System Dynamics Model (SDM) for the National Guard Chemical, Biological, Radiological, Nuclear, High-Explosive (CBRNE) Enhanced Response Force Package (CERFP)

Mr. Marc Alderman and Mr. James Engoglia

From June through October 2008 the National Guard Bureau (NGB) –J8 conducted a capability based assessment (CBA) to determine National Guard (NG) capability gaps for Defense Support to Civil Authorities (DSCA). A major DCSA mission that the NGB Capability Assessment and Development Process (CADP) focused on was Chemical, Biological, Radiological, Nuclear, and high-Explosive Consequence Management (CBRNE CM) response. As expected, the most difficult portion of the CBA was defining and quantifying the gap in NG specialized CBRNE CM capabilities (CERFPs). Initially, NGB developed a simple allocation model that captured the total number of CERFPs employed based on subject matter expertise. However, NGB-J8 developed a more objectively quantifiable model that would systemically document and consistently apply assumptions. Repeatability was essential to defining and quantifying NGB CBRNE CM capability gaps. NGB-J8 determined a System Dynamics Model would be the best approach for developing this model.

To conduct this CBA, the NGB-J8 developed and led the implementation of the NGB CADP. The NGB CADP provided an analytical framework to systemically and comprehensively evaluate existing DSCA policies, capabilities, identify capability shortfalls, and understand capability interdependencies. Additionally, it provided a means to gain consensus with other DSCA stakeholders on the prioritization and on the way-ahead for providing solutions for NG DSCA capability gaps.

CADP Methodology. In 2003, the Joint Staff began using the Joint Capabilities Integration and Development System (JCIDS) to rectify the deficiencies of the previous Requirements Generation System (RGS). The JCIDS process is intended to deliver capabilities necessary to perform across the range of military operations and challenges using a top-down approach. The CBA portion of the JCIDS process utilizes joint concepts and integrated architectures to identify capability gaps and potential solutions. The JCIDS CBA process is composed of three distinct elements with successive dependent deliverables. The NG CADP was modeled after the JCIDS CBA process, but it tailored the process to conform to NGB time and resource constraints (Figure 1).

a. NG CADP. The NG CADP is a four phased process. These four phases incorporate the major elements of a CBA outlined in CJCSM 3170.01C: a Functional Needs Analysis (FAA), Functional Needs Analysis (FNA), Capability Gap Assessment and Prioritization, and a Functional Solution Analysis (FSA) for specific high priority capability gaps.

(1) Phase I, Capability Based Assessment: During Phase I, the NGB used a seminar wargame methodology to conduct a NG DSCA Functional Area Analysis (FAA) and a Functional Needs Analysis (FNA) that produced a list of joint NG capability gaps. The seminar wargames were organized around Federal Emergency Management Agency (FEMA) regions. Three of four (4) National Planning System (NPS) Scenarios were used at each seminar wargame: a 10 kiloton nuclear detonation (10KT); pandemic influenza (PI); earthquake (EQ)

Hurricane scenarios. All wargames included the 10KT NUCDET and PI – the third scenario EQ or Hurricane was determined based on relative regional probability of occurrence. A major event list was developed for each scenario with corresponding NG tasks (with appropriate conditions and standards) developed from other CBAs (such as the Weapons of Mass Destruction Consequence Management CBA), Combatant Commander Contingency Plans (CONPLANs) or state plans. During the wargame, state NG and Emergency Management (EM) participants determined what type and number of NG forces was applied to the specific tasks using a NGB-J8 developed allocation model. The allocation model assisted in capturing and documenting level and sufficiency of available NG forces, where NG lacks the appropriate force, or an alternate capability. However, it was the SDM that was used to define and quantify the capability gaps for the CERFPs.

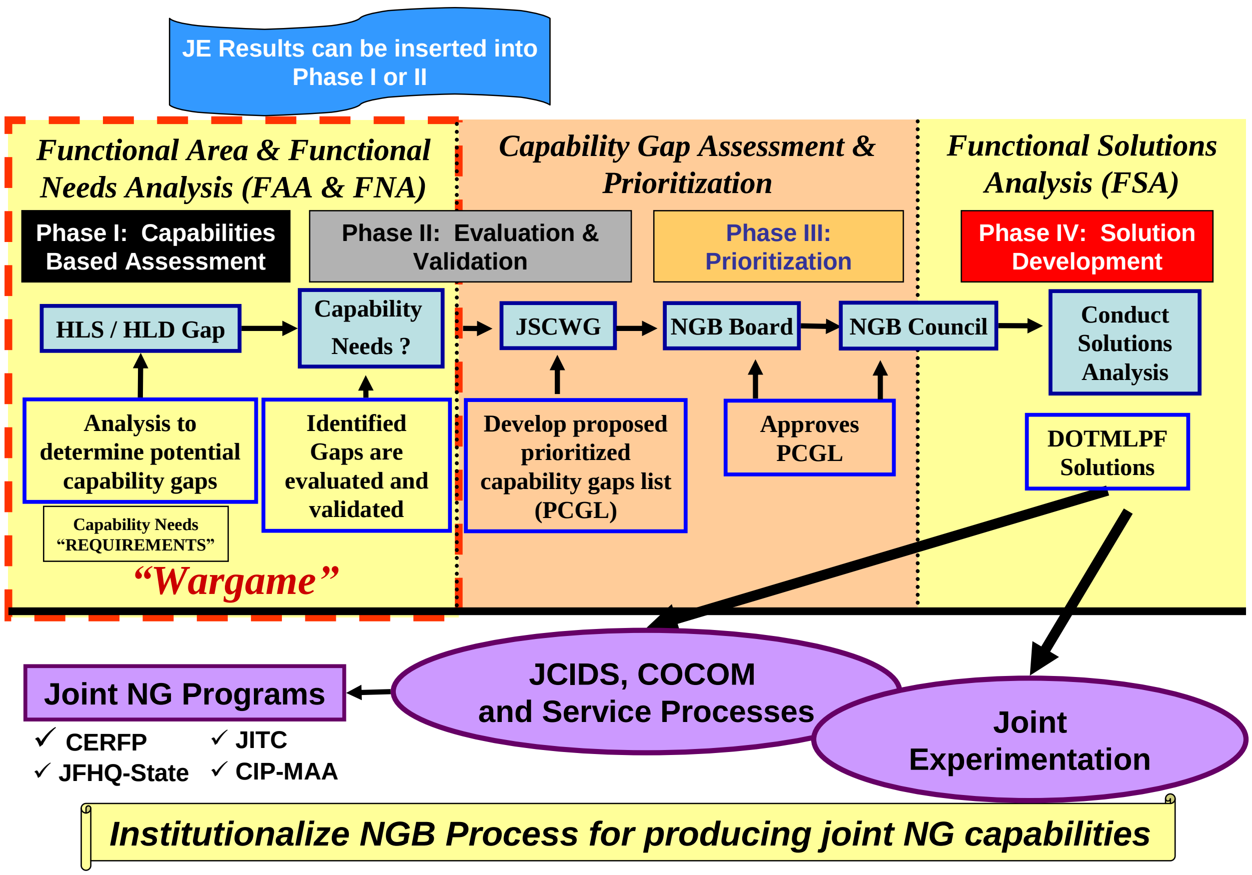


Figure 1. NGB Capabilities Assessment and Development Process

(2) Phase II, Evaluation and Validation: the NGB reviewed and validated NG capability gaps. This was accomplished through the standard NGB staffing process, and was expanded to include participating state NG JFHQs, and other participating DoD Components and federal agencies. The final source for validation of capability gaps within the NGB, was the NGB-J3.

(3) Phase III, Prioritization: Once the capability gaps were validated, the NGB prioritized gaps and produced a Prioritized Capability Gaps List (PCGL) that was presented to the NG Council (CNGB and the Directors of the Army and Air National Guard) for approval. The

Chief, NGB approved the capability gaps for which the NGB would conduct functional solutions analyses.

(4) Phase IV, Solution Development: The NGB-J8 identified NGB Directorates that were responsible for conducting Functional Solutions Analysis (FSA) for the capability gaps approved by the NG Council in Phase III. NGB-J8 assisted designated NGB Directorates in conducting the FSA and developing the appropriate documentation for either joint or Service follow-on capability/requirement processes or Joint or Service Experimentation processes if further refinement was necessary to develop a coherent solution.

b. Wargame Participation. The major participants during the wargame were NG representatives from the JFHQ-State J3/5/6, planners from the state Emergency Management Offices, and the NGB staff subject matter experts. Additionally, NGB-J8 coordinated for the participation from FEMA, Department of Health and Human Services, Office of the Assistant Secretary of Defense for Homeland Defense and Americas Security Affairs (OASD HD&ASA), United States Northern Command, and the Chemical Biological, Radiological and Nuclear Joint Requirements Office (JRO).

c. Timeline. NGB conducted four regional Wargames in FY 08 (May, July, August and September.

(1) FEMA Region III (Virginia, Maryland, Delaware, Pennsylvania, West Virginia and Washington DC NG): 2-6 Jun 08, NGB will host wargame in the National Capitol Region.

(2) FEMA Region IV (Kentucky, Tennessee, Mississippi, Alabama, Florida, Georgia, South Carolina, and North Carolina): 14-19 Jul 08.

(3) FEMA Region VII (Nebraska, Kansas, Missouri, and Iowa): 11-15 Au 08.

(4) FEMA Region X (Alaska, Washington, Oregon and Idaho): 8-12 Sep 08.

d. NGB CADP Purpose: Define NG HD / CS capability needs, identify capability gaps and excess overlaps in capabilities, and recommend approaches which will lead to non-materiel and materiel solutions.

e. NGB CADP Objectives.

(1) In concert with state NG mission partners, develop assumptions defining state roles and capabilities as well as projected levels of effort from those organizations potentially contributing to HD and CS.

(2) Systematically evaluate programmed NG HD and CS Capabilities.

(3) Prioritize projected capability shortfalls and recommend to CNGB approaches for developing FSAs.

f. Study Plan Analysis: War game participants used the NGB-J8 developed Access based *National Guard Force Allocation Model* to assign and track organizational assignment.

(1) The allocation model recorded organizational (unit) availability, response times, proficiency level and sufficiency of NG forces selected to meet a task for an event. If a primary organization (unit) was not available to meet a task, the allocation model allowed selection of a substitute unit. In cases where the substitute could not perform the task at the same level of proficiency as the primary unit, the allocation model recorded the level of degradation. Assignment of all units was based on the assumption that the organization's ability to perform the mission (readiness) was sufficient.

(2) Analytical assessment and capability needs gap development was based on the recorded force related and non-force related attributes captured during the war game scenarios. Data recorded from all war game scenarios were consolidated in a relational database to readily create data sets for analysis. Given variance of each data set, hypotheses of casual relationships were made together with selecting the statistical distribution that best fit each data set.

(3) Defining Force Related Gaps: During the wargame, it was assumed that NG forces are at 100% readiness in personnel and equipment and that NG forces were not impacted by the event (except the attrition of the District of Columbia NG in the 10KT). Therefore, initial analysis of data focused on establishing appropriate readiness and force attrition assumptions and applying those to data to develop more realistic NG force requirements. Additionally, data analysis refined force data based on assessment of availability, timeliness, organization's (unit) proficiency/suitability and sustainability.

(4) Non-Force related gaps such as information sharing (common operating picture, collaborative tools) enhancing partnership capabilities, and training data were captured during the wargame and assessed.

(5) Once NGB-J8 completed the initial Force and non-Force capability gap analyses, sensitivity analyses were performed to determine the sensitivity of results to changes in initial and follow-on assumptions and conditions.

(6) Following the sensitivity analyses, the NGB-J8 applied conditional probability techniques: qualitative evaluation of probable risks based on the sequence and combination of tasks and the respective capability to meet each task; and quantitative evaluation of frequency of tasks and respective capabilities used and the likelihood of mission failure to assist in prioritizing gaps- producing a draft PCGL.

(7) After the CNGB validated the PCGL; data was used to assist in defining solutions through doctrine, organization, training, materiel, leadership, personnel and facility recommendations (DOMTLPF) to form the foundation for FSA development..

g. Functions. The NG analysis integrated a number of on-going DoD analytical efforts and assisted in refining NG roles and functions in HD and CS and how these roles, plans and procedures relate to state Emergency Management roles and functions.

h. NG CBRNE CM Analysis.

(1) The Problem. The CADP Study Plan assumed that the SME from the JFHQ-States, the State EMO, and other federal agencies would be able to define the requirement for NG capabilities and therefore the allocation model would provide sufficient fidelity in capturing the total NG capabilities to perform specific missions. For the majority of NG missions, the SME had sufficient historical and personal experience to accurately define the capability requirements. However, for CBRNE CM response for the 10KTs scenario, the magnitude of the event and the lack of objective data on existing state capabilities to perform and sustain: detection and characterization of threat; urban search and rescue in a contaminated environment; mass decontamination; and medical triage and stabilization resulted in an inability to objectively "define NG CBRNE CM requirements." As result, the allocation of NG CBRNE CM capabilities (NG Civil Support Teams and CERFPs) was initially based on time and distance (eg: how many CSTs and CERFPs could be expected to arrive in the incident area within 96 hours). NGB-J8 determined it needed a more objective assessment of NG CBRNE CM capability requirements, specifically for urban search and rescue in a contaminated environment; mass decontamination; and medical triage and stabilization or more specifically, NGB-J8 wanted to objectively answer the question – how many CERFPs does the NG need to mitigate the impact of a catastrophic CBRNE event.

(2) To objectively answer this question, NGB-J8 required: (1) more detailed knowledge of existing state and federal capability to perform urban search and rescue in a contaminated environment; mass decontamination; and medical triage and stabilization at an incident site; and (2) a means to accurately model the integration of state, federal and NG capabilities to determine sufficiency. One was relatively easy to accomplish, NGB-J8 sent out a team to collect data on existing state CBRNE CM capabilities and recorded through-put and sustainment data for Washington DC, Atlanta, Kansas City, Salt Lake City, and Seattle. Two was accomplished by developing an SDM for urban search and rescue in a contaminated environment; mass decontamination; and medical triage and stabilization.

CERFP(s). The following information on the CERFP mission and task organization will assist in understanding the framework for developing the SDM.

a. Mission: The NG CERFP, on order, will respond to a Chemical, Biological, Radiological, Nuclear, or high yield Explosive (CBRNE) incident and support local, state, and federal agencies managing the consequences of the event by providing capabilities to conduct casualty/patient decontamination, medical support, and casualty search and extraction.

b. Task Organization (Figure 3).

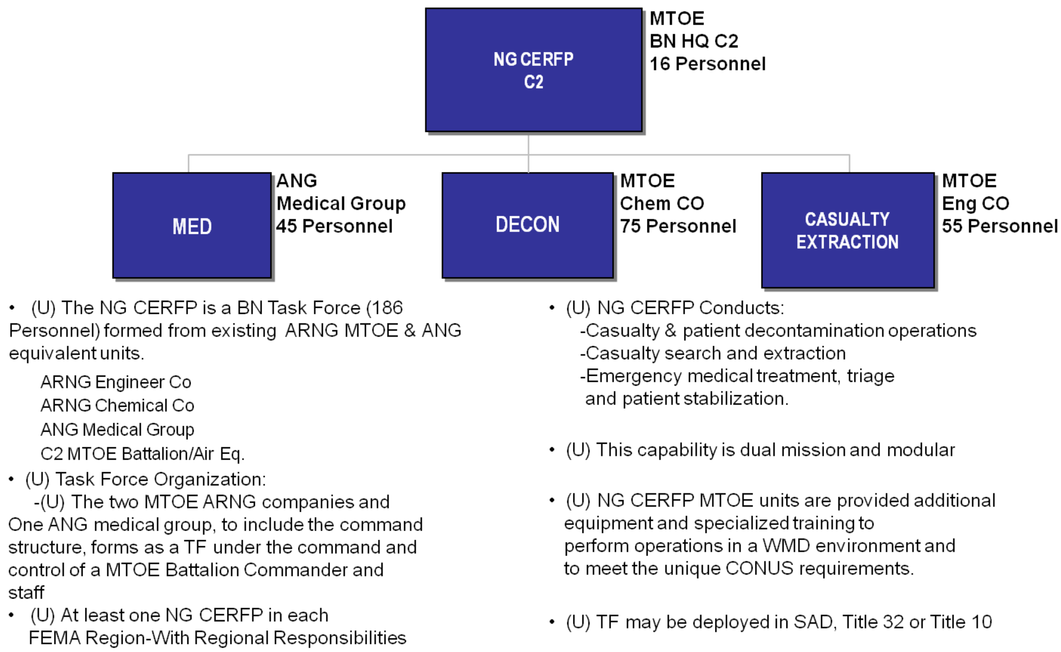


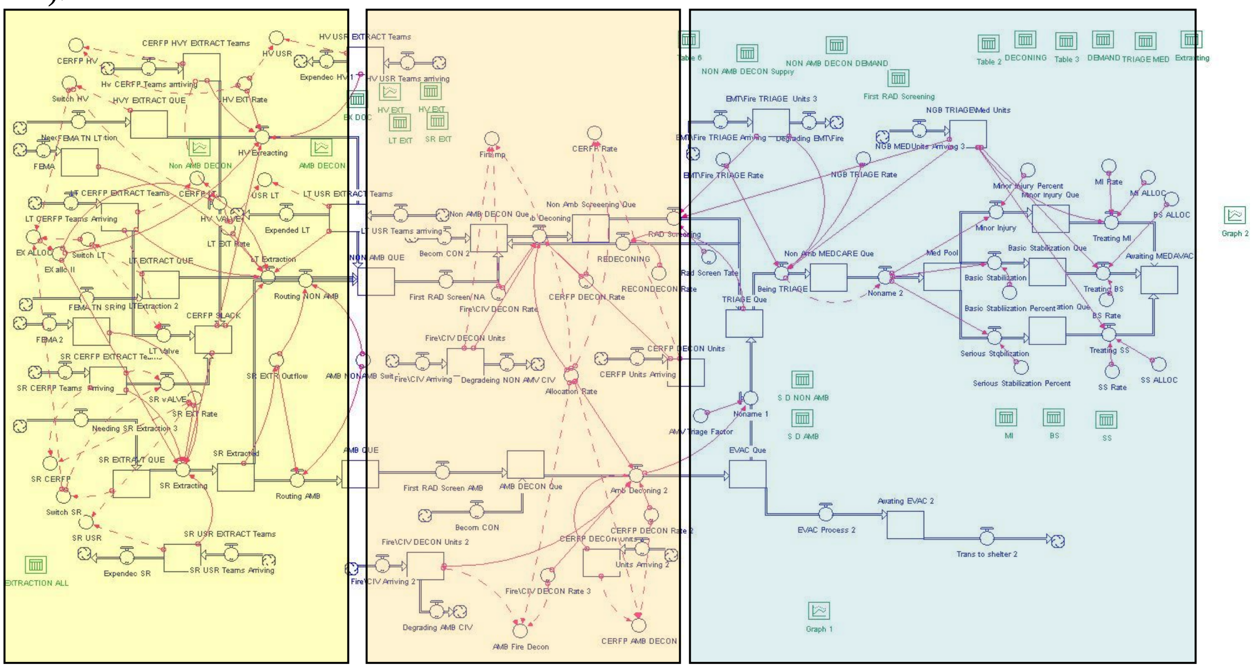
Figure 3: CERFP Task Organization.

The SDM. Purpose of building model: A model was required to identify and measure NGB civil support capability gaps related to the operational requirements of extraction, ambulatory or non-ambulatory decontamination (DECON), and triage/medical stabilization in respond to a 10K explosion over a 96 hour period. A dynamic modeling approach was selected given that the set of Extraction, DECON, and Triage/Medical stabilization requirements are sequentially generated over time and first responder, FEMA, and NG resources to address the requirements arrive and degrade over time. The availability of training for IThink was primary reason this specific software was selected to construct the dynamic model.

a. Role of Subject Matter Experts. SME were employed thought the CADP process. The key players that assigned units to tasks to achieve capabilities were SMEs from Air and Army NG operation personal, state emergency management advisors, FEMA, and first responders. First responder, state emergency manager advisors, and NGB medical SMEs were the primary source of capability metrics when none previously existed and their expertise was used to perfect existing metrics.

b. Model Development. Model was developed as an iterative process. Capability work flows for extraction, DECON, and Triage/Medical stabilization were first modeled as independent entities. For each civil support requirement, SMEs first identified each key requirement variable and the key resource variables necessary to control requirement amounts. Refinement of model variables started with a series of war-games and were subsequently improved by input from state, local emergency management experts and NGB functional experts. This iterative process was used in constructing models tailored for all four FEMA regions evaluated.

c. Major Model Components. Model consists of a set of three sequential capability work flows that represent a civil support response to a 10Kt nuclear explosion over a 96 hour time period. The sequential work flows are Extraction, DECON, and Triage/Medical stabilization (Figure 4A).



EXTRACTION DECONTAMINATION TRIAGE AND STABLIZATION

Figure 4A: Major Model Components

d. Key Variables of Model Components. The basic building block of each capability work flow is an external resource template that consists of two components. The first is a requirement component that is modeled by a flow that fills the requirement stock and a flow that drains the requirement stock into a subsequent requirement stock that serves a queue for the next workflow process.

(1) The rate of flow out of the requirement stock is computed by the second resource or capability component. The capability component is modeled by a resource stock and rate converter (Or set of resource stocks and rate converters). The resource stock has an input flow that models the quantity of resources arriving over time and an out flow that models the degradation of available resources over time due to exhaustion.

(2) The quantity of resources in the resource stock and the respective processing rate stored in converter are transmitted to each requirements flow by two action connectors. The transmission of this information enables the requirement flow to compute the amount of requirements processed per time period (quantity of resources times processing rate). The first requirements queue is drained by this amount and the next requirement queue is filled by this amount (Figure 4B).

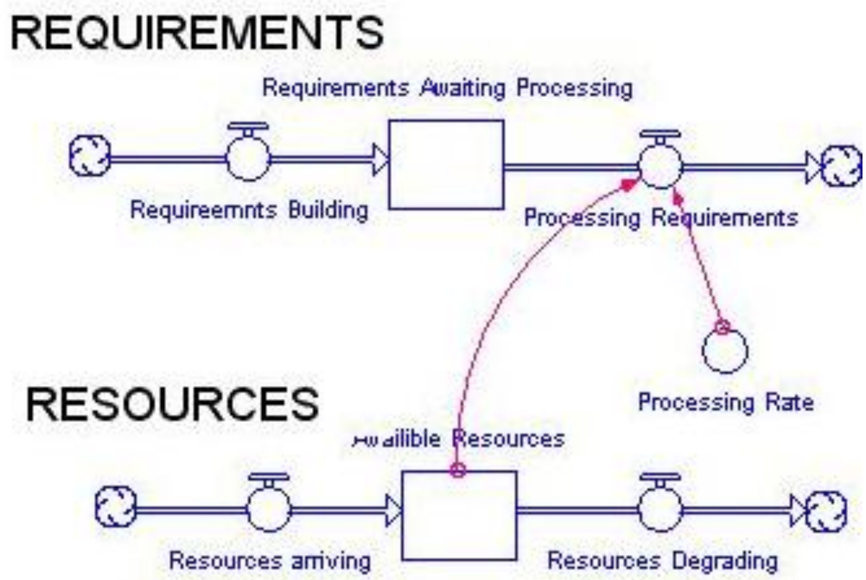


Figure 4B: External Resource Template

e. Extraction Capability Work Flow. Extraction requirement component is modeled by using a separate inflow, requirement stock and outflow for each extraction category. Each requirement stock is filled by an inflow that uses a single pulse expression to load the quantity of people that require a specific type of extraction. The source of data for extraction requirements was estimated from a DTRA model or from data from National Planning Scenario 1 (NPS 1) that generated the consequences of the 10KT explosion.

(1) Each requirement stock is drained by an outflow that represents the level of capability to extract a number of people per time period. This requirement stock outflow is regulated by the aggregate resources available to conduct each type of extraction and the productive rate of each resource. Resources are the various types of extraction teams that first responders, NGB CERFPs, and FEMA can provide over time. Given that first responders, NGB CERFPs, and FEMA teams possess different extraction abilities and endurance, their resource contribution to each type of extraction is distinctly modeled. The model is configured by an inflow to a resource stock and an outflow out of the stock along with a converter containing the processing rate of the type team.

(2) The flow into the stock uses a graph function to identify the arrival of the number of type extraction teams by time period. The flow out of the stock uses a graph function to model degradation of available type teams due to exhaustion.

(3) The summation of the product of quantity of resources in each resource stock and the respective processing rate stored in the converter for each extraction mission are transmitted by connectors to the respective out flow of each extraction requirements. The transmission of this

information enables the capability flow to compute the amount of requirements processed per time period (summation of quantity of resources times respective processing rate).

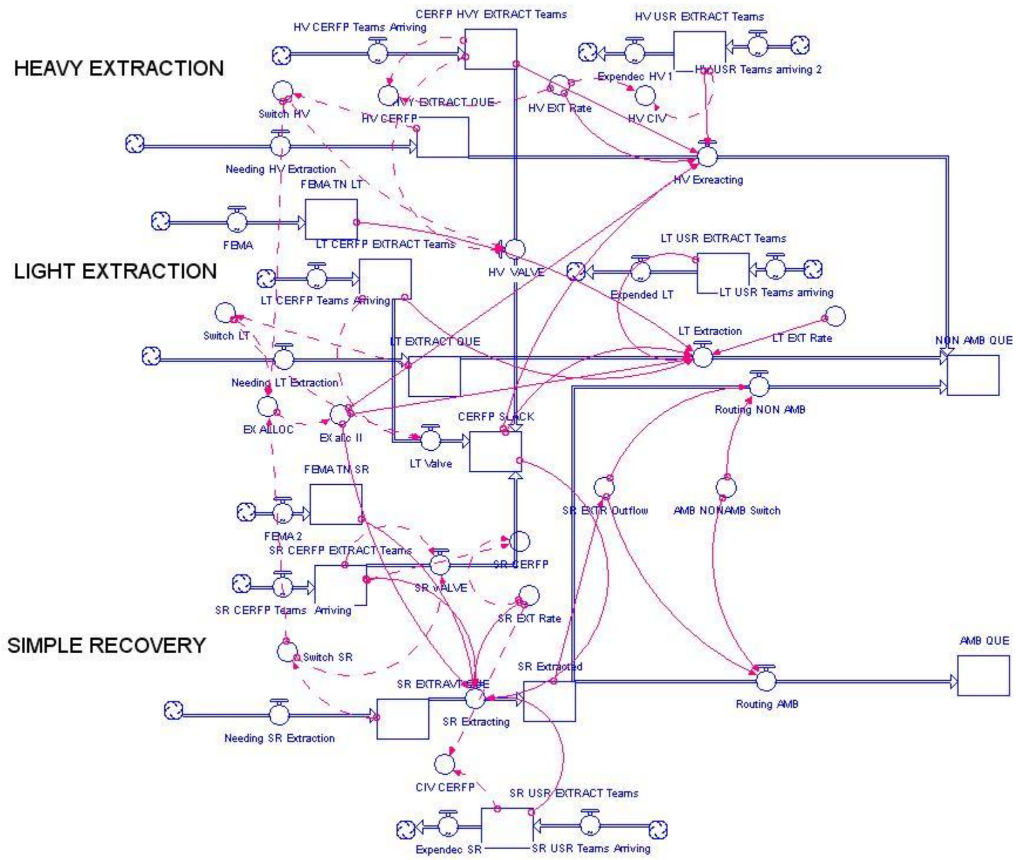


Figure 4C: Extraction Work Flow

(4) Given that initially assigned resources for each extraction requirement may complete its mission before the 96 hour time period, a set of converter employ a logic set to transfer those resources from the completed mission to an active extraction mission. The converter logic tests when the back log for an extraction mission is zero and transfers extraction teams dedicated to that mission to the two remaining mission and when second mission is complete then transferred to the sole remaining mission (Figure 4C).

f. DECON Capability Work Flow. The outflows of each extraction requirement became the inflows to an ambulatory or non-ambulatory requirement stocks/queues. SMEs provided the logic, embedded in a converter, to allocate the proportion of the three extraction outflows to a particular ambulatory or non-ambulatory DECON stock.

(1) The requirement work flow for ambulatory or non-ambulatory DECON is modeled in the same manner as the extraction requirement workflow.

(2) There is a requirement component that is modeled by flows that fills each DECON requirement stock and there is resource component that determines the processing amount of the outflow that drains the requirement stock into subsequent requirement stocks. Extraction requirement outflows are only one source of inflow to the ambulatory or non-ambulatory requirement stocks/queues. There are other people needing ambulatory or non-ambulatory DECON over the 96 hour timeframe.

(3) These additional ambulatory or non-ambulatory DECON requirements are modeled by an independent inflow to the respective DECON requirement stock. Each inflow uses a graph function to model the number of people over time requiring each type of DECON. Again, the source of data for DECON requirements was obtained from a DTRA model that generated the consequences of the 10KT explosion.

(4) The resource component is comprised of first responders and NGB CERFPs DECON units. As the case with extraction teams, first responders and NGB CERFPs possess different DECON abilities and endurance times. Thus their resource contribution to each type of DECON is distinctly modeled. For each, the model uses the same configuration of an inflow to a resource stock and an outflow from the stock along with a converter containing the processing rate of the unit. The flow into the stock uses a graph function to identify the arrival of the number of type DECON teams by time period.
The flow out of the stock uses a graph function to model degradation of available type teams due to exhaustion.

(5) The summation of the product of quantity of resources in each resource stock and the respective processing rated stored in converter for each DECON requirement are transmitted by connectors to the respective out flow of ambulatory or non-ambulatory DECON requirements. The transmission of this information enables the capability flow to compute the amount of DECON requirements processed per time period (summation of quantity of resources times respective processing rate). Given the demand for ambulatory or non-ambulatory requirements exceeded available resource capabilities there was no need to model the transfer of resources (Figure 4D).

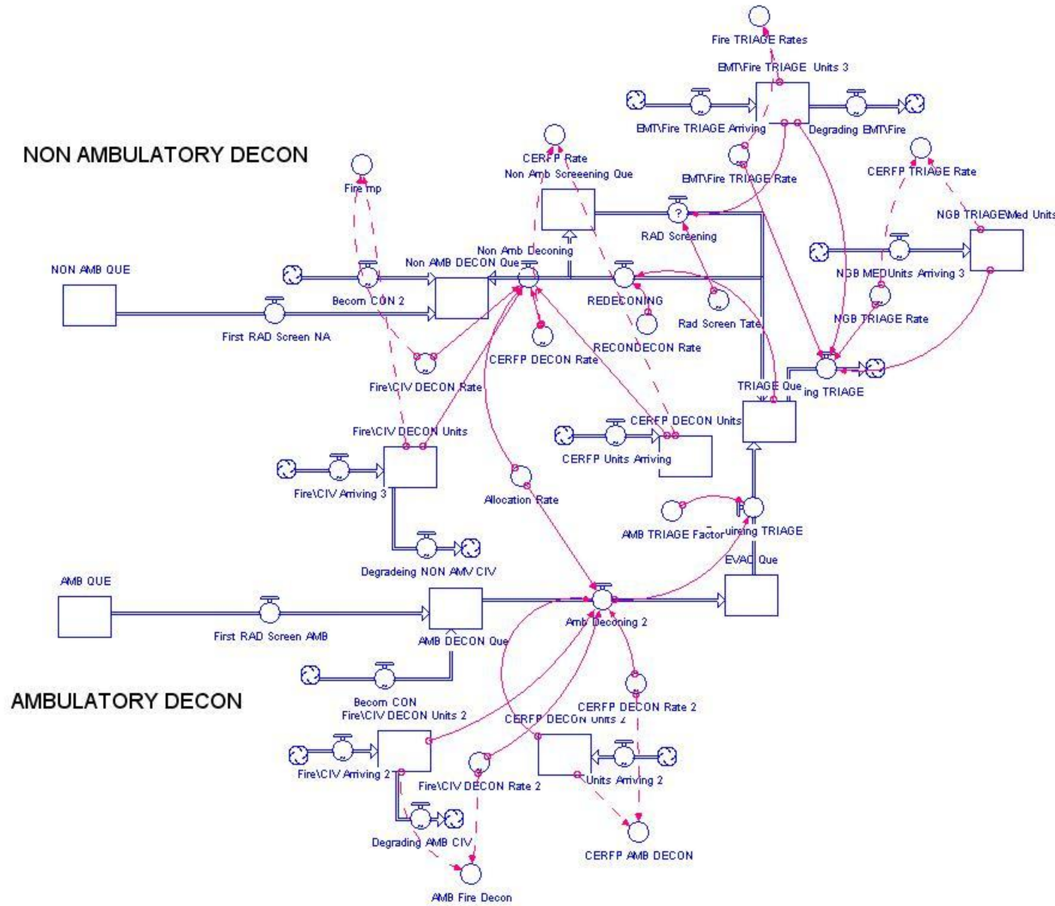


Figure 4D: Decon Work Flow

f. Triage/Medical Stabilization and Evacuation Capability Work Flow. The outflows of each DECON requirement became the inflows to either the Triage/Medical Stabilization stock/queue or Evacuation stocks/queues.

(1) All non-ambulatory flows were directed to Triage/Medical Stabilization stock/queue. SMEs provided the logic, embedded in a converter, to transfer a portion of assumed well from the ambulatory flow to the not well of Triage/Medical Stabilization stock/queue.

(2) From the Triage/Medical Stabilization stock/queue, there are three sub-requirements that consist of Major Injury, Basic Stabilization, and Serious Stabilization. The percentage flows to each of these medical requirement stocks was made by a team of Medical SMEs and their judgment was modeled in a set of converter that applied the expected percentage to the stock/queue of Triage/Medical Stabilization.

(3) Only NGB medical resources were modeled for this set of requirement since our study was unable to obtain the metrics of the local area contributing medical resources. The requirement work flow for Major Injury, Basic Stabilization, and Serious Stabilization is again modeled in the same manner as the DECON and Extraction requirement workflow.

(4) There is a requirement component that is modeled by flows that fills each Major Injury, Basic Stabilization, and Serious Stabilization requirement stock and there is a NGB CERFP resource component that determines the processing amount of outflow that drains the requirement stock into subsequent MEDAVAC requirement stock of awaiting ground or air evacuation. The NGB CERFP resource contribution to each type of Major Injury, Basic Stabilization, and Serious Stabilization DECON is distinctly modeled. The flow into the stock uses a graph function to identify the arrival of the number of type NG Medical CERFP teams by time period.

(5) For each, the model uses two CERFP teams as an inflow to a resource stock that can operate 24/7 that eliminates any outflow from the resource stock. A converter containing the processing rate of each Major Injury, Basic Stabilization, and Serious Stabilization element is employed to model the processing amount for each requirement stock,

(6) The scope of modeling ended when the assumed well flowed into evacuation/transfer to shelter stock or the not well were transferred to evacuation stock/queue. Other government agencies are also responsible for the non-ambulatory/not well evacuation mission (Figure 4E).

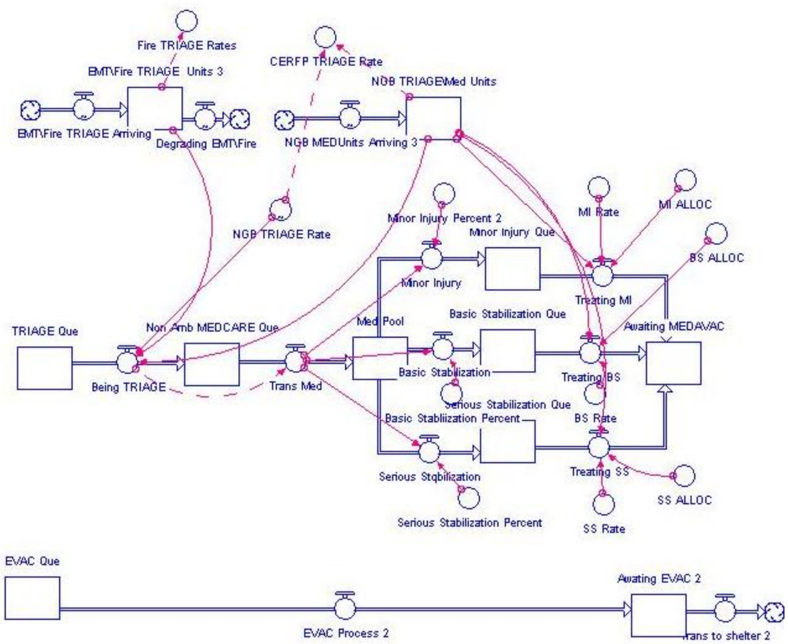


Figure 4E: Medical Triage/Stabilization Work Flow

g. Model Validation. The Civil Support Analytical Baseline study was used as a frame of reference to validate the output of the dynamic model. This study was conducted by the Simulation and Analysis Center Office of the Secretary of Defense, Capability Assessment and Program Evaluation (OSD CAPE) to determine the sufficiency of DoD support to civil authorities during large catastrophic events in CONUS. Validation consisted of comparing operating assumptions and resulting backlog over time for the capabilities of extraction, DECON, and Triage/Medical Stabilization. The Equation tab of iThink was provided to OSD

CAPE analysts allowing direct comparison of the model's operating assumptions and productions rates to the OSD CAPE model/methodology. Both analytic efforts used the same 10Kt Security Council's National Planning Scenario (NPS) and DTRA models to determine extraction, DECON, and Triage/Medical requirements. Though the NGB analysis considered requirements of casualties resulting in a 10Kt explosion in FEMA region III, IV, VII, and X, the validation only considered the same casualties in FEMA region III (the scope of OSD CAPE study).

h. Differences in Model Assumptions and Subsequent Computations.

(1) Timeline – OSD CAPE used a 120 hour time period while NGB used a 96 hour time period. NGB model did not include Title 10 capabilities arriving after 96 hours.
Force structure - OSD CAPE model used the force structure in the Homeland Defense Multi-Service Force Deployment (MSFD) annex, while the NGB used a force structure derived from a set of war-games conducted in four FEMA regions. Thus the OSD CAPE study understated NGB capabilities to address requirements.

(2) Production rates – Both models shared the same production rates. Key difference was that the OSD CAPE model used higher DECON rates for first responders than the NGB model.
Burnout – The OSD CAPE model assumed arriving capabilities would operate 24/7 over 120 hours with no degradation of efficiency. The NGB model applied burnout rates to arriving capabilities.
Closure rates – Both models considered capability arrival times to address requirements. NGB capabilities arrived more timely in the NGB model than the OSD CAPE model.

(3) Causal relationships between Extraction, DECON, and Triage/Medical stabilization requirements and capabilities. - The OSD CAPE model computed Extraction, DECON, and Triage/Medical stabilization requirements and capabilities as activities independent of each other over time. The NGB dynamic model computed Triage/Medical stabilization requirements and capabilities as function of DECON requirements and capabilities and DECON requirements and capabilities were a function of in part of Extraction requirements and capabilities. More over the NGB dynamic model considered a percentage of ambulatory DECON requiring additional DECON processing as well as reassign percentage of ambulatory DECON personnel as non ambulatory patients requiring Medical stabilization.

i. Results of Validation - OSD CAPE gave a qualified approval of results of the NGB model and consented with the underline assumptions and rates contributing to the results. OSD CAPE took issue with the NGB conclusion there was no capability gap for extraction requirements. Both analytic efforts concluded there are significant capability gaps in DECON and Triage/Medical stabilization capabilities.

j. Lessons Learned. Data availability was a primary constraint in model development. SMEs identified causal and effect variables that would add to the models utility but were not included due to lack of reliable information to quantify the variables. For example, there should be a correlation between the length of time that a person is extracted, decontaminated or received medical stabilization and the probability of surviving. If we could model this relationship we could present the consequences of not performing a particular function in a certain time period. However due to a lack of data to quantify the relationships this attribute was not modeled.

7. Conclusions. The CBRNE CM SDM provided an objective means of determining the overall requirement for urban search and rescue, mass decontamination and medical triage capability in a catastrophic CBRNE event and therefore, allowed an objective assessment of the gap in NG CBRNE CM capabilities (Figure 5).

- SEARCH AND EXTRACTION
- **-- Avg Demand: 53,182**
- **-- Avg Supply (96hrs): 48,055**
- **-- Avg GAP: 5,127**

- NON-AMBULATORY DECON
- **-- Avg Demand: 72,604**
- **-- Avg Supply (96hrs): 24,265**
- **-- Avg GAP: 48,339**

- AMBULATORY DECON
- **-- Avg Demand: 106,569**
- **-- Avg Supply (96hrs): 61,005**
- **-- Avg GAP: 45,564**

- TRIAGE AND STABILIZATION
- **-- Avg Demand: 29,811**
- **-- Avg Supply (96hrs): 3751**
- **-- Avg GAP: 26,060**

With 11 additional CERFPs

- SEARCH AND EXTRACTION
  - Avg GAP: 0
- NON-AMBULATORY DECON
  - Avg GAP: 36,568
- AMBULATORY DECON
  - Avg GAP: 20,820

Figure 5: SDM Results.

This analysis provided supported the Chief, National Guard Bureau's proposal to stand-up 10 Homeland Response Forces (HRFs) during the 2010 Quadrennial Defense Review (QDR) Civil Support Issue Team.

" Field faster, more flexible consequence management response forces. The Department has gained important experience and learned valuable lessons from its efforts to field specialized consequence management response forces for chemical, biological, radiological, nuclear, and high-yield explosives events (CBRNE). Given the potential for surprise attacks within the United States, the Department will begin reorganizing these forces to enhance their lifesaving capabilities, maximize their flexibility, and reduce their response times. First, the Department will begin restructuring the original CBRNE Consequence Management Response Force (CCMRF), to increase its ability to respond more rapidly to

an event here at home. To address the potential for multiple, simultaneous disasters, the second and third CCMRFs will be replaced with smaller units focused on providing command and control and communications capabilities for Title 10 follow-on forces. Complementing the evolution of the first CCMRF, the Department also will draw on existing National Guard forces to build a Homeland Response Force (HRF) in each of the ten Federal Emergency Management Agency (FEMA) regions. These ten HRFs will provide a regional response capability; focus on planning, training and exercising; and forge strong links between the federal level and state and local authorities." 2010 QDR