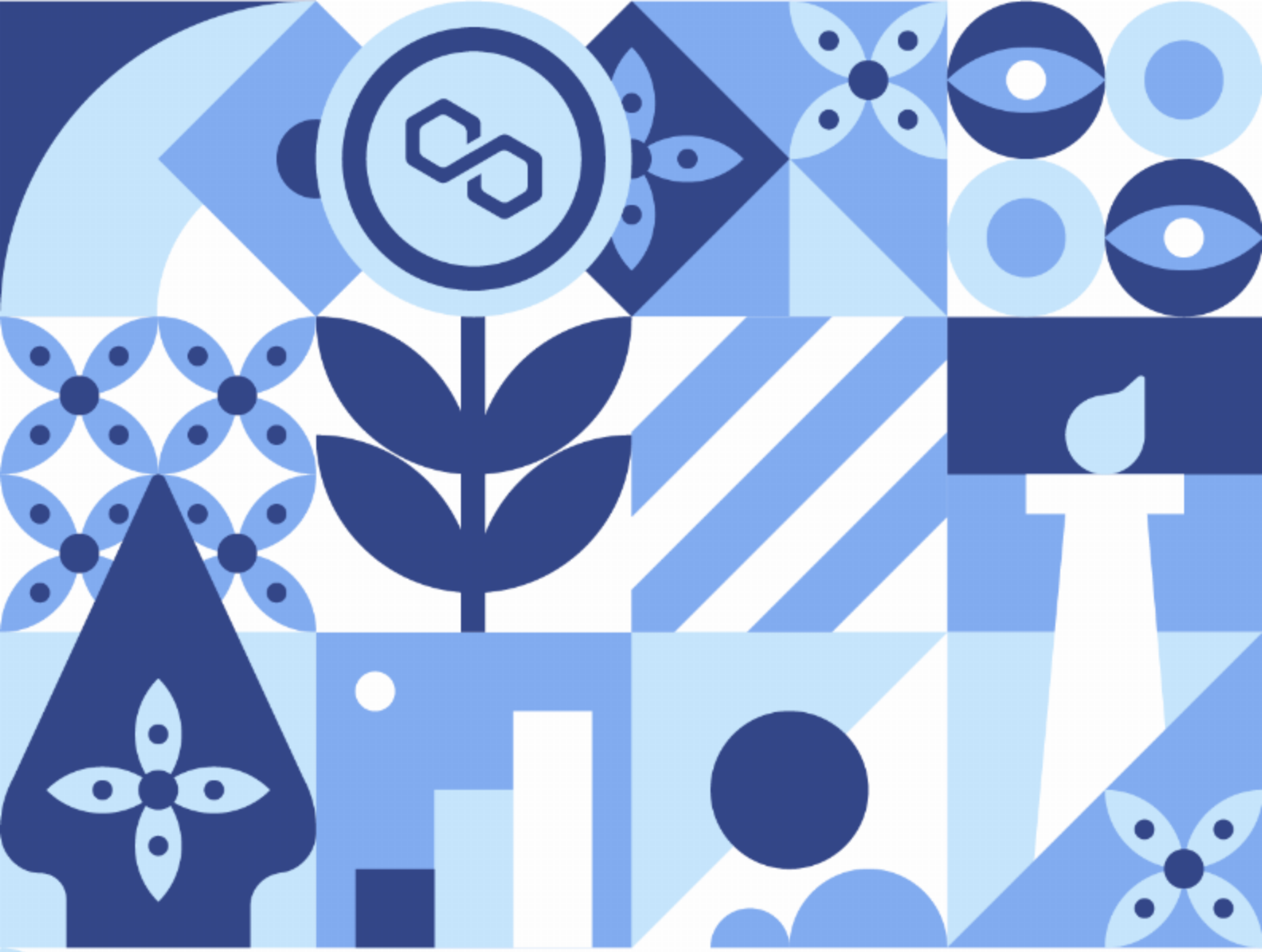

Tidal Token

Smart Contract Audit Report

SYSFIXED

14 Jul 2021

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
Tidal Token	TIDAL	Polygon Matic

Addresses

Contract address	0xB41EC2c036f8a42DA384DDE6ADA79884F8b84b26
Contract deployer address	0x5c99f63937FA74205dea9b308e9A8e16F66d26CC

Project Website

https://tidal.finance/

Codebase

https://polygonscan.com/address/0xB41EC2c036f8a42DA384DDE6ADA79884F8b84b26#code

SUMMARY

TIDAL is a decentralized discretionary mutual cover protocol that offers the DeFi community the ability to hedge against the failure of any DeFi protocol or asset. By directly leveraging up the reserve to cover multiple protocols at the same time, the enhanced capital efficiency attracts reserve providers while a competitive insurance premium attracts buyers.

Contract Summary

Documentation Quality

Tidal Token provides a very good documentation with standard of solidity base code.

- The technical description is provided clearly and structured and also dont have any high risk issue.

Code Quality

The Overall quality of the basecode is standard.

- Standard solidity basecode and rules are already followed by Tidal Token with the discovery of several low issues.

Test Coverage

Test coverage of the project is 100% (Through Codebase)

Audit Findings Summary

- SWC-100 SWC-108 | Explicitly define visibility for all state variables on lines 999 and 1095.
- SWC-120 | It is recommended to use external sources of randomness via oracles on lines 1714 and 1787.

CONCLUSION

We have audited the Tidal Token project released on July 2021 to discover issues and identify potential security vulnerabilities in Tidal Token Project. This process is used to find technical issues and security loopholes which might be found in the smart contract.

The security audit report provides satisfactory results with low-risk issues.

The issues found in the Tidal Token smart contract code do not pose a considerable risk. The writing of the contract is close to the standard of writing contracts in general. The low-risk issues found a state variable visibility is not set and potential use of "block.number" as a source of randomness.

AUDIT RESULT

Article	Category	Description	Result
Default Visibility	SWC-100 SWC-108	Functions and state variables visibility should be set explicitly. Visibility levels should be specified consciously.	ISSUE FOUND
Integer Overflow and Underflow	SWC-101	If unchecked math is used, all math operations should be safe from overflows and underflows.	PASS
Outdated Compiler Version	SWC-102	It is recommended to use a recent version of the Solidity compiler.	PASS
Floating Pragma	SWC-103	Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly.	PASS
Unchecked Call Return Value	SWC-104	The return value of a message call should be checked.	PASS
Unprotected Ether Withdrawal	SWC-105	Due to missing or insufficient access controls, malicious parties can withdraw from the contract.	PASS
SELFDESTRUCT Instruction	SWC-106	The contract should not be self-destructible while it has funds belonging to users.	PASS
Reentrancy	SWC-107	Check effect interaction pattern should be followed if the code performs recursive call.	PASS
Uninitialized Storage Pointer	SWC-109	Uninitialized local storage variables can point to unexpected storage locations in the contract.	PASS
Assert Violation	SWC-110 SWC-123	Properly functioning code should never reach a failing assert statement.	PASS
Deprecated Solidity Functions	SWC-111	Deprecated built-in functions should never be used.	PASS
Delegate call to Untrusted Callee	SWC-112	Delegatecalls should only be allowed to trusted addresses.	PASS

DoS (Denial of Service)	SWC-113 SWC-128	Execution of the code should never be blocked by a specific contract state unless required.	PASS
Race Conditions	SWC-114	Race Conditions and Transactions Order Dependency should not be possible.	PASS
Authorization through tx.origin	SWC-115	tx.origin should not be used for authorization.	PASS
Block values as a proxy for time	SWC-116	Block numbers should not be used for time calculations.	PASS
Signature Unique ID	SWC-117 SWC-121 SWC-122	Signed messages should always have a unique id. A transaction hash should not be used as a unique id.	PASS
Incorrect Constructor Name	SWC-118	Constructors are special functions that are called only once during the contract creation.	PASS
Shadowing State Variable	SWC-119	State variables should not be shadowed.	PASS
Weak Sources of Randomness	SWC-120	Random values should never be generated from Chain Attributes or be predictable.	ISSUE FOUND
Write to Arbitrary Storage Location	SWC-124	The contract is responsible for ensuring that only authorized user or contract accounts may write to sensitive storage locations.	PASS
Incorrect Inheritance Order	SWC-125	When inheriting multiple contracts, especially if they have identical functions, a developer should carefully specify inheritance in the correct order. The rule of thumb is to inherit contracts from more /general/ to more /specific/.	PASS
Insufficient Gas Griefing	SWC-126	Insufficient gas griefing attacks can be performed on contracts which accept data and use it in a sub-call on another contract.	PASS
Arbitrary Jump Function	SWC-127	As Solidity doesnt support pointer arithmetics, it is impossible to change such variable to an arbitrary value.	PASS

Typographical Error	SWC-129	A typographical error can occur for example when the intent of a defined operation is to sum a number to a variable.	PASS
Override control character	SWC-130	Malicious actors can use the Right-To-Left-Override unicode character to force RTL text rendering and confuse users as to the real intent of a contract.	PASS
Unused variables	SWC-131 SWC-135	Unused variables are allowed in Solidity and they do not pose a direct security issue.	PASS
Unexpected Ether balance	SWC-132	Contracts can behave erroneously when they strictly assume a specific Ether balance.	PASS
Hash Collisions Variable	SWC-133	Using abi.encodePacked() with multiple variable length arguments can, in certain situations, lead to a hash collision.	PASS
Hardcoded gas amount	SWC-134	The transfer() and send() functions forward a fixed amount of 2300 gas.	PASS
Unencrypted Private Data	SWC-136	It is a common misconception that private type variables cannot be read.	PASS

SMART CONTRACT ANALYSIS

Started	Tuesday Jul 13 2021 16:08:21 GMT+0000 (Coordinated Universal Time)
Finished	Wednesday Jul 14 2021 17:39:22 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	TidalTokenChild.sol

Detected Issues

ID	Title	Severity	Status
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-120	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.	low	acknowledged
SWC-120	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.	low	acknowledged

SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 999

low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "inited" is internal. Other possible visibility settings are public and private.

Source File

- TidalTokenChild.sol

Locations

```
998   contract Initializable {
999   bool inited = false;
1000
1001   modifier initializer() {
1002   require(!inited, "already inited");
1003
```

SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 1095

low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "nonces" is internal. Other possible visibility settings are public and private.

Source File

- TidalTokenChild.sol

Locations

```
1094   );
1095   mapping(address => uint256) nonces;
1096
1097   /*
1098   * Meta transaction structure.
1099
```

SWC-120 | POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.

LINE 1714

low SEVERITY

The environment variable "block.number" looks like it might be used as a source of randomness. Note that the values of variables like coinbase, gaslimit, block number and timestamp are predictable and can be manipulated by a malicious miner. Also keep in mind that attackers know hashes of earlier blocks. Don't use any of those environment variables as sources of randomness and be aware that use of these variables introduces a certain level of trust into miners.

Source File

- TidalTokenChild.sol

Locations

```
1713   {
1714   require(blockNumber < block.number, "GovernanceToken::getPriorVotes: not yet
determined");
1715
1716   uint32 nCheckpoints = numCheckpoints[account];
1717   if (nCheckpoints == 0) {
1718
```

SWC-120 | POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.

LINE 1787

low SEVERITY

The environment variable "block.number" looks like it might be used as a source of randomness. Note that the values of variables like coinbase, gaslimit, block number and timestamp are predictable and can be manipulated by a malicious miner. Also keep in mind that attackers know hashes of earlier blocks. Don't use any of those environment variables as sources of randomness and be aware that use of these variables introduces a certain level of trust into miners.

Source File

- TidalTokenChild.sol

Locations

```
1786   {
1787   uint32 blockNumber = safe32(block.number, "GovernanceToken::_writeCheckpoint:
block number exceeds 32 bits");
1788
1789   if (nCheckpoints > 0 && checkpoints[delegatee][nCheckpoints - 1].fromBlock ==
blockNumber) {
1790   checkpoints[delegatee][nCheckpoints - 1].votes = newVotes;
1791
```

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This is a limited report on our findings based on our analysis, in accordance with good industry practice as of 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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