

STARS[®]

SCENE TEAM MANUAL



MISSION STATEMENT

The Shock Trauma Air Rescue Society (STARS) is dedicated to providing a safe, rapid, highly specialized emergency medical transport system for the critically ill and injured.



STARS SCENE TEAM MANUAL

Your guide to working with STARS

The STARS Scene Team Manual has been developed for individuals and agencies responsible for emergency services and provides critical information on landing zone operations, patient transport and management, as well as essential services for activating STARS to a scene call.

STARS is one link in the chain of survival and for effective outcomes, all components must work together in an efficient manner. The STARS helicopter can serve you only if we arrive safely. Our safety and the safety of the people on the ground depend on you, the professionals on the scene. We hope this manual proves beneficial to your organization.

TABLE OF CONTENTS

• INTRODUCTION TO STARS	PG. 4
• WHEN TO CALL STARS	PG. 6
• HOW TO ACTIVATE STARS	PG. 8
• LANDING ZONE PREPARATIONS AND OPERATIONS	PG. 11
• PATIENT PACKAGING	PG. 18
• PATIENT LOADING	PG. 19
• HAZARDOUS MATERIALS	PG. 20
• SEARCH & RESCUE	PG. 21
• CONCLUSION	PG. 23

INTRODUCTION TO STARS



The following section will provide a brief history of STARS including the subsequent growth of the organization and the establishment of the STARS Emergency Link Centre.

The Shock Trauma Air Rescue Society (STARS) is a link in the chain of survival, transporting critically ill and injured patients by helicopter and making a difference in thousands of lives. Today, STARS operates in three provinces: Alberta, Saskatchewan and Manitoba with a fleet of medically-equipped helicopters and specialized medical teams.

The vision for STARS originated in 1984, when Dr. Greg Powell, STARS Founder, and his colleagues became progressively concerned by what they saw as “needless deaths”. They felt it was taking too long to transport rural patients to the larger urban hospitals. The death of a young woman as a result of bleeding after giving birth to a healthy, normal baby sparked the first steps. Her prolonged care and transport time were significant contributors to the tragic outcome.

Dr. Powell along with a group of dedicated and passionate volunteers comprised of physicians, paramedics and nurses who wanted to make a difference began working on establishing the STARS program. Backed by strong support from the Lions of Alberta Foundation and a committed aviation provider with a helicopter, STARS was able to fly its first mission on December 1, 1985 from the Calgary base. At the request of the Edmonton medical community, the Edmonton base opened in September 1991 to serve the central part of the province. In 2006, the Grande Prairie base opened to serve the northwest portion of the province. In 2009, STARS received its first request to serve the province of Manitoba during flood relief efforts. STARS returned to Manitoba again in 2011 for flood assistance. Subsequently, a 10-year affiliation agreement was signed with the province. In 2011, STARS also signed an agreement with the Government of Saskatchewan to offer the same service to critically ill and injured patients, with bases opening in Regina and Saskatoon in 2012.



Since inception, STARS has flown well over 20,000 missions. Our Air Medical Crews are available at each base 24 hours a day, seven days a week and can be in the air within eight minutes of dispatch. The Air Medical Crew includes an advanced life support paramedic, a critical care nurse and a Referral Emergency Physician (REP). The REP provides online medical control during all missions and participates as a crew member on approximately 20-25 per cent of patient transports. The paramedics and nurses are highly dedicated and skilled individuals who also hold part or full-time positions with high performance advanced life support emergency medical services (EMS) and major hospital critical care departments including emergency, intensive care unit (ICU) and cardiac care units (CCU).

When required, the STARS helicopter is used to transport specialty teams to assist special patient populations. These include Pediatric Intensive Care Unit (PICU) teams for pediatric patients and Neonatal Intensive Care Unit (NICU) teams for newborn patients. One Air Medical Crew member assists the specialty teams during these missions.

The STARS helicopter pilots work full time at our bases. Our captains are highly experienced and have a minimum of 3,000 helicopter flying hours. All STARS pilots are Air Transport Licensed as well as Instrument Flying Rules (IFR) and Night Vision Goggles (NVG) rated.

During each mission, the Air Medical Crew is supported by communication centres located in Alberta and Manitoba. The STARS Emergency Link Centre at the Calgary base coordinates missions for both Alberta and Saskatchewan. In Manitoba, all STARS flight coordination is conducted through the Medical Transportation Coordination Centre (MTCC) in Brandon. Both of these centres are staffed by a team of communication specialists and utilize advanced technology to link stakeholders together to make decisions about patient care and transport.

WHEN TO CALL STARS

In the following section you will be able to identify the circumstances when STARS emergency medical transport will benefit the patient.

AIR TRANSPORTATION SHOULD BE CONSIDERED WHEN EMERGENCY CARE PERSONNEL HAVE EVALUATED INDIVIDUAL CIRCUMSTANCES AND FOUND:

GENERAL CRITERIA

- The patient requires critical care life support (invasive procedures, specific equipment, etc.) during transport that is not available locally.
- The patient's clinical condition requires that the time spent out of the hospital (in transport) be as short as possible.
- The potential for delays which may be associated with ground transport including road obstacles and traffic, is likely to worsen the patient's clinical status.
- The patient is located in an area which is inaccessible to regular ground transport.
- The use of a ground transport team would leave the local area without adequate EMS coverage or physician coverage when the patient needs physician escort.

TRAUMA PATIENTS

- The patient fell from a height of greater than two metres (six feet).
- The patient experienced a central penetrating injury.
- The patient experienced a scalping or de-gloving injury.
- The patient experienced a severe hemorrhage. Included are those patients with a systolic BP of less than 90 mmHg after initial volume resuscitation and those requiring ongoing blood transfusions to maintain a stable blood pressure.
- The patient experienced major burns of the face or thorax with the potential for (or clearly evident) airway or inhalation injury.
- The patient suffered injuries to the face or neck which may result in an unstable or potentially unstable airway and may require invasive procedures (endotracheal intubation, nasotracheal intubation, cricothyroidotomy) to stabilize airway.
- The patient had a score from an objective ranking system for trauma (such as the Revised Trauma Score, Field Triage Score, Glasgow Coma Scale, etc.) at the scene which indicates a severe injury.
- The patient is a child with multiple traumatic injuries requiring care at a pediatric trauma centre.
- Lengthy extrication of the patient from the accident site and the severity of the patient's injury require delivery of a critical care team to the scene.

- One or more of the following mechanisms of injury with a motor vehicle collision present:
 - The patient was ejected from the vehicle
 - Another person in the same vehicle died
 - The patient was thrown from a motorcycle
- The patient is greater than 55 years of age and has multiple traumatic injuries, with or without pre-existing illness, such as diabetes mellitus, coronary artery disease, chronic obstructive pulmonary disease, or chronic renal failure.
- The patient is an adult with a respiratory rate of less than 10 or greater than 30 breaths per minute, or a heart rate of less than 60 or greater than 120 beats per minute.

ADULT MEDICAL/SURGICAL PATIENTS

- The patient experienced a respiratory or cardiac arrest or is experiencing acute respiratory failure not responsive to initial therapy.
- The patient requires continuous intravenous anti-dysrhythmia medications or mechanical ventricular assist device to maintain a stable cardiac output.
- The patient requires mechanical ventilator support or is at risk of having an unstable airway.
- The patient requires immediate invasive therapy for hypothermia.
- The patient has a respiratory rate of less than 10 or greater than 30, or a heart rate of less than 50 or greater than 150, or a systolic BP of less than 90 mmHg or greater than 200 mmHg.
- The patient requires immediate transport in a critical care environment to a medical centre that can perform organ transplantation or procurement.
- The patient is experiencing an acute myocardial infarction, a dissecting or leaking aneurysm, or an acute cerebrovascular accident in evolution.
- The patient is pregnant with a high-risk obstetrical condition and requires urgent transport to a perinatal centre. This includes the delivery of premature infants.

PEDIATRIC PATIENTS

- The patient is experiencing or has a high risk of developing cardiac dysrhythmia or cardiac pump failure that requires interventions not available at the referring hospital.
- The patient is experiencing or has a high risk of developing acute respiratory failure or respiratory arrest, and is not responsive to initial therapy.
- The patient requires invasive airway procedures (including endotracheal intubation, nasotracheal intubation, or cricothyroidotomy) and assisted ventilation.
- The patient experiences clinical signs of shock including pallor, poor capillary refill, tachycardia, hypotension, or decreased level of consciousness.
- The patient is experiencing any of the following clinical conditions:
 - Near-drowning
 - Acute bacterial meningitis
 - Acute respiratory failure
 - Status epilepticus
 - Hypothermia
 - Multiple trauma

HOW TO ACTIVATE STARS

In this section you will be able to determine how to activate the system and outline the information you will need to communicate when doing so.

EMS, Fire, Police, Conservation Officers/Park Wardens, First Responders, Search and Rescue (SAR) and Industrial First Aid services may initiate a request for STARS transport through their local dispatch.

EARLY NOTIFICATION

Notify STARS as soon as possible if you believe helicopter transport may be required. By placing the STARS helicopter on pre-alert, the crew will be better prepared to rapidly respond if a dispatch request is confirmed. Early notification will give the pilots more time to check weather, top up the fuel if required, move the aircraft to the launch position, and, if the scene is close in, to start for a hot (rotors turning) dispatch.

THE USE OF A STANDBY REQUEST IS STRONGLY ENCOURAGED.

COMMUNICATING WITH STARS

In Alberta and Saskatchewan, the STARS Emergency Link Centre (STARS ELC), and in Manitoba, the Medical Transportation Coordination Centre (MTCC), work to rapidly coordinate the care and transport of critically ill and injured patients. Emergency service agencies are to contact their communications centre to request STARS.

In areas serviced by 911, the first number to call is 911, and once the emergency call has been processed, the services of the STARS ELC or MTCC may be utilized. Areas without a 911 primary dispatch service may coordinate with the STARS ELC or MTCC directly.

Communication is of the utmost importance. STARS helicopters are equipped with programmable radio equipment. This capability allows the flight crew to program any UHF or VHF frequency to allow direct communication with the requesting parties while in flight, and also allows the pilot to obtain crucial landing zone information assuring safe landing and departure paths.

When your dispatch centre is requesting STARS, please advise us which frequency will be used along with the Landing Zone Officer's identification/designation. This vital information will be relayed to the air crew. In situations when STARS cannot communicate with ground personnel, such as interference or incompatible frequencies, the requesting party from Alberta or Saskatchewan should contact the STARS ELC at 1-888-999-EVAC (3822). For Manitoba responders, if you are unable to establish direct radio contact with the helicopter at a landing zone, please contact your dispatch centre to request a connection via the MTCC. The centres can patch you through to the STARS aircraft. In addition, the STARS helicopter can communicate with you over the telephone. Built in airphone equipment allows us to dial any telephone.

Alberta and Saskatchewan: We also communicate on the Provincial Ambulance and/or Provincial Fire frequencies and are capable of communicating with the RCMP on Tac 9 (if available).

Manitoba: The Interagency, short range line of sight frequency for air to ground communications between the STARS crew and the Landing Zone Officer during landing zone procedures is Memo Simplex channel 10 for EMS-Fire and Zone 12 -EMO/Local for RCMP. The Landing Zone Officer should have their radio on this channel, while other on scene responders should have their radios on their operational talkgroups.

WHEN ACTIVATING STARS ... BE PREPARED TO COMMUNICATE THE FOLLOWING:

1. WHO YOU ARE:

Give the service, unit number, and level of medical training.

2. CALL BACK NUMBER AND METHOD THAT STARS CAN COMMUNICATE WITH THE SCENE.

3. LOCATION OF OCCURRENCE:

The scene location information should be as accurate and complete as possible. It should include at least two or more of the following items:

- Highway and intersection identifiers
- Township and range
- GPS coordinates
- Distance and direction from major landmarks like towns, river crossings, lakes, etc.

4. NATURE OF INCIDENT:

Mechanism of injury or type of illness, age and weight.

5. PERTINENT WEATHER CONDITIONS:

Wind, visibility, freezing rain, etc.



BE PREPARED TO COMMUNICATE ADDITIONAL INFORMATION WHEN APPLICABLE:

• MECHANISM OF INJURY (WHAT HAPPENED)

Speed of collision; vehicle interior damage; distance thrown or fallen; trapped or crushed; penetrating gunshot; stabbing; explosion/fire; inhalation injury; electrocution; drowning.

• TYPE OF ILLNESS:

Imminent complicated child birth; internal bleeding; ischemic heart pain - uncontrolled or with dysrhythmia; metabolic imbalance; acute asthma; anaphylaxis; hypoglycemia; overdose; seizures.

• PERTINENT MEDICAL HISTORY:

Medications; allergies; medical illness; age; weight.

• NUMBER OF PATIENTS:

Requiring air evacuation.

• PATIENT CONDITION:

Level of response to verbal/painful stimuli; query deteriorating loss of consciousness; significant wounds or deformity.

• TREATMENT GIVEN:

What treatment has been given and how the patient has responded.



INITIAL REQUEST

When making the initial request for STARS, first responders should consider the following:

- **SCENE DESCRIPTION**

A description of the scene should be provided to help the pilots quickly identify it from the air once they are within range (roadway, industrial site, farmyard, forest confined area, etc). Distinguishing or unique landmarks which may be visible from the air should be noted. If this information is not available during the initial dispatch it should be provided during the LZ pre-landing report.

- **MISSION LIMITATIONS**

STARS may not be able to respond or complete a mission in adverse weather conditions. The following weather conditions or limits will determine the ability of STARS to respond:

- **Day Visual Flight Rules (VFR) Ceiling & Visibility Limits** - As low as 800 metres (0.5 mile) visibility and clear of cloud. In practice, STARS pilots will require 1.6 km (one mile) or more visibility and a cloud base of several hundred feet or more before they will accept a mission. The flight distance, terrain, weather patterns and patient transport requirements will influence the go/no go decision.
- **Instrument Flight Rules (IFR) Conditions** - The STARS helicopters are fully IFR equipped and capable of flying in cloud or fog to normal IFR limits, which may be as low as 800 metres (0.5 mile) visibility and a 61 metre (200 foot) ceiling (vertical cloud base) at selected airports (e.g. Calgary, Lethbridge, Edmonton, Grande Prairie). IFR weather limits at some hospitals with GPS approach procedures or at smaller IFR airports typically range from 1.6 to 3.2 km (one to two miles) visibility and 91 to 182 metre (300 to 600 foot) ceilings. IFR approaches cannot be flown to scene call locations. The BK117 helicopters are not capable of IFR flight in icing conditions which may be encountered in cloud or visible moisture above the freezing level. The AW139 helicopters have de-icing capabilities.
- **Night Limits** - Minimum visibility of 4.82 km (three miles); eight km (five miles) in mountainous terrain; and 457 metre (1500 foot) cloud base above the highest obstacle along the flight route.
- **Mountainous Terrain** - STARS pilots at selected bases are qualified to fly with night vision goggles (NVG) within mountainous areas (advanced qualification). Flight into mountainous terrain may only be completed along pre-surveyed routes. Landings at scene locations within mountainous areas may be completed within 1.6 km (one mile) laterally of designated NVG routes (some additional restrictions apply).



LANDING ZONE PREPARATIONS AND OPERATIONS

In this section you will identify the requirements for selecting a Landing Zone including the hazards to be aware of, in addition to the responsibilities of a designated Landing Zone Officer.

GENERAL

A suitable landing zone (LZ) should be prepared prior to the arrival of the STARS helicopter. The pilots will be relying on the first responders on scene to identify hazards and safely secure the LZ. The landing zone team is the crew's eyes and ears on the ground since potential hazards may not be visible or apparent from the air, especially during night operations. When selecting the LZ and assessing the site, many factors need to be considered, including wind direction (the helicopter normally lands into wind), proximity to obstacles, ease of stretcher transfer to the casualty, debris and dust, traffic control, location of HAZMAT, etc.

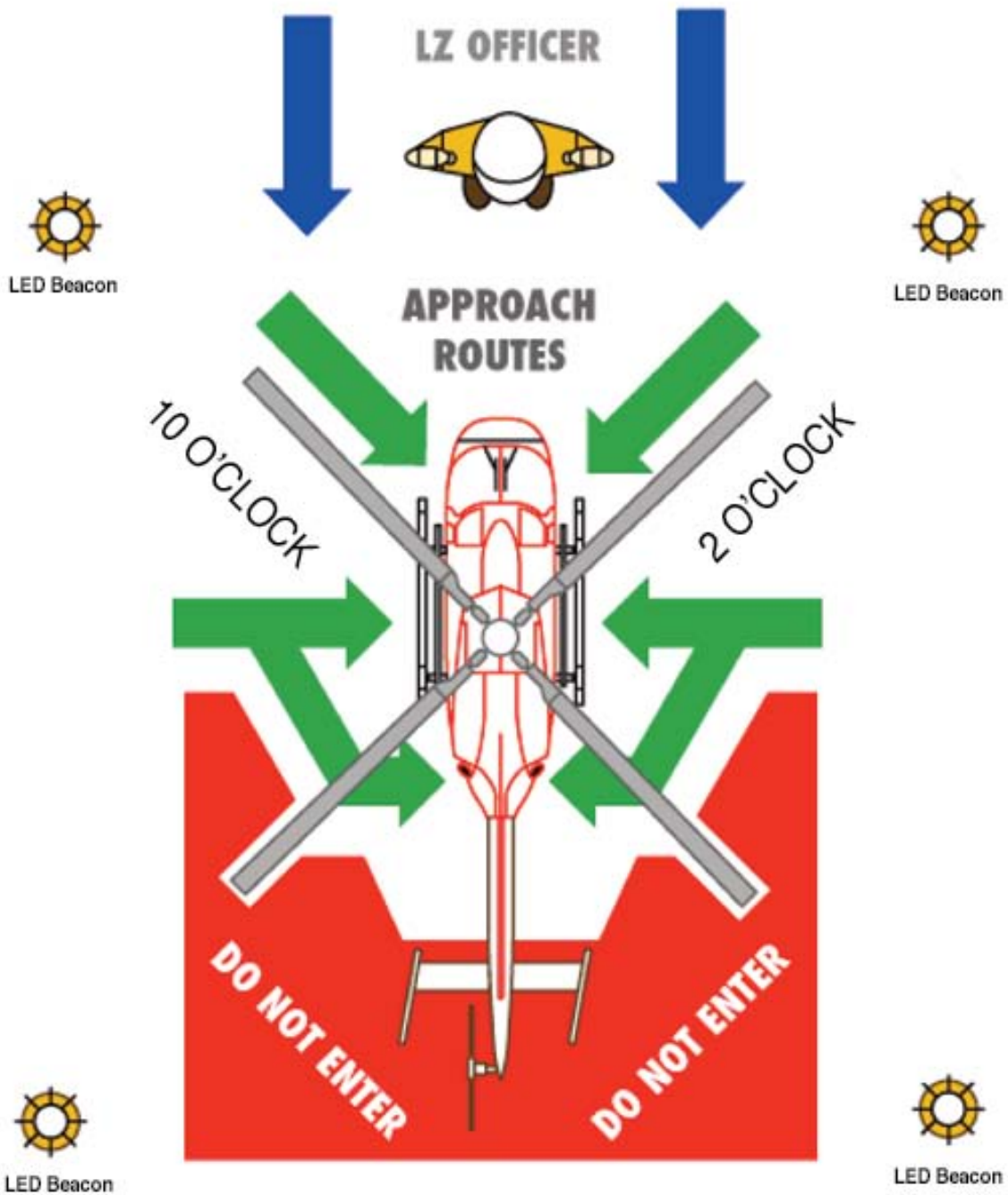
A trained Landing Zone Officer should be selected from the on-scene responders to take responsibility for landing zone safety duties. These duties include LZ preparation and hazard identification, the LZ pre-landing report, marshalling and LZ security. Any member of emergency services can become an LZ Officer by arranging training through their local STARS base.

SELECTING A LANDING ZONE

First responders should select the LZ with the following considerations in mind. The landing area should be at least 36 metres x 36 metres or 36 paces x 36 paces (approximately 120 feet x 120 feet). The LZ surface should be:

- As flat as possible, firm and free of debris which may blow up into the rotor system;
- Clear of obstructions such as vehicles, trees, poles and wires;
- Free of any stumps, brush, posts or large rocks which may damage the helicopter or interfere with a safe landing;
- Kept clear of all personnel and vehicles during flight operations;
- Located at least 36 metres (120 feet) away from the accident or patient care location. The LZ should be downwind of the scene if possible unless a HAZMAT incident is involved. If the LZ is located upwind of the scene, the distance to the accident site should be increased as much as possible to avoid having the helicopter downwash create a hazard for the emergency responders or compromise patient care.
- During the on-scene reconnaissance, the pilots may choose a different landing area if they are uncomfortable with the selected LZ.

WIND DIRECTION



36 m (120 Ft)

STARS LANDING ZONE

TOUCHDOWN AND SAFETY AREA

The touchdown area which will support the helicopter landing gear should be flat and clear of all rocks, stumps, curbs or other irregularities which may snag the skids or wheels. The surface slope should be no greater than five degrees in any direction. When possible, an additional 36 metre (120 feet) wide safety area should be secured around the touchdown area. This area should be kept clear of all non-essential personnel and vehicles.

LZ MARKING AND LIGHTING

The perimeter of the LZ should be marked or lighted so it will be visible from the air. The four corners and midpoints (if possible) of each side of the LZ should be identified using one or more of the following methods or devices:

- **LED Beacons** - Set up four (see illustration on pg.12)
- **Weighted Traffic Cones** - For night operations, reflective tape and strobe beacons may be used to illuminate the cones;
- **Headlights** - Two vehicles with their headlights on low-beam pointed to cross at the centre of the LZ may be used in conjunction with a perimeter marker (e.g. traffic cones). The vehicles should be parked outside of the LZ at the downwind corners with their headlights pointing into wind;
- **Fluorescent Paint** - May be used to mark the LZ perimeter or in the form of a large X. This is especially effective on snow.



HAZARDS

All obstacles and hazards which might compromise safety during flight operations should be identified:

- **Foreign Object Debris** - Objects on or near the LZ and safety areas which may damage the helicopter or become an airborne hazard to personnel on the ground should be removed or secured (e.g. plastic tarps, large pieces of sheet metal, plywood, etc.);
- **Wires and Obstructions** - The entire area in the vicinity of the scene should be carefully surveyed for wires or obstructions which may be a hazard to the helicopter during approach or landing. If possible, these hazards should be marked to help the pilots identify them from the air. For example, emergency vehicles with flashing lights may be parked underneath wires which cross the anticipated approach path to the LZ. At night, vehicle search lights should be used to identify poles or towers which may be a hazard. Do not use flagging tape or other markers which may become detached and thrown into the air in the helicopter downwash;
- **Vehicles and Traffic** - All traffic or access routes which underlie or are adjacent to the LZ and approach and departure paths should be blocked and secured during flight operations:
 - Whenever possible, emergency vehicles should be used to create a physical barrier which will block access to the LZ;
 - All traffic (both directions) should be blocked at scene locations on a divided highway unless it is apparent that the helicopter will be able to safely conduct an into-wind approach to the LZ without over-flying or operating in close vicinity to the opposite (non-accident) lanes of traffic;
 - Traffic or access routes outside of the LZ and safety area may be re-opened once the helicopter has landed. The pilots shall be consulted if emergency vehicles must be moved through the LZ or safety area in close proximity to the helicopter. If permission is granted, the safety pilot will marshal the vehicle as it passes the helicopter while blocking its approach to the edge of the rotor disc. Alternatively, the helicopter should be re-positioned to allow emergency vehicle access.
- **HAZMAT** - The LZ should be located well upwind of any accident site which involves HAZMAT. The nature of the HAZMAT incident should be investigated prior to the arrival of the helicopter and communicated to the STARS crew during the LZ report so that appropriate protective measure may be taken (see pg. 20).
- **Dust or Snow** - Dust, sand, or loose snow blown up by the rotor downwash may reduce visibility and (in the case of dust or sand) damage the helicopter during landing and take-off. The following mitigating measures may be taken:
 - Water down the site to control the dust or sand. The law enforcement officers on site should be consulted prior to watering the LZ in order to ensure that important evidence required for their investigation will not be damaged or obliterated;
 - Park an emergency vehicle upwind and adjacent to the LZ to provide the pilots with a visual reference in white-out winter conditions.
- **Ground Lights** - High intensity vehicle headlights, warning, or spotlights directed at the LZ may damage the pilots' night vision and reduce visibility, especially when NVG are in use. Headlights (unless required for LZ lighting), strobe lights and search lights should not be directed at the LZ or should be placed on low.

- **Birds and Wildlife** – Be cognizant of wildlife and particularly birds that may pose a risk to the helicopter while in flight.

APPROACH & DEPARTURE PATHS

The site chosen for the LZ should allow the helicopter to make a safe approach and departure from the scene location. Approach and departure paths should be as clear of trees, power and telephone lines, and other potential hazards as possible. When selecting the LZ, be aware that the pilots will want to land and take-off into the wind, or as close as possible. Locations which will require the pilots to execute a steep into-wind approach over obstacles should be avoided.

LANDING ZONE OFFICER

A Landing Zone Officer should be assigned to provide LZ security and to marshal the helicopter during landing and take-off. Duties of the Landing Zone Officer include:

- **LZ Security** - During flight operations the LZ Officer should ensure the LZ is clear of hazards, vehicles, or personnel. He/she should maintain security until relieved by the safety pilot;
- **LZ Report** - Communications should be established with the STARS crew prior to the arrival of the helicopter. The report should include:
 - Location of the scene relative to conspicuous landmarks (i.e. towns, highway intersections, river crossings, etc.);
 - Location of the LZ within the scene area relative to conspicuous landmarks or objects (e.g. on the north-bound lane south of the fire trucks);
 - LZ marking or lighting;
 - Nature and location of hazards; This should include their location relative to the scene and any measures that have been taken to identify them visually (e.g. emergency vehicle parked under wires to the north of the scene).
 - Wind direction;
- **Marshalling** - Just prior to the arrival of the helicopter, the LZ Officer should position him/herself in the middle of the upwind edge of the LZ with his/her back to the wind. He/she should wear protective clothing including eye and ear protection. Hats or helmets should be secured by chin straps. Only a few signals are required (see images on page 16):
 - Clear to Land - As the helicopter begins its final approach the LZ Officer should raise his/her arms above his/her head to indicate that the LZ is safe for landing. As the helicopter approaches to a hover, the Officer should maintain position and kneel once he feels the downwash. The Officer **should not move** during the landing, especially during low visibility conditions (blowing dust or snow) since the pilots may inadvertently follow him/her and fly into an obstruction;



HAND SIGNALS

CLEAR TO LAND



ABORT LANDING



CLEAR TO DEPART



- Abort - If the LZ Officer feels it is necessary to abort the landing or departure procedure for any reason, he/she should wave the helicopter off by repeatedly crossing his/her arms above his/her head in a waving motion; until he/she confirms a response from the helicopter (stops descending or ascending);
- Clear to Depart - When the safety pilot re-enters the cockpit and it is apparent the crew is ready for take-off, the LZ Officer should re-confirm that the area is secure, make eye contact with the Captain, and give the 'clear to depart' signal, which is the same as the "Clear to Land" signal. The Officer should then kneel in position while the helicopter takes-off.

LZ SAFETY

Ground personnel should observe the following safety precautions when moving within the vicinity of the LZ:

- **Spectators** - Spectators should be kept at least 60 m or more away from the LZ at all times;
- **Protective Clothing** - Eye and ear protection should be worn by all personnel who must be near the LZ during flight operations. Helmets and hats must be secured by a chin strap;
- **Fire Protection** - If available, fire fighting equipment should be positioned at the LZ during flight operations;
- **Approaching the Helicopter** - No one should approach the helicopter after it has landed until addressed by the flight crew. The STARS crew will normally be able to unload without assistance. If assistance is required during unloading or loading, ground personnel should wait until they are cleared to approach the helicopter. Emergency personnel should be instructed in the following safety procedures:
 - Always approach and depart the LZ from the 10 and 2 o'clock positions in clear sight of the pilot(s). **Never** approach from the rear of the helicopter;
 - Move beneath the main rotor in a semi-crouched position. Do not raise anything over your head. Long objects should be carried in a horizontal position at waist level. If the helicopter is parked on a slope, approach and depart on the down slope side;
 - **Never** throw anything while in the vicinity of the helicopter;
 - If assisting with loading, stay with the STARS crew. Once the stretcher is at the rear loading doors and you have received a signal that you are no longer required, depart the LZ immediately via the same path taken into the helicopter. The crew is responsible for operation of all doors.
 - Make sure all loose objects (including blankets) are secure;
 - Observe and obey all instructions from the safety pilot. **Never** move behind the safety pilot toward the tail rotor.

PATIENT PACKAGING

In this section you will identify what patient interventions are beneficial prior to helicopter transport.

ONCE LANDING ZONE DETAILS HAVE BEEN COMMUNICATED, IT WOULD HELP THE AIR MEDICAL CREW IF YOU WOULD GIVE A BRIEF COMMENT ON THE PATIENT'S CURRENT STATUS



1. OXYGEN THERAPY:

- Oxygen via most appropriate means
- airway management - endotracheal intubation if warranted
- proper tube placement and properly secured
- nasogastric/orogastric tube following intubation (inter-hospital transfer)

2. C-SPINE PRECAUTIONS:

- stiff collar with blanket roll to stabilize the head
- backboard
- blankets outside straps - ensures rapid patient accessibility during transport

3. INTRAVENOUS ACCESS:

- two large bore IVs, if possible
- well-secured, exposed sites
- prefer in the left arm if possible, for greater accessibility in flight
- splint fractures

4. CHEST TUBES/FOLEY CATHETER

- tubes/catheter attached to appropriate drainage devices
- connections to be taped and well secured

5. DOCUMENTATION (time permitting, please prepare hard copies of all documents for crew prior to arrival):

- time of event
- mechanism of injury
- level of consciousness (changes, trend, Glasgow Coma Scale)
- primary/secondary assessments
- vital signs
- fluid status (in & out) including blood products
- allergies, past history, medications
- tube sizes
- photocopies of chart, lab x-ray results
- next of kin (notified and/or phone number)

Please Note:

- STARS does not carry a patient's family members on board the helicopter.
- No personal effects please.

PATIENT LOADING

In this section you will be able to identify how to load patients in the BK117 and AW139 STARS helicopters.

The BK117 and AW139 helicopters have been specifically designed for EMS operations and can be quickly loaded. The BK117 comes equipped with rear-loading clamshell doors which are opened while the aircraft remains running. The design of the main rotor system is such that it presents a minimal height hazard and the tail rotor is guarded by one of the two pilots.

The AW139 has a side loading sliding door configuration.

Patients are loaded into the helicopter without lifting them or removing them from the wheeled stretcher. The AW139 has a section of the stretcher that detaches and gets stored in the rear compartment.

The BK117 can carry one patient at a time, but can be reconfigured for two non-critical patients. The AW139 can carry two critical patients.



HAZARDOUS MATERIALS

In this section you will be able to identify the appropriate actions required in the situation where there are hazardous materials at the scene.

GENERAL

Accidents involving hazardous materials require special handling by fire/rescue units on the ground. Just as important are the preparations and considerations for helicopter operations in these areas. Hazardous materials of concern are those which are toxic, poisonous, flammable, explosive, irritating or radioactive. Helicopter crews normally don't carry the necessary equipment to protect them from hazardous materials. The STARS crew must be told of hazardous materials on the scene. For the crew's protection, patients who have become contaminated may require special precautions in packaging before loading on the aircraft.



HAZARDOUS MATERIAL LANDING ZONES (UPWIND)

When hazardous materials, explosives, poisonous gases/vapours, or chemicals in danger of exploding and burning are on site, helicopter landing zones must be prepared upwind from the hazardous material accident site and never in low-lying areas. The toxic gases or vapours may be heavier than air and gather in low-lying areas. The designated LZ should not involve the helicopter's approach over the scene. If steam or smoke is involved, they will land in a clear area. The landing site may be further from the scene than in the above examples.

HAZARDOUS CHEMICALS/GASES

Hazardous chemicals and gases are extremely dangerous to the unprotected person and may be fatal if inhaled or absorbed through the skin. Upon initial radio contact, the helicopter crew must be made aware of any hazardous gases in the area. Never assume that the crew has already been informed. If STARS were to fly through the hazardous gases, the crew could be incapacitated and/or the engines could develop mechanical problems.

Poisonous or irritating gases may cling to a victim's clothing and go unnoticed until the patient is loaded and the doors of the helicopter are closed; the crew could then become contaminated as well and subject to the toxic effects of the poison or gas.

RADIOACTIVE MATERIALS

Some radioactive materials are more dangerous than others, depending upon the type and amounts of those materials. In general, radioactive materials are difficult to ignite, but will burn and the smoke is toxic to humans. STARS should be advised if victims may be contaminated by radioactivity.

SEARCH & RESCUE

In this section you will be able to describe the Search and Rescue capabilities of STARS and the information that should be provided when making a request for this service.

STARS will support Search and Rescue (SAR) missions, conducted for the purpose of saving a human life, when requested to do so by an emergency service or law enforcement agency. STARS can provide aerial surveillance for emergency situations. With the use of Night Vision Goggle (NVG) technology, pilots can see poorly lit or completely dark areas.

INFORMATION THAT WILL BE REQUIRED IN THE EVENT OF A SAR MISSION INCLUDES:

- (a) Have the RCMP/City Police helicopter units been informed?
- (b) Nature of the incident
- (c) Search staging/rendezvous location
- (d) Name and contact frequency/phone number of Search Commander
- (e) Search area boundaries
- (f) Anticipated search pattern
- (g) Known or anticipated hazards
- (h) Number of observers
- (i) Is Ground Search And Rescue (GSAR) involved?
- (j) Number and age of victim(s)
- (k) Anticipated medical condition of the search victim(s)
- (l) Fuel availability



Due to the unique and technical nature of some SAR missions, the needs of the SAR mission may extend beyond the capabilities of the STARS helicopter and crew. Crews must ensure the viability of the mission is carefully considered, and safety is not compromised. The air crew, together with either the STARS ELC or the MTCC will work with the local Search Commander to determine the most suitable air resource for a successful mission. This may include coordination with the Canadian Forces Rescue Coordination Centre (RCC), Parks Canada, Mountain Rescue and Public Safety Specialists.



CONCLUSION



A FINAL NOTE ...

Thank you for taking the time to review the STARS Scene Team Manual and become familiar with the procedures that will enable all of us to provide the best care for patients in the timeliest manner possible.

If at any time you have questions concerning STARS, please feel free to call us.

Contact us at 1-888-797-8277 or visit www.stars.ca for information on the STARS base nearest you.

STARS®

Saving lives through Partnership, Innovation and Leadership.

Photography © STARS/Mark Mennie

The costs of the production of this manual are generously covered by:

enerPLUS