and variable at all times of the year. Wind socks have been installed on selected tanks to indicate direction and should be referenced in evaluating evacuation routes.

The local South Portland fire and police authorities and authorized officials would be in charge of selecting populations to be evacuated and evacuation routes. The City Manager has the authority to order an evacuation. Local authorities would be in charge of conducting the evacuation. The South Portland Hazardous Materials Response Plan should serve as the primary plan for the evacuation process.

Other agencies that would likely provide support during an evacuation operation are the Red Cross and emergency medical service agencies.

Alarm/Notification System

Fire alarm pull boxes are located on PMPL's South Portland facilities which when activated will summon the South Portland Fire Department. One is located to the southwest of the maintenance building next to the roadway, another is located on Pier 2 at the dock house; another is located outside the Guard House. Activation of the Pier 2 fire pump will also automatically activate the fire alarm system to the South Portland Fire Department through the Guard House fire alarm panel. The South Portland General Office has smoke and heat detectors which will sound an alarm in the building for evacuation. All fires should be reported to the controller who will contact the South Portland Fire Department and open the front gate for access for fire response equipment.

LOCATION SPECIFIC EVACUATION PROCEDURES

ALL MAINLINE PUMP STATIONS

In the event of an emergency situation at any mainline pump station, the following course of action would be taken to ensure the safety of all personnel at the Pump Station.

- Evacuation of People to Predetermined Assembly Points

  An alarm would be given through a telephone call, verbally or by radio. All workers would be evacuated to the primary evacuation muster point as listed below or to the alternate site if the primary muster point is endangered. The Manager, Technician, or Chief in charge of the work will take a head count to ensure that everybody has left the hazardous area.

- Re-entry Procedure

  When safe to do so, the Director of Operations or the Manager, Technician, or Chief in charge of the work, in consultation with the local Fire Department and/or Law Enforcement, will give employees clearance to return to the station.

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MONTREAL TERMINAL

When there is an emergency situation at the Montreal Terminal, the following course of action will be taken to ensure the safety of all personnel. More information on the location of evacuation points, assembly points and Emergency Operations Center, are provided on the Fire Control Plan drawings in the Montreal Pipe Line Emergency Response Maps.

Evacuation of People to Predetermined Assembly Points

- An alarm would be given through a telephone call, verbally or by radio;
- (b) (7)(F) [redacted]
- The Operation Section Chief or their designate will take a head count to ensure that everybody has left the hazardous area and will inform the Incident Commander of any problems during the evacuation.

Access Points

Fire Control Plan drawings in Section 7.3 show the geographical location of the one (1) main (b) (7)(F) [redacted]

[redacted]

[redacted]

NORTH TANK FIELD

When there is an emergency situation at the North Tank Field, the following course of action will be taken to ensure the safety of all personnel. More information on the location of evacuation points, assembly points and Emergency Operations Center, are provided on the Fire Control Plan drawings in the Montreal Pipe Line Emergency Response Maps.

Evacuation of People to Predetermined Assembly Points

- An alarm would be given through a telephone call, verbally or by radio;
- (b) (7)(F) [redacted]
- The Operation Unit Leader will take a head count to ensure that everybody has left the hazardous area and will inform the Deputy Incident Commander of any problems during the evacuation.

Access Points

(b) (7)(F) [redacted]

[redacted]

[redacted] In this case, it would be necessary to cross commercial properties and, a wooded area, with the help of appropriate heavy equipment, to access the tank field.

EVACUATION DIAGRAMS

U.S. - The following drawings are attached for reference:

South Portland Tank Farm	Drawing D-4921
South Portland Marine Terminal	Drawing D-4922

Canada - The following fire control drawings can be found in Section 7.3 for reference:

Highwater Pump Station:	Drawing D-3835
St-Cesaire Pump Station	Drawing D-3834
Montreal East Terminal	Drawing D-3833
North Tank Field	Drawing D-4248

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APPENDIX E

FOLLOW-UP INVESTIGATION

FOLLOW-UP INVESTIGATION

All emergencies covered under this plan shall be investigated to identify root causes and the appropriate corrective actions. During the investigation, precautions must be taken in order to prevent the loss of critical evidence, which may be of importance during the investigation. The site must be secured and nothing shall be moved from the site of the incident (e.g. pieces of broken equipment, etc.) until the incident is fully investigated, which may include review by PMPL insurance carriers as well.

Upon approval by the Incident Commander (or post incident, the respective Director of Operations), the site may be rehabilitated and the normal course of business may be re-established.

Subsequent to or as part of the investigation, the Company will review the Plan to evaluate and validate its effectiveness. Input on the effectiveness of the Plan will be sought from management, terminal personnel, the Spill Management Team, regulatory agencies, and others as deemed necessary. Based on the review, amendments to the Plan may be necessary.

It is the responsibility of the Manager of Health, Safety and Environment to oversee the review of the Plan and to make sure that all copies of the Plan are amended.

APPENDIX F

DISPOSAL PLAN

OVERVIEW

A major emergency, especially an oil spill response, may generate significant quantities of waste materials ranging from oily debris and sorbent materials to sanitary water and used batteries. All these wastes need to be classified and separated (i.e., oily, liquid, solid, hazardous material, etc.), transported from the site, and treated and/or disposed of at approved disposal sites. Transportation and disposal of waste may require permits and transportation manifests. Each of these activities demands that certain health and safety precautions be taken, which are strictly controlled by federal, state and provincial laws and regulations. This section provides an overview of the applicable regulations governing waste disposal, and a discussion of various waste classification, handling, transfer, storage, and disposal techniques. It is the responsibility of the Environmental Specialist to support field personnel in managing waste disposal needs during an oil spill cleanup.

WASTE CLASSIFICATION

Oily - Liquid Wastes

Oily liquid wastes (i.e., oily water and emulsions) that would be handled, stored, and disposed of during response operations are very similar to those handled during routine storage and transfer operations. During a spill incident, the largest volume of oily liquid wastes would be produced by recovery operations (e.g., through the use of vacuum devices or skimmers). In addition, oily water and emulsions would be generated by vehicle operations (e.g., spent motor oils, lubricants, etc.), and equipment cleaning operations. Recover the liquids and store in identified impermeable drums, containers or tanks (depending on the quantity). An analysis will be required to identify the most appropriate course of action.

Non-Oily - Liquid Wastes

Emergency Response operations could also produce considerable quantities of non-oily liquid wastes. Water and other non-oily liquid wastes would be generated by the storage area and stormwater collection systems, vessel and equipment cleaning (i.e., water contaminated with cleaning agents), and office and field operations (i.e., sewage, construction activities). These liquid wastes will also be stored in identified impermeable drums or tanks. An analysis will be required to identify the most appropriate course of action.

Oily - Solid/Semi-Solid Wastes

Oily solid/semi-solid wastes that would be generated by containment and recovery operations include damaged or worn-out booms, disposable/soiled equipment, used sorbent materials, saturated soils, contaminated beach sediments, driftwood, and other debris. These solid wastes will be stored in identified impermeable containment. An analysis will be required to identify the most appropriate course of action.

WASTE CLASSIFICATION (Cont'd)

Non-Oily - Solid/Semi-Solid Wastes

Non-oily solid/semi-solid wastes would be generated by emergency construction operations (e.g., scrap, wood, pipe, and wiring) and office and field operations (i.e., refuse). Vessel, vehicle, and aircraft operations also produce solid wastes. These would be handled using routine waste disposal methods and systems.

WASTE HANDLING

A primary concern in the handling of recovered oil and oily debris is contaminating unaffected areas or recontaminating already cleaned areas. Oily wastes generated during the response operations would need to be separated by type and transferred to temporary storage areas and/or transported to incineration or disposal sites. Proper handling of oil and oily wastes is imperative to ensure personnel health and safety.

Safety Considerations

Care should be taken to avoid or minimize direct contact with oily wastes. All personnel handling or coming into contact with oily wastes must wear protective clothing. A barrier cream can be applied prior to putting on gloves to further reduce the possibility of oily waste absorption. Safety goggles must be worn by personnel involved in waste handling activities where splashing might occur. Any portion of the skin exposed to oily waste will be washed with soap and water as soon as possible. Decontamination zones would be set up during response operations to ensure personnel are treated for oil exposure.

Decontamination of Personnel and Equipment

Removing contaminants from the response team personnel, their clothing, and from equipment is of major importance after an emergency response. Personnel responding to emergencies may become contaminated in a number of ways, including:

- Contacting vapors, gases, mists, or particulates in the air;
- Being splashed by materials while responding to the emergency;
- Walking through puddles of liquids or on contaminated soil;
- Using contaminated instruments or equipment.

Under the supervision of the Environmental Specialist, contaminated material such as disposable PPE will be sent to an authorized site for disposal. Reusable PPE and equipment will be decontaminated by contractors properly trained for such decontamination activities. For example, contaminated fire intervention equipment will be cleaned before storage. Cleaning fluids used for decontamination will be recovered by a vacuum truck and sent to an authorized site.

If fumes from the spilled product or from a fire containing toxic substances (e.g.: dioxins, furans, etc.), a specific decontamination protocol will be established by the Environmental Specialist. This protocol may include a medical monitoring program for the personnel. Analyses may also be required to demonstrate the efficiency of the decontamination techniques. Such proof could be required by governmental authorities (Quebec MDDELCC, Environment Canada, EPA, etc.).

WASTE HANDLING (cont'd)

Waste Transfer

During response operations, it may be necessary to transfer recovered oil and oily debris from one point to another several times before the oil and oily debris are ultimately recycled, incinerated or disposed of at an appropriate disposal site. Depending on the location of response operations, any or all of the following transfer operations may occur:

- From portable or vessel-mounted skimmers into flexible bladder tanks, storage tanks of the skimming vessel itself, or a barge.
- Directly into the storage tank of a vacuum device.
- From a skimming vessel or flexible bladder to a barge.
- From a vacuum device storage tank to a barge.
- From a barge to a tank truck.
- From a tank truck to a processing system (e.g., oil/water separator).
- From a processing system to a recovery system and/or incinerator.
- Directly into impermeable bags that, in turn, are placed in impermeable containers.
- From containers to trucks.

There are four general classes of transfer systems that may be employed to affect oily waste transfer operations:

- **Pumps:** Rotary pumps, such as centrifugal pumps, may be used when transferring large volumes of oil, but they may not be appropriate for pumping mixtures of oil and water. The extreme shearing action of centrifugal pumps tends to emulsify oil and water, thereby increasing the viscosity of the mixture and causing low, inefficient transfer rates. The resultant emulsion would also be more difficult to separate into oil and water fractions. Lobe or "positive displacement" pumps work well on heavy, viscous oils, and do not emulsify the oil/water mixture. Double-acting piston and double acting diaphragm pumps are reciprocating pumps that may also be used to pump oily wastes.

- **Vacuum Systems**: A vacuum truck may be used to transfer viscous oils but they usually pick up a very high water/oil ratio.

- **Belt/Screw Conveyors:** Conveyors may be used to transfer oily wastes containing a large amount of debris. These systems can transfer weathered debris laden oil either horizontally or vertically for short distances (i.e., 10 feet) but are bulky and difficult to set up and operate.

- **Wheeled Vehicles:** Wheeled vehicles may be used to transfer liquid wastes or oily debris to storage or disposal sites. These vehicles have a limited transfer volume (i.e., 100 barrels) and require good site access.

Figure F-1 provides a comparative evaluation of 16 types of transfer systems that could be available for transfer operations.

TEMPORARY WASTE STORAGE

Interim storage of recovered oil, oily and non-oily waste would be considered to be an available means of holding the wastes until a final management method is selected. In addition, the segregation of wastes according to type would facilitate the appropriate method of disposal.

The storage method used would depend upon:

- The type and volume of material to be stored.
- The duration of storage.
- Access.

During an oil spill incident, the volume of oil that can be recovered and dealt with effectively depends upon the available storage capacity. Typical short-term storage options are summarized in Figure F-2. The majority of these options can be used either onshore or offshore. If storage containers such as bags or drums are used, the container must be clearly marked to indicate the type of material/waste contained and/or the ultimate disposal option. Bladder or pillow tanks would be acceptable, if the available space can support the weight of both the container and the product. PMPL Crude Oil Storage Tanks may be used for storage of recovered crude oil.

Fuel barges may be the best option for temporary storage of oil recovered in open waters. Depending on size, these vessels may be able to hold up to 6,000 barrels of oil and water. The barge deck can be used as a platform for operating oil spill clean-up equipment and storing containment boom. See Appendix C for recovery and containment barges.

Empty barges have four to six feet draft which would increase when these barges are filled with oil or loaded with cargo. Consequently, they may not be able to enter shallow, nearshore waters. Barges operating in Portland Harbor could discharge recovered crude oil into shore side fractionation tanks at the Clean Harbors terminal in South Portland. Recovered oil could then be trucked back to PMPL for transportation to Montreal, transferred to the Williams terminal tanks operated by Clean Harbors with DEP authorization or trucked to incineration facilities as appropriate. It may be difficult to offload recovered oil stored inside barges. In Montreal, barges or bladders could be discharged at "Operations Sites" predetermined by ECRC. These include locations such as SIMEC's facility at Verchères, the Quai de Verchères at Verchères, the Port de plaisance at Contrecoeur, the Salle communautaire in Lavaltrie, and HydroQuebec in Tracy. Recovered liquids could be disposed of in one of PMPL's tanks if one is available and the solids would be disposed of by the ECRC in an approved disposal site as determined at the time with the MDDEP, ECRC and PMPL's contract environmental specialist. Due to natural forces which affect spilled oil, recovered oil may be very viscous or emulsified, rather than free-flowing. It may be necessary to use steam to heat viscous oil before pumping it from the barge.

Steel or rubber tanks can be used to store oil recovered near the shoreline. To facilitate offloading, demulsifiers may be used to break emulsions prior to placing the recovered substance into the barges or storage tanks.

Use of any site for storage is dependent on the approval of the local authorities. The following elements affect the choice of a potential storage site:

- Geology.
- Ground water.
- Soil.
- Flooding.
- Surface water.
- Slope.

TEMPORARY WASTE STORAGE (Cont'd)

- Covered material.
- Capacity.
- Climatic factors.
- Land use.
- Toxic air emissions.
- Security.
- Regulations.
- Access.
- Public contact.

Temporary storage sites should use the best achievable technology to protect the environment (soil, surface and groundwater, etc.) and human health. They should be set up to prevent leakage, contact, and subsequent absorption of oil by the soil. The sites should be bermed (1 to 1.5 meters high) and double lined with plastic or visqueen sheets 6-10 millimeters or greater in thickness, without joints, prior to receiving loose and bagged debris. The edges of the sheet should be weighted with stones or earth to prevent damage by wind, and the sheet should be placed on a sand layer or an underfelt thick enough to prevent piercing. A reinforced access area for vehicles at the edge of the site should be provided. In addition, if oily debris is stored, it should be covered by secured visqueen or tarps and an adequate stormwater runoff collection system for the size and location of the site would be utilized. Additionally, the sites should be at least 3 meters above mean sea level.

Oily debris can be hauled to approved temporary storage sites in visqueen lined trucks or other vehicles. Burnable, non-burnable, treatable and re-usable materials can be placed in well defined separate areas at temporary storage sites.

Contaminated equipment and materials, PPE, decontamination solutions, adsorbents and spent chemicals will be removed and disposed of by the response contractor using the above criteria as guidance. Contaminated equipment will typically be cleaned on site and the cleaning materials bagged and taken to an incinerator. Adsorbents and contaminated PPE will be incinerated. Spent chemicals from decontamination stations and cleaning will be recovered and recycled when possible or incinerated if necessary. All steps necessary will be taken to avoid or minimize the amount of materials taken to a landfill. Facilities and response resources for these activities are listed in Figure 2.14 & 2.15 as Additional Response Resources.

When the last of the oily debris leaves a temporary storage site, the ground protection would be removed and disposed of with the rest of the oily debris. Any surrounding soil which has become contaminated with oil would also be removed for disposal or treatment. If the soils were removed for treatment, they may be replaced if testing proves acceptable levels have been achieved. Treatment and remediation is encouraged when feasible. **The temporary storage area should be returned to its original condition.**

It is the responsibility of the Environment Specialist to identify the acceptable disposal methods and sites approved to receive the different types of wastes produced during the emergency and to consult with federal, state or provincial authorities as needed.

WASTE DISPOSAL

Techniques for Disposal of Recovered Oil

Recovery, reuse, and recycling are the best choices for remediation of a spill, thereby reducing the amount of oily debris to be bermed onsite or disposed of at a solid waste landfill. Incineration and burning for energy recovery are preferred when available within a reasonable geographical distance, with treatment the next best alternative. There are some limitations and considerations in incinerating for disposal. Environmental quality of incineration varies with the type and age of the facility. Therefore, when incineration becomes an option during an event, local air quality authorities would be contacted for advice about efficiency and emissions of facilities within their authority. Approval of the local air authorities is a requirement for any incineration option. Landfilling is the last option.

During an oil spill incident, PMPL would consult with the federal, state and provincial representatives to identify the acceptable disposal methods and sites appropriately authorized to receive such wastes. PMPL maintains a list of approved disposal sites that satisfy local, state, provincial and federal regulations and PMPL requirements. This identification of suitable waste treatment and disposal sites would be prepared by PMPL in the form of an Incident Disposal Plan. In the US, this plan must be authorized by the U.S. Coast Guard and/or the EPA. In Canada, approval is by the Quebec MDDEP. An Incident Disposal Plan would include predesignated interim storage sites, segregation strategies, methods of treatment and disposal for various types of debris, and the locations/contacts of all treatment and disposal site selections. Onsite treatment/disposal will be preferred.

In order to obtain the best overall Incident Disposal Plan, a combination of methods should be used. There is no template or combination of methods that can be used in every spill situation. Each incident should be reviewed carefully to ensure an appropriate combination of disposal methods is employed.

The different types of wastes generated during response operations would require different disposal methods. To facilitate the disposal of wastes, they should be separated by type for temporary storage, transport and disposal. Figure F-3 lists some of the options that would be available to segregate oily wastes. The table also depicts methods that may be employed to separate free and/or emulsified water from the oily liquid waste.

Recovered oil will be returned to the facility and moved to refineries for processing as suitable. Alternatively, debris laden recovered oil may be incinerated. Contaminated soils will be recycled through commercial paving companies or otherwise properly disposed.

The following is a brief discussion of some disposal techniques available for recovered oil and oily debris.

Recycling

This technique entails removing water from the oil and blending the oil with uncontaminated oil. Recovered oil can be shipped to refineries provided that it is accepted by the refinery and exempt from hazardous waste regulations. There it can be treated to remove water and debris, and then blended and sold as a commercial product.

WASTE DISPOSAL (Cont'd)

Oiled soils are potential candidates for recycling with commercial paving companies that are able to properly recycle and process the material (see Figures 2.14 & 2.15). Please note that this is not permitted in Quebec.

PMPL's **Environmental Specialist** is responsible for ensuring that all waste materials be properly disposed of or recycled at a PMPL approved disposal site or recycling facility.

Incineration

This technique entails the complete destruction of the recovered oil by high temperature thermal oxidation reactions. There are licensed incineration facilities as well as portable incinerators that may be brought to a spill site. Incineration may require the approval of the local Air Pollution Control Authority. Factors to consider when selecting an appropriate site for onsite incineration would include:

- Proximity to recovery locations.
- Access to recovery locations.
- Adequate fire control.
- Approval of the local air pollution control authorities.

In Situ Burning/Open Burning

Burning techniques entail igniting oil or oiled debris and allowing it to burn under ambient conditions. These disposal techniques are subject to restrictions and permit requirements established by federal, state, provincial and local laws. They would not be used to burn PCBs, waste oil containing more than 1,000 parts per million of halogenated solvents, or other substances regulated by the EPA. Permission for *in situ* burning may be difficult to obtain when the burn takes place near populated areas.

As a general rule, *in situ* burning would be appropriate only when atmospheric conditions will allow the smoke to rise several hundred feet and rapidly dissipate. Smoke from burning oil will normally rise until its temperature drops to equal the ambient temperature. Afterwards, it will travel in a horizontal direction under the influence of prevailing winds.

Landfill Disposal

This technique entails burying the recovered oil in an approved landfill in accordance with regulatory procedures. Landfill disposal of free liquids is prohibited by federal law in the United States.

With local health department approval, non-burnable debris which consists of oiled plastics, gravel and oiled seaweed, kelp, and other organic material may be transported to a licensed, lined, approved municipal or private landfill and disposed of in accordance with the landfill guidelines and regulations. Landfill designation would be planned only for those wastes that have been found to be unacceptable by each of the other disposal options (e.g., waste reduction, recycling, energy recovery). Wastes would be disposed of only at PMPL and state/provincially approved disposal facilities. PMPL is responsible for ensuring that all waste materials are disposed of at a previously approved PMPL and MEDEP disposal site. Disposal at a facility not previously approved would require approval by PMPL senior management prior to sending any waste to such a facility.

Figure F-1
COMPARATIVE EVALUATION OF OIL SPILL TRANSFER SYSTEMS

CHARACTERISTICS OF TRANSFER SYSTEMS	CENTRIFUGAL PUMP	LOBE PUMP	GEAR PUMP	INTERMESCHING SCREW	VALVE PUMP	FLEXIBLE IMPELLER	SCREW/AUGER PUMP	PROGRESSING CAVITY	PISTON PUMP	DIAPHRAGM PUMP	AIR CONVEYOR	VACUUM TRUCK	PORTABLE VACUUM PUMP	CONVEYOR BELT	SCREW CONVEYOR	WHEELED VEHICLES
High Viscosity Fluids	1	5	5	5	3	2	5	5	5	3	5	4	4	5	4	5
Low Viscosity Fluids	5	2	2	2	3	4	1	3	3	4	5	5	5	1	1	5
Transfer Rate	5	2	1	1	3	4	1	2	2	3	4	5	3	2	2	2
Debris Tolerance																
° Silt/Sand	5	3	1	1	1	4	5	5	3	4	5	5	5	5	5	5
° Gravel/Particulate	5	2	1	1	1	2	5	3	2	3	5	5	4	5	4	5
° Seaweed/Stringy Matter	2	3	4	3	2	2	4	4	3	3	4	4	3	5	4	5
Tendency to Emulsify Fluids	1	4	3	3	3	3	5	5	2	5	5	5	5	5	5	5
Ability to Run Dry	5	3	2	1	2	3	4	3	3	2	5	5	5	4	3	
Ability to Operate Continuously	5	3	2	2	2	3	3	3	4	4	3	3	3	3	2	4
Self Priming	1	3	2	2	2	5	1	5	4	4	5	5	5	5	5	
Suction/Head	2	3	2	2	3	4	1	5	5	2	5	4	3			
Back Pressure/Head	1	5	5	5	4	3	4	5	2	4	1	1	1	3	3	
Portability	5	3	3	2	4	4	3	2					2	1	1	
Ease of Repair	5	3	2	2	3	4	3	2	3	5	1	1	2	3	2	3
Cost	5	3	2	2	3	3	1	2	3	5	1	1	2	2	2	3
Comments	E,J	B	B	B,J		F	A	B	B,D	A,C,D	F,G,I	F,G,I	F,G			G,H,I

KEY TO RATINGS: 5 = Best; 1 = Worst

KEY TO COMMENTS:

A. Normally require remote power sources, thus are safe around flammable fluids.
B. Should have a relief valve in the outlet line to prevent bursting hoses.
C. Air powered units tend to freeze up in sub-freezing temperatures.
D. Units with work ball valves are difficult to prime.
E. Some remotely powered types are designed to fit in a tanker's butterworth hatch.
F. Can also pump air at low pressure.
G. Transfer is batch-wise rather than continuous.
H. Waste must be in separate container for efficient transfer.
I. Transportable with its own prime mover.
J. High shear action tends to emulsify oil and water mixtures.

Figure F-2

TEMPORARY STORAGE METHODS

CONTAINER	ONSHORE	OFFSHORE	SOLIDS	LIQUIDS	NOTES
Barrels	x	x	x	x	May require handling devices. Covered and clearly marked.
Tank Trucks	x	x		x	Consider road access. Barge-mounted offshore.
Dump/Flat Bed Trucks	x		x		May require impermeable liner and cover. Consider flammability of vapors at mufflers.
Barges		x	x	x	Liquids only in tanks. Consider venting of tanks.
Oil Storage Tanks	x	x		x	Consider problems of large volumes of water in oil.
Bladders	x	x		x	May require special hoses or pumps for oil transfer.

Figure F-3

OILY WASTE SEPARATION AND DISPOSAL METHODS

TYPE OF MATERIAL	SEPARATION METHODS	DISPOSAL METHODS
LIQUIDS		
Non-emulsified oils	Gravity separation of free water	Incineration Use of recovered oil as refinery/production facility feedstock*
Emulsified oils	Emulsion broken to release water by: ● heat treatment ● emulsion breaking chemicals ● mixing with sand ● centrifuge ● filter/belt press	Use of recovered oil as refinery/production facility feedstock*
SOLIDS		
Oil mixed with soil	Collection of liquid oil leaching from soil during temporary storage Extraction of oil from soil by washing with water or solvent Removal of solid oils by sieving Recycling	Incineration Use of recovered oil as refinery/production facility feedstock* Direct disposal Stabilization with inorganic material Degradation through land farming or composting Incorporation of treated oiled sand in road base material
TYPE OF MATERIAL	**SEPARATION METHODS**	**DISPOSAL METHODS**
Oil mixed with cobbles or pebbles	Screening Collection of liquid oil leaching from materials during temporary storage Extraction of oil from materials by washing with water or solvent Recycling	Incineration Direct Disposal Use of recovered oil as refinery/production facility feedstock* Incorporation of treated oiled sand in road base material
Oil mixed with wood, seaweed and sorbents	Screening Collection of liquid oil leaching from debris during temporary storage Flushing of oil from debris with water	Incineration Direct disposal Degradation through land farming or composting for oil mixed with seaweed or natural sorbents
Tar balls	Separation from sand by sieving	Incineration Direct disposal

* Requires acceptance by refinery.

US –STATE REGULATORY REQUIREMENTS

State environmental personnel will respond when notified of an oil spill and will be available to provide guidance on proper treatment, storage, and disposal of oil and oil-contaminated debris.

A waste material that is discarded, recycled or reclaimed and that exhibits one or more of the four characteristics shown below is classified as “Hazardous Waste” or “Universal Waste” under federal law or by each of the three states in which PMPL operates.

- Ignitable: The material has a flash point of less than 140^{o}F and/or is an oxidizer.
- Corrosive: An aqueous material that has a pH of less than 2.0 (acid) or greater than 12.5 (base).
- Reactive: A material that is reactive to water, shock, heat, pressure or undergoes rapid or violent chemical reaction.
- Toxic: This category includes materials that meet or exceed specified levels of heavy metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), certain volatile organic chemicals (including benzene), and certain pesticides.

In addition, waste materials that are “listed” in the each state’s hazardous waste management regulations, are also classified as “Hazardous Waste”.

Some products and materials that can become hazardous or universal wastes during an oil spill are:

- Discarded products (i.e., batteries).
- Products used as solvents or cleaning compounds.
- Spent lubricating oils.
- Spent hydraulic oils.
- Products that are damaged in shipment.

Although crude oil is typically not a hazardous or universal waste, sampling and testing of waste products during an oil spill is recommended to best determine the disposal method appropriate at different times throughout the incident. If the waste is designated as a hazardous waste, it must be disposed of in accordance with the state’s hazardous waste management regulations as discussed more specifically below. Disposal of all non-hazardous or universal wastes generated by response to an oil spill is also regulated in each of the states as discussed more specifically below.

Maine

According to the Maine Department of Environmental Protection (DEP), recovered oil and oily debris is not considered a hazardous waste. Oily debris includes sorbents, seaweed, carcasses, and other materials contaminated with oil as a result of a marine oil spill.

Under Chapter 405.6 of the DEP’s regulations, oily debris can be landfilled, or incinerated and the resultant ash landfilled. The disposal of animal carcasses is the responsibility of the Maine Department of Inland Fisheries and Wildlife in conjunction with the U.S. Fish and Wildlife Service. All carcasses not required by

the Maine Warden Service, U.S. Fish and Wildlife Service Special Agent, or National Marine Fisheries Service Agent will be landfilled, or incinerated and the resultant ash landfilled. The DEP has a contract with the Mid-Maine Waste Action Committee in Auburn for disposal of combustible oily debris.

Waste oil is typically disposed of by burning in a waste oil burner. The requirements of Chapter 860 of the DEP's regulations must be met for storage and transportation of waste oil by a waste oil dealer. PMPL will work closely with the DEP regarding storage and disposal options and procedures. Currently, the DEP does not require hazardous waste testing of recovered waste oil. The testing of other waste streams may be necessary. Figure 2.5 in the Notification Section provides a list of approved testing laboratories**.**

New Hampshire

The New Hampshire Department of Environmental Services (DES),specifies procedures for clean-up, management and investigation of soil contaminated by petroleum releases in Chapter Env-Or 600 of the New Hampshire Code of Administrative Rules. Under these rules, contaminated soils may fall into several categories including "non-hazardous oil-contaminated soil" or "non-hazardous contaminated soil." Different certification, management, and disposal requirements apply to each category of soils. PMPL will work closely with the DES regarding soil disposal procedures. Testing may be required. Figure 2.5 provides a list of approved testing laboratories.

DES regulates the collection, storage, testing, transfer , and disposal of other oily waste (including absorbents, certain oils and petroleum products but not including the soils discussed immediately above) in Chapter Env-Sw 900 of the New Hampshire Code of Administrative Rules. Disposal of oily animal carcasses is also regulated by DES. PMPL will work closely with DES regarding these wastes. Testing may be required. Figure 2.5 in the Notification Section provides a list of approved testing laboratories.

Vermont

According to the Vermont Department of Environmental Conservation (DEC), oily debris includes sorbents, sludge or grit, and contaminated soil. Carcasses are not included within the definition of oily debris and must be handled in accord with Vermont's Solid Waste Management Rule. Recovered oil and oily debris is not considered a hazardous waste *unless the wastes contain more than 5% by weight petroleum distillates.* Oily debris that is hazardous waste must be identified and shipped using waste code VT02. Certain clean-up materials containing oil may be wrung out, cleaned, and/or stored in accord with Section 7-203 of Vermont's Hazardous Waste Management Rules. Testing of these waste streams may be necessary. Figure 2.5 in the Notification Section provides a list of approved testing laboratories.

Oil that is a free liquid and that is generated as part of a clean-up may be managed as used oil. Used oil is typically disposed of by burning for energy recovery. PMPL will store and transport used oil in accord with the requirements of Subchapter 8 of the Vermont Hazardous Waste Management Rules. PMPL will work closely with the DEC regarding disposal procedures. Currently, the DEC does not require hazardous waste testing of recovered used oil.

CANADA – PROVINCIAL REGULATORY REQUIREMENTS

Federal (Environment Canada) and Quebec (MDDELCC) environmental personnel will respond when notified of an oil spill. MDDELCC will provide guidance on proper treatment, storage, and disposal of oil and oil-contaminated debris under the Quebec Environment Quality Act unless there is PCB's. In this last case, Environment Canada environmental personnel would get involved to indicate how the disposal should be handled for this specific situation under the Canada PCB Regulations.

Quebec

The MDDELCC (Ministère du Développement durable, de l'Environnement et Lutte contre les changements climatiques), specifies with the Residual Materials Policy the procedures for the management, the investigation and the disposal of soil contaminated by petroleum releases. The Residual Materials Policy includes the laws, regulations, guides, guidelines and directives regarding these materials. "Residual material" is a generic term covering several major families of waste, including hazardous and non-hazardous material, biomedical waste, pesticides, fertilizing residual material and used snow.

By definition, a hazardous material is any substance which, by reason of its properties, poses a threat to health or the environment and which, within the meaning of this law and attendant regulations, is explosive, gaseous, flammable, toxic, radioactive, corrosive, combustive or leachable, or any material or object that is deemed to be a hazardous material. They are so called because they must be managed in a special way in order to prevent accidents or environmental contamination that could lead to the degradation of soil, water or air and affect flora, fauna and humans to varying degrees.

Non-hazardous material are residues such as tires, computers, paint, oil, paper, card board, glass, leaves, building debris, metals, plastic, industrial residues, etc. Different requirements must be taken into consideration for the management and the recycling of these materials.

PMPL will work closely with the MDDELCC regarding the management, the investigation and the disposal of these residual materials.

APPENDIX G

WORST CASE DISCHARGE ANALYSIS AND SCENARIOS

This appendix identifies potential causes for oil discharges and discusses the response efforts that are necessary for successful mitigation. Included in this appendix are hypothetical scenarios for various types of spills that have the potential to occur along the system. It is anticipated that PMPL will respond to spills in a consistent manner regardless of the location. Therefore, the guidelines discussed in this appendix will apply to all spills whenever possible.

US DISCHARGE VOLUME CALCULATIONS

The Portland Marine Terminal is classified as a "Complex Facility" which operates in a non-higher volume port area.

> "**Complex**" means a facility possessing a combination of transportation-related and non-transportation-related components that is subject to the jurisdiction of more than one Federal agency under section 311(j) of the Clean Water Act (CWA).

Complexes must perform discharge calculations for each jurisdictional agency and plan for the largest Worst Case Discharge Volume pursuant to the respective regulations. The USCG, EPA, and the DOT-PHMSA discharge volume calculations are described below. The calculations and descriptions are as follows:

USCG Discharge Volume Calculation

- **Worst Case Discharge (WCD)**
  Discharge from all piping carrying oil between the marine transfer manifold and the non-transportation-related portion of the Facility. The discharge from each pipe is calculated as follows:

  *{[Maximum Discovery Time (hrs) + Maximum Shutdown Time (hrs.)] * Maximum Flow Rate (Bbls/Hr)} +Total Line Fill (Bbls) = WCD (Bbls)*

- **Maximum Most Probable Discharge (MMPD)**
  1,200 Bbls or 10% of the WCD, whichever is less

- **Average Most Probable Discharge (AMPD)**
  50 Bbls or 1% of the WCD, whichever is less

EPA Discharge Volume Calculation

- **Worst Case Discharge**
  100% of the largest single tank plus the volume of all tanks without adequate secondary containment.

- **Medium Discharge**
  Discharge greater than 2,100 gallons (50 Bbls) and less than or equal to 36,000 gallons (857 Bbls) or 10% of the capacity of the largest tank, whichever is less and not to exceed the WCD.

- **Small Discharge**
  Discharge of less than or equal to 2,100 gallons (50 Bbls), not to exceed the WCD.

DOT-PHMSA Discharge Volume Calculation

- **Worst Case Discharge**
  The largest volume (Bbls) of the following:

  - *Pipeline's maximum release time (hrs), plus the maximum shutdown response time (hrs), multiplied by the maximum flow rate (Bbls/hr.), plus the largest line drainage volume after shutdown of the line section.*

  -- OR --

  - *Largest foreseeable discharge for the line section is based on the maximum historic discharge, if one exists, adjusted for any subsequent corrective action or preventive action taken.*

  -- OR --

  - *Capacity of the single largest breakout tank or battery of tanks within a single secondary containment system, adjusted for the capacity or size of the secondary containment system. (Note: PMPL pipeline system does not contain breakout tanks)*

The following planning volume calculations must be performed to determine the required response resources for a Worst Case Discharge:

Planning Volume for On-Shore Recovery (OSR)

OSR = WCD * % Oil On Shore * Emulsification Factor

Planning Volume for On-Water Recovery (OWR)

OWR = WCD * % Recovered Floating Oil * Emulsification Factor

Recovery Capacity (RC)

RC = OWR * On-Water Recovery Resource Mobilization Factors

The recovery capacity determined by these equations is compared to the appropriate response capability caps from the EPA tables; the actual contracted response amount is the lesser of the two values. If the calculated capacity exceeds the capability caps, sufficient response resources should be available for twice the amount of the caps or up to the total planning volume, whichever is less.

Scenario Types

The occurrence of a Small, Medium, or Worst Case Discharge could be the result of any number of scenarios at the Facility including (Maintenance activities are pre-planned and attended during work, therefore are not considered to be the cause of the discharge scenarios.):

- Tank overfill and/or failure.
- Piping rupture.
- Piping leak, under pressure and not under pressure.
- Explosion or fire.
- Equipment failure (e.g. pumping system failure, relief valve failure, or other general equipment relevant to operational activities associated with internal or external facility transfers).

The response actions to each of these scenarios are outlined in Section 3.1 and Figures 3.1-3.16. The response resources are identified in Section 5.1 with additional detail on equipment and manpower provided in Appendix C. Facility response personnel list/telephone numbers and other internal/external resources telephone numbers are detailed in Figures 2.2 – 2.15.

EPA TABLES
FOR WORST CASE DISCHARGE RESPONSE RESOURCES DETERMINATION
AND REMOVAL CAPACITY PLANNING

Spill Location	(1) Rivers & Canals			(2) Nearshore/Inland/Great Lakes		
	3 Days			4 Days		
Sustainability of on-water oil recovery		**D**	**E**		**D**	**E**
Oil Group	% Natural Dissipation	% Recovered Floating Oil	% Oil On Shore	% Natural Dissipation	% Recovered Floating Oil	% Oil On Shore
I. Non-persistent oils	80	10	10	80	20	10
II. Light crudes	40	15	45	50	50	30
III. Medium crudes and fuels	20	15	65	30	50	50
IV. Heavy crudes and fuels	5	20	75	10	50	70

EMULSION FACTORS

F	
NON-PERSISTENT OIL	
Group I	1.0
PERSISTENT OIL	
Group II	1.8
Group III	2.0
Group IV	1.4
Group V	1.0

RESPONSE CAPABILITY CAPS (bbls/day)
(Maximum Required Recovery levels)

AREA	TIER 1	TIER 2	TIER 3
Rivers and Canals	1,875	3,750	7,500
Great Lakes	6,250	12,300	25,000
Inland/Nearshore	12,500	25,000	50,000

ON-WATER OIL RECOVERY RESOURCE MOBILIZATION FACTORS

AREA	TIER 1	TIER 2	TIER 3
River	.30	.40	.60
Inland/Nearshore Great Lakes	.15	.25	.40

NOTE: These mobilization factors are for total resources mobilized, not incremental response resources.

RESPONSE TIME (hours)

AREA	TIER 1	TIER 2	TIER 3
Higher volume port area	6	30	54
All Other	12	36	60

US RESPONSE CAPABILITY SCENARIOS

Small/Average Most Probable Discharge = 50 Bbls

Response Requirement

The Facility must identify sufficient resources, by contract or other approved means, to respond to a small discharge. The response resources must include at a minimum:

- 1,000' of containment boom or twice the length of the largest vessel that regularly conducts oil transfers to or from the Facility, whichever is greater, and the means of deploying and anchoring the boom at the Facility within one (1) hour of the detection of a spill.
- Oil recovery devices with an effective daily recovery capacity equal to the amount of oil discharged in a *Small /Average Most Probable Discharge* or greater which is available at the Facility within two (2) hours of the detection of an oil discharge.
- Oil storage capacity for recovered oily material equivalent to twice the effective daily recovery rate.

Facility Response Resources/Capability

The Facility will respond to a ***Small Discharge/Average Most Probable Discharge*** with the manpower detailed in Figures 2.2-2.7 as well as local contract resources as detailed in Figure 2.14, Section 5.1, Figures 4.2 & 4.3 and Appendix C.

- Small discharges could occur from little used or idle piping.
- A 50 Bbl discharge from Facility piping typically will not escape the Facility.
- Direction of flow would be consistent with the drainage diagrams in the SPCC plan.
- Scenario weather conditions – heavy rainfall.
- The spill would typically be retained inside a tank dike or on land, immediately adjacent to the piping location.
- If a 50 Bbl discharge escaped the Facility or occurred as the result of a marine transfer operation, response operations would be implemented immediately upon discovery.
- Spills of this nature would not create a chain reaction of other failures.
- Oil containment and recovery devices can be secured from contract resources (with a minimum effective daily recovery capacity of 50 Bbls) and can be implemented at the Facility, as the situation demands.
- A minimum of 100 Bbls of oil storage capacity for recovered oily material can be secured from contractor resources or made available within the Facility's storage facilities, as the situation demands.
- Additional recovery and storage equipment may be secured from other Company and contract resources, as the situation demands.

Small/Average Most Probable Discharge = 50 Bbls

- Disposal of recoverable oil would be done per the disposal plan.

Notes:

- Equipment and manpower resources are detailed in Sections 4.0, 5.0, Figures 4.2 & 4.3, and Appendix C.
- Telephone references are provided in Figures 2.2-2.14.

Medium/Maximum Most Probable Discharge (b) (7)(F)

Response Requirement

The Facility shall identify sufficient response resources, by contract or other approved means, to respond to a Medium/Maximum Most Probable Discharge. The response resources shall, as appropriate, include:

- Oil recovery devices with an effective daily recovery capacity equal to 50% of the *Medium/Maximum Most Probable Discharge* volume must be capable of arriving on scene within 12 hours.
- Sufficient quantity of containment boom must arrive within 12 hours for oil collection and containment and for protection of fish and wildlife and sensitive environments, as appropriate.
- Temporary storage capacity equal to twice the daily recovery capacity must be available.

Facility Response Resources/Capability

The Facility will initially respond to a ***Medium/Maximum Most Probable Discharge*** with a similar response to the Small Discharge. Additional response resources will be activated from an Oil Spill Removal Organization(s) (OSRO) as detailed in Figures 2.14, Section 5.1, Figure 4.3 and Appendix C and will arrive within 12 hours.

- Medium discharges could occur from Third Party damage.
- (b) (7)(F) [redacted]
- Scenario weather conditions – heavy rainfall.
- Direction of flow would be consistent with the drainage diagrams in the SPCC plan.
- At the South Portland Tank Farm, oil will be retained on premises and not reach water, fish, wildlife or sensitive environments. At the terminal area and shore tanks, there is a low probability the oil could reach the Fore River.
- These types of spills are typically singular in nature and not subject to chain reactions or failure due to the nature of the cause of the leak.

US RESPONSE CAPABILITY SCENARIOS, Cont'd

Medium/Maximum Most Probable Discharge = (b) (7)(F)

- Oil recovery devices with an effective daily recovery capacity of (b) (7)(F) (50% of the Medium/Maximum Most Probable Discharge volume) secured from the OSRO(s) will be on scene within 12 hours.
- (b) (7)(F) of oil storage capacity for recovered oily material will be secured from the OSRO(s) and/or made available within the Facility's storage facilities.
- Containment boom for oil collection and containment and for protection of fish and wildlife and sensitive areas will be secured from the OSRO(s) in the event that the spill escapes the boundaries of the Facility and impacts the storm water drainage channels, Anthoine Creek, Fore River or Casco Bay.
- Disposal of recoverable oil would be done per the disposal plan.

Notes:

- Equipment and manpower resources are detailed in Sections 4.0, 5.0, Figures 4.2 & 4.3, and Appendix C.
- Telephone references are provided in Figures 2.2-2.14.

(b) (7)(F) [redacted]

A worst case discharge at this Facility is considered to be discharge that does not exceed (b) (7)(F) [redacted] barrels.

Description

This size discharge would most likely occur due to a natural disaster or catastrophic event. Examples may include, but not be limited to:

- Tank and associated pipeline fire
- Catastrophic tank shell failure
- Tornado-induced spills
- Pipeline manifold rupture

The types of material that could be discharged is crude oil.

This spill type is one that would result in a chain reaction and shut down of systems. There is low probability it would result in failures of other equipment.

Potential Causes

- (b) (7)(F) [redacted]

Prevention

For a worst case discharge caused by a natural disaster, preparedness is more appropriate than prevention. Company employees receive training periodically on the proper procedures to deal with a natural disaster. Employees are also trained in steps to follow if any of the facilities must be evacuated (due to a tank fire or other emergency).

In addition, preventative maintenance of tanks and the associated pipeline are performed at regularly scheduled intervals (to ensure that any weaknesses are discovered). Note that tanks can be expected, due to their shape and due to product weight, to fare very well during severe weather. The pipeline mainline is primarily underground, excepting short piping runs within the pump stations. Line inspections include surface conditions on or adjacent to the pipeline and the adequacy of the cathodic protection.

(b) (7)(F) [redacted]

Worst Case Discharge and Adverse Weather

Calculation of response equipment needs for a worst case discharge are given later in this Appendix. These calculations take into account adverse weather. Severe rain events and associated flooding would also increase the chances of an oil spill from leaving the property.

Nevertheless, boom could be deployed as an initial measure to reduce the potential for any off-site drainage from a spill that may unfortunately occur concurrently with a severe rain event, associated flooding, or a hurricane.

Direction of Flow:

Oil from the Tank Farm that reaches the Fore River would be subject to outgoing river current offset periodically by incoming tides per the tidal cycle. Oil reaching the Fore River via Anthoine Creek would likely pool in the mud flats immediately adjacent to Broadway and migrate to the river with the current pull. When it reaches the river itself, it may move upriver if there is an incoming tide. Oil reaching the Fore River from the shore tanks will be more immediately affected by river current and tides, migrating down current toward Pier 2. In both cases, protective booming strategies as outlined in the PPLC Spill Response Field Document and the Geographic Response Plans developed by the Area Committee should be referenced and evaluated for applicability based on conditions.

US RESPONSE CAPABILITY SCENARIOS (Cont'd)

(b) (7)(F)

Response Requirement

The Facility shall identify sufficient response resources, by contract or other approved means, to respond to a worst case discharge to the maximum extent practicable. The response resources shall, as appropriate, include:

- All resources shall be capable of arriving at the Facility within the applicable response tier requirements [Tier 1 = 6 hours; Tier 2 = 30 hours; Tier 3 = 56 hours (EPA/USCG); Tier 1 = 12 hours; Tier 2 = 36 hours; Tier 3 = 60 hours (DOT)].

- Oil recovery devices with an effective daily recovery capacity equal to the lesser of 50% of the WCD or the response caps. If the daily recovery rate exceeds the applicable contracting caps (see EPA Tables) then the Facility must identify additional resources equal to twice the cap or the amount necessary to reach the calculated planning volume.

- Temporary storage capacity equal to twice the daily recovery capacity.

- At least 20% of the on-water response equipment should be capable of operating in water of 6 feet or less depth.

- Containment boom for oil collection and containment and for protection of areas of environmental sensitivity or economic importance.

- Identify resources capable of responding to a shoreline clean-up operation involving the calculated volume of oil and emulsified oil that might impact the affected shoreline.

Facility Response Resources/Capability

The Facility will respond to a ***Worst Case Discharge (WCD)*** initially with a similar response as identified for a Small/Average Most Probable or Medium/Maximum Most Probable Discharge. Additional OSRO(s) will be activated as the situation demands. The response resources will be capable of arriving within the required response tiers and will include:

- Oil recovery devices with an effective daily recovery capacity equal to the lesser of 50% of the WCD or the response caps will be secured from the OSRO(s) and other Company resources. Any amount in excess of the required caps will be contracted for and responded to as part of the same response effort.

- Temporary storage capacity equal to twice the daily recovery capacity will be secured from OSRO(s), other Company resources, or made available within the Facility's storage facilities.

- At least 20% of the on-water response equipment secured from the OSRO(s) and other Company resources will be capable of operating in water of 6 feet or less depth.

- Containment boom for oil collection and containment and for protection of fish and wildlife and sensitive environments and socio-economic sensitivities will be secured from the OSRO(s) and other Company resources.

US RESPONSE CAPABILITY SCENARIOS (Cont'd)

(b) (7)(F)

[redacted]

Facility Response Resources/Capability (Cont'd)

- Resources capable of responding to a shoreline clean-up operation involving the calculated volume of oil and emulsified oil that might impact the shoreline will be secured from the OSRO(s) and other Company resources.
- Disposal of recoverable oil would be done per the disposal plan.
- Overall response operations will be conducted under the Incident Command System with adequate Facility and Contract Response personnel to continue operations for a minimum of seven (7) days.

Notes:

- Equipment and manpower resources are detailed in Sections 4.0, 5.0, Section 5.1, Figure 4.3, and Appendix C.
- Telephone references are provided in Figures 2.3 – 2.14.

U.S. Coast Guard
Discharge Volume Calculations

Worst Case Discharge Volume Calculations from Marine Operations (WCD)

- Potential simultaneous pumping operations (SO) (b) (7)(F) [redacted]
- Maximum pumping flow rate (MFR):
- Maximum discharge discovery time (MDT):
- Maximum discharge shut down time (MSDT):
- Maximum line fill volume (LFV):

(*see Hazard Evaluation, Appendix H for Pipeline detail*)

- WCD = [(MDT + MSDT) * MFR * SO] + LFV
- (b) (7)(F) [redacted]

Maximum Most Probable Discharge Calculations (MMPD)

- 1,200 Bbls **<or>** 10 % of the WCD (whichever is less)
- (b) (7)(F) [redacted]

Average Most Probable Discharge Calculations (AMPD)

- 50 Bbls **<or>** 1 % of the WCD (whichever is less)
- **AMPD** = 50 Bbls

U.S. EPA
Discharge Volume Calculations

Worst Case Discharge Calculations (WCD)

- The volume of the largest single tank.
- (b) (7)(F) [redacted]

(*largest single tank, see Hazard Identification Tanks Table in Appendix H*)

Medium Discharge (MD) Calculations

- 857 Bbls **<or>** 10 % of the capacity of the largest tank (whichever is less)
- (b) (7)(E) [redacted]

Small Discharge (SD) Calculations

- Less than or equal to 50 Bbls
- **SD** = 50 Bbls

U.S. DOT PHMSA
Discharge Volume Calculations

The worst case discharge of (b) (7)(F) barrels is calculated by using the method identified under 49 CFR 194.105(b)(1) - The pipeline's maximum release time in hours, plus the maximum shutdown response time in hours, multiplied by the maximum flow rate expressed in barrels per hour, plus the largest line drainage volume after shutdown of the line section. Operators monitor the flow of oil at the terminal and mainline pump stations during all transfer operations. The following calculations are used to determine the worst case discharge:

Pipeline maximum release time [1]
Maximum shutdown time [2]
Maximum flow rate [3]
Largest line drainage volume [4]
Worst case discharge

(b) (7)(F) [redacted]

1. Maximum release time is based on a best estimate of how long it would take the operator to recognize a catastrophic pipeline failure. Given the capabilities of the pipeline monitoring system to detect shortages and the installation of pressure rate of change detection alarms at the pump stations, this is a reasonable estimate.

2. The maximum shutdown time is an estimate based on historical shutdown experience.

3. The maximum flow rate is the maximum daily capacity (expressed in barrels per hour) of the 24" line using the Colt Engineering study.

4. The largest line drainage volume for the U.S. system is based on a 24" mainline break at milepost (b) (7)(F) [redacted] The calculation assumes a full drain down of the pipeline from the point of highest elevation on either side of the break. The calculation considers the location of block valves and assumes that the sections of pipe that are located in topographical depressions (except for the break location) will remain full of oil.

EPA Planning Distance Calculation
"Oil Transport on Tidal Influence Areas"

For persistent oils discharged into tidal waters, the planning distance is 15 miles from the facility down current ebb tide and to the point of maximum tidal influence or 15 miles, whichever is less, during flood tide.

Portland Pipe Line Corporation - South Portland Terminal Facility
Response Planning Volume Calculations

Location Data

Location Type	Nearshore/Inland
Port Type	Higher Volume Port
WCD Product Type	(b) (7)(F)
Product Group	
Maximum Vessel Discharge Pumping Rate (bbls/hr/line)	
Maximum Number of Simultaneous Vessel Discharge Pumping Operations (per line)	
Worst Case Discharge Scenario Pumping Time (detect + shut down, hrs)	
Total Line Fill Volume From Dock to First Valve w/in Containment (bbls)	
Capacity of the Largest Single Tank (bbls)	

Discharge Volumes/Calculations

Average Most Probable or Small Discharge (bbls)	(b) (7)(F)
Maximum Most Probable or Medium Discharge (bbls)	
Worst Case Discharge - Based on USCG criteria (bbls)	
Worst Case Discharge - Based on DOT/PHMSA criteria (bbls)	
Worst Case Discharge - Based on EPA criteria (bbls)	

USCG WCD Calculation: (Pump Rate * Pump Time * Number of Pump Operations) + Line Fill
DOT/PHMSA WCD Calculation: (Detection + Shutdown Times) * Max Flow Rate + Line Fill
EPA WCD Calculation: 100% * Capacity of Largest Single Tank

Selected Calculation Factors

Removal Capacity Planning Volume - Percent Natural Dissipation	50%
Removal Capacity Planning Volume - Percent Recovered Floating Oil	50%
Removal Capacity Planning Volume - Percent Oil Onshore	30%
Emulsification Factor	1.8
Tier 1 - On Water Oil Recovery Resource Mobilization Factor	15%
Tier 2 - On Water Oil Recovery Resource Mobilization Factor	25%
Tier 3 - On Water Oil Recovery Resource Mobilization Factor	40%

Response Planning Volume Calculation

On-Water Recovery Volume (bbls)	(b) (7)(F)
On-Shore Recovery Volume (bbls)	
Total Recovery Volume (bbls)	

	Tier 1	Tier 2	Tier 3
On-Water Recovery Cpcty (bbls/day)	36,180	60,300	96,480
Shallow Water Resp Cpblty (bbls/day)	7,236	12,060	19,296
Storage Capacity (bbls/day)	72,360	120,600	192,960
On-Water Response Caps (bbls/day)	12,500	25,000	50,000
Additional Response Req'd (bbls/day)	(b) (7)(F)		
Response Time (hrs)	12	36	60

CANADA DISCHARGE VOLUME CALCULATIONS / SCENARIOS

This Appendix addresses worst case crude oil spills most likely to occur at the Montreal Pipe Line Ltd. Installations, namely the trunk lines and the North Tank Field in Montreal-East.

MONTREAL PIPE LINE LIMITED
DISCHARGE VOLUME CALCULATION
MAIN LINE

Worst Case Discharge Volume Calculations

The worst case discharge is calculated by using the method identified under 49 CFR 194.105(b)(1) U.S. DOT PHMSA. The pipeline's maximum release time in hours, plus the maximum shutdown response time in hours, multiplied by the maximum flow rate expressed in barrels per hour, plus the largest line drainage volume after shutdown of the line section. Operators monitor the flow of oil at the terminal and mainline pump stations during all transfer operations. The following calculations are used to determine the worst case discharge:

Pipeline maximum release time[1]	(b) (7)(F) [redacted]
Maximum shutdown time[2]	
Maximum flow rate[3]	
Largest line drainage volume[4]	
Worst case discharge	

1. Maximum release time is based on a best estimate of how long it would take the operator to recognize a catastrophic pipeline failure. Given the capabilities of the pipeline monitoring system to detect shortages and the installation of pressure rate of change detection alarms at the pump stations, this is a reasonable estimate.
2. The maximum shutdown time is an estimate based on historical shutdown experience.
3. (b) (7)(F) [redacted].
4. (b) (7)(F) [redacted] The calculation considers the location of block valves and assumes that the sections of pipe that are located in topographical depressions (except for the break location) will remain full of oil.

APPENDIX H

HAZARD EVALUATION

Unloading of Transportation Vehicles (South Portland Marine Terminal)

The Facility only conducts unloading of marine vessels. These operations are typically conducted as follows:

MARINE OPERATIONS	
Transfer Points:	Two (2)
(b) (7)(F) [redacted]	[redacted]
Simultaneous Operations:	Two (2) operations
Transfers per day:	Four (4) (*maximum*)
Products:	Crude Oil

Day-to-Day Operations

The day-to-day operations at the Facility that may present a risk of discharging oil or releasing a hazardous substance are:

- Pipeline transfer operations
- Vessel unloading operations
- Tank to tank transfers
- Vacuum truck to tank transfers (maintenance activities)

Work such as piping replacement/repair is rare, and would only be done on portions of the system that are isolated from the active system.

Secondary Containment Volumes

Secondary containment is provided for the bulk storage tanks and/or transfer points at the South Portland Facility. Detailed secondary containment information is located in the SPCC Plan (under separate tab).

Normal Daily Throughput

The Company currently maintains 23 above-ground storage tanks at its South Portland facilities. Four (4) tanks (Tanks 1, 2, 27, and 28) are located adjacent to the two Company piers in Portland Harbor. Pier No. 2 is the only active pier; however, Tanks 1 and 2 are still used for active storage. The remaining 19 tanks are located at the Tank Farm located on Hill Street in South Portland approximately three miles from the marine terminal. The Hazard Identification Table in this appendix identifies each of these tanks by tank number. All tanks are used to store crude oil only, and are filled and drained in accordance with scheduled receipt of crude oil by vessels at Pier No. 2, and by delivery of crude oil to refineries and storage tanks in Montreal, Canada by the Company's interstate pipeline. Because delivery and shipment of crude oil vary throughout the year, the Company has chosen to present the rated shell capacity as the maximum capacity of liquid in each tank. The average quantity stored in each tank on any given day can range from empty to an effective liquid capacity for each tank, depending on receipt and shipment of crude oil to and from the facility.

The Normal Daily Throughput for the South Portland Facility:

Normal Daily Throughput	Average Storage	Total Storage
(b) (7)(F) [redacted]	[redacted]	[redacted]

Hazard Identification Tank Table

The Hazard ID Tank table, which is located in the appendix, lists all storage tanks at the South Portland facilities. A detailed Spill Potentials List for the South Portland facilities is located in the SPCC Plan, under separate tab.

Discharge Detection

Detailed information pertaining to discharge detection is located in the SPCC Plan, under separate tab.

Security

(b) (7)(F) [redacted]

US - Vulnerability Analysis

Introduction

The vulnerability analysis addresses the potential effects (i.e., to human health, property, or the environment) of an oil spill originating from the South Portland Facilities. Section 6.0 of this Plan provides general guidance to the responder for "Spill Impact Considerations", addressing response options for many of the specific sensitivities detailed below.

The rest of the pipeline system is rather extensive as it stretches across 236 miles in three states and two countries. Therefore, the sensitive areas are detailed in “Emergency Response Mapping” booklets which are contained in separate, stand alone documents.

The area potentially affected by a spill originating from the Facility has a number of characteristics which require consideration in the event of a discharge.

- The immediate area of the Facility is located in an industrialized area of South Portland, Maine.
- The most sensitive area near the facility are commercial and sport fisheries and wildlife in the Portland Harbor and the Casco Bay areas.
- Residential areas are located on all sides of the Tank Farm, and on both banks of Anthoine Creek and the Fore River.

(b) (7)(F) [redacted]

[redacted]

Residential Areas

Residential areas are on all sides of the Tank Farm, and on both banks of Anthoine Creek and the Fore River. Any evacuation efforts for these areas will be coordinated with the local emergency assistance agencies (police department, fire department, etc.) Additional details on the residential areas within the area of the Facility are included in the "Emergency Response Mapping" booklets which are maintained as separate, stand alone documents. Telephone reference is provided in Figure 2.5.

Businesses

There are various commercial areas in the vicinity of the Facility. Any evacuation efforts for these areas will be coordinated with the local emergency assistance agencies (police department, fire department, etc.). Additional detail on the general layout of businesses within the area of the Facility are included in the "Emergency Response Mapping" booklets which are maintained as separate, stand alone documents.

Fish and Wildlife, Wetlands, and other Sensitive Environments

The area surrounding the Facility is detailed in the applicable ACP. The "Emergency Response Mapping" booklets which are maintained as separate, stand alone documents, detail sensitive areas.

Flora and fauna are always present and are sensitive to the effects of a pollution incident. All environmental areas deserve protection from pollution, but they must be prioritized during a response so as to protect the most sensitive and susceptible areas to pollution.

Commercial and sport fisheries and wildlife are located in the Portland Harbor and Casco Bay area. Additional information is included in the "Emergency Response Mapping" booklets which are maintained as separate, stand alone documents.

Possible environmental effects of a spill could include potential mortality to fish, wildlife, flora and fauna.

During a response situation the USFWS and applicable state agencies should be contacted for information regarding wetlands and other sensitive environments. Upon contact the agencies will be able to:

- Identify and establish priorities for fish and wildlife, wetlands, and other sensitive environments requiring protection from any direct or indirect effects from a discharge.
- Identify potential environmental effects on fish and wildlife, wetlands, and other sensitive environments resulting from removal actions or countermeasures.
- Mobilize equipment to haze birds and wildlife and activate wildlife rescue and rehabilitation resources

Lakes and Streams

The Facility is located in close proximity to Anthoine Creek, the Fore River, and Portland Harbor. Additional information is included in the "Emergency Response Mapping" booklets which are maintained as separate, stand alone documents. Possible environmental effects of a spill could include impacts to water quality and potential mortality to fish, wildlife, flora and fauna in these areas.

Endangered Flora and Fauna

No endangered species are known to be located within the immediate area of the Facility. A complete list of state and federal threatened and endangered wildlife is located in the "Emergency Response Mapping" booklets which are maintained as separate, stand alone documents.

Recreational Areas

There are various recreational areas in the area of the Facility. These areas include Ferry Beach State Park, Crescent Beach State Park, Two Lights State Park, Bug Light Park, Willard Beach, East End Beach, and Wolfe's Neck Woods State Park. These are identified in the "Emergency Response Mapping" booklets which are maintained as separate, stand alone documents.

The recreational area that could be potentially affected by a spill from the South Portland Tank Farm is the Greenbelt Walkway that transits Anthoine Creek immediately adjacent to Broadway.

The recreation areas that could potentially be impacted by a Spill from the terminal tanks would be East End Beach, Willard Beach and Bug Light Park.

Possible environmental effects of a spill could include oil impacted shorelines and potential mortality to fish, wildlife, flora and fauna. Public access and recreational use could also be impacted.

Transportation Routes (air, land, and water)

<u>South Portland Tank Farm</u>
A worst case spill from a tank at the South Portland tank farm at 30 Hill Street could potentially impact traffic on Broadway in South Portland near Anthoine Street where Anthoine Creek crosses Broadway. Depending on the tank location within the farm, it could also potentially affect Evans Street and Highland Avenue traffic. South Portland Police would be contacted to direct traffic.

Although unlikely, a high degree of vapors from a spill could impact air traffic at the Portland Jetport. The alternate western and northern runway approaches would be used. It is possible the Fore River could see enough oil to impact vessel activity in the upper Fore River. The decision to curtail vessel activity would be made by the USCG who are the leading FOSC for spills east of Route One.

(b) (7)(F)

Other Areas of Economic Importance

Any evacuation efforts necessary for these areas will be coordinated with the local emergency assistance agencies (police department, fire department, etc.), State Police, and other agencies as the situation demands. Telephone references are provided in Figure 2.5. Other than neighboring businesses, there are not many other areas of economic importance within close proximity to the Facility.

US - Analysis of the Potential for a Spill

The potential for a significant spill at the Portland Marine Terminal and Tank Farm is minimal due to the spill prevention measures that are in place and the operating procedures followed by facility personnel. The potential for a spill of sufficient magnitude to escape the Facility is very remote due to the spill mitigation measures inherent in the facility design.

Spill prevention measures include a number of discharge detection methods and various inspection procedures which are described further in the SPCC Plan (under separate tab).

Operating procedures are defined in the Company procedural manuals. All personnel responsible for terminal operations are trained. New personnel receive on-the-job training working with experienced operating personnel as well as training in the areas of safety, spill prevention, emergency response, and applicable pollution prevention laws, rules and regulations. They become fully trained prior to assuming unsupervised operating responsibilities.

Spill mitigation measures include facility designs intended to direct releases to containment areas where they can be promptly controlled and cleaned up.

The Portland area is not subject to excessive exposure of inclement weather such as tornadoes, hurricanes, floods, or tropical storms. The area is subject to snowstorms during the winter months but none have resulted in reportable spills.

The South Portland Tank Farm is constructed on bedrock and consolidated soils, with good stability. The existing rock underlying the topography is the reason the tanks are built at different elevations and also provides good support for the tanks. A tank settlement monitoring program is in place.

Small Discharges

Small discharges could occur from little used or idle piping. Unused piping is removed or flushed, cleaned and capped. Little used piping is flushed and unloading lines undergo internal inspection and pigging. Response effort for these types of spills would be initiated by site personnel and aided by contract response resources. Spills of this nature are generally singular in nature and not subject to chain reactions or failures. The spill would typically be retained inside a tank dike or on land immediately adjacent to the piping location. Disposal would be per the disposal plan with recovered soil typically taken to a local plant for use as road base material.

Medium Discharges

Medium Discharges could occur from Third Party Damage to underground piping. PPLC, Dig Safe and City permit processes control digging around underground piping. At the South Portland Tank Farm, oil will be retained on premises and not reach water, fish, wildlife or sensitive environments. At the terminal area and shore tanks, there is a low probability the oil could reach the Fore River. These types of spills are typically singular in nature and not subject to chain reactions or failure due to the nature of the cause of the leak.

US - Reportable Oil Spill History

The Facility maintains a separate Oil Spill History file in the Facility office. The Facility's file contains the below listed information to the extent that such information is reasonably identifiable.

- Date of discharge.
- Location of discharge.
- Discharge cause(s).
- Material(s) discharged.
- Amount discharged.
- Amount of discharge that reached navigable waters.
- Amount recovered.
- Effectiveness and capacity of secondary containment.
- Clean-up actions taken.
- Steps taken to reduce possibility of recurrence.
- Total storage capacity of the tank(s) or impoundment(s) from which the material discharged.
- Enforcement actions.
- Effectiveness of monitoring equipment.
- Description of how spill was detected.

Based on the information available, an analysis of previous spills yields two tank overflow spills in the early years of operation. Both were contained. Since that time, remote monitoring of tank levels has been implemented with redundant high level alarms which are monitored by personnel having full authority to stop all operations to prevent an overflow. There have been small spills attributable to seals and gaskets. A computerized maintenance managing system is used today to manage maintenance of these components. There have been spills attributed to internal corrosion of little used piping. These spills were retained on premises. To prevent recurrence unused piping is removed or flushed, cleaned and capped, little used piping is flushed, and unloading lines undergo internal inspection and pigging. There is one known enforcement action by the Maine Department of Environmental Protection.

Recorded history indicates that the only known damage to the facility by nature was damage to Pier No. 1 by a hurricane in 1946. The pier was rebuilt stronger, and has weathered subsequent storms. One hurricane of low magnitude is known to have occurred in the mid-1990s with no impact to the oil containing facilities.

There have been no spills from the South Portland Tank Farm that were reportable under 40 CFR Part 110. There has been only one identified South Portland Tank Farm Facility spill that threatened to reach surface waters. Subsequent to construction of the 42” dock line in 1969, oil was released into a ditch connecting with Anthoine Creek. A summary of this incident follows.

Figure H-1
US - Reportable Oil Spill History

Date of discharge.	September 15, 1969
Location of discharge.	42” Unloading Line
Discharge cause(s).	After construction and hydrostatic testing of the 42” unloading line, a skimmer pit was built to allow drainage of the test water from the line and capturing any residual oil in the pipe from leaking manifold valves and piping. The contractor representative responsible for observing the fluid being drained to the pit left the job site without permission. In his absence, some oil entered and overflowed the pit and into a ditch connecting with Anthoine Creek (did not reach Anthoine Creek).
Material(s) discharged.	Crude oil
Amount discharged.	50 barrels
Amount of discharge that reached navigable waters.	None – did not reach Anthoine Creek.
Amount recovered.	---
Effectiveness and capacity of secondary containment.	Temporary secondary containment not effective due to human failure.
Clean-up actions taken.	Dam constructed upstream of Anthoine Creek.
Steps taken to reduce possibility of recurrence.	Employee counseled; Today, work plans and contractor programs manage.
Total storage capacity of the tank(s) or impoundment(s) from which the material discharged.	Capacity of skimmer pit unknown.
Enforcement actions.	None documented.
Effectiveness of monitoring equipment.	Poor; human error (contractor).
Description of how spill was detected.	Visual discovery by company personnel.

Figure H-2

US - HAZARD IDENTIFICATION TANKS ABOVE GROUND STORAGE TANKS

(Tank = any container that stores oil)

(b) (7)(F)

Tank Number	Substance Stored *(Oil & Haz. Substance)*	Tank Type *(ie. floating roof, fixed roof, etc.)*	Year Built	Potential Failure Mode	Probability	Rate of Flow *(Gallons)*	Failure / Cause *(Record cause and date of any Tank failure which has resulted in a loss of tank contents)*	Direction of Flow
1	Crude	Floating	1941	Rupture	Low	-----	Overflow due to incorrect remote tank guage readings. 74,340 gal. loss to containment (5/29/75)	Note "A"
2	Crude	Floating	1941	Rupture	Low	-----	N/A	
27	Crude	Floating	1966	Rupture	Low	-----	N/A	Note "B"
28	Crude	Floating	1969	Rupture	Low	-----	N/A	
3	Crude	Floating	1950	Rupture	Low	-----	N/A	Note "C"
4	Crude	Floating	1950	Rupture	Low	-----	N/A	
5	Crude	Floating	1950	Rupture	Low	-----	N/A	
6	Crude	Floating	1950	Rupture	Low	-----	N/A	
8	Crude	Floating	1944	Rupture	Low	-----	N/A	
9	Crude	Floating	1944	Rupture	Low	-----	N/A	
10	Crude	Floating	1941	Rupture	Low	-----	Overflow when wrong tank opened to receive oil from vessel. 10,080 gal. loss to containment. (10/5/60)	
11	Crude	Floating	1941	Rupture	Low	-----	N/A	

(b) (7)(F)

Figure H-2 (Cont'd)

US - HAZARD IDENTIFICATION TANKS
ABOVE GROUND STORAGE TANKS (cont'd)

(Tank = any container that stores oil)

(b) (7)(F) [redacted]

Tank Number	Substance Stored *(Oil & Haz. Substance)*	Tank Type *(ie. floating roof, fixed roof, etc.)*	Year Built	Potential Failure	Probability	Rate of Flow *(Gallons)*	Failure / Cause *(Record cause and date of any Tank failure which has resulted in a loss of tank contents)*	Direction of Flow
12	Crude	Floating	1941	Rupture	Low	-----	N/A	Note "C"
13	Crude	Floating	1941	Rupture	Low	-----	N/A	
18	Crude	Floating	1971	Rupture	Low	-----	N/A	
19	Crude	Floating	1953	Rupture	Low	-----	N/A	
20	Crude	Floating	1953	Rupture	Low	-----	N/A	
21	Crude	Floating	1955	Rupture	Low	-----	N/A	
22	Crude	Floating	1955	Rupture	Low	-----	N/A	
23	Crude	Floating	1960	Rupture	Low	-----	N/A	
24	Crude	Floating	1965	Rupture	Low	-----	N/A	
25	Crude	Floating	1965	Rupture	Low	-----	N/A	
26	Crude	Floating	1957	Rupture	Low	-----	N/A	
#2 Fuel Oil Storage Tank	Fuel Oil	Horizontal	1983	Leak	-----	-----	N/A	
Waste Oil/Rags Drums Storage	Waste Oil & Rags	55 Gal Drums	-----	Leak	-----	-----	N/A	
Pier 2 Diesel Generator Tank	Diesel Fuel	-----	2002	Leak	-----	-----	N/A	
Construction Mobile Fuel Tank	Diesel Fuel	Rectangular	-----	Leak	-----	N/A		In tank dike 23/24
TOTALS:								

(b) (7)(F) [redacted]

Note[A]: Primary drainage is to the containment area. Drainage outside of, or escaping containment would flow northwest to Portland Harbor.

Note[B]: Primary drainage is to the containment area. Drainage outside of, or escaping containment would flow north across Pickett Street towards Portland Harbor.

Note[C]: Primary drainage is to the containment area. Drainage outside of, or escaping containment would more than likely flow through either storm drains or ditches to the oil/water separator and reservoir. The chance does exist that a spill could reach Portland Harbor to the northwest.

Note[F]: 55 gallon drum is stored on factory produced drum containment pallet sufficient to hold the entire contents.

Figure H-3

US - HAZARD IDENTIFICATION SURFACE IMPOUNDMENTS (SI)
(Surface Impoundment = natural topographic depression, man-made excavation, or diked area)

SI Number	Substance Stored	Quantity Stored *(Gallons)*	Maximum Capacity *(Gallons)*	Surface Area	Year Built	Failure / Cause *(Record cause and date of any SI failure which has resulted in the loss of SI contents)*
		There are no Surface Impoundments at this Facility				

US - HAZARD IDENTIFICATION TANKS
UNDERGROUND STORAGE TANKS
(Tank = any container that stores oil)

Tank Number	Substance Stored *(Oil & Haz. Substance)*	Average Quantity Stored *(Gallons)*	Maximum Capacity *(Gallons)*	Tank Type *(ie. floating roof, fixed roof, etc.)*	Year Built	Potential Failure	Rate of Flow *(Gallons)*	Failure / Cause *(Record cause and date of any Tank failure which has resulted in a loss of tank contents)*	Direction of Flow	Secondary Containment Capacity *(Gallons)*
			There are no Underground Storage Tanks at this Facility							

Figure H-4
United States

This page reserved for Hydrant and Drainage Diagrams

D4923 – Hydrants - South Portland Tank Farm
D4924 – Hydrants - South Portland Terminal
B1154 – Drainage Diagram – South Portland Tank Farm
B1153 – Drainage Diagram – South Portland Terminal

(b) (7)(F)

[redacted]

(b) (7)(F)

(b) (7)(F)

APPENDIX I

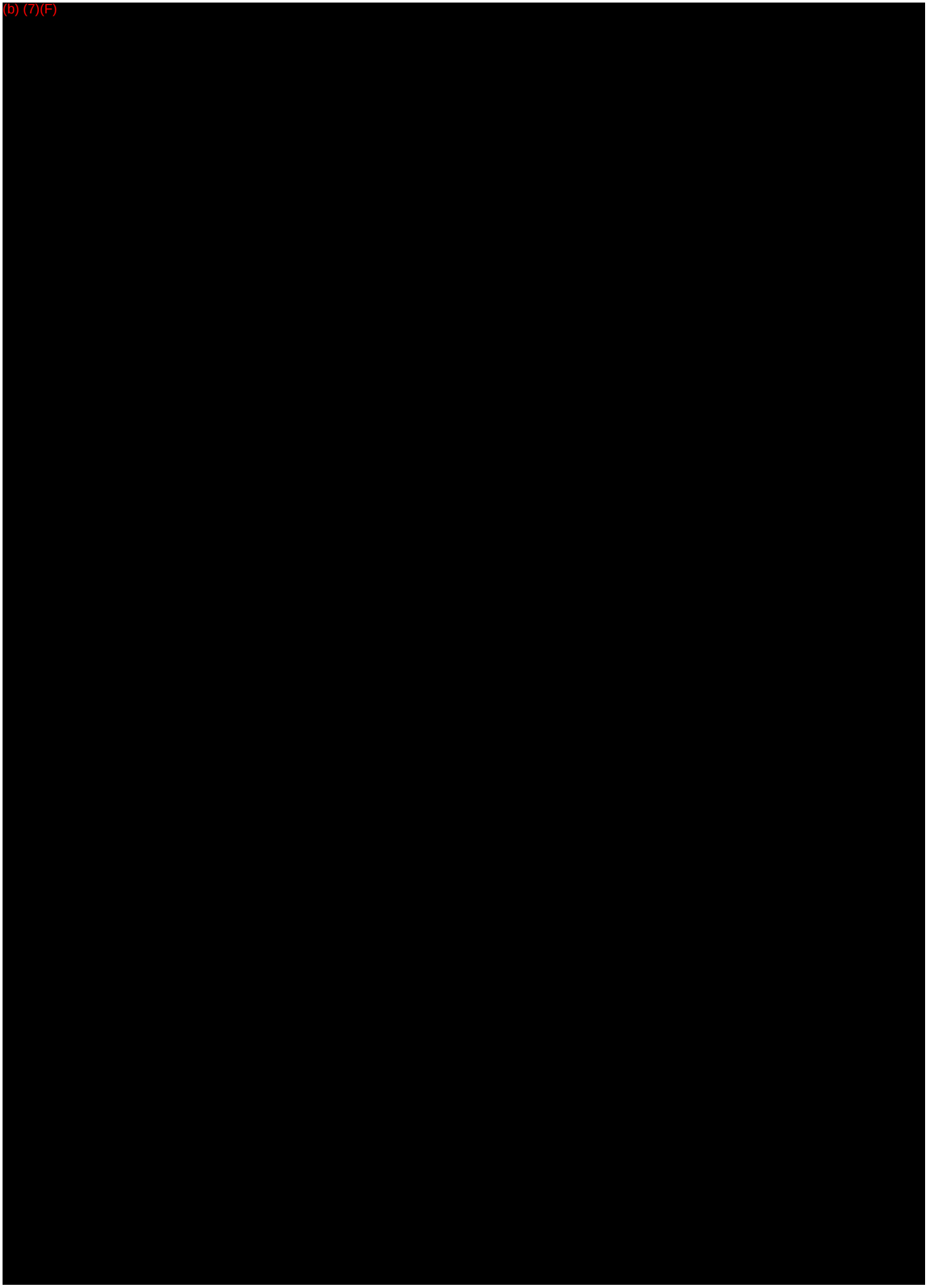
PMPL MAIN LINE INFORMATION

Figure I-1

PMPL Main Line Profile Drawing - J 162

(b) (7)(F)

[redacted]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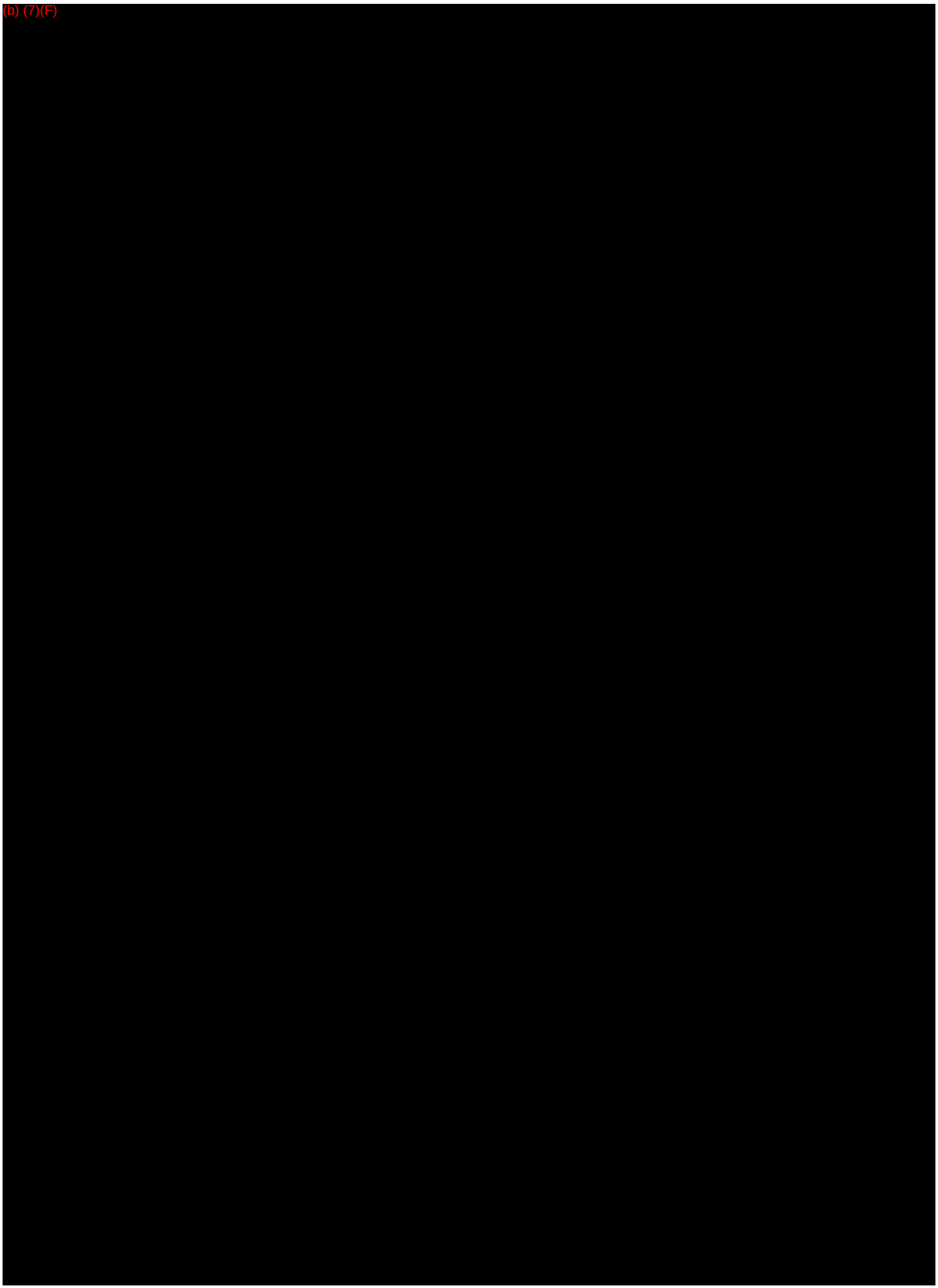
(b) (7)(F)



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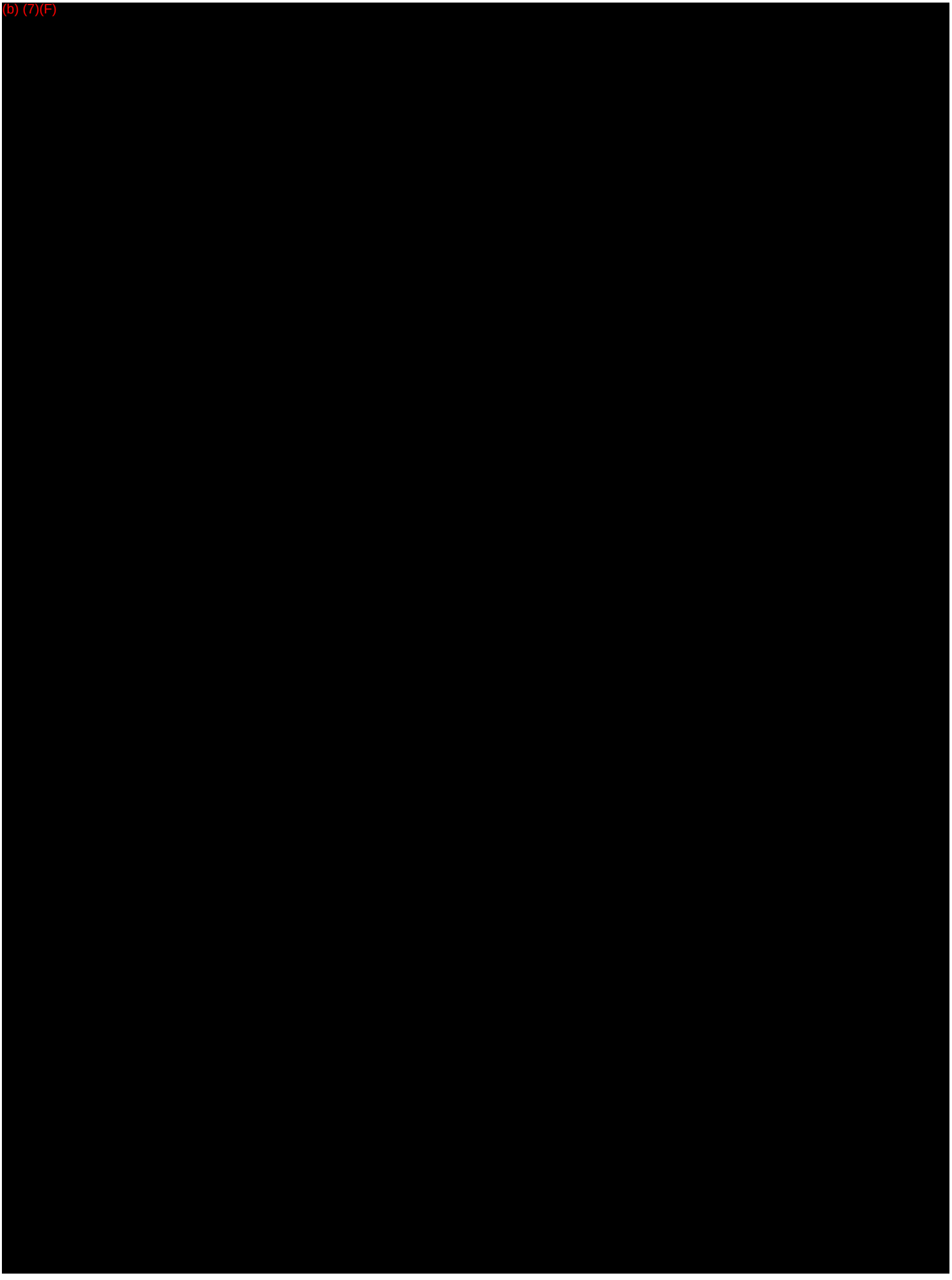

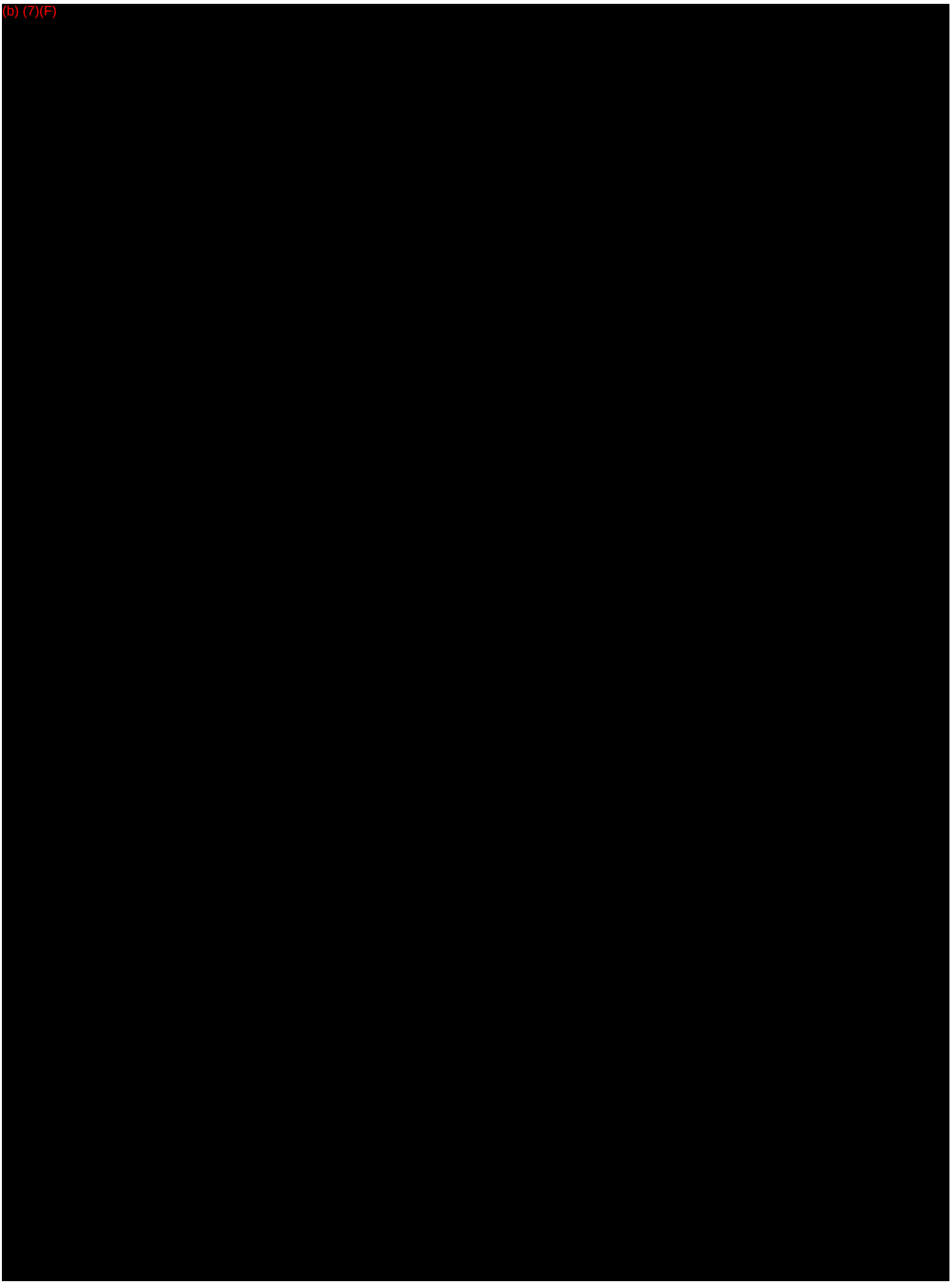
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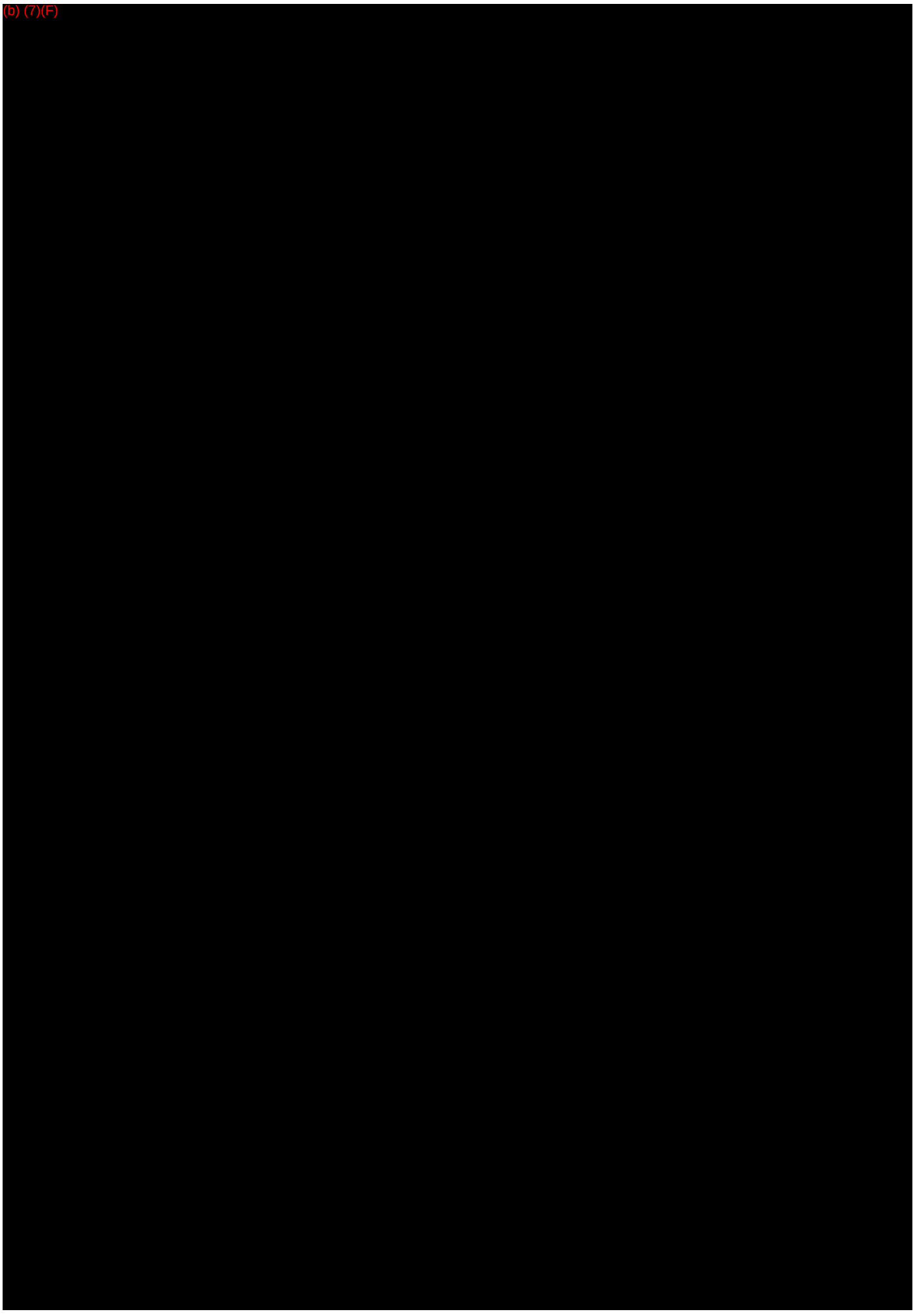
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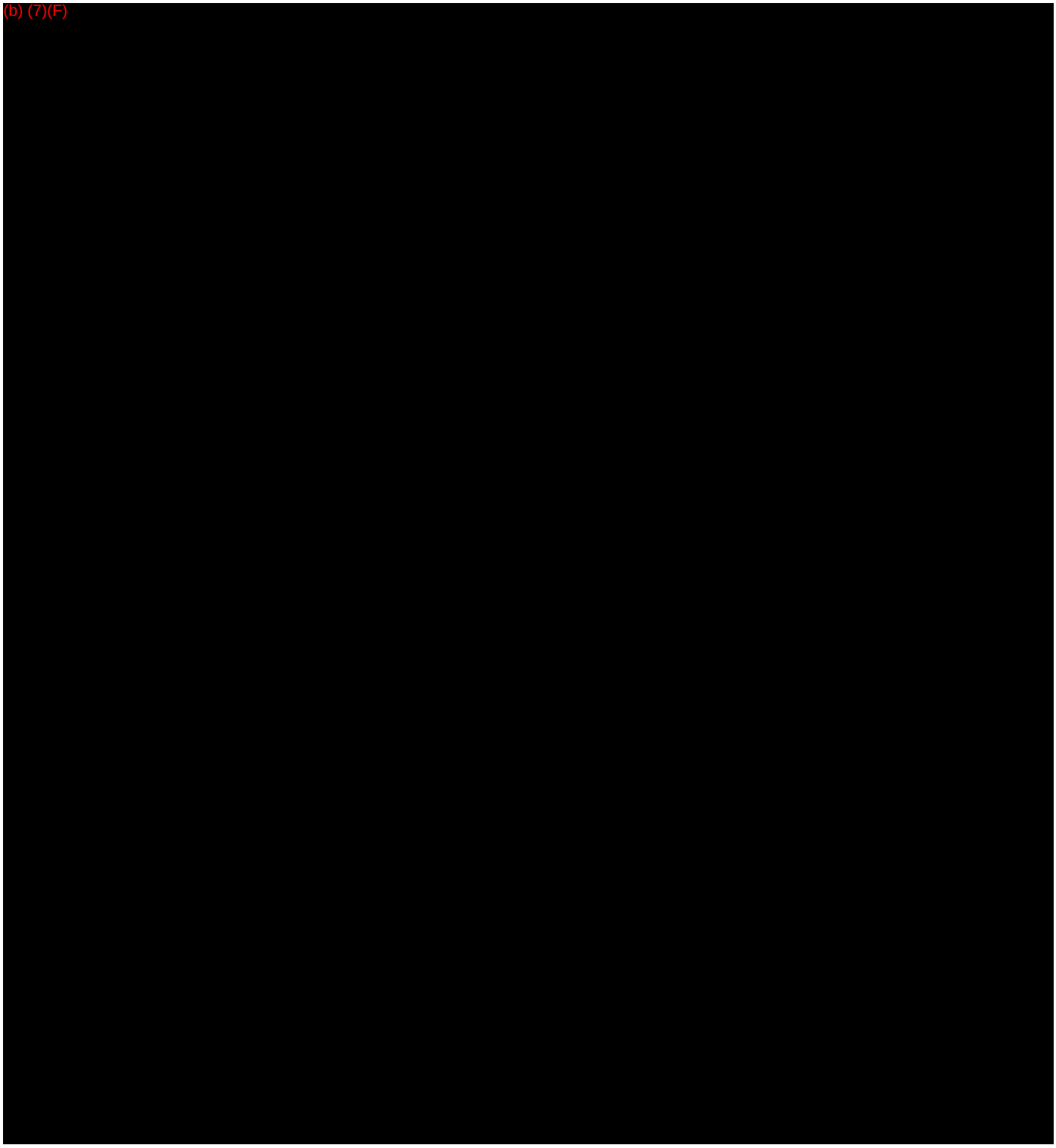

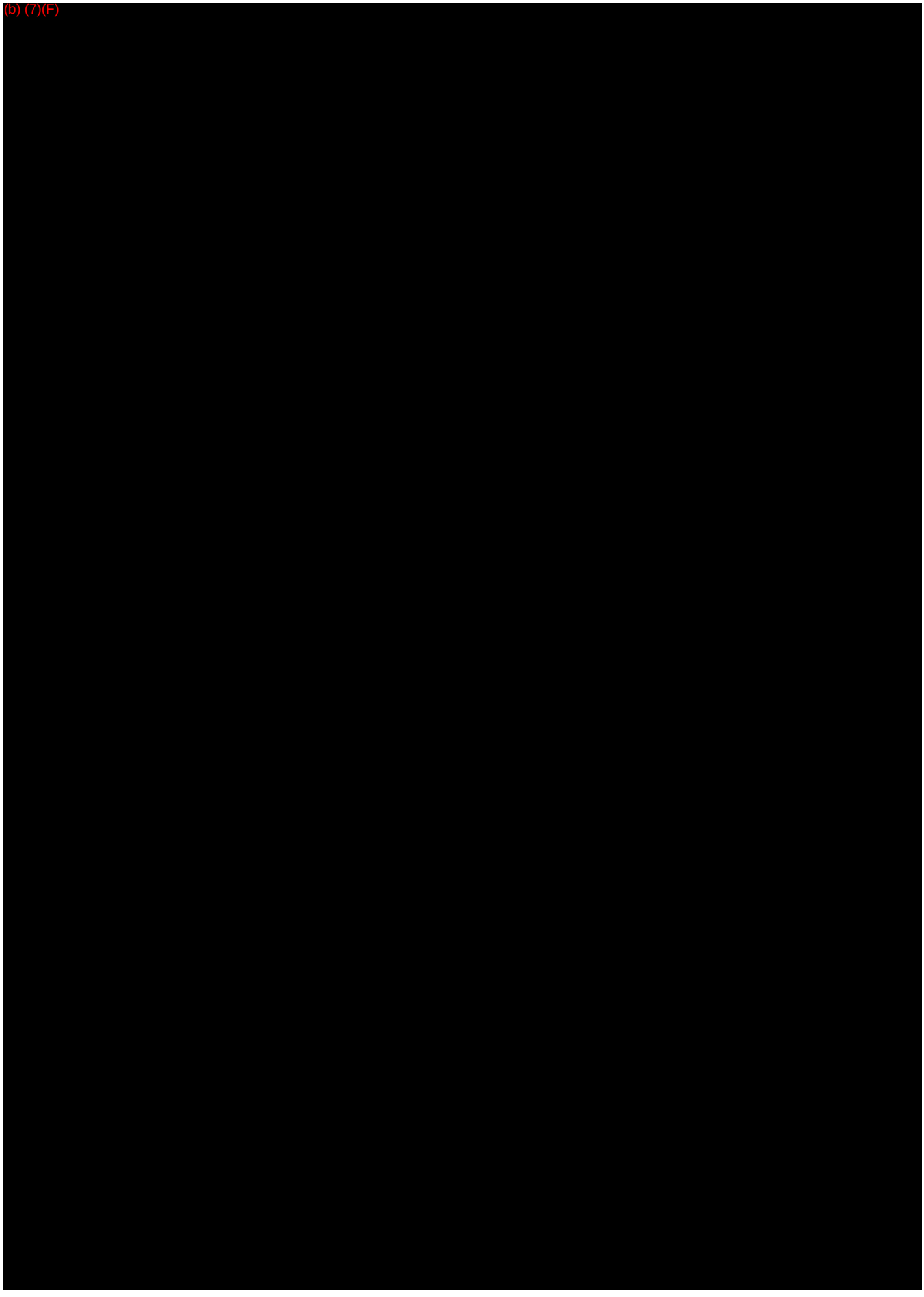
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(b) (7)(F)

(b) (7)(F)

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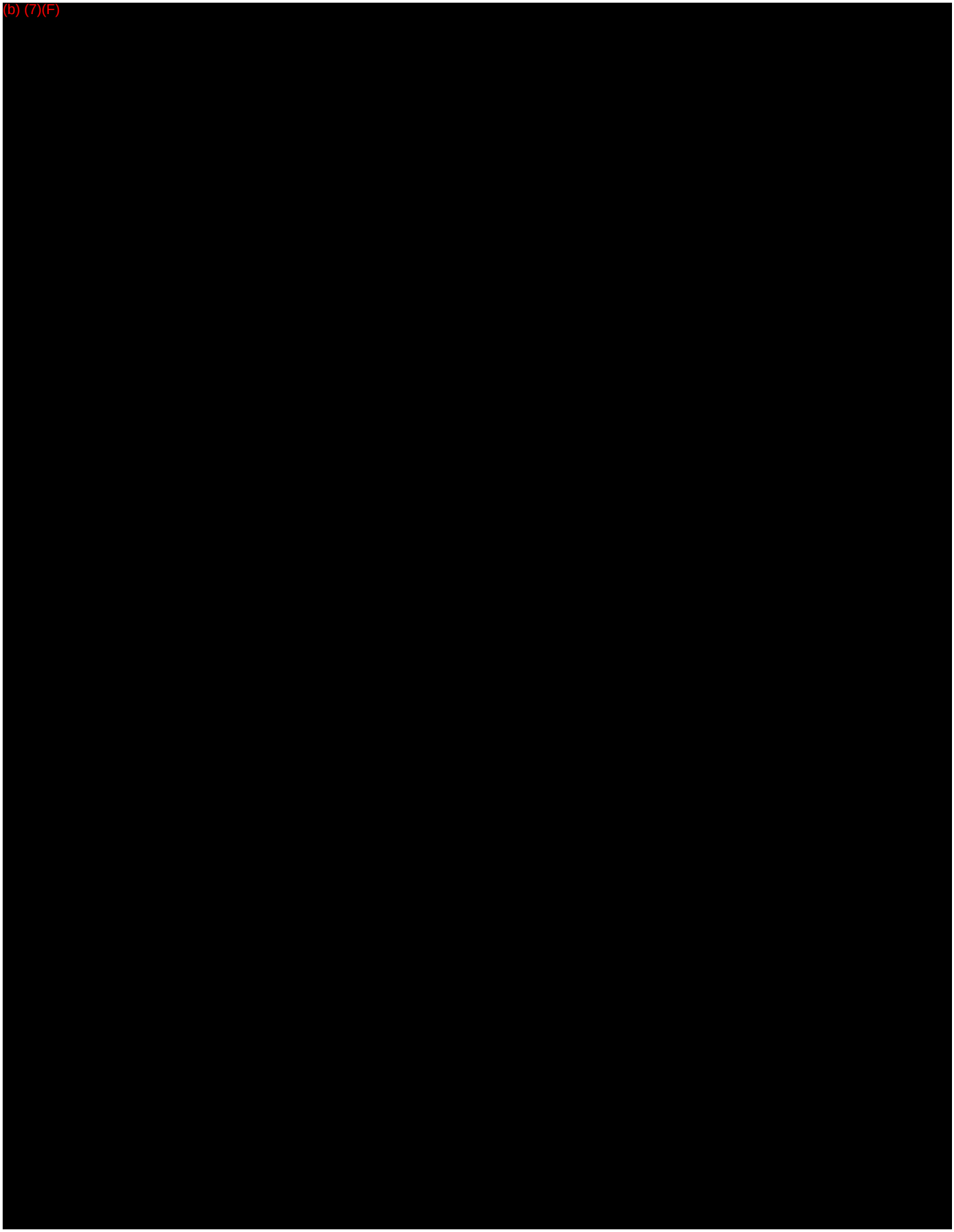
(b) (7)(F)



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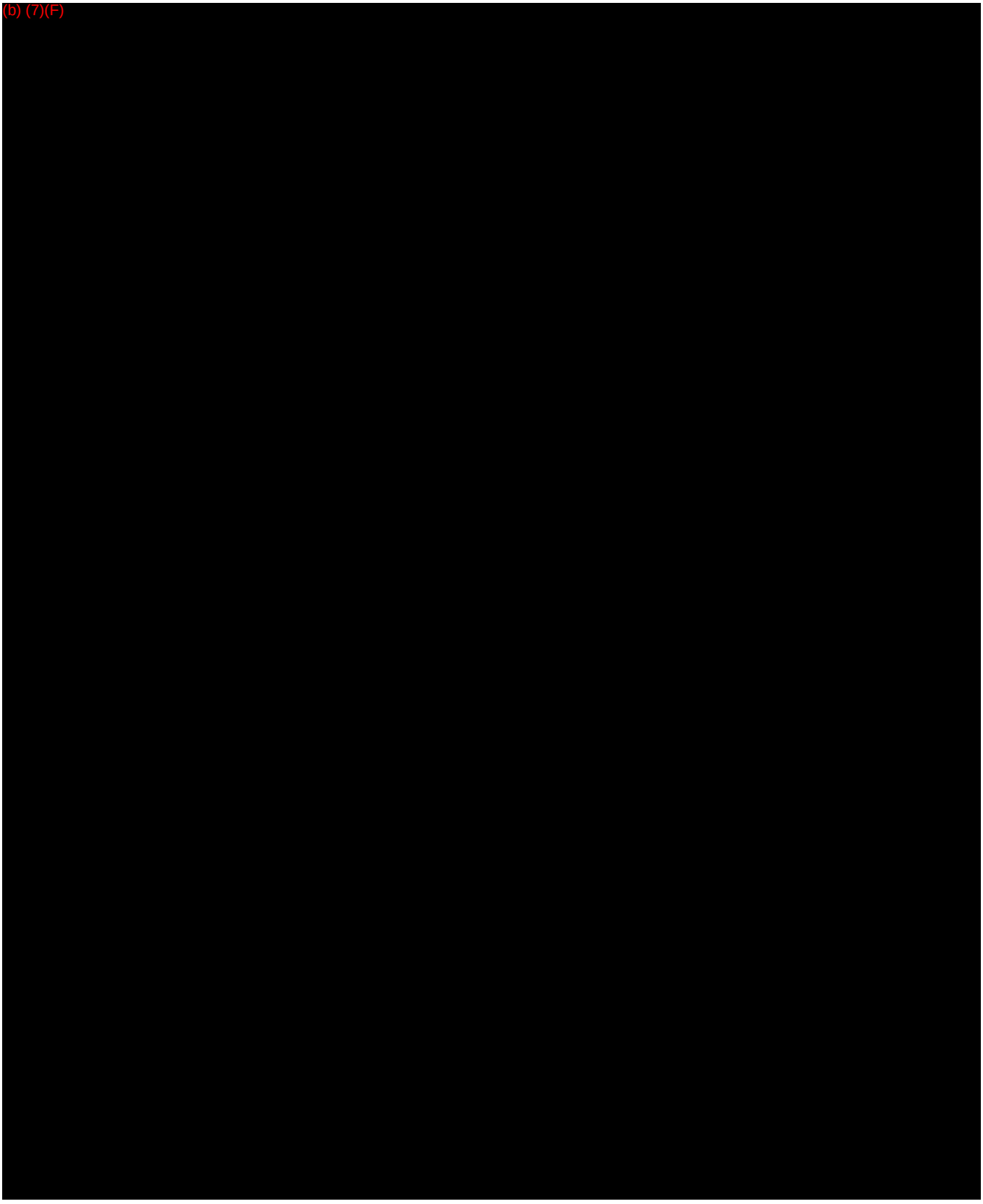

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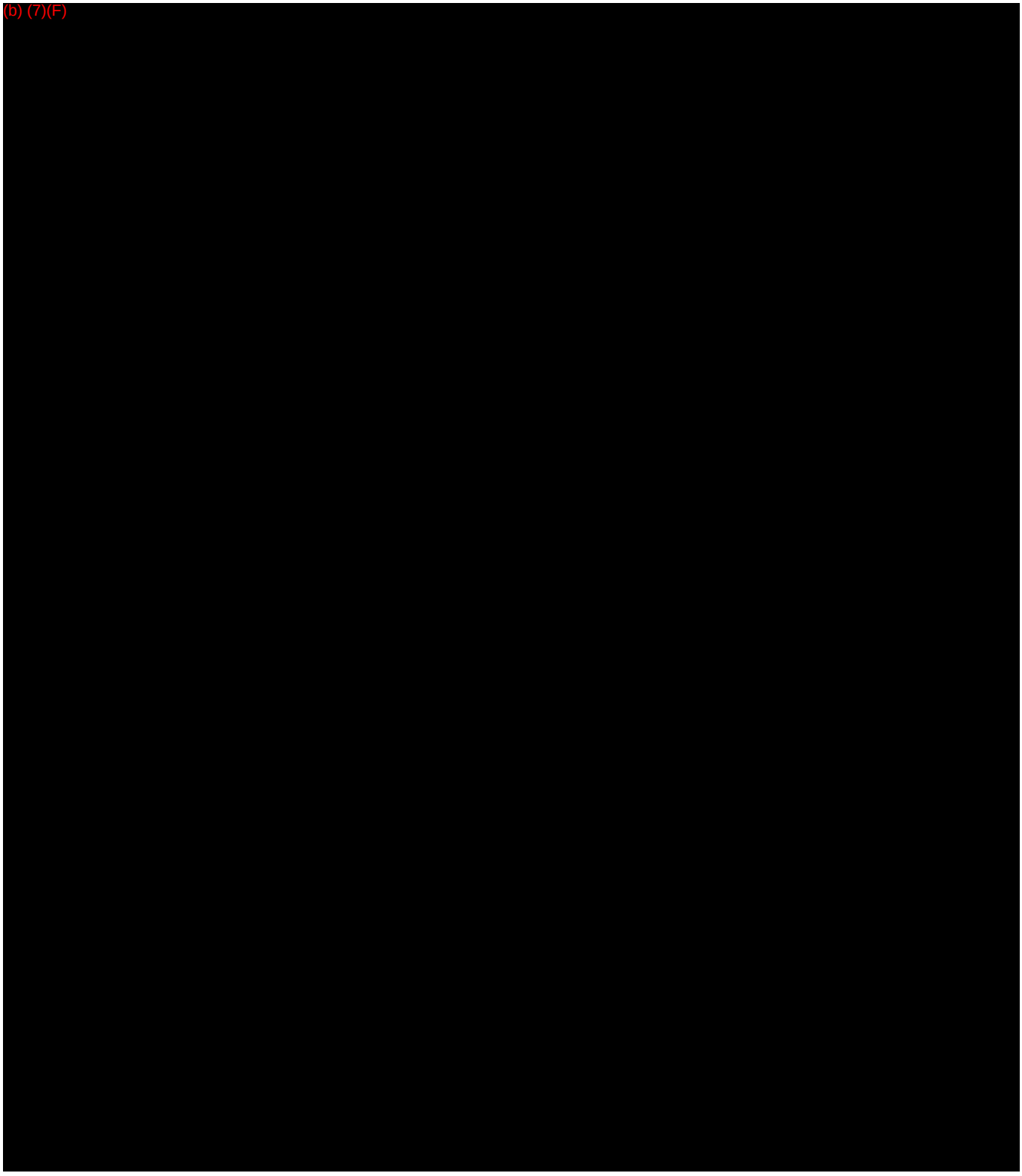

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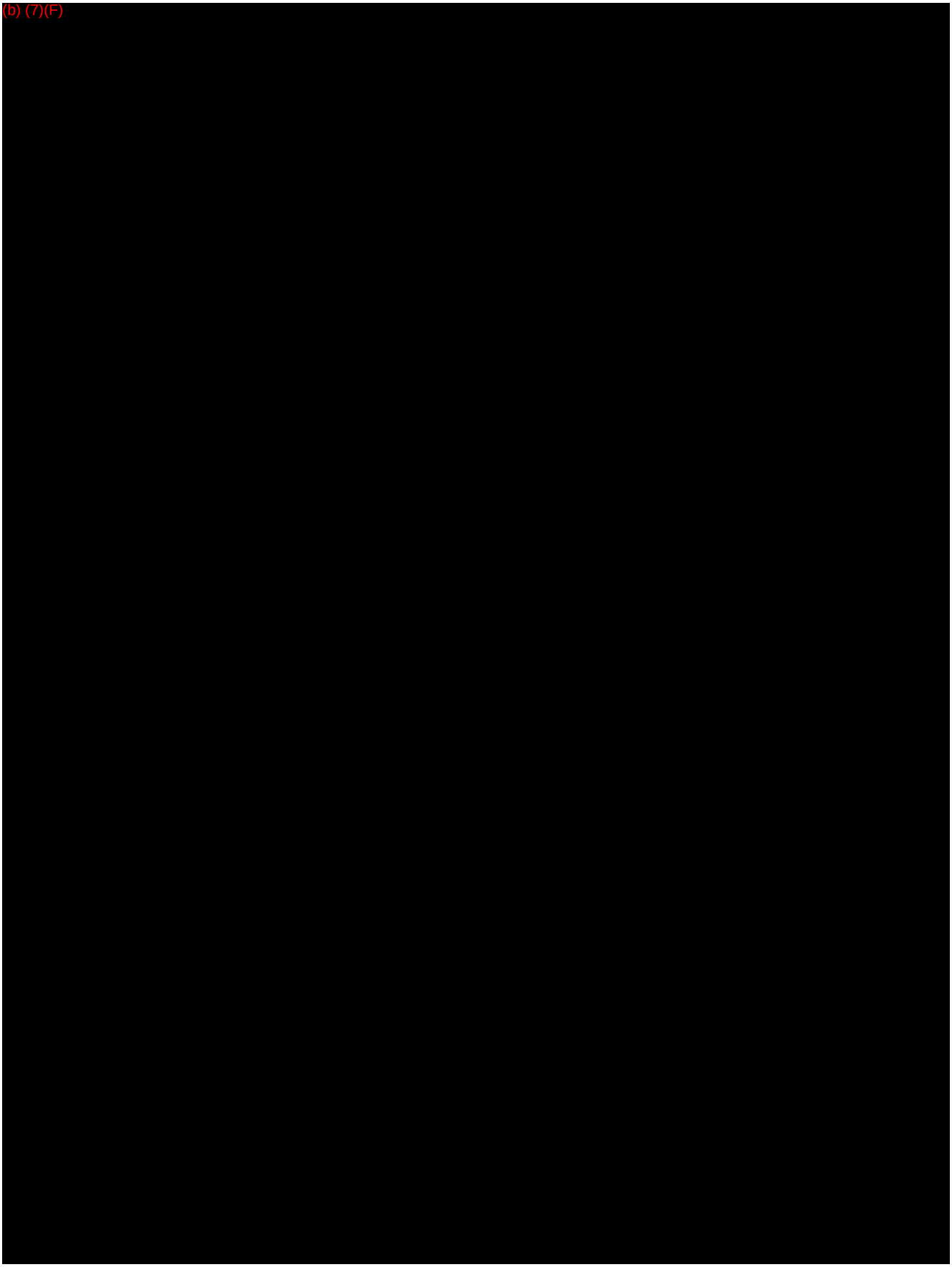

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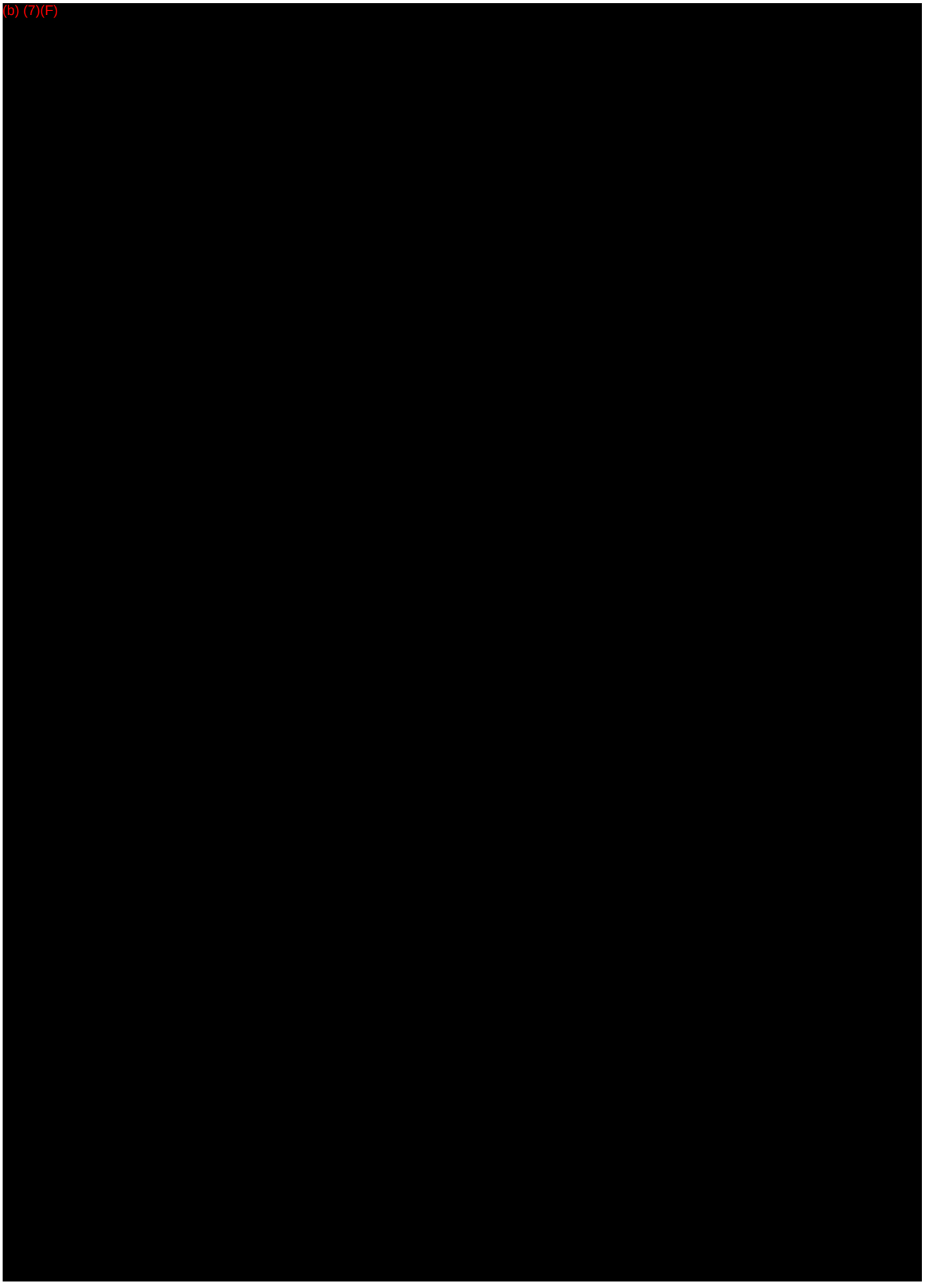

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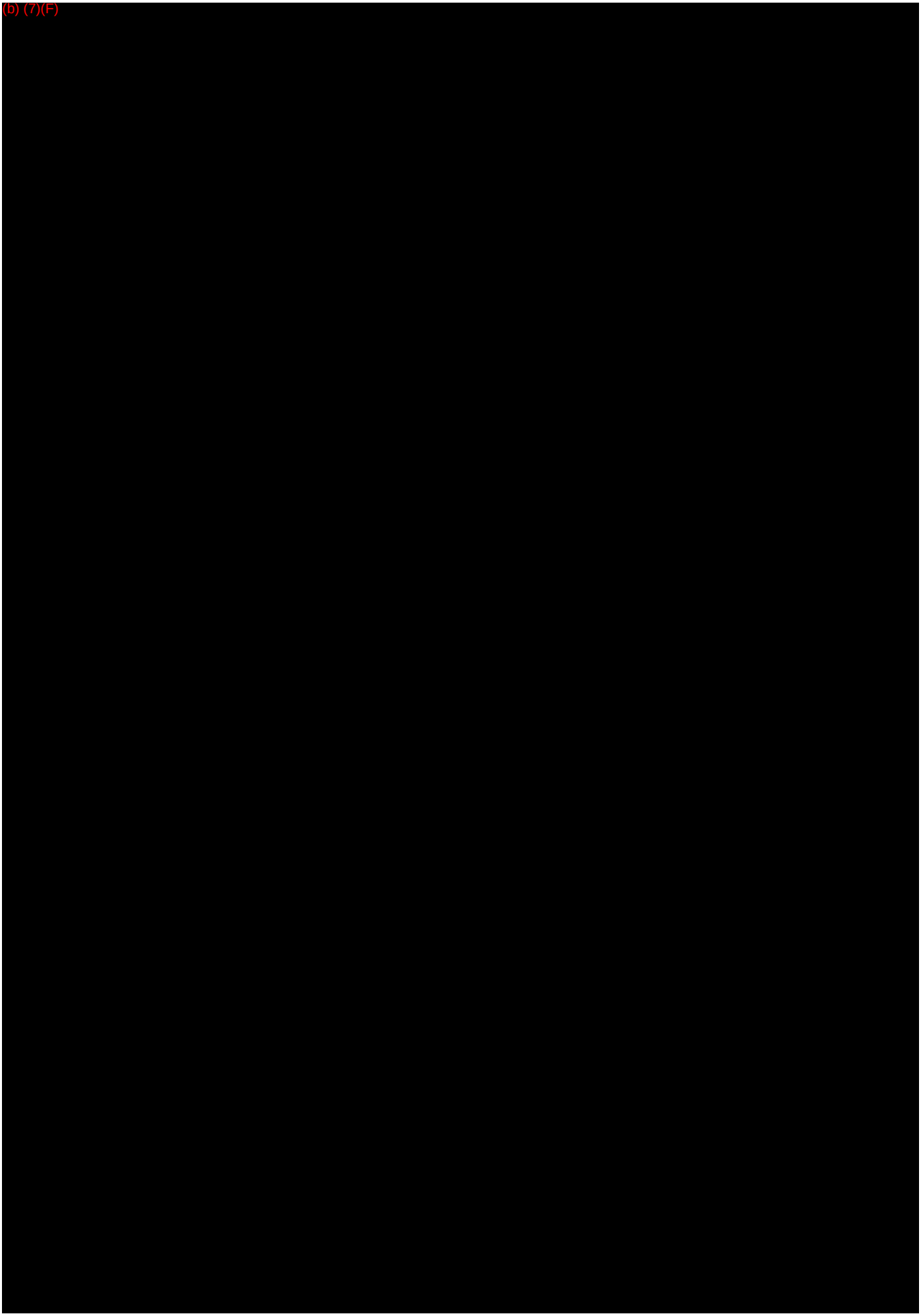

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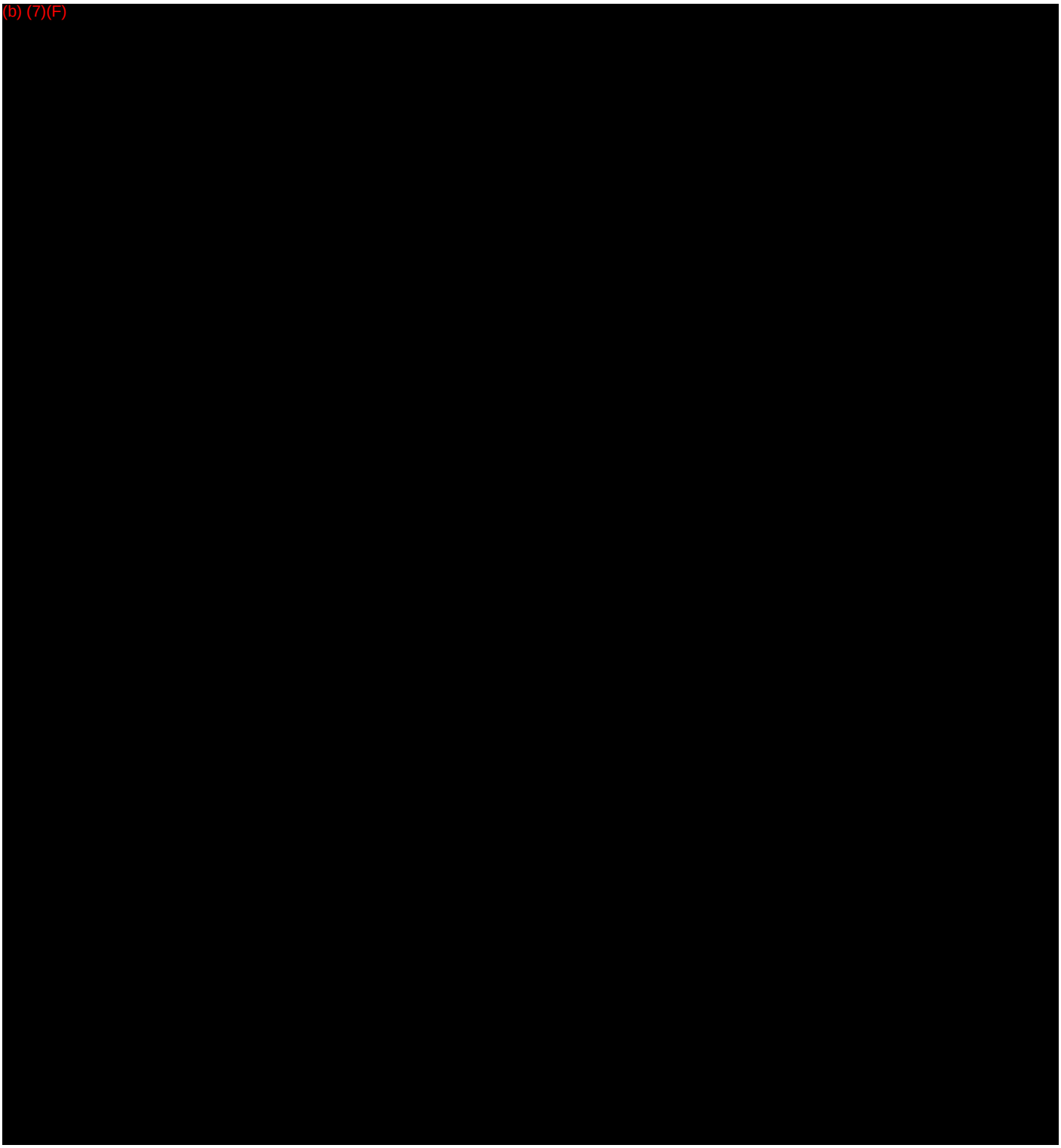

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