

WORK INSTRUCTION

Work Instruction Title:	Bell Halocarbon Containing System Work Instruction			
Content Owner:	Mary-Lynne Marino	Document #:	BELL-12558-en	
Content Owner Position:	Senior Manager, Energy	Revision #:	6	

For questions regarding this document, contact the Content Owner

1.0 PURPOSE

This work instruction defines the steps to ensure compliance when managing Halocarbon containing systems (air conditioning, chillers and fire extinguishers).

2.0 SCOPE

This work instruction applies to the Bell strategic client of BGIS Global Integrated Solutions (BGIS).

3.0 ROLES & RESPONSIBILITIES

Role	Responsibilities
Facility Technician / Senior Facility Technician (FT / SFT) & Contractors	 Is responsible to apply all steps in this work instructions (see sections below)
Facility Manager	 Is responsible to ensure that Facility Technicians / Senior Facility Technician or Contractors have all the tools required to apply this work instruction.

4.0 INSTRUCTIONS

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SECTION 1 FEDERAL REGULATORY REQUIREMENTS

All technicians conducting work on refrigeration and air condition systems in Bell Canada buildings are held responsible for complying with requirements of both the Federal Halocarbon Regulations (FHR) and the Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems.

For complete reference, refer to <u>Section 10: Contacts and References</u> of the present document.

1.1 Important Points Regarding Work Conducted on a System Containing Halocarbons

- It is strictly forbidden to discharge any quantity whatsoever of halocarbons to the atmosphere because it is a greenhouse gas and/or an ozone-depleting substance.
- It is strictly forbidden to allow or cause a discharge from an equipment or container used for recycling, reuse, regeneration or storage of a halocarbon.
- Only a Trained Technician, either a subcontractor or a BGIS O&M Solutions Facility Technician / Senior Facility Technician (FT/SFT), may perform work on refrigeration and air-conditioning equipment, including installation, maintenance, charging, leak testing, decommissioning, dismantling or any other work that could possibly result in a release of halocarbons.
- Only a Certified Technician, either a subcontractor or a BGIS O&M Solutions Facility Technician / Senior Facility Technician (FT/SFT), may perform work on refrigeration and air-conditioning equipment, including installation, maintenance, charging, leak testing, decommissioning, dismantling or any other work that could possibly result in a release of halocarbons.
- As soon as possible, but no later than 7 days after detecting a leak, the certified technician must either:
 - Repair the leak;
 - Isolate the leaking section of the equipment and recover the halocarbons, in accordance with <u>Section</u> <u>7</u>: Halocarbon Recovery and Used Halocarbon Disposal;
 - Recover all halocarbons from the equipment, in accordance with the <u>Section 7 : Halocarbon Recovery</u> <u>and Used Halocarbon Disposal</u>.
- All technicians performing any work that could possibly result in a halocarbon leak from an air-conditioning or refrigeration system must recover the halocarbon beforehand, in accordance with <u>Section 7 : Halocarbon</u> <u>Recovery and Used Halocarbon Disposal</u>.
- All technicians that install, maintain, or charge an air-conditioning or refrigeration system, or perform a leak test or any other work on it that could possibly result in a halocarbon leak, must conform to the *Refrigeration Code of Practice*.

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- If a piece of equipment has not been used for more than a year and is not likely to be used in the following three months, halocarbons must be recovered by a Certified Technician, in accordance with <u>Section 7</u>: <u>Halocarbon Recovery and Used Halocarbon Disposal</u>.
- INSTRUCTIONS WITH REGARDS TO POUCHES AND TUBES

1.2 Installation of Pouches and Tubes

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The installation and maintenance of pouches and tubes is the responsibility of BGIS O&M Solutions Facility Technician / Senior Facility Technician (FT/SFT) and contractors. Pouches and tubes must be installed according to the following circumstances.

Type of equipment	Required Installation
With internal components only	Pouches on internal components
With internal and external components	Pouches on internal components
With external components only	Tubes on external components

Two types of pouches or tubes must be installed according to the following circumstances:

Type of equipment	Type of pouch/tube required
Cooling capacity of less than 5.4 tons	Only a "Service Log" pouch
Cooling capacity of 5.4 tons or more	"Service Log" pouch and "Annual Leak Detection Tests" pouch

* Given the case that equipment requires the installation of tubes, only one tube having both labels ("Service Log" and "Annual Leak Detection Tests") can be installed per equipment.

- 1.2.1 Materials Required for Pouches and Tubes Installation
 - Installation of pouches :
 - Plastic pouches;
 - o "Annual Leak Detection Test" stickers;
 - "Service Log labels" stickers.
 - Installation of tubes :
 - Plastic tubes;
 - Two end caps and a clip per tube;
 - One screw per tube;
 - o "Annual Leak Detection Test" stickers;
 - "Service Log" stickers.

These items can be ordered by phone or email from BGIS O&M Solutions Environmental Services.

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1.3 Using the Pouches and Tubes

Tickets and the Service Logs are the only two types of documents that are to be kept in the pouches. Other maintenance records, such as service reports, technician's timesheets, invoices, and work orders, must be kept in a file somewhere on site.

In the case of external equipment of 5.4 tons or more where only one tube is installed, staple the last two Annual Leak Detection Tests tickets together and staple together the rest of the tickets and Service Logs.

1.4 Removal of Pouches and Tubes

A pouch or a tube must **<u>never</u>** be removed from equipment, except:

- To replace it with a new pouch or tube in which the Tickets and Service Log are transferred; or,
- To dismantle and send the equipment off-site, in which case the two pouches or tube and accompanying maintenance records must remain for five years in the building where the equipment was located.

SECTION 2 COMPLETING AND MAINTENANCE OF TICKETS

Tickets are used to document the work performed on equipment having halocarbons. Tickets are available in booklets from Safeguard.

BGIS O&M Solutions Facility Technician / Senior Facility Technician (FT/SFT) and contractors are responsible for complete Tickets and for keeping them in their rightful place.

2.1 Actions Requiring a Ticket to be completed

Tickets must be completed by BGIS O&M Solutions Facility Technician / Senior Facility Technician (FT/SFT) and contractors each time any of the following types of work are performed on refrigeration or air-conditioning equipment:

- The installation of an equipment;
- A leak test;
- A halocarbon recovery;
- A repair;
- Charging;
- Dismantling and decommissioning of an equipement.

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2.2 Information Required on a Ticket



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*Only the last two Tickets of the Annual Leak Detection Tests must be kept in the "Annual Leak Detection Tests" pouches/tubes. The others must be placed in the "Service Log" pouches/tubes.

All Tickets must be retained in these pouches for a period of <u>five years</u>. Tickets older than five years must be removed from pouches, but only by BGIS O&M Solutions personnel.

Tickets documenting equipment that is decommissioned must be kept indefinitely (as long as the equipment has not been removed from the site).

SECTION 3 COMPLETING AND MAINTENANCE OF SERVICE LOGS

The Service Log shows, at a glance, all work that has been done on a particular piece of equipment.

BGIS O&M Solutions Facility Technician / Senior Facility Technician (FT/SFT) and contractors are responsible for complete Service Log and for keeping them in their rightful place.

All equipment must have a Service Log. If an equipment does not have one, it is the responsibility of the BGIS O&M Solutions Facility Technician / Senior Facility Technician (FT/SFT) to make one from the model provided by BGIS O&M Solutions Environmental Services.

3.1 Actions that require that a Service Log be completed

Whenever work involving the halocarbon circuit is done (and for which a Ticket is made), one or several lines of the Service Log must be completed.

As a general rule, there should be a line of the Service Log that is filled out for each type of work (leak detection, repair, recharge, etc.). Therefore, several lines may correspond to the same Ticket.

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3.2 Completing a Service Log

	SECT	TON 1 - HALO	CARBON EQUIPMENT SEI	RVICE LOG - /	Air Condition	ing and Refri	geration Sys	tems	
BGIS Equipment ID:				Manufacturer:					
Client Equipment ID:				Model Number					
Client Name:				Serial Number:					
Building Address:				Location of Equi	pment				
City:				Equipment Des	cription:				
Province:				Type of Halocar	bon:		Tonnage:		
Operator Name:	BGIS			Charging Capac	zty:		KG 🖂 LBS		
							_	_	
TION 2 - COMPLETE THIS !	SECTION FOR B	EVERY PM, SE	RVICE OR REPAIR PERFOR	SECTION	3 - COMPLET	E LEAK TEST	RESULTS		LEAK DETAIL
Sevice Date mm / dd / year	Fork Order Numb	Technician Nam	Company Name	ODP Certficate Number	Leak Test	Leak Detected	Leak Test Tag Number	Complete SEC	CTION 4 below if leak detected
					Y/N	YźN		М	fethod of Detection
Work Performed:					Y/N	YIN		-	fethod of Detection
Work Performed:					Y / N Y / N	Y/N Y/N		Elect	

Section 4 must be filled after repairs.

SECTION 4 - LEAK REPAIR DETAIL								
Repair Date mmil ddi year		Leak Test Date performed after repair		Location of Leak	Leak Isolated	Report leak within 24 hours	Quantity Recovered KG1LBS	Quanity Charged KG / LBS
					Y/N	Through RealMobile		
Leak Repairs Completed								
					YIN	Through RealMobile		
Leak Repairs Completed								

If the last line of the Service Log is already used, print a new page and transcribe the information found in the header to the new Service Log. Attach the new page to the already completed Service Log.

3.3 Maintenance of Service Logs

The Service Log must be kept in the "Service Log" pouches/tubes of the equipment.

Information found the Service Log must be kept for a period of **five years**. All the lines documenting works older than five years must be removed, but only by BGIS O&M Solutions personnel.

SECTION 4 THE DECISION PROCESS FOR A HALOCARBON LEAK, AND LEAK AND LOSS DOCUMENTATION

4.1 Decision Process for a Halocarbon Leak

Once a halocarbon leak is detected, a technician must complete, in order, the following steps:

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Step 1: Determine the equipment's charging capacity

 If the equipment contains 100 or more kilograms of halocarbon: Immediately stop the leak and then report the situation to the Bell Canada Corporate Responsibility and Environment Group at 1-877-235-5368 (1-877-BELL-ENV).

Step 2: Evaluate the possibility of repairing the system' without compromising the safety of people or

telecommunications equipment.

- If it is not possible to repair the leak without compromising the safety of people or equipment, immediately
 report the situation to the Bell Canada Corporate Responsibility and Environment Group at 1-877-235-5368 (1877-BELL-ENV) in order to give the following information :
 - The nature of the danger;
 - o The circumstances justifying the recharging of a leaking system.
- If it is possible to repair the leak without compromising the safety of people or equipment, continue to next step.

Step 3: Evaluate the possibility of repairing the leak, or of isolating or recovering all of the halocarbon

from the equipment within 7 days

- If it is not possible to repair the leak or isolate or recover all the halocarbon within 7 days, contact BGIS O&M Solutions Environmental Services to notify them of the situation.
- If it is possible to repair the leak, isolate or recover all of the halocarbon from the equipment within 7 days, continue to next step.

Step 4: Stop and repair the leak

- Conduct the required work as soon as possible either by repairing the leak, or by isolating or recovering all of the halocarbon according to <u>Section 7: Halocarbon Recovery and Used Halocarbon Disposal</u>.
- Once the leak has been repaired, conduct a Leak Detection Test and if no leak is detected recharge the
 equipment. If a leak is detected, conduct the additional repairs required until no leak is detected then recharge
 the equipment.

4.2 Reporting Halocarbon Leaks and Losses

When a leak occurs:

- The leak must be reported within 24 hours of detection and repairs via the *Halocarbon Form* (available inside the Work Order). If the repairs are to be done within 24 hours of leak discovery, only one Form can be filled after repairs.
- If a vendor discovers and/or repairs a leak, it is the responsibility of the Operations team (Facility Manager or Technician) to report the leak through the *Halocarbon Form*. All leak details, including photos of the tag and service log, must be provided by the vendor to the Operations team.
- If the leak is on a unit that has more than 100 kg (220 lbs) of refrigerant, it must be reported immediately to Bell Enviro-Line.

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• For BGIS managed sites only: Fill the Incidents form in Intelex from BGIS Corp.

HALOCARBON LEAK DETECTION TEST

4.3 General Requirements

- Only a Certified Technician may perform a leak detection test on refrigeration or air-conditioning systems.
- All Leak Detection Tests must be performed according to the requirements of the Refrigeration Code of Practice.
- When equipment is repaired, a leak test must always be performed before recharging the equipment with halocarbons.
- If a leak is detected, follow the instructions given in <u>Section 5 : The decision process for a halocarbon leak,</u> and leak and loss documentation.

4.4 Annual Leak Detection Tests

- They are mandatory for all refrigeration and air-conditioning systems with refrigeration capacity equal to or greater than 5.4 tons.
- Must be performed at least once every 12 months minus one (1) day. For example, if the last test was
 performed November 1st 2009, the next test must be performed <u>at the latest</u> on October 31st 2010.
- All equipment components in contact with halocarbons must be tested.

SECTION 5 HALOCARBON RECOVERY AND USED HALOCARBON DISPOSAL

5.1 General Requirements

- The halocarbons must be recovered in compliance with the requirements stated in Section 2.9 of the *Refrigeration Code of Practice.*
- Each time halocarbons are recovered in an approved container they must be weighed to determine their quantity.
- If the amount of recovered halocarbon is less than the amount normally contained in the system, follow the
 procedure for a halocarbon leak, and leak and loss documentation, as explained in <u>Section 5 : The decision</u>
 process for a halocarbon leak, and leak and loss documentation.
- The halocarbons must be transported, in accordance with the requirements of the federal Transportation of Dangerous Goods Act and Regulations.
- The used halocarbons must be disposed of via the regular halocarbon supplier.

5.2 Approved Containers

All halocarbons must be recovered in an approved container, that is:

- Designed to be filled more than once (reusable);
- Designed to contain the recovered halocarbon, such as either of the following:
 - a container labelled with a tag indicating the content and weight, and complying with the requirements of the federal *Transportation of Dangerous Goods Act and Regulations*,

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o a container identifying the appropriate refrigerant, by colour, according to the following table:

Refrigerant	Colour of Container
R-22	Light green
R-123	Grey-blue
R-134a	Sky blue
R-407C	Medium brown
R-410A	Rose

- Labelled as per WHMIS requirements;
- Stamped with the design specifications and the pressure rating.

SECTION 6 MANAGEMENT OF EQUIPMENT CONTAINING 100 KG OR MORE OF HALOCARBON

Red stickers must be installed on equipment containing 100 kg and more of halocarbon.

When new equipment containing 100 kg or more is installed, the Facility Manager must provide a sticker to the technician for its installation.

When an equipment losses 100 kg or more of halocarbon:

- BGIS O&M Solutions Environmental Services must provide the Facility Manager with a copy of the report sent to Bell Canada Corporate Responsibility and Environment Group;
- The Facility Manager must make sure that the report is kept in the "Service Log" pouch of the concerned equipment.

SECTION 7 MANAGEMENT OF SMALL AIR-CONDITIONING AND REFRIGERATION SYSTEMS

7.1 Definition

A small air-conditioning and refrigeration system has the following three characteristics:

- A refrigeration capacity of less than 19 kW (or 5.4 tonnes);
- Requires <u>no maintenance</u> of the halocarbon circuit;
- The installation, maintenance, and removal are unlikely to result in a halocarbon leak.

Examples of small air-conditioning and refrigeration systems:

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- Household refrigerator;
- Water fountain;
- Household freezer;
- Water cooler;
- Air dryer (for telecommunications cables or pneumatic controls).

Should you have any doubts regarding the designation of a small air-conditioning or refrigeration system, contact the BGIS O&M Solutions Environmental Services.

7.2 Hook-up and Maintenance

No documentation is required for the hook-up.

If halocarbon circuit maintenance is required, document the work according to the instructions presented in <u>Section 3, Completing and Maintenance of Tickets</u>.

If a leak is detected, follow the instructions presented in <u>Section 5 : The decision process for a halocarbon</u> <u>leak, and leak and loss documentation</u>.

7.3 Disconnection, Removal, and Disposal

When removing a small air-conditioning and refrigeration system, follow the following instructions:

- If possible, a small system should be returned to the supplier;
- If there is no supplier, or the supplier will not take back the equipment, then the small system should be sent to a specialised contractor who will repair, restore, or refurbish it;
- If it is absolutely impossible to implement one of the preceding solutions, the following should be done:
 - the halocarbons should be removed from the unit and disposed of through a halocarbon supplier,
 - o the unit should be recycled (metal) and if absolutely not possible, sent to landfill
 - the work should be documented according to the instructions presented in <u>Section 4: Completing</u> and <u>Maintenance of Service Logs</u>,
 - the white copy of the Ticket must be kept on site for 5 years.

SECTION 8 CONTACTS AND REFERENCES

8.1 Key Resource Persons

 BGIS O&M Solutions Inc. Environmental Services BGIS O&M Solutions Inc. 87 Ontario West, Floor 6 Montreal (Quebec) H2X 0A7 <u>enviro@bgis.com</u>

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• Safeguard

To order booklets of tickets.

Phone: 1-800-203-9828

Bell ENVIRO-LINE

Phone: 1-877-235-5368 or 1-877-BELL-ENV

5.0 **DEFINITIONS**

Word/Acronym	Definition	
Approved Container	Appropriately manufactured and identified container used for the recovery and transport of halocarbons.	
ARI	Air-Conditioning and Refrigeration Institute	
ASHRAE	American Society of Heating, Refrigeration and Air-Conditioning Engineers	
FT/SFT	BGIS O&M Solutions Facility Technician / Senior Facility Technician (FT/SFT)	
BFC	Bromofluorocarbons	
CFC	Chlorofluorocarbons	

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Service Log	A BGIS O&M Solutions form used to record regulated maintenance on equipment. Each Ticket completed for work done on equipment must be entered on the Service Log.
BU Number	A business unit (BU) number is a location code, made up of a unique set of numbers and letters, which is specific for each Bell Canada estate.
Certified Technician	Person who has completed Environment Canada's Environmental Awareness Course for the Environmentally Safe Handling of Refrigerants. This technician must possess a valid certificate for the successful completion of the course.
	In most provinces, the course is offered by the Heating, Refrigerating, and Air- Conditioning Institute of Canada (or HRAI) in collaboration with community colleges. The name of the course varies according to the province. In Ontario we refer to the Ozone Depletion Prevention (or ODP) course. The format of certificate numbers varies slightly by province, usually starting with two or three letters that identify the province, and followed by four, five, or six numbers. Ontario's certificate numbers consist of six numbers and no letters.
Service Log	A BGIS O&M Solutions form used to record regulated maintenance on equipment. Each Ticket completed for work done on equipment must be entered on the Service Log.
EC Loss Report	Document issued to Environment Canada by Bell Canada every six months (The first semester is from January 1 st until June 30 th and the second semester is from July 1 st until December 31 st). This report summarizes all regulated ODS losses from all equipment (that is, losses between 10 and 100 kilograms of refrigerant).
E-mail Memorandum	E-mail listing the actions to be taken by the site technician in order to complete the document update procedure.
Equipment	Bell Canada equipment that contains a halocarbon and is subject to the FHR (2003). This includes both operational equipment and on-site decommissioned equipment.
Equipment Number	A unique numerical code used to identify equipment owned by Bell Canada. In the following hypothetical equipment number, 443201-01-008-03,

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	443201 is the location code; 01 is the type of equipment (with 01 being used for air-conditioning units and 03 for chillers, for example); 008 is the number given to that particular piece of equipment at that site; and 03 is the floor where the equipment is located (0B = basement, R = roof).
First Responder	The worker who first witnesses or is made aware of the occurrence of an environmental incident or emergency.
Halocarbon Leak	Atmospheric release of halocarbon that is caused by a defect, break or accident detected during maintenance or inspection.
Halocarbon Loss	Known quantity of halocarbon released from a system as a direct result of a leak.
Halocarbons	Organic compounds used in air-conditioning, refrigeration and fire extinguishing systems (for example, CFCs such as R-11 and R-12, HCFC such as R-22 and R-123, HBFCs such as halons, and HFCs such as R-134, FM-200®).
Halon	Halocarbons used in a fire extinguishing system.
HBFC	Hydrobromofluorocarbon

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HCFC	Hydrochlorofluorocarbon	
HFC	Hydrofluorocarbon	
HRAI	Heating, Refrigeration and Air-conditioning Institute of Canada	
Maintenance Records	A variety of documents, such as service reports, technician timesheets, invoices, and work orders, that show regulated maintenance work has been performed on specific pieces of equipment.	
National Equipment Inventory (or Equipment list)	List compiled by BGIS O&M Solutions of regulated equipment owned by Bell Canada and its subsidiaries.	
ODP	Ozone Depleting Potential	
ODS	Ozone depleting substance. Any substance which is harmful to the ozone layer. Some halocarbons are ODSs.	
Refrigerant	Any halocarbon that is used in an air-conditioning or refrigeration system. Examples include R-22 (or HCFC-22), and R-123 (or HCFC-123).	
Summary Report	Report issued to BGIS O&M Solutions Environmental Services in order to summarize the results of a Halocarbon Documentation Update performed at a site of Bell Canada or that of its subsidiaries	
Ticket	A BGIS O&M Solutions form used for recording the maintenance work conducted on equipment.	
Trained Technician	Person that has followed the BGIS O&M Solutions Halocarbon Environmental Management Program.	
Tubes	Plastic tubes installed, in order to protect the tickets and Service Log, on exterior monoblock units without any interior components such as : evaporator, compressor and condenser (e.g. HVAC rooftop units).	

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WHMIS	Workplace Hazardous Materials Information System. Refrigerant gases are held in pressurized containers; therefore, they fall under a specific category of the WHMIS's classification of hazardous materials in the workplace.

6.0 **REFERENCES**

Document #	Document Title
FHR (2003)	Federal Halocarbon Regulations DORS/2003-289, 13 August 2003. https://www.ec.gc.ca/ozone/default.asp?lang=En&n=E06A6B0D-1
Refrigeration Code of Practice	"Environmental Code of Practice for Elimination of Fluorocarbon_Emissions from Refrigeration and Air-conditioning Systems", 2014. https://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n= D918C063-1
BELL-12365	Halocarbon Environmental Management Process

7.0 REVISION HISTORY

Revision #	Description of Change
0	Initial Document
1	Updates and simplifications
2	Transfer to new Work Instruction template
3	Corrected reference to Fire Extinguishing Systems in Section 1.
4	Updated for BGIS WI. Fused Refrigeration and Fire Extinguishers work instructions
5	Updated for new 2020 BGIS WI Template in order to upload in Intelex
6	As requested by the Owner, remove in the section 1.2 "These items can be ordered by phone or email from BGIS O&M Solutions Environmental Services."