

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 1 of 16

### 1. PURPOSE

To ensure that the Manitoba Division complies with Manitoba Regulation 103/94, Ozone Depleting Substances Regulation, effective May, 1994.

### 2. SCOPE

To control the procurement, installation, commissioning, decommissioning, permitted uses and systems of record pertaining to all Class 1, 2 and 3 Ozone Depleting Substances (ODS). These substances are utilized in stationary and mobile air conditioning, air drying, fire extinguishing, safety /emergency warning and refrigeration applications. **Appendix 1** lists these substances by Class.

### 3. DEFINITIONS

*Certified personnel:* A person who is a ‘trained service technician’, holding a valid Manitoba Ozone Protection Industry Association (MOPIA) issued Certification Number, having attended and passed a course on the control of ODS’s.

*Qualified Personnel:* a person who is both certified (as defined above) and deemed qualified by each Plant/ Mine to be able to repair, service, charge, recharge and/or recover an ODS from air conditioning, fire extinguishing or refrigeration equipment.

*Repair and Service:* refers to repairing and servicing the individual equipment components which contain or could release an ODS to the atmosphere and DOES NOT refer to the equipment as a whole. Service includes moving, dismantling, charging, recharging, modifying, commissioning and decommissioning the equipment.

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 2 of 16

*Recover:* means capture in a closed container an ODS that is removed from air conditioning, fire extinguishing or refrigeration equipment.

*Reclaim:* means purify a recovered ODS that is unsuitable for immediate reuse, to its original state of purity.

*Recycle:* means a) return a recovered ODS to air conditioning, fire suppression or refrigeration equipment after completion of repairs or service of equipment, b) reuse a recovered ODS from air conditioning, fire extinguishing or refrigeration equipment, or c) return a recovered ODS to the supplier or manufacture for reclaiming.

**White Good:** A domestic refrigerator or freezer, window air conditioner or a 115 – 230 V self-contained plug in unit that requires the use of a Class 1,2 or 3 substance for operation, including but not limited to a drinking fountain, pneumatic air dryer or domestic dehumidifier.

#### 4. RESPONSIBILITIES

##### 4.1 **Each Plant and Mine:**

(a) Maintain a complete inventory of their ODS containing materials and equipment (excluding white goods) by equipment identification #, type and quantity of ODS

(b) Maintain an adequate number of certified personnel as defined above, and ensure the individuals' certification is recorded in the employee training record system

(c) Ensure that repair and service records (**Appendix 2**) are maintained, through the work order system, and hard copies are stored at the plant for no less than 3 years. Records covering the 4<sup>th</sup> quarter of any given year must be submitted no later than January 10<sup>th</sup> of the following year

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 3 of 16

(d) Ensure that work orders include job instructions, as defined by Appendix 2 and that information entered into the work order system includes completion comments, usage and time confirmation of the person responsible for the execution of the work

(e) Technicians shall not perform any work on ODS equipment which does not include job instructions as defined by Appendix 2 and shall return a completed signed document to supervisor, ensuring all required information is included

(f) Any and all releases of an ODS must be reported to the SHE Department in accordance with Divisional SPI 35-3, Spill Reporting.

(g) Upon decommissioning or disposal of ODS containing equipment, ensure a description of the type and quantity of ODS recovered is included in the 72a Asset Disposal form

### **4.2 Divisional Support Department:**

- a) At the discretion of the Plants/Mines, coordinate the on-going training of maintenance personnel within the Manitoba Operations to ensure certified, qualified personnel
- b) Maintain a listing of certified personnel across the Division
- c) Maintain a division wide inventory of (serviceable) ODS containing equipment
- d) Maintain the repair and information instructions (through the work order system) to facilitate the tracking of information for repair and inspection tasks

### **4.3 Learning & Development Department:**

- a) Deliver on-going training to the Manitoba Division to ensure awareness of the requirements of this SPI

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 4 of 16

### 4.4 Safety Health & Environment Department

- (a) Maintain a complete inventory of ODS containing materials and equipment for the Manitoba Operations
- (b) Maintain the central location for the storage of records pertaining to the procurement, decommissioning, and permitted uses of all Class 1, 2 and 3 Ozone Depleting Substances (ODS)
- (c) Submit on behalf of the Manitoba Operations, an annual report containing a summary of all required repair, service, inventory and usage records to MOPIA, before February 1<sup>st</sup> of each year, as required by the Section 8(4) of MB Regulation 103/94
- (d) Ensure records are retained for a period of at least 3 years, and make the records available to an Environment Officer upon request
- (e) Report any leaks or spills of ODS to Manitoba Environment, in accordance with Section 24 of MB Regulation 103/94 and Divisional SPI 35-3, Spill Reporting

### 4.5 Centre for Material Disposal (CMD):

- (a) Maintain a suitable disposal area for out-of-service ODS containing materials and equipment including white goods.
- (b) Ensure that ODS are recovered (for recycling, reclamation or destruction) by certified personnel for equipment (including white goods) that are to be decommissioned, and submit a copy of the service record (**Appendix 4**) to the central location (see email address below).

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 5 of 16

### 4.6 Purchasing and Warehouse Department:

- (a) Provide an annual summary report of all ODS material or equipment purchases to the central location (see email address below) on or before January 31<sup>st</sup> of the following year.
- (b) Maintain the Secondary Distributor Permit for the Manitoba Operations in accordance with Section 22 of Manitoba Regulation 103/94

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
OZONE DEPLETING SUBSTANCES		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 6 of 16

All persons shall email all required documents and records to the Central Location  
[ManitobaOzoneDepletingSubstances@vale.com](mailto:ManitobaOzoneDepletingSubstances@vale.com)

### 5.0 CONTROLS

This SPI will be reviewed in the event of regulation changes or every three years.

### 6.0 APPENDICES

Appendix 1: Classes of Ozone Depleting Substances

Appendix 2: Repair and Service Record

Appendix 3: Process Flow Diagram

Appendix 4: CMD Usage Reporting Document

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 7 of 16

### Appendix 1 Classes of Ozone Depleting Substances

Manitoba Regulation 103-94 Schedule A

#### Class 1

Chlorofluorocarbons (**CFCs**), whether existing alone or in a mixture and including isomers of any

CFC-11	trichlorofluoromethane
CFC-12	dichlorodifluoromethane
CFC-13	chlorotrifluoromethane
CFC-111	pentachlorofluoroethane
CFC-112	tetrachlorodifluoroethane
CFC-113	trichlorotrifluoroethane
CFC-114	dichlorotetrafluoroethane
CFC-115	chloropentafluoroethane
CFC-211	heptachlorofluoropropane
CFC-212	hexachlorotrifluoropropane
CFC-213	pentachlorotrifluoropropane
CFC-214	tetrachlorotetrafluoropropane
CFC-215	trichloropentafluoropropane
CFC-216	dichlorohexafluoropropane
CFC-217	chloroheptafluoropropane

**Halons**, includes bromofluorocarbons and bromochlorofluorocarbons, whether existing alone or in a mixture and including isomers

Halon 1011	bromochloromethane
Halon 1211	bromochlorodifluoromethane (R-12B1)
Halon 1301	bromotrifluoromethane (R-13B1)
Halon 2402	1,2-dibromotetrafluoroethane (R-114B2)

Chlorocarbons, whether existing alone or in a mixture and including isomers, other than 1,1,2 trichloroethane

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 8 of 16

R10 tetrachloromethane (carbon tetrachloride)  
 R140 1,1,1 trichloroethane (methyl chloroform)

### Appendix 1 Classes of Ozone Depleting Substances Continued Manitoba Regulation 103-94 Schedule A

#### Class 2

Hydrochlorofluorocarbons (**HCFCs**) plus all other hydrochlorofluorocarbons, whether existing alone or in a mixture and including isomers of any

- HCFC-21 dichlorofluoromethane
- HCFC-22 chlorodifluoromethane
- HCFC-31 chlorofluoromethane
- HCFC-121 tetrachlorofluoroethane
- HCFC-122 trichlorodifluoroethane
- HCFC-123 dichlorotrifluoroethane
- HCFC-123 2,2-dichloro-1,1,1-trifluoroethane
- HCFC-124 chlorotetrafluoroethane
- HCFC-131 trichlorofluoroethane
- HCFC-132 dichlorodifluoroethane
- HCFC-133 chlorotrifluoroethane
- HCFC-141 dichlorofluoroethane
- HCFC-142 chlorodifluoroethane
- HCFC-151 chlorofluoroethane
- HCFC-221 hexachlorofluoropropane
- HCFC-222 pentachlorodifluoropropane
- HCFC-223 tetrachlorotrifluoropropane
- HCFC-224 trichlorotetrafluoropropane
- HCFC-225 dichloropentafluoropropane



## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
OZONE DEPLETING SUBSTANCES		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 9 of 16

HCFC-226	chlorohexafluoropropane
HCFC-231	pentachlorofluoropropane
HCFC-232	tetrachlorodifluoropropane
HCFC-233	trichlorotrifluoropropane
HCFC-234	dichlorotetrafluoropropane
HCFC-235	chloropentafluoropropane
HCFC-241	tetrachlorofluoropropane
HCFC-242	trichlorodifluoropropane
HCFC-243	dichlorotrifluoropropane
HCFC-244	chlorotetrafluoropropane
HCFC-251	trichlorofluoropropane
HCFC-252	dichlorodifluoropropane
HCFC-253	chlorotrifluoropropane
HCFC-261	dichlorodifluoropropane
HCFC-262	chlorodifluoropropane
HCFC-271	chlorofluoropropane

Note: Mixtures or azeotropes of HCFCs and CFCs are Class 1 substances

### Appendix 1 Classes of Ozone Depleting Substances Continued

Manitoba Regulation 103-94 Schedule A

#### Class 3

Hydrofluorocarbons **HFCs**, plus all other hydrofluorocarbons, whether existing alone, or in a mixture and including isomers of any

HFC-23	trifluoromethane
HFC-32	difluoromethane (methylene fluoride) (R32)
HFC-41	fluoromethane (methyl fluoride) (R41)
HFC-125	1,1,1,2,2-pentafluoroethane (R125)

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 10 of 16

HFC-134	tetrafluoroethane
HFC-143	trifluoroethane
HFC-152	difluoroethane
HFC-161	fluoroethane (ethylfluoride)
HFC-227	heptafluoropropane
HFC-236	hexafluoropropane
HFC-245	pentafluoropropane
HFC-254	tetrafluoropropane
HFC-263	trifluoropropane
HFC-272	difluoropropane
HFC-281	fluoropropane
HFC-329	nonafluorobutane
HFC-338	octofluorobutane
HFC-347	heptafluorobutane
HFC-356	hexafluorobutane
HFC-365	pentafluorobutane
HFC-374	tetrafluorobutane
HFC-383	trifluorobutane
HFC-392	difluorobutane
	Fluorobutane
HFC-4310	1,1,1,2,2,3,4,5,5,5-decafluoropentane

Note: Mixtures or azeotropes of HFCs and CFCs are Class 1 substances and mixtures or azeotropes of HFCs and HCFCs are Class 2 substances.

Perfluorocarbons (**PFCs**) plus all other perfluorocarbons, whether existing alone or in a mixture and including isomers of any

FC-14	tetrafluoromethane (carbon tetrafluoride) (R14)
FC-116	hexafluoroethane (R116)
	1,1,2,3,3,3-hexafluoro-1-propene (perfluoropropene)
FC-218	octafluoropropane (R218)
	1,1,2,3,4,4-hexafluoro-1,3-butadiene

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 11 of 16

### Appendix 1 Classes of Ozone Depleting Substances Continued Manitoba Regulation 103-94 Schedule A

RC318	1,1,1,4,4,4-hexafluoro-1,2-butene octafluorocyclobutane (PFC-410) (perfluorocyclobutane) 1,1,1,2,3,4,4,4-octafluoro-2-butene
FC-3-1-10	decafluorobutane (PFC-410) (perfluorobutane)
FC-4-1-12	dodecafluoropentane (PFC-512) (perfluoropentane) hexafluorobenzene (perfluorobenzene)
FC-5-1-14	tetradecafluorohexane (PFC-614) (perfluorohexane)
FC-6-1-16	hexadecafluoroheptane (perfluoroheptane) Octadecafluorooctane (perfluorooctane) 2,2,3,3,5,5,6,6-octafluoro-4-(trifluoromethyl)-morpholine 2,2,3,3,5,5,6,6-octafluoro-4-(pentafluoroethyl)-morpholine

Note: Mixtures or azeotropes of PFCs and HCFCs are Class 2 substances.

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 12 of 16

### Appendix 2: Repair and Service Record

Vale Base Metal Job Card						Page 1 of 2
Order Number: 201503286773			Repair Air Conditioning			
Functional Location/Equipment: 11032384			Functional Location/Equipment Description: LHD,R1700,Caterpillar,SBR1,Test Eq			
Mn.Wk.Ctr.: 87DSES01			Mn. Wk. Ctr. Description: Div Support- Equipment Specialist			
Sort Field:			Created By: MARK DANIEL THOMAS KLATT			
Work Center: 84HDEM05	Op/Sub Op: 0010/	Earliest Start: 2015.11.20				
Work Center: Hde Mechanic-Shops	Op/Sub Op: Repair / Inspect Air Conditioning	Earliest Finish: 2015.11.20				
Description: Hd Mech	Description:					
Priority: 2	Number: 1	Group: 68924	Group Counter: 3	Due Date: 2015.11.27		
Materials						
Reqmt Qty	Qty Used	Material	Batch	Part Number	Material Description	Req
Order Instructions						
Header Description					Comments	
<p>Operation Description</p> <p>BMMB 13SI-ODS - SAFETY INSTRUCTIONS</p> <p>Ozone Depleting Substances Refer to Inco SPI 35 - O4/ Ozone Depleting Substances</p> <p>When repairing and servicing individual equipment COMPONENTS/ which could release ODS into the atmosphere/ this repair and Service Record Form MUST be completed. This does not refer to equipment as a whole.</p> <p>Equipment information must be current information on record. Do not use slang or common local terminology to identify equipment.</p> <p>If work is being done by an external contractor/ this form must still be filled out if Vale ODS product is being used and submitted to Environmental Control for their records.</p> <p>***** BMMB 13SM-327 - Air Conditioning / ODS Information</p> <p>Date _____</p> <p>WORK ORDER NUMBER _____ OPERATION NUMBER _____</p> <p>Work Group (Garage): _____</p> <p>Unit Number: _____ Hour Meter Reading: _____</p>						
2015032867730010.		00000000011032384.		Has the Work Area housekeeping been performed? Yes No		
						
Work Performed	Crew Member		Supervisor		Hour Meter	
Date	Signature		Personnel#		Superintendent (if applicable)	
Start Time:						
End Time:						

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

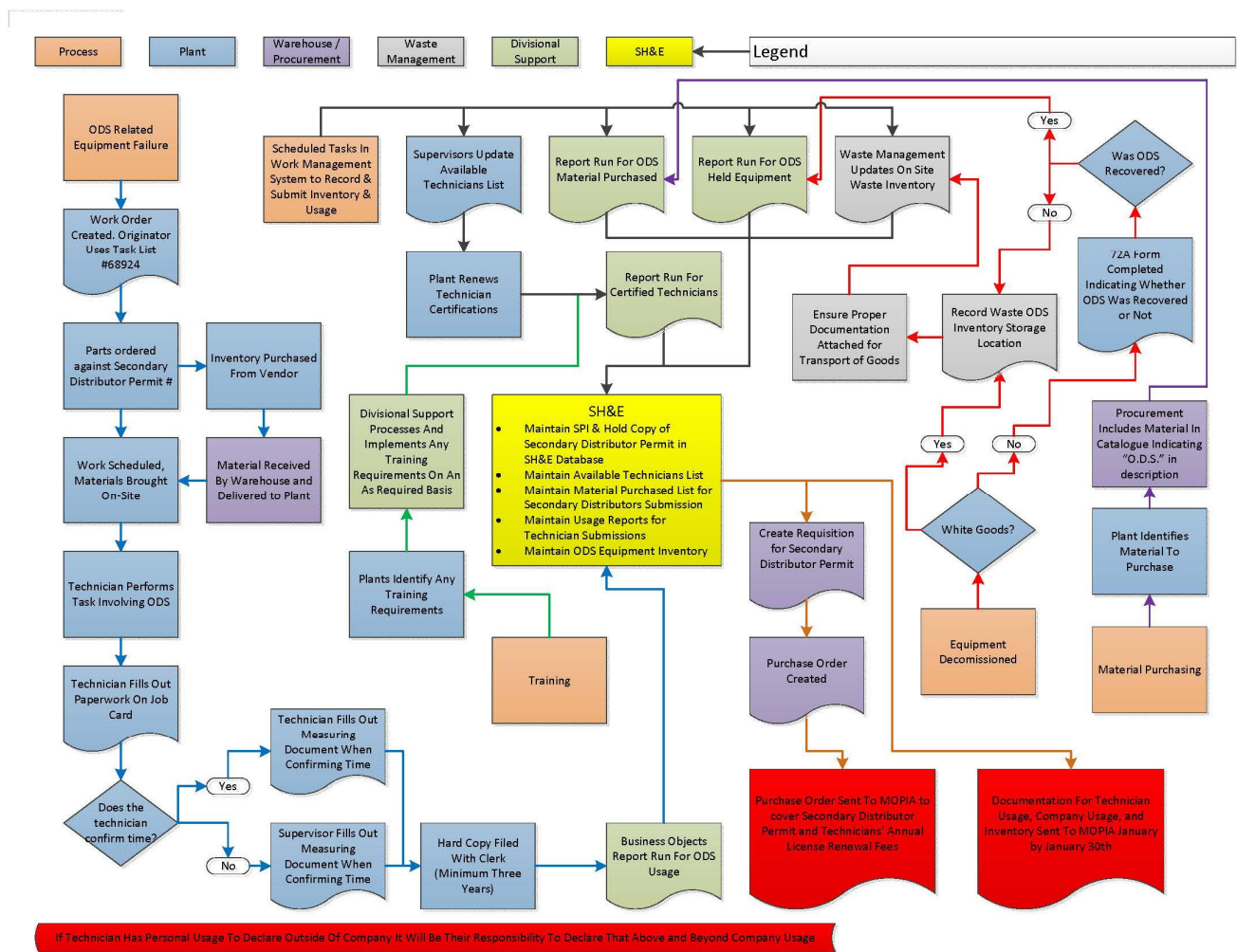
Page 13 of 16

Vale Base Metal Job Card		Page 2 of 2
Order Number 201503286773	Repair Air Conditioning	
Functional Location/Equipment: 11032384	Functional Location/Equipment Description: IHD, R1700, Caterpillar, SERI, Test Eq	
Mn. Wk. Ctr. 87DSES01	Mn. Wk. Ctr. Description: Div Support - Equipment Specialist	
Sort Field	Created By: MARK DANIEL THOMAS KLATT	
Technician's Name: _____ Technician's Employee Number: _____ Technician's ODS Certification Number: _____ Description of repair _____ _____ _____ _____ _____		
***** BMMB 13CI-ODS - COMPLETION INSTRUCTIONS Ozone Depleting Substances Was an Ozone Depleting Substance removed, recovered, charged or recharged into the system? YES _____ NO _____ Type of ODS used _____ Weight of ODS recovered _____ Weight of ODS charged / recharged _____ Technician certification number _____ Ensure measuring document is entered when confirming time against "Refrigerant Usage" measuring point. (Weight Recharged - Weight Recovered = Refrigerant Usage) Please complete the ODS data record sheet at the recovery machine. Date Completed _____ Completed By _____		

# STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
OZONE DEPLETING SUBSTANCES		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

## Appendix 3: Process Flow Diagram



## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 15 of 16

### Appendix 4: CMD Usage Reporting Document

**Record of ODS Recovery**

Refer to Vale SPI35 - 04, Ozone Depleting Substances

When recovering ODS for material disposal, contracted technician to record recovered ODS information and submit copy to [ManitobaOzoneDepletingSubstances@vale.com](mailto:ManitobaOzoneDepletingSubstances@vale.com) and to CMD coordinator.

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

Contractor Company Name: \_\_\_\_\_

Technician's Name: \_\_\_\_\_ ODS Certification #: \_\_\_\_\_

ODS Recovered: \_\_\_\_\_ CAS #: \_\_\_\_\_

Weight or Volume of ODS Recovered: \_\_\_\_\_

Description of work performed:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Form completed by: \_\_\_\_\_

Email this completed form to [ManitobaOzoneDepletingSubstances@vale.com](mailto:ManitobaOzoneDepletingSubstances@vale.com)

## STANDARD PROCEDURE INSTRUCTION

Title		SPI #35-4
<b>OZONE DEPLETING SUBSTANCES</b>		
Department	Supersedes SPI Dated	Effective Date
Health & Safety and Environment	March 2007	January 17, 2018

Page 16 of 16

Approved By	Title
	Vice President, Vale Manitoba Operations
Date	