FEBRUARY 2022 Planetary Defense Interagency Tabletop Exercise 4

Situation Manual

2/23/2022, 2/24/2022

This Situation Manual (SitMan) provides exercise players with the necessary tools and information to execute their roles in the exercise. Additional information may be accessed at the following websites: http://pd-ttx.jhuapl.edu/, https://cneos.jpl.nasa.gov/

EXERCISE OVERVIEW

Exercise Name	Planetary Defense Interagency Tabletop Exercise 4
Exercise Dates	**February 23-24, 2022**
Scope	This exercise is a Tabletop Exercise (TTX), planned for one-and-a-half days at the Johns Hopkins Applied Physics Laboratory (APL) in Laurel, Maryland. The Planetary Defense Interagency Tabletop Exercise 4 will emphasize the collaboration of federal, state, and local agencies in planning for mitigation and disaster responses to a near-Earth object impact scenario. This will be the first effort at an end-to-end exercise for this type of disaster.
Objective	To exercise multiple aspects of a potential asteroid impact, encompassing initial detection, uncertainty, damage modeling, notification, potential mitigation, ground preparation, and ground recovery.
Threat or Hazard	**Simulated Asteroid Impact Threat**
Scenario	The exercise will span four epochs in time through carefully coordinated and structured modules. Each module will explore different aspects of the exercise scenario. For the purpose of this exercise, all preparation, response, and recovery events will take place sequentially through the phases of the exercise. Please refer to the read-ahead document for additional information.
Sponsor	NASA, Planetary Defense Coordination Office (PDCO), with collaboration from about half a dozen federal, state, and local institutions
Participating Organizations	Approximately 120 personnel across multiple organizations will participate in this exercise, including state and local emergency management response participants from North Carolina.
Point of Contact	Dipak Srinivasan, TTX Project Manager, APL http://pd-ttx.jhuapl.edu/ PD-TTX@jhuapl.edu

General Information

INTRODUCTION

The National Aeronautics and Space Administration (NASA) Planetary Defense Coordination Office (PDCO) has partnered with the Federal Emergency Management Agency (FEMA), NASA Jet Propulsion Laboratory's Center for Near Earth Object Studies (JPL CNEOS), NASA Ames' Asteroid Threat Assessment Project (ATAP), North Carolina State Emergency Response Team(s), and Winston-Salem/Forsythe County Local/County Emergency Response Teams to conduct a Planetary Defense Interagency Tabletop Exercise, to evaluate the technical, logistical, and operational challenges associated with planetary defense activities, to include exercising and implementing protocols as defined in the National Near-Earth Object (NEO) Preparedness Strategy and Action Plan. This exercise will leverage visuals (animated and static) and models describing asteroid trajectories and impact risks to enable the participants to envision the scope, scale, and timing of a potential impact on Earth.

CONFIDENTIALITY

This is an unclassified exercise. Control of exercise information is based on public sensitivity regarding the nature of the exercise rather than the actual exercise content. Some exercise material is intended for the exclusive use of planners, controllers, facilitators, and data collectors; however, players may view other materials deemed beneficial to perform their jobs/functions. All exercise participants may view material and additional resources hosted on the exercise website, http://pd-ttx.jhuapl.edu/, and additional NASA websites as follows: www.nasa.gov/planetarydefense, https://cneos.jpl.nasa.gov/

All exercise participants should use appropriate guidelines to ensure proper control of information within their areas of expertise and protect this material in accordance with current directives.

EXERCISE SUMMARY

Purpose and Scope

The Planetary Defense Interagency Tabletop Exercise will be conducted over a period of one-and-a-half days and is based on a simulated asteroid impact scenario that traverses over four distinct epochs, or periods of time, referred to as modules. In this scenario, CNEOS discovers a hypothetical asteroid that could impact the Earth in six months. As the events of the exercise unfold, the exercise participants learn that the hypothetical asteroid is on a collision course with Earth and is large enough to cause substantial regional damage.

Each module covers a different period of time and focuses on unique aspects of preventing and responding to the hypothetical asteroid threat, with day one being set on the first day of the exercise. The overall objective of the exercise is to enable the participants to exercise all phases of the disaster scenario (initial detection, notification, potential mitigations, ground preparations, and ground recovery).

Timeline and Structure

The exercise will be a dynamic, multimedia-facilitated event. The players will move through accelerated time and actively participate in four distinct modules. Each module will be led by a Facilitator who will offer a series of issues and questions (via a Master Scenario Events List, or MSEL) for the players to respond to with the decisions and actions they would take given the scene. The module will also include briefings by Subject-Matter Experts (SMEs) to help inform the next set of discussions. Actions will be simulated; however, the discussions will be based on real plans, policies, and procedures.

Each module is staged to fully explore core capabilities as aligned with the key objectives described in the Objectives Traceability Matrix. The core capabilities — which constitute prevention, protection, mitigation, response, and recovery — represent distinct critical elements necessary to achieve the specific objectives of each module. The objectives and aligned core capabilities were selected by the Exercise Planning Team. Upon completion of each module, the players will be provided a participant feedback form to fill out. A hotwash will immediately follow the conclusion of the exercise on day 2, providing the players with the additional opportunity to speak freely, offer potential improvements, and share key insights with all the participants.

The Facilitators will move the players through each of the following modules:

Module 1 Event: 23 February 2022 (6 months prior to impact)
Core Objective: Early Mitigation Options

Module 2 Event: 15 June 2022 (2 months prior to impact)
Core Objective: Early Preparedness

Module 3 Event: 10 August 2022 (6 days prior to impact)
Core Objective: Final Preparedness & Readiness

Module 4 Event: 16 August 2022 (impact+)
Core Objective: Response & Transition to Recovery

PARTICIPANT ROLES & RESPONSIBILITIES

The term *participant* encompasses many groups of people, not just those playing in the exercise. Groups of participants may be involved in the exercise, and their respective roles and responsibilities are as follows:

Players

The role of the players is to respond to the situation presented in the exercise by using their knowledge of protocols, response procedures, current plans and procedures, and insights derived from the briefings. The players are invited personnel who have an active role in discussing, initiating, or performing their regular roles and responsibilities in response to the simulated event. To enable a robust discussion, players should ensure that they perform the following actions in preparation for the exercise:

- Review appropriate agency emergency response plans, procedures, and protocols.
- Review appropriate exercise materials included in the exercise read-ahead document and posted on the CNEOS website.
- Report to the event check-in location at the designated time at least 30 minutes prior start of the event to ensure comfortable seating and to log-in to the exercise portals.

Facilitators

The Facilitator's role is to plan and manage exercise play, direct the pace of exercise, provide key data to players, and issue prompts or initiate certain player actions to ensure exercise continuity. Each of the four modules will be led by a single Facilitator, who will be located in the primary room along with the primary module players. Key Exercise Planning Team members may also assist with the facilitation as SMEs during the exercise.

Data Collectors

The role of the Data Collectors is to closely observe and document performance against established capability targets and critical tasks, as aligned with the exercise's key objectives and in accordance with the Objective Traceability Matrix. Data Collectors will pay special attention to whether the discussions conform to plans, polices, and procedures, as well as to observe and document actions, discussions, timing, results, and end-user comments to support the execution of the MSEL Playbook.

Observers

Observers visit or view selected segments of the exercise. Observers do not play in the exercise or perform any control or evaluation functions. Observers view the exercise from a designated observation area and must remain within the observation area during the exercise. The exercise Support Staff includes individuals who perform administrative and logistical support tasks during the exercise, to include managing the multimedia applications.

EXERCISE GUIDELINES, ASSUMPTIONS, AND ARTIFICIALITIES

Assumptions constitute the implied factual foundation for the exercise and, as such, are assumed to be present prior the initiation of the exercise. The following general assumptions apply to the exercise:

- This exercise will be held in an open, low-stress, no-fault environment in which notification protocols, systems, capabilities, and processes will be evaluated. The exercise is not designed to evaluate individuals, individual actions, or abilities.

- Varying viewpoints, to include contrary opinions and disagreements, are expected and greatly encouraged.

- Exercise players will react to information and situations as they are presented, in the same manner as if the exercise were a real incident. Thus, players are encouraged not to fight the scenario but to accept it at face value and address the events as they unfold in real time.

- Facilitators, SMEs, and Data Collectors may draw upon subject-matter expertise and specialized knowledge in the form of current and future plans and capabilities to respond to the scenario events and in response to specific questions from the participants.

- Decisions are not precedent-setting and may not reflect the player's organization's final position on a given issue. This exercise is an opportunity to discuss and present multiple options and possible solutions.

- Participating agencies may need to balance exercise play with real-world emergencies.

EXERCISE EVALUATION

Evaluation of this exercise is based on the exercise objectives and aligned capabilities, capability targets, and critical tasks, which are further explained on the website: http://pd-ttx.jhuapl.edu/. Additionally, all players, including participants, will be asked to complete an online participant feedback form following completion of each module. These documents, in addition to both the Facilitators' and Data Collectors' observations and notes, will be used to evaluate the exercise and compile the After-Action Report (AAR).