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OPERATOR IN RESPONSIBLE CHARGE AND ASSISTANT OPERATOR IN RESPONSIBLE CHARGE TRAINING AND CERTIFICATION PROGRAM FOR U.S. NAVY OVERSEAS DRINKING WATER SYSTEMS

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CNIC MANUAL 5090.3

From: Commander, Navy Installations Command

Subj: OPERATOR IN RESPONSIBLE CHARGE AND ASSISTANT OPERATOR IN RESPONSIBLE CHARGE TRAINING AND CERTIFICATION PROGRAM FOR U.S. NAVY OVERSEAS DRINKING WATER SYSTEMS

Ref: See Appendix A

1. Purpose. To ensure that personnel in charge of drinking water systems on overseas U.S. Navy installations are at least as competent and qualified as operators certified within the U.S. regulatory framework. Commander, Navy Installations Command (CNIC), as the Navy Executive Agent (EA) for Drinking Water Ashore, directs adherence with this manual and the requirements contained therein as the standards for overseas installations to adopt and implement. This manual, in conjunction with reference (a), provides two standards that meet the guidance and direction set forth in references (b) and (c) by the Office of the Chief of Naval Operations (OPNAV), and Deputy Assistant Secretary of the Navy, Environment (DASN(E)). This manual also ensures drinking water system Operators in Responsible Charge (ORCs) and Assistant Operators in Responsible Charge (AORCs) are qualified, competent and certified.

2. Scope and Applicability. This manual applies to all CNIC Headquarters and Regions.

4. Records Management. Records created as a result of this instruction regardless of media and format, will be managed per SECNAV M-5210.1 of January 2012.

5. Review and Effective Date. Per OPNAVINST 5215.17, CNIC (N4) will review this manual annually on the anniversary of its effective date to ensure applicability, currency, consistency with Federal, DoD, SECNAV, and Navy policy. This manual will automatically expire 10 years after effective date unless reissued or canceled prior to the 10-year anniversary date, or an extension has been granted.

C. S. GRAY
Chief of Staff

Releasability and distribution:
This manual is cleared for public release and is available electronically only via Gateway 2.0 web site, https://g2.cnic.navy.mil/CC/Documents/Forms/Directives%20Only.aspx,

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ACRONYMS

ABC	Association of Boards of Certification
AORC	Assistant Operator in Responsible Charge
AWWA	American Water Works Association
BOS	Base Operating Support
CNIC	Commander, Navy Installations Command
CTO	Certificate to Operate
DoD	Department of Defense
ERK	Expected Range of Knowledge
FGS	Final Governing Standards
HN	Host Nation
HQ	Headquarters
ICO	Installation Commanding Officer
IWQB	Installation Water Quality Board
NAVFAC	Naval Engineering Command
NOCA	Navy Operator Certification Authority
OEBGD	Overseas Environmental Baseline Guidance Document
ORC	Operator in Responsible Charge
OT&C	Operator Training and Certification
POA&M	Plan of Action and Milestones

PWO	Public Works Officer
PWS	Public Water System
RWQB	Regional Water Quality Board
UEM	Utilities and Energy Management
USEPA	United States Environmental Protection Agency
U.S.	United States
WQOC	Water Quality Oversight Council
WTP	Water Treatment Plant

CHAPTER 1
INTRODUCTION

1. Background

a. Public consumption of poor quality drinking water poses a significant potential threat to human health and safety. Rapid and widespread transmission of waterborne illnesses often occurs when the public drinking water supply becomes contaminated. Therefore, the ownership and operation of a public water system (PWS) constitutes a significant force protection and public health responsibility.

b. In the U.S., the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the U.S. Virgin Islands, the Northern Mariana Islands and other territories or possessions over which the U.S. has jurisdiction, many federal and state laws and regulations are in place to ensure that public drinking water is safe for human consumption.

c. Reference (d) and its 1986 and 1996 amendments provide the backbone for all drinking water laws in the U.S. The Safe Drinking Water Act regulations promulgated by the U.S. Environmental Protection Agency (USEPA) include provisions that require public Navy drinking water systems to be certified by competent authorities. To operate water systems within U.S. jurisdictions, Navy water system operators must comply with all federal and state drinking water regulations including maintaining applicable permits and operators' certifications in good standing. However, overseas Navy installations are subject to a blend of U.S. and Host Nation (HN) regulations that do not specifically address operator or system classification.

2. Purpose. Together with the Certificate to Operate (CTO) Requirements and Criteria, the intent of the Operator Training and Certification (OT&C) program for Navy drinking water systems is to fulfill the Secretary of the Navy (SECNAV) directive and Chief of Naval Operations (CNO) imperative as defined in references (c), (e) and (f). Therefore, to protect public health, Navy drinking water systems must be properly operated, maintained and managed. Drinking water systems are complex, with rapidly advancing technological and regulatory requirements; for this reason and to protect the financial investment of drinking water supplies and associated system infrastructures, the Navy overseas drinking water system operators who make process control and system integrity decisions about water quality or quantity that can potentially affect public health must be certified similar to their U.S. counterparts. To sit for the examination and obtain certification, Navy overseas drinking water system operators must meet the minimum educational requirements and possess the acceptable level of experience.

3. Scope

a. Reference (g) and the country specific Final Governing Standards (FGS) require that the "U.S. Department of Defense (DoD) installations will ensure that personnel are appropriately trained to operate DoD water systems." However, these documents do not establish a program to

ensure operators are trained and certified to have a level of competence and experience similar to that required by federal and state operator certification programs in the U.S.

b. In addition, reference (b) requires overseas drinking water treatment and distribution system operators be trained as required by reference (g) and the governing FGS and provided basic training needed to comply with all applicable federal, state and local safe drinking water regulations; Executive Orders; and Navy policies. While Navy overseas regulations require Navy drinking water systems have competent operators, these regulations currently do not have specific provisions for a formal Navy drinking water systems OT&C program similar to that for U.S. established systems.

c. It is the responsibility of the Navy Overseas Water Quality Oversight Council (WQOC) to develop procedures and minimum standards for the training and certification of the Navy overseas drinking water Operator in Responsible Charge (ORC) and Assistant Operator in Responsible Charge (AORC).

d. Accordingly, this document establishes a Navy overseas ORC and AORC OT&C program to ensure operators satisfy the requirements of an equivalent stateside, USEPA-approved program that is modified to include overseas requirements. This program accomplishes the following:

(1) Provides a system for classifying water treatment and distribution facilities.

(2) Establishes procedures for the examination and certification of water treatment and distribution facility operators to operate these facilities.

(3) Establishes the professional development requirements for operator recertification and stipulates the minimum number of contact hours each operator must achieve to maintain or improve operator capabilities and certification levels.

4. Program Applicability. The requirements of the Navy's OT&C program apply to all Navy overseas ORCs and AORCs. These roles may be filled by Navy operators, DoD, and contractor operating personnel (e.g., base operating support (BOS) contractors), Region service providers for leased properties and lessor employees.

5. Program Execution

a. Overall water quality management and oversight for U.S. Navy drinking water systems at overseas installations is outlined in reference (h) and the Navy Operator Certification Authority (NOCA) Board Charter. They prescribe participation from the WQOC, NOCA Board, Regional Water Quality Boards (RWQB) and Installation Water Quality Boards (IWQB).

b. The NOCA Board is a subgroup within the WQOC assigned to manage the OT&C program. The WQOC chair and primary principals will determine the make-up and number of members assigned to the NOCA Board.

c. The NOCA Board oversees various program requirements for the certification of operators of water treatment plants (WTP) and water distribution systems to ensure the U.S. Navy overseas drinking water systems are properly operated, maintained and managed.

d. These guidelines were developed to enable the NOCA Board, with support from RWQBs and IWQBs, to administer a successful operator certification program ensuring the protection of the public.

6. Roles and Responsibilities

a. CNIC will:

(1) Chair the WQOC.

(2) Enforce this instruction, providing additional guidance and interpretation to Navy Regions, as needed.

(3) Oversee implementation and compliance with this instruction, via the WQOC, which will:

(a) Conduct Sanitary Surveys utilizing Naval Facilities Engineering Command (NAVFAC) Echelon III Commands.

(b) Plan, program and budget for Sanitary Surveys.

(c) Maintain and update this manual, as needed.

(4) Prepare an annual report for the Vice Chief of Naval Operations (VCNO) demonstrating compliance with this instruction and associated guidance.

(5) Evaluate compliance with this instruction through the review of installation internal environmental audit results and CNIC external audit results.

b. REGCOMs will:

(1) Chair the Region Water Quality Board (RWQB).

(2) Implement and comply with this instruction through the RWQB in collaboration with NAVFAC and Bureau of Medicine and Surgery (BUMED) personnel.

(3) Plan, program and budget for requirements to comply with this instruction.

(4) Evaluate compliance with this instruction through installation annual internal Environmental Management System and Environmental Quality Assessment audit results.

(5) Ensure training and qualification requirements for drinking water system ORC, AORC and operations and maintenance personnel are met per this manual and the guidance contained in the referenced standards.

c. Installation Commanding Officers will:

(1) Chair the IWQB.

(2) Implement and comply with this manual through the IWQB in collaboration with NAVFAC and BUMED personnel.

(3) Evaluate compliance with this manual through installation annual internal environmental audits.

(4) Document compliance with this manual utilizing the Navy Overseas Drinking Water Data Repository.

d. NAVFAC Headquarters and Region Facility Engineering Commands (FECs) are responsible for supporting execution of this manual in collaboration with IWQBs, RWQBs and WQOC.

7. Forms and Information Management. The following forms can be found on the NAVFAC Portal Drinking Water Page at https://hub.navfac.navy.mil/webcenter/portal/pw/Utilities%20and%20Energy%20Management/Water?_afrLoop=1442925311750#!%40%40%3F_afrLoop%3D1442925311750%26centerWidth%3D100%2525%26leftWidth%3D0%2525%26pocEmail%3Dtraci.stites%2540navy.mil%26rightWidth%3D0%2525%26showFooter%3Dfalse%26showHeader%3Dfalse%26_adf.ctrl-state%3D40od2futu_320:

a. ORC and AORC Certification Application Form.

b. ORC and AORC Certification Renewal Form.

c. Examination Application Form.

d. Certification Examination Proctor Policy.

e. WQOC Operator Professional Development Guidelines and Approval Courses.

CHAPTER 2
OPERATOR ROLES AND RESPONSIBILITIES

1. Table 2-1 outlines the roles and responsibilities of Navy drinking water operators.

Table 2-1. Operator Roles and Responsibilities
• Directly operate, maintain, repair and manage the drinking WTPs and distribution system (including cross connection and backflow prevention equipment under the jurisdiction of the utilities and energy management (UEM) business line) to ensure that water is safe, aesthetically pleasing, and meets operational and mission needs and requirements at all times.
• Manage and oversee drinking WTPs and distribution systems under the jurisdiction of the UEM, FMS (BOS Contract) or AM (Lease) business lines.
• Maintain operator logs and site logbooks according to the Overseas Drinking Water Plant Operational Logs and Site Log Books Standard Operating Procedures (SOPs).
• Document continuing education course completion to the IWQB.
• Submit certification renewal request to the IWQB 90 days prior to expiration.
• Notify the IWQB of exceedances in a timely fashion (i.e., within 24 hours) unless an immediate health concern, then as soon as possible.
• Review and understand all drinking water SOPs.

2. In addition to the roles and responsibilities outlined in Table 2-1, the ORC and AORC are responsible for the items listed in Table 2-2.

Table 2-2. ORC and AORC Roles and Responsibilities
• Must work on the site, be familiar with and have the ability to repair and operate the equipment on the site.
• Shall be available, either on-call or on-duty, for consultation in case of emergency, malfunction or breakdown of equipment, or for other questions or concerns with the drinking WTP or distribution system.
• Must be available at all times when the water system is in operation.
• If assigned to multiple systems, must travel between systems.
• The AORC must be available to fulfill the ORC's responsibilities when the ORC is on leave or unavailable.

3. The installation must provide 24/7 coverage of their water systems which include after hours, weekends and holidays when the treatment or distribution systems are unmanned. Either the ORC or AORC must be available at all times. Such coverage shall include a roving security patrol or an automated monitoring system (Supervisory Control and Data Acquisition system, or similar), from a remote location.

CHAPTER 3
ORC AND AORC CERTIFICATION PROCESS

1. Water treatment and distribution facilities classification and certification levels are designated, in increasing order of system complexity and population served, by Levels I, II and III. Operator certification levels are designated by the same number as the classification level of the highest facility the operator is certified to operate. Hence, a Level II certified operator may be the ORC for facilities classified as Level I or Level II – but not for facilities classified as Level III. An applicant must meet the Navy's overseas operator drinking water requirements for the type and level of facility that he or she seeks to be certified to operate within one year of hire. If this person does not meet these requirements, then it is the responsibility of the installation to find a certified operator to meet CTO requirements. The ORC and AORC certification program execution is outlined in Table 3-1.

Table 3-1. ORC and AORC Certification Process

First Step
• IWQB o Identifies candidates for ORC and AORC • Applicants o Submits required paperwork, as outlined in the Certification Application for Drinking Water System Operator (Appendix C), to the Public Works Officer (PWO) • Installation PWO o Prepares, signs and submits Certification Application for Drinking Water System Operator to the ICO • ICO o In conjunction with the IWQB, reviews, approves, signs and submits the Certification Application for Drinking Water System Operator to the RWQB
Second Step
• RWQB o Reviews the application to ensure training and experience requirements are met o Forwards the application to the WQOC NAVFAC HQ PW representative • WQOC o Forwards the application to the NOCA Board • NOCA Board o Reviews application and provides recommendation to the RWQB
Third Step
• RWQB o Notifies the operator candidate of the NOCA Board recommendation o Grants approval or disapproval of application o Issues operator certification
Fourth Step
• Drinking Water Operators o Completes required profession development courses and provides proof to the IWQB (refer to Chapter 4.10) o Monitors expiration date of certification o Submits required renewal package (i.e., renewal form, along with proof of required professional

Table 3-1. ORC and AORC Certification Process
development course completion) to the PWO 90 days prior to certification expiration • IWQB o Monitors the expiration date of the current drinking water operator certifications and notifies drinking water operators of impending expiration o Maintains proof of drinking water operator professional development course completion • Installation PWO o Prepares, signs and submits renewal package, which includes the certification renewal form (Appendix D) and proof of professional development training and experience, to the ICO • Installation CO o Through the IWQB, reviews, approves, signs and submits the renewal package to the RWQB 60 days prior to certification expiration • RWQB o Reviews the renewal package to ensure training and experience requirements are met o Forwards the renewal package to the WQOC NAVFAC HQ PW representative WQOC • WQOC o Forwards the renewal package to the NOCA Board • NOCA Board o Reviews renewal package and provides recommendation to the RWQB
Fifth Step
• RWQB o Notifies the operator of the NOCA Board recommendation o Grants approval or disapproval of application o Issues operator renewal certification

CHAPTER 4
OPERATOR CERTIFICATION

1. Operator Certification. The Navy Certification will include the following five basic requirements: 1) Education; 2) Experience; 3) NOCA-approved training for each certification level; 4) Examination; and 5) annual professional development. Operators intending to achieve certification through the reciprocity process should refer to Chapter 4.4 for process and requirements. The ORC must possess a valid certificate issued by the RWQB equivalent to or exceeding the classification of the facility they operate. The AORC's certificate must be no more than one level lower than the classification of the facility they operate. When the ORC is not available, an AORC must be available. Upon vacancy of an ORC or AORC position, the IWQB must notify the RWQB via the installation's chain of command within 72 hours. The RWQB must then notify the NOCA Board Chair by telephone within 15 days and in writing within 30 days of their Plan of Action and Milestones (POA&M) toward filling the vacancy. Any person (e.g., AORC) stepping in temporarily to fill a vacancy does not automatically become the ORC.

2. Certified Operator Requirements. All U.S. Navy overseas installation WTPs and distribution systems must have a Navy-certified ORC and AORC assigned. The IWQBs and RWQBs are responsible for assigning the appropriate number of ORCs and AORCs. Each system must have at least one ORC and one AORC, yet they may have more than one AORC. ORCs and AORCs may be assigned to multiple systems.

3. Operator Certification Levels. Applicants for the various levels of certification shall be of legal working age, per the U.S. Navy and HN labor agreements, successfully complete and pass the Navy Overseas General Training and Examination, and meet the educational and experience requirements presented in Table 4-1. At the discretion of NOCA Board and on a case-by-case basis, an existing operator whose application exhibits extensive operations knowledge and field experience may be allowed to sit for a particular certification exam without having to take the training class (refer to Chapter 4.6 for exam request process).

4. Reciprocity

a. In addition to obtaining certification through education, experience and exam, certification may be obtained through reciprocity. The determination of reciprocity, including the potential need for the applicant to take the examination, will be made on a case-by-case basis as determined by the NOCA Board. Navy overseas installations who employ operators certified per U.S. stateside water operator certification systems or HN's certification requirements may apply to the NOCA Board for reciprocity via the RWQB. Navy installations that employ operators who hold a valid, current U.S. drinking water license or certification must apply for Navy Certification, but shall not be subject to the training and examination requirements, unless otherwise deemed so by the NOCA Board, on a case-by-case basis. Applications for reciprocal certification under this program must be submitted on the certification application form provided by NOCA Board. The RWQB, with assistance from the IWQB, must request and supply

information to the NOCA Board for the designated applicant(s), demonstrating that the requirements under which the other certification was obtained are equivalent to the Navy program requirements.

b. The NOCA Board reserves the right to:

(1) Require the applicant, who appears otherwise qualified by education, experience and certification elsewhere, to pass the examination; or

(2) In special circumstances require the applicant to take training classes.

5. Association of Boards of Certification (ABC). The NOCA Board has determined that the ABC Water Treatment Operator and Distribution Operator certifications are accepted as equivalent to the Navy Operator certifications, with ABC classes 1, 2, 3 equivalent to NOCA levels I, II, III respectively. The ABC Exam Equivalency Charts, which indicate which exams the ABC Certification Program considers equivalent to ABC standardized exams, have been adopted as well. These equivalency charts include a state by state certification equivalency. Additional training on reference (g) and FGS may be required by the NOCA.

6. Examination Request

a. Exams not taken during a classroom session may be requested using the Examination Application Form (Appendix E), with the ORC and AORC blocks unchecked. The exam request will be sent to the NOCA for approval. RWQBs may request proctors to administer exams using the process described in the Proctor Policy (Appendix F). The proctor designation form must be signed and submitted to the NOCA for approval.

b. Any applicant who fails an examination three times must retake the appropriate training class before sitting for the exam again. There is no waiting period between exams.

7. Provisional Certification

a. A provisional certificate may be issued by the RWQB when the supply of certified operators, or individuals with training and experience necessary to obtain certification, is inadequate. However, prior approval must be obtained from the NOCA Board for such provisional certification.

b. All provisional certificate applications must be filed on the NOCA-approved certification application via the regular application process (refer to Chapter 3). The information provided on the form must be sufficient to allow the NOCA Board to determine if the public health will be adequately protected while such provisional certification is in force. Further, the application must demonstrate to the NOCA Board that the applicant(s) applying for the provisional

certification is competent and able to fulfill the appropriate duties according to the NOCA Board requirements.

c. A provisional certification applies only for the system where the operator is employed at the time of issuance. The term of a provisional certification shall not exceed 12 months. During this time, in addition to meeting the educational and experience requirements for the system type and level for which they are applying, the operator holding a provisional certification must take the appropriate training class and pass the exam for the required certification level. At the discretion of the NOCA Board and under extenuating circumstances, the NOCA Board may extend the provisional certification beyond the 12 month deadline.

d. A POA&M will be developed by the installation to demonstrate a plan for obtaining full certification. Professional Development Requirements, as defined in Chapter 4.10, will be maintained during provisional certification.

8. Renewal

a. Certifications shall be renewed every three years. Renewal packages (i.e., applications on the NOCA-approved renewal form, along with proof of the required professional development course completion) will be due to the RWQB and NOCA Board at least 60 days prior to the certificate's expiration date. If the IWQB fails to file the appropriate renewal package via the RWQB for its operator(s) or if the operator/applicant fails to meet the professional development requirements (refer to Chapter 4.10) by the certification expiration date, the certification will expire. An operator whose certification has expired may seek reinstatement within two years of expiration. Expired certifications may be renewed at the discretion of the NOCA Board and may include additional training or testing requirements.

b. It is the responsibility of the operator and IWQB, in coordination with the RWQB, to monitor the expiration status of their operator's certifications and to file the appropriate renewal package by the deadlines listed above. No mail or email renewal notices will be sent from the NOCA Board.

c. Renewal applicants will be subject to the education, experience, exam and training requirements in effect at the time of their renewal. No renewal applicants will be grandfathered under previous requirements. Refer to Table 4-1 for a summary of these requirements. Applicants, in coordination with their IWQB, should carefully monitor these requirements to ensure that applicants meet these requirements prior to submission of the renewal package.

9. Suspension and Revocation

a. If an operator fails to maintain the requirements of their position as detailed herein, his or her certificate may be suspended or revoked. If deemed appropriate, the RWQB will work

through the chain of command to suspend or revoke the certification of an operator to address any of the following:

(1) The operator has practiced fraud or deception.

(2) The operator failed to use reasonable care, judgment, knowledge or ability in the performance of his or her duties.

(3) The operator is incompetent or unable to properly perform the duties of an operator.

(4) The operator has failed to comply with the requirements for certification or renewal of certification.

b. Any operator whose certification has been revoked by the RWQB must apply, through the IWQB, to the RWQB for consideration and approval by the NOCA Board for reinstatement of the revoked certification.

10. Professional Development

a. All certified operators shall complete NOCA Board-approved professional development as described in the U.S. Navy Overseas WQOC Certified Operator Professional Development Guidelines and Approved Courses (Appendix G). All certified operators are required to complete 36 contact hours every three years beginning at the time of certification (provisional included) or renewal. No more than 25% of the contact hours shall be operator safety.

b. The U.S. Navy Overseas WQOC Certified Operator Professional Development Guidelines and Approved Courses provides information on NOCA-Board approved courses. Drinking water operators, through the IWQB and in coordination with the RWQB, should submit an Application for Approval of Training for Professional Development prior to taking any course (including site-specific or installation-provided training) not already on the approved list to ensure NOCA-Board approval of the course.

c. Drinking water operators shall obtain a certificate or other proof of completion from the organization providing the professional development training which includes the name of the provider, the provider's address and a point of contact with telephone number and email address. The proof of completion shall further identify the name of the participant, the number of contact hours completed, the course name, the instructor's name and the date of the training received.

d. Training records, including operator certificates and professional development contact hours and course completion, must be maintained by the installation. It is the responsibility of the drinking water operator and IWQB to maintain accurate training records. The NOCA Board will not maintain copies of operator training records.

Table 4-1. Education and Experience Requirements		
Education	**Experience**	**Training and Exam**
ORC and AORC Treatment Level I		
College graduate with a bachelor's degree or equivalent in the physical, engineering (such as civil, chemical or environmental), or natural sciences; **OR** graduate of a two year technical program with a diploma in water technology	Three months of acceptable experience at a water treatment facility; **AND** be an existing employee at the treatment facility	Satisfactorily completed a Level I training course and exam provided by the NOCA Board
High school diploma, GED, or equivalent	One year of acceptable experience at a water treatment facility; **AND** be an existing employee at the treatment facility	
ORC and AORC Treatment Level II		
College graduate with a bachelor's degree or equivalent in the physical, engineering (such as civil, chemical or environmental), or natural sciences; **OR** graduate of a two year technical program with a diploma in water technology	One year of acceptable treatment level experience at a water treatment facility; **AND** be an existing employee at the treatment facility	Satisfactorily completed a Level II training course and exam provided by the NOCA Board
Be a high school graduate or equivalent	Three years of acceptable treatment level experience at a water treatment facility; **AND** be an existing employee at the treatment facility	
ORC and AORC Treatment Level III		
College graduate with a bachelor's degree or equivalent in the physical, engineering (such as civil, chemical or environmental), or natural sciences; **OR** graduate of a two year technical program with a diploma in water technology	One year of acceptable treatment level experience at a treatment facility; **AND** be an existing employee at the treatment facility	Satisfactorily completed a Level III training course and exam provided by the NOCA Board
Be a high school graduate or equivalent; **AND** 900 contact hours of post high school education relevant to drinking water treatment and distribution	Four years of acceptable experience at a water treatment facility including 2 years as ORC or AORC; **AND** be an existing employee at the treatment facility	
Be a high school graduate or equivalent	10 years of acceptable experience at a water treatment facility including 2 years of ORC or AORC; **AND** be an existing employee at the treatment facility	
ORC and AORC Distribution Level I		
College graduate with a bachelor's degree or equivalent in the physical, engineering (such as civil, chemical or environmental), or natural sciences; **OR** graduate of a two year technical program with a diploma in water technology	Three months of acceptable experience at a water distribution facility; **AND** be an existing employee at the distribution facility	Satisfactorily completed a Level I training course and exam provided by the NOCA Board

Table 4-1. Education and Experience Requirements		
Education	**Experience**	**Training and Exam**
High school diploma, GED or equivalent	One year of acceptable experience at a water distribution facility; **AND** be an existing employee at the distribution facility	
ORC and AORC Distribution Level II		
College graduate with a bachelor's degree or equivalent in the physical, engineering (such as civil, chemical or environmental), or natural sciences; **OR** graduate of a two year technical program with a diploma in water technology	One year of acceptable distribution experience at a water distribution facility; **AND** be an existing employee at the distribution facility	Satisfactorily completed a Level II training course and exam provided by the NOCA Board
Be a high school graduate or equivalent	Three years of acceptable distribution level experience at a water distribution facility; **AND** be an existing employee at the distribution facility	
ORC and AORC Distribution Level III		
College graduate with a bachelor's degree or equivalent in the physical, engineering (such as civil, chemical or environmental), or natural sciences; **OR** graduate of a two year technical program with a diploma in water technology	One year of acceptable distribution level experience at a distribution facility; **AND** be an existing employee at the distribution facility	Satisfactorily completed a Level III training course and exam provided by the NOCA Board
Be a high school graduate or equivalent; **AND** 900 contact hours of post high school education relevant to drinking water treatment and distribution	Four years of acceptable experience at a water treatment facility including two years of ORC or AORC; **AND** be an existing employee at the treatment facility	
Be a high school graduate or equivalent	Ten years of acceptable experience at a water treatment facility including two years of ORC or AORC; **AND** be an existing employee at the treatment facility	

CHAPTER 5
FACILITIES LEVELS OF CERTIFICATION

1. Classification of Water to be Treated

a. In addition to the "ground water" and "surface water" that require treatment, the country specific FGS may have a "Purchased Water" category which refers to any drinking water acquired from a water system authorized by a competent HN water authority to produce and distribute drinking water; in the U.S. this category is known as a consecutive system. It should also be noted that under the HN FGS, bottled water is not considered "Purchased Water"; however, bottled water must be from DoD approved sources.

b. For purchased water (and thus consecutive system water) that has to be treated again, the treatment is called "supplemental" treatment. The operator of supplemental treatment processes must have a treatment certificate. If the treatment is simple (e.g., chlorination), a Level I treatment certificate may be appropriate. If the treatment is more complex, a Level II or III treatment certificate would be needed.

c. It will be the responsibility of the NOCA Board to establish and verify water treatment and distribution classification of Navy overseas installation drinking water systems to ensure consistency across the enterprise. If there are any changes or modifications to a water system, a new classification score sheet may be submitted, via the RWQB, to the WQOC for review.

2. Water Treatment Facility Classification. The classification of the water treatment facility will dictate the level of certification required for operation. Designation of water treatment facility classification will follow the point system provided in Appendix H. It depends on the total number of points assigned to each applicable parameter listed in Appendix H. Classifications will be designated according to the following points:

Classification	Total Points
Level I	1-50
Level II	51-110
Level III	over 110

3. Water Distribution Facility Classification. The classification level of the water distribution facility will dictate the certification level required for operation. Designation of water distribution facility classification will follow the point system provided in Appendix I. It depends on the total number of points assigned to each applicable parameter listed in Appendix I. Classifications will be designated according to the following points:

Classification	Total Points
Level I	1-50
Level II	51-75
Level III	over 75

CHAPTER 6
EXPECTED RANGE OF KNOWLEDGE

1. General

a. Drinking water treatment and distribution facility operators have the primary responsibility for day-to-day operations to protect the public health by delivering drinking water that is fit for human consumption to the water customers. To assist the individual in preparation for the certification process, the Expected Range of Knowledge (ERK) has been developed as an example of knowledge required. This chapter outlines requirements for breakpoint chlorination as an example of required knowledge, however there are other requirements. They can be found in the Navy Overseas Drinking Water Training, available at the Navy Overseas Drinking Water Repository. Additionally, the ABC website has an extensive list of "Need-to-Know" criteria, which can be used as a guideline for drinking water operators. ABC covers most requirements, with the exception of reference (g) and FGS requirements that are unique to overseas locations.

b. The ERKs below are based on industry-accepted publications and standards, or a combination of skill sets that a particular level of employee would be expected to achieve, and are taken from several available training manuals that are widely accepted and used in certification programs throughout the U.S. References (b) through (ah) are widely used in the programs prescribed by the ABC, which is subscribed to by many states.

c. In addition to reviewing and becoming proficient with the information in Chapter 7, operators may be required to attend a week long class on distribution or treatment and pass an exam upon completion. An operator who does not pass the exam at the end of the training will receive two additional opportunities to retake the test at a later date. Navy training for certification is progressive from Level I to Level II to Level III, reflecting progressive levels of difficulties and comprehension, depending on the system classification.

2. Navy Level I Training. The Navy Level I training will expect entering students to have a general knowledge of breakpoint chlorination. Prior to conducting the training classes, each of the attendees will receive copies of the training material that must be studied prior to the scheduled class. The students will receive a beginner's overview of breakpoint chlorination in the class, including:

a. Basic definitions:

(1) Free residual chlorine.

(2) Total residual chlorine.

(3) Combined residual chlorine.

(4) Chlorine demand.

b. Graphic description of the breakpoint chlorination curve:

(1) Basic curve.

(2) Breakdown of curve into its distinctive parts.

(3) Description of what happens in each part.

c. Description of basic chemistry between chlorine and ammonia in water.

d. Basic discussion of importance of breakpoint chlorination in water treatment.

3. Navy Level II Training. The Navy Level II training will expect entering students to have a working knowledge of breakpoint chlorination and filtration methods. Prior to conducting the training classes, each of the attendees will receive copies of the training material that must be studied prior to the scheduled class. The students will receive a thorough review of breakpoint chlorination in the class, including:

a. Detailed graphic description of the breakpoint chlorination curve:

(1) Basic curve.

(2) Breakdown of curve into its distinctive parts.

b. Detailed description of what happens in each part:

(1) Chlorine demand chemistry including iron, manganese, sulfide and color.

(2) Chloramination chemistry.

(a) Monochloramine.

(b) Dichloramine.

(c) Trichloramine.

(d) Breakpoint.

(e) Chlorine to ammonia ratios for each of the above.

(f) Optimum pH for each of the above.

c. Detailed discussion of the importance of breakpoint chlorination in water treatment processes and its potential positive and negative impacts on disinfection and on the water system in general.

4. Navy Level III Training

a. The Navy Level III training will expect entering students to have a mastery of the subject in general and the training material in particular. Prior to conducting the training classes, each of the attendees will receive copies of the training material that must be studied prior to the scheduled class. The entering students will be expected to have developed specific questions regarding their respective treatment systems. The students will receive a thorough and exhaustive review of breakpoint chlorination and filtration methods in the class, including:

(1) Detailed graphic review of the breakpoint chlorination curve:

(a) Basic curve.

(b) Breakdown of curve into its distinctive parts.

(2) Detailed review of what happens in each part:

(a) Chlorine demand chemistry including iron, manganese, sulfide and color.

(b) Chloramination chemistry.

1. Monochloramine.

2. Dichloramine.

3. Trichloramine.

4. Breakpoint.

5. Chlorine to ammonia ratios for each of the above.

6. Optimum pH for each of the above.

(3) Thorough and detailed discussion of the importance of breakpoint chlorination in water treatment processes and its potential positive and negative impacts on disinfection and on the water system in general, with particular attention given to the intricacies of the students' actual water systems.

b. Students successfully completing Level III will be expected to have an intimate understanding of breakpoint chlorination in general and its impact on their respective water systems in particular.

5. Dechlorination and the Removal of Fluoride. In addition to the ERK discussed in this chapter, information on the removal of chlorine (dechlorination) and fluoride will be included in both the treatment and distribution operator training courses. The removal of these constituents is sometimes required for drinking water that is being reintroduced into a HN distribution system.

6. Translation of Training Materials. The Navy training courses and exams have been developed in English. It is up to the discretion and expense of the RWQB to translate these materials into the HN language as necessary.

APPENDIX A
REFERENCES

a. CNIC M-5090.2

b. OPNAVINST 5090.1D

c. DASN Memo, Overseas Drinking Water, 31 December 2015

d. Pub. L. No. 93-523, 88 Stat. 1660, Federal Safe Drinking Water Act, 1974

e. SECNAV Memo, Overseas Potable Water Systems, 28 January 2008

f. CNO Memo, Overseas Potable Water Systems, 1 April 2009

g. Department of Defense (DoD) 4715.05-G, Overseas Environmental Baseline Guidance Document (OEBGD), Chapter 3, 1 May 2007

h. CNICINST 5090.3

i. CNICINST 5090.1

j. Association of Boards of Certification (2016), Get Certified Operators, (http://www.abccert.org/abc_certification_program/operator_certification.asp)

k. American Water Works Association (AWWA) M5, Water Utility Management, Second Edition, 2005

l. AWWA M14, Recommended Practice for Backflow Prevention and Cross - Connection Control, Fourth Edition, 2015

m. AWWA M21, Groundwater, Fourth Edition, 2014

n. AWWA G100-11, Water Treatment Plant Operation and Management, 2011

o. AWWA G200-15, Distribution Systems Operation and Management, 2015

p. AWWA, Water Transmission and Distribution, Fourth Edition, 2010

q. AWWA, Water Distribution Operator Training Handbook, Fourth Edition, 2013

r. AWWA, Water Meters - Selection, Installation, Testing, and Maintenance, Manual M6, Fifth Edition, 2012

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t. Federal Register, USEPA Guidelines for the Certification and Recertification of the Operators Community and Nontransient Noncommunity Public Water Systems, April 18, 2001

u. Kerri, Kenneth D., Small Water System Operation and Maintenance, Fifth Edition, Office of Water Programs, College of Engineering and Computer Science, California State University, Sacramento, 2009

v. Kerri, Kenneth D., Water Treatment Plant Operation, Volume I, Sixth Edition, Office of Water Programs, College Engineering and Computer Science, California State University, Sacramento, 2008

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y. NAVMED P-5010-1, Manual of Naval Preventive Medicine, Chapter 5 - Water Supply Ashore, June 23, 2008

z. Naval Facilities Engineering Service Center (NFESC) UG-2029-ENV, Cross-Connection Control and Backflow Prevention Program Implementation at Navy Shore Facilities, May 1998

aa. Sterrett, Robert, ed., Groundwater and Wells, Third Edition, January 2007

ab. UFC 3-230-02, Operations and Maintenance: Water Supply Systems, July 10, 2001

ac. UFC 3-230-19N, Water Supply Systems (superseding Military Handbook (MIL-HDBK)-1005/7A), June 8, 2005

ad. UFC 3-600-01, Fire Protection for Facilities Engineering, Design and Construction (superseding MIL-HDBK-1008C), September 26, 2006

ae. USEPA 570/9-75-001, Manual of Water Well Construction Practices, 2nd Edition, 1998

af. USEPA 570/9-91-003, Manual of Small Public Water Supply Systems, 1991

ag. USEPA 816-R-00-022, Operator Certification Guidelines, Implementation Guidance, January 2000

ah. USEPA 816-D-04-001, Tribal Drinking Water Operator Certification Program, Final Guidelines, May 2005

APPENDIX B
DEFINITIONS

Unless the context clearly requires otherwise, the following definitions apply.

1. Acceptable Experience. AORC and ORC job-related responsibilities shall consist of performance of operational duties for Navy drinking water systems. All related knowledge and experience shall be based on the use of the principles and application of physics, chemistry and bacteriology as they relate to water purification; ability to read, understand and record data from gauges, scales and meters; ability to make routine laboratory and field tests for control of plant operations. This experience shall be based on the use of mathematics, equipment, materials, maintenance, installation and repair techniques, cross-connection control and other skills necessary for maintaining and operating a water system; ability to understand and carry out oral and written instructions; mechanical aptitude; alertness and dependability; and physical condition commensurate with the demands of the position. The remaining experience shall be in related fields such as water facility operation, water laboratories, water pumping stations, water system design and engineering, surface facilities, wells, or cross-connection control.

2. Assistant Operator in Responsible Charge (AORC). Is an individual that meets all established criteria designated by the Navy to be responsible for the operation and maintenance of a particular facility in the temporary absence of the ORC.

3. Available. The ORC or the designated AORC is either on call or on duty.

4. Contact Hours. Each hour of classroom training instruction.

5. Certified Operator. Any holder of a certificate issued per the provisions of this program.

6. Fit for Human Consumption. Water that meets primary drinking water standards as defined by FGS, and references (g) and (i), and is safe for drinking, cooking, bathing and other oral hygiene uses.

7. Installation Water Quality Board (IWQB). A board chaired by each overseas Navy Installation Control Officer that provides management and oversight of drinking water systems in order to achieve compliant drinking water that is fit for human consumption. Standing members are the PWO, representatives from installation Public Works Environmental and Utilities, representative from local Preventive Medicine Authority and the installation Public Affairs Office. Other ad hoc members shall be added as needed. The IWQB reports to the RWQB for all drinking water matters.

8. Navy Drinking Water System. A PWS or non-PWS that is operated by the U.S. Navy, operated by a lessor of the U.S. Navy, or operated under a U.S. Navy Facility Support Contract, BOS Contract, other relevant contract or other HN agreement.

9. Navy Operator Certification Authority (NOCA) Board. The board made up of Navy drinking water subject-matter experts that operates under the direction of the WQOC.

10. On Call. To respond upon notification to a work-related emergency or situation when off duty. The ORC or AORC must be available to respond immediately via telephone and to be on site within a predefined number of minutes after notification. Either an ORC or AORC must be on call 24/7.

11. On Duty. When the ORC or AORC is on at least one Navy installation where their overseas drinking water system(s) is/are located during each operating shift making process control and system integrity decisions about water quality or quantity that affect public health. Minimum is expected to be eight hours/day, five days a week except in extenuating circumstances (e.g., both are attending training), during which time at a minimum a provisional operator must be available.

12. Operator. Is an individual who has direct responsibility for the operation or maintenance of a WTP or water distribution system.

13. Operator in Responsible Charge (ORC). An individual that meets all established criteria designated by the Navy to be responsible for supervising or directing the operation or maintenance of a particular WTP or water distribution system and makes process control and system integrity decisions.

14. Provisional Certification. May be granted temporarily, and under certain conditions, prior to meeting and passing certain Level I, II or III training and exam requirements.

15. Public Water System (PWS) is a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves a daily average of at least 25 individuals at least 60 days of the year. This also includes any collection, treatment, storage and distribution facilities under control of the operator of such systems, and any collection or pretreatment storage facilities not under such control that are used primarily in connection with such systems. A PWS is either a "community water system" or a "non-community system."

a. Community Water System. A PWS that has at least 15 service connections used by year-round residents, or which regularly serves at least 25 year-round residents.

b. Non-Community Water System. A PWS that serves the public, but does not serve the same people year-round.

c. Non-Transient, Non-community Water System. A PWS that supplies water to at least 25 of the same people at least six months per year, but not year round. Examples include schools, factories, office buildings and hospitals that have their own water systems.

d. Transient, Non-Community Water System. A PWS that provides water to at least 25 persons (but not the same 25 persons) at least six months per year. Examples include but are not limited to gas stations, motels and campgrounds that have their own water sources.

16. Reciprocity. Pending review, approval and recommendation of the NOCA Board, the RWQB may issue certification without examination and on a case-by-case basis to Navy installation drinking water system operators. Operators must certified at a comparable system classification level, have passed an adequate written examination and hold a valid certificate in another state, territory or possession of the U.S. or any country, provided the requirements for certification of operators under which the certification was issued do not conflict with and are equivalent to the Navy ORC and AORC Operator Training & Certification (OT&C) program requirements.

17. Regional Water Quality Board (RWQB). Develops HN–appropriate strategies, oversees the associated processes, and is designated to provide compliant drinking water that is fit for human consumption to all Navy personnel within their area of responsibility. Each Navy Region overseas or with overseas installations must establish Navy RWQBs. The RWQB shall be chaired by the REGCOM (not a designee). Standing members are the Region N4 and N45, representatives from the Region N45 Environmental office, NAVFAC Engineering Command Public Works Utilities, Navy Region Preventive Medicine Authority, Region Public Affairs Office and Region Counsel. Other ad hoc members shall be added as needed. The RWQB oversees installation programs and ensures compliance and consistency but does not have program primacy. The RWQB reports to the WQOC for all drinking water matters.

18. Water Distribution System. Refers to any combination of pipes, tanks, pumps, etc. that deliver water from a source or treatment facility to the consumer.

19. Water Quality Oversight Council (WQOC). Is the overall governing body responsible to provide water quality oversight for U.S. Navy drinking water systems at overseas installations similar to that provided by the USEPA and states for Navy drinking water systems in the U.S. The WQOC is permanently chaired by the CNIC N4, Director of Facilities and Environmental. Standing members include representatives from CNIC and NAVFAC HQ Environmental and Facilities and Public Works, BUMED HQ, Navy and Marine Corps Public Health Center, NAVFAC Atlantic and Pacific, and NAVFAC Engineering and Expeditionary Warfare Center. The WQOC convenes on a regular basis, determines overarching policies and makes associated decisions. The WQOC reports on a regular basis to the executive authority, CNIC.

20. Water Treatment Facility. Means any facility or facilities used or available for use in the collection, treatment, testing, storage or pumping of water for a PWS. Treatment includes additional treatment of purchased water by the Navy or its agents. It specifically excludes distribution.

APPENDIX C
WATER TREATMENT FACILITY CLASSIFICATION POINT SYSTEM

Parameter	Sub-Parameter 1	Sub-Parameter 2	Rating Value
Surface Water Source			
	flowing stream		5
	flowing stream w/impoundment		7
	raw water treatment		3
Ground Water Source			
	first five wells		5
	add 1 point per five wells or fraction thereof		1
Coagulation			
	aluminum or ferric based		10
	polymer		5
Mixing			
	baffle		2
	mechanical		4
	air		3
Oxidation (pre-treatment)			
	ClO_2		5
	ozone		5
	$KMnO_4$		3
	Cl_2		3
Carbon Treatment			2
Aeration			
	mechanical draft		3
	coke tray / splash tray		2
	diffused		3
	packed tower (VOC reduction)		10
pH Adjustment (primary)			

Parameter	Sub-Parameter 1	Sub-Parameter 2	Rating Value
	caustic (NaOH)		10
	lime / soda ash		3
	acid		10
Sedimentation			
	standard rate		5
	tube settlers		3
	upflow		8
	pulsators and plates		5
Contact Tank			1
Filtration			
	pressure		
		sand / anthracite	8
		synthetic media (birm)	8
		granular activated carbon (GAC)	10
	gravity		
		sand	10
		anthracite (mixed) / GAC	12
		with surface wash or air scour	2
	membrane (microfiltration or ultrafiltration)		10
Ion Exchange			
	softener, Na cycle		5
	softener, H cycle		7
	Fe and Mn (greensand)		10
	mixed bed or split stream		12
Lime Softening			
	spiractors		10
	clarifier with coagulation		12
	fuel burner (recarbonation)		5

Parameter	Sub-Parameter 1	Sub-Parameter 2	Rating Value
Phosphate (sequestering agent)			5
Stabilization			
	acid feed		10
	phosphate		2
	caustic (NaOH)		10
	lime / soda ash		3
	contact units		5
Nanofiltration, Reverse Osmosis or Electrodialysis			111
Disinfection			
	gas Cl2		10
	hypochlorite solution		7
	ClO2		13
	ozone		13
	ammonia and Cl2		12
	ultraviolet light (UV)		5
Fluoridation			
	saturator		8
	dry feed		8
	solution (acid)		10
Pumping (each station)			
	raw		3
	intermediate (at plant)		1
	finished (at plant)		3
	distribution system booster		2
Storage Tank (each)			
	raw		1
	treated ground level at plant or in distribution system		1
	elevated at plant or in distribution system		2

Parameter	Sub-Parameter 1	Sub-Parameter 2	Rating Value
	hydropneumatic at plant or in distribution system		2
Population Served (1 point per 1,000 persons served or fraction thereof)			1 min. to 50 max.
Plant Capacity (1 point per 1 MGD capacity or fraction thereof)			1 min. to 25 max.
On-Site Quality Control			
	bacteriological		
		MPN/MF	5
		HPC	2
		MMO-MUG (Colilert)	2
	pH		
		meter	2
		test kit	1
	fluoride		
		meter	3
		colorimetric	3
	chlorine		
		titrator	3
		colorimeter	2
		test kit	1
	iron		1
	hardness		1
	alkalinity		1
	turbidity		1
	manganese		1
	others (1 pt. each)		1

APPENDIX D
WATER DISTRIBUTION FACILITY CLASSIFICATION POINT SYSTEM

Parameter	Sub-Parameter 1	Sub-Parameter 2	Rating Value
Potable Water Distribution System			
	population served (1 point per 1,000 persons served or fraction thereof)		1 min. to 50 max.
	plant capacity (1 point per 1 MGD capacity or fraction thereof)		1 min. to 25 max.
	booster pump station (each)		2
	storage tank (finished water at plant or in distribution system)		
		ground level (each)	1
		elevated (each)	2
		hydropneumatic (each)	2
	pressure zone (each)		5
	pressure reducing valve vault (each)		2
	master meter vault to/from another system (each)		1
	pier hookup (each)		5
	fire rated system		25
Non-Potable Water Distribution System			
	population served (1 point per 1,000 persons served or fraction thereof)		1 min. to 50 max.
	booster pump station (each)		2
	storage tank (finished water at plant or in distribution system)		
		ground level (each)	1
		elevated (each)	2
		hydropneumatic (each)	2
	pressure zone (each)		5
	pressure reducing valve vault (each)		2
	master meter vault to/from another system (each)		1
	pier hookup (each)		5
	fire rated system		25