



Cyberscope

Audit Report

Pocketcoin Staking

March 2025

SHA256

b12a15ee11f9ee2f1fd10ed7dca6517163f2448a27df437804d17607579063e0

Audited by © cyberscope

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Risk Classification

The criticality of findings in Cyberscope's smart contract audits is determined by evaluating multiple variables. The two primary variables are:

1. **Likelihood of Exploitation:** This considers how easily an attack can be executed, including the economic feasibility for an attacker.
2. **Impact of Exploitation:** This assesses the potential consequences of an attack, particularly in terms of the loss of funds or disruption to the contract's functionality.

Based on these variables, findings are categorized into the following severity levels:

1. **Critical:** Indicates a vulnerability that is both highly likely to be exploited and can result in significant fund loss or severe disruption. Immediate action is required to address these issues.
2. **Medium:** Refers to vulnerabilities that are either less likely to be exploited or would have a moderate impact if exploited. These issues should be addressed in due course to ensure overall contract security.
3. **Minor:** Involves vulnerabilities that are unlikely to be exploited and would have a minor impact. These findings should still be considered for resolution to maintain best practices in security.
4. **Informative:** Points out potential improvements or informational notes that do not pose an immediate risk. Addressing these can enhance the overall quality and robustness of the contract.

| Severity | Likelihood / Impact of Exploitation |
|-----------------------|--|
| ● Critical | Highly Likely / High Impact |
| ● Medium | Less Likely / High Impact or Highly Likely/ Lower Impact |
| ● Minor / Informative | Unlikely / Low to no Impact |

Review

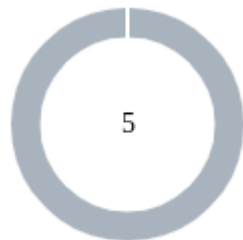
Audit Updates

| | |
|---------------|---|
| Initial Audit | 5 Mar 2025 |
| Test Deploy | https://sepolia.etherscan.io/address/0xE31f2C55Bf01FB7daF930213BCC6b5324c6df64 |

Source Files

| | |
|-------------------------|--|
| Filename | SHA256 |
| StakingContract_(2).sol | b12a15ee11f9ee2f1fd10ed7dca6517163f2448a27df437804d17607579063e0 |

Findings Breakdown



| | |
|---------------------|---|
| Critical | 0 |
| Medium | 0 |
| Minor / Informative | 5 |

| Severity | Unresolved | Acknowledged | Resolved | Other |
|---------------------|------------|--------------|----------|-------|
| Critical | 0 | 0 | 0 | 0 |
| Medium | 0 | 0 | 0 | 0 |
| Minor / Informative | 5 | 0 | 0 | 0 |

Diagnostics

● Critical ● Medium ● Minor / Informative

| Severity | Code | Description | Status |
|----------|------|--|------------|
| ● | CCR | Contract Centralization Risk | Unresolved |
| ● | CRP | Coupled Rewards Pool | Unresolved |
| ● | PTAI | Potential Transfer Amount Inconsistency | Unresolved |
| ● | L04 | Conformance to Solidity Naming Conventions | Unresolved |
| ● | L19 | Stable Compiler Version | Unresolved |

CCR - Contract Centralization Risk

| | |
|--------------------|--------------------------------------|
| Criticality | Minor / Informative |
| Location | StakingContract_(2).sol#L218,234,250 |
| Status | Unresolved |

Description

The contract's functionality and behavior are heavily dependent on external parameters or configurations. While external configuration can offer flexibility, it also poses several centralization risks that warrant attention. Centralization risks arising from the dependence on external configuration include Single Point of Control, Vulnerability to Attacks, Operational Delays, Trust Dependencies, and Decentralization Erosion.

```
function withdrawRemainingRewards() external nonReentrant onlyOwner {...}
function proposeMultiplierUpdate(uint256 lockDuration, uint256
newMultiplier) external onlyOwner {...}
function executeMultiplierUpdate(uint256 lockDuration) external onlyOwner
{...}
```

Recommendation

To address this finding and mitigate centralization risks, it is recommended to evaluate the feasibility of migrating critical configurations and functionality into the contract's codebase itself. This approach would reduce external dependencies and enhance the contract's self-sufficiency. It is essential to carefully weigh the trade-offs between external configuration flexibility and the risks associated with centralization.

CRP - Coupled Rewards Pool

| | |
|-------------|------------------------------|
| Criticality | Minor / Informative |
| Location | StakingContract_(2).sol#L125 |
| Status | Unresolved |

Description

The contract maintains a balance of staked tokens and tokens aimed for rewards, where the staked tokens and reward tokens are the same token. The contract accepts a new stake by comparing its current balance to the staked amounts and the incoming deposit and rewards. The deposited balance of previous stakes is used to determine the eligibility of future stakes. Coupling user deposits with the expected rewards and the contract's balance is prone to errors and could yield inconsistencies.

```
uint256 contractBalance = token.balanceOf(address(this));
require(
    contractBalance >= (totalStaked + totalPlannedRewards + amount +
    plannedReward),
    "Insufficient rewards in contract"
);
```

Recommendation

It is advisable to ensure consistency by maintaining a strict association between the available reward pool and the expected rewards. Decoupling the staked balance from the reward pool will ensure overall consistency.

PTAI - Potential Transfer Amount Inconsistency

| | |
|-------------|------------------------------|
| Criticality | Minor / Informative |
| Location | StakingContract_(2).sol#L147 |
| Status | Unresolved |

Description

The `transfer()` and `transferFrom()` functions are used to transfer a specified amount of tokens to an address. The fee or tax is an amount that is charged to the sender of an ERC20 token when tokens are transferred to another address. According to the specification, the transferred amount could potentially be less than the expected amount. This may produce inconsistency between the expected and the actual behavior.

The following example depicts the diversion between the expected and actual amount.

| Tax | Amount | Expected | Actual |
|---------|--------|----------|--------|
| No Tax | 100 | 100 | 100 |
| 10% Tax | 100 | 100 | 90 |

```
// Record the stake
stakes[msg.sender].push(Stake({
    amount: amount,
    startTime: block.timestamp,
    lockDuration: lockDuration,
    multiplier: multiplier,
    withdrawn: false
}));

// Transfer tokens from user to contract
token.safeTransferFrom(msg.sender, address(this), amount);
```

Recommendation

The team is advised to take into consideration the actual amount that has been transferred instead of the expected.

It is important to note that an ERC20 transfer tax is not a standard feature of the ERC20 specification, and it is not universally implemented by all ERC20 contracts. Therefore, the contract could produce the actual amount by calculating the difference between the transfer call.

`Actual Transferred Amount = Balance After Transfer - Balance Before Transfer`

L04 - Conformance to Solidity Naming Conventions

| | |
|--------------------|-----------------------------|
| Criticality | Minor / Informative |
| Location | StakingContract_(2).sol#L89 |
| Status | Unresolved |

Description

The Solidity style guide is a set of guidelines for writing clean and consistent Solidity code. Adhering to a style guide can help improve the readability and maintainability of the Solidity code, making it easier for others to understand and work with.

The followings are a few key points from the Solidity style guide:

1. Use camelCase for function and variable names, with the first letter in lowercase (e.g., myVariable, updateCounter).
2. Use PascalCase for contract, struct, and enum names, with the first letter in uppercase (e.g., MyContract, UserStruct, ErrorEnum).
3. Use uppercase for constant variables and enums (e.g., MAX_VALUE, ERROR_CODE).
4. Use indentation to improve readability and structure.
5. Use spaces between operators and after commas.
6. Use comments to explain the purpose and behavior of the code.
7. Keep lines short (around 120 characters) to improve readability.

```
/// @param _tokenAddress The address of the ER
```

Recommendation

By following the Solidity naming convention guidelines, the codebase increased the readability, maintainability, and makes it easier to work with.

Find more information on the Solidity documentation

<https://docs.soliditylang.org/en/stable/style-guide.html#naming-conventions>.

L19 - Stable Compiler Version

| | |
|--------------------|------------------------------|
| Criticality | Minor / Informative |
| Location | StakingContract_(2).sol#L2,4 |
| Status | Unresolved |

Description

The `^` symbol indicates that any version of Solidity that is compatible with the specified version (i.e., any version that is a higher minor or patch version) can be used to compile the contract. The version lock is a mechanism that allows the author to specify a minimum version of the Solidity compiler that must be used to compile the contract code. This is useful because it ensures that the contract will be compiled using a version of the compiler that is known to be compatible with the code.

```
pragma solidity ^0.8.19;
```

Recommendation

The team is advised to lock the pragma to ensure the stability of the codebase. The locked pragma version ensures that the contract will not be deployed with an unexpected version. An unexpected version may produce vulnerabilities and undiscovered bugs. The compiler should be configured to the lowest version that provides all the required functionality for the codebase. As a result, the project will be compiled in a well-tested LTS (Long Term Support) environment.

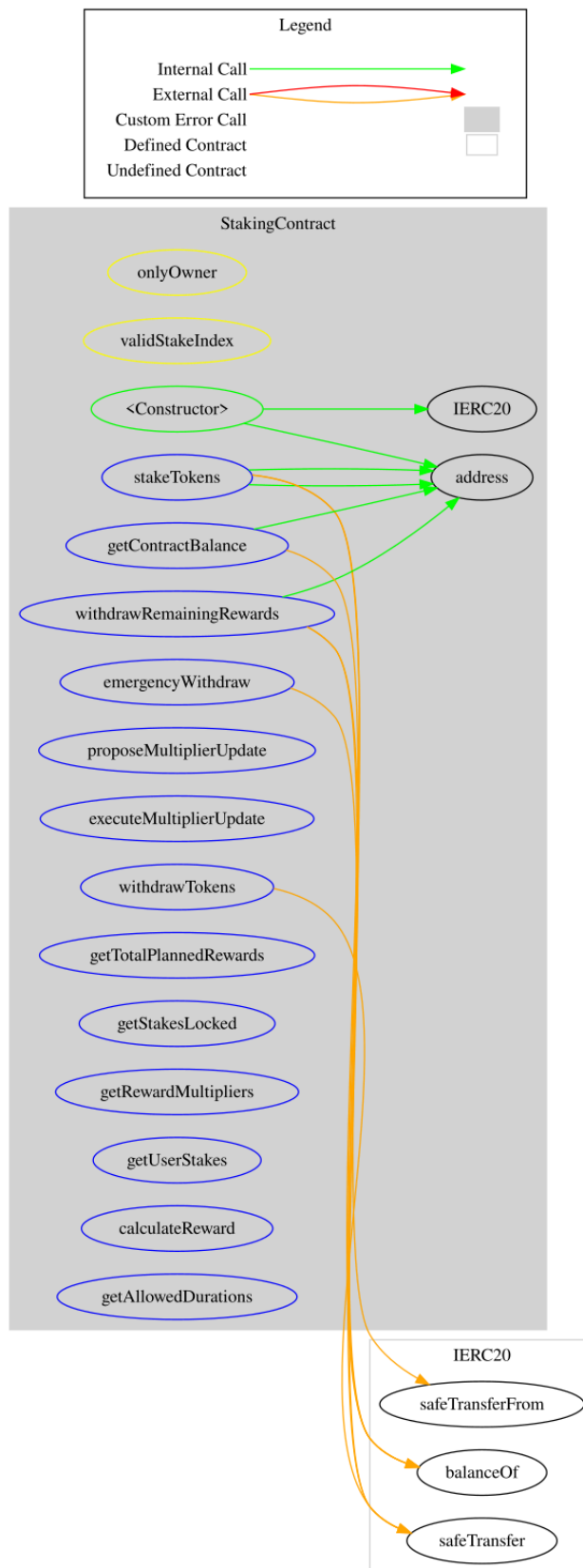
Functions Analysis

| Contract | Type | Bases | | |
|-----------------|--------------------------|-----------------|------------|---------------------------------|
| | Function Name | Visibility | Mutability | Modifiers |
| | | | | |
| StakingContract | Implementation | ReentrancyGuard | | |
| | | Public | ✓ | - |
| | stakeTokens | External | ✓ | nonReentrant |
| | withdrawTokens | External | ✓ | nonReentrant validStakeIndex |
| | emergencyWithdraw | External | ✓ | nonReentrant validStakeIndex |
| | withdrawRemainingRewards | External | ✓ | nonReentrant onlyOwner |
| | proposeMultiplierUpdate | External | ✓ | onlyOwner |
| | executeMultiplierUpdate | External | ✓ | onlyOwner |
| | getContractBalance | External | | - |
| | getTotalPlannedRewards | External | | - |
| | getStakesLocked | External | | - |
| | getRewardMultipliers | External | | - |
| | getUserStakes | External | | - |
| | calculateReward | External | | validStakeIndex |
| | getAllowedDurations | External | | - |

Inheritance Graph



Flow Graph



Summary

Pocketcoin contract implements a staking mechanism. This audit investigates security issues, business logic concerns and potential improvements. The Smart Contract analysis reported no compiler error or critical issues.

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Blockchain technology and cryptographic assets present a high level of ongoing risk. Cyberscope's position is that each company and individual are responsible for their own due diligence and continuous security. Cyberscope's goal is to help reduce the attack vectors and the high level of variance associated with utilizing new and consistently changing technologies and in no way claims any guarantee of security or functionality of the technology we agree to analyze. The assessment services provided by Cyberscope are subject to dependencies and are under continuing development. You agree that your access and/or use including but not limited to any services reports and materials will be at your sole risk on an as-is where-is and as-available basis. Cryptographic tokens are emergent technologies and carry with them high levels of technical risk and uncertainty. The assessment reports could include false positives, false negatives and other unpredictable results. The services may access and depend upon multiple layers of third parties.

About Cyberscope

Cyberscope is a blockchain cybersecurity company that was founded with the vision to make web3.0 a safer place for investors and developers. Since its launch, it has worked with thousands of projects and is estimated to have secured tens of millions of investors' funds.

Cyberscope is one of the leading smart contract audit firms in the crypto space and has built a high-profile network of clients and partners.



The Cyberscope team

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