



Smart Contract Security Audit Report

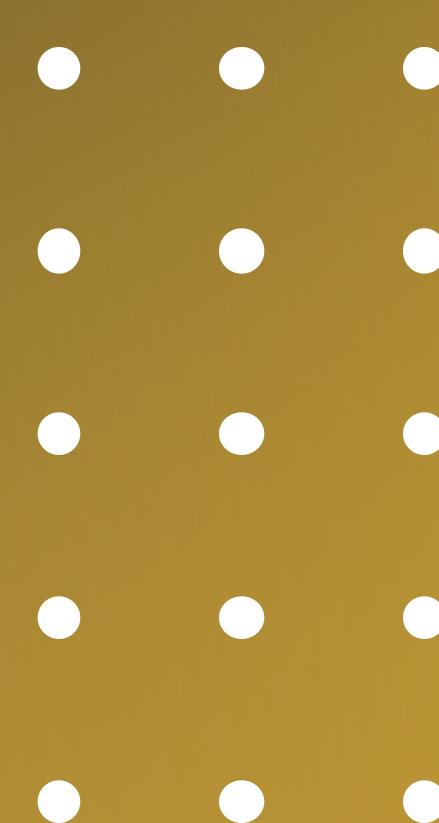
PANDADAO

November 2022

Security Status



www.hacksafe.io



Audit Details



Audited project

PANDADAO



Deployer address

0xDa82A7c65b6Bb89b3847D26Bd9f81ef39E7BADfe



Client contacts

PANDADAO Team



Blockchain

Binance smart chain



Website

<https://pandadao.network/>

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 PANDADA0 to perform an audit of smart contracts:

- <https://bscscan.com/token/0x1af3B59a839e97e944C65177aB3a024B499133F8#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.

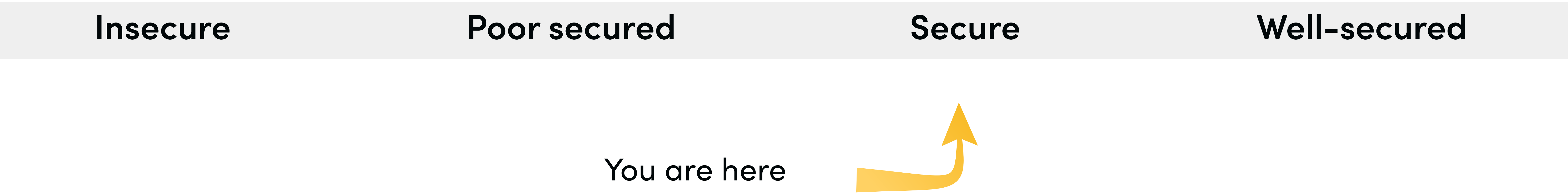
Contract Details

Token contract details for 11.11.2022

Token Type	: DAO
Contract name	: PANDADAO
Contract address	: 0x1af3B59a839e97e944C65177aB3a024B499133F8
Total supply	: 100,000,000,000
Token Ticker	: PDAO
Decimals	: 9
Token Holders	: 21,316
Transactions count	: 125,054
Compiler version	: v0.6.2+commit.bacdbe57
Contract deployer address	: 0xDa82A7c65b6Bb89b3847D26Bd9f81ef39E7BADfe
Owner address	: 0xda82a7c65b6bb89b3847d26bd9f81ef39e7badfe

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 as owner does have control over smart contract.



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, 1 medium and 2 low.

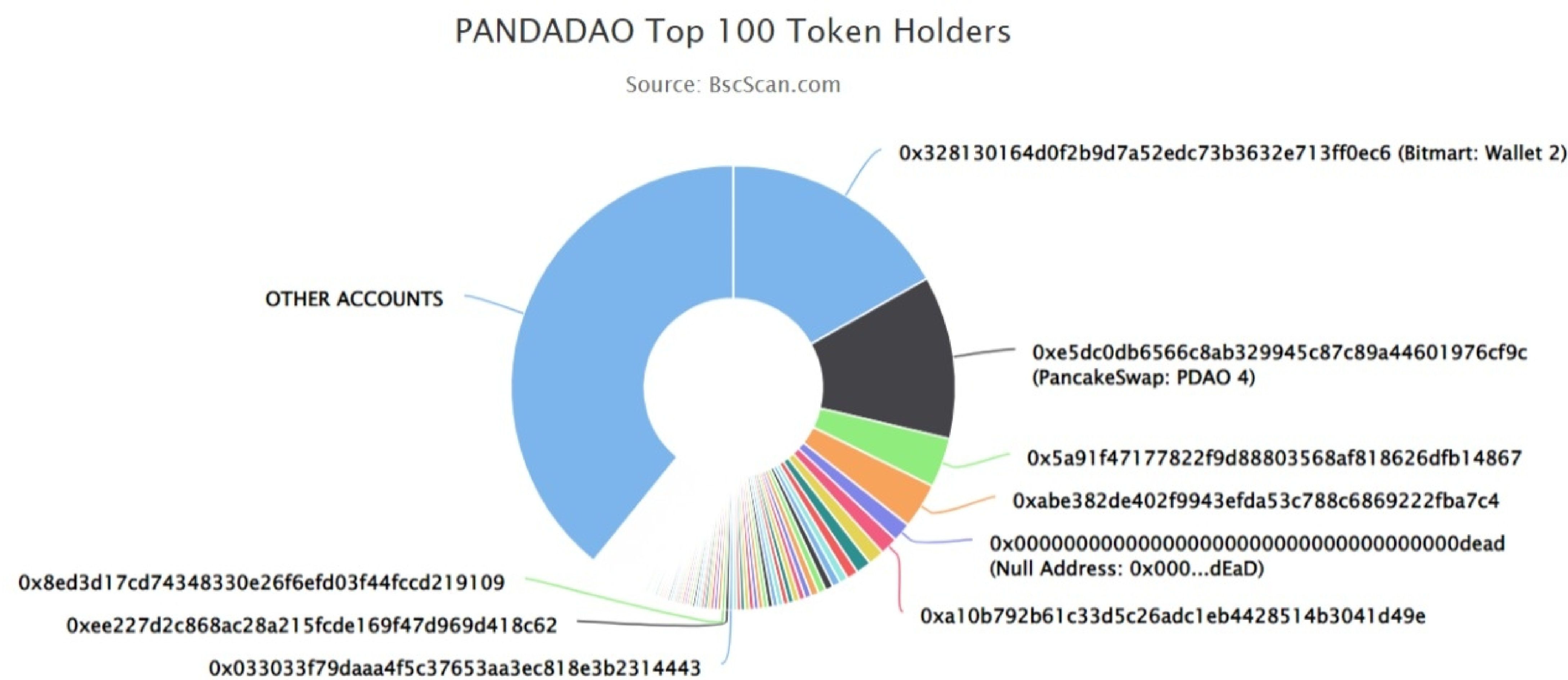
PANDADAO Distribution

 The top 100 holders collectively own 60.82% (60,818,788,769.40 Tokens) of PANDADAO

 Token Total Supply: 100,000,000,000.00 Token




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Total Token Holders: 21,316



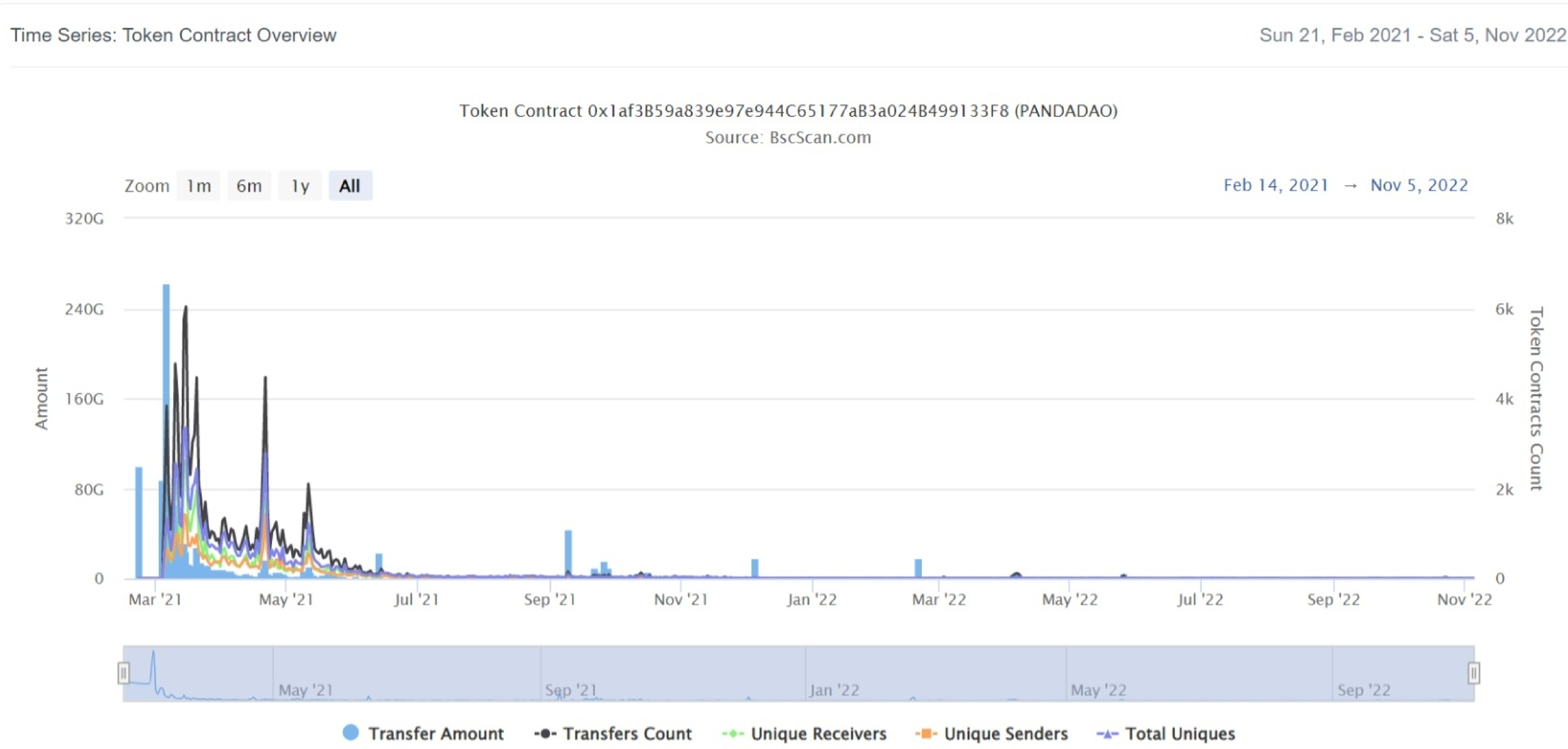
PANDADAO Top 20 Token Holders

(A total of 60,818,788,769.40 tokens held by the top 100 accounts from the total supply of 100,000,000,000.00 token)

Rank	Address	Quantity (Token)	Percentage
1	Bitmart: Wallet 2	16,855,621,028.972429006	16.8556%
2	 PancakeSwap: PDAO 4	11,841,126,049.473326116	11.8411%
3	0x5a91f47177822f9d88803568af818626dfb14867	3,611,389,333.836976066	3.6114%
4	0xab3e382de402f9943efda53c788c6869222fba7c4	3,286,593,810.525530638	3.2866%
5	Null Address: 0x000...dEaD	1,396,974,473.030525486	1.3970%
6	0xa10b792b61c33d5c26adc1eb4428514b3041d49e	1,296,622,456.561420145	1.2966%
7	0xc896fc5f6d20f87949d0fb6a7162bf6450b1956a	1,181,145,926.692851363	1.1811%
8	 0x493d4dc2ae91455e22cb1f3444a71404d9f13886	1,100,334,123.030520621	1.1003%
9	 0x7e21b7c4b6997a2efea1831f6203c59c522248a3	819,107,613.658779534	0.8191%
10	0x9816a66bfda289a2b37ccf8e6f985bb543739504	631,564,231.236064432	0.6316%
11	0xeabe8a5d139b25ef2f35af5e9d454c28acd2bd82	589,592,344.299350861	0.5896%
12	0x0ebef4f8a5bfeab143d1d1f3d9d78c2d19739ea	563,299,692.225701772	0.5633%
13	0x4b308ce263933c983540ee7bec4457ef6fbda02e	557,670,444.880253897	0.5577%
14	0xa804bd3a1e3209dd91002f88c306af5e645eb560	553,118,197.424709078	0.5531%
15	0xb591a35af33fd9d7b4343cc1a3db3cb334c2ba76	459,034,279.492862683	0.4590%
16	0x6e0ce9ef7974244d75999e7e79d98139410e7913	435,360,795.203420544	0.4354%
17	0x29a4542467fc4dbf3f4db7173abc2a2baa861c6e	425,210,671.546647718	0.4252%
18	0x736989a54438c3c877b5607bc7bd96b9e4c58589	408,622,276.192810203	0.4086%
19	0x7fa430462e04b35c2984f7b49c47a45c96e6cb0f	380,595,948.136800415	0.3806%
20	0x1cb98b82cebcd0d4fd75ea710e031dcd02ab56f7	377,397,421.75749613	0.3774%

PANDADAO Distribution

PANDADAO Contract Overview



Contract functions details

+Context

- [Int] _msgSender
- [Int] _msgData

+ [Int] IBEP20

- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer
- [Ext] allowance
- [Ext] approve
- [Ext] transferFrom

+ [Lib] SafeMath

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

+ [Lib] Address

- [Int] isContract
- [Int] sendValue
- [Int] functionCall
- [Int] functionCall
- [Int] functionCallWithValue
- [Int] functionCallWithValue
- [Int] _functionCallWithValue

+Ownable (Context)

- [Int] <constructor>
- [Pub] owner
- [Pub] renounceOwnership #
-modifiers: onlyOwner
- [Pub] transferOwnership #
-modifiers: onlyOwner

Contract functions details

+PANDADA0 (Context, IBEP20, Ownable)

- [Pub] <constructor>
- [Pub] name
- [Pub] symbol
- [Pub] decimals
- [Pub] totalSupply
- [Pub] balanceOf
- [Pub] transfer #
- [Pub] allowance
- [Pub] approve #
- [Pub] transferFrom #
- [Pub] increaseAllowance #
- [Pub] decreaseAllowance #
- [Pub] isExcluded
- [Pub] totalFees
- [Pub] PandaDao #
- [Pub] reflectionFromToken
- [Pub] tokenFromReflection
- [Ext] excludeAccount #
 - modifiers: onlyOwner
- [Ext] includeAccount
 - modifiers: onlyOwner
- [Pvt] _approve #
- [Pvt] _transfer #
- [Pvt] _transferStandard#
- [Pvt] _transferToExcluded #
- [Pvt] _transferFromExcluded #
- [Pvt] _transferBothExcluded #
- [Pvt] _reflectFee #
- [Pvt] _getValues
- [Pvt] _getTValues
- [Pvt] _getRValues
- [Pvt] _getRate
- [Pvt] _getCurrentSupply

(\$) = payable function

= non-constant function

Issues Checking Status

No.	Title	Status
1.	Unlocked Compiler Version	Low issue
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.	Medium issue
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	Low issue

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

One medium severity issue found.

1. Out of gas limit.

- **Description**

The smart contract has functions which has used for includeAccount, _getCurrentSupply. Large length of _excluded can cause an error of out of gas for these two functions.

- **Recommendation**

It is advisable to either remove for loop or use smaller length to avoid the gas limit error while transaction.

✔ Low Severity Issues

Two low severity issue found.

1. Old compiler version

- **Description**

Contract has been deployed using too old solidity version.

- **Recommendation**

It is advisable to deploy contract using any of the latest version of solidity.

2. Unlocked Compiler Version.

- **Description**

The contract utilizes an unlocked compiler version. An unlocked compiler version in the contract's source code permits the user to compile it at or above a particular version. This, in turn, leads to differences in the generated bytecode between compilations due to differing compiler version numbers. This can lead to ambiguity when debugging as compiler-specific bugs may occur in the codebase that would be difficult to identify over a span of multiple compiler versions rather than a specific one.

- **Recommendation**

It is advisable that the compiler version is alternatively locked at the lowest version possible so that the contract can be compiled. For example, for version ^0.6.2 the contract should contain the following line:
pragma solidity 0.6.2;

Centralization

Owner Privileges :

- Owner can transfer and renounce ownership.
- Owner can exclude and include account from fees.

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. Following are Admin functions :

- Excludeaccount
- Includeaccount
- Renounceownership
- Transferownership

Conclusion

Smart contract contains low and 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.