REPORT OF THE
VIRGINIA DEPARTMENT OF HEALTH
AND THE TEAM STUDYING

The Feasibility of Establishing a Helicopter Medevac Service On The Eastern Shore of Virginia

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 60

COMMONWEALTH OF VIRGINIA
RICHMOND
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DECEMBER, 1989

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TO
THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA
RICHMOND, VIRGINIA
DECEMBER, 1989

To: The Honorable Gerald L. Baliles, Governor of Virginia
and
The General Assembly of Virginia

I. ORIGIN OF THE STUDY

A resolution was introduced to the 1989 Session of the General Assembly in response to concerns over an inadequate air medical transport system to meet the needs of trauma patients on the Eastern Shore of Virginia. House Joint Resolution 318, patroned by Delegate Robert Bloxom, recognized the need for a study to determine the feasibility of establishing a medevac program on the Eastern Shore.

House Joint Resolution 318 called for the State Department of Health to "conduct a study on the feasibility, need, access to, and costs of an emergency medical evacuation system for physical trauma patients for the Eastern Shore." The resolution required completion of the study and submission of findings and recommendations to the Governor and the 1990 Session of the General Assembly. HJR 318 was approved, and the State Department of Health was requested to conduct the study.

The State Health Department established a multi-disciplinary study team that included representatives from the Eastern Shore and surrounding areas. The Study Team consisted of twenty (20) members, including the following:

Delegate Robert S. Bloxom of Mappsville
Robert T. Adkins, M.D., Director of Emergency Medical Services at Peninsula General Hospital in Salisbury, MD.
David C. Auerbach, EMS Systems Planner with the Virginia Department of Health (VDH), Division of Emergency Medical Services (EMS)
Carolyn Bono, EMS Coordinator, Northampton County
Sheriff W. Wayne Bradford, Northampton County Sheriff's Office
Marc Bramble, Maryland Institute for EMS Systems
Gary R. Brown, Assistant Director, Division of EMS, VDH
Jim Chandler, Executive Director, Tidewater EMS Council
Scott Chandler, Tidewater EMS Council Board Member from Accomack County

Sheriff Robert D. Crockett, Accomack County Sheriff's Office
William Downey, Vice President, Riverside Middle Peninsula Hospital
1st Sergeant Lee Fitzgerald, Section Commander, Maryland State Police Aviation Unit
Geoffrey Gubb, M.D., Operational Medical Director, Eastern Shore and Director of Emergency Department at Northampton-Accomack Memorial (NAM) Hospital, Nassawadox
J.W. Jeffries, Town Manager, Chincoteague
Sue Kwentus, R.N., NAM Hospital
Susan D. McHenry, Director, Division of EMS, VDH
Ann Mowry, R.N., Director of Nursing, Rappahannock General Hospital, Kilmarnock
1st Sergeant Jim Nichols, Virginia State Police Aviation Unit
Jeff Slepin, M.D., Operational Medical Director, Nightingale Air Ambulance Service, Norfolk
Frank M. Yeiser, M.D., Medical Director, Division of EMS, VDH.

Susan McHenry served as chairperson of the Study Team.

II. ANALYSIS OF THE ISSUES

A. BACKGROUND

Physical trauma is the major cause of death for individuals from age one to 44 in Virginia and the nation. Over the last ten years there has been significant improvement in the emergency medical services system in Virginia, particularly as it relates to care of trauma patients. In fact, in the July, 1988, issue of the Journal of the American Medical Association (JAMA) Virginia was recognized as one of only two states having a truly comprehensive and coordinated statewide trauma care system. Important components of a trauma care system include designation of trauma centers, development of treatment and triage protocols, implementation of a rapid transport system through the use of helicopters, and implementation of a statewide trauma registry to monitor the system and assist with injury prevention efforts. A helicopter medevac service is an important aspect of trauma care because the time factor from the time the injury occurs until the patient receives definitive treatment in a trauma center is critical to the patient's survival. It must be remembered, however, that the helicopter is just a tool in the overall system and it has limitations and risks. Weather is a major limiting factor.

Six air medical evacuation services are currently in place in Virginia. These are Nightingale in Norfolk, Med-Flight One in Chesterfield County, Aries in Fairfax, Pegasus in Charlottesville, Life-Guard in Roanoke, and Med-Flight Two in Abingdon. Their locations are shown on the map in the Appendices. These medevac services are well distributed and provide reasonably good coverage to most areas of the state.

In addition, medevac services in Washington D.C. (MedStar) and Maryland (Maryland State Police) serve portions of Virginia when necessary. Generally speaking, only those areas within a 15-30 minute response time of the helicopter base lend themselves to effective on-scene pick-up of patients. Most other missions would involve inter-hospital transfer. These flights must be concerned with continuing the level of care already initiated at the hospital.

In 1986, the State Medevac Committee of the State EMS Advisory Board completed a State Medevac Plan that addresses the coordination of the various services within the state and sets forth expectations in terms of utilization, safety, flight crew training, record keeping and evaluation.

B. INTERFACE BETWEEN PUBLIC AND PRIVATE SERVICES

Of the existing medevac services in Virginia, three are private hospital-based services and three are public service. All six are either based at a trauma center or linked with a trauma center for medical direction and flight crew training and continuing education. Whenever implementation of a new medevac service is contemplated, consideration must be given to its potential impact on existing services. As previously reported by Department of State Police, in keeping with Executive Memorandum 2 -88, State Police Med-Flight service areas are limited to avoid inappropriate competition with services provided by the private sector. Reciprocal agreements are, however, maintained between the public and private sectors to ensure that response time is minimized in all cases. Careful attention must be given to developing an appropriate interface with Nightingale, with respect to service on the Eastern Shore, and to establishing protocols under which the new program would function.

C. ANTICIPATED CHANGES IN MEDEVAC SERVICES ENVIRONMENT

Air medical services are usually based at urban tertiary care hospitals. There are approximately 230 helicopter medevac programs in operation across the country. As helicopter services have increased in number, questions have arisen regarding their costs, appropriate utilization, and safety. Recent national experience, FAA analysis of helicopter medevac crashes that have occurred across the country, and pending litigation in federal court, suggest several trends and changes within the helicopter medevac industry.

* Single engine aircraft for medevac are being phased out in favor of twin engine helicopters, due to safety considerations and demand for greater weight and crew capacity.

* The standard for medical staffing of these helicopters is progressively moving toward requiring a medical flight crew of two, normally including a certified Paramedic and a qualified Flight Nurse. This is already the "gold

standard" and the practice followed by most of the hospital-based medevac programs. It is anticipated that such staffing may be required in the future.

* Costs are continuing to increase and programs are having to more fully justify the costs to administration.

These issues are important to keep in mind as consideration is given to establishing any new medevac service, whether it is public or private.

D. RURAL EMERGENCY MEDICAL SERVICES NEEDS

Rural EMS systems in Virginia, and elsewhere in the U.S., face significant challenges due to several factors. Key factors include the following:

1. Shortages of prehospital care providers, particularly during daylight hours.

2. Limited availability of training and continuing education opportunities.

3. Distance from a hospital with an emergency department or a specialty care center.

4. Limited experience levels due to low EMS call volume.

5. Shortage or absence of adequately trained dispatchers.

6. Very limited resources to apply to system improvements.

If one adds to this list the changes that are occurring in rural health care in general, such as the nationwide trend of smaller rural hospitals closing, it quickly becomes evident that there are many critical issues facing rural EMS agencies that must be given higher priority.

The Eastern Shore of Virginia is not only rural in nature, but it is relatively isolated due to the Chesapeake Bay. Several of the specific Eastern Shore EMS system needs will be further addressed under the Work of the Study Team section of this document.

The location of a helicopter medevac service on the Shore may improve outcome for some of the most critically injured patients, but it will not necessarily help in addressing many of the other EMS needs on the Shore.

E. AERIAL SUPPORT FOR LAW ENFORCEMENT

Very few localities in Virginia have their own aircraft, either rotary or fixed wing, to support law enforcement activities. The Department of State Police, through its Aviation Unit, provides aerial support to local law enforcement officials as well as supporting its own law enforcement functions and search and rescue and executive transportation functions. Two of the three State Police Aviation Unit locations, Chesterfield County and Abingdon, also provide the medevac service for those areas. The helicopter based at the Manassas location is not staffed or equipped for medevac, but is capable of serving as a backup for that service. All of the helicopters are equipped for search and rescue.

The primary area of the state that does not have quick access to aerial support for law enforcement is the State Police Fifth Division in eastern Virginia. This was brought to light very early in the deliberations of the HJR 318 Study Team and it was decided to expand the scope of the study to address the law enforcement needs as well as the medevac needs and to include the Northern Neck and Middle Peninsula in the study.

Among some specific law enforcement needs on the Eastern Shore are those related to traffic crashes, jail breaks, increasing drug problems, and search and rescue. Fixed wing aircraft can be useful on some of these missions. One of the major issues to be addressed is the relative need for law enforcement support versus medevac support and how that should affect the decision on where such a unit would most appropriately be located.

From a law enforcement standpoint, a more centralized location on the mainland would be preferable to the Eastern Shore, as it would provide better coverage for all of the Tidewater area. Past experience of the State Police Aviation Unit shows that approximately 90% of their missions are law enforcement and other emergency services, and only 10% are medevac related.

III. WORK OF THE STUDY TEAM

The first meeting of the Study Team was held at Eastern Shore Community College in Melfa on July 17, 1989. At this time Delegate Bloxom, the patron of HJR 318, reviewed the reasons for the introduction of the resolution and his thoughts on expanding the scope of the study to address law enforcement needs as well as medevac needs and to have the area of study include the Northern Neck and the Middle Peninsula. He emphasized the need for a multi-faceted program for rural Virginia, search and rescue needs for water-bound areas, and special needs for isolated areas such as Tangier Island.

During this first meeting, the Study Team reviewed background information, including an earlier feasibility study conducted in 1988 by the Department of State Police. Representatives from Nightingale Air Ambulance Service and Maryland State Police reviewed their level of activity and service for the Eastern Shore over the past year and a half. Nightingale reported responding to 70-80 requests for transport from the Eastern Shore in 1988. Almost all of those were from Northampton -Accomack Memorial (NAM) Hospital in Nassawadox to Sentara Norfolk General Hospital in Norfolk. The types of cases were primarily trauma, unstable cardiac, major vascular injuries, head injuries and sick children. They are rarely called to respond to a scene on the Eastern Shore, and then only when there is a prolonged extrication. Maryland State Police and Dr. Adkins reported on improvements in their helicopter capability and neurosurgical capability at Peninsula General Hospital in Salisbury, MD.

Representatives from the Eastern Shore reviewed some of the features of the EMS system on the Shore and discussed some of the other needs that must be addressed, such as the need to improve ground EMS capabilties, and to consider the cost/benefit of both approaches. They indicated that the Shore is reasonably well served by existing medevac services.

There was discussion of the need for the Study Team to weigh the need for medevac service on the Shore, the improvement that might be expected if there were a medevac service located on the Shore, and the impact such a new service might have on existing programs such as Nightingale. Another question discussed was whether a medevac service based on the Shore, given some of the known constraints, could operate within the medevac standard of care that has been established statewide. It was suggested that a new program on the Shore operated by State Police may need to be limited to scene pick-ups, search and rescue activities, and law enforcement missions, with the possibility of serving as a back-up for Nightingale if they are committed on another mission or otherwise can not respond on an inter-hospital flight.

There was brief discussion of some of the law enforcement needs for air support. It was agreed that the Study Team would be expanded to include two sheriffs from the Shore and representatives from the Northern Neck and Middle Peninsula, and that the next meeting would focus more attention on the law enforcement needs.

The second meeting of the Study Team was held at NAM Hospital in Nassawadox on August 21, 1989. Study Team members presented more detailed data on medevac utilization on the Eastern Shore. They indicated that of the 81 NAM Hospital requests for Nightingale in 1988, 66 missions were flown and the others were not flown, primarily due to weather conditions. There were only two occasions in the last two years when Nightingale was unable to respond due to unavailability.

Maryland State Police responded to seven medevac calls in the northern part of the Va. Eastern Shore and one to Tangier Island in 1988. They were four missions into Virginia so far in 1989. The new representative from the Kilmarnock area indicated that the medevac needs in that area are being adequately met at this time. They request medevac services approximately 6-8 times per month. There is normally about a 45 minute flight time for Med-Flight One.

Jim Chandler of the Tidewater Emergency Medical Services Council presented a state map with overlays to show state coverage by existing medevac services. Coverage was shown in 10, 20, and 30 minute response times, with appropriate variation for size and speed of aircraft.

Dr. Gubb indicated that the demand for medevac service on the Shore is, in large part, being met. He agreed that some patients from the more remote areas could be helped by the service, but he believes that recognition at the scene and education of the ground crews are the most important factors. Several other Study Team members agreed that there is a great need to better educate ground EMS crews. This would also help improve patient assessment skills that are very important in determining when a helicopter is needed.

Dr. Yeiser discussed some of the changes that are likely to occur in medevac services across the country, including increased costs requiring greater justification, increased use of twin engine aircraft, and a two member medical flight crew becoming the standard to provide the level of patient care needed in these critical transports. Airway management seems to be one of the most frequently used and most effective specific interventions performed in flight. Dr. Yeiser, who at one time served as the Operational Medical Director for Nightingale, stated that Nightingale really has no paranoia about a new service on the Shore from a financial standpoint, because flights cost money, particularly if the patient is a "no-pay" patient. The important point is that there must be a system that provides quality patient care.

The Study Team agreed that there is not an interest in a new medevac service for inter-facility transfers, but more for on-scene response, search and rescue, and support of law enforcement. It also agreed that, in the future, there should be a major effort to upgrade both the ships and the medical flight crew in cases in which single engine aircraft and single member medical crews are currently in use.

The discussion was then redirected to the law enforcement needs for air support. Traffic fatality statistics for the Eastern Shore were reviewed. Figures recently issued by the Department of Motor Vehicles showed 17 traffic fatalities in Northampton County last year, which gives them the highest fatality rate in the state. Other areas of possible need

identified were jail breaks, increasing drug problems and search and rescue.

1st Sgt. Nichols reviewed the Va. State Police aviation activity in the area for the last five years. He reported that utilization has been low due to the distance the helicopter would have to travel from Chesterfield even to get to the area of need. He pointed out that the location preference for police response would be a more centralized location. He also stated that placement of a helicopter in eastern Virginia would relieve the present call demand on the current police helicopter in Chesterfield and improve response time and capability by approximately 50 percent.

Dr. Yeiser pointed out that the Eastern Shore Medevac Program Feasibility Study completed by Department of State Police last year and updated this year addresses medevac needs almost exclusively. He suggested that it might be more balanced to reflect the significant need for law enforcement support.

The third meeting of the Study Team was held at NAM Hospital on September 21, 1989. The primary areas of focus for this meeting were the medical staffing needs for a helicopter located on the Shore and the other emergency medical services needs in the area.

Regarding the staffing of a medevac helicopter, it was agreed that it would be necessary to have at least one certified flight paramedic on board for each mission. This would be the minimum acceptable, as many services routinely fly with both a paramedic and a flight nurse. With critical trauma patients, the most frequently transported patients, there is a great deal to do and it is very difficult for one person to manage alone.

At this time the highest level of pre-hospital training and certification on the Shore is Shock/Trauma Technician, although Dr. Gubb does train them in some additional skills. He pointed out that it is difficult even now to maintain the skills of the Shock/Trauma Techs. For the medevac program at least five paramedics would have to be hired or contracted and it would be difficult to maintain these special skills with the low volume of calls that would be anticipated. Dr. Yeiser pointed out that even the Nightingale crew which runs a high volume of calls does not get enough ongoing experience on the helicopter. They maintain their clinical skills through full time employment with busy urban/suburban advanced life support EMS systems. This is facilitated by exposure to a wide variety of clinical situations in a high volume EMS system in proximity to a Level I Trauma Center. This type of ongoing clinical skill maintenance would be difficult to achieve on the Eastern Shore or in a similar rural environment.

Dr. Yeiser suggested that there is a need to look at innovative ways to augment the advanced life support skills on

the Eastern Shore. It would be unacceptable to staff the helicopter in a substandard fashion. The preferable staffing would be one paramedic and one flight nurse. However, in general discussion among the Study Team members, it was agreed that perhaps it would be acceptable to staff this particular helicopter with one paramedic and one shock/trauma tech. This would provide better utilization of existing resources on the Shore and would give some of the ground crew the opportunity to experience the medevac work.

The Team also discussed another possibility or approach to the need for improved care in the field. The helicopter could serve as a vehicle to provide rapid transport of a more highly qualified provider to the scene. The provider would then ride with the ground crew to the hospital. The helicopter would not transport the patient in that case. Delegate Bloxom emphasized the need to design a composite of the necessary components for rural care and it was agreed that the Study Team should offer both approaches for consideration - a fully qualified and staffed crew for a medevac unit and a system to transport to the scene a provider with somewhat higher skills than are currently available in the field.

The discussion then shifted to other emergency medical services needs on the Shore. At this time there is no one beyond shock/trauma level, but they have enhanced that by adding the automatic defibrillator and intubation skills. There is currently no telemetry on the Shore, but this may not be a problem. There is a strong need for a full-time training coordinator to assist instructors and to provide instruction where needed. Additional attention is needed to enhance the skills of basic emergency medical technicians who have little experience. There is a need to upgrade their patient assessment and scene assessment skills and for training in management in the EMS environment.

There are a multitude of ambulances on the Eastern Shore because of the geography. There are paid personnel in five of the thirteen rescue stations eight hours per day. Response time is a problem. Response times range from one minute to 45 minutes to reach the scene, based on factors of distance and crew availability. During the day, volunteer squads often have difficulty in staffing an ambulance at the time of a call.

Dr. Gubb pointed out that there is also a major need for dispatcher training. The dispatcher needs to ask the right questions of the caller. If the first person can not accurately assess the needs of the patient, the right resources may not be dispatched. The dispatcher is usually the point of entry to patient care. Sheriff Crockett indicated that the real problem is not having enough dispatchers. He approached the Compensation Board for staff increases, including dispatchers, and was told that they do not recognize the responsibility for fire and rescue dispatching within the sheriff's office. The other dispatching

need discussed was to have the dispatchers trained to provide pre-arrival guidance or instructions to the victim or family members or friends. Dispatchers are a critical part of the system, particularly where there are limited resources. Many of these same needs are paramount in the Northern Neck and Middle Peninsula areas of the state. The Study Team recognizes that these other EMS issues were not part of the original resolution, but believed that the discussion should be included to put the medevac issues in perspective with the other EMS system needs.

At the close of the meeting, it was agreed that there is a significant need for air support for law enforcement functions in eastern Virginia and that a helicopter located on the Eastern Shore that is properly equipped and staffed could enhance the current medevac availability. The need for careful coordination with other medevac services and for protocols was reemphasized, and it was suggested that some consideration be given to allowing the State Police to charge a reasonable cost for the medevac service as is provided for in Section 32.1- 112 C. of the Code of Virginia. Again, it was recommended that to serve the entire Tidewater area from a law enforcement standpoint, it would be better to locate the helicopter more centrally, though a police helicopter located on the Eastern Shore could respond more rapidly to Tidewater than could the Chesterfield-based helicopter. Dr. Yeiser stated that what we need is the capacity to use all the resources to provide the maximum benefit and address as many of the problems as possible.

The final meeting of the Study Team was held at NAM Hospital on October 31, 1989. The draft report of the Team was reviewed and revised and the amended report received final approval of the Study Team. It was agreed that, should the report be accepted favorably by the General Assembly of Virginia, additional work would be necessary to make a selection from the various location and staffing alternatives and to prepare a detailed budget for implementation.

A representative from Riverside Health System indicated that Riverside Hospital is interested in supporting this effort and would be willing to contribute some private support. The level of participation may depend to some degree on the selected location for the service.

IV. FINDINGS AND RECOMMENDATIONS

The Study Team reached consensus on several major recommendations that address the directive of HJR 318, the need for air support for law enforcement functions at the state and local levels in Eastern Virginia and other significant emergency medical services system needs in the study area.

First, it was concluded that there is definitely a need for an eastern site for the State Police Aviation Unit, and the site should be equipped with at least a helicopter. This would enable

the State Police to assist local law enforcement agencies in carrying out their functions and provide more timely aerial support for their own enforcement and search and rescue functions. It is recommended that careful consideration be given to the most appropriate location for such a service to provide the maximum benefit.

Second, there was consensus among the Team members that the medical evacuation needs on the Eastern Shore and Northern Neck and Middle Peninsula are being adequately met at the present time and that the establishment of a new helicopter service in that area is not justified based on the medevac need alone. It was agreed that if such a service is made available in the area based on the law enforcement needs, it could enhance the existing medevac service, primarily by responding to on-scene calls and search and rescue calls and serving as a back-up to Nightingale on inter-hospital transfers.

Considerations for the medevac service aspects of the program should include the following:

* Such a program must meet the accepted standard of care for staffing, equipment, and operations.

* The medevac service should be limited to on-scene pick-ups, search and rescue calls, and back-up for Nightingale on inter-hospital transfers, where appropriate.

* There are two options for operating the medevac service. The standard approach would be to staff the helicopter full-time with at least a certified paramedic and a flight nurse. A shock/trauma technician may be acceptable as a second medical crew member. The other approach would be to use the helicopter as rapid transportation for more highly trained providers to the scene of an emergency to augment local ground EMS providers and to accompany the patient to the hospital in the ambulance. The first option is preferable, assuming local resources and capabilities exist or can be developed.

* There must be close coordination with existing medevac services and protocols must be developed that address the types of missions to be run, circumstances under which exceptions would be appropriate, and other operational aspects of the program.
* Consideration should be given to the Department of State Police charging reasonable costs for this service, as there are specific provisions for this in the Code of Virginia and third party payers (insurance companies) have provisions to reimburse for emergency air transport. This would help to offset some of the costs of the program and might discourage inappropriate requests that might be made

because the service is "free".

* Serious thought and consideration should be given to upgrading the State Police helicopters to twin engine helicopters. This is critical from a safety standpoint and is beneficial from a staffing, equipment and patient care perspective.

The Study Team recommends that consideration be given to other critical emergency medical services needs such as increased availability and support for training of ground EMS providers and increased training and support for dispatchers. Additional funding is needed to meet these needs.

V. CONCLUSION

The Study Team has concluded that the establishment of a new helicopter service on the Eastern Shore of Virginia based on the medevac need alone is not justified. There is, however, a clear need for an eastern site for the State Police Aviation Unit to assist local law enforcement and to support State Police enforcement and search and rescue functions. The availability of such a service in the area could enhance existing medevac service, especially by responding to on-site calls.

Further, the Study Team is convinced that there are a number of other critical emergency medical services needs on the Eastern Shore and the Northern Neck and Middle Peninsula areas of the State. The Study Team achieved an increased appreciation for and understanding of the unique needs and challenges of providing quality emergency medical services and law enforcement in the more rural areas of our state.

The Findings and Recommendations of the Study will require further refinement and a detailed budget must be developed should the report receive a favorable response from the General Assembly.

APPENDICES

House Joint Resolution No. 318

Map and Isochrone Chart of Average Response Times of Virginia Helicopter Medevac Services

GENERAL ASSEMBLY OF VIRGINIA -- 1989 SESSION

HOUSE JOINT RESOLUTION NO. 318

Requesting the Department of Health to study the feasibility of establishing a medevac program on the Eastern Shore.

Agreed to by the House of Delegates, February 6, 1989
Agreed to by the Senate, February 23, 1989

WHEREAS, the Virginia General Assembly on previous occasions has recognized the need for an air medical transport system capable of removing trauma victims to emergency health care in the first hour following injury when the victim's status is so critical; and

WHEREAS, the Commonwealth has implemented regional medevac plans in five areas of the Commonwealth; and

WHEREAS, the Eastern Shore of Virginia has not been included in the regional planning and is thereby unable to treat effectively the physical trauma associated with motor vehicle accidents, suicides and homicides; and

WHEREAS, the emergency medical services available by air to the remainder of the Commonwealth should also be available to residents of Virginia's Eastern Shore; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Department of Health conduct a study on the feasibility, need, access to, and costs of an emergency medical evacuation system for physical trauma victims for the Eastern Shore.

The Department shall complete its work in time to submit its findings and recommendations to the Governor and the 1990 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for processing legislative documents.

MEDEVAC RESPONSE TIMES (in min.)
LEGEND
VIRGINIA
TOLL FACILITIES
30
20
10