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Steps in writing an effective Master Scenario Events List

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ABSTRACT

Planning and conducting effective operations-based exercises is a complex and resource intensive process. The US Department of Homeland Security Exercise and Evaluation Program (HSEEP) describes many key elements in successfully planning and conducting operations-based exercises. The Master Scenario Events List (MSEL) is integral to the successful conduct of operations-based exercises. The MSEL is the exercise blueprint, consisting of messages, or injects, designed to test exercise objectives and drive continual exercise play. Surprisingly, there is little guidance provided in the exercise development literature or by HSEEP about how to create an effective MSEL. This article discusses essential elements for a MSEL, offers recommended steps for writing a MSEL, and then illustrates these steps using an example from an operations-based exercise.

Key words: master scenario events list, exercise design

WRITING AN EFFECTIVE MASTER SCENARIO EVENTS LIST*Overview*

The Homeland Security Exercise and Evaluation Program (HSEEP) describes how discussion-based and operations-based exercises must be coordinated using a building block approach to help the nation prepare for, mitigate, respond to, and recover from all hazards.¹ Discussion-based exercises include seminars, workshops, tabletop exercises, and games. The purpose of discussion-based exercises is to help agencies understand and update Standard Operating Policies and Procedures (SOPs), agency Emergency

Operations Plans (EOPs), and other relevant documents. Seminars and workshops provide a forum for individual agencies to discuss critical plan elements and develop or update EOPs. Tabletop exercises provide an opportunity for multiple agencies to discuss how to coordinate EOPs by establishing Memorandums of Understanding (MOU), Mutual Aid Agreements, and so on. Games allow participants to explore decision making processes in their plans along with the consequences of those decisions without using actual resources.

Discussion-based exercises

Many deficiencies in EOPs can be identified through discussion-based exercises. Identifying and refining as many deficiencies as possible in EOPs through discussion is more cost-effective than using operations-based exercises.² Each deficiency identified and corrected in discussion-based exercises increases the likelihood for participants in subsequent operations-based exercises to meet their objectives. For example, consider an operations-based exercise designed to test transportation and security issues associated with shifting resources from one jurisdiction to another. The success of the exercise objective is dependent on MOUs being established between agencies. If these MOUs are not in place, then the exercise will stall in the early phases, not allowing the issues of transport and security to be assessed because the resources would not be released. Discussion-based exercises are an excellent and cost effective venue to uncover many deficiencies, such as needed MOUs.

PROOF COPY ONLY**DO NOT DISTRIBUTE***Operations-based exercises*

Operations-based exercises include drills, functional exercises, and full-scale exercises. Drills are intended to allow single agencies to test specific aspects of their EOP or SOPs. Functional exercises are designed to test Emergency Operations Center (EOC) functionality through simulation. Simulation is introduced to save costs associated with deploying resources. Full-scale exercises, as the name suggests, involve a full deployment of resources and are accordingly the most costly. It is important to note that associated cost and risk increases proportionately as planners move from discussion-based seminars through to operations-based full-scale exercises. As more players become involved and as resources become deployed in the field, exercise costs increase and the margin for safety narrows.³ Thus, although planning is important in all exercises, the repercussions of poor planning are most severe in operations-based exercises.

Planning an effective operations-based exercise involves several key elements. First and foremost an exercise design team must be created. A strong design team needs to include subject matter and exercise conduct experts. The design team must develop well-written objectives and an appropriate scenario to test these objectives.⁴ Players are first introduced to the scenario via a narration. The subsequent unfolding of the scenario is detailed in the Master Scenario Events List (MSEL). Although the importance of the scenario narration has received some attention in the literature,⁴ there is a dearth of guidance on writing an effective MSEL. This is especially surprising given its importance in ensuring operations-based exercise objectives are tested. Many exercise designers and controllers tacitly understand how to create the MSEL. The purpose of this article is to provide explicit guidance for writing a MSEL. Making such guidelines explicit is the necessary first step toward developing a gold standard for MSEL writing.

THE MSEL

The MSEL is the exercise blueprint, consisting of messages, or injects, designed to test exercise objectives. The MSEL is essential for the lead controller of an operations-based exercise to control the exercise

flow. Although there are tools designed to assist with exercise flow,⁵ a review of the exercise development literature failed to uncover a definition of *exercise flow*. Therefore, exercise flow is defined by authors as a pace of activity within the exercise that challenges player's ability without compromising the integrity of the exercise. Within the HSEEP system, the MSEL is designed to complement the exercise plan and controller/evaluator (C/E) handbook.⁶

A search conducted by the authors yielded only two sources of guidance for writing a MSEL. The first is HSEEP, which provides a template for users to follow; however, it provides very little instruction on how to effectively develop a MSEL. HSEEP offers an online beta software application allowing users to create a MSEL. The beta software is part of the HSEEP toolkit and can only be accessed if granted permissions to the HSEEP Toolkit by the HSEEP Helpdesk as well as by the lead developer of the exercise.

A second source of guidance is a web-based training offered by the Oak Ridge Institute for Science and Education. The institute's training is part of their Exercise Builder 2008 software and clearly predicates its existence on the lack of any specified format for a MSEL or timeline document. Oak Ridge Institute recommends four steps, includes the following: (1) identification of initiating and other key events; (2) identification of expected responder actions; (3) assignment of times as events are added to the MSEL and timeline; and (4) identification of messages and injects. The training also lists the components for inclusion in the MSEL document, including time, organizations represented descriptions of key events and expected responses, message injects, and control measures. Suggestions are also provided on how to list messages: by message number, by designated type (ie, initiation vs contingency), by who issues the message, by who is to receive the message, and by summary of the actual message to be used in the exercise.⁷

The HSEEP and Oak Ridge Institute documents provide a skeleton for the elements of a MSEL. However, exercise designers require more substantive direction as to how to create and coordinate the elements of a MSEL.

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RECOMMENDED ELEMENTS OF A HIGH PERFORMING MSEL

A good MSEL will ensure investments in costly operations-based exercises are realized, credibility in the design team is established, and integrity of the exercise is maintained. A good MSEL has three important characteristics: increasing complexity, engaging injects, and includes several opportunities for players to successfully meet objectives.

Fundamentally, operations-based exercises are designed to place players in more realistic and stressful situations. However, it is imperative players are not overwhelmed.³ Overwhelming players will only result in them becoming frustrated and will ultimately reduce the likelihood they will learn, meet objectives, and want to participate in future exercises. Gradually increasing complexity will ensure players gain confidence early in the exercise, increasing the likelihood of successfully meeting exercise objectives.

A good MSEL is engaging. It keeps all the players and agencies involved from beginning to end of the exercise. Bored players or agencies not included in exercise play will be less likely to commit resources to future exercises or see the value to those who were engaged.

The MSEL should also be designed to provide multiple opportunities for success. It is not uncommon, when complexity is added to an exercise (eg, a flurry of messages arriving simultaneously), for players to forget to respond to a message or to fail to formulate the best possible response. The MSEL should create opportunities for players to learn during the course of the exercise by reminding players to respond when necessary, providing multiple opportunities to test objectives, or guiding players when they provide unanticipated, but plausible actions.

The remainder of this article will focus on describing several recommendations for writing a MSEL with these three characteristics. The approach is based on an iterative improvement process extending over a 2 year period, over a series of functional exercises conducted for the Oklahoma State Department of Health – Bioterrorism Preparedness Division, Santa Cruz County Office of Emergency Management in Arizona, and the Tucson Area Indian Health Services. The approach is not intended to be definitive. Rather, it is shared so that others responsible for planning

and conducting exercises can have a framework from which to begin. As with any framework, as others apply the approach and share their experiences it will likely be modified and improved.

RECOMMENDED STEPS IN WRITING A MSEL

The authors felt it necessary to tie the recommended steps for writing the MSEL to the recommended Exercise Design Steps as defined by the Emergency Management Institute.⁸ Individuals certified by the Federal Emergency Management Agency’s (FEMA) Emergency Management Institute (EMI) as Master Exercise Practitioners (MEPs) trained to design, conduct, and evaluate exercises must be well-versed in the exercise design steps. Linking the recommendations for writing a MSEL to this framework will facilitate understanding. Figure 1 depicts the

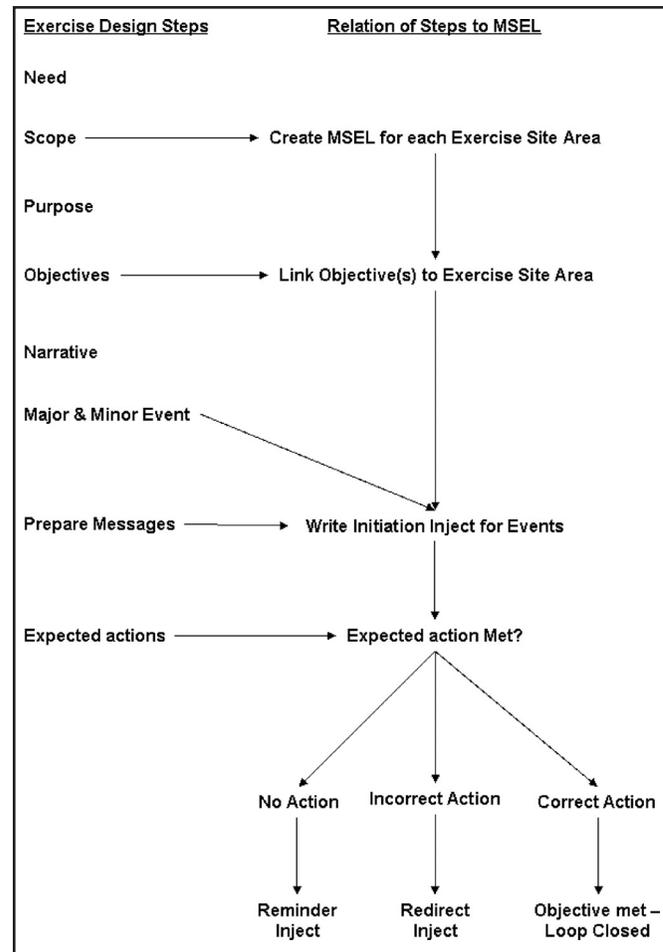


Figure 1. Relationship of steps for writing a MSEL to eight-step exercise design process.

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relationship between the exercise design steps and the steps for writing a MSEL.

Step 1. Delineate number and location of exercise sites.

Use information from the Scope section of the exercise design steps to delineate the number and location of exercise sites. Create a MSEL template for each exercise site. In the authors' experience, a common error occurs when exercise designers attempt to write a single chronological MSEL for all sites simultaneously. It is simply too difficult to simultaneously track events at multiple sites and ensure the MSEL gradually increases in complexity when including multiple opportunities for players' to successfully meet exercise objectives.

The recommendation to organize a MSEL by exercise site departs significantly from the HSEEP template for writing a MSEL.⁶ The HSEEP template suggests that the MSEL be organized by participating agencies. Although this ensures that agencies will be engaged, it is the authors' opinion it is not consistent with the purpose of advanced operations-based exercises. Functional and full-scale exercises are designed to include multiple agencies. Under the building block approach, agencies would have already interacted in a discussion-based exercise. The purpose of engaging in a functional or full-scale exercise is to test the coordinated response between agencies to accomplish some objective(s). Messages, or injects, designed to assess overarching objectives are difficult to write when viewing through the lens of a single agency's response tactics.

Step 2. Write objectives for each exercise site.

Some exercises are designed to test the coordination between multiple agencies at a single site (eg, train derailment, fire in a building). In such cases, Step 2 is moot. In exercises focused in multiple sites, the design team should create objectives specific to each exercise site to ensure players at those sites are engaged and being tested. However, exercise developers will frequently create overarching objectives or, as noted earlier, create objectives for each participating agency. Under such an approach it is possible for players and agencies located at some sites to be disengaged. Therefore, it is important to verify that

there is at least one exercise objective for each exercise site.

Step 3. Define exercise events and write an *initiation inject* for each event.

An *event* is a message or something that happens as the scenario unfolds to specifically test an objective. An event must be conveyed to players through an *Initiation Inject*. Therefore, planners must develop an initiation inject for each event. It is the intent of the initiation inject to trigger a series of expected actions resulting in the testing of an objective. An important rule of thumb for writing and delivering injects is to write two injects per objective to ensure the objective is met and validated.

Step 4. Write *reminder injects*.

For each initiation inject, a *Reminder Inject* should also be written. It is not unreasonable in the chaos of an exercise for players to forget to follow through. This is especially true when the complexity of the exercise is advanced. Ask the subject matter experts (SMEs) on the design team to identify a reasonable length of time for an expected action to occur. If there has been no response within the identified time, then a reminder inject is useful.

Step 5. Brainstorm and write *redirect injects*.

For each initiation inject consider other plausible actions. Plausible actions are defined here as those not anticipated, but leading to a successful resolution. Plausible actions are other acceptable courses of action or are "out of the box" thinking that may be necessary in certain emergency situations. However, unanticipated actions might not result in a successful resolution. In this instance, a *Redirect Inject* is needed to help the players get back on course and successfully resolve the intended action.

Step 6. Include nonobjective related injects.

Injects not directly related to the exercise objectives are referred to as "optional" in the HSEEP template.⁶ Such injects may have two purposes: first to fill lags in time to keep the exercise flowing and second to engage players who may not be directly involved in addressing the exercise injects at certain points in the exercise. For this reason, such injects may be delivered during the course of exercise play as the need for such injects is determined by the exercise controller.

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Step 7. Establish the relative times for injects.

Once all initiation, reminder, redirect, and nonobjective injects are written in chronological order for each site, the design team should consult the exercise SMEs to identify appropriate time frames in which each inject could realistically be resolved from the point of inject delivery. The relative time may vary depending on the content of the inject and could help in deciding if additional injects are necessary or if certain injects should be eliminated. Some injects may need to be placed early in the exercise to allow for resolution depending on the time constraints of the exercise. This will also assist the controller in knowing when to utilize reminder injects to prompt action.

Step 8. Merge all exercise site MSELs into a single document and sort by relative time.

Once all injects have been written and SMEs have identified, relative times associated with each inject merge the MSELs from each site into one document and then sort by relative time. This will create one single document for all sites where injects are chronologically organized relative to the start of exercise play (STARTEX).

ADDITIONAL CONSIDERATION: MAINTAIN OPEN INJECTS FOR ADLIBBING

Controllers need to maintain the flexibility to deliver *Open Injects* if the need for an extra inject arises. Controllers should document the insertion of an open inject and track the inject to ensure the loop of the open inject is closed. Maintaining this flexibility also allows the controller to challenge the players if the predeveloped injects do not present a realistic challenge. Additional clarification or redirection may require the development of an open inject.

WRITING AN EFFECTIVE MSEL: AN ILLUSTRATION

How the recommendations manifest themselves is now illustrated using a real-life example from a full-scale exercise conducted in southern Arizona. In 2007, the Santa Cruz County (SCC) Office of Emergency Management, located along the Mexican border in southern Arizona, approached the first author for assistance in designing, conducting, and evaluating an exercise. A planning team was created,

consisting of SMEs and a Master Exercise Practitioner. Together the design team followed the eight exercise design steps referenced earlier.⁸

Based on the SCC exercise history and the funding requirements, the design team decided there was a *need* to test the ability of the SCC EOC to support the county Strategic National Stockpile (SNS) Receipt Staging and Storage (RSS) warehouse as well as one Point of Dispensing (POD).

In establishing the *scope*, the design team decided to conduct a functional exercise. Furthermore, two exercise sites were defined as the RSS site and the POD site. In actuality there were four POD sites, but it was determined actions at each POD site would be the same. Therefore, following the *first recommended step* in writing a MSEL, two separate MSELs were initially created, one for each site.

The *purpose* of the functional exercise was to test the ability of the EOC to support (a) the county RSS site in receiving and distributing SNS supplies and (b) the opening, securing, dispensing, and closing of a county POD site.

The design team then defined two *objectives*. Following *Step 2*, objectives were tied to exercise sites. Objectives 1 and 2 related to the RSS and POD sites, respectively. Each objective was derived from the Target Capability List (TCL).⁹ The objectives, associated Homeland Security Mission Area, Target Capability (TC), and Activity were written as follows:

Objective 1: Demonstrate the capability of the SCC EOC to provide support in establishing security of the RSS site (TC: Respond > medical supplies management and distribution > establish security).

Objective 2: Demonstrate the capability of the SCC EOC to open the Patagonia POD. (TC: Respond > mass prophylaxis > establish points of dispensing).

It is important to note, one common error in exercise design involves beginning by writing a scenario. Objectives must drive the scenario (ie, narrative and major/minor events), not vice versa. Not until the

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objectives of the exercise are clear can a series of events be designed to test objectives.

Following development of the objectives, a *narrative* was written. The purpose of the narrative was to provide players with necessary background information laying the foundation for the scenario.⁴ The narrative also described assumptions (eg, players should operate from existing policies and procedures) and artificialities (eg, there will be no influx of Mexican residents from across the border) to the exercise.

Using the objectives and the TCL from which they were derived, the design team began envisioning *realistic events* that would allow for each objective to be tested. The use of TCL critical tasks proved particularly helpful in this regard. For example, one critical task related to Objective 1 is to execute the plan for credentialing medical personnel. Following *Step 3*, the design team then began preparing messages, or injects. The initiation inject for this event used by the Simulation Cell (SIMCELL) and delivered to the EOC read, "This is the RSS manager. We have someone attempting to enter our facility."

For each initiation inject there is an *expected action* (Figure 1). As the name suggests, the expected action is what players are expected to do in response to an inject. Sometimes there is more than one action a player is expected to take in response to a message. When all the expected actions are successfully completed by players, the loop is said to be closed and the objective met. The evolving MSELs are shown in Table 1.

Step 4 recommends writing reminder injects in case a loop has not been closed. The reminder inject to use in case the EOC did not respond to the initiation inject read, "This is the RSS manager. The person trying to get in says his name is Jose Valenzuela. Do you have a list of approved RSS personnel you can send us?" Note the inject is designed to remind the EOC the issue has not been resolved and to also assist EOC players in engaging in the correct expected action.

The design team reasoned in response to the request for advice, a plausible action would be for the players in the EOC to remind the RSS to check their preapproved list or to send the person to the EOC for credential verification (in this case study, the EOC

and RSS site were a few blocks apart making this a plausible response). Therefore, following *Step 5* for writing a MSEL the redirect inject read, "We have faxed you the pre-approval list. Please confirm receipt and inform regarding your decision."

Redirect injects are used for unanticipated responses leading to an unacceptable course of response. For example, the EOC may have told the RSS manager to allow the person onsite without credentials. However, this action clearly violates the policies written for the POD. The redirect inject to this response could read, "This is the RSS Manager. I am uncomfortable allowing a non-credentialed, unidentified person onsite to assist with medical response. Please provide additional guidance on how to handle this situation." In this case, the redirect inject allows the EOC another opportunity to respond appropriately.

Following *recommended Step 6* for writing a MSEL, nonobjective related injects were then added to the MSEL. In the SCC exercise, an inject was delivered to engage the EOC Incident Commander and Planning Section Chief advising a fatal crash had occurred which was affecting interstate traffic into the area where one of the PODs was located. Although this inject did not test the exercise objectives, it allowed for continuity in the exercise and engaged two players who had not been actively involved in response to recent injects.

Following *recommended Step 7*, relative times were assigned to each inject in the MSEL Table 2. Consideration was given as to how much time would be adequate for the loop to be closed for an initiation inject. For example, SMEs determined 10 minutes would be adequate for the EOC to respond to the initiation inject from the RSS manager for Objective 1.

After the relative times were assigned, the MSELs for both sites were merged and sorted based on relative time. The final MSEL is shown in Table 3.

SUMMARY

Planning and conducting effective operations-based exercises can be a complex and resource intensive process. One key element in conducting a successful operations-based exercise is the proper development

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Table 1. MSEL for each exercise site with all injects.						
Inject #	Time	Objective tested	Inject type	Message	Expected action	Time complete
	00	-	-	STARTEX	-	-
RSS Site						
		1	Initiation	From: RSS Manager To: SCC EOC "This is the RSS manager. We have someone attempting to enter our facility. The person says they forgot their identification in the rush to respond. Please advise how to handle."	RSS site security is instructed to handle the situation as per protocols.	
		1	Reminder	From: RSS Manager To: SCC EOC "This is the RSS manager. The person trying to get in says his name is Jose Valenzuela. Do you have a list of approved RSS personnel you can send us?"	EOC sends a list of approved personnel to RSS site.	
		1	Redirect	From: RSS Manager To: SCC EOC "This is the RSS Manager. I am uncomfortable allowing a non-credentialed, unidentified person onsite to assist with medical response. Please provide additional guidance on how to handle this situation."	EOC instructs RSS security to handle the situation as per protocol.	
		N/A	Nonobjective related	From: RSS Manager To: SCC EOC "This is the RSS Manager. Our tow motor's engine died. We can't get the pallets down for this next shipment. Can you find us a mechanic?"	1. Finance is notified. 2. Designated mechanic is contacted. 3. EOC replies to RSS with ETA for mechanic.	
POD Site						
		2	Initiation	From: Patagonia POD Manager To: SCC EOC "This is the Patagonia POD Manager. The security officer and I are here, but the facilities manager is not. I have no way to get in touch with him. Can you contact him for me?"	1. Logistics locates facilities manager. 2. I.C. is informed. 3. Planning and operations are informed. 4. EOC replies to POD with status.	
		2	Reminder	From: Patagonia POD Manager To: SCC EOC "This is the Patagonia POD Manager. Can I get a status update on our facilities manager? We still haven't seen or heard anything from him."	EOC takes appropriate actions above and replies to POD with status.	
		2	Redirect	From: Patagonia POD Manager To: SCC EOC "This is the Patagonia POD Manager. Thank you for contacting a replacement for the facilities manager. In the meantime, our facilities manager has just arrived onsite. We are beginning to open and secure the POD."	1. Patagonia POD status is tracked by planning. 2. Planning notifies operations.	
		N/A	Nonobjective related	From: SCC Sherriff's Office To: SCC EOC - Incident Commander "This is the Santa Cruz County Sherriff's Office. Be advised that a fatal collision on State Route 82 has blocked northbound traffic into Patagonia. Northbound traffic is being re-routed back to Nogales."	1. I.C. forwards information to planning. 2. Planning forwards information to Patagonia POD.	

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Table 2. MSEL for each exercise site with relative inject times.						
Inject #	Time	Objective tested	Inject type	Message	Expected action	Time complete
	00	-	-	STARTEX	-	-
RSS Site						
	00	1	Initiation	From: RSS Manager To: SCC EOC "This is the RSS manager. We have someone attempting to enter our facility. The person says they forgot their identification in the rush to respond. Please advise how to handle."	RSS site security is instructed to handle the situation as per protocols.	
	+10	1	Reminder	From: RSS Manager To: SCC EOC "This is the RSS manager. The person trying to get in says his name is Jose Valenzuela. Do you have a list of approved RSS personnel you can send us?"	EOC sends a list of approved personnel to RSS site.	
	+4	1	Redirect	From: RSS Manager To: SCC EOC "This is the RSS Manager. I am uncomfortable allowing a non-credentialed, unidentified person onsite to assist with medical response. Please provide additional guidance on how to handle this situation."	EOC instructs RSS security to handle the situation as per protocol.	
	+90	N/A	Nonobjective related	From: RSS Manager To: SCC EOC "This is the RSS Manager. Our tow motor's engine died. We can't get the pallets down for this next shipment. Can you find us a mechanic?"	1. Finance is notified. 2. Designated mechanic is contacted. 3. EOC replies to RSS with ETA for mechanic.	
POD Site						
	+5	2	Initiation	From: Patagonia POD Manager To: SCC EOC "This is the Patagonia POD Manager. The security officer and I are here, but the facilities manager is not. I have no way to get in touch with him. Can you contact him for me?"	1. Logistics locates facilities manager. 2. I.C. is informed. 3. Planning and operations are informed. 4. EOC replies to POD with status.	
	+15	2	Reminder	From: Patagonia POD Manager To: SCC EOC "This is the Patagonia POD Manager. Can I get a status update on our facilities manager? We still haven't seen or heard anything from him."	EOC takes appropriate actions above and replies to POD with status.	
	+8	2	Redirect	From: Patagonia POD Manager To: SCC EOC "This is the Patagonia POD Manager. Thank you for contacting a replacement for the facilities manager. In the meantime, our facilities manager has arrived onsite. We are beginning to open and secure the POD."	1. Patagonia POD status is tracked by planning. 2. Planning notifies operations.	
	+50	N/A	Nonobjective related	From: SCC Sherriff's Office To: SCC EOC - Incident Commander "This is the Santa Cruz County Sherriff's Office. Be advised that a fatal collision on State Route 82 has blocked northbound traffic into Patagonia. Northbound traffic is being re-routed back to Nogales."	1. I.C. forwards information to planning. 2. Planning forwards information to Patagonia POD.	

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Table 3. The final MSEL with exercise sites combined and injects sorted on relative time.						
Santa Cruz County POD Functional Exercise Master Scenario Events List (MSEL)						
Inject #	Time	Objective tested	Inject type	Message	Expected action	Time complete
	00	-	-	STARTEX	-	-
1	00	1	Initiation	From: RSS Manager To: SCC EOC "This is the RSS manager. We have someone attempting to enter our facility. The person says they forgot their identification in the rush to respond. Please advise how to handle."	RSS site security is instructed to handle the situation as per protocols.	
2	+4	1	Redirect	From: RSS Manager To: SCC EOC "This is the RSS Manager. I am uncomfortable allowing a non-credentialed, unidentified person onsite to assist with medical response. Please provide additional guidance on how to handle this situation."	EOC instructs RSS security to handle the situation as per protocol.	
3	+5	2	Initiation	From: Patagonia POD Manager To: SCC EOC "This is the Patagonia POD Manager. The security officer and I are here, but the facilities manager is not. I have no way to get in touch with him. Can you contact him for me?"	1. Logistics locates facilities manager. 2. I.C. is informed. 3. Planning and operations are informed. 4. EOC replies to POD with status.	
4	+8	2	Redirect	From: Patagonia POD Manager To: SCC EOC "This is the Patagonia POD Manager. Thank you for contacting a replacement for the facilities manager. In the meantime, our facilities manager has arrived onsite. We are beginning to open and secure the POD."	1. Patagonia POD status is tracked by planning. 2. Planning notifies operations.	
5	+10	1	Reminder	From: RSS Manager To: SCC EOC "This is the RSS manager. The person trying to get in says his name is Jose Valenzuela. Do you have a list of approved RSS personnel you can send us?"	EOC sends a list of approved personnel to RSS site.	
6	+15	2	Reminder	From: Patagonia POD Manager To: SCC EOC "This is the Patagonia POD Manager. Can I get a status update on our facilities manager? We still haven't seen or heard anything from him."	EOC takes appropriate actions above and replies to POD with status.	
7	+50	N/A	Nonobjective related	From: SCC Sherriff's Office To: SCC EOC – Incident Commander "This is the Santa Cruz County Sherriff's Office. Be advised that a fatal collision on State Route 82 has blocked northbound traffic into Patagonia. Northbound traffic is being re-routed back to Nogales."	1. I.C. forwards information to planning. 2. Planning forwards information to Patagonia POD.	
8	+90	N/A	Nonobjective related	From: RSS Manager To: SCC EOC "This is the RSS Manager. Our tow motor's engine died. We can't get the pallets down for this next shipment. Can you find us a mechanic?"	1. Finance is notified. 2. Designated mechanic is contacted. 3. EOC replies to RSS with ETA for mechanic.	

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of a MSEL. Without a properly constructed MSEL, exercise objectives are not likely to be met. By following the steps presented in this article, the development of high-performing MSELs are better assured for any operations-based exercise.

Key elements in writing a MSEL include remembering to identify how many exercise sites will be utilized and developing objectives specific to each site. Not only should initial injects be developed for each exercise site, but also reminder injects should be developed to ensure loops are closed and exercise objectives are met. Redirect injects will allow controllers to “redirect” participants if they respond in a completely unexpected direction. To fully test the capabilities of the players, controllers must build increasingly complex injects. It is important that sufficient injects are developed so each objective is tested at least twice. Also, to ensure all players are involved and objectives are met, all actual and simulated agencies must be included in injects. As you can never fully predict how an exercise will flow, controllers should prepare nonobjective specific injects to act as filler if needed. In the end, all injects need to have relative times attached to them so controllers know approximately when to implement them. Once all injects have been developed, they should be integrated into a single document sorted by relative time to the start of the exercise. By remembering to include open injects in this final document, controllers will have all the tools they need to ensure exercise success and still have the ability to adlib if needed.

The recommended steps presented in this document will be helpful as a tool and a starting point for exercise developers in building an effective MSEL. It is hoped as others follow these steps they will share their lessons learned so more of the mystery surrounding

the exercise design process may be brought to light. Only through sharing such exercise design information will better exercises be developed and conducted.

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