

PRODUCTION CASE STUDY

TORNADO CONTAINMENT

HOW WE BUILT THE TRAILER

A practical guide to reference design, directed YAML prompts, causal shot coverage, continuity editing, source-direct finishing, and effects-forward sound.

FINAL

21.7 seconds

EDIT

12 segments

FORMAT

2.30:1 at 24 fps

PIPELINE

Reference-to-video + FFmpeg

Reference assets and final frames shown throughout. No text, logos, or watermarks appear in the film.

The production recipe

The film was not made by asking for one perfect 30-second generation. It was built as a controlled system of references, independent dailies, selects, and repairs.

01 VISUAL BIBLE

Lock two identities, one vehicle, one launcher, one environment.

02 YAML DAILIES

Give each generation one story job and a visible handoff.

03 SELECTS

Keep only the strongest seconds. Reject idle frames and broken physics.

04 CONTINUITY EDIT

Chain state, direction, gaze, prop ownership, and cause-effect.

05 SOURCE-DIRECT FINISH

Grade original clips once; then add squeeze, grain, and sharpening.

06 SOUND MIX

Let dialogue and effects puncture the score at causal events.

THE CORE PRINCIPLE

Generation creates options. Editing creates the movie. The prompt protects the story state; the edit decides which moments deserve to survive.



Two women. Two jobs. Zero identity ambiguity.

The largest narrative risk was character blending: showing one woman driving, then a different woman exiting without making their roles legible.



OPERATIVE - THE ACTION OWNER

- Very dark espresso skin, cropped fade, pale amber eyes.
- Exits once, carries the launcher, shoulders right, fires once.
- Fear reads through breath, grip pressure, grit blink, and recovery.



DRIVER - THE MISSION SUPPORT OWNER

- Light-brown skin with facial vitiligo, long tight braids.
- Stays in the left driver seat; never exits or holds the launcher.
- Operates steering, targeting, and arming actions under pressure.

Bind every image to one responsibility

A reference is not a general mood. Each upload controls a defined asset and is explicitly forbidden from leaking its studio background or identity into other elements.



VEHICLE

Angular white storm truck, black bull bar, roof sensor, orange lower stripe.

CONTROL ONLY THIS ASSET



LAUNCHER

Matte-black faceted housing, orange rim, pale cylinder, brace, grip, amber sight.

CONTROL ONLY THIS ASSET



ENVIRONMENT

Cracked desert road, sparse scrub, brown-gray tornado, broken storm daylight.

CONTROL ONLY THIS ASSET

Reference rule: exact identity + explicit ownership + explicit exclusions. This reduced background leakage, face blending, prop morphing, and accidental redesign.

Make the silent story readable before adding spectacle

The audience only needs one sentence: a two-woman storm crew reaches the tornado; the operative fires a containment probe; the probe reverses the storm and seals it



ARRIVAL

Threat + team



ROLE PROOF

Driver + operative



PAYOFF

Containment changes the storm



Why we used directed YAML

YAML did not make the model smarter. It made our direction clearer, easier to audit, and easier to repair without rewriting the entire scene.

HIERARCHY

Separate global locks from clip-specific actions.

TIME

Force a beginning state, change, and end state inside exact windows.

OWNERSHIP

Declare which reference controls which person, prop, or place.

HANDOFFS

Make every clip end on an image the next clip can inherit.

DIFFS

Revise geography or physics without destabilizing identity rules.

REJECTION

Name visible failure states the result must not contain.

THE REPEATABLE HIERARCHY

REFERENCE LEDGER > CONTINUITY BIBLE > STORY JOB > TIMELINE > FIRST STATE / ACTION / CAMERA / END STATE > HANDOFF > REJECT IF

A directed shot is a state transition, not a mood paragraph

The most reliable unit was one primary action, one camera behavior, and one observable state change. Everything else supported that event.

NORMALIZED TEACHING SCHEMA

`story_job: "Turn held decision into a legible launch chain"`

`upload_order:`

- operative identity
- launcher geometry
- tornado environment

`timeline:`

- time: "1.0-3.1"
- first_state: "right-shoulder aim is already locked"
- cause: "one deliberate trigger squeeze"
- action: "one projectile exits toward frame-right"
- camera: "hold profile; cut at peak velocity"
- end_state: "same projectile airborne"

`handoff: "next shot inherits direction + projectile design"`

`reject_if:`

- "second shoulder lift"
- "projectile changes shape"
- "tornado moves to frame-left"

1. STORY JOB

One sentence defines what the clip must add to the movie.

2. ASSET BINDING

References are assigned exact responsibilities before action begins.

3. STATE CHAIN

First state -> cause -> action -> end state prevents resets.

4. CAMERA VERB

The camera has one destination and cuts near peak velocity.

5. HANDOFF

The outgoing image becomes the next shot's incoming evidence.

6. REJECT LIST

Failures are visible and testable, not vague quality adjectives.

Five 10-second dailies, each with one story job

We generated independent coverage, then used only the strongest pieces. The full 50 seconds were never intended to survive the edit.



01 ARRIVAL + ARM

Hook danger. Prove both women. Light the launcher indicator.

HANDOFF
amber indicator



02 STOP + EXIT

Stop the truck. Complete one passenger exit. Driver stays inside.

HANDOFF
operative outside



03 HERO + HOLD

Shoulder once. Fight wind. Land on a human pre-fire stillness.

HANDOFF
locked aim



04 FIRE + TRAVEL

Trigger, recoil, projectile flight, and contact as one causal chain.

HANDOFF
active probe



05 CAPTURE + SEAL

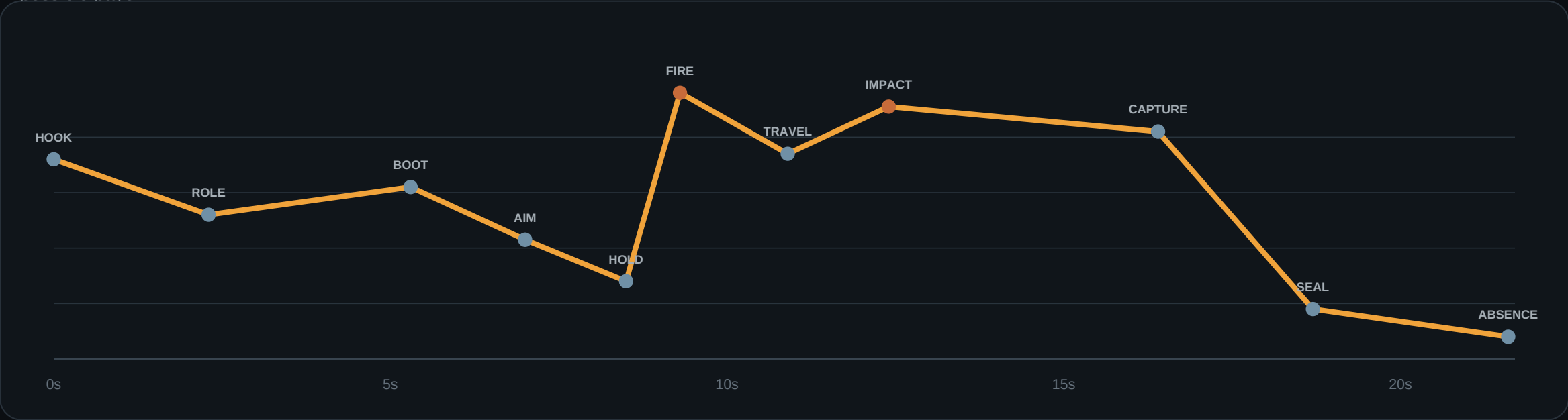
Reverse wind, contract the funnel, ingest mass, then prove the absence.

HANDOFF
clear aftermath

EDIT SELECT RULE: protect the state change; trim the approach, idle pose, repeated action, and unstable tail.

Tension and release came from timing, not constant cutting

Energy was built inside shots with acceleration, physical resistance, camera reaction, and changing scale. The cut rate tightened for action and opened for the impossible payoff.



COMPRESSION

Shorter facts: role, boot, eye, trigger, projectile.

TENSION VALLEY

A held breath and stable aim make the launch feel larger.

RELEASE

Launch and impact receive strong transients and decisive cuts.

PAYOFF HOLD

Containment resolves, then absence receives three full seconds.

The camera, actor, and environment share the same force

We replaced vague words like intense and cinematic with camera destinations, physical resistance, and observable performance cues.



PERFORMANCE VERBS

**brace / swallow / blink against grit /
tighten grip / absorb recoil**

Emotion appears as behavior the model can stage.



CAMERA VERBS

**drive / follow / whip / land / hold / cut at
peak velocity**

Every move has one destination and a reason to stop.



ENVIRONMENT VERBS

**gust / snap / compress / reverse / peel
/ collapse**

Wind, dust, fabric, vehicle, and camera agree on direction.

Every cut must inherit evidence from the shot before it

Temporal consistency is not just matching clothes. It is preserving the state of bodies, props, geography, forces, and consequences across time.

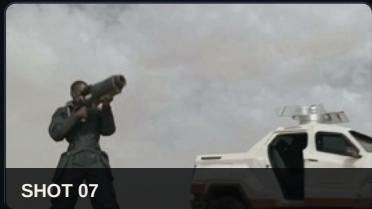
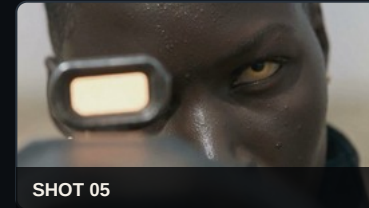
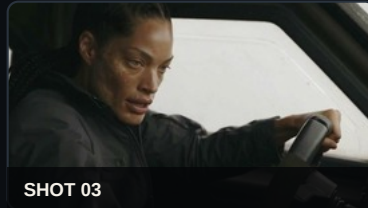


STATE LEDGER	
IDENTITY	operative = cropped fade; driver = braids + vitiligo
PROP	launcher in hands -> one projectile -> planted probe
MAP	truck left; tornado right; aim and travel rightward
FORCE	wind right-to-left, then reverses after activation
EXPOSURE	one coherent neutral storm finish

- REJECT THE SHOT IF
- It replays an action already completed.
 - The character aims away from the established tornado.
 - The weapon, projectile, or probe changes identity.
 - The tornado resets to full size after ingestion begins.
 - A distant effect happens before the local cause reaches it.

How 50 seconds of dailies became a 21.7-second film

We edited for causal clarity first, then rhythm. The best frames were not always the best shots; a beautiful shot was removed if it broke geography or repeated state.

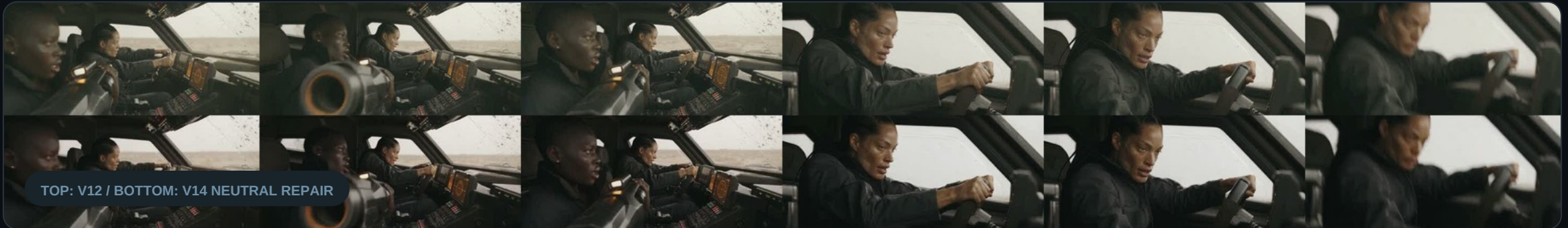


EDITORIAL SECRET SAUCE

- Cut on contact, recoil, or peak velocity so energy crosses the seam.
- Use inserts to hide geography errors, but return to a readable wide before payoff.
- Let projectile travel and containment linger; those ideas need time to register.
- Remove the attractive shot if it resets identity, aim, prop state, or tornado scale.
- Build the silent cut first. Sound should intensify comprehension, not repair it.
- When the sequence feels choppy, extend the shot that contains a complete idea - not every shot equally.

One coherent finish. Effects that break through the score.

The final pass was rebuilt from original source clips so correction did not accumulate on top of earlier correction.



PICTURE FINISH

- Grade each original shot, then apply one shared finishing pass.
- Neutralize the green cabin bias and restore a readable black point.
- Preserve skin texture, black suit detail, storm highlights, and white truck paint.
- Apply a 2.8% vertical stretch plus center crop, then subtle animated temporal grain once.
- Treat this as a digital shape adjustment, not a true optical anamorphic squeeze.
- Avoid grade-on-grade stacking, crushed shadows, or a dirty grain overlay.

SOUND FINISH

- Event Horizon entered at about -9.8 LUFS and was too dominant untreated.
- Lower the score, trim masking midrange, then duck it from dialogue and causal effects.
- Let boot, whoosh, launcher, impact, mechanism, containment, and seal produce the loudness jumps.
- Frame-spot tactile transients to the visible onset of each cause.
- Final V15 QC: -13.9 LUFS integrated and -1.0 dBTP measured after AAC encode.

The ten rules worth stealing

This is the compact quality gate for the next reference-to-video action sequence.

01

Lock the silent story in one sentence.

02

Give every reference exactly one ownership job.

03

Separate recurring character roles before writing action.

04

One primary action and one camera verb per generated shot.

05

Write first state, cause, effect, and end state.

06

Make every clip hand off a visible image or motion vector.

07

Direct emotion through behavior, resistance, and recovery.

08

Edit selects, not generations; remove repeated state immediately.

09

Grade from roots, then add squeeze and grain once.

10

Let effects trigger score ducking at visible causes.

VERIFIED APPENDIX: the original character, vehicle, launcher, interior, environment, and lockline prompts are reproduced in the following pages as the actual source kit.

The plan was a scaffold; the finished film is the evidence

The five 10-second YAML dailies were a source plan. The conform kept causal moments and rewrote an ending whose absence did not yet register.



BEND

decelerate only here



DISSIPATE

return to native cadence



ABSENCE

three-second readable hold

ORIGINAL PLAN

- Five 10-second generations; roughly 30 seconds imagined as a trailer.
- Storm Bronze was the first finishing direction.
- Containment resolved quickly into black.
- No measured collapse retime or aftermath duration.

FINAL V15 CONFORM

- 21.7 seconds; 12 constructed edit segments at constant 24 fps.
- Lower-contrast neutral storm finish; no Storm Bronze.
- Smooth 1.00x to about 0.84x bend, then back to 1.00x.
- Three seconds of clear aftermath and 1.47 seconds of measured silence.

The beautiful shot loses if it breaks the movie

Each repair was framed as a visible failure condition, then solved with a replacement, insert, trim, retime, or source-direct correction.

IDENTITY BLEND	Driver and operative became interchangeable.	Assign fixed roles; prove both in the cabin two-shot.	AXIS FLIP	Truck/tornado swapped sides or the aim drifted away.	Hold the left-right map; reject orbiting or direction reversal.
REPLAYED EXIT	She exits, then appears to run from the truck again.	Complete one exit; jump to boot, eye, or launcher evidence.	REPEATED LIFT	Launcher is shouldered, then lifted again.	Enter the next shot already locked on the right shoulder.
PROP TELEPORT	Launcher becomes a ground device without travel.	Show launch, flight, impact, planted probe, then activation.	PREMATURE IMPACT	Projectile lands before flight has registered.	Let travel own a full visual idea before the hard impact cut.
FORCE BEFORE CAUSE	Dust or funnel reverses before activation.	Near dust changes first; distant mass follows continuously.	GREEN CABIN	Interior lost black point and shifted green.	Correct the original cabin source before the shared finish.
GRADE STACKING	Contrast and grain accumulated over versions.	Rebuild from roots; grade per shot, then finish once.	UNREADABLE DEATH	Tornado vanished too quickly to feel defeated.	Slow the bend subtly, restore cadence, then hold clear sky.

AUDIENCE TEST: with sound muted, a first-time 18-year-old viewer should identify who drives, who fires, where the threat is, what the projectile becomes, and why the tornado disappears.

What the final FFmpeg pass actually did

The edit was rebuilt from root clips. Timing and shot-level corrections happen before concat; shared shape, grain, sharpening, and loudness happen once after the conform.

```
# PER-SHOT: choose source frames, retime, correct
trim=start_frame=125:end_frame=208,setpts=PTS-STARTPTS
setpts='(N+if(lt(N,13),0,if(lt(N,59),
  6*(3*pow((N-13)/46,2)-2*pow((N-13)/46,3)),6)))/(24*TB)'
fps=24,eq=...,colorbalance=...,scale=992:432
trim=start_frame=208:end_frame=227,minterpolate=fps=72
setpts=PTS/0.400,fps=24,tpad=stop_mode=clone:stop_duration=1

# CONFORM: preserve explicit editorial order
[v01][v02][v03][v05][v07][v08][v09][v09b]
[v10][v11][v12][v13]concat=n:12:v:1:a=0[vconform]

# SHARED FINISH: apply once
scale=992:444,crop=992:432:0:6
noise=c0s=2:c0f=t+u,unsharp=5:5:0.16,fps=24

# MIX: effects drive score ducking
[music][fx_key]sidechaincompress=ratio=10:attack=4:release=260
```

WHY THIS ORDER MATTERS

- Trims protect continuity before style is applied.
- Shot corrections match exposure and color at their roots.
- Concat makes timing explicit and repeatable.
- The 2.8% stretch/crop and grain cannot accumulate.
- Effects key the music duck; the score does not bury causes.

FINAL EDL - 12 CONSTRUCTED SEGMENTS

01	00.000-01.500	arrival / brake	02	01.500-03.042	team cabin two-shot	03	03.042-04.542	driver role proof
04	04.542-06.125	boot exits once	05	06.125-07.875	eye + amber sight	06	07.875-08.958	launcher locked
07	08.958-09.708	single fire	08	09.708-10.750	projectile flight	09	10.750-12.125	travel to impact
10	12.125-12.750	probe plants	11	12.750-14.958	activation builds	12	14.958-21.667	capture / death / absence

Character masters: identity before wardrobe coverage

These are the original approved source prompts supplied for the project, reproduced here as the identity-lock layer of the reference system.



MARA - MASTER (VERBATIM SOURCE)

Photorealistic beauty-editorial portrait, front view, chest-up, on a plain slate-grey backdrop: a breathtaking young Black woman in her early 30s with deep rich espresso skin, visible natural skin texture with fine pores and subtle surface detail, faint natural sheen of rain moisture on her face and collarbones, a few tiny natural skin marks, striking pale amber-gold eyes that glow against her dark skin, dramatic razor-sharp cheekbones, full lips, thick defined brows, fine baby hairs along a sharp clean hairline, very short cropped natural fade, small gold stud earrings, athletic build, wearing a modern matte-black technical storm shell jacket with a rust-orange shoulder panel, collar half-open. Shot on ARRI Alexa 65 with Panavision anamorphic lenses, 2.39:1 aspect ratio, unretouched natural skin, shallow depth of field with critical focus on the eyes, subtle film grain, soft directional key light, documentary-crisp grounded realism, no text, no logos, no captions, no watermarks



CASS - MASTER (VERBATIM SOURCE)

Photorealistic character reference portrait, front view, chest-up, soft neutral daylight on a plain slate-grey backdrop: a striking woman in her late 20s with light brown skin and pronounced vitiligo patterning across one side of her face and neck in soft pale patches, sharp angular features, pale hazel eyes, long dark box braids pulled back into a low tie, a small pale scar through one eyebrow, calm steady expression, wearing a charcoal-grey weatherproof work jacket with a rust-orange shoulder panel, simple uncluttered wardrobe, no hardware. Shot on ARRI Alexa 65 with Panavision anamorphic lenses, 2.39:1 aspect ratio, photorealistic, subtle film grain, deep focus, documentary-crisp grounded realism, no text, no logos, no captions, no watermarks

Three-panel sheets: turn identity into coverage

The master portrait controls the face. The three-panel image supplies repeatable wardrobe, body silhouette, back detail, boots, and rear-view continuity.



MARA - THREE-PANEL (VERBATIM SOURCE)

Using the attached reference image for the character's face and identity: a three-panel character design sheet in a single 16:9 image, three equal vertical panels side by side on a plain slate-grey backdrop with identical soft studio lighting in all three. LEFT PANEL: tight close-up headshot of the woman from the reference, front view, calm neutral expression. CENTER PANEL: full-body three-quarter front view of the same woman with her head cropped out of frame above the shoulders, showing only the body and wardrobe from the neck down. RIGHT PANEL: full-body three-quarter view from behind, head visible, showing the back of the outfit. Wardrobe in all panels: an angular matte-black technical exploration suit with hard geometric paneling, a rust-orange shoulder plate, structured high collar, exposed articulated seams and utility straps at the hip, tapered cargo-cut trousers, and oversized chunky white-and-charcoal exploration boots — near-future astronaut field gear, fashion-editorial cut, sculptural silhouette. Shot on ARRI Alexa 65 with Panavision anamorphic lenses, photorealistic, visible natural skin texture, unretouched skin, subtle film grain, documentary-crisp grounded realism, no text, no logos, no captions, no watermarks



CASS - THREE-PANEL (VERBATIM SOURCE)

Identical prompt to Mara's, with two changes: RIGHT PANEL specifies "head visible with long dark box braids down her back"; wardrobe reads "an angular charcoal-grey technical exploration suit" in place of matte-black.

Vehicle exterior and interior: one design language

Exterior geometry anchors screen direction and scale. The interior sheet prevents the cabin from becoming a generic sci-fi cockpit or changing between driver coverage and two-shots.



VEHICLE THREE-PANEL (VERBATIM SOURCE)

A three-panel vehicle design sheet in a single 16:9 image, three equal vertical panels side by side on a plain slate-grey backdrop with identical soft studio lighting in all three. LEFT PANEL: full side profile view of the vehicle, perfectly perpendicular to camera. CENTER PANEL: three-quarter front view of the same vehicle. RIGHT PANEL: three-quarter rear view of the same vehicle showing the tailgate and rear sensor housing. The vehicle in all three panels: a near-future storm-research pickup truck, matte-white armored body with hard angular geometric paneling, a rust-orange stripe along the lower doors, a roof-mounted silver sensor array with folded antenna arms, reinforced brush guard, heavy oversized off-road tires with mud caked in the treads, exposed articulated suspension, weathered and field-used. Shot on ARRI Alexa 65 with Panavision anamorphic lenses, photorealistic, subtle film grain, documentary-crisp grounded realism, no text, no logos, no captions, no watermarks

INTERIOR THREE-PANEL (VERBATIM SOURCE)

Using the attached vehicle reference for design language: a three-panel interior design sheet in a single 16:9 image, three equal vertical panels side by side with identical studio lighting in all three. LEFT PANEL: interior shot from the driver's seat looking forward at the dashboard — hard angular matte-black dash with geometric paneling, three mounted screens glowing faint amber with radar and weather readouts, chunky technical steering wheel, physical toggle switches and rotary dials, rust-orange accent trim. CENTER PANEL: interior shot from the passenger seat looking across at the empty driver's seat — worn charcoal technical bucket seats with rust-orange harness straps, angular door panel with exposed fasteners, coiled cables along the sill, roll cage tubing framing the shot. RIGHT PANEL: rear cabin looking forward between the two front seats — hard black equipment cases strapped with rust-orange webbing, a rack of matte-grey sensor probes in foam, exposed roll cage structure, mounted rugged tablet glowing amber, worn rubber floor matting. In all three panels the windshield and every window are blank flat neutral grey with no environment visible outside. Photorealistic, subtle film grain, documentary-crisp grounded realism, no text, no logos, no captions, no watermarks

Launcher hero and three-panel: protect prop identity

The launcher had to survive close-up, shoulder profile, firing, projectile flight, and planted-probe coverage without changing silhouette or ownership.



LAUNCHER HERO (VERBATIM SOURCE)

Photorealistic hero product shot of a near-future field probe launcher on a plain slate-grey backdrop: a compact shoulder-fired launcher with an angular matte-black composite body, hard geometric paneling, a wide bore muzzle with a rust-orange interior ring, an exposed articulated shoulder brace, a top-mounted sighting unit glowing faint amber, a ribbed forward grip, visible field wear with scratches and mud in the seams, a loaded matte-grey projectile visible in the breach. Hard raking side light, shallow depth of field. Shot on ARRI Alexa 65 with Panavision anamorphic lenses, photorealistic, subtle film grain, desaturated slate-teal with warm amber accents, documentary-crisp grounded realism, no text, no logos, no captions, no watermarks

LAUNCHER THREE-PANEL (VERBATIM SOURCE)

A three-panel weapon design sheet in a single 16:9 image, three equal vertical panels side by side on a plain slate-grey backdrop with identical soft studio lighting in all three. LEFT PANEL: full side profile view of the launcher, perfectly perpendicular to camera. CENTER PANEL: three-quarter front view showing the muzzle and sighting unit. RIGHT PANEL: three-quarter rear view showing the shoulder brace and breach with a loaded projectile. The device in all three panels: a compact near-future shoulder-fired probe launcher, angular matte-black composite body with hard geometric paneling, wide bore muzzle with a rust-orange interior ring, exposed articulated shoulder brace, top-mounted amber-glowing sighting unit, ribbed forward grip, field-worn with scratches and mud in the seams. Shot on ARRI Alexa 65 with Panavision anamorphic lenses, photorealistic, subtle film grain, documentary-crisp grounded realism, no text, no logos, no captions, no watermarks

Environment plate and lockline: one world across every shot

The stills-camera language solved the CGI-landscape problem. The lockline was then appended to every video prompt to suppress weather, palette, terrain, and background drift.



DESERT STORM PLATE - FINAL SOURCE

Three-quarter angle view: photojournalism shot of a vast dry desert plain of pale beige cracked earth and sparse dry scrub, faint dirt tire tracks cutting through, dark rock formations on the distant horizon, an enormous dark grey tornado dominating the frame, the entire sky completely covered in flat overcast grey storm cloud with no blue sky and no white cumulus, thick dust haze filling the air and veiling the horizon, heavy atmospheric perspective, desaturated near-monochrome beige and grey palette, low contrast, no direct sunlight, dim diffused light. Shot handheld on a Canon EOS R5 with a 35mm lens, fine sensor noise, unedited raw photograph, no CGI, no render, no text, no logos, no watermarks

EARLIER HIGHWAY REALISM FIX

Three-quarter angle view: photojournalism shot of a rural two-lane highway at dusk in Oklahoma, cracked and patched asphalt with faded tar seams and worn lane paint, gravel and weeds along the crumbling shoulder, sagging power lines on leaning weathered poles, a rusted road sign post, an enormous dark supercell storm wall on the horizon with rain shafts falling, dust and grit blowing across the road surface, a few insects and specks caught in the light. Shot handheld on a Canon EOS R5 with a 35mm lens at f/5.6, natural available light, slight lens flare and chromatic aberration at the edges, fine sensor noise, imperfect horizon, unedited raw photograph, real-world documentary photography, no CGI, no render, no illustration, no text, no logos, no watermarks

ENVIRONMENT LOCKLINE - APPEND TO EVERY VIDEO PROMPT

Environment: vast dry desert plain of pale beige cracked earth with sparse scrub and distant rock formations, under a dark storm with a massive tornado visible in the background, dust and grit blowing across the ground, flat overcast grey sky with no blue and no bright clouds, thick dust haze, desaturated near-monochrome beige-grey palette, low contrast, dim diffused light. No grassland, no green fields, no explosions, no sci-fi weapons platforms.

WHY IT WORKED

The prompt specifies terrain, sky, haze, palette, contrast, light, and forbidden worlds. Those are observable production constraints, not generic mood adjectives.