Advancement Handbook
for
Cryptologic Technician
Collection (CTR)

This Advancement Handbook was developed in August 1999.

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PREFACE

The purpose of the Advancement Handbook is to assist CTRs in preparing for Navywide advancement-in-rating examinations. The bibliographies (BIBs), together with this handbook, form a comprehensive examination study package. Since this handbook provides skill and knowledge components for each paygrade of the CTR rating, it helps focus study on those areas that will be tested. This feature ensures Sailors will get the most out of their study time.

Each page in Parts 1 through 4 of this Advancement Handbook presents general skill areas, specific skill areas, the knowledge factors associated with each skill area, the pertinent references required to perform each skill, and the types of subject areas you can expect on the examination. The skill statements describe the skills you are expected to perform for each paygrade. They are cumulative; that is, you are responsible for all the skills for the paygrade for which you are competing, your present paygrade, and all paygrades below.

Although this handbook is very comprehensive, it cannot cover all the tasks performed by CTRs. As a result, advancement examinations may contain questions more detailed than described in the "Exam Expectations" section of the skill areas.

Remember that advancement competition is keen, so your keys to advancement include not only comprehensive advancement examination study but also sustained superior performance.

1999 Edition

THE UNITED STATES NAVY

GUARDIAN OF OUR COUNTRY

The United States Navy is responsible for maintaining control of the sea and is a ready force on watch at home and overseas, capable of strong action to preserve the peace or of instant offensive action to win in war.

It is upon the maintenance of this control that our country's glorious future depends; the United States Navy exists to make it so.

WE SERVE WITH HONOR

Tradition, valor, and victory are the Navy's heritage from the past. To these may be added dedication, discipline, and vigilance as the watchwords of the present and the future.

At home or on distant stations, we serve with pride, confident in the respect of our country, our shipmates, and our families.

Our responsibilities sober us; our adversities strengthen us.

Service to God and Country is our special privilege. We serve with honor.

THE FUTURE OF THE NAVY

The Navy will always employ new weapons, new techniques, and greater power to protect and defend the United States on the sea, under the sea, and in the air.

Now and in the future, control of the sea gives the United States her greatest advantage for the maintenance of peace and for victory in war.

Mobility, surprise, dispersal, and offensive power are the keynotes of the new Navy. The roots of the Navy lie in a strong belief in the future, in continued dedication to our tasks, and in reflection on our heritage from the past.

Never have our opportunities and our responsibilities been greater.

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Part 1

Advancement Handbook for CTR3

Advancement Handbook for CTR3

General CTR3 *Skill Area*	**Automated Information Systems (AIS) Operations**
A *skill* you are expected to perform from the General Skill Area above:	Perform computer peripheral equipment, operating systems, word processing software and graphics software manipulation. Perform file maintenance, database management and computer systems security procedures. Operate computer systems in an integrated software environment.
Knowledge you should have to perform this skill:	• Computer systems hardware components and security requirements • Functions of Local Area Networks (LANs) and Wide Area Networks (WANs)
References you should study to gain the knowledge you need to perform this skill:	• DCID 1/16 • DIAM 50-4 • Joint DODIIS/Cryptologic SCI Information Systems Security Standards • NEETS Module 22 • NSA/CSS 130-1 • NSGTP Module 9 • SECNAVINST 5510.36 • USSID 3 • USSID 12
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge.*

Advancement Handbook for CTR3

General CTR3 *Skill Area*	**Security**
A *skill* you are expected to perform from the General Skill Area above:	Mark and handle classified material and Sensitive Compartmented Information (SCI) in accordance with security requirements. Perform routine/emergency destruction of classified/SCI material and security checks of work stations and equipment. Change combination locking devices.
Knowledge you should have to perform this skill:	• Knowledge of naval cryptologic, national, information security (INFOSEC), operational security (OPSEC), physical security and information systems (IS) security requirements
References you should study to gain the knowledge you need to perform this skill:	• DCID 1/14 • DCID 1/21 • DOD DIR S-5105.21.M-1 • DOD TS-5105.21-M-2 • Joint DODIIS/Cryptologic SCI Information Systems Security Standards • NAVSECGRUINST 5510.7B • NAVSECGRUINST C3301.1C • NSA/CSSM 123-2 • NSGTP Module 1 • OPNAVINST 5530.14C • SECNAVINST 5510.30A • SECNAVINST 5510.36 • USSID 3 • USSID 503 • USSID 702
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR3

General CTR3 *Skill Area*	**Cryptologic Operations**
A *skill* you are expected to perform from the General Skill Area above:	Perform radio wave frequency and wave length conversions. Perform geolocation applications. Perform signal analysis of amplitude, angle, and pulse modulation signals. Perform radio receiver, oscilloscope, frequency counter, sonograph, and demodulator operations in support of signal analysis. Perform signals analysis to determine multiplexing schemes, error detection and correction (EDAC) schemes, linear recursive sequences, speech privacy systems, short duration signals, global networking services and basic communications protocols. Perform line coding analysis techniques and basic graphic signals analysis. Perform analog, digital, and optical recording operations and traffic analysis of COMINT signals. Perform spectrum analysis operations. Perform signals analysis using computer based programs. Perform kleiglight (KL) processing. Perform analog/digital conversions. Perform STRUM processing and JMCIS and/or GCCS-M unified build operations and applications. Measure spectral characteristics of a sine wave. Calculate decibels as related to power and voltage ratios. Report COMINT. Classify signals to appropriate designators. Use cryptologic publications in support of signals analysis.

Advancement Handbook for CTR3

General CTR3 *Skill Area*	**Cryptologic Operations**
Knowledge you should have to perform this skill:	- Radio wave and propagation principles - Frequency characteristics of various antennas - Radio frequency bands - Signals research and target development - Satellite methodology and orbital techniques - Search and rescue procedures - Threats based on signals analysis - cryptologic sensor capabilities of air, surface, and subsurface platforms - Mission for fleet DIRSUP and Information Assurance (IA) - LERTCON procedures - Tasking - International communications procedures

Advancement Handbook for CTR3

General CTR3 *Skill Area*	**Cryptologic Operations**
References you should study to gain the knowledge you need to perform this skill:	- NAVEDTRA 10069-D1, Mathematics, Volume 1 - NAVEDTRA 10062, Mathematics, Volume 2-A - NAVEDTRA 10063, Mathematics, Volume 2-B - NAVEDTRA 10073-A1, Mathematics, Volume 3 - NAVSECGRUINST C3301.1C - NEETS Module 10 - NEETS Module 12 - NEETS Module 13 - NEETS Module 17 - NEETS Module 23 - NSGTP Module 2 - NSGTP Module 5 - NSGTP Module 9 - NSGTP Module 15 - NSGTP Module 16 - NSGTP Module 22 - RASIN Manual - TA-103 Basic Traffic Analysis - USSID 2 - USSID 18 - USSID 101 - USSID 103 - USSID 110 - USSID 111 - USSID 205 - USSID 300 - USSID 369 - USSID 410
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR3

General CTR3 *Skill Area*	**Quality Assurance**
A *skill* you are expected to perform from the General Skill Area above:	Perform quality control of STRUM reports.
Knowledge you should have to perform this skill:	• STRUM reporting formats
References you should study to gain the knowledge you need to perform this skill:	• NSGTP Module 15 • USSID 205
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR3

General CTR3 *Skill Area*	**Technical Administration**
A *skill* you are expected to perform from the General Skill Area above:	Use USSID publications.
Knowledge you should have to perform this skill:	• General understanding of the USSID system
References you should study to gain the knowledge you need to perform this skill:	• USSID 2
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR3

General CTR3 *Skill Area*	**Information Warfare**
A *skill* you are expected to perform from the General Skill Area above:	Perform cryptologic support to Information Warfare (IW) and Command and Control Warfare (C2W).
Knowledge you should have to perform this skill:	• Mission of IW and C2W and Information Operations (IO)/IW
References you should study to gain the knowledge you need to perform this skill:	• NSGTP Module 2
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Part 2

Advancement Handbook for CTR2

Advancement Handbook for CTR2

General CTR2 *Skill Area*	**Automated Information Systems (AIS) Operations**
A *skill* you are expected to perform from the General Skill Area above:	Perform network system operations.
Knowledge you should have to perform this skill:	• Network system operations capabilities
References you should study to gain the knowledge you need to perform this skill:	• Joint DODIIS/Cryptologic SCI Information Systems Security Standards • NEETS Module 22 • NSGTP Module 9
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR2

General CTR2 *Skill Area*	**Security**
A *skill* you are expected to perform from the General Skill Area above:	Prepare classified material destruction reports.
Knowledge you should have to perform this skill:	• Information security program requirements
References you should study to gain the knowledge you need to perform this skill:	• DOD DIR S-5105.21.M-1 • NSGTP Module 11 • SECNAVINST 5510.36
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR2

General CTR2 *Skill Area*	**Cryptologic Operations**
A *skill* you are expected to perform from the General Skill Area above:	Perform signals analysis of terrestrial microwave and direct sequence spread spectrum signals. Perform fine-grain signals/traffic analysis on COMINT signals. Perform JDISS advanced tactical cryptologic system (JATACS) operations. Draft CRITIC and Product reports. Implement tasking messages. Issue STRUM reports. Maintain continuity on threat nation communications. Report significant tactical I&W data. Coordinate COMINT operations.
Knowledge you should have to perform this skill:	• Very Small Aperture Terminal (VSAT), troposcatter, noncommunications, and cellular communications signals characteristics • CRITIC associated activity
References you should study to gain the knowledge you need to perform this skill:	• NEETS Module 10 • NEETS Module 12 • NEETS Module 17 • NSGTP Module 2 • NSGTP Module 5 • NSGTP Module 15 • NSGTP Module 16 • USSID 101 • USSID 110 • USSID 205 • USSID 300 • USSID 301
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR2

General CTR2 *Skill Area*	**Communications**
A *skill* you are expected to perform from the General Skill Area above:	Brief cryptologic operational events.
Knowledge you should have to perform this skill:	• Cryptologic operations
References you should study to gain the knowledge you need to perform this skill:	• NSGTP Module 1 • NSGTP Module 2 • NSGTP Module 5 • NSGTP Module 22
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR2

General CTR2 *Skill Area*	**Quality Assurance**
A *skill* you are expected to perform from the General Skill Area above:	Perform quality control of collected signals of interest, COMINT summary reports, and KL reports.
Knowledge you should have to perform this skill:	• COMINT reporting formats • Parameters of collected signals
References you should study to gain the knowledge you need to perform this skill:	• NSGTP Module 15 • RASIN Manual • USSID 101 • USSID 111 • USSID 115 • USSID 205 • USSID 300 • USSID 303 • USSID 369
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR2

General CTR2 *Skill Area*	**Technical Administration**
A *skill* you are expected to perform from the General Skill Area above:	Provide information for mission statement on equipment outages used in collection operations.
Knowledge you should have to perform this skill:	• Mission of cryptologic operations
References you should study to gain the knowledge you need to perform this skill:	• NSGTP Module 2 • NSGTP Module 5 • NSGTP Module 22 • USSID 110 • USSID 402
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Part 3

Advancement Handbook for CTR1

Advancement Handbook for CTR1

General CTR1 *Skill Area*	**Automated Information Systems (AIS) Operations**
A *skill* you are expected to perform from the General Skill Area above:	Coordinate IS operations.
Knowledge you should have to perform this skill:	• Information systems to include LAN and WAN configurations
References you should study to gain the knowledge you need to perform this skill:	• Joint DODIIS/Cryptologic SCI Information Systems Security Standards • NEETS Module 22 • NSGTP Module 9
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR1

General CTR1 *Skill Area*	**Security**
A *skill* you are expected to perform from the General Skill Area above:	Initiate and maintain classified material inventories. Implement physical alert, OPSEC, and INFOSEC procedures. Coordinate Emergency Action Plans (EAPs). Verify classified material destruction reports.
Knowledge you should have to perform this skill:	• Classified material accounting and destruction procedures • Physical alert, OPSEC, INFOSEC, and EAP conditions
References you should study to gain the knowledge you need to perform this skill:	• DCID 1/14 • DCID 1/21 • DOD DIR S-5105.21.M-1 • DOD TS-5105.21-M-2 • NAVSECGRUINST 5510.7B • NAVSECGRUINST C3301.1C • NSA/CSSM 123-2 • NSGTP Module 11 • SECNAVINST 5510.36 • SECNAVINST 5510.30A
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR1

General CTR1 *Skill Area*	**Cryptologic Operations**
A *skill* you are expected to perform from the General Skill Area above:	Issue CRITIC, KL, and COMINT summary reports. Draft and maintain target studies. Perform all-source SIGINT fusion analysis.
Knowledge you should have to perform this skill:	• Cryptologic report formats • Threat nation capabilities
References you should study to gain the knowledge you need to perform this skill:	• NSGTP Module 2 • NSGTP Module 15 • NSGTP Module 22 • USSID 18 • USSID 101 • USSID 110 • USSID 111 • USSID 115 • USSID 150 • USSID 205 • USSID 300 • USSID 301 • USSID 325 • USSID 339 • USSID 369 • USSID 404
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR1

General CTR1 *Skill Area*	**Quality Assurance**
A *skill* you are expected to perform from the General Skill Area above:	Perform quality control of collected signals of interest, COMINT summary reports, and KL reports.
Knowledge you should have to perform this skill:	• COMINT reporting formats • Parameters of collected signals
References you should study to gain the knowledge you need to perform this skill:	• NSGTP Module 15 • RASIN Manual • USSID 101 • USSID 111 • USSID 115 • USSID 205 • USSID 300 • USSID 303 • USSID 369
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR1

General CTR1 *Skill Area*	**Technical Administration**
A *skill* you are expected to perform from the General Skill Area above:	Draft mission statement on equipment outages. Maintain report tickler affecting collection operations.
Knowledge you should have to perform this skill:	• Collection operations procedures
References you should study to gain the knowledge you need to perform this skill:	• NSGTP Module 5 • USSID 110 • USSID 402
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTR1

General CTR1 *Skill Area*	**Management**
A *skill* you are expected to perform from the General Skill Area above:	Manage COMINT operations.
Knowledge you should have to perform this skill:	• Operational capabilities for COMINT operations
References you should study to gain the knowledge you need to perform this skill:	• NSGTP Module 5 • NSGTP Module 22 • USSID 101 • USSID 110
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Part 4

Advancement Handbook for CTRC

Advancement Handbook for CTRC

General CTRC *Skill Area*	**Security**
A *skill* you are expected to perform from the General Skill Area above:	Implement and review EAP. Evaluate OPSEC and INFOSEC. Coordinate and enforce physical security programs and SCIF accreditation.
Knowledge you should have to perform this skill:	• Physical security and SCIF accreditation requirements • Command EAP requirements • OPSEC and INFOSEC requirements
References you should study to gain the knowledge you need to perform this skill:	• DCID 1/21 • DOD DIR S-5105.21.M-1 • NAVSECGRUINST 5510.7B • NSGTP Module 11 • OPNAVINST 5530.14C • SECNAVINST 5510.30A • SECNAVINST 5510.36 • USSID 3
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from each of the areas listed under *Knowledge*.

Advancement Handbook for CTRC

General CTRC *Skill Area*	**Management**
A *skill* you are expected to perform from the General Skill Area above:	Coordinate mission requirements and intelligence oversight/USSID 18 programs. Conduct security violation investigations. Evaluate collection operations.
Knowledge you should have to perform this skill:	• Security regulations and intelligence oversight/USSID 18 programs • Collection operation capabilities
References you should study to gain the knowledge you need to perform this skill:	• DOD DIR S-5105.21.M-1 • NSGTP Module 5 • NSGTP Module 11 • SECNAVINST 5510.30A • SECNAVINST 5510.36 • USSID 9 • USSID 18 • USSID 101 • USSID 110
Exam Expectations. These are subject areas you should know to help you answer exam questions correctly:	You can expect questions from the areas listed under *Knowledge*.

Appendix 1

References Used in This Advancement Handbook

DCID 1/14
Personnel Security Standards and Procedures Governing Eligibility for Access to SCI

DCID 1/16
Security Policy for Uniform Protection of Intelligence Processed in Automated
Information Systems and Networks

DCID 1/21
Physical Security Standards for Sensitive Compartmented Information Facilities (SCIFs)

DIAM 50-4,
Security of Compartmented Computer Operations

DOD 5105.21 (M-1)
Sensitive Compartmented Information Administrative Security Manual

DOD TS-5105.21-M-2
SCI Security Manual, Communications Intelligence Policy

Joint DODIIS/Cryptologic SCI Information Systems Security Standards

NAVEDTRA 10069-D1
Mathematics, Volume 1

NAVEDTRA 10062
Mathematics, Volume 2-A

NAVEDTRA 10063
Mathematics, Volume 2-B

NAVEDTRA 10073-A1
Mathematics, Volume 3

NAVSECGRUINST 5510.7B
Command Guidance for Emergency Action Plans (EAP)

NAVSECGRUINST C3301.1C
Implementation of JCS Uniform System of Alert Conditions (LERTCONS) Within the
Naval Security Group Command

NEETS Module 10
Introduction to Wave Propagation, Transmission Lines, and Antennas, NAVEDTRA
B72-10-00-93

NEETS Module 12
Modulation Principles, NAVEDTRA 172-12-00-83

NEETS Module 13
Introduction to Number Systems and Logic Circuits, NAVEDTRA B72-13-00-94

NEETS Module 17
Radio Frequency Communications Principles, NAVEDTRA 172-17-00-84

NEETS Module 22
Introduction to Digital Computers, NAVEDTRA B72-22-00-88

NEETS Module 23
Magnetic Recording, NAVEDTRA B72-23-00-91

NSA/CSS 123-2
National Security Agency/Central Security Service Classification Manual

NSA/CSS 130-1
National Security Agency/Central Security Service Operational Security Manual

NSG Module 1
Naval Cryptology in National Security, NSGTP 683-01-00-97

NSG Module 2
Fleet Operations: Command and Control Warfare and Electronic Warfare Systems,
NSGTP 683-02-00-99

NSG Module 5
Communications Signals Collection Operator, NSGTP 683-05-00-96

NSG Module 9
Cryptologic Collection Equipments, NSGTP 683-09-00-96

NSG Module 11
SCI Security and Emergency Destruction, NSGTP 683-11-00-98

NSG Module 15
SIGINT Reporting, NSGTP 683-15-00-98

NSG Module 16
Radio Wave Modulation & Signal Multiplexing, NSGTP 683-16-44-91

NSG Module 22
Fleet Operations: Orientation

OPNAVINST 5530.14C
Navy Physical Security

RASIN Manual

SECNAVINST 5510.30A
Department of the Navy Personnel Security Program

SECNAVINST 5510.36
Department of the Navy (DON) Information Security Program (ISP) Regulation

TA-103
Basic Traffic Analysis

USSID 2

USSID 3

USSID 9

USSID 12

USSID 18

USSID 101

USSID 103

USSID 110

USSID 111

USSID 115

USSID 150

USSID 205

USSID 300

USSID 301

USSID 303

USSID 325

USSID 339

USSID 369

USSID 402

USSID 404

USSID 410

USSID 503

USSID 702