

IH Field Guide for Blast Overpressure (BOP): Process Identification the Addition of BOP as a Hazard within DOEHRS-IH

Juy 2025

Background Information

Centralized Navy IH BOP Program

Technical Guidance for Process Identification and Inclusion in DOEHRS-IH

STEP 1. Identify BOP producing processes.

STEP 2. Determine whether controls are in place that may reduce BOP exposure.

STEP 3. Add BOP producing processes to DOEHRS-IH.

STEP 4. Add standard wording to Observation and Notes (within DOEHRS-IH) and Executive Summary/Program Summary within IH Survey

For questions regarding this IH Field Guide for BOP, contact <u>mailto:usn.hampton-</u> roads.navmcpubhlthcenpors.list.nmcphc-ATSBOPsupport@health.mil.

More information on BOP can be found on NMCFHPC's website. <u>https://www.med.navy.mil/Navy-and-Marine-Corps-Force-Health-Protection-Command/Environmental-Health/Industrial-Hygiene/Acquisition-Technical-Support/Blast-Overpressure-BOP/</u>

- Ref: (a) Department of Defense (DoD) Requirements for Managing Brain Health Risks from Blast Overpressure of 8 Aug 24
 - (b) DoD Warfighter Brain Health Initiative Strategy and Action Plan, June 8, 2022
 - (c) Department of Defense Implementation Guidance for Managing Brain Health Risks from Blast Overpressure of 12 Dec 24

Background Information

BOP is defined as the sharp, instantaneous rise in ambient atmospheric pressure resulting from an explosive detonation or the weapon system firing. Exposure to BOP can result in a blast injury and adversely affect the brain and hollow organs of the body (lungs, intestines, ears). Per reference (a), DoD personnel in operational environments demonstrate possible adverse effects from acute and repetitive exposures to BOP on brain health and cognitive performance (e.g., headache, ringing in ears, slow reaction time, poor concentration). Although brain health effects from BOP exposures are not yet fully characterized, adverse health and cognitive performance impacts have been reported for exposures to BOP above four pounds per square inch (4 psi). Reference (a) establishes DoD requirements and direction for the management of brain health risks to DoD personnel from exposures to BOP and directly supports the DoD commitment to reduce the risks associated with BOP as detailed in reference (b).

Key terms and definitions the IH program office (IHPO) should know relating to the graphical representation in Figure 1 include:

Peak Pressure (psi)

•The sharp rise on the graph indicates the **peak pressure** (**P**) of the blast typically measured in pounds per square inch (psi).

Positive Impulse (psi-ms)

•The net force of the positive phase duration is the positive **impulse**, typically measured in psi/msec, also referred to as the "area under the curve".

Positive Phase Duration (ms)

•The time (t) in milli seconds (msec) from P to ambient pressure is known as the **positive phase duration**.





Figure 1. Graphical Representation of a Blast Wave

Centralized Navy BOP Program

Navy IH will coordinate project management centrally from NMCFHPC to oversee the early adoption of the BOP program, implement exposure assessment methods and evaluate work for quality assurance (e.g., sampling, analysis, reporting, recordkeeping).

The process identified in this tech guide will enable the Department of Navy (DON) Industrial Hygiene (IH) Program Offices (PO) to satisfy the following elements of the Department of Defense (DoD) Requirements for Managing Brain Health Risks from Blast Overpressure:

 "Identify and track personnel who are potentially exposed to BOP in the Defense Occupational and Environmental Health Readiness System-Industrial Hygiene, prioritizing those personnel who possess an occupational specialty that, by nature of operational activities, regularly places them at increased risk of BOP exposures."

Technical Guidance for Process Identification and Inclusion in DOEHRS-IH

Using the information in this guide, the IHPO will identify commands, processes, and personnel that utilize Tier 1 weapons and other BOP producing weapons of concern. Weapon systems, BOP hazard, control measures, and process personnel information will be documented in DOEHRS-IH.

The science relating to BOP exposure is still evolving. In the absence of an occupational exposure limit which does not exist, 4 psi is used as a risk mitigation threshold per references (a) and (c). Reference (c) states "this threshold may be revised in the future when further research defining brain health impacts from BOP exposure is available." Therefore, the IHPO <u>will not</u> be completing exposure assessments in DOEHRS-IH for the hazard of BOP. Other hazards associated with the processes will continue to be assessed.

STEP 1. Identify BOP producing processes.

The IHPO must first recognize processes that may lead to BOP exposure and determine the likelihood of exposure based on personnel roles within the process. NMCFHPC developed a survey that will be used to assist in identifying BOP producing processes based on weapons use. The **DON IH WEAPONS USE SURVEY FOR BOP EXPOSURE ESTIMATES** can be found on <u>NMCFHPC's BOP website</u>. More details on the proper use of the Weapons Use Survey are below.

(a) Tier 1 Weapons

Weapons systems known to produce BOP exposures exceeding 4 psi include breaching charges, shoulder fired weapons, 0.50 caliber rifles/guns, and indirect fires. DoD has identified these weapons as Tier-1 Weapons that are of greatest concern, which are included in the **DON IH WEAPONS USE SURVEY FOR BOP EXPOSURE ESTIMATES.** Tier-1 weapons are shown below in Figure 2. Exposure data has been collected during the use of the Tier-1 weapons as part of the NDAA 734 efforts; a summary can be found within the DoD Blast Overpressure Reference and Information Guide (D-BOP RIG) available at **https://denix.osd.mil/auth/soh/programs/bop/.**



Figure 2. Tier-1 Weapons as identified in the DoD Blast Overpressure Reference and Information Guide (D-BOP RIG)

(b) Additional Department of Navy Weapons of Concern

NMCFHPC, in collaboration with the acquisition and operational community, have identified additional weapons that may produce BOP that were not on the Tier-1 list. The additional weapons have been added to the **DON IH WEAPONS USE SURVEY FOR BOP EXPOSURE ESTIMATES**, found on <u>NMCFHPC's BOP website</u>. A screenshot of the tool is below.

				DON IH WEAPONS US	SE SI	URVEY FOR BOP EX		TES	
Command:	-			Command POC:			IH:		Date:
	Instructions: The IH should distribute this survey to the safety representative or weapons representative at the command, who will review the survey below and annotate all weapons used at the command with a "yes" in the								
	first column. If yes to a particular weapon, the point of contact should also detail the MOS/Specialty Code/Rating of personnel who use the weapon as well as answer the the information in items (a) through (h) within the								
Weapons U	Weapons Usage Notes and Controls column:								
			ed in operation of the weapon at the com	mand (operators and suppo	ort p	personnel)			
	used per person								
	uency and durat								
(d) and det	ails on the locati	ion of use	(such as indoor, outdoor, shipboard, unde	erground, etc).					
(e) Do you	have any require	ements to	limit the number of personnel within the	vicinity of firing operation	ıs?				
DOD Requi	irement: DOD Po	olicy requi	ires DOD Components to minimize the nu	mber of personnel in the	vicir	nity of BOP genera	ting events (i.e.,	personnel	who are not directly involved in the training or executing tasks associated
with the tr	aining event) to	minimize	unnecessary exposure.						
(f) Do you	enforce safety w	arnings ar	nd restrictions in weapons systems technic	al and operators' manuals	. and	d have a safety brie	f prior to beginn	ning operatio	ons?
		-	arnings and restrictions in weapons syste						
	-		the weapon, and do personnel stay as far a						
			· · ·	-					off distances for Tier-1 Weapons and standoff distances for non-training
			-	below and can also be fou	nd i	in the DoD Blast O	erpressure Ref	erence and	Information Guide (D-BOP RIG), available at
https://de	nix.osd.mil/auth	n/soh/pro	grams/bop/						
(h) Do you	have any interna	l require	ments for a maximum number of rounds th	hat can be fired for any wea	apor	ns utilized at the co	mmand?		
DOD requi	rement: Until st	udies are	complete that define an allowable numb	per of rounds per training p	peri	iod, integrate BOP	exposure mitiga	ation measu	res during live-fire training events to ensure operational readiness to
protect bra	ain health and th	he health	of the Force. DoD Components will integ	rate simulations into trai	ning	g strategies to red	uce BOP exposu	re, when ap	propriate, and will not expend excess rounds once training standards are
achieved.									
			For questions or to request changes to t	his weapons survey, conta	act:	usn.hampton-roa	ds.navmcpubhli	thcenpors.li	st.nmcphc-atsbopsupport@health.mil
	MOS/								
	Specialty			-	_		Platform/		
Yes if used	Code/Rating	Servi 💌	Systems 🚽	Round	*	DODIC	Posture 💌	Exposur 👻	Weapon Usage Notes and Controls* (a)-(h) above
							Advanced		
							Reconnaissa	Operator,	
							nce Vehicle	Observer,	
		USMC	30mm	30mm			(ARV-30)	Dismount	
							Amphibiuos		
							Combat	Operator,	
							Vehicle (ACV-	Observer,	
		USMC	30mm	30mm			30)	Dismount	
				60 mm mortar (on the					
			60 mm ground mortar 0 charge	ground) All Ammo @			Standing	Team	
		USMC		Charges 0, 1, 2, 3 and 4					Tier 1; DOD minimum safe standoff distance = 3ft
				60 mm mortar (on the			1		,
			60 mm ground mortar 2 charge	ground) All Ammo @			Standing	Team	
		USMC		Charges 0,1,2,3 and 4					Tier 1; DOD minimum safe standoff distance = 3ft
				60 mm mortar (on the			1		
			60 mm ground mortar 3 charge	ground) All Ammo @			Standing	Team	
		USMC	se min si ound morter o charge	Charges 0,1,2,3 and 4			stanong		Tier 1; DOD minimum safe standoff distance = 3ft
								1	
		00000							
		Como	60 mm ground mostar 4 charge	60 mm mortar (on the			Standing	Toom	
		USMC	60 mm ground mortar 4 charge				Standing	Team	Tier 1: DOD minimum safe standoff distance = 3ft

(c) Utilizing the DON IH WEAPONS USE SURVEY FOR BOP EXPOSURE ESTIMATES

Instructions for use: The IH should distribute the **DON IH WEAPONS USE SURVEY FOR BOP EXPOSURE ESTIMATES** to the safety representative or weapons representative at the command, who will review the survey below and annotate all weapons used at the command with a "yes" in the first column.

If yes to a particular weapon, the point of contact should detail the MOS/Specialty Code/Rating of personnel who utilize the weapon and detail additional information that must include:

- total number of personnel involved in operation of the weapon at the command (operators and support personnel)
- \circ rounds used per person
- $\circ \ \ \,$ the frequency and duration of use of the weapon
- \circ $\;$ and details on the location of use (such as indoor, outdoor, shipboard, underground, etc.).

The point of contact should also answer **questions regarding administrative controls** used to manage brain health risks of BOP exposures. More information on this can be found below in "STEP 2. Determine whether controls are in place that may reduce BOP exposure."

				DON IH WEAPON	S USE SURVEY FOR BO	OP EXPOSURE ESTIN	IATES	
ommand:				Command POC:		IH:		Date:
structions	s: The IH shoul	d distribut	te this survey to the safety	representative or weapons represen	tative at the command	d, who will review th	e survey be	low and annotate all weapons used at the command with a "yes" in th
st column.	. If yes to a pa	articular v	weapon, the point of conta	act should also detail additional infor	mation in a separate r	notes page to be give	en to the IH	or by adding to the "Weapon Use Notes and Controls" column, with
formation	that must inclu	ude:						
	•							
) total nu	nber of perso	onnel invo	lved in operation of the	weapon at the command (operator	rs and support perso	nnel)		
) rounds (sed per perso	on						
) the frequ	ency and du	ration of	use of the weapon					
) and deta	ils on the loc	ation of u	use (such as indoor, outdo	oor, shipboard, underground, etc).				
) Do you l	ave any requ	uirements	to limit the number of p	ersonnel within the vicinity of firing	g operations?			
JD Requir	ment: DOD P	olicy requi	ires DOD Components to m	ninimize the number of personnel in t	he vicinity of BOP gen	erating events (i.e.,	personnel w	ho are not directly involved in the training or executing tasks associa
ith the trai	ining event) to	minimize	unnecessary exposure.					
Do vou e	enforce safety	warning	s and restrictions in wear	oons systems technical and operato	rs' manuals, and hav	e a safety brief prio	r to beginn	ing operations?
		-		weapons systems technical and oper				• • • • • • • • • • • • • • • • • • • •
			-	ersonnel stay as far away as possibl				
ces.			•	5 5				distances for Her-1 Weapons and standoff distances for non-training
you l you l quire	have inte	rnal requ i udies are	irements for a maximum i complete that define an al	number of rounds that can be fired lowable number of rounds per trainin l integrate simulations into training s	for any weapons uti g period, integrate BC	ilized at the comma	nd? on measures	during live-fire training ts to ensure operational readiness to pr
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you l equire	have ementil sti ano MOS/ Specialty	rnal requi udies are h of the Fo	irements for a maximum complete that define an al rcre. DoD Components wil For questions or to reques Systems	number of rounds that can be fired lowable number of rounds per trainin l integrate simulations into training s st changes to this weapons survey, co v Round	for any weapons uti g period, integrate BC trategies to reduce B(ontact: usn.hampton-r	ilized at the comma DP exposure mitigatic DP exposure, when a oads.navmcpubhithc Platform/ Platform/ Platform/ Advanced Reconnaissan ce Vehicle (ARV-30) Amphibiuos Combat	nd? on measures ppropriate, enpors.list.r Exposur(Operator, Dismount Operator,	aduring live-fire training ts to ensure operational readiness to prand will not expend extended on the standards are achiev

(d) Navy Unique Exposures

DON has a unique environment compared to the other services. This includes underway and other environments with reflective surfaces, mission and training requirements that require firing a certain type and number of rounds, non-stationary training, "living where you work" in shipboard environments, and work environments that vary to include shoreside, undersea, underground, in air, and shipboard that may create exposures that differ from traditional exposures anticipated from operating weapons in an open field, open air environment. The following reflective surfaces and where they are in relation to weapons operations may affect BOP exposures: enclosures, walls, berms, sand/sandbags, vehicles, trees, rocks, and foxholes. This may be further expanded on ships to include bulkheads, decks, overhead, passageways, bulwarks, and ladders.

Because of the unique DON environments, the role of the IHPO in observing and evaluating, whether qualitatively or quantitatively, is essential to understanding and documenting potential exposure within DON. A few things to keep in mind during the IH survey:

- Weapon operators, instructors, range safety personnel, watchstanders, etc., may all be exposed to BOP during weapons use.
- Exposed populations can be identified by weapons used or by occupational specialty.
- Weapons systems known to produce BOP exposures exceeding 4 psi include breaching charges, shoulder fired weapons, 0.50 caliber rifles/guns, and indirect fires.
- In general, Naval Special Warfare operators, Special Boat Team personnel, Explosive Ordnance Disposal (EOD) personnel, Gunners Mates, weapons operators and assistant gunners, Range Safety Officers, and instructors utilizing the weapons identified below are at highest risk of exposure to various levels of BOP within the Department of Navy (DON).

(e) Process Naming

Once weapons use has been identified, a process to capture the weapons used must be created. The IHPO will have to determine the best process name to capture the use of the weapons systems, which may lead to multiple processes. Examples of process names are below (not an inclusive list).

- **Process: Weapons Training, Shoulder Fired Weapons.** This could include multiple weapons or one weapon, such as the Carl Gustaf, AT4, and M72 LAW.
- **Process: Operating Crew Served Weapons.** Crew Served Weapons require more than a single operator for its proper use. Crew served weapons may be used shipboard or shoreside. Examples of crew served weapons include M2HB, M2A1, and M240B. Shipboard Crew Served Weapons guides can be found here:

<u>https://militaryhealth.sharepoint-</u> <u>mil.us/:f:/r/teams/DONBOP/Shared%20Documents/General/Surface%20Ship%20Crew%20Served%20</u> <u>Weapons%20guides?csf=1&web=1&e=QMvXg7</u>

- **Process: Weapons System Test and Evaluation.** This may include several weapons, such as the GAU-21, MK15, M2A1, etc.
- **Process: Topside watchstanding during weapons operations.** Weapons could include larger shipboard weapons such as MK45, CIWS, etc.
- **Process: Explosive Breaching.** This could include various charges, indoor or outdoor.
- **Process: Training with Mortar Systems**. This may include several types of mortars, or one single type.
- **Process: Operations utilizing Advanced Reconnaissance Vehicle (ARV-30).** This could include operator, observer, dismount if necessary.

STEP 2. Determine whether controls are in place that may reduce BOP exposure.

Utilize **DON IH WEAPONS USE SURVEY FOR BOP EXPOSURE ESTIMATES** to begin to understand whether controls are in place, which identifies questions relating to controlling BOP exposures. The "Department of Defense (DoD) Requirements for Managing Brain Health Risks from Blast Overpressure" policy requires DOD Components to manage brain health risks of BOP exposures. The questions below guide the IH to understand

whether the command is managing risk per DOD requirements. These questions are also within the survey

itself that can be found on <u>NMCFHPC's BOP website</u> and shown in the screenshot below.

	DON IH WEAPONS USE SURVEY FOR BOP EXPOSURE ESTIMATES							
Command:			Command POC:		IH:		Date:	
	structions: The IH should distribute this survey to the safety representative or weapons representative at the command, who will review the survey below and annotate all weapons used at the command with a "yes" in the							
first column. If yes to a	rst column. If yes to a particular weapon, the point of contact should also detail additional information in a separate notes page to be given to the IH or by adding to the "Weapon Use Notes and Controls" column, with							
information that must in	rmation that must include:							
• •		olved in operation of the w	eapon at the command (operators	and support personne	el)			
(b) rounds used per per								
(c) the frequency and d								
			r, shipboard, underground, etc).					
(e) Do you have any red	quirements	to limit the number of per	sonnel within the vicinity of firing	operations?				
DOD Requirement: DOD	Policy requ	ires DOD Components to min	imize the number of personnel in the	e vicinity of BOP genera	ting events (i.e.,	personnel w	ho are not directly involved in the training or executing tasks associated	
with the training event) t	o minimize	unnecessary exposure.						
(f) Do you entorce safe	ty warning	s and restrictions in weapo	ns systems technical and operators	s' manuals, and have a	safety brief prio	r to beginn	ing operations?	
DOD requirement: Enfor	e safety w	arnings and restrictions in we	eapons systems technical and operat	tors' manuals.				
(g) How far do personn	el stand fro	m the weapon, and do per	sonnel stay as far away as possible	while still meeting mi	ssion requiremen	nts?		
							distances for Tier-1 Weapons and standoff distances for non-training	
audiences.								
(h) Do you have any int	ernal requ	irements for a maximum nu	imber of rounds that can be fired f	or any weapons utilize	ed at the comma	nd?		
DOD requirement: Until :	studies are	complete that define an allow	wable number of rounds per training	period, integrate BOP e	exposure mitigation	on measures	s during live-fire training events to ensure operational readiness to protect	
brain health and the hea	lth of the Fo	orce. DoD Components will in	ntegrate simulations into training str	ategies to reduce BOP	exposure, when a	ppropriate,	and will not expend excess rounds once training standards are achieved.	
		For questions or to request	changes to this weapons survey, cor	itact: usn.hampton-road	ls.navmcpubhlthc	enpors.list.r	mcphc-atsbopsupport@health.mil	
MOS/								
Specialty				_	Platform/	_		
Yes if used Code/Rating	Service	Systems	Round	- DODIC		Exposure	Weapon Usage Notes and Controls (a)-(h) above	
					Advanced			
					Reconnaissan			
						Observer,		
	USMC	30mm	30mm			Dismount		
					Amphibiuos	_		
						Operator,		
					Vehicle (ACV-			
	USMC	30mm	30mm		30)	Dismount		
	USMC	M249	5.56mm	1	Prone	Operator		

- **Question 1:** Do you have any requirements to limit the number of personnel within the vicinity of firing operations?
 - DOD Requirement: DOD Policy requires DOD Components to minimize the number of personnel in the vicinity of BOP generating events (i.e., personnel who are not directly involved in the training or executing tasks associated with the training event) to minimize unnecessary exposure.
 - Answer: If yes, administrative controls are in place.
 - Control description for DOEHRS: Minimize personnel near BOP generating events.
 - Control description comments: DOD Policy requires DOD Components to minimize the number of
 personnel in the vicinity of BOP generating events (i.e., personnel who are not directly involved in the
 training or executing tasks associated with the training event) to minimize unnecessary exposure.
- **Question 2:** Do you enforce safety warnings and restrictions in weapons systems technical and operators' manuals, and have a safety brief prior to beginning operations?
 - DOD requirement: Enforce safety warnings and restrictions in weapons systems technical and operators' manuals.
 - Answer: If yes, administrative controls are in place.
 - Control description for DOEHRS: Enforce safety requirements.
 - Control description comments: DOD Policy requires DOD Components to enforce safety warnings and restrictions in weapons systems technical and operators' manuals per DOD requirements.

- **Question 3:** How far do personnel stand from the weapon, and do personnel stay as far away as possible while still meeting mission requirements?
 - DOD Requirement: Components must incorporate BOP risk management and mitigation actions to minimize the risk of brain injury that includes stand-off distances for Tier-1 Weapons and standoff distances for non-training audiences.
 - NOTE: Standoff distances for "tier-1" one weapons are documented in the DoD Blast Overpressure Reference and Information Guide (D-BOP RIG), available at https://denix.osd.mil/auth/soh/programs/bop/
 - Answer: If yes, administrative controls are in place.
 - Control description for DOEHRS: Stand-off distances utilized per DOD requirements.
 - Control description comments: Components must incorporate BOP risk management and mitigation actions to minimize the risk of brain injury that includes stand-off distances for weapons users and standoff distances for non-training audiences per DOD policy.
- **Question 4:** Do you have any internal requirements for a maximum number of rounds that can be fired for any weapons utilized at the command?
 - DOD requirement: Until studies are complete that define an allowable number of rounds per training period, integrate BOP exposure mitigation measures during live-fire training events to ensure operational readiness to protect brain health and the health of the Force. DoD Components will integrate simulations into training strategies to reduce BOP exposure, when appropriate, and will not expend excess rounds once training standards are achieved.
 - **Answer**: If yes, administrative controls are in place.
 - **Control description for DOEHRS**: Minimize rounds fired.
 - Control description comments: DOD Policy requires DOD Components to limit the number of rounds to no more than the amount necessary to achieve mission readiness.

The above information can be used to select controls when entering the process in DOEHRS as detailed below.

STEP 3. Add BOP Producing Processes to DOEHRS-IH

Prior to entering Blast Overpressure information, verify appropriate personnel are assigned to the shop and process(es) that will have BOP hazards added. Add personnel as needed.

a. Adding Blast Overpressure as a Process Hazard

Step 1. Click on Process Name and expand the options to see and select Hazards.

rou are here. <u>Home & onep & onep Detail & Hazara</u>
Work Plan
Work Basket Pending QA Master Schedule Jobs
Industrial Hygiene
Sample Log Shop ATC Breacher School TEST (N49093) Shop Personnel Processes Lead Breacher Course TEST Personnel Lead Breacher Course TEST Personnel Hazmat Att Antion Samples Shop Respiratory Protection Program Shop Respiratory Protection Program

Step 2. Select Add Hazard.

Hazards - Search	
Please select one of the option Tip: Exposure Route, Target C	ns below. rgan, and Qualifier are for Chemical Hazards only.
Quick Search Between	Hazard Name
Advanced Search Hazard Category Hazard Class (Ctrl click to select multiple)	

Step 3. Search for Blast Overpressure and then Add to Form. On the Hazard Detail page, select Save.

	ard to add to the form.		
Search Ha:	zard Name 🗸 Blast over	Search	
Hazard Sea	rch Results		۲
Add To For	m		
Select	Hazard Name	Synonym	CAS#
0	Blast Overpressure		
Add To For	m		
Page: 1			« Previous Next
<u>.</u>			
Back to Sea	arch Cancel		

b. Add Weapons System Information to a Process

Step 1. Select the appropriate process. On the **Process Information**, click the drop-down arrow for **Weapons System Information** tab. Select the plus button to add a weapon system.

Indicates Required Field					
				Other Actions -Processes-	
op Name: BOP Weapon Training	g Center				
Save Cancel					
Process Information					
rocess Name *	BOP Weapons Firing	Process Category *	Industrial V		
ommon Process *	Weapons & Ordnance 🗸	Method *	Breeching	~	
Start Date *	2024/04/16 (yyyy/mm/dd)	Stop Date	(yyyy/mm/dd)		
Process Frequency *	Monthly V	Process Duration *	2-4 hours V		
IOTE: If changing the Process F	requency and/or Process Duration fields, press the 'Archive Process Descri	iption' button FIRST to capture the existing data, th	en make applicable changes and create updated Description.		
Description Archive Process Descript	fon Example Process for BOP data into DOEHRS-IH. **This Pro BOP to populate on the report. Do not perform a DOEHRS-	ocess has BOP as a hazard but NO control. -IH exposure assessment for the hazard of	. A control must be added for the hazard of EOP.		
Reference Documents					
Archived Process Descriptions					
Process Description			Process Frequency	Process Duration Archived Date	
Process Personnel Display C	Current Process Personnel V				
SLO Assignments for Current P					
Descent Hannaha Di A O					
Process Hazards Display Cu	rient Process nazards				
Process HazMats Display Cu		ations V			
Process HazMats Display Cur Active Medical Surveillance Rec	rrent Process HazMats V commendations Display Current Medical Surveillance Recommenda	stions V			
Process HazMats Display Cur Active Medical Surveillance Rec	rrent Process HazMats	ations V			
Process HazMats Display Cur Active Medical Surveillance Rec Deficiencies Associated with the	rrent Process HazMats V commendations Display Current Medical Surveillance Recommenda	ations V			•
Process HazMats Display Cur Active Medical Surveillance Rec Deficiencies Associated with the Weapon Systems Information	rrent Process HazMats V commendations Display Current Medical Surveillance Recommenda	ations V			• «
Process HazMats [Display Cu Active Medical Surveillance Rec Deficiencies Associated with the Weapon Systems Information Location Information	rrent Process HazMats V commendations Display Current Medical Surveillance Recommenda	ations V			
Process HazMats Display Co: Active Medical Surveillance Rec Deficiencies Associated with the Weapon Systems Information Location Information Attachments (0)	rrent Process HazMats V commendations Display Current Medical Surveillance Recommenda				• •
Process HazMats Display Ca: Active Medical Surveillance Rec Deficiencies Associated with the Weapon Systems Information Location Information Attachments (0) There are currently no associated a	rrent Frocess HazNats v commendations Display Current Medical Surveillance Recommenda e Current Process Display Current Deficiencies v				
Deficiencies Associated with the Weapon Systems Information Location Information Attachments (0)	rrent Frocess HazNats v commendations Display Current Medical Surveillance Recommenda e Current Process Display Current Deficiencies v				

Step 2. If you know the name of the Weapon System you are searching for, you can use the **Quick Search Weapons System** option. If you need to search for your Weapon System, use the Advanced Search options to locate the correct weapons system. First select the correct **Category** and continue to make selections until the weapon system you are looking for populates in the **Type** field and the select **Search**. You can add one or more weapons per process. A full breakdown of DON BOP Weapon System options can be found can be found on <u>NMCFHPC's BOP website</u>.

Step 1 - Find Weapon Syste	em - Search/Add Weapon System
Please select one of the options belo	W.
Quick Search Weapon System	Search
Advanced Search	
Category	Search & Recovery Space Support Equipment Vehicles Vessels Weapon System (Large Caliber) Weapon System (Other) Weapon System (Shoulder Launched) Weather
Туре	Machine Gun (Small Caliber) Pistol Shotgun Small Arms * « Search
Cancel	

Step 3. After selecting your Weapon System, the Step 2 – Find Weapon System – Select Weapon System page will appear. This page lists Weapon Systems by alphabetical order and you may need to hit View All Results to find your specific Weapon System then select Continue.

Note: **Do not** use the **Add "Other" Weapon System**. If you cannot find the weapons system in the search function, contact <u>NMCFHPC DOEHRS-IH Support Team</u>.

Step 2 - Find Weapon System - Select Weapon System

Results 1-20 of 20 records found.

Shops			
Select	Weapon Category	Weapon Type	Weapon System
0	Weapon System (Small Caliber)	Rifle	AK-103
0	Weapon System (Small Caliber)	Rifle	AK-104
0	Weapon System (Small Caliber)	Rifle	M1 Carbine Rifle
0	Weapon System (Small Caliber)	Rifle	M1 Garand Rifle
0	Weapon System (Small Caliber)	Rifle	M107 Sniper Rifle
0	Weapon System (Small Caliber)	Rifle	M110 Rifle
0	Weapon System (Small Caliber)	Rifle	M14 Rifle
0	Weapon System (Small Caliber)	Rifle	M16A2 Rifle
0	Weapon System (Small Caliber)	Rifle	M1903 Springfield Rifle
0	Weapon System (Small Caliber)	Rifle	M1917 Enfield Rifle
0	Weapon System (Small Caliber)	Rifle	M2010 Enhanced Sniper Rifle
0	Weapon System (Small Caliber)	Rifle	M21 Sniper Weapon Systems (SWS)
0	Weapon System (Small Caliber)	Rifle	M24
0	Weapon System (Small Caliber)	Rifle	M24 Sniper Weapon Systems (SWS)
0	Weapon System (Small Caliber)	Rifle	M4 Carbine Rifle
0	Weapon System (Small Caliber)	Rifle	M82 Barrett
0	Weapon System (Small Caliber)	Rifle	MK 18 Carbine Rifle
0	Weapon System (Small Caliber)	Rifle	MK 22 Sniper Rifle
0	Weapon System (Small Caliber)	Rifle	NGSW Automatic Rifle
0	Weapon System (Small Caliber)	Rifle	NGSW Rifle

Page: A M N | View All Results

Add "Other" Weapon System

Continue Cancel Back

Step 4. The Step 3 – Find Weapon System – Select Ammunition page will appear. Select the Start Date for the Weapon System Name and add any ammunition information.

Step 3 - Find Weapon System - Select Ammunition							
Weapon System							•
Weapon System Name		Stop Date					
AK-103	2025/05/13 💽 (yyyy/mm	/dd)		yyyy/mm/dd)			
Weapon System Ammunition							+ •
Selecting Not Applicable means the process involving the We	apon System does not include the	use of Ammunition.					
Delete							
Select Ammunition		Ammunition Description	Start Date*		Stop Date		
7.62mm M82 Blank, Linked	~						
				(yyyy/mm/dd)		(yyyy/mm/dd)	
Delete							
Add To Form Cancel Back							

Step 5. The weapon system and ammunition information will now appear on the **Process – Detail** page. **Weapons System Information** does not currently populate in the Standardized Survey.

Process - Detail									
* Indicates Required Field							Other	Actions -Processes-	~
Shop Name: BOP Weapo	n Training Center								
Save Cancel									٢
Process Information									۲
Process Name *	Weapons Training, Shoulder		Process Category *	Industrial	~				
Common Process *	Weapons & Ordnance 🗸		Method *	Weapons & Ord	inance, NOC		~		
Start Date *	2024/04/19 (yyyy/mm/dd)		Stop Date		yyyy/mm/dd)				
Process Frequency *	Yearly 🗸		Process Duration *	15-30 minutes	• •				
NOTE: If changing the F	rocess Frequency and/or Process Duration fields, press the 'Archive Pro-				es and create update				
Description Archive Proce	ss Description ** This Process has BOP as a hazard, has a cont Selected SEAL Team Platoon members will train				, LAW, and Carl	* *			
Reference Documents									
Archived Process Desc	iptions								-
Process Description						Process Frequency	Process Duration	Archived Date	
Process Personnel Di	splay Current Process Personnel 🗸								•
SEG Assignments for 0	urrent Process Display Current SEG-Process SEGs								•
Process Hazards Disa	lay Current Process Hazards								•
Process HazMats Dis	olay Current Process HazMats 🗸								•
Active Medical Surveill	ance Recommendations Display Current Medical Surveillance R	Recommendations	•						-
Deficiencies Associate	d with the Current Process Display Current Deficiencies	~							•
Weapon Systems Infor	nation								+ +
Delete Include Archi	ved Weapon Systems								
Select Categ		Type	System Sta	art Date	Stop Date	Ammunition			
<u>Weap</u>	on System (Shoulder Launched)	Individual	M72 LAW 20	25/02/26		Other (Ammunition Te	esting Descript)		
<u>Weap</u>	on System (Shoulder Launched)	Individual	M136 AT4 20	25/04/14		Not Applicable			
Weap	on System (Small Caliber)	Rifle	AK-103 20	25/05/13		7.62mm M82 Blank, Li	inked		
Delete									
Location information									_
Attachments (0)									+ •
There are currently no as	sociated attachment files; you may upload attachment files by clicking on the pl	lus image on the right							
Program Office Informa	tion								-
Demographic Informati	on								•
Save Cancel									

Note: In the **Process Description**, specify the associated Department of Defense Identification Code (DODIC/ammunition code) and Posture position along with additional process information. The DODIC and other ammunition specific information can be found on the ammo can or by asking personnel on the range. The figure below shows a DODIC on an ammo can.



c. Adding Controls for Blast Overpressure Hazards

Step 1. Click on selected Process Name and expand the options to see and select **Controls**.

Work Plan
Work Basket Pending QA Master Schedule Jobs
Industrial Hygiene
Sample Log Shop BOP Weapon Training Center (N49093) Shop Personnel Processes BOP Weapons Firing Personnel BOP Weapons Firing Personnel Hazards Equipment Hazards Engineering PPE Administrative Samples H

Step 2. Select Add Control.

Controls - Search	
Please select one of the	options below.
Quick Search Between	Description V Start Date V (yyyy/mm/dd) Start Date V (yyyy/mm/dd) Include Archived Records Search
Add Control	
Advanced Search Control Type	

Step 3. On the Control Information page, select Control Type: Administrative, Control Class: Miscellaneous, Control Name: Standard Operating Procedure and then select Continue.

Add Control				
Please select a control type.				
Shop Name: BOP Weapon Training Center Process Name: BOP Weapons Firing				
Control Information				
Control Type *	Administrative 🗸			
Control Class *	Miscellaneous 🗸			
Control Name *	Standard Operating Procedures 🗸			
Continue Cancel				

Step 4. On the Control Details page, enter the Description and Comments.

Control Detail - Admini	strative					
* Indicates Required Field						
	sining Center Process Name: BOP W	amone Firing				
Shop Manie. Dor Weapon ha	anning octator i rioceaa nume. Dor vie	supons r ming				
Save Cancel						
Control Information						
Control Class	Miscellaneous		Control Name	Standard Operating Procedures		
Description*			Reference Used			
Requirement Information						
Adequate *	O Yes O No O Ur	real and the second				
Use *	O Required O Recor					
030	by Regulation					
	by OSHA					
Required						
to Control Exposure at Acceptable Levels						
Comments						
Current Process Assignmen	ts					
Process		Start Date		Stop Date		
BOP Weapons Firing *		2024/04/16 (yyyy/mm/dd)		(yyyy/mm/dd)		
Former Process Assignment	ts					
Hazards Controlled						
No Hazards Selected						
Select Hazards Controlle		olled	Process(es)			
	Blast Overpress	, 🔟				
Attachments (0)						
There are currently no associa	ted attachment files; you may upload at	tachment files by clicking on the plus image on the righ	d			
Program Office Information						
Save Cancel						

Standardized Control description wording options and comments for DOEHRS (use exact phrases below):

Option (1) Control description: Minimize personnel near BOP generating events.

Control description comments: DOD Policy requires DOD Components to minimize the number of
personnel in the vicinity of BOP generating events (i.e., personnel who are not directly involved in the
training or executing tasks associated with the training event) to minimize unnecessary exposure.

Option (2) Control description: Enforce safety requirements.

• Control description **comments**: DOD Policy requires DOD Components to enforce safety warnings and restrictions in weapons systems technical and operators' manuals per DOD requirements.

Option (3) Control description: Stand-off distances utilized per DOD requirements.

• Control description **comments**: Components must incorporate BOP risk management and mitigation actions to minimize the risk of brain injury that includes stand-off distances for weapons users and standoff distances for non-training audiences per DOD policy.

Option (4) Control description: Minimize rounds fired.

• Control description **comments**: DOD Policy requires DOD Components to limit the number of rounds to no more than the amount necessary to achieve mission readiness.

Step 5. Select "Unknown" response for Adequate and "Required" for Use. Scroll down to the Hazards Controlled section and select Blast Overpressure. Select Save.

Control Detail - Adminis	trative					
* Indicates Required Field						
Shop Name: BOP Weapon Train	ning Center Process Name: BOP W	apons Firing				
Save Cancel						
Control Information						
Control Class	Miscellaneous			Control Name	Standard Oper	ating Procedures
Description*				Reference Used		
Requirement Information			•			
Adequate *	○ Yes ○ No ○ Ur	known				
Use *	O Required O Recor	nmended O Elective				
	by Regulation					
	by OSHA					
Required	to Control Exposure	to Control Exposure at Acceptable Levels				
	Periodic Monitoring					
Comments						
Current Process Assignments	8					
Process		Start Date			Stop Date	
BOP Weapons Firing *		2024/04/16 (yyyy/mm/dd)			(yyyy/mm/dd)	
Former Process Assignments	8					
Hazards Controlled						
No Hazards Selected	Userado Conto					
Select		Hazards Controlled				Process(es)
✓	Blast Overpress					
Attachments (0)						
There are currently no associate	ed attachment files; you may upload at	tachment files by clicking or	n the plus image on the right			
Program Office Information						
Save Cancel						

Because BUMED IH is not currently performing exposure assessments for BOP hazards, at least one Control must be added with the Hazard of BOP for BOP to be listed in the standardized survey. An example standardized survey can be found on <u>NMCFHPC's BOP website</u>

The resulting survey would result in a process that looks like this within the DOEHRS-IH Survey:

Process: BOP Weapons Test		
Frequency: Weekly	Duration: 1-2 hours	
Description: **This Process has BOP as a hazard and a control, but NO assessment.		

Administrative

Control Description	Hazards Controlled	Control Use	Adequate		
STAND-OFF DISTANCES UTILIZED PER DOD REQURIEMENTS	Blast Overpressure	Required	Unknown		
Comments: Components must incorporate BOP risk management and mitigation actions to minimize the risk of brain injury that includes stand-off distances for weapons users and standoff distances for non-training audiences per DOD policy.					

STEP 4. Add standard wording to Observation and Notes (within DOEHRS-IH) and Executive Summary/Program Summary within IH Survey

If the IHPO identifies a BOP producing process and adds it to DOEHRS-IH, standard wording must be placed in **Observations and Notes** section (within DOEHRS-IH) and the **Executive Summary/Program Summary** of the IH survey. Standard wording is as follows:

"Blast Overpressure

References:

- (a) Department of Defense Warfighter Brain Health Initiative Strategy and Action Plan, June 8, 2022
- (b) Department of Defense (DoD) Requirements for Managing Brain Health Risks from Blast Overpressure
- (c) DoD Safety and Occupational Health, Blast Overpressure (BOP) Program, available at https://denix.osd.mil/auth/soh/programs/bop/
- (d) Warfighter Brain Health Hub, available at https://www.health.mil/Military-Health-Topics/Warfighter-Brain-Health

Blast Overpressure (BOP) is defined as the sharp, instantaneous rise in ambient atmospheric pressure resulting from an explosive detonation (e.g., breaching operations) or the weapon system firing. The DoD is committed to reducing risks associated with blast overpressure (BOP) as part of the overall "Comprehensive Strategy and Action Plan for Warfighter Brain Health", reference (a). Reference (b) establishes DoD requirements and direction for the management of health risks to DoD personnel from exposures to BOP. Reference (b) states that DoD personnel in operational environments demonstrate possible adverse effects from acute and repetitive exposures to BOP on brain health and cognitive performance (e.g., headache, ringing in ears, slow reaction time, poor concentration). Although brain health effects from BOP exposures are not yet fully characterized, adverse health and cognitive performance impacts have been reported for exposures to BOP above 4 pounds per square inch (psi). References (c) and (d) provide additional resources relating to BOP.

To aid in risk mitigation, industrial hygiene has identified processes that involve BOP exposures at your command below."

END STANDARD WORDING

Additional information and files discussed in this IH Field Guide can be found on NMCFHPC's BOP Website:

https://www.med.navy.mil/Navy-and-Marine-Corps-Force-Health-Protection-Command/Environmental-Health/Industrial-Hygiene/Acquisition-Technical-Support/Blast-Overpressure-BOP/