SOLIDProof

Bring trust into your projects

Blockchain Security | Smart Contract Audits | KYC

MADE IN GERMANY

AquaTank

Audit

Security Assessment

16.August,2022

For

SolidProof_io

@solidproof_io

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Version	Date	Description
1.0	15.August,2022	• Layout project • Automated- /Manual-Security Testing • Summary

Network

Binance (BSC)

Website
https://aquatank.io/

Twitter
https://twitter.com/Aquatankio

Telegram
https://t.me/aquatankio

Reddit
https://www.reddit.com/user/Aquatankio

Discord
https://discord.com/invite/zAjSvcXTug

Github
https://github.com/Aquatankio

Description

Designed and developed by ***ATA studios***, *Aqua Tank* is Strategy NFTs life time reward staking protocol, co-developed on the foundation of NFT-in-metaverse technology. This NFTs features an exclusive and game changing model on the BSC, *Hold-to-Earn passive income* mode.
Unlike any other blockchain games in the GameFi network, Aqua Tank is the pioneer in introducing the marine ecosystem to the BSC blockchain.
The idea of AquaTank is inspired by thousands of undiscovered Islands on different continents. Unreachable by humans, these Islands are populated by marine species. A home to different biospeheres. Now finally, getting utilized by the AquaTank project. Players on this protocol are insentivzed for discovering and holding on to different marine NFTs.
The Hold-to-Earn model of this protocol encompasses all NFTs utilities. Thus creating a highly monetized model for passive earning through strategically owning different NFTs!

Project Engagement

During the 15th of August 2022, **Aqua Tank** team engaged Solidproof.io to audit the smart contracts that they created. The engagement was technical in nature and focused on identifying the security flaws in the design and implementation of the contracts. They provided Solidproof.io with access to their code repository and whitepaper.

Logo

Contract Links

v1.0

https://bscscan.com/address/0xf59a047b8a7aa114f03448362d56936693c00635#code

Vulnerability & Risk Level

Risk represents the probability that a certain source-threat will exploit vulnerability, and the impact of that event on the organization or system. Risk Level is computed based on CVSS version 3.0.

Level	Value	Vulnerability	Risk (Required Action)
Critical	9 - 10	A vulnerability that can disrupt the contract functioning in a number of scenarios, or creates a risk that the contract may be broken.	Immediate action to reduce risk level.
High	7 – 8.9	A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.	Implementation of corrective actions as soon as possible.
Medium	4 – 6.9	A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.	Implementation of corrective actions in a certain period.
Low	2 – 3.9	A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.	Implementation of certain corrective actions or accepting the risk.
Informational	0 – 1.9	A vulnerability that have informational character but is not effecting any of the code.	An observation that does not determine a level of risk

Auditing Strategy and Techniques Applied

Throughout the review process, care was taken to evaluate the repository for security-related issues, code quality, and adherence to specification and best practices. To do so, reviewed line-by-line by our team of expert pentesters and smart contract developers, documenting any issues as there were discovered.

Methodology

The auditing process follows a routine series of steps:

1. Code review that includes the following:
    i) Review of the specifications, sources, and instructions provided to SolidProof to make sure we understand the size, scope, and functionality of the smart contract.
    ii) Manual review of code, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.
    iii) Comparison to specification, which is the process of checking whether the code does what the specifications, sources, and instructions provided to SolidProof describe.

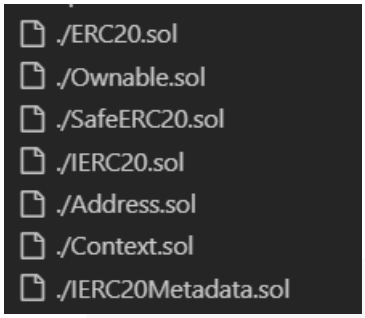
2. Testing and automated analysis that includes the following:
    i) Test coverage analysis, which is the process of determining whether the test cases are actually covering the code and how much code is exercised when we run those test cases.
    ii) Symbolic execution, which is analyzing a program to determine what inputs causes each part of a program to execute.

3. Best practices review, which is a review of the smart contracts to improve efficiency, effectiveness, clarify, maintainability, security, and control based on the established industry and academic practices, recommendations, and research.

4. Specific, itemized, actionable recommendations to help you take steps to secure your smart contracts.

Used Code from other Frameworks/Smart Contracts (direct imports)

Imported packages:



Tested Contract Files

This audit covered the following files listed below with a SHA-1 Hash.

A file with a different Hash has been modified, intentionally or otherwise, after the security review. A different Hash could be (but not necessarily) an indication of a changed condition or potential vulnerability that was not within the scope of this review.

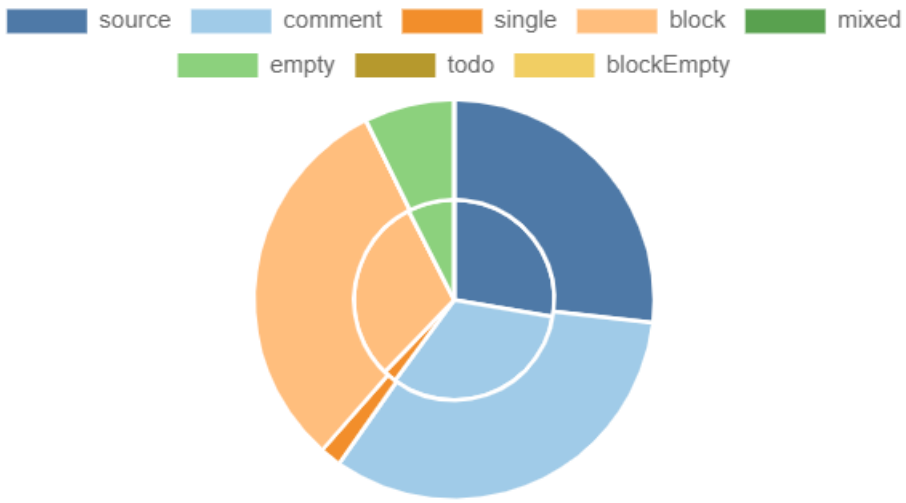
v1.0

File Name	SHA-1 Hash
contracts/Aqua.sol	b44c1fceccf771f09cca9044fc663f8c9a3f1550
contracts/Context.sol	0698b67af5830b24aee8766a0df7c646c8a9f656
contracts/IERC20Metadata.sol	77236e7b51a95a504c42e54cffeed101e2b2c3fb
contracts/Address.sol	2c37088bb1513e68289323adff2b95b25ec8f033
contracts/SafeERC20.sol	628bce9e4fde3b51bf3f7d0e8865ba326d62c272
contracts/Ownable.sol	cad0c3aa20f93a167c9570028f2408b1382ffb1a
contracts/ERC20.sol	2aad52e204c2d942035ff779006e4d32a561cd38
contracts/IERC20.sol	51c86c411e2347dd4e04fdc7fbb43247c8fa8504

Metrics

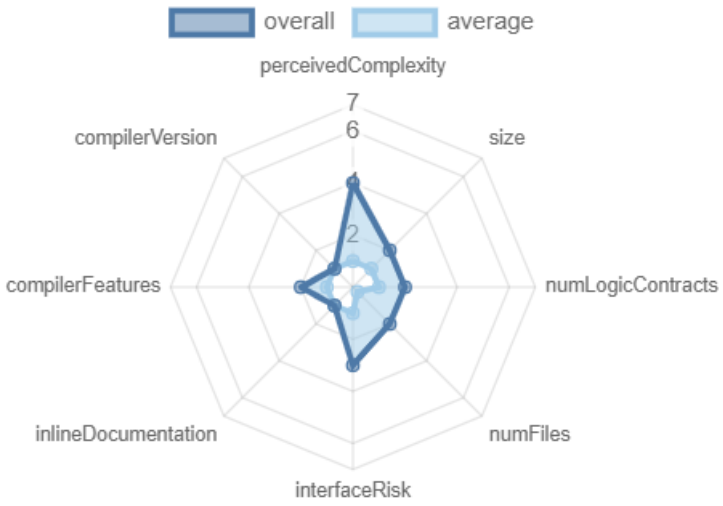
Source Lines

v1.0



Risk Level

v1.0



Capabilities

Components

Version	Contracts	Libraries	Interfaces	Abstract
1.0	2	2	3	2

Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.

Version	Public	Payable
1.0	27	0

Version	External	Internal	Private	Pure	View
1.0	13	63	2	1	18

State Variables

Version	Total	Public
1.0	8	2

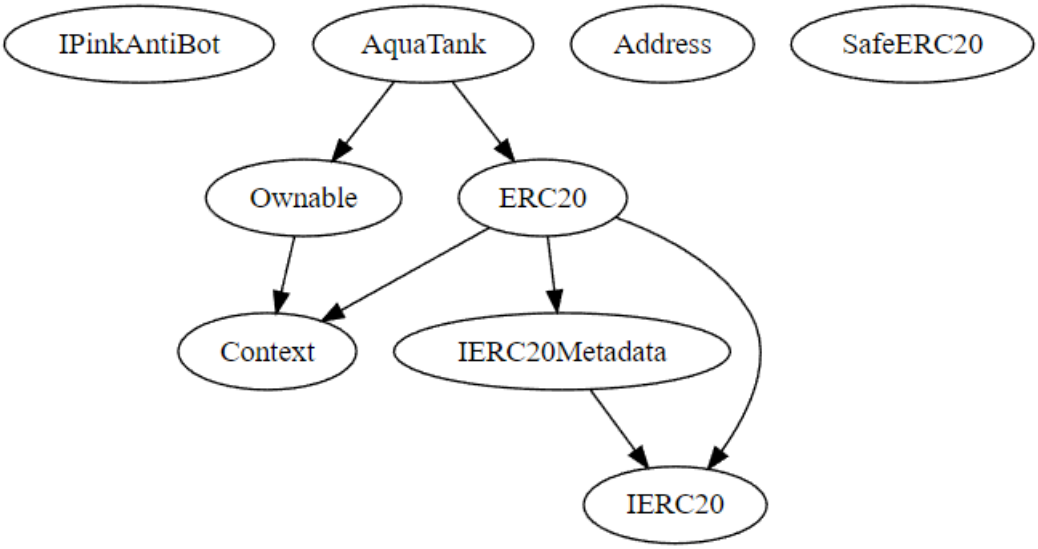
Capabilities

Version	Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
1.0	`^0.8.0`			Yes	

Version	Transfers ETH	Low-Level Calls	DelegateCall	Uses Hash Functions	EC Recover	New/Create/Create2
1.0			Yes			

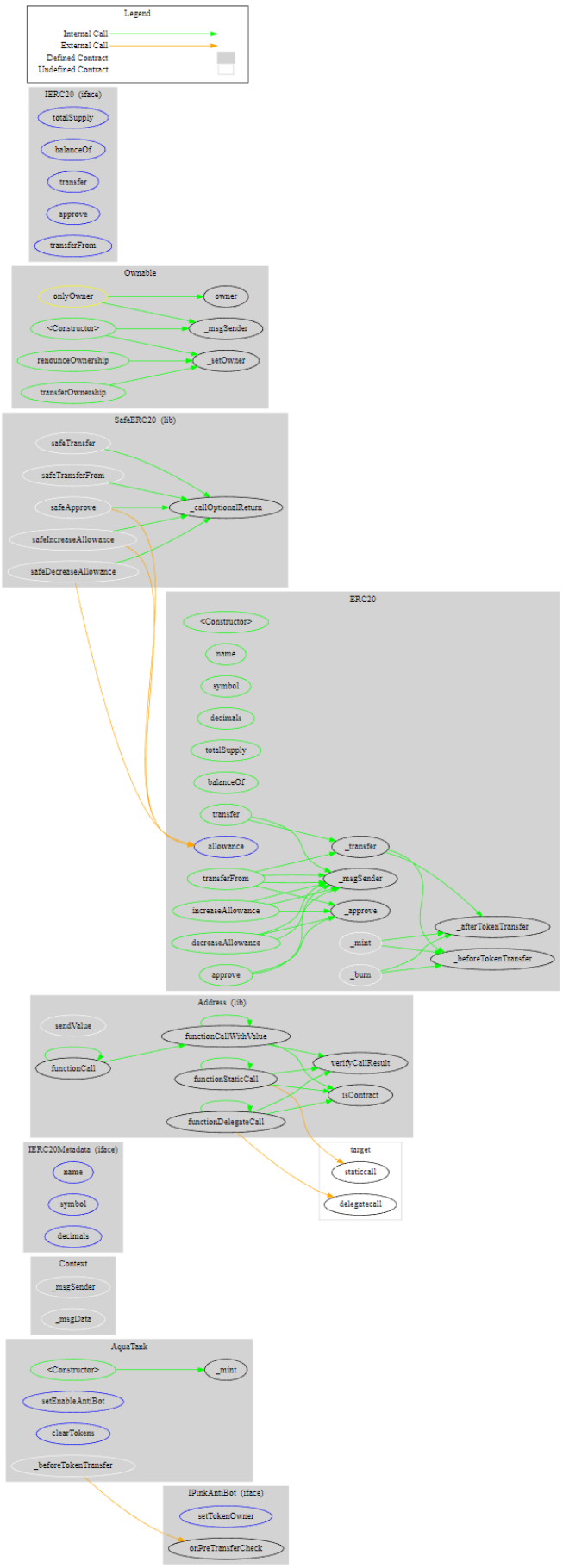
Inheritance Graph

v1.0



Call Graph

v1.0



Scope of Work/Verify Claims

The above token Team provided us with the files that needs to be tested (Github, Bscscan, Etherscan, files, etc.). The scope of the audit is the main contract (usual the same name as team appended with .sol).

We will verify the following claims:

1. Is contract an upgradeable
2. Correct implementation of Token standard
3. Deployer cannot mint any new tokens
4. Deployer cannot burn or lock user funds
5. Deployer cannot pause the contract
6. Deployer can set fees
7. Deployer can blacklist/antisnipe address
8. Overall checkup (Smart Contract Security)

Is contract an upgradeable

Name	
Is contract an upgradeable?	No

Correct implementation of Token standard

ERC20				
Function	**Description**	**Exist**	**Tested**	**Verified**
totalSupply	Provides information about the total token supply			
balanceOf	Provides account balance of the owner's account			
transfer	Executes transfers of a specified number of tokens to a specified address			
transferFrom	Executes transfers of a specified number of tokens from a specified address			
approve	Allow a spender to withdraw a set number of tokens from a specified account			
allowance	Returns a set number of tokens from a spender to the owner			

Write functions of contracts
v1.0

1. approve
2. clearTokens
3. decreaseAllowance
4. increaseAllowance
5. renounceOwnership
6. setEnableAntiBot
7. transfer
8. transferFrom
9. transferOwnership

Deployer cannot mint any new tokens

Name	Exist	Tested	Status
Deployer cannot mint			
Max / Total Supply	N/A		

Comments:

The supply will be decided at the time of deployment by the deployer.

Deployer cannot burn or lock user funds

Name	Exist	Tested	Status
Deployer cannot lock			
Deployer cannot burn			

Deployer cannot pause the contract

Name	Exist	Tested	Status
Deployer cannot pause			

Deployer can set fees

Name	Exist	Tested	Status
Deployer can set fees over 25%			
Deployer can set fees to nearly 100% or more			

Deployer cannot blacklist/antisnipe addresses

Name	Exist	Tested	Status
Deployer can blacklist/antisnipe addresses			

Overall checkup (Smart Contract Security)

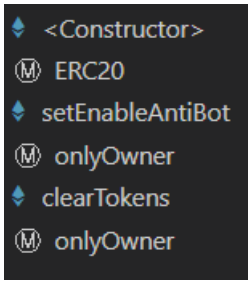
Tested	Verified

Legend

Attribute	Symbol
Verified / Checked	
Partly Verified	
Unverified / Not checked	
Not available	

Modifiers and public functions

v1.0



Comments:

- The deployer can clear the tokens if users accidentally sent another tokens to the contract
- The deployer can

Source Units in Scope

v1.0

File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
contracts/Aqua.sol	1	1	59	46	36	5	27	
contracts/Context.sol	1		23	23	9	11	1	
contracts/IERC20Metadata.sol		1	27	16	4	15	9	
contracts/Address.sol	1		216	171	80	113	47	
contracts/SafeERC20.sol	1		98	76	36	30	24	
contracts/Ownable.sol	1		71	71	28	33	23	
contracts/ERC20.sol	1		355	335	103	193	80	
contracts/IERC20.sol		1	81	26	17	57	13	
Totals	**6**	**3**	**930**	**764**	**313**	**457**	**224**	

Legend

Attribute	Description
Lines	total lines of the source unit
nLines	normalized lines of the source unit (e.g. normalizes functions spanning multiple lines)
nSLOC	normalized source lines of code (only source-code lines; no comments, no blank lines)
Comment Lines	lines containing single or block comments
Complexity Score	a custom complexity score derived from code statements that are known to introduce code complexity (branches, loops, calls, external interfaces, ...)

Audit Results

AUDIT PASSED

Critical issues

No critical issues

High issues

No high issues

Medium issues

No medium issues

Low issues

Issue	File	Type	Line	Description
#1	Main	Missing Events	40	Emit an event for critical parameter changes. In this case, minting, burning of tokens, etc.
#2	Main	Missing zero check	30	Check that the address is not zero
#3	Main	Shadowing Local Variables	27,28	Rename the local variables that shadow another component
#4	Main	A Floating Pragma is set	2	The current pragma Solidity directive is „“^0.8.0". Contracts should be deployed with the same compiler version and flags that they have been tested with thoroughly. Locking the pragma helps to ensure that contracts do not accidentally get deployed using other versions.

#5	Main	Contract doesn't import npm packages from source (like OpenZeppelin etc.)	-	We recommend importing all packages from npm directly without flattening the contract. Functions could be modified or can be susceptible to vulnerabilities

Informational issues

Issue	File	Type	Line	Description
#1	Main	NatSpec documentation missing	-	If you started to comment your code, also comment all other functions, variables etc.

Audit Comments

We recommend you to use the special form of comments (NatSpec Format, Follow link for more information https://docs.soliditylang.org/en/v0.5.10/natspec-format.html) for your contracts to provide rich documentation for functions, return variables and more. This helps investors to make clear what that variables, functions etc. do.

16. August, 2022:

- There is still an owner (Owner still has not renounced ownership)
- Read the whole report and modifiers section for more information.

SWC Attacks

ID	Title	Relationships	Status
SWC-136	Unencrypted Private Data On-Chain	CWE-767: Access to Critical Private Variable via Public Method	PASSED
SWC-135	Code With No Effects	CWE-1164: Irrelevant Code	PASSED
SWC-134	Message call with hardcoded gas amount	CWE-655: Improper Initialization	PASSED
SWC-133	Hash Collisions With Multiple Variable Length Arguments	CWE-294: Authentication Bypass by Capture-replay	PASSED
SWC-132	Unexpected Ether balance	CWE-667: Improper Locking	PASSED
SWC-	Presence of unused variables	CWE-1164: Irrelevant Code	PASSED

131			PASSED
SWC-130	Right-To-Left-Override control character (U+202E)	CWE-451: User Interface (UI) Misrepresentation of Critical Information	
SWC-129	Typographical Error	CWE-480: Use of Incorrect Operator	
SWC-128	DoS With Block Gas Limit	CWE-400: Uncontrolled Resource Consumption	
SWC-127	Arbitrary Jump with Function Type Variable	CWE-695: Use of Low-Level Functionality	
SWC-125	Incorrect Inheritance Order	CWE-696: Incorrect Behavior Order	
SWC-	Write to Arbitrary	CWE-123: Write-what-where Condition	

124	Storage Location		
SWC-123	Requirement Violation	CWE-573: Improper Following of Specification by Caller	PASSED
SWC-122	Lack of Proper Signature Verification	CWE-345: Insufficient Verification of Data Authenticity	PASSED
SWC-121	Missing Protection against Signature Replay Attacks	CWE-347: Improper Verification of Cryptographic Signature	PASSED
SWC-120	Weak Sources of Randomness from Chain Attributes	CWE-330: Use of Insufficiently Random Values	PASSED
SWC-119	Shadowing State Variables	CWE-710: Improper Adherence to Coding Standards	NOT PASSED

SWC-118	Incorrect Constructor Name	CWE-665: Improper Initialization	PASSED
SWC-117	Signature Malleability	CWE-347: Improper Verification of Cryptographic Signature	PASSED
SWC-116	Timestamp Dependence	CWE-829: Inclusion of Functionality from Untrusted Control Sphere	PASSED
SWC-115	Authorization through tx.origin	CWE-477: Use of Obsolete Function	PASSED
SWC-114	Transaction Order Dependence	CWE-362: Concurrent Execution using Shared Resource with Improper Synchronization ('Race Condition')	PASSED
SWC-113	DoS with Failed Call	CWE-703: Improper Check or Handling of Exceptional Conditions	PASSED

SWC-112	Delegatecall to Untrusted Callee	CWE-829: Inclusion of Functionality from Untrusted Control Sphere	PASSED
SWC-111	Use of Deprecated Solidity Functions	CWE-477: Use of Obsolete Function	PASSED
SWC-110	Assert Violation	CWE-670: Always-Incorrect Control Flow Implementation	PASSED
SWC-109	Uninitialized Storage Pointer	CWE-824: Access of Uninitialized Pointer	PASSED
SWC-108	State Variable Default Visibility	CWE-710: Improper Adherence to Coding Standards	PASSED
SWC-107	Reentrancy	CWE-841: Improper Enforcement of Behavioral Workflow	PASSED

SWC-106	Unprotected SELFDESTRUCT Instruction	CWE-284: Improper Access Control	PASSED
SWC-105	Unprotected Ether Withdrawal	CWE-284: Improper Access Control	PASSED
SWC-104	Unchecked Call Return Value	CWE-252: Unchecked Return Value	PASSED
SWC-103	Floating Pragma	CWE-664: Improper Control of a Resource Through its Lifetime	NOT PASSED
SWC-102	Outdated Compiler Version	CWE-937: Using Components with Known Vulnerabilities	PASSED
SWC-101	Integer Overflow and Underflow	CWE-682: Incorrect Calculation	PASSED

SWC-100	Function Default Visibility	CWE-710: Improper Adherence to Coding Standards	PASSED