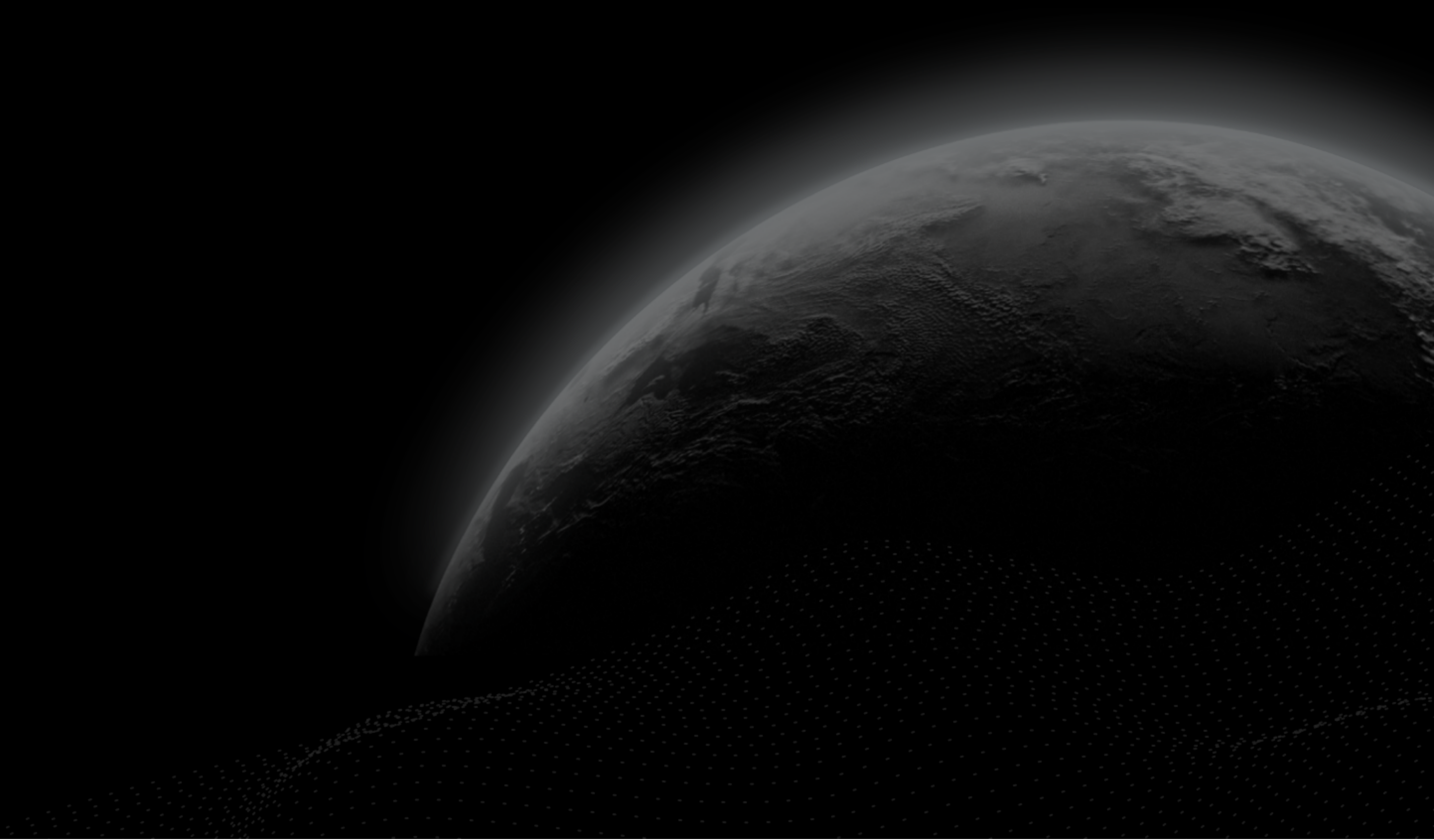
CERTIK

Security Assessment

Seascape-Audit

CertiK Assessed on Jul 24th, 2023



CertiK Assessed on Jul 24th, 2023

Seascape-Audit

The security assessment was prepared by CertiK, the leader in Web3.0 security.

Executive Summary

TYPES	ECOSYSTEM	METHODS
DeFi	Binance Smart Chain (BSC)	Manual Review, Static Analysis

LANGUAGE	TIMELINE	KEY COMPONENTS
Solidity	Delivered on 07/24/2023	N/A

CODEBASE

87aa82147a74c7498f65bcc0734fd0a3a9cd88c6

View All in Codebase Page

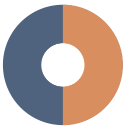
COMMITS

87aa82147a74c7498f65bcc0734fd0a3a9cd88c6

3a9608fb4b34a05987fd33948f8bef0c388423f7

View All in Codebase Page

Vulnerability Summary



2	0	1	0	1	0
Total Findings	Resolved	Mitigated	Partially Resolved	Acknowledged	Declined

0	Critical		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.
1	Major	1 Mitigated	Major 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.
0	Medium		Medium risks may not pose a direct risk to users' funds, but they can affect the overall functioning of a platform.
0	Minor		Minor 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.
1	Informational	1 Acknowledged	Informational errors are often recommendations to improve the style of the code or certain operations to fall within industry best practices. They usually do not affect the overall functioning of the code.

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Disclaimer

CODEBASE | SEASCAPE-AUDIT

Repository

87aa82147a74c7498f65bcc0734fd0a3a9cd88c6

Commit

87aa82147a74c7498f65bcc0734fd0a3a9cd88c6

3a9608fb4b34a05987fd33948f8bef0c388423f7

AUDIT SCOPE | SEASCAPE-AUDIT

1 file audited • 1 file with Acknowledged findings

ID	Repo	File	SHA256 Checksum
• NCT	blocklords/seascape-smartcontracts	NewCrownsToken.sol	688492b4a86f0f2c64343d6da817f8321b41bd53224abdbcfe38ad5d2c7a3f03

APPROACH & METHODS | SEASCAPE-AUDIT

This report has been prepared for Seascape to discover issues and vulnerabilities in the source code of the Seascape-Audit project as well as any contract dependencies that were not part of an officially recognized library. A comprehensive examination has been performed, utilizing Manual Review and Static Analysis techniques.

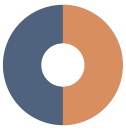
The auditing process pays special attention to the following considerations:

- Testing the smart contracts against both common and uncommon attack vectors.
- Assessing the codebase to ensure compliance with current best practices and industry standards.
- Ensuring contract logic meets the specifications and intentions of the client.
- Cross referencing contract structure and implementation against similar smart contracts produced by industry leaders.
- Thorough line-by-line manual review of the entire codebase by industry experts.

The security assessment resulted in findings that ranged from critical to informational. We recommend addressing these findings to ensure a high level of security standards and industry practices. We suggest recommendations that could better serve the project from the security perspective:

- Testing the smart contracts against both common and uncommon attack vectors;
- Enhance general coding practices for better structures of source codes;
- Add enough unit tests to cover the possible use cases;
- Provide more comments per each function for readability, especially contracts that are verified in public;
- Provide more transparency on privileged activities once the protocol is live.

FINDINGS | SEASCAPE-AUDIT



2	0	1	0	0	1
Total Findings	Critical	Major	Medium	Minor	Informational

This report has been prepared to discover issues and vulnerabilities for Seascape-Audit. Through this audit, we have uncovered 2 issues ranging from different severity levels. Utilizing the techniques of Manual Review & Static Analysis to complement rigorous manual code reviews, we discovered the following findings:

ID	Title	Category	Severity	Status
NCT-01	**Initial Token Distribution**	**Centralization**	**Major**	**Mitigated**
NCT-03	Solidity Version Not Recommended	Language Version	Informational	Acknowledged

NCT-01 | INITIAL TOKEN DISTRIBUTION

Category	Severity	Location	Status
Centralization	**Major**	**NewCrownsToken.sol: 60, 61, 62, 63, 64, 65**	**Mitigated**

Description

All of the `CrownsToken` are sent to several externally-owned account (EOA) addresses. This is a centralization risk because the owner(s) of the EOAs can distribute tokens without obtaining the consensus of the community. Any compromise to these addresses may allow a hacker to steal and sell tokens on the market, resulting in severe damage to the project.

Recommendation

It is recommended that the team be transparent regarding the initial token distribution process. The token distribution plan should be published in a public location that the community can access. The team should make efforts to restrict access to the private keys of the deployer account or EOAs. A multi-signature (⅔, ⅗) wallet can be used to prevent a single point of failure due to a private key compromise. Additionally, the team can lock up a portion of tokens, release them with a vesting schedule for long-term success, and deanonymize the project team with a third-party KYC provider to create greater accountability.

Alleviation

Seascape Team:

The distributed addresses are controlled by multisig wallets.

Detailed distribution plan is available at https://docs.google.com/spreadsheets/d/1i8MP74yX8b5CIYMo4ed0QrZSv_MOIddt_jV0UXHgLlM/edit#gid=482170496

Since this is a re-issue due to poly.network hack (we were not compromised, they were) over 50% of the supply will be distributed via airdrop from the investor multi-sig wallet. We will announce clearly to community the details of the airdrop when it happens.

NCT-03 | SOLIDITY VERSION NOT RECOMMENDED

Category	Severity	Location	Status
Language Version	Informational	NewCrownsToken.sol: 3	Acknowledged

Description

Solidity frequently releases new compiler versions with improved security features and bug fixes. Using an outdated version prevents access to these enhancements and may leave the smart contract vulnerable to known issues.

Recommendation

It is recommended to deploy with Solidity version ^0.8.0, which offers benefits such as support safe math by default, new language features, fewer bugs, and more efficient gas usage, ultimately enhancing code readability and maintainability. Additionally, use a simple pragma version that allows any of these versions. Consider using the latest version of Solidity for testing.

Reference: https://github.com/ethereum/solidity/releases.

Alleviation

Seascape Team:

We decided to use previous version of Solidity as it's more compatible with our game smart contracts.

OPTIMIZATIONS | SEASCAPE-AUDIT

ID	Title	Category	Severity	Status
NCT-02	Unused State Variable	Coding Issue	Optimization	Resolved

NCT-02 | UNUSED STATE VARIABLE

Category	Severity	Location	Status
Coding Issue	Optimization	NewCrownsToken.sol: 31	Resolved

Description

Some state variables are not used in the codebase. This can lead to incomplete functionality or potential vulnerabilities if these variables are expected to be utilized.

Variable `MIN_SPEND` in `CrownsToken` is never used in `CrownsToken`.

```
31      uint256 private constant MIN_SPEND = 10 ** 6;
```

```
14  contract CrownsToken is Context, IERC20, Ownable {
```

Recommendation

It is recommended to ensure that all necessary state variables are used, and remove redundant variables.

Alleviation

The team heeded our advice and fixed the issue in this commit.

APPENDIX | SEASCAPE-AUDIT

Finding Categories

Categories	Description
Language Version	Language Version findings indicate that the code uses certain compiler versions or language features with known security issues.
Coding Issue	Coding Issue findings are about general code quality including, but not limited to, coding mistakes, compile errors, and performance issues.
Centralization	Centralization findings detail the design choices of designating privileged roles or other centralized controls over the code.

Checksum Calculation Method

The "Checksum" field in the "Audit Scope" section is calculated as the SHA-256 (Secure Hash Algorithm 2 with digest size of 256 bits) digest of the content of each file hosted in the listed source repository under the specified commit.

The result is hexadecimal encoded and is the same as the output of the Linux "sha256sum" command against the target file.

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