CHAIRMAN OF THE JOINT CHIEFS OF STAFF INSTRUCTION

J-2 CJCSI 3505.01E
DISTRIBUTION: A, B, C 10 August 2022

TARGET COORDINATE MENSURATION
CERTIFICATION AND PROGRAM ACCREDITATION

References: See Enclosure B

1. Purpose. This instruction establishes policy for Target Coordinate Mensuration (TCM) tools, certification for individuals, and program accreditation for the Department of Defense (DoD), Services, Combatant Commands (CCMDs), CCMD subordinate force headquarters (HQs), combat support agencies (CSAs), and coalition partners.

2. Superseded/Cancellation. Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3505.01D, 15 January 2019, is hereby superseded.

3. Applicability. This instruction applies to the Services, CCMDs, CCMD subordinate force HQs, CSAs, and coalition partners that conduct TCM using National Geospatial-Intelligence Agency (NGA)-validated mensuration tools, methods, and geospatial intelligence (GEOINT) sources during joint or coalition operations. Tools and systems that generate coordinates without the use of NGA-validated mensuration tools do not constitute TCM and are not subject to this instruction.

4. Policy

a. TCM supports strategic, operational, and tactical level decisions, operations, activities and investments. TCM is commonly referred to as precise point mensuration, and these terms may be used interchangeably. TCM is the use of NGA-validated tools and methods by certified personnel to produce coordinates (latitude, longitude and elevation), that include associated errors to support the use of coordinate-seeking weapons (CSWs). Any TCM program that produces coordinates for CSWs must meet the standards set forth in this instruction (see paragraphs 4.c.–4.e.).

b. As the Defense Intelligence Enterprise Manager (DIEM) for GEOINT, in accordance with reference c, the Director of NGA establishes TCM tool validation, TCM certification, and TCM accreditation standards for Service, CCMD, CCMD subordinate force HQs, CSA and applicable ally and partner TCM programs. Organizations and individuals who conduct TCM to support the use of CSWs require certification. This requirement maintains the integrity and reliability of:

(1) Joint desired point of impact (JDPI) coordinate data.

(2) Products generated using NGA-validated tools.

(3) Exact location data to support use of CSWs and Terminal Area Modeling (e.g., the Joint Direct Attack Munition, Small Diameter Bomb, 155mm Excalibur Artillery Munition, Guided Multiple Launch Rocket System, Army Tactical Missile System, and Precision Strike Missile).

c. Program Accreditation. An NGA-accredited TCM program must include the use of a NGA-validated TCM tool, a certification process, training materials, proficiency procedures, work center/work environment procedures, governing documents, and certified individuals. Programs pursuing accreditation must complete the accreditation process outlined in reference d.

d. There are two types of TCM program accreditation: Target Material Production (TMP) and Target Mensuration Only (TMO). NGA accredits both programs and requires completion of all requirements in reference d. Any coordinate generated outside of these programs (e.g., sensors alone, targeting nodes, laser locater designators, or radars) does not constitute TCM and is not governed by this instruction.

(1) As part of advanced target development, TMP is the conduct of TCM to generate target materials in support of future operations and planning and force execution. TMP is a GEOINT production effort that involves the employment of NGA-validated TCM tools and imagery. Consequently, these JDPI products must be stored in the Modernized Integrated Database (MIDB)/Machine-Assisted Analytic Rapid-Repository System (MARS) for the mission planning architecture to work (see reference e for graphic standards). Only a certified TMP analyst within an NGA accredited TMP work center may perform TMP. TMP may support dynamic targeting efforts when time and the operational environment permits. An analyst certified in TMP on an NGA-validated tool may generate target coordinates, including elevation, to support dynamic targeting mission requirements. A list of certified TMP analysts is stored in the joint registry maintained by Joint Staff Targeting Division (J2T) (see Enclosure A.). Management and maintenance of a Service, CCMD, CCMD

subordinate force HQs, or CSA TMP program may be delegated to a subordinate echelon. This policy also applies to alley and partner TMP programs.

(2) TMO is the process of using TCM to generate a target coordinate, which is not databased in MIDB/MARS, or annotated on target materials. TMO primarily supports current operations execution, battles, engagements, and dynamic targeting. TMO employs NGA-validated tools, imagery and imagery derived products GEOINT data. Only a certified TMO operator may perform TMO; however, in some cases a TMP certified analyst may produce TMO points for operational/tactical use. NGA-accredited TMO programs train and certify TMO operators. Management and maintenance of a Service, CCMD, CCMD subordinate force HQs, or CSA TMO program may be delegated to a subordinate echelon. This policy also applies to ally and partner TMO programs.

(3) Organizations request program accreditation through a TCM Accreditation Request (TAR) submitted to NGA. Organizations and coalition partners should begin to prepare a TAR about a year before an accredited program is required by the unit (see reference d for detailed guidance). The process to prepare and submit a TAR can take roughly 150 days. The accreditation process can take another 180 days after receipt of the TAR. Services, CCMDs, CCMD subordinate force HQs, and CSAs requesting accreditation for their TCM programs must submit a TAR to NGA. Upon receipt, NGA provides the requesting organization with the TAR Application Package. The requesting organization returns the completed package to NGA within 60 days of submitting the TAR.

e. TCM Training and Certification. TCM programs are responsible for developing and maintaining training and certification based on NGA-validated tools and TCM methods. The NGA Technical Review Team will validate a tool when the outputs of the mensurated positions in latitude, longitude, elevation, and error propagation estimates are within established performance parameters. TCM training and certification requirements vary by tool and TCM methods. Individual certification is required for each validated tool used. All accredited programs must include instruction for all TCM tools employed within their work center(s) or work environment(s), and must outline the implications of using those tools for purposes not validated by NGA. At a minimum, TCM instruction shall address the following core topics:

(1) Basic imagery interpretation and management, to include theory, acquisition, and analysis.

(2) NGA approved targeting GEOINT data (e.g., Digital Point Positioning Database (DPPDB)), imagery and imagery derived products management, to include acquisition, storage, and maintenance.

(3) TCM tool capabilities, operations, and limitations based on NGA TCM Tool Validation Statement.

(4) TCM methods overview and limitations.

(5) Database capabilities, requirements, and adherence to the standards within this instruction and reference d (TMP only).

(6) Creating JDPI graphics according to the standards within this instruction and references d and e (TMP only).

f. MARS JDPI Production. TMP accredited programs must establish procedures to ensure that only TMP certified analysts produce JDPI coordinates and associated target materials. The TMP organizations must publish JDPIs into MIDB/MARS; target detail records must be entered within five business days of publishing the JDPI. JDPI records older than five years will be reviewed for currency by the responsible producer or supported command. Supported joint force command directives may shorten review periods to meet mission needs. NGA conducts quality reviews of the JDPI production to ensure the integrity and accuracy of data. To maintain accreditation, TMP programs must address and resolve negative trends associated with periodic MIDB JDPI reviews. The results of these quality reviews are reported to J2T and the accredited program leadership and HQs.

g. Ally and Partner Accreditation Process

(1) Allies and partners may request NGA TCM accreditation through an approved Foreign Military Sales case. North Atlantic Treaty Organization or foreign partners that have access to NGA-validated tool and prerequisite GEOINT data may achieve accreditation. TMP programs must ensure JDPI data is made available for NGA review to ensure continuing compliance with National System for Geospatial Intelligence Instruction (NSGI) 2351 and this instruction.

(2) Partner countries desiring to operate in a coalition and wanting to co-produce or partake in federated production under a CCMD must receive CCMD endorsement and demonstrate the ability to write to MIDB/MARS directly or indirectly. All JDPI data must be made available for NGA review to ensure continuing compliance with NSGI 2351 and this instruction.

5. Definitions. See Glossary

6. Responsibilities. See Enclosure A.

7. Summary of Changes. This instruction incorporates recommendations from the Services, CCMDs, and CSAs to improve clarity, readability, and standardization of the TCM accreditation process. It aligns CJCSI 3505.01 with NSGI 2351 - Geospatial Intelligence Targeting Support Program for Target Coordinate Mensuration Program Accreditation and Certification.

8. Releasability. UNRESTRICTED. This directive is approved for public release; distribution is unlimited on the Non-classified Internet Protocol Routing Network (NIPRNET). DoD Components (to include the Combatant Commands), other Federal agencies, and the public, may obtain copies of this directive through the Internet from the Chairman of the Joint Chiefs of Staff (CJCS) Directives Electronic Library at http://www.jcs.mil/library. Joint Staff activities may also obtain access via the Secret Internet Protocol Routing Network (SIPRNET) directives Electronic Library websites.

9. Effective Date. This INSTRUCTION is effective upon receipt.

For the Chairman of the Joint Chiefs of Staff:

JAMES J. MINGUS, LTG, USA
Director, Joint Staff 8/10/22

Enclosures:
- A - Component Responsibilities for Certification and Program Accreditation
- B - References

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ENCLOSURE A

COMPONENT RESPONSIBILITIES FOR CERTIFICATION AND PROGRAM ACCREDITATION

1. Joint Staff Targeting (J2T). J2T develops TCM policy and guidance for the CJCS. The division implements administrative and doctrinal oversight of all aspects of TCM policy, standards, and procedures; regulates and adjudicates standards adherence; and reports to senior DoD leadership and the Military Targeting Committee Executive Steering Committee as it pertains to TCM. The division maintains a joint registry of TCM certified individuals. The registry is available via SIPRNET, the Joint Worldwide Intelligence Communication System (JWICS), and the J2T STONE GHOST website for Commonwealth participants, per agreements with coalition partners. J2T will inform the CCMDs when NGA identifies that a Service may not be meeting standards, and, at NGA's recommendation, revoke or place on probation a program not meeting production standards.

2. DIEM-GEOINT. DIEM-GEOINT establishes minimum standards for TCM tool validation and TCM personnel training, certification, and proficiency through the TCM Working Group (see references d and f).

3. NGA

a. NGA administers TCM program accreditation for Services, CCMDs, CCMD subordinate forces, CSAs, allies, and partners under the authorities and oversight provided by this instruction. NGA conducts a documentation review of accredited TCM programs every two-years to ensure that changes made to training, certification, and proficiency processes do not deteriorate the quality of TCM products.

b. In order to maintain TCM accreditation, a program must perform established minimum standards and undergo a full NGA on-site reaccreditation every four years. NGA or an accredited U.S. organization operating through an established framework (e.g., Foreign Military Sales or CCMD sponsorship) may approve a foreign partner's TMP work center.

c. NGA performs JDPI quality reviews to monitor the performance of approved work centers within an accredited program. The results of these quality reviews are reported to J2T, the accredited program management, the Service HQ, and CCMDs as necessary for awareness and action.

4. Services. Services provide trained, certified individuals to perform TCM (references a and b). Services will provide programs for training, certification,

maintaining credentials, and tracking proficiency of personnel performing TCM. Services will monitor JDPI reports and help ensure that Service TMP work centers adhere to minimum performance standards. Services may establish TCM training programs, standards, and certification beyond the minimum joint standards in the NGA-accredited program. Services will appoint TCM program managers to serve as primary points of contact (POC) for accredited programs. TCM program managers request access to the joint registry from J2T, and are responsible for entering the names of certified individuals into the registry. Upon request, Services shall provide NGA, other Services, or CCMDs with access to their record of certified individuals.

5. CCMDs and CSAs

a. CCMDs and CSAs must ensure the certification and proficiency of individuals assigned to conduct TCM. CCMDs will determine the number of certified personnel necessary based on operational requirements and provide those requirements on the Joint Manning Document. CCMDs and CSAs will provide retraining and recertification in instances where certified personnel were trained on Service mensuration systems that differ from those in use by the CCMD or CSA. CCMDs and CSAs will monitor JDPI quality review reports and help ensure that their work centers adhere to minimum performance standards. CCMDs should publish local TCM policy to supplement this instruction, since they are responsible for providing training and certification in all local TCM policy.

b. CCMDs will provide NGA with an endorsement and operational requirement assessment before NGA considers a coalition partner's TAR for TMP. Without an endorsement from the CCMD, J2T will recommend that NGA decline the coalition partner's TAR for TMP.

c. CCMDs will identify one or more TCM program manager(s) to serve as a primary POC for accredited programs, and will inform J2T and NGA of their selection. TCM program managers request access to the joint registry from J2T, and are responsible for entering the names of certified individuals into the registry. Upon request, CCMDs shall provide NGA, Services, or other CCMDs with access to their record of certified individuals.

6. Shared Responsibilities for TMP JDPI Data Review Reports

a. NGA will extract approximately a 10 percent sample of the total TMP data produced by all accredited programs to re-mensurate and review associated data entries and graphic products for accuracy and standards compliance. NGA uses JDPI Quality Index (QI) and Geodetic Data Quality Index metrics to report the JDPI quality review. A satisfactory assessment

requires a minimum JDPI QI of 90 percent. Metrics are aggregated by a TMP program and subordinate TMP work center(s). NGA provides detailed reports for each approved TMP work center. These reports are forwarded through the accredited program management for distribution across the Service and component chains of command. NGA will provide TMP quality review results to J2T and the component HQ for awareness or action as appropriate.

b. NGA provides J2T with a consolidated statistical rollup of the data reviewed and the level of compliance for the reference period to help evaluate the effectiveness of the provisions established in this instruction. Graphic product errors are generally not reported to J2T, except in cases of a significant error. NGA will post this rollup report to its SIPRNET and JWICS website.

c. The accredited program or approved work center verifies discrepant JDPIs and graphics and makes any necessary corrections or deletions. Only certified analysts using NGA-validated tools can populate the MIDB/MARS with JDPIs. The accredited program has 30 days to consider errors identified by NGA. At the end of the 30 days, preliminary findings are considered final, unless the program verifies and, when necessary, rebuts NGA's findings. Accredited programs scoring below 90 percent on the JDPI QI during the reporting period must provide NGA and J2T with a response acknowledging that they reviewed the discrepant data and made necessary corrections within four weeks of the date that the report is finalized. If the accredited organization or certified producer chooses not to appeal the findings, NGA will deem the preliminary findings verified. NGA will post verified reports to its SIPRNET and JWICS website to share lessons learned across the entire TMP community.

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ENCLOSURE B

REFERENCES

a. Title 10, United States Code

b. DoDD 5100.01, 21 December 2010, "Functions of the Department of Defense and Its Major Components"

c. DoDD 5105.60, 29 July 2009, "National Geospatial-intelligence Agency (NGA)"

d. National System for Geospatial Intelligence (NSG) Instruction (NSGI) 2351, 1 September 2021, "Geospatial Intelligence Targeting Support Program for Target Coordinate Mensuration Program Accreditation and Certification."

e. CJCSI 3370.01 series, "Target Development Standards"

f. NGA, 3 May 2010, "Concept of Operations: Independent Verification and Validation of Target Coordinate Mensuration Tools for the National Geospatial-Intelligence Agency"

g. Joint Publication 1, Doctrine for the Armed Forces of the United States, 25 March 2013 (Change 1, 12 July 2017)

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GLOSSARY

PART I-ABBREVIATIONS AND ACRONYMS

Items marked with an asterisk (*) *have definitions in PART II*

CCMD	combatant command
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CSA	combat support agency
CSW	coordinate-seeking weapons
DIEM	Defense Intelligence Enterprise Manager
DoD	Department of Defense
DoDD	Department of Defense Directive
DPPDB	Digital Point Positioning Database
GEOINT	geospatial intelligence
HQ	headquarters
J2T	Joint Staff Targeting Division
JDPI*	joint desired point of impact
JP	Joint Publication
JWICS	Joint Worldwide Intelligence Communications System
MARS	Machine-Assisted Analytic Rapid-Repository System
MIDB	Modernized Integrated Database
NGA	National Geospatial-Intelligence Agency
NIPRNET	Non-classified Internet Protocol Router Network
NSG	National System for Geospatial Intelligence
NSGI	National System for Geospatial Intelligence Instruction
POC	point of contact
Quality Index	QI
SIPRNET	Secret Internet Protocol Router Network
TAR	TCM Accreditation Request
TCM*	Target Coordinate Mensuration
TMO*	Target Mensuration Only
TMP*	Target Material Production

PART II-DEFINITIONS

accreditation – For this instruction, the authority granted by the National Geospatial-Intelligence Agency to operate at an acceptable level of risk based on the implementation of an approved set of technical, instructional, managerial, and procedural safeguards.

dynamic targeting – Targeting that prosecutes targets identified too late or not selected for action in time to be included in deliberate targeting (JP 3-60). For this instruction, this typically involves individuals engaged in self-defense or prosecution of fleeting targets.

error propagation – The process of evaluating the uncertainty of computed values as a function of uncertainty in the input values. In the case of target coordinates, compute the uncertainty of three-dimensional coordinates (latitude, longitude, and elevation) primarily from input uncertainties within geospatial intelligence data (e.g., imagery) geometries and image pixel measurement. The target coordinate uncertainty is realized as a 3x3-error covariance matrix from which circular (horizontal) and linear (vertical) error estimates are typically derived. All geospatial intelligence data has some amount of error or uncertainty that must be carried forward or propagated through photogrammetric methods to estimate the uncertainty of the target coordinate relative to the true, earth-based location.

joint desired point of impact (JDPI) – A unique, alpha-numeric coded precise aim point associated with a target to achieve an explicit weaponeering objective and identified by a three-dimensional (latitude, longitude, and elevation) mensurated coordinate (JP 3-60).

mensuration – The process of measurement of a feature or location on the earth to determine an absolute latitude, longitude, and elevation (JP 3-60).

planned target – Target that is known to exist in the operational environment, upon which actions are planned to use deliberate targeting, creating effects that support commanders' objectives. There are two subcategories of planned targets: scheduled and on-call (JP 3-60).

program manager – For this instruction, an individual appointed by the component as representative to the National Geospatial-Intelligence Agency responsible for all correspondence related to their accredited program, requesting access to and recording the names of certified individuals on the Joint Staff Target Coordination Mensuration registry, and the primary point of contact for the Joint Desired Point of Impact quality review.

Target Coordinate Mensuration (TCM) – TCM supports strategic, operational, and tactical levels decisions, operations, activities and investments. TCM is commonly referred to as precise point mensuration, and these terms may be used interchangeably. TCM is the use of NGA-validated tools and methods by certified personnel to produce coordinates (latitude, longitude and elevation), that include associated errors to support the use of coordinate-seeking weapons (CSWs). Any TCM program that produces coordinates for CSWs must meet the standards set forth in CJCSI 3505.01E.

Target Coordinate Mensuration program – The combination of the following distinct separate critical components and their ability to operate as a whole to accurately produce mensurated target coordinates: use of one or more National Geospatial-Intelligence Agency (NGA)-validated mensuration tool, a mensuration process, a training syllabus, proficiency development and maintenance procedures, work center/work environment procedures, access to imagery, program governance documentation, and certified analysts and/or operators. The program is considered to be accredited to operate with an NGA-validated tool, and a review of the program's ability to certify and maintain proficient analysts and operators.

Target Coordinate Mensuration tool – National Geospatial-Intelligence Agency-validated hardware and software used to generate precise three-dimensional coordinate data (latitude, longitude, and elevation) and associated uncertainty estimates.

target materials – Graphic, textual, tabular, digital, video, or other presentations of target intelligence, primarily designed to support operations against designated targets by one or more weapon systems (JP 3-60).

Target Material Production (TMP) – TMP is the conduct of TCM to generate target materials in support of future operations and planning and force execution. TMP is a GEOINT production effort that involves the employment of NGA-validated TCM tools and imagery. Consequently, these JDPI products must be stored in the Modernized Integrated Database (MIDB)/Machine-Assisted Analytic Rapid-Repository System (MARS) for the mission planning architecture to work (see reference e for graphic standards). Only a certified TMP analyst within an NGA accredited TMP work center may perform TMP. TMP may support dynamic targeting efforts when time and the operational environment permits. An analyst certified in TMP on an NGA-validated tool may generate target coordinates, including elevation, to support dynamic targeting mission requirements.

Target Mensuration Only (TMO) – TMO is the process of using TCM to generate a target coordinate, which is not databased in MIDB/MARS, or annotated on

target materials. TMO primarily supports current operations execution, battles, engagements, and dynamic targeting. TMO employs NGA-validated tools, imagery and imagery derived products GEOINT data. Only a certified TMO operator may perform TMO; however, in some cases a TMP certified analyst may produce TMO points for operational/tactical use.

validation
1. A part of target development that ensures all vetted targets meet the objectives and criteria outlined in the commander's guidance and ensures compliance with the law of armed conflict and rules of engagement (JP 3-60).
2. In computer modeling and simulation, the process of determining the degree to which a model or simulation is an accurate representation of the real world from the perspective of the intended uses of the model. It is also the process of determining that a model implementation accurately represents the developer's conceptual description and specifications (JP 3-35).

work center – The physical space of an accredited Target Material Production program where target material production and coordinate mensuration are performed. Analysts must be certified and employ a certified mensuration process that includes imagery acquisition and management, use of a National Geospatial-Intelligence Agency-validated Target Coordinate Mensuration tool, and product generation.

work environment – No one location defines a typical work environment. Particularly in the conduct of tactical operations, the work environment may represent a variety of locations, from tactical operations centers, to mobile vehicles and individual fighting positions. Regardless of where Target Coordinate Mensuration is performed, individuals must be certified and employ a certified mensuration process that includes imagery acquisition and management and the use of a National Geospatial-Intelligence Agency-validated target coordinate mensuration tool for coordinate generation.