OREGON ARMY NATIONAL GUARD

OZONE-DEPLETING CHEMICAL ELIMINATION PLAN

Prepared for

NATIONAL GUARD BUREAU

111 South George Mason Drive
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AND
Oregon Army National Guard

Prepared by

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COMMANDER'S BUY-IN STATEMENT

As a result of actions taken by parties to the Montreal Protocol and by the U.S. Congress in the 1990 Amendments to the Clean Air Act, ozone-depleting chemicals (ODCs) such as halons and chlorofluorocarbons are no longer produced. The Congress in Public Law 102-484, Section 326; the President in Executive Order 12843; and the U.S. Environmental Protection Agency in regulations promulgated in support of the Clean Air Act have further limited the procurement and use of these chemicals. While I strongly endorse the intent behind these actions, they do pose a considerable challenge to maintaining effective facilities operations at Oregon.

ARNG facilities in Oregon use halon and chlorofluorocarbons in building fire suppression systems and air conditioning and refrigeration equipment. As recently as January 1999, the Army reiterated its policy to eliminate the use of ODCs in facilities by the end of fiscal year 2003. As recycled stocks of these chemicals diminish, the need to plan now for their absence is obvious. Failure to do so could impact our readiness and quality of life.

Elimination of ODCs from Oregon ARNG facilities is thereby critical. As ODCs are being phased-out, Class I ODCs are currently the highest priority. Elimination of the use of Class I ODCs will include the prohibition of purchases of Class I ODCs, the recovery of all excess quantities of Class I ODCs, the proper management including recovery and turn-in, and the use of compliant ODC alternatives.

To that end, I ask ARNG facility leaders in Oregon to assist my ODC Elimination Team in their efforts to implement our ODC Elimination Plan. Resources are limited and solutions are still evolving, so a well-thought-out plan is essential. I solicit the involvement of every element in this state to ensure successful execution of this Plan.

Further, I direct state ARNG personnel to comply with the Plan requirements and to support the ODC Elimination Team's responsibility to maintain this SUBMACOM's compliance with ODC regulations including Army directives and policies and Sections 608 and 609 of the Clean Air Act. The ODC Elimination Team is directed to review ODC management practices including equipment maintenance practices involving stationary air conditioning and refrigeration equipment, halon 1301 total flooding fire suppression systems, and mobile air conditioning systems.

I remain confident that ARNG facilities in Oregon will continue their role as a leader in support of the Army's efforts to preserve and protect the environment. I am also confident that we can and will do this while maintaining our readiness and quality of life. As always, a common commitment is the key to our continued success.

MAJ Nancy Borschowa	Major General Alexander H. Burgin
Name of State Contact	Name of TAG
Signature	Signature
Date	Date

ODC Elimination Plan Upkeep Documentation

Amendment	Responsibility
The Oregon retrofitting, repair, elimination, and/or management policies and procedures relative to Class I Ozone Depleting Chemicals (ODC) and this ODC Elimination Plan.	ODC Elimination Team

Document Distribution

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Sections most likely to change

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Chapter/ Section No.	Revision Date	Effective Date	Description	Approved By/Date

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LIST OF COMMONLY USED ACRONYMS

AAFES	Army/Air Force Exchange Services
AAPPSO	Army Acquisition Pollution Prevention Support Office
AASF	Army Aviation Support Facility
AC&R	air condition and refrigeration
ARNG	Army National Guard
CAA	Clean Air Act
CENCOM	Central Command
CFC	Chlorofluorocarbon
CMDL	Climate Monitoring and Diagnostics Laboratory
CONUS	Continental United States
CSMS	Combined Support Maintenance Shop
DASA	Department of the Army Staff Agencies
DDRV	Defense Depot Richmond, Virginia
DeCA	Defense Commissary Agency
DLA	Defense Logistics Agency
DoD	U.S. Department of Defense
DoDAAC	DoD Activity Address Code
DOT	U.S. Department of Transportation
DPW	Directorate of Public Works
DRMO	Defense Reutilization and Marketing Office
DSCR	Defense Supply Center Richmond
EPA	U.S. Environmental Protection Agency
EPR	U.S. Army Environmental Program Requirements
ESOH	Environmental, Safety and Occupational Health
FY03	fiscal year 2003
GFE	Government Furnished Equipment
GSA	General Service Administration
HAST	U.S. Army Halon Alternative Selection Tool
HCFC	Hydrochloroflurocarbon

LIST OF COMMONLY USED ACRONYMS (continued)

HFC	hydrofluorocarbons
HQDA	Headquarters Department of the Army
MACOM	Major Army Command
MATES	Maneuver Area Training Equipment Site
MIPR	Military Interdepartmental Purchase Request
MTA	Maneuver Training Area
MTC	Maneuver Training Command
MVAC	motor vehicle air conditioners
MVSB	motor vehicle storage building
MWR	Morale, Welfare & Recreation
NAVSEA	Naval Sea Systems Command
NGB	National Guard Bureau
NOAA	National Oceanic and Atmospheric Administration
NSN	National Stock Number
O_2	oxygen
O_3	ozone
OCUNUS	Outside the Continental United States
ODC	ozone-depleting chemicals
ODP	ozone-depleting potential
ODS	ozone-depleting substances
O&MG	Operation & Maintenance Guard
OMS	Operation and Maintenance Shop
POC	point of contact
ppt	parts per trillion
SAO	Senior Approving Officer
SATCOM	Satellite Communications
SES	Senior Executive Service
SNAP	Significant New Alternatives Policy
TAG	The Adjutant General

LIST OF COMMONLY USED ACRONYMS (continued)

USACHPPM	U.S. Army Center for Health Promotion and Preventative Medicine
USP&FO	U.S. Property & Fiscal Office
UTES	Unit Training Equipment Site
UV	ultraviolet
WESTON	Roy F. Weston, Inc.

PREFACE

OZONE

Ozone (O_3) is a highly reactive form of normal molecular oxygen (O_2) upon which life depends and occurs in two layers of the atmosphere. In the troposphere, the atmospheric layer surrounding the earth's surface, ground level or "bad" ozone is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends from the earth's surface to about 10 miles up where it meets the second layer, the stratosphere. In the stratosphere, the layer that extends from the upper boundary of the troposphere to about 30 miles up, ozone is a most important gaseous molecule that serves to protect our exposure from the sun's ultraviolet radiation. Ozone is very efficient at interacting with high energy ultraviolet (UV) radiation such as UVB and UVC and blocks about 99% of the harmful ultraviolet radiation from reaching the surface of the earth.

Ozone occurs naturally in the stratosphere and is normally produced and destroyed at a constant rate. But manmade chemicals called chlorofluorocarbons (CFCs), halons, and other ozone-depleting substances (used in coolants, foaming agents, fire extinguishers, solvents, and aerosol propellants) are gradually destroying this "good" ozone. These ozone-depleting substances degrade slowly and can remain intact for many years as they move through the troposphere until they reach the stratosphere. There they are broken down by the intensity of the sun's ultraviolet rays and release chlorine and bromine molecules that destroy "good" ozone. One chlorine or bromine molecule can destroy 100,000 ozone molecules, causing ozone to disappear much faster than nature can replace it.

Satellite observations indicate a worldwide thinning of the protective ozone layer. The most noticeable losses occur over the North and South Poles because ozone depletion accelerates in extremely cold weather conditions. The thinning of the protective ozone layer has global implications.

REGULATORY ENVIRONMENT

Because of the risks posed by ozone depletion, world leaders crafted the Montreal Protocol on Substances that Deplete the Ozone Layer, a series of international agreements on the reduction and eventual elimination of production and use of manmade ozone depleting substances, which became effective in 1989. Some 165 countries currently participate in the Protocol. The Protocol has a profound impact on the way we use a host of ozone-depleting substances.

As part of the U.S. commitment to implementing the Montreal Protocol, the U.S. Congress amended the Clean Air Act, adding provisions under Title VI for protection of the ozone layer. Title VI of the Clean Air Act (CAA) Amendments of 1990 regulates the production and purchase of ODCs as well as the operation and maintenance of equipment that use ODCs. Under Title VI of the CAA Amendments, the U.S. Environmental Protection Agency (EPA) has created several regulatory programs to address numerous issues, including the following:

- Ending the production of ozone-depleting substances.
- Ensuring that refrigerants and halon fire extinguishing agents are recycled properly.
- Identifying safe and effective alternatives to ozone-depleting substances.
- Banning the release of ozone-depleting refrigerants during the service, maintenance, and disposal of air conditioners and other refrigeration equipment.
- Requiring that manufacturers label products either containing or made with the most harmful ODCs.

Section 608 of Title VI of the CAA Amendments establishes restrictions on the operation and maintenance of ODC-using equipment. Per this section, it is illegal to knowingly vent halon or any refrigerants into the atmosphere. Moreover, and most importantly, it is illegal to perform work on an air conditioning and refrigeration (AC&R) system without first receiving training and a certification from the EPA or to sell CFC refrigerant to someone without the same certification. It is also illegal to dispose of AC&R equipment that still has refrigerant inside. Finally, CFC AC&R systems are limited to a maximum percentage of refrigerants they can leak. If their annual leakage exceeds this percentage, they must be repaired or replaced.

Additional standards and requirements for the servicing of motor vehicle air conditioners are established in Section 609 of Title VI of the CAA Amendments. It reiterates the prohibition on knowingly venting refrigerants, as well as the requirement to be trained and certified by the EPA to legally purchase refrigerant or work on mobile air-conditioning equipment. It further establishes requirements for refrigeration recovery equipment and recordkeeping at shops that service mobile air conditioners.

Because of their relatively high ozone depletion potential, several manmade compounds including CFCs, carbon tetrachloride, methyl chloroform, and halons were targeted first for phaseout. As defined in Section 602 of the CAA, a Class I substance is any chemical with an ozone-depleting potential (ODP) of 0.2 or greater. A listing of those compounds identified as Class I ODCs is provided in Table 1.

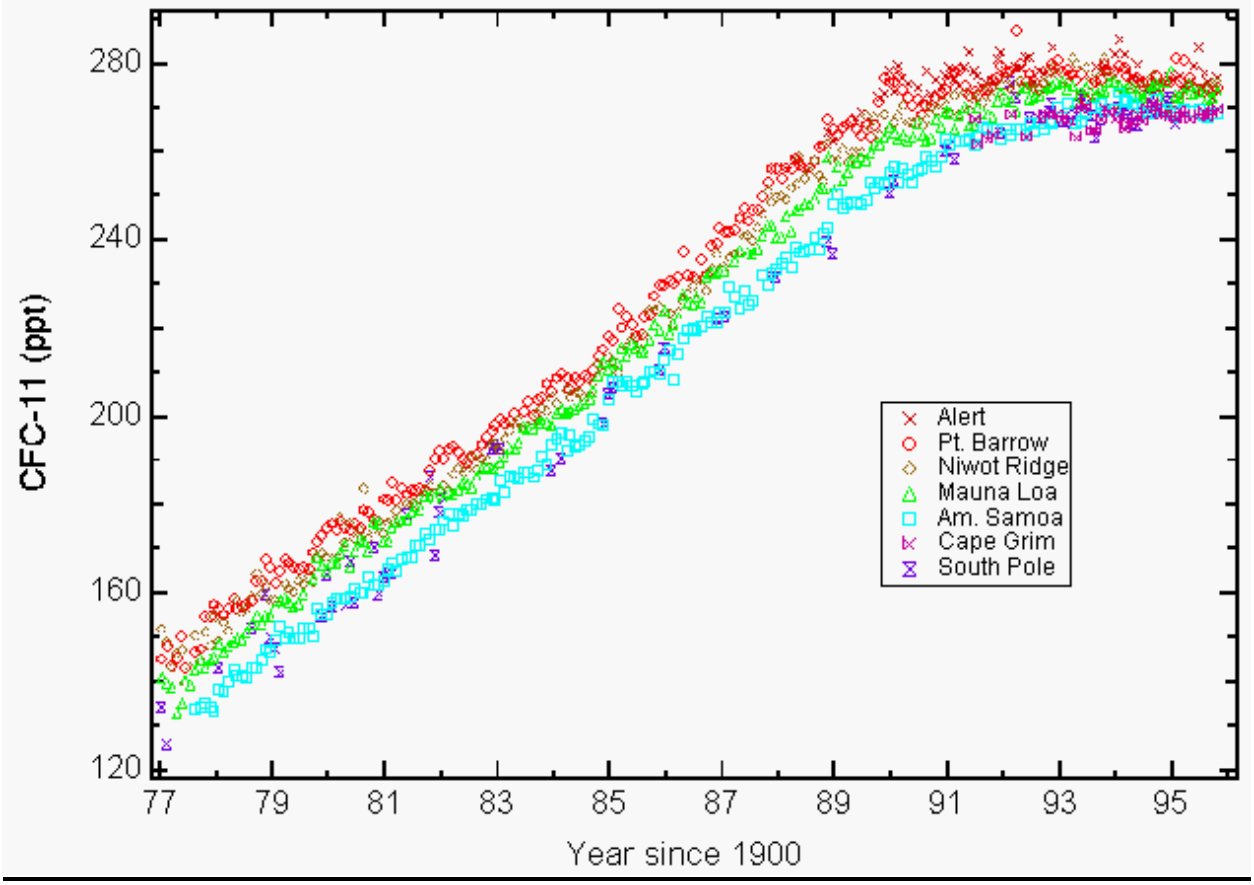
REGULATORY RESULTS

By using control efforts, recovery of the ozone layer is estimated to occur in about 50 years. Figure 1 shows a leveling-off trend for CFC-11, one of the regulated CFCs, that begins around 1990. This type of leveling-off is the first step in the recovery process.

ARMY POLICIES AND DIRECTIVES

The National Defense Act of 1916 established the National Guard as an organization to be inspected and recognized by the War Department and organized like regular Army units. Since 1994, the U.S. Department of the Army has published policy and procedures addressing the elimination of ozone-depleting chemicals at all Army installations and has tasked the Army Acquisition Pollution Prevention Support Office (AAPPSO) with the development of such guidance documents. As a recognized Army component, the National Guard is subject to these Army directives and policies.

Figure 1 Accumulation of CFC-11



The accumulation of chlorofluorocarbon-11 (CFC-11) in the atmosphere levels off as a result of voluntary and mandated emission reductions. Monthly means reported as dry mixing ratios in parts per trillion (ppt) for CFC-11 at ground level for four NOAA/CMDL stations (Pt. Barrow, Alaska; Mauna Loa, Hawaii; Cape Matatula, American Samoa; and South Pole) and three cooperative stations (Alert, Northwest Territories, Canada (Atmospheric Environment Service); Niwot Ridge, Colorado (University of Colorado); Cape Grim Baseline Air Pollution Station, Tasmania, Australia, (Commonwealth Scientific and Industrial Research Organization) [9]. (Courtesy of NOAA/CMDL)

Source: http://www.cmdl.noaa.gov/noah/publictn/elkins/cfcs.html

ARMY NATIONAL GUARD IMPACT

The control and phaseout of ODCs has a direct bearing on military readiness and quality of life. Because ODCs are commonly used in weapons systems for fire and explosion suppression and at Army National Guard (ARNG) facilities for refrigeration and cooling systems, the dependency on ODCs has a profound impact on the ARNG. The U.S. Department of Defense has a program in place to address ODCs associated with weapons systems; therefore, weapons systems are not

included in this ODC Elimination Plan (Plan). ODCs associated with facility operations are the focus of this Plan.

The Army has a continued dependence on ODCs, which poses a real threat to Army readiness and quality of life. This is the principle reason why the Army set a policy that calls for complete elimination of Class I ODCs from facilities by the end of fiscal year 2003 (FY03). This Plan is needed to provide clear, concise guidance on how to plan for the elimination of Class I ODCs by the end of FY03. The ODC Elimination Plan will also be the basis for securing ODC elimination funding.

ORGANIZATION OF ODC ELIMINATION PLAN

This ODC Elimination Plan was prepared utilizing the Army Acquisition Pollution Prevention Support Office (AAPPSO) guidance, dated 14 January 1999. The following is a description of the ODC Elimination Plan format, according to this guidance:

Chapter 1: **Facility Information** – A brief description of each Oregon facility, which receives federal dollars to support their mission that has reported the presence of Class I ODCs.

Chapter 2: **ODC Elimination Team** – A listing of the ODC Elimination Team members responsible for ODC management including their contact information.

Chapter 3: **ODC Inventory** – An inventory of Class I ODC equipment is provided in this chapter. Specifically, the inventory addresses halon fixed flooding systems and CFC air conditioning and refrigeration (AC&R) equipment.

Chapter 4: **Regulatory and Policy Review** – A review of laws, regulations, and policies that restrict the use of ODCs including federal, state, Army directives, and municipal (applicable to California only).

Chapter 5: **Recovery and Turn-in** – A description of U.S. Department of Defense (DoD) policy regarding recovery and turn-in of ODCs, including a listing of facility-recovered or turned-in ODCs.

Chapter 6: **Management** – Management of Class I ODCs including the prioritization of projects, ODC alternatives, and elimination scheduling in order to meet the 1 October 2003 Class I ODC elimination schedule.

Chapter 7: **Resources** – Because of the complexity associated with project funding issues, the information provided in this chapter includes basic information on ODC replacement project funding.

Table 1

Class I ODCs

	CHEMICAL NAME	ODP	CAS NO.
Group I			
CFC-11 (R-11)	Trichlorofluoromethane	1.0	75-69-4
CFC-12 (R-12)	Dichlorodifluoromethane	1.0	75-71-8
CFC-113 (Freon 113)	1,1,1-Trichlorotrifluoroethane	0.8	354-58-5
---	1,1,2-Trichlorotrifluoroethane	0.8	76-13-1
CFC-114 (R-114)	Dichlorotetrafluoroethane	1.0	76-14-2
CFC-115 (R-115)	Monochloropentafluoroethane	0.6	76-15-3
Group II			
Halon 1211	Bromochlorodifluoromethane	3.0	353-59-3
Halon 1301	Bromotrifluoromethane	10.0	75-63-8
Halon 2402	Dibromotetrafluoroethane	6.0	124-73-2
Group III			
CFC-13 (R-13)	Chlorotrifluoromethane	1.0	75-72-9
CFC-111 (R-111)	Pentachlorofluoroethane	1.0	354-56-3
CFC-112 (R-112)	Tetrachlorodifluoroethane	1.0	76-12-0
CFC-211	Heptachlorofluoropropane	1.0	422-78-6
CFC-212	Hexachlorodifluoropropane	1.0	3182-26-1
CFC-213	Pentachlorotrifluoropropane	1.0	2354-06-5
CFC-214	Tetrachlorotetrafluoropropane	1.0	29255-31-0
CFC-215	Trichloropentafluoropropane	1.0	1599-41-3
CFC-216	Dichlorohexafluoropropane	1.0	661-97-2
CFC-217	Chloroheptafluoropropane	1.0	422-86-6
Group IV			
$CC1_4$	Carbon tetrachloride	1.1	56-23-5
Group V			
Methyl Chloroform	1,1,1-trichloroethane	0.1	71-55-6
Group VI (listed in the Accelerated Phaseout Final Rule)			
CH_3Br	Methyl bromide	0.7	74-83-9
Group VII (listed in the Accelerated Phaseout Final Rule)			
$CHFBr_2$	---	1.0	---

Table 1

Class I ODCs (continued)

	CHEMICAL NAME	ODP	CAS NO.
CHF_2Br(HBFC-22B1)	---	0.74	---
CH_2FBr	---	0.73	---
C_2HFBr_4	---	0.3 - 0.8	---
$C_2HF_2Br_3$	---	0.5 - 1.8	---
$C_2HF_3Br_2$	---	0.4 - 1.6	---
C_2HF_4Br	---	0.7 - 1.2	---
$C_2H_2FBr_3$	---	0.1 - 1.1	---
$C_2H_2F_2Br_2$	---	0.2 - 1.5	---
$C_2H_2F_3Br$	---	0.7 - 1.6	---
$C_2H_3FBr_2$	---	0.1 - 1.7	---
$C_2H_3F_2Br$	---	0.2 - 1.1	---
C_2H_4Br	---	0.07 - 0.1	---
C_3HFBr_6	---	0.3 - 1.5	---
$C_3HF_2Br_5$	---	0.2 - 1.9	---
$C_3HF_3Br_4$	---	0.3 - 1.8	---
$C_3HF_4Br_3$	---	0.5 - 2.2	---
$C_3HF_5Br_2$	---	0.9 - 2.0	---
C_3HF_6Br	---	0.7 - 3.3	---
$C_3H_2FBr_5$	---	0.1 - 1.9	---
$C_3H_2F_2Br_4$	---	0.2 - 2.1	---
$C_3H_2F_3Br_3$	---	0.2 - 5.6	---
$C_3H_2F_4Br_2$	---	0.3 - 7.5	---
$C_3H_2F_5Br$	---	0.9 - 1.4	---
$C_3H_3FBr_4$	---	0.08 - 1.9	---
$C_3H_3F_2Br_3$	---	0.1 - 3.1	---
$C_3H_3F_3Br_2$	---	0.1 - 2.5	---
$C_3H_3F_4Br$	---	0.3 - 4.4	---
$C_3H_4FBr_3$	---	0.03 - 0.3	---
$C_3H_4F_2Br_2$	---	0.1 - 1.0	---
$C_3H_4F_3Br$	---	0.07 - 0.8	---

Table 1

Class I ODCs (continued)

	CHEMICAL NAME	ODP	CAS NO.
$C_3H_5FBr_2$	---	0.04 - 0.4	---
$C_3H_5F_2Br$	---	0.07 - 0.8	---
C_3H_6FBr	---	0.02 - 0.7	---
Miscellaneous (Azeotropic mix of . . .)			
R-500	R-12 and 1,1 Difluoroethane (HFC-152a)	---	---
R-501	R-12 and Chlorodifluoromethane (HCFC-22)	---	---
R-502	Chlorodifluoromethane (HCFC-22)	---	---
R-503	R-13 and Trifluoromethane (HFC-23)	---	---

Notes:

Table adapted from the EPA Ozone-Depleting Substances website: http://www.epa.gov/ozone/ods.html

ODP = Ozone Depletion Potential; a number that refers to the amount of ozone depletion caused by a substance.

Generally, the use of Class I ODCs in ARNG facilities includes the following:

Halon	Fixed, total flooding room fire suppression (Halon 1301)
	Excess storage for emergency rescue vehicles (Halon 1211)
CFCs	Large building chillers (R-11, R-12)
	Large fixed air conditioning systems (R-12, R-500, R-502)
	Climate test facilities (R-13, R-113, R-114)
	Environmentally controlled warehouses (R-11, R-12, R-113)
	Walk-in refrigerators and freezers (R-12, R-502)
	Smaller, older appliances like icemakers (R-12)
	Older household appliances (R-12)
	Air conditioners in non-tactical vehicles (R-12)

1. FACILITY INFORMATION

1.1 INTRODUCTION

The National Guard Bureau (NGB) retained Roy F. Weston, Inc. (WESTON®) to develop Ozone-Depleting Chemical Elimination Plans (ODC Plan) for the Army National Guard (ARNG) in all 50 states and 4 territories as authorized under Naval Sea Systems Command (NAVSEA) contract number N0024-99-D-8137, Delivery Order 0025. Ms. Colleen Betker of the NGB is the ARNG ODC elimination program point-of-contact (POC).

The information provided in this ODC Plan was compiled through a telephone survey and a data request worksheet. MAJ Nancy Borschowa provided information to identify the state's ARNG facilities that require federal dollars to support their mission. The individual facility POCs were contacted as part of the preliminary telephone survey to identify Oregon facilities that manage equipment that may contain Class I ODCs. A listing of Class I ODCs is presented as Table 1, located in the Preface of this ODC Plan. The facility personnel interviewed for this data request are included in the Listing of Contacts below. For facilities identified as potentially managing Class I ODCs, a worksheet questionnaire was transmitted to the facility POC requesting the necessary information for this ODC Plan. The worksheet was customized to include applicable tables based on the telephone survey response to whether the facility managed halon or CFC equipment or both.

Listing of Contacts

FACILITY NAME	NAME	PHONE NUMBER
STATE POC	MAJ Nancy Borschowa	(503) 945-3851
1/186 IN OMS	Eugene Milliron	(541) 776-6054
141 SPT BN OMS (Kliever)	MSG Pete Helzer	(503) 280-6814
141 SPT BN OMSS (Maison)	MSG Mark Grier	(503) 557-6043
3/116 CAV OMS	SFC Robert Beeman	(541) 963-5712
AASF #1	Troy Bissell	(503) 945-3230
AASF #2	SSG Gary Wagner	(541) 276-4544
Ashland Armory	Richard McMillen	(541) 482-5819
Bend Armory	Rich Finch	(541) 388-6282
BIAK	CPT Bill McCaffrey	(541) 548-2453
Camp Rilea [1]	Ken Klee	(503) 861-4178

Listing of Contacts (continue)

FACILITY NAME	NAME	PHONE NUMBER
1/186 IN OMS [1]	SSG Lou Weston/	(541) 776-6057/
	Eugene Milliron	(541) 776-6054
Camp Withycombe [1]	Nancy Jackson	(503) 557-5368
COUTES [1]	Mike Powell	(541) 548-8356
Eugene Armory	Mike Wiley	(541) 686-7975
Forest Grove Armory	Frank Wallace	(503) 359-4632
Hermiston Armory	Ric Tunstead	(541) 567-9175
HQ STARC OMS	WO Jeff Poulin	(503) 378-4838
LaGrande Armory	Rod Weitman	(541) 963-4221
OMD	Leonard Gassner	(503) 945-3858
Pendleton Armory	Karl Ashley	(541) 276-2746
RTI	Gene Hansen	(503) 838-8578
Salem Auditorium	Mike Wilson	(503) 378-6923
UCD 3/116 CAV OMSS Bldg 115	MSG John Bales	(541) 564-5366
UCD 3/116 CAV OMSS Bldg 52	SFC Bruce Bugbee	(541) 564-5368
YCP	Jim Perry	(541) 317-9623

[1] The 1/186 IN OMS, Camp Rilea, Camp Withycombe, and COUTES are compromised of numerous ARNG buildings that are federally supported.

At the request of the NGB, ARNG facilities participating in this project were limited to those facilities that receive federal support (use federal dollars to maintain, operate, or replace the air conditioning, refrigeration, or fire-suppression system). Table 2 provides organizational information. This section provides a brief description of each facility including the following:

- A brief description of the major activities conducted at the facility.
- Identification of the host activity with a point of contact.
- A list of facility points of contact.
- A map of facilities that reported Class I ODCs, identifying buildings by number.

OREGON

Description of Activities

Camp Withycombe

Camp Withycombe is a multiple use Oregon Army National Guard (ORARNG) facility that serves several military functions. It consists of 234 acres of land, all state property, 156 acres of which has been transferred to the Oregon Department of Transportation as part of the Sunrise Corridor project, but functionally is still part of the Camp. Camp Withycombe is the primary logistics facility for the ORARNG for the state, focusing on equipment maintenance, warehousing, and supply/distribution functions. The Camp Withycombe complex has 22 tenants. In addition, military units and civilian agencies (such as law enforcement agencies) use the camp for training. Training facilities include a pistol range, machine gun range, track vehicle driving course, physical fitness area, and an undeveloped area of land. See Figure 2 for a map of Camp Withycombe; buildings that have qualifying equipment that uses Class I ODCs are noted with red hatch marks.

COUTES

The Central Oregon Unit Training Equipment Site (COUTES) is located in Redmond, Oregon. It consists of 31,500 acres of land, of which 99% is owned by the Bureau of Land Management. The site is bordered by the Redmond Municipal Airport and by the Federal Bureau of Land Management. The COUTES complex consists of three main facilities: a Unit Training Equipment Shop (UTES); the 50-meter firing range area; and an area for new housing and barracks (to be constructed). The central compound contains the main UTES building, which includes administrative offices and a new, multi-bay maintenance shop; a training equipment storage building; an equipment wash rack with oil/water filtration system; a mobile trailer with additional office space; and vehicle parking areas. See Figure 3 for a map of COUTES; buildings that have qualifying equipment that uses Class I ODCs are noted with red hatch marks.

1/186 IN OMS

The Medford location is an Organizational Maintenance Shop (OMS) located on 1.1 acres owned by the State of Oregon and operated by the Oregon Military Department. The primary function of the OMS is to maintain and repair military equipment for the 1/186 IN and to support DET 1/141st SPT BN. See Figure 4 for a map of 1/186 IN OMS; buildings that have qualifying equipment that uses Class I ODCs are noted with red hatch marks.

Table 2

Organizational Information

National Guard Bureau SUBMACOM	Facility Name	Area/Activity	POC	Number	Fax	E-mail
OR Army National Guard	1/186 IN OMS	49	Eugene Milliron	(541) 776-6054	(541) 858-3140	
OR Army National Guard	Camp Withycombe	Bldg. 6400	SSG Monty Shaster	(503) 557-5392	(503) 557-5471	shasterm@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6101	1SG Harvey Hall	(503) 557-5325	(503) 557-6703	hallh@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6410	CW4 David Loegster	(503) 557-5365	(503) 557-5469	loegsterd@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6200	LTC Gale Sears	(503) 557-5223	(503) 557-5224	searsg@or-arng.ngb.army.mil
OR Army National Guard	COUTES	Bldg. 4405	Mike Powell	(541) 388-6282	(541) 548-1799	powellm@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6480	LTC James Weaver	(503) 557-5222	(503) 557-5244	weaverj@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6400	SSG Ron Bassett	(503) 557-5311	(503) 557-5303	bassettr@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6101	SSG Paul Carrier	(503) 557-5329	(503) 557-5224	carrierp@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6515	LTC Harold E Newson	(503) 557-9369	(503) 557-5416	newsons@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6105	LTC Rendell Chilton	(503) 557-5343	(503) 557-5348	chiltonr@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6510	LT Dan Radakovich	(503) 557-5479	(503) 557-5493	radakovichd@or-arng.ngb.army.mil
OR Army National Guard	Camp Withycombe	Bldg. 6550	MSG Randy Farmer	(503) 557-5291	(503) 557-5288	farmerr@or-arng.ngb.army.mil

Figure 2 Camp Withycombe

Figure 3 COUTES

Figure 4 1/186 IN OMS

2. ODC ELIMINATION TEAM

Roles and responsibilities are a key part of the ODC Plan implementation and the Plan's success. The ODC Elimination Team (ODC Team) will be responsible for ODC use and removal. The chair of the ODC Team will serve as a coordinator and facilitator. In addition, the other ODC Team members will assist the ODC Team chair in maintaining a current, accurate ODC inventory, verifying that the facility is complying with ODC regulations, and that the facility is subscribing to an ODC management/removal plan. Refer to Section 4 of this Plan for a discussion of the ODC regulatory framework. Table 3 provides a list of the members of Oregon ODC Elimination Team.

One of the critical elements of the ODC Team's success is securing the support of the Installation Commander and, as appropriate, tenant commanders. To facilitate securing this support, the commander(s) will be kept informed about the ODC Team's progress through a debriefing to be conducted once a year or more often, as necessary. The commander(s) will be invited to attend the ODC Team meetings.

The ODC Team's challenge includes establishing the Team's mission, identifying issues, planning actions, and assigning responsibilities. To provide a focused ODC elimination effort, a mission statement, including objectives, is provided in this section. Meetings to discuss issues, actions, and responsibilities will be held on a periodic basis. An example format for the Meeting Sign-In and Meeting Minutes is provided in this Appendix A.

Further, this Plan is a "living document" that must be updated and corrected periodically. It is the ODC Team's responsibility to ensure that this Plan is kept up-to-date. A log documenting revisions or amendments is provided at the beginning of this Plan. The log will be maintained to ensure implementation of this Plan's intent.

2.1 PLANNING DOCUMENTATION RETENTION

ODC elimination management requires planning, strategizing, and cooperatively working with affected unit members, the Construction and Facilities Management Officer, and the Installation

Commander. Documentation of ODC Team meetings will be retained in Appendix A of this Plan. For identified action items, resolutions will be documented either in subsequent Meeting Minutes or some other written format and retained with the Meeting Minutes.

Table 3

ODC Elimination Team

Function	Name	Facility Name	Symbol	Phone Number	Fax	E-mail
Team Chief	MAJ Nancy Borschowa			(503) 945-3862	(503) 945-3584	borschowan@or-arng.ngb.army.mil
Team Member	Eugene Milliron	1/186 IN OMS		(541) 776-6054	(541) 858-3110	millirone@or-arng.ngb.army.mil
Team Member	Mike Powell	COUTES		(541) 548-8356	(541) 548-1799	powellm@or-arng.ngb.army.mil
Team Member	Sonny Newson	Camp Withycombe		(503) 557-5368	(503) 557-5416	newsons@or-arng.ngb.army.mil

ODC TEAM MISSION STATEMENT

Mission

Through responsible management of all ODC assets, facilities modification and energy efficiency programs, and environmental and real property Operation & Maintenance Guard (O&MG) funds, ARNG facilities in Oregon will completely eliminate its dependency on Class I ODCs.

Objectives

ARNG facilities in Oregon will retrofit, replace, or otherwise retire all air conditioning and refrigeration equipment using chlorofluorocarbon refrigerant by the end of fiscal year 2003.

ARNG facilities in Oregon will recover all chlorofluorocarbon refrigerant installed in retired air conditioning and refrigeration equipment and reuse it to support routine operations of existing air conditioning and refrigeration equipment, until that equipment is in turn retired.

ARNG facilities in Oregon will convert or retire all halon total flooding fire suppression systems by the end of fiscal year 2003.

ARNG facilities in Oregon will recover all halon from converted or retired total flooding fire suppression systems and turn it in to the Army ODC Reserve, for use in critical weapon system applications.

ARNG facilities in Oregon will minimize the impact on the operations and maintenance account of all ODC retrofits, replacements, or other conversions by using to the maximum extent possible resourcing options available through facilities modernization and energy efficiency programs.

3. INVENTORY

The basis for the ODC elimination effort at ARNG facilities is to provide accurate, complete, and up to date inventories. Facility-specific Class I ODC inventories are included in this section. At ARNG facilities there are two equipment types that utilize ODCs:

System	Class I ODC
Halon Systems	Halon 1301, 1211, and 2401
Air Conditioning or Refrigeration Systems (AC&R)	R-11, R-12, R-13, R-14, R-111, R-112, R-113, R-114, R-115, R-500, R-501, R-502, R-503

An inventory form for each ODC type (halon and CFC) is provided in this Plan. A list of typical, but not all-inclusive, applications and sources of halon and CFCs follow:

3.1 HALON SYSTEMS

Halon applications include those in fixed, total flooding room fire suppression and emergency or rescue vehicles. Some typical sources are provided as follows:

- Communications and Control Centers (Total Flooding Systems)
- Computer Centers (Total Flooding Systems)
- Emergency/Uninterrupted Power (Total Flooding Systems)
- Flammable Materials Warehouses (Total Flooding Systems)
- Hazardous Materials Storage Areas (Total Flooding Systems)
- Hydraulic Pump Rooms (Total Flooding Systems)
- Maintenance Facilities (Total Flooding Systems)
- Medical/Dental Clinics (Total Flooding Systems)
- Museums (Total Flooding Systems)
- Ordnance Silos (Total Flooding Systems)
- SATCOM Stations (Total Flooding Systems)
- Tactical Simulators (Total Flooding Systems)
- Test Facilities (Total Flooding Systems)
- Flight-Lines (Emergency Rescue Vehicles)

3.2 AC&R SYSTEMS

CFC applications include those located in the following:

- Large Building Chillers (R-11 and R-12)

- Large Fixed Air-conditioning Systems (R-12, R-500, R-502)
- Climate Test Facilities (R-13, R-113, R-114)
- Environmentally Controlled Warehouses (R-11, R-12, R-113)
- Walk-in Refrigerators and Freezers (R-12, R-502)
- Refrigeration Trucks (R-12, R-502)
- Air Conditioners in Non-Tactical and Non-GSA Vehicles (R-12)

Typical sources of CFCs include the following:

- Banks, Stores, and Other Services; Office/Administration Buildings (Air Conditioning)
- Barracks, Lodging, Hotels (Air Conditioning)
- Central Plants (Refrigeration Systems)
- Chapels, Libraries, Child Care, Recreation Centers (Air Conditioning)
- Clubs, Mess Halls (Refrigeration, Air Conditioning)
- Communications and Control Centers, Computer Centers (Air Conditioning)
- Fire/Military Police Stations (Air Conditioning)
- Medical/Dental Clinics (Refrigeration, Air Conditioning)
- Schools, Training Centers, SATCOM Stations (Air Conditioning)
- Test Facilities (Refrigeration, Air Conditioning)
- Museums, Theaters, Halls (Air Conditioning)

Following the January 1999, U.S. ARMY ODC Elimination Plan Preparation Guidance, a number of equipment exceptions are not included in the inventory.

3.3 EXCEPTIONS

Equipment not to be included in the inventory is as follows:

☒ Equipment in weapons systems.

☒ Fire suppression systems that use HFCs (such as FM-200™), CO_2, or inert gasses (such as Inergen™).

☒ Halon 1211 fire extinguishers—either handheld or large, wheeled flight-line extinguishers.

☒ Equipment that uses HFCs (such as R-134a, the principal CFC alternative refrigerant) or Class II ODCs (HCFCs) (such as R-22, commonly found in fixed air conditioning equipment with a capacity under 100 tons).

☒ Hermetically sealed equipment like home refrigerators, window air conditioners, or drinking fountains.

☒ Tactical vehicles or GSA vehicles.

☒ ODC equipment in temporary facilities, tactical field mobile structures.

☒ Equipment in temporary facilities, tactical field-mobile structures, Defense Commissary Agency (DeCA) commissaries, or Army/Air Force Exchange Services (AAFES).

3.4 FACILITY-SPECIFIC INVENTORIES

Facility-specific Class I ODC inventories for halon and CFCs, as appropriate, are retained in this section as Tables 4 and 5, respectively.

Table 4

Halon Inventory

Facility Name	Bldg No.	Room Protected	Halon Location	Halon (Reserve) (lb)	Area (sqft)	Volume (cuft)	Assets Protected	Cost of Assets	Respon-sible Org.	POC Name	POC Phone	Water to?	Manned 24 Hrs?
1/186 IN OMS	49	Kitchen	Kitchen	75 (0)	807	40	Grill	$30,000	MFO3	Eugene Milliron	(541) 776-6054	Y	N
Camp Withycombe	6101	Phone Room	Room 11	5 (0)	350	1,320	Communi-cations Equipment	$30,000,000	State Of Oregon DOIM	Mike Fisher	(503) 557-5369	N	N

Table 5

CFC Inventory

Facility Name	Bldg No.	Room No.	Type of Equip-ment	Refrig	Make	Model/ Serial No.	Year Installed	Capacity (hp-btu-ton)	Servicing Origin	Servicing POC	Refrig Charge	Refrig Leak	Leak Rate (%)
COUTES	4405	Boiler Room	Chiller #1	R-12	Trane	CVAC-O131-74/ LA13FLAA34F	1985	130 tons	Quality Heating	Quality Heating (541) 923-4752	0		
COUTES	4405	Boiler Room	Chiller #2	R-12	Trane	CVAC-O131-74/ LA13FLAA34F	1985	130 tons	Quality Heating	Quality Heating (541) 923-4752	0		
COUTES	4405	Boiler Room	Chiller #3	R-12	Trane	CVAC-O131-74/ LA13FLAA34F	1985	130 tons	Quality Heating	Quality Heating (541) 923-4752	700		

4. REGULATORY FRAMEWORK

The ODC Team is responsible for maintaining the facility in compliance with federal, state, municipal (when applicable), and Army-mandated ODC regulations. Although this Plan is limited to Class I ODCs, this section defines the regulatory framework addressing ODCs. For specific regulation language refer to the associated citation. As an explanatory note, whenever there is more than one applicable regulation, the most stringent takes precedence. Regulatory information is also available from the Ozone Protection Hotline, toll free at (800) 296-1996, direct-dial at (301) 614-3396, or on the Internet at http://www.epa.gov/ozone.

For ARNG facilities located outside the United States and not regulated by the laws of the United States, confirm that the country where the facility is located has regulations addressing ODCs, and if so, use the most stringent of those regulations and the U.S. version.

4.1 FEDERAL

Title VI of the Clean Air Act addresses Stratospheric Ozone Protection and includes Sections 601 through 618. A listing of the topics in each section of Title VI is as follows:

Section	Title
601	Definitions
602	Listing of Class I and Class II substances
603	Monitoring and reporting requirements
604	Phaseout of production and consumption of Class I substances
605	Phaseout of production and consumption of Class II substances
606	Accelerated schedule
607	Exchanges
608	National recycling and emission reduction program
609	Servicing of motor vehicle air conditioners
610	Nonessential products containing chloroflurocarbons
611	Labeling
612	Safe alternatives policy
613	Federal procurement

Section	Title
614	Relationship to other law
615	Authority of Administrator
616	Transfer among Parties to the Montreal Protocol
617	International cooperation
618	Miscellaneous

For convenience, a listing of Class I ODCs as regulated by Section 602 is included in the Preface of this Plan (see Table 1).

4.2 US EPA REGULATIONS

The EPA response to these Title VI mandates is promulgated at *40 Code of Federal Regulations* (CFR) Part 82 and constitute the federal regulations related to the Protection of Stratospheric Ozone (regulations are available on the internet at http://www.epa.gov). 40 CFR Part 82 Subparts most pertinent in the management of Class I ODCs are discussed below:

Subpart B - Servicing of Motor Vehicle Air Conditioner, 40 CFR Part 82.30

Servicing of motor vehicle air conditioners (MVAC) is regulated by this subpart. **Tactical vehicles are exempt**. In accordance with Section 609 of the CAA, some of the prohibitions and required practices in 40 CFR Part 82.34 include the following:

- Approved certified refrigerant recycling equipment must be used during the performance of repairs or service to MVAC refrigerant systems; the standards for such equipment are set forth in Appendices A through F of Subpart B.
- Only properly trained and certified individuals properly using certified equipment may perform repairs or service on MVAC refrigerant systems.
- Appropriate personnel and equipment registration certification recordkeeping requirements (40 CFR Part 82.42) require the submission of certifications to the following:

  Air Conditioner Recycling Program Manager
  Stratospheric Protection Division
  U.S. Environmental Protection Agency
  401 M. Street, SW

Washington, DC 20460

- Recordkeeping requirements for owners of refrigerant recycling equipment include the maintenance and retention of refrigerant transfer information and personnel certification records for a period of 3 years.

Subpart F – Recycling and Emissions Reduction, 40 CFR Part 82.150

In accordance with Section 608 of the CAA, the purpose of this subpart is to reduce emissions of Class I and II refrigerants during the service, maintenance, and disposal of appliances. Some of the prohibitions and required practices include the following:

- Any person, while maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration, is **prohibited from** knowingly venting or otherwise releasing or disposing of any Class I, II, or substitute substance used as a refrigerant in such an appliance into the atmosphere.

- Class I or II ODCs contained in an item such as appliances, machines, or other goods except for small appliances and MVACs, **must be appropriately removed prior** to the disposal or recycle of such an item.

- Any product in which a Class I or II ODC is incorporated, as to constitute an inherent element of such a product, shall be disposed of in a manner that reduces, however practicable, the release of such ODCs into the atmosphere.

- Leak repair and reporting requirements are stipulated, including repair requirements for refrigeration equipment and appliances containing more than 50 pounds of refrigerant (40 CFR Part 82.156(i)). Leak limits for commercial refrigeration systems containing more than 50 pounds of refrigerant with a leak rate in excess of 35% of the total annual charge requires that leaks be repaired within 30 days of discovery. For appliances containing more than 50 pounds of refrigerant, the leak rate limit is 15%. Owners or operators of federally owned equipment may request an extension from compliance with the 30 day repair requirement by notifying EPA within the 30 day repair period (see Part 82.
  166 (n)).

- Four Technician Certification Types are set forth in 40 CFR Part 82.161:

  1. Type I—Maintain, service, or repair small appliances with 5 pounds or less of refrigerant.

  2. Type II—Maintain, service, repair, or dispose of high- or very high-pressure appliances (an appliance using a refrigerant with a boiling point between –50° and 10°C); typically comfort cooling appliances with greater than 50 pounds of

refrigerant charge. Type II technicians can also maintain, service, or repair MVAC-like appliances.

3. Type III—Maintain, service, repair, or dispose of low-pressure appliances (an appliance using a refrigerant with a boiling point above 10°C at atmospheric pressure); typically industrial cooling systems such as large building chillers.

4. Type IV (Universal Technicians)—Maintain, service, repair, or dispose of low- and high-pressure equipment must be certified as Universal Technicians.

- Reporting and recordkeeping requirements are stipulated in 40 CFR Part 82.166 and include the retention of servicing records documenting date, type of service, and date and quantity of refrigerant added. Repair extension requests are set forth in Part 82.166(n).

Subpart G - Significant New Alternatives Policy (SNAP) Program, 40 CFR Part 82.170

SNAP objectives provide for the identification of acceptable alternatives for ozone depleting chemicals and the promotion of their use. List of acceptable and unacceptable substitutes are published pursuant to the SNAP Program. Appendices A through H of Subpart G provide the list of acceptable and unacceptable substitutes. A list for acceptable and unacceptable substitutes for air conditioning, Commercial Refrigeration, and Noncommercial Refrigeration under the SNAP Program are provided in Appendix B. Also provided in Appendix B is a list of alternative refrigerant manufacturers. **It is illegal to use an ODC alternative in an application that is "disapproved" on the SNAP list.**

Therefore, when retrofitting to alternative refrigerants, this subpart must be researched. Additionally, a Toxicity Clearance from the U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) must be obtained prior to its use.

The only alternative refrigerant that currently has a toxicity clearance for use in stationary building AC&R systems is HFC-134a.

Subpart H – Halon Emissions Reduction, 40 CFR part 82.250

Reducing halon emissions by prohibiting the manufacture of halon blends and the intentional release of halons during repair, testing, training, and disposal of equipment containing halons; mandating technician emissions reduction training; and requiring proper disposal of halons and

halon-containing equipment is the purpose of this subpart. The following are included in this subpart:

- After April 6, 1998, no person may newly manufacture any halon blends.
- Knowingly venting or otherwise releasing any halons during the testing, maintaining, servicing, repairing, or disposal of halon-containing equipment is prohibited.
- Technicians who test, maintain, service, repair, or dispose of halon-containing equipment will undergo emission reduction training.
- Disposal of halon-containing equipment must be properly managed for halon recovery. This provision does not apply to fully discharged total flooding systems or to halon-containing equipment with only de minimis quantities of halon.
- Halon must be sent for recycling or destruction.

Army policy requires the recovery of all installed halon. Furthermore, halon should remain in the control of the system owner and must not leave Army ownership.

4.3 STATE RULES AND REGULATIONS

The State of Oregon supports all federal rules and regulations governing ODCs and/or stratospheric ozone protection and does not provide specific state guidelines beyond these rules and regulations.

4.4 ARMY ODC POLICY

In October 1994, Army installations were instructed to develop plans and budgets for the replacement of halon fire suppression and CFC-producing equipment. Army ODC policy is addressed in ACSIM policy memo, dated 3 July 1997, *Elimination of the Dependency on Ozone-Depleting Chemicals (ODCs) in Army Facilities.* Army ODC policy documentation is provided as Appendix C. The policy identifies six main points:

1. **Installation Commanders Are Responsible for ODC Elimination.** Installation Commanders are responsible to the MACOM and HQDA for the condition and operation of their facility. They must document the condition of their facility through the Army Environmental Program Requirements (EPR) report. Even though ODC

projects are currently not a high priority for environmental funding, Army policy still requires that they be included in the EPR.

Installation Commanders are responsible for preparing and maintaining an inventory of all ODC equipment, both facility-owned and tenant-owned. Commanders are also responsible for the development and execution of their ODC Elimination Plans.

Installation Commanders are not necessarily responsible for the resourcing of every ODC replacement project on the entire facility. However, they are responsible for ensuring that the elimination of all the Class I ODCs installed on post – including those in tenant facilities – is being adequately planned for and funded. The Commander's agents for ensuring this elimination planning should be the facility ODC Elimination Team, as described in Section 1.

2. **Tenant Commanders Are Responsible for Complying with Host ODC Policies and Supporting Host ODC Elimination Efforts.** Tenant Commanders' responsibilities extend to whole ODC elimination effort as described, namely the following:

   - Support of and participation on the ODC Team.
   - Preparation and maintenance of an ODC inventory.
   - Compliance with applicable ODC laws and regulations.
   - Recovery, recycling, and turn-in of excess ODCs.
   - Proper management of ODC material and equipment.
   - Adequate resourcing of ODC management efforts and replacement projects in support of their own ODC equipment.

3. **Class I ODCs Must Be Eliminated from All ARNG Facilities by the End of FY03**. CFC refrigerants and halon 1301 may not be available commercially beyond the third quarter of 2003; therefore, the Army has established this deadline. This policy has been in place since the 13 February 1996 ASA(I,L&E) memorandum, subject: "Ozone-Depleting Chemicals (ODC) Elimination at Army Installations" (see Appendix D).

4. **Installations May Not Contract for the Use of Class I ODCs**. Such contracts are prohibited by PL 102-484, Section 326. This prohibition not only applies to the direct purchase of Class I ODCs, but also to facilities service contracts that require technicians to "top off" or replace leaked or discharged ODCs. Such service contracts can legally only be awarded with a Technical Certification and a SAO approval. This requirement applies to both CONUS and OCONUS facilities.

5. **All Class I ODCs Installed in ARNG Facilities Must Be Recovered**. CFCs and halons cannot be sold, traded, turned into the Defense Reutilization and Marketing Office (DRMO), **or otherwise transferred from Army ownership**. All ODCs in nonsealed systems must be recovered when the system is retired.

   Recovered CFC refrigerants may be reused to support another CFC system or systems on the same facility. This is called "cascading" and is the recommended means of recycling CFCs. Recovered CFCs can be provided as GFE to the contractor servicing the facility AC&R equipment to avoid the contract approval process required by PL 102-484, Section 326.

   Any excess CFCs not needed to support existing AC&R equipment on the facility must be turned in to the following:

   Army ODC Reserve
   Defense Supply Center Richmond (DSCR)
   Richmond, Virginia
   POC: Mr. Joe Schmierer
   COMM: 804-279-5202
   DSN: 695-5202

   See Section 5 and Appendix E for turn-in procedures.

   All – repeat all – recovered halon must be turned in to the Army ODC Reserve. It cannot be used to support another fire protection system on the same installation. This halon is needed to support mission critical fire and explosion suppression systems in Army weapon systems.

6. **ODC Alternatives Must First Be Approved by the EPA SNAP Program and also Receive a Toxicity Clearance from the Army Surgeon General Before Used in ARNG Facilities.** The EPA analyzes and rules on submittals by the chemical manufacturers for inclusion to the SNAP list. It is illegal to use an ODC alternative in an application that is "disapproved" on the SNAP list.

   Even if the chemical is SNAP-approved, however, it still must get a toxicity clearance from the USACHPPM, which is the Surgeon General agent for toxicity issues. The only alternative refrigerant that currently has a toxicity clearance for use in stationary building AC&R systems is HFC-134a.

5. RECOVERY AND TURN-IN

The manufacture of ODCs is being controlled to protect the stratospheric ozone layer; therefore, the availability of ODCs such as halon and CFCs is dwindling, and during the phaseout period, the cost is dramatically increasing. All Class I ODCs should be considered precious commodities.

As mandated by environmental regulations and Army policy, CFC refrigerants and halon in serviced equipment must be recovered before the equipment is retired.

5.1 CFC RECOVERY

EPA regulations have identified recovery and recycling equipment standards and established recovery procedures to optimize the recovery process.

Army policy requires the recovery, capture of refrigerant in the system, of ALL installed CFCs. **Additionally, Army policy requires that contractor's who retire equipment containing CFCs recover the installed refrigerant and provide it to the equipment owner, so the Army retains ownership at all times**.

Recovered CFCs will be properly managed using ODC management practices outlined in Section 6. "Cascading," which refers to the reuse of recovered CFCs within state ARNG facilities, will be the primary ODC management practice utilized. If reuse is not an option, recovered CFCs should be turned in to the following:

Army ODC Reserve
Defense Supply Center Richmond (DSCR)
Richmond, Virginia
POC: Mr. Joe Schmierer
COMM: 804-279-5202
DSN: 695-5202

5.2 HALON RECOVERY

Army policy also expressly requires the recovery of all installed halon. **Most importantly, halon must remain in the control of the equipment owner, so the Army retains ownership at all times**.

Recovered halon will be properly managed using ODC management practices outlined in Section 6. "Cascading," which refers to the reuse of recovered halon within state ARNG facilities, will be the primary ODC management practice utilized. If reuse is not as option, recovered halon should be turned in to the following:

Army ODC Reserve
Defense Supply Center Richmond (DSCR)
Richmond, Virginia
POC: Mr. Joe Schmierer
COMM: 804-279-5202
DSN: 695-5202

Safety Procedures

Halon cylinders **must** be secured ("safetied") when they are removed from a fire suppression system. Simply disconnecting the actuator is not enough. With a pneumatic actuator, the puncture pin may be exposed, and the slightest pressure could cause the seal to blow. With an electric actuator, an explosive initiator may be installed, and static electricity could cause the seal to blow (any explosive initiator **must** be removed).

But the most important aspect of securing a halon system cylinder is that it **MUST** have a discharge port or anti-recoil safety cap installed. These caps direct any gas release out sideways from the cylinder and in several directions. When a safety cap is properly installed, a halon system cylinder is incapable of "taking off." The halon can still vent—with considerable force—and the cylinder may pitch and jerk, but it will not become airborne. Detailed securing instructions are included in the Army ODC Reserve Turn-in Procedures provided in Appendix E.

WARNING!

A halon system cylinder may weigh over 400 lb, and may be pressurized to over 400 psi. They are designed to dump their entire contents through a small pipe in a matter of seconds, and so their valves have "hair trigger" actuators. Some actuators are mechanical (pneumatic), which means bumping them the wrong way can set them off. Some are electrical, which means static electricity could set them off. In either case, halon cylinders can (and sadly, have) become large and very deadly unguided missiles.

WARNING!

5.3 ODC STORAGE

All recovered halon and any excess CFCs not needed to support existing AC&R equipment on the facility must be turned in to the Army ODC Reserve:

Army ODC Reserve
Defense Supply Center Richmond (DSCR)
Richmond, Virginia
POC: Mr. Joe Schmierer
COMM: 804-279-5202
DSN: 695-5202

Facilities are encouraged to reuse CFC refrigerants; therefore, CFC cylinders must be stored until needed. Preferably, the support contractor should store CFC cylinders. However, appropriate documentation and necessary management of the off-site CFC cylinders must be provided by the facility to ensure that the CFCs still remain in Army ownership until consumed. Allowing the support contractor to store off-site negates the need for government transportation or delivery of the cylinders and the need to manage them on-site. The contractor who installs the new replacement AC&R equipment (usually the same personnel who retires the old equipment and recovers the old refrigerant) can be directed per the contract to deliver the recovered CFC refrigerant to the facility AC&R support contractor.

Another option for storing CFC cylinders is to store them at either a hazardous material or compressed gas cylinder storage facility on-site.

5.4 EXCESS ODCS

Since 1990, Army policy has required that all recovered halon and excess CFCs not needed to support existing AC&R equipment on the facility be shipped directly to the Army ODC Reserve. The Army ODC Reserve is the Army's storage of ODC in the DoD Ozone Depleting Substance (ODS) Reserve. The DoD ODS Reserve is managed by the Defense Logistics Agency (DLA) through the Defense Supply Center, Richmond (DSCR) and located at the Defense Depot Richmond Virginia (DDRV). DLA also operates two ODC OCONUS collection points: FSIC Pearl Harbor, Hawaii and DDDE-Germesheim, Germany.

Excess CFCs are defined by Army policy (DASA [ESOH] memorandum of 18 October 1994, see Appendix F) as CFC refrigerant that "is no longer required by the installation to support operational equipment (e.g., chillers, air conditioners, freezers, etc.)." It is highly encouraged that as much recovered CFC refrigerant as possible be reused on the owning facility.

However, "reuse" does not include trading or selling CFCs for any reason. If CFCs cannot be used at the original equipment owner's facility location, it must be turned in to the Army ODC Reserve. There are critical applications in Army weapon systems that require CFCs for interim support until retrofit can be completed to a non-ODC alternative.

> NOTE: The halon 1211 in fire extinguishers is not "excess" unless the extinguishers are being replaced. Alternative non-ODC fire suppression agents have been identified and halon 1211 extinguishers are being phased out through attrition. This includes both the small handheld extinguishers usually found in buildings and the large wheeled fire extinguishers, usually found at airfields.

5.5 TURN-IN TO THE ARMY ODC RESERVE

No authorization or prenotification is required to turn in ODCs into the DoD ODS Reserve. All types of containers are acceptable, including cylinders, fire extinguishers, drums, and canisters. Government recovery cylinders are available free of charge through DSCR. DSCR will also cover turn-in shipping costs (if greater than $250) by forwarding a MIPR to the shipping unit.

However, DSCR will not give monetary credit to the shipping unit for either the ODC or the cylinders.

All containers must be packaged and labeled in compliance with U.S. Department of Transportation (DOT) regulations, and also tagged or labeled with the following:

- Shipper's DoD Activity Address Code (DoDAAC).
- Shipping activity, with point-of-contact and phone number.
- NSN(s) of the container(s) being shipped.
- Type of ODC being shipped (halon 1301, R-12, etc).
- Number of containers on the pallet or in the crate.

Overheated or mixed products can be shipped to the ODS Reserve. However, the following items should NOT be sent to the ODS Reserve:

☒ Class II ODCs (specifically R-22).

☒ Class II ODC blends (such as HotShot™, FreeZone™, and FRIGC™).

☒ Hydrofluorocarbons (HFCs) (specifically, R-134a and HFC-227ea (FM-200™)).

☒ Empty fire extinguishers.

☒ Empty commercial containers, aerosol cans, inert gases (such as Nitrogen, CO_2, and Inergen™).

☒ Dry chemicals.

NOTE: The DoD ODS Reserve does not accept all the Class I ODCs that may be found at the facility. Two such exceptions are R-13 and R-113. These CFCs must be disposed of through the facility DRMO.

Complete ODC turn-in instructions are provided in Appendix E, included are shipping instructions, points of contact, overseas collection sites, NSNs for turn-in containers, and handling procedures for preparing halon system cylinders.

5.6 TRACKING OF ODC RECOVERY AND TURN-IN

To provide for an accurate and up-to-date account of recovered and turned-in ODCs, maintain a log of these activities. Facility-specific tracking logs will be kept in this section of the Plan in Table 6, ODC Recovery Record.

Table 6

ODC Recovery Record

Facility Name	ODC	From Bldg.	Container NSN	Container Size	No.	Total LB	Excess ?	Stored At	Storage POC	LB Left	Recovery Date	Transfer Doc. No.
COUTES	R-12	4405		150 lb.	7	690	N	4405	Mike Powell	90		

6. ODC MANAGEMENT

All Class I ODCs must be eliminated from ARNG facilities by 1 October 2003. Complying with applicable ODC federal, state, and municipal regulations and Army ODC policy and securing available ODC elimination funding is essential to proper management.

Three steps can be used to properly manage the elimination of Class I ODCs from your facility:

(1) Prioritizing projects.
(2) Choosing acceptable alternatives.
(3) Developing phase-out schedules.

6.1 PRIORITIZING PROJECTS

The first step is to review the halon and CFC inventories and establish a priority for each replacement project. Grouping of projects by responsible organization and identifying funding responsibilities is necessary.

6.1.1 Prioritizing Halon Projects

The **mission of the protected equipment** is the overriding priority for a halon fire suppression system. Currently, a halon substitute is not readily available; therefore, if the mission of the protected equipment is critical, planning for the replacement of the halon-containing system is also critical. Another consideration is the cost of the replacement project; this consideration should be used as a second level criteria.

Because the prioritization process is subjective, the operational unit, the DPW, and the ODC Team should collaborate to evaluate prioritization projects.

6.1.2 Prioritizing CFC Projects

The prioritization of CFC projects is less mission-oriented than for halon projects for the following reasons:

- Facility AC&R systems are for the most part quality-of-life considerations, instead of operational considerations.
- CFC use is much more stable (i.e., 10-20% per year of the installed charge).
- Army policy allows for the "stockpiling" of retired CFCs; whereas, the "stockpiling" of halon is prohibited.
- Specific requirements are used to replace certain CFC equipment (i.e., the 40 CFR 82.156 leak limits).

The overriding priority for CFC projects should be the replacement of equipment that is out of compliance with the 40 CFR 82.156 leak limits.

NOTE: ARNG comfort-cooling appliances (large building chillers) containing more than 50 pounds of refrigerant must comply with EPA-mandated annual leak limit of 15% of the system charge rate. This is the **only situation** where environmental funds should be readily available for ODC elimination, and **every opportunity** should be taken to identify noncompliant CFC AC&R equipment.

The second step is to consider is the type of CFC refrigerant used, so the replacement of equipment that uses Class I ODCs can be a priority.

Another consideration should be the quantity of refrigerant used in the equipment. A priority should be given to equipment that uses large quantities of refrigerant. For example, for three building chillers (A, B, and C) using R-11 as the refrigerant, the following applies:

- Chiller A has 1,000 pounds of installed R-11 and is leaking at 6% per year.
- Chiller B has 500 pounds of installed R-11 and is leaking 8% per year.
- Chiller C has 200 pounds of installed R-11 and is leaking 10% per year.

Chiller C has the worst leak rate, but is loosing only 20 pounds per year while Chiller B is loosing 40 pounds per year. Chiller A, with the lowest leak rate, is loosing 60 pounds per year. Clearly, a higher priority should be given to Chiller A.

"Cascading" CFC Refrigerant

In the previous example, another associated reason exists for replacing Chiller A before Chiller B or Chiller C. It has to do with the idea of "cascading" the refrigerant from a retired

system to support other systems that use the same type of refrigerant. Not only does Chiller A use the most refrigerant, but in this example, it also has the most refrigerant installed. Therefore, by retiring Chiller A first, prolonging the use of Chillers B and C is possible. Detailed information on cascading CFC refrigerants is provided in Appendix G.

National Guard Bureau prioritization criteria are based on the equipment age. When equipment age information was provided, the following criteria was used to assign prioritization:

- High = Equipment age prior to 1980
- Medium = Equipment age from 1981 – 1990
- Low = Equipment age from 1991 – present

When equipment age information was not provided, a Low Priority was assigned**.**

6.2 CHOOSING ALTERNATIVES

Army policy dictates that even if the chemical is EPA SNAP-approved, it still must get a toxicity clearance from USACHPPM before it can be used as an ODC alternative.

The EPA SNAP lists of approved ODC alternatives are available through a number of publications and on a number of home pages, including the homepage for AAPPSO. The AAPPSO website is www.aappso.com. The EPA website is www.epa.gov/ozone/title6/lists/index.html. EPA will also fax a copy of the approved SNAP list for a desired application; call the EPA Hotline for Stratospheric Ozone Policy at 1-800-296-1996. A listing of some pertinent SNAP information is provided in Appendix B.

An updated list of the alternatives that have received toxicity clearances can be found at chppm-www.apgea.army.mil/tox. USACHPPM should be able to process a toxicity clearance for a SNAP-approved and commercially available ODC alternative quickly.

6.3 ALTERNATIVES FOR HALON 1301

The number one alternative for halon 1301 total flooding systems is water. This alternative is inexpensive and works well, as long as the system is designed to turn the power off before the water comes on. For applications where a water alternative is not viable, consulting with expert

technical contractors or using the Army's Halon Alternative Selection Tool (HAST) would be useful.

6.4 ALTERNATIVES FOR CFC REFRIGERANTS

R-134a is domestically the alternative refrigerant of choice for applications from automobile air conditioners to small appliances and to centrifugal building chillers. However, there are other viable alternatives. First, there are Class II ODCs (called hydrochlorofluorocarbons), with the most notable being R-22 and R-123. These refrigerants are common, can offer very efficient and effective cooling, and are readily available. Class II ODCs do have legally directed production phaseout dates, but not until 2020 or beyond.

Another group of "viable" alternatives is Class II ODC blends. This group includes a number of refrigerants that are already SNAP-approved such as FRIGC™, HotShot™ and FreeZone™. Most have been mixed so that their chemical properties are very similar to R-12's, so that they can be sold for use in R-12 equipment. However, retrofitting a piece of R-12 AC&R equipment would be necessary prior to its use. Topping off an existing charge of R-12 with a substitute refrigerant can damage the system and contaminates the existing R-12 refrigerant for recovery.

6.5 DEVELOPING REPLACEMENT SCHEDULES

The last step in managing ODC elimination is establishing replacement schedules that include replacement cost estimates. Cost estimates should be based on actual contractor estimates and should include funding information. ODC replacement projects should be completed by 1 October 2003.

6.6 FACILITY SPECIFIC INFORMATION

This section includes the following information for each facility:

(1) A prioritized list of halon systems with alternatives identified, Table 7.
(2) A prioritized list of CFC equipment with alternatives identified, Table 8.
(3) A schedule of halon replacement projects with cost estimates, Table 9.
(4) A schedule of CFC replacement projects with cost estimates, Table 10.

When replacement costs were not provided by the facility, WESTON secured replacement cost estimates as follows:

- Halon systems (assumed the use of FM-200 as alternative agent) – Dooley Tackaberry, Inc., Deer Park, Texas.
- Central a/c units – GH A/C, Inc., Houston, Texas.
- Chiller systems – Way Engineering, Inc., Houston, Texas.
- Walk-in refrigerators, coolers, freezers – International Cold Storage, Inc., Andover, Kansas.
- Vehicle/truck/van a/c retrofit – PepBoys, Houston, Texas, and Stewart & Stevenson, Inc., Houston, Texas.

Replacement estimates provided in Tables 7 and 8 represent conservative replacement costs; however, it is important to note these replacement costs may change on a regional basis.

Table 7

Halon Project Estimates

Facility Name	Proj No.	Priority	Bldg No.	Room Protected	Halon Location	Halon (Reserve) (lb)	Assets Protected	Alternate Agent	Replacement Estimate	Replacement Contractor	Replacement Center POC
Camp Withycombe	1	Medium	6101	Phone Room	Room 11	5 (0)	Communi-cations Equipment		$190,000	AT&T, US West	OMD-doim (503) 945-3883 J. D. Power
1/186 IN OMS	248	Medium	49	Kitchen	Kitchen	75 (0)	Grill	FM-200	$3,450[1]		

[1] Pricing is based upon utilizing existing detection systems with approved releasing panels.

Table 8

CFC Project Estimates

Facility Name	Proj No.	Priority	Bldg No.	Equipment	Model/ Serial No.	Altrn Refrig	Replacement Cost	Replacement Contractor	Replacement Center POC
COUTES	1	To Be Removed	4405	Chiller #3	CVAC-O131-74/ LA13FLAA34F	R-134a	$100,000[1]		
COUTES	2	To Be Removed	4405	Chiller #1	CVAC-O131-74/ LA13FLAA34F	R-134a	$100,000[1]		
COUTES	3	To Be Removed	4405	Chiller #2	CVAC-O131-74/ LA13FLAA34F	R-134a	$100,000[1]		

[1]Assuming 460 volt unit.

Table 9

Halon Replacement Schedule

PROJECTS				SCHEDULE													
No.	**Priority**	**Bldg.**	**Assets**	**3Q00**	**4Q00**	**1Q01**	**2Q01**	**3Q01**	**4Q01**	**1Q02**	**2Q02**	**3Q02**	**4Q02**	**1Q03**	**2Q03**	**3Q03**	**4Q03**
1	Medium	6101	Communi-cations Equipment									$95,000	$95,000				
248	Medium	49	Grill									$3,450(1)					
Total Environmental O&MG:																	
Total Real Property O&MG:																	
Total Other Accounts:																	
Total Funds Required:												**$193,450**					

[1] Pricing is based upon utilizing existing detection systems with approved releasing panels.

Table 10

CFC Replacement Schedule

PROJECTS				SCHEDULE													
No.	**Priority**	**Bldg.**	**Assets**	**3Q00**	**4Q00**	**1Q01**	**2Q01**	**3Q01**	**4Q01**	**1Q02**	**2Q02**	**3Q02**	**4Q02**	**1Q03**	**2Q03**	**3Q03**	**4Q03**
1	To Be Removed	4405	Chiller #3									$50,000(1)	$50,000(1)				
2	To Be Removed	4405	Chiller #1									$50,000(1)	$50,000(1)				
3	To Be Removed	4405	Chiller #2									$50,000(1)	$50,000(1)				
Total Environmental O&MG:																	
Total Real Property O&MG:																	
Total Other Accounts:																	
Total Funds Required:												**$300,000**					

[1] Assuming 460 volt unit.

7. RESOURCES

The NGB policy for the replacement of Class I ODC Equipment is as follows:

All Class I ODC equipment will be replaced using installation dollars when the equipment has reached the end of its useful service life. In addition, any equipment that is leaking Class I ODCs, over the limit allowed by EPA guidelines, will be replaced using installation dollars. The EPA guidelines, established in 40 CFR 82, state that the maximum allowable leak rate for equipment with the capacity refrigerant charge of more than 50 pounds is as follows:

- Commercial refrigeration equipment 15% a year
- Industrial process refrigeration equipment 20% per year
- Comfort cooling and other appliances (existing) 10% per year
- Comfort cooling and other appliances (new) 5% per year

APPENDICES

APPENDIX A

ODC ELIMINATION TEAM SIGN-IN SHEET AND MEETING MINUTES

APPENDIX A

EXAMPLE

ODC TEAM MEETING
SIGN-IN SHEET

Date	Name of Attendees

EXAMPLE

MEETING MINUTES

Distribution List: (*Commanding Officer(s))* Date:
(*List others, as appropriate)*

From:

Subject: ODC Team Meeting

Attachments

The following provides a summary of the discussions at the _____ (*date*) meeting. This meeting took place at the _____ (*location*).

ATTENDEES

(*List the ODC Team members in attendance*)

PURPOSE

The purpose of this meeting was to discuss ODC management/elimination efforts at _____ _____ *(location*).

MEETING DISCUSSIONS

Follow-up Action Items : _____

Follow-up By: _____ Follow-up Deadline: _____

APPENDIX B

LISTINGS OF ACCEPTABLE AND UNACCEPTABLE SUBSTITUTES FOR AIR CONDITIONING, COMMERCIAL REFRIGERATION, AND NONCOMMERCIAL REFRIGERATION

United States
Environmental Protection Agency

Air and Radiation
Stratospheric Protection Division
6205J

Substitute Refrigerants Under SNAP as of June 8, 1999

SNAP Information: http://www.epa.gov/ozone/title6/snap/
Stratospheric Ozone Protection Hotline: (800) 296-1996

EPA has created the Significant New Alternatives Policy (SNAP) Program under Section 612 of the Clean Air Act Amendments. SNAP evaluates alternatives to ozone-depleting substances. Substitutes are reviewed on the basis of ozone depletion potential, global warming potential, toxicity, flammability, and exposure potential as described in the March 18, 1994 final SNAP rule (59 FR 13044). Lists of acceptable and unacceptable substitutes will be updated periodically in the Federal Register. The following SNAP notices and subsequent final rules are included in this list: August 26, 1994 (59 FR 44240), January 13, 1995 (60 FR 3318), June 13, 1995 (60 FR 31092), July 28,1995 (60 FR 38729), February 8, 1996 (61 FR 4736), May 22, 1996 (61 FR 25585), September 5, 1996 (61 FR 47012), October 16, 1996 (61 FR 54030), March 10, 1997(62 FR 10700), June 3, 1997 (62 FR 30275) , February 24, 1998 (63 FR 9151), May 22, 1998 (63 FR 28251), January 26, 1999 (64 FR 3861), April 28, 1999 (64 FR22981), and June 8, 1999 (64 FR 30410).

Acceptable Substitutes for Air Conditioning under the Significant New Alternatives Policy (SNAP) Program as of June 8. 1999

Substitutes (Name Used in the Federal Register)	Trade Name	CFC-111 Centrifugal Chillers	CFC-12, CFC-114, R-500 Centrifugal Chillers	CFC-12, R-500 Reciprocating Chillers	CFC-12 Motor Vehicle AC	CFC-114 Industrial Process AC	CFC-12, R-500 Residential Dehumidifiers
HFCF-123	123	R,	N				
HCFC-22	22	N	N	N	R, N* (buses only)	N (only<115F)	R, N
HCFC-124	124		R, N (CFC-114 only)		R, N		
HFC-134a	134a	N	R, N	R, N	R, N*	N(only<125F)	R, N
HFC-227ea		N	N	N			
HFC-236fa			R,N (CFC-114 only)				
R-401A, R-401B	MP-39, MP-66			R, N		R,N	R, N
R-406A	GHG		R, N (R-500 only)		R, N**		R
R-409A (HCFC Blend Gamma	409A			R, N			R
R-411A, R-411B	411A, 411B			R, N			

Key: R = Retrofit Uses, N = New Uses

*These refrigerants are actually "acceptable subject to use conditions." The conditions include 1)the use of unique fittings, 2)the use of descriptive labels, and 3)a prohibition against topping off one refrigerant with another. Details may be found in EPA's fact sheet titled "Choosing and Using Alternative Refrigerants for Motor Vehicle Air Conditioning."

**In addition to the use conditions listed under (*), these refrigerants must be used with barrier hoses.

APPENDIX B

Acceptable Substitutes for Air Conditioning under the Significant New Alternatives Policy (SNAP) Program as of June 8, 1999 (continued)

Substitutes (Name Used in the Federal Register)	Trade Name	CFC-111 Centrifugal Chillers	CFC-12, CFC-114, R-500 Centrifugal Chillers	CFC-12, R-500 Reciprocating Chillers	CFC-12 Motor Vehicle AC	CFC-114 Industrial Process AC	CFC-12, R-500 Residential Dehumidifiers
FRIGC (HCFC Bland Beta)	FRIGC FR-12		R, N (CFC-12, R-500 only)	R, N	R, N*		R, N
Free Zone (HCFC Blend Delta)	Freezone / RB-276		R, N (CFC-12, R-500 only)	R, N	R, N*		R, N
Blend Zeta	Ikon				R, N*		
Hot Shot	Hot Shot, Kar Kool		R, N (CFC-12, R-500 only)		R, N**		R, N
GHG-X4	GHG-X4, Autofrost, Chill-it		R, N (CFC-12, R-500 only)	R, N	R, N**		R, N
GHG-X5	GHG-X5		R, N (CFC-12, R-500 only)	R, N	R, N**		R, N
GHG-HP (HCFC Blend Lambda)	GHG-HP				R, N**		R, N
Freeze 12	Freeze 12		R, N (CFC-12, R-500 only)	R, N	R, N*		R, N
G2018C	411C		R, N (CFC-12, R-500 only)	R, N			
HCFC-22/HCFC-142b			R, N (CFC-12 only)	R, N (CFC-12 only)			R, N (CFC-12 only)
Ammonia Vapor Compression		N	N				
Evaporative Cooling		N	N	N	N*		
Desiccant Cooling		N	N	N			
Ammonia / Water Absorption		N	N				
Water / Lithium Bromide Absorption		N	N				

Key: R = Retrofit Uses, N = New Uses

*These refrigerants are actually "acceptable subject to use conditions." The conditions include 1)the use of unique fittings, 2)the use of descriptive labels, and 3)a prohibition against topping off one refrigerant with another. Details may be found in EPA's fact sheet titled "Choosing and Using Alternative Refrigerants for Motor Vehicle Air Conditioning."

**In addition to the use conditions listed under (*), these refrigerants must be used with barrier hoses.

APPENDIX B

Acceptable Substitutes for Commercial Refrigeration under the Significant New Alternatives Policy (SNAP) Program as of June 8, 1999

Substitutes (Name Used in the Federal Register)	Trade Name	ODS Being Replaced	Cold Storage Warehouses	Ref. Transport	Retail Food Ref.	Ice Machines	Vending Machines	Water Coolers	Non-Mechan-nical Heat Transfer	Very Low Temp. Ref.
HCFC-22	22	12,502	R, N	R, N	R, N	N	R, N	N		
HFC-23	23	12, 12, 13B1, 503								R, N
HFC-134a	134a	12	R, N	R, N	R, N	N	R, N	R, N		
HFC-227ea		12	N		N					
HFC-236fa		114							R, N	
R-401A, R-401B	MP39, MP66	12	R, N	R, N	R, N	R, N	R, N	R, N		
R-402A, R-402B	HP80, HP81	502	R, N	R, N	R, N	R, N				
R-404A	Hp62, 404A	502	R, N	R, N	R, N	R, N	R, N			
R-406A	GHG	12, 500	R	R	R	R	R	R		
R-407A, R-407B	Klea 407A, 407B	502	R, N	R, N	R, N	R, N				
R-408A (HCFA Blend Epsilon)	408A	502	R	R	R	R				
R-409A (HCFC Blend Gamma)	409A	12		R	R	R	R	R		
R-411A, R-411B	411A, 411B	12, 500, 502	R, N	R, N	R, N	R, N	R, N	R, N		
R-507	AZ-50	502	R, N	R, N	R, N	R, N	R, N			
R-508A	KLEA 5R3	13, 13B1, 503								R, N
R-508B	SUVA 95	12, 13B1, 503								R, N
FRIGC (HCFC Blend Beta)	FRIGC FR-12	12, 500	R, N	R, N	R, N	R, N	R, N	R, N		
Free Zone (HCFC Blend Delta)	Free Zone / RB-276	12	R, N	R, N	R, N	R, N	R, N	R, N		
Hot Shot	Hot Shot	12, 500	R, N	R, N	R, N	R, N	R, N	R, N		
GHG-X4	GHG-X4	12, 500	R, N	R, N	R, N	R, N	R, N	R, N		
GHG-X5	GHG-X5	12, 500	R, N	R, N	R, N	R, N	R, N	R, N		
(HCFC Blend Lambda)	GHG-HP	12	R, N	R, N	R, N	R, N	R, N	R, N		
FREEZE 12	FREEZE 12	12	R, N	R, N	R, N	R, N	R, N	R, N		
G2018C	411C	12, 500, 502	R, N	R, N	R, N	R, N	R, N	R, N		
HCFC-22/HCFX-142b		12	R, N	R, N	R, N	R, N	R, N	R, N		
Ammonia Vapor Compression		All	N		N	N				

APPENDIX B

Acceptable Substitutes for Commercial Refrigeration under the Significant New Alternatives Policy (SNAP) Program as of June 8, 1999 (continued)

Substitutes (Name Used in the Federal Register)	Trade Name	ODS Being Replaced	Cold Storage Warehouses	Ref. Transport	Retail Food Ref.	Ice Machines	Vending Machines	Water Coolers	Non-Mechan-nical Heat Transfer	Very Low Temp. Ref.
Garden Fluids		11, 12, 113, 114, 115							R	
Evaporative/Desiccant Cooling		all	N							
Stirling Cycle		all		N						
Direct Nitrogen Expansion		all		N						
Pressure Stepdown		all	N							
CO_2		11, 12, 13, 113, 114, 115, 13B1, 503							R, N	R, N
Self-chilling cans using CO_2		12, 502	R, N	R, N	R, N		R, N			
Volatile Methyl Silixanes, Water, Mineral Oil		11, 12, 113, 114, 115							R, N	
C_3F_8, C_4F_{10}, C_5F_{12}, $C_5F_{11}NO$, C_6F_{14}, $C_6F_{13}NO$, C_7F_{16}, $C_7F_{15}NO$, C_8F_{18}, $C_8F_{16}O$, and $C_9F_{21}N$										
NARM-502		13, 13B1, 503								R, N
THR-04	THR-04	502	R, N	R, N	R, N	R, N	R, N	R, N		
HFE-7100		113							R, N	

Acceptable Substitutes for Noncommercial Refrigeration under the Significant New Alternatives Policy (SNAP) Program as of June 8, 1999

Substitutes (Name Used in the Federal Register)	Trade Name	ODS Being Replaced	Industrial Process Refrigeration	Ice Skating Rinks	Household Refrigerators	Household Freezers
HCFC-123	123	11	R, N			
HCFC-22	22	12, 502	R, N	R, N	R, N	R, N
HFC-23		13, 13B1, 503	R, N			
HFC-134a	134a	12	R, N		R, N	R, N
HFC-152a		12			N	N
HFC-227ea		12	N			
HFC-236fa		114	R, N			
R-401A, R-401B	MP-39, MP-66	12	R, N	R	R, N	R, N
R-402A, R-402B	HP-80, HP-81	502	R, N			R, N
R-403B	Isceon 69-L	13, 13b1, 503	R, N*			
R-404A	HP-62, 404A	502	R, N			R, N
R-406A	GHG	12, 500	R		R	R
R-407A, R-407B	Klea 407A, 407B	502	R, N	R, N		
R-408A (HCFC Blend Epsilon)	408A	502	R			
R-409A (HCFC Blend Gamma)	409A	12			R	R
R-411A, R-411B	411A, 411B	12, 500, 502	R, N			
R-507	AZ-50	502	R, N			
R-508A	KLEA 5R3	12, 13B1, 503	R, N			
R-508B	Suva 95	12, 13 B1, 503	R, N			
FRIGC (HCFC Blend Beta)	FRIGC FR-12	12, 500	R, N		R, N	R, N
Free Zone (HCFC Blend Delta)	Free Zone / RB-276	12	R, N	R, N	R, N	R, N
Hot Shot	Hot Shot	12, 500	R, N	R, N	R, N	R, N
GHG-X4	GHG-X4	12, 500	R, N	R, N	R, N	R, N
GHG-X5	GHG-X5	12, 500	R, N		R, N	R, N
(HCFC Blend Lambda)	GHG-HP	12	R, N		R, N	R, N
FREEZE 12	FREEZE 12	12	R, N	R, N	R, N	R, N

Acceptable Substitutes for Noncommercial Refrigeration under the Significant New Alternatives Policy (SNAP) Program as of June 8, 1999 (continued)

Substitutes (Name Used in the Federal Register)	Trade Name	ODS Being Replaced	Industrial Process Refrigeration	Ice Skating Rinks	Household Refrigerators	Household Freezers
G2018C	411C	12, 500, 502	R, N	R, N		
NARM-502	NARM-502	13, 503	R, N			
THR-01	THR-01	12			N	N
THR-04	THR-04	502	R, N	R, N	R, N	
HCFC-22/HCFC-142b		12	R, N	R, N	R, N	
CO2		13, 13B1, 503	R, N			
Ammonia Vapor Compression		12, 502	R, N	R, N		
Ammonia Absorption		12			N	N
Propane, Propylne, Butane, HC Blend A, B	HC-12a, OZ-12	All	R, N*			
Self-chilling cans using CO2		12, 502			R, N	
Chlorine		All	R, N			
Evaporative/Desiccant Cooling		All	N			

Key: R = Retrofit Uses, N= New Uses
*Prohibited for other end-uses. See list of unacceptable refrigerants below.

Unacceptable Substitute Refrigerants
Significant New Alternatives Policy (SNAP) Program as of June 8, 1999

Substitutes (Name Used in the Federal Register)	Trade Name	ODS Being Replaced	End-Uses	Reason
All flammable refrigerants, including OZ-12 (Hydrocarbon Blend A) and HC-12a (Hydrocarbon Blend B)		CFC-12	Motor Vehicle Air Conditioning, retrofit and new	lack of adequate risk assessment that characterizes incremental flammability risk
OZ-12 (Hydrocarbon Blend A) and HC-12a (Hydrocarbon Blend B)	OZ-12 HC-12a	CFC-12	All end-uses other than Industrial Process Refrigeration, retrofit and new	lack of adequate risk assessment that characterizes incremental flammability risk
R-176*		CFC-12	All end-uses, retrofit and new	contains CFC-12
R-403B		R-502	All end-uses other than Industrial Process Refrigeration, retrofit and new	contains a perfluorcarbon that exhibits extremely high GWP and very long lifetime
R-405A		CFC-12	All end-uses, retofit and new	contains a perfluorocarbon that exhibits extremely high GWP and very long lifetime
MT-31		CFC-12, HCFC-22	All end-uses, retrofit and new	a chemical contained in this blend presents an unacceptable toxicity risk
MT-31-1		CFC-12, HCFC-22	All end-uses, retrofit and new	a chemical contained in this blend presents an unacceptable toxicity risk
Hexafluoropropylene (HFP) and all HFP-containing blends		CFC-12, HCFC-22	All end-uses, retrofit and new	presents an unacceptable toxicity risk
NARM-22		HCFC-22	All end-uses, retrofit and new	contains HCFC-22

*R-176 contains CFC-12, HCFC-22, and HCFC-142b. It is a different product from RB-276, typically sold under the name “Freezone.”

APPENDIX B

Acceptable Substitutes for Class II (HCFCs) Substance in Air Conditioning and Refrigeration under the Significant New Alternatives Policy (SNAP) Program as of June 8, 1999

Substitutes (Name Used in the Federal Register)	Trade Name	Household and Light Commercial AC	Commercial Comfort Air Conditioning	Industrial Process Refrigeration	Industrial Process Air Conditioners	Cold Storage Warehouse Systems	Ice Skating Rinks	Refrigerated Transport	Retail Food Refrigeration	Ice Machines	Household and other Refrigerated Appliances
R-410A	AZ-20	N	N	N	N	N	N	N	N	N	N
R-410B	Suva 9100	N	N	N	N	N	N	N	N	N	N
R-407C	Suva 9000, KLEA 66	R, N	R, N	R, N	R, N	R, N	R, N	R, N	R, N	R, N	R, N
R-134a	HFC-134a	N	-	-	-	-	-	-	-	-	-
R-507	AZ-50	N	N	N	N	N	N	N	N	N	-
Self-chilling cans using CO_2		-	-	-	-	R, N	-	R, N	R, N	-	R, N
Ammonia		N[1]	N[2]	N[3]	N[3]	N[3]	N[3]	-	N[4]	N[3]	N1
Evaporative Cooling		N	N	-	N	-	-	-	-	-	-
Desiccant Cooling		N	N	-	N	-	-	-	-	-	-
Water/Lithium bromide		-	N	-	-	-	-	-	-	-	-

Key: R = Retrofit Uses, N = New Uses, (-) = Not submitted for review against this end use or not practical to use the substitute refrigerant in this end. Use
1. Absorption systems; 2. Absorption chillers or vapor compression with secondary loop; 3. Vapor compression or absorption systems; 4. Vapor compression with a secondary loop.

Description of Class II End Uses		
End Use	**Air Conditioning and Refrigeration Systems or Application**	**Ozone Depleting Substance[1]**
Household and Light Commercial Air Conditioning	Heat pumps, central air conditioning, direct-expansion commercial air conditioners, packaged terminal air conditioners, room air conditioners, and split system air conditioners	HCFC-22
Commercial Comfort Air Conditioning	Reciprocating, centrifugal and screw chillers	HCFC-22, CFC-12, R-500, and CFC-11
Industrial Process Air Conditioning	Air conditioning systems that perform a critical mission in a high-temperature industrial environment, such as cooling a control cab on a crane in a foundry or protecting a computer room in a steel mill	HCFC-22, CFC-12, and CFC-114
Cold Storage Warehouse Systems	Public and private facilities used to store meat, produce, dairy products, frozen food, and other perishable goods.	HCFC-22, R-502, and CFC-12
Ice Skating Rinks	Ice Skating Rinks	HCFC-22, CFC-12, and R-502
Refrigerated Transport	Refrigeration systems in trucks, trailers, railcars, ships, intermodal containers, on board ships, and air conditioning systems in buses and passenger trains.	CFC-12, R-500, and R-502
Retail Food Refrigeration	Stand alone refrigeration cases found in small markets, convenience stores, restaurants and other food establishments, large systems found in supermarkets, and HCFC-22 systems found in a wide variety of retail and service establishments.	HCFC-22, CFC-12, and R-502
Ice Machines	Small, medium, an d large ice makers used by a number of entities including restaurants and hotels	CFC-12
Household and Other Refrigerated Appliances	Refrigerators, freezers, water coolers, vending machines, and dehumidifiers	CFC-12 and R-502

1. Substitution through retrofit is only applicable to HCFC-22 systems.

APPENDIX B

Alternative Refrigerant Manufacturers

Refrigerant	Allied Signal	Dupont	Elf Atochem	ICI	People's Welding Supply	Green cool	Refrigerant Gases	IKON	Intermagnetics General	ICOR	Technical Chemical
	800-522-8001	**800-235-7882**	**800-343-7940**	**800-275-5532**	**800-382-9006**	**703-643-2376**	**888-373-3066**	**505-345-2707**	**800-555-1442**	**800-357-4062**	**800-527-0885**
HCFC-123	Genetron 123	Suva 123	Forane 123								
HCFC-22	Genetron 22	Freon 22	Forane 22	Arcton-22							
HFC-134a	Genetron 134a	Suva 134a	Forane 134a	Klea 134a							
R-401A, R-401B	MP39, MP66	Suva MP39, MP66	Forane 401A, 401B								
R-402A, R-402B	HP80, HP81	Suva HP80, HP81	Forane 402A, 402B								
R-404A	Genetron 404A	Suva HP62	Forane 404A								
R-406A					GHG						
R407A, R-407B				Klea 407A, 407B							
R-408A	Genetron 408A	Suva 408A	Forane 408A								
R-409A	Genetron 409A	Suva 409A	Forane 409A								
R-411A, R-411B						R-411A, B					
R-507	AZ-50	Suva 507									
R-508A				Klea 5R3							
R-508B		Suva 95									
HCFC Blend Beta									FRIGC FR-12		
HCFC Blend Delta							Free Zone / RB-276				
GHG-X4					Autofrost / Chill-It						
GHG-X5					GHG-X5						
GHG-HP					GHG-HP						
Hot Shot										Hot Shot	
Blend Zeta								IKON-12			
Freeze 12											Freeze 12
G2018C						R-411C					

APPENDIX C

ELIMINATION OF THE DEPENDENCY ON OZONE-DEPLETING CHEMICALS (OCDS) IN ARMY FACILITIES

APPENDIX C

ACSIM POLICY MEMO DATED 3 JULY 1997

DEPARTMENT OF THE ARMY
ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
600 ARMY PENTAGON
WASHINGTON DC 20310-0600

REPLY TO ATTENTION OF

S: 26 Sep 97

DAIM-ED-P2

3 JUL 1997

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Elimination of the Dependency on Ozone-Depleting Chemicals (ODCs) in Army Facilities

1. References:

a. Memorandum, Assistant Secretary of the Army (Installations, Logistics, and the Environment), 13 Feb 96, subject: "Ozone-Depleting Chemicals (ODC) Elimination at Army Installations."

b. *Strategic Guidance and Planning for Eliminating Ozone-Depleting Chemicals from U.S. Army Applications*, Nov 95.

c. Memorandum, Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health), 19 Oct 94, subject: "Disposition of Excess Ozone-Depleting Substances (ODS) at Army Installations."

d. Memorandum, Army Acquisition Executive, 20 May 93, subject: "Elimination of Ozone-Depleting Chemicals; Implementation of the Requirements of the National Defense Authorization Act for Fiscal Year 1993."

2. The Clean Air Act of 1990 established production phase-out dates for ODCs. The production of halon was banned after 1 Jan 94, and the production of chlorofluorocarbons (CFCs) was banned after 1 Jan 96. Since then, halon prices have increased thirty-fold, and CFCs may be unavailable in some areas as early as next year. Per reference 1.a, Army policy dictates all ODC equipment must be replaced within the next five years. The need to prepare now for the absence of these chemicals is obvious. Failure to do so will result in an adverse impact to Army readiness.

3. It is important operationally and economically that the halon and CFCs installed in Army facilities are recovered for reuse by

ACSIM POLICY MEMO DATED 3 JULY 1997 (continued)

DAIM-ED-P2
SUBJECT: Elimination of the Dependency on Ozone-Depleting Chemicals (ODCs) in Army Facilities

the Army. They are not to be traded, sold, turned in to DRMO, or in any other way transferred out of Army ownership. The halon in building fire suppression systems and in fire extinguishers is needed for the continued operation of Army weapon systems such as the M1 Abrams tank and the UH-60 Blackhawk helicopter. All CFC refrigerant in serviced equipment must be recovered before the equipment is retired. It is needed for the continued operation of CFC equipment on your installation. If in excess to your requirements, it is needed by the Army ODC Reserve.

4. The above referenced documents delineate current Army policy on eliminating ODCs from Army installations. A summary of those policies is provided at enclosure 1.

5. Referenced 1.a and 1.c identify the need for Installation Commanders to prepare ODC equipment inventories and develop and maintain ODC elimination plans. Installation Commanders are responsible for the elimination of all ODC use on their installations, including that of tenants, with the exceptions of the Army-Air Force Exchange Service and the Defense Commissary Agency. Reference 1.b provides detailed instructions on how to build installation ODC elimination plans. To gauge the level of Army preparedness for the unavailability of ODCs, we request a status of these planning efforts. Specifically, please provide the number of your installations that have an ODC elimination plan per reference 1.b, and also the number of your installations that have not yet developed this plan.

6. To properly evaluate both the current status of ODC conversions in Army facilities and the outstanding unfunded requirement, we request that all addressees complete and submit the forms provided at enclosure 2. Instructions are provided for each form.

7. Please forward your submissions to the Army Acquisition Pollution Prevention Support Office (AAPPSO) by 26 Sep 97. My point of contact at AAPPSO is Mr. George Terrell, Army ODC

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ACSIM POLICY MEMO DATED 3 JULY 1997 (continued)

DAIM-ED-P2
SUBJECT: Elimination of the Dependency on Ozone-Depleting Chemicals (ODCs) in Army Facilities

Elimination Program Director, (703) 617-9468, facsimile (703) 617-5146, e-mail gterrell@hqamc.army.mil. Technical questions may be directed to Mr. David Koehler, Ocean City Research Corporation, (703) 212-9006, facsimile (703) 212-9019, e-mail ocrc2@erols.com. OASCIM point of contact is Mr. Bob Schroeder, (703) 693-0544.

Encls
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for J C Monig

RANDOLPH W. HOUSE
Major General, GS
Assistant Chief of Staff
Installation Management

DISTRIBUTION:
Chief of Staff,
U.S. Army Training and Doctrine Command, Ft. Monroe, VA 23651-5000
U.S. Army Europe and Seventh Army, APO AE 09014-0100
U.S. Army Pacific, Ft. Shafter, HI 96858-5100
U.S. Army South, APO AA 34004-5000
U.S. Army Forces Command, Ft. McPherson, GA 30330-6000
U.S. Forces Korea, APO AP 96205-0010
U.S. Army Materiel Command, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001
U.S. Army Medical Command, Ft. Sam Houston, TX 78234-6000
U.S. Army Military District Washington, Ft. Leslie J. McNair, Washington, DC 20319-5050
U.S. Army Corps of Engineers, 20 Massachusetts Avenue NW, Washington, DC 20314-1000
U.S. Army Space and Strategic Defense Command, P.O. Box 1500, Huntsville, AL 35807-3801
U.S. Military Academy, West Point, NY 10996-5000
U.S. Army Reserve, 2400 Army Pentagon, Washington, DC 20310-2400
National Guard Bureau, 2500 Army Pentagon, Washington, DC 20310-2500

3

ACSIM POLICY MEMO DATED 3 JULY 1997 (continued)

DAIM-ED-P2
SUBJECT: Elimination of the Dependency on Ozone-Depleting Chemicals (ODCs) in Army Facilities

CF:
Chief of Staff
U.S. Army Safety Center, Ft. Rucker, AL 36362-5363
U.S. Army Environmental Center, Aberdeen Proving Ground, MD 21010-5401
U.S. Army Center for Health Promotion and Preventive Medicine, Aberdeen Proving Ground, MD 21010-5244
U.S. Army Community & Family Support Center, Hoffman Building 1, 2461 Eisenhower Avenue, Alexandria, VA 22331

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APPENDIX C

ACSIM POLICY MEMO DATED 3 JULY 1997 (continued)

SUMMARY OF POLICY
ELIMINATION OF OZONE-DEPLETING CHEMICALS (ODCs)
FROM ARMY INSTALLATIONS

1. **INSTALLATION COMMANDERS ARE RESPONSIBLE FOR ODC ELIMINATION.**
   -- Responsible for the documentation of all installation ODC elimination requirements using the Environmental Program Requirements (EPR) report.
   -- Responsible for preparing and maintaining an inventory of installation-owned and tenant-owned ODC equipment installed in their installation facilities.
   -- Responsible for development & execution of installation ODC elimination plans.

2. **TENANT COMMANDERS ARE RESPONSIBLE FOR COMPLYING WITH HOST ODC POLICIES AND SUPPORTING HOST ODC ELIMINATION EFFORTS.**

3. **CLASS I ODCs MUST BE ELIMINATED FROM ALL FACILITIES ON ARMY INSTALLATIONS BY THE END OF FY03.**
   -- Class I ODCs are defined by Section 602(a) of the Clean Air Act of 1990.

4. **INSTALLATIONS MAY NOT CONTRACT FOR THE USE OF CLASS I ODCS.**
   -- Public Law 102-484, Section 326, prohibits the Army from letting contracts that require the use of Class I ODCs. This includes contracts for the servicing of AC&R equipment and fixed fire suppression systems, as well as the direct purchase of CFC refrigerants and halon.
   -- Approvals may be granted only through the preparation of a technical certification of need identifying that no ODC alternative is available, and the formal approval of a General Officer or Senior Executive Service member.

5. **ALL CLASS I ODCS INSTALLED IN ARMY FACILITIES MUST BE RECOVERED.**
   -- ODCs must not be sold, traded, turned in to the post Defense Reutilization and Marketing Office (DRMO), or otherwise transferred from Army ownership. All ODCs in non-sealed systems must be recovered when the system is retired.
   -- Halon installed in fixed, total flooding fire suppression systems must be turned in to the Army ODC Reserve when the system is retired. This halon must not be reused to support another facility fire protection system on the installation.
   -- Recovered CFC refrigerants may be reused to support another CFC systems on the same installation. This is referred to as "cascading" and is recommended in lieu of purchasing CFC refrigerant to service existing equipment.

6. **ODC ALTERNATIVES MUST FIRST BE APPROVED BY THE EPA SIGNIFICANT NEW ALTERNATIVES PROGRAM AND RECEIVE A TOXICOLOGY CLEARANCE FROM THE ARMY SURGEON GENERAL BEFORE USE IN ARMY FACILITIES.**

ENCL 1

APPENDIX D

OZONE-DEPLETING CHEMICALS (ODC) ELIMINATION AT ARMY INSTALLATIONS

APPENDIX D

February 13, 1996 ASA(I,L&E) memorandum, "Ozone-Depleting Chemicals (ODC) Elimination at Army Installations"

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
INSTALLATIONS LOGISTICS AND ENVIRONMENT
110 ARMY PENTAGON
WASHINGTON DC 20310-0110

February 13, 1996

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Ozone-Depleting Chemicals (ODC) Elimination at Army Installations

This delineates responsibilities and establishes procedures to which all Army installations will comply in the execution, reporting and resourcing of their respective ODC elimination plans. The Strategic Guidance and Planning for Eliminating Ozone-Depleting Chemicals from U.S. Army Applications, October 1995, provides information on the overall Army ODC Elimination Program, with specific guidance for installations on the development and execution of installation ODC elimination plans. ODC elimination in Army weapon systems is being addressed on a programmatic basis and should not be included in installation ODC elimination plans. For the purposes of ODC elimination, Army-Air Force Exchange Service (AAFES) and Defense Commissary Agency organizations will not be considered as tenants. These organizations have developed and are implementing their own ODC elimination plans.

Army Installation/Regional Support Commanders are responsible for ensuring that Class I ODCs, as defined by section 602(a) of Title VI of the Clean Air Act, are eliminated in all facilities on their installations by the end of fiscal year 2003. These responsibilities include the inventory of installation owned equipment and facilities occupied by Army and non-Army tenant organizations. The manner in which installation ODC elimination plans are executed should be consistent with existing host-tenant agreements. In some cases, these agreements may require Installation Commanders to execute, report and request resources for tenants. In other cases, tenants may execute their own ODC elimination projects, and report and obtain resources through their respective chains of command. In any event, Installation Commanders are responsible for ensuring appropriate actions are initiated and that Class I ODCs are eliminated in all facilities on their installations by the end of fiscal year 2003.

Commanders, Directors and Chiefs of Army tenant organizations on Army and non-Army installations are responsible for complying with installation policies and supporting the ODC elimination efforts of their host Installation Commander. This support should be consistent with existing host-tenant

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APPENDIX D

February 13, 1996 ASA(I,L&E) memorandum, "Ozone-Depleting Chemicals (ODC) Elimination at Army Installations" (continued)

agreements. When host-tenant agreements specify, tenant commanders, directors and chiefs will take appropriate actions through their organizational chains of command to execute, report and resource efforts to eliminate Class I ODCs (i.e., retrofit/replacement of mission-unique equipment). These mission-unique requirements will be forwarded to the installation Commander to ensure that they are incorporated in the installation ODC elimination plan.

Host-tenant agreements which are not in compliance with the above policy should be re-negotiated as soon as possible, incorporating ODC elimination in the environmental compliance section. These agreements should specifically address host and tenant resourcing responsibilities as previously discussed.

Commanders, Directors and Chiefs of Army organizations in GSA-leased facilities and Army users of GSA-leased vehicles will support applicable GSA programs to eliminate the use of ODCs. This support will be provided in accordance with existing lease agreements.

Installation Commanders will document all installation ODC requirements, in accordance with existing host-tenant agreements, using the Environmental Pollution Prevention, Control and Abatement Report (RCS DD-P&L(SA) 1383 (OMB A-106 Report)). Major Army Commands (MACOMs) will provide a copy of the consolidated reports for all installations under their command, or a copy of the consolidated reports for tenants who must report separately, to the Army Acquisition Pollution Prevention Support Office (AAPPSO). These reports will be used to support requests for funding in the budget process.

AAPPSO will provide additional guidance as required.

My point of contact for this action is Colonel H. F. Wolfe, 697-0440 and the technical point of contact in AAPPSO is Mr. Thomas A. Bush, DSN 284-5941, commercial (703) 274-5941, facsimile (703) 274-5146.

Robert M. Walker
Assistant Secretary of the Army
(Installations, Logistics & Environment)

February 13, 1996 ASA(I,L&E) memorandum, "Ozone-Depleting Chemicals (ODC) Elimination at Army Installations" (continued)

DISTRIBUTION:
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U.S. Army Military District of Washington, Ft. Lesley J. McNair, Washington, D.C. 20319-5060
U.S. Army Corps of Engineers, 20 Massachusetts Ave., NW, Washington, D.C. 20314-1000
U.S. Army Safety Center, Ft. Rucker, AL 36362-5363
U.S. Army Community & Family Support Center, Hoffman Building 1, 2461 Eisenhower Avenue, Alexandria, VA 22331

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APPENDIX E

DOD ODS TURN-IN PROCEDURES

DOD ODS TURN-IN PROCEDURES

DLA is assigned the mission of managing the Army Reserve of Ozone Depleting Substances to ensure that the supplies for mission critical uses are available. DLA provides central management for the receipt, storage and issuance through DSCR, which is the DLA activity that manages ODSs. DDRV is the initial storage site.

It is imperative that you turn in to the ODS Reserve the following excess CFCs and halons: **CFC's-11, 12, 114, 500, 502, and Halons - 1202, 1211, 1301**. The ODS Reserve accepts both used and new CFCs and halons in a relatively pure state (i.e. not as a component of other products). These chemicals may have been purchased under Federal Supply Classes (FSC) 6830 and 4210, or from a commercial source. Solvent CFC -113 (Type I & II) and 1,1,1 trichloroethane (FSC 6850 and 6810) can also be turned in to the ODS Reserve provided their containers are sealed and unopened.

Section 1 provides procedures on how to turn-in excess ODS. Section 2 provides guidance for European turn-ins to the collection site at Germesheim, GE and Pacific theater turn-ins to the collection site at Pearl Harbor, HI. Section 3 lists the National Stock Numbers (NSNs) assigned to ODS turned in to the ODS Reserve and associated recovery cylinders. Section 4 lists the names of the chemicals in the ODS Reserve.

For questions concerning requisitions and stock availability, contact Ms. Audrey Studevant, DSCR-JDSA, DSN 695-3756 or (804) 279-3756. Procedural concerns may be addressed to Mr. Steve Minus, DSCR-RP, DSN 695-5203 or (804) 279-5203.

SECTION 1: GENERAL ODS TURN-IN INFORMATION

I. Procedures

A. No authorization/pre-notification to the item manager or ODS Program Office is required when turning in ODS to the Reserve.

B. The ODS Reserve accepts all containers, to include cylinders, fire extinguishers, drums, spheres, and canisters. Government recovery cylinders are available free of charge through DSCR and can be requisitioned through normal MILSTRIP procedures. Only these cylinders should be used for recovering ODS from systems. The government cylinders used for recovering CFC refrigerants are painted orange, and halons red. Both have yellow tops and dual port (two valves) to distinguish them from standard spec single port valve gas cylinders.

DoD ODS TURN-IN PROCEDURES (CONTINUED)

C. Turned in ODS containers must be tagged/labeled as follows:

1. The shippers DoD Activity Address Code (DoDAAC).
2. The shipping activity with POC and phone number.
3. The NSN of cylinder(s) containing the recovered ODS (see Section 3)
4. Type of ODS (i.e., Halon 1301 or CFC-12).
5. The quantity of containers on the pallet or within the shipping crate.
6. Packaged and labeled in compliance with DOT regulations.

Note: When multiple containers (cylinders, drums, spheres, canisters, or fire extinguishers) with the same NSN are shipped in palletized or in a box/crate, apply only one tag/label to the shipment, not to each item.

D. Fire suppression system cylinders and canisters with electrical charges or initiators must be deactivated prior to shipment to the ODS Reserve. Also, safety caps must be used to cover exposed actuation mechanisms and discharge ports on these special cylinders, otherwise dangerous safety situations could arise during the shipping, receiving, or storage process. Local fire protection equipment companies can provide safety services. Special handling procedures for Halon system cylinders are provided later in Section 1. If further guidance is needed, contact Mr. Joe Schmierer of the ODS Reserve Program Office at DSN 695-5202 or (804) 279-5202.

E. Monetary credit will not be given for turned in ODS or cylinders. However, ownership credit will always be given to the Army for the pounds of ODS turned in. ODS can be requisitioned from the ODS Reserve by Army-authorized activities.

F. Empty spec cylinders must be turned in to the ODS Reserve. Spec gas empty cylinders (see Section 3 for applicable NSNs) should not be used for recovery purposes. Spec gas cylinders will be refurbished and refilled with product for future applications. Empty recovery cylinders not expected to be used must also be returned to the ODS Reserve.

G. Solvent CFC-113 and 1,1,1 trichloroethane when turned in must be in their original containers in which the seal has never been broken.

H. Burnt out or mixed reserve products can be turned in to the ODS Reserve. Clearly identify the chemical by defining its components (i.e. R-12 & R-502).

I. The following items should not be turned in to the ODS Reserve:

1. Empty fire extinguishers (with the valves removed)
2. Empty commercial containers
3. Aerosol cans with Reserve chemicals
4. Dry chemicals

DoD ODS TURN-IN PROCEDURES (CONTINUED)

II. Transportation Guidance

A. When shipping ODS refer to the following regulations if needed:

1. MIL-STD-129L, Military Standard Marking for Shipment and Storage.
2. DLAR 4145.25, Storage and Handling of Compressed Gases and Liquids in Cylinders, and of Cylinders or the following applicable Service regulation:
   (a) AR-700-68
   (b) NAVSUPINST 4440.128C
   (c) MCO 10330.2C
   (d) AFR 67-12
3. Code of Federal Regulations 49.173 (particularly 173.301), Requirements for the Shipment of Compressed Gas Cylinders.

B. Transportation cost assistance can be provided for shipments costing $250.00 r greater. This cost assistance is strictly for transporting ODS and not for packing costs. For transportation cost assistance, fax the following data to Mr. Steve Minus at (804) 279-4970 or DSN 695-4970:

1. Type and quantity of ODS
2. Total weight of shipment
3. The shipping cost
4. Requesting facility and point of contact

C. Turn-ins should be forwarded to the following address:

DEFENSE DEPOT RICHMOND VIRGINIA (DDRV)
SW0400
CYLINDER OPERATIONS
8000 JEFFERSON DAVIS HIGHWAY
RICHMOND, VA 23297-5900

D. If your activity is personally transporting ODS to the Reserve, be sure to schedule your delivery with the DDRV Dispatch Office at DSN 695-3834 or (804) 279-3834.

DoD ODS TURN-IN PROCEDURES (CONTINUED)

Special Handling Procedures for Turning in Halon 1301 System Cylinders

A. Halon 1301 is typically incorporated into built-in fire suppression systems applications with the charged Halon cylinder connected to the system piping. Because the Halon is over pressurized with nitrogen to facilitate distribution, these system cylinders are usually disconnected from the system and used as the transportation cylinder to return the product to the Reserve as the system are taken out of service. However, fire suppression system cylinders and canisters with electrical charges or initiators must be deactivated prior to shipment to the Defense Reserve. Special care should be taken when deactivating and disassembling the systems. The valves on these cylinders are designed in a manner that upon activation, the y are changed instantly from a closed position to a fully open position and will dispense the Halon in under 10 seconds. The combination of these sensitive valves and the high pressure within the cylinders require compliance with good safety practices.

B. Instructions from dismantling a Halon Fire Suppression System are provided as follows:

1. The first step is to deactivate the actuation system, which is usually electrical or pneumatic. However, disconnection from the electrical or pneumatic source is not sufficient from a safety standpoint. In the case of pneumatic systems, there is often still a small pin exposed that must be covered with a safety cap before handling. Just the slightest touch on this pin could cause full activation of the valve. In the case of electrically activated valves, simple disconnection of the electrical leads to the solenoid valves is acceptable. However, if the electrical connection is to an explosive initiator, it is very important to remove the initiator. This is a very important safety practice, because static electricity can cause the explosive to detonate. These actions should be done before any other dismantling is initiated.

2. The next step is to disconnect any discharge piping from the discharge port. Immediately upon disconnection of the piping, install an anti-recoil device(discharge port safety cap). Safety caps should be used to cover exposed actuation mechanisms and discharge ports on these special cylinders, otherwise dangerous safety situations could arise during the shipping, receiving, or storage process. Application of manufacturer's designed and supplied caps are the proper safety practice. In some cases the threads are not exactly the same as pipe threads and may not hold under pressure of release. However, if pipe caps, plugs or plates are substituted for manufacturer's caps, at least pout opposing holes must be drilled in the anti-recoil cap, plug or place to disperse any release of the Halon of the valve inadvertently activates. Anti-recoil device safety caps/plugs/plates must always be in place before handling the cylinders.

DoD ODS TURN-IN PROCEDURES (CONTINUED)

3. Adherence with the above safety practices is paramount before removing any cylinders from the mounting positions. Once the safety devices are in place, cylinders can be moved with relative safety. However, these are high-pressure compressed gas cylinders and require all the safety handling practices of any other gas cylinder. Also, protective safety wear is required for personnel deactivating cylinders.

SECTION 2: PROCEDURES FOR OVERSEAS COLLECTION SITES

Defense Distribution Depot Europe (DDDE) Germesheim, Germany

I. The primary turn-in site for the ODS Reserve is located at DDRV. However, a collection site has been established at Germesheim, GE for European bases. This is not a mini-Reserve, only a collection site. The following procedures apply:

II. Only halon and refrigerant products will be accepted. Of you have other eligible items, please contact Mr. Steve Minus at (804) 279-4970 or DSN 695-4970.

III. Turn-in procedures:

A. All ODS containers being shipped to DDDE-Germesheim will be coordinated in advance through the Transportation Office by telephoning 378-3733/3618 or civilian 07274-58733/58618. DDDE receives IDS on Mondays and Tuesdays. If units cannot turn in on these days, special accommodations will be made.

B. All types of ODS containers will be accepted to include cylinders, fire extinguishers, drums, spheres, and canisters. The exception is aircraft specific halon canisters, which should be returned through the airframe maintenance channels. Government recovery cylinders are available free of charge through DSCR for ODS turned in and can be requisitioned through the normal MILSTRIP procedures. The government cylinders used for recovering CFC refrigerants are painted orange, and halon red. Both have yellow tops and dual port (two valves) to distinguish them from single port valve standard spec gas (virgin) cylinders.

C. All ODS containers being turned in to DDDE-Germesheim must have the following information attached:

1. The shipper's DoD Activity Address Code (DoDAAC).
2. The shipping activity with POC and phone number.
3. The NSN of cylinder(s) containing the recovered ODS (see Section 3).
4. Type of ODS (i.e., Halon 1301 or CFC-12).
5. The quantity of containers on the pallet or within the shipping crate.

DoD ODS TURN-IN PROCEDURES (CONTINUED)

Note: When multiple containers (cylinders, drums, spheres, canisters, or fire extinguishers) with the same NSN are shipped palletized on in a box/crate, apply only one tag/label to the shipment, not to each item. Pallets must contain items of the same type (i.e., cylinders, drums, canisters, etc.). Boxed/crated loads may contain different size containers, but should contain the same type of product, and must note on the exterior that multiple NSNs are within.

D. Fire suppression system cylinders and canisters with electrical charges or initiators must be deactivated prior to shipment to DDDE. Also, safety caps must be used to cover exposed actuation mechanisms and discharge ports on these special cylinders, otherwise dangerous safety situations could arise during the shipping, receiving, or storage process. Local fire protection experts can provide safety services. Special handling procedures for halon system cylinders are provided in Section 1. If further guidance is needed, contact Mr. Joe Schmierer of the ODS Reserve Program Office in Richmond, VA at DSN 695-5202 or (804) 279-5202.

E. Monetary credit will not be given for turned in ODS or cylinders. However, ownership credit will always be given to the Army for the pounds of ODS turned in. ODS can be requisitioned from the ODS Reserve by Army-authorized activities.

F. The following procedures must be followed:

1. Units with leaking containers must transfer the ODS into proper storage containers before shipment to DDDE-Germesheim. If guidance is needed, please call one of the DDDE-Germesheim POCs as provided in paragraph H of this section.

2. Cylinders must be banded together in an upright position, using a wooden collar, on wooden pallets using metal/steel-banding material or secured in a wooden crate.

3. Halon fire extinguishers/system cylinders must have safety pins installed and secured to prevent accidental release. Safety caps will be installed on all cylinders.

4. DD Form 1348-1 must be the document used to turn in ODS cylinders, with the address shown in paragraph G.4.

5. The cargo vehicle (truck/trailer) must have the means for forklift off-loading (removable side rails, etc.). Containers must not be off-loaded by hand.

DoD ODS TURN-IN PROCEDURES (CONTINUED)

G. Transportation Guidance

1. When transporting compressed gas cylinders with ODS, the following guidelines apply to military and in some cases contracted carriers:

(a) Military carriers must be in compliance with USAREUR Regulation 55, USAFE Regulation 75, the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR), and the equivalent in Germany (GGVS).

(b) Any shipment performed by U.S. military and military vehicles will require driver training and certification, inspection requirements of vehicles, and other requirements as mandated by regulation.

(c) Shipments coming from outside of Germany must be in compliance with exporting and importing country requirements.

(d) Shipments performed over water must be in compliance wit the international Maritime Dangerous Goods Code (IMDG).

2. For units in Germany without appropriate transportation capability, transportation services for ODS to the new collection point at DDDE will be made through DRMO disposal contracts commencing 1 May 1997. Units that want to utilize this service are required to provide a separate DD Form 1348-1 to fund transportation, and shall contact the servicing DRMO for instructions. DRMS will monitor shipments for regulatory compliance.

3. Transportation cost assistance can be provided for shipments costing $250.00 or greater. This cost assistance is strictly for transporting DS and not for packing costs. The $250.00 minimum transportation cost assistance applies to shipping ODS from the overseas base to DDDE. Shipments from the consolidation point will be funded by the ODS Reserve for transporting ODS to the United States. For transportation cost assistance fax the following data to Mr. Steve Minus at (804) 279-4970 or DSN 695-4970:

(a) Type and quantity of ODS
(b) Total weight of the shipment
(c) The shipping cost
(d) Requesting facility and point of contact

DoD ODS TURN-IN PROCEDURES (CONTINUED)

4. Turn-ins originating in Europe, except for the United Kingdom, should be forwarded to the following consolidation point:

SWE300
DEFENSE DISTRIBUTION DEPOT EUROPE
BUILDING 7886
U.S. DEPOT GERMESHEIM
GATE 2
76726 GERMESHEIM

H. Points of contact at Germesheim are:

Richard Hawkins	DSN 378-3533	07274-58-533
SFC Pretlow	DSN 378-3733	07274-58-733
Peter Wuerschke	DSN 378-3729	07274-58-729

After duty hours, contact gate guards at 378-3678. Security guards have the home telephone numbers of the designated personnel.

Fleet and Industrial Supply Center (FISC), Pearl Harbor, Hawaii

I. The primary turn-in site for the DoD ODS Reserve is located at DDRV in Richmond, VA. However, a collection site has been established at Pearl Harbor, HI. This site is not a mini-Reserve, only a collection site. The following procedures apply.

II. Only halon and refrigerant products will be accepted. Of you have other eligible items, please contact Mr. Steve Minus at (804) 279-4970 or DSN 695-4970.

III. Turn-in procedures:

A. Deliveries will be accepted Monday through Friday, 0800-1400 (except holidays). Advance notification is not required on quantities of four (4) pallets or less. For quantities greater than four pallets, a delivery schedule should be coordinated in advance with FISC Pearl Harbor, Code 302, telephone (808) 474-3770. Any other special accommodations should be coordinated at the same number.

B. All types of ODS containers will be accepted to include cylinders, fire extinguishers, drums, spheres, and canisters. The exception is aircraft specific halon canisters, which should be returned through the airframe maintenance channels. Government recovery cylinders are available free of charge through DSCR for ODS turned in and can be requisitioned through the normal MILSTRIP procedures. The government cylinders used for recovering CFC refrigerants are painted orange, and halon red. Both have yellow tops and dual port (two valves) to distinguish them from single port valve standard spec gas (virgin) cylinders.

DoD ODS TURN-IN PROCEDURES (CONTINUED)

C. All ODS containers being turned in to FISC Pearl Harbor must have the following information attached:

1. The shipper's DoD Activity Address Code (DoDAAC).
2. The shipping activity with POC and phone number.
3. The NSN of cylinder(s) containing the recovered ODS (see Section 3).
4. Type of ODS (i.e., Halon 1301 or CFC-12).
5. the quantity of containers on the pallet or within the shipping crate.

Note: When multiple containers (cylinders, drums, spheres, canisters, or fire extinguishers) with the same NSN are shipped palletized on in a box/crate, apply only one tag/label to the shipment, not to each item. Pallets must contain items of the same type (i.e., cylinders, drums, canisters, etc.). Boxed/crated loads may contain different size containers, but should contain the same type of product, and must note on the exterior that multiple NSNs are within.

D. Fire suppression system cylinders and canisters with electrical charges or initiators must be deactivated prior to shipment to FISC Pearl Harbor. Also, safety caps must be used to cover exposed actuation mechanisms and discharge ports on these special cylinders, otherwise dangerous safety situations could arise during the shipping, receiving, or storage process. Local fire protection experts can provide safety services. Special handling procedures for Halon system cylinders are provided in Section 1. If further guidance is needed, contact Mr. Joe Schmierer of the ODS Reserve Program Office in Richmond, VA at DSN 695-5202 or (804) 279-5202.

E. Monetary credit will not be given for turned in ODS or cylinders. However, ownership credit will always be given to the Army for the pounds of ODS returned to the ODS Reserve. ODS can be requisitioned by Army-authorized activities.

F. The following procedures must be followed:

1. Units with leaking containers must transfer the ODS into proper storage containers before shipment to DDDE-Germesheim. If guidance is needed, please call one of the DDDE-Germesheim POCs as provided in paragraph H of this section.

2. Cylinders must be banded together in an upright position, using a wooden collar, on wooden pallets using metal/steel-banding material or secured in a wooden crate.

3. Halon fire extinguishers/system cylinders must have safety pins installed and secured to prevent accidental release. Safety caps will be installed on all cylinders.

DoD ODS TURN-IN PROCEDURES (CONTINUED)

4. DD Form 1348-1 must be the document used to turn in ODS cylinders, with the address shown in paragraph G.4.

5. The cargo vehicle (truck/trailer) must have the means for forklift off-loading (removable side rails, etc.). Containers must not be off-loaded by hand.

G. Transportation Guidance

1 When transporting compressed gas cylinders with ODS, the following guidelines apply to military and in some cases contracted carriers:

(a) Shipments coming from outside of Hawaii must be in compliance with exporting and importing country requirements.

(b) Shipments performed over water must be in compliance with the International Maritime dangerous Goods Code (IMDG).

2. Transportation cost assistance can be provided for shipments costing $250.00 or greater. This cost assistance is strictly for transporting DS and not for packing costs. The $250.00 minimum transportation cost assistance applies to shipping ODS from the Hawaiian or Pacific base to the consolidation point. Shipments from the consolidation point will be funded by the ODS Reserve for transporting ODS to DDRV, Richmond, VA. For transportation cost assistance fax the following data to Mr. Steve Minus at (804) 279-4970 or DSN 695-4970:

(a) Type and quantity of ODS
(b) Total weight of the shipment
(c) The shipping cost
(d) Requesting facility and point of contact

3. Turn-ins originating in the Pacific region should be forwarded to the following consolidation point:

N00604
FLEET AND INDUSTRIAL SUPPLY CENTER
BOX 300
CODE 302/BLDG 1762
PEARL HARBOR, HAWAII 96860-5300
76726 Germesheim

H. Point of contact at FISC Pearl Harbor is Stan Sousa, (808) 474-4076.

DoD ODS TURN-IN PROCEDURES (CONTINUED)

SECTION 3: NSNs

EMPTY RECOVERY CYLINDERS

COMMODITY	EMPTY RECOVERY SIZE (LB)	CYLINDER NSNs
HALONS		
Halon 1202	160	8120-01-356-1781
Halon 1211	200	8120-01-356-1248
Halon 1211	1500	8120-01-356-1249
Halon 1301	117	8120-01-371-0533*
*DENOTES A HIGH-PRESSURE CYLINDER OF 600 PIS PLUS		
REFRIGERANTS		
R-11	59	8120-01-356-5960
R-11	170	8120-01-356-9756
R-11	1400	8120-01-355-9763
R-12	45	8120-01-355-4017
R-12	145	8120-01-355-4018
R-12	1190	8120-01-355-4019
R-114	57	8120-01-356-1245
R-114	165	8120-01-356-1246
R-114	1360	8120-01-356-1247
R-500	43	8120-01-357-6774
R-500	127	8120-01-357-7656
R-500	1045	8120-01-357-7657
R-502	44	8120-01-357-6770
R-502	128	8120-01-357-6771
R-502	1050	8120-01-357-6769

EMPTY SPEC GAS (VIRGIN) PRODUCT CYLINDERS (FOR TURN-INS ONLY)

COMMODITY	EMPTY RECOVERY SIZE (LB)	CYLINDER NSNs
HALONS		
Halon 1202	160	8120-01-339-6277
Halon 1202	2000	8120-01-371-0532
Halon 1211	200	8120-01-337-2899
Halon 1211	1500	8120-01-396-2165
Halon 1301	137 & 150	8120-00-531-8193
Halon 1301	1123 & 1240	8120-01-356-5961

DoD ODS TURN-IN PROCEDURES (CONTINUED)

REFRIGERANTS

R-11	59	8120-01-355-9760
R-11	170	8120-01-355-9761
R-11	1400	8120-01-355-9762
R-12	45	8120-01-337-1816
R-12	145	8120-01-337-6242
R-12	1190	8120-01-355-4016
R-114	57	8120-01-354-9400
R-114	165 (49x10)	8120-00-063-3983
R-114	165 (36x12)	8120-01-337-6236
R-114	1360	8120-01-356-1244
R-500	43	8120-01-357-6773
R-500	127	8120-01-357-6772
R-500	1045	8120-01-357-9137
R-502	44	8120-01-357-7655
R-502	128	8120-01-357-6239
R-502	1050	8120-01-357-6907

ODS TURN-INS

COMMODITY	EMPTY RECOVERY SIZE (LB)	CYLINDER NSNs
HALONS		
Halon 1202	160	6830-01-356-1780
Halon 1211	1-5	6830-01-376-8013
Halon 1211	6-10	6830-01-376-8014
Halon 1211	11-20	6830-01-376-8015
Halon 1211	21-60	6830-01-376-8016
Halon 1211	61-125	6830-01-376-8017
Halon 1211	126-200	6830-01-356-1209
Halon 1211	201-340	6830-01-376-8018
Halon 1211	341-1500	6830-01-356-1211
Halon 1301	1-5	6830-01-376-8394
Halon 1301	6-10	6830-01-376-8395
Halon 1301	11-20	6830-01-376-8396
Halon 1301	21-70	6830-01-376-8397
Halon 1301	71-100	6830-01-376-8398
Halon 1301	101-117	6830-01-371-0501
Halon 1301	118-125	6830-01-376-8399
Halon 1301	126-150	6830-01-356-9752
Halon 1301	151-200	6830-01-376-8400
Halon 1301	201-260	6830-01-376-8401
Halon 1301	261-350	6830-01-376-8402
Halon 1301	351-530	6830-01-376-8403
Halon 1301	531-600	6830-01-376-8404
Halon 1301	601-1240	6830-01-356-5958

DoD ODS TURN-IN PROCEDURES (CONTINUED)

REFRIGERANTS		
R-11	59	6830-01-355-9754
R-11	170	6830-01-355-9756
R-11	1400	6830-01-355-9758
R-12	45	6830-01-355-4013
R-12	145	6830-01-355-6648
R-12	1190	6830-01-355-4015
R-114	57	6830-01-356-1203
R-114	165	6830-01-356-1205
R-114	1350	6830-01-355-1207
R-500	43	6830-01-357-7650
R-500	127	6830-01-358-5123
R-500	1045	6830-01-357-7654
R-502	44	6830-01-357-6726
R-502	128	6830-01-357-6727
R-502	1050	6830-01-357-6905

DRUMS/CANS CONTAINING CFC SOLVENTS FOR TURN-INS

COMMODITY	**DRUM/CAN CAPACITY**	**DRUM/CAN NSNs**
CFC/Solvent 113		
	6 oz	6850-01-424-8532
	1 pint	6850-01-424-8533
	1 quart	6850-01-424-8540
	1 gal/11 lb	6850-01-424-8531
	100 lb	6850-01-424-8535
	200 lb	6850-01-424-8536
	5 gal/60 lb	6850-01-424-8534
	55 gal/690 lb	6850-01-424-8537
1,1,1 Trichloroethane		
	6 oz	6810-01-424-8538
	1 pint	6810-01-424-9662
	1 quart	6810-01-424-9665
	1 gal/12 lb	6810-01-424-8539
	5 gal/60 lb	6810-01-424-9674
	55 gal/640 lb	6810-01-424-9673

DoD ODS TURN-IN PROCEDURES (CONTINUED)

SECTION 4: CLASS I ODS IN THE ODS RESERVE

CFCs	**Chemical Name**	**Symbol**
CFC-11	Trichlorofluoromethane	$CFCl_3$
CFC-12	Dichlorodifluoromethane	CF_2Cl_2
CFC-114	Dichlorotetrafluoroethane	$C_2F_4Cl_2$
R-500	Azeotropic mix of R-12 and 1,1,1 Difluoroethane (HFC-152a)	CF_2Cl_2/C_2F_2
R-502	Azeotropic mix of Chloropenta-fluoroethane (R-115) and Chlorodifluoromethane (HCFC-22)	CF_2Cl/C_2F_5Cl
Halons		
Halon 1202	Dibromodifluoromethane	CF_2Br_2
Halon 1211	Bromochlorodifluoromethane	CF_2ClBr
Halon 1301	Bromotrifluoromethane	CF_3Br
Solvents		
Methyl Chloroform	1,1,1 Trichloroethane	CH_3CCl_3
CFC-113	Trichlorotrifluoroethane	$C_2F_3Cl_3$

APPENDIX F

DISPOSITION OF EXCESS OZONE-DEPLETING SUBSTANCES (ODS) AT ARMY INSTALLATIONS

APPENDIX F

DASA(ESOH) MEMORANDUM OF 18 OCTOBER 1994, "DISPOSITION OF EXCESS OZONE-DEPLETING SUBSTANCES (ODS) AT ARMY INSTALLATIONS"

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
INSTALLATIONS LOGISTICS AND ENVIRONMENT
110 ARMY PENTAGON
WASHINGTON DC 20310-0110

OCT 18 1994

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Disposition of Excess Ozone-Depleting Substances (ODS) at Army Installations

Reference memorandum, Deputy Under Secretary of Defense (Environmental Security), 13 Apr 1994, subject: Phase-out of Class I Ozone Depleting Substances (ODS).

The referenced memorandum provided OSD guidance on the disposition of excess ODS at Department of Defense installations. This memorandum establishes procedures to which all Army installations shall comply. The procedures contained in the attachment are intended to maintain unit operational readiness while also eliminating the Army's dependence on ODSs. These procedures apply to both weapon system and facility applications, unless otherwise noted.

Installation commanders should be reminded of the requirements of Sections 608 and 609 of the Clean Air Act concerning the training and certification of personnel responsible for servicing/maintaining equipment which utilize ODS as refrigerants.

The policy and procedures contained in this memorandum, with attachment, shall be implemented by all Army installations, to include those installations identified for closure under the Base Realignment and Closure (BRAC) Act. Discrepancies between this memorandum and individual installation BRAC agreements should be referred to the Army Acquisition Pollution Prevention Support Office (AAPPSO) for resolution.

Each installation shall continue to develop plans and budget for the retrofit or replacement of existing halon 1301 fire suppression systems and equipment utilizing CFCs as a refrigerant. The Strategic Plan for Eliminating ODS from Army Facilities is being developed and will be available first quarter, fiscal year 1995.

AAPPSO will provide additional guidance and policy as required.

APPENDIX F

DASA(ESOH) MEMORANDUM OF 18 OCTOBER 1994, "DISPOSITION OF EXCESS OZONE-DEPLETING SUBSTANCES (ODS) AT ARMY INSTALLATIONS" (continued)

My points of contact in AAPPSO are Dr. Daniel P. Verdonik and Mr. Thomas A. Bush, DSN 284-0815/6, Comm (703) 274-0815/6, fax (703) 274-5146.

Lewis D. Walker
Deputy Assistant Secretary of the Army
(Environment, Safety and Occupational Health)
OASA(I,L&E)

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APPENDIX F

DASA(ESOH) MEMORANDUM OF 18 OCTOBER 1994, "DISPOSITION OF EXCESS OZONE-DEPLETING SUBSTANCES (ODS) AT ARMY INSTALLATIONS" (continued)

OZONE-DEPLETING SUBSTANCES GUIDANCE

It is DOD policy that: 1) no ODS shall be sold, contracted for disposal, or given away to any activity, to include turn-in to Defense Reutilization Management Office (DRMO), 2) all excess ODS shall be shipped directly to the DoD Reserve at the Defense General Supply Command (DGSC), Richmond, Virginia (shipments must be identified as originating from an Army activity in order for the Army account to be credited with the turn-in quantity), and 3) all shipments to the DOD Reserve shall comply with CFR 49, Section 173.301, Requirements for Shipment of Compressed Gas Cylinders.

Excess ODS are defined as: 1) for halon (1301 and 1211), that halon which is currently not installed in an operational fire suppression system. Halon bottles installed as back-up in operational systems or maintained as a "combat load" by tactical units for weapon system applications are not considered excess. Halon becomes "excess" as fire suppression systems are retrofit or replaced with systems employing non-ODS substitutes. Halon shall not be stockpiled or placed into a reserve at the installation level. 2) for chlorofluorocarbon (CFC) -11, CFC-12, CFC-500, CFC-502 and other refrigerants, when that particular refrigerant is no longer required by the installation to support operational equipment (e.g. chillers, air conditioners, freezers, etc.). Installations shall recycle/re-use all refrigerants to the maximum extent possible in lieu of procurement of replacement refrigerant. Refrigerants shall be shipped to DGSC Richmond after all existing equipment utilizing a particular refrigerant is retrofit or replaced, or when the installation deems that recycle/re-use of a particular refrigerant is no longer required. Refrigerants recovered from weapon system applications shall be shipped to the DoD reserve to support continuing weapon system requirements. 3) for CFC-113, methyl chloroform (1,1,1 Trichloroethane), and other solvents, when that particular solvent is no longer required by the installation to support continuing operations. Un-used and recyclable solvents shall be shipped to DGSC Richmond. Used solvents which have been classified as hazardous waste are not considered excess and shall be disposed of IAW applicable laws and regulations.

Facility requirements for ODS shall not be supported through the DOD Reserve. Installations may continue to procure or requisition ODS via normal supply procedures under the conditions of Public Law 102-484, Section 326, for as long as stocks are available.

APPENDIX G

CASCADING OF CFC REFRIGERANT

APPENDIX G

CASCADING OF CFC REFRIGERANT

The DASA(ESOH) memorandum of 18 Oct 94 and the *Strategic Guidance and Planning for Eliminating Ozone-Depleting Chemicals from U.S. Applications* both strongly recommend that installation ODC managers plan the retirement of their AC&R equipment so that the installation operations are not dependent on the future availability of CFC refrigerants. This involves the retirement of older equipment as soon as possible, and the recovery/ recycle of the retired equipment's refrigerant for reuse on the installation. This process is called "cascading" CFCs.

The most important thing you need to have to be able to properly plan to cascade your CFC refrigerant is an adequate inventory of your CFC AC&R equipment. You also need to have a good idea of the annual leak rate on your equipment, which should be included in your inventory. With this information, you should be able to 1) identify your worst leakers and/or largest users of CFCs, and 2) determine your annual CFC requirements.

With your inventory in hand, you should first focus on retiring a major piece of CFC equipment for every type of CFC refrigerant you need (R-11, R-12, R-502, etc.) if you don't already have this type of refrigerant on-hand. If you have a continuing need for R-12, R-113, or R-114, you should retire at least one of these systems as expeditiously as possible.

The first pieces of this equipment you retire should then be the older pieces, since RPMA money may already be programmed for their replacement. The oldest equipments are also usually the worst leakers, and should be near (or over) their design economic life. Also, the older equipment are usually the least energy efficient – significant improvements have been made over the last ten years, for example, in building air conditioning centrifugal chillers, with achievable efficiency improvements of 40% or more.

Finally, remember that estimates are just estimates. Your CFC equipment should be monitored closely to keep track of refrigerant usage, and your plans should be updated accordingly.

What follows are three very general examples of plans to cascade CFC refrigerants. These examples use equipment averages and broad assumptions, while your plans should not. (For example, these examples assume no refrigerant servicing requirement in the year a piece of equipment is retired, which is not good to assume unless all your change-outs will occur in October.) However, they do illustrate the basic progression of equipment retirements that your plan should reflect, so that your installation no longer needs to purchase CFC refrigerants.

CASCADING OF CFC REFRIGERANT (CONTINUED)

EXAMPLE #1

SITUATION: Your installation has three R-12 centrifugal chillers of average size providing air conditioning for three administrative buildings.
Average size Army R-12 chiller = 800 tons @ 2.2 lb/ton = 1760 lb
Average R-12 chiller leak rate = 15 percent per year
Chillers are 10/15/20 years old with 10/15/20% leak rates:
Annual leakage = 1760 x (0.10 + 0.15 + 0.20) lb = 792 lb

WITHOUT PLANNED CASCADE
Retire the oldest chiller in FY02 at 23 years old: cost =$640,000
Recover 90% of refrigerant: cascade 1,584 lb of R-12
R-12 use for FY02-04: 1760 x (0.10 + 0.15) = 440 lb per year

Year	FY99	FY00	FY01	FY02	FY03	FY04
CFC Price	$100/lb	$150/lb	$210/lb	$280/lb	$360/lb	$500/lb
CFC Qty	792lb	792lb	792lb	0	0	0
CFC Cost	$792K	$118.8K	$166.3K	0	0	0
Conv Cost	0	0	0	$640.0K	0	0
TOTAL	$79.2K	$118.8K	$166.3K	$640.0K	$0	$0

TOTAL FY99-03 = $1,004,300
TOTAL FY04-12 = UNSUPPORTABLE

WITH PLANNED CASCADE
Retire oldest system in FY99 at 20 years old: cost = $640,000
Recover 90% of refrigerant: cascade 1,584 lb of R-12
Since the remaining systems using 440 lb/year, the recovered 1,584 lb will last +3 years
Therefore, retire next oldest system in FY02 at 18 years old: cost = $640,000
Recover another 1,584 lb, plus 264 lb left over = 1,848 lb R-12
Since the remaining systems are now using only 176 lb/year, the 1,848 lb of R-12 should last over ten years!
Retire last system in FY12 at 23 years old: cost $640,000

Year	FY99	FY00	FY01	FY02	FY03	FY04
CFC Price	$100/lb	$150/lb	$210/lb	$280/lb	$360/lb	$500/lb
CFC Qty	0	0	0	0	0	0
CFC Cost	0	0	0	0	0	0
Conv Cost	$640.0K	0	0	$640.0K	0	0
TOTAL	$640.0K	$0	$0	$640.0K	$0	$0

TOTAL FY99-03 = $1,280,000
TOTAL FY04-12 = $ 640,000

CASCADING OF CFC REFRIGERANT (CONTINUED)

EXAMPLE #2

SITUATION: Your installation has two R-11 centrifugal chillers of average size providing air conditioning for two administrative buildings.
Average size Army R-11 chiller = 550 tons @ 2.2 lb/ton = 1210 lb
Average R-11 chiller leak rate = 15%/year
Chillers 15/17 years old with 13/17% leak rates:
Annual leakage is 1210 x (0.13 + 0.17) lb = 363 lb

WITHOUT PLANNED CASCADE: Retire the oldest chiller in FY07 at 25 years old: cost = $440,000

Year	FY99	FY00	FY01	FY02	FY03	FY04
CFC Price	$50/lb	$70/lb	$100/lb	$140/lb	$190/lb	$250/lb
CFC Qty	363lb	363lb	363lb	363lb	363lb	363lb
CFC Cost	$18.2K	$25.4K	$36.3K	$50.8K	$69.0K	$90.8K
Conv Cost	0	0	0	0	0	0
TOTAL	$18.2K	$25.4K	$36.3K	$50.8K	$69.0K	$90.8K

TOTAL FY99-03 = $290,500
TOTAL FY04-12 = UNSUPPORTABLE

WITH PLANNED CASCADE: Retire the oldest system in FY99 at 17 years old: cost = $440,000
Recover 90% of refrigerant: cascade 1,089 lb of R-11
Remaining system is using 157 lb/year, so 1,089 lb will last 7 years
Retire the last R-11 system in FY06 at 22 years old: cost = $440,000

Year	FY99	FY00	FY01	FY02	FY03	FY04
CFC Price	$50/lb	$70/lb	$100/lb	$140/lb	$190/lb	$250/lb
CFC Qty	0	0	0	0	0	0
CFC Cost	0	0	0	0	0	0
Conv Cost	$440.0K	0	0	0	0	0
TOTAL.9K	$440.0K	0	0	0	0	0

TOTAL FY99-03 = $440,000
TOTAL FY04-12 = $440,000

CASCADING OF CFC REFRIGERANT (CONTINUED)

EXAMPLE #3

SITUATION: Your installation has four R-12 cold storage units and three R-12 walk-in refrigerators for food storage for the troops.
Average Army R-12 cold storage unit = 35 horse-power @ 5.9 lb/hp = 207 lb of R-12 in each
Average cold storage leak rate = 25%/year
Cold storage units are 7/8/9/10 years old with 20/23/27/30% leak rates:
Annual leakage = 207 x (0.20 + 0.23 + 0.27 + 0.30) = 207 lb of R-12
Average Army major R-12 appliance = 7.5 horse-power @ 5.9 lb/hp = 44 lb of R-12 in each
R-12 appliances are 8/9/10 years old with 20/25/30% leak rates:
Annual leakage = 44 x (0.20 + 0.25 + 0.30) lb = 33 lb R-12

WITHOUT PLANNED CASCADE
Retire the oldest C/S unit in FY99 at 10 years old: cost = $35,000
Retire next oldest C/S unit in FY01 at 11 years old, and then one every other year thereafter
Retire oldest R-12 appliance in FY99 at 10 years old: cost = $11,300
Retire next oldest R-12 appliance in FY01 at 11 years old, and then one every year thereafter

Year	FY99	FY00	FY01	FY02	FY03	FY04
R-12 Price	$100/lb	$150/lb	$210/lb	$280/lb	$360/lb	$500/lb
R-12 Qty	0	83lb	0	0	0	0
R-12 Cost	$0	$12.5K	$0	$0	$0	$0
Conv Cost	$46.3K	0	$46.3K	$11.3K	$35.0K	$0
TOTAL	$46.3K	$12.5K	$46.3K	$11.3K	$35.0K	$0

TOTAL FY99-03 = $151,400
TOTAL FY04-12 = $ 35,000
TOTAL COST = $186,400

WITH PLANNED CASCADE
Retire two oldest R-12 C/S units in FY99: cost = 2 x $35,000 = $70,000
Recover 90% of the refrigerant: cascade 372 lb of R-12
Total R-12 requirement for FY99-01: 277 lb
Retire oldest R-12 appliance in FY02 at 13 years old: cost = $11,300
Recover 90% of the refrigerant: cascade 39 lb of R-12
Total cascaded R-12 in FY02: 39 lb + 95 lb remaining = 134 lb
Total R-12 requirement for FY02: 100 lb, with 34 lb left over
Retire third R-12 C/S unit in FY03 at 12 years old: cost = $35,000
Recover 90% of the refrigerant: cascade 186 lb of R-12
Total cascaded R-12 in FY03: 186 lb + 34 lb remaining = 220 lb
Total R-12 requirement for FY03-05: 189 lb, with 31 lb left over

CASCADING OF CFC REFRIGERANT (CONTINUED)

EXAMPLE #3 (Continued)

Retire second R-12 appliance in FY06 at 16 years old: cost = $11,300
Recover 90% of the refrigerant: cascade 39 lb of R-12
Total cascaded R-12 in FY06: 39 lb + 31 lb left over = 70 lb
Total R-12 requirement FY06: 52 lb, with 18 lb left over

Retire last R-12 appliance in FY07 at 18 years old: cost = $11,300
Recover 90% of the refrigerant: cascade 39 lb of R-12
Total cascaded R-12 in FY07: 39 lb + 18 lb left over = 57 lb
Total R-12 requirement in FY07: 41 lb, with 16 lb left over
Retire the last R-12 C/S unit in FY08 at 19 years old: cost = $35,000

Year	FY99	FY00	FY01	FY02	FY03	FY04
R-12 Price	$100/lb	$150/lb	$210/lb	$280/lb	$360/lb	$500/lb
R-12 Qty	0	0	0	0	0	0
R-12 Cost	0	0	0	0	0	0
Conv Cost	$70.0K	$0	$0	$11.3K	$35.0K	$0

TOTAL FY99-03 = $116,300
-- Saved Cost = $ 35,100 (23%)
TOTAL FY04-12 = $ 57,600
TOTAL COST = $173,900
-- Saved Cost = $ 12,500 (7%)