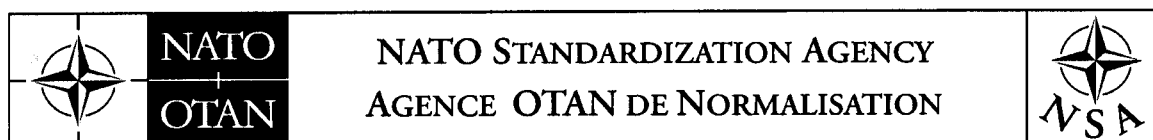


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MILITARY COMMITTEE LAND STANDARDIZATION BOARD (MCLSB)

24 January 2007

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MC LSB Distribution List

STANAG 2395 NSA ENGR (EDITION 3) – DELIBERATE WATER CROSSING PROCEDURES

References:


- A. MAS(ARMY)080-ENGR/2395 dated 25 March 1997 (Edition 2)
- B. NSA(ARMY)0413-ENGR/2395, dated 19 May 2006 (Edition 3) (Ratification Draft 1)

1. The enclosed NATO Standardization Agreement which has been ratified by nations as reflected in the **NATO Standardization Document Database (NSDD)**, is promulgated herewith.

2. The references listed above are to be destroyed in accordance with local document destruction procedures.

ACTION BY NATIONAL STAFFS

3. National staffs are requested to examine their ratification status of the STANAG and, if they have not already done so, advise the MC LSB, NSA, through their national delegation as appropriate of their intention regarding its ratification and implementation.


J. MAJ
Major General, POL(A)
Director, NSA

Enclosure:
STANAG 2395 (Edition 3)

NATO Standardization Agency – Agence OTAN de Normalisation
B-1110 Brussels, Belgium Internet site: <http://nsa.nato.int>
E-mail: nsa.army@hq.nato.int – Tel 32.2.707.55.79 – Fax 32.2.707.57.18

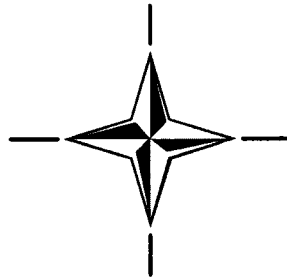
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STANAG 2395
(Edition 3)

**NORTH ATLANTIC TREATY ORGANIZATION
(NATO)**



**NATO STANDARDIZATION AGENCY
(NSA)**

**STANDARDIZATION AGREEMENT
(STANAG)**

SUBJECT: DELIBERATE WATER CROSSING PROCEDURES

Promulgated on 24 January 2007

J. MAJ 
Major General, POL(A)
Director, NSA

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RECORD OF AMENDMENTS

No.	Reference/date of amendment	Date entered	Signature

EXPLANATORY NOTES

AGREEMENT

1. This NATO Standardization Agreement (STANAG) is promulgated by the Director NATO Standardization Agency under the authority vested in him by the NATO Standardization Organisation Charter.
2. No departure may be made from the agreement without informing the tasking authority in the form of a reservation. Nations may propose changes at any time to the tasking authority where they will be processed in the same manner as the original agreement.
3. Ratifying nations have agreed that national orders, manuals and instructions implementing this STANAG will include a reference to the STANAG number for purposes of identification.

RATIFICATION, IMPLEMENTATION AND RESERVATIONS

4. Ratification, implementation and reservation details are available on request or through the NSA websites (internet <https://nsa.nato.int>; NATO Secure WAN <http://nsa.hq.nato.int>).

FEEDBACK

5. Any comments concerning this publication should be directed to NATO/NSA – Bvd Leopold III - 1110 Brussels - BE.

NATO STANDARDIZATION AGREEMENT
(STANAG)

DELIBERATE WATER CROSSING PROCEDURES

- Annexes: A. Terms and Definitions
B. Command and Control Responsibilities
C. Special Characteristics in Deliberate Crossings in Offensive Operations
D. Special Characteristics in Defensive or Delaying Operations

Related Documents:

STANAG 2101 TOP	- Establishing Liaison
AAP-6	- NATO Glossary of Terms and Definitions (English and French)
AAP-19	- NATO Combat Engineer Glossary
ATP-3.2	- Land Operations
ATP-52	- Land Force Combat Engineer Doctrine

AIM

1. The aim of this agreement is to standardize the procedures for deliberate water crossing operations.

AGREEMENT

2. Participating nations agree that national doctrines will embody the principles and characteristics outlined in this agreement.

DEFINITIONS

3. The lexicon in support of the terms and definitions used in the STANAG is listed in Annex A.

SCOPE

4. This agreement covers deliberate water crossing procedures within the operational framework. Special characteristics associated with deliberate crossing procedures in offensive, defensive and delay operations are covered in Annexes to the main text.

GENERAL

5. The purpose of any water crossing operations is to project combat power across the obstacle and is an integral part of sustaining ground manoeuvre and ensuring freedom of action in operations through the spectrum of conflict. When a water obstacle cannot be crossed from the march using existing bridges, fords or on-hand bridging resources and, possibly, due to threat force action, a deliberate crossing will have to be carried out.
6. The principles and practices of deliberate water crossing operations remain the same in asymmetric and non-linear threat environments.

CROSSING ORGANIZATION

7. The crossing organization, as outlined in Annex B, identifies the locations and function of all the essential components required in a deliberate water crossing operation. A typical crossing organization is depicted schematically in Appendix 1 to Annex B. The precise arrangement will depend on many factors and it must remain flexible and at the discretion of the responsible commanders at the time of the operation.

COMMAND AND CONTROL RESPONSIBILITIES

8. The need for a clear command organization, which plans and executes a complete but simple crossing plan, is paramount in all water crossing operations in order to support the crossing flow and to avoid losses caused by enemy activities. Command and Control responsibilities are further detailed in Annex B.
9. In a crossing operation, the movement of bridging equipment, troops, tracked and wheeled vehicles and their passage through assembly areas and, if necessary, waiting areas, over the obstacle, and their dispersal on the far side, must be strictly controlled. The controlling headquarters must provide a flexible organization and make best use of the resources available to react to any changes in the crossing flow and the tactical situation.
10. The basic requirements for control are:
 - a. A simple crossing plan with mutually agreed and known terms and symbols;
 - b. A crossing control organization with well-defined responsibilities;
 - c. A movement control organization; and
 - d. A command and control communication network.
11. Orders should state:
 - a. The crossing plan (Appendix 2 to Annex B);
 - b. The command structure;

- c. Who authorizes the start of site preparations and crossings;
- d. Who controls the movement to and over the various crossing sites; and
- e. The priorities for moving forces.

CROSSING OPERATIONS IN SPECIFIC OPERATIONS

12. Offensive Operations. The special characteristics of deliberate offensive crossings are identified in Annex C.

13. Defensive or Delaying Operations. The special characteristics of crossings during defensive, delay, relief or withdraw operations are identified in Annex D.

IMPLEMENTATION OF THE AGREEMENT

14. This STANAG is implemented when nations have issued instructions to their forces adopting these procedures.

LEXICON

1. Assembly Area - An area in which a command is assembled preparatory to further action (AAP-6). In water crossing operations, it may be used as a waiting area where any final regrouping of friendly forces takes place. It also may be established on the far side of the obstacle to regroup and facilitate the onward movement of friendly forces.
2. Bridgehead - An area of ground, in a territory occupied or threatened by the enemy, which must be held or at least controlled, so as to permit the continuous embarkation, landing or crossing of troops and material, and/or to provide manoeuvre space requisite for subsequent operations (AAP-6).
3. Bridgehead Line - The limit of the objective area in the development of the bridgehead (AAP-6).
4. Crossing Area - A number of adjacent crossing sites under the control of one commander (AAP-6). In water crossing operations, it may be situated on both sides of the obstacle, or one side only, and be bounded by phase lines. This area is kept free of forces, installations and equipment not necessary for the conduct of the crossing or for the defence of the crossing sites. In this area, the engineer commander exercises his technical engineer responsibilities.
5. Crossing Site - The location of a single bridge or rafting site, or in an initial assault, a site for the crossing of assault boats or for the swimming or fording of vehicles on a broad front (AAP-19).
6. Crossing Site Commander - An officer in command of a crossing site, who is responsible for both the technical aspects of maintaining the crossing and the movement of troops and vehicles across it (AAP-19). Crossing Site Commanders are normally engineers, however there may be cases where this may not be possible.
7. Deliberate Crossing - The crossing of an inland water obstacle that requires extensive planning and detailed preparation (AAP-6).
8. Hasty Crossing - The crossing of an inland water obstacle using the crossing means at hand or those readily available, and made without pausing for elaborate preparations (AAP-6).
9. Lodgement. The limit of the objectives of the bridgehead force. Seizure of the lodgement by the assault echelon will eliminate enemy ground observation and direct fire of the crossing sites.

10. Movement Control - The planning, routing, scheduling and control of personnel and cargo movements over lines of communication. Also - an organization responsible for the planning, routing, scheduling and control of personnel and cargo movements over lines of communications (AAP-6).
11. Movement Control Post - The post through which the control of movements is exercised by the commander, depending on operational requirements (AAP-6).
12. Movement Credit - The allocation granted to one or more vehicles in order to move over a controlled route in a fixed time according to movement instructions (AAP-6).
13. Phase Line - A line utilized for control and coordination of military operations, usually a terrain feature extending across the zone of action (AAP-6). In water crossing operations, phase lines may be established on each side of the water obstacle to delimit where a number of crossing sites come under the command of one commander. See also "Crossing Area".
14. Tactical Commander - A commander who can assign tasks to forces under his command for the accomplishment of the mission assigned by higher authority.
15. Waiting Area - A location adjacent to the route or axis which may be used for the dispersal of vehicles, troops and equipment while an element is waiting to resume movement (*former* ATP-35). Formerly called Buffer Area, Cushion Area, Dispersal Area, Holding Area or Staging Area. Waiting areas are normally located on both banks close to crossing areas.

COMMAND AND CONTROL RESPONSIBILITIES

AIM

1. The aim of this Annex is to identify the responsibilities of the key elements of the command and control structure and to standardize the general procedures for deliberate crossing operations.

COMMAND AND CONTROL STRUCTURES

2. A clear command structure is established to ensure the success of a deliberate water crossing operation. The tactical commander who orders the crossing is the overall commander. In any water crossing operation, it is normal to have four elements providing control over the crossing. These four elements with their functions are:

- a. Controlling Headquarters. The commander has the overall responsibility or command and control of the crossing operation and will issue the crossing plan. The commander may select, determine and allocate:
 - (1) crossing areas,
 - (2) crossing sites,
 - (3) assembly and waiting areas, and
 - (4) deployment routes.
- b. The commander may also issue special instructions for crossing times and, if necessary, the organisation of convoys.
- c. The commander exercises command and control through his headquarters. For a major crossing, if due to tactical circumstances—such as the main headquarters is too far from the water obstacle—a smaller special controlling headquarters (Forward Command Post) may be set up close to the obstacle to exercise greater control. The headquarters should have following staff elements represented: operations/security, movement control and engineers. It also may be necessary to have the following staff represented: combat service support, communications, electronic warfare and liaison elements from crossing formations/units.

- d. Crossing Area Headquarters. The commander must decide who is best suited as the Crossing Area Headquarters at the time depending on the tactical situation. In offensive operations the bridgehead force or the Force-in-Place may be used as the Crossing Area Headquarters. Once the crossing is no longer of immediate tactical concern, the responsibility for the crossing area may revert to another formation including the engineers. When the crossing is no longer an engineer technical problem, co-ordination of the crossing rests with the Movement Control Organisation. The following elements will be represented in the Crossing Area Headquarters: engineers, movement control, security, and combat service support elements (medical and recovery). The functions of the Crossing Area Headquarters are:
- (1) Security. Routes, waiting areas, near bank, attack positions and line of departure must be secured, as must be the objectives on the far bank once crossed;
 - (2) Movement Control. In order to maintain momentum, avoid congestion and provide flexibility, movement of troops and equipment must be strictly controlled;
 - (3) Terrain Control. Centralized terrain control is essential in order to co-ordinate the heavy demand for terrain near the obstacle; and
 - (4) Crossing Support. May include a variety of elements and equipment to support the crossing. Specialized engineer crossing support may include the operation of assault boats, swim sites and the construction of bridges and ferries. Recovery, medical and logistic support will also be required. Other support may include electronic warfare assets deployed to deceive the enemy from the intended crossing site.
- e. Subordinate to the Crossing Area Headquarters will be crossing site commanders:
- (1) Crossing Site Commander. Each crossing site will have a Crossing Site Commander. If there are many crossing sites, the Crossing Area Commander may create sectors to reduce the span of control. The Crossing Site Commander is normally an engineer appointed by the appropriate level of command with the following responsibilities:
 - (a) development and maintenance of the crossing site including entrances and exits;
 - (b) construction, operation and maintenance of the means of crossing;
 - (c) movement across the water at his crossing site including the giving of orders to troops during the crossing;

- (d) advice to the Waiting Area Controller on movement to his crossing site; and
 - (e) all technical aspects of maintaining the uninterrupted operation of his crossing site.
- f. Movement Control Organisation Headquarters. During deliberate water crossing operations, a Movement Control Organisation is required to ensure the co-ordinated and effective movement to and from crossing sites. The Movement Control Organisation is likely to be formed by the formation's reconnaissance and military police units. Planning and control of movement across the obstacle is the responsibility of the commander of the crossing operation. Where possible, Movement Control can be enhanced by the assistance from local civilian police to divert civilian traffic away from assigned routes. The Movement Control Organisation Commander exercises command through a Movement Control Organisation Headquarters, Sector Movement Control Headquarters and Movement Control Posts. To facilitate co-ordination, the Movement Control Organisation is normally collocated with the Controlling Headquarters. A Sector Movement Control Headquarters is normally collocated with the headquarters of each formation involved in the crossing operation. Assembly Area Controllers and Waiting Area Controllers further assist the Movement Control Organisation to co-ordinate movement within the crossing area. The responsibilities of the Movement Control Organisation are:
- (1) advising the commander on all aspects of movement/traffic control,
 - (2) establishing a movement control communications network,
 - (3) establishing liaison and co-operation from local civilian police (if applicable), and
 - (4) contributing to the crossing plan by:
 - (a) provision of axial routes and diversions,
 - (b) provision of route signing and guides,
 - (c) calculation and maintenance of time and distance factors, traffic flow and traffic density,
 - (d) dispersal and formation of columns
 - (e) establishment and manning of assembly and waiting areas, and
 - (f) provision of specific engineer routes, if possible.
 - (5) Assembly Area Controller. The Assembly Area Controller, in close co-ordination with the Crossing Site Commanders and the Waiting Area

Controllers, is responsible for the implementation of the following aspects of the crossing plan:

- (a) organising the assembly area,
 - (b) manning the area,
 - (c) establishing Movement Control Posts at the entrances to and exit from the area,
 - (d) controlling other movement control personnel in charge of movement within the area,
 - (e) dispatching packets, and
 - (f) giving priority over all other traffic to engineer vehicles required at the crossing sites.
- (6) The Assembly Area Controller will be assisted in this task by:
- (a) engineer personnel as required and available,
 - (b) liaison personnel for the crossing formation/unit, and
 - (c) repair and recovery elements.
- (7) Waiting Area Controller. The Waiting Area Controller normally is the Commander of the Movement Control Post at a waiting area and is, in conjunction with the Assembly Area Controller and Crossing Site Commander, responsible for:
- (a) the organisation of and procedures within the area; and
 - (b) holding and dispersing vehicles in case of traffic congestion at the crossing site until it has been cleared.
- (8) Movement Control Posts. The distribution of Movement Control Posts must clearly enable the commander to monitor continuously the traffic flow and to react quickly to any disruption by reallocating roads and/or crossing sites. Movement Control Posts along the near bank provide liaison with the Crossing Site Commander.
- g. Liaison. There is a constant requirement for the commander, the crossing area commander, the engineer commander, and the crossing site commanders to keep each other informed on the latest plan, the organisation and the procedures for crossing the obstacle. This allows the crossing area commander and the crossing site commanders to operate away from each other in times of reduced communications or changes in the situation or threat.

ENGINEER COMMAND AND CONTROL

3. Engineer Responsibilities. Engineer commanders are responsible at their respective levels of command for:

- a. Giving advice on all engineer matters;
- b. ensuring there is an adequate communications network for engineers involved in the operation;
- c. assigning engineer units (which may include assigning commanders of crossing sites);
- d. Contributing to the crossing plan by advising, if required, on the following points:
 - (1) selection of crossing sites, alternatives crossing sites and approaches to both,
 - (2) allocation of engineer resources to sites,
 - (3) recommendation of waiting areas adjacent to or within a crossing area,
 - (4) determination of the limits of the crossing area,
 - (5) identification of the security and protection requirements at the crossing site,
 - (6) establishment and control of water safety procedures, and
 - (7) determination and maintenance of the crossing means' capabilities.

4. To ensure that vehicles crossing the water obstacle are within the capabilities of the crossing means, engineer personnel, if available, are located in selected waiting areas or Movement Control Posts. They conduct technical checks and assist the movement control personnel to make up and dispatch vehicle packets and convoys to appropriate crossing sites.

RESPONSIBILITIES OF CROSSING FORMATIONS/UNITS

5. When a force is required to conduct a move, which is controlled and supported by another authority, it is mandatory for this force to liaise as early as possible at its respective level of command within that authority. Liaison is a standard operating procedure at all levels. The purpose of this liaison is to exchange relevant documents and to be briefed on:

- a. movement Control Organisation,

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- b. organisation and procedures of the water crossing,
- c. reporting details for the move and for the water crossing, and
- d. convoy composition.

6. The relevant information from this briefing should be passed to all personnel exercising command of convoys and all drivers. They must obey the instructions of the Crossing Area Headquarters and the Movement Control Organisation.

7. When entering an assembly area or (if necessary) a waiting area, each convoy commander or his representative and drivers of isolated vehicles are to report to the first Movement Control Post indicated by the prescribed signs. The Movement Control Post will be given the required information concerning formation/unit, number of vehicles, military load classification etc., and issue the necessary orders and instructions.

SUPPORT SERVICES

8. Medical. The Crossing Plan must include medical arrangements, particularly for the evacuation of casualties. Medical facilities with casualty evacuation assets should be established each side of the obstacle.

9. Repair and Recovery. The following provisions should be made in the crossing plan.

- a. Recovery facilities to ensure all routes, and particularly ramps and approaches to the crossing sites are kept open. Clearing routes and crossing sites of immobilized vehicles has priority over repair activities.
- b. A repair and recovery capability at selected assembly/waiting areas. The associated Movement Control Post will co-ordinate their activity.
- c. Recovery facilities must be available at each crossing site.

10. Supply. The responsibility for supply remains with the crossing formations.

COMMUNICATIONS

11. No water crossing operation can be carried out smoothly without an adequate communications network. Three separate networks that are necessary are the command, movement control and engineer command nets. They should be based on existing unit and formation communications and have the following purpose:

- a. Command Net
 - (1) To support the overall commander.
 - (2) To connect with:

- (a) the Movement Control Organisation if separated from the Controlling Headquarters,
- (b) the engineer commander,
- (c) the Force-in-Place,
- (d) the crossing formations/units, and
- (e) the controlling headquarters and/or Forward Command Posts if deployed.

b. Movement Control Net

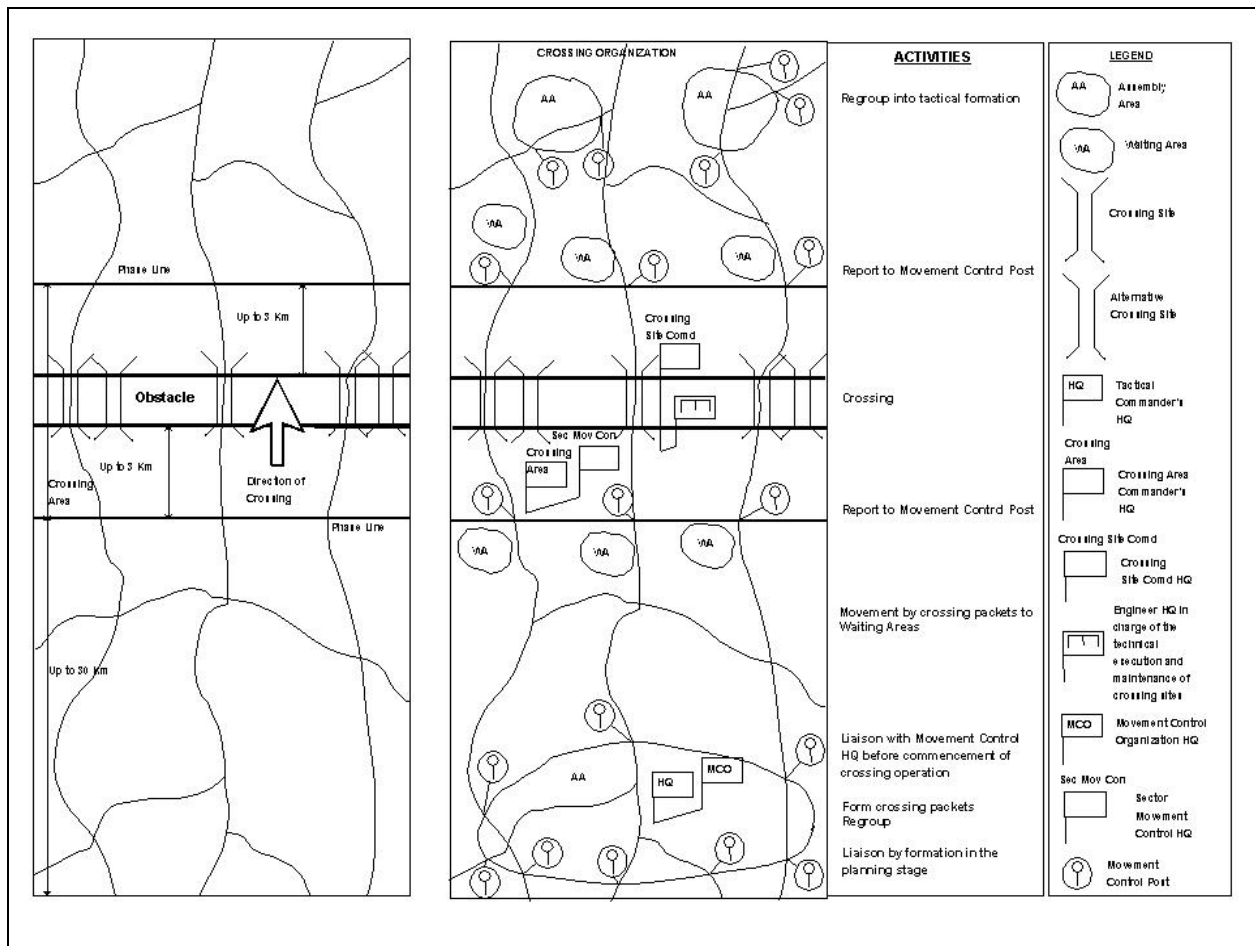
- (1) To co-ordinate all movement control activities in the operational area.
- (2) To link all movement control agencies down to Movement Control Posts.

c. Engineer Net. To co-ordinate engineer activities.

12. In addition to an adequate communications network, liaison officers may be employed to facilitate command, movement control and engineer liaison.

APPENDIX 1 TO
ANNEX B TO
STANAG 2395
(Edition 3)

EXAMPLE OF A CROSSING ORGANIZATION



WATER OBSTACLE CROSSING PLAN

AIM

1. The aim of this appendix is to identify the specific content of the crossing plan for a deliberate water crossing operation.

PLAN CONTENT

2. The crossing plan should include the following items:
 - a. Current operational and tactical situation and concept;
 - b. Commander's intention, special directives and arrangements for security, movement control, terrain control and crossing support;
 - c. Designation of Crossing Sites, alternate Crossing Sites and routes leading to and from them (including specific engineer routes, if possible);
 - d. Grouping and tasks for engineers;
 - e. Crossing schedule that provides a timetable for the crossing as well as:
 - (1) Movement credits per unit, if existing, and
 - (2) Priorities for the crossing;
 - f. Movement/Traffic Control plan to include routes to and from the obstacle, axial and lateral routes, Movement Control Posts and Assembly/Waiting Areas. Routes will be signed;
 - g. Alternative arrangements for ferrying and bridging;
 - h. Limitations such as the capacity, speed and Military Load Classification;
 - i. Nicknames or other identification symbols (e.g. numbers) for each Crossing Site;
 - j. Combat Service Support measures including medical, repair and recovery and supply issues;
 - k. Communications and liaison information, and
 - l. Defence of the Crossing Sites.

SPECIAL CHARACTERISTICS IN
DELIBERATE CROSSINGS IN OFFENSIVE OPERATIONS

AIM

1. The aim of this Annex is to standardize water crossing procedures specific to deliberate offensive crossings.

PURPOSE

2. The objective of a water crossing operation in the offence is to project combat power across an obstacle while ensuring maintenance of momentum and the initiative.

STAGES

3. Deliberate offensive water crossings are conducted in five overlapping stages, outlined below:

Approach to Obstacle - The approach of the Bridgehead Force to the water obstacle. A passage of lines through the Force-in-Place may be necessary.

- a. Assault - to gain a lodgement on the far side of the water obstacle.
- b. Build-up - to extend the lodgement into a bridgehead.
- c. Consolidation - to establish a firm base within the bridgehead from which to breakout and continue the overall operation.
- d. Breakout - The breakout is the aim of the crossing operation and it must remain as the commander's main objective to maintain momentum of the force.

FORCES

4. A clear command structure is established to ensure the success of a deliberate offensive water crossing operation. The relationship between the commanders of the various forces must be well understood. There are three main forces involved:

- a. Bridgehead Force. The Bridgehead Force consists of an assault echelon and a main body. Its mission is to control ground in order to permit the continuous embarkation, landing or crossing of troops and materiel. It will also provide the manoeuvre space needed for subsequent operations. Within its area, the Bridgehead Force has normal responsibility for security, including the defence of the far bank. The assault echelon is tasked with gaining the lodgement, normally by seizing intermediate objectives. This prevents enemy ground observation and fire on to the crossing sites, so that crossing sites and

equipment can be prepared and operated to bring the main body and Breakout Force to the far side with minimum interference. The main body conducts the build-up stage and participates in the consolidation stage. Engineers supporting the bridgehead forces will be grouped with the assault echelon and main body and tasked to provide close engineer support from the far bank to the bridgehead line.

- b. Breakout Force. The Breakout Force is tasked with the continuation of the overall operation. The force will conform to the Bridgehead Force regarding use of ground in the bridgehead. In some circumstances, the breakout may be an additional task of the Bridgehead Force. The planning and preparation requirements for the Breakout Force are similar to those undertaken by any advancing force. The force will cross the obstacle into assembly areas and eventually breakout of the bridgehead in accordance with the commander's concept of operations. Engineers supporting the breakout are normally dedicated to that task and are not employed for other stages of the crossing.
- c. Force-in-Place. When an allied or national force is already in place along the obstacle, it can be called upon to assist the Bridgehead Force during the crossing. In some circumstances the Bridgehead Force and the Force-in-Place will be the same organization. The Force-in-Place provides fire and other support to the Bridgehead Force during the crossing. Within its area, it has normal responsibilities for security, including defense of the obstacle and the home bank. A forward passage of lines will occur as the Bridgehead Force and Breakout Force pass through the Force-in-Place. Engineers from the Force-in-Place, with augmentation from other engineers and engineer specialists, will normally be tasked to operate crossing sites to include the operation of assault boats, preparation of crossing sites, swim sites, fording sites and the construction of bridges and ferries.

PLANNING

5. Planning for a deliberate water crossing is similar to that for an attack; however, a number of additional factors are considered because of the obstacle. The tactical commander will determine the composition of forces needed on the far side of the obstacle. This will drive his movement plan, which will determine the required crossing rate. The engineer commander will advise on the feasibility of attaining this rate and will assist in developing the crossing plan accordingly.

6. In addition to determining the composition of forces and their missions, the tactical commander normally will assign responsibility for the critical functions to the Bridgehead Force. These functions then will be executed within each sector. Although much of the detailed planning and coordination can be done by the Bridgehead Force command element, final responsibility for the operation will always remain centralized with the tactical commander.

CRITICAL FUNCTIONS

7. There are several critical functions:

- a. Security. The routes, Assembly and Waiting Areas, home bank, attack positions and Line of Departure must be secure. As the crossing moves into the build-up stage, the bridgehead objectives on the far side must be secure to permit consolidation and provide a secure Line of Departure for the Breakout Force;
- b. Movement Control. In order to maintain momentum, flexibility and avoid congestion, movement of troops and equipment must be strictly controlled;
- c. Terrain Control. Centralized terrain control is essential in order to coordinate the heavy demand for terrain near the obstacle;
- d. Crossing Support. Specialized engineer crossing support may include the operation of assault boats, swim sites, and the construction of ferries and bridges. Recovery, medical and re-supply support also should be coordinated;
- e. Crossing Area. The commander will order a crossing area only if the tactical situation or the nature of the obstacle requires it. The establishing of a crossing area allows the commander the flexibility to switch traffic from one crossing site to another, and prevents a build-up of friendly forces near the obstacle. It also gives the engineers the freedom to shift equipment from one site to another. The depth of the crossing area is normally not very great and will depend on the size of the obstacle and the terrain. Its near and far boundaries should be positioned within the closest lateral routes approximately 3 kilometres from the water or on easily recognisable terrain features which run parallel to the obstacle. An entry line will be established as a control measure to show where control of movement and terrain is delegated to the crossing area headquarters; and
- f. Crossing Sites. Crossings should be conducted on as broad a front as possible, with multiple crossing sites. Areas selected for crossing should have the following features, either naturally or through engineer development.
 - (1) A suitable number of crossing sites, with alternates, which are dispersed to reduce vulnerability and to provide flexibility. The number of crossing sites established is normally twice that required by the desired crossing rate. This is necessary; as time does not usually allow other sites to be started should the initial ones fail. In addition, the threat may dictate the need to move to another site.
 - (2) Cover from observation.

- (3) Routes to and from crossing sites, to include lateral routes, which have the required load classification and capacity.
 - (4) Waiting areas.
 - (5) Sufficient space for the establishment of a bridgehead.
 - (6) Locations for elements providing support by direct fire and observed indirect fire.
 - (7) Assembly areas which are located some distance from the obstacle where forces wait to move to the crossing site and proceed to once the force has crossed the obstacle to clear the crossing area of congestion. The assembly areas must be dispersed, have good routes to the crossing sites, and have good cover and concealment.
- g. Bridgehead. A bridgehead should have the following characteristics:
- (1) Defensible terrain of sufficient extent that the enemy cannot seriously interfere with the crossing;
 - (2) sufficient crossing and movement facilities to avoid congestion; and
 - (3) a base for the continuation of the overall operation.

ENGINEER RESPONSIBILITIES

8. Engineer support will be required for nearly all crossings and is therefore vital. The task of the engineers is to enable the Bridgehead Force to cross the obstacle. In order to ensure the minimum loss of momentum, engineer reconnaissance assets will need to be attached to the leading elements of the formation and bridging resources should be placed in the order of march such that they can be made available as quickly as possible. As a secondary task, engineers may be required to prepare obstacles to protect the flanks of the Crossing Force.

9. Engineer Commander. Each level of Command in a water crossing operation will have an engineer who is responsible for the technical aspects of executing the crossing. This includes:

- a. giving advice on all engineer matters, such as the selection of crossing sites, the allocation of engineer forces and equipment, the selection of Waiting Areas adjacent to Crossing Sites and water safety;
- b. ensuring that there is an adequate communications network for engineers involved in the operation; and
- c. assigning Crossing Site Commanders.

10. Crossing Site Commanders. Each Crossing Site will have a commander who is normally an Engineer. He will have the following responsibilities:

- a. develop and maintain the Crossing Site, including entrances and exits;
- b. construct, operate and maintain the means of crossing;
- c. control movement across the water at his Crossing Site, including giving orders to troops during the crossing;
- d. advise the Waiting Area Controller on movement to his Crossing Site; and
- e. monitor all technical aspects of his Crossing Site and crossing equipment.

11. Waiting Areas/Movement Control Points. To ensure that vehicles crossing the obstacle are within the capability of the crossing means, engineer personnel are located in selected Waiting Areas or Movement Control Points. They conduct technical checks and assist the movement control personnel to make up and dispatch vehicle packets and convoys to appropriate Crossing Sites.

12. Assault Stage. In support of the Bridgehead Force during the assault stage, the engineer responsibilities include:

- a. reconnaissance of obstacle for boat, ford, snorkel, swim or ferry sites including associated Assembly Areas, routes and Waiting Areas;
- b. determination of ferry and bridge support requirements for the Bridgehead Force;
- c. coordination of Crossing Sites with the assault echelon forces;
- d. manning of boats, boat off-loading points and boat inflation points;
- e. support to swimming, fording or snorkelling operations including clearance and maintenance of the far bank exits;
- f. breaching of any obstacles on the far bank water-line which hinder the landing of assault boats or vehicles;
- g. provision of water safety organization, and
- h. deployment with the assault echelon to provide engineer support in seizing the lodgement.

13. Build-up and Consolidation Stage. In support of the Bridgehead Force during the build-up and consolidation stages, the engineer responsibilities include:

- a. continuation or closing out of ford, snorkel and swim sites;
 - b. preparation, operation and maintenance of ferry, and/or bridge sites;
 - c. continued operation of safety organization; and
 - d. support to the Bridgehead Force in establishing the bridgehead line by:
 - (1) breaching obstacles;
 - (2) assistance with field protection;
 - (3) obstacle emplacement for flank protection; and
 - (4) route maintenance.
14. Breakout. The breakout is the continuation of the operation.

SPECIAL CHARACTERISTICS IN
DEFENSIVE OR DELAY OPERATIONS

AIM

1. The aim of this Annex is to standardize those water crossing procedures specific to defensive or delaying operations.

PURPOSE

2. The purpose of a water crossing in defensive or delay operations is to cross the water obstacle while preserving the integrity of the force.

STAGES

3. Crossings in defensive and delaying actions are conducted in concert with the following overlapping stages:
 - a. Relief. The maximum use of existing crossing infrastructure (fords, permanent and equipment bridging and ferries) should be made to withdraw those elements not essential to the defensive/delaying battle as early as possible. This will likely entail a rearward passage of lines as the units move through the Force-in -Place for the defence/delay on the obstacle. The in place force, in effect, will establish a bridgehead to protect the crossing of those conducting the passage of lines;
 - b. Delay. This represents the assault stage in reverse. Forces on the enemy bank are withdrawn under the cover of home bank supporting fire (direct and indirect). The threat forces' pressure dictates the crossing rate. The tactical commander may elect to accept risk by using all crossing resources available, concentrating on those best concealed or protected. Those means of crossing no longer required should be withdrawn, dismantled or destroyed; and
 - c. Withdrawal. The development of the obstacle, on both banks, in concert with the preparation of the subsequent defensive/delaying positions is carried out during this stage. Rafts, ferries, swimming, snorkelling and/or any other available means may remove the last friendly troops and vehicles.

FORCES

4. Crossings in defensive/delay operations are conducted with two forces:
 - a. Force-in-Place; and

b. Withdrawing Force.

5. The same control measures are used in crossings for defensive/delay operations. These are depicted graphically in Annex B, Appendix 1.

PLANNING

6. Water crossings in defensive or delay operations differ from offensive crossings in several aspects:

- a. initially, both banks of the water obstacle are under friendly control. Detailed information concerning the obstacle and the area over which the defensive or delay operation will be conducted is readily available to the tactical commander;
- b. all existing bridges and other crossing sites are available to the force to expedite the crossing; and
- c. in most cases, relative combat power favours the threat.

7. Planning for crossings in defensive/delay operations must consider the following factors:

- a. Crossings must not impede the conduct of defensive or delaying actions;
- b. Crossings are carried out when the use of the existing bridges may threaten the success of the defensive or delaying actions;
- c. As the crossings are likely to be conducted under pressure with increasingly unfavourable force ratios, great care must be taken in coordinating the crossing with the fire and obstacle plans; and
- d. Upon completion of the crossing operation, the crossing sites must be either destroyed or dismantled.

CRITICAL FUNCTIONS

8. The critical functions for defensive/delay crossings are:

- a. Security. The routes, assembly areas, waiting areas on the home bank must be secure to allow forces to cross the obstacle. The Force-in -Place provides security for the main body to cross the obstacle;
- b. Movement Control. In order to avoid confusion and congestion across the obstacle, movement of troops and equipment must be strictly controlled;
- c. Terrain Control. Terrain control is essential near the obstacle itself to accommodate the Withdrawing Forces; and

- d. Crossing Support. Engineer support may include early identification of bridges for dismantling or demolitions. Engineer crossing support may include the operation of Crossing Sites to support the final withdrawal of the Force-in -Place.

ENGINEER RESPONSIBILITIES

9. General. The engineer units assigned to the obstacle should be separate from those supporting the units in contact with the enemy. Engineers will perform the following actions during the three stages:

- a. Relief

- (1) Force-in -Place. The engineers supporting the Force-in -Place will support the establishment of the bridgehead. This will include the construction of obstacles and barriers, the preparation and execution of reserved demolitions and the provision of mobility support within the bridgehead and on the home bank. This last task includes, along with maintaining routes within the bridgehead, the provision and/or maintenance of crossing infrastructure, including bank maintenance. This infrastructure gradually will be thinned out and withdrawn; and
- (2) Withdrawing Force. The engineers supporting the Withdrawing Force perform conventional defensive/delaying tasks, support the mobility of the force, effect liaison with the Force-in -Place engineers, reconnoitre obstacles including minefield lanes and reserved demolitions on the withdrawal route and assist the Force-in -Place engineers as able and required;

- b. Delay

- (1) Force-in -Place. Remaining crossing infrastructure will be withdrawn or destroyed. Engineers will support the withdrawal of the final elements of the Force-in -Place with integral resources. As this may be in contact, the engineer will have to advise the tactical commander on a technical and tactical compromise between continuing the crossing, holding a given site and destroying the crossing site and means; and
- (2) Withdrawing Force. Engineers remain with their supported force to permit movement to the next area of operations. Some elements may be temporarily tasked to assist the Force-in -Place engineers.

- c. Withdrawal. Engineers will ensure the removal and/or destruction of all crossing sites and infrastructure, in accordance with developing the commander's obstacle plan. Other tasks include those supporting conventional defensive/delaying actions i.e. mobility, counter mobility, survivability and general engineer support tasks.