ASSURE DEFI®
THE VERIFICATION GOLD STANDARD

Security Assessment:
Regayov STAKING

November 26, 2024

- Audit Status: **Fail**
- Audit Edition: **Advance**

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INTEGRITY ⋆ TRUST ⋆ CREDIBILITY

Risk Analysis

Classifications of Manual Risk Results

Classification	Description
🔴 Critical	Danger or Potential Problems.
🟠 High	Be Careful or Fail test.
🟡 Medium	Pass, Not-Detected or Safe Item.
🟢 Low	Function Detected

Manual Code Review Risk Results

Contract Privilege	Description
🟢 Buy Tax	0%
🟢 Sale Tax	5%
🟢 Cannot Buy	Pass
🟢 Cannot Sale	Pass
🟢 Max Tax	5%
ℹ Modify Tax	No
🟢 Fee Check	Pass
🟢 Is Honeypot?	Not Detected
🟢 Trading Cooldown	Not Detected
🟢 Can Pause Trade?	Pass
🟢 Pause Transfer?	Not-Detected
🟢 Max Tx?	Pass
🟢 Is Anti Whale?	Not-Detected
🟢 Is Anti Bot?	Not-Detected

Contract Privilege	Description
🟢 Is Blacklist?	Not-Detected
🟢 Blacklist Check	Pass
🟢 is Whitelist?	Not-Detected
🟢 Can Mint?	Pass
🟢 Is Proxy?	Not Detected
🟢 Can Take Ownership?	Not Detected
🟢 Hidden Owner?	Not-Detected
ℹ Owner	0x57272861395F1858eA5400fbB7A24b7Cebc211A0
🟢 Self Destruct?	Not Detected
🟢 External Call?	Not-Detected
🟢 Other?	Not Detected
🟢 Holders	4
🟡 Auditor Confidence	Medium
🟡 KYC Present	No
🟡 KYC URL	

The following quick summary it's added to the project overview; however, there are more details about the audit and its results. Please read every detail.

Project Overview

Token Summary

Parameter	Result
Address	0x80ca5D601390Ca7Cc87F775abF0E3b112AC91895
Name	Regayov
Token Tracker	Regayov (HSACV)
Decimals	18
Supply	10,000,000,000
Platform	ETHEREUM
compiler	v0.8.6+commit.11564f7e
Contract Name	Staking
Optimization	Yes with 200 runs
LicenseType	MIT
Language	Solidity
Codebase	https://sepolia.etherscan.io/address/0x80ca5D601390Ca7Cc87F775abF0E3b112AC91895#code
Payment Tx	Corporate

Main Contract Assessed
Contract Name

Name	Contract	Live
Regayov	0x80ca5D601390Ca7Cc87F775abF0E3b112AC91895	Yes

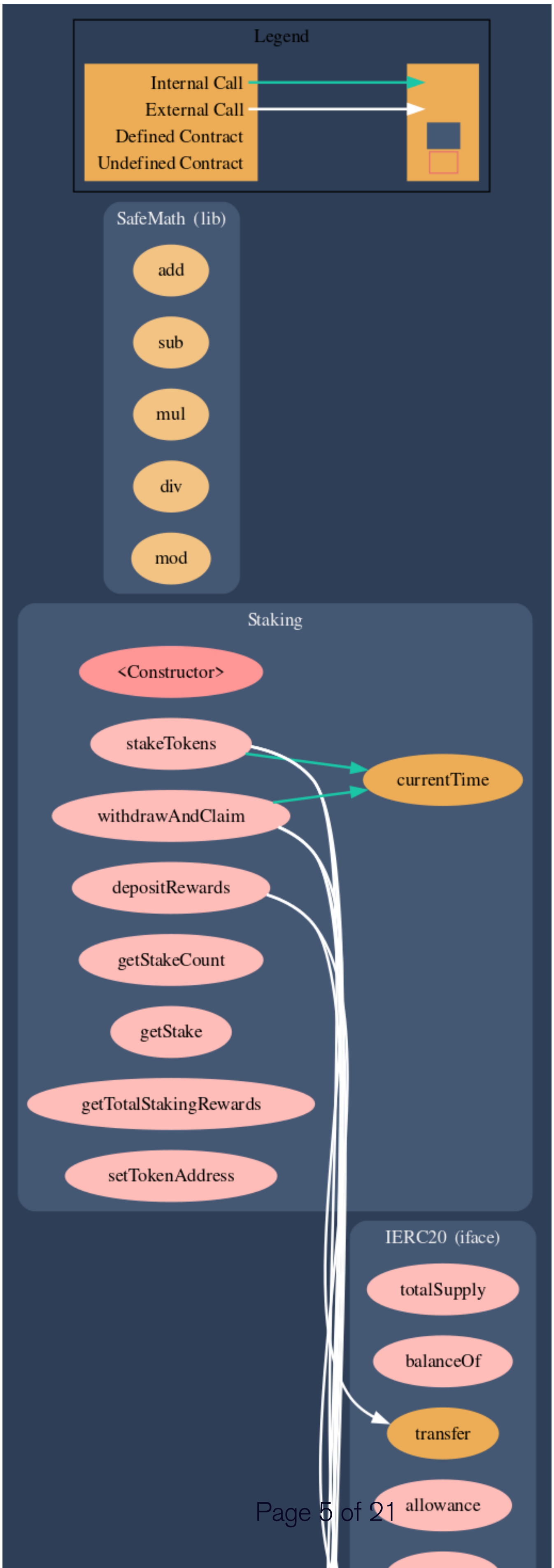
TestNet Contract was Not Assessed

Solidity Code Provided

SolID	File Sha-1	FileName
Staking	75b6ee250b22d5aed6517a2d8139773b6d5702d9	Staking.sol
Staking		.sol
Staking		.sol
Staking		.sol
Staking		.sol
Staking		.sol

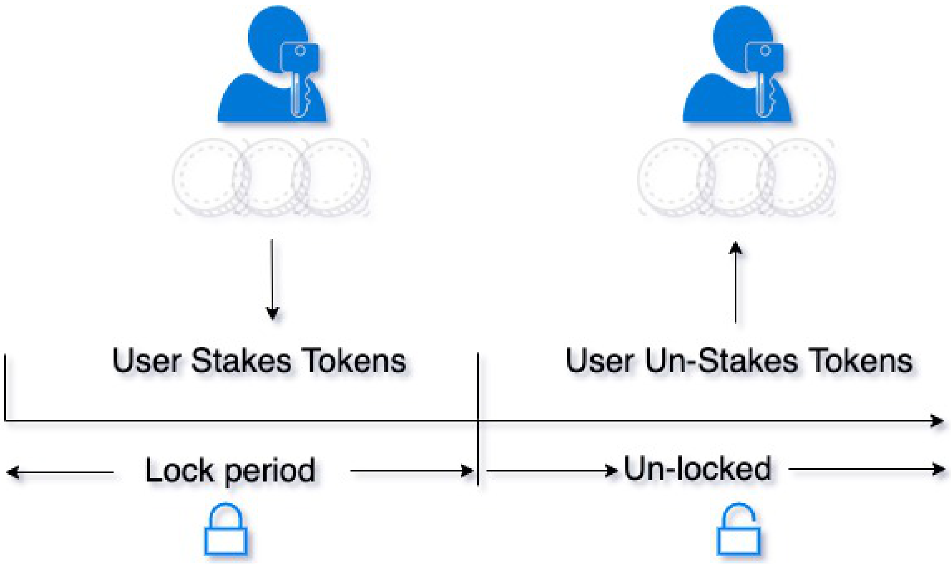
Call Graph

The contract for Regayov has the following call graph structure.



What is a Staking Contract

A smart contract which allows users to stake and un-stake a specified ERC20 token. Staked tokens are locked for a specific length of time (set by the contrat owner at the outset). Once the time period has elapsed, the user can remove their tokens again.



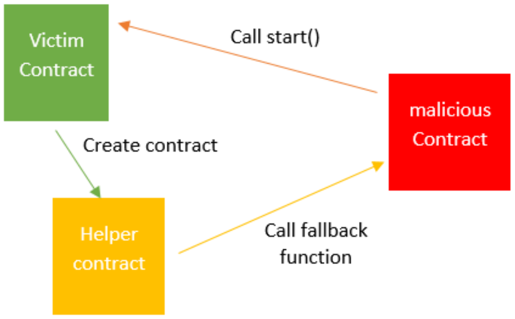
Reentrancy Check

The Project Owners of Regayov have not configure the Reentrancy Guard library.

You can read more about Reentrancy issues in the following link.
Reentrancy After Istanbul.

We recommend the team to add the library to the contract to avoid potential issues.

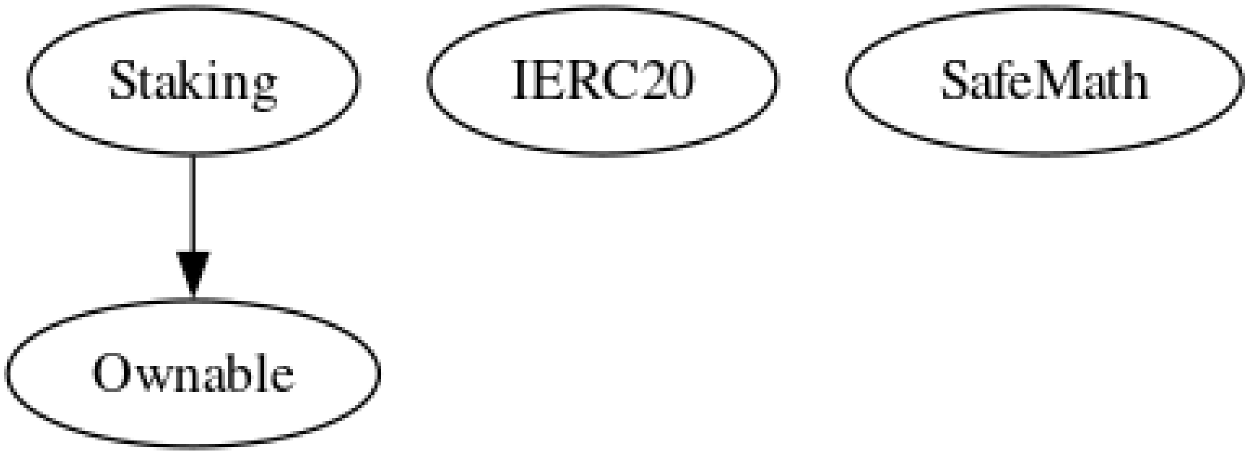
We recommend the team to create a new contract with Reentrancy Guard added to the same.



Inheritance

The contract for Regayov has the following inheritance structure.

The Project has a Total Supply of 10,000,000,000



HSACV-03 | Lack of Input Validation.

Category	Severity	Location	Status
Volatile Code	🟢 Low	Staking.sol: L: 192 C: 12	Detected

Description

The given input is missing the check for the non-zero address.

The given input is missing the check for the onlyOwners need to be revisited for require..

Remediation

We advise the client to add the check for the passed-in values to prevent unexpected errors as below:

```
    ...
     require(receiver != address(0), "Receiver is the zero address");
    ...
    ...
    require(value X limitation, "Your not able to do this function");
   ...
```

We also recommend customer to review the following function that is missing a required validation. onlyOwners need to be revisited for require..

HSACV-05 | Missing Event Emission.

Category	Severity	Location	Status
Volatile Code	🟢 Low	Staking.sol: L: 192 C: 12	Detected

Description

Detected missing events for critical arithmetic parameters. There are functions that have no event emitted, so it is difficult to track off-chain changes.The linked code does not create an event for the transfer.

Remediation

Emit an event for critical parameter changes. It is recommended emitting events for the sensitive functions that are controlled by centralization roles.

HSACV-14 | Unnecessary Use Of SafeMath

Category	Severity	Location	Status
Logical Issue	🟡 Medium	Staking.sol: L: 55 C: 0	Detected

Description

The SafeMath library is used unnecessarily. With Solidity compiler versions 0.8.0 or newer, arithmetic operations
will automatically revert in case of integer overflow or underflow.
library SafeMath {
An implementation of SafeMath library is found.
using SafeMath for uint256;
SafeMath library is used for uint256 type in contract.

Remediation

We advise removing the usage of SafeMath library and using the built-in arithmetic operations provided by the
Solidity programming language

Project Action

HSACV-19 | Centralization Privileges of.

Category	Severity	Location	Status
	● Medium	Staking.sol: L: 393 C: 14,L: 385 C: 14,L: 341 C: 14,L: 306 C: 14,L: 299 C: 14,L: 269 C: 14	Detected

Description

Centralized Privileges are found on the following functions.

Remediation

undefined

Project Action

HSACV-21 | Potential Reward Calculation Error.

Category	Severity	Location	Status
	Medium	Staking.sol: L: 147	Detected

Description

Reward calculation may exceed the rewards pool.

Remediation

undefined

Project Action

HSACV-22 | Reentrancy Risk in withdrawAndClaim.

Category	Severity	Location	Status
	🟠 High	Staking.sol: L:129	Detected

Description

External calls before state changes may lead to reentrancy.

Remediation

undefined

Project Action

Technical Findings Summary

Classification of Risk

Severity	Description
🔴 Critical	Risks are those that impact the safe functioning of a platform and must be addressed before launch. Users should not invest in any project with outstanding critical risks.
🟠 High	Risks can include centralization issues and logical errors. Under specific circumstances, these major risks can lead to loss of funds and/or control of the project.
🟡 Medium	Risks may not pose a direct risk to users' funds, but they can affect the overall functioning of a platform
🟢 Low	Risks can be any of the above but on a smaller scale. They generally do not compromise the overall integrity of the Project, but they may be less efficient than other solutions.
ℹ Informational	Errors are often recommended to improve the code's style or certain operations to fall within industry best practices. They usually do not affect the overall functioning of the code.

Findings

Severity	Found	Pending	Resolved
🔴 Critical	0	0	0
🟠 High	1	1	0
🟡 Medium	3	3	0
🟢 Low	2	2	0
ℹ Informational	0	0	0
Total	6	6	0

Social Media Checks

Social Media	URL	Result
Twitter		Pass
Other		N/A
Website		Pass
Telegram		Pass

We recommend to have 3 or more social media sources including a completed working websites.

Social Media Information Notes:

Auditor Notes: undefined

Project Owner Notes:

Assessment Results

Score Results

Review	Score
Overall Score	81/100
Auditor Score	79/100
Review by Section	Score
Manual Scan Score	32
Auto Scan Score	37
Advance Check Score	12

The Following Score System Has been Added to this page to help understand the value of the audit, the maximum score is 100, however to attain that value the project most pass and provide all the data needed for the assessment. Our Passing Score has been changed to 84 Points for a higher standard, if a project does not attain 85% is an automatic failure. Read our notes and final assessment below.

Audit Fail

Assessment Results

Important Notes:

- Ownership and Access Control: Verify that the Ownable contract is correctly implemented and that only the owner can call functions with the onlyOwner modifier. Ensure the initial owner is correctly set during deployment.ı

- Token Handling: Ensure the setTokenAddress function is called with a valid ERC20 token address. Confirm that the token contract adheres to the ERC20 standard to prevent unexpected behavior.ı

- Staking Logic: Validate that the staking and claiming logic correctly checks for locked periods and prevents double claiming. Ensure that the stakeTokens function checks for sufficient rewards in the pool before allowing staking.ı

- Reward Calculation: Double-check the reward calculation logic to ensure it accurately reflects the intended reward percentages. Verify that the rewards pool is adequately funded to cover potential claims.ı

- Security Practices: Use SafeMath for all arithmetic operations to prevent overflow and underflow issues. Consider implementing a reentrancy guard, especially around functions that involve token transfers.ı

- Gas Optimization: Evaluate the potential gas costs associated with large stakes arrays and consider optimizations if necessary.ı

- Testing and Validation: Conduct thorough testing, including edge cases such as maximum stake amounts and multiple stakes per user. Simulate various scenarios to ensure the contract behaves as expected under different conditions.ı

- Event Emissions: Ensure all state-changing functions emit appropriate events for transparency and traceability.ı

- Error Handling: Ensure all require statements have clear and informative error messages. Validate that all external calls (e.g., token transfers) handle potential failures gracefully.ı

- Code Clarity and Documentation: Maintain clear and concise comments explaining the purpose and logic of complex sections. Consider adding NatSpec comments for functions to improve code documentation.ı

- Upgradeability Considerations: If future upgrades are anticipated, consider implementing a proxy pattern or other upgradeable contract design.ı

- Edge Cases: Test edge cases such as zero amount staking, maximum duration, and reward pool depletion. Ensure the contract handles these scenarios without unexpected behavior.

Auditor Score =79
Audit Fail

Appendix

Finding Categories

Centralization / Privilege

Centralization / Privilege findings refer to either feature logic or implementation of components that actagainst the nature of decentralization, such as explicit ownership or specialized access roles incombination with a mechanism to relocate funds.

Gas Optimization

Gas Optimization findings do not affect the functionality of the code but generate different, more optimalEVM opcodes resulting in a reduction on the total gas cost of a transaction.

Logical Issue

Logical Issue findings detail a fault in the logic of the linked code, such as an incorrect notion on howblock.timestamp works.

Control Flow

Control Flow findings concern the access control imposed on functions, such as owner-only functionsbeing invoke-able by anyone under certain circumstances.

Volatile Code

Volatile Code findings refer to segments of code that behave unexpectedly on certain edge cases that mayresult in a vulnerability.

Coding Style

Coding Style findings usually do not affect the generated byte-code but rather comment on how to makethe codebase more legible and, as a result, easily maintainable.

Inconsistency

Inconsistency findings refer to functions that should seemingly behave similarly yet contain different code,such as a constructor assignment imposing different require statements on the input variables than a setterfunction.

Coding Best Practices

ERC 20 Conding Standards are a set of rules that each developer should follow to ensure the code meet a set of creterias and is readable by all the developers.

Disclaimer

Assure Defi has conducted an independent security assessment to verify the integrity of and highlight any vulnerabilities or errors, intentional or unintentional, that may be present in the reviewed code for the scope of this assessment. This report does not constitute agreement, acceptance, or advocation for the Project, and users relying on this report should not consider this as having any merit for financial advice in any shape, form, or nature. The contracts audited do not account for any economic developments that the Project in question may pursue, and the veracity of the findings thus presented in this report relate solely to the proficiency, competence, aptitude, and discretion of our independent auditors, who make no guarantees nor assurance that the contracts are entirely free of exploits, bugs, vulnerabilities or deprecation of technologies.

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