

MOP / SOP / EOP skeleton

The Definitive Guide to AI Data Centers — aidatacenterguide.com · v1.0 · defaults as of 2026-07 · Canonical chapters: Ch 13.2 (documentation & scripts), Ch 14 (operations)

READ-ONLY WORKED EXAMPLE - this PDF is not fillable. Copy its structure into your controlled procedure system before entering site-specific values.

Intended user: facility operations lead / CFM writing the site's controlled procedure library — started during commissioning (the Cx scripts become the first MOPs) and maintained for life. **Classes:** **SOP** = standard operating procedure (normal state changes); **MOP** = method of procedure (maintenance/abnormal work, risk-assessed and approved per execution); **EOP** = emergency operating procedure (pre-authorized immediate actions, drilled, no per-event approval). One procedure per document; §B is a complete worked MOP.

§A — Required skeleton (every MOP/SOP/EOP)

Section	What it must contain
1. Document control	Procedure ID, class (MOP/SOP/EOP), title, revision, effective date, author, technical reviewer, approver, review-by date. A procedure past its review-by date is not executable.
2. Purpose & scope	The single task this procedure performs; systems and locations affected; explicit exclusions.
3. Risk & CSA level	Critical-systems-affected level (e.g. CSA-1 touches a live critical path; CSA-3 no critical exposure); redundancy state during work (N, N+1 maintained, N-1 accepted); worst credible outcome; permits required (LOTO, hot work, confined space); and named abort authority - every person or role permitted to call STOP WORK.
4. Prerequisites	Required system state and verifications before step 1; weather/load restrictions; parts, tools, PPE, test equipment (with calibration due dates); minimum crew and qualifications.
5. Notifications	Who is informed before / during / after (NOC, tenant/SRE, utility, vendor support bridge), with contact and acknowledgment fields.
6. Procedure steps	Numbered steps, one action each, with the expected indication after every state change and an initial/time field per step. Any deviation stops work and invokes the backout plan.
7. Backout plan	The decision point (last step from which backout is possible), backout steps in order, and the criteria for choosing backout vs continue.
8. Restoration & verification	Return-to-normal steps, alarm review, and the specific verifications proving normal state (not just "no alarms").
9. Sign-offs	Executor, verifier (independent), and operations acceptance with date/time; for MOPs, post-execution notes feed the next revision.

§B — Worked example (MOP): UPS system A to maintenance bypass for annual PM

WORKED EXAMPLE — REPLACE EVERY VALUE WITH YOUR SITE'S; STEP INDICATIONS ARE ILLUSTRATIVE FOR A TYPICAL DOUBLE-CONVERSION UPS LINEUP.

Procedure ID / class	MOP-ELEC-014 · MOP	Revision / effective	R3 · 2026-05-01 · review by 2027-05-01
Author / reviewer / approver	J. Rivera · K. Wong (EE of record) · Site CFM	CSA level / redundancy state	CSA-1 · hall A rides on raw utility via maintenance bypass (N, no UPS ride-through) for ≤4 h
Abort authority	J. Rivera (executor), K. Wong (independent verifier), the NOC duty manager, or the Site CFM may call STOP WORK at any time. Resume requires Site CFM and technical-reviewer reauthorization.		

Step	Action	Expected indication	Initial / time
1	Confirm prerequisites: utility stable ≥30 min, no storms inside 50 km, hall A load ≤65% of bypass rating, generator system available, tenant/SRE change-window acknowledgment received.	All checks green; acknowledgments logged	
2	OEM/site interlock proof. With the OEM FSE and site controls verifier, demonstrate the maintenance-bypass permissive, EPO/shunt-trip state, generator/ATS logic, and EPMS/BMS alarms against approved matrix INT-UPS-A-014. Do not defeat an interlock under this MOP.	INT-UPS-A-014 signed by OEM FSE and site controls verifier; each permissive, trip, and alarm demonstrated; no bypassed interlocks	
3	At UPS A HMI, verify inverter output and static bypass are synchronized to bypass source.	Sync indication in window; phase error <3°	
4	Transfer UPS A to static bypass.	Load on static bypass; zero transfer time; no load-side alarms	
5	Backout decision point. Close the external maintenance-bypass breaker (MBB-A). UOB-A remains closed — both paths parallel.	MBB-A closed; current sharing static/maintenance paths	
6	Open UPS output breaker (UOB-A). Load now solely on maintenance bypass.	UOB-A open; load unchanged on MBB path; hall A PDUs normal	
7	LOTO the UPS input, output, and battery disconnects per permit LT-2026-041.	All sources isolated and locked; absence of voltage verified	
8	Release the UPS to the vendor FSE for PM (scope per PO; no firmware changes without a separate approved MOP).	PM checklist completed and countersigned	
9	Remove LOTO; restart UPS and secure it on internal static bypass — do not transfer to inverter yet. Verify rectifier walk-in, battery charge state, output in sync with the bypass source.	UPS on static bypass; output in sync; no alarms	
10	Close UOB-A with the UPS held on static bypass.	UOB-A closed; current sharing static/maintenance paths	
11	Open MBB-A.	Full load on the UPS static-bypass path; no load-side alarms	
12	Transfer the UPS from static bypass to inverter.	Load on inverter; ride-through restored; battery on float	
13	Restoration verification: alarm review, EPMS trends nominal for 30 min; notify NOC and tenant of window close.	Normal state confirmed; notifications logged	

Backout plan	Through step 5 (UOB-A still closed): open MBB-A if closed, verify load on the UPS static-bypass path, re-transfer static bypass → inverter, confirm normal. From step 6 onward (UOB-A open): backout is the full restoration sequence — UPS secured on internal static bypass, close UOB-A, verify parallel paths, open MBB-A, then transfer to inverter (steps 9–13). Never open MBB-A while UOB-A is open — that drops the only live path to the hall. Choose backout on: any unexpected alarm, utility instability, sync failure, interlock-proof failure, or FSE finding beyond PM scope.		
Sign-offs	Executor _____ Independent verifier _____ Operations acceptance _____ Date/time _____		

§C — EOP addendum (what changes for emergency procedures)

- Pre-authorized: no per-event approval; the approver signs the procedure, not the execution.
- First page is the action list — context and theory go last, not first. Target: first stabilizing action inside 60 seconds of opening the document.
- Drill cadence and last-drill date are document-control fields; an undrilled EOP past its cadence is flagged at shift handover.
- Every EOP names its termination state — the point where the emergency is stable and normal MOP/SOP governance resumes.