



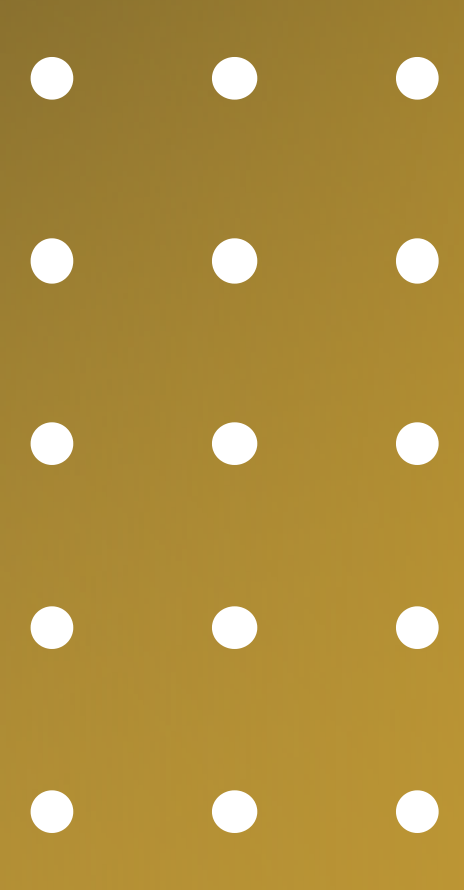
# Smart Contract Security Audit Report

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## Livepeer Token

March 2023

Security Status

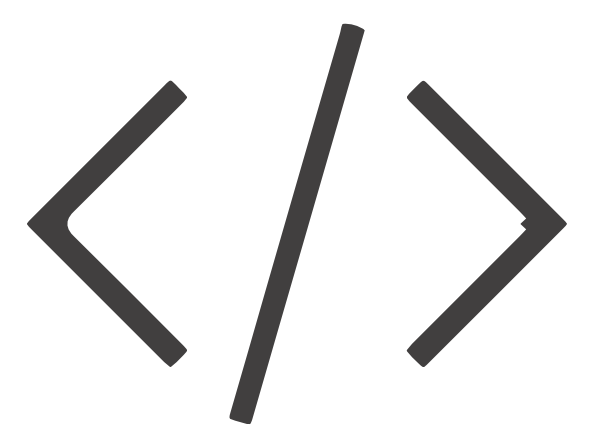


# Audit Details



## Audited project

Livepeer Token



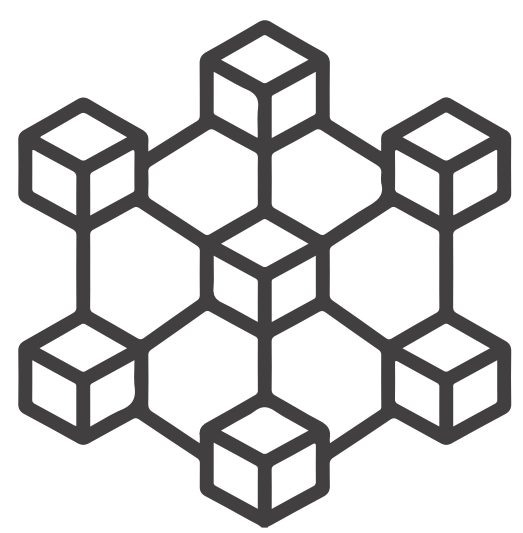
## Deployer address

0xb5af4138f0f33be0d6414eb25271b9c2dc245fb5



## Client contacts

Livepeer Token Team



## Blockchain

Ethereum



## Website

<https://livepeer.org/>



# Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.



# Procedure

## **Step 1 - In-Depth Manual Review**

Manual line-by-line code reviews to ensure the logic behind each function is sound and safe from various attack vectors. This is the most important and lengthy portion of the audit process (as automated tools often cannot find the nuances that lead to exploits such as flash loan attacks).

## **Step 2 - Automated Testing**

Simulation of a variety of interactions with your Smart Contract on a test blockchain leveraging a combination of automated test tools and manual testing to determine if any security vulnerabilities exist.

## **Step 3 - Leadership Review**

The engineers assigned to the audit will schedule meetings with our leadership team to review the contracts, any comments or findings, and ask questions to further apply adversarial thinking to discuss less common attack vectors.

## **Step 4 - Resolution of Issues**

Consulting with the team to provide our recommendations to ensure the code's security and optimize its gas efficiency, if possible. We assist project team's in resolving any outstanding issues or implementing our recommendations.

## **Step 5 - Published Audit Report**

Boiling down results and findings into an easy-to-read report tailored to the project. Our audit reports highlight resolved issues and any risks that exist to the project or its users, along with any remaining suggested remediation measures. Diagrams are included at the end of each report to help users understand the interactions which occur within the project.

# Background

**HackSafe was commissioned by Livepeer Token to perform an audit of smart contracts:**

- <https://etherscan.io/token/0x58b6a8a3302369daec383334672404ee733ab239#code>

**The purpose of the audit was to achieve the following:**

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be understood to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

# Contract Details

## Token contract details for 30.03.2023

Type	: DAPP
Contract name	: LivepeerToken
Contract address	: 0x58b6A8A3302369DAEc383334672404Ee733aB239
Total supply	: 24,918,514.377941353891894504
Token Ticker	: LPT
Decimals	: 18
Token Holders	: 2,330,292
Transactions count	: 6,147,621
Compiler version	: v0.4.18+commit.9cf6e910
Contract deployer address	: 0xb5af4138f0f33be0d6414eb25271b9c2dc245fb5
Owner address	: 0x8dDDB96CF36AC8860f1DE5C7c4698fd499FAB405



# Audit Summary

According to the standard audit assessment, Customer`s solidity smart contracts are “**Secure**”. This token contract does contain owner control, which do not make it fully decentralized.

Insecure	Poor secured	Secure	Well-secured
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You are here



We used various tools like Slither, Mythril and Remix IDE. At the same time this finding is based on critical analysis of the manual audit. All issues found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the issues checking status.

We found 0 critical, 0 high, 0 medium and 0 low.

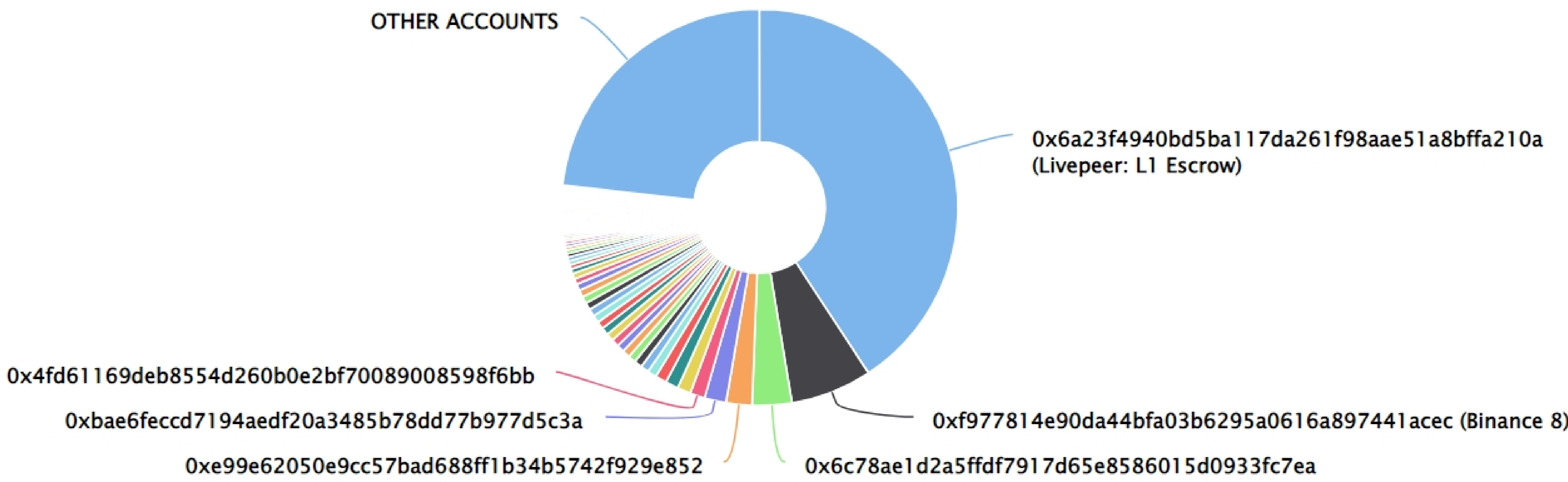
# Livepeer Token Distribution

 The top 100 holders collectively own 76.79% (19,135,453.24 Tokens) of Livepeer Token

 Token Total Supply: 24,918,514.38 Token | Total Token Holders: 2,330,292























## Livepeer Token Top 100 Token Holders

Source: Etherscan.io



## Livepeer Token Top 20 Token Holders

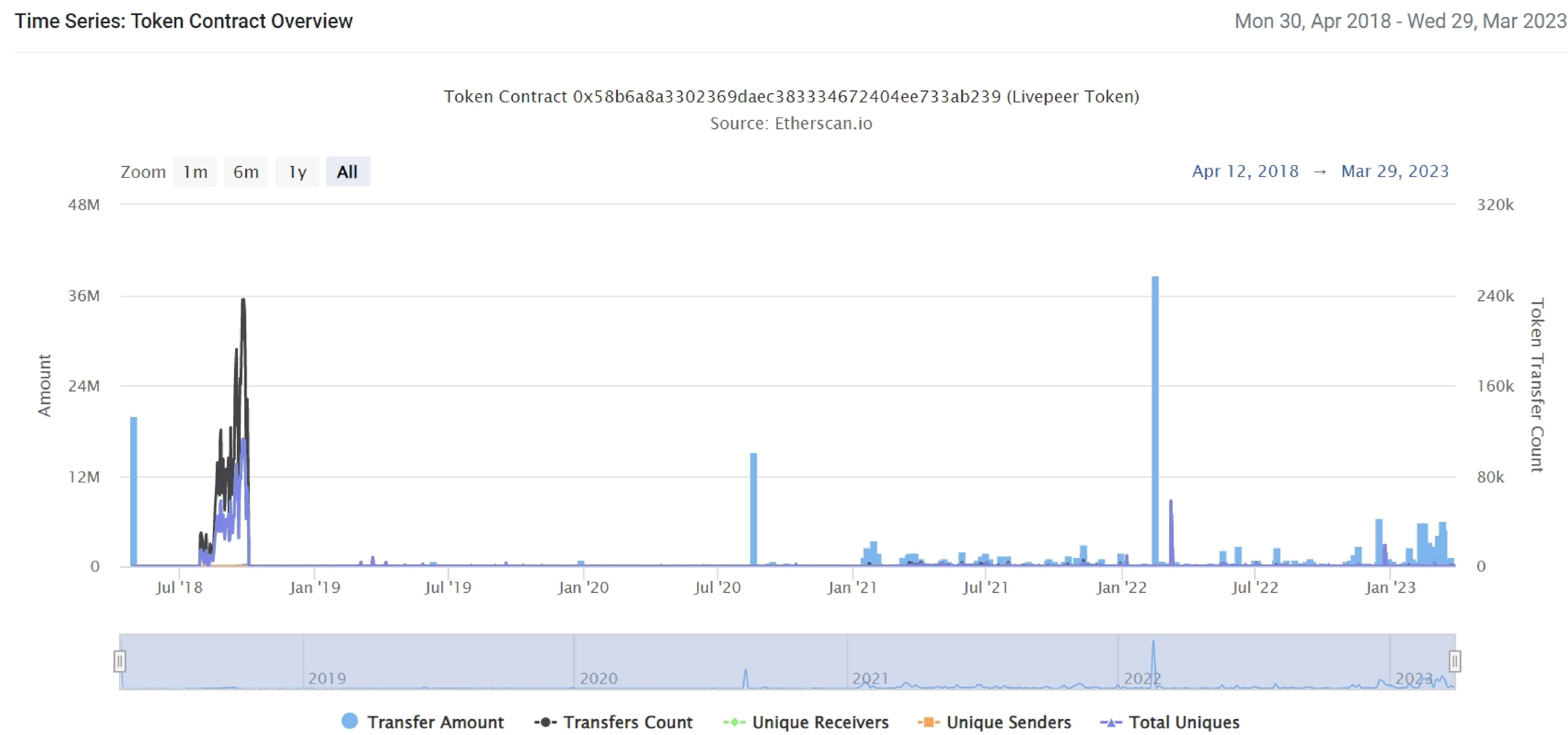
(A total of 19,135,453.24 tokens held by the top 100 accounts from the total supply of 24,918,514.38 token)

Rank	Address	Quantity (Token)	Percentage
1	 Livepeer: L1 Escrow 	10,150,112.076072665283766246	40.7332%
2	Binance 8 	1,654,393.407	6.6392%
3	0x6C78Ae...933FC7ea 	805,076.104434856314598531	3.2308%
4	0xE99e62...f929e852 	529,300.58245576	2.1241%
5	0xbae6FE...977D5C3A 	436,754.508253793946318834	1.7527%
6	0x4fd611...8598f6BB 	299,999	1.2039%
7	0x0B1331...1A2be45b 	274,384.2747	1.1011%
8	0x9D8389...7a2D8D64 	263,296.248524547510580782	1.0566%
9	OKX 	230,953.711924329151786497	0.9268%
10	 Coinbase 10 	184,027.5659097300346831	0.7385%
11	0x9977e2...5b26bA9e 	164,126.12155498042008035	0.6587%
12	0x48f989...3D157F67 	164,126.12155498042008035	0.6587%
13	0x7625E6...422c2f9C 	156,884.19077011590172685	0.6296%
14	0x1B9244...30089ea5 	156,884.19077011590172685	0.6296%
15	0x30B8FF...a01785E4 	155,924.6891843370205173	0.6257%
16	0x8b7Ac9...8f3E14F6 	154,166.580638910159014699	0.6187%
17	0xf6E744...67112bc5 	153,867.9881397668462256	0.6175%
18	0xF0E01c...13857450 	153,867.9881397668462256	0.6175%
19	0x0dE0c6...D50dceea 	152,446.42752074694824	0.6118%
20	0xCA28dd...4267af25 	152,446.42752074694824	0.6118%



# Livepeer Token Distribution

## Livepeer Token Contract Overview



# Contract functions details

## +ERC20Basic

- [Pub] balanceOf
- [Pub] transfer

## +ERC20 (ERC20Basic)

- [Pub] allowance
- [Pub] transferFrom
- [Pub] approve

## +Ownable

- [Pub] Ownable
- [Pub] transferOwnership #
  - modifiers: onlyOwner

## +[Lib] SafeMath

- [Int] mul
- [Int] div
- [Int] sub
- [Int] add

## +BasicToken (ERC20Basic)

- [Pub] transfer #
- [Pub] balanceOf

## +StandardToken (ERC20, BasicToken)

- [Pub] transferFrom #
- [Pub] approve #
- [Pub] allowance
- [Pub] increaseApproval #
- [Pub] decreaseApproval #

## +MintableToken (StandardToken, Ownable)

- [Pub] mint #
  - modifiers: onlyOwner, canMint
- [Pub] finishMinting #
  - modifiers: onlyOwner, canMint

## +VariableSupplyToken (MintableToken)

- [Pub] burn #

## +ILivepeerToken (ERC20, Ownable)

- [Pub] mint #



# Contract functions details

-[Pub] burn #

+LivepeerToken (ILivepeerToken, VariableSupplyToken)

(\$) = payable function

# = non-constant function

# Issues Checking Status

No.	Title	Status
1.	Compiler error	Passed
2.	Missing Input Validation	Passed
3.	Race conditions and Reentrancy. Cross-function race conditions.	Passed
4.	Possible delays in data delivery	Passed
5.	Oracle calls.	Passed
6.	Timestamp dependence.	Passed
7.	Integer Overflow and Underflow	Passed
8.	DoS with Revert.	Passed
9.	DoS with block gas limit.	Passed
10.	Methods execution permissions.	Passed
11.	Economy model of the contract.	Passed
12.	Private use data leaks.	Passed
13.	Malicious Event log.	Passed
14.	Scoping and Declarations.	Passed
15.	Uninitialized storage pointers.	Passed
16.	Arithmetic accuracy.	Passed
17.	Design Logic.	Passed
18.	Safe Open Zeppelin contracts implementation and usage.	Passed
19.	Incorrect Naming State Variable	Passed
20.	Too old version	Passed



# Severity Definitions

Risk Level	Description
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to assets loss or data manipulations.
High	High-level vulnerabilities are difficult to exploit; however, they also have a significant impact on smart contract execution, e.g., public access to crucial functions
Medium	Medium-level vulnerabilities are important to fix; however, they can't lead to assets loss or data manipulations.
Low	Low-level vulnerabilities are mostly related to outdated, unused, etc. code snippets that can't have a significant impact on execution.

# Security Issues

## ✔ Critical Severity Issues

No critical severity issue found.

## ✔ High Severity Issues

No high severity issue found.

## ✔ Medium Severity Issues

No medium severity issue found.

## ✔ Low Severity Issues

No low severity issue found.



# Centralization

## Owner Privileges :

- Livepeer Token Contract:
  - Owner can mint tokens.

This smart contract has some functions which can be executed by the admin (Owner) only. If the admin wallet private key would be compromised, then it would create trouble as smart contract ownership has not been renounced.

# Conclusion

Smart contract contains no medium severity issues! The further transfer and operations with the fund raised are not related to this particular contract.

HackSafe note: Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.