

ENP Body of Knowledge (BOK) updated 09/28/2016

The ENP Body of Knowledge (BOK) was established in 1995 as a result of interviews conducted at the National NENA Conference in Las Vegas by Dr. Robert Mathis and Carol McKnight, of the University of Nebraska, and a nationwide survey sent to all NENA members. The data from both was compiled and is intended to reflect the knowledge needed to perform in the capacity of an Emergency Number Professional.

The Body of Knowledge was approved by the NENA Executive Board. Once the NENA Institute Board was established, it became the responsibility of the Institute Board to regularly review and update the BOK as needed.

The BOK is the source of the questions used on the ENP exam.

The following pages describe how the various facets of the BOK are aligned with the exam questions. The reader is cautioned to understand that these pages constitute a “snapshot in time” of the BOK. The actual BOK is a living document that changes when the Board members deem it necessary to keep it up to date. The most recent version of the BOK listing may be found on NENA’s web site at www.nena.org/ENP.

How the Exam Is Structured

9-1-1 OPERATIONS (50%)

I. TELECOMMUNICATIONS OPERATIONS (35%)

A. PRINCIPLES OF TELECOMMUNICATIONS

- 1) Network Design and Architecture
 - a) Originating Service Provider (OSP)
 - 1) Local Exchange Carrier (LEC)
 - 2) Competitive Local Exchange Carrier (CLEC)
 - 3) Interexchange Carrier
 - 4) Local Loop
 - 5) Area Code Overlay/Split
 - 6) N-1-1
 - 7) VoIP Service Providers (VSP)
 - b) Transport Facilities
 - 1) Copper
 - 2) Fiber optic
 - 3) Microwave
 - 4) Coaxial Cable
 - c) Security
 - a. Border Control Function (BCF)
- 2) Network Configurations
 - a) Trunking Requirements
 - b) Switching
 - 1) Direct Trunked
 - 2) Tandem (Analog vs. Digital)
 - 3) End Office Routing
 - c) Alternate routing considerations
 - d) Grade of Service/Blocking Probabilities
 - e) Wireless/PCS Call Routing and Interconnects
 - f) PBX/PS ALI Routing and Interconnect
 - g) Emergency Services IP Network (ESInet)
- 3) Signaling/Transport
 - a) Centralized Automated Message Accounting (CAMA)
 - b) Selective Router Networking
 - c) Trunk Concentration
 - d) Dual Tone Multi-Frequency (DTMF)
 - e) Intelligent Networks
 - 1) Integrated Services Digital Network Signaling System 7 (ISDN/SS7)
 - 2) Internet Protocol (IP)
 - 3) Frame Relay
 - 4) Asynchronous Transfer Mode (ATM)
 - 5) Multiprotocol Labeling Switching (MPLS)
 - f) Session Initiation Protocol (SIP)

- 4) Transmission Systems
 - a) Analog
 - b) Digital

B. TYPES AND FEATURES OF 9-1-1 SYSTEMS

1. Types of 9-1-1 Systems
 - a) Basic
 - b) ANI Only
 - c) ANI/ALI
 - d) Enhanced
 - e) NG9-1-1
2. Features of 9-1-1 Systems
 - a) Selective Routing
 - b) Alternate Routing
 - c) Default Routing
 - d) Call Transferring
 - e) ANI Resend
 - f) Router to Router Transfer
 - g) Geo-spatial Routing
 - h) Policy routing

C. PUBLIC SAFETY ANSWERING POINT (PSAP)

1. Types of PSAPs
 - a) Primary/Secondary
 - b) Single Jurisdiction/Multiple Jurisdiction
 - c) Consolidated
 - d) Co-located
 - e) Virtual
2. PSAP 9-1-1 Equipment
 - a) ANI Controller
 - b) ALI Controller
 - c) System controllers
 - d) Power Supply
 - e) ANI Displays
 - f) ALI Displays
 - g) ACD
 - h) Intelligent Workstations/Computer Telephony Integration (CTI)
 - i) PS ALI
 - j) Gateways
 - k) Customer Premises Equipment (CPE)
3. Other PSAP Equipment
 - a. Dispatch
 - b. Recording
 - c. Power Systems
 - d. CAD System
 - e. Records Management System
 - f. Mobile Data Systems
 - g. Automatic Vehicle Location

- h. Telecommunications Device for the Deaf (TDD/TTY)
- i. Time Synchronization
- j. Mapping Systems

- 4) Radio Communications
 - a) Trunked
 - b) VHF/UHF
 - c) Mobiles/Portables
 - d) Repeater Systems
 - e) Satellite
 - f) Radio over IP (RoIP)

D. PBX/PSP

- 1. Caller Location Identification
 - a) Private Switch ANI/ALI
 - b) Information Transport
 - c) Routing

E. WIRELESS

- 1. Wireless Devices
- 2. Network Routing
- 3. Methods for 9-1-1 Call Routing
- 4. Location Information
- 5. Interconnection Standards
- 6. Phase II
- 7. Long-term evolution (LTE)
- 8. Non Service Initialized (NSI)

F. Next Generation 9-1-1 FRAMEWORK

- 1. NG9-1-1 Core Services Architecture (i3)
- 2. Denial of Service (DoS)
- 3. Quality of Service (QoS)

II. INFORMATION SYSTEMS (10%)

A. DATA BASES IN SUPPORT OF 9-1-1

- 1. Types of Data Bases
 - a) Service Order System
 - b) SAG
 - c) MSAG,ESN, and ESZ
 - d) ALI Records
 - e) Selective Routing Systems (SRS) Records
 - f) TN Records
 - g) Geographic Information Systems (GIS)
 - 1. Latitude/Longitude Based
 - 2. Relationship to Location Determination Technologies

3. Global Positioning Systems (GPS)
4. GIS Data Model
- h) NG9-1-1 Data Bases
- i) Third Party Databases
- j) National Information Exchange Model (NIEM)
- k) Number Portability Administration Center (NPAC)

2. Relational Databases

- a) Interfacing
- b) Data Stream

B. DATA BASE DEVELOPMENT, IMPLEMENTATION, MAINTENANCE

1. Location of E9-1-1 Database

- a) Telco
- b) Self-Maintained at PSAP
- c) Stand Alone at PSAP via Telco
- d) Individual Provided/Maintained

2. ESZ/ESN/MSAG Development

- a) Initial Creation
- b) Finalization
- c) Error Correction
- d) Maintenance
- e) MSAG/GIS/ALI Synchronization
- g) NG9-1-1 Data Base Management

C. NENA STANDARDS AND OTHER DOCUMENTS

Please link to the following for the latest NENA Standards and other documents:
www.nena.org/Standards

D. NON-VOICE COMMUNICATIONS

1. Telematics
2. Text Messaging
3. Email
4. Multimedia
5. Social networking
6. Device Applications (Apps)

E. INFORMATION NETWORKS

1. Internet
2. Intranet
3. Local Area Networks (LAN)
4. Wide Area Networks (WAN)
5. Wireless Local Area Network(WLAN)

F. SECURITY

1. Physical
2. Cyber
3. Network
4. Personnel

III. LEGISLATION (5%)

A. FUNDING AND ENABLING LEGISLATION

5. Mechanisms and Sources
 - a) Telephone Service Surcharge and Levies
 - b) Wireless Surcharges
 - c) Taxes
 - d) Government Funding
 - e) Grants

6. Factors to Consider
 - a) Limitation on Use of Funds
 - b) Collection and Distribution Methods
 - c) Governing Board Requirements
 - d) Standards for Telecommunicators
 - e) Standards for Equipment
 - f) Standards for Addressing and Mapping

B. TELECOMMUNICATIONS REGULATORY ENVIRONMENT

1. Federal, State, Provincial, County, Municipal
 - a) Telecommunications Act of 1996
 - b) Wireless Communication and Public Safety Act of 1999
 - c) ENHANCE 9-1-1 Act of 2004
 - d) IP-Enabled Voice Communications and Public Safety Act of 2007
 - e) NET911 Improvement Act of 2008
 - f) Middle Class Tax Relief & Job Creation Act of 2012
2. FCC/CRTC (Canada)
 - a) N-1-1
 - b) Wireless
 - c) PS ALI/PBX
 - d) CLEC
 - e) NG9-1-1
3. Sovereign Immunity
4. TSP (Telecommunications Services Priority)
5. Confidentiality/Public Information Laws/Privacy Laws
6. Liability
7. Public Utilities Commission Requirements
 - a) Tariffs
 - b) Unbundling
 - c) Political Considerations
 - d) Public Safety Entities
8. Radio Communications Act (Canada)

C. SPECIAL LEGISLATIVE AREAS

1. MLTS
2. TDD Protocols
3. Cellular, PCS
4. Accessibility
5. Emergency Medical Dispatching
6. Nuisance/False Alarm Legislation
7. Automatic Alarm Systems
8. Industry Canada (Canada)
9. Emergency Preparedness Canada (Canada)
10. Access to Information Act (Canada)
11. Mass Notification Systems
12. Open Records Legislation
13. Telecommunications Standards/Legislation
14. Bidding and Purchasing Laws
15. Pipeline

9-1-1 MANAGEMENT (50%)

I. MANAGEMENT OF ORGANIZATION (20%)

A. MANAGEMENT/GOVERNANCE FUNCTIONS

1. Budgeting
2. Purchasing
 - a) Developing Specifications
 - b) Vendor Selection
 - c) Vendor Contracting
3. Decision Making
 - a. Political
 - b. Technological
 - c. Human Resource
 - d. Operations
 - e. Financial
 - f. Legislative
 - g. NG9-1-1 System Administration
 - h. Interoperability
 - i. Database Management
4. Planning
 - a. Short Range
 - b. Long Range
 - c. Strategic

B. CONTINGENCY AND DISASTER PLANNING

1. Types of Disasters
 - a) Localized
 - b) Regional
 - c) PSAP Only
 - d) Network/Transport Facilities
2. Phases of Emergency Management
 - a) Mitigation
 - 1) Resource Management
 - 2) Interagency Cooperation
 - 3) Security
 - b) Preparedness
 - 1) Redundancy
 - 2) Relocation/Back-up Site
 - 3) Mutual Aid Agreement
 - 4) Testing
 - 5) Training
 - 6) Notification Plans (Employees and Families)
 - 7) Supplies

- c) Response
 - 1) Transportation of Employees/Equipment
 - 2) Food/Water/Toilets
 - 3) Procedures and Policies
 - 4) National Incident Management System (NIMS)*

- d) Recovery
 - 1) Transportation of Employees/Equipment
 - 2) Restoration of Services
 - 3) Telecommunicator Emergency Response Taskforce (TERT)

C. HEALTH AND SAFETY

- 1. Environment Factors
 - a. Human Factors
 - b. Engineering/Ergonomics
 - c. Job-related Illnesses and Injuries
- 2. Critical Incident Stress Management
- 3. Employee Assistance Programs (EAP)
- 4. Post-Traumatic Stress Disorder (PTSD)

D. PUBLIC RELATIONS AND EDUCATION

- 1. Research
- 2. Action Plan (Preventive vs. Remedial)
- 3. Information Delivery
- 4. Evaluation
- 5. Media Relations
- 6. Social Media

II. MANAGEMENT OF EMPLOYEES (25%)

A. DEVELOPMENT of POLICIES and PROCEDURES

B. SCHEDULING of EMPLOYEE TIME

C. QUALITY AND PERFORMANCE MANAGEMENT

1. Performance Planning: Identification of Goals and Desirable Behaviors
2. Setting and Communicating Performance Standards
3. Employee Attitudes, Opinions, and Satisfaction
4. Measuring Results and Feedback
5. Implementation of Performance Improvement Strategies
6. Evaluation of Results
7. Discipline
8. Customer Service & Stakeholder Satisfaction

D. SELECTION AND PLACEMENT

1. Recruiting
 - a) Determining Needs
 - b) Identifying Selection Criteria
 - c) Internal Sourcing
 - d) External Sourcing
 - e) Evaluation of Recruitment Effectiveness
2. Selection Strategies
3. Retention of Employees
4. Succession Planning

E. TRAINING AND DEVELOPMENT

1. Training Needs Analysis
2. Development of Training
3. Training Methods
4. Ongoing/Long-Term Training
5. Evaluation of Training
6. Quality Assurance/Quality Improvement
7. Career Planning and Development
8. Mentoring
9. Succession Planning

F. COMPENSATION AND BENEFITS

1. Job Analysis and Job Descriptions
2. Setting Pay Rates
3. Types
4. Philosophies and Strategies
5. Economic Factors
6. Pay Adjustments and Increases

7. Medical Benefits

G. EMPLOYEE RELATIONS AND LABOR RELATIONS

1. Policies and Practices
2. Employment Rights and Privacy
 - a) Harassment Legislation
 - b) Affirmative Action Plans
 - c) Workers Compensation Laws/Regulations
 - d) Unemployment Compensation Laws/Regulations
 - e) Social Security
 - f) Canada Labour Relations Board (Canada)
3. Labor/Management Relations
 - a) Union Representation of Employees
 - b) Collective Bargaining
 - c) Unfair Labor Practices
 - e) Strikes
 - f) Boycotts

III. Legislation (5%)

A. EMPLOYMENT LAWS AND REGULATIONS

1. Title VII of the Civil Rights Act (1964) as amended (1972, 1991)
2. Age Discrimination in Employment Act (1967) as amended
3. Pregnancy Discrimination in Employment Act (1978)
4. Uniform Guidelines on Employee Selection Procedures
5. Occupational Safety and Health Act (1971)
6. Americans with Disabilities Act
7. Family Medical Leave Act
8. Canadian Charter of Rights and Freedoms (Canada)
9. Canadian Human Rights Act (Canada)
10. Canadian Centre for Occupational Health and Safety Act (Canada)
11. Constitution Act (Canada)

B. COMPENSATION LAWS AND REGULATIONS

1. Fair Labor Standards Act (1938) as amended (Wage and Hour)
2. Equal Pay Act (1963)
3. COBRA (Consolidated Omnibus Reconciliation Act) (1990)
4. Social Security Act (as amended)
5. Patient Protection Affordable Care Act