GEOINT Professional Certification
Geospatial Analysis: Proficiency Level II (GA-II)
Essential Body of Knowledge (EBK)
01 June 2023

Core Competency 1 - Acquire, Assess, Prepare, and Manage Data for Geoprocessing (25%)

A geospatial analyst conducts research to acquire, assess, prepare, and manage data for operational requirements or intelligence issues with a spatial context. Additionally, a geospatial analyst employs proper data management principles and techniques to verify and maximize the usefulness of the data. Sources of data can include: SIGINT, HUMINT, OSINT, imagery, video, text, databases, tables, presentations, web services, shapefiles, etc.

Terminal and Enabling Certification Objectives (TCOs & ECOs)
TCO 1: Summarize how to plan, review, and organize data or tools.
ECO 1.1: Understand multiple geospatial data formats, databases, and standards.
ECO 1.2: Understand how GEOINT sources and methods can or cannot be applied to an intelligence problem.
ECO 1.3: Interpret customer requirements based on policies, procedures, and Essential Elements of Information (EEI) to determine proper response.
TCO 2: Demonstrate the ability to research and collect information or data.
ECO 2.1: Find geospatial and/or technical information from internal and external sources.
ECO 2.2: Review reporting to identify relevant information to determine the appropriate spatial context for an issue.
ECO 2.3: Analyze features and other geographic information from map/topographic products.
ECO 2.4: Understand differences between structured and unstructured data.
TCO 3: Prepare and manipulate data or tools for use.
ECO 3.1: Manipulate information or data into the appropriate format for analysis.

ECO 3.2: Prepare raster data for use or analysis (e.g., georeferencing, mosaicing, image catalogs).
ECO 3.3: Understand topological concepts.
ECO 3.4: Explain how to select the appropriate datum and projection for analysis.
ECO 3.5: Convert between different coordinate formats.
TCO 4: Demonstrate the ability to create, extract, and maintain data.
ECO 4.1: Discuss the requirements for data maintenance.
ECO 4.2: Perform basic feature extraction.
ECO 4.3: Attribute data sets with appropriate information (e.g., text, numeric, temporal).
ECO 4.4: Discuss the applicable standards used to create metadata.
ECO 4.5: Understand basic components of structured data (e.g., data standards, schemas, domains, databases).
TCO 5: Explain how to evaluate data.
ECO 5.1: Describe quality control and assurance processes.
ECO 5.2: Understand accuracy, currency, and completeness of geospatial data including spatial metadata.
ECO 5.3: Understand the difference between categorical, ordinal, interval, and ratio data.
ECO 5.4: Understand the difference between continuous and discrete data.
Core Competency 2 – Leverage Geospatial Information Science and Technology (25%) A geospatial analyst uses geospatial information science and technology to properly manipulate spatial data into useful information to support development of assessments.
Terminal and Enabling Certification Objectives (TCOs & ECOs)
TCO 6: Demonstrate techniques to integrate, generate, and subset data.

ECO 6.1: Understand vector processes used to create or combine data from existing features (e.g., merge, append, union, buffer).
ECO 6.2: Describe how to subset existing features using vector processes (e.g., clip, intersect, split).
ECO 6.3: Understand how to subset data using selections (e.g., select by location, attribute, cursor).
ECO 6.4: Construct queries to select by attributes or perform definition queries.
ECO 6.5: Integrate spatial data using tables (e.g., join, relate).
ECO 6.6: Describe how to mosaic or clip to combine or subset georeferenced raster data.
ECO 6.7: Understand methods to generalize a dataset (e.g., dissolve, smooth, simplify).
TCO 7: Demonstrate an understanding of measurement.
ECO 7.1: Manipulate geospatial data and/or imagery to improve positional accuracy.
ECO 7.2: Define positional accuracy and error terms.
ECO 7.3: Calculate length, area, and perimeter using appropriate methods.
ECO 7.4: Determine the appropriate method to measure distance between features.
TCO 8: Create terrain and scene visualization.
ECO 8.1: Understand how to visualize 3D data (e.g., perspective, fly-thru).
ECO 8.2: Perform basic terrain analyses (e.g., viewshed, line of sight, hillshades, slope, aspect).
ECO 8.3: Understand different sources of terrain data (e.g., LIDAR, DTED, SRTM, contours).
Core Competency 3 – Apply Critical and Spatial Thinking to Intelligence Problems (23%) A geospatial analyst conducts spatio-temporal analysis using concepts such as time, location, scale, hierarchy, heterogeneity, and adjacency. A geospatial analyst uses critical thinking skills to apply spatial analysis and remote sensing techniques.
Terminal and Enabling Certification Objectives (TCOs & ECOs)

TCO 9: Determine analytic assumptions, biases, and uncertainties.
ECO 9.1: Identify assumptions in an intelligence assessment.
ECO 9.2: Describe terms related to analytic uncertainty and confidence.
ECO 9.3: Describe cognitive biases (e.g., confirmation bias, anchoring bias, attribution error).
ECO 9.4: Understand spatial biases (e.g., modifiable areal unit, edge effects).
TCO 10: Discuss initial assessments by synthesizing and evaluating information.
ECO 10.1: Understand how aggregating data and other information assists in forming and supporting analytic assessments.
ECO 10.2: Communicate alternative conclusions.
ECO 10.3: Discuss the benefits and limitations of models and simulations.
TCO 11: Comprehend spatial and temporal relationships of a problem set.
ECO 11.1: Identify the spatial components of an intelligence problem.
ECO 11.2: Discuss the value of applying weights to various spatial layers using arithmetic logic and subject matter expertise.
ECO 11.3: Describe topological and geometric relationships of spatial datasets.
ECO 11.4: Describe methods for identifying trends and patterns.
ECO 11.5: Explain the application of temporal analysis.
ECO 11.6: Discuss the value of normalizing data.
TCO 12: Summarize advanced geospatial techniques used to answer intelligence problems.
ECO 12.1: Understand basic spatial statistics (e.g., mean center, standard deviation ellipse, root mean squared).
ECO 12.2: Describe methods used to conduct density analyses (e.g., simple, point, kernel).
ECO 12.3: Understand different types of networks (e.g., hydrologic, transportation, utilities).

ECO 12.4: Understand basic analysis of raster datasets (e.g., algebraic operations, frequency, reclassification).
ECO 12.5: Identify methods of interpolating spatial data.
TCO 13: Describe geospatial analysis in support of GEOINT.
ECO 13.1: Describe the GEOINT workflow (Plan, Research, Analyze, Communicate Results) and how it is used in problem solving.
ECO 13.2: Understand how to integrate temporal analysis into the GEOINT workflow.
ECO 13.3: Identify the components and uses of mobility analysis.
ECO 13.4: Describe overlay analysis (e.g., site suitability, proximity analysis).
ECO 13.5: Describe the values and limits of automation to assist with the GEOINT workflow.
ECO 13.6: Discuss the value of aggregating spatial point data into grids (e.g., hexagonal bins, fishnet surfaces).
Core Competency 4 – Communicate Analytic Findings (27%) A geospatial analyst communicates complex issues by applying standards and techniques to create textual and visual products.
Terminal and Enabling Certification Objectives (TCOs & ECOs)
TCO 14: Discuss the applicable standards used to prepare analytic products.
ECO 14.1: Discuss the applicable standards used to create traditional or custom products.
ECO 14.2: Discuss the benefits of creating templates to assist with product generation.
ECO 14.3: Explain the benefits of packaging geospatial information, models, and services.
ECO 14.4: Determine the appropriate scale to convey analytic findings.
ECO 14.5: Understand classification and disclosure/release polices relevant to geospatial data and analytic products.
ECO 14.6: Explain how to write, update, and validate spatial metadata in accordance with NSG guidance.

ECO 14.7: Communicate GEOINT conclusions, key judgment, confidence, assumptions, and relevance through geospatial analytic reporting.
ECO 14.8: Discuss various data classification methods (e.g., equal interval, quantiles, natural breaks).