JFS ESC AP MOA 2004-01
Joint Terminal Attack Controller (JTAC) (Ground)
4 March 2021 Change 2 (16 February 2022)

MEMORANDUM OF AGREEMENT (MOA)

Between

Director, Joint Staff

and

U.S. Army Deputy Chief of Staff, G-3/5/7
U.S. Air Force Deputy Chief of Staff for Operations, Plans, and Requirements
U.S. Marine Corps Deputy Commandant for Plans, Policies, and Operations
U.S. Navy Deputy Chief of Naval Operations for Operations, Plans, and Strategy
U.S. Special Operations Command Director of Operations
Chief of Air Force, Royal Australian Air Force
Land Component Commander, Belgian Defence
Commander, Canadian Army Doctrine and Training Centre
Commander Air Force, Czech Republic
Deputy Chief of Staff/Chief Capabilities Division Air Command Denmark
Commander Air Force, Republic of Estonia
Deputy Chief of Staff (Operations), Finnish Defence Forces
Commander, Joint Force Operations Command, German Armed Forces
Head of Directorate, Hungarian Defence Forces Command Force Planning Directorate
Vice Chief of Staff, Joint Staff, Japan Self-Defense Forces
Commander, Royal Jordanian Air Force
Vice Commander, Air Force Operations Command, Republic of Korea Air Force
Commander, Special Warfare Command, Republic of Korea
Assistant Commandant, Marine Corps, Republic of Korea
Chief of Defense, Republic of Latvia
The Ministry of National Defense, Republic of Lithuania
Director, Division Operations & Resources, Luxembourg Armed Forces
Minister of Defence, Kingdom of the Netherlands
Chief of Army, New Zealand Army
Commander, Norwegian Army Land Warfare Center
Minister of National Defence of the Republic of Poland

Commander, Qatar Emiri Air Force

Commander, Royal Saudi Air Force

Ministry of Defence of the Slovak Republic

Commander, Slovenian Armed Forces

Director of Armed Forces Training and Development, Swedish Armed Forces

Commander, United Arab Emirates Presidential Guard

Commander, United Kingdom Joint Air Liaison Organisation

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Summary of Changes

- Paragraph 5.1.1 added Danish Armed Forces JTAC Program
- Paragraph 5.1.2. added Danish Armed Forces JTAC Course and Hungarian Defense Forces JTAC Certification Course
- Paragraph 5.2.1. Changed "All terminal attack control, whether live, dry, or simulated, must be instructed by qualified JTAC instructors (JTAC-I)." to "Qualified JTAC instructors (JTAC-I) must instruct JTAC trainees conducting simulated, dry, or live terminal attack control." This corrects an inadvertent change made during the last revision.
- Added Luxembourg as a signatory
- Minor administrative corrections throughout

1. Purpose

This MOA provides all signatories standardization of the minimum training and performance requirements for JTAC certification and qualification to prepare terminal attack controllers to operate in a joint/multinational environment.

2. Background

JTACs are a forward element of the theater air-ground system (TAGS) and must be organized, trained, and equipped to operate in a joint/multinational force. A JTAC is defined as, "a qualified (certified) Service member who, from a forward position, directs the action of combat aircraft engaged in close air support and other offensive air operations." (*DOD Dictionary of Military and Associated Terms)*. Contents of this MOA – specifically the JMTL and training standards are based on JP 3-09.3, CAS. A qualified JTAC will be recognized across the DOD and participating nations as capable and authorized to perform terminal attack control (TAC).

2.1. The Joint Fire Support (JFS) Executive Steering Committee (ESC), chartered by the Chairman Joint Chiefs of Staff Instruction (CJCSI) 5127.01 JFS ESC Governance and Management, nominates JFS ESC Action Plan tasks based on combatant command, Service, agency, and participating Partner Nation inputs.

2.2. Joint Close Air Support (JCAS) Issue 1, Joint Terminal Attack Controller (JTAC) of the JFS ESC Action Plan contains actions designed to standardize JTAC training.

2.3. Issue 4, Partner Nation JTAC/ Forward Air Controller (Airborne) (FAC[A])/Joint Fires Observer (JFO) Training and Standardization extends this standardization to Partner Nations. Completion of these actions improves joint/multinational force interoperability and reduces the potential for mishaps and friendly fire. The JFS ESC endorses the requirements identified in this MOA.

2.4. Under United States domestic law, organizing, training, and equipping personnel to fulfill JTAC duties is a responsibility of each Military Department or Service component within the Department of Defense. In fulfillment of its Title 10 responsibility to train, organize, and equip the forces, each Military Department and Service component independently and voluntarily determines if it is in their Service's best interests to establish, meet, or exceed the minimum standards for JTAC certification and qualification identified in this MOA. This MOA does not create any legally binding obligations for any signatory under international law. US/DOD and participating Partner Nations may unilaterally withdraw from this MOA as specified in paragraphs 6 and 7. Further, this MOA does not restrict in any way a Combatant Commander (CCDR), or equivalent, from determining operational JTAC qualifications unique to the CCDR's area of responsibility which exceed the standards identified in this MOA. If a CCDR elects to specify JTAC qualifications that exceed the standards specified in this MOA it is incumbent upon the signatory to meet the COCOM requirement.

3. Scope

This MOA standardizes JTAC training by defining the certification and qualification process. It applies to all signatories who agree to adhere to the standards outlined within it and specifically to JTACs conducting close air support (CAS).

4. Responsibilities

Signatories will ensure JTAC trainees meet Joint Mission Task List (JMTL) requirements during certification and JTACs maintain qualification requirements. Signatories who train JTACs will ensure JTAC training programs, formal schools, and training organizations comply with the requirements of this MOA and are in accordance with applicable national laws, regulations, and policies. Additionally, Signatories will ensure JTAC trainees and JTACs are capable of performing all tasks identified in the JMTL during their certification and maintain identified qualification requirements.

4.1. Being a signatory of the JTAC MOA does not guarantee or obligate access to services, schoolhouse quotas, training assets, ranges, live fire training, or the commitment of resources. All activities conducted in furtherance of the JTAC MOA are subject to the availability of funds. Signatories specifically agree that the JTAC MOA is non-binding in law.

4.2. JTAC Program Managers are responsible for administrative management, readiness tracking, signatory JTAC directives, and monitoring simulation and equipment requirements at the appropriate level of organization (US Service/USSOCOM, national, unit-level, etc.), in accordance with signatory directives. These duties may be modified as required. Each signatory to this MOA will identify a program manager to accomplish required duties and coordinate with the JFS ESC through the action officer. Signatories should select appropriate personnel to manage JTAC programs; however, JTAC certification and/or qualification are not required.

4.3. English is the language to be used; therefore, JTACs require adequate knowledge of and proficiency in the English language. For signatories for which English is not the primary language, language proficiency must be assessed prior to a trainee entering an accredited JTAC school, and the trainee must meet standards as defined in NATO STANAG 6001, Language Proficiency Levels. Level 3 is required in the following areas: Listening, Speaking, and Reading; Level 2 is required in Writing (LSRW of 3 3 3 2). It is a national responsibility to ensure JTACs meet and maintain this standard.

4.3.1. If the U.S. Defense Language Institute English Comprehension Level (ECL) Test is used as part of the assessment, a test score of 85 can be considered equivalent to Language Proficiency Levels 3 for listening and reading. If national equivalent tests are used, the signatory must verify equivalence to the standards of STANAG 6001. All four areas (LSRW) must be tested.

4.3.2. A JTAC school candidate that does not meet minimum score requirements for English proficiency may enter JTAC training with the approval of the JTAC school commander. Academic instruction and tasks, including controls, must be conducted in English. This provision applies to individuals who speak English but have not yet passed the required English language assessment. Prior to certification, JTAC trainees must meet language proficiency requirements.

4.3.2.1. A JTAC candidate who meets English proficiency requirements within six months after successful completion of a JTAC school may be certified and designated a JTAC upon completion of initial evaluation. A JTAC candidate who meets English proficiency requirements more than six months after successful completion of a JTAC school course of instruction may be certified and designated a JTAC upon completion of a signatory-approved

refresher syllabus. At a minimum, training must include completion of training requirements in paragraph 5.2.4.1.

4.3.2.2. Place language proficiency assessment in PART IV of the JTAC Training and Evaluation Folder or maintain in a centralized electronic tracking program. Required refresher training is at the discretion of the signatory with appropriate documentation placed in PART IV of the JTAC Training and Evaluation Folder, per signatory directives.

4.4. Recommended JTAC equipment is per Appendix D of this MOA.

5. Accreditation, Certification, Qualification, and JMTL

5.1. Accreditation

The JFS ESC accredits signatory JTAC programs and schoolhouses. A JTAC program must have a signed directive that outlines certification and qualification policies and responsibilities. The signed directive serves as the foundation of accreditation by defining how the signatory maintains compliance with the JTAC MOA. A JTAC program may or may not have a schoolhouse. If a program has a schoolhouse, the JFS ESC will accredit the schoolhouse if it complies with the certification requirements of the JTAC MOA. JTAC programs may also utilize phased certification with certification requirements completed between a schoolhouse and an operational unit or other training organization. If the JTAC program is without a schoolhouse, certified JTACs must successfully complete a JFS ESC or NATO accredited JTAC schoolhouse and complete all certification requirements. The JFS ESC recognizes NATO accredited JTAC schoolhouses. When utilizing a NATO accredited schoolhouse and/or qualified personnel for JTAC certification/qualification training, it is the responsibility of the certifying nation to ensure training is complete and conducted in accordance with the standards of this MOA. Partner nations must have an agreement supporting accreditation (NATO/Bilateral) and submit a formal request to sign the JTAC MOA before starting the accreditation process.

5.1.1. Accredited JTAC Training Programs. The following JTAC training programs are recognized by the JFS ESC as being in compliance with JTAC MOA requirements:

- US Air Force (USAF)
- US Marine Corps (USMC)
- US Navy (USN)
- US Special Operations Command (USSOCOM)
- Australian Defense Force (ADF)
- Belgian Armed Forces
- Canadian Armed Forces (CAF)
- Armed Forces of the Czech Republic
- Danish Armed Forces
- Estonian Defense Forces
- Finnish Defense Forces
- Hungarian Defense Force

– Royal Jordanian Air Force (RJAF)
– Republic of Korea Air Force (ROKAF)
– Latvian Armed Forces
– Lithuanian Armed Forces
– Armed Forces of the Netherlands
– New Zealand Defence Force (NZDF)
– Norwegian Armed Forces
– Armed Forces of the Republic of Poland
– Armed Forces of the Slovak Republic
– Slovenian Armed Forces
– Swedish Armed Forces
– Armed Forces of the United Arab Emirates
– Armed Forces of the United Kingdom (UK)

5.1.2. Accredited JTAC Schoolhouses. The following JTAC training courses are managed by accredited programs and are recognized as compliant with JTAC MOA academic curriculum requirements:

– US Air Force (USAF) 6th Combat Training Squadron (CTS) Tactical Air Control Party Formal Training Unit (TACP FTU)
– US Air National Guard (ANG) JTAC Qualification Course (JTACQC)
– USMC Expeditionary Warfare Training Group Atlantic (EWTGLANT) TACP Course
– USMC Expeditionary Warfare Training Group Pacific (EWTGPAC) TACP Course
– USN Naval Aviation Warfighting Development Center (NAWDC) Joint Terminal Attack Controller Course (JTACC)
– Special Operations Terminal Attack Controller Course (SOTACC)
– Royal Australian Air Force (RAAF) 4th Squadron, Joint Terminal Attack Controller Course (JTACC)
– Canadian Armed Forces (CAF), Royal Canadian Artillery School, Joint Terminal Attack Controller Course (JTACC)
– Czech Republic (CZE) Joint Terminal Attack Controller Certification Course (JTAC CC)
– Danish Armed Forces Joint Terminal Attack Controller (JTAC) Course
– Hungarian Defense Forces (HDF) Joint Terminal Attack Controller Certification Course

- The Netherlands Air Ground Operations School Joint Terminal Attack Controller Qualification Course (JTACQC)
- Norwegian Air Ground Operations School (NORAGOS) Joint Terminal Attack Control Basic Course
- Polish Tactical Air Control Party Training Center (TACP TC) Joint Terminal Attack Controller Initial Qualification Course (JTACIQC)
- Republic of Korea Air Force (ROKAF) Air Ground Operations School (AGOS) Joint Terminal Attack Controller Qualification Course (JTACQC)
- Swedish Forward Air Controller Training and Evaluation Cell (FACTEC) Joint Terminal Attack Controller Basic Course
- Slovenian Armed Forces (SAF) Air Ground Operations School (AGOS) Joint Terminal Attack Controller (JTAC) Certification Course
- United Arab Emirates (UAE) Presidential Guard Institute Joint Terminal Attack Controller Qualification Course (JTACQC)
- United Kingdom Joint Forward Air Control Training and Standardisation Unit (JFACTSU) Joint Terminal Attack Controller Certification Course

5.2. JTAC Certification and Qualification

This section provides minimum requirements for personnel responsible for training JTACs and the minimum requirements for certification and qualification training.

5.2.1. JTAC Instructors and Evaluators

5.2.1.1. JTAC Instructors. Qualified JTAC instructors (JTAC-I) must instruct JTAC trainees who are conducting simulated, dry, or live terminal attack control. Subject matter experts may instruct JTAC trainees on course topics which support CAS operations, but are not directly associated with controlling aircraft (examples: fire support coordination, airspace management, and TAGS). To be designated as a JTAC-I, an individual must:

- Possess a minimum of one year of experience as a qualified JTAC (or one year as a FAC(A) at the discretion of the signatory).
- Maintain JTAC qualification in accordance with (IAW) signatory directive.
- Complete a JTAC instructor training program, IAW signatory directive. (JTAC-I upgrade programs will train instructors to instruct trainees in JTAC JMTL and JTAC Evaluation Criteria, AREAs 1 – 25.
- Be designated a JTAC-I in writing by an approved authority IAW signatory directive.

5.2.1.1.1. JTAC-Is shall be Active [or Regular] Component, Guard, Reserve, DOD Civilian, Civilian Contractor, or Partner Nation equivalent. During initial JTAC certification or requalification, when instructing JTAC trainees or JTACs unqualified for more than 24 months in terminal attack control, a JTAC-I will be physically located with the individual being trained and be able to take control if necessary. A JTAC-I instructing a trainee may count the control at the discretion of the signatory.

5.2.1.1.2. JTAC-I Waiver Authority. JTAC-I waiver authority will be in accordance with signatory directives, but should reside no lower than O-6/OF-5 (see examples in Appendix A, Enclosure 4 and 5).

5.2.1.1.3. Contractor JTAC-I. In accordance with signatory directives, contractors may serve as JTAC-Is with the following criteria:

- Previously qualified as a JTAC-I or certified and qualified JTAC (IAW the JTAC MOA or NATO ATP 3.3.2.2 JTAC Program.) while serving as a member of the Armed Forces. Previously qualified JTACs require upgrade training in accordance with signatory directives under the supervision of an Active, Guard, Reserve, or DOD Civilian JTAC-I.
- Meet certification and maintain qualification requirements in accordance with this MOA and their assigned signatory directives.
- Restricted to operations in a training environment only; may not perform JTAC duties in support of combat/contingency operations.
- Recurring evaluations will be administered by a JTAC Evaluator (see para 5.2.2.) designated from Active, Guard, Reserve, or DOD Civilian.

5.2.1.2. JTAC Evaluator. A qualified JTAC Evaluator (JTAC-E) is a JTAC that has been designated to conduct JTAC evaluations. To be designated as a JTAC-E, an individual must:

- Possess a minimum of one year of experience as a qualified JTAC.
- Maintain JTAC qualification IAW signatory directive.
- Complete an evaluator upgrade program IAW signatory directive (Evaluator upgrade programs will train evaluators to accurately assess all JTAC, JTAC-I, and JTAC-E Evaluation Criteria, AREAs 1 – 27).
- Be designated a JTAC-E in writing by an approved authority IAW signatory directive.

5.2.1.3. JTAC-E Waiver Authority. JTAC evaluator waiver authority will be in accordance with signatory directives, but should reside no lower than O-6/OF-5 (see examples in Appendix A, Enclosures 4 and 5).

5.2.2. JTAC-I/E Co-designation. JTAC-Is may be co-designated as instructor and evaluator (I/E) by the commander per signatory directives. In accordance with paragraph 5.2.1.2, Contractor JTAC-I may be designated as Evaluators per signatory directives; however, contractors may NOT conduct evaluations on other contractor JTAC-I/Es.

5.2.3. JTAC-I/E Evaluations. JTAC I/Es will be evaluated prior to designation and on a recurring basis, not to exceed 18 months between evaluations.

5.2.3.1. JTAC-I Evaluations at a minimum will assess JTAC and JTAC-I Evaluation Criteria, AREAs 1 – 25 and 26 on pages A40 – A47.

5.2.3.2. JTAC-E Evaluations will assess all JTAC, JTAC-I, and JTAC-E Evaluation Criteria, AREAs 1 – 25, 26, and 27, on pages A40 – A48.

5.2.3.3. JTAC, JTAC-I, and JTAC-E evaluations may be accomplished individually or combined into a single event; however, all applicable areas (JTAC, JTAC-I, JTAC-E) Evaluation Criteria AREAs 1 – 27, on pages A40 – A48 must be assessed on a recurring basis, not to exceed 18 months between evaluations.

5.2.4. JTAC Certification

5.2.4.1. JTAC Certification Process. Prior to commencing JTAC training, trainees should complete a pre-screening process to identify appropriate candidates to enter a JTAC training program. Candidates who have operational or mission ready fire support exposure, or aircrew members with at least one year of operational flying experience have an increased rate of successful course completion. JTAC trainees will receive authorized training through an accredited JTAC training program listed in paragraph 5.1.1. Signatories will certify JTACs in accordance with their respective directives, as aligned with established JTAC guidelines, using the approved JMTL. Once certified, a JTAC is considered initially qualified. To be certified as a JTAC, the individual must successfully:

- Complete an accredited JTAC schoolhouse
- Demonstrate proficiency in execution tasks under qualified JTAC-I supervision
- Complete JMTL identified in Table 5.2.4.1. during a terminal attack control
- Complete an initial JTAC evaluation by a designated evaluator (see examples in Appendix A, Enclosure 1 and 3)

Table 5.2.4.1. Minimum JTAC Certification Controls

Terminal Attack Control	Minimum Required	Condition
Type 1	2	Live or Dry
Type 2	2	Live, Dry, or Simulated
Type 3	1	Live, Dry, or Simulated
BOT	2	Live or Dry
BOC	2	Live, Dry, or Simulated
FW CAS Aircraft	2	Live or Dry
RW CAS Aircraft*	1	Live, Dry, or Simulated
Laser control [1]	1	Live or Dry
IR Pointer [2, 4]	1	Live or Dry
Remote Observer	1	Live, Dry, or Simulated
Video Downlink (VDL)	1	Live, Dry, or Simulated
Live	2	Live (actual munitions release)
9-line CAS brief [3]	2	Live or Dry (1 may be Simulated)
SEAD	1	Live, Dry, or Simulated
Urban	1	Live, Dry, or Simulated
With FAC(A)*	1	Live, Dry, or Simulated
Day	2	Live or Dry
Night[4]	2	Live or Dry (1 may be Simulated)

[1] Ground laser shall be utilized to mark/designate a target for an aircraft (laser spot tracker recommended). Intent is to utilize laser equipment and laser brevity.
[2] A ground IR pointer shall be utilized to mark a target for an NVG equipped aircrew. Intent is to utilize IR equipment and IR brevity.

[3] Must use a complete 9-line CAS brief - IP to target attack (Lines 1-3 will not be abbreviated, not applicable (N/A), or from the overhead).
[4] Units deployed to or stationed at extreme latitudes (>49 deg) may waive the night and/or IR pointer control(s) for certification until night sorties can be executed.

*****Signatories without FAC(A) capability, or without RW CAS Aircraft (or simulation accredited for RW task), are exempt until fielding occurs. This exemption is not intended to be permanent and signatories shall procure equipment to support the required capability and pursue every possible opportunity to train to meet all requirements.

5.2.4.2. JTAC Schoolhouse Documentation. JTAC Schoolhouses will provide course completion documentation. If all required training was not accomplished, the JTAC Schoolhouse will provide a deficiency letter listing the specific training that was not accomplished to include the reason why the training was not accomplished (e.g. no live or dry controls were completed due to weather). See example in Appendix A, Enclosure 6.

5.2.5. JTAC Qualification. Qualification training is the training required after certification completion to maintain proficiency and develop mission specific skills.

5.2.5.1. JTAC Qualification Process. Once certified, a JTAC remains qualified if:

5.2.5.1.1. JMTL knowledge/proficiency are maintained IAW signatory directives.

5.2.5.1.2. Evaluation requirements are satisfactorily accomplished.

5.2.5.1.3. Tasks identified in Table 5.2.5.2. are successfully completed during a terminal attack control and during an established six-month period unless noted.

5.2.5.2. Minimum JTAC Qualification Controls. Table 5.2.5.2. provides the minimum terminal attack control tasks and conditions that are required to be accomplished every 6 months to maintain JTAC qualification.

Table 5.2.5.2. Minimum JTAC Qualification Controls

Terminal Attack Control	Minimum Required	Condition
Type 1	1	Live, Dry, or Simulated (No more than 12 months between Live or Dry)
Type 2	1	Live, Dry, or Simulated
Type 3	1	Live, Dry, or Simulated
BOT	1	Live or Dry
BOC	1	Live, Dry, or Simulated
FW CAS Aircraft	2	Live or Dry (1 may be Simulated)
RW CAS Aircraft*	1	Live, Dry, or Simulated
Laser control [1]	1	Live, Dry, or Simulated (No more than 12 months between Live or Dry)
IR Pointer [2, 4]	1	Live, Dry, or Simulated (No more than 12 months between Live or Dry)
Remote Observer	1	Live, Dry, or Simulated
Video Downlink (VDL)	1	Live, Dry, or Simulated
Live	1	Live (actual munitions release)
9-line CAS brief [3]	1	Live or Dry

Day	1	Live or Dry
Night [4]	1	Live, Dry, or Simulated (No more than 12 months between Live or Dry)

[1] Ground laser shall be utilized to mark/designate a target for an aircraft (laser spot tracker recommended). Intent is to utilize laser equipment and laser brevity.
[2] A ground IR pointer shall be utilized to mark a target for a NVG equipped aircrew. Intent is to utilize IR equipment and IR brevity.
[3] Must use a complete 9-line CAS brief - IP to target attack (Lines 1-3 may not be abbreviated, N/A or from the overhead).
[4] Units deployed to or stationed at extreme latitudes (>49 deg) may waive the night and/or IR pointer control(s) for qualification until night sorties can be executed.

*****Signatories without RW CAS Aircraft (or simulation accredited for RW task) are exempt until fielding occurs. This exemption is not intended to be permanent and signatories shall procure equipment to support the required capability and pursue every possible opportunity to train to meet all requirements.

5.2.5.3. JTACs should accomplish qualification requirements with ground maneuver units, integrating JFOs and FAC(A)s whenever possible. Commanders should establish guidance and set goals aimed at achieving joint integration.

5.2.5.4. FAC(A) with JTAC Qualification. A FAC(A) who is also a qualified JTAC may count FAC(A) controls towards JTAC qualification at the discretion of the signatory. Signatories should identify this capability in their directive(s).

5.2.6. JTAC Training Simulation

An accredited simulation system(s) may be used to accomplish certification and qualification JMTL and TAC requirements when the use of live resources (actual aircraft, equipment, ranges, etc.) are not sufficient/affordable to facilitate required training, or when the system is better able to accomplish the training. Upon request from a JTAC MOA signatory, simulation system(s) will be assessed and accredited by the JFS ESC or their designated representative, during scheduled program/schoolhouse accreditation for their capability to facilitate minimum terminal attack control requirements contained in this MOA. To expedite simulation system(s) accreditation, a checklist is provided (in the JCAS Standardization Team SOP) for the signatory to conduct a self-assessment of the simulation system(s) for compliance with criteria established and approved by the JFS ESC. Based on the results of the self-assessment, the JFS ESC will grant an interim accreditation until the JFS ESC JTAC Standardization Team can validate the self-assessment during the next regularly scheduled JTAC program accreditation. The team will use the checklist provided in the JCAS Standardization Team SOP and document accreditation in the accreditation report.

NOTE: Personnel trained using JTAC simulation systems which were granted interim accreditation based on self-assessment, but do not meet JFS ESC accreditation criteria during the self-assessment validation, will have all Table 5.2.5.2 items logged using the simulation system considered invalid and must re-accomplish those items according to the paragraph 5.2.5.2 prescribed timeline starting from the date last accomplished under an approved condition.

5.2.7. JTAC Evaluations

Evaluations are the primary tool commanders use to assess the effectiveness of training programs and individual readiness. Evaluations measure the unit's baseline minimum standard accomplishment of JTAC JMTLs.

5.2.7.1. JTAC Evaluation Requirements. Signatories determine their own evaluator and recurring evaluation requirements. However, the interval between evaluations will not exceed 18-months.

5.2.7.2. Evaluations will ensure compliance with JTAC MOA qualification requirements and Joint Mission Task List (JMTL), and verify that the JTAC Training and Evaluation Folder is up to date. A JTAC will lose qualification and recognition under this MOA if they fail a recurring evaluation or if their evaluation period lapses. Appendix A, Enclosure 3, is an example of a form that may be used for evaluations.

5.2.7.3. At a minimum, JTAC evaluations will assess and document performance using JTAC Evaluation Criteria, AREAs 1 – 25, on pages A40 – A48. Signatories have flexibility to conduct evaluations and may accomplish initial evaluations cumulatively during certification and/or conduct subsequent evaluations during one event, or multiple events, based on available resources.

5.2.8. JTAC Requalification Process

5.2.8.1. Loss of Qualification. JTACs who fail to comply with qualification requirements IAW para 5.2.5. (e.g. JMTL and controls or Evaluation) are considered unqualified. JTACs who fail to successfully complete JMTL Tasks/Table 5.2.5.2. requirements must, under the supervision of a qualified JTAC and IAW signatory directives, complete the number and category (e.g., appropriate night, fixed-wing, ordnance, etc.) of controls they failed to accomplish to regain qualification. Supervision is required only for those events which were not accomplished (e.g. if night was not accomplished; only night control requires supervision); the JTAC may still control, without supervision, in the other areas they have not lapsed in. A JTAC who is unqualified (JMTL tasks) for more than six months, but less than 24 months, must complete the JMTL requirements IAW para 5.2.5.1. (JTAC Qualification Process), under the supervision of a qualified JTAC or JTAC-I. A JTAC who fails to satisfactorily complete an evaluation, will only be authorized to control while under the supervision of a qualified JTAC. This restriction will remain in place until the unqualified JTAC satisfactorily completes a subsequent re-evaluation conducted by a JTAC-E.

5.2.8.2. Unqualified for 24 Months or Longer. A JTAC who is unqualified for 24 consecutive months must regain qualification by completing a signatory approved refresher syllabus, to include successful completion of JMTL and Table 5.2.5.2. (Minimum JTAC Qualification Controls) under the supervision of a qualified JTAC-I, and accomplish an evaluation.

5.2.9. Deployment Process. JTACs will deploy qualified IAW para 5.2.5.1, JTAC Qualification Process, without exceptions. JTACs deployed in support of combat or contingency operations are considered qualified for the duration of the deployment and the 18-month evaluation requirement is waived. Deployed JTACs who fail to maintain qualification requirements are considered unqualified upon completion of the deployment and must re-qualify IAW this MOA.

5.2.10. JTAC Training and Evaluation Folder. To document compliance with JTAC certification and qualification standards, an individual JTAC Training and Evaluation Folder will be created IAW signatory directives and maintained by the individual's assigned command. The JTAC Training and Evaluation Folder will be used to record and maintain appropriate JTAC training and evaluation records during each duty assignment and deployment. The JTAC Training and Evaluation Folder or an up-to-date copy will accompany the individual JTAC to each duty assignment and deployment location to provide commanders a historical record of the individual's JTAC certification and qualification training and their qualification status. JTAC Training and Evaluation Folders shall be organized using the format in Table 5.2.10.; however, the arrangement order of the individual parts may be modified at the discretion of the signatory. A JTAC Training and Evaluation Folder is mandatory for all JTACs and will contain the six-part format as depicted in Table 5.2.10. JTAC Training and Evaluation Folder Table of Contents.

Table 5.2.10. JTAC Training and Evaluation Folder Table of Contents

PART I: TABLE OF CONTENTS	
PART II: COMMANDER'S DESIGNATION LETTERS	This section contains a copy of the JTAC's current designation letter.
PART III: CAS LOG	This section contains a record of all controls in legible format and must be in compliance with Appendix A of this document. This section should contain records of all controls performed since initial certification.
PART IV: DOCUMENTATION OF TRAINING	All continuation training and refresher training should be documented in Part IV to include academics and testing.
PART V: DOCUMENTATION OF EVALUATIONS	This section contains documentation of all evaluations conducted since initial certification.
PART VI: JTAC FORMAL SCHOOL DOCUMENTATION	This section contains copies of course completion documentation received from attending a formal course of instruction pertaining to close air support or terminal attack control.

NOTE: Copies of waivers will be placed in applicable sections (qualification, evaluations, etc.)

5.2.10.1. Electronic Records

Signatories are authorized to manage JTAC training and evaluation records using an electronic database; however, the systems must be capable of producing a hard copy of individual JTAC records and contain the information in Parts II – VI as listed above. Signatories are responsible to provide access or a hard copy of individual JTAC training and evaluation records when verification of individual JTAC qualification is required.

5.2.11. Waiver Authority and Staffing. Waivers which reduce JTAC MOA minimum certification or evaluation requirements will be staffed to JFS ESC for concurrence and results will be provided to the requester. Waiver authority for JTAC qualification requirements (excluding evaluation portion) will be in accordance with signatory directives, but should reside no lower than O-6/OF-5 and the signatory will provide the JFS ESC secretariat with an information copy. Certification, evaluation, and qualification waivers will be used only to

address a temporary issue and for a limited period with a specified end-date. Deploying JTACs will comply with paragraph 5.2.9. of this document without exception.

5.3. JTAC Joint Mission Task List (JMTL)

The following JMTL tasks have been identified as the minimum tasks required for a JTAC to successfully perform terminal attack control. The JMTL will be the basis for developing a schoolhouse academic training syllabus for JTAC certification and qualification training programs. The JMTL will also be used during accreditation of JTAC training programs and schoolhouses by the JTAC standardization team. The Joint Mission Tasks are divided into duty areas for academic application and are listed by task and associated sub-tasks.

5.3.1. Duty Area 01 – CAS Planning

This Duty Area focuses on the minimum required classroom academics. Each Task and Sub-Task will be covered in the schoolhouse/unit lesson plan. Lesson plan learning objectives should also be based on the Task and Sub-task and be a source for test questions. To re-enforce the learning objectives, and to assess student comprehension, practical exercises, quizzes and examinations will be conducted.
Note: Joint Publication 3-09.3*, Close Air Support,* is the source document and primary reference for all assigned JMTL tasks. Additional reference material such as JFIRE *Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower* and applicable service specific publications should also be referenced.

Task	Defined Task	Condition	Standard
01.1 Advise ground commander on Close Air Support assets in support of ground scheme of maneuver.	Collective Task		
01.1.1 Advise ground commander on Fixed-Wing (FW) / Rotary-Wing (RW) platform capabilities / limitations / employment.	Demonstrate knowledge of the capabilities, limitations, and employment of FW/RW platforms. (e.g. tactical air, bomber, UAS). JTAC will be able to successfully answer questions on capabilities, limitations, and employment of FW/RW CAS platforms.	Classroom	Score 80% or greater on a written test.
01.1.2 Advise ground commander on FAC(A) capabilities / limitations / employment.	Demonstrate knowledge of the capabilities, limitations, and employment of FW/RW wing FAC(A) platforms. Clearly define the roles and responsibilities of supporting and supported forces when integrating FAC(A). JTAC will be able to successfully answer questions on the capabilities, limitations, and employment of FW/RW FAC(A).	Classroom	Score 80% or greater on a written test.
01.1.3 Advise ground commander on remote observer capabilities / limitations / employment.	Demonstrate knowledge of the capabilities, limitations, and employment of a remote observer (e.g. scout, FIST, SOF)/ JFO. Clearly define the roles and responsibilities of supporting and supported forces when integrating a remote observer/ JFO. JTAC will be able to successfully answer questions on remote observer/JFO capabilities, limitations, and employment.	Classroom	Score 80% or greater on a written test.

Task	Defined Task	Condition	Standard
01.1.4 Advise ground commander on Group 1, 2, 3, 4 Unmanned Aerial Systems (UAS) capabilities/limitations/ employment.	Demonstrate knowledge of the capabilities, limitations, and employment of Group 1, 2, 3, 4 UAS platforms. JTAC will be able to successfully answer questions on the capabilities, limitations, video downlink (VDL), and employment of Group 1, 2, 3, 4 UAS.	Classroom	Score 80% or greater on a written test.
01.1.5 Advise ground commander on aviation weapon capabilities / limitations / employment.	Demonstrate knowledge of aerial delivered weapon's capabilities, limitations, and employment methods. (General purpose bombs, laser guided munitions, inertially-aided munitions, aircraft guns, rockets, flares, air to ground missiles). JTAC will be able to successfully answer questions on weapons capabilities, limitations, and employment.	Classroom	Score 80% or greater on a written test.
01.1.6 Advise ground commander on effects of weather, terrain, and threats on CAS capabilities.	Demonstrate knowledge of weather, terrain, and threats when employing CAS assets. JTAC will be able to successfully answer questions on mission impacts of weather, terrain, and threats when employing CAS assets.	Classroom	Score 80% or greater on a written test.
01.1.7 Advise ground commander on effects of electronic warfare on CAS capabilities.	Demonstrate knowledge of airborne and ground base Electronic Warfare (EW) effects. JTAC will be able to successfully answer questions on EW effects, location of electronic warfare planners, the request process, and how to submit an EW request (Joint Tactical Air Strike Requests (JTAR) when employing CAS assets.	Classroom	Score 80% or greater on a written test.
01.1.8 Advise ground commander on the use and timely submission of JTARs.	Demonstrate knowledge of the Air Tasking Order (ATO) planning cycle and its effects on JTAR submission. Address what an ATO is, the information listed, and how to access the document. The JTAC should also understand the process to get a preplanned mission on the ATO. JTAC trainee will be able to successfully answer questions on the ATO planning cycle and its effects on JTAR submission.	Classroom	Score 80% or greater on a written test.
01.1.9 Advise ground commander on Battle Damage Assessment (BDA) and Mission Reporting (MISREP) procedures.	Demonstrate knowledge of the information required to successfully complete a BDA (e.g. observed damage (enemy/civilian), re-attack recommendation, BDA log, and MISREP procedures. JTAC will be able to successfully answer questions on the information required to successfully complete BDA report to CAS aircraft that includes: Size, Activity, and Location. Time, Remarks — Munitions expended, observed damage (number of tanks destroyed, number still active, and recommendation), mission number, and mission accomplishment (SUCCESSFUL, UNSUCCESSFUL or UNKNOWN).	Classroom	Score 80% or greater on a written test.
01.2 Advise ground commander on the minimum components of a game plan (types of Terminal Attack Control and Method of Attack).	Demonstrate knowledge of how tactical situation, aircrew, aircraft, and weapons capabilities/limitations determine appropriate type of terminal attack control and method of attack contained in the game plan. JTAC will be able to successfully answer questions on the types of CAS control and the factors that determine the type of control and method of attack to be used in a given situation.	Classroom	Score 80% or greater on a written test.
01.3 Advise ground commander on integration of CAS with indirect fires.	Demonstrate knowledge of the integration of indirect fires (surface to surface) with CAS during a written evaluation. Address deconfliction methods which facilitate simultaneous multi-ship/platform CAS and indirect fire. Must be well versed in Airspace Coordination Area (ACA) terminology and have knowledge of all applicable ACAs in use. JTAC will be able to	Classroom	Score 80% or greater on a written test.

Task	Defined Task	Condition	Standard
	successfully answer questions on separation techniques that deconflict airspace to provide a reasonably safe operating space for aircraft to maneuver and attack targets.		
01.4 Advise ground commander on the impact of fire support coordination measures (FSCM) on CAS mission planning.	Given a tactical scenario (e.g. operations order) assess the impact of FSCMs on CAS operations in support of the ground commander's concept of operations during a written evaluation. Address, at a minimum, the definition and proper employment of permissive and restrictive FSCMs to expedite the attack of targets. JTAC will be able to successfully answer questions on FSCMs used during CAS operations. *Note: Students should be briefed on Kill box terminology, but a kill box will not be established for CAS missions. If a CAS mission is required within an established kill box, the portion of the kill box requiring detailed integration should be closed.*	Classroom	Score 80% or greater on a written test.
01.5 Advise ground commander on airspace command and control (Joint and Component) procedures and their impact on CAS mission planning (supporting documents - Airspace Control Order (ACO), Airspace Control Measures (ACM), Air Tasking Order (ATO), and Special Instructions (SPINS).	Demonstrate knowledge of airspace command and control components, the definition and application of ACO, ACM, ATO, and SPINS and their impact on CAS mission planning (e.g. Theater Air Ground System (TAGS), Theater Air Control System (TACS)/Army Air-Ground System (AAGS), Marine Corps Air Command and Control System (MACCS), Navy Tactical Air Control System (NTACS), and Special Operations Air-Ground System (SOAGS)). JTAC will be able to successfully answer questions on the primary command and control agencies and their roles and responsibilities within the associated Command and Control System and the functions of the ACO, ACM, ATO, and SPINS.	Classroom	Score 80% or greater on a written test.
01.6 Apply intelligence products to CAS mission planning.	Given a tactical scenario, operations order, apply intelligence products to support CAS mission planning in support of the ground commander's concept of operations. Describe how intelligence supports air operations, available intelligence products (e.g. order of battle, maps, ISR imagery), and the importance of including Intel early in the planning process. JTAC will be able to successfully answer questions on the intelligence products used to support CAS mission planning.	Classroom	Score 80% or greater on a written test.
01.7 Apply the products of the targeting process to CAS mission planning.	Demonstrate knowledge of the targeting process. Address the process which the supported commander selects and prioritize targets and match appropriate effects. Lesson should focus on the products the JTAC will use when planning the employment of CAS (tactical level). JTAC trainee will be able to successfully answer questions on the targeting process products.	Classroom	Score 80% or greater on a written test.
01.8 Plan CAS missions with precision and unguided/general-purpose weapons, in support of the ground scheme of maneuver.	Collective Task		
01.8.1 Plan a laser guided weapon employment and use of a ground and airborne Laser Target Designator (LTD).	Demonstrate knowledge of laser guided weapons employment and use of a ground and airborne LTD (aircraft targeting pod and UAS). Address the standard laser brevity terms and procedures for ground and airborne designating, marking, and proper employment of laser guided weapons. JTAC will be able to successfully answer questions on laser guided weapons	Classroom	Score 80% or greater on a written test.

Task	Defined Task	Condition	Standard
	employment, safety zone, optimal attack zones, hellfire designator exclusion zone, and proper laser brevity.		
01.8.2 Plan inertially-aided munitions (IAMS) deliveries.	Demonstrate knowledge of IAMS employment. Address the unique characteristics and limitations of IAMS/GPS guided weapons. Lesson will also cover target location error (TLE), Bomb on Coordinate (BOC), and Bomb on Target (BOT). JTAC will be able to successfully answer questions on IAMS employment.	Classroom	Score 80% or greater on a written test.
01.8.3 Plan unguided/general-purpose weapons deliveries.	Demonstrate knowledge of unguided/general-purpose weapons employment. Address the capabilities, limitations, and employment of unguided/general-purpose weapons. Consideration must be given to host aircraft navigation/weapons system accuracy. JTAC will be able to successfully answer questions on unguided/general-purpose weapons employment.	Classroom	Score 80% or greater on a written test.
01.9 Plan engagement with appropriate weapon in order to achieve desired effects, proportional response, and minimize collateral damage.	Demonstrate knowledge of aviation ordnance capabilities and effects. Lesson will present scenarios where ordnance is appropriately matched to targets to achieve ground commander's intent and comply with Rules of Engagement (ROE) and restrictions. Theatre specific ROE, restrictions and lessons learned should be briefed (as applicable). Reinforcement through practical application is required during simulated, dry, or live controls. JTAC will be able to successfully answer questions on aviation ordnance capabilities and effects.	Classroom	Score 80% or greater on a written test.
01.10 Plan day CAS missions, in support of the ground scheme of maneuver.	Collective Task		
01.10.1 Plan day FW CAS missions.	Demonstrate knowledge of day FW CAS planning factors. JTAC will be able to successfully answer questions on day FW CAS planning factors.	Classroom	Score 80% or greater on a written test.
01.10.2 Plan day RW CAS missions.	Demonstrate knowledge of day RW CAS planning factors. JTAC will be able to successfully answer questions on day RW CAS planning factors.	Classroom	Score 80% or greater on a written test.
01.11 Plan night CAS missions, in support of the ground scheme of maneuver.	Collective Task		
01.11.1 Plan night FW CAS missions.	Demonstrate knowledge of night FW CAS planning factors. JTAC will be able to successfully answer questions on night FW CAS planning factors.	Classroom	Score 80% or greater on a written test.
01.11.2 Plan night RW CAS missions.	Demonstrate knowledge of night RW CAS planning factors. JTAC will be able to successfully answer questions on night RW CAS planning factors.	Classroom	Score 80% or greater on a written test.
01.11.3 Plan Illumination in support of night CAS missions.	Collective Task		
01.11.3.1 Plan ground-delivered Illumination.	Demonstrate knowledge of ground-delivered illumination in support of CAS. Address techniques and procedures on how to employ illumination via surface based fire support systems in support of CAS missions (Artillery, Mortars, and Naval Surface Fire Support). JTAC will be able to successfully answer questions on surface-delivered illumination, in support of CAS.	Classroom	Score 80% or greater on a written test.

Task	Defined Task	Condition	Standard
01.11.3.2 Plan aerial delivered Illumination.	Demonstrate knowledge of aviation-delivered illumination in support of CAS. Address techniques and procedures on how to employ illumination via aviation assets in support of CAS missions (e.g. aerial delivered flares, illumination rockets). JTAC will be able to successfully answer questions on aerial delivered illumination in support of CAS.	Classroom	Score 80% or greater on a written test.
01.12 Incorporate CAS mission planning factors for operations in limited visibility / adverse weather.	Demonstrate knowledge of limited visibility and adverse weather and its effects on CAS. Address techniques and procedures on how to execute a CAS mission during limited visibility and adverse weather conditions. JTAC will be able to successfully answer questions on limited visibility/adverse weather effects on CAS.	Classroom	Score 80% or greater on a written test.
01.13 Incorporate CAS mission planning factors for operations in an urban environment.	Demonstrate knowledge of CAS mission planning factors for operations in an urban environment. Address planning factors, techniques, and procedures on how to execute a CAS mission in the urban environment JTAC will be able to successfully answer questions on urban CAS planning factors.	Classroom	Score 80% or greater on a written test.
01.14 Plan AC-130 fire missions in support of the ground scheme of maneuver.	Demonstrate knowledge of AC-130 fire missions. Address planning factors, techniques and procedures on how to employ the AC-130. JTAC will be able to successfully answer questions on AC-130 capabilities, call-for-fire procedures, and proper employment.	Classroom	Score 80% or greater on a written test.
01.15 Plan integrated attack by multiple fire support assets to support CAS.	Collective Task		
01.15.1 Plan target marking for CAS assets.	Sub-Task	Classroom	
01.15.1.1 Plan target marking for CAS with indirect fire assets.	Demonstrate knowledge to effectively plan visual target marking for CAS with indirect fire. Address techniques and procedures on how to use indirect fire (e.g. artillery, mortars) to provide visual marks (e.g. smoke, illumination) to execute a CAS mission. JTAC will be able to successfully answer questions on target mark timing, airspace management (deconflicting fires from CAS platforms) and use of smoke, high explosive, illumination, or other visual means.	Classroom	Score 80% or greater on a written test.
01.15.1.2 Plan target marking with ground IR pointer for CAS assets.	Demonstrate the ability to effectively plan ground IR pointer target marking for CAS. Address the standard IR pointer brevity terms, procedures for ground IR pointer marking, and the proper employment of IR pointer. JTAC will be able to successfully answer questions on IR brevity and IR pointer safety.	Classroom	Score 80% or greater on a written test.
01.15.2 Plan surface to surface Suppression Enemy Air Defenses (SEAD) for CAS attack.	Demonstrate the ability to effectively plan SEAD for CAS. Address techniques and procedures on how to use indirect fire (e.g. artillery, mortars) to provide SEAD in support of a CAS mission. JTAC will be able to successfully answer questions on definition of SEAD, timing, and airspace management (deconflicting fires from CAS platforms).	Classroom	Score 80% or greater on a written test.
01.15.3 Plan coordinated attacks by multiple flights of aircraft to support CAS.	Demonstrate knowledge to effectively coordinate attacks by multiple flights of aircraft and deconflict them from each other during simultaneous, sequential, or random attacks to support CAS. Address type of attack (Combined/Sectored), timing, and procedures on how to deconflict flights. JTAC will be able to successfully answer questions on methods of deconflicting CAS	Classroom	Score 80% or greater on a written test.

Task	Defined Task	Condition	Standard
	platforms from each other during simultaneous, sequential, or random attacks.		
01.16 Plan terminal attack control in support of CAS attack.	Demonstrate knowledge of terminal attack control procedures in support of CAS planning. Address planning factors, techniques and procedures on how to conduct terminal attack control of a CAS mission. JTAC will be able to successfully answer questions on established terminal attack control procedures, Situation update, game plan and CAS Brief.	Classroom	Score 80% or greater on a written test.
01.17 Plan target location procedures with the understanding of target location errors (TLE) in support of attack.	Demonstrate knowledge of target location procedures and TLE in support of CAS planning. Address planning factors, techniques, and procedures on how to most efficiently and effectively locate targets; stress the importance of a targets associated TLE. JTAC will be able to successfully answer questions on procedures, equipment used to determine target location, and TLE categories.	Classroom	Score 80% or greater on a written test.
01.18 Request CAS via JTAR.	Demonstrate knowledge of the JTAR. Address the proper routing and processing of pre-planned and immediate request through the command and control system. JTAC will be able to successfully answer questions on the procedures to fill out and route a JTAR.	Classroom	Score 80% or greater on a written test.
01.19 Plan the use of digitally-aided CAS (DACAS) systems in support of weapons deliveries.	Demonstrate knowledge of DACAS/Fires systems to facilitate weapons employment. Address the capabilities, limitations, and proper use of signatory-fielded DACAS systems. JTAC will be able to successfully answer questions on conducting CAS missions (e.g. friendly deconfliction, A/C check in, ON STATION REPORT, 9-Line CAS brief, and BDA) using DACAS systems.	Classroom	See Duty Area 2, CAS Preparation Task 02.1.5.
01.20 Plan CAS employment in a contested environment	Demonstrate knowledge of CAS employment in a contested environment. Address planning factors for threats and tactical situation that dictate attacking aircraft use counter-tactics, countermeasures, and/or vertical and/or lateral standoff during target attack. Include planning for surface based indirect fire and/or EW assets (lethal and/or non-lethal) to provide SEAD, degraded/denied GPS/communications, and enemy direction-finding capabilities, as applicable.	Classroom	Score 80% or greater on written test

5.3.2. Duty Area 02 – CAS Preparation

This Duty Area focuses on the minimum practical, dry, or live terminal attack control to be conducted. Trainees should use the same JTAC equipment in training as they are required to operate during combat operations. Appropriate material will be supplied to the trainees to facilitate CAS mission planning. Each Task and Sub-Task will be covered in the exercise.

Performance Level and description:

Proficient – Trainee is able to accomplish all items in the task correctly and efficiently without assistance, in accordance with signatory standards.

Task	Defined Task	Condition	Standard
02.1 Operate JTAC equipment.	Collective Task		
02.1.1 Operate JTAC communications equipment.	Demonstrate the ability to operate all required organic communications equipment necessary for requesting, coordinating, and controlling CAS missions. JTAC will demonstrate proficiency in operating communications equipment as designated by the signatory. JTACs will have the skills to operate in the required frequency bands in secure voice, frequency agile, and digital information exchange capabilities.	Classroom, practical exercise, dry, or live.	Performance level of proficient.
02.1.2 Operate JTAC target marking equipment.	Demonstrate the ability to operate target-marking equipment in support of CAS. JTAC will demonstrate the ability to operate LTDs, IR pointers, radar beacons and other designated target marking equipment as designated by the signatory. Reference signatory equipment checklist, manuals, and documentation.	Classroom, practical exercise, dry, or live.	Performance level of proficient.
02.1.3 Operate JTAC target location equipment. *Note – Signatories without fielded TMO capability are exempt until fielding occurs.	Demonstrate the ability to operate target location equipment and knowledge of its accuracy in support of CAS. JTAC will demonstrate the ability to operate Laser Range finders, GPS systems, Target Mensuration Only (TMO) Targeting Software (e.g. PSS-SOF) and other target location equipment designated by the signatory. Reference signatory equipment checklist, manuals, and documentation.	Classroom, practical exercise, dry, or live.	Performance level of proficient.
02.1.4 Operate JTAC video downlink equipment.	Demonstrate the ability to operate video downlink equipment (e.g. ROVER) in support of CAS. JTAC will demonstrate the ability to operate video downlink equipment designated by the signatory. Reference signatory equipment checklist, manuals, and documentation.	Classroom, practical exercise, simulation, dry, or live.	Performance level of proficient.
02.1.5 Operate DACAS/Fires systems. **Note**: Signatories without fielded digital CAS systems are exempt until fielding occurs.	Demonstrate the ability to operate digitally-aided systems in support of CAS and call-for-fire (CFF) using appropriate reference material when required. JTAC will demonstrate the ability to operate digitally-aided systems in support of CAS and CFF during simulation, dry and/or live training events, using designated equipment and software by their signatory. Reference signatory equipment checklist, manuals, and documentation.	Classroom, practical exercise, simulation, dry, or live.	Performance level of proficient.

Task	Defined Task	Condition	Standard
02.2 Apply the products of Operational planning in support of CAS execution.	Collective Task		
02.2.1 Apply intelligence products in support of CAS execution.	Demonstrate the ability to apply intelligence products (e.g. ISR support, ground order of battle, air order of battle, missile order of battle, maps, charts (1:50, gridded reference graphic (GRG)). JTAC will understand which products of the intelligence/deliberate planning cycle are available to him in order to devise a plan to ensure CAS resources are used against appropriate targets based on the commander's intent. (e.g. Target List).	Classroom, practical exercise, simulation, dry, or live.	Performance level of proficient.
02.2.2 Apply the products of the fire support plan in support of CAS execution.	Demonstrate the ability to apply the products of the fire support plan (e.g., FSCMs). JTAC will understand what role they play in developing a fire support plan, ensuring CAS is fully integrated and be able to use the products that result from fire support planning (e.g. target lists, FSCMs).	Classroom, practical exercise, simulation, dry, or live.	Performance level of proficient.
02.2.3 Apply the products of the ACO in support of CAS execution.	Demonstrate the ability to apply the products of the ACO (e.g. ACMs). JTAC will be able to extract and apply the applicable information contained in the ACO required to safely and effectively conduct a CAS mission.	Classroom, practical exercise, simulation, dry, or live.	Performance level of proficient.
02.2.4 Apply the products of communications planning in support of CAS execution.	Demonstrate the ability to apply a communications plan (e.g. Tactical Air Direction (TAD), Air Request Net (ARN), Tactical Air Request (TAR)/Helicopter Request (HR), TACP Local (L), Tactical Chat, IP and URN addressing, OPTASKLINK). JTAC will establish and maintain all applicable communications nets required to plan, coordinate, and execute a CAS mission. JTAC will understand communications plans and be able to extract communications network data from applicable sources.	Classroom, practical exercise, simulation, dry, or live.	Performance level of proficient.
02.2.5 Apply the products of the ATO in support of CAS execution.	Demonstrate the ability to apply the ATO (e.g. aircraft, time on station, SPINS). JTAC will read an ATO and be able to identify and extract the information needed to execute a CAS mission.	Classroom, practical exercise, simulation, dry, or live.	Performance level of proficient.

5.3.3. Duty Area 03 – CAS Execution

This Duty Area focuses on the minimum practical, dry, or live terminal attack controls. Trainees should use the same JTAC equipment in both training and combat operations. Appropriate material will be supplied to the trainees to facilitate CAS mission planning and execution. Each Task and Sub-Task will be covered in the exercise.

Performance Level and description:

Proficient – Trainee is able to accomplish all items in the task correctly and efficiently without assistance, in accordance with signatory standards.

Task	Defined Task	Condition	Standard
03.1 Targeting	Collective Task		
03.1.1 Target Acquisition	Sub-Task		
03.1.1.1 Execute aided and unaided target acquisition during daytime conditions.	Demonstrate the ability to acquire targets based on ground commander's CAS target nominations using aided (e.g. binoculars, laser rangefinder (LRF), LTD, electro-optical (EO), IR) and unaided visual acquisition. JTAC will visually identify CAS targets based on ground commander's CAS target nominations under day conditions.	Practical exercise, simulation, dry, or live.	Performance level of proficient.
03.1.1.2 Execute target acquisition via aided and unaided during nighttime conditions.	Demonstrate the ability to acquire targets using aided (e.g., binoculars, NVGs, IR, thermal) and unaided vision during nighttime conditions. JTAC will visually identify CAS targets based on ground commander's CAS target nominations under night conditions. Unaided target acquisition may involve the use of artificial illumination.	Practical exercise, simulation, dry, or live.	Performance level of proficient.
03.1.1.3 Execute target acquisition via remote observer.	Demonstrate the ability to target via remote observer (e.g. scout, FIST, JFO, SOF). JTAC will demonstrate the ability to work successfully with a remote observer to acquire targeting information (e.g. target location, threats, friendlies) and other critical information needed to build situational awareness in order to successfully conduct a CAS mission.	Practical exercise, simulation, dry, or live.	Performance level of proficient.
03.1.1.4 Execute target acquisition via remote real-time sensor video downlink information.	Demonstrate the ability to acquire targets via remote real-time sensor video downlink (e.g. ROVER, Video Scout, and targeting pod). JTAC will demonstrate the ability to successfully use video downlink to receive full motion video, still photos, imagery, or other media to acquire targeting information (e.g. target coordinates, threats, friendlies, etc.) needed to build situational awareness in order to successfully conduct a CAS mission.	Practical exercise, simulation, dry, or live.	Performance level of proficient.
03.1.2 Target Location	Collective Task		
03.1.2.1 Determine target location via map plot.	Demonstrate the ability to determine target location via map plot. JTAC will demonstrate the ability to successfully determine target coordinates within 100 m accuracy in open terrain with identifiable terrain features out to 3500 m using only binoculars, map, and compass.	Practical exercise, simulation, dry, or live.	Performance level of proficient.
03.1.2.2 Determine target location via coupled GPS/LRF system.	Demonstrate the ability to determine target location via coupled GPS/LRF. JTAC will demonstrate the ability to successfully determine target coordinates using a coupled GPS/LRF with at least the following accuracy: 50-80 m at 1 km.	Practical exercise, simulation, dry, or live.	Performance level of proficient.
03.1.2.3 Determine target location via tactical targeting system (e.g. Precision Strike Suite –	Demonstrate the ability to determine target location via tactical targeting system. JTAC will demonstrate the ability to successfully determine target location coordinates within 10 m accuracy using a tactical targeting system (e.g. PSS-SOF).	Practical exercise, simulation, dry, or live.	Performance level of proficient.

Task	Defined Task	Condition	Standard
Special Operations Forces (PSS-SOF). **Note**: Signatories without fielded tactical targeting systems are exempt until fielding occurs. If JTACs employ tactical targeting systems that produce precision coordinates, (PSS-SOF, etc.) proficiency with that equipment must be demonstrated IAW signatory directives.			
03.2 Match target location accuracy / format to desired weapons system.	Demonstrate the ability to determine accuracy of target location (e.g. TLE) and proper coordinate format to desired weapons system. JTAC will determine TLE associated with the procedure or equipment used to determine target location coordinates. Match coordinates format and best weapon to target based on accuracy and capability.	Practical exercise, simulation, dry, or live.	Performance level of proficient.
03.3 Coordinate CAS missions	Collective Task		
03.3.1 Integrate CAS missions with ground scheme of maneuver.	Demonstrate the ability to integrate CAS missions with ground scheme of maneuver. JTAC will demonstrate the ability to effectively integrate CAS into the ground scheme of maneuver by meeting the commander's intent for CAS, without limiting the employment of maneuver, aviation, or fire support assets.	Simulation, dry, or live.	Performance level of proficient.
03.3.2 Integrate CAS missions with surface-based fires.	Demonstrate the ability to integrate CAS missions with surface-based fires. JTAC will demonstrate the ability to effectively integrate CAS with supporting or complementary surface fires into the ground scheme of maneuver by meeting the commander's intent for Fire Support.	Simulation, dry, or live.	Performance level of proficient.
03.3.3 Integrate CAS missions with fire support and airspace coordination measures.	Demonstrate the ability to integrate CAS missions with fire support coordination and airspace coordinating measures. JTAC will demonstrate the ability to effectively use fire support coordination and airspace coordinating measures to deconflict CAS with all fire support and aviation assets, to meet the commander's intent for maneuver and fire support.	Simulation, dry, or live.	Performance level of proficient.
03.4 Execute deconfliction of aviation assets	Collective Task		
03.4.1 Execute procedural control of aircraft to provide safe separation.	Demonstrate the ability to effectively deconflict aircraft. JTAC will demonstrate the ability to use appropriate airspace management procedures to ensure safe operation of aircraft in the battlespace during CAS operations.	Simulation, dry, or live.	Performance level of proficient.
03.4.2 Execute procedural control of aircraft to provide safe separation from fires.	Demonstrate the ability to effectively deconflict aircraft from fires. JTAC trainee will demonstrate the ability to combine appropriate airspace management procedures with active fire support coordination measures to ensure safe operation of aircraft in the battlespace during CAS operations.	Simulation, dry, or live.	Performance level of proficient.
03.5 Coordinate CAS Target engagement.	Collective Task		
03.5.1 Receive aircraft check-in and provide situation update to CAS aircraft.	Demonstrate the ability to receive aircraft check-in and provide situation update. JTAC will demonstrate the ability to receive CAS aircraft check-in and provide situation update and apply information to the CAS mission as required.	Simulation, dry, or live.	Performance level of proficient.

Task	Defined Task	Condition	Standard
03.5.2 Provide Game plan and CAS Brief.	Demonstrate the ability to provide Game plan and CAS brief. JTAC will demonstrate the ability to pass a Game plan and CAS brief to CAS aircraft in order to attack a surface target.	Simulation, dry, or live.	Performance level of proficient.
03.5.3 Provide weapon recommendation to achieve desired effects.	Demonstrate the ability to provide a weapon recommendation, based on ground commander's intent, to achieve desired effects. JTAC will demonstrate the ability to make appropriate weapons recommendations to CAS aircraft to ensure effects achieve the ground commander's desired intent and comply with ROE and restrictions.	Simulation, dry, or live.	Performance level of proficient.
03.6 Execute target marking for CAS assets.	Collective Task		
03.6.1 Execute visual target marking for CAS with indirect fire assets.	Demonstrate the ability to effectively target mark via visual means with indirect fire. JTAC will demonstrate the ability to mark a target using a visual indicator (e.g. smoke (WP, RP), high explosive (HE), illumination) to allow a CAS aircraft to visually acquire the target area.	Simulation, dry, or live.	Performance level of proficient.
03.6.2 Execute target mark or designation for CAS with a ground laser target designator (LTD).	Demonstrate the ability to effectively target mark or designate with a ground based LTD. JTAC will demonstrate the ability to successfully mark or designate a target using a LTD to allow a CAS aircraft to acquire the target or deliver a laser guided weapon. Laser shall be utilized to designate for a weapon delivery or to mark a target for an aircraft (laser spot tracker recommended). Intent is to utilize laser equipment and proper brevity.	Simulation, dry, or live.	Performance level of proficient.
03.6.3 Execute target mark for CAS with a ground IR pointer.	Demonstrate the ability to effectively target mark with a ground based IR pointer. JTAC will demonstrate the ability to successfully mark a target using an IR pointer to allow a CAS aircraft to acquire the target. IR pointer shall be utilized to mark a target for aircrew with NVG. Intent is to utilize IR pointer equipment and brevity.	Simulation, dry, or live.	Performance level of proficient.
03.7 Integrate SEAD during the execution of CAS missions in a medium to high threat environment.	Demonstrate the ability to effectively integrate SEAD with CAS in a medium to high threat environment. JTAC will demonstrate the ability to successfully integrate SEAD during a CAS mission.	Simulation, dry, or live.	Performance level of proficient.
03.8 Execute appropriate terminal attack control procedures and method of attack.	Collective Task		
03.8.1 Execute Type 1 terminal attack control procedures.	Perform Type 1 terminal attack control of CAS aircraft. JTAC will demonstrate the ability to successfully perform a Type 1 CAS control.	Simulation, dry, or live.	Performance level of proficient.
03.8.2 Execute Type 2 terminal attack control procedures.	Perform Type 2 terminal attack control of CAS aircraft. JTAC will demonstrate the ability to successfully perform a Type 2 CAS control.	Simulation, dry, or live.	Performance level of proficient.
03.8.3 Execute Type 3 terminal attack control procedures.	Perform Type 3 terminal attack control of CAS aircraft. JTAC will demonstrate the ability to successfully perform a Type 3 CAS control.	Simulation, dry, or live.	Performance level of proficient.
03.8.4 Execute BOT method of attack during a terminal attack control.	Perform BOT method of attack during terminal attack control of CAS aircraft. JTAC will demonstrate the ability to successfully perform a BOT method of attack.	Simulation, dry, or live.	Performance level of proficient.
03.8.5 Execute BOC method of attack during a terminal attack control.	Perform BOC method of attack during terminal attack control of CAS aircraft. JTAC will demonstrate the ability to successfully perform a BOC method of attack.	Simulation, dry, or live.	Performance level of proficient.

Task	Defined Task	Condition	Standard
03.9 Control day and night CAS missions, in support of the ground scheme of maneuver.	Collective Task		
03.9.1 Control day FW CAS missions.	Perform a day FW control. JTAC will demonstrate the ability to successfully perform a day FW control.	Simulation, dry, or live.	Performance level of proficient.
03.9.2 Control night FW CAS missions.	Perform a night FW control. JTAC will demonstrate the ability to successfully perform a night FW control.	Simulation, dry, or live.	Performance level of proficient.
03.9.3 Control RW CAS missions. **Note:** Signatories without RW CAS Aircraft (or a simulation system accredited for RW task), are exempt until fielding occurs.	Perform a RW control. JTAC will demonstrate the ability to successfully perform a day or night RW control IAW JP 3-09.3 and appropriate signatory references.	Simulation, dry, or live.	Performance level of proficient.
03.9.4 Control CAS missions with the support of a remote observer.	Perform a Type 2 or 3 control with the support of a remote observer (e.g. scout, FIST, JFO, SOF). JTAC will demonstrate the ability to successfully perform a day or night Type 2 or 3 control with the support of a remote observer.	Simulation, dry, or live.	Performance level of proficient.
03.9.5 Control CAS missions with the support of a FAC(A). **Note**: Signatories without FAC(A) capability are exempt until fielding occurs.	Perform a control with the support of a FAC(A). JTAC will demonstrate the ability to successfully perform a day or night control with the support of a FAC(A).	Simulation, dry or live.	Performance level of proficient.
03.10 Control a CAS mission in an urban environment in support of the ground scheme of maneuver.	Perform a CAS control in an urban environment. JTAC will demonstrate the ability to successfully perform a CAS control in an Urban environment.	Simulation, dry or live.	Performance level of proficient.
03.11 Employ DACAS/Fires systems. **Note**: Signatories without fielded DACAS systems are exempt until fielding occurs.	Demonstrate the ability to control CAS missions (e.g. friendly deconfliction, A/C check in, ON STATION REPORT, 9-Line CAS brief, and BDA) using DACAS systems. JTAC will demonstrate the ability to successfully perform a digitally-aided CAS control.	Simulation, dry or live.	Performance level of proficient.
03.12 Conduct Battle Damage Assessment (BDA).	Demonstrate the ability to provide accurate BDA (e.g. observed damage (enemy/civilian)), re-attack recommendation and maintain a log of all BDA collected, using appropriate reference material when required. JTAC will demonstrate the ability to provide BDA report to CAS aircraft that includes: Size, Activity, Location, Time, and Remarks — Munitions expended, observed damage (number of tanks destroyed, number still active, and recommendation), mission number, and mission accomplishment (SUCCESSFUL, UNSUCCESSFUL or UNKNOWN).	Simulation, dry or live.	Performance level of proficient.

6. U.S. Signature Page

Effective Date, Review, and Withdrawal. This MOA, including all Appendices and enclosures, has an effective date of the DJS signed implementation memo. The MOA will be reviewed every three years, and updated as required. Updates that change MOA intent or add issues not previously addressed will be coordinated through the JFS ESC and the Joint Staff Action Process, and will be signed by the Director of the Joint Staff, Service Operations Deputies, USSOCOM Deputy Commander, and equivalent participating Partner Nations. Updates that do not change the intent of the MOA will be reviewed and approved by the JFS ESC. Signatories may withdraw from the JTAC MOA by providing 90-day advance written notice to the JFS ESC.

ANDREW P. POPPAS
Lieutenant General, USA
Director, Joint Staff

CHARLES A. FLYNN
Lieutenant General, USA
Deputy Chief of Staff, G-3/5/7

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Date: 2020.12.18 16:03:57 -05'00'

JOSEPH T. GUASTELLA
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VINCENT K. BECKLUND
Major General, USAF
USSOCOM, Director of Operations

7. Partner Nation Signature Page

Effective Date, Review, and Withdrawal. This MOA, including all Appendices and enclosures, has an effective date of the DJS signed implementation memo. The MOA will be reviewed every three years and updated as required. Updates that change MOA intent or add issues not previously addressed will be coordinated through the JFS ESC and the Joint Staff Action Process, and will be signed by the Director of the Joint Staff, Service Operations Deputies, USSOCOM Deputy Commander, and equivalent participating Partner Nations. Updates that do not change the intent of the MOA will be reviewed and approved by the JFS ESC. Signatories may withdraw from the JTAC MOA by providing 90-day advance written notice to the JFS ESC.

M. HUPFELD AO, DSC
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M.H. ST-LOUIS
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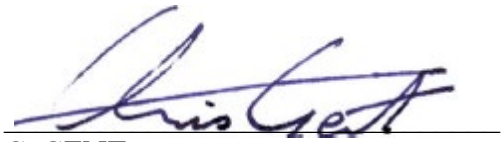
Commander Canadian Army Doctrine and Training Centre/Army Training Authority

Statement of the Canadian Signatory:
The Canadian Armed Forces understands that this JTAC MOA does not create any legally binding obligations or rights under domestic or international law.



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United Kingdom

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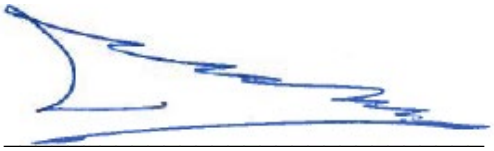
Commander Norwegian Army Land Warfare Centre



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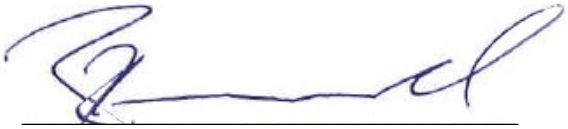

JOHN R. BOSWELL, DSD
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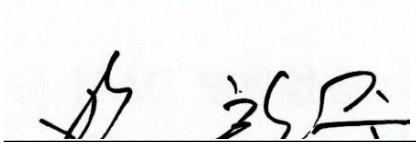
Chief of Army, New Zealand



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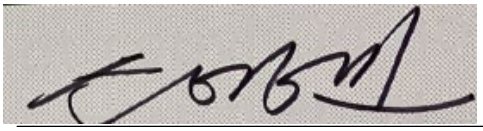

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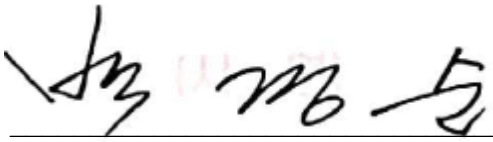

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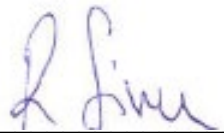

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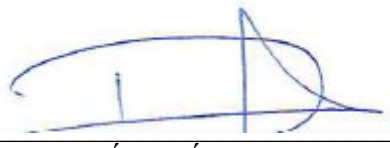

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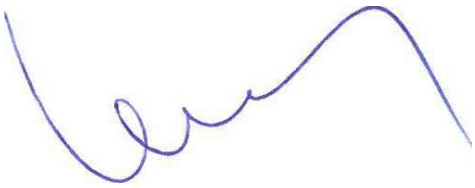

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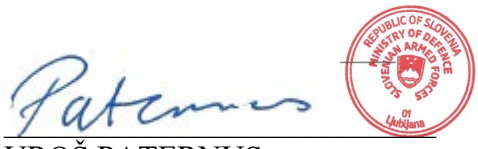

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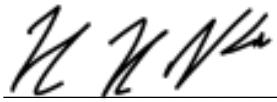

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Deputy Chief of Staff/Chief Capabilities
Division Air Command Denmark

DANIEL ZMEKO
General
Chief of the General Staff
of the Armed Forces of the Slovak Republic

Statement of the Slovak Signatory:
The Ministry of Defence of the Slovak Republic understands the JTAC MOA does not create rights and obligations under international law per Sections 2.3 and 4. However, in order to effectively apply and recognize procedures and provisions contained in the JTAC MOA, the Ministry of Defence of the Slovak Republic will implement the JTAC MOA in accordance with its national legislation.

1

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Director Division Operations & Resources

Appendix A: Examples, Forms, Evaluation Criteria

Enclosure 1: Example Close Air Support Controls for Training

A.1. JMTL Duty area 03 – CAS Execution, lists the required tasks that a JTAC trainee must successfully complete to be certified and maintain JTAC qualification. It further defines the sub-tasks to be demonstrated and performed during execution task demonstration. A trainee must successfully demonstrate each execution task for initial JTAC certification. Listed below are examples of CAS Controls which support JMTL requirements and utilize a building block approach to training. This is not intended to specify national training programs, but to provide example control descriptions and standards that support the JMTL. The control examples can be conducted in simulation, dry, or live environment in accordance with JMTL. This is not intended to restrict training programs from completing controls in a different sequence or to higher performance standards. The examples can also be used for qualification training.

(See examples on next pages)

A. Type 1 BOT, FW aircraft, marked or unmarked, Day CAS Control

Goal: Conduct Type 1 BOT terminal attack control with FW aircraft in a low threat environment on a marked or unmarked target.

Criteria: Given a tactical scenario, control a FW aircraft in a low threat environment. Indirect fire marking rounds should be used. Two successful Type 1 BOT terminal attack controls recommended for completion.

Performance Standards: Using doctrinal control procedures and the CAS execution template successfully coordinate and control a FW aircraft on a marked or unmarked target. Procedures must include:

- Provide Routing / Safety of flight.
- Receive aircraft check-in brief.
- Provide situation update to CAS aircraft.
- Provide game plan (Type of control and method of attack).
- Provide CAS Brief (9-line / remarks / restrictions).
- Receive aircraft read backs.
- Conduct correlation (Confirmation the attacking aircraft has acquired the correct target or mark).
- Execute procedural control of aircraft to provide safe separation of aircraft and fires.
- Execute target talk-on or mark for CAS assets.
- Provide “CLEARED HOT”, “CONTINUE DRY” or “ABORT”.
- Assess effects.
- Conduct BDA.
- Provide Routing / Safety of flight.

Prerequisite: Class room academics and simulation (if available).

Ordnance: Free fall bombs or gun (High Explosive (HE) or inert preferred). Two indirect fire marking rounds (White Phosphorous (WP), Red Phosphorus (RP), or Illumination).

External Syllabus Support: One firing unit of artillery or mortars (may be notional). One (two preferred) FW aircraft.

B. Type 2 BOT or BOC, FW aircraft, Laser mark or designation, Day or Night CAS Control

Goal: Conduct Type 2 terminal attack control with FW aircraft in a low threat environment on a Laser marked (BOT) or designated (BOC) target.

Criteria: Given a simple tactical scenario, control a FW aircraft in a low threat environment. Laser mark or designation shall be utilized. One successful Type 2 BOT or BOC terminal attack control recommended for completion.

Performance Standards: Using doctrinal control procedures, CAS execution template and Laser CAS brevity terms, successfully coordinate FW aircraft control on a Laser marked or designated target. Procedures must include:

- Provide Routing / Safety of flight.
- Receive aircraft check-in brief.
- Provide situation update to CAS aircraft.
- Provide game plan (Type of control and method of attack).
- Provide CAS Brief (9-line / remarks / restrictions).
- Receive aircraft read backs.
- Conduct correlation – BOT only (Confirmation the attacking aircraft has acquired the correct target or mark).
- Execute procedural control of aircraft to provide safe separation of aircraft.
- Execute Laser target mark and or weapon terminal guidance for CAS assets. *
- Provide “CLEARED HOT”, “CONTINUE DRY” or “ABORT”.
- Assess effects.
- Conduct BDA.
- Provide Routing / Safety of flight.

* Intent is to utilize laser equipment and laser brevity during a simulated, dry, or live terminal attack control.

Prerequisite: Class room academics and simulation (if available). CAS Control A.

Ordnance: One laser guided training round or laser guided bomb desired.

External Syllabus Support: Laser and operator. One (two preferred) laser spot tracker capable equipped FW aircraft desired.

C. Type 2 BOT, FW or RW Aircraft, IR Pointer Mark, Night CAS Control

Goal: Conduct Type 2 BOT terminal attack control with FW or RW aircraft in a low threat environment at night utilizing IR pointer and night vision devices (NVDs).

Criteria: Given a tactical scenario, control a FW or RW aircraft in a low threat environment at night while utilizing IR pointer to mark the target and NVDs. One successful Type 2 BOT terminal attack control recommended for completion.

Performance Standards: Using doctrinal control procedures, CAS execution template and Night IR CAS brevity terms, successfully coordinate and control attacks from CAS platforms on a target marked by an infrared pointer at night. Procedures must include:

- Provide Routing / Safety of flight.
- Receive aircraft check-in brief.
- Provide situation update to CAS aircraft.
- Provide game plan (Type of control and method of attack).
- Provide CAS Brief (9-line or 5-line / remarks / restrictions).
- Receive aircraft read backs.
- Conduct correlation (Confirmation the attacking aircraft has acquired the correct target or mark).
- Execute procedural control of aircraft at night to provide safe separation of aircraft and fires.
- Execute IR pointer target mark for CAS assets.
- Provide “CLEARED HOT”, “CONTINUE DRY” or “ABORT”.
- Assess effects.
- Conduct BDA.
- Provide Routing / Safety of flight.

Prerequisite: Class room academics and simulation (if available). CAS Control A and B.

Ordnance: General-purpose ordnance, gun, or rockets (HE or inert preferred).

External Syllabus Support: One IR pointer. One (two preferred) NVD capable FW or RW aircraft.

D. Type 2 BOT or BOC, FW or RW Aircraft, Remote Observer, Day CAS Control

Goal: Conduct Type 2 BOT or BOC terminal attack control in a low threat environment on a marked target utilizing a remote observer support.

Criteria: Given a tactical scenario, control a FW or RW aircraft in a low threat environment on a surface target. Remote observer should be used to provide an indirect fire or LTD mark. The remote observer/LTD could also be used for weapons guidance. One successful Type 2 BOT or BOC terminal attack control recommended for completion.

Performance Standards: Using doctrinal control procedures and CAS execution template, successfully coordinate and control a FW or RW aircraft on a marked target. Procedures must include:

- Provide Routing / Safety of flight.
- Receive aircraft check-in brief.
- Provide situation update to CAS aircraft.
- Provide game plan (Type of control and method of attack).
- Provide CAS Brief (9-line or 5-line / remarks / restrictions).
- Receive aircraft read backs.
- Provide target description/talk-on and conduct (BOT only) correlation via the remote observer.
- Execute procedural control of aircraft to provide safe separation of aircraft and fires.
- Execute the attack utilizing the remote observer to provide a target description, talk-on, mark, or weapon guidance as appropriate.
- Provide “CLEARED HOT”, “CONTINUE DRY” or “ABORT”.
- Assess effects.
- Conduct BDA.
- Provide Routing / Safety of flight.

Prerequisite: Class room academics and simulation (if available). CAS Control C.

Ordnance: General-purpose ordnance or laser guided training round or laser guided bomb desired.

(HE or inert preferred). Two indirect fire marking rounds (WP, RP, or Illumination).

External Syllabus Support: One firing unit of artillery and/or mortars (may be notional). Remote observer with a LTD. One (two preferred) FW aircraft.

E. Type 1/2 BOT or BOC, FW or RW Aircraft, Day, Contested CAS Control

Goal: Conduct Type 1, 2 or 3 BOT terminal attack control in a medium to high threat environment while employing SEAD fires and utilizing a complete 9-line.

Criteria: Given a scenario, control a FW/RW aircraft in a medium to high threat environment, contested and/or degraded operations environment with aircraft utilizing vertical and/or lateral standoff. Scenario should be customized to include, but not limited to, the following: EW Integration, multiple SAM locations, integrated SEAD, degraded/denied GPS and/or SATCOM, adversary Direction Finding (DF) capabilities, laser warning receivers, frequency hopping utilization, DACAS, or any combination of the above. One Type 1/2/3, BOT/BOC terminal attack control recommended for completion.

Performance Standards: Using doctrinal control procedures and CAS execution template, successfully coordinate and control a FW/RW aircraft while employing SEAD, with emphasis on limiting transmission time (not to exceed five seconds per transmission), reducing GPS dependency, and display knowledge of effective countermeasures to mitigate limitations in a contested environment. Procedures must include:

- Provide Routing / Safety of flight.
- Receive aircraft check-in brief.
- Provide situation update to CAS aircraft.
- Provide game plan (Type of control and method of attack).
- Provide CAS Brief (9-line/remarks restrictions). *
- Receive aircraft read backs.
- Conduct correlation.
- Execute procedural control of aircraft to provide safe separation of aircraft and fires.
- Provide SEAD assessment.
- Execute target talk-on or mark for CAS assets.
- Provide “CLEARED HOT”, “CONTINUE DRY” or “ABORT”.
- Assess effects.
- Conduct BDA.
- Provide Routing / Safety of flight.

*Control must use entire 9-line (e.g. IP to TGT).

Prerequisite: Class room academics and simulation (if available).

Ordnance: General-purpose ordnance (HE or inert preferred), missiles, guns, or rockets.

External Syllabus Support: One firing unit of artillery and/or mortars (may be notional). One (Two preferred) FW/RW aircraft.

F. Type 3 BOT, FW and RW Aircraft, Coordinated Attack, Day CAS Controls

Goal: Conduct a Type 3 BOT coordinated attack terminal attack control with FW and RW (or additional FW) aircraft in a low threat environment on a marked or unmarked target.

Criteria: Given a tactical scenario, control a FW and RW (or additional FW) aircraft in a low threat environment. Indirect fire marking rounds should be used. Two successful Type 3 BOT terminal attack controls required for completion.

Performance Standards: Using doctrinal control procedures and CAS execution template, successfully coordinate and control a FW and RW (or additional FW) aircraft on an IDF marked or unmarked target as required by the scenario. Procedures must include:

- Provide Routing / Safety of flight.
- Receive aircraft check-in brief.
- Provide situation update to CAS aircraft.
- Provide game plan (Type of control and method of attack).
- Provide CAS Brief (9-line or 5-line / remarks / restrictions).
- Receive aircraft read backs.
- Conduct correlation (Confirmation the attacking aircraft has acquired the correct target or mark).
- Execute coordinated types of attack (Combined and Sectored (Simultaneous/Sequential))
- Execute procedural control of aircraft to provide safe separation of aircraft and fires.
- Execute target talk-on or mark for CAS assets.
- Provide “CLEARED TO ENGAGE, or “TYPE 3, CONTINUE DRY” or “ABORT” to both sets of aircraft.
- Receive “COMMENCING ENGAGEMENT” from both sets of aircraft.
- Receive “ENGAGEMENT COMPLETE” from both sets of aircraft.
- Assess effects.
- Conduct BDA.
- Provide Routing / Safety of flight.

Prerequisite: Class room academics and simulation (if available). CAS Control A and B.

Ordnance: General-purpose ordnance, gun, or precision guided munitions. (HE or inert preferred). Two indirect fire marking rounds (WP, RP, or Illumination).

External Syllabus Support: One firing unit of artillery or mortars and ground maneuver unit (may be notional). One FW and one RW aircraft (two FW and RW aircraft preferred).

G. Type 1 BOT, FW or RW Aircraft with FAC(A) support, Day CAS Control

Goal: Conduct a Type 1 BOT terminal attack control with FW or RW aircraft in a low threat environment with FAC(A) support on a marked or unmarked target.

Criteria: Given a tactical scenario (Airborne, Rotary Wing Insertion, Mechanized or Amphibious Assault), control a FW or RW aircraft in a low threat environment with FAC(A) support. Indirect fire or FAC(A) mark should be used. One successful Type 1 BOT terminal attack control recommended for completion.

Performance Standards: Using doctrinal control procedures and CAS execution template, successfully coordinate and control a FW or RW aircraft with FAC(A) support on a marked or unmarked target as required by the scenario. Procedures must include:

- Provide Routing / Safety of flight.
- Receive FAC(A) check-in brief.
- Provide situation update to FAC(A).
- Provide game plan (Type of control and method of attack) to FAC(A) to include Brief, Stack, Mark, and Control.
- Receive aircraft check-in brief.
- Provide situation update to CAS aircraft.
- Provide game plan (Type of control and method of attack).
- Provide CAS Brief (9-line or 5-line / remarks / restrictions).
- Receive aircraft read backs.
- Conduct correlation (Confirmation the attacking aircraft has acquired the correct target or mark).
- Execute procedural control of aircraft with support of a FAC(A) to provide safe separation of aircraft and fires.
- Provide target talk-on or mark for CAS assets with support of a FAC(A).
- Provide “CLEARED HOT”, “CONTINUE DRY” or “ABORT”.
- Assess effects.
- Conduct BDA.
- Provide Routing / Safety of flight.

Prerequisite: Class room academics and simulation (if available). CAS Control A.

Ordnance: General-purpose ordnance or Gun (HE or inert preferred). Two indirect fire marking rounds (WP, RP, or Illumination) or two 2.75 in. rocket marking rounds (WP or RP).

External Syllabus Support: One firing unit of artillery or mortars (may be notional) and ground maneuver unit. One FW and one FAC(A) aircraft (two FW preferred, ground maneuver unit and FAC(A) may be notional).

H. Type 2 BOT, FW or RW Aircraft, Urban Terrain, Day CAS Control

Goal: Conduct a Type 2 BOT terminal attack control in urban terrain with FW or RW aircraft in a low threat environment on a marked or unmarked target.

Criteria: Given a scenario, control a FW or RW aircraft in a low threat urban terrain. GRG and or indirect fire marking rounds can be used. One Type 2 BOT terminal attack control required for completion.

Performance Standards: Using doctrinal control procedures and CAS execution template, successfully coordinate and control a FW or RW aircraft in urban terrain on a marked or unmarked target as required by the tactical scenario. Procedures must include:

- Provide Routing / Safety of flight.
- Receive aircraft check-in brief.
- Provide situation update to CAS aircraft.
- Provide game plan (Type of control and method of attack).
- Provide CAS Brief (9-line or 5-line / remarks / restrictions).
- Receive aircraft read backs.
- Conduct correlation (Confirmation the attacking aircraft has acquired the correct target or mark).
- Execute procedural control of aircraft to provide safe separation of aircraft and fires.
- Execute target talk-on or mark for CAS assets.
- Provide “CLEARED HOT”, “CONTINUE DRY” or “ABORT”.
- Assess effects.
- Conduct BDA.
- Provide Routing / Safety of flight.

Prerequisite: Class room academics and simulation (if available). CAS Control A

Ordnance: General-purpose ordnance, Gun or rockets (HE or inert preferred). Two indirect fire marking rounds (WP, RP, or Illumination).

External Syllabus Support: One firing unit of artillery or mortars and ground maneuver unit (may be notional). One FW or RW aircraft (two preferred).

Enclosure 2: Joint Terminal Attack Controller (JTAC) CAS Log

JOINT TERMINAL ATTACK CONTROL (JTAC) MISSION LOG FOR JOHN Q. PUBLIC								
DATE	RANGE / SIM NAME & LOCATION	NUMBER & A/C TYPE	TYPE OF ORDNANCE	NUMBER OF CONTROLS	*9-LINE/TYPE OF CONTROL/MOA/ THREAT/MARK/ DAY/NIGHT/SUPT ELEMENT/SIM/ Other (Specify)	CONTROLLER SIGNATURE	SUPERVISOR INITIALS	REMARKS
2 Feb 2021	Coleman, Ft Bragg, NC	2xA-10	30mm, Mk82	2	9L/1/T/L/IR/N			Recurring JTAC evaluation
10 Feb 2021	SIM-LE, Smoky Hill, KS	1xB-1	GBU-38	1	9L/2/C/MH/D/SIM			
28 Feb 2021	Manchester Ft Bragg NC	2xF-16	Dry	4	2/C/L/NA/D			
10 Mar 2021	Shoal Creek, Ft Hood TX	2xA-10	BDU-33	2	1/T/L/VDL/D			Talk-on from the overhead
22 Mar 2021	Coleman, Ft Bragg, NC	1xA-10	AGM-65B	1	9L/2/T/MH/LD/N			
28 Mar 2021	Noble Pass, 29 Palms, CA	2xAH-1	20mm, 2.75 inch rkt	2	9L/3/T/L/WP, IF/D/RO			
3 Apr 2021	JTC-TRS, Ft Carson, CO	1xMQ-9	AGM-114	1	9L/3/T//L/VDL/D/ SIM			

*Column 6 should be completed in the following order:

9-Line: 9L

Type of Control: Type 1 = 1, Type 2 = 2, Type 3 = 3

Method of Attack: BOT = T, BOC = C

Threat: Low = L, Med to High = MH

Mark: Laser Designation (laser mark or terminal guidance) = LD, IR = IR, White Phosphorous = WP, Red Phosphorous = RP, Illum = IL, Indirect Fire or Artillery = IF, No Mark = NA, Direct Fire = DF, Video Downlink = VDL, Talk On = TO

Day: D and **Night**: N

Supporting Element: Digitally Aided = DA, Forward Air Controller (Airborne) = FAC-(A), Remote Observer = RO)

Simulated Terminal Attack Control: SIM

Note: SIM is either SIM-VE or SIM-LE (see Appendix C). In **column 2** include accredited simulation system name & location if SIM-VE system used, or annotate SIM-LE (no name required) & location if accredited SIM-LE event used. If accredited SIM-LE event incorporated with live-fly, annotate in Remarks and specify event/task.

Other: O (Specify signatory training requirement)

Examples:
2 Feb 2021 – 9-Line, Type 1, BOT, Low Threat, IR pointer, Night.
10 Feb 2021 – 9-Line, Type 2, BOC, High-Threat, Day, Simulated (SIM-LE/location in column 2)
28 Feb 2021 – Type 2, BOC, Low Threat, No Mark, Day
10 Mar 2021 – Type 1, BOT, Low Threat, Video Downlink, Day, talk-on from the overhead
22 Mar 2021 – 9-Line, Type 2, BOT, Medium to High Threat, Laser Designation, Day
28 Mar 2021 – 9-Line, Type 3, BOT, Low Threat, White Phosphorous Arty, Day, Remote Observer
3 Apr 2021 – 9-Line, Type 3, BOT, Low Threat, Video Downlink, Day, Simulated (JTC-TRS/location in column 2)

Enclosure 3: Example JTAC Evaluation Form and Evaluation Criteria

TERMINAL ATTACK CONTROL EVALUATION			
Part I – Personal Data			
Name (Last, First, MI)		Unit	Overall Qualification
			☐JTAC ☐JTAC-I ☐JTAC-E
Part II – Evaluation Data			
Evaluation Location		Evaluation Date	Evaluation Type
			☐JTAC ☐JTAC-I ☐JTAC-E
Qualification Date	Type	Category	Notification
	☐Initial ☐Recurring	☐Regular ☐Spot ☐Concurrent	☐Prior Notice ☐No Notice

Part III – Evaluation

A. Event Description:

B. Evaluation Tasks and Grades:

Task	Grade			Task	Grade		
	Q	Q-	U		Q	Q-	U
1. Mission Planning				23. Inertially Aided Munitions Operations			
2. Equipment Preparation				24. Night CAS Operations			
3. Comm Equipment Ops				25. Safety			
4. GPS Operations				26. JTAC-I Eval Criteria			
5. Transmit/Receive Procedures				26.1 Equipment Preparation			
5.1. Authentication Procedures				26.2 Lesson Overview Objectives			
6. CAS Request Submission				26.3 Instruction Effectiveness			
7. Target Analysis				26.4 Procedures – Technique			
8. Threat Analysis				26.5 Training Aids			
9. Ground Force Staff Coord				26.6 Knowledge of Subject			
10. Ground Commander Coord				26.7 Communication			
11. Fires/Airspace Mngt				26.8 Time Management			
12. Airspace Management				26.9 Live CAS Instruction			
13. Use of Signaling Devices				26.10 Admin Grade/Document			
14. JTAC to CAS aircraft brief				26.11 Safety			
14.1 Digitally aided CAS systems				27. JTAC-E Eval Criteria			
15. Weapons Utilization				27.1 Compliance w Manuals			
16. CAS Aircraft Control				27.2 Evaluation Briefing			
17. Ordnance Adjustment				27.3 Discrepancies and Grades			
18. Post Attack Assessment				27.4 Performance Assessment			
19. Area Procedures				27.5 Assignment of Add Trng			
20. FAC(A)/JFO/RO Interface				27.6 Mission Debrief			
21. Laser Operations				27.7 Supervisor Debrief			
22. IR Pointer				27.8 Completed Eval Documentation			

C. Items Requiring Additional Training:

Training Due Date:		Training Completion Date:	

Part IV – Remarks		
JTAC-E Name and Rank	JTAC-E Signature	Evaluation Grade
		Q - U

Part V – Certification

Billet	Name and Rank	Concur	Do Not Concur	Signature	Date
Program Manager					
Commanding Officer					

JTAC Evaluation Criteria

	Q	Q-	U
AREA 1. Mission Planning.	Checked all factors applicable to mission (e.g. ATO, weather, timing, frequencies, map datum, range procedures, call signs, airspace and special requirements). Aware of alternatives if mission cannot be completed as planned.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Major error of omission/ commission precluded mission accomplishment or unnecessarily endangered personnel or equipment.
AREA 2. Equipment Preparation.	All equipment needed for mission accomplishment properly prepared and inspected. Unsatisfactory items identified and appropriate corrective actions taken.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Major error of omission or commission precluded mission accomplishment or unnecessarily endangered personnel or equipment.
AREA 3. Communications Equipment Operations.	Able to operate all required communications equipment secure and non-secure necessary for requesting, coordinating and controlling CAS missions.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Major errors that precluded mission accomplishment or unnecessarily endangered personnel or equipment.
AREA 4. Global Positioning System Operations.	Successfully turned on, initialized, and performed operator checks. Able to determine individual location using MGRS and Latitude/longitude in seconds and decimal minutes. Able to determine distant location using slant range calculations from a known point to an unknown point. Properly loaded	Minor errors of omission/commission that did not detract from mission effectiveness or safety. Remedial instruction or training required.	Unsuccessfully turned on, initialized and/or operated GPS. Unable to determine individual location using MGRS and Latitude/ longitude in seconds and decimal minutes. Unable to determine distant location using slant range calculations from known point to an unknown point. Unable to properly load waypoints. Unable to

	Q	Q-	U
	waypoints. Able to properly load encryption fill. Able to configure GPS to proper map datum/ ellipsoid and convert coordinates between map datum. Demonstrates complete knowledge of battery fault conditions/ procedures.		properly load encryption fill. Unable to configure GPS to proper map datum/ ellipsoid or unable to convert coordinates between map datum. Unable to explain battery fault conditions or procedures.
AREA 5. Transmit / Receive Procedures.	Communications clear, concise, and understandable. Promoted mission effectiveness.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Deviation from acceptable communications procedures impaired mission effectiveness.
AREA 5.1 Authentication Procedures.	Successfully authenticated CAS aircraft IAW pre-coordinated methods.	Successfully authenticated CAS aircraft, with minor errors, timely fixed by JTAC	JTAC failed, or was unable to authenticate CAS aircraft due to insufficient pre-mission coordination.
AREA 6. CAS Request Submission.	Demonstrated in-depth knowledge of CAS request procedures. Submitted the request in a timely, thorough, and effective manner.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Unfamiliar with CAS request procedures. Unable to properly or effectively compile, prepare, and transmit CAS requests.
AREA 7. Target Analysis.	Analyzed target for CAS employment procedures (e.g. ID, description, location, suitability, and collateral damage,).	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Could not recommend appropriate CAS employment procedures for the target. Errors that precluded mission accomplishment or unnecessarily endangered personnel or equipment.
AREA 8. Threat Analysis.	Recognized ground to air threats capable of engaging CAS aircraft. Plan mitigated threat to the	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Failed to recognize ground to air threats capable of engaging CAS aircraft. Plan did not mitigate threat to the

	Q	Q-	U
	survivability of the aircraft.		survivability of the aircraft.
AREA 9. Ground Force Staff Coordination.	Demonstrated timely coordination procedures with appropriate ground force staff agencies (e.g. S-2, S-3, FSE, NSFS, ADA, Aviation LNOs, etc.).	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Coordination with appropriate agencies not completed before attack commenced. Delays caused by untimely coordination degraded or prevented successful mission accomplishment.
AREA 10. Ground Commander Coordination.	Demonstrated timely coordination with ground commander or designated representative. Accurately explained to the ground commander CAS mission data and dangers to friendly forces. Understood ground commander's scheme of maneuver. Requested timely ground commander attack clearance.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Did not adequately coordinate with ground commander/designated representative. Provided inaccurate data regarding CAS mission data/dangers to friendly forces. The information provided or not provided impacted mission effectiveness or exposed friendly forces to hazards. Did not request or receive ground commander attack clearance prior to weapons release.
AREA 11. Fire Support and Airspace Management.	Demonstrated timely coordination for fire support (e.g. SEAD). Recognized and deconflicted attack aircraft with formal or informal airspace coordination measures.	Slow to coordinate fire support. Recognized but did not deconflict attack aircraft with formal or informal airspace control measures. Did not impact mission or aircraft survivability.	Did not coordinate fire support. Did not recognize or deconflict attack aircraft with formal and informal airspace control measures.
AREA 12. Airspace Management.	Integrate attack aircraft with formal or informal airspace coordination measures.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Did not recognize or integrate attack aircraft with formal and informal airspace control measures.

	Q	Q-	U
AREA 13. Use of Signaling Devices.	Thorough working knowledge of signaling devices day/night. Selected most appropriate device for tactical situation. Enhanced mission effectiveness.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Not familiar with signaling devices. Use of signaling device inappropriate to tactical situation.
AREA 14. JTAC to CAS Aircraft Briefing.	Provided the attack aircraft, via voice or data transmission, with a complete, concise, and effective briefing with enhanced mission effectiveness (e.g. 9-line CAS brief or theater specific briefing, and mission check-in).	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Briefing compromised safety or mission effectiveness due to erroneous information or errors of omission/commission. Tactics briefed inappropriate to situation and precluded effective mission completion and jeopardized survivability.
AREA 14.1 Digitally-aided CAS systems. ***Note – Signatories without fielded digital CAS systems are exempt until fielding occurs.**	Thoroughly understood and utilized digital systems to aid the Fires delivery process. Able to generate target coordinates, receive on station report, send 9-line, track aircraft, send BDA, conduct CFF and integrate applicable FSCMs, ACMs and closest friendly position on equipment display.	Minor deficiencies observed, did not preclude mission success. Equipment was utilized to some level.	Failed to understand and/or utilize Digitally Aided CAS/Fires equipment in any capacity.

	Q	Q-	U
AREA 15. Attack Weapons Utilization.	Demonstrated thorough knowledge of weapons characteristics, capabilities, and effects. Used weapons most suitable to target. Employed weapons in the correct manner. Considered aircraft and ground forces survivability. Delivery sequence of ordnance enhanced mission effectiveness. Understood risk-estimate distances.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Discrepancies in knowledge and/or employment with impact on mission effectiveness. Did not understand risk-estimate distances, and exposed friendly forces to unacceptable risk. Failed to achieve desired results (due to JTAC's action/inaction). Mission resulted in unwanted collateral damage.
AREA 16. CAS Aircraft Control.	Exercised thorough situational awareness and control of assigned aircraft throughout mission. Clearance or aborts issued in a positive and timely manner. Reestablished abort code after aborting an attack.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Control instructions were not timely, clear, and accurate or were unsafe. Loss of situational awareness or actions resulted in either degraded or ineffective mission.
AREA 17. Ordnance Adjustment.	Ordnance adjust instructions were clear, concise, and timely. All attack restrictions placed on attack aircraft were appropriate and necessary.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Adjustment instructions were not timely, clear, and accurate or were unsafe. Actions resulted in either degraded or ineffective mission.
AREA 18. Post Attack Assessment.	Battle damage assessment was realistic, accurate, and timely. Attack flight and appropriate agencies were provided a concise report in accordance	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Unrealistic. Reports contained major errors or omissions. Reports were not timely.

	Q	Q-	U
	with governing directives.		
AREA 19. Area Procedures.	Complied with all area procedures, range/MOA safety requirements and restrictions. Knowledgeable of emergency procedures (e.g. hung bombs, off range release, fire on range, MEDEVAC, etc.). Ensured aircraft briefed on applicable restrictions.	Minor errors of omission/commission that did not detract from mission effectiveness. Remedial instruction or training required.	Violated range procedures. Was not knowledgeable of range requirements. Incomplete knowledge of emergency procedures. Gave incomplete restrictions to aircraft.
AREA 20. FAC(A)/JFO/RO Interface.	Successfully functioned as an air-ground interface to achieve mission effectiveness.	Minor errors of omission/commission that did not detract from mission effectiveness. Requires additional training as indicated.	Failed to provide effective interface between FAC(A)/ JFO/RO required to achieve mission effectiveness.
AREA 21. Laser Operations.	Readily understood laser procedures (target distance, safety zone, etc.) from an effective location, using proper LTD code, brevity, and timely coordination.	Minor errors of omission/commission that did not detract from mission effectiveness or safety. Remedial instruction or training required.	Actions caused unsafe terminal environment or deficiencies noted precluded mission success.
AREA 22. IR Pointer Operations.	Readily understood and utilized IR Pointer procedures from an effective location, using proper IR Pointer brevity and timely coordination.	Minor errors of omission/commission that did not detract from mission effectiveness or safety. Remedial instruction or training required.	Actions caused unsafe terminal environment or deficiencies noted precluded mission success.
AREA 23. Inertially-aided Munitions Operations.	Readily understood inertial-aided munitions procedures (coordinate format, coordinate reliability, target elevation, final attack clearance, and final attack headings/angle).	Minor errors of omission/commission that did not detract from mission effectiveness or safety. Remedial instruction or training required.	Actions caused unsafe terminal environment or deficiencies noted precluded mission success.

	Q	Q-	U
AREA 24. Night CAS Operations.	Readily understood night CAS procedures and tactics that enhanced mission effectiveness.	Minor errors of omission/commission that did not detract from mission effectiveness or safety. Remedial instruction or training required.	Actions caused unsafe terminal environment or deficiencies noted precluded mission success.
AREA 25. Safety. (CRITICAL)	Employed all available methods to ensure safety of flight and ground personnel. Analyzed emergency situations and implemented emergency procedures. Used equipment, to include signaling devices, laser target designators and IR marking devices, in a safe manner.		Any dangerous act. Disregarded safety procedures. Did not use equipment in a safe manner. Did not comply with safety requirements.

JTAC-Instructor Evaluation Criteria

AREA 26.	Q	Q-	U
AREA 26.1. Equipment Preparation.	All equipment needed for mission accomplishment properly prepared and inspected. Unsatisfactory items identified and corrective actions taken.	Minor errors did not detract from mission / training effectiveness.	Major error precluded mission accomplishment or unnecessarily endangered personnel or equipment.
AREA 26.2. Lesson Overview with Statement of Objectives	Thoroughly briefed the lesson overview and clearly stated the objective.	Minor errors did not detract from mission / training effectiveness.	Major omissions precluded mission / training success.
AREA 26.3. Instruction Effectiveness	Assured student understood material and relationship to job performance	Minor errors did not detract from mission / training effectiveness.	Instruction was ineffective, precluded mission / training success.
AREA 26.4 Identified Procedures vs. Technique.	Thoroughly explained instructions as procedures and technical methods as techniques.	Minor errors did not detract from mission / training effectiveness.	Confused procedures with techniques, precluded mission / training success.
AREA 26.5 Training Aids	Training aids were used in a manner that enhanced the training outcome.	Minor errors did not detract from mission / training effectiveness.	Training aids were omitted, precluded mission / training success.
AREA 26.6 Knowledge of Subject Matter	Demonstrated thorough knowledge of the subject matter and used examples to clarify / enhance subject areas.	Minor errors did not detract from mission / training effectiveness.	Lack of knowledge or could not provide examples, precluded mission / training success
AREA 26.7 Communication	Communications clear, concise, and understandable. Promoted effective training.	Minor errors did not detract from mission / training effectiveness.	Unacceptable communications impaired mission / training effectiveness.
AREA 26.8 Time Management.	Effectively managed time to ensure all objectives were covered.	Minor errors did not detract from mission / training effectiveness.	Did not cover all objectives or manage time wisely.
AREA 26.9 Live or Dry CAS Control Instruction.	Provided proper instruction and feedback throughout the live-fly CAS mission.	Minor errors did not detract from mission / training effectiveness.	Improper CAS instruction and incorrect feedback precluded mission effectiveness.
AREA 26.10 Administered Student Grade & Documentation	Assigned proper grade and completed training documentation correctly.	Minor errors did not detract from mission / training effectiveness.	Failed to assign proper grade when appropriate. Unable to complete training documentation correctly.
AREA 26.11. Safety. (CRITICAL)	Employed all available methods to ensure safety of flight and ground personnel. Used equipment, to include signaling devices, laser target designators and IR marking devices, in a safe manner.		Any dangerous act. Disregarded safety procedures. Did not use equipment in a safe manner. Did not comply with safety requirements.

JTAC-Evaluator Evaluation Criteria

AREA 27.	Q	Q-	U
AREA 27.1. Compliance with Pertinent Manuals.	Complies with all manuals pertaining to the administration of a JTAC evaluation.	Complied with most manuals. Deviations did not jeopardize the effectiveness of the evaluation or safety.	Failed to comply with manuals or allowed safety to be jeopardized.
AREA 27.2. Evaluation Briefing.	Thoroughly briefed the examinee on the conduct of the evaluation.	Omitted items during the briefing causing minor confusion. Did not fully brief the examinee as to the conduct and purpose of the evaluation.	Failed to adequately brief the examinee.
AREA 27.3. Identification of Discrepancies and Assignment of Area Grades.	Identified all discrepancies and assigned proper area grade.	Most discrepancies were identified. Failed to assign Q- grade when appropriate. Assigned discrepancies for performance that was within standards.	Failed to identify discrepancies related to discipline or deviations that merited an unqualified grade. Assigned Q- grades that should have been U or assigned U grades for performance within standards.
AREA 27.4. Assessment of Overall Performance.	Awarded the appropriate overall grade based on the examinee's performance.	Awarded an overall grade without consideration of cumulative deviations in the examinee's performance.	Did not award a grade commensurate with overall performance.
AREA 27.5 Appropriate Assignment of Additional Training.	Assigned proper additional training if warranted.	Additional training assigned was insufficient to ensure the examinee would achieve proper level of qualification.	Failed to assign additional training when warranted.
AREA 27.6. Mission Debrief.	Thoroughly debriefed the examinee on all aspects of the evaluation.	Failed to discuss all deviations and assigned grades. Did not advise the examinee of additional training, if required.	Did not discuss any assigned area grades or overall rating. Changed grades without briefing the examinee.
AREA 27.7. Briefing the Supervisor on the Evaluation.	Thoroughly debriefed the examinee's supervisor.	Debriefed supervisor, but failed to discuss all discrepancies, grades, or additional training.	Failed to debrief the examinee's supervisor on an unsatisfactory evaluation.
AREA 27.8. Completed Evaluation Documentation	Correctly completed all documentation required in accordance with manuals	Completed documentation with minor errors.	Failed to properly document evaluation in accordance with manuals.

Enclosure 4: Example JTAC Instructor/Evaluator Waiver (Experience)

Date

From: Commanding Officer (O-6/OF-5), (Organization)
To: Commander, (Schoolhouse)
Info: Chairman, Joint Fire Support Executive Steering Committee

Subj: WAIVER OF JFS ESC AP MOA 2004-001 JTAC INSTRUCTOR/EVALUATOR PREREQUISITE MINIMUM OF ONE YEAR OF EXPERIENCE AS A QUALIFIED JTAC (Name of instructor)

1. Waiver of the JFS ESC JFS ESC AP MOA 2004-01 JTAC Instructor/Evaluator prerequisite of one year of experience as a qualified JTAC per paragraph 5.2.1.1. for (Name of candidate) based on this individual satisfying the intent of the prerequisite through the following criteria:

   a. Combat experience (months): XXX

   b. Operational exposure (months): XXX

   c. Mission ready fire support exposure (months): XXX

2. (Name of candidate) aptitude, combat experience, and thorough knowledge of CAS procedures satisfy the intent of one year of experience as a qualified JTAC per the JFS ESC AP MOA 2004-01.

3. Specific questions regarding this waiver can be addressed directly to (Name and contact information).

(Signature)

1

Enclosure 5: Example JTAC Instructor Waiver (FAC(A) Experience)

Date

From: Commanding Officer (O-6/OF-5), (Organization)
To: Commander, (Schoolhouse)
Info: Chairman, Joint Fire Support Executive Steering Committee

Subj: WAIVER OF JFS ESC AP MOA 2004-001 JTAC INSTRUCTOR/EVALUATOR PREREQUISITE MINIMUM OF ONE YEAR OF EXPERIENCE AS A QUALIFIED FAC(A) (Name of instructor)

1. Waiver of the JFS ESC AP MOA 2004-01 JTAC Instructor prerequisite of one year of experience as a qualified FAC(A) per paragraph 5.2.1.1. for (Name of candidate) based on this individual satisfying the intent of the FAC(A) prerequisite through the following criteria:

   a. Aircraft type flight hours: XXX

   b. Combat flight hours: XX.X

   c. Combat sorties: XX

   d. CAS training sorties: XX

2. XX-month combat deployment

3. (Name of candidate) quality flight time, combat experience, and thorough knowledge of CAS procedures satisfy the intent of the one year of operational experience as a qualified FAC(A) per the JFS ESC AP MOA 2004-01.

4. Specific questions regarding this waiver can be addressed directly to (Name and contact information).

(Signature)

Enclosure 6: Example JTAC Student Academic Completion Letter

Date

MEMORANDUM FOR RECORD

From: Commander, (Schoolhouse)
To: Student Name, (Organization)

Subj: JTAC ACADEMIC COMPLETION/DEFICIENCY LETTER

Ref: (a) JFS ESC AP MOA 2004-01 JTAC (4 Mar 2021)
(b) National JTAC Directive

Encl: (1) JTAC Course Academic Completion List

1. Student Name successfully completed the Academic phase of Joint Terminal Attack Controller Course (number) in accordance with refs (a) and (b). During this training he completed JTAC academics with an average of XX%. Student Name did or did not complete all required certification training. Student Name did not complete the following certification training tasks per paragraph 5.2.4.1.

2. Any questions can be addressed to (Schoolhouse) staff at (Phone Number).

(Signature)

Appendix B: JTAC Training Standardization

B.1. Purpose. This appendix addresses issues related to JTAC training standardization. In particular, it provides definitions associated with the standardization process and describes JTAC program/schoolhouse accreditation, the JTAC Standardization Process, and JTAC Standardization Team Guidance.

B.2. Background. CJCSI 5127.01A JFS ESC Governance and Management requires the JFS ESC to form standardization teams to conduct accreditation of signatory programs/schoolhouses. The JFS ESC Action Plan established a requirement to institutionalize methods and metrics to standardize JTAC certification and qualification training programs, provide a vehicle for monitoring and evaluating the state of signatory JTAC training programs, and provide periodic updates and feedback to the JFS ESC.

B.3. Approach. This appendix describes JTAC training program accreditation review procedures and establishes a methodology for maintaining standardization through the JTAC Standardization Team. JTAC programs are expected to meet all requirements of this MOA and the curricula of accredited JTAC schoolhouses are expected to incorporate the Joint Mission Task List (JMTL) outlined in this MOA. To ensure programs are meeting MOA requirements and the JMTL is being properly incorporated into schoolhouse curriculum, Signatories agree that a JS DDC5I, Joint Fires Integration Division (JFID)-led standardization team will conduct initial and recurring accreditation reviews of each JTAC program/schoolhouse. Signatories will continuously monitor and evaluate units with JTACs IAW applicable directives. In extenuating circumstances JFID may designate a signatory member, who meets required qualifications, to lead the standardization team on behalf of JFID and the JFS ESC.

B.4. JTAC Standardization Process

The intent of the standardization process is to:

- Ensure compliance with program management, certification, evaluation and qualification requirements of the MOA.
- Expose instructors from each schoolhouse to other schoolhouses.
- Provide standardization in the JTAC training process.
- Enhance Joint/Multinational collaboration and standardization as CAS doctrine, tactics, techniques, and procedures evolve.

Ultimately, the JTAC standardization process ensures JTACs are trained to a common standard throughout the U.S. Department of Defense and participating Partner Nations.

B.4.1. JTAC Standardization Team. A team of individuals, led by JS DD C5I JFID and formed at the direction of the JFS ESC, is responsible for conducting initial and recurring accreditation reviews of programs/schoolhouses and implementing the standardization process outlined in this MOA.

B.4.1.1. Standardization Team Composition. The team may consist of the following individuals:

– JS DD C5I JFID CAS SME (Active Duty or DOD Civilian; in extenuating circumstances, may be a qualified signatory member representing JFID) (Team Lead)

– U.S. Service/USSOCOM JFS ESC Member (Active Duty or DOD Civilian)

– Partner Nation JFS ESC Member*

Standardization Team size for reviews can be a minimum of three members, but each signatory may send a member to each review.

**NOTE: ***Visit requests for Partner Nation personnel participating in Standardization Team reviews at U.S./DOD JTAC schoolhouses will be processed in accordance with DOD Directive 5230.20, CJCS Manual 5230.01A, and applicable Service directives governing foreign visits.

B.4.1.2. Each signatory may provide one additional non-voting advisory member to the team. JTAC MOA Signatories agree that the team shall perform initial accreditation of new JTAC programs/schoolhouses recurring accreditation of each accredited program/schoolhouse. Accreditation recommendation will be determined by consensus. The team lead will release the team once all required tasks are complete.

B.4.2. JFS ESC JCAS Standardization Team Standard Operating Procedure (SOP): Standardization team administrative processes, compliance checklists, report formats and all additional required information for conducting accreditation visits is found in the JCAS Standardization Team SOP. This SOP is approved by the JFS ESC O6 Working Group, maintained by JS J6 DD C5I JFID, and made available to all signatories to ensure transparency in the process. Signatories use the SOP and provided checklists to conduct internal reviews of program/schoolhouses to prepare for accreditation visits.

B.4.3. Initial Accreditation: When a signatory requests accreditation of an established program/schoolhouse (as applicable) or creates an additional schoolhouse, the JFS ESC will form a JTAC standardization team to conduct a full program/schoolhouse review. For accreditation, the JTAC standardization team will accomplish the following:

B.4.3.1. Program Accreditation:

B.4.3.1.1 Review program management and applicable program documents for compliance with the requirements of the MOA.

B.4.3.1.2 Ensure the program complies with all certification, evaluation, qualification, and safety requirements of the MOA.

B.4.3.1.3 Review operational unit compliance with qualification requirements of the MOA; this may or may not include a visit to an operational unit, and may be accomplished directly with the program manager.

B.4.3.1.4 For programs without a schoolhouse, verify the program utilizes a JFS ESC or NATO accredited schoolhouse, and verify the program complies with all certification, evaluation and qualification requirements of the MOA.

B.4.3.2. School Accreditation:

B.4.3.2.1 Attend a sufficient portion of the course and evaluate curriculum, course of instruction, simulation, practical exercises and live events. If circumstances dictate, the team may observe instruction in practical exercises/simulation only.

B.4.3.2.2 Verify the schoolhouse curriculum addresses identified MOA-defined JTAC Joint Mission Task List (Duty Areas), and the course complies with safety requirements of the MOA.

NOTE: Organizations utilizing a phased certification process will have the entire process reviewed in conjunction with the program and/or schoolhouse.

B.4.3.3. Upon completion of the accreditation review, the team will forward recommendation to JFS ESC O6 Working Group for accreditation or non-accreditation. For initial accreditations and accreditation with discrepancies a response of concurrence or non-concurrence is required; for recurring accreditations with no discrepancies no response is required unless non-concurring.

B.4.3.3.1 The accreditation report will contain a summary of program management, course (if applicable) materials and events, simulation, live events, equipment and training. The report will also provide a list of identified issues in the following format:

Discrepancy: Issue of non-compliance with MOA requirements, which if not corrected by prescribed follow-on actions within specified timelines, will lead to recommendation for non-accreditation or removal of previous accreditation. Based on when the discrepancy occurred, previous schoolhouse or program trainees may lose certifications issued during the identified period. The signatory's JFS ESC Action Officer will provide discrepancy status updates to the JFS ESC AO WG, and the JFS ESC secretariat will track discrepancies to resolution. The O6 WG Chairman may approve one six-month extension; additional extensions will be coordinated at the Principal level.

Deficiency: Issue which negatively impacts program/schoolhouse execution, quality of training, or combat capability, but does not warrant recommendation for non-accreditation. Recommended corrective actions will be accomplished at the discretion of the signatory nation program/schoolhouse management and leadership as time and funding permit. Deficiencies will be addressed in subsequent standardization reviews to evaluate progress toward resolution.

Observation: Area of recommended improvement to program/schoolhouse execution, quality of training or combat capability; or, a positive practice or product observed in the program/schoolhouse but not to the level of a best practice; or, a neutral comment of a relevant fact. Observations are addressed at the discretion of program/schoolhouse management.

Best Practice: A highly positive practice or product, which significantly enhances program/schoolhouse execution, quality of training, or combat capability; highlighted as exemplary and could be highly recommended for other schoolhouses/programs to implement.

B.4.3.3.2 Accreditation with discrepancies will contain recommended actions to correct discrepancies and a projected timeline to provide documentation clearing all discrepancies. The program/schoolhouse may continue to operate and train JTAC students, but if discrepancies are not cleared within the specified timeline, the accreditation will be removed as well as all JTAC certifications issued in the preceding period.

B.4.3.3.3 Non-accreditation will contain recommended actions to correct discrepancies and a projected timeline to reschedule a follow-on accreditation visit.

B.4.4. "Grandfather Clause". Newly accredited schoolhouses or JTAC programs may recommend previous graduates, who meet the requirements of the JTAC MOA, for designation as JTACs under the "grandfathering" concept. A list of these individuals will be submitted in writing to the Standardization Team as part of the accreditation process. The Standardization Team will include any recommendation for grandfathering in the accreditation report.

B.4.5. Recurring Accreditation Review. After initial accreditation, the first recurring review may be conducted within two years, if deemed necessary during the initial accreditation; otherwise, the first recurring and all subsequent reviews will occur every three years. In extenuating circumstances, the recurring review may be extended to four years without affecting accreditation. If necessary due to extenuating circumstances, the review may be conducted in phases, (process outlined in JCAS Standardization Team SOP). For signatories with more than one schoolhouse, the program overall and one schoolhouse will be reviewed every three years. For any schoolhouse(s) not reviewed in that cycle, the signatory will conduct an internal review and forward results to the JFS ESC. A program/schoolhouse may have accreditation suspended if their JTAC program or course is not in accordance with guidelines specified in this MOA. Accreditation may be reinstated through follow-on accreditation visit, at the discretion of the JFS ESC, based on a recommendation from the JTAC standardization team. For recurring reviews, the JTAC standardization team will accomplish the same action listed in paragraph **B.4.3.**

NOTE: For all reviews, suspension of accreditation will contain recommended actions to correct discrepancies and a projected timeline to reschedule a follow-on accreditation visit.

B.4.6. Annual Curriculum Review. A JS DD C5I JFID hosted forum for military-to-military exchanges of views in which JTAC schoolhouses will compare curricula, ensure joint standardization, share "best practices"/ lessons learned, and discuss potential improvements/adjustments to the JTAC curriculum, certification, evaluation and qualification processes. This review will take place at a minimum once a year and may be held in person or via electronic communication as circumstances dictate.

B.5. Responsibilities

B.5.1. JS DD C5I JFID will:

- Provide team lead and a representative to head logistics and administrative details of accreditation visit.
- Coordinate with program representatives and develop a schedule of visits for the standardization team.
- Provide JCAS Standardization Team SOP checklists to the program, schoolhouse, and standardization team no later than 90 days prior to review (SOP should be made available to JFS ESC AOs and program management personnel at any time).

- Coordinate team membership, fund travel and per diem for the U.S. standardization team members (subject to availability of funds). Partner Nations are responsible for funding all costs of participation by their personnel in JTAC standardization team activities. Review program management, compliance with certification, evaluation and qualification requirements, administration, academics, simulation, live events, equipment, safety and operational unit compliance (as applicable, depending on signatory's program composition).
- Conduct a review of the segments of a phased certification program that are not observed by the standardization team in conjunction with the program/schoolhouse initial/recurring accreditation. Provide in/out-brief to the unit's commanding officer.
- Provide the reviewed program/schoolhouse, parent command, and JFS ESC with a written report of the findings and recommendations no later than 30 days, 45 days for a JFS ESC/NATO Combined Standardization Team (CST), following the accreditation visit. Report staffing will be combined to the JFS ESC O6/Action officer Working Groups; a concurrence or non-concurrence response is required from members for all initial accreditation reports and recurring reports containing discrepancies. For recurring reports without discrepancies, no response is required unless the signatory elects to non-concur with or question a portion of the report.
- Maintain tracking of all discrepancies identified during initial/recurring accreditation visits and conduct follow-on coordination until resolved.
- Maintain records of accreditation results for two years, archived as appropriate.
- Capture "best practices" within the report and post on JCAS Section web site.
- Collect and submit JTAC standardization team recommendations to Joint CAS publication office of primary responsibility (OPR).

B.5.2. Standardization Team Members will:

- Have successfully completed a JTAC course.
- Have working knowledge of the JTAC MOA.
- Evaluate program/schoolhouse compliance with MOA requirements.
- Provide Team lead with comments/recommendations.
- Be available for assistance in developing final report.
- Debrief own program manager on results.
- Provide feedback on issues observed and make recommendations to improve the JTAC standardization team process.

B.5.3. JTAC Standardization Team Guidance. The following is a list of critical items that could cause a schoolhouse or program to be recommended for non-accreditation or suspension of accreditation. This list is not all-inclusive and the recommendation for suspension of JTAC accreditation will be forwarded to the JFS ESC for resolution and action.

- JTAC trainees being supervised by non-qualified instructors. Non-JTAC qualified instructors may conduct briefings and other formal classes in an area in which they

have expertise. Only qualified JTAC instructors shall be used to supervise JTAC trainees while performing terminal attack control with a live aircraft.

- JTAC trainees being taught TTPs other than current JP 3-09.3 as standard TTPs. TTPs not found in JP 3-09.3 may be instructed, however, the course must teach the recognized joint TTPs as the primary method of conducting CAS.
- JTAC trainees being certified as a JTAC by the schoolhouse and not being trained to the minimum certification requirements as outlined in this MOA.
- Safety violations where JTAC trainees or JTAC instructors are at an increased risk of friendly fire or possibility of bodily harm.
- Course not performing scheduled lectures/events. This does not preclude the schoolhouse from changing/omitting certain events due to unforeseen circumstances. The standardization team shall respect the commanding officer's authority and judgment in the case of unforeseen circumstances. However, in all circumstances the schoolhouse is responsible for instruction to fulfill the joint mission task requirements of the JTAC.
- JP 3-09.3 information and procedures being taught incorrectly or completely omitted.

If any of the above are noted by a JTAC standardization team member, the standardization team shall record the date, time, and location of the infraction. In addition, all circumstances surrounding the infraction which were observed by the standardization team or one of its members will be documented and briefed to the course manager for immediate correction, and commanding officer will be notified during the scheduled out brief.

Appendix C: JTAC Simulation System Accreditation

C.1. Purpose. This appendix addresses JTAC Simulation System Accreditation. The Joint Fire Support Executive Steering Committee's (JFS ESC) JTAC simulation system accreditation process ensures standardization of simulation systems used to accomplish JTAC tasks. Simulation also serves as an instrument to assist signatories in developing a robust mission rehearsal capability to ensure JTACs are trained to meet CCDR (or equivalent) needs.

C.2. Background. CJCSI 5127.01A JFS ESC Governance and Management requires the JFS ESC to form standardization teams to conduct accreditation of signatory simulation systems.

C.3. Approach. The JFS ESCs intent is to recognize simulation systems capable of facilitating high quality JTAC training in any simulation virtual environment (SIM-VE) and/or simulation live environment (SIM-LE) which assists signatories in building JTAC training capability. The accreditation criteria focus on the JTAC MOA JMTL and control requirements. An accreditation criterion recognizes the capability of simulation based on its capability to facilitate mastery tasks required to achieve performance objectives. Signatories are responsible for fielding simulation systems to meet training objectives in accordance with MOA requirements.

C.4. Intent. For the purposes of JFS ESC accreditation of JTAC simulation systems (SIM-VE), the following principles apply:

C.4.1. JFS ESC JTAC simulation accreditation is only applicable to systems that are components of and officially accepted by a JFS ESC-accredited JTAC training program. Prior to initial program accreditation, a signatory may conduct the self-assessment and receive interim accreditation; formal assessment will occur during the initial accreditation visit.

C.4.2. The JFS ESC will not accredit commercial JTAC simulation systems at the request of industry and does not recognize commercial products as accredited without direct JTAC MOA signatory sponsorship.

C.4.3. If a signatory desires to lease a commercially available JTAC simulation system and/or use commercially available JTAC simulation training support services, the following criteria must be satisfied to meet the requirements of the JTAC MOA:

C.4.3.1. The capability of the leased JTAC simulation system must be of the same type/model or an improved version of a JTAC simulation system already accredited by the JFS ESC and in use by an accredited signatory JTAC program.

C.4.3.2. The signatory leasing the system will conduct a self-assessment in accordance with Appendix C, and specify in writing (memorandum, program directive, etc.) that the contractual arrangement is part of their accredited JTAC training program. The specified contractual arrangement is subject to JFS ESC review as part of the accreditation process, if appropriate.

C.4.3.3. Signatories are responsible for ensuring personnel facilitating training/operating JTAC simulation systems possess the necessary skills and experience, and are qualified to provide the quality of training required to comply with the JTAC MOA.

C.4.4. A JFS ESC-accredited simulation system is a viable training solution for all signatories. All signatories may, at their discretion, take full advantage of the provided

capability/services of any other signatory and log certification and qualification controls and accomplish JMTL, in accordance with this MOA.

C.5. Simulation System Accreditation Fidelity Scale. The rating scale in Enclosure 1, Table C.1 was used in the original development of the JFS ESC JTAC Simulation System Accreditation Criteria and applies to SIM-VE. Minimum fidelity scale ratings are assigned to each criterion task and are applied during the assessment process.

C.6. Simulation Virtual Environment (SIM-VE) Accreditation Criteria. The criteria in Enclosure 1, Table C.2 is designed to identify the minimum capabilities a SIM-VE system should possess to facilitate high quality terminal attack control training and supporting tasks. The intent of this criterion is to ensure standardization of training and to assist signatories in developing effective simulation systems.

C.7. JTAC SIM-VE Accreditation Self-Assessment Checklist. The SIM-VE self-assessment checklist, with cover page and accompanying JMTL matrix, is found in the JCAS Standardization Team SOP and is used in conjunction with the Simulation System Accreditation criteria in Enclosure 1, Table C.3 when requesting accreditation of a SIM-VE system.

C.8. JTAC Simulation-Live Environment (SIM-LE) Accreditation Criteria. SIM-LE uses notional assets, unlike SIM-VE which uses a virtual environment, and may be used to accomplish JTAC tasks and increase realism in the live training environment in the absence of actual assets. Threat systems, friendly and enemy ground forces, and indirect fires are routinely simulated during live CAS training. Enclosure 2 contains the minimum criteria for each type of terminal attack control event and is used when requesting accreditation of a SIM-LE process. The specified tasks are derived using the CAS execution template and procedures in JP 3-09.3. These minimum task standards are required to facilitate the terminal attack control requirements for certification and qualification training IAW Table 5.2.4.1 and Table 5.2.5.2.

> NOTE: The default classification for terminal attack control is in the daytime environment. Specific criteria for Night terminal attack control is also included.

C.8.1. JTAC Simulation System Accreditation Assessment Process. At the request of the signatory, simulation systems will be reviewed and accredited by the JFS ESC, or designated representative, during initial or recurring program accreditation. Representatives will determine simulation capability and evaluate its ability to facilitate the minimum terminal attack control requirements for certification and qualification training. The following paragraph explains the process by which the JFS ESC implements the JTAC Simulation Accreditation process. A list of all currently accredited SIM-VE/LE systems is maintained by JS J6 DD C5I JFID (JCAS Simulation Lead). This list is updated when new systems are added or existing systems updated, and is maintained on the JCAS website (access granted upon request), available to signatories upon request.

C.8.1.1. Self-Assessment. Signatories are responsible for training and equipping JTACs and will ensure simulation systems are capable of facilitating the specified JMTL and control requirements prior to requesting JFS ESC accreditation. Signatories should ensure simulation systems are assessed by experienced JTAC instructors and evaluators who were not involved with the acquisition of the system.

C.8.1.2. Requests for JFS ESC Accreditation. All requests for JFS ESC accreditation will be forwarded to the JFS ESC JCAS Simulation Lead for consideration and action. The request will include the following information:

SIM-VE

- A detailed description of system to be accredited (information paper or brief). Include signatory's official name/designation of the SIM-VE system.
- Completed JFS ESC Accreditation Self-Assessment Checklist with certification page completed and signed; complete accompanying JMTL matrix as applicable (JFID Simulation Lead will provide fillable copies of checklists).
- Other documents validating the system meets user requirements (Examples: Acceptance testing documents, manufacturer test documents, performance specifications, etc.).

SIM-LE

- Cover letter, signed by the JTAC program manager, describing the SIM-LE event name(s), process, and specific controls for which accreditation is requested, referenced to applicable sections of Enclosure 2.
- Concept of operations for the SIM-LE event(s).
- Any other supporting information specific to the SIM-LE process.

C.8.1.2.1 Upon receipt of the signatory request, the JFS ESC JCAS Working Group (WG) JCAS Simulation lead will review the provided information and, if appropriate, confirm interim accreditation via concurrence with the self-assessment. During the next scheduled JTAC accreditation review the standardization team will validate the SIM-VE self-assessment and/or SIM-LE process and document findings in the accreditation report.

C.8.1.3. Self-Assessment Validation. Self-Assessment Validation will be conducted to ensure the training system is capable of facilitating JMTL and control requirements using pre-coordinated mission profiles to demonstrate system capability and operations. Although not specifically addressed in the accreditation criteria, effective operation of the training system by the instructors and/or designated simulation operators, and the design of training, are critical to the effectiveness of simulation and will be considered during the accreditation determination.

C.8.1.3.1 Self-assessment validations will capture the capabilities of the SIM-VE system and/or SIM-LE process, and disparities should be resolved during the validation. Upon completion of validation, the team leader will capture the results in the JTAC accreditation report, which is coordinated with the JFS ESC O6 Working Group.

C.8.1.4. Accreditation Duration. Once the JCAS Simulation Lead concurs with the self-assessment, the system is accredited as assessed, unless there are exceptions identified in the JTAC accreditation report. Accreditations remain effective until the accreditation criterion is significantly changed, or if during regular standardization visits, systems fail to demonstrate the ability to meet current criteria. Capability upgrades will be recognized during regularly scheduled standardization visits, and documented in subsequent accreditation reports.

Enclosure 1: SIM-VE Accreditation

Table C.1: Fidelity Scale

Rating	Short Description	Detailed Description
0	Information not presented	The information is not presented in any form.
1	Provided by system but insufficient detail (Unusable)	Although the information is presented, it is not presented with enough detail to be useful to the student. For example, if students are required to perform the terminal control of an aircraft and the aircraft is visually presented but the detail is too low to determine which direction the aircraft is pointed or whether it is still maneuvering.
2	Provided by system but incorrect scale (Unusable)	Although the information is presented, it is not presented in a scale that matches the real-world. For example, target scaling is incorrect and leads to students overestimating or underestimating distances.
3	Information is provided to students in a different form (Presented by instructor)	Although the information is presented with sufficient detail to perform the task, it is not in the form that it is presented in the real world. For example, the *instructor* could tell students that their target has started moving east at 40 km/h instead of requiring students to detect that the target is moving and estimate the speed.
4	Information is provided to students in a different form (Presented by system)	Although the information is presented with sufficient detail to perform the task, it is not in the form that it is presented in the real world. For example, the *system* could present a text description of a target instead of requiring students to look at the target and determine what the target type is.
5	Provided by system w/ low detail or incorrect scale (Usable)	The information is presented and, although the level of detail or scale is incorrect, it does not adversely affect task performance.
6	Provided by the system similar to how it is in the real world	The information presented is in the same form and similar detail and scale as observed in the real world environment.

Table C.2: JTAC SIM-VE Accreditation Criteria

Item	JTAC Simulation System Accreditation Criteria	Minimum Fidelity Rating	Desired Fidelity Rating
1.	**Environment**		
1.1.	Terrain with natural and manmade features must be consistent with military maps.	5	6
1.2.	Terrain must be of sufficient detail, scaled appropriately, to facilitate military scenarios to generate trainee reactions during detection, identification, targeting and engagement of entities.	5	6
1.3.	Terrain must correlate to military mapping datum database and map products used in the training environment.	6	6
1.4.	Terrain must be capable of providing natural obscuration, hindering observation of targets, aircraft, weapons effects, and other entities when appropriate (depressions, terrain masking, etc.).	5	6
1.5.	Man-made features (buildings, bridges, roads, etc.) and entity models (military and civilian vehicles, weapons systems, people, etc.) must be consistent with real world representations and behavior (to the greatest extent as possible), and scaled appropriately, to facilitate target acquisition and engagement.	5	6
1.5.1.	Entities must be sufficient in number/type to facilitate the full scope of military scenarios (major combat operations (MCO) to counter insurgency).	5	6
1.5.2.	Targetable models must have a minimum of 3 damage states. • Intact (no visible damage). • Damaged (overall structure intact with visible damage to wheels/tracks, turret, guns/missiles, etc.). • Destroyed (model structure severely damaged, smoking hulk). • Weapons effects on moving vehicles must cease motion when attacked to indicate a mobility kill.	5	6
1.5.3.	Model locations correlate to WGS-84 or newer military mapping datum database and map products used in the training Simulation.	5	6
1.5.4.	Ground models have sufficient detail (size, shape) to facilitate detection, recognition and identification.	5	6
•	Day Visual Unaided (3-meter high target). • Detectable @ 2400m • Recognizable @ 900m • Identifiable @ 600m	5	6
•	Day Visual Aided (magnifying device) (3-meter-high target). • Detectable @ 6000m • Recognizable @ 4000m • Identifiable @ 2000m	5	6
•	Night Aided (NVG or thermal). • Detectable @ 1000m • Recognizable @ 500m	5	6
1.5.5.	Aircraft models have sufficient detail (size, shape, scale) to facilitate verification of aircraft position and attack geometry while in flight.	5	6

Item	JTAC Simulation System Accreditation Criteria	Minimum Fidelity Rating	Desired Fidelity Rating
1.5.6.	Aircraft entities must be able to comply with trainee directions (e.g., "Stay west of the river, proceed to IP C").	5	6
1.6.	System should be capable of importing available terrain and map datum file formats to permit users to build custom terrain and scenarios (desired future capability).	-	6
1.7.	System must replicate environmental conditions which impact CAS /operations (Should be operator selectable).		
1.7.1.	System must replicate realistic time of day and shadowing consistent with sun angles and location, moon phase, and star representation.	5	6
1.7.2.	System must replicate varying cloud heights (in 500ft increments), scattered clouds selectable in percent of entire sky.	5	6
1.7.3.	System must replicate a full range of visibility (200 feet to unrestricted, fog).	5	6
1.7.4.	System must replicate wind and effects (direction and velocity) on scenario features (grass, trees, flares, etc.), on air-burst illumination rounds (ground- and air-delivered), and weapon effects (smoke).	5	6
1.7.5.	System must replicate precipitation (rain, sleet, snow).	5	6
1.7.6.	System should replicate seasonal effects (defoliated trees, snow/ice/leaves ground cover, etc.).	3	6
1.8.	System must provide sufficient terrain and manmade feature detail to facilitate a CAS target-talk-on.		
1.8.1.	System must provide sufficient terrain and manmade feature detail to conduct effective target correlation (between JTAC and pilot perspectives).	5	6
1.9.	Sounds must be consistent with the natural and manmade Simulation (accurate representative Doppler shift).		
1.9.1.	Explosion sounds must be consistent with size of weapon (minimum distinction small, medium, large weapons).	5	6
1.9.2.	Delays/intensity of sounds must be consistent with range/size of explosion (flash bang).	5	6
1.9.3.	Machine entity sounds must be representative of actual military and civilian equipment.	5	6
1.9.4.	Cultural sounds must be consistent with normal sounds produced by the environment.	5	6
2.	**Model Behavior**		
2.1.	Ground model behavior must be consistent with actual objects.		
2.1.1.	Ground model movements must be natural and consistent with those normally associated with the actual object.	5	6
2.1.2.	Ground model reactions are consistent with actual objects (attack, break contact, etc.).	5	6
2.2.	Fixed wing aircraft, rotary wing aircraft, and unmanned aerial systems (UAS) performance during CAS missions in the simulation environment must be consistent with current CAS aircraft TTPs.		
2.2.1.	Aircraft flight-paths must be realistic and resemble actual performance characteristics (physics-based).	6	6

Item	JTAC Simulation System Accreditation Criteria	Minimum Fidelity Rating	Desired Fidelity Rating
2.2.2.	Aircraft speed during ingress/egress/orbit must be consistent with actual aircraft type.	5	6
2.2.3.	Aircraft turning ability must be consistent with actual aircraft performance.	5	6
2.2.4.	Aircraft flight-paths and flight performance must be realistic to each aircraft type represented and resemble actual performance characteristics (physics-based models)" during very low, low, medium and high altitude attack profiles.	5	6
2.3.	Aviation weapons deliveries must be consistent with current aircraft TTPs.		
2.3.1.	Aircraft models must be capable of realistic weapons configurations (SCLs).	5	6
2.3.2.	System must replicate aircraft dropping bombs consistent with current TTP.	5	6
2.3.3.	Bomb flight paths must be physics based.	5	6
2.3.4.	System must replicate aircraft employing forward firing weapons (rockets, guns, missiles) consistent with current TTP.	5	6
2.3.5.	Rotary wing aircraft must be capable of off axis engagements (as appropriate)	5	5
2.3.6.	System operator must be able to abort attacks, based on an abort call from the JTAC, or failure to provide proper clearance in a timely manner	6	6
2.4.	Weapons effects must be proportional in size and visual effect inflicting damage consistent with current weapons.		
2.4.1.	Weapons effects must include: • Blast (visible explosions, fire proportional to weapon size). • Damage (structural damage, casualties' proportional to weapon size and effects). • Collateral effects (structural damage, casualty's proportional to weapon size and effects). • Smoke and fire from weapons impacts will be persistent with accurately modeled dissipation and wind speed/direction modeling.	5	6
2.5.	The following are the minimum air-to-surface weapons: • Bombs (500lbs, 1000lbs, 2000lbs): – General-purpose – Laser guided – Inertially-aided • Strafe (20-30mm). • Rockets (2.75"): – Laser guided • Missiles: – AGM-65 – AGM-114 • Illumination: – Aerial Flares (parachuting) – Target marking flares (ground)	5	6
2.6.	The following are the minimum surface-to-surface weapons • Artillery (High Explosive [HE], Smoke, Illumination [Illum]) • Mortars (HE, Smoke, Illum)	5	6

Item	JTAC Simulation System Accreditation Criteria	Minimum Fidelity Rating	Desired Fidelity Rating
	• Naval Surface Fire Support (HE, Smoke, Illum)		
2.6.1.	System must be able to provide realistic firing response and sustained rate of fire.	5	6
2.6.2.	System should enable the selection of number of guns, multi-target capability (min of 2 x targets – e.g. SEAD mark and suppress), number of rounds, and time on target (TOT) for each target.	5	6
2.6.3.	System must provide message to observer (MTO) information to include time of flight (TOF) / maximum ordinate / Angle T, when appropriate.	5	6
2.6.4.	System should be able replicate entities operating using degrees magnetic (aircraft), milliradians (S-S), and be present the difference between magnetic north and grid north as appropriate (requires consideration of G-M angle).	5	6
2.7.	System must facilitate realistic time and spatial relationships required for airspace deconfliction and integration of air and surface fires during CAS mission execution.		
2.7.1.	System must facilitate time on target (TOT) missions.	5	6
2.7.2.	System must facilitate time to target (TTT) missions	5	6
2.7.3.	System must produce negative feedback when control measures are not employed correctly (midair collisions, A/C damage from indirect fire, etc.)	5	6
2.8.	System must facilitate the visual marking of CAS targets with air and indirect delivered fire systems.	5	6
2.8.1.	Volume and duration of smoke must closely replicate fielded weapons (IAW appropriate weapons manuals).	5	6
2.8.2.	Marking effects (e.g. smoke, dust) must behave appropriately when influenced by the environmental factors. (e.g. drift based on wind direction and speed).	5	6
2.8.3.	Trainee must be able to determine range and bearing from a mark to the target to facilitate aircrew target acquisition.	6	6
2.9.	System must facilitate combined arms scenarios where multiple fire support systems and aircraft simultaneously engage targets in the same target area.	5	6
2.10.	System must replicate realistic surface to air threat systems.		
2.10.1	Threat system models must be of sufficient detail to invoke a decision on the need to coordinate suppression of enemy air defenses (SEAD).	5	6
2.10.2	Threat models must exhibit realistic behaviors to invoke a decision on the capability of the threat system (e.g. turret/vehicle movement, tracking radar, troops in vicinity, missile launch, gun fire (muzzle flash).	5	6
2.10.3	The following air defense system weapons and effects are the minimum to be available in the system (derived from unclassified sources). • Surface to Air Missile Systems (radar and IR guided). (3 types minimum) – Launch blasts – Smoke trails (contrails, plumes) – Detonation explosions • Air defense artillery systems (3 types minimum) – Muzzle flashes – Tracer rounds – Impact effects	5	6

Item	JTAC Simulation System Accreditation Criteria	Minimum Fidelity Rating	Desired Fidelity Rating
2.10.4	Damage to threat systems when engaged by SEAD must provide visual effects to the threat system to illicit a successful / not successful determination (visible model damage, SEAD impacts on target, cease in activity, etc.)	5	6
3.	**Equipment**		
3.1.	System must provide an emulated or stimulated replica global positioning system (GPS) which corresponds to a WGS-84 or newer military mapping datum database, and map products used in the training simulation.	5	6
3.2.	System must provide an emulated or stimulated replica magnetic compass for JTAC spatial awareness.	5	6
3.2.1.	Compass bearing must be consistent with terrain database and accompanying map products.	5	6
3.3.	System must facilitate the use of laser range finder (LRF) and laser target designator (LTD) for target location, marking, and designation.		
3.3.1.	Laser target designators must be emulated or simulated likenesses of actual equipment required in CAS operations.	5	6
3.3.2.	Selection of appropriate laser code and system feedback for noncompliance is required for lasing and marking targets.	5	6
3.3.3.	Laser devices must be capable of providing accurate range and bearing consistent with WGS-84 or newer military mapping datum database, and map products used in the training simulation.	5	6
3.3.4.	System operator must be able to verify laser mark and laser spot during target designation.	5	6
3.3.5.	Laser guided weapon must terminally guide to the point of laser designation (on or off target).	5	6
3.4.	System must facilitate radio communications for command and control agencies in the air-ground system.		
3.4.1.	Radio communications equipment used by the JTAC to communicate with aircraft must be an emulated or simulated likeness of actual equipment.	5	6
3.4.2.	Communications radio equipment used by the JTAC to communicate with command and control and supporting agencies must be similar in likeness and functionality of fielded equipment.	5	6
3.5.	System must facilitate the use of Video Downlink (VDL) equipment for reconnaissance, targeting, and CAS execution.		
3.5.1.	VDL equipment must have the ability to emulate, simulate, or stimulate current VDL equipment.	5	6
3.5.2.	Airborne sensor must be able to provide grid coordinates consistent with real world sensor capabilities.	5	6
4.	**Night**		
4.1.	System must be capable of varying light levels during night time based on moon phase, star lighting, and cultural lighting to determine the need and suitability of air and/or ground delivered illumination in support of night CAS.	5	6
4.2.	Man-made models must display lighting as appropriate (e.g., building lights, vehicle headlights).	5	6

Item	JTAC Simulation System Accreditation Criteria	Minimum Fidelity Rating	Desired Fidelity Rating
4.3.	System must emulate, simulate or stimulate current night vision equipment (NVGs simulate/stimulate only).		
4.3.1.	Individual simulated NVGs or night vision devices must be worn by trainee similar to actual NVGs.	5	6
4.3.2.	Night capable devices must emulate, simulate, or stimulate current LRFs, scopes, and LTDs.	5	6
4.3.3.	Night vision devices must display images consistent with actual night vision devices (resolution, clarity, color).	5	6
4.4.	System must facilitate the use of IR target marking systems from the ground (IR Pointer).		
4.4.1.	IR markers at a minimum must be emulated, simulated or stimulated.	5	6
4.4.2.	IR markers must be capable of producing NVG visible “SPARKLE,” “SNAKE,” and “ROPE” to mark targets.	5	6
4.4.3.	“SPARKLE,” “SNAKE,” and “ROPE” must be visible in the pilot field of view (operator).	5	6
4.4.4.	Weapons effects (when appropriate) must be visible through NVDs to assess mission effectiveness.	5	6
4.4.5.	System aircraft must be able to match sparkle. Both beams must be visible to the JTAC and pilot (system operator).	5	6
4.5.	System must replicate friendly night time position markers (overt and covert strobe lights).	5	6
4.6.	System must replicate aircraft marker lights during night time (overt and covert beacon /position lights / formation lights); (desired future capability).	-	6
4.7.	System must replicate air and surface delivered illumination to facilitate CAS during night time.		
4.7.1.	Aerial Illumination (flares) must be consistent with height of burst, ground lighting patterns, burn times, descent rates, wind drift, and ground shadowing associated with actual weapons.	5	6
4.7.2.	Ground Illumination must be consistent with ground lighting patterns, burn times, descent rates, wind drift, and ground shadowing associated with actual weapons.	5	6
5.	**Type 1 terminal attack control**		
5.1.	During Type 1 control, the trainee must be able to visually acquire the attacking aircraft’s attack geometry in relation to the target to predict the weapon trajectory from release to impact, to ensure friendly positions and collateral damage concerns are safe from undesired weapons effects.	5	6

Enclosure 2: JTAC SIM-LE Accreditation Criteria

C.9. The following events and tasks are for the live environment:

C.9.1. Type 2 Terminal Attack Control. The following are the minimum tasks required to facilitate Type 2 Terminal Attack Control:

Type 2 Control Accreditation Tasks
1. Provides the means to identify CAS target.
2. Provides the means to determine CAS target location.
3. Provides the means to determine friendly locations in relation to the CAS target.
4. Provides the means to generate a CAS briefing.
5. Provides the means to receive final attack approval from Ground Commander.
6. Provides the means to establish communications contact with aircraft.
7. Provides the means to facilitate the direction of and compliance with aircraft to contact point / initial point (CP/IP) instructions (routing safety of flight).
8. Provides the means to receive fighter check-in.
9. Provides the means to provide situation update to aircraft.
10. Provides the means to provide a game plan.
11. Provides the means to pass a CAS brief to aircraft.
12. Provides the means to provide the aircraft with relevant remarks/restrictions.
13. Provides the means to receive CAS brief read-backs
14. Provides the means to conduct target correlation
15. Provides the means to direct aircraft to depart IP/commence attack
16. Provides the means to determine if the pending attack poses a risk to friendly forces
17. Provides the means to issue attack clearance or abort for individual attacks
18. Provides the means to assess weapons effects on target
19. Provides the means to provide weapons corrections to inbound aircraft
20. Provides the means to identify and report anti-aircraft fires/missile launch on egressing aircraft
21. Provides the means to facilitate bomb damage assessment as appropriate
22. Provides the means to facilitate the direction of and compliance with aircraft egress instructions (routing and safety of flight)

C.9.2. Type 3 Terminal Attack Control. The tasks required to facilitate Type 3 Terminal Attack Control are the same as C.9.1. Type 2 Terminal Attack Control, the only difference being Type 3 control permits multiple attacks within a single engagement, subject to specific attack restrictions.

C.9.3. Bomb on Coordinate (BOC) Terminal Attack Control. The tasks required to facilitate BOC Terminal Attack Control are the same as C.9.1. (or C.9.2. for Type 3) except bomb on coordinate procedures must be executed IAW JP 3.09.3.

C.9.4. Fixed Wing Terminal Attack Control. The tasks required to facilitate Terminal Attack Control with a fixed wing aircraft are the same as C.9.1. (or C.9.2. for Type 3) except fixed wing procedures must be executed IAW JP 3.09.3. Personnel role-playing fixed wing aircrew must have a working knowledge of fixed wing aircraft systems, TTPs, radio procedures, and brevity terms.

C.9.5. Rotary Wing Terminal Attack Control. The tasks required to facilitate Terminal Attack Control with a rotary wing aircraft are the same as C.9.1. (or C.9.2. for Type 3) except rotary wing procedures must be executed IAW JP 3.09.3. Personnel role-playing rotary wing aircrew must have a working knowledge of rotary wing aircraft systems, TTPs, radio procedures, and brevity terms.

C.9.6. Ground Laser Target Designation and Marking. The following are the minimum tasks required to facilitate laser target designation and marking tasks required to support a laser terminal attack control. Personnel role-playing aircrew must have a working knowledge of aircraft systems, TTPs, radio procedures, and brevity terms.

Ground Laser Target Designation
1. Provides the means to identify CAS target
2. Provides the means to determine CAS target location using a laser target designator/range finder (range and bearing) when coupled with GPS
3. Provides the means to determine friendly locations in relation to the CAS target
4. Provides the means to generate a CAS briefing
5. Provides the means to receive final attack approval from Ground Commander
6. Provides the means to establish communications contact with aircraft
7. Provides the means to facilitate the direction of and compliance with aircraft to CP/IP instructions (routing and safety of flight)
8. Provides the means to receive fighter check-in
9. Provides the means to provide situation update to aircraft
10. Provides the means to provide a game plan
11. Provides the means to pass a CAS brief to aircraft
12. Provides the means to provide the aircraft with relevant remarks/restrictions
13. Provides the means to receive CAS brief read-backs
14. Provides the means to provide a laser designation for weapon terminal guidance or laser marking spot to facilitate target engagement
15. Provides the means to direct aircraft to depart IP/commence attack
16. Provides the means to determine if the pending attack poses a risk to friendly forces
17. Provides the means to issue attack clearance or abort for individual attacks
18. Provides the means to assess of weapons effects on target
19. Provides the means to be able to provide weapons corrections to inbound aircraft
20. Provide means to identify and report AA fires/missile launch on egressing aircraft
21. Provides the means to facilitate bomb damage assessment as appropriate
22. Provides the means to facilitate the direction of and compliance with aircraft egress instructions (routing and safety of flight)

C.9.7. Terminal Attack Control Employing IR Pointer for Target Marking. The following are the minimum tasks required to facilitate IR laser marking tasks required to support an IR pointer terminal attack control. Personnel role-playing aircrew must have a working knowledge of aircraft systems, TTPs, radio procedures, and brevity terms.

IR Pointer (Laser Target Marking)
1. Provides the means to identify CAS target
2. Provides the means to determine friendly locations in relation to the CAS target

1. Provides the means to generate a CAS briefing
2. Provides the means to receive final attack approval from Ground Commander
3. Provides the means to establish communications contact with aircraft
4. Provides the means to facilitate the direction of and compliance with aircraft to CP/IP instructions (routing and safety of flight)
5. Provides the means to receive fighter check-in
6. Provides the means to provide situation update to aircraft
7. Provides the means to provide a game plan
8. Provides the means to pass a CAS brief to aircraft
9. Provides the means to provide the aircraft with relevant remarks/restrictions
10. Provides the means to receive CAS brief read-backs
11. Provides the means to provide a laser "SPARKLE" to facilitate target correlation
12. Provides the means to direct aircraft to depart IP/commence attack
13. Provides the means to determine if the pending attack poses a risk to friendly forces
14. Provides the means to issue attack clearance or abort for individual attacks
15. Provides the means to assess of weapons effects on target
16. Provides the means to be able to provide weapons corrections to inbound aircraft
17. Provides the means to identify and report AA fires/missile launch on egressing aircraft
18. Provides the means to facilitate bomb damage assessment as appropriate
19. Provides the means to facilitate the direction of and compliance with aircraft egress instructions (routing and safety of flight)

C.9.8. Terminal Attack Control with a Remote Observer. The tasks required to facilitate terminal attack control with a remote observer are the same as C.9.1. (or C.9.2. for Type 3) except targeting information is provided to the JTAC by a remote observer. The JTAC and remote observe should be participants in the training scenario. Personnel role-playing aircrew must have a working knowledge of aircraft systems, TTPs, radio procedures, and brevity terms.

C.9.9. Terminal Attack Control using Video Downlink (Full motion Video). The following are the minimum tasks required to facilitate terminal attack control using sensor video broadcast from aircraft. Personnel role-playing aircrew must have a working knowledge of aircraft systems, TTPs, radio procedures, and brevity terms.

Terminal Attack Control Using Video Down-Link
1. Provides the means to identify CAS target using a broadcast video received from an aircraft sensor
2. Provides the means to determine CAS target location using a broadcast video received from an aircraft sensor
3. Provides the means to determine friendly locations in relation to the CAS target
4. Provides the means to generate a CAS briefing
5. Provides the means to receive final attack approval from Ground Commander
6. Provides the means to establish communications contact with aircraft
7. Provides the means to facilitate the direction of and compliance with aircraft to CP/IP instructions (routing and safety of flight)
8. Provides the means to receive fighter check-in
9. Provides the means to provide situation update to aircraft
10. Provides the means to provide a game plan

11. Provides the means to pass a CAS brief to aircraft
12. Provides the means to provide the aircraft with relevant remarks/restrictions
13. Provides the means to receive CAS brief read-backs
14. Provides the means to direct aircraft to depart IP/commence attack
15. Provides the means to determine if the pending attack poses a risk to friendly forces
16. Provides the means to issue attack clearance or abort for individual attacks
17. Provides the means to assess weapons effects on target
18. Provides the means to be able to provide weapons corrections to inbound aircraft using VDL info
19. Provides the means to facilitate bomb damage assessment using VDL
20. Provides the means to facilitate the direction of and compliance with aircraft on egress instructions (routing and safety of flight)

C.9.9.1. Suppression of Enemy Air Defenses (SEAD). The tasks required to facilitate SEAD in support of terminal attack control are the same as C.9.1. (or C.9.2. for Type 3) with the addition of the following tasks. Personnel role-playing aircrew and indirect fire systems must have a working knowledge of the employed systems, TTPs, radio procedures, and brevity terms.

Suppression of Enemy Air Defense (SEAD) Tasks
1. Provides the means to identify threat system
2. Provides the means to determine threat location
3. Provides the means to determine friendly locations in relation to threat system
4. Provides the means to determine all elements of the appropriate +
5. Provides the means to establish communications contact with fire direction center / surface fires coordination unit
6. Provides the means to determine observer to target range and bearing
7. Provides the means to determine if suppressing fires poses a risk to friendly forces
8. Provides the means to transmit the call for fire and receive required MTO or other required read-back elements
9. Provides the means to assess weapons effects on threat system
10. Provides the means to provide round adjustments
11. Provides the means to assess effectiveness of suppression fires and provide BDA to fire direction center / surface fires coordination unit at end of mission

C.9.10. Terminal Attack Control in an Urban Environment. The tasks required to facilitate Terminal Attack Control with in an urban environment are the same as C.9.1. (or C.9.2. for Type 3) except the JTAC is located in an urban environment. Urban training scenarios should present unique challenges such as operations in urban canyons, de-confliction in confined airspace, restrictive ROE, difficulty in threat analysis, the presence of noncombatants, the potential for collateral damage, and the increased risk of friendly fire. Personnel role playing aircrew must have a working knowledgeable of aircraft systems, TTPs, radio procedures, and brevity terms.

C.9.11. Terminal Attack Control using a FAC(A). The tasks required to facilitate terminal attack control with a FAC(A) are the same as C.9.1. (or C.9.2. for Type 3) except the JTAC is employing FAC(A) to assist with detecting and destroying enemy targets, coordinating target marking, providing TAC of CAS missions, conducting air reconnaissance, providing artillery

and naval surface fire support air spotting, providing radio relay for the TACP or JTAC, and passing BDA. Personnel role playing the FAC(A) must have a working knowledge of aircraft systems, FAC(A) TTPs, radio procedures, and brevity terms.

C.9.12. Night Terminal Attack Control. The following are the minimum tasks required to facilitate night terminal attack control. Conducting CAS at night requires employment of special equipment and TTPs to facilitate target engagement.

Night Terminal Attack Control Accreditation Tasks
1. Provides the means to identify CAS target at night using NVDs (illumination)
2. Provides the means to determine CAS target location at night
3. Provides the means to determine friendly locations in relation to the CAS target at night
4. Provides the means to generate a CAS briefing
5. Provides the means to receive final attack approval from Ground Commander
6. Provides the means to establish communications contact with aircraft
7. Provides the means to facilitate the direction and compliance with aircraft to CP/IP instructions (routing and safety of flight)
8. Provides the means to receive fighter check-in
9. Provides the means to provide situation update to aircraft
10. Provides the means to provide a game plan
11. Provides the means to pass a CAS brief to aircraft
12. Provides the means to provide the aircraft with relevant remarks/restrictions
13. Provides the means to receive CAS brief read-backs
14. Provides the means to conduct target correlation using night marking devices
15. Provides the means to direct aircraft to depart IP/commence attack
16. Provides the means to determine if the pending attack poses a risk to friendly forces
17. Provides the means to issue attack clearance or abort for individual attacks
18. Provides the means to assess weapons effects on target at night
19. Provides the means required to provide weapons corrections to inbound aircraft
20. Provides the means to identify and report anti-aircraft fires/missile launch on egressing aircraft at night
21. Provides the means to facilitate bomb damage assessment as appropriate at night
22. Provides the means to facilitate the direction of and compliance with aircraft egress instructions (routing and safety of flight)

Appendix D: Recommended JTAC Equipment List

D.1. Tactical Equipment

- Binoculars and/or Spotting Scope
- Night Vision Devices*
- Laser range finder*
- Laser eye protection
- Map*
- Compass*
- GPS*
- Protractor (mils and degrees) *
- Tablet/imagery

D.2. Friendly Position Marking Equipment

- IR strobe
- Marker panel(s) (VS-17 and/or thermal panels)
- Signal Mirror

D.3. Communications Equipment

NOTE: Man-portable, multi-band, long range, and beyond line-of-sight (BLOS), capable of communication with Command Net, Fires Net, Tactical Air Direction (TAD) Net (JTAC/aircrews), Joint Air Request Net (JARN)

- UHF/VHF AM*
- FM*
- SATCOM
- HF
- Encryption/Fill Device
- Secure Voice/Data*
- Frequency agile (SATURN/HQ II)

D.4. Target Marking/Designation Equipment

- Ground laser target designator*
- IR Pointer*
- Thermal/laser spot imager
- Video downlink receiver*
- Digital precision targeting software capable of Category I target location error (TLE) coordinate generations (e.g. PSS-SOF) *

D.5. Digitally Aided CAS (DACAS) Capability*

- Variable Message Format (VMF), Link 16, Cursor on Target (CoT)

NOTE: * designates items necessary to accomplish JMTL (exemptions listed in paragraph 5.3 JMTL apply). JTACs should be supplied with SPINS, communication plan, maps, and GRGs.

Glossary

Section I – Acronyms and Abbreviations

AAGS	Army air-ground system
ACA	airspace control authority; airspace coordination area
ACM	airspace coordinating measure (Joint) / airspace control means (NATO)
ACO	airspace control order
ACP	airspace control plan
ATO	air tasking order
ATP	allied tactical publication
BDA	battle damage assessment
BOC	bomb on coordinate
BOT	bomb on target
C2	command and control
CAS	close air support
DACAS	digitally aided close air support
EO	electro-optical
EW	electronic warfare
FAC(A)	forward air controller (airborne)
FIST	fire support team
FSCM	fire support coordination measure
FSE	fire support element
FW	fixed wing
GLTD	ground laser target designator
GPS	global positioning system
GRG	gridded reference graphic
IR	infrared
ISR	intelligence, surveillance, and reconnaissance
JP	joint publication
JTAC	joint terminal attack controller
JTAC-E	joint terminal attack controller evaluator
JTAC-I	joint terminal attack controller instructor
JTACQC	joint terminal attack controller qualification course
JTAR	joint tactical air strike request
LRF	laser range finder
LST	laser spot tracker
LTD	laser target designator
MACCS	Marine air command and control system
MISREP	mission report
MOA	memorandum of agreement; method of attack; military operations area
NATO	North Atlantic Treaty Organization
NSFS	naval surface fire support
NTACS	Navy tactical air control system
NVD	night vision device
NVG	night vision goggle
PSS-SOF	precision strike suite-special operations forces
ROE	rules of engagement

RW	rotary wing
SCL	standard conventional load
SEAD	suppression of enemy air defenses
SOF	special operations forces
SOP	standard operating procedure
SPINS	special instructions
STANAG	standardization agreement (NATO)
TAC	terminal attack control
TACP	tactical air control party
TACS	theater air control system
TAD	tactical air direction
TAGS	theater air ground system
TLE	target location error
TTP	tactics, techniques, and procedures
UAS	unmanned aircraft system
VDL	video downlink

Section II – Terms and Definitions

(Unless otherwise referenced, terms and definitions are specific to this document)

accredited simulation system – A live or virtual environment which has been assessed and accredited by the JFS ESC for its capability to facilitate the minimum JMTL and terminal attack control requirements contained in this MOA.

airspace control authority — The commander designated to assume overall responsibility for the operation of the airspace control system in the airspace control area. Also called **ACA.** (JP 3-52)

airspace control order – An order implementing the airspace control plan (ACP) that provides the details of the approved requests for airspace coordinating measures. Also called **ACO.** (JP 3-52)

airspace control plan — The document approved by the joint force commander that provides specific planning guidance and procedures for the airspace control system for the joint force operational area. Also called **ACP.** (JP 3-52)

airspace coordinating measures — Measures employed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces. Also called **ACMs.** (JP 3-52)

airspace coordination area – A three-dimensional block of airspace in a target area, established by the appropriate commander, in which friendly aircraft are reasonably safe from friendly surface fires. Also called **ACA.** (JP 3-09.3)

air tasking order – A method used to task and disseminate to components, subordinate units, and command and control agencies projected sorties, capabilities and/or forces to targets and specific missions. Also called **ATO.** (JP 3-30)

Army air-ground system – The Army system which provides for interface between Army and tactical air support agencies of other Services in the planning, evaluating, processing, and coordinating of air support requirements and operations. Also called **AAGS.** (JP 3-09.3)

attack heading – The assigned magnetic compass heading to be flown by aircraft during the delivery phase of an air strike. (JP 3-09.3)

battle damage assessment – The estimate of damage composed of physical and functional damage assessment, as well as target system assessment, resulting from the application of lethal or nonlethal military force. Also called **BDA**. (JP 3-0)

bomb on coordinate (BOC) – An attack when the JTAC/FAC(A) determines that the desired effects can be created against the target with CAS aircraft employing ordnance on a specified set of coordinates; the aircraft is not required to be TALLY / CAPTURED the target or CONTACT the mark.

bomb on target (BOT) – Aircraft/aircrew will acquire the target or intended aim point using the best method available; an attack requiring that the JTAC/FAC(A)'s intended target or mark is TALLY / CONTACT / CAPTURED by the aircrew.

certified – Individuals who satisfactorily complete the appropriate signatory academic and practical training requirements of an accredited training curriculum, and complete a comprehensive initial evaluation, are considered certified.

close air support – Air action by aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces. Also called **CAS**. (JP 3-0)

command and control – The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Also called **C2**. (JP 1)

condition – Describes the circumstances under which the task will be performed. The condition identifies when, and where the individual performs the task and what materials, personnel, and equipment the individual must have to perform the task.

contested control – A terminal attack control in an environment where the threat level and tactical scenario dictate the use of threat counter-tactics, countermeasures, and stand-off (vertical and/or horizontal) during target engagement. Includes integrating SEAD assets (indirect fire/electronic warfare) and accounting for degraded/denied communications and/or GPS and enemy direction-find capabilities, when applicable.

continue – Continue present maneuver; does not imply a change in clearance to engage or expend ordnance. (JP 3-09.3)

control – Consists of at least one simulated, dry, or live aircraft attacking a surface target. The control should follow the CAS execution template in accordance with (IAW) JP 3-09.3 CAS/ATP 3.3.2.1. TTP for CAS and Air Interdiction. Actual weapons release is not required. Two controls may be counted per CAS briefing per target.

digitally aided CAS (DACAS)– The machine-to-machine exchange of required CAS mission data (e.g. aircraft check-in, CAS brief, BDA) between a terminal attack controller, C2 node and CAS platform for the purpose of attacking a surface target.

dry terminal attack control – Control of an actual aircraft where air-to-ground munitions are not employed. Also called **Dry**.

emulate – To imitate the function of (another system), as by modifications to hardware or software that allow the imitating system to accept the same data, execute the same programs or functions, and achieve the same results as the imitated system. [Does not require form fit and function devices, but requires the same steps and produces the same result as the emulated system]

fire support – Fires that directly support land, maritime, amphibious, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives. (JP 3-09)

fire support coordination – The planning and executing of fire so that targets are adequately covered by a suitable weapon or group of weapons. (JP 3-09)

fire support coordination measure – A measure employed by commanders to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces. Also called **FSCM.** (JP 3-0)

fire support team – A field artillery team provided for each maneuver company/troop and selected units to plan and coordinate all supporting fires available to the unit, including mortars, field artillery, naval surface fire support, and close air support integration. Also called **FIST**. (JP 3-09.3)

forward air controller (airborne) – A specifically trained and qualified aviation officer, normally an airborne extension of the tactical air control party, who exercises control from the air of aircraft engaged in close air support of ground troops. Also called **FAC(A)**. (JP 3-09.3)

game plan – A concise and situational awareness enhancing tool to inform all players of the flow of the following attack. At a minimum, the game plan will contain the type of control and method of attack. In addition, the following can be part of or passed in remarks: the ground commander's intent, the ordnance effects desired, or the ordnance and fuze combination required, if known. Aircraft interval can also be requested from the aircrew or proposed by the JTAC. (JP 3-09.3)

infrared pointer – A low power laser device operating in the near infrared light spectrum that is visible with light amplifying night vision devices. Also called **IR pointer**. (JP 3-09.3)

joint terminal attack controller – A qualified (certified) Service member who, from a forward position, directs the action of combat aircraft engaged in close air support and other offensive air operations. Also called **JTAC**. (JP 3-09.3)

JTAC Evaluator (JTAC-E) – A qualified JTAC Evaluator is a JTAC who is designated to conduct initial and recurring 18-month JTAC evaluations.

JTAC Instructor (JTAC-I) – A highly qualified JTAC who is designated as a terminal attack control instructor. A JTAC instructor is authorized to instruct JTAC trainees.

JTAC Program Manager – Individual responsible for oversight of the signatory's JTAC program. Signatories should select appropriate personnel for this role; however, JTAC certification and/or qualification are not required.

live terminal attack control – Control of an actual aircraft where actual air-to-ground munitions (live, inert, or training ordnance) are employed. Also called **Live**.

Marine Air Command and Control System – A system that provides the aviation combat element commander with the means to command, coordinate, and control all air operations within an assigned sector and to coordinate air operations with other Services. Also called **MACCS**. (JP 3-09.3)

method of attack – Agreement between the supported commander, the JTAC/FAC(A), and the aircraft, regarding the aircrew's correlation requirement, and is completely independent of the type of control. The method of attack is broken down into two categories, BOT and BOC. These two categories define how the aircraft will acquire the target or mark. (JP 3-09.3)

naval surface fire support – Fire provided by Navy surface gun and missile systems in support of a unit or units. Also called **NSFS**. (JP 3-09.3)

night vision device – Any electro-optical device that is used to detect visible and infrared energy and provide a visible image. Also called **NVD**. (JP 3-09.3)

night vision goggle – An electro-optical image intensifying device that detects visible and near-infrared energy, intensifies the energy, and provides a visible image for night viewing. Also called **NVG**. (JP 3-09.3)

preplanned air support – Air support in accordance with a program, planned in advance of operations. (JP 3-09.3)

program – Refers to all aspects of JTAC training including, but not limited to, administrative management, readiness tracking, maintaining signatory JTAC directives, equipment, and simulation requirements.

practical exercise (PE) – A training event (e.g. sand table, tabletop or field exercise) which allows trainees to practice the skills associated with correct use of equipment, tactics, techniques and procedures. These events may include TAC but cannot be used to fulfill certification or qualification requirements, unless accredited as a SIM-LE (see Accredited Simulation System).

proficient – Trainee is able to accomplish all items in the task without assistance, in accordance with signatory standards.

qualified – A certified JTAC who completes the established minimum qualification training and evaluation requirements.

remote observer – Any individual who is integral to the success of the CAS attack based on the contributor's ability to provide target location, target marking, terminal guidance, or BDA. When possible this should be a JFO.

rules of engagement – Directives issued by competent military authority that delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. Also called **ROE**. (JP 1-04)

simulated terminal attack control – Control of a simulated aircraft conducting CAS in a live or virtual environment.

simulate – To assume or have the appearance or characteristics of an actual system or device that will accept the same data, execute the same programs or functions, and achieve the same results as the imitated system.

simulation – The use of a live or virtual environment designed to take the place of weapon systems, actual aircraft, equipment or other assets, in order to train to specific events.

simulation live environment (SIM-LE) – Simulation in a real environment in which assets are simulated; for example, conducting Type 2 BOC attacks on training range with aircraft simulated via third party.

simulation virtual environment (SIM-VE) – Simulation in a virtual environment in which assets and environment are digitally simulated (including augmented reality); for example, conducting CAS in a computer simulation with aircraft and other entities generated by the simulation system.

standard – Criteria for how well a task or learning objective must be performed. The standard specifies how well, completely, or accurately a process must be performed or product produced.

stimulate – The ability to use actual equipment in the simulation system as it would in the real world in order to provide the same results for use in the simulation.

suppression of enemy air defenses – Activity that neutralizes, destroys, or temporarily degrades surface-based enemy air defenses by destructive and/or disruptive means. Also called **SEAD**. (JP 3-01)

tactical air control party – A subordinate operational component of a tactical air control system designed to provide air liaison to land forces and for the control of aircraft. Also called **TACP.** (JP 3-09.3)

targeting – The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities. (JP 3-09.3)

task – A clearly defined and measurable activity accomplished by individuals and organizations. It must be specific; usually has a definite beginning and ending; may support or be supported by other tasks; generally, is performed in a relatively short time (however, there may be no time limit or there may be a specific time limit); and it must be observable and measurable.

terminal attack control – The authority to control the maneuver of and grant weapons release clearance to attacking aircraft. Also called **TAC.** (JP 3-09.3)

terminal control – 1. A type of air control with the authority to direct aircraft to maneuver into a position to deliver ordnance, passengers, or cargo to a specific location or target. 2. Any electronic, mechanical, or visual control given to aircraft to facilitate target acquisition and resolution. (JP 3-09.3)

terminal guidance – The guidance applied to a guided missile between midcourse guidance and arrival in the vicinity of the target. (JP 3-09)

trainee – Individual identified to attend the appropriate JTAC training program with the intent of being certified as a JTAC.

type of control – There are three Types: 1, 2, and 3. (JP 3-09)

unmanned aircraft – An aircraft that does not carry a human operator and is capable of flight with or without human remote control. Also called **UA.** (JP 3-30)

unmanned aircraft system – That system whose components include the necessary equipment, network, and personnel to control an unmanned aircraft. Also called **UAS.** (JP 3-30)

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