

## APPENDIX D

# PLANNING CONSIDERATIONS FOR WATER, WIRE, AND TREE EMERGENCY LANDINGS

*An airborne airdrop is an inherently high-risk operation. When water, wire, or tree obstacles are on or close to the intended drop zone, the jumpers face an even higher risk of injury. This appendix assists the commander in conducting a DZ risk assessment analysis. This appendix also provides the commander, DZSO/DZSTL, and JM with operational and logistical planning measures to lower the risks jumpers may encounter during airborne operations.*

### D-1. WATER OBSTACLES

A water obstacle is any body of water (for example, a lake, pond, river, stream, or canal) that has a depth of 4 feet or more, is 40 feet wide or wider, and is located within 1,000 meters of any edge of the surveyed or tactically assessed DZ.

#### a. Risk Assessment Analysis for a Drop Zone with Water Obstacles.

When making a training parachute jump DZ risk assessment, the commander should consider the proximity of the water obstacle to the DZ, the depth of the water obstacle, and the width of the water obstacle. Additionally, the following factors may enter into the water obstacle risk assessment: the condition of the water obstacle bottom, the current of a free-flowing water obstacle, water temperature, the number of obstacles, the equipment available to reduce the risk level, jumper experience levels, jump time (day or night and percent of illumination), and whether or not the selected DZ is critical to mission success. The following risk categories are assigned to DZs with water obstacles:

(1) **High risk.** A high-risk condition exists if a water obstacle is within 1,000 meters of any edge of the DZ, water depth is 4 feet or more, and water is 40 feet wide or wider. If a high-risk condition exists, it may be necessary to use a boat detail.

(2) **Medium risk.** A medium-risk condition exists if a water obstacle is more than 1,000 meters but less than 1,500 meters from any edge of the DZ, water depth is 4 feet or more, and water is 40 feet wide or wider.

(3) **Low risk.** A low-risk condition exists if a water obstacle is more than 1,500 meters from any edge of the DZ, water depth is 4 feet or more, and water is 40 feet wide or wider.

**b. Planning Considerations.** The commander, DZSO/DZSTL, and JM perform the following actions to reduce the risks associated with water obstacles:

(1) **Commander.**

(a) Ensure a risk assessment analysis has been conducted to determine the unintentional water landing risk level for jumpers. If a high risk exists, select (if possible) an alternate DZ that allows mission conduct at a lower risk level.

(b) Ensure a follow-on assessment has been made to determine whether the jumpers' risk level has changed.

(c) Ensure that key leaders, jumpmasters, and jumpers have been informed of the water obstacle risks and the risk level (high, medium, or low).

(d) Ensure USAF Form 3823, DZ Survey (formerly MAC Form 339), is current and available. Ensure the DZSO/DZSTL and JM have read it and completely understand the unintentional water landing risk level and the safety measures that are to be used.

(e) If a boat detail is used, ensure DZSO/DZSTL and the unit providing the detail have properly conducted initial or refresher training. Ensure the OIC/NCOIC of the boat detail knows where and when the detail begins its duties and how to contact the DZSO/DZSTL.

(f) Ensure that B-5 or B-7 life preservers are coordinated for if used.

(g) Ensure DZSO/DZSTL, JM/AJM, safeties, and jumpers are informed of all water obstacle risks and that the DZSO/DZSTL and JM complete their duties.

(2) **DZSO/DZSTL.**

(a) Determine if a follow-on assessment of the DZ has been conducted to confirm the current status.

(b) If the risk assessment indicates high risk and a boat detail is necessary, ensure the OIC/NCOIC is fully briefed on the plan. Ensure all boat detail personnel have been trained and have all necessary equipment available to conduct the mission.

(c) Read all applicable regulations, FMs, and SOPS. Ensure copies are present throughout mission.

(3) **Jumpmaster.**

(a) If B-5 or B-7 life preservers are to be used, ensure they have been inspected within the last 180 days and are serviceable, and that all jumpers have been trained on life preserver wear, fit, and use (to include manual inflation).

(b) Ensure all personnel have received prejump training within 24 hours prior to drop time, with special emphasis on unintentional water landings.

c. **Water Obstacle Coverage.** Each water obstacle may require a different type of coverage. The following is an example composition of a boat detail. Equipment should be altered to best accomplish the mission.

- (1) OIC/NCOIC (qualified as a boat operator) and assistant boat operator.
- (2) Qualified boat operators per boat - 1 primary and 1 assistant.
- (3) Recovery personnel per boat - 2 (one may be lifeguard qualified and combat lifesaver certified). All boat detail personnel should be strong swimmers.
- (4) Each recovery boat team may need the following equipment:
  - Boat (Zodiac RB-10 or solid-bodied boat of comparable size) with operable outboard motor.
  - Enough fuel/oil to complete the mission.
  - Life vest/flotation device for each boat detail member and additional flotation devices for jumpers.
  - Life ring with attached rope - 1.
  - Radio with spare battery - 1.
  - Shepherd's crook - 1.
  - Grappling hook - 1.
  - Long backboard to facilitate CPR - 1.
  - Aid bag with resuscitation equipment - 1.
  - Rope, 120 feet long - 1.
- (5) For night recovery operations, the following equipment should be added:
  - Operational night vision devices per boat with spare batteries - 2.

d. **Optional Training.** The following optional training is suggested:

- (1) Suspended harness training on second through fifth points of performance may be given. Step-by-step training on the procedures jumpers will take for an unintentional water landing may be conducted.
- (2) An optional dunk tank training device may be constructed to allow the lowering of jumpers (wearing parachute harness and B-5 or B-7 life preserver) into the water. This training familiarizes the jumpers with the proper emergency water landing procedures.

## D-2. WIRE OBSTACLES

A wire obstacle is a wire or set of wires (regardless of height or type) located within 1,000 meters of any edge of the surveyed or tactically assessed DZ. The types of wire obstacles that could pose a risk to jumpers are power, telephone, or cable television wires. Wire fence can be regarded as an obstacle if it will pose a hazard to jumpers. Power line capacity (voltage or amperage) is not a factor

when determining the risk to jumpers who may come in contact with a wire obstacle on or near the DZ.

**CAUTION**

REGARDLESS OF VOLTAGE OR CURRENT-CARRYING CAPACITY, IF A POWER LINE IS LOCATED WITHIN 1,000 METERS OF ANY EDGE OF THE SURVEYED OR TACTICALLY ASSESSED DZ, THE POWER SHOULD BE CUT OFF BEFORE USING THE DZ, IF POSSIBLE.

**a. Risk Assessment Analysis for a Drop Zone with Wire Obstacles.**

When making a training parachute jump DZ risk assessment, the commander should consider the proximity of the wire obstacle to the DZ, the height of the wire obstacle, the number of obstacles, the equipment available to reduce the risk level, jumper experience levels, drop time (day or night and percent of illumination), and whether or not the selected DZ is critical to mission success. The following risk categories are assigned to DZs with wire obstacles:

- (1) **High risk.** A high-risk condition exists if a wire obstacle is within 1,000 meters of any edge of the DZ. If a high-risk condition exists, it may be necessary to have a recovery detail at the DZ.
- (2) **Medium risk.** A medium-risk condition exists if a wire obstacle is more than 1,000 meters but less than 1,500 meters from any edge of the DZ.
- (3) **Low risk.** A low-risk condition exists if a wire obstacle is more than 1,500 meters from any edge of the DZ.

**b. Planning Considerations.** The commander, DZSO/DZSTL, and JM perform the following actions to reduce the risks associated with wire obstacles:

(1) **Commander.**

(a) Ensure a risk assessment analysis has been conducted to determine the unintentional wire landing risk level for jumpers. If a high risk exists, select (if possible) an alternate DZ which allows mission conduct at a lower risk level.

(b) Ensure a follow-on assessment has been made to determine whether the jumpers' risk level has changed.

(c) Ensure that key leaders, jumpmasters, and jumpers have been informed of the wire obstacle risks and the risk level (high, medium, or low).

(d) Ensure USAF Form 3823, DZ Survey (formerly MAC Form 339), is current and available. Ensure the DZSO/DZSTL and JM have read it and completely understand the wire landing risk level and the safety measures to be used.

(e) If a recovery detail is used, ensure DZSO/DZSTL and the unit providing the detail have properly conducted initial or refresher training. Ensure the

OIC/NCOIC of the recovery detail knows where and when the detail begins its duties and how to contact the DZSO/DZSTL.

(f) Ensure DZSO/DZSTL, JM/AJM, and jumpers have been informed of all wire obstacle risks. Ensure the DZSO/DZSTL and JM complete their duties.

(2) **DZSO/DZSTL.**

(a) Determine if a follow-on assessment of the DZ has been conducted to confirm the current status.

(b) If the risk assessment indicates high risk and a recovery detail is utilized, ensure that the OIC/NCOIC is fully briefed on the plan. Ensure all recovery personnel have been trained and have all necessary equipment available to them to conduct the mission.

(c) Ensure the coordination with the power company has been made to cut off the power not later than 1 hour prior to drop time, if possible.

(d) Read all applicable regulations, FMs, and SOPs. Ensure copies are present throughout mission.

(3) **Jumpmaster.**

(a) Ensure all personnel have been briefed on the wire obstacles.

(b) Ensure all personnel have received prejump training within 24 hours prior to drop time with special emphasis on unintentional wire landings.

c. **Wire Obstacle Coverage.** Each wire obstacle may require different types of coverage. The following is an example composition of a recovery detail. Equipment should be altered to best accomplish the mission.

(1) OIC/NCOIC and assistant.

(2) Enough personnel to recover jumpers who may become entangled in the wire obstacle.

(3) A recovery team may need the following equipment:

- Radios with spare batteries - 2(1 for OIC/NCOIC and 1 for recovery team).
- Grappling hook - 1.
- Tree-climbing kit - 1.
- Long backboard to facilitate CPR - 1.
- Aid bag with resuscitation equipment - 1.
- Ropes, 120 feet long - 2.
- Wood poles 15 feet long - 2.
- Wood extension ladder, 20 feet long - 1.
- Snap links - 4.

(4) For night recovery operations, the following equipment should be added:

- Night vision devices per team with spare batteries.
- Operational flashlights per team with spare batteries.

d. **Optional Training.** Optional training includes suspended harness training on the second through fifth points of performance. Step-by-step training on the procedures jumpers take for unintentional wire landings may be conducted.

### D-3. TREE OBSTACLES

A tree obstacle is any tree or group of trees that are on, around, or within 1,000 meters of any edge of the drop zone.

#### a. **Risk Assessment Analysis for a Drop Zone with Tree Obstacles.**

When making a training parachute jump DZ risk assessment, the commander should consider the proximity of the tree obstacles to the DZ, the number of obstacles, the equipment available to reduce the risk level, jumper experience levels, drop time (day or night and percent of illumination), and whether or not the selected DZ is critical to mission success. The following risk categories are assigned to DZs with tree obstacles:

(1) **High risk.** A high-risk condition exists if a tree or group of trees are within 1,000 meters of the DZ or are on any edge of the DZ and have a height of 35 feet or more. If a high-risk condition exists, it may be necessary to have a recovery detail present at the DZ.

(2) **Medium risk.** A medium-risk condition exists if a tree or group of trees are on or within 1,000 meters of any edge of the DZ and have a height of 20 to 35 feet.

(3) **Low risk.** A low-risk condition exists if a tree obstacle having a height of less than 20 feet is on or within 1,000 meters of any edge of the drop zone.

b. **Planning Considerations.** The commander, DZSO/DZSTL, and JM perform the following actions to reduce the risks associated with tree obstacles.

#### (1) **Commander.**

(a) Ensure a risk assessment analysis has been established to determine the tree landing risk level for jumpers. If a high risk exists, select (if possible) an alternate DZ that allows mission conduct at a lower risk level.

(b) Ensure a follow-on assessment has been made to determine whether the jumpers' risk level has changed.

(c) Ensure that key leaders, jumpmasters, and jumpers have been informed of the tree obstacle risks and the risk level (high, medium, or low).

(d) Ensure USAF Form 3823, DZ Survey (formerly MAC Form 339), is current and available. Ensure DZSO/DZSTL/JM have read it and completely understand the tree landing risk level and the recovery measures to be used.

(e) If a recovery detail is used, ensure DZSO/DZSTL and the unit providing the detail have properly conducted initial or refresher training. Ensure the

OIC/NCOIC of the recovery detail knows where and when the detail begins its duties and how to contact the DZSO/DZSTL.

(f) Ensure DZSO/DZSTL, JM/AJM, and jumpers have been informed of all tree obstacle risks and that the DZSO/DZSTL and JM complete their duties.

(2) **DZSO/DZSTL.**

(a) Determine if a follow-on assessment of the DZ has been conducted to confirm the current status.

(b) If the risk assessment indicates high risk and a recovery detail is used, ensure that the OIC/NCOIC is fully briefed on the plan. Ensure all recovery personnel have been trained and have all necessary equipment available to conduct the mission.

(c) Read all applicable regulations, FMs, and SOPs; ensure copies are present throughout mission.

(3) **Jumpmaster.**

(a) Ensure all personnel have been briefed on the tree obstacles.

(b) Ensure all personnel have received prejump training within 24 hours prior to drop time, with special emphasis on unintentional tree landings.

c. **Tree Obstacle Coverage.** Each tree obstacle may require a different type of coverage. The following is an example composition of a recovery detail. Equipment should be altered to best accomplish the mission.

(1) OIC/NCOIC and assistant.

(2) Enough personnel to recover jumpers who may become entangled in the tree obstacle.

(3) A recovery team may need the following equipment:

- Radios with spare batteries - 2(1 for OIC/NCOIC and 1 for recovery team).
- Grappling hook - 1.
- Tree-climbing kit - 1.
- Long backboard to facilitate CPR - 1.
- Aid bag with resuscitation equipment - 1.
- Ropes, 120 feet long - 2.
- Wood poles 15 feet long - 2.
- Wood extension ladder 20 feet long - 1.
- Snap links - 4.

(4) For night recovery operations, the following equipment should be added:

- Night vision devices per team with spare batteries.
- Operational flashlights per team with spare batteries.

d. **Optional Training.** Optional training includes suspended harness training on the second through fifth points of performance. Step-by-step training on the procedures jumpers will take for unintentional tree landings may be conducted.

#### **D-4. DROP ZONE RISK ASSESSMENT DECISION MATRIX AND LEADER'S CHECKLISTS**

Following are Table D-1, drop zone risk assessment decision matrix, and Figures D-1 through D-3, leader's checklists.

	HIGH RISK	MEDIUM RISK	LOW RISK
WATER	WITHIN 1,000 METERS OF ANY EDGE OF DZ, MORE THAN 4 FEET DEEP, AND MORE THAN 40 FEET WIDE.	MORE THAN 1,000 METERS BUT LESS THAN 1,500 METERS FROM ANY EDGE OF DZ, MORE THAN 4 FEET DEEP, AND MORE THAN 40 FEET WIDE.	MORE THAN 1,500 METERS FROM ANY EDGE OF DZ, MORE THAN 4 FEET DEEP, AND MORE THAN 40 FEET WIDE
WIRE	WITHIN 1,000 METERS OF ANY EDGE OF DZ AND 35 FEET TALL OR TALLER.	MORE THAN 1,000 METERS BUT LESS THAN 1,500 METERS FROM ANY EDGE OF DZ.	MORE THAN 1,500 METERS FROM ANY EDGE OF DZ.
TREE OR TREES	WITHIN 1,000 METERS OF ANY EDGE OF DZ AND 35 FEET TALL OR TALLER.	WITHIN 1,000 METERS OF ANY EDGE OF DZ AND 25 TO 35 FEET TALL.	WITHIN 1,000 METERS OF ANY EDGE OF DZ, BUT LESS THAN 20 FEET TALL.
OBSTACLE TRAINING AND EQUIPMENT	REQUIRED.	RECOMMENDED, BUT AT COMMANDER'S DISCRETION.	NOT REQUIRED.

**Table D-1. Drop zone risk assessment decision matrix.**



**COMMANDER**

- \_\_\_\_\_ RISK ASSESSMENT AND FOLLOW-ON ASSESSMENT HAVE BEEN CONDUCTED.
- \_\_\_\_\_ KEY LEADERS, JUMPMASTERS, AND JUMPERS HAVE BEEN INFORMED OF WATER OBSTACLE RISKS AND THE RISK LEVEL (HIGH, MEDIUM, OR LOW).
- \_\_\_\_\_ USAF FORM 3823, DZ SURVEY (FORMERLY MAC FORM 339), IS CURRENT AND AVAILABLE; THE DZSO/DZSTL/JM HAVE READ IT AND COMPLETELY UNDERSTAND THE UNINTENTIONAL WATER LANDING RISK LEVEL AND THE SAFETY MEASURES THAT ARE TO BE USED.
- \_\_\_\_\_ DZSO/DZSTL AND OIC/NCOIC OF THE BOAT DETAIL HAVE BEEN BRIEFED AND UNDERSTAND THEIR MISSION.
- \_\_\_\_\_ B-5/B-7 LIFE PRESERVERS ARE COORDINATED FOR IF USED.
- \_\_\_\_\_ DZSO/DZSTL/JM/AJM/SAFETIES/JUMPERS HAVE BEEN INFORMED OF ALL WATER OBSTACLE RISKS. DZSTL/DZSO/JM COMPLETE THEIR DUTIES.

**DZSO/DZSTL**

- \_\_\_\_\_ RISK ASSESSMENT ANALYSIS HAS BEEN CONDUCTED.
- \_\_\_\_\_ IF A BOAT DETAIL IS USED, THE OIC/NCOIC OF THE BOAT DETAIL IS FULLY BRIEFED ON THE PLAN. ALL PERSONNEL HAVE BEEN TRAINED AND HAVE ALL NECESSARY EQUIPMENT AVAILABLE TO CONDUCT THE MISSION.
- \_\_\_\_\_ ALL APPLICABLE REGULATIONS, FMS, AND SOPS HAVE BEEN READ.
- \_\_\_\_\_ THE BOAT DETAIL MAINTAINS COMMUNICATIONS THROUGHOUT THE MISSION. COMMUNICATIONS ARE ESTABLISHED 1 HOUR PRIOR TO DROP TIME AND CHECKED 15 MINUTES PRIOR TO DROP TIME.

**JUMPMASTER**

- \_\_\_\_\_ ALL PERSONNEL HAVE BEEN BRIEFED ON THE WATER OBSTACLES.
- \_\_\_\_\_ B-5/B-7 LIFE PRESERVERS HAVE BEEN INSPECTED WITHIN THE LAST 180 DAYS AND ARE SERVICEABLE. ALL JUMPERS HAVE BEEN TRAINED ON WEAR, FIT, AND USE (TO INCLUDE MANUAL INFLATION) OF LIFE PRESERVERS.
- \_\_\_\_\_ ALL PERSONNEL RECEIVE PREJUMP TRAINING WITHIN 24 HOURS OF DROP TIME WITH SPECIAL EMPHASIS ON UNINTENTIONAL WATER LANDINGS.

**Figure D-1. Leader's checklist for possible water landings.**

#### **COMMANDER**

- \_\_\_\_\_ RISK ASSESSMENT AND FOLLOW-ON ASSESSMENT ANALYSIS HAVE BEEN CONDUCTED.
- \_\_\_\_\_ KEY LEADERS, JUMPMASTERS, AND JUMPERS ARE INFORMED OF WIRE OBSTACLE RISKS AND THE RISK LEVEL (HIGH, MEDIUM, OR LOW).
- \_\_\_\_\_ USAF FORM 3823, DZ SURVEY (FORMERLY MAC FORM 339), IS CURRENT AND AVAILABLE. THE DZSO/DZSTL AND JM HAVE READ IT AND COMPLETELY UNDERSTAND THE WIRE LANDING RISK LEVEL AND THE SAFETY MEASURES THAT ARE TO BE USED.
- \_\_\_\_\_ THE DZSO/DZSTL AND THE OIC/NCOIC OF THE RECOVERY DETAIL ARE BRIEFED AND UNDERSTAND THEIR MISSION.
- \_\_\_\_\_ DZSO/DZSTL/JM/AJM/SAFETIES/JUMPERS ARE INFORMED OF ALL WIRE OBSTACLE RISKS. DZSTL/DZSO/JM COMPLETE THEIR DUTIES.

#### **DZSO/DZSTL**

- \_\_\_\_\_ RISK ASSESSMENT ANALYSIS HAS BEEN CONDUCTED.
- \_\_\_\_\_ IF A RECOVERY DETAIL IS USED, THE OIC/NCOIC OF THE RECOVERY DETAIL IS FULLY BRIEFED ON THE PLAN. ALL PERSONNEL HAVE BEEN TRAINED AND HAVE ALL NECESSARY EQUIPMENT AVAILABLE TO CONDUCT THE MISSION.
- \_\_\_\_\_ ALL APPLICABLE REGULATIONS, FMS, AND SOPS HAVE BEEN READ.
- \_\_\_\_\_ THE RECOVERY DETAIL MAINTAINS COMMUNICATIONS THROUGHOUT THE MISSION. COMMUNICATIONS ARE ESTABLISHED 1 HOUR PRIOR TO DROP TIME AND CHECKED 15 MINUTES PRIOR TO DROP TIME.

#### **JUMPMASTER**

- \_\_\_\_\_ ALL PERSONNEL HAVE BEEN BRIEFED ON THE WIRE OBSTACLES.
- \_\_\_\_\_ ALL PERSONNEL HAVE RECEIVED PREJUMP TRAINING WITHIN 24 HOURS OF DROP TIME WITH SPECIAL EMPHASIS ON WIRE LANDINGS.

**Figure D-2. Leader's checklist for possible wire landings.**

**COMMANDER**

- \_\_\_\_\_ RISK ASSESSMENT AND FOLLOW-ON ASSESSMENT ANALYSIS HAVE BEEN CONDUCTED.
- \_\_\_\_\_ KEY LEADERS, JUMPMASTERS, AND JUMPERS ARE INFORMED OF TREE OBSTACLE RISKS AND THE RISK LEVEL (HIGH, MEDIUM, OR LOW).
- \_\_\_\_\_ USAF FORM 3823, DZ SURVEY (FORMERLY MAC FORM 339), IS CURRENT AND AVAILABLE. THE DZSO/DZSTL/JM HAVE READ IT AND COMPLETELY UNDERSTAND THE TREE LANDING RISK LEVEL AND THE SAFETY MEASURES THAT ARE TO BE USED.
- \_\_\_\_\_ THE DZSO/DZSTL AND THE OIC/NCOIC OF THE RECOVERY DETAIL ARE BRIEFED AND UNDERSTAND THEIR MISSION.
- \_\_\_\_\_ DZSO/DZSTL/JM/AJM/SAFETIES/JUMPERS ARE INFORMED OF ALL TREE OBSTACLE RISKS. DZSTL/DZSO/JM COMPLETE THEIR DUTIES.

**DZSO/DZSTL**

- \_\_\_\_\_ RISK ASSESSMENT ANALYSIS HAS BEEN CONDUCTED.
- \_\_\_\_\_ IF A RECOVERY DETAIL IS USED, THE RECOVERY DETAIL OIC/NCOIC IS FULLY BRIEFED ON THE PLAN. ALL PERSONNEL HAVE BEEN TRAINED AND HAVE ALL NECESSARY EQUIPMENT AVAILABLE TO CONDUCT THE MISSION.
- \_\_\_\_\_ ALL APPLICABLE REGULATIONS, FMS, AND SOPS HAVE BEEN READ.
- \_\_\_\_\_ THE RECOVERY DETAIL MAINTAINS COMMUNICATIONS THROUGHOUT THE MISSION. COMMUNICATIONS ARE ESTABLISHED 1 HOUR PRIOR TO DROP TIME AND CHECKED 15 MINUTES PRIOR TO DROP TIME.

**JUMPMASTER**

- \_\_\_\_\_ ALL PERSONNEL HAVE BEEN BRIEFED ON THE WIRE OBSTACLES.
- \_\_\_\_\_ ALL PERSONNEL RECEIVE PREJUMP TRAINING WITHIN 24 HOURS OF DROP TIME WITH SPECIAL EMPHASIS ON UNINTENTIONAL TREE LANDINGS.

**Figure D-3. Leader's checklist for possible tree landings.**