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Draft Guidance: Response, Restoration, and Recovery Checklist for Biologically Contaminated Facilities

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Introduction

The Checklist for Facility Response, Restoration, and Recovery presented in this document is principally focused on the Consequence Management Phase (see Figure A-1; LLNL 2006) of a bioterror agent (i.e., *Bacillus anthracis*) release at a large facility, such as an airport or subway. Information in this document conforms to the *National Response Plan* (NRP) (DHS 2004) and the National Incident Management System (NIMS 2004). Under these two guidance documents, the personnel responsible for managing biological response and recovery efforts—that is, the decision-makers—are members of an Incident Command (IC), which is likely to transition to a Unified Command (UC) in the event of a biological warfare agent attack. A UC is used when more than one agency has incident jurisdiction or when incidents cross political jurisdictions. The location for primary, tactical-level command and management is referred to as the Incident Command Post (ICP), as described in the NRP. Thus, regardless of whether an IC or a UC is used, the responsible entities are located at an ICP. Agencies work together through designated members of the UC to establish their designated Incident Commanders at a single ICP and to establish a common set of objectives and strategies and a single Incident Action Plan.

Initially during the Crisis Management Phase (see Figure A-1), the Incident Commander is likely to be the Chief of the fire department that serves the affected facility. As life-safety issues are resolved and the Crisis Management Phase shifts to the Consequence Management Phase, the work of characterization, decontamination, and facility clearance begins. There will likely be a coincident transition in organizational structure as well, and new restoration-focused groups, units, and personnel will be added as restoration needs are anticipated. Depending on the specific facility and type of incident, the responsible individual (Incident Commander or Unified Commander) within the UC during the Consequence Management Phase could be the Facility Manager, the Facility Emergency Operations Manager, or their designee.

In an incident involving large-scale biological contamination, the Governor of the state would typically request, and the President of the United States would likely declare, an emergency under the Stafford Act (1974; amended 2002). The Secretary of Homeland Security would likely determine that the event is an Incident of National Significance on the basis of criteria established in Homeland Security Presidential Directive 5 (HSPD-5), “Management of Domestic Incidents.” Incidents of National Significance are those high-impact events that require a coordinated and effective response by an appropriate combination of Federal, state, local, tribal, private-sector, and nongovernmental entities to save lives, minimize damage, and provide the basis for long-term community recovery and mitigation activities.

If facility authorities request outside assistance, or if an emergency is declared under the Stafford Act, then other members of the UC could include local and state agencies as well as Federal agencies, such as the Federal Emergency Management Agency (FEMA) and the U.S.

Environmental Protection Agency (USEPA). If an Incident of National Significance is declared, a Principal Federal Official will be appointed by the Department of Homeland Security (DHS) to facilitate Federal support to the UC structure.

The following Checklist for Facility Response, Restoration, and Recovery presents the critical steps that would be taken by organizations involved in responding to a biological incident. It is intended for use by key decision-makers in the event that an incident occurs and steps must be taken immediately and systematically. The organizations would follow the Incident Command System (ICS). See Appendix A for more information on the ICS and how the responsible personnel identified in the checklist map into the consequence management organizational structure. The Notification and First-Response Phases are cursorily addressed in the checklist, whereas the main focus is on consequence management actions. The order of actions is generally sequential. However, depending on the specifics of an event and how the response is implemented, actions may be reordered. For example, preparing a Remediation Action Plan (RAP) is identified in the checklist as a critical step of the Remediation Phase. However, it is likely that preparation of the RAP would begin before completing all actions identified in the Characterization Phase.

In addition to the actions recommended in the checklist, any emergency response conducted at a major metropolitan facility should comply with notification and response procedures established by the facility, as well as applicable procedures established by the jurisdictional responding agencies.

Notes and References

DHS (December 2004), Department of Homeland Security, *National Response Plan*, available at <http://www.dhs.gov/dhspublic/interapp/editorial/editorial_0566.xml>.

LLNL (2006), Lawrence Livermore National Laboratory, *Restoration Plan for Major International Airports After a Bioterrorist Attack*, Lawrence Livermore National Laboratory, Livermore, CA, UCRL-TR-210178-DRAFT Rev. 2; to be issued as a joint Department of Homeland Security and U.S. Environmental Protection Department document.

NIMS (March 1, 2004), *National Incident Management System*, document available from FEMA at 1-800-480-2520, Option 4, ask for FEMA 501.

Robert T. Stafford Disaster Relief and Emergency Assistance Act, 93 Pub. L. No. 288, 88 Stat 143 (1974) [codified as amended at 42 U.S.C. §§ 5121–5206 and scattered sections of 12 U.S.C., 16 U.S.C., 20 U.S.C., 26 U.S.C., and 38 U.S.C. (2002)].

Checklist for Facility Response, Restoration, and Recovery

Responsible Personnel	Action
Notification Phase	
Facility emergency management organization and law enforcement or other response organizations	<input type="checkbox"/> Facility receives notification that: <ul style="list-style-type: none"> • A biological incident has been detected, or • A biological incident is suspected, or • Information about a developing threat is received from an agency or responsible person as the result of an active detection system (e.g., BioWatch), medical surveillance, or epidemiologic investigation.
	<input type="checkbox"/> Gather information and continue to assess incident credibility, incident status, potential effect on the facility, and the degree to which a response is needed.
	<input type="checkbox"/> Facility makes notification, as appropriate, by: <ul style="list-style-type: none"> • Following previously established facility notification protocol, tailored to specific triggers at each stage of a developing incident, and either alerting responders and agencies (Federal, state, and local) or acting on direction from them. • Disseminating information, including preliminary risk communication and public health directives.
First-Response Phase	
Incident Commander or Facility Manager at the ICP	<input type="checkbox"/> Activate, or coordinate with law enforcement and emergency operations personnel as needed: <ul style="list-style-type: none"> • Security personnel. • FBI and/or local law enforcement (they will likely control the crime scene to protect evidence and commence forensic investigation). • Fire department personnel. • Public health and medical personnel. • Hazardous materials (HAZMAT) and/or other screening sampling teams. • Local USEPA On Scene Coordinator.
	<input type="checkbox"/> Continue to inform responders and agencies (Federal, state, and local) about developing details related to the incident.
	<input type="checkbox"/> Continue risk communication.
	<input type="checkbox"/> Control access to and/or isolate the affected area and contain the contamination.
	<input type="checkbox"/> Transition to a Unified Command (UC) as additional agencies and organizations respond.
	<input type="checkbox"/> Plan and conduct initial screening sampling for analysis of bioterror agent.
CDC and/or Local Public Health	<input type="checkbox"/> Perform laboratory analysis of environmental screening samples.
	<input type="checkbox"/> If laboratory analysis yields a confirmed positive result, determine if there is a significant risk to public health.
	<input type="checkbox"/> Gather new information, as necessary, to determine significant risk to public health. For example, agent viability results, medical epidemiological surveillance, additional environmental sample analysis, and available intelligence information.
IC or UC	<input type="checkbox"/> Evacuate, rescue, and/or isolate affected persons, as needed.
	<input type="checkbox"/> Mitigate any conditions posing immediate threat to human health.
	<input type="checkbox"/> Determine if facility operations should be sustained, diverted, or suspended.

Checklist continued.

Responsible Personnel		Action
Characterization Phase		
Planning Section: Situation Unit	<input type="checkbox"/>	Compile all analytical and observational data and reports that were created during the First Response Phase, and provide results to the Environmental Unit.
UC	<input type="checkbox"/>	Mobilize, as necessary, pre-identified resources for characterization activities, including: <ul style="list-style-type: none"> • Laboratory Response Network (LRN) and/or other CDC-approved laboratories. • Environmental sampling teams, decontamination and disposal resources, and personal protective equipment (PPE). • Data management and documentation specialists. • Air-dispersion modeling resources.
	<input type="checkbox"/>	Create or activate Technical Working Group (TWG) and Environmental Clearance Committee (ECC) if desired; establish lines of authority and responsibilities.
	<input type="checkbox"/>	Begin notifying resources for remediation, clearance, and waste management.
Safety Officer and Logistics Section: Medical Unit	<input type="checkbox"/>	Create Health and Safety Plan (HASP).
	<input type="checkbox"/>	Vaccinate or provide antibiotics to appropriate restoration and response personnel, as needed.
Facility	<input type="checkbox"/>	Provide detailed blueprints of areas of operation and HVAC systems to Planning Section: Documentation Unit.
Planning Section: Environmental Unit	<input type="checkbox"/>	Consider and recommend immediate agent containment and source reduction, if needed.
	<input type="checkbox"/>	Implement any recommended agent containment and isolation actions.
	<input type="checkbox"/>	Depending on actions completed during crisis management: <ul style="list-style-type: none"> • Assess potential contaminant transport outside the facility (i.e., direct release, rolling stock). • Evaluate the need for air monitoring. • Evaluate the need for conceptual or mathematical modeling.
	<input type="checkbox"/>	Perform air modeling of movement of a biothreat agent throughout facility to estimate initial extent of contamination.
Planning Section: Environmental Unit with input from TWG	<input type="checkbox"/>	Develop a characterization strategy to support restoration activities. Organize the facility into characterization zones. Select sampling locations for each zone.
	<input type="checkbox"/>	Write an incident-specific characterization plan in which all goals are identified.
UC	<input type="checkbox"/>	Approve the characterization plan.
Operations Section: Sampling Group	<input type="checkbox"/>	Implement the characterization plan.
LRN and/or other laboratories	<input type="checkbox"/>	Analyze samples to meet goals of the characterization plan, including identifying characteristics of the confirmed biothreat agent (e.g., survivability, toxicity, and ability to reaerosolize).
UC with input from TWG	<input type="checkbox"/>	Evaluate results of characterization activities. Consult with the ECC, as appropriate. Recommend additional characterization activities, as needed. Report to the Environmental Unit.

Checklist continued.

Responsible Personnel		Action
Remediation Phase		
Planning Section: Environmental Unit with input from TWG	<input type="checkbox"/>	Develop cleanup goals and measurable cleanup performance criteria, as appropriate, based on characterization results with input from the ECC.
UC	<input type="checkbox"/>	Approve overall cleanup goals.
Planning Section: Environmental Unit with input from TWG	<input type="checkbox"/>	Develop the decontamination strategy, including assessment of potential environmental impacts of remediation.
	<input type="checkbox"/>	Prepare the Remediation Action Plan (RAP), including: <ul style="list-style-type: none"> • Areas to decontaminate and types of surfaces involved. • Materials and structures to decontaminate in place or remove. • What decontamination technologies to use (e.g., reagent and delivery system). • Appropriate process parameters and analytical techniques.
	<input type="checkbox"/>	Include Ambient Air Monitoring Plan (AAMP) in RAP if fumigation is used.
	<input type="checkbox"/>	Prepare Clearance Sampling and Analysis Plan (SAP), including: <ul style="list-style-type: none"> • Clearance zones. • Sampling approach(es) for each zone (e.g., targeted, biased, and random or statistical sampling). • Aggressive air sampling, as necessary.
Operations Section: Decontamination Group	<input type="checkbox"/>	Perform source reduction.
	<input type="checkbox"/>	Review draft RAP and SAP.
UC	<input type="checkbox"/>	Approve the RAP and SAP with input from the ECC.
	<input type="checkbox"/>	Submit RAP and SAP to USEPA to obtain a crisis exemption if using an unregistered product for decontamination (i.e., one that is not an EPA-approved sterilant or pesticide).
Facility Safety Officer	<input type="checkbox"/>	If fumigation is selected, develop an Emergency Response Plan to address potential uncontrolled fumigation releases (e.g., from explosion, fire, or hurricane).
Operations Section: Decontamination and Sampling Groups	<input type="checkbox"/>	Perform all site preparations as specified in the RAP.
Operations Section: Decontamination Group	<input type="checkbox"/>	Conduct decontamination.
UC with input from TWG	<input type="checkbox"/>	Evaluate whether decontamination process criteria are met. Consult with ECC as appropriate. <ul style="list-style-type: none"> • Fumigation (e.g., biological indicators, concentration, temperature) • Surface decontamination (e.g., limited surface sampling, contact time, pH) Recommend additional decontamination activities, as necessary.

Checklist continued.

Responsible Personnel		Action
Clearance Phase		
Planning Section: Environmental Unit with input from TWG	<input type="checkbox"/>	Review, and revise as appropriate, the incident-specific clearance SAP.
UC with input from ECC	<input type="checkbox"/>	Approve the incident-specific clearance SAP, if it was revised.
Operations Section: Sampling Group	<input type="checkbox"/>	Perform clearance sampling.
Planning Section: Environmental Unit with input from TWG	<input type="checkbox"/>	Evaluate the clearance SAP results. Determine if cleanup criteria have been met. Recommend additional remediation if necessary.
Planning Section: Situation Unit	<input type="checkbox"/>	Write and submit the final clearance report.
UC with input from ECC	<input type="checkbox"/>	Review the final report. Make recommendations on whether facilities and items have been effectively decontaminated.
UC	<input type="checkbox"/>	Conduct reviews and confirm that facility, regulatory and stakeholder needs are addressed.
Facility Authority	<input type="checkbox"/>	Determine whether to reopen all or parts of the facility, or to initiate recovery and refurbishment activities. If none of the above, further decontamination may be warranted.
Reoccupancy Phase		
Facility Authority	<input type="checkbox"/>	Prepare and implement site-specific recovery plan: <ul style="list-style-type: none"> • Implement renovation, including refurbishment of removed and damaged items, system testing, and other required actions. • Determine whether phased-in reuse of the facility is needed to support recovery operations. • Upgrade or enhance facility for safety reasons, as appropriate (e.g., mitigate biological vulnerability).
	<input type="checkbox"/>	Address special work activities as necessary under the reoccupancy (transitional) program, such as safety-based maintenance and housekeeping.
Facility Authority in collaboration with local public health and OSHA, where appropriate	<input type="checkbox"/>	Determine strategy and implement long-term environmental and public health monitoring of the facility and employees, if deemed appropriate.
	<input type="checkbox"/>	Determine whether to permit tenants and employees to return for normal business. Address general industrial safety issues.
Facility Authority	<input type="checkbox"/>	Resume full operations at the facility for the public.

Recommendations for Facility Preparedness

The following list identifies preparedness activities a facility should conduct to expedite biological restoration. Activities are listed under the response phase with which they are most closely associated.

Initial Notification-Related Preparation
<ul style="list-style-type: none"> • Incorporate specific biological response plans into the facility’s emergency response plan, as appropriate. • Develop a notification protocol for all facility personnel, responders, and agencies (Federal, state, and local) tailored to each stage of a developing incident.
First Response-Related Preparation
<ul style="list-style-type: none"> • Develop a policy specifying the criteria for facility closure or suspension of operations after a biothreat agent attack. The policy should incorporate public health strategies and management of employees, rolling stock, and patrons. • Identify members of a Unified Command (UC), convene the UC, and review the facility’s restoration plan. • Conduct training exercises with likely command personnel, including responder and agency representatives.
Characterization-Related Preparation
<ul style="list-style-type: none"> • Identify members of a Technical Working Group (TWG), as appropriate. Members are drawn from the Centers for Disease Control and Prevention (CDC), U.S. Environmental Protection Agency (USEPA), local public health, sampling contractors, and analytical laboratories. The TWG should review the facility’s restoration plan. • Identify characterization resources, such as sampling contractors and analytical laboratories. • Identify potential sampling, characterization, fumigation, and decontamination zones within the facility. • Identify sampling units (which may consist of surfaces, items, or sets of items) to be sampled. • Identify areas at the facility that can be used or cleared for staging and storing waste materials. • Create and maintain an up-to-date library of key facility architectural and mechanical drawings including heating, ventilation and air conditioning (HVAC) operating parameters. • Update building vulnerability assessments periodically, and correct any deficiencies. • Create a new, or review and revise an existing, Health and Safety Plan (HASP).
Remediation-Related Preparation
<ul style="list-style-type: none"> • Identify in-house equipment that could be used or upgraded for remediation activities. • Select staging areas or warehouses for equipment and supplies. • Predetermine disposal and restoration options for potentially contaminated materials. • Determine likely decontamination method(s). • Determine types of decontamination supplies to store. • Select and retain contractors for the decontamination team. • Identify staging and storage areas for waste. • Initiate discussions with local waste-disposal facilities and wastewater treatment facilities. • Discuss waste-disposal issues with State solid waste management authority.
Clearance-Related Preparation
<ul style="list-style-type: none"> • Identify members of an Environmental Clearance Committee (ECC), as appropriate. ECC members should review the facility’s restoration plan.
Reoccupancy-Related Preparation
<ul style="list-style-type: none"> • Develop a Hazard Communication Plan, including written examples that would be used to inform employees and the general public about possible risks associated with reoccupancy.

Appendix A. Incident Command System

The Incident Command System (ICS) is a standardized, flexible, on-scene, emergency management construct specifically designated to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. It includes the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure and is designed to aid in managing resources during an emergency response, such as an incident involving a biothreat agent. It is critical that the ICS structure remain flexible and adaptable. It can be resized and restructured as the incident unfolds, adding or disbanding various groups, as dictated by the incident. The consequence management organization structure shown in Figure A-2 shows typical relationships among ICS organizations involved in consequence management of a biological contamination incident.

Formation of a Technical Working Group (TWG) early in an incident is strongly recommended. This group of technical specialists helps to plan restoration operations and provides advice to the Incident Commander or Unified Commander, staff, and contractors.

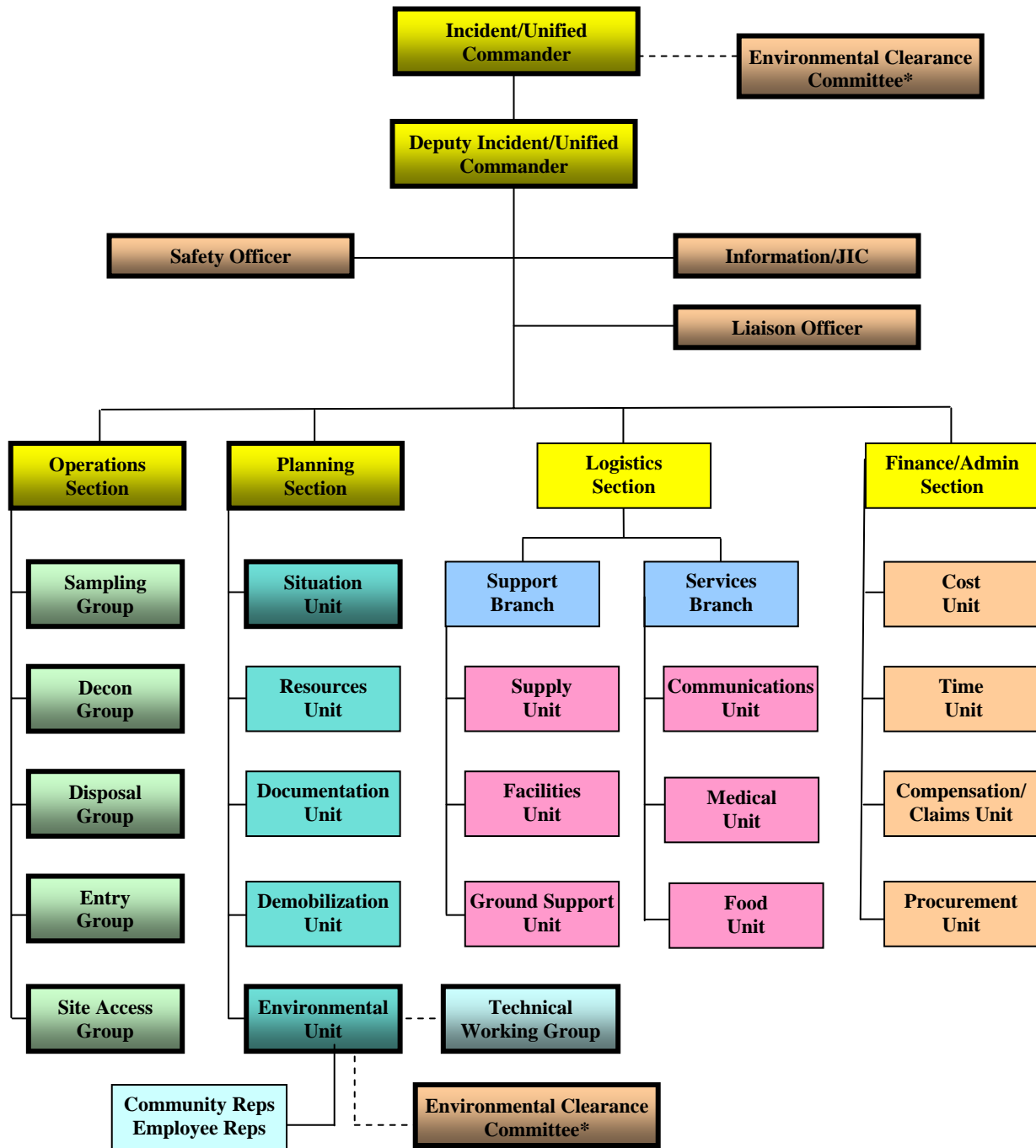
Formation of an Environmental Clearance Committee (ECC) is also strongly recommended. This group acts as an independent body to review cleanup thresholds and the effectiveness of remediation activities, and it recommends whether a facility should be opened for reoccupancy.

Figure A-3 identifies some of the specialty areas that would be required of personnel who staff the Unified Command, TWG, and ECC or the organizations that could provide representatives for each group. Technical roles played by members of the TWG and ECC are varied and challenging. For an incident involving a biological warfare agent, qualifications would include medical or restoration experience related to biological contamination.

CRISIS MANAGEMENT		CONSEQUENCE MANAGEMENT			
RESPONSE ACTIVITIES		RESTORATION ACTIVITIES			RECOVERY ACTIVITIES
NOTIFICATION	FIRST RESPONSE	CHARACTERIZATION	REMEDICATION/ CLEANUP	CLEARANCE	REOCCUPANCY
Receive and assess information Identify suspect release sites Relay key information and potential risk to appropriate agencies	HAZMAT and emergency actions Forensic investigation Public health actions Screening sampling Determine agent type, concentration, and viability Risk communication	Detailed characterization of biological agent Characterization of affected site Site containment Continue risk communication Characterization/ environmental sampling and analysis Initial risk assessment Clearance goals	Decontamination strategy Remediation action plan Worker health & safety Site preparation Source reduction Waste disposal Decontamination of sites and/or items Decontamination verification	Clearance sampling and analysis Clearance decision	Renovation Longer-term environmental and public health monitoring Reoccupation decision

Figure A-1. Response phases for a biological event. The content of this illustration was developed with interagency cooperation (LLNL 2006).

Figure A-2. Organizational structure of the consequence management phase of a biological attack. See Figure A-3 for additional detail.



* At the discretion of the UC, the ECC may either report directly to the UC or function under the direction of the Environmental Unit Leader.



Figure A-3. Components of the UC, TWG, and ECC during consequence management.

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