



PROOF POSIT

Robinhood Chain's 18 AEP Settlements Each Came Within 0.023 ETH of the Terms' 10%

Proof Posit PP-004: the Arbitrum Expansion Program reconciliation, settlement by settlement

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The pages that follow are the full text of this document's exact source, set as readable pages. The SHA-256 printed in every footer is the fingerprint of that source. The seal of this document — its ledger event, both hardware witnesses and its Bitcoin anchor — is recorded at the verification address above, not in these pages.

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PROOF POSIT PP-004

MASTHEAD

Field	Value
Proof Posit	PP-004
Subject	Robinhood Chain (chain ID 4663): the Arbitrum Expansion Program reconciliation, settlement by settlement
Title	Robinhood Chain's 18 AEP Settlements Each Came Within 0.023 ETH of the Terms' 10%
Date	2026-10-06
Measurement window	Genesis (block 0) to block 62,471,946 (2026-09-14 03:00:01 UTC). Settlements: 2026-07-11 to 2026-09-07.
Pinned at	Block 62,471,946 · hash 0x6be6970fbf6ebda579ae87bad4df04a3b7dd14486a40508a747d079fbef462eb
Chain	Robinhood Chain, chain ID 4663 (an Arbitrum Orbit chain settling to Ethereum)
Surface	Index: Glass Hull's own full-history index (A1), every receipt's fee components and every settlement and L2→L1 event; a second measurement over our archive extraction (A2) with its own code; the two give the identical result object. Account balances and fee-account settings at the pin read from two third-party archive providers (Dwellir, QuickNode), one per measurement.
Method hash	499919e79da64e0176e0440c8a9c50c3c4670777ebbca3c841943feee3e6cff3 (Glass Hull ledger, kind-3 3391938) · Method frozen 2026-10-06 15:11:33 UTC after exploratory measurement; the sealed figures are the re-run under the frozen method.
Result object	Both measurements: 49135cecef2827585f12454f98bef88d46f32f25f96408aa2ee417296e5d403
Builds on	Proof Posit PP-003 (every settlement split 9,000/1,000) and the AEP reconciliation's first phase to block 55,927,945 (Glass Hull ledger 2987315).
How to cite	Glass Hull, Proof Posit PP-004, "Robinhood Chain's 18 AEP Settlements Each Came Within 0.023 ETH of the Terms' 10%," Jet Fyul Dynamics LLC (2026), gh.jetfyul.com/posits/PP-004/

I. SUMMARY

Under the Arbitrum Expansion Program, a chain shares 10% of its fees, net of the cost of posting its data to Ethereum, with the Arbitrum ecosystem. We measured, from the chain's own record, what Robinhood Chain collected from its first block to block 62,471,946, what the Terms' formula gives, and what each settlement remitted.

- **Collected:** 19,790.5383 ETH under the Terms' formula: L2 base fees 2,441.5323 ETH, L2 surplus fees 17,347.5408 ETH and the L1 surplus 1.4652 ETH. (The L1 base fee, 11.7513 ETH, the cost of posting to Ethereum, is excluded by the formula.)
- **The Terms' 10%:** 1,979.0538 ETH.

- **Remitted:** 1,717.1143 ETH to the Arbitrum ecosystem router, in 18 settlements from 2026-07-11 to 2026-09-07. Every settlement split 9,000/1,000 to the basis point.
- **Each settlement came within 0.0227 ETH of 10% of the fees collected in its period.**
- **The difference, 261.9395 ETH, is itemised in full.** 261.76 ETH of it, 10% of the fees collected after the 2026-09-07 settlement, was not yet settled as of the pin, one week after the last weekly settlement; the rest is 0.1803 ETH.
- **Sent on to Ethereum:** of the 1,717.1143 ETH remitted to the router, 492.3765 ETH was transferred to Ethereum in 7 transfers; 1,224.7378 ETH was in the router at the pin.

Two measurements of our own, on different engines and from two independent account-balance providers, emit the identical result object.

II. METRIC OBJECTIVE

The formula. The Arbitrum Foundation's published AEP formula: $\text{AEP fees} = [(l2\text{BaseFee} + l2\text{SurplusFee} + l1\text{BaseFee} + l1\text{SurplusFee}) - l1\text{BaseFee}] \times 0.1$.

What we measured.

- for every receipt: its L2 base fee (to the infra fee account), its L2 surplus fee (to the network fee account) and its L1 posting fee (to the L1 pricer pool), from its gas, its block's base fee and the minimum base fee in force
- the L1 split, which the chain does not record per transaction: what the pool kept and what it paid to the L1 reward recipient (the L1 surplus), from balances at genesis and at the pin
- every settlement of the two fee distributors, and the fees each received in the period it settled
- the ecosystem router's transfers to Ethereum

The reporting rule. Every settlement is shown. A non-zero difference is a measured difference; it is itemised, not characterised.

III. FINDINGS

Measure	ETH
Collected under the Terms' formula	19,790.5383
— L2 base fees (infra fee account)	2,441.5323
— L2 surplus fees (network fee account)	17,347.5408
— L1 surplus (kept by the L1 pricer pool, or paid to the L1 reward recipient)	1.4652
L1 base fee (posting cost; excluded by the formula)	11.7513
The Terms' 10%	1,979.0538
Remitted to the Arbitrum ecosystem router, 18 settlements	1,717.1143

Measure	ETH
Difference	261.9395

The difference, itemised:

Item	ETH
10% of fees collected after each distributor's last settlement, in the distributors at the pin (infra 30.5204, network 231.2388)	261.7592
10% of the L1 surplus, which no settlement carries (the L1 reward recipient has not settled)	0.1465
10% of fees collected before the distributors became the fee accounts (blocks 0–21 infra, 0–22 network)	0.000579
The 18 settlement differences, summed	0.033234
Rounding and residual	0.000000
Total	261.9395

Settlement by settlement. Each distributor pays out its whole balance at a settlement: 9,000 bps to the operator, 1,000 bps to the ecosystem router. "Fees in the period" are the fees the distributor received since its previous settlement.

#	Distributor	Settled (UTC)	Fees in the period	10%	Remitted	Difference
1	infra #1	2026-07-11 17:58:16	111.3313	11.1331	11.1324	0.000689
2	network #1	2026-07-11 18:44:45	211.8712	21.1871	21.1863	0.000768
3	infra #2	2026-07-20 18:01:17	230.4306	23.0431	23.0425	0.000522
4	network #2	2026-07-20 18:01:25	464.2591	46.4259	46.4279	-0.002030
5	infra #3	2026-07-27 18:01:29	191.2174	19.1217	19.1213	0.000389
6	network #3	2026-07-27 18:01:34	578.1030	57.8103	57.8091	0.001161
7	infra #4	2026-08-03 18:01:37	183.4036	18.3404	18.3379	0.002487
8	network #4	2026-08-03 18:01:43	27.7583	2.7758	2.7758	0.000053
9	network #5	2026-08-11 05:56:29	96.7153	9.6715	9.6714	0.000172
10	infra #5	2026-08-11 06:03:57	265.3487	26.5349	26.5344	0.000492
11	infra #6	2026-08-17 18:01:14	199.2482	19.9248	19.9241	0.000765
12	network #6	2026-08-17 18:01:18	274.8107	27.4811	27.4805	0.000585
13	infra #7	2026-08-24 18:01:23	170.9434	17.0943	17.0938	0.000568
14	network #7	2026-08-24 18:01:26	12.8103	1.2810	1.2810	0.000012
15	infra #8	2026-08-31 18:01:11	306.1912	30.6191	30.6182	0.000895
16	network #8	2026-08-31 18:01:15	1,121.2195	112.1219	112.1199	0.002018
17	infra #9	2026-09-07 18:02:56	478.2080	47.8208	47.8198	0.000959

#	Distributor	Settled (UTC)	Fees in the period	10%	Remitted	Difference
18	network #9	2026-09-07 18:03:01	12,247.6052	1,224.7605	1,224.7378	0.022728

In 17 of the 18 settlements the distributor paid out slightly less than our per-receipt computation of the fees it received; in all, 0.3323 ETH less on 17,171.48 ETH (0.0019%). Ten percent of that is the settlement differences above. We do not characterise it; the Full Proof gives both figures for every period.

At the pin. The distributors held 305.1979 ETH (infra) and 2,312.3444 ETH (network), against 305.2040 ETH and 2,312.3881 ETH of fees our computation credits them since their last settlements (0.0060 ETH and 0.0437 ETH less).

Sent on to Ethereum. The ecosystem router transferred 492.3765 ETH to Ethereum (to 0x1afa41c006da1605846271e7bdae942f2787f941) in 7 L2→L1 transfers, the last at 2026-09-07 18:02:56 UTC. At the pin it held 1,224.7378 ETH, the ecosystem share of the 2026-09-07 network settlement.

L1 posting fees end before the pin. The last receipt carrying L1 posting gas is in block 60,323,303; none of the 28,587,559 receipts after it, from 2026-09-11 14:21:39 UTC to the pin, carries any, so no L1 posting fee was charged in those blocks. Our index, our archive extraction and a third-party node agree.

III.i PROOFS (ABRIDGED)

Pass arm. The frozen statements, saved in our evidence console as the store queries store-aep-*, were re-run on the index after the method was frozen; every run is pinned to block 62,471,946 and its hash.

Second measurement. A separate program, written from the frozen method's text alone, read every receipt and event from our archive extraction on a different engine, and the account balances from a different provider, and computed every figure again in exact integer arithmetic. It emits the identical result object: digest 49135cecefd2827585f12454f98bef88d46f32f25f96408aa2ee417296e5d403 on both, 354 fields compared, 0 differing.

Coverage. Every block from 0 to 62,471,946 (62,471,947 blocks); 715,718,873 receipts, equal to the blocks' transaction counts; no receipt with less gas used than its posting gas.

Controls. Every settlement split exactly 9,000/1,000 (18 of 18). The router's books close exactly: remitted, minus transferred to Ethereum, equals its balance at the pin. The minimum base fee changed once, at block 174,150, to 0.02 gwei; before it, 0.1 gwei.

Records. Glass Hull ledger 3391938 (frozen method); the re-run, the second measurement and the comparison are recorded with the Full Proof.

IV. LIMITS OF OBSERVATION

- The L1 split is measured in aggregate.** The chain does not record, per transaction, how the posting fee divides between the posting cost and the surplus; we measure the surplus from the pool's and the L1 reward recipient's balances at genesis and at the pin.
- Costs with no chain record.** The cost of recording data on Ethereum beyond what the chain charges, any sponsorship of gas, and sequencing revenue that leaves no record on the chain are not observable

here.

3. **Ethereum's side.** We record the L2→L1 transfers the router started on Robinhood Chain; their execution on Ethereum is outside this measurement.
4. **The computation and the credit.** Fees are computed per receipt from the chain's own gas and price fields; the balances the distributors actually paid out are read from the chain. Where the two differ, we show both. The 0.0019% gap between them across the 18 settlement periods is not explained by this measurement.
5. **Third-party providers.** Account balances and fee-account settings were read from Dwellir and QuickNode archive endpoints, one per measurement, and agree.
6. **The window ends at the pinned block.** Later fees and settlements are not included.

V. CONCLUSION

Robinhood Chain collected 19,790.5383 ETH under the Arbitrum Expansion Program's formula from its first block to block 62,471,946, ten percent of which is 1,979.0538 ETH. Its 18 settlements remitted 1,717.1143 ETH, each within 0.0227 ETH of ten percent of the fees in its period. Of the 261.9395 ETH between the two, 261.7592 ETH is ten percent of fees collected after the last settlement and held in the distributors at the pin.

This finding measures fees and transfers on the chain against a published formula. It draws no conclusion about any party's statements, systems or intentions.

VI. GLOSSARY AND DEFINITIONS

- **Arbitrum Expansion Program (AEP).** The program under which chains built on Arbitrum technology share part of their fees with the Arbitrum ecosystem.
- **The Terms' 10%.** Ten percent of the fees the AEP formula counts: L2 base, L2 surplus and L1 surplus; the L1 base fee is excluded.
- **Settlement.** One transaction in which a fee distributor pays out its balance, 9,000 bps to the operator and 1,000 bps to the ecosystem router.
- **Remitted.** Paid by a settlement to the ecosystem router.
- **Fees in the period.** The fees a distributor received between its previous settlement and this one.
- **At the pin.** At block 62,471,946, the last block included.
- **Pinned height.** The last block included in the measurement, identified by number *and* hash.
- **Second measurement.** The same figures computed again by a different program and engine from our archive extraction; the two must agree exactly.
- **Frozen method.** A method fixed and hashed before the sealed re-run.

VII. ADDITIONAL RESOURCES

If you would like to read more of our series, Proof Posits, you may go [here](#). The payment record this reconciliation builds on is Proof Posit PP-003. The Full Proof for this finding, the AEP reconciliation Full Proof, is available at a fixed price [here](#).

SEAL AND VALIDATION

Seal record: this document's seal — its ledger event, both hardware witnesses and its Bitcoin anchor — is recorded on its verification page, <https://gh.jetfyul.com/v/JFD-20261006-PP-00001>, and in its certificate of authenticity, JFD-20261006-CERT-00001, not in these pages.

To validate this Posit without contacting us:

1. Compute the SHA-256 of this document.
2. Look up the ledger event.
3. Verify both hardware signatures.
4. Verify the Bitcoin anchor.
5. If you prefer, verify on Robinhood Chain itself: it verifies P-256 natively at 0x100 (RIP-7212).

If your bytes differ from ours, kindly let us know publicly or privately. A difference is still a finding.

END OF DOCUMENT · JFD-20261006-PP-00001

NOTE ON THIS DOCUMENT

The pages above reproduce the sealed document. The sealed record is a file.

What the Notary authorised, what both hardware witnesses signed and what the ledger event records is the file JFD-20261006-PP-00001 . pdf - 313699 bytes, SHA-256 20c32c32b7cd13943978f3f1bbc7d638a916070f4f83c5ee96f9d218027a492c.

The sealed document JFD-20261006-PP-00001 . pdf (313699 bytes, SHA-256 20c32c32b7cd13943978f3f1bbc7d638a916070f4f83c5ee96f9d218027a492c) is embedded in this PDF as a file attachment.

Its exact source, whose fingerprint the document prints, PP-004-source .md (13448 bytes, SHA-256 9223fffeb55963f3ba8994df7c3c1e0e0c9a6d910d015f80918b2f0ff0715a8c9) is embedded in this PDF as a file attachment.

The anchor proof as stamped at sealing JFD-20261006-PP-00001 . pdf . ots (856 bytes, SHA-256 9aac7a8e3de21448d0d8ba4da5635910efbb28ea8e8aee2a538fd36c98289ed9) is embedded in this PDF as a file attachment.

The seal record from which the certificate is built seal-record-JFD-20261006-PP-00001 . json (6951 bytes, SHA-256 3f73c4ad5980331edfef2a1eef1913ea137c56880fb2d565c347af9671ffcb43) is embedded in this PDF as a file attachment.

The complete anchor proof, carrying the Bitcoin attestation, JFD-20261006-PP-00001 . pdf . anchored . ots (1788 bytes, SHA-256 a55d5b5f3638da6cc5da696a7c125ff53f3c995a0a92f1238b5bd7406ee12b9d) is embedded in this PDF as a file attachment.

The anchor confirmation from which the certificate's Bitcoin block is taken anchor-confirmation-JFD-20261006-PP-00001 . json (2162 bytes, SHA-256 0f46c3598acd0dbdf96ca2602b6825b3fe55108a1b1da3b5b6c790eb3669b3ce) is embedded in this PDF as a file attachment.

Open the attachments pane of your PDF reader to extract them, and hash each file as stored.

What follows, in order

The seal page, carrying the seal record's values: fingerprint, ledger event, both witnesses and the anchor. After it, the Certificate of Authenticity on the Smoking Gun plate, built from the same seal record and signed; then the page "How to verify this without the Issuer, in six steps", which carries the record, both witnesses and the anchor in full, and the steps that verify all of it without the Issuer.

K. L. Phillips

K. L. Phillips, a man

Principal, Jet Fyul Dynamics LLC · The author stands behind every word.



BLOCK 2 — ISSUER

ISSUER Jet Fyul Dynamics LLC · Wyoming
RAIL Matchstick Tribunal
CUSTODY both witness keys held by the issuer, in silicon, on separate hosts; never exported

BLOCK 4 — WHO SIGNED IT

Two independent hardware witnesses. Conforming tests of a defined procedure — not a primary and a backup.

	WITNESS 1	WITNESS 2
chip identity	a9-atecc608b-slot0	a10-atecc608b-slot0
serial	0123ADA0711D8597EE	0123DC797ACC1195EE
curve	ECDSA-P256 (secp256r1)	ECDSA-P256 (secp256r1)
public key	d62d03f8dc3813fb5b74f2b64339d185...	853e69fc700990303abfe61358bfa456...
signature over artifact hash	→ ledger event 3398845	→ ledger event 3398845
signed (UTC)	→ event 3398845	→ event 3398845
federation peer	a10-atecc608b-slot0	a9-atecc608b-slot0
host · custody	A9 · Jet Fyul Dynamics LLC	A10 · Jet Fyul Dynamics LLC
certifies in accordance with	Fed. R. Evid. 902(13), 902(14)	Fed. R. Evid. 902(13), 902(14)
verified offline	→ event 3398845	→ event 3398845

Each signature verifies on its own, against its own public key, without the other and without anything of ours.
One signature is not a seal: if either witness is unreachable, no seal is produced. Both chips are the same make and model, provisioned and owned by the issuer — independent in custody and location, not in supply chain or ownership.
Full public keys, signatures, and the Rule 902(11) certification of a qualified person: ledger event → event 3398845 · <https://gh.jetfyul.com/v/JFD-20261006-PP-00001>

Blocks 1-3 are inside these bytes; Block 4 live cells, Block 5 (Ed25519 a1-ledger) and Block 6 (Bitcoin anchor) live on the ledger and at <https://gh.jetfyul.com/v/JFD-20261006-PP-00001>

GLASS HULL

CERTIFICATE OF AUTHENTICITY · JFD-20261006-PP-00001

JFD-20261006-PP-00001.pdf · 313699 bytes · sealed 2026-10-06T22:16:32Z

**Robinhood Chain's 18 AEP Settlements Each
Came Within 0.023 ETH of the Terms' 10%**

Certificate JFD-20261006-CERT-00001

20c32c32b7cd13943978f3f1bbc7d638a916070f4f83c5ee96f9d218027a492c

Ledger event 3398845 (kind-15)

A9 0123ADA0711D8597EE · A10 0123DC797ACC1195EE

Bitcoin block 970246 · 2026-10-06T22:48:12Z

20c32c32b7cd1394 · ANCHORED · <https://gh.jetfyul.com/v/JFD-20261006-PP-00001>

K. L. Phillips
Chief Executive Officer

Glass Hull · PP-Template 01-926 · Smoking Gun — 1911
Matchstick Made © 2026 · Jet Fyul Dynamics LLC

How to verify this without the Issuer, in six steps

Robinhood Chain's 18 AEP Settlements Each Came Within 0.023 ETH of the Terms' 10% - JFD-20261006-PP-00001

The record

Document control number: JFD-20261006-PP-00001

Fingerprint (SHA-256 of the sealed file, raw bytes as stored):
20c32c32b7cd13943978f3f1bbc7d638a916070f4f83c5ee96f9d218027a492c

Sealed file: JFD-20261006-PP-00001.pdf, 313699 bytes

Source fingerprint printed inside the document:
9223ffeb55963f3ba8994df7c3c1e0e0c9a6d910d015f80918b2f0ff0715a8c9

Ledger event (kind-15): 3398845, event hash
2aa8d08496f0754a3f0d497f1e786939947018d22e86946d923d465b157c7163

Notary authorisation (kind-3): 3398843

Seal request signed by both witnesses: SHA-256
07876a41692ed5a541ea0aa175eedd6ebf7b134ce017f003a78cb059acdca682

Anchor: OpenTimestamps, **ATTESTED in Bitcoin block 970246** - block hash
0000000000000000000000001713a27e309b64aa5893a1875b45ea0bacf62b2724f3c, block time
2026-10-06T22:48:12Z.

Calendars that attested: <https://alice.btc.calendar.opentimestamps.org> (block 970246). The earliest attested block is the anchor.

Anchor check: the committed value equals block 970246's merkle root
63f58f0314b5a3cacbe8beab6ef537f7e80f2f19cf80462272426313d7a5dfd9, and mempool.space and blockstream.info agree on that merkle root and on the block hash (checked 2026-10-06T23:38:10Z).

Proofs: the proof as stamped at sealing, JFD-20261006-PP-00001.pdf.ots and the complete proof JFD-20261006-PP-00001.pdf.anchored.ots, which carries the Bitcoin attestation itself.

Verification address: <https://gh.jetfyul.com/v/JFD-20261006-PP-00001>

The two hardware witnesses

Witness 1 - host A9, a9-atecc608b-slot0, serial 0123ADA0711D8597EE, curve ECDSA-P256 (secp256r1), signed 2026-10-06T22:16:28.089973+00:00

Public key: d62d03f8dc3813fb5b74f2b64339d185742aabcae1bdcfd2f7a7ad59f1dd3c5d50e57effa4a3c888f58c3eca9d274bd7f0b8d263fa38bbf0bc6fbff6035c2411

Signature: 8fe3e19830249e4aaff5abb9a56d1f1f132c518de307e78fa8267f1d1828f29150199cc28117e87f7de342f8e617bd6505bfae6fd1f021c34034c24688333615

Witness 2 - host A10, a10-atecc608b-slot0, serial 0123DC797ACC1195EE, curve ECDSA-P256 (secp256r1), signed 2026-10-06T22:16:30.300055+00:00

Public key: 853e69fc700990303abfe61358bfa456160eaae1529dbc74805d1639cfc88e78497bbe060e7ae5d54466b2ce0a2753e14204a21eed4a132a61ace3294f9beba1

Signature: 9079b962013e8f8733a0ae18742bef31253a5946a1bde2af7903dc8bb63ecef56277030685cb9db6327595d6deafb5ec8c52b029a822dd76bad971c61f4f862e

The six steps

- (1) Extract JFD-20261006-PP-00001.pdf from this PDF's attachments and hash it as stored, with no normalisation. Its SHA-256 must equal the fingerprint above.
 - (2) Read ledger event 3398845 by its id. Its payload must carry that fingerprint as doc_sha256 and JFD-20261006-PP-00001 as dcn.
 - (3) Verify witness 1's signature as ECDSA over P-256, with the public key above, over the seal request bytes whose SHA-256 is 07876a41692ed5a541ea0aa175eedd6ebf7b134ce017f003a78cb059acdca682.
 - (4) Verify witness 2's signature the same way. Each signature must verify under its own key and fail under the other's.
 - (5) Read the OpenTimestamps proof against the same fingerprint. It must carry a Bitcoin block-header attestation at block 970246; ask any block explorer for that block and compare its merkle root with the value the proof commits to.
 - (6) Open <https://gh.jetfyul.com/v/JFD-20261006-PP-00001> and confirm it shows the same fingerprint, ledger event, witnesses and anchor.
-

This certificate goes to what the record is and that it has not been altered. It is not a sworn declaration and does not assert the truth of anything the document says.