JOB SPECIFICATIONS

Rig Name	**Test Rig 1**	Shaker Number	**1**
Log Depth (ft)	**11563.0**	Mud Weight (ppg)	**11.1**
Accel Range	**±16 g**	G Range	**Shale shaker, 5-8 G**

INSTRUMENT

SMA Serial	**DEMO**	MAC Address	**-**
SMA Firmware	**-**	Hardware Rev	**-**
App Version	**1.2.4 (109)**	Sample Rate	**1660 Hz**
Calibration	**-**	Next Calibration	**-**

SUMMARY

Result	Across positions	Confidence	Verdict
G-force	**5.46 - 6.23 G**	MEASURED	**Normal**
Stroke	**0.171 in - 0.195 in**	MEASURED	-
Running speed	**1500 rpm**	MEASURED	-
Motion shape	**Linear**	MEASURED	-
Motion angle	**45.0° to deck**	MEASURED	-

G verdicts use the job's G range: normal 5-8 G, caution 4-5 G or above 8 G, out of range below 4 G.

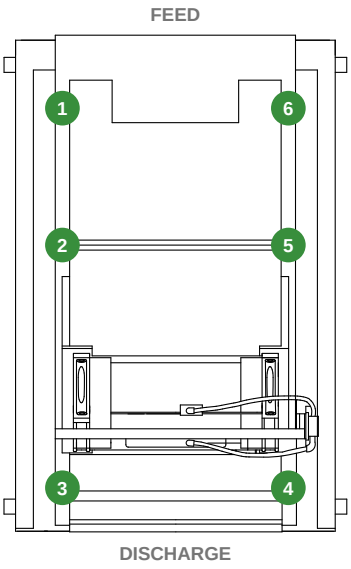
Findings

! Side-to-side G difference: feed 13% (right lower); mid 12% (right lower); discharge 13% (right lower). — INDICATOR

! Residual vibration above 15% of the running motion: Left Discharge 25%. — INDICATOR

- Feed to discharge: left 6.22 to 6.23 G (0%); right 5.48 to 5.49 G (0%). — INDICATOR

POSITIONS



1. Left Feed **6.22 G**
2. Left Mid **6.15 G**
3. Left Discharge **6.23 G**
4. Right Discharge **5.49 G**
5. Right Mid **5.46 G**
6. Right Feed **5.48 G**

Top view. Left and right as seen from the discharge end. The SMA sits flat on the top rail with its arrow toward discharge.

Position	G-force	Stroke	Speed (rpm)	Shape	Angle	Lateral	Residual	Deck angle
Left Feed	6.22	0.195 in	1500	Linear	45.0°	2%	1%	+3.0°
Left Mid	6.15	0.192 in	1500	Linear	45.0°	2%	1%	+3.0°
Left Discharge	6.23	0.195 in	1500	Linear	45.0°	2%	25%	+3.0°
Right Discharge	5.49	0.172 in	1500	Linear	45.0°	2%	1%	+3.0°
Right Mid	5.46	0.171 in	1500	Linear	45.0°	2%	1%	+3.0°
Right Feed	5.48	0.171 in	1500	Linear	45.0°	2%	1%	+3.0°

DETAILED MOTION ANALYSIS (WAVEFORMS & ORBITS)

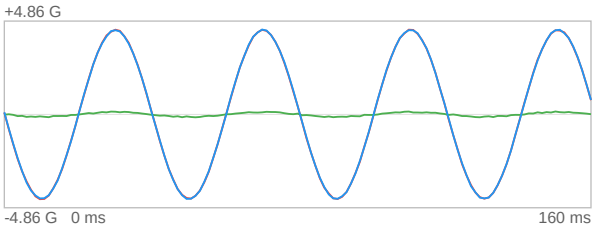
LEFT FEED

LINEAR

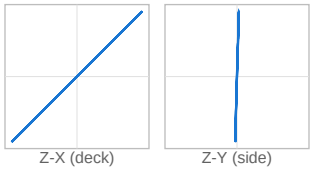
G-force: 6.22 G (Normal)
Stroke: 0.195 in
Speed: 1500 rpm (25.00 Hz)
Shape: Linear (0.00)
Motion angle: 45.0° to deck
Lateral: 2%
Pitch / roll: 0.00° / 0.00°
Residual: 1%
Harmonics (exp.): 0.5x 0% 2x 0% 3x 0%
Deck angle: +3.0° (side tilt 0.0°)

RMS 4.40 G, peak 6.25 G, crest factor 1.42

Waveform, mid-run (Z blue, X red, Y green)



Orbit: along deck / side to side



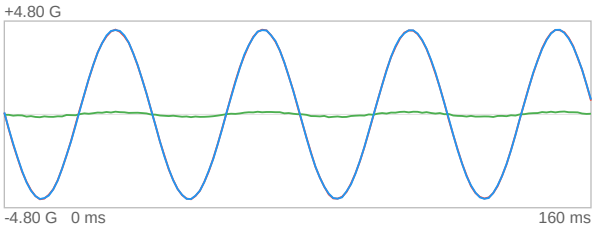
LEFT MID

LINEAR

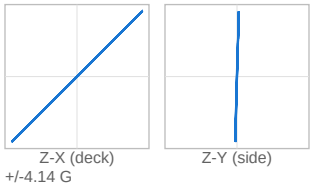
G-force: 6.15 G (Normal)
Stroke: 0.192 in
Speed: 1500 rpm (25.00 Hz)
Shape: Linear (0.00)
Motion angle: 45.0° to deck
Lateral: 2%
Pitch / roll: 0.00° / 0.00°
Residual: 1%
Harmonics (exp.): 0.5x 0% 2x 0% 3x 0%
Deck angle: +3.0° (side tilt 0.0°)

RMS 4.35 G, peak 6.19 G, crest factor 1.42

Waveform, mid-run (Z blue, X red, Y green)



Orbit: along deck / side to side



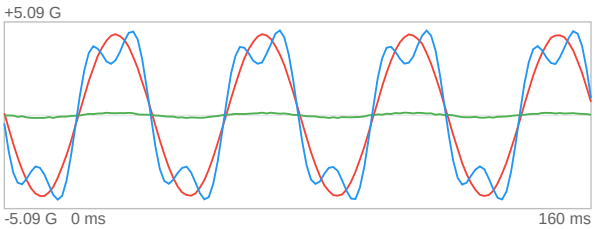
LEFT DISCHARGE

LINEAR

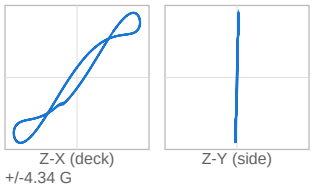
G-force: 6.23 G (Normal)
Stroke: 0.195 in
Speed: 1500 rpm (25.00 Hz)
Shape: Linear (0.00)
Motion angle: 45.0° to deck
Lateral: 2%
Pitch / roll: 0.00° / 0.00°
Residual: 25%
Harmonics (exp.): 0.5x 0% 2x 0% 3x 25%
Deck angle: +3.0° (side tilt 0.0°)

RMS 4.54 G, peak 7.11 G, crest factor 1.57

Waveform, mid-run (Z blue, X red, Y green)



Orbit: along deck / side to side



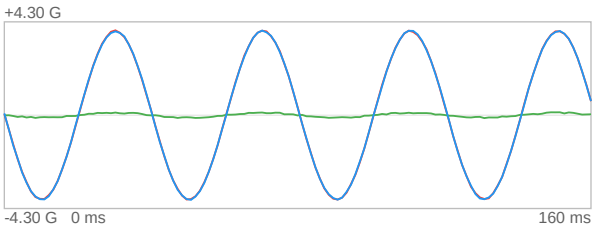
RIGHT DISCHARGE

LINEAR

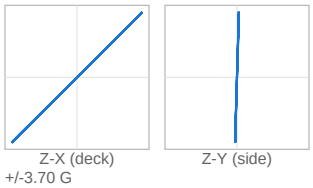
G-force: 5.49 G (Normal)
Stroke: 0.172 in
Speed: 1500 rpm (25.00 Hz)
Shape: Linear (0.00)
Motion angle: 45.0° to deck
Lateral: 2%
Pitch / roll: 0.00° / 0.00°
Residual: 1%
Harmonics (exp.): 0.5x 0% 2x 0% 3x 0%
Deck angle: +3.0° (side tilt 0.0°)

RMS 3.88 G, peak 5.53 G, crest factor 1.42

Waveform, mid-run (Z blue, X red, Y green)



Orbit: along deck / side to side



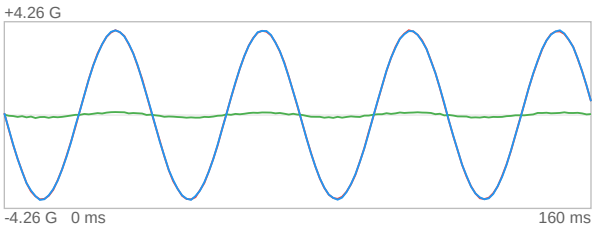
RIGHT MID

LINEAR

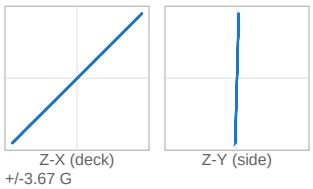
G-force: 5.46 G (Normal)
Stroke: 0.171 in
Speed: 1500 rpm (25.00 Hz)
Shape: Linear (0.00)
Motion angle: 45.0° to deck
Lateral: 2%
Pitch / roll: 0.00° / 0.00°
Residual: 1%
Harmonics (exp.): 0.5x 0% 2x 0% 3x 0%
Deck angle: +3.0° (side tilt 0.0°)

RMS 3.86 G, peak 5.49 G, crest factor 1.42

Waveform, mid-run (Z blue, X red, Y green)



Orbit: along deck / side to side



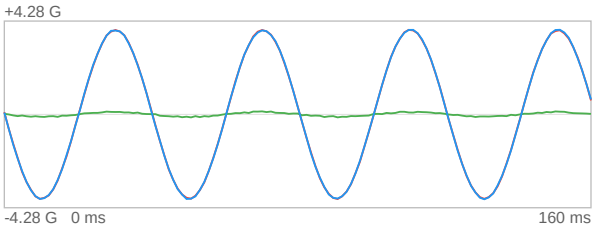
RIGHT FEED

LINEAR

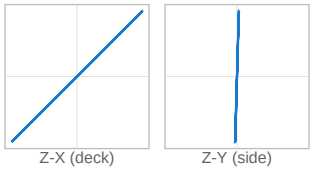
G-force: 5.48 G (Normal)
Stroke: 0.171 in
Speed: 1500 rpm (25.00 Hz)
Shape: Linear (0.00)
Motion angle: 45.0° to deck
Lateral: 2%
Pitch / roll: 0.00° / 0.00°
Residual: 1%
Harmonics (exp.): 0.5x 0% 2x 0% 3x 0%
Deck angle: +3.0° (side tilt 0.0°)

RMS 3.87 G, peak 5.52 G, crest factor 1.42

Waveform, mid-run (Z blue, X red, Y green)



Orbit: along deck / side to side



Field Technician Signature: _____

HOW TO READ THIS REPORT

Each result carries a confidence label:

MEASURED	Direct physics, verified against a reference. Judged against the machine's expected range.
INDICATOR	Sound method, thresholds not yet field-proven. Shown as a comparison, never as a diagnosis.
EXPERIMENTAL	Promising, unproven in the field. Not for maintenance decisions.

Positions marked * have data-quality notes (see Summary). Results that depend on untrustworthy data are shown as "-".

Running speed MEASURED

How fast the vibrator motors are turning. The motors set the shaking speed, so this should match the motor nameplate or the VFD setting.

Good looks like: Within ±3% of the expected speed.

If it's off: Low: VFD set low, motor overloaded, or low supply voltage. Different between runs: unstable supply or a motor problem.

G-force MEASURED

How hard the basket is shaking, as a multiple of gravity: the main number shaker makers quote. More G dries cuttings better and moves them faster, but wears screens faster. Shale shakers typically run 5-8 G; worn or heavily loaded machines drop toward 4 G.

Good looks like: Within the G range set for the job: the OEM spec, or 5-8 G for a shale shaker.

If it's off: Low: worn or mis-set eccentric weights, a weak or failed motor, low speed, heavy loading, or a broken spring. High: weights set above spec, which shortens screen life.

Stroke MEASURED

How far the basket travels on each shake, end to end, along its main motion direction. Stroke and speed together set the G-force. Longer stroke moves material faster and handles sticky solids better.

Good looks like: Within ±10% of the OEM spec.

If it's off: Same causes as G-force. Stroke changes with weight settings and loading, not with speed.

Motion angle MEASURED

The angle of the shaking motion relative to the screen deck. On linear-motion shakers it sets how fast solids travel. It is set by the motor mounting, typically around 45° , and should be the same at every position.

Good looks like: Within ±3° of the OEM spec, and within 3° position to position.

If it's off: Differs side to side: uneven motor output or weights. Differs feed to discharge: the basket is pitching.

Motion shape MEASURED

Whether the basket moves in a straight line (linear), an oval (elliptical) or a circle (circular). It should match the machine's design.

Good looks like: Linear machines: ratio below 0.15. Elliptical and circular machines: consistent with the OEM design.

If it's off: A linear machine reading elliptical: a weak or failed motor, motors not synchronized, different weight settings, or one motor wired to run backwards.

Lateral motion INDICATOR

How much the basket shakes side to side, which it shouldn't. Side-to-side motion wastes energy and stresses the basket and springs.

Good looks like: Small. Provisional: below 10%.

If it's off: Uneven springs or isolators, a motor mounted off-axis, or a loose motor mount.

Deck angle and side tilt MEASURED

Deck angle: how steeply the deck slopes up toward discharge. Uphill holds a deeper fluid pool, so more liquid passes through the screens, but solids convey more slowly. Side tilt: whether the machine is level side to side; a tilted machine wears one side's screens first.

Good looks like: Deck angle as set by the operator. Side tilt within ±0.5° .

If it's off: Angle mechanism not set as expected, machine not leveled, or the skid has settled.

Left/right balance INDICATOR

Whether both sides of the basket shake equally. A healthy basket moves as one rigid piece, so left and right should match closely.

Good looks like: Provisional: G within 10% side to side.

If it's off: Possible causes: a weak motor or different weight settings; a broken, sagging or mismatched spring or isolator on one side; uneven loading.

Feed-to-discharge consistency INDICATOR

Whether the feed end and discharge end shake the same. On linear machines they should; a difference means the basket is pitching.

Good looks like: Linear and balanced-elliptical machines: provisional, within 10%. Unbalanced elliptical machines differ by design.

If it's off: Possible causes: motor mounting position, uneven springs front to back, or a heavy build-up of solids.

Pitch and roll INDICATOR

How much the basket rocks while shaking: pitch is end to end, roll is side to side. A healthy basket translates without much rocking.

Good looks like: Small and consistent across positions. Thresholds to be set from field data.

If it's off: Possible causes: mismatched or failed springs, motors not balanced against each other, or a loose basket component.

Residual vibration INDICATOR

Shaking that isn't the machine's intended motion: rattles, knocks and buzzing. A healthy machine is almost purely its running motion. Rising residual vibration often means something is loose.

Good looks like: Provisional: below 15% of the running motion.

If it's off: Possible causes: loose screen panels or wedges, worn or loose isolators, cracked welds or loose bolts, a failing motor bearing.

Harmonic content EXPERIMENTAL

Vibration at exact multiples (or half) of running speed. In machinery diagnostics this is a classic sign of looseness or something striking once per cycle.

Good looks like: Low compared with the running motion.

If it's off: High 2× or 3×: looseness, or a component knocking once per cycle. Present 0.5×: severe looseness or rubbing.

Vibration figures

Each position also lists these overall figures. They describe all of the vibration, not just the shaker's intended motion.

Reported G (G-force): Peak acceleration of the steady shaking at running speed, along its main direction, from all three axes. Noise, impacts and vibration at other frequencies are left out. This is the industry "G" that shaker makers quote, and the only figure judged against the G range.

RMS G: Root-mean-square of all vibration in the run (gravity removed), every frequency and all three axes combined: the overall energy, including noise and impacts. For clean straight-line shaking, Reported G is about 1.4 x RMS G. A Reported G well below that means much of the vibration is not the running motion.

Peak G: The single largest vibration reading in the run (all three axes combined, gravity removed), including any impact or spike. It can be far above Reported G when something knocks.

Crest factor: Peak G divided by RMS G: how spiky the vibration is. About 1.4 for clean straight-line shaking and 1.0 for circular motion; 3 or more means impacts or spikes on top of the motion.