NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**FIRST RESPONDER READINESS
A SYSTEMS APPROACH TO READINESS ASSESSMENT
USING MODEL BASED VULNERABILITY ANALYSIS
TECHNIQUES**

by

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September 2005

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This thesis reviews various tools used by military and civilian First Responders to assess unit readiness. Most civilian readiness assessment tools have fallen short of adequately predicting a response team's probability of mission success or failure. This thesis will explore the use of model based vulnerability analysis techniques and FT++ software as potential tools that could be adopted by the first response community to predict a unit's operational performance.

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FIRST RESPONDER READINESS: A SYSTEMS APPROACH TO READINESS ASSESSMENT USING MODEL BASED VULNERABILITY ANALYSIS TECHNIQUES

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ABSTRACT

This thesis reviews various readiness assessment tools used by military units and the civilian First Responder community. Most civilian readiness assessment tools have fallen short of adequately predicting a response team's probability of mission success or failure. This thesis will explore the use of model based vulnerability analysis techniques and FT++ software as potential tools that could be adopted by first response organizations to predict a unit's operational performance.

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EXECUTIVE SUMMARY

Most of our knowledge of readiness is derived from the Department of Defense. The U.S. military has been assessing unit readiness since World War II through various methods, its most recent iteration being the Status of Resource and Training System (SORTS). While unit readiness has been a long standing part of military culture, its value has not been fully recognized by the civilian first responder community. There are several reasons for this such as diversity in the forms of government at the State and local level, much smaller budgets and a lack of a standardized assessment methodology. Additionally, military readiness deals with information on military capabilities, and therefore, must be classified for reasons of national security. As a result, the core competencies necessary for a readiness program are frequently unknown by leaders in the civilian first response community.

This thesis takes a systems view of the readiness issue as it pertains to civilian first response organizations. In a theoretical sense, it examines the relationship between tangible assets that a jurisdiction has at its disposal, as well as the value of intangible ones. It also examines the relationship between the capability and the capacity of a civilian first response organization as it pertains to the readiness of an operational unit. This thesis also examines the relationship between time and the consumption of readiness resources which are the foundation of a sound readiness program. Additionally, benchmarks are conducted of various readiness assessment tools currently used by both military and civilian organizations.

By systematically looking at the readiness issue it is possible to develop a methodology that uses model based vulnerability analysis (MBVA) techniques. By using MBVA techniques it is theoretically possible, to create a predictive model to forecast the probability of a unit failing in an operational setting. The readiness model proffered in this thesis uses a three phase approach which consists of an assessment phase, an analysis phase and a budget allocation phase. Finally, this model is put in the context of a comprehensive readiness program that not only quantitatively assesses the tangible assets of an organization but qualitatively assesses the intangible ones as well.

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I.   READINESS OVERVIEW

A.   INTRODUCTION

"Hamlet: . . . There is a special providence in the fall of a sparrow. If it be now 'tis not to come—if it be not to come, it will be now—if it be not now, yet it will come—the readiness is all. . ."

---Shakespeare, Hamlet, 5.2.215-219

What is Readiness? Regrettably, there are no easy answers to this question. In many ways readiness is very much a term of art as it is used in homeland security quarters. The very term invokes different meanings to a variety of actors on the public stage. Depending on ones role and perspective, the approaches to readiness can be endless. While there are no shortages of opinions on what a readiness program should include, very little academic research has been conducted on readiness as it pertains to the civilian first responder community. This thesis will proffer a scientific approach to readiness but recognizes that ultimately a response operation is much more art than it is science. Analytic tools can provide a unit commander with powerful information to assist in making critical decisions, but these tools will never be a substitute for the experience, leadership and skill of the unit commander.

Much of our current knowledge of readiness comes from the Department of Defense (DoD).   The DoD has been measuring combat readiness since World War II, and understandably much of the DoD's readiness information has been and continues to be classified. As a result of the need to classify, the vast majority of first responders have not had access to the military's readiness assessment methodology. It is surprising, however, that despite the Department of Defense's (DoD) experience with readiness measurement their processes have remained relatively unchanged.

This thesis will demonstrate how model based vulnerability analysis techniques can be adopted to assess the readiness of civilian first responder organizations. The system being proffered in this thesis will be referred to as the STEP Readiness System (Supply, Training, Equipment and Personnel).   The STEP model follows a simple process of assessment,

analysis and allocation to improve a unit's readiness. The Assessment Phase identifies the components that are necessary for mission success. Supply, training, equipment and personnel readiness levels are then calculated for each of these sectors. In the Analysis Phase model based vulnerability analysis (MBVA)[1] techniques are used to predict the probability of sector failure and ultimately mission failure. Finally, in the Allocation Phase, resources will be allocated to specific vulnerabilities that yield the greatest return on the dollar in terms of readiness.

B.   BACKGROUND

In the wake of 9/11, the First Responder community became acutely aware of the need to establish readiness programs. Prior to this most serious discussions of readiness were confined to military circles. First responders by and large thought of readiness as something that the military did. Most responders thought of it in terms of an army's ability to conduct combat operations. Due to the sensitive nature of military readiness and the inherent need to classify military capabilities, it is not surprising that the number of first responders knowledgeable in this discipline was limited.

The importance of first responder readiness was driven home by US Senator Joseph Lieberman in 2003 during his opening statement at the hearings on "Investing in Homeland Security: Challenges Faced by State and Local Governments". Senator Lieberman stated, "Today the readiness of our firefighters, police officers and public health professionals is every bit as important to national security as the readiness of our soldiers, sailors, and airmen. Homeland security cannot be done on the cheap. It takes serious money to employ, train, and equip top flight first responders, to buy new biometric security systems, install information sharing networks, develop biological and chemical testing and treatment capabilities, to improve security around water plants and airports, to revamp aging seaports and protect chemical and nuclear plants. These are tough jobs and countless others cannot be accomplished with wishful thinking or a magic wand. They cannot be accomplished by

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[1] Lewis, Ted G. <u>Critical Infrastructure Protection in Homeland Security: Defending a Networked Nation.</u> 2003-2004

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placing an unfair share of the burden on State and local governments who are already facing the worst fiscal crisis in decades without helping our State and local leaders."[2]

The attacks on September 11th, 2001 changed the way that first responders would forever view readiness. Over night domestic first responders found themselves thrust into the front lines of the Global War on Terror (GWOT). A variety of interpretations of readiness flourished as Federal, State, and local decision makers tried to ensure that their organizations were prepared to successfully operate in a world where hostile sub-national groups could leverage technology with devastating results. The perceived security afforded the United States by two oceans suddenly vanished as State and local responders realized they had to be better prepared to respond to emerging threats; threats which could include the grim prospect of responding to attacks on the US homeland with chemical, biological, radiological, nuclear or high yield explosive weapons.

Just as the Department of Defense had to deal with politicization of readiness during the 2000 election cycle, State and local public officials found themselves under increasing political pressure to ensure that first responders were ready to respond to the consequences of a major terrorist attack. John Hillen, who was the 2000 Bush Campaign's advisor on defense, summed up the politicization of readiness best when he said, "Readiness ratings are so fungible, it just becomes a matter of he-said, she-said—my anecdotes versus your anecdotes. . . everything said by both sides is pretty much true and neither side has been able to score a knockout blow."[3] But unlike the Department of Defense, who had the benefit of the "Cold War" to develop sophisticated readiness analysis tools, State and Local officials had little expertise in this field.

As preparedness funds poured into local jurisdictions, emergency managers developed assessment tools in stride. Since no jurisdiction wanted to miss out on preparedness grant money, several "just-in-time" preparedness strategies emerged. While US Senator Susan Collins of Maine applauded State and local first responders for developing "innovative

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[2] United States Senate. Hearing before the Committee on Governmental Affairs One Hundred and Eighth Congress, First Session. "Investing in Homeland Security: Challenges Facing State and Local Governments" S. Hrg. 108-83. US Government Printing Office. 15 May 2003.

[3] Ricks, Thomas E. "Readiness Debate Called Off Target; Experts Fault Use of Cold War Yardsticks". The Washington Post. Washington D.C. Page A6. 1 September 2000.

strategies" for preparedness, it was clear that no national readiness strategy existed.[4] The Department of Justice, The Department of Health and Human Service and the Office of Domestic Preparedness each had independent preparedness funding mechanisms.[5] This resulted in jurisdictions spending much of their time chasing grant requirements rather than focusing on developing a systematic program for readiness improvement.

The need for funding State and local preparedness activities sparked a national debate which culminated in the hearings held by the US Senate in May of 2003. The topic of the hearings was "Investing in Homeland Security: Challenges facing State and Local Governments."[6] Later in September of that same year, the US House of Representatives held hearings on "Combating Terrorism: Assessing Federal Assistance to First Responders."[7]

The Department of Homeland Security (DHS) attempted to consolidate all preparedness grant monies within the Office of Domestic Preparedness so that State and local governments could go to one source for preparedness funding. Unfortunately this did not include agencies that were outside of the DHS umbrella. The Centers for Disease Control and Prevention and the Health Resources Services Administration, both agencies within the Department of Health and Human Services, were unaffected by the preparedness grant consolidations. As a result, States were still required to go to multiple agencies for preparedness funds.

C.   STATEMENT OF THE PROBLEM

Current approaches to readiness, such as the Status of Resource Training System (SORTS) used by the Department of Defense, tend to focus on the quantities and status of resources a unit has at its disposal. Some readiness programs, including SORTS, quantify

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[4] United States Senate. Hearing before the Committee on Governmental Affairs One Hundred and Eighth Congress, First Session. "Investing in Homeland Security: Challenges Facing State and Local Governments" S. Hrg. 108-83. US Government Printing Office. 15 May 2003.

[5] United States Senate. Hearing before the Committee on Governmental Affairs One Hundred and Eighth Congress, First Session. "Investing in Homeland Security: Challenges Facing State and Local Governments" S. Hrg. 108-83. US Government Printing Office. 15 May 2003.

[6] United States Senate. Hearing before the Committee on Governmental Affairs One Hundred and Eighth Congress, First Session. "Investing in Homeland Security: Challenges Facing State and Local Governments" S. Hrg. 108-83. US Government Printing Office. 15 May 2003.

[7] United States House of Representatives. Hearing before the Subcommittee on National Security, Emerging Threats and International Relationships of the Committee on Governmental Reform, One Hundred and Eighth Congress, First Session. "Combating Terrorism: Assessing Federal Assistance to First Responders". Serial No. 108-112. 14 September 2003.

readiness by means of a simple percentage, for example if there are 10 positions in the organization and 8 are filled then personnel readiness is 80%. Other methods, particularly among civilian first response organizations, use a preparedness checklist which often contains vague or ambiguous questions. It is not uncommon to see questions like, "Are all members of the response team properly trained?" What does this mean? How do you know if your team is properly trained? The use of open ended questions in preparedness checklists are subject to wide varieties of interpretations. While the use of status reports may provide some insight into the deficiencies of a unit, they are devoid of meaningful analysis.

Status reports fall short of providing a probability based forecast of a unit's potential for mission success. Furthermore, it is difficult to precisely allocate resources with these tools. Resource allocations are frequently done by the seat of the pants. Budgeting strategies often try to eliminate all outstanding deficiencies. This strategy works for DoD because it has a very large budget. Additionally, DoD makes funding readiness a top priority. In smaller jurisdictions however, this strategy does not work as well. Municipalities must balance public safety priorities with education, trash collection, public health and other essential services. A policy of eliminating all discrepancies is simply not possible from a fiscal standpoint.

By using fault and event trees to analyze the readiness of a unit, it is possible to determine the probability of a unit failing at its assigned mission, a trait lacking from other readiness assessment methods. This is a major paradigm shift in the way organizations have historically viewed readiness. A unit commander equipped with this knowledge can precisely target areas of vulnerability and improve the overall readiness of his/her unit. This is particularly important when budget constraints prevent correcting all vulnerabilities. Fault and event tree analysis enables the commander to select those vulnerabilities, or combinations of vulnerabilities, that increase the probability of his/her unit being able to successfully accomplish its mission. The use of an event tree may reveal combinations of vulnerabilities that are not readily apparent from a traditional readiness status report.

This thesis will explore the possibility of using Model Based Vulnerability Analysis (MBVA) techniques as a component of a comprehensive readiness program. Rather than focusing on resource quantities and their status, this thesis will focus on the mission of the organization as viewed in three phases, a response phase, an operations phase and a re-

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deployment phase. Each of these phases will be treated as a separate sector and the four categories of resources needed for a response (supplies, training, equipment and personnel) will be viewed as potential vulnerabilities to each sector respectively. The root node for the analysis will be mission failure. By conducting fault tree and event tree analysis of the mission, it is possible to calculate the probability of a unit failing in the field. By viewing different potential combinations of vulnerabilities derived from an event tree, it is possible to develop budgeting strategies that hone in on those specific vulnerabilities that contribute to sector failure. Funds can then be applied to correct the most significant vulnerabilities thereby increasing the probability of mission success and making it possible for decision makers to defend their purchasing decisions.

D.   LITERATURE REVIEW

As was previously stated, the terms readiness and preparedness are often used interchangeably, but in fact they are quite different. In this thesis "readiness activities" are defined as "those activities that are *directly related* to a response operation." For example, supply chain management and in-service training are considered "readiness activities" by this definition. Conversely, this thesis defines "preparedness activities" as "those activities that are necessary to create an environment that *enables* an effective response." By this definition, laws and statutory authorities would be considered preparedness activities as they create the environment that allows a response to take place.

When one examines the categories of resources used by civilian response organizations it is not surprising that many are the same categories measured by the Department of Defense in their SORTS (Status of Resources and Training System) reporting system.[8] This makes sense because there are many similarities between a battlefield commander and an emergency manager. Both must have sufficient numbers of trained people, adequate supplies and well maintained capital equipment to successfully execute their mission. Additionally, the emergency manager's role is analogous to that of an orchestra conductor who is directing a symphony. He or she must make certain that all resources work together in a cooperative manner and ensure that the right assets are in the right place at the right time.

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[8] Status of Resources and Training System (SORTS), Naval Warfare Publication 1-03.3

Despite the fact that the military has studied readiness for years, it is remarkable that there is still widespread disagreement within the Department of Defense as to what the term means. Jin-Tyan Chiou correctly observed, "The definition of operational readiness varies with the position and responsibility of the military leader or political leader using the term. In general usage, the definition is not used precisely and usually reflects the agenda of the leader employing the term. For example, a politician in the legislature may determine that a unit is incapable of performing a mission because the military has not purchased a weapons system manufactured in his district. In this case, he has specified the mission that he expects the unit to perform in terms of the purchase he wishes the government to make."[9]

During the military downsizing of the 1990's the military service chiefs and commanders in chief expressed concern over the traditional readiness model. This prompted a request to the General Accounting Office (GAO) [subsequently renamed the General Accountability Office] to conduct a review to determine if the existing definition and indicators of readiness were adequate to predict positive or negative changes in readiness.[10] The GAO concluded that in addition to the traditional SORTS indicators (personnel, equipment, training, and location); there were other indicators that needed to be considered as well. The GAO recommended including mobility, C3 (command, control, communication), operations, time, leadership, operations tempo, exercises and morale with the existing readiness indicators as these were also factors that should be captured in a comprehensive readiness system. While the GAO identified important indicators of readiness performance, the factors they recommended were problematic from a measurement standpoint. One of the problems with the GAO's report is that it fell short of providing guidance on how to measure intangible variables such as morale, leadership or mobility.

Tangible indicators are typically defined as those assets to which a cost can be associated. For example, if one looks at the traditional SORTS readiness indicators, it is possible to associate costs to personnel, training, supplies and equipment. These indicators easily lend themselves to quantitative measures. Most will agree that morale, operational

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9 Jin-Tyan Chiou, "An Improved System for Operational Readiness Reporting for the ROC Armed Forces" (MS thesis, Naval Postgraduate School. 1996) 2.

10 US General Accounting Office, National Security and International Affairs Division, "MILITARY READINESS, DoD Needs to Develop a More Comprehensive Measurement System" October 1994. Page 1.

tempo, leadership, time, operations, C3 or mobility are valuable to an organization, but they are difficult to measure. These indicators better lend themselves to qualitative assessments; however, qualitative assessments tend to have less predictive power than quantitative indicators.

In the late 1980's and early 1990's, the US Naval Reserve created a hybrid readiness measurement system that was a modified version of SORTS. The indicators that were measured by the Naval Reserve Force were personnel levels, individual training levels and unit training levels.[11] Since a cost could be associated with these indicators, the system better lent itself to quantitative measurement. The major difference between this system and SORTS was the Naval Reserve's strong focus on individual readiness rather than unit readiness. By focusing on individual readiness, it was possible to paint a fairly accurate picture of the skills a mobilized reservist could perform in the field. The Naval Reserve readiness measurement system was a more comprehensive system than SORTS because of its focus on the individual. Under the Naval Reserve system, Naval Reserve Readiness Commands were tasked with validating the reported readiness of subordinate Naval Reserve Centers through a triennial operational readiness evaluation. This allowed inspectors to validate reported readiness figures and also make those equally important qualitatively assessments of intangible variables such as unit morale and leadership.

In recent years, the US Coast Guard has been exploring the use of data mining to assess the readiness of their shore based facilities. RMS (Readiness Measurement System) is an IT system that allows commanders to select specific information about a facility and drill down to review the history of the selected subject. The complexity of linking multiple USCG legacy systems together has been a staggering technical undertaking and the level of detail that RMS produces is probably beyond the needs of a local first response organization.

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[11] Commander, Naval Reserve Force Instruction 3501.1K, "Readiness Monitoring and Reporting for the Naval Reserve Force Units. 25 May 1998

II. READINESS THEORY

A. DEFINING KEY TERMS

Since there are varying interpretations of readiness it is necessary to establish some operational definitions for the terms used in this thesis. Operational definitions provide specificity to the language and provide a clearer understanding of the issues at hand.

Tangible Asset—An asset that can be associated with a cost.

Intangible Asset—An asset that cannot be associated with a cost with but brings value to an organization or a response. An example of an intangible asset is the experience of an incident commander.

STEP—STEP is an acronym that represents the cumulative total quantities of supplies, training, equipment, and personnel needed for incident response. (STEP resources are considered tangible assets for the purpose of this paper).

Supplies—Mission critical consumable resources that are expended during an incident. (Batteries, water, fuel, respirators and filter canisters, etc.). These items are typically funded out of a jurisdiction's annual operating budget.

Training—Mandatory training required by position descriptions or individual training plans that directly relate to incident response.

Equipment—Mission critical non consumable materials. Capital assets typically fall into this category. These assets are normally funded out of the jurisdiction's Capital Expenditure Budget. (Fire trucks, buildings, communications equipment).

Personnel—Human resources needed for response operations

If one were to break an incident response down to its most basic components they would find that almost all incidents have three distinct phases. The first phase is the Response Phase. The Response Phase begins immediately after an incident occurs. It is in this phase that resources are mobilized and moved to the incident location. The next phase is the Operations Phase. During the Operations Phase all the necessary resources that were marshaled during the Response Phase are tactically employed and consumed. The final phase is the Redeployment Phase. During the Redeployment Phase unused resources are recovered and returned to a ready condition.

One of the readiness challenges for first response organizations is maintaining personnel, equipment, training levels and supplies in a ready state when the timing of an incident is unknown. Readiness, to use a physics analogy, is akin to potential energy. It can be thought of as the potential energy that is stored in a unit waiting to be released at the appropriate time and place. Unquestionably, maintaining STEP resources in a state of readiness is more difficult for some organizations than others. For example, a busy city fire company that responds to three or four fires a day will almost certainly be able to maintain a higher level of readiness than a small rural fire company that responds to only one fire a month. Units with higher tempos of operation will generally be in a more ready condition. The frequency of incidents in a jurisdiction is an important variable in maintaining readiness.

B. RESOURCES REQUIRED FOR A RESPONSE

The types of resources that are required for a response can be broken down into two distinct categories, tangible and intangible assets. The first category is tangible assets. Tangible assets are those assets that a jurisdiction has at its disposal and to which a monetary cost can be associated. The four types of tangible assets that are needed for a response are supplies, training, equipment, and personnel. Collectively these will be referred to as STEP resources in this thesis. The actual quantity of each of these resources varies as to the type of operation that is being conducted. For example, the type of equipment, number of personnel, training levels, and supply quantities for a plane crash will be much different than those required for a hazardous materials release; however some combination of STEP resources will be required for each. Equally important but much more difficult to quantify are intangible assets of an organization. Intangible assets of an organization such as leadership, information, knowledge, empowerment, morale, effective communication, public confidence, public perception, and actionable intelligence frequently make the difference between a successful or failed mission. While it may difficult to quantifiably assess intangible assets they do lend themselves to qualitative assessments.

1. Tangible Assets

One of the reasons why tangible assets are the foci of the STEP Readiness Model is that they are easy to quantify. Since tangible assets are quantifiable it is easier to allocate

funds to their shortfalls. Obviously it is easier to purchase a new piece of equipment like a fire truck, a tangible asset, than to purchase leadership, an intangible asset. Both however are critical to incident response.

In calculating readiness using the STEP Readiness Model it is necessary to calculate the mission essential quantities of each individual category of resource. The exact levels of resource quantities are defined by subject matter experts (SME) within the respective organizations. A SME work group's primary consideration should be to identify those STEP resources that are critical to the organization's mission success. Budgetary concerns, while important, should not taint the work group's decisions during this phase of the process.

a.   Supplies

Supplies, as defined in the STEP model, are those consumable items necessary to conduct an incident response operation. Required supply items and their quantities will vary based upon the recommendations of the SME work groups. Supply readiness is calculated by simply measuring the percentage of supplies on hand out of the total supplies required. Since only mission critical items should be identified there is no need to use weighted averages. While some items are more critical than others, mission critical items as they are referred to in this thesis are those items that must be present or it will guarantee mission failure. For example, fire hoses would be a mission critical supply item for a fire department; without them, the fire company would not be able to extinguish a fire.

Sample of Supply Readiness Assessment

Supply Item	Minimum Inventory Level	Quantity On Hand	Quantity On Order	Readiness Factor
1. Batteries	100	100	0	1
2. Cannisters	50	10	40	0
3. Bandages	1000	500	500	0
4. Rubber gloves	1000	1000	0	1
5. Oral/Nasal Mask	20	20	0	1
			Total/5	3
			S Readiness Factor	60%

Figure 1.   Sample Supply Readiness Worksheet

b.   *Equipment*

Equipment, as defined in the STEP model, is non-consumable durable goods with a life expectancy of one year or greater. Frequently first responder equipment is thought of in terms of unattached equipment such as fire trucks, police cars or ambulances. But also included in this category are necessary infrastructure items such as building projects or renovations to existing facilities. Resources in the equipment category are typically funded out of the jurisdictions' Capital Expenditure Budget. Unlike the other STEP resources, equipment is not consumed in an operation, but is a reusable resource. Although equipment is considered a reusable resource it will depreciate over time. Replacement of equipment should be part of a life cycle replacement plan. Equipment readiness levels can be determined by calculating the percentage of fully mission capable equipment out of all of the mission critical equipment. See Figure 2.

Equipment
List Non Consumable Mission Essential Equipment

Equipment	Fully Mission Capable	Reduced Capability	Out of Commission
1. ERV	1		
2. D-1		1	
3. D-2	1		
4. D-3	1		
5. Trailer #1			1
6. Trailer #2	1		
7. Motorola Radio #1	1		
8. Motorola Radio #2		1	

Calculation= (5) FMC items divided by (8) items
5/8=.6
Equipment Readiness=60%
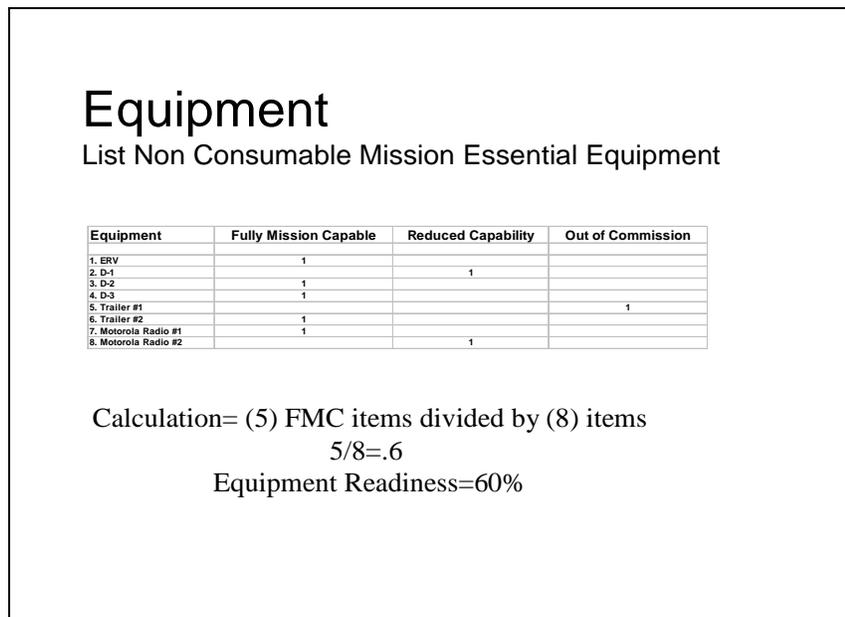
Figure 2.   Equipment Readiness Worksheet

c.   *Personnel*

Personnel are also a tangible asset that should be assessed to help paint the overall picture of unit readiness. Personnel readiness levels are determined by calculating the percentage of filled positions out of all of the mission critical positions in the organization. In smaller organizations it is not uncommon to have individuals cross-trained and more than one

person filling a position on the organizational chart. For personnel readiness calculations however, only one person should fill a position. The reason for this is that while certain remarkable individuals are capable of multi-tasking for short periods of time, many will fatigue before the end of the operational period. The staffing structure for the organization should be based on what a single individual can be expected to manage during a twelve hour operational period. It is assumed that any person filling a position has met the minimum physical and educational standards for that position. The training requirements for a position are taken into account in the Training Readiness Assessment. For an example of a Personnel Readiness Worksheet see Figure 3.
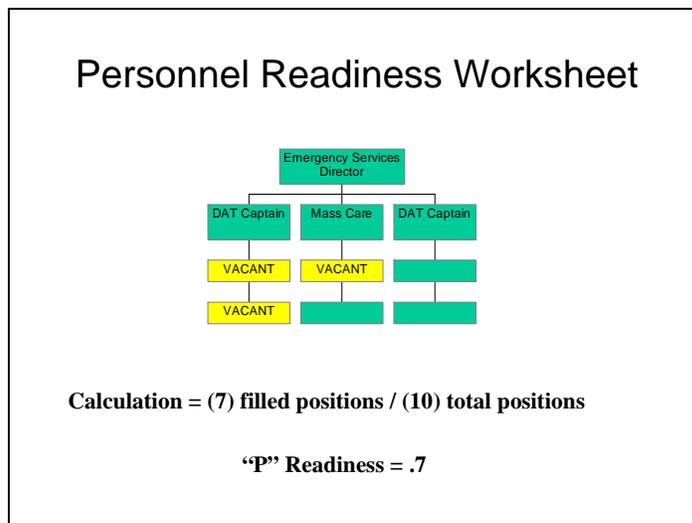
Figure 3.   Personnel Readiness Worksheet

d.   Training

Training is the last category of resources that needs to be assessed. Training managers frequently maintain two types of training plans. The first is a Unit Training Plan (UTP). UTP's are used to plan training activities in which the entire unit will participate. Things that one would expect to find in the Unit Training Plan would be drills or exercises. Individual Training Plans (ITP) are another type of training plan that is frequently maintained by a first response organization. ITPs are based on an individual's position description. A well crafted ITP should include job prerequisites, job related courses, and job qualification

standards. An ITP should also link training to the Unit Training Plan. Typical linkages could include items like, "attend 1 drill a month or participation in 2 full functional exercises a year."

When conducting a training readiness assessment, managers should assess each individual's training level. The individual's level of training then becomes an input to the unit's overall training readiness assessment. Figure 4 and Figure 5 illustrate how training readiness is calculated.

Individual Training Plan

Job Qualification Courses (JQC)	Date	Initial			
1. First Aid Certification	9/15/00	HM			
2. CPR Certification	11/20/00	HM			
3. Intro to Disaster Services					

Calculation =(2) Completed items / (3) Total Items

Individual "T" Readiness Factor = .6
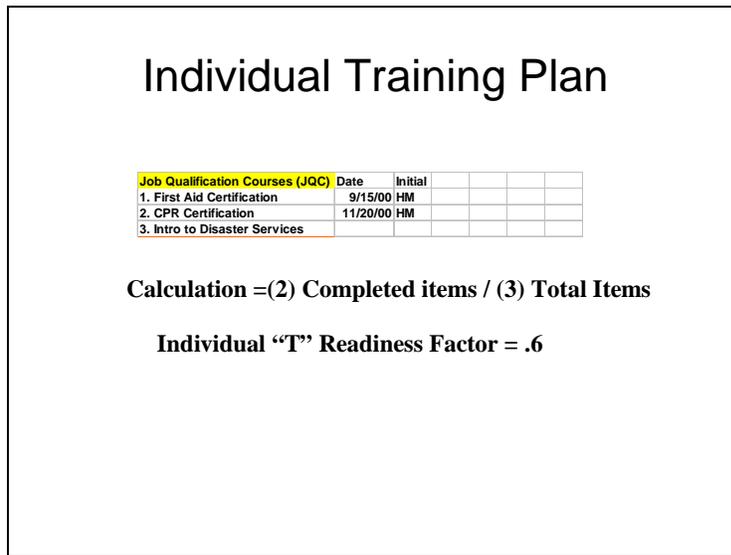
Figure 4.   Sample Individual Training Plan

Training Readiness Calculation
Average ITP completion rate for unit

ITP .6
ITP .9
ITP .5
ITP .8

.7
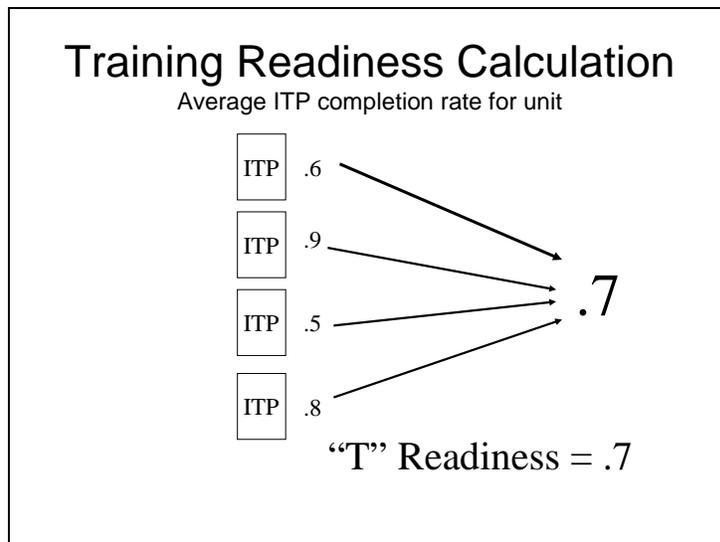
"T" Readiness = .7

Figure 5.   Sample Training Readiness Calculation

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2. Intangible Assets

Equally important, but much more difficult to assess, are intangible assets. Intangible assets as defined in the STEP Readiness Model are assets that bring value to an incident response; however, a monetary cost cannot be easily associated with them. Some intangible assets that relate directly to incident response are leadership, information, knowledge, empowerment, morale, effective communication, public confidence, public perception, and actionable intelligence.

Frequently, it is possible to link intangible assets to one or more of the tangible STEP resources. An excellent example of this is communications. Communications is a complex variable because it affects all four tangible STEP resources but can also be considered an intangible asset as well. In an emergency response you need communications equipment, which relates to the STEP resource of Equipment (E). You also need personnel who have been trained in operating communications equipment which relates to both STEP resource categories of Personnel (P) and Training (T). Finally, consumable materials such as batteries may be used in communications. In these instances the STEP resource category of Supply (S) would be affected as well. Finally, communications must be effective. Effective communications is an outcome and can be qualitatively assessed as an intangible asset. Complex variables should be broken down to their basic components when developing assessment criteria.

Since the intangible asset category of resources does not lend itself to quantitative measurement, it is necessary to make qualitative assessments through observation. One of the best methods to do this is through observing a unit during a drill or functional exercise. This can be done through either as a formal inspection process or peer review by a neighboring jurisdiction. The dynamic tension created by the observation process can be used to motivate responders and provide a goal for achieving peak operational performance.

C. RELATIONSHIP BETWEEN TIME AND QUANTITIES

As was previously mentioned, the essence of a response involves three phases. The Response Phase where resources are mobilized and moved, the Operations Phase where marshaled resources are tactically employed and consumed, and the final phase, the Redeployment Phase, where the unit is returned to a ready condition.
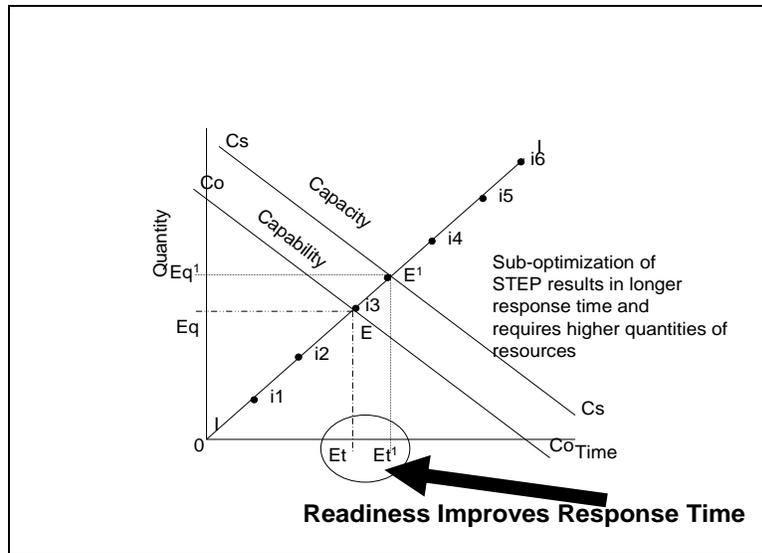
Figure 6.　　Relationship between time and quantities

In first response operations there is a clear relationship between time and quantities of STEP resources consumed. Figure 6 illustrates this relationship. (Note: the slopes of Figure 6 are not data driven; rather they are offered as a hypothetical model to illustrate the relationship between resource and time). The total quantity of STEP resources that a jurisdiction has at its disposal is measured along the Y axis. The time that it takes to marshal resources and begin the Operations Phase is illustrated along the X axis. The magnitude of an incident is illustrated by the incident line I. Incidents can occur anywhere along line I. Incidents that occur to the left of point E (I^1 and I^2) on the line are the incidents that a jurisdiction has adequate STEP resources to support and can handle within their scope of normal services. Incidents that occur to the right of point E (I^4, I^5 and I^6) are large incidents that exceed the STEP resources a jurisdiction has at its disposal. Incidents that occur to the right of point E are those incidents that require external resources to assist in managing the situation. External assistance can take the form of mutual assistance from neighboring jurisdictions, assistance from the State emergency management agencies, interstate assistance through Emergency Mutual Assistance Compacts (EMAC) or Federal assistance through the Department of Homeland Security, FEMA. The greater the demand of resources, the longer it takes to marshal them at the incident location.

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D.   CAPACITY, CAPABILITY AND READINESS

Downward sloping lines Cs and Co reflect the consumption of STEP resources over the life of an incident. The slopes of the lines are exaggerated for illustrative purposes. Line Cs stands for Capacity (sub-optimized), and Co stands for Capability (optimized). (Note: the slopes of Figures 7 and 8 are not data driven, rather they are offered as a hypothetical model to illustrate the relationship between capacity, capability and readiness).

An important distinction between these two lines is that Cs reflects a jurisdiction's capacity while Co reflects the jurisdiction's capability.
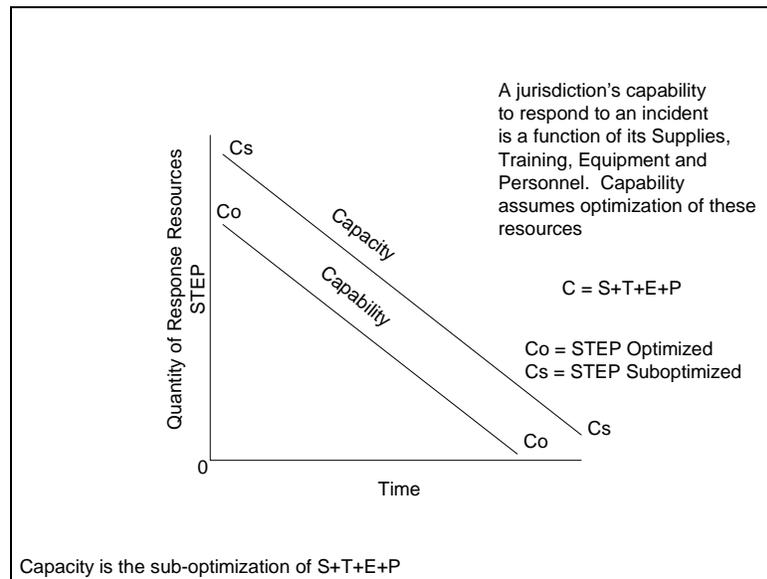
Figure 7.   Capacity and Capability

While the terms capability and capacity are frequently used interchangeably, they are in fact two very different concepts. Capacity, as used in the STEP readiness model, reflects a unit's ability to perform at the present moment in time. Or put another way, what a unit "CAN DO" now. Capability, however, reflects the theoretical optimum performance that a unit could perform if they maximized their effectiveness. Capability then becomes what the unit "COULD DO". Readiness, as defined in the STEP Readiness Model, is moving a unit from capacity Cs to capability Co. All readiness activities should be geared towards reducing the gap between these two lines. This is done by improving the mission critical processes of the organization through actions like maximizing the efficiency of supply chain management,

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creating effective training programs tailored to meet the needs of individual first responders, improving preventive maintenance programs for capital equipment and developing sound personnel policies. Continuous process improvement or business process reengineering techniques could prove very useful in maximizing the potential of a unit.
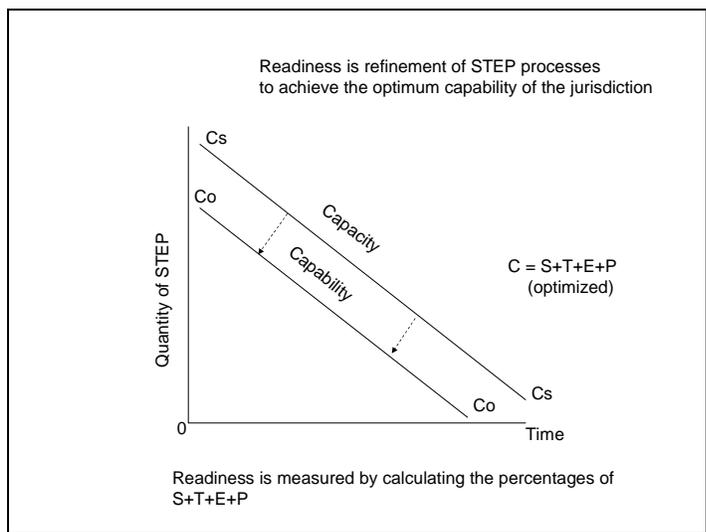
Figure 8.   Moving from Capacity to Capability

E.   CONSUMPTION OF RESOURCES

As was previously mentioned, lines Cs and Co reflect the consumption of total STEP resources over time. However, it is worth looking at how each of the four resources is consumed to help us make informed assumptions about resource management. The reader will please note that the slopes on the graphs are exaggerated for illustrative purposes and are based on assumptions of a hypothetical incident. Further research on this topic is required to calculate the exact slopes of these lines.

Supplies are the first category of STEP resources that will be discussed. In any response operation a certain quantity of consumable goods will be expended. The longer an incident lasts, the greater the amount of supplies consumed. Large incidents require sophisticated logistic operations to re-supply exhausted consumable material. The level of supplies should be determined by subject matter experts and emergency planners. Several factors drive quantity levels such as threat and risk assessment, mission of the organization, and affluence of the jurisdiction. Large operations that exceed a jurisdiction's supply capacity may be augmented through either State or Federal sources.

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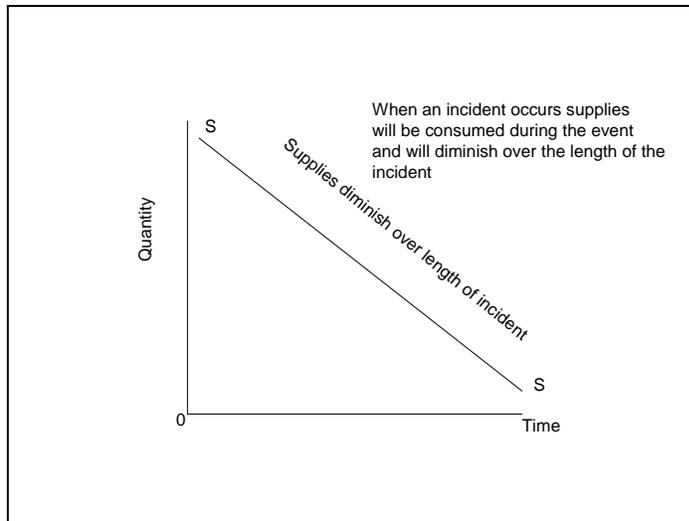
Figure 9.   Consumption of Supplies

Equipment is the only category of resource that is rarely consumed during an operation. Equipment is a reusable resource, and other than normal depreciation, which is calculated as a part of life cycle accounting, there is no consumption. Because capital equipment is expensive, many jurisdictions try to equate readiness with new equipment purchases. While jurisdictions find it desirable to receive Federal funding for capital expenditures, such spending does little to increase the readiness of the jurisdiction. Capital equipment is critical to a response organization and must be replaced when it reaches the end of its life expectancy, but to increase the level of capital equipment above what a jurisdiction needs for routine operations is wasteful. Increases in capital equipment also carry hidden costs. Before increasing the level of capital equipment, senior leaders should ask some hard questions. For example: Is there adequate storage capacity for an additional fire truck or does a new bay need to be added to the firehouse? Is current staffing adequate or should it be increased? Do crews have adequate training or will they need to be retrained on the new apparatus? These are just a few of the considerations that should be taken into account before purchasing a new piece of capital equipment. The funding of capital equipment should be the responsibility of the local government. Most jurisdictions already have some form of a phased replacement program built into their capital expenditure budget for just this purpose.
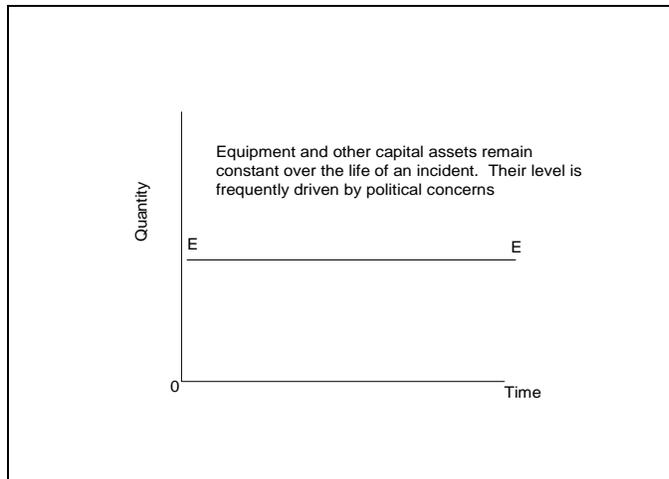
Figure 10.   Consumption of Equipment

The consumption curve for personnel and equipment are both similar. Personnel effectiveness, like training levels, diminishes rapidly. As a response unfolds into a protracted operation initial responders will begin to fatigue.   Incident Commanders understand that responders need time off task for recovery prior to the next operational period. It is for this reason that operational periods are frequently limited to 12 hours. The stress of an incident begins taking its toll early on the first responders; as the incident drags on adherence to safety standards become lax and the potential for injuries increases. Personnel also require sufficient rest so they can continue to deliver essential services throughout operational periods of a disaster.
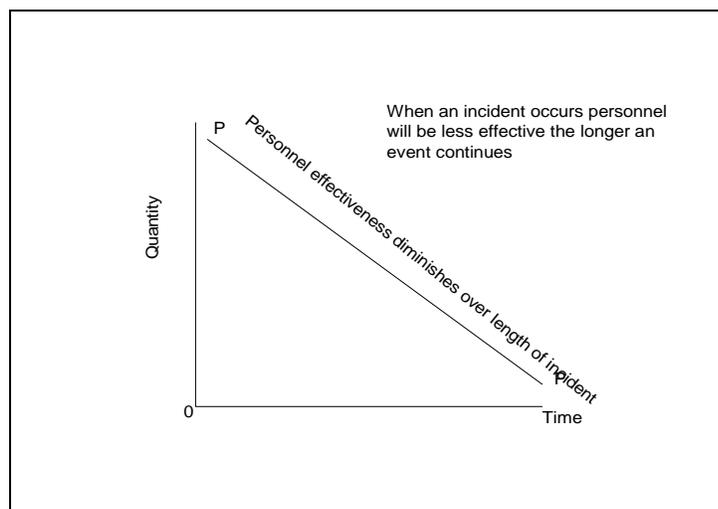
Figure 11.   Personnel Effectiveness over Time

The last categories of resources to be discussed are training levels. Training levels diminish at the same rate as personnel. As well trained responders rotate from operational periods, their training and experience leaves with them. The first responders on scene will have first hand knowledge of the incident but they will soon need to be replaced. When they leave their knowledge of the incident leaves with them, as well as all of their training and qualifications. Incident Commanders and first line supervisors need to be cognizant of this fact. They must also consider the training and qualification levels of their relief responders. An untrained or unqualified responder creates a hazard not only to his or her self but to their fellow responders as well. On large incidents, where external resources come from outside jurisdictions, the visiting responders will be unfamiliar with the local area's resources, policies and practices. Even the best trained outside responders will be less effective than they would have been in their home jurisdiction.
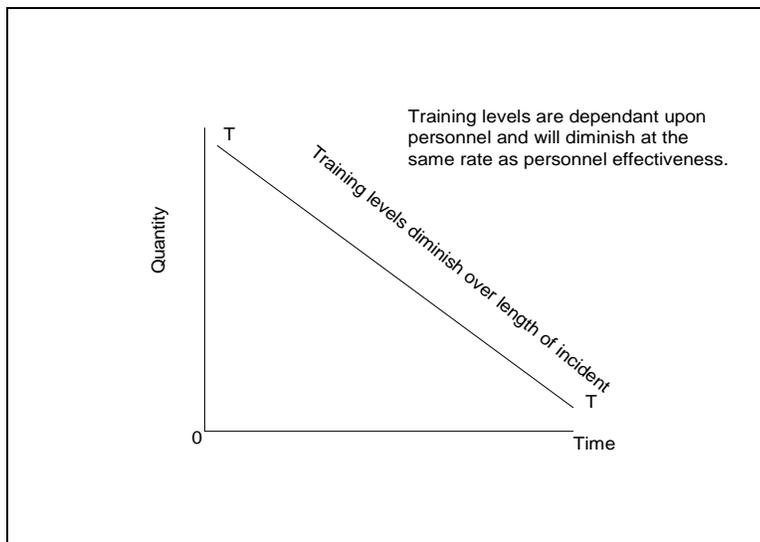
Figure 12.   Training effectiveness diminishes over the life of an incident

F.   THE DIFFERENCE BETWEEN PREPAREDNESS AND READINESS

This thesis attempts to separate preparedness issues from readiness issues. Preparedness issues are defined as those activities taken to mitigate a response or, when necessary, to create an environment that allows for a rapid and effective response to take place. Things that are included in preparedness are prevention and mitigation campaigns, statutory laws and authorities, plans, SOPs, etc. It is not uncommon for preparedness checklists to be over 100 pages long. They provide detailed information from panels of SMEs

and are great training tools. On the other hand, readiness is akin to potential energy. It is the potential within an organizational unit to rapidly respond to an event. Readiness involves those things that relate directly to a response both the tangible (STEP) resources and the intangible (leadership, knowledge, morale and the like). It involves reducing the gap between capacity and capability through process improvement or business process reengineering to reduce response times and efficiently manage resources.

G.   CONCLUSIONS

If one were to re-examine the modeled relationships between resources and time in Figure 6, one should be able to make some informed assumptions about response operations. (Note: these conclusions are based on the assumptive models. Further research is required to prove if these relationships can in fact be substantiated).

If one looks at the incident labeled I^3 on line I (at the intersection of line I and Co) it is clear that equilibrium (point E) is achieved between the demands for resources and their supply intersect.   Point E assumes that the readiness processes in this organization are operating with maximum efficiency, or put another way, the unit is operating at its designed capability. Point E^1 reflects the equilibrium point for the unit at its current capacity. Point Et reflects the response time for a unit operating at maximum effectiveness, while Point Et^1 reflects response time for a unit at its current capacity. Any incident that creates a demand for resources within the box created by points O, Eq^1, E^1, and Et^1 can be effectively handled by this unit without external assistance.

Line segment Eq-Eq1 reflects the excess resources needed to respond to incident I3. Likewise, line segment Et-Et1 reflects the delay in response time caused by inefficiencies in the system. Theoretically, the refinement and improvement of STEP processes should produce better response times resulting in the favorable outcomes of more lives saved and less property damaged. Likewise, fewer quantities of resources should be needed for a response thus freeing up public dollars for other purposes. From this one can deduce that investing in process improvements will yield the greatest benefit in terms of readiness. Reducing the gap between capacity and capability should be the major focus of a readiness program.

The amount of money that can be invested in readiness activities will vary from jurisdiction to jurisdiction.   The level of expenditures will vary and will primarily be a

function of a jurisdiction's affluence and political climate. The focus of preparedness expenditures should be to effectively handle those incidents that occur within box O, Eq1, E1, and Et1 in Figure 6. These are the routine day to day operations. Refining and improving processes should not be viewed as an activity that is performed solely within a jurisdiction. It also includes refining processes with external partners as well. Improving mutual aid relationships with neighboring jurisdictions and developing good working relationships with State and Federal partners will do more good than buying additional capital equipment that may never be used.

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III. BENCHMARKING READINESS APPROACHES

A. TYPES OF READINESS ASSESSMENT TOOLS

Since the terrorist attacks of 11 September 2001, there has been considerable interest in preparedness and first responder readiness activities. What has emerged is an assortment of different organizational readiness methods and approaches. For the most part these activities have been influenced either in a small or large part by the Department of Defense and its methodology to measure combat readiness. Most these approaches however, have fallen short of providing a comprehensive system that looks quantitatively at tangible assets and qualitatively at intangible assets. Six different approaches to readiness will be benchmarked in this section. These approaches have been selected because each represents a unique way to assess and improve an organization's response.

The assessment tools examined in this session are taken from the Department of Defense (DoD), the Department of Homeland Security (DHS) and the American Red Cross (ARC). The first approach that will be benchmarked is the DOD's Status of Resources and Training System (SORTS). SORTS is an automated system that assesses combat readiness of operational units. The next will be the Naval Reserve's readiness program that grew out of SORTS in the 1980's and 1990's. This program differed from SORTS in that its main focus was on individual readiness as opposed to unit readiness. In recent years the US Coast Guard has pursed an innovative approach known as the Readiness Management System (RMS). RMS is essentially a data mining system that provides continuous readiness monitoring by tapping into existing databases. The Federal Emergency Management Agency (FEMA) and National Emergency Management Association (NEMA) jointly developed the Capabilities Assessment for Readiness (CAR) checklist. The CAR is a tool designed to help emergency management agencies increase their preparedness for disasters. Another innovative approach was spearheaded by the American Red Cross in 2002. The ARC developed one of the few tools that actually attempts to forecasts resource requirements under varying scenarios. Finally, the National Disaster Medical System (NDMS) developed a self assessment tool in 2003. The NDMS Response Team Self Assessment (NDMS—RTSA) is typical of many checklist driven readiness models. The NDMS Response Team Self Assessment (NDMS—RTSA) is discussed not so much for its innovation, but rather to illustrate how a readiness

assessment checklist can be converted to a predictive tool using the STEP System. The NDMS—RTSA will be used as a case study and will be discussed further in Chapters IV and V.

B.   STATUS OF RESOURCES AND TRAINING SYSTEM (SORTS), DEPARTMENT OF DEFENSE

Clearly the Department of Defense has been one of the foremost leaders in studying and analyzing operational readiness. Even within the realm of the DoD the study of readiness continues to evolve to meet the challenges of a dynamic and changing world. At the heart of the DoD system is SORTS (Status of Resources and Training System). SORTS is an automated internal management tool for use by the Chairman of the Joint Chiefs of Staff, Unified Commands, and Combat Support Agencies.

Virtually every operational unit of the armed forces is required to report their status via SORTS. SORTS serves a variety of purposes such as providing data for planners, assessing each services' effectiveness in meeting Title 10 responsibilities, determining which resources and training requirements are needed for a unit to fulfill its wartime mission, providing a link to budgeting, and acting as a system to monitor trends. SORTS operates on a fundamental premise that unit commanders will maintain reporting integrity when submitting their readiness reports and that unit commanders will voluntarily provide full disclosure of readiness shortfalls. The quandary has been that an officer's promotion potential is frequently tied to his/her ability to prepare his/her unit for combat. This dichotomy has often put the officer promotion system and SORTS at odds. In the past it was not uncommon for unit commanders to inject bias into their SORTS reports.

In SORTS, operational units are required to report their status of tangible assets in the categories of supply, training, equipment and personnel. Numeric scores are computed in a readiness algorithm that produces an overall readiness score that is referred to as a C rating. There are six C-levels that designate a units' overall readiness. The SORTS C-levels are:

- C-1. The unit possesses the required resources and is trained to undertake the full wartime mission for which it is organized. The unit does not require any compensation for deficiencies.

- C-2. The unit possesses the required resources and is trained to undertake most of the wartime mission for which it is organized. The unit requires little if any compensation for deficiencies.

- C-3. The unit possesses the required resources and is trained to undertake many, but not all, portions of the wartime mission for which it is organized. The unit requires significant compensation for deficiencies.

- C-4. The unit requires additional resources or training to undertake its wartime mission, but it may be directed to undertake portions of its wartime mission with resources on hand.

- C-5. The unit is undergoing a Service directed resource action and is not prepared to undertake the mission for which it is organized.

- C-6. The unit is not required to measure assets in a specified area. C-6 is not a rating and may not be used as an overall C rating.[12]

SORTS cannot provide continuous monitoring of readiness status but its database is frequently updated. Commanders are required to submit updated reports whenever there is a change in their unit's status or each month, whichever occurs sooner. Additionally, SORTS does not assess the intangible assets of a unit. Although SORTS does not directly assess a unit's intangible assets, intangible assets are qualitatively assessed in other programs throughout the DoD.   Leadership, communications effectives, information sharing, empowerment of personnel and knowledge are frequently tested in major exercises, unit training exercises and operational readiness evaluations.   These factors are continuously reinforced as part of the military culture.   Likewise, DoD has a well developed public information program that specifically deals with issues of public perception and public confidence.

C. SURFACE NAVAL RESERVE READINESS MONITORING AND REPORTING PROGRAM

The Naval Reserve as a component of the Department of Defense is not exempt from SORTS reporting; however, the Surface Naval Reserve Force (SNRF) is structured significantly different from the active component.   In the Surface Naval Reserve Force

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[12] Retrieved from http://www.vt.ang.af.mil/ncodisk/08/e/SORTS.htm.

operational units are the exception rather than the rule. The vast majority of naval reservists are sent to mobilization positions (billets) that are embedded within operational units of the active component. While there are some Naval Reserve units who report via SORTS (because of their linkage to an Operations Plan (OPLAN), Contingency Plan (CONPLAN), a Single Integrated Operations Plan (SIOP) or a Service war plan), these units are in the minority. The bulk of the Surface Naval Reserve Force (SNRF) has historically been focused on individual readiness rather than unit readiness.

The stated mission of the Naval Reserve is ". . . to provide trained units and qualified personnel for active duty in the Naval Forces, in time of war or national emergency."[13] As a result, the Naval Reserve developed a hybrid of SORTS that focused on mobilization readiness. Mobilization readiness has two key readiness components: billet training (CTRN) and personnel manning (CPERS). The combination of these two indicators are calculated in an algorithm that produces a final overall mobilization readiness score (CROVL).

The Surface Naval Reserve Force is mostly made up of augmentation units. Augmentation units are units that drill at a location other than their gaining command (a gaining command is an active duty operational unit). To understand how this system is structured it is necessary to look at a typical gaining command. For this example this thesis will use Naval Weapons Station, Earle, NJ as a notional gaining command. NWS Earle may hypothetically have a wartime staffing requirement for 200 reserve ordnance handlers. To support this mission the Naval Reserve might establish 4 different augmentation units each made up of 50 reservists. These augmentation units would be physically located at different geographic locations and supported by a Naval Reserve Center.

The gaining command, in cooperation with the Surface Naval Reserve Force headquarters, would identify specific training requirements for each reserve position. The Surface Naval Reserve Force would then in turn take the gaining command's training requirements and develop individual training plans (ITPs) for each reservist. The ITPs would be forwarded to the augmentation units for execution. It becomes the responsibility of the augmentation unit commanders to ensure that the members of their commands comply with the training requirements as stated in the ITP. Likewise, each member of the Naval Reserve

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[13] Readiness Monitoring and Reporting for Naval Reserve Force Units. COMNAVRESFORINST 3501.1k. P. 1. 26 May 1998.

is required to complete their ITP and become fully proficient in the functions that their gaining command has identified. The aggregate percentage of the augmentation unit's completed training requirements is used to calculate the CTRN score (billet training).

The second factor, CPERS (personnel manning levels), is calculated by taking all of the naval reserve positions that have been authorized at the gaining command and comparing it to the actual number of reservists filling positions in the augmentation unit. In the Naval Weapons Station, Earle, NJ example this thesis notionally used 200 authorized billets as our reserve manpower requirement. These 200 billets were split between 4 previously identified augmentation units of 50 members each. If augmentation unit #1 had 50 of its 50 authorized positions filled with qualified personnel it would have a CPERS score of 100%. If augmentation unit #2 had filled 10 of its 50 authorized positions it would have a CPERS score of 20%. The CROVL score (overall mobilization readiness) is the mathematical result of both billet training (CTRN) and billet staffing (CPERS) scores. Since augmentation units are personnel pools they are not required to maintain supplies or equipment, so there is no need to assess these assets.

Just as assessments of intangible assets are embedded within the active duty military culture, the same is true with the reserve component. The Naval Reserve of the 1980's and 1990's, however, also had a very well developed program to qualitatively assess augmentation units. Every three years a regional oversight inspection team would visit each reserve center. As part of the inspection process, there would be a qualitative assessment of the intangible assets. Personnel inspections would be conducted and unit commanders would be assessed on their leadership abilities, communications effectiveness and administrative acumen. Tests would also be administered to randomly selected reservists to assess their training and knowledge levels. During these inspections an oversight team would validate each augmentation unit's reported readiness to ensure minimal reporting bias. Training, personnel and medical records of assigned personnel would also be audited and scored.

While theoretically a very sound system, implementation of the system was difficult. It relied on already overworked active duty commands to identify the training requirements for their selected reservists. The quality of input from the active components was frequently less than adequate. Likewise, the organizational cultures of the Naval Reserves and the active

component were often diametrically opposed, resulting in a clash of cultures. Among the critics of this system were Naval Reservists who were mobilized for Operation Desert Storm. Many sailors had spent years qualifying for their billet only to discover that when they were mobilized their gaining commands did not trust them to perform their jobs. Frequently the mobilized reservists were given the menial tasks that the active sailors had little interest in performing. This mismatch of qualifications had an adverse affect on morale and led to disenchanted reservists leaving the service once deactivated. Since augmentation units were quite often several hundreds of miles away from active duty gaining command, it was difficult for reservists to develop relationships and trust with the active forces. It is understandable why the Naval Reserve has deemphasized this readiness approach in recent years.

D.   READINESS MANAGEMENT SYSTEM (RMS), DEPARTMENT OF HOMELAND SECURITY, US COAST GUARD

The US Coast Guard has taken a fresh approach to readiness measurement. The Readiness Management System (RMS)[14] is essentially an IT data mining system that can focus in on specific areas of interest. They have defined readiness as ". . . the ability of the Coast Guard Systems to execute mission requirements in accordance with standards."[15] While the Coast Guard does not make a distinction between capability and capacity, it does have well defined performance logic that is linked to an assessment program. The performance logic for RMS is depicted in Figure 13.

[14] AFFIRM (IT) Brief. Watanabe, Todd. 16 Oct 2003. retrieved from http://www.affirm.org/Presentations/EventPresentations.aspx

[15] Ibid.
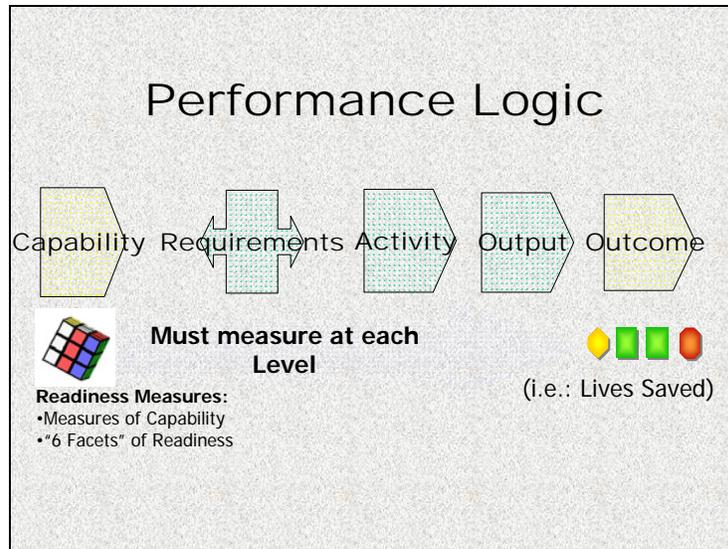
Figure 13.   RMS Performance Logic[16]

RMS measures six "facets" of readiness, four of which are the same tangible assets, supplies, training, equipment and personnel that are measured in SORTS and STEP. However, unlike SORTS and STEP, it measures two additional facets, infrastructure and information.   Infrastructure and information, while valuable, are problematic from a measurement standpoint.   Infrastructure has a variety of meanings depending upon ones perspective.   Likewise, information is also difficult to measure and is better suited for qualitative rather than quantitative assessment. The key to measuring information and infrastructure will most likely be in the operational definitions that are eventually developed.

Eventually, the real power of the RMS system will be its ability to mine data from existing data bases. While implementation of RMS may be a Herculean task, particularly with regards to ensuring databases are accurately maintained, it will provide the Coast Guard with the ability to continuously monitor readiness.   On any given day Coast Guard commanders will be able access, in near real time, the status of any of the six identified readiness facets.

While RMS has excellent quantitative potential to measure tangible assets, it does not provide a methodology to address the intangible ones. There does not appear to be a link between quantitative and qualitative assessments. This could be due to the fact that just as in

16 AFFIRM (IT) Brief. Watanabe, Todd. 16 Oct 2003. retrieved from http://www.affirm.org/Presentations/EventPresentations.aspx

DoD, many of the intangible assets are embedded as a part of the organizational culture of the service. In the Coast Guard, intangibles such as leadership and empowerment of personnel are most likely assessed in much the same way as other military services.

E. CAPABILITIES ASSESSMENT FOR READINESS CAR, FEDERAL EMERGENCY MANAGEMENT AGENCY AND NATIONAL EMERGENCY MANAGEMENT ASSOCIATION

The Capability Assessment for Readiness (CAR) was developed jointly by the Federal Emergency Management Agency (FEMA) and the National Emergency Management Association (NEMA) in 1997. The purpose of the CAR was to "assess State, Territory or Insular Area's operational readiness and capabilities in emergency management."[17] The assessment tool is a very thorough sixty seven page instrument that provides a detailed checklist for State emergency management personnel.

The instrument is organized into thirteen Emergency Management Functions (EMFs). The EMFs assessed by the CAR are:

1. Laws and Authorities

2. Hazard Identification and Risk Assessment

3. Hazard Mitigation

4. Resource Management

5. Planning

6. Direction, Control and Coordination

7. Communications and Warning

8. Operations and Procedures

9. Logistics and Facilities

10. Training

11. Exercises, Evaluations and Corrective Actions

12. Crisis Communications, Public Education and Information

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[17] State Capability Assessment for Readiness. Federal Emergency Management Agency and National Emergency Management Association. P. iii. April 2000.

13. Finance and Administration

Subsequently, each EMF is subdivided into Characteristics and Attributes. Attributes are broad criteria by which the emergency management program's performance can be assessed. Characteristics are more detailed criteria that clarify an attribute.[18] The CAR was envisioned as a tool to provide the following: [19]

1. Quantitative data for strategic planning and budgeting

2. To provide an organizational assessment to enhance program effectiveness

3. A tool to raise the level of professionalism within a State's emergency management community.

4. Provide a standard template and create a common language for Federal/State and Local emergency management operations

5. Change the emergency management culture from being one of reactive to proactively helping build disaster resistant communities

6. Develop an emergency management baseline for States

7. To aggregate into a national assessment of emergency management preparedness

8. To provide an assessment component to FEMA's Emergency Management Performance Grant Program

The CAR program tries to answer four questions:[20]

1. Is the emergency management program comprehensive for the needs of the State?

2. Are the mission, goals and objectives of the emergency management organizations being achieved?

3. Is the State able to redirect the strategic deployment of the resources in a disaster?

4. Is the State able to help communities and citizens avoid becoming disaster victims?

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[18] State Capability Assessment for Readiness. Federal Emergency Management Agency and National Emergency Management Association. P. iv. April 2000.

[19] Ibid.

[20] Ibid.

The CAR can best be characterized as a preparedness tool. Like the NDMS—RTSA, it is a self assessment tool that focuses primarily on those issues that are necessary to create an environment to enable an effective and efficient response.

The CAR, however, falls short of providing sufficient quantifiable detail of a State's tangible assets. Attributes and characteristics that reference tangible assets are typically vague in nature. For example, Attribute 4.1 refers to personnel resource management. The attribute states, "The State Emergency Management Agency has the human resources required to carry out assigned day to day responsibilities."[21] The characteristics to define this attribute are equally vague and subject to wide interpretation. Some of the supporting characteristics for Attribute 4.1 are:[22]

> 4.1.2. The State Emergency Management Agency has adequate staffing

> 4.1.4. State staff is provided training opportunities for professional development to enhance their qualifications.

It is easy to see how the lack of specificity in these types of questions can lead to a wide variety of interpretations when filling out the assessment tool. When questions are asked like, "Is the State Emergency Management Agency adequately staffed?" it must be based on some criteria. What is adequate? "Is the State staff provided professional training opportunities for professional development to enhance their qualifications?" What qualifications are required? This lack of specificity is particularly troubling when it is tied to strategic planning and budgeting.

F. CHAPTER DISASTER READINESS ASSESSMENT (CDRA), AMERICAN RED CROSS

Following the 2001 terrorist attacks, the American Red Cross (ARC) like so many other response organizations began questioning their level of readiness. The organizational unit that the ARC was primarily concerned about was the individual American Red Cross Chapter. Being a non-profit organization the ARC has a particularly challenging mission. The organization receives no Federal or State funding so, as a result, a major part of all ARC disaster operations must include a fund raising component.

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[21] State Capability Assessment for Readiness. Federal Emergency Management Agency and National Emergency Management Association. P. 24. April 2000.

[22] Ibid.

In the spring of 2002, the American Red Cross convened a working group of subject matter experts to develop a program to conduct a national assessment of chapter readiness levels. The Chapter Disaster Readiness Assessment (CDRA)[23] was the result of this work group. It was influenced by the DoD's SORTS methodology; however, the final product was distinctly Red Cross.

CDRA is structured as a three part assessment tool. The first part addresses chapter information and statistics, identifies readiness indicators, provides checklists for three different event scenarios (WMD, Storm, single family disasters), and provides guidelines for training, human resources staffing levels, and supplies and equipment. The second part of the assessment tool applies information gathered from the first part to small, medium or large scale scenarios. The final section summarizes and analyzes data to identify readiness shortfalls and to assist in determining strategies to overcome those shortfalls.

While the CDRA does not provide continuous monitoring, it does in fact have the ability to perform periodic monitoring. Currently, the Red Cross requires each chapter to conduct a top to bottom analysis of their disaster services on an annual basis. One of the strong points of this tool is that it provides recommended staffing ratios for each scenario. These ratios give chapter managers definitive and obtainable goals which will increase the likelihood of their success during a disaster. The CDRA also has an excellent section that identifies the minimum number of instructors needed to train responders in the various disciplines of Red Cross disaster operations. The CDRA is also one of the few assessment tools that actually attempts to forecast resources necessary for varying scenarios. It also takes advantage of time proven planning assumptions, such as the necessary square footage per person needed in a shelter and volunteer staffing ratios. The CDRA also forecasts quantities of supplies and equipment that are needed for each scenario.

One of the CDRA's shortfalls is that it only focuses on tangible assets. Very little has been done to address the key intangible assets of leadership, communications effectives, information sharing, empowerment of personnel, organizational culture, public perception and public confidence. Likewise, there is no clear connection between budgeting and the

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[23] Chapter Disaster Readiness Assessment. Chapter Operations Support, National Headquarters, American Red Cross. Oct 2004.

assessment tool. The CDRA provides a snapshot in time on an annual basis. It does not provide real time or near real time assessments of the chapter's capabilities.

G.   NATIONAL DISASTER MEDICAL SYSTEM—RESPONSE TEAM SELF ASSESSMENT (NDMS—RTSA)

The NDMS Readiness program discussed in this section will be used throughout the remainder of this thesis as a case study for implementing the STEP Readiness System.

In 2004, the National Disaster Medical System (NDMS) implemented a readiness tool for its Disaster Medical Assistance Teams (DMAT). The assessment tool was developed by a team of subject matter experts who tried to capture the essential tasks needed for a successful mission. A copy of the NDMS—RTSA can be seen in Appendix A[24]. The NDMS—RTSA is best described as a preparedness checklist because many of the items on the checklist relate to creating an environment that enables a response, not necessarily the response itself. The original intent of the NDMS—RTSA was to be a tool for team leaders to conduct a self inspection of their units.

The items on the checklist were grouped into five essential focus areas. The focus areas were organized in accordance with the Incident Command System's (ICS) architecture.

1. Command Assessment

2. Financial and Administrative

3. Logistics Assessment

4. Operations and Training Assessment

5. Plans assessment

The NDMS—RTSA, despite its noble purpose, resulted in contributing to the decline of morale among its largely volunteer workforce. It also highlights the need for a coherent implementation strategy. When this tool was rolled out by NDMS Headquarters, a decision was made to require all teams to report back their self inspection results, thus deviating from the original intent of the checklist. Assurances were made to team commanders that the self inspection results would be kept confidential and that the information submitted would be helpful in developing budgets. While the teams were submitting their completed checklists, a

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24 US Department of Homeland Security, Federal Emergency Management Agency, National Disaster Medical System, Operations Workgroup. *NDMS Response Team Self Assessment.* Oct. 2003.

separate initiative was underway by FEMA headquarters. In an attempt to strategically restructure the workforce, the status of several teams was lowered. The significance of downgrading a team meant that the team would receive a smaller budget and they would not be considered as an initial responder to large disasters. While the two initiatives were unrelated, it created the perception that the downgrading decisions were based on the submitted checklists. Many believed a direct correlation existed between the reclassification initiative and their self assessments.

The original structure of the NDMS—RTSA itself provided very little in the way of quantitative assessment of tangible assets. It did, however, provide a good tool for determining staffing levels for a response. Scattered throughout the NDMS—RTSA were bits and pieces of information that alluded to STEP resource categories. For example, the NDMS—RTSA required a team to have a training program but did not fully identify what the individual members were required to do, nor did it assess their individual readiness levels. Ideally, individual training needs should be the foundation of the unit's training program. The NDMS—RTSA also did not provide a mechanism to assess those critical intangible assets needed for a successful operation. If the NDMS—RTSA was used as a component of a comprehensive readiness program that validated reported data through an inspection or peer review process more value may have been gained by this initiative.

The shortfalls of the NDMS—RTSA are typical of many first time attempts to create a readiness program. Chapter's IV and V will use the NDMS—RTSA as the foundation of the STEP Readiness System and also illustrate the applicability of the STEP System to real world constraints.

H.   SUMMARY AND CONCLUSIONS

Table 1 is a summary of the benchmarked readiness approaches' ability to quantify tangible assets. Table 2 is a summary of the benchmarked readiness approaches' ability to qualitatively assess intangible assets. Finally, Table 3 is a summary of the desirable characteristics of a readiness assessment tool. These tables represent the author's qualitative assessment of each of the tools when compared and contrasted to the STEP Readiness Model. This assessment is based on a review of each of the readiness assessment tools and observation of the various models in practice.

Table 1.   Tangible Asset Quantitative Assessment Benchmarks

Tangible Assets	STEP	SORTS	SNRF	RMS	CAR	ARC	NDMS
Supplies	✓	✓	None	✓	None	✓	Partial
Equipment	✓	✓	None	✓	None	✓	Partial
Personnel	✓	✓	✓	✓	None	✓	✓
Training	✓	✓	✓	✓	None	✓	Partial

Table 2.   Intangible Asset Qualitative Assessment Benchmarks

Intangible Assets	SORTS	SNRF	RMS	CAR	ARC	NDMS
Leadership	✓	✓				
Knowledge	✓	✓		✓	✓	
Communications Effectiveness	✓	✓				
Information Sharing	✓	✓				
Organizational Culture	✓	✓				
Empowerment of Personnel						
Public Perception						
Public Confidence						

Table 3.   Assessment Tool Characteristics

Assessment Tool Quality	STEP	SORTS	SNRF	CAR	RMS	ARC	NDMS
Ease of Use				✓		✓	✓
Predictive Power	✓					✓	
Link to Budgeting	✓	✓	✓	✓			
Continuous Monitoring					✓		
Insight to problems	✓	✓	✓	✓	✓	✓	✓
Minimizes Bias	✓		✓				

Acronyms:

SORTS: Status of Resource Training System: Department of Defense

SNRF: Surface Naval Reserve Force: Department of Defense

CAR: Capabilities Assessment for Readiness: Federal Emergency Management Agency/National Emergency Managers Association

RMS: Readiness Management System: Department of Homeland Security/US Coast Guard

ARC: American Red Cross

NDMS: National Disaster Medical System: Department of Homeland Security/Federal Emergency Management Agency

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IV. THE STEP READINESS ASSESSMENT

The STEP Readiness Assessment is the keystone to an effective readiness system. The model is designed to be used at the unit level and will produce an assessment of a unit's operational readiness. It is made up of three separate phases: an assessment phase, an analysis phase, and an allocation phase. When each of these phases has been completed, it equips the unit commander with valuable insight into his/her unit's probability of mission failure, as well as a budget allocation strategy that will enhance the unit's probability of mission success.

A. ASSESSMENT PHASE

1. STEP Readiness Assessment Checklist (STEP—RAC)

The Assessment Phase is the first rung of the STEP Readiness Assessment. It begins with a checklist developed by a group of subject matter experts. Most response organizations have developed some form of a checklist, but if not, one must be developed before proceeding further. The NDMS—RTSA in Appendix A is an example of the original checklist used by the National Disaster Medical System. Like many readiness checklists, this tool identifies essential elements of an operation and a scoring scheme. One of the shortfalls with the NDMS—RTSA is that it does not link STEP resources to readiness.

2. Restructuring an Existing Checklist

It is essential to convert an existing checklist into a STEP—RAC. Appendix B shows how the NDMS—RTSA (Appendix A) has been restructured for this purpose. Before the checklist can be restructured however, it is necessary to have a clear definition of what constitutes mission success. In this case it has been determined that a NDMS team must be able to accomplish three goals. First, the team must be able to mobilize its members and equipment and move them to the designated area of operation. Next, it must be able sustain itself in austere field conditions without support for up to 72 hours. Finally, a team must be able to provide quality medical care in austere conditions. If a team can accomplish all three of these things it will be successful in providing medical care in a disaster setting. These three sectors define mission success and make up the far right hand columns of Appendix B. The columns are labeled Mobility, Self Sufficiency, and Operations respectively. While these sectors apply to a NDMS team they are not universal. Some organizations may want to organize their sectors to coincide with the three phases of a response operation (Response

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phase, Operations phase, and Redeployment phase). It is important that the STEP—RAC reflect the components that define mission success for the organization.

3. Applying STEP Resources to the STEP—RAC

Once senior management has clearly defined the appropriate sectors for mission success each line item of the checklist must be evaluated. This is a tedious but necessary task. The design team must identify which category of resource applies to each line item in each sector. The STEP—RAC in Appendix B uses a six column worksheet. This worksheet includes all of the line items from the NDMS—RTSA. The first column is labeled Assessment Criteria; this describes what a team is supposed to do. The next column is the Maximum Score column. The maximum score is the weighted value assigned to each line item of the assessment criteria. The third column is the Preparedness column. This column is used to identify line items that create an environment to enable a response. The next three columns are the mission success sectors (mobility, self sufficiency, and operations). If an assessment criterion requires STEP resources, it is indicated by an S, T, E, or P in the appropriate sector columns. For example, the first assessment criteria line item in Appendix B states:

"Does the team have named, designated staff assigned to perform the following functions:

-Commander (separate person from the Administrative Officer, Logistics and Training Officer)"

Since this line item is a preparedness item, an X is placed in the Preparedness column. Additionally, this line item requires trained personnel for mobility, self sufficiency, and medical operations, so a P and T are entered in each of the respective sector columns.

As each line item is evaluated by the Readiness Design Team, they may find that line items relate to one, more than one, or no STEP resources. When a line item can not be associated with a resource it is frequently because the original workgroup was recognizing the importance of an intangible asset that could not be quantified or a preparedness issue rather than a true readiness item. STEP analysis will only quantify tangible assets; intangible assets will be qualitatively assessed in the Administrative/Material (ADMAT) inspection and the Operational Readiness Evaluation (ORE) phases of the readiness cycle. Preparedness line items that are not associated with a STEP resource will be assessed in these phases.

B.   ANALYSIS PHASE

Once the original checklist has been converted to a STEP—RAC, an internal readiness assessment team can begin to score the template. An assessment alone will provide some insight into the readiness of the unit, however a thorough analysis using model based vulnerability analysis (MBVA) techniques will provide much greater clarity of the unit's true potential.

1.   Fault Tree Analysis

The STEP Readiness Model uses simple fault tree analysis and Boolean logic to determine the probability of an operational unit failing in the field. The advantage of using this methodology is that it provides a standard, repeatable, and measurable way to analyze a unit's readiness. The use of fault trees is a common practice within the discipline of reliability engineering. Ted Lewis and Rudy Darken at the Center for Homeland Defense and Security in Monterey, CA, have pioneered the use of these tools as a means to assess critical infrastructure within the United States.[25]   Just as fault tree analysis has proven valuable in critical infrastructure analysis; their value can also be extended to the field of readiness.

Appendix C shows the fault tree that was created from the STEP—RAC. The root node for this tree is "mission failure"; the second tier shows the three sectors that define mission success for a NDMS team (Mobility, Self-Sufficiency, and Operations). These three elements make up the component section of the fault tree. The third tier of the fault tree is made up of the STEP resources needed for each of the three sectors. The STEP resources make up the vulnerability section of the fault tree. Finally, each tier of the fault tree is linked by an <OR> logic gate (meaning that if A or B is false then C must be false). Since the fault tree uses <OR> gates, one can assume that a failure of any sector will result in mission failure. For example, a resource failure in supplies <OR> training <OR> equipment <OR> personnel will result in a sector failure. Then a failure of mobility <OR> self sufficiency <OR> medical operations will result in overall mission failure. The failure of a single resource category causes a cascading failure that will produce "Mission Failure".

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[25] Lewis, Ted G. "Critical Infrastructure Protection in Homeland Security: Defending a Networked Nation Vol. 1" © 2003-2004.

2.   Probability

Boolean logic is based on the assumption that faults occur with certainty 100% of the time; but in the real world, faults rarely occur with such certainty. It is for this reason that it is necessary to calculate the probability of failure in the analysis phase. Probability deals with the likelihood of a fault occurring and this likelihood is represented as a percentage. When using <OR> gates, DeMorgan's Law 1-[(1-P(A) X (1-P(B))] is applied to calculate the probability of sector failure. The Sector Analysis worksheets used in Appendix D are used to analyze and assess the vulnerability of each category of resource for each sector. These worksheets were derived from the STEP—RAC. The numeric scores were computed by a unit commander who inspected his unit and determined his unit's level of compliance with the assessment criteria in the NDMS—RTSA. For example, in MP (Mobility Sector-Personnel Resource Worksheet) the unit commander assessed his unit as being in compliance with 64% of the personnel line items on the worksheet (Appendix D, page 88). This meant that the unit was not in compliance with 36% of the remaining requirements. This is the value that was used to calculate the probability of MP failure at 36%. Now referring to the updated Fault Tree in Appendix E, one will notice that percentages have been calculated for all STEP resource vulnerabilities. Additionally, a cost estimate has been calculated to determine the cost to completely eliminate the vulnerabilities. Since mobility, self sufficiency and medical operations are linked by an <OR> gate, DeMorgan's Law is applied to determine the probability of sector failure. From the data it is determined that the Mobility Sector has a 99% chance of failure, the Self Sufficiency Sector has a 98% chance of failure, and the Operations Component has a 98% of failure. The overall probability that this team will not be able to fully satisfy it mission requirements is 100%. These values have been added to the fault tree, as can be seen in Appendix E.

3.   Event Trees

Finally, the results of the analysis can be further refined using an event tree. Event trees are used to determine the probabilities that vulnerabilities and/or combinations of vulnerabilities lead to sector failure. One of the challenges associated with event trees are that they grow geometrically as the threat grows linearly. The event tree in this case study involved 4,096 different potential combinations of faults. Because of the large number of vulnerabilities and/or combinations of vulnerabilities that had to be considered, it was

necessary to use the aid of a computer to generate the required data. FT3 software was used for this purpose. When an event tree analysis is completed, the sum of the probabilities is equal to the probability of failure of the root node, in this case Mission Failure.   For simplicity's sake however, only faults, and combinations of faults with a probability of 1% or greater have been tabulated. It is for this reason that the sum of the probabilities in Table 4 totals 92% and not the full 100% as shown in Appendix E.   If all combinations of probabilities less than 1% were included they would make up the missing 8% from the table. While these values are not shown in Table 4 they are calculated by FT3 software.

Mobility Sector Failures	Self Sufficiency Sector Failures	Operations Sector Failures	Probabilities
P			2%
T			1%
P&T			1%
S			5%
P&S			3%
T&S			1%
P&T&S			1%
E			14%
P&E			7%
T&E			4%
P&T&E			2%
S&E			19%
P&S&E			10%
T&S&E			5%
P&T&S&E			3%
S	P		1%
E	P		1%
P&E	S		1%
S&E	P		1%
P&S&E	P		1%
T&S&E	P		1%
S		P	1%
E		P	2%
P&E		P	1%
S&E		P	2%
P&S&E		P	1%
T&S&E		P	1%
Total			**92%**

Table 4.   Event Tree Analysis

Table 4 shows all of the potential combinations of vulnerabilities and the probability they will result in a Mission Failure. For example, there is a 2% probability that a Personnel fault in the Mobility Sector will cause a failure of the root node, Mission Failure. Additionally, there is a 1% chance that a Training fault in the Mobility Sector will cause a Mission Failure. Also, there is a 1% probability that a Personnel fault and a Training fault, occurring simultaneously, in the Mobility Sector could cause a Mission Failure, and so on. Finally, it is possible that faults can occur simultaneously in multiple sectors. For example there is a 1% probability that a Supply fault in Mobility and a Personnel fault in Self Sufficiency will result in Mission Failure. These data are then used as inputs for determining the appropriate budget allocation strategy. (Note: Abbreviations P,T,S,E are used for personnel, training, supplies and equipment and indicate the vulnerability to a sector)

4. FT3 Software

The event tree in this case was calculated using FT3 software developed by Lewis and Darken at the Center for Homeland Security and Defense, Monterey, California. FT3 software was originally designed to conduct network analysis of critical infrastructure. While not specifically designed for readiness, the software performs two functions that are very useful for readiness analysis. First, the software allows a user to draw a fault/event tree on a computer screen and generate four different budget allocation strategies. Secondly, the software generates an event tree for each of the different budget strategies.[26]

C. ALLOCATON

Once the probability of failure has been calculated, the next step is to calculate how to allocate the budget in the most effective way. FT3 software can assist with this task once the following inputs have been gathered:

- Annual Budget

- Vulnerability

- Cost to repair

- Damages

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[26] Lewis, Ted G. Critical Infrastructure Protection in Homeland Security: Defending a Networked Nation Vol. 1., page 45. 2004.

In the NDMS case study the medical response team had an annual budget of $33,000. The costs to repair all vulnerabilities were estimated to be $300,073. The input for damages was not financial, but rather the number of treat and release patients a fully operational NDMS team could be expected to care for in the field during a two week deployment. FT3 software takes these inputs and then allows the user to obligate funds using different budgeting strategies. The advantage of this is that decision makers can select an allocation strategy that best reflects the needs of their organization. The four different resource allocation strategies are described below.

1. Ranked Allocation

The ranked allocation is the most typical way of allocating a budget. In this strategy, funds are distributed to the highest ranking fault to reduce its probability to zero, and then to the second highest ranking, and then the third, and so on.[27]

2. Apportioned Allocation

The apportioned allocation spreads funds across the entire fault tree. This method funds a portion of available dollars on each of the sectors. The goal is that by funding a part of each sector one can minimize the overall fault. In certain circumstances it may be necessary to fair share out the budget due to overriding political concerns. The hope in using this method is two fold; to build constituent support and reduce overall vulnerability in a uniform method. [28]

3. Optimum Allocation

The optimum budget allocation is analogous to dealing cards to all threats where each card equals one dollar until the entire budget has been spread among all threats. The process is repeated until the fault probability is minimized. While this method may yield the most efficient strategy in distributing funds it has a downside. The downside is that some threats maybe unfunded. Decision makers may find themselves in a politically sensitive situation if they choose to fund certain vulnerabilities and not others.[29]

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[27] Lewis, Ted G. Critical Infrastructure Protection in Homeland Security: Defending a Networked Nation Vol. 1., page 25. 2004.

[28] Ibid. page 33.

[29] Ibid. page 27.

4. Manual Allocation

Finally, the FT3 software allows the decision makers to consider the different computer generated strategies but override the recommendation by manually allocating the budget. Part of the responsibility of command is that the unit commander is ultimately responsible for the readiness of his/her unit and nothing should prevent the commander from using sound judgment and experience in allocating resources.[30]

5. Case Study Results

The analysis conducted for this case study provides considerable insight into the readiness of this unit and how the unit could spend its funds to increase its chances of mission success. As was previously discussed, before the allocation of funds the overall probability of this team failing in the field was 100%. The probability that the mobility sector would fail was 99%, the probability the self sufficiency sector would fail was 98% and the probability that the operations sector would fail was 98%. The team's annual budget was $33,000, but the total cost estimated to reduce the overall vulnerability to zero was $300,073, almost ten times that amount of available funds. The STEP—RAC uncovered the fact that this team did not have any equipment. This discrepancy alone would cost $150,000 to repair; however, until the equipment was received, the team would be unable to perform its mission. In calculating the cost to repair it was apparent that certain line items had ramifications that cut across each of the three sectors (mob, self sufficiency, and med ops). It was assumed that if funds were spent to correct a shortfall in one sector it would correct the short falls in the other sectors that were affected as well. Based on this assumption, funds either had to be equally distributed among the effected sectors or the total amount should be dedicated to a single sector, in this case Mobility Equipment.

Allocation analysis was conducted using FT3 software with the following results.

a. *Apportionment Strategy*

Using the Apportionment Strategy, the $33,000 was evenly distributed among all threats. By following this strategy, the vulnerability in the mobility sector was reduced to 94% (a 5% reduction), the self sufficiency sector to 84% (a 14% reduction) and the medical operations sector to 83% (a 15% reduction). Overall, the probability of mission failure

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30 Lewis, Ted G. Critical Infrastructure Protection in Homeland Security: Defending a Networked Nation Vol. 1., page 23. 2004.

remained 100%. This allocation strategy recommended spending $0 on personnel, $3,000 on training, $6,000 on supplies and $24,000 on equipment.

b. *Optimal Allocation Strategy*

Using the Optimal Allocation Strategy it was determined that by spending $33,000 the vulnerability of the mobility sector could be reduced to 90% (a 9% reduction), the self sufficiency sector could be reduced to 12% (an 86% reduction) and the medical operations sector could be reduced to 13% (an 85% reduction). The probability of overall mission failure could be reduced from 100% to 92% (an 8% overall reduction). This was achieved by funding $2,500 to personnel, $8,500 to training, $18,500 to supplies, and $3,500 to equipment.

c. *Ranked Allocation Strategy*

Using the Ranked Allocation Strategy, 100% of the $33,000 budget would be spent on equipment. By following this strategy, other areas of the organization would be neglected and only one third of the required equipment would be purchased.

d. *Manual Allocation Strategy*

Using the Manual Allocation Strategy, the unit commander may want to fund a disproportionate amount of his/her budget to equipment but purchase smaller amounts of personnel, supplies, and training.

By conducting STEP analysis with MBVA techniques the unit commander is equipped with compelling information to make a case to justify additional funds, or conversely produce analysis to buy political cover if his/her unit fails to meet mission exceptions. Sharing of this information should be at the discretion of the unit commander. A summary of the resource allocation strategies used in this thesis can be found in Appendix F.

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V.   ELEMENTS OF A COMPREHENSIVE READINESS PROGRAM

A.   ELEMENTS OF A READINESS PROGRAM

If a first response organization is going to be successful in optimizing its capacity and reducing the gap between capacity and capability it must embrace a readiness philosophy. Many organizations will review an ill-defined assessment checklist and assume they are ready. Readiness, however, is much more than a checklist; it is a philosophy akin to the Total Quality Management movement of the 1980's and 1990's. All echelons of command from the Mayor's Office to the newest rookie must be committed to continuously improving the readiness of the organization. Readiness must assess the tangible and the intangible assets of the organization. Readiness must not be viewed as a one time snapshot, but as an ongoing program.

The STEP Readiness System consists of four components; a Self Assessment using the STEP—RAC and its associated analysis, an Administrative and Material Inspection (ADMAT), an Operational Readiness Evaluation (ORE) and continuous reporting. It relies on honest self reporting followed up by external validation.

1.   Self Assessment

The Self Assessment is based on a checklist developed by a working group of subject matter experts. As was previously discussed in Chapter III, great care must be taken in crafting the STEP—RAC so that it correctly identifies all of the essential components of a response. The STEP—RAC and its subsequent analysis is a tool for the unit commander to use at his or her discretion. It provides him/her with an opportunity to identify both the strengths and weaknesses of the organization as well as a tool to build an annual budget. A well crafted STEP—RAC can also be used as the basis for developing individual and unit training plans. Finally, the STEP model's self assessment methodology, using model based vulnerability analysis techniques, provides a probability based tool that will forecast the chances of a unit failing in the field. The self assessment should be viewed as a tool for the unit commander's personal use and the results of the assessment should only be shared with higher authority at the unit commander's discretion.

## 2.	Regular Reporting

The unit commander should report the percentage of his/her STEP resources to higher authority on a regular basis. This alerts superiors in the chain of command to the most pressing issues facing the unit. While real time reporting of a unit's status is always desirable, many times it is not feasible. At a minimum, response organizations should report their STEP readiness to higher authority on a monthly basis or whenever a significant change in status occurs, such as the overhaul of a major piece of equipment.

## 3.	Administrative and Material (ADMAT) Inspection

A key component of the STEP Readiness System is managerial oversight. An administrative and material inspection provides an excellent opportunity for senior managers to validate the integrity of a unit's readiness reports. The dynamic tension caused by the inspection process is a necessary step in holding commanders accountable for the readiness of their units. During ADMAT inspections, senior management ensures compliance with administrative programs such as safety, training, equal opportunity, etc. It is also when the material condition of capital equipment can be inspected to ensure preventative maintenance is being performed correctly and equipment is in proper operating condition. This is also when those items from the Preparedness Column of the STEP—RAC are reviewed.

The Administrative and Material Inspection also is a time when senior management can make the qualitative assessments the unit's intangible assets. For example, well run administrative programs provide insight into the unit's leadership, morale, effective communications and empowerment of subordinates. The ADMAT also provides an opportunity to assess training programs and individual responders' level of knowledge. The material condition of the unit and quality of its administrative programs will provide a measure of confidence in the unit ability to respond in the field under trying conditions. The periodicity of the ADMAT Inspection is determined by senior management but it should provide unit commander's ample time to prepare their units, a three year cycle is probably satisfactory in most cases.

## 4.	Operational Readiness Evaluation (ORE)

The final component in the STEP Readiness System is an Operational Readiness Evaluation (ORE). The ORE is an observed exercise that stresses a unit's ability to respond under real world conditions. Exercise scenarios should be realistic and based upon plausible

events that could occur in the jurisdiction. If the scenario is outside of the unit's normal scope of services the ORE loses its credibility and value. Developing scenarios that set a unit up for failure are easy to devise but they have minimal value from a readiness assessment standpoint.

An honest evaluation of the unit's performance in the field, followed up with an after action debrief, enables refinement of Standard Operating Procedures, identifies shortcomings in training, assesses equipment operability and personnel shortfalls. The ORE can be conducted in conjunction with a scheduled ADMAT or it could be on a separate cycle. Post exercise analysis is critical in assessing a unit's performance. A review of the most recent readiness reports should be reviewed and analyzed to determine where incremental changes can be made to improve future performance.

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VI. CONCLUSIONS

Readiness, as it is used in many homeland security quarters, is a term of art. At the present time there is no clear consensus within the first responder community on what a readiness program should include or how readiness assessments should be conducted. Despite enormous investments by the Federal government in first responder readiness it is unclear what, if any, tangible improvements in readiness have been produced.

There have been several isolated attempts by different organizations to develop readiness programs. Most of these attempts have involved some form of a checklist driven assessment tool. Few of these attempts have quantitatively assessed the tangible readiness indicators of supply, equipment, training, or personnel levels. Few of these attempts have produced clear linkages to budgeting strategies and none have been found that attempt to forecast the probability of a team's success or failure in the field.

By adopting model based vulnerability analysis techniques to assess the vulnerabilities to mission success that are created by supply, equipment, training and personnel shortages it is possible to forecast the probability of a unit failing in the field. Then by using FT3 software it is possible to allocate available funds to specific vulnerabilities reducing the probability of failure.

The STEP Readiness Model provides a systematic way to assess a unit's readiness, a consistent way to analyze an assessment's results, a means to predict the probability of mission failure and a methodology to allocate funds to reduce the probability of mission failure.

The STEP Readiness Model should not be viewed as a stand-alone tool, but rather as a part of an overall comprehensive readiness program. A comprehensive readiness program should not only review tangible assets (supply, training, equipment and personnel levels) which are easily quantified, but it should also qualitatively assess the intangible assets of an organization (leadership, communications effectiveness, organizational culture, knowledge, information sharing, empowerment of personnel, public confidence and perception). A

comprehensive readiness program should include a self assessment component, a regular reporting component, an administrative/material inspection and an operational readiness evaluation.

By establishing a comprehensive readiness program in first response organizations systemic management problems can be addressed and improved. The continuous improvement of systemic problems should reduce the gap between capacity and capability and result in a more effective and more efficient response organization.

APPENDIX A.   NDMS RESPONSE TEAM SELF-ASSESSMENT

Team Name:	
Date Prepared:	
Submitted by:	
Submitter e-mail address:	

Team Score:		57%	950	1,662
Self-assessed Operational Status				

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
	Team Officers					
1	*Command Assessment*					
	Does the team have named, designated staff assigned to perform the following functions to ensure day-to-day operations:			12	15	
	-Commander (separate person from the Administrative Officer, Logistics Officer and Training Officer)	High	Full			
	-Deputy Commander	High	Progress <50%			
	-Administrative Officer (separate person from the Commander, Log Officer and Training Officer)	High	Full			
	-Finance Officer	High	Progress <50%			
	-Logistics Officer (separate person from the Commander, Admin Officer and Training Officer)	High	Full			
	-Property Control Officer	High	Full			
	-Communications Officer	High	Full			
	-Training Officer (separate from the Commander, Admin and Log Officers)	High	Full			
#	Item	Priority	Team Self-Assessed	Team Scores	Max Score	Team Notes, Explanation,

			Compliance			Comments, Plans
	-Public Information Officer	Medium	Progress >=50%			
	Command Staff Meetings					
2	Does the team conduct at least quarterly command staff meetings?	High	Full	15	15	Occurring weekly during development phase
3	Does the team produce written minutes of command and staff meetings, including attendance?	Medium	Progress <50%	3	9	
4	Does the command staff review the team's progress against its annual work plan at least once per quarter?	High	Full	15	15	
	Financial and Administrative Assessment					
	Fiscal Management					
5	Does the team have an overall fiscal management system in place?	Medium	Full	9	9	
6	Does the team have an annual fiscal audit process in place?	Medium	Progress <50%	3	9	
7	Did the team pass their last annual financial audit?	Medium	Not Started		9	This is first year with a budget
8	Did the team file all required financial reports in the past year?	Medium	Not Started		9	This is first year with a budget
	Requesting, tracking, spending and reporting federal funds					
9	Does the team maintain federal funds and books separate from other funding sources?	High	Full	15	15	
10	Does the team maintain receipts and appropriate documentation for all federal invoices submitted?	High	Full	15	15	
11	Is the team either a 501c3 and/or have a 3 party contractor agreement in place for receiving NDMS funds?	High	Progress <50%	5	15	501 c3
12	Does the team have a business or government checking account for deposit of federal funds?	High	Full	15	15	Business
13	Does the team possess a federal tax ID number?	High	Progress <50%	5	15	
14	Does the team have an annual NDMS budget and Workplan on file with NDMS?	High	Full	15	15	

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
15	Did the team spend at least 90% of the last year's annual NDMS funding?	Medium	Not Started		9	This is first year with NDMS funding
	Federal, State, Local Support					
16	Does the team have an NDMS MOU in place?	High	Full	15	15	
17	Does the team have local sponsor/participating agency MOU in place?	Low	Full	3	3	
18	Does the team have an established working relationship with its state/local emergency management or services agency and public health agency, outlining what resources are available from those agencies?	Low	Progress >=50%	2	3	
19	Does the team have a non-NDMS pharmacy or pharmaceutical agreement in place?	Medium	Full	9	9	
	Immunization/vaccination tracking					
20	Does the team track each deployable team member's immunization status: which immunizations received and when?	High	Full	15	15	
21	Does each team member maintain an immunization record PHS-731?	High	Progress >=50%	10	15	
	Office Space					
22	Does the team have office space for making copies, sending faxes, and security maintain team documentation?	Low	Full	3	9	
	Medical Records and Documentation					
23	Are the team's member medical records safely and securely filed per federal General Records Schedule?	Medium	Progress <50%	3	9	
24	Does the team maintain member occupational exposure injury records on file for 30 years after the member leaves the team?	High	Progress >=50%	10	15	
25	Are the team's copies of patient medical records safely and securely filed per General Records Schedule:	Medium	Progress <50%	3	9	
26	Are the team's prescription drug records appropriately recorded and filed?	Medium	Progress <50%	6	9	
	Individual and team background, training an licensure tracking					
27	Does the team maintain a roster, including name, phone numbers and addresses that has been updated within the last 3 months?	High	Full	15	15	Updated monthly

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
28	Does the team maintain a record of all team training conducted including attendance?	Low	Progress >=50%	2	3	
29	Does the team maintain a training record on each individual	Low	Progress >=50%	2	3	
30	Does the team maintain a photo copy of current team members certifications and licenses?	High	Full	15	15	
31	Has the team reviewed its team member certifications and licenses reviewed in the past year?	High	Full	15	15	
32	Does the team track clinical care hours to ensure that each healthcare provider has at least 112 hours of direct patient care in the previous 12 months?	High	Progress <50%	5	15	
33	Does the team track deployability and readiness of each member as determined by both NDMS and the team (e.g. completed immunizations and required training)?	High	Full	15	15	
34	Has the team sent a written "Deployment Status/Deficiency" notice to each team member within the last 12 months?	Low	Progress <50%	1	3	
35	Does the team perform a background check on new members?	Medium	Not Started		9	Do not do background checks at this time
36	Does the team have a policy for managing derogatory findings of a background check?	Medium	Not Started		9	Do not do background checks at this time
	Basic load inventory and maintenance tracking					
37	Has the team submitted an inventory of all federally issued or owned property within the last year	High	Not Started		15	No Federal equipment at this point
38	Does the team maintain an electronic inventory of all federal and non federal property (separately)	High	Progress <50%	10	15	Some None Federal equipment
39	Does the team have a written preventative maintenance program in place?	High	Not Started		15	No Federal equipment at this point
40	Does the team maintain an equipment deficiency log?	High	Progress >=50%	10	15	No Federal equipment at this point
	Rosters: Team, Officers, On-Call Month					
41	Does the team have a roster of all deployable team members?			13	15	
	-Contact methods: work/home/cell/pager/e-mail/postal address	High	Full			

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
	-SSN	High	Full			
	-Date of Birth	High	Full			
	-City of Birth	High	Full			
	-Team position (s)	High	Full			
	-Immunization Status	High	Progress >=50%			
	-Training Status	High	Progress >=50%			
	-Physical ability status	High	Progress >=50%			
	-Health and medical status	High	Progress >=50%			
	-Team specific deployment requirements (attendance, dues, etc)	High	Progress >=50%			
42	Does each team officer possess a roster of team officers, including the following information			15	15	
	-Work Phone #	High	Full			
	-Home Phone #	High	Full			
	-Cell Phone #	High	Full			
	-Pager #	High	Full			
	-Fax #	High	Full			
	-Team position(s)	High	Full			
	-E-mail address(es)	High	Full			
43	Does NDMS have the current team officer roster on file at the OSC?	High	Full	15	15	
44	Does the team maintain a list of available team members during the on-call month?	High	Progress <50%	5	15	Not in this rotation as of yet
	Logistics Assessment					
	Storage facility space/access					
45	Does the team store its cache in an adequately temperature-controlled area?	High	Not Started		15	No cache at this time

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
46	Does the team have at least 40'x60' (or equivalent) for cache storage, equipment rehab, and maintenance and shipping and receiving	High	Full	15	15	Have space no cache
47	Is the team's storage facility adequately equipped for loading and unlading the cache? (e.g. loading dock, forklift, adequate ceiling clearance)	High	Full	15	15	
48	Does the team's storage facility have a restroom?	Medium	Full	9	9	
	Storage facility safety and security					
49	Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	Medium	Progress <50%	3	9	
50	Is the team's storage facility adequately secured, with controlled access only by designated individuals?	Medium	Progress >=50%	6	9	
51	Are the team's controlled substances stored, inventoried, and handled according to all applicable protocols and standards?	High	Not Started		15	No controlled substances at this time
52	Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	Medium	Not Started		9	
53	Is the team's storage facility adequately secured, with controlled access only by designated individuals?	Medium	Not Started		9	
54	Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	High	Not Started		15	No cache at this time
55	Is the team's storage facility adequately secured, with controlled access only by designated individuals?	High	Not Started		15	No cache at this time
	Insurance					
56	Is the team's storage facility and federal cache adequately insured or otherwise protected against perils?	High	Not Started		15	no cache at this time
57	Does the team maintain appropriate peril and transportation insurance for federal equipment and supplies used on federal trainings, exercises or deployments?	High	Not Started		15	no cache at this time
	Minimum equipment and supplies					

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
58	Does the team possess the items listed in the current version of the NDMS issued basic load?	High	Not Started		15	no cache at this time
	Basic load packaging and organizations					
59	Is the team's cache packaged according to NDMS specifications?	Low	Not Started		3	no cache at this time
60	Is the tam's cache labeled according to NDMS specifications	Low	Not Started		3	no cache at this time
61	Is the team's cache packaged according to a standard specification?	High	Not Started		15	no cache at this time
62	Is the team's cache labeled according to a standard specification?	High	Not Started		15	no cache at this time
	Transportation Arrangements					
63	Does the team have a transportation arrangement for moving the team cache from its storage location to each potential airhead?	High	Not Started		15	No cache at this time
64	Does the team have a transportation arrangement for transporting the team cache for 500 miles by ground transportation?	High	Not Started		15	No cache at this time
65	Does the team have a transportation arrangement for moving team personnel from the mobilization site to the airhead?	High	Progress >=50%	10	15	
66	Does the team have a transportation arrangement for transporting team personnel by ground within a 500 mile radius?	High	Progress <50%	5	15	
67	Does the team have a secure location for parking personal vehicles for the duration of a mission?	Medium	Full	9	9	
	Load Plans					
68	Does the team have a load plan for military air-transport palletization?	Low	Not Started		3	No cache at this time
89	Does the team have a load plan for civilian aircraft?	Low	Not Started		3	No cache at this time
70	Does the team have a load plan for 48'+ enclosed trailers?	Low	Not Started		3	No cache at this time
71	Does the team have a load plan for 48'+ flatbed trailers?	Low	Not Started		3	No cache at this time
72	Does the team have a load plan for 24' enclosed trucks?	Low	Not Started		3	No cache at this time
	Hazardous cargo documentation					
73	Does the team have a prescripted hazardous cargo declaration for outbound and return travel	High	Not Started		15	
74	Is the team's cache properly placarded for hazardous cargo air transportation?	High	Not Started		15	
75	Is the team's cache properly placarded for hazardous cargo ground transportation?	High	Not Started		15	

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
76	Does the team have at least one logistics person trained to IATA standards?	High	Full	15	15	
77	Does the team have a mobile spill pack for taking to a local airhead?	Medium	Not Started		9	
	Operations and Training Assessment					
	Staffing Levels					
	Does the team have at least 102 members in the following positions (may not count a team member more than once for the purpose of this assessment)					
78	-(4) Team Leaders	High	Progress >=50%	10	15	
79	-(3) Administrative/Finance Chiefs	High	Full	15	15	
80	-(3) Administrative Officers	High	Full	15	15	
81	-(3) Administrative Assistants	High	Full	15	15	
82	-(3) Logistics' Chiefs	High	Full	15	15	
83	-(3) Equipment Specialists	High	Full	15	15	
84	-(3) Communications Officers	High	Full	15	15	
85	-(3) Communications Specialists	High	Progress >=50%	10	15	
86	-(3) Safety Officers	High	Progress >=50%	10	15	
87	-(3) Security Officers	High	Progress <50%	5	15	
88	-(9) Medical Officers	High	Full	15	15	
89	-(6) Advanced Practice Nurses, Physician Assistants or Medical Officers	High	Full	15	15	
80	-(3) Pharmacists	High	Full	15	15	
91	-(6) Pharmacy Assistants, Pharmacists, or others permitted by team's state regulations	High	Full	15	15	
92	-(3) Supervisory Nurse Specialists (or medical practitioners with Charge Nurse experience)	High	Full	15	15	

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
93	-(12) Staff Nurses, Supervisory Nurse Specialists, Advanced Nurse Practitioners or Physician Assistants	High	Full	15	15	
94	-(8) Paramedics	High	Full	15	15	
95	-(6) EMTs, Paramedics, Staff Nurses or Supervisory Staff Nurses	High	Full	15	15	
96	-(3) Mental Health Specialists or Social Workers	High	Progress <50%	5	15	
97	-(15) Other members as determined by the team	High	Full	15	15	
98	Are (3) or more of the Medical Officers board certified (or have hospital privileges) in emergency medicine or critical care?	High	Full	15	15	
	Training Program Structure					
99	Does the team have an annual training program in place and submitted to NDMS?	High	Progress >=50%	10	15	
100	Does the training program include all NDMS Core Training Modules every 24 months?	Medium	Progress >=50%	6	9	
101	Does the training program include objectives for online training completion?	Medium	Full	9	9	
102	Does the training program include objectives for didactic training?	Medium	Progress <50%	3	9	
103	Does the training program include at least one annual overnight field exercise?	High	Full	15	15	
104	Does the training program incorporate the NDMS field training curriculum?	Low	Progress <50%	1	3	
105	Has the team submitted required training notification/approval documentation to NDMS?	High	Progress >=50%	10	15	
106	Does the team provide or arrange training and protocols for skills not typically practiced in daily work?	High	Progress <50%	5	15	
107	Does the team provide position specific individual trading plans for each team member?	Low	Progress <50%	1	3	
	Training Program Effectiveness					
108	Has the team provided an annual report to NDMS of the effectiveness and participation level of the prior years training program that includes the following?			10	15	In first year, this report will be turned in end of this year

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
	-The % of team members who have completed at least one field exercise within the last year?	Medium	Progress >=50%			
	-The % of team's didactic training completed by each team member?	Medium	Progress >=50%			
	-The % of NDMS Core online training program completed by each team member?	Medium	Progress >=50%			
109	Did at least 50% of the team attend at least one field exercise in the past year?	High	Progress >=50%	10	15	
110	Did at least 50% of the team complete the didactic training required by the team in the past year?	High	Progress >=50%	10	15	
	Immunization and Vaccination Program					
111	Does the team have an immunization program in place that meets the current NDMS immunization requirements?	High	Full	15	15	
112	Does the team have sufficient numbers of immunized personnel to meet the specified minimum team staffing levels?	High	Progress <50%	5	15	
	Uniform and Personal Equipment Inspection Program					
113	Does the team have a written uniform policy that is consistent with the NDMS Uniform Policy?	Medium	Full	9	9	
114	Does the team have a written policy for personal equipment?	High	Full	15	15	
115	Does the team pre-inspect (during regular, non-activated operations) all deployable members to confirm that they meet the uniform and personal equipment policies?	Medium	Progress <50%	3	9	
116	Does the team inspect uniforms and personal equipment during the mobilization process?	Medium	Not Started		9	
	Physical Ability Program					
117	Does the team have physical ability standards for individual team members that meet or exceed NDMS standards?	High	Full	15	15	
118	Does the team have a physical Ability Statement form documenting the individual meets the team's physical ability requirements?	High	Progress <50%	5	15	
119	Does the team have a process in place to annually verify that individuals meet the team's physical ability requirements?	High	Progress <50%	5	15	

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
120	Does the team have a process in place to address physical ability deficiencies	Medium	Progress <50%	3	9	
	Health and Medical Fitness Program					
121	Does the team have health and medical fitness standards for individuals that meet or exceed NDMS standards	High	Full	15	15	Standards as in team notebook
122	Does the team have a member medical information for documenting the individual meets the team health and medical standards?	High	Progress <50%	5	15	
123	Have all deployable team members submitted completed Member Medical Information forms and address deficiencies?	High	Progress <50%	5	15	
124	Does the team have a process in place to review Member Medical Information forms and address deficiencies prior to deployment	Medium	Progress <50%	3	9	
125	Does the team perform a mobilization/activation and post-mission/deactivation medical screening that includes the following:				15	Team not response ready at this point
	-A baseline set of vitals	High	Not Started			
	-History of present illnesses, past medical history, recent surgery and allergies	High	Not Started			
	-Current medications (and possess adequate quantity for deployment)	High	Not Started			
	-Any medical condition which would preclude deployment	High	Not Started			
126	Does the team have a process to evaluate medical screening information to determine whether the team member is capable of deploying on missions?	High	Progress <50%	5	15	
	Plans Assessment					
	Annual development plan					
127	Does the team have an annual plan, submitted to NDMS, that describes activities, goals and objectives (training, equipment, management/procurement, recruiting/staffing), budget and finances?	High	Full	15	15	
128	Does the team have an annual team Workplan, including key objectives for each team officer position?	Medium	Progress <50%	3	9	

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
129	Is there a comprehensive annual plan that includes:			12	15	
	-Strategies, priorities and timetables for command, administrative/finance, operations/training and logistics functions?	Medium	Progress >=50%			
	-Annual work plan and budget	High	Full			
	-Multi-year strategic plan to correct deficiencies and maintain current readiness	Medium	Progress >=50%			
	-Training plan	High	Full			
	-Supply/equipment procurement and maintenance	High	Progress >=50%			
	-Recruiting, Retention and Public Awareness	Low	Progress >=50%			
	Activation Call Down					
130	Does the team have a documented mobilization procedure that:			8	15	
	-Starts at the point where NDMS contacts the team leaders	High	Full			Starting point verified with one augmentation of a deployed team
	-Results in a complete, short notice team mobilization at any time day or night?	High	Not Started			
	-Includes at least two methods of contacting each member (e.g. phone, e-mail, website, pager)	High	Progress >=50%			
131	Has the activation procedure been exercised at least once per quarter for the past year?	High	Not Started		15	Team not response ready at this point
132	Has the past year's activation procedure tests successfully contacted 80% of the team members within 3 hours producing a "hypothetical" complete team roster with all required positions staffed?	High	Not Started		15	Team not response ready at this point
	Mobilization					
133	Does the team have a documented mobilization plan that includes	High		3	15	
	-Roster preparation and submission	High	Progress <50%			
	-Personal gear inspection or assurance	Medium	Progress <50%			

#	Item	Priority	Team Self-Assessed Compliance	Team Scores	Max Score	Team Notes, Explanation, Comments, Plans
	-Health and medical exam/screening	High	Progress <50%			
	-Documentation	High	Progress <50%			
	-Charging batteries for basic load items (radios, defibrillator, EKG, suction, ophthalmoscope, etc.)	High	Not Started			No cache at this time
	-Acquiring fuel	High	Not Started			No cache at this time
	-Activating MOUs for transportation	High	Progress <50%			
	-Loading the equipment cache	High	Not Started			no cache at this time
134	Have all components of the mob plan been tested at least twice within the past year ?	High	Not Started			no cache at this time

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APPENDIX B. STEP-RAC (SUPPLY, TRAINING, EQUIPMENT, PERSONNEL-READINESS ASSESSMENT CHECKLIST)

Self Assessment Criteria	*Max Score*	*Preparedness*	*Mobility*	*Self Sufficiency*	*Operations*
Command Assessment					
Does the team have named, designated staff assigned to perform the following functions to ensure day-to-day operations:					
-Commander (separate person from the Administrative Officer, Logistics Officer and Training Officer)	100	X	P,T	P,T	P,T
-Deputy Commander	100	X	P,T	P,T	P,T
-Administrative Officer (separate person from the Commander, Log Officer and Training Officer)	100	X	P,T	P,T	P,T
-Finance Officer	100	X	P,T	P,T	P,T
-Logistics Officer (separate person from the Commander, Admin Officer and Training Officer)	100	X	P,T	P,T	P,T
-Property Control Officer	100	X	P,T	P,T	P,T
-Communications Officer	100	X	P,T	P,T	P,T
-Training Officer (separate from the Commander, Admin and Log Officers)	100	X	P,T	P,T	P,T
-Public Information Officer	50	X	P,T	P,T	P,T
Command Staff Meetings					
Does the team conduct at least quarterly command staff meetings?	100	X			
Does the team produce written minutes of command and staff meetings, including attendance?	50	X			
Does the command staff review the team's progress against its annual work plan at least once per quarter?	100	X			
Financial and Administrative Assessment					
Fiscal Management					
Does the team have an overall fiscal management system in place?	50	X			

Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
Does the team have an annual fiscal audit process in place?	50	X			
Did the team pass their last annual financial audit?	50	X			
Did the team file all required financial reports in the past year?	50	X			
Requesting, tracking, spending and reporting federal funds					
Does the team maintain federal funds and books separate from other funding sources?	100	X			
Does the team maintain receipts and appropriate documentation for all federal invoices submitted?	100	X			
Is the team either a 501c3 and/or have a 3 party contractor agreement in place for receiving NDMS funds?	100	X			
Does the team have a business or government checking account for deposit of federal funds?	100	X			
Does the team possess a federal tax ID number?	100	X			
Does the team have an annual NDMS budget and Workplan on file with NDMS?	100	X			
Did the team spend at least 90% of the last year's annual NDMS funding?	50	X			
Federal, State, Local Support					
Does the team have an NDMS MOU in place?	100	X			
Does the team have local sponsor/participating agency MOU in place?	25	X			
Does the team have an established working relationship with its state/local emergency management or services agency and public health agency, outlining what resources are available from those agencies?	25	X			
Does the team have a non-NDMS pharmacy or pharmaceutical agreement in place?	50	X			
Immunization/vaccination tracking					
Does the team track each deployable team member's immunization status: which immunizations received and when?	100	X	P	P	P
Does each team member maintain an immunization record PHS-731?	100	X	P	P	P
Office Space					
Does the team have office space for making copies, sending faxes, and security maintain team documentation?	25	X			

Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
Medical Records and Documentation					
Are the team's member medical records safely and securely filed per federal General Records Schedule?	50	X	P		
Does the team maintain member occupational exposure injury records on file for 30 years after the member leaves the team?	100	X	P		
Are the team's copies of patient medical records safely and securely filed per General Records Schedule:	50				
Are the team's prescription drug records appropriately recorded and filed?	50	X			
Individual and team background, training an licensure tracking					
Does the team maintain a roster, including name, phone numbers and addresses that has been updated within the last 3 months?	100	X	P		
Does the team maintain a record of all team training conducted including attendance?	25	X	P,T	P,T	P,T
Does the team maintain a training record on each individual	25	X	P,T	P,T	P,T
Does the team maintain a photo copy of current team members certifications and licenses?	100	X	P,T		P,T
Has the team reviewed its team member certifications and licenses reviewed in the past year?	100	X	P,T		P,T
Does the team track clinical care hours to ensure that each healthcare provider has at least 112 hours of direct patient care in the previous 12 months?	100	X			P,T
Does the team track deployability and readiness of each member as determined by both NDMS and the team (e.g. completed immunizations and required training)?	100	X	P		
Has the team sent a written "Deployment Status/Deficiency" notice to each team member within the last 12 months?	25	X	P		
Does the team perform a background check on new members?	50	X	P		
Does the team have a policy for managing derogatory findings of a background check?	50	X	P		
Basic load inventory and maintenance tracking					
Has the team submitted an inventory of all federally issued or owned property within the last year	100	X	S,E	S,E	S,E
Does the team maintain an electronic inventory of all federal and non federal property (separately)	100	X	S,E	S,E	S,E

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Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
Does the team have a written preventative maintenance program in place?	100	X	E	E	E
Is there a shelf life maintenance plan in place for consumables?	100	X	S	S	S
Does the team maintain an equipment deficiency log?	100	X	E	E	E
Rosters: Team, Officers, On-Call Month					
Does the team have a roster of all deployable team members?	100	X	P		
-Contact methods: work/home/cell/pager/e-mail/postal address	100	X	P		
-SSN	100	X	P		
-Date of Birth	100	X	P		
-City of Birth	100	X	P		
-Team position	100	X	P		
-Immunization Status	100	X	P		
-Training Status	100	X	P		
-Physical ability status	100	X	P		
-Health and medical status	100	X	P		
-Team specific deployment requirements (attendance, dues, etc)	100	X	P		
Does each team officer possess a roster of team officers, including the following information		X	P		
-Work Phone #	100	X	P		
-Home Phone #	100	X	P		
-Cell Phone #	100	X	P		
-Pager #	100	X	P		
-Fax #	100	X	P		
-Team position(s)	100	X	P		
-E-mail address(es)	100	X	P		
Does NDMS have the current team officer roster on file at the OSC?	100	X	P		
Does the team maintain a list of available team members during the on-call month?	100	X	P		
Logistics Assessment					
Does the team store its cache in an adequately temperature-controlled area?	100	X	E,S	E,S	E,S

Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
Does the team have at least 40'x60' (or equivalent) for cache storage, equipment rehab, and maintenance and shipping and receiving	100	X	E,S		
Is the team's storage facility adequately equipped for loading and unlading the cache? (e.g. loading dock, forklift, adequate ceiling clearance)	100	X	E,S		
Does the team's storage facility have a restroom?	50	X	P		
Storage facility safety and security					
Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	50	X	E,S,P		
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	50	X	E,S,P,T		
Are the team's controlled substances stored, inventoried, and handled according to all applicable protocols and standards?	100	X	S		
Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	50	X	E,S,P,T		
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	50	X	E,S,P,T		
Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	100	X	E,S,P,T		
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	100	X	E,S,P,T		
Insurance					
Is the team's storage facility and federal cache adequately insured or otherwise protected against perils?	100	X			
Does the team maintain appropriate peril and transportation insurance for federal equipment and supplies used on federal trainings, exercises or deployments?	100	X			
Minimum equipment and supplies					
Does the team possess the items listed in the current version of the NDMS issued basic load?	100	X	E,S	E,S	E,S

Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
Basic load packaging and organizations					
Is the team's cache packaged according to NDMS specifications?	25	X	E,S		
Is the tam's cache labeled according to NDMS specifications	25	X	E,S		
Is the team's cache packaged according to a standard specification?	100	X	E,S		
Is the team's cache labeled according to a standard specification?	100	X	E,S		
Transportation Arrangements					
Does the team have a transportation arrangement for moving the team cache from its storage location to each potential airhead?	100	X	E,S		
Does the team have a transportation arrangement for transporting the team cache for 500 miles by ground transportation?	100	X	E,S		
Does the team have a transportation arrangement for moving team personnel from the mobilization site to the airhead?	100	X	P		
Does the team have a secure location for parking personal vehicles for the duration of a mission?	50	X	P,T		
Load Plans					
Does the team have a load plan for military air-transport palletization?	25	X	E,S		
Does the team have a load plan for civilian aircraft?	25	X	E,S		
Does the team have a load plan for 48'+ enclosed trailers?	25	X	E,S		
Does the team have a load plan for 48'+ flatbed trailers?	25	X	E,S		
Does the team have a load plan for 24' enclosed trucks?	25	X	E,S		
Hazardous cargo documentation					
Does the team have a prescripted hazardous cargo declaration for outbound and return travel	100	X	E,S		
Is the team's cache properly placarded for hazardous cargo air transportation?	100	X	E,S		
Is the team's cache properly placarded for hazardous cargo ground transportation?	100	X	E,S		
Does the team have at least one logistics person trained to IATA standards?	100	X	P,T		

Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
Does the team have a mobile spill pack for taking to a local airhead?	50	X	E,S		
Operations and Training Assessment					
Staffing Levels					
Does the team have at least 102 members in the following positions (may not count a team member more than once for the purpose of this assessment)					
-(4) Team Leaders	100	X	P	P	P
-(3) Administrative/Finance Chiefs	100	X	P	P	P
-(3) Administrative Officers	100	X	P	P	P
-(3) Administrative Assistants	100	X	P	P	P
-(3) Logistics' Chiefs	100	X	P	P	P
-(3) Equipment Specialists	100	X	P	P	P
-(3) Communications Officers	100	X	P	P	P
-(3) Communications Specialists	100	X	P	P	P
-(3) Safety Officers	100	X	P	P	P
-(3) Security Officers	100	X	P	P	P
-(9) Medical Officers	100	X	P	P	P
-(6) Advanced Practice Nurses, Physician Assistants or Medical Officers	100	X	P	P	P
-(3) Pharmacists	100	X	P	P	P
-(6) Pharmacy Assistants, Pharmacists, or others permitted by team's state regulations	100	X	P	P	P
-(3) Supervisory Nurse Specialists (or medical practitioners with Charge Nurse experience)	100	X	P	P	P
-(12) Staff Nurses, Supervisory Nurse Specialists, Advanced Nurse Practitioners or Physician Assistants	100	X	P	P	P
-(8) Paramedics	100	X	P	P	P
-(6) EMTs, Paramedics, Staff Nurses or Supervisory Staff Nurses	100	X	P	P	P
-(3) Mental Health Specialists or Social Workers	100	X	P	P	P
-(15) Other members as determined by the team	100	X	P	P	P

Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
Are (3) or more of the Medical Officers board certified (or have hospital privileges) in emergency medicine or critical care?	100	X	P	P	P
Training Program Structure					
Does the team have an annual training program in place and submitted to NDMS?	100	X			
Does the training program include all NDMS Core Training Modules every 24 months?	50	X	T	T	T
Does the training program include objectives for online training completion?	50	X	T	T	T
Does the training program include objectives for didactic training?	50	X			T
Does the training program include at least one annual overnight field exercise?	100	X	T	T	
Does the training program incorporate the NDMS field training curriculum?	25	X	T	T	T
Has the team submitted required training notification/approval documentation to NDMS?	100	X			
Does the team provide or arrange training and protocols for skills not typically practiced in daily work?	100	X	T	T	T
Does the team provide position specific individual trading plans for each team member?	25	X	T	T	T
Training Program Effectiveness					
Has the team provided an annual report to NDMS of the effectiveness and participation level of the prior years training program that includes the following?					
-The % of team members who have completed at least one field exercise within the last year?	50	X	T	T	
-The % of team's didactic training completed by each team member?	50	X			T
-The % of NDMS Core online training program completed by each team member?	50	X	T	T	T
Did at least 50% of the team attend at least one field exercise in the past year?	100	X	T	T	
Did at least 50% of the team complete the didactic training required by the team in the past year?	100	X			T
Immunization and Vaccination Program					

Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
Does the team have an immunization program in place that meets the current NDMS immunization requirements?	100	X	P	P	P
Does the team have sufficient numbers of immunized personnel to meet the specified minimum team staffing levels?	100	X	P	P	P
Uniform and Personal Equipment Inspection Program					
Does the team have a written uniform policy that is consistent with the NDMS Uniform Policy?	50	X	P	P	P
Does the team have a written policy for personal equipment?	100	X	P	P	P
Does the team pre-inspect (during regular, non-activated operations) all deployable members to confirm that they meet the uniform and personal equipment policies?	50	X	P		
Does the team inspect uniforms and personal equipment during the mobilization process?	50	X	P		
Physical Ability Program					
Does the team have physical ability standards for individual team members that meet or exceed NDMS standards?	100	X	P	P	P
Does the team have a physical Ability Statement form documenting the individual meets the team's physical ability requirements?	100	X	P		
Does the team have a process in place to annually verify that individuals meet the team's physical ability requirements?	100	X	P		
Does the team have a process in place to address physical ability deficiencies	50	X			
Health and Medical Fitness Program					
Does the team have health and medical fitness standards for individuals that meet or exceed NDMS standards	100	X	P	P	P
Does the team have a member medical information for documenting the individual meets the team health and medical standards?	100	X	P		
Have all deployable team members submitted completed Member Medical Information forms and address deficiencies?	100	X	P		
Does the team perform a mobilization/activation and post-mission/deactivation medical screening that includes the following:	50	X	P		
-A baseline set of vitals	100	X	P		

Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
-History of present illnesses, past medical history, recent surgery and allergies	100	X	P		
-Current medications (and possess adequate quantity for deployment)	100	X	P		
-Any medical condition which would preclude deployment	100	X	P		
Does the team have a process to evaluate medical screening information to determine whether the team member is capable of deploying on missions?	100	X	P		
Plans Assessment					
Annual development plan					
Does the team have an annual plan, submitted to NDMS, that describes activities, goals and objectives (training, equipment, management/procurement, recruiting/staffing), budget and finances?	100	X			
Does the team have an annual team Workplan, including key objectives for each team officer position?	50	X			
Is there a comprehensive annual plan that includes:	50	X			
-Strategies, priorities and timetables for command, administrative/finance, operations/training and logistics functions?	100	X			
-Annual work plan and budget	50	X			
-Multi-year strategic plan to correct deficiencies and maintain current readiness	100	X			
-Supply/equipment procurement and maintenance	100	X			
-Recruiting, Retention and Public Awareness	25	X			
Activation Call Down					
Does the team have a documented mobilization procedure that:					
-Starts at the point where NDMS contacts the team leaders	100	X	S,T,E,P		
-Results in a complete, short notice team mobilization at any time day or night?	100	X	S,T,E,P		
-Includes at least two methods of contacting each member (e.g. phone, e-mail, website, pager)	100	X	P		
Has the activation procedure been exercised at least once per quarter for the past year?	100	X	S,T,E,P		

Self Assessment Criteria	Max Score	Preparedness	Mobility	Self Sufficiency	Operations
Has the past year's activation procedure tests successfully contacted 80% of the team members within 3 hours producing a "hypothetical" complete team roster with all required positions staffed?	100	X	P		
Mobilization					
Does the team have a documented mobilization plan that includes	100	X			
-Roster preparation and submission	100	X	P		
-Personal gear inspection or assurance	50	X	P		
-Health and medical exam/screening	100	X	P		
-Documentation	100	X	P		
-Charging batteries for basic load items (radios, defibrillator, EKG, suction, ophthalmoscope, etc.)	100	X	E,S		
-Acquiring fuel	100	X	S		
-Activating MOUs for transportation	100	X	E,S		
-Loading the equipment cache	100	X	E,S		
Have all components of the mob plan been tested at least twice within the past year ?	100	X	S,T,E,P		

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APPENDIX C.   FAULT TREE

P = Personnel
T = Training
S = Supplies
E = Equipment

Mission Failure — OR

Mobility Sector — OR — P, T, S, E

Self Sufficiency — OR — P, T, S, E

Operations Sector — OR — P, T, S, E
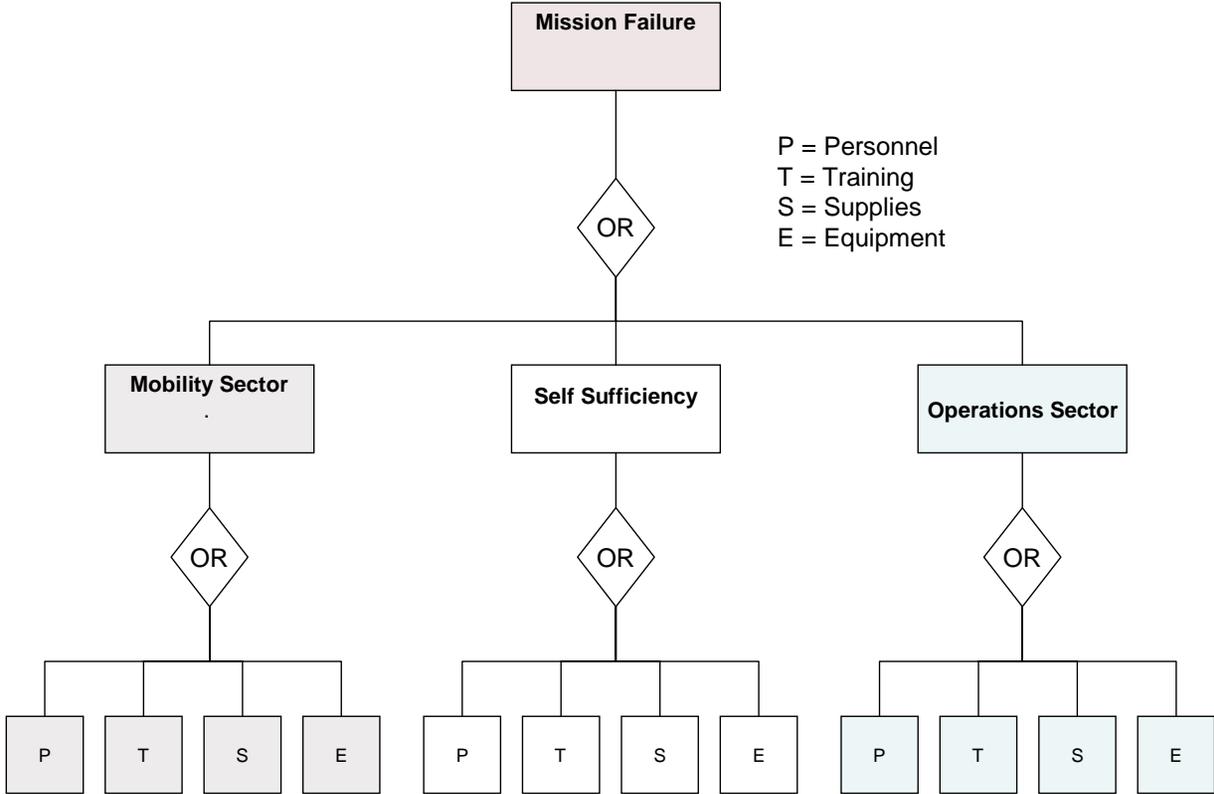
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APPENDIX D.   SECTOR ANALYSIS

Mobility Sector - Personnel Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
Personnel			
Command Assessment			
-Commander (separate person from the Administrative Officer, Logistics Officer and Training Officer)	100	100	
-Deputy Commander	100	50	$ 3,333.00
-Administrative Officer (separate person from the Commander, Log Officer and Training Officer)	100	100	
-Finance Officer	100	50	$ 2,666.00
-Logistics Officer (separate person from the Commander, Admin Officer and Training Officer)	100	100	
-Property Control Officer	100	100	
-Communications Officer	100	100	
-Training Officer (separate from the Commander, Admin and Log Officers)	100	100	
-Public Information Officer	50	25	$ 1,666.00
Immunization/vaccination tracking			
Does the team track each deployable team member's immunization status: which immunizations received and when?	100	100	
Does each team member maintain an immunization record PHS-731?	100	75	$ 83.00
Medical Records and Documentation			
Are the team's member medical records safely and securely filed per federal General Records Schedule?	50	17	$ 83.00
Does the team maintain member occupational exposure injury records on file for 30 years after the member leaves the team?	100	67	$ 166.00
Individual and team background, training and licensure tracking			
Does the team maintain a roster, including name, phone numbers and addresses that has been updated within the last 3 months?	100	100	
Mobility Sector - Personnel Readiness			

Self Assessment Criteria	Max Score	Compliance Score	Cost to Fix
Does the team maintain a record of all team training conducted including attendance?	25	17	$ 83.00
Does the team maintain a training record on each individual	25	17	$ 83.00
Does the team maintain a photo copy of current team members certifications and licenses?	100	100	
Has the team reviewed its team member certifications and licenses reviewed in the past year?	100	100	
Does the team track deployability and readiness of each member as determined by both NDMS and the team (e.g. completed immunizations and required training)?	100	100	
Has the team sent a written "Deployment Status/Deficiency" notice to each team member within the last 12 months?	25	9	$ 100.00
Does the team perform a background check on new members?	50	0	$ 2,500.00
Does the team have a policy for managing derogatory findings of a background check?	50	0	$ 250.00
Rosters: Team, Officers, On-Call Month			
Does the team have a roster of all deployable team members?			
-Contact methods: work/home/cell/pager/e-mail/postal address	100	100	
-SSN	100	100	
-Date of Birth	100	100	
-City of Birth	100	100	
-Team position	100	100	
-Immunization Status	100	50	$ 100.00
-Training Status	100	50	$ 100.00
-Physical ability status	100	50	$ 100.00
-Health and medical status	100	50	$ 100.00
-Team specific deployment requirements (attendance, dues, etc)	100	50	$ 100.00
Does each team officer possess a roster of team officers, including the following information			
-Work Phone #	100	100	
-Home Phone #	100	100	
Mobility Sector - Personnel Readiness			

Self Assessment Criteria	Max Score	Compliance Score	Cost to Fix
-Cell Phone #	100	100	
-Pager #	100	100	
-Fax #	100	100	
-Team position(s)	100	100	
-E-mail address(es)	100	100	
Does NDMS have the current team officer roster on file at the OSC?	100	100	
Does the team maintain a list of available team members during the on-call month?	100	33	$ 250.00
Logistics Assessment			
Does the team's storage facility have a restroom?	50	0	$ 25,000.00
Storage Facility Safety and Security			
Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	50	17	$ 15,000.00
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	50	33	$ 100.00
Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	50	0	$ 5,000.00
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	50	0	$ 100.00
Transportation Arrangements			
Does the team have a transportation arrangement for moving team personnel from the mobilization site to the airhead?	100	0	$ 200.00
Does the team have a secure location for parking personal vehicles for the duration of a mission?	50	0	$ 1,000.00
Hazardous Cargo Documentation			
Does the team have at least one logistics person trained to IATA standards?	100	0	$ 250.00
Staffing Levels			
Does the team have at least 102 members in the following positions (may not count a team member more than once for the purpose of this assessment)			
-(4) Team Leaders	100	66	$ 3,333.00
Mobility Sector - Personnel Readiness			

Self Assessment Criteria	Max Score	Compliance Score	Cost to Fix
-(3) Administrative/Finance Chiefs	100	100	
-(3) Administrative Officers	100	100	
-(3) Administrative Assistants	100	100	
-(3) Logistics' Chiefs	100	100	
-(3) Equipment Specialists	100	100	
-(3) Communications Officers	100	100	
-(3) Communications Specialists	100	66	$ 1,666.00
-(3) Safety Officers	100	66	$ 1,666.00
-(3) Security Officers	100	33	$ 1,666.00
-(9) Medical Officers	100	100	
-(6) Advanced Practice Nurses, Physician Assistants or Medical Officers	100	100	
-(3) Pharmacists	100	100	
-(6) Pharmacy Assistants, Pharmacists, or others permitted by team's state regulations	100	100	
-(3) Supervisory Nurse Specialists (or medical practitioners with Charge Nurse experience)	100	100	
-(12) Staff Nurses, Supervisory Nurse Specialists, Advanced Nurse Practitioners or Physician Assistants	100	100	
-(8) Paramedics	100	100	
-(6) EMTs, Paramedics, Staff Nurses or Supervisory Staff Nurses	100	100	
-(3) Mental Health Specialists or Social Workers	100	33	$ 1,666.00
-(15) Other members as determined by the team	100	100	
Are (3) or more of the Medical Officers board certified (or have hospital privileges) in emergency medicine or critical care?	100	100	
Immunization and Vaccination Program			
Does the team have an immunization program in place that meets the current NDMS immunization requirements?	100	100	
Does the team have sufficient numbers of immunized personnel to meet the specified minimum team staffing levels?	100	33	$ 830.00
Uniform and Personal Equipment Inspection Program			
Mobility Sector - Personnel Readiness			

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Self Assessment Criteria	Max Score	Compliance Score	Cost to Fix
Does the team have a written uniform policy that is consistent with the NDMS Uniform Policy?	50	50	
Does the team have a written policy for personal equipment?	100	100	
Does the team pre-inspect (during regular, non-activated operations) all deployable members to confirm that they meet the uniform and personal equipment policies?	50	17	$ -
Does the team inspect uniforms and personal equipment during the mobilization process?	50	0	$ -
Physical Ability Program			
Does the team have physical ability standards for individual team members that meet or exceed NDMS standards?	100	100	
Does the team have a physical Ability Statement form documenting the individual meets the team's physical ability requirements?	100	33	$ 100.00
Does the team have a process in place to annually verify that individuals meet the team's physical ability requirements?	100	33	$ -
Health and Medical Fitness Program			
Does the team have health and medical fitness standards for individuals that meet or exceed NDMS standards	100	100	
Does the team have a member medical information for documenting the individual meets the team health and medical standards?	100	33	$ 100.00
Have all deployable team members submitted completed Member Medical Information forms and address deficiencies?	100	33	$ 75.00
Does the team perform a mobilization/activation and post-mission/deactivation medical screening that includes the following:	50	17	$ -
-A baseline set of vitals	100	0	$ -
-History of present illnesses, past medical history, recent surgery and allergies	100	0	$ -
-Current medications (and possess adequate quantity for deployment)	100	0	$ -
-Any medical condition which would preclude deployment	100	0	$ -
Mobility Sector - Personnel Readiness			
Self Assessment Criteria	Max Score	Compliance Score	Cost to Fix

	Max Score	Comp Score	Cost to Fix
Does the team have a process to evaluate medical screening information to determine whether the team member is capable of deploying on missions?	100	0	$ -
Activation Call Down			
Does the team have a documented mobilization procedure that:			
-Starts at the point where NDMS contacts the team leaders	100	100	
-Results in a complete, short notice team mobilization at any time day or night?	100	0	$ 250.00
-Includes at least two methods of contacting each member (e.g. phone, e-mail, website, pager)	100	0	$ 250.00
Has the activation procedure been exercised at least once per quarter for the past year?	100	0	$ 250.00
Has the past year's activation procedure tests successfully contacted 80% of the team members within 3 hours producing a "hypothetical" complete team roster with all required positions staffed?	100	0	$ 250.00
Mobilization Plan			
Does the team have a documented mobilization plan that includes			
-Roster preparation and submission	100	0	$ -
-Personal gear inspection or assurance	50	0	$ -
-Health and medical exam/screening	100	0	$ -
-Documentation	100	0	$ -
Have all components of the mob plan been tested at least twice within the past year?	100	0	$ -
	8,825	5673	$ 70,515.00
MOBILITY SECTOR: P-Readiness	64%		
Enter Mob sector P Score here	0.64		

Mobility Sector - Training Readiness			
Self Assessment Criteria	*Max Score*	*Comp Score*	*Cost to Fix*
Command Assessment			

	Max Score	Comp Score	Cost to Fix
Does the team have named, designated staff assigned to perform the following functions to ensure day-to-day operations:			
-Commander (separate person from the Administrative Officer, Logistics Officer and Training Officer)	100	100	
-Deputy Commander	100	50	
-Administrative Officer (separate person from the Commander, Log Officer and Training Officer)	100	100	
-Finance Officer	100	50	
-Logistics Officer (separate person from the Commander, Admin Officer and Training Officer)	100	100	
-Property Control Officer	100	100	
-Communications Officer	100	100	
-Training Officer (separate from the Commander, Admin and Log Officers)	100	100	
-Public Information Officer	50	25	
Individual and team background, training an licensure tracking			
Does the team maintain a record of all team training conducted including attendance?	25	17	$ 83.00
Does the team maintain a training record on each individual	25	17	$ 83.00
Does the team maintain a photo copy of current team members certifications and licenses?	100	100	
Has the team reviewed its team member certifications and licenses reviewed in the past year?	100	100	
Storage facility safety and security			
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	50	50	
Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	50	50	
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	50	50	
Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	100	100	
Mobility Sector - Training Readiness			
Self Assessment Criteria	*Max Score*	*Comp Score*	*Cost to Fix*
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	100	100	

Transportation Arrangements			
Does the team have a secure location for parking personal vehicles for the duration of a mission?	50	0	
Hazardous cargo documentation			
Does the team have at least one logistics person trained to IATA standards?	100	100	
Training Program Structure			
Does the team have an annual training program in place and submitted to NDMS	100	66	$ 100.00
Does the training program include all NDMS Core Training Modules every 24 months?	50	33	$ 33.00
Does the training program include objectives for online training completion?	50	50	
Does the training program include objectives for didactic training?	50	17	$ 50.00
Does the training program include at least one annual overnight field exercise?	100	100	
Does the training program incorporate the NDMS field training curriculum?	25	9	$ 33.00
Does the team provide or arrange training and protocols for skills not typically practiced in daily work?	100	33	$ 830.00
Does the team provide position specific individual trading plans for each team member?	25	9	$ 83.00
Training Program Effectiveness			
-The % of team members who have completed at least one field exercise within the last year?	50	25	$10,000.00
-The % of NDMS Core online training program completed by each team member?	50	25	$ -
Did at least 50% of the team attend at least one field exercise in the past year?	100	66	$10,000.00
Activation Call Down			
Does the team have a documented mobilization procedure that:			
-Starts at the point where NDMS contacts the team leaders	100	100	
-Results in a complete, short notice team mobilization at any time day or night?	100	0	$ -
Has the activation procedure been exercised at least once per quarter for the past year?	100	66	$ -
Mobilization			
Have all components of the mob plan been tested at least twice within the past year ?	100	0	$ 250.00
	2700	74%	$21,545.00
Mobility Sector - Training Readiness			
MOBILITY SECTOR: T-Readiness Score	74%		

Enter Mobility Sector T-Readiness Score here	0.74		

Mobility Sector - Supply Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
Basic load inventory and maintenance tracking			
Has the team submitted an inventory of all federally issued or owned property within the last year	100	0	$ 83.00
Does the team maintain an electronic inventory of all federal and non federal property (separately)	100	66	$ 166.00
Is there a shelf life maintenance plan in place for consumables?	100	0	$ 166.00
Logistics Assessment			
Does the team store its cache in an adequately temperature-controlled area?	100	0	$ 2,666.00
Does the team have at least 40'x60' (or equivalent) for cache storage, equipment rehab, and maintenance and shipping and receiving	100	100	
Is the team's storage facility adequately equipped for loading and unlading the cache? (e.g. loading dock, forklift, adequate ceiling clearance)	100	100	
Storage facility safety and security			
Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	50	17	$ -
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	50	33	$ -
Are the team's controlled substances stored, inventoried, and handled according to all applicable protocols and standards?	100	0	$ 250.00
Minimum equipment and supplies			
Does the team possess the items listed in the current version of the NDMS issued basic load?	100	0	$ -
Basic load packaging and organizations			
Is the team's cache packaged according to NDMS specifications?	25	0	$ 500.00
Is the tam's cache labeled according to NDMS specifications	25	0	$ 150.00
Is the team's cache packaged according to a standard specification?	100	0	$ 500.00
Is the team's cache labeled according to a standard specification?	100	0	$ 150.00
Transportation Arrangements			

Does the team have a transportation arrangement for moving the team cache from its storage location to each potential airhead?	100	0	$ 2,500.00
Mobility Sector - Supply Readiness			

Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
Does the team have a transportation arrangement for transporting the team cache for 500 miles by ground transportation?	100	0	$ 2,500.00
Load Plans			
Does the team have a load plan for military air-transport palletization?	25	0	$ -
Does the team have a load plan for civilian aircraft?	25	0	$ -
Does the team have a load plan for 48'+ enclosed trailers?	25	0	$ -
Does the team have a load plan for 48'+ flatbed trailers?	25	0	$ -
Does the team have a load plan for 24' enclosed trucks?	25	0	$ -
Hazardous cargo documentation			
Does the team have a prescripted hazardous cargo declaration for outbound and return travel?	100	0	$ 100.00
Is the team's cache properly placarded for hazardous cargo air transportation?	100	0	$ 250.00
Is the team's cache properly placarded for hazardous cargo ground transportation?	100	0	$ 250.00
Does the team have a mobile spill pack for taking to a local airhead?	50	0	$ 500.00
Activation Call Down			
Does the team have a documented mobilization procedure that:			
-Starts at the point where NDMS contacts the team leaders	100	0	$ -
-Results in a complete, short notice team mobilization at any time day or night?	100	0	$ -
Has the activation procedure been exercised at least once per quarter for the past year?	100	0	$ -
Mobilization			
Does the team have a documented mobilization plan that includes			
-Charging batteries for basic load items (radios, defibrillator, EKG, suction, ophthalmoscope, etc.)	100	0	$ 100.00
-Acquiring fuel	100	0	$ 150.00
-Activating MOUs for transportation	100	0	$ -
-Loading the equipment cache	100	0	$ 500.00
Have all components of the mob plan been tested at least twice within the past year ?	100	0	$ -

		2625	316	$ 11,481.00
Mobility Sector - Supply Readiness				
Mobility Sector: S-Readiness	12%			
Enter Mobility Sector: S Readiness Score here	0.12			

Mobility Sector - Equipment Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
Basic load inventory and maintenance tracking			
Has the team submitted an inventory of all federally issued or owned property within the last year?	100	0	$ -
Does the team maintain an electronic inventory of all federal and non federal property (separately)?	100	66	$ -
Does the team have a written preventative maintenance program in place?	100	0	$ 166.00
Does the team maintain an equipment deficiency log?	100	66	$ -
Logistics Assessment			
Does the team store its cache in an adequately temperature-controlled area?	100	0	$ -
Does the team have at least 40'x60' (or equivalent) for cache storage, equipment rehab, and maintenance and shipping and receiving	100	100	
Is the team's storage facility adequately equipped for loading and unlading the cache? (e.g. loading dock, forklift, adequate ceiling clearance)	100	100	
Storage facility safety and security			
Does the team's storage facility meet or exceed NFPA standards, and include fire sprinklers, smoke detectors, and fire extinguishers?	50	17	$ -
Is the team's storage facility adequately secured, with controlled access only by designated individuals?	50	33	$ -
Minimum equipment and supplies			
Does the team possess the items listed in the current version of the NDMS issued basic load?	100	0	$150,000.00
Basic load packaging and organizations			
Is the team's cache packaged according to NDMS specifications?	25	0	$ -
Is the tam's cache labeled according to NDMS specifications	25	0	$ -
Is the team's cache packaged according to a standard specification?	100	0	$ -
Is the team's cache labeled according to a standard specification?	100	0	$ -
Transportation Arrangements			

Self Assessment Criteria	Max Score	Comp Score	Cost to Fix
Does the team have a transportation arrangement for moving the team cache from its storage location to each potential airhead?	100	0	$ -
Mobility Sector - Equipment Readiness			
Self Assessment Criteria	*Max Score*	*Comp Score*	*Cost to Fix*
Does the team have a transportation arrangement for transporting the team cache for 500 miles by ground transportation?	100	0	$ -
Load Plans			
Does the team have a load plan for military air-transport palletization?	25	0	$ -
Does the team have a load plan for civilian aircraft?	25	0	$ -
Does the team have a load plan for 48'+ enclosed trailers?	25	0	$ -
Does the team have a load plan for 48'+ flatbed trailers?	25	0	$ -
Does the team have a load plan for 24' enclosed trucks?	25	0	$ -
Hazardous cargo documentation			
Does the team have a prescripted hazardous cargo declaration for outbound and return travel?	100	0	$ -
Is the team's cache properly placarded for hazardous cargo air transportation?	100	0	$ -
Is the team's cache properly placarded for hazardous cargo ground transportation?	100	0	$ -
Does the team have a mobile spill pack for taking to a local airhead?	50	0	$ -
Activation Call Down			
-Starts at the point where NDMS contacts the team leaders	100	100	
-Results in a complete, short notice team mobilization at any time day or night?	100	0	$ -
Has the activation procedure been exercised at least once per quarter for the past year?	100	0	$ -
Mobilization			
-Charging batteries for basic load items (radios, defibrillator, EKG, suction, ophthalmoscope, etc.)	100	0	$ -
-Activating MOUs for transportation	100	0	$ -
-Loading the equipment cache	100	0	$ -
Have all components of the mob plan been tested at least twice within the past year ?	100	0	$ -
	2525	482	$150,166.00
Mobility Sector: E-Readiness Score	19%		
Enter Mobility Sector: E-Readiness Score here			

	0.19		

Self Sufficiency Sector - Personnel Readiness			
Self Assessment Criteria	Max Score	Compliance Score	Cost to Fix
Command Assessment			
-Commander (separate person from the Administrative Officer, Logistics Officer and Training Officer)	100	100	
-Deputy Commander	100	50	$ 3,333.00
-Administrative Officer (separate person from the Commander, Log Officer and Training Officer)	100	100	
-Finance Officer	100	50	$ 2,666.00
-Logistics Officer (separate person from the Commander, Admin Officer and Training Officer)	100	100	
-Property Control Officer	100	100	
-Communications Officer	100	100	
-Training Officer (separate from the Commander, Admin and Log Officers)	100	100	
-Public Information Officer	50	25	$ 1,666.00
Immunization/vaccination tracking			
Does the team track each deployable team member's immunization status: which immunizations received and when?	100	100	
Does each team member maintain an immunization record PHS-731?	100	66	$ 83.00
Individual and team background, training an licensure tracking			
Does the team maintain a record of all team training conducted including attendance?	25	17	$ 83.00
Does the team maintain a training record on each individual	25	17	$ 83.00
Staffing Levels			
Does the team have at least 102 members in the following positions (may not count a team member more than once for the purpose of this assessment)			
-(4) Team Leaders	100	66	$ 3,333.00
-(3) Administrative/Finance Chiefs	100	100	
-(3) Administrative Officers	100	100	
-(3) Administrative Assistants	100	100	

Self Assessment Criteria	Max Score	Comp Score	Cost to Fix
-(3) Logistics' Chiefs	100	100	
Self Sufficiency Sector - Personnel Readiness			
Self Assessment Criteria	*Max Score*	*Comp Score*	*Cost to Fix*
-(3) Equipment Specialists	100	100	
-(3) Communications Officers	100	100	
-(3) Communications Specialists	100	66	$ 1,666.00
-(3) Safety Officers	100	66	$ 1,666.00
-(3) Security Officers	100	66	$ 1,666.00
-(9) Medical Officers	100	100	
-(6) Advanced Practice Nurses, Physician Assistants or Medical Officers	100	100	
-(3) Pharmacists	100	100	
-(6) Pharmacy Assistants, Pharmacists, or others permitted by team's state regulations	100	100	
-(3) Supervisory Nurse Specialists (or medical practitioners with Charge Nurse experience)	100	100	
-(12) Staff Nurses, Supervisory Nurse Specialists, Advanced Nurse Practitioners or Physician Assistants	100	100	
-(8) Paramedics	100	100	
-(6) EMTs, Paramedics, Staff Nurses or Supervisory Staff Nurses	100	100	
-(3) Mental Health Specialists or Social Workers	100	33	$ 1,666.00
-(15) Other members as determined by the team	100	100	
Are (3) or more of the Medical Officers board certified (or have hospital privileges) in emergency medicine or critical care?	100	100	
Immunization and Vaccination Program			
Does the team have an immunization program in place that meets the current NDMS immunization requirements?	100	100	
Does the team have sufficient numbers of immunized personnel to meet the specified minimum team staffing levels?	100	33	$ 830.00
Uniform and Personal Equipment Inspection Program			
Does the team have a written uniform policy that is consistent with the NDMS Uniform Policy?	50	50	
Does the team have a written policy for personal equipment?	100	100	
Physical Ability Program			

	Max Score	Compliance Score	Cost to Fix
Does the team have physical ability standards for individual team members that meet or exceed NDMS standards?	100	100	
Self Sufficiency Sector - Personnel Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
Health and Medical Fitness Program			
Does the team have health and medical fitness standards for individuals that meet or exceed NDMS standards?	100	100	
	3750	3305	
Self Sufficiency Sector: P-Readiness	88%		$ 18,741.00
Enter Self Sufficiency Sector: P-Readiness score here	0.88		

Self Sufficiency Sector - Training Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
Command Assessment			
Does the team have named, designated staff assigned to perform the following functions to ensure day-to-day operations:			
-Commander (separate person from the Administrative Officer, Logistics Officer and Training Officer)	100	100	
-Deputy Commander	100	50	$ -
-Administrative Officer (separate person from the Commander, Log Officer and Training Officer)	100	100	
-Finance Officer	100	50	$ -
-Logistics Officer (separate person from the Commander, Admin Officer and Training Officer)	100	100	
-Property Control Officer	100	100	
-Communications Officer	100	100	
-Training Officer (separate from the Commander, Admin and Log Officers)	100	100	
-Public Information Officer	50	25	$ -
Individual and team background, training an licensure tracking			
Does the team maintain a record of all team training conducted including attendance?	25	17	$ 83.00
Does the team maintain a training record on each individual	25	17	$ 83.00
Training Program Structure			
Does the training program include all NDMS Core Training Modules every 24 months?	50	33	$ 33.00
Does the training program include objectives for online training completion?	50	50	
Does the training program include at least one annual overnight field exercise?	100	100	
Does the training program incorporate the NDMS field training curriculum?	25	9	$ 33.00
Does the team provide or arrange training and protocols for skills not typically practiced in daily work?	100	33	$ 830.00
Does the team provide position specific individual trading plans for each team member?	25	9	$ 83.00
Training Program Effectiveness			

Has the team provided an annual report to NDMS of the effectiveness and participation level of the prior years training program that includes the following?			
Self Sufficiency Sector - Training Readiness			
Self Assessment Criteria	*Max Score*	*Compliance*	*Cost to Fix*
-The % of team members who have completed at least one field exercise within the last year?	50	25	
-The % of team's didactic training completed by each team member?	50	25	
-The % of NDMS Core online training program completed by each team member?	50	25	
Did at least 50% of the team attend at least one field exercise in the past year?	100	66	
	1500	1134	$ 1,145.00
Self Sufficiency Sector: T-Readiness	76%		
Enter Self Sufficiency Sector: T-Readiness Score here	0.76		

Self Sufficiency Sector - Supply Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
Basic load inventory and maintenance tracking			
Has the team submitted an inventory of all federally issued or owned property within the last year	100	0	$ 83.00
Does the team maintain an electronic inventory of all federal and non federal property (separately)	100	66	$ 166.00
Is there a shelf life maintenance plan in place for consumables?	100	0	$ 166.00
Logistics Assessment			
Does the team store its cache in an adequately temperature-controlled area?	100	0	$ 2,666.00
Minimum equipment and supplies			
Does the team possess the items listed in the current version of the NDMS issued basic load?	100	0	
	500	66	
Self Sufficiency Sector: S-Readiness Score	13%		$ 3,081.00
Enter Self Sufficiency Sector: S-Readiness Score here	0.13		

Self Sufficiency Sector - Equipment Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
Basic load inventory and maintenance tracking			
Has the team submitted an inventory of all federally issued or owned property within the last year	100	0	$ -
Does the team maintain an electronic inventory of all federal and non federal property (separately)	100	66	$ -
Does the team have a written preventative maintenance program in place?	100	0	$ 166.00
Does the team maintain an equipment deficiency log?	100	66	$ -
Logistics Assessment			
Does the team store its cache in an adequately temperature-controlled area?	100	0	$ -
Minimum equipment and supplies			
Does the team possess the items listed in the current version of the NDMS issued basic load?	100	0	$ -
	600	132	
Self Sufficiency Sector: E-Readiness Score	22%		$ 166.00
Enter Self Sufficiency Sector: E Readiness Score here	0.22		

Operations Sector - Personnel Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
### Command Assessment			
Does the team have named, designated staff assigned to perform the following functions to ensure day-to-day operations:			
-Commander (separate person from the Administrative Officer, Logistics Officer and Training Officer)	100	100	
-Deputy Commander	100	50	$ 3,333.00
-Administrative Officer (separate person from the Commander, Log Officer and Training Officer)	100	100	
-Finance Officer	100	50	$ 2,666.00
-Logistics Officer (separate person from the Commander, Admin Officer and Training Officer)	100	100	
-Property Control Officer	100	100	
-Communications Officer	100	100	
-Training Officer (separate from the Commander, Admin and Log Officers)	100	100	
-Public Information Officer	50	25	$ 1,666.00
Immunization/vaccination tracking			
Does the team track each deployable team member's immunization status: which immunizations received and when?	100	100	
Does each team member maintain an immunization record PHS-731?	100	75	$ 83.00
Individual and team background, training an licensure tracking			
Does the team maintain a record of all team training conducted including attendance?	25	17	$ 83.00
Does the team maintain a training record on each individual	25	17	$ 83.00
Does the team maintain a photo copy of current team members certifications and licenses?	100	100	
Has the team reviewed its team member certifications and licenses reviewed in the past year?	100	100	
Staffing Levels			
Does the team have at least 102 members in the following positions (may not count a team member more than once for the purpose of this assessment)			
-(4) Team Leaders	100	66	$ 3,333.00

Self Assessment Criteria	Max Score	Compliance Score	Cost to Fix
-(3) Administrative/Finance Chiefs	100	100	
Operations Sector - Personnel Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
-(3) Administrative Officers	100	100	
-(3) Administrative Assistants	100	100	
-(3) Logistics' Chiefs	100	100	
-(3) Equipment Specialists	100	100	
-(3) Communications Officers	100	100	
-(3) Communications Specialists	100	66	$ 1,666.00
-(3) Safety Officers	100	66	$ 1,666.00
-(3) Security Officers	100	33	$ 1,666.00
-(9) Medical Officers	100	100	
-(6) Advanced Practice Nurses, Physician Assistants or Medical Officers	100	100	
-(3) Pharmacists	100	100	
-(6) Pharmacy Assistants, Pharmacists, or others permitted by team's state regulations	100	100	
-(3) Supervisory Nurse Specialists (or medical practitioners with Charge Nurse experience)	100	100	
-(12) Staff Nurses, Supervisory Nurse Specialists, Advanced Nurse Practitioners or Physician Assistants	100	100	
-(8) Paramedics	100	100	
-(6) EMTs, Paramedics, Staff Nurses or Supervisory Staff Nurses	100	100	
-(3) Mental Health Specialists or Social Workers	100	33	$ 1,666.00
-(15) Other members as determined by the team	100	100	
Are (3) or more of the Medical Officers board certified (or have hospital privileges) in emergency medicine or critical care?	100	100	
Training Program Structure			
Immunization and Vaccination Program			
Does the team have an immunization program in place that meets the current NDMS immunization requirements?	100	100	
Does the team have sufficient numbers of immunized personnel to meet the specified minimum team staffing levels?	100	33	$ 830.00
Uniform and Personal Equipment Inspection Program		0	

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	Max Score	Compliance Score	Cost to Fix
Does the team have a written uniform policy that is consistent with the NDMS Uniform Policy?	50	50	
Operations Sector - Personnel Readiness			
Self Assessment Criteria	***Max Score***	***Compliance Score***	***Cost to Fix***
Does the team have a written policy for personal equipment?	100	100	
Physical Ability Program			
Does the team have physical ability standards for individual team members that meet or exceed NDMS standards?	100	100	
Health and Medical Fitness Program			
Does the team have health and medical fitness standards for individuals that meet or exceed NDMS standards	100	100	
	3950	3481	$ 18,741.00
Operations Sector: P-Readiness Score	88%		
Enter Operations Sector P Readiness Score here	0.88		

Operations Sector - Training Readiness			
Self Assessment Criteria	Max Score	Compliance Score	Cost to Fix
Command Assessment			
Does the team have named, designated staff assigned to perform the following functions to ensure day-to-day operations:			
-Commander (separate person from the Administrative Officer, Logistics Officer and Training Officer)	100	100	
-Deputy Commander	100	50	$ -
-Administrative Officer (separate person from the Commander, Log Officer and Training Officer)	100	100	
-Finance Officer	100	50	$ -
-Logistics Officer (separate person from the Commander, Admin Officer and Training Officer)	100	100	
-Property Control Officer	100	100	
-Communications Officer	100	100	
-Training Officer (separate from the Commander, Admin and Log Officers)	100	100	
-Public Information Officer	50	25	$ -
Individual and team background, training an licensure tracking			
Does the team maintain a record of all team training conducted including attendance?	25	17	$ 83.00
Does the team maintain a training record on each individual	25	17	$ 83.00
Does the team maintain a photo copy of current team members certifications and licenses?	100	100	
Has the team reviewed its team member certifications and licenses reviewed in the past year?	100	100	
Training Program Structure			
Does the training program include all NDMS Core Training Modules every 24 months?	50	33	$ 33.00
Does the training program include objectives for online training completion?	50	50	
Does the training program include objectives for didactic training?	50	25	$ 50.00
Does the training program incorporate the NDMS field training curriculum?	25	9	$ 33.00

| Self Assessment Criteria	Max Score	Compliance Score	Cost to Fix
Does the team provide or arrange training and protocols for skills not typically practiced in daily work?	100	33	$ 830.00
Does the team provide position specific individual trading plans for each team member?	25	9	$ 83.00
Operations Sector - Training Readiness			
Self Assessment Criteria	***Max Score***	***Compliance Score***	***Cost to Fix***
Training Program Effectiveness			
Has the team provided an annual report to NDMS of the effectiveness and participation level of the prior years training program that includes the following?			
-The % of team's didactic training completed by each team member?	50	25	$ -
-The % of NDMS Core online training program completed by each team member?	50	25	$ -
Did at least 50% of the team complete the didactic training required by the team in the past year?	100	50	$ -
	1600	1218	$ 1,195.00
Operations Sector: T-Readiness Score	76%		
Enter Operations Sector T Readiness Score here	0.76		

Operations Sector - Supply Readiness			
Self Assessment Criteria	**Max Score**	**Compliance Score**	**Cost to Fix**
Basic load inventory and maintenance tracking			
Has the team submitted an inventory of all federally issued or owned property within the last year?	100	0	$ 83.00
Does the team maintain an electronic inventory of all federal and non federal property (separately)	100	66	$ 166.00
Is there a shelf life maintenance plan in place for consumables?	100	0	$ 166.00
Logistics Assessment			
Does the team store its cache in an adequately temperature-controlled area?	100	0	$ 2,666.00
Minimum equipment and supplies			
Does the team possess the items listed in the current version of the NDMS issued basic load?	100	0	$ -
	500	66	$ -
Operations Sector: S Readiness Score	13%		$ 3,081.00
Enter Operations Sector S Readiness Score here	0.13		

Operations Sector - Equipment Readiness			
Self Assessment Criteria	*Max Score*	*Compliance Score*	*Cost to Fix*
Basic load inventory and maintenance tracking			
Has the team submitted an inventory of all federally issued or owned property within the last year?	100	0	$ -
Does the team maintain an electronic inventory of all federal and non federal property (separately)?	100	66	$ -
Does the team have a written preventative maintenance program in place?	100	0	$ 166.00
Does the team maintain an equipment deficiency log?	100	66	$ -
Logistics Assessment			
Does the team store its cache in an adequately temperature-controlled area?	100	0	$ -
Minimum Equipment and Supplies			
Does the team possess the items listed in the current version of the NDMS issued basic load?	100	0	$ 50.00
	600	132	$ 216.00
Operations Sector: E Readiness Score	22%		
Enter Operations Sector E Readiness Score here	0.22		

Note: Max Score column represents the weighted value as taken from the STEP—RAC which was developed by a subject matter expert working group. The compliance score represents the degree of compliance with the Max Score. The Sector Readiness Scores represent the overall percentage of compliance with the Max Score.

APPENDIX E. FAULT TREE WITH PROBABILITY OF SECTOR FAILURE AND COST ESTIMATES

Mission Failure
Probability
100%

OR

P = Personnel
T = Training
S = Supplies
E = Equipment

Mobility Sector
Prob. Sector Failure
99%

Self Sufficiency
Prob. Sector Failure
98%

Operations Sector
Prob. Sector Failure
98%

OR

OR

OR

P	T	S	E
36%	26%	88%	81%
$70.5 K	$21.5 K	$11.5 K	$150.2 K

P	T	S	E
12%	24%	87%	87%
$19 K	$1.2 K	$3.1 K	$0.2 K

P	T	S	E
13%	25%	87%	78%
$19 K	$1.2 K	$3.1 K	$0.2 K
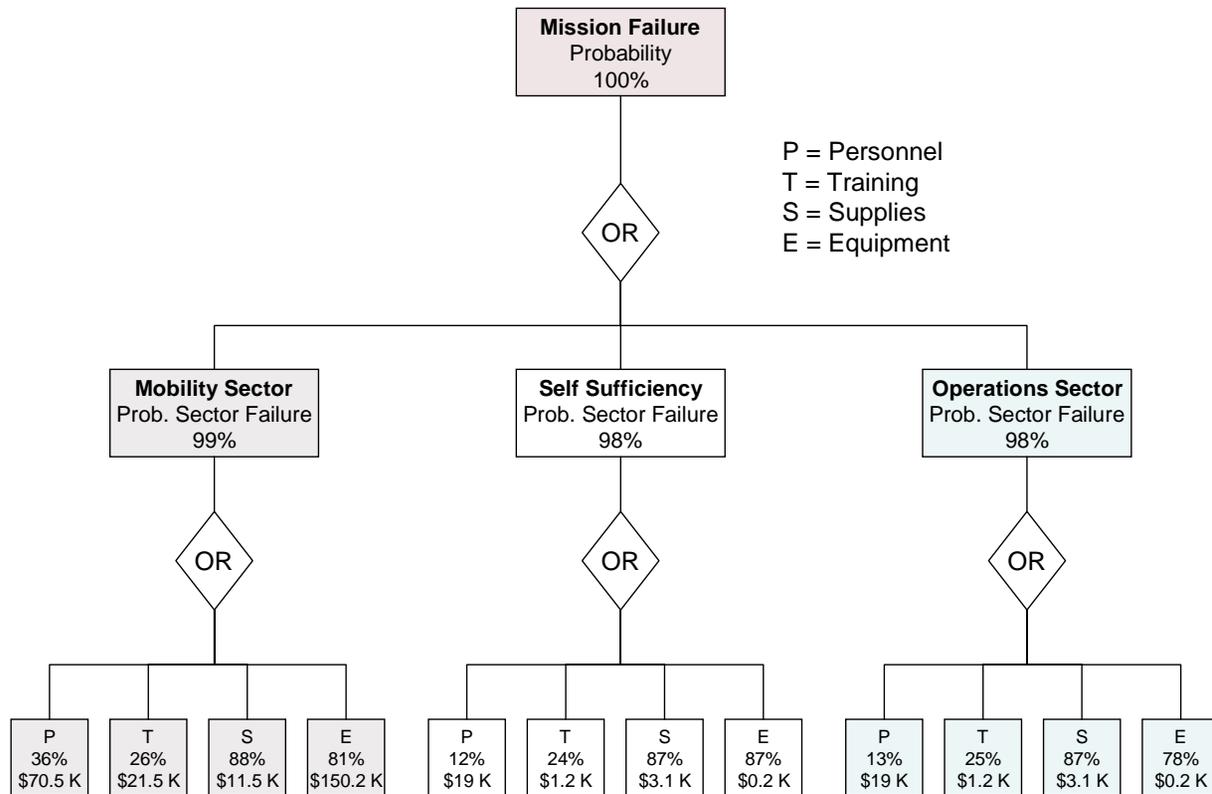
Cost information is the total cost
to eliminate the vulnerability

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APPENDIX F.   RESOURCE ALLOCATION ANALYSIS

The following table shows the effect of using the apportioned and optimal budgeting strategies.

Mobility Sector				
Resource Component	Probability to cause sector failure	*Apportioned Budget Strategy* Amount by which the reduces probability of sector failure	*Apportioned Budget Strategy* Amount of available funds which should be dedicated to decrease the vulnerability	*Optimal Budget Strategy* Amount by which the reduces probability of sector failure	*Optimal Budget Strategy* Amount of available funds which should be dedicated to decrease the vulnerability
Personnel	36%	36%	None	36%	$2.5 K
Training	26%	22%	$2.9 K	21%	$4.5K
Supplies	88%	56%	$4.2K	0%	$11.5K
Equipment	81%	74%	$22.6K	80%	$2.0K
		Reduces Mobility Sector Vulnerability by 5% **Mobility Sector Vulnerability: 94%**		Reduces Mobility Sector vulnerability by 9% **Mobility Sector Vulnerability: 90%**	

	Self Sufficiency Sector				
Personnel	12%	12%	None	12%	None
Training	24%	15%	$0.4K	0%	$2.0K
Supplies	87%	55%	$0.4K	0%	$2.0K
Equipment	87%	55%	$1.1K	0%	$2.0K
		Reduces Self Sufficiency Sector Vulnerability by 14% **Self Sufficiency Sector Vulnerability: 84%**		Reduces Self Sufficiency Sector vulnerability by 86% **Self Sufficiency Sector Vulnerability: 12%**	
	Operations Sector				
Personnel	13%	13%	None	13%	None
Training	25%	16%	$0.4	0%	$2.0K
Supplies	87%	55%	$1.1K	0%	$3.5K
Equipment	78%	49%	$0.7K	0%	$1.0K
		Reduces Operations Sector Vulnerability by 15% **Operations Sector Vulnerability: 83%**		Reduces Operations Sector Vulnerability by 83% **Operations Sector Vulnerability: 13%**	

If the apportioned budgeting strategy is followed, funds should be obligated to the STEP resource categories as follows:

Personnel	None
Training	$3.78 K
Supplies	$6.43 K
Equipment	$24 K

Probability of Mission Failure: Apportioned Budget Strategy—100%

If the optimal budgeting strategy is followed, funds should be obligated to the STEP resource categories as follows:

Personnel	$2.5 K
Training	$8.5 K
Supplies	$18.5 K
Equipment	$3.5 K

Probability of Mission Failure: Optimal Budget Strategy—92%

If the ranked allocation strategy is followed, 100% of the available funds would be spent on equipment.

Probability of Mission Failure: Ranked Allocation Strategy—100%

If the manual allocation strategy is followed, funding will be at the sole discretion of the unit commander.

Probability of Mission Failure: Manual Allocation Strategy—Unable to calculate.

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