

COGPLEXITI · DISCUSSION PAPER

SUSTAINING DECISION PERFORMANCE

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JAYSON COIL

Sustaining Decision Performance

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The case for continued proficiency and performance evaluation in high-consequence incident command positions

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July 2026

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ISBN 979-8-9959056-6-0

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EDITION INFORMATION

July 2026.

Published by Cogplexiti LLC, Flagstaff, Arizona · jayson@cogplexiti.com · www.cogplexiti.com

Part of the Cogplexiti Analysis line (Systems & Decision Analysis), alongside The System Tier and The Incident Tier. This paper has a companion premortem volume, The Reveal, which generalizes the gap examined here to the enterprise level.

DISCLAIMER

The views, frameworks, and recommendations expressed in this publication are those of the author and do not necessarily reflect the official policy or position of the Sedona Fire District, Southwest Incident Management Team 1, the National Wildfire Coordinating Group, the U.S. Forest Service, or any other agency or organization. This document is not doctrine. It is a professional analysis informed by operational experience, research, and study.

How to Read This Paper

This paper belongs to the Cogplexiti Analysis line — systems- and incident-level studies that sit alongside The System Tier and The Incident Tier. It is a discussion paper prepared for interagency review: measured, anchored to primary regulatory and standards sources, and deliberately non-prescriptive. Its arc is short: the situation, the gap precisely stated, the comparison with fields that have closed it, and a recommended next step whose deliberate modesty is the point — charter a focused effort to characterize the problem and develop options.

Sourcing is carried as bracketed references — [1] through [9] — keyed to the Primary & Regulatory Sources section in the back matter. The continued-training and evaluation requirements attributed to other fields rest on primary regulatory and standards citations and are confirmed; claims resting on operational experience are identified as such where they occur.

This paper has a companion volume. The Reveal — A Premortem of the Collapse of Complex Incident Management generalizes the gap examined here to the enterprise level and carries a stipulated future, a workforce model, and a recommended course of action. The two papers may be read independently; this one closes with a short section stating what the individual-level gap becomes at enterprise scale, and why the companion exists. The working rule in both is the same: calibrate language to the evidence, distinguish evidence from opinion, and apply local rationality symmetrically — explain, don't judge.

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Executive Summary

On large wildland fire incidents, daily suppression expenditures routinely reach one to two million dollars and, on the most complex incidents, can exceed five million [1]. The quality of that expenditure — whether it advances control objectives or is consumed by delay, redundancy, and poor phasing — is determined largely by the judgment of qualified position-holders in the operations and command structure: operations section chiefs, branch directors, division supervisors, and their counterparts. These same positions carry direct responsibility for firefighter and public safety.

The wildland fire qualification system invests heavily in certifying these individuals once. It does not require them to sustain proficiency or to undergo any evaluation of their decision performance after they are qualified. Continuing education is not required. The only performance evaluation the system mandates applies to trainees; once an individual is qualified, no further evaluation is required, and the rating instrument that does exist is not tied to any corrective process. The result is a high-consequence decision environment in which individual proficiency is presumed rather than verified.

This is not an inherent limitation of incident command. Every comparable field — including the public-safety disciplines closest to wildland fire and the high-reliability industries that manage analogous risk — requires continued training, periodic evaluation, or both. Structural firefighting, emergency medical services, and law enforcement all impose recurring training obligations. Commercial aviation, commercial nuclear power, and military command go further, pairing continued training with recurring, criterion-referenced evaluation of the individual. Wildland fire is an outlier, and the gap appears to be a product of historical structure rather than deliberate design.

This paper does not prescribe a specific remedy. Its purpose is to make the gap visible, to establish that it is consequential and out of step with comparable fields, and to argue that it warrants a focused interagency effort to characterize the problem and develop options.

1 · The Situation: Consequence Without Verification

Magnitude. Large-incident suppression is expensive, and the trend is upward. Federal wildfire suppression has averaged on the order of several billion dollars annually in recent years. On an individual large incident, daily expenditures commonly fall in the one-to-two-million-dollar range and can be substantially higher on the most complex incidents. These figures are operational reality for any team that has managed a Type 1 or large Type 2 incident.

Decisions drive the cost. The level and efficiency of that expenditure is not fixed by the fire alone. The cost-driver literature identifies incident-management choices — the efficiency of the operations section, the type of overhead team assigned, and the clarity with which the incident commander and agency administrator establish and support cost objectives — as significant determinants of suppression cost, alongside non-controllable factors such as fire size, terrain, weather, and values at risk [2]. In short, the judgment of the people filling these positions materially affects whether a given day's commitment is used well.

The asymmetry. When that authority and consequence are distributed across the many position-holders who shape a large incident, the cost — and the safety exposure — attributable to any single decision-maker per operational period remains significant. The system recognizes this importance at the front end: it requires a structured qualification process before an individual may fill these roles. It does not extend the same logic to the rest of a career. Once qualified, an individual is presumed to remain proficient and to perform well, with no mechanism to verify either.

2 · The Gap, Precisely Stated

It is worth distinguishing what the current system requires from what it does not, because the gap is specific.

What Exists

Initial qualification. The qualification system — position task books and agency certification — gates entry to each position through a documented, evaluated process. This is a one-time gate.

Currency. To remain qualified, an individual must perform the position within a defined recency window. Currency confirms recency of assignment; it does not assess the quality of the individual's judgment or decisions.

A trainee evaluation instrument. Performance evaluation is required during the trainee phase. Once an individual is qualified, no recurring evaluation is required. Where an end-of-assignment rating is completed for a qualified individual, it is scored against the position standard rather than relative to peers, is applied inconsistently, and triggers no corrective action.

Wildland fire position qualifications and currency are governed by the NWCG Standards for Wildland Fire Position Qualifications (PMS 310-1) [3].

What Does Not Exist

No continuing-education or recurrent-training requirement after qualification. No required, recurring evaluation of decision performance for qualified individuals. No criterion-referenced or comparative assessment of how an individual performs the role, relative to a standard or to peers. No corrective pathway linking performance to development, remediation, or continued qualification.

The informal substitute is reputation: in a relatively small community, informal standing strongly influences who is requested and rostered. This is a real selection pressure, but it is opaque, subject to bias, and not criterion-referenced. It is not a substitute for a defined evaluation system.

The net effect is that across the broad middle of normal operations — the day-to-day decisions on ordinary large incidents, where most suppression dollars are actually spent well or poorly — the system has no means to detect, develop, or correct degraded decision performance. The mechanisms that do exist address entry (qualification), recency (currency), or catastrophic failure (accident and entrapment reviews). The space in between is unmonitored.



Figure 1 · Where the system intervenes across a career — and where it does not

3 · This Is an Outlier, Not a Necessity

The strongest evidence that the gap is a choice rather than a constraint is that comparable fields have closed it. Two tiers are instructive.

The adjacent public-safety disciplines all impose continued-training obligations. The prevailing structural-fire benchmark credits departments for providing roughly 20

hours per firefighter per month of structure-fire training, and departments build their programs around it [4]. Nationally Registered Paramedics must recertify every two years, which requires 60 hours of continuing education or recertification by examination [5]. States generally mandate annual in-service training for certified peace officers, commonly 20 to 40 hours per year, with decertification or suspension consequences for noncompliance [6]. Even the fields most similar to wildland fire treat continued training as a baseline obligation of holding a credential.

The high-reliability fields go further, pairing continued training with recurring evaluation of the individual. Under Federal Aviation Regulations, airline crewmembers must complete recurrent training and pass periodic proficiency checks — typically every 6 to 12 months — evaluated against a defined standard, on the explicit rationale that skills demonstrated at initial qualification will otherwise lapse [7]. Licensed reactor operators must complete a requalification program on a roughly two-year cycle, pass requalification written examinations and simulator operating tests, undergo biennial medical examination, and renew their license every six years [8]. Military officers are subject to periodic documented evaluations; professional military education is tied to advancement; command selection is explicitly comparative; after-action review is institutionalized; and relief for cause is a recognized accountability mechanism.

The significance is not the specific cadence in any one field. It is that each of these fields faces the same objections typically raised against evaluating wildland fire decision-makers — distributed authority, high stakes, and judgment exercised under uncertainty — and each built a continued-proficiency and evaluation system anyway. Aviation and nuclear power in particular manage exactly the combination of high consequence and judgment-dependent performance that characterizes incident command, and they treat recurring evaluation as fundamental rather than optional.

TABLE 1

Continued training and evaluation requirements, by field

Field	Continued training required after qualification	Recurring evaluation of the individual's performance
Wildland fire incident command positions	None required	Only during the trainee phase; none required once qualified; no link to corrective action
Structural firefighting	Yes — prevailing benchmark of roughly 20 hrs / firefighter / month	Employment-based review; not command-specific
Emergency medical services (paramedic)	Yes — 60 hrs every 2 yrs, or recertification by exam	Recertification plus standing medical oversight
Law enforcement	Yes — state-mandated annual in-service, commonly 20–40 hrs / yr	Employment-based review; varies by agency

Commercial aviation	Yes — recurrent training program	Yes — proficiency checks every 6–12 months and line checks against a defined standard
Commercial nuclear power	Yes — requalification training on a ~2-yr cycle	Yes — requalification written exams and simulator operating tests; license renewal
Military command	Yes — professional military education tied to advancement	Yes — periodic evaluations, comparative selection boards, after-action review, relief for cause



Figure 2 · Continued training and recurring evaluation across high-consequence fields

4 · Why the Gap Persists — and Why That Is Not a Reason to Leave It Open

An honest case must account for why wildland fire developed differently. Several structural features explain the gap.

1. Episodic, collateral-duty role tenure. Most position-holders fill these roles intermittently, as collateral duty to a home-unit job. They are not in the position continuously, and their home unit — not the incident — holds their formal employment evaluation. The entity bearing the incident's cost is therefore not the entity that evaluates the individual.
2. Distributed authority. Incident command deliberately distributes decision authority across many positions. This is a strength, but it also diffuses attribution: outcomes are genuinely collective, which makes individual performance harder to isolate.
3. Confounded outcomes. The headline outcomes of a fire — acres, cost, structures lost — are driven heavily by weather, fuels, terrain, and the built environment [9]. Outcome alone is therefore an unreliable measure of an individual's decision quality.
4. Non-market funding. Suppression is publicly funded. There is no profit-and-loss signal to surface cost-performance the way a competitive market continuously scores, for example, a fund manager.

These features are real, and they explain the historical absence of a sustainment-and-evaluation system. They do not justify leaving it absent. Two points follow.

First, the high-reliability fields share most of these same features and still built systems. Aviation and nuclear operators also exercise distributed authority, also face confounded outcomes — a safe flight or a safe operating year is not proof of individual excellence — and, in aviation's case, also rotate among aircraft and routes. Those fields solved the problem not by waiting for outcomes to reveal performance, but by evaluating process and demonstrated competency directly. A proficiency check or a simulator evaluation assesses how the individual performs against a standard, independent of whether a given shift happened to produce an incident. That is precisely the move available to wildland fire.

Second, the collateral-duty and confounded-outcome features shape what kind of solution fits; they do not make a solution impossible. They argue for evaluation attached to the role and the incident rather than the home unit, and for assessment of decision process and demonstrated competency rather than incident outcome. The structural drivers are design constraints, not disqualifiers.

5 · What Is at Stake in Leaving the Gap Unaddressed

The implications of the status quo are concrete and span more than cost.

Fiscal. At one to two million dollars or more per operational period, even modest improvements in coordination, phasing, and anticipation represent large absolute savings across a season; conversely, decision performance that has degraded undetected is an unbounded and unmeasured cost. The cost-driver literature already attributes meaningful cost variation to incident-management efficiency.

Safety. Decisions made at the operations, branch, and division levels bear directly on firefighter and public exposure. The case for verifying decision performance is, at root, a safety case as much as a fiscal one.

Workforce and development. The field invests heavily in qualifying individuals and then offers them no structured feedback or development in the role thereafter. This is a missed opportunity to build bench strength at exactly the positions where capability is hardest to grow, and it is inconsistent with how a high-performing workforce expects to be supported.

External credibility. Public and oversight attention to large-fire cost and outcomes continues to increase. A documented inability to describe how the performance of the most consequential decision-makers is sustained and evaluated is difficult to defend, and it is better addressed proactively than in response to a specific failure or inquiry.

6 · Recommendation: Charter a Focused Effort to Characterize the Gap and Develop Options

The appropriate next step is not to adopt a particular evaluation scheme. It is for interagency leadership to commission a focused effort to do the following.

1. Characterize the gap and its consequences rigorously. Quantify, to the extent the data permit, the relationship between decision performance and cost and safety outcomes, and document current practice across geographic areas and agencies.
2. Study comparable models. Examine how aviation, nuclear power, the military, and the adjacent public-safety disciplines structure continued proficiency and individual evaluation, and identify what transfers to a rotational, interagency incident-command context and what does not.
3. Develop sequenced options. Recognize that the components differ in difficulty. A continued-proficiency or recurrent-training requirement is likely the most immediately

actionable. Structured, formative feedback on decision performance is a reasonable next step. Valid summative or comparative evaluation is the hardest component and the most dependent on the design questions above; it should be developed deliberately rather than imposed prematurely.

This is a low-regret investigation. Characterizing the problem and studying proven models commits the enterprise to nothing it would not want to know. The alternative — continuing to presume the proficiency of decision-makers who direct millions of dollars and bear direct safety responsibility, with no means to verify it — is increasingly difficult to justify.

A Note on Evidence and Sources

The continued-training and evaluation requirements attributed to other fields are drawn from primary regulatory and standards sources (carried as bracketed references and aggregated in the back matter) and are confirmed. The relationship between incident-management decisions and suppression cost is corroborated by the published cost-driver literature. Daily-expenditure figures and the description of current wildland fire qualification practice reflect operational experience and should be read as reported pending confirmation against current agency data. Characterizations of military evaluation and command practice are presented at a general level.

The Companion Analysis: From the Individual Gap to the System

This paper isolates a single, verifiable gap: the qualified individual is never re-evaluated. Seen at the level of the enterprise rather than the person, that gap is one instance of a more general failure — a credential that has decoupled from the capability it once signaled. The decoupling does not sit alone. It compounds with a workforce pipeline that is arithmetically insolvent, with resource hoarding that takes a different game-theoretic form at each echelon, and with health metrics that have quietly stopped measuring capability.

The companion volume, *The Reveal — A Premortem of the Collapse of Complex Incident Management*, carries that generalization to its conclusion. It also answers, at the level of mechanism, the question this paper deliberately leaves open — what a valid evaluation of decision performance would actually consist of. The two papers stand independently; the reader persuaded by this one that the gap warrants a chartered effort has what they need. The reader who wants to know what the gap becomes if the effort is never chartered has the companion.

Primary & Regulatory Sources

These sources support the comparative claims in this paper and correspond to the bracketed references in the text. The continued-training and evaluation requirements attributed to other fields are drawn from these primary regulatory and standards sources and are confirmed.

- [1] U.S. Department of the Interior, Office of Policy Analysis, review of wildland fire economics (2023); and published reviews of suppression cost drivers. Federal wildfire suppression has averaged in the low single-digit billions of dollars annually in recent years; per-incident and per-operational-period costs vary widely with fire size, terrain, and values at risk.
- [2] Mangan (1999); Independent Large Wildfire Cost Panel (2008), on incident-management decisions as cost drivers; see also analyses of daily incident cost reports drawn from I-Suite and ICS-209 data.
- [3] NWCG Standards for Wildland Fire Position Qualifications (PMS 310-1), governing wildland fire position qualifications and currency.
- [4] Insurance Services Office (Verisk), Fire Suppression Rating Schedule. The schedule credits company training, commonly cited as roughly 20 hours per firefighter per month of structure-fire training; it is a credited rating component rather than a universal legal mandate, but departments routinely build their training programs around it.
- [5] National Registry of Emergency Medical Technicians, paramedic recertification under the National Continued Competency Program: 60 hours of continuing education on a two-year cycle, or recertification by examination.
- [6] State mandatory annual in-service training for certified peace officers — examples: Georgia (20 hours), Colorado and Indiana (24 hours), Massachusetts and Tennessee (40 hours), with certification suspension or loss of arrest authority for noncompliance.
- [7] 14 CFR Part 121, subparts N (Training Program, including recurrent training under § 121.427) and O (Crewmember Qualifications, including proficiency checks under § 121.441). Proficiency-check frequency generally falls in the 6–12 month range depending on crew position and approved program.
- [8] 10 CFR Part 55 (Operators' Licenses): requalification program under § 55.59, biennial medical examination, and a six-year license term with renewal under § 55.57. See also NRC, "Backgrounder on Reactor Operator Licensing."
- [9] Bayham and Yoder (2020) and related suppression-cost analyses, on non-controllable cost and outcome drivers — structure density, accessibility, and fire size.

*“The system checks entry and recency, and reviews catastrophe.
The space between is unmonitored.”*

On a large wildland fire, daily suppression expenditures routinely run one to two million dollars, and the judgment of qualified position-holders — operations section chiefs, branch directors, division supervisors — largely determines whether that commitment is used well. These same positions carry direct responsibility for firefighter and public safety. The system certifies these decision-makers once, at qualification, and then never verifies proficiency again. No recurrent training. No re-evaluation. No corrective pathway. Proficiency is presumed, indefinitely.

This is an outlier, not a necessity. Every comparable field — structural fire, EMS, law enforcement, and above all aviation, nuclear power, and military command — faces the same objections raised against evaluating incident commanders, and every one of them built a continued-proficiency system anyway. The gap is a product of historical structure, not deliberate design, and the features that explain it are design constraints, not disqualifiers.

A discussion paper prepared for interagency review. The situation, the gap precisely stated, the comparison fields documented from primary regulatory and standards sources, and a deliberately modest recommendation: charter a focused effort to characterize the gap, study the models that closed it elsewhere, and develop sequenced options. A low-regret investigation — it commits the enterprise to nothing it would not want to know. The alternative, presuming the proficiency of decision-makers who direct millions of dollars with no means to verify it, is increasingly difficult to justify.

Sustaining Decision Performance belongs to the Cogplexiti Systems & Decision Analysis line, alongside The System Tier and The Incident Tier. It has a companion premortem, The Reveal, which generalizes the gap examined here to the enterprise level — and derives the date by which the assumption fails. The two stand independently; the working rule in both is the line’s own: calibrate language to evidence, and apply local rationality symmetrically.

ABOUT THE AUTHOR

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