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The Hand Exposure Audit™

Most organisations audit PPE, procedures and behaviours.
A Hand Exposure Audit™ audits where the hands actually go.

Step 01 FIND	Step 02 CLASSIFY	Step 03 ENERGY	Step 04 MEASURE	Step 05 ENGINEER	Step 06 VERIFY
Where does the hand enter the task cycle?	Which of the eight hand functions is being performed?	What hazardous energy can reach the hand in this position?	How close, how long, how often, how variable?	Can the function be performed outside the exposure zone?	Has hand exposure actually reduced? Any new exposures introduced?

— THE PROPOSITION

Auditing Where the Hands Go, Not Just What the Hands Wear

Industrial safety auditing is well developed. Organisations routinely audit PPE compliance — whether the correct gloves, eyewear and footwear are in use for each task. They audit procedures — whether work is being conducted in accordance with written instructions. They audit behaviours — whether workers are observing safe distances, correct lifting postures, permit requirements.

What most safety auditing systems do not systematically examine is hand entry: the specific moments in each task cycle when a worker's hand moves into a zone where hazardous energy can reach it, what function the hand is performing in that zone, and whether that function could be performed from a position where the energy cannot reach it.

PPE auditing asks: is the hand protected? Procedure auditing asks: is the task being performed correctly? The Hand Exposure Audit™ asks a prior question: does the hand need to be there?

This distinction matters because it operates at a different level of the control hierarchy. PPE and administrative controls act after the hand is positioned inside the exposure zone. An engineering intervention — if one can be identified — removes the hand from the zone before any exposure occurs. The audit's primary purpose is to identify where those engineering opportunities exist, before an incident makes the identification necessary.

An organisation that knows where its workers' hands are going — systematically, before anyone is hurt — has adopted a fundamentally different relationship with hand risk.

PSC HAND EXPOSURE CONTROL™ · METHOD 01

The Hand Exposure Audit™ is a six-step field methodology that any qualified safety professional or operations engineer can conduct. It does not require specialist equipment — it requires observation, the ability to name what the hand is doing, and a structured approach to recording what is found.

The methodology is tool-neutral and compatible with existing organisational risk frameworks. Where a formal risk rating is required, Step 04 provides the observable data that organisations can apply to their own risk matrices. The Hand Exposure Audit™ does not introduce a competing scoring system.

PREPARATION

How to Use This Methodology

Who conducts the audit. The Hand Exposure Audit™ is designed for safety professionals, operations engineers or supervisors with working knowledge of the tasks being assessed. The assessor does not need specialist hand-safety qualifications, but should be able to observe a task cycle completely, identify energy sources present in the work environment, and distinguish between the hand performing its primary function and the hand positioned where energy can reach it. For complex operations — confined spaces, suspended loads, high-energy environments — a two-person assessment team is recommended.

What to assess. The methodology applies to any task in which a worker's hand enters or approaches a zone where hazardous energy is present. The most productive starting points are: tasks involving handling, positioning or installing components; operations involving mechanically assisted lifting or movement; maintenance work in which energy isolation cannot be fully confirmed; and any task that has historically produced hand-contact near-miss events or injuries.

What the audit produces. A completed Hand Exposure Audit™ record documents the hand entry point, the function being performed, the energy present, the observable exposure characteristics, an assessment of whether engineering intervention is viable, any intervention proposed or implemented, and the verification outcome. Over time, aggregated audit records identify where hand exposure is concentrated, where engineering solutions have been successfully deployed, and where further development is required.

THE SIX-STEP SPINE • HAND EXPOSURE AUDIT™

Find The Hand™ → Classify → Energy → Measure → Engineer → Verify

Step 01 FIND	Step 02 CLASSIFY	Step 03 ENERGY	Step 04 MEASURE	Step 05 ENGINEER	Step 06 VERIFY
Observe the complete task cycle. Identify every point at which the hand enters proximity of hazardous energy.	Name the hand function from the eight-function taxonomy established in PSC Doctrine 01.	Identify the specific hazardous energy type or types that can reach the hand in this position.	Record the observable characteristics: proximity, duration, frequency, variability, consequence potential.	Apply the engineering question: can this function be performed from outside the exposure zone?	Confirm any intervention has actually reduced hand exposure and has not introduced new hazards.

Pages 4 through 9 address each step individually. Page 10–11 provide a completed example. The field record form on page 12 is designed for use during the assessment and may be reproduced freely for field use.

STEP 01 FIND THE HAND™ — OBSERVE WHERE THE HAND ENTERS

The objective of this step is to identify every point in the complete task cycle where a worker's hand moves into proximity of hazardous energy. This is an observational step. Do not intervene in or modify the task during observation — observe it as it is normally performed.

Observe the complete cycle, not a snapshot. Hand exposure events are often brief and occur at specific moments in the task — the final approach to a landing, the moment the hammer falls, the reach into a confined space. An observation that begins partway through a cycle or ends before the hand-entry phase will miss the exposure entirely.

Watch the hand, not the hazard. Conventional hazard observation begins with the energy source and works outward. Find The Hand™ begins with the hand and asks: where does it go? at what point in the task? for how long? how predictably? This reversal of perspective consistently identifies exposures that hazard-led observation misses.

Record every entry point separately. A task may have more than one hand-entry phase. Each should be recorded on a separate audit record. Different entry points may involve different functions, different energy sources, and different intervention options. Combining them reduces analytical precision and may result in an intervention that addresses one entry point while leaving others unchanged.

Note what prompts the hand to enter. The reason the hand enters the zone is diagnostic. Is it responding to a precision demand the mechanical system cannot meet? Is it recovering a component that has shifted during the operation? Is it holding a tool because no fixture exists? The reason determines whether an engineering intervention is conceptually possible.

RECORD *The specific moment in the task cycle when the hand enters. Describe it precisely enough that another assessor could identify the same moment independently.*

RECORD *What prompts the hand to enter at that moment. The reason is as important as the location.*

NOTE *If the task has multiple hand-entry phases, begin a separate audit record for each one. Do not consolidate.*

STEP 02 CLASSIFY THE FUNCTION — NAME WHAT THE HAND IS DOING

Having identified where the hand enters, name the function it is performing using the eight-function taxonomy established in PSC Doctrine 01: *The Human Hand Is Not a Tool™*. The taxonomy is reproduced below for field reference.

Function classification is not a labelling exercise. It is the step that makes the engineering question tractable. Different functions require different interface geometries. An exposure classified as Guide requires an interface that can influence load trajectory. An exposure classified as Hold requires an interface that maintains position under applied force. The classification determines the engineering question that Step 05 must answer.

Where the hand performs two functions simultaneously — guiding a load while stabilising it against swing — record both. Two functions at one entry point may require either two separate engineering solutions or a single interface that addresses both simultaneously.

Where the function changes during the entry phase — the hand begins as Guide and shifts to Hold as the component seats — record both in sequence. The transition point may represent a different exposure level and a different intervention requirement.

F01 Guide	F02 Align	F03 Hold	F04 Stabilise
F05 Retrieve	F06 Position	F07 Push	F08 Pull

RECORD *The function or functions being performed. Use the taxonomy codes F01–F08 for the audit record, with a brief description of what the hand is specifically doing in this instance.*

RECORD *If the function changes during the entry phase, note the sequence and the approximate transition point in the task cycle.*

NOTE *If the hand function cannot be clearly assigned to any of the eight categories, describe it precisely in plain language. The taxonomy is the primary reference; field observation is the authority.*

STEP 03 IDENTIFY THE ENERGY — WHAT CAN REACH THE HAND?

Identify the specific hazardous energy type or types that can reach the hand during the exposure phase identified in Step 01. Be specific: "moving load" is less useful than "suspended mass of approximately 800 kg with residual pendulum movement during final approach." Specificity in energy identification determines both the consequence assessment in Step 04 and the intervention options in Step 05.

A hand-exposure scenario may involve more than one energy type simultaneously. Record all that apply. Where energies interact — the hand between a moving load and a fixed structure, creating both crush and pinch exposure — record the interaction, not just the individual energy sources.

SUSPENDED MASS <i>Load retained by rigging or lifting equipment. Residual movement, load shift, rigging failure or equipment malfunction can transfer energy to the hand without warning.</i>	PINCH POINT <i>Convergence of moving and fixed structures where the hand can become trapped. Often created during final approach and positioning phases.</i>
CRUSH ZONE <i>Zone between two surfaces where relative movement can trap and compress the hand. Includes between load and landing surface, component and mating structure.</i>	STRUCK-BY FORCE <i>Impact energy directed toward a surface at which the hand is positioned. Primary source: hammer or striking tool used in struck-tool operations.</i>
ROTATIONAL ENERGY <i>Energy in a rotating component or cylindrical object. Can draw the hand into a nip point or generate wrapping hazard during handling and positioning.</i>	STORED MECHANICAL ENERGY <i>Energy in compressed springs, tensioned components, or pre-loaded assemblies that can release suddenly during disassembly or positioning operations.</i>
GRAVITATIONAL ENERGY <i>Potential energy in an elevated component not fully retained by the lifting system during the final positioning phase. Drop energy.</i>	THERMAL / ELECTRICAL <i>Surface temperature or electrical charge on a component or surface being positioned or retrieved. Often secondary to a primary mechanical exposure.</i>

RECORD *All energy types present during the hand entry phase. Use specific descriptors — magnitude, direction, variability — not general category labels alone.*

NOTE *Where energies interact to create a combined exposure, describe the interaction explicitly. Combined exposures frequently have higher consequence potential than their individual components suggest.*

— STEP 04 OF 06

STEP 04 MEASURE THE EXPOSURE — OBSERVABLE CHARACTERISTICS

This step records the observable characteristics of the exposure. It does not introduce a scoring matrix. The five dimensions below provide the factual basis for a risk evaluation using the organisation's existing methodology. Where a formal risk rating is required, apply the organisation's own risk assessment framework to the data recorded here.

PROXIMITY <i>How close?</i>	The approximate distance between the hand and the energy source at its closest point during the exposure phase. Record as an observed range — for example, "hand within 50–150 mm of load perimeter during final approach." Observe and record during the task cycle; do not estimate from memory. OBSERVE AND RECORD IN MM OR CM DURING THE TASK CYCLE
DURATION <i>How long per cycle?</i>	The time the hand spends in the exposure zone during a single task cycle. This may be a few seconds for a struck-tool hold, or minutes for a complex positioning operation. Record actual observed duration, not an estimate of what is intended. TIME FROM HAND ENTRY TO HAND EXIT • SECONDS OR MINUTES
FREQUENCY <i>How often?</i>	How many times per shift, per day or per operation does the hand enter this exposure zone? High-frequency, short-duration exposures often accumulate to more total exposure than low-frequency, long-duration events. EVENTS PER SHIFT OR PER OPERATION • NOTE IF FREQUENCY VARIES
VARIABILITY <i>How predictable?</i>	Is the hand position during the exposure phase consistent and predictable, or does it vary depending on load geometry, task conditions or worker technique? High variability means the hand may occasionally enter zones closer to the energy source than the typical observation suggests. This is a critical dimension for intervention design. CONSISTENT / VARIABLE / HIGHLY VARIABLE • RECORD OBSERVED RANGE
CONSEQUENCE <i>What can it do?</i>	Describe what the identified energy source can physically do to the hand if contact occurs at the observed proximity. Be specific — crush between surfaces, impact from striker, entrapment in pinch point. The consequence description should be factual, not a risk rating. The organisation's risk matrix applies this description to produce a rating. DESCRIBE THE PHYSICAL MECHANISM • DO NOT ASSIGN A SEVERITY SCORE HERE

STEP 05 ENGINEER THE DISTANCE — CAN THE FUNCTION MOVE OUTSIDE THE ZONE?

This is the core engineering step. Its input is the function classification from Step 02 and the energy identification from Step 03. Its question is: can the named function be performed with the hand positioned outside the zone where the identified energy can reach it?

The function classification determines what type of interface would be needed. The energy identification determines what that interface must withstand. Together they generate a specific engineering question — not a general aspiration to reduce hand exposure, but a precise question about whether a particular function, in the context of a particular energy source and load geometry, can be transferred to a remote interface.

Work through the decision logic below in sequence. Document the reasoning at each step, including the reasoning behind a negative finding. A documented negative finding — recording why no suitable engineering intervention currently exists — is substantially more useful than an undocumented assumption that the task cannot be changed.

Is the hand performing a named function from the eight-function taxonomy?	YES	Proceed. The function is defined. An engineering question can be formulated.
	NO	Describe the function in plain language and proceed. The taxonomy is a reference, not a constraint.
Is there a class of interface that could perform this function from outside the exposure zone?	YES	Identify the interface type. Assess whether load geometry, force requirements and access constraints permit its use in this specific instance. Proceed to the next question.
	NO	Document why no suitable interface class exists. Record as: engineering intervention not currently viable — specify reason. Apply highest available administrative and PPE controls. Review periodically.
Does the specific load geometry, force level and access geometry permit use of the identified interface in this application?	YES	Proceed to intervention selection and implementation. Record the interface selected and the rationale. Proceed to Step 06 for verification.
	NO	Document the specific geometric, force or access constraint that prevents use. Record as: engineering intervention not viable in this instance — specify constraint. The interface class may be appropriate; this application may require further engineering development.

RECORD

The engineering question as formulated from the function and energy. Record the decision at each stage of the logic. Record the proposed intervention or the documented reason why no intervention is currently viable.

STEP 06 VERIFY — HAS HAND EXPOSURE ACTUALLY REDUCED?

Verification is the step most frequently skipped in safety interventions. An intervention is identified, a tool is procured, a procedure is updated — and the task is considered resolved. Verification asks three questions that are not answered by implementation alone.

Has the hand position actually changed? Observe the task cycle again after the intervention has been implemented. Has the hand entry point moved outside the exposure zone identified in Step 01? By how much? Has the function previously performed inside the zone now been transferred successfully to the interface or engineering control? Do not verify by asking workers — verify by observation.

Has the overall exposure reduced? An intervention that moves the hand away from one energy source may bring it closer to another. An interface tool that removes the hand from a pinch zone may require the hand to be positioned adjacent to a different hazard during operation. Step 06 requires observation of the complete modified task cycle, not just the original exposure point.

Has the intervention introduced new exposure? New tools, fixtures and interfaces add elements to the task. Each addition can create new handling requirements, new stored-energy sources, new pinch points during deployment or recovery. The verification step assesses the modified task as a whole.

Common failure modes. Interventions that reduce exposure during observed conditions but not during all operating conditions — different load geometries, different crew compositions, time pressure. Verification should include conditions that represent the realistic range of the task, not only the optimal case.

RECORD	<i>The hand position in the modified task cycle — how far outside the original exposure zone? Observed, not reported.</i>
RECORD	<i>Any new exposures introduced by the intervention. If present, re-enter the audit process from Step 01 for each new exposure point.</i>
RECORD	<i>The outcome: Exposure eliminated / Exposure reduced / Exposure unchanged / Further engineering review required. This classification enables aggregation of findings across operations and over time.</i>
NOTE	<i>Where the outcome is Exposure unchanged or Further engineering review required, set a review date. The audit record remains open until the exposure has been resolved or formally accepted with documented rationale.</i>

What a Completed Audit Record Looks Like

The following illustrates a completed Hand Exposure Audit™ record across all six steps. No sector, client or specific equipment is identified. The example is intended to show the level of specificity the methodology requires at each step — and what a partially resolved finding looks like in practice.

HAND EXPOSURE AUDIT™ · COMPLETED FIELD RECORD Task: Pump assembly installation – final component positioning during shutdown maintenance Area: Rotating equipment bay · For illustration only · Not a client record Observer: Site Safety Engineer Date: Illustrative	
STEP 01 FIND	HAND ENTRY POINT During final seating of pump casing onto baseplate. Chain block used for lifting; final 200–300 mm of descent requires manual guidance to align casing bolt holes with baseplate studs. Both hands enter the zone between the descending casing and the baseplate surface. WHAT PROMPTS HAND ENTRY Chain block cannot provide the lateral precision required for stud alignment at final approach. Manual correction is the only available means of achieving alignment under the current task structure.
STEP 02 CLASSIFY	FUNCTION(S) F01 GUIDE + F02 ALIGN DESCRIPTION Hand guides the casing laterally while simultaneously aligning bolt holes to the stud pattern. Function transitions from Guide (broad lateral correction) to Align (fine positional correction) as the casing approaches the landing surface.
STEP 03 ENERGY	ENERGY TYPES Suspended mass (pump casing approximately 340 kg) · Gravitational energy during descent · Crush zone between descending casing underside and fixed baseplate surface · Pinch point between casing flange and stud bolt heads during alignment INTERACTION Crush and pinch energies are simultaneous during the final alignment phase. The hand is positioned between two converging surfaces while a suspended mass above continues to be lowered. Combined consequence is higher than either energy source considered independently.

— COMPLETED EXAMPLE · PART 2 OF 2

STEP 04 MEASURE	PROXIMITY Hand within 80–150 mm of casing underside during approach; fingers within 30–50 mm of baseplate surface at final alignment. Closest hand-to-energy-source distance: approximately 30 mm during stud engagement. DURATION 45–90 seconds per installation event. Duration increases when stud alignment requires repeated lateral correction (observed range: up to 3 minutes in difficult cases). FREQUENCY 4–6 pump casing installation events per scheduled shutdown. Frequency does not vary significantly by shift — all installations occur within the same maintenance window. VARIABILITY Highly variable. Hand position changes continuously during final approach as the worker responds to casing movement. Position cannot be predicted from one cycle to the next. CONSEQUENCE Crush between 340 kg casing and baseplate if casing descends unexpectedly or chain block releases. Finger entrapment between casing flange and stud bolt head during lateral alignment. Both mechanisms capable of causing serious hand injury.
STEP 05 ENGINEER	ENGINEERING QUESTION Can lateral guidance (F01) and bolt-hole alignment (F02) each be achieved using a rigid interface that keeps both hands outside the crush and pinch zone during final descent? GUIDE FUNCTION ASSESSMENT Viable. A push/pull interface can provide lateral correction from outside the crush zone. Casing geometry compatible with available hook engagement points. Proceed to implementation and Step 06 verification. ALIGN FUNCTION ASSESSMENT Partially viable. Stud-location guide pins or temporary alignment jig could eliminate manual bolt-hole finding. Engineering assessment of casing geometry and baseplate stud pattern underway. Not yet implemented.
STEP 06 VERIFY	OUTCOME EXPOSURE REDUCED — FURTHER ENGINEERING REVIEW REQUIRED VERIFICATION — GUIDE FUNCTION Push/pull interface implemented for lateral guidance. Observed over three subsequent installation cycles. Hand position during lateral correction now outside the crush zone. Guide function: resolved. VERIFICATION — ALIGN FUNCTION Manual finger-alignment of bolt holes to studs continues. Alignment jig under engineering assessment. Audit record remains open for the Align function. Review date set for next scheduled maintenance window. NEW EXPOSURES INTRODUCED None identified. Push/pull interface deployment and recovery observed. No new hand-entry phase created.

The outcome above — Guide resolved, Align under review — is the expected result of a first audit cycle. A partially resolved finding is a valid and useful output. The audit record remains open until the Align function exposure has been addressed or formally accepted with documented rationale. This is the discipline.

TASK / OPERATION	AREA / EQUIPMENT	DATE	OBSERVER

STEP 01
FIND

Where does the hand enter the task? At what moment in the cycle? What prompts the entry?

STEP 02
CLASSIFY

Circle the hand function(s) being performed. Describe specifically what the hand is doing.

F01 · GUIDE

F02 · ALIGN

F03 · HOLD

F04 · STABILISE

F05 · RETRIEVE

F06 · POSITION

F07 · PUSH

F08 · PULL

STEP 03
ENERGY

What hazardous energy can reach the hand? Type, magnitude, direction, variability. Note any combined exposures.

STEP 04
MEASURE

PROXIMITY	DURATION	FREQUENCY	VARIABILITY	CONSEQUENCE

STEP 05
ENGINEER

Can the function be performed with the hand outside the exposure zone? Proposed intervention — or reason why not currently viable.

STEP 06
VERIFY

Observed hand position after intervention. New hazards introduced?

OUTCOME — CIRCLE ONE:

EXPOSURE ELIMINATED

EXPOSURE REDUCED

EXPOSURE UNCHANGED

FURTHER ENGINEERING REVIEW REQUIRED

METHOD REFERENCE

The Six Steps — Quick Reference

This page summarises the six-step methodology for use as a field reference. Each step's core question and primary record requirement are stated concisely. For full guidance on each step, refer to pages 4–9.

Step 01 FIND	Where does the hand enter the task? What prompts it? Observe the complete task cycle. Record the specific moment of hand entry and the reason the hand enters at that moment. Begin a separate record for each distinct entry point.
Step 02 CLASSIFY	Which of the eight hand functions is the hand performing? Guide · Align · Hold · Stabilise · Retrieve · Position · Push · Pull. Record all functions if more than one applies simultaneously. Note if function changes during the entry phase.
Step 03 ENERGY	What hazardous energy can reach the hand in this position? Suspended mass · Pinch point · Crush zone · Struck-by force · Rotational energy · Stored mechanical energy · Gravitational energy · Thermal or electrical. Record all present. Describe combined exposures explicitly.
Step 04 MEASURE	How close, how long, how often, how variable, and what can the energy do? Record observed facts: Proximity (mm/cm) · Duration (seconds/minutes per cycle) · Frequency (events per shift or operation) · Variability (consistent / variable / highly variable) · Consequence (physical mechanism, not a rating). Apply the organisation's risk matrix to these facts where a formal rating is required.
Step 05 ENGINEER	Can the function be performed with the hand outside the exposure zone? Formulate the engineering question from the function and energy. Work through the decision logic: interface class viable? → geometry and access permit? → implement and verify. Document negative findings with specific rationale — not just "no practical alternative."
Step 06 VERIFY	Has hand exposure actually reduced? Have new exposures been introduced? Observe the modified task cycle — do not rely on reports. Record new hand position relative to original exposure zone. Check for new exposures introduced by the intervention. Classify outcome: Exposure eliminated / Exposure reduced / Exposure unchanged / Further engineering review required. Keep the record open until the exposure is resolved.

PSC HAND EXPOSURE CONTROL™ · THE CENTRAL QUESTION

Begin not by asking how to protect the hand. Begin by asking why the hand must be there.

PSC HAND EXPOSURE CONTROL™ · METHOD SERIES

The Hand Exposure *Audit*™

METHOD 01 · FIRST EDITION · 2026

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FOUNDATION

17 Years of Hand Safety Engineering

DOCTRINE 01

The Human Hand Is Not a Tool™

METHOD 01

The Hand Exposure Audit™ — This Document

DOCTRINE 02

The Last 300 mm Rule™

DOCTRINE 03

The Hand Exposure Hierarchy™