

Operator in Responsible Charge and
Assistant Operator in Responsible
Charge

**TRAINING AND
CERTIFICATION PROGRAM**

for
United States Navy Overseas Navy
Drinking Water Systems

Prepared for

Commander, Navy Installations Command (CNIC) and
Commander, Naval Facilities Engineering Command
(COMNAVFACENGCOM)

Prepared by

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ACRONYMS

ABC - Association of Boards of Certification
ADLE - Acceptable Distribution Level Experience
ATLE - Acceptable Treatment Level Experience
AOR - Area of Responsibility
AORC - Assistant Operator in Responsible Charge
AWWA - American Water Works Association
BOS Contract - Base Operating Support Contract
BUMED - Bureau of Medicine and Surgery
BUMEDINST - Bureau of Medicine and Surgery Instruction
CNIC - Commander, Navy Installations Command
CNO - Chief of Naval Operations
CNRK - Commander, Naval Region Korea
CNR EURAFSWA - Commander, Navy Region Europe, Africa,
Southwest Asia
CNRJ - Commander, Navy Region Japan
CNRSE - Commander, Navy Region Southeast
COMNAVFACENGCOM - Commander, Naval Facilities Engineering
Command (NAVFAC)
CTO - Certificate to Operate
DoD - Department of Defense
EA - Executive Agent for drinking water ashore
ERK - Expected Range of Knowledge
FEC - Facilities Engineering Command
FGS - Final Governing Standards
FSC - Facility Support Contract
GAC - Granular Activated Carbon
HN - Host Nation

ICO - Installation Commanding Officer
IWQB - Installation Water Quality Board
MGD - Millions of Gallons per Day
MIL-HDBK - Military Handbook
NAVFAC LANT/PAC - Naval Facilities Engineering Command
Atlantic/Naval Facilities Engineering Command
Pacific
NAVIG - United States Navy Inspector General
NFESC - Naval Facilities Engineering Service Center
NMCPHC - Navy and Marine Corps Public Health Center
NOCA - Navy Operator Certification Authority
NRC Singapore - Navy Region Center Singapore
OEBGD - Overseas Environmental Baseline Guidance Document
OPNAVINST - Naval Operations Instruction
ORC - Operator in Responsible Charge
OT&C - Operator Training and Certification
PAO- Public Affairs Officer
PMU - Preventive Medicine Unit
POA&M - Plan of Action and Milestones
PW UEM - Public Works Utilities and Energy Management
REGCOM - Regional Commander
RWQB - Regional Water Quality Board
SCADA - Supervisory Control and Data Acquisition
SDWA - Safe Drinking Water Act
SECNAV - Secretary of the Navy
UFC - Unified Facilities Criteria
UG - User's Guide
USEPA - United States Environmental Protection Agency
US - United States
UV - Ultraviolet

VOC - Volatile Organic Compounds

WQOC - Navy Overseas Water Quality Oversight Council

WTP - Water Treatment Plant

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1 INTRODUCTION

1.1 BACKGROUND

Public consumption of impure or 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 constitutes a significant force protection and public health responsibility.

To protect public health, Navy drinking water systems must be properly operated, maintained, and/or managed. For this reason and to protect the financial investment of drinking water supplies, the system operators who make process control and system integrity decisions about water quality or quantity that affect public health must be certified. To sit for the examination in order to obtain certification, system operators must meet the minimum educational requirements and achieve the Acceptable Treatment Level Experience (ATLE) or Acceptable Distribution Level Experience (ADLE).

In the United States (US), the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Northern Mariana Islands, and other territories or possessions over which the United States has jurisdiction, many federal and/or state laws and regulations are in place to ensure that

public drinking water is safe for human consumption. The Federal Safe Drinking Water Act (SDWA) of 1974 and its 1986 and 1996 amendments provide the backbone for all drinking water laws in the US. The SDWA regulations promulgated by the United States Environmental Protection Agency (USEPA) include provisions that require public Navy drinking water systems to be certified by competent authorities. To operate water systems within US 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 US and Host Nation (HN) regulations that do not specifically address operator or system certification.

1.2 PURPOSE

It is the responsibility of the Navy Overseas Water Quality Oversight Council (WQOC) to develop standard procedures for water treatment and distribution systems' Operator in Responsible Charge (ORC) and Assistant Operator in Responsible Charge (AORC) training and certification and for documenting operator certification records for water treatment and distribution systems at all overseas US Navy installations.

The Overseas Environmental Baseline Guidance Document (OEBGD, Section C3.3.4.) and Final Governing Standards (FGS) require that "US 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 US.

Naval Operations Instruction (OPNAVINST) 5090.1 Sections 21-5.12 and 10-5.1 reinforce the training requirement by requiring all overseas drinking water treatment and distribution system operators be trained as required by FGS and be provided basic training needed to comply with all applicable federal, state, and local safe drinking water regulations; Executive Orders (EO); 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 Operator Training and Certification (OT&C) program similar to that for US-established systems.

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

- Provide a system for classifying water treatment and distribution facilities
- Require examination of water treatment and

distribution facility operators and certification for their competency to operate the water treatment and distribution facilities according to the classification

- Establish procedures for such classification and certification
- Improve and achieve environmental compliance and protect public health

Appendix A provides definitions for terms that may be used in this document.

1.3 PROGRAM APPLICABILITY

The January 2009 Navy Inspector General (NAVIG) Summary Report, Overseas Potable Water Systems “[...]recommends the Navy concentrate on improving drinking water quality where the Navy controls the treatment processes, infrastructure, contracts or leases that deliver potable water to Navy personnel.” Together with the Certificate to Operate (CTO) Requirements and Criteria, the intent of the OT&C program for Navy drinking water systems is to satisfy the direction provided by the Secretary of the Navy (SECNAV) and Chief Naval Officer (CNO). As a result, this ORC and AORC OT&C program applies to the operators of US Navy overseas water systems that provide drinking water to personnel on installations, which includes non-contiguous property, to include CNIC special areas, considered to be a part of the installation.

1.4 ROLES AND RESPONSIBILITIES

The membership of the Water Quality Oversight Council (WQOC) includes those from Commander, Naval Installations Command (CNIC) HQ, Naval Facilities Engineering Command Headquarters (NAVFAC HQ), Naval Facilities Engineering Command Atlantic and Pacific (NAVFAC LANT/PAC), Bureau of Medicine and Surgery (BUMED) and Navy and Marine Corps Public Health Center (NMCPHC). The primary responsibility of the WQOC is to provide water quality oversight for United States Navy drinking water systems at overseas installations similar to that provided by the USEPA and state regulatory agencies for Navy drinking water systems in the US. This Council is chaired by the CNIC N4, and reports to the Navy Executive Agent (EA) for Drinking Water Ashore, CNIC.

The membership of the Regional Water Quality Board (RWQB) includes the Regional Commander (REGCOM) who is the Chair, the Region N45, the Environmental Business Line Coordinator (EV BLC) and Public Works Business Line Coordinators (PW BLC), the regional in-theater medical authority, and other ad hoc members as appropriate, generally including Region Public Affairs officer (PAO), Housing, and FEC Asset Management/Real Estate. The Navy Regions required to organize and operate a RWQB include Commander, Navy Region Europe, Africa, Southwest Asia (CNR EURAFSWA); Commander, Navy Region Southeast (CNRSE); Commander, Navy Region Japan (CNRJ); Commander, Navy Region Korea (CNRK); and Naval Region Center Singapore. The RWQB develops strategy and oversees processes to provide compliant drinking water at installations and facilities. The RWQB is also responsible for working with the WQOC and Installation Water Quality Boards (IWQBs) to implement the ORC and AORC OT&C program, including the development and implementation of site-specific operator training requirements. Each RWQB is led by the REGCOM, who is responsible for classifying the water treatment and distribution facilities and issuing the ORC and AORC certification certificates (see Fig. 2-2).

The IWQB members include installation staff from PW UEM, EV, Preventive Medicine Unit (PMU), Housing (where applicable), and Real Estate (where applicable). The IWQB executes various strategies and different processes to achieve compliant drinking water that is fit for human consumption at their installation. Each IWQB is led by the Installation Commanding Officer (ICO). The IWQB plays a key role in addressing the ORC/AORC training and certification requirements, and identifying candidates for ORC/AORC certification.

1.5 PROGRAM EXECUTION

Water treatment and distribution facilities classification/certification levels are designated, in increasing order of complexity/population, by the levels 1, 2, and 3. 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 2 certified operator may be the ORC for facilities classified as Level 2 or Level 1 - but not for facilities classified as Level 3. An applicant must pass the Navy's overseas operator drinking water written certification examination for the appropriate type and level of facility that he or she seeks to be certified to operate.

The OT&C program for US Navy overseas drinking water systems will be executed in five separate phases:

- Phase 0 - Establishment and implementation of the Navy Overseas Drinking Water General Training and Examination
- Phase I - Establishment of Navy Overseas Drinking Water Operator Certification and Classification Standards
- Phase II - Development of the Navy Drinking Water Treatment and Distribution Systems ORC/AORC Training Courses and Certification Examinations for Level I Certification and procedure and criteria for reciprocity or the issuance of certification without examination by the RWQB to operators who hold a valid certificate in a comparable classification, on a case-by-case basis and pending the review, approval, and recommendation of the WQOC-Navy Operator Certification Authority (NOCA). Refer to Section 3.3 for information on obtaining reciprocity. Training and examinations will be translated into the HN language as necessary.
- Phase III - Development of the Navy Drinking Water Treatment and Distribution Systems' ORC/AORC Training Courses and Certification Examinations for Level II Certification
- Phase IV - Development of the Navy Drinking Water Treatment and Distribution Systems' ORC/AORC Training Courses and Certification Examinations for Level III Certification

Once the OT&C program has been established, Navy Certification will include the following 5 basic requirements: 1) Education; 2) Experience; 3) 40 hours of classroom training for each certification level; 4) Examination; and 5) Annual continuing education.

Six months after the ORC/AORC training course and certification examination is developed, the ORC/AORC must obtain the Level 1 certification. Section 6 provides more detailed information regarding the OT&C program implementation.



2 CERTIFICATION AUTHORITY

The Navy Operator Certification Authority (NOCA) will be a subgroup within the WQOC assigned to manage the OT&C program, henceforth referred to as the WQOC-NOCA. The WQOC chair and primary principals will determine the make-up and number of members assigned to the WQOC-NOCA.

The WQOC-NOCA oversees various program requirements for the certification of operators of water treatment plants (WTPs) and water distribution systems in order to ensure protection of public health and that US Navy overseas Navy drinking water systems are properly operated, maintained, and managed.

The responsibilities of the WQOC-NOCA include:

- Review Navy instructions, requirements, and procedures pertaining to the OT&C program in order to advise and assist the WQOC in the program's administration
- Establish minimum requirements of education, experience, and knowledge for each level of certification for water treatment and distribution facility operators
- Oversee various aspects of the OT&C program and report at least annually via the WQOC to NAVFAC HQ, CNIC, BUMED, and NMCPHC of its activities during the year and provide recommendations to improve the program as necessary
- Establish/verify water treatment and distribution systems' classification levels
- Establish/verify levels of certification for water treatment and distribution facility operators based on the classification of water treatment and distribution facilities

- Review guidance for submitting applications for certification, conducting examinations, and verifying applicant certification on the basis of prompt and fair consideration to ensure that US Navy overseas drinking water systems are operated, maintained, and/or managed by appropriately-certified operators
- Review the operator education, training, experience, and other pertinent operator certification requirements of a HN and determine the application of those requirements to the Navy's program, and issue a decision regarding acceptance or rejection of reciprocity
- Approve OT&C materials, OT&C classes, and operator certification tests
- Recommend to the RWQB that it issue Navy Overseas Drinking Water Operator Certification to operators who meet the certification requirements
- Provide guidelines for developing, implementing, and approving operator continuing education training courses
- Provide administrative oversight of proper execution of OT&C program requirements at the region and installation levels
- Recommend to the RWQB suspension/revocation of an operator's certificate if the operator fails to meet OT&C requirements

These guidelines were developed to enable the WQOC-NOCA, with support from RWQBs and IWQBs in the implementation and enforcement of program details, and to administer a successful operator certification program to ensure the protection of public health. They set the minimum baseline for an operator certification program to meet the provisions set forth by the SDWA.

Figure 2-1 illustrates the roles of the WQOC-NOCA and the various commands in this program.

Figure 2-1 Program Implementation Authority and Responsibilities

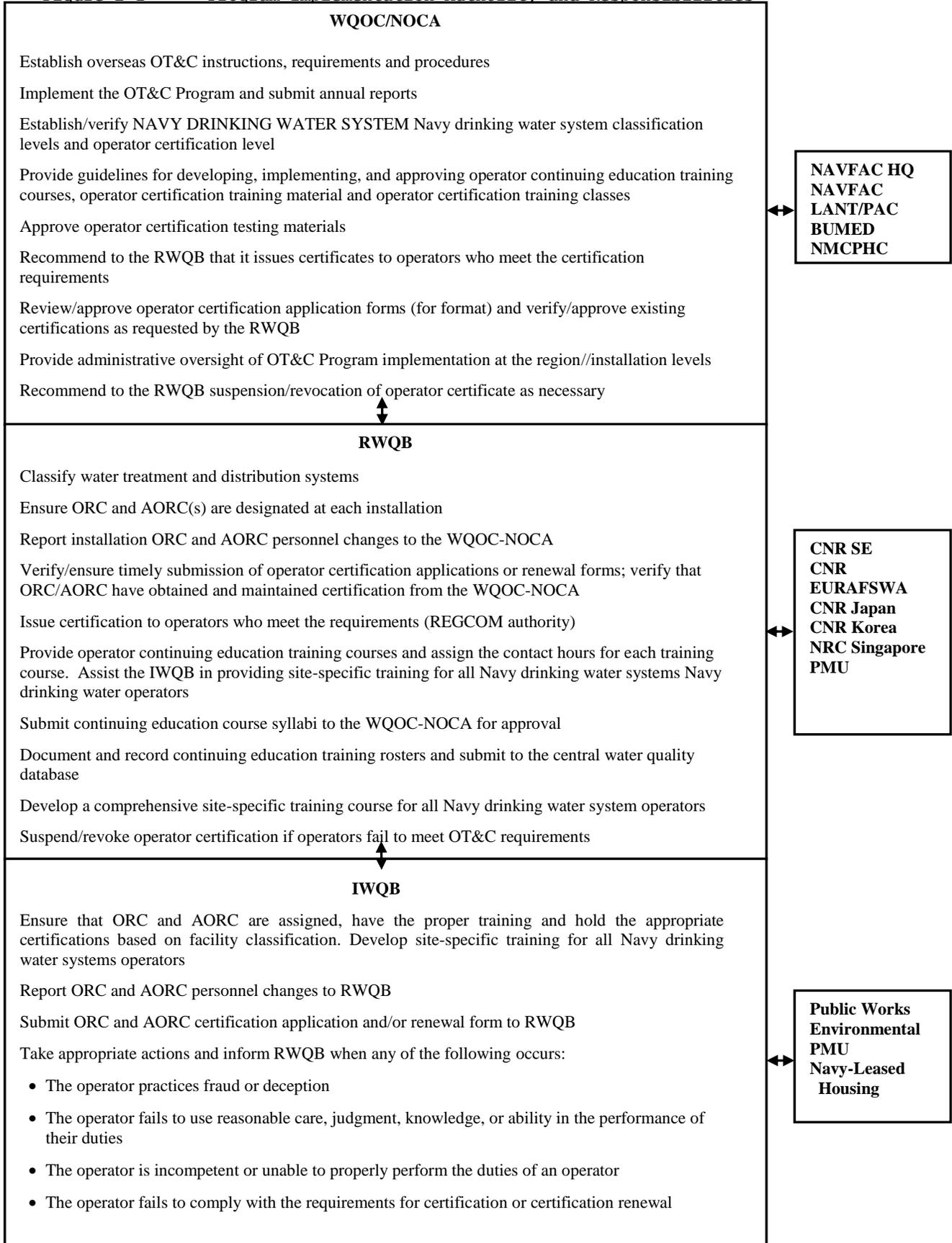
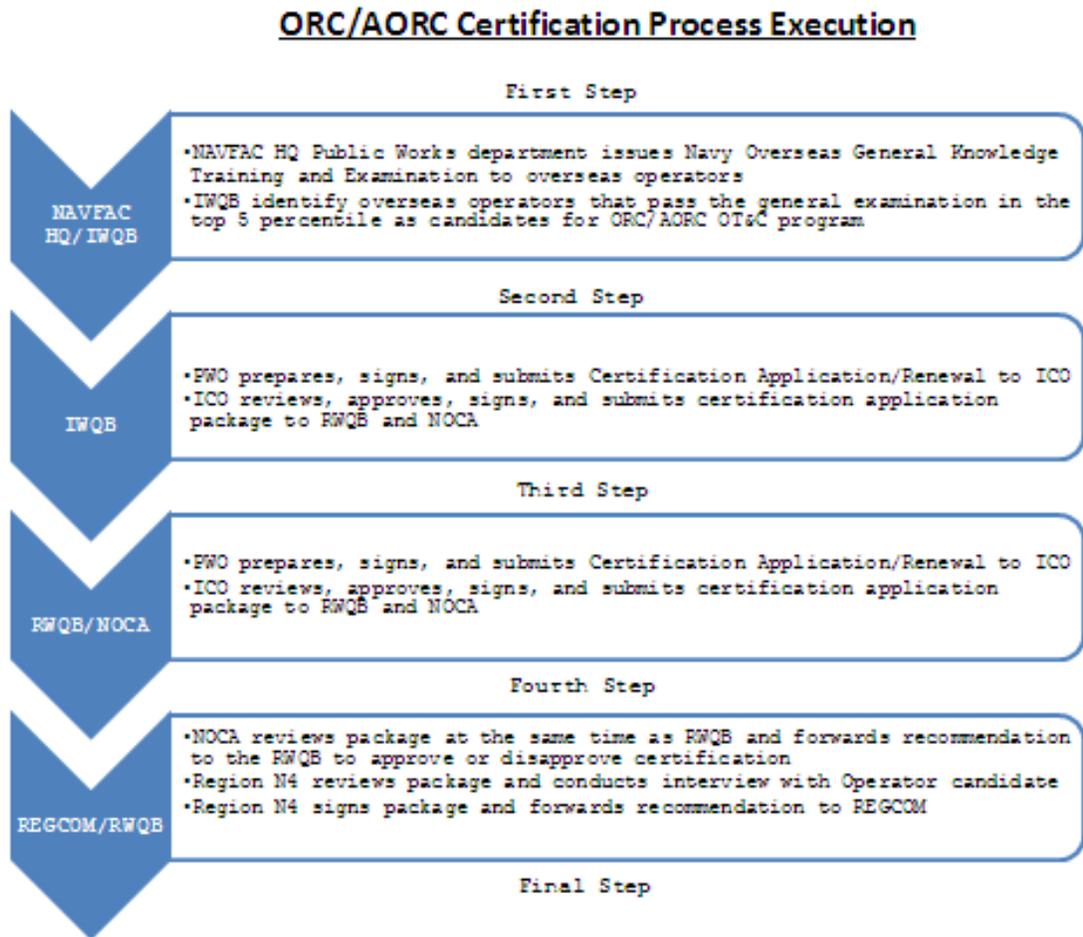


Figure 2-2 ORC/AORC Certification Process Flow



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3 OPERATOR CERTIFICATION

3.1 CERTIFIED OPERATOR REQUIREMENTS

All US Navy overseas installation water treatment and distribution systems must have a Navy-certified ORC assigned. All systems must also have a Navy-certified AORC assigned if physical, chemical, or microbiological characteristics of the water are altered in that system. An ORC and AORC may be assigned to multiple systems. The IWQBs and RWQBs are responsible for assigning the appropriate number of ORCs/AORCs to systems but each installation must have at least one ORC and where installations have more than one system, there must be at least one ORC and one AORC. Each ORC/AORC must carry a Navy Certification Pocket Card (Fig 3-1).

Figure 3-1 ORC/AORC Pocket Certification Card

US Navy Overseas Drinking Water Operator in Responsible Charge	
Certified by: (REGCOM)	Date:
Examination: (RWQB Initial)	Date:
Education: (RWQB Initial)	
Experience: (RWQB Initial)	
Continuing Education: (RWQB Initial)	Date:
Expiration Date: (RWQB assign)	
CNIC Signature: Navy Ashore Drinking Water Executive Agent	

3.2 OPERATOR CERTIFICATION LEVELS

Applicants for the various levels of certification shall be of legal working age, in accordance with the US 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 3-2. These operator certification levels, education, and experience requirements are consistent with the USEPA Guidelines for the Certification and Recertification of the Operators of Community and Nontransient Noncommunity Public Water Systems published in the Federal Register on February 5, 1999, and the updates published in the Federal Register on April 18, 2001. They are also consistent with the Association of Boards of Certification (ABC) guidelines.

Table 3-2 Operator Certification Levels For Treatment

Educational & Experience Requirements			
Level	Type	Standard	Alternatives*
1	Treatment	<p>Be a college graduate with a bachelor's degree or equivalent in the physical or natural sciences; OR</p> <p>Be a graduate of a two year technical program with a diploma in water technology; OR</p> <p>Be a high school graduate or equivalent with six months of acceptable experience at a water treatment facility; OR</p> <p>Be an existing employee at the treatment facility; AND</p> <p>Have satisfactorily completed a Level 1 training course provided by the WQOC-NOCA.</p>	None
2	Treatment	<p style="text-align: center;"><u>OPTION 1</u></p> <p>Be a college graduate with a bachelor's degree or equivalent in the physical or natural sciences; OR</p> <p>Be a graduate of a two year technical program with a diploma in water technology; AND</p> <p>Have six months of acceptable treatment level experience at a at a Level 1 water treatment facility; AND</p> <p>Have satisfactorily completed a Level 2 training course provided by the WQOC-NOCA.</p> <p style="text-align: center;"><u>OPTION 2</u></p> <p>Has one year of acceptable treatment level experience</p>	<p>Be a high school graduate or equivalent; AND</p> <p>Have ten years of acceptable experience at a water treatment facility; AND</p> <p>Have satisfactorily completed a Level 2 training course provided by the WQOC-NOCA.</p>

		<p>at a water treatment facility while holding a Level 1 Treatment Certificate; AND</p> <p>Have satisfactorily completed a Level 2 training course provided by the WQOC-NOCA.</p>	
3	Treatment	<p>Be a college graduate with a bachelor's degree or equivalent in the physical or natural sciences; OR</p> <p>Be a graduate of a two year technical program with a diploma in water technology; AND</p> <p>Have one year of acceptable treatment level experience at a Level 2 or higher water treatment facility while holding a Level 2 Treatment Certificate; AND</p> <p>Have satisfactorily completed a Level 3 training course provided by the WQOC-NOCA.</p>	<p>Be a high school graduate or equivalent; AND</p> <p>Have twenty years of acceptable experience at a water treatment facility; AND</p> <p>Have satisfactorily completed a Level 3 training course provided by the WQOC-NOCA.</p>

Table 3-2 OPERATOR CERTIFICATION LEVELS FOR DISTRIBUTION

Educational & Experience Requirements			
Level	Type	Standard	Alternatives*
1	Distribution	<p>Be a college graduate with a bachelor's degree or equivalent in the physical or natural sciences; OR</p> <p>Be a graduate of a two year technical program with a diploma in water technology; OR</p> <p>Be a high school graduate or equivalent with six months of acceptable experience at a water distribution facility; OR</p> <p>Be an existing employee assigned at the distribution facility; AND</p> <p>Have satisfactorily completed a Level 1 training course provided by the WQOC-NOCA.</p>	None
2	Distribution	<p style="text-align: center;"><u>OPTION 1</u></p> <p>Be a college graduate with a bachelor's degree or equivalent in the physical or natural sciences; OR</p> <p>Be a graduate of a two year technical program with a diploma in water technology; AND</p> <p>Have six months of acceptable experience at a water distribution facility; AND</p> <p>Have satisfactorily completed a Level 2 training course provided by the WQOC-NOCA.</p>	<p>Be a high school graduate or equivalent; AND</p> <p>Have ten years of acceptable experience at a water distribution facility; AND</p> <p>Have satisfactorily completed a Level 2 training course provided by the WQOC-NOCA.</p>

		<u>OPTION 2</u>	
		<p>Have one year of acceptable experience at a water distribution facility while holding a Level 1 Distribution Certificate; AND</p> <p>Have satisfactorily completed a Level 2 training course provided by the WQOC-NOCA.</p>	
3	Distribution	<p>Be a college graduate with a bachelor's degree or equivalent in the physical or natural sciences; OR</p> <p>Be a graduate of a two year technical program with a diploma in water technology; AND</p> <p>Have one year of acceptable experience at a Level 2 or higher water distribution facility while holding a Level 2 Distribution Certificate; AND</p> <p>Have satisfactorily completed a Level 3 training course provided by the WQOC-NOCA.</p>	<p>Be a high school graduate or equivalent; AND</p> <p>Have twenty years of acceptable experience at a water distribution facility; AND</p> <p>Have satisfactorily completed a Level 3 training course provided by the WQOC-NOCA.</p>

*Notes: During the first two years following the date of implementation of these requirements, an applicant who has been an operator of a Navy drinking water system and/or Navy drinking water system on or for a housing facility leased by the Navy for at least five years may meet the alternative age, education, and experience requirements for the various classes of certification.

3.3 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 WQOC-NOCA. Navy overseas installations who employ operators certified in accordance with US stateside water operator certification systems or HN's certification requirements may apply to the WQOC-NOCA for reciprocity via the RWQB. Navy installations that employ operators who hold a valid, current drinking water license/certification in a US state must apply for Navy Certification, but shall not be subject to the 40-hr training and examination requirements, unless otherwise deemed so by the WQOC-NOCA, on a case-by-case basis. Applications for reciprocal certification under this program must be submitted on the form provided by WQOC-NOCA. The RWQB, with assistance from the IWQB, must request and supply information to the WQOC-NOCA for the designated applicant(s), demonstrating that the requirements under which the other certification was obtained are equivalent to the Navy program requirements.

The WQOC-NOCA reserves the right to: (a) Require the applicant, who appears otherwise qualified by education, experience, and certification elsewhere, to pass the examination or (b) in special circumstances require the applicant to take training classes.

If the aforementioned requirements are not met, the applicant will be required to take the Navy training class and pass an examination for the level of

certification for which the applicant is applying. Any applicant who fails an examination three times must retake the appropriate class, as designated above, before sitting for the exam again. Specific procedures for providing reciprocity will be developed by the WQOC-NOCA.

At the discretion of WQOC-NOCA 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. However, failure to pass the exam will require the operator to take the training course.

3.4 PROVISIONAL CERTIFICATION

Following the OT&C program implementation, as discussed in Section 6 of this document, a provisional certificate may be issued by the RWQB when the supply of certified operators, or individuals with training necessary to obtain certification, is inadequate. However, prior approval must be obtained from the WQOC-NOCA for provisional certification.

All IWQB provisional certificate applicants must file a WQOC-NOCA approved application form via the RWQB. The information provided on the form must be sufficient to allow the WQOC-NOCA to determine if the public health will be adequately protected while such provisional certification certificate is in force. Further, the application must demonstrate to the WQOC-NOCA that the IWQB applicant(s) applying for the provisional certification certificate is competent and able to

fulfill the appropriate duties according to the WQOC-NOCA requirements.

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, the operator holding a provisional certification must take the appropriate training class and pass the exam for the required certification level.

3.5 RENEWAL

Certifications shall be renewed every 2 years. Application for renewals will be due to the RWQB and WQOC-NOCA at least 60 days prior to the certificate's expiration date. If the IWQB fails to file the appropriate application form via the RWQB for its operator(s) and if that same applicant(s) fails to meet the continuing education requirements prior to or by the expiration date, the certification will expire. In summary, all IWQB application forms for certification or certification renewal shall be submitted to and received by the RWQB with a copy to the WQOC-NOCA within the specified timeframe.

The WQOC-NOCA shall mail or e-mail renewal notices to the RWQB for Navy installation Navy drinking water system operators within their area of responsibility (AOR) at least 180 days prior to the expiration date and inquire whether the RWQB has a record of their professional development hours for the preceding 2 years. The IWQB must provide the RWQB with proof of the required 32

contact hours of training for each of their Navy drinking water system operators at the time of the bi-annual certification renewal. Failure to receive the renewal notice does not in any way relieve the IWQB of the responsibility to submit the renewal application(s) to the RWQB and WQOC-NOCA at least 60 days prior to the certification's expiration.

3.6 SUSPENSION AND REVOCATION

If an operator fails to maintain the requirements of their position as detailed herein, his or her certificate may be suspended and/or revoked. If deemed appropriate, the RWQB will work through the chain of command to suspend and/or revoke the certification of an operator to address any of the following:

- The operator has practiced fraud or deception
- The operator failed to use reasonable care, judgment, knowledge, or ability in the performance of his duties
- The operator is incompetent or unable to properly perform the duties of an operator
- The operator has failed to comply with the requirements for certification or renewal of certification

3.7 CONTINUING EDUCATION

All certified operators shall complete at least 16 contact hours of WQOC-NOCA-approved training each calendar year following initial certification. However, 8 hours of online training as part of the total 16 hours,

may be permitted in lieu of all onsite training if the training course material is submitted to the WQOC-NOCA for review and prior approval. Implementation of the continuing education training, including any site-specific training for each installation, will be the responsibility of the RWQB. Ultimately, submission of proof of professional development hours is the responsibility of the IWQB to the RWQB.

The organization providing the training shall give each participant a certificate or other proof of completion that 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.

3.8 CERTIFICATION REINSTATEMENT

An operator whose certification has expired may seek reinstatement within 2 years of expiration. The IWQB must provide to the RWQB and WQOC-NOCA proof of the applicant's continuing education for each calendar year that has passed since the certification expiration, or by re-examination.

Any operator whose certification has been expired for more than 2 years or whose certification has been revoked by the RWQB must apply, through the IWQB, to the RWQB for consideration and approval by the WQOC-NOCA for either

re-certification or reinstatement of the revoked certification.

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4 WATER TREATMENT AND DISTRIBUTION FACILITY LEVELS OF CERTIFICATION

4.1 CLASSIFICATION OF WATER TO BE TREATED

In addition to the "ground water" and "surface water" that require treatment, the HN FGS "Purchased Water" category 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 US 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.

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 (chlorination, etc.), a Level 1 treatment certificate may be appropriate. If the treatment is more complex, a Level 2 or 3 treatment certificate would be needed.

It will be the responsibility of WQOC-NOCA to establish and verify water treatment and distribution classification of Navy overseas installation drinking water systems. This promotes consistency among the drinking water systems.

4.2 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 B. This point system is consistent with the ABC WTP rating system and with the rating system provided in the USEPA Draft Final Guidelines for Tribal Drinking Water Operator Certification Program. Any US stateside classification systems will differ significantly from the classification system in these guidelines.

The water treatment facility classification depends on the total number of points assigned to each applicable parameter listed in Appendix B. Classifications will be designated according to the following point:

<u>Classification</u>	<u>Total Points</u>
Level 1	1-50
Level 2	51-110
Level 3	over 110

4.3 WATER DISTRIBUTION FACILITY CLASSIFICATION

The water distribution facility classification will follow the point system provided in Appendix C. This classification level will dictate the certification level required for operation.

The total number of points assigned to each applicable parameter listed in the Appendix will dictate the water

distribution facility classification according to the following point totals:

<u>Classification</u>	<u>Total Points</u>
Level 1	1-50
Level 2	51-75
Level 3	over 75

5 OPERATOR REQUIREMENTS

5.1 ORC AND AORC OPERATOR REQUIREMENTS

When the ORC is not on duty, an AORC must be on duty. This AORC must hold a current certification no more than one level lower than the classification of the WTP or distribution system. Upon vacancy of an ORC or AORC position, which results in noncompliance with this requirement, the IWQB must notify the RWQB via the installation's chain of command within 72 hours of such vacancy. The RWQB must then notify the WQOC-NOCA chairperson by telephone within 15 days and in writing within 30 days of being notified by the installation of their Plan of Action and Milestones (POA&M) toward filling the vacancy.

5.2 RESPONSIBILITIES OF ORC AND AORC

The ORC must possess a valid certificate issued by the RWQB equivalent to or exceeding the classification of the facility they operate. The AORC must possess a valid certificate issued by the RWQB no more than one level lower than the classification of the WTP or distribution system they operate. The ORC and AORC must both carry the Navy Overseas Certification Pocket Card.

Since the ORC and AORC are new requirements, they may be filled by existing Navy operators or other existing DoD/contractor operating personnel that meet the required operator certification education and experience.

The ORC shall be readily available for consultation in case of emergency, malfunction, breakdown of equipment, or other needs. The ORC must be either on-site or able to be contacted as needed to initiate appropriate actions in a timely manner. However, the designated operator (ORC or AORC) must be directly available at all times the water system is in operation. The designated operator must travel between the different water systems if assigned responsibility for multiple systems.

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. Such coverage shall include a roving security patrol or monitoring by a Supervisory Control and Data Acquisition (SCADA) system from a remote location. The ORC must be in "on call" status except when in leave status or not capable of fulfilling their duties; during those instances, the AORC must be available to fulfill the ORC's responsibilities.

5.3 EXPECTED RANGE OF KNOWLEDGE (ERK) - TREATMENT AND DISTRIBUTION FACILITY OPERATORS

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.

During development Phases II-IV of the OT&C program, the ERK for treatment and distribution operators will be further refined.

Formal training for certification is progressive from Level 1 to Level 2 to Level 3, reflecting progressive levels of difficulties and comprehension, depending on the system classification.

As an example, the Level 1 training will not expect entering students to have any knowledge of breakpoint chlorination. It will only be assumed that the students have at least read the study material before coming to class. The students will receive a beginner's overview of breakpoint chlorination in the class, including:

- Basic definitions:
 - Free residual chlorine
 - Total residual chlorine
 - Combined residual chlorine
 - Chlorine demand
- Graphic description of the breakpoint chlorination curve:
 - Basic curve
 - Breakdown of curve into its distinctive parts
 - Description of what happens in each part
- Description of basic chemistry between chlorine and ammonia in water
- Basic discussion of importance of breakpoint chlorination in water treatment

The Level 2 training will expect entering students to have a working knowledge of breakpoint chlorination. It will be assumed that the students have read and understand the study material before coming to class. The students will

receive a thorough review of breakpoint chlorination in the class, including:

- Detailed graphic description of the breakpoint chlorination curve:
 - Basic curve
 - Breakdown of curve into its distinctive parts
- Detailed description of what happens in each part:
 - Chlorine demand chemistry including iron, manganese, sulfide, and color
 - Chloramination chemistry:
 - Monochloramine
 - Dichloramine
 - Trichloramine
 - Breakpoint
 - Chlorine to ammonia ratios for each of the above
 - Optimum pH for each of the above
- 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

The Level 3 training will expect entering students to have a mastery of the subject in general and the training material in particular. It will be assumed that the students have re-read and understand the study material before coming to 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 in the class, including:

- Detailed graphic review of the breakpoint chlorination curve:
 - Basic curve
 - Breakdown of curve into its distinctive parts
- Detailed review of what happens in each part:
 - Chlorine demand chemistry including iron, manganese, sulfide, and color
 - Chloramination chemistry:
 - Monochloramine
 - Dichloramine
 - Trichloramine
 - Breakpoint
 - Chlorine to ammonia ratios for each of the above
 - Optimum pH for each of the above
- 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

Students successfully completing Level 3 will be expected to have an intimate understanding of breakpoint chlorination in general and its impact on their respective water systems in particular.

To assist the individual in preparation for the certification process, the required ERK will be determined and developed. These ERKs 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 US. Section 7 provides a list of references widely used in the programs prescribed by the ABC, which is subscribed to by many states.

The training courses and tests will initially be developed in English. Training and Examinations will be translated into the HN language as necessary. All calculations will be in the British Imperial System (e.g., feet versus meter or pound versus kilogram). Acknowledging most countries, such as those in Europe, use the metric system (meter versus feet or kilogram versus pound), the references listed in section 7 and other related training material will be utilized to develop the training material and metric conversions provided for each water treatment and distribution operator certification level during Phase II of this OT&C program, .

5.4 DECHLORINATION AND THE REMOVAL OF FLUORIDE

In addition to the ERK discussed in Section 5.3, 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.

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6 PROGRAM IMPLEMENTATION

As indicated in Section 1 of this document, the US Navy's Overseas Drinking Water Treatment and Distribution System OT&C program will be executed in five separate phases:

- Phase 0 - Establishment and implementation of the Navy Overseas General Training and Examination
- Phase I - Establishment of Certification and Classification Standards
- Phase II - Development of the "Navy Drinking Water Treatment and Distribution Systems' ORC/AORC Training Courses and Certification for Level I Certification", and procedure and criteria for reciprocity or the issuance of certification without examination by the RWQB (to individuals who hold a valid certificate in a comparable classification on a case-by-case basis and pending the review, approval, and recommendation of the WQOC- NOCA). Refer to Section 3.3 for discussion on obtaining reciprocity. Training and examinations will be translated into the HN language as necessary.
- Phase III - Development of the Navy Drinking Water Treatment and Distribution Systems' ORC/AORC Training Courses and Certification Examinations for Level II Certification
- Phase IV - Development of the Navy Drinking Water Treatment and Distribution Systems ORC/AORC Training Courses and Certification Examinations for Level III Certification

Following the establishment of the certification and classification standards in Phase I, the development of the drinking water treatment and distribution facilities operators' training courses and certification examinations will be executed as quickly as possible.

The ability of the ORC and AORC operators to successfully complete the training and pass the examinations will be evaluated by the WQOC-NOCA [twice per annum in the Atlantic and Pacific AORs]. The ERK for both the treatment and distribution facility operators will also be further refined and updated as needed. In addition, the material that is developed for this training and certification program will include metric conversions.

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.

In addition to reviewing and becoming proficient with the information in the aforementioned training documents, operators will be required to attend a weeklong class on distribution and/or treatment and pass an exam upon completion. This is the Phase 0 General Knowledge requirement. An operator who does not pass the test at the end of the General Knowledge training will receive two additional opportunities to retake the test at a later date.

There will be an annual internal WQOC-NOCA review of the overall program to determine if any adjustments need to be made to the program and/or the training material.

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APPENDICES

A Definitions

**B Water Treatment Facility Classification
Point System**

**C Water Distribution Facility Classification
Point System**

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APPENDIX A

DEFINITIONS

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

"Acceptable Distribution Level Experience" means that at least 50 percent of the AORC and ORC job-related responsibilities shall consist of active on-site performance of operational duties for distribution systems within public water systems. All related knowledge and 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 distribution 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. Utility Supervisor/Manager experience shall be acceptable if at least 50 percent of their job duties include inspection or on-site technical assistance of public water systems and the ability to plan and supervise the work of subordinates. In addition, based upon the review and decision of the WQOC-NOCA, applicants who were former employees and

operators of other DOD (e.g., Army, Marine, Air Force, etc.) water distribution systems of similar complexities meeting the aforementioned qualifications may also be deemed as having met the acceptable experience level.

"Acceptable Treatment Level Experience" means that at least 50 percent of the AORC and ORC job-related responsibilities shall consist of active on-site performance of operational duties for Navy drinking water systems. All related knowledge and experience shall be based on 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, and other skills necessary for maintaining and operating a treated water system. The remaining experience shall be in related fields such as water laboratories, water pumping stations, water system design and engineering, surface facilities, wells, distribution systems, or cross-connection control. The experience of Utility Supervisor/Manager personnel shall be acceptable if at least 50 percent of their job duties include inspection or on-site technical assistance of Navy drinking water systems and the ability to plan and supervise the work of subordinates. In addition, based upon the review and decision of the WQOC-NOCA, applicants who were former employees and operators of other DOD (e.g., Army, Marine, Air Force, etc.) water treatment systems of similar complexities meeting the aforementioned

qualifications may also be deemed as having met the acceptable experience level.

"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.

"Available" means that the ORC or the designated AORC is either on-site or able to be contacted as needed to initiate appropriate actions in a timely manner anytime the water system is in operation.

"Contact Hours" means each hour of classroom training instruction.

"Certified Operator" means any holder of a certificate issued in accordance with the provisions of this program.

"Community Water System (CWS)" means a public water system having at least 15 service connections used by year-round residents or which regularly serves at least 25 year-round residents.

"Fit for Human Consumption" is water that meets primary drinking water standards as defined by Final Governing Standards, Overseas Environmental Baseline Guidance Documents, and CNICINST 5090.1, and is safe for drinking, cooking, bathing, and other oral hygiene uses.

"Housing Facility Leased by Navy" means a compound designed, constructed, and/or operated and maintained in accordance with Navy specifications or a Base Operating Support (BOS) Contract agreement. A private rental that is leased individually does not meet this definition.

"Installation Water Quality Board (IWQB)" is a board chaired by each overseas Navy ICO that provides oversight of water systems in order to achieve compliant drinking water that is fit for human consumption at its installations.

"Navy Drinking Water System" is a public water system or non-public water system that is operated by the US Navy or operated under a US Navy Facility Support Contract (FSC) or BOS Contract.

"Navy Operator Certification Authority" is the board made up of 5 Navy drinking water subject-matter experts that operates under the direction of the WQOC and reports to the WQOC Chair.

"Non-Community Water System (NCWS)" is a public water system used by intermittent users or travelers and is sub-classified as a Non-Transient, Non-Community system (NTNC) or a Transient, Non-Community (TNC) system. A NTNC system could be a school or factory with its own water supply where the same people drink the water throughout the year but not 24-hours a day. A TNC system might be a motel with its own well.

"On Call" means a prearrangement or agreement to respond upon notification to a work-related emergency or situation when off duty.

"On Duty" means when the ORC or AORC is on-site during each operating shift making process control and system integrity decisions about water quality or quantity that affect public health. **"Operator"** means an individual who has direct responsibility for the operation or maintenance of a WTP or water distribution system.

"Operator in Responsible Charge (ORC)" is 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.

"Provisional Certification" - Certification granted temporarily prior to meeting and passing certain Level 1, 2, or 3 training and testing requirements. Provisional certification will be considered following full implementation of the program.

"Public Water System (PWS)" means a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves at least 25 year-round residents. This term includes both "community water systems" which serve year-round residents and "non-community systems" along with 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.

"Reciprocity" means pending review, approval, and recommendation of the WQOC-NOCA, the RWQB may issue certification without examination and on a case-by-case basis to Navy installation drinking water system operators. Operators must be 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 US 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 OT&C program requirements.

"Regional Water Quality Board (RWQB)" - Per CNIC direction, the RWQB is chaired by the REGCOM of each overseas Navy Region. It develops HN-appropriate strategies, oversees the associated processes, and is designated to provide compliant potable drinking water to all Navy personnel within their AOR.

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

"Navy Overseas Water Quality Oversight Council (WQOC)" - The WQOC is composed of representatives from CNIC; NAVFAC HQ; NAVFAC LANT/PAC Environmental & Public Works; BUMED; NMCPHC; and ad hoc representatives from NAVFAC Asset Management, Capital Improvements, and counsel. The responsibility of the WQOC is to provide water quality oversight for US Navy drinking water systems at overseas installations similar to that provided by the USEPA and states for Navy drinking water systems in the US.

"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 public water system. It specifically excludes distribution.

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APPENDIX B

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 5 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)			
	caustic (NaOH)		10
	lime / soda ash		3
	acid		10

**Water Treatment Facility Classification Point System
 (continued)**

Parameter	Sub-Parameter 1	Sub-Parameter 2	Rating Value
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
Phosphate (sequestering agent)			5
Stabilization			
	acid feed		10
	phosphate		2
	caustic (NaOH)		10
	lime / soda ash		3

	contact units		5
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**Water Treatment Facility Classification Point System
 (continued)**

Parameter	Sub-Parameter 1	Sub-Parameter 2	Rating Value
Nanofiltration, Reverse Osmosis, or Electrodialysis			111
Disinfection			
	gas Cl ₂		10
	hypochlorite solution		7
	ClO ₂		13
	ozone		13
	ammonia and Cl ₂		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 dist. system		1
	elevated at plant or in dist. system		2
	hydropneumatic at plant or in dist. 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.

**Water Treatment Facility Classification Point System
 (continued)**

Parameter	Sub-Parameter 1	Sub-Parameter 2	Rating Value
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 / spec.	2
		test kit	1
	iron		1
	hardness		1
	alkalinity		1
	turbidity		1
	manganese		1
	others (1 pt. each)		1

APPENDIX C

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 dist. 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 dist. system)		

**Water Distribution Facility Classification Point System
(continued)**

Parameter	Sub-Parameter 1	Sub-Parameter 2	Rating Value
		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