Cyberscope

Audit Report

PoSciDonDAO Token

July 2024

Repository	https://github.com/PoSciDonDAO/poscidondao_contracts
Commit	f9ba3adfc787608f8394ce0de2311be1aed6bff4
Files	tokens/SCI.sol
Audited by	© cyberscope

Analysis

🔴 Critical 🟠 Medium ⚪ Minor / Informative 🔵 Pass

Severity	Code	Description	Status
🔵	ST	Stops Transactions	Passed
🔵	OTUT	Transfers User's Tokens	Passed
🔵	ELFM	Exceeds Fees Limit	Passed
⚪	MT	Mints Tokens	Unresolved
🔵	BT	Burns Tokens	Passed
🔵	BC	Blacklists Addresses	Passed

Diagnostics

🔴 Critical 🟠 Medium ● Minor / Informative

Severity	Code	Description	Status
●	IDI	Immutable Declaration Improvement	Unresolved
●	MEE	Missing Events Emission	Unresolved
●	L16	Validate Variable Setters	Unresolved
●	L19	Stable Compiler Version	Unresolved

Table of Contents

Review

Contract Name	Sci
Repository	https://github.com/PoSciDonDAO/poscidondao_contracts
Commit	f9ba3adfc787608f8394ce0de2311be1aed6bff4
Testing Deploy	https://testnet.bscscan.com/address/0xf593c83367b9edbf3bd191ccf0e9e2be650c4ea4
Symbol	SCI
Decimals	18

Audit Updates

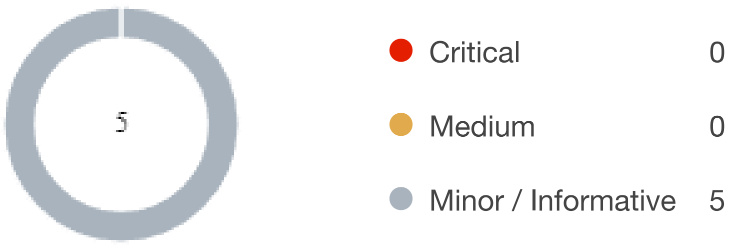
Initial Audit	10 Jul 2024

Source Files

Filename	SHA256
contracts/SCI.sol	54e793c91b0ae5cc1eb22c0b00919042888e1d292a54e574c94164a2e191219b
contracts/ISci.sol	abad75be8e2bd2abc0361c4b36041c7cc3cca40cca745a36f586e0e6d9b9ef1f
@openzeppelin/contracts/utils/Strings.sol	cb2df477077a5963ab50a52768cb74ec6f32177177a78611ddbbe2c07e2d36de
@openzeppelin/contracts/utils/Context.sol	b2cfee351bcafd0f8f27c72d76c054df9b571b62cfac4781ed12c86354e2a56c
@openzeppelin/contracts/utils/math/SignedMath.sol	420a5a5d8d94611a04b39d6cf5f02492552ed4257ea82aba3c765b1ad52f77f6

@openzeppelin/contracts/utils/math/Math.sol	85a2caf3bd06579fb55236398c1321e15fd524a8fe140dff748c0f73d7a52345
@openzeppelin/contracts/utils/introspection/IERC165.sol	701e025d13ec6be09ae892eb029cd83b3064325801d73654847a5fb11c58b1e5
@openzeppelin/contracts/utils/introspection/ERC165.sol	8806a632d7b656cadb8133ff8f2acae4405b3a64d8709d93b0fa6a216a8a6154
@openzeppelin/contracts/token/ERC20/IERC20.sol	7ebde70853ccafcf1876900dad458f46eb9444d591d39bfc58e952e2582f5587
@openzeppelin/contracts/token/ERC20/ERC20.sol	d20d52b4be98738b8aa52b5bb0f88943f62128969b33d654fbca731539a7fe0a
@openzeppelin/contracts/token/ERC20/extensions/IERC20Metadata.sol	af5c8a77965cc82c33b7ff844deb9826166689e55dc037a7f2f790d057811990
@openzeppelin/contracts/token/ERC20/extensions/ERC20Burnable.sol	0344809a1044e11ece2401b4f7288f414ea41fa9d1dad24143c84b737c9fc02e
@openzeppelin/contracts/access/IAccessControl.sol	d03c1257f2094da6c86efa7aa09c1c07ebd33dd31046480c5097bc2542140e45
@openzeppelin/contracts/access/AccessControl.sol	afd98330d27bddff0db7cb8fcf42bd4766dda5f60b40871a3bec6220f9c9edf7

Findings Breakdown



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

MT - Mints Tokens

Criticality	Minor / Informative
Location	contracts/SCI.sol#L63
Status	Unresolved

Description

The `govOpsAddress` has the authority to mint tokens to the `treasuryWallet`, which is an address specified during contract deployment and cannot be changed afterwards. The `govOpsAddress` take advantage of it by calling the `mint` function. As a result, the contract tokens will be highly inflated.

```
function mint(uint256 amount) external onlyGovOps {
        _mint(treasuryWallet, amount);
}
```

Recommendation

The team should carefully manage the private keys of the owner's account and the treasury wallet. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions.

Temporary Solutions:

These measurements do not decrease the severity of the finding

- Introduce a time-locker mechanism with a reasonable delay.
- Introduce a multi-signature wallet so that many addresses will confirm the action.
- Introduce a governance model where users will vote about the actions.

Permanent Solution:

- Renouncing the ownership, which will eliminate the threats but it is non-reversible.

IDI - Immutable Declaration Improvement

Criticality	Minor / Informative
Location	contracts/SCI.sol#L42
Status	Unresolved

Description

The contract declares state variables that their value is initialized once in the constructor and are not modified afterwards. The `immutable` is a special declaration for this kind of state variables that saves gas when it is defined.

```
treasuryWallet
```

Recommendation

By declaring a variable as immutable, the Solidity compiler is able to make certain optimizations. This can reduce the amount of storage and computation required by the contract, and make it more gas-efficient.

MEE - Missing Events Emission

Criticality	Minor / Informative
Location	contracts/SCI.sol#L51
Status	Unresolved

Description

The contract performs actions and state mutations from external methods that do not result in the emission of events. Emitting events for significant actions is important as it allows external parties, such as wallets or dApps, to track and monitor the activity on the contract. Without these events, it may be difficult for external parties to accurately determine the current state of the contract.

```
function setGovOps(
    address newGovOpsAddress
) external onlyRole(DEFAULT_ADMIN_ROLE) {
    govOpsAddress = newGovOpsAddress;
}
```

Recommendation

It is recommended to include events in the code that are triggered each time a significant action is taking place within the contract. These events should include relevant details such as the user's address and the nature of the action taken. By doing so, the contract will be more transparent and easily auditable by external parties. It will also help prevent potential issues or disputes that may arise in the future.

L16 - Validate Variable Setters

Criticality	Minor / Informative
Location	contracts/SCI.sol#L42,54
Status	Unresolved

Description

The contract performs operations on variables that have been configured on user-supplied input. These variables are missing of proper check for the case where a value is zero. This can lead to problems when the contract is executed, as certain actions may not be properly handled when the value is zero.

```
treasuryWallet = treasuryWallet_;
govOpsAddress = newGovOpsAddress;
```

Recommendation

By adding the proper check, the contract will not allow the variables to be configured with zero value. This will ensure that the contract can handle all possible input values and avoid unexpected behavior or errors. Hence, it can help to prevent the contract from being exploited or operating unexpectedly.

L19 - Stable Compiler Version

Criticality	Minor / Informative
Location	contracts/SCI.sol#L2
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;
```

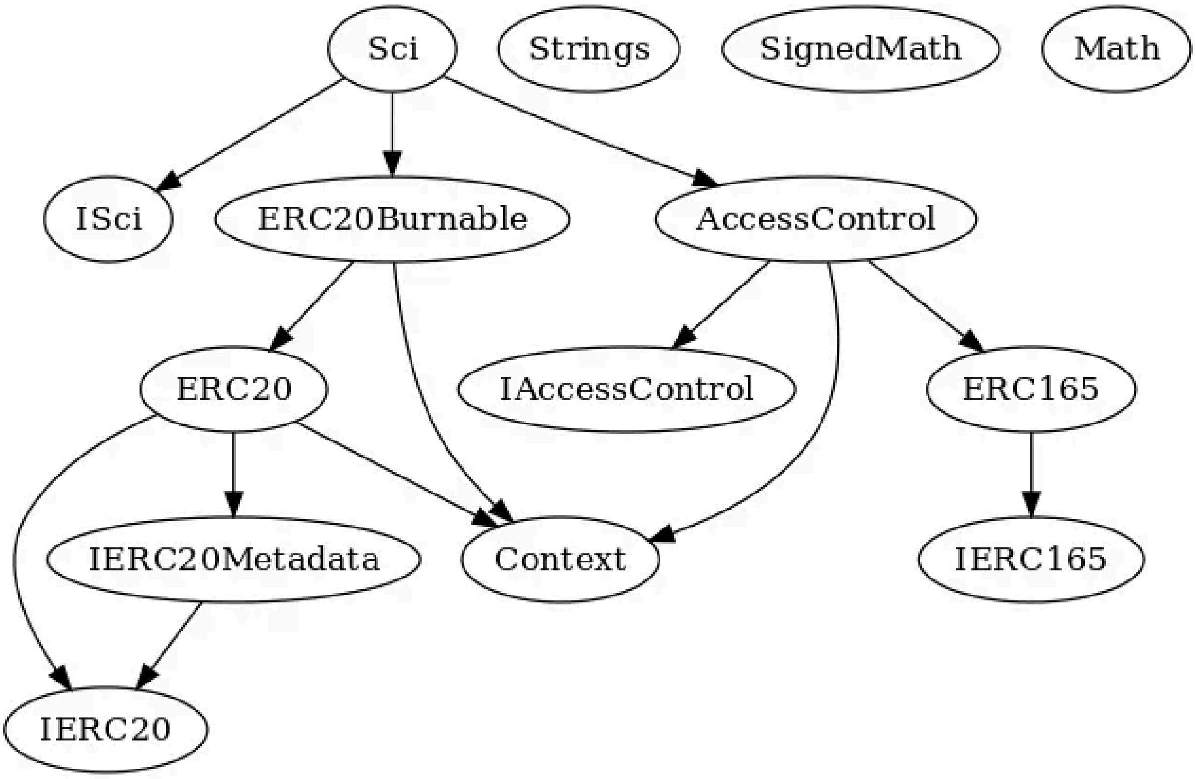
Recommendation

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.

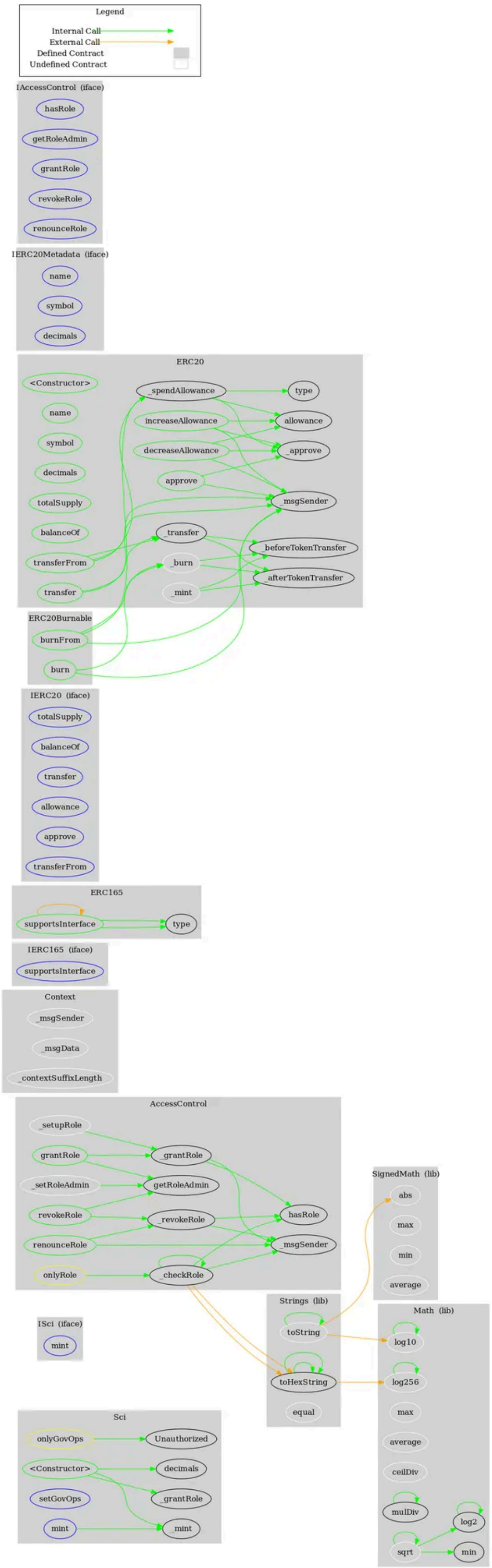
Functions Analysis

Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
Sci	Implementation	ISci, ERC20Burnable, AccessControl		
		Public	✓	ERC20
	setGovOps	External	✓	onlyRole
	mint	External	✓	onlyGovOps

Inheritance Graph



Flow Graph


Legend
Internal Call
External Call
Defined Contract
Undefined Contract
IAccessControl (iface)
hasRole
getRoleAdmin
grantRole
revokeRole
renounceRole
IERC20Metadata (iface)
name
symbol
decimals
ERC20
<Constructor>
name
symbol
decimals
totalSupply
balanceOf
transferFrom
transfer
_spendAllowance
increaseAllowance
decreaseAllowance
approve
_transfer
_burn
_mint
type
allowance
_approve
msgSender
_beforeTokenTransfer
_afterTokenTransfer
ERC20Burnable
burnFrom
burn
IERC20 (iface)
totalSupply
balanceOf
transfer
allowance
approve
transferFrom
ERC165
supportsInterface
type
IERC165 (iface)
supportsInterface
Context
_msgSender
_msgData
_contextSuffixLength
AccessControl
_setupRole
grantRole
_setRoleAdmin
revokeRole
renounceRole
onlyRole
_grantRole
getRoleAdmin
_revokeRole
_checkRole
hasRole
msgSender
SignedMath (lib)
abs
max
min
average
ISci (iface)
mint
Strings (lib)
toString
toHexString
equal
Math (lib)
log10
log256
max
average
ceilDiv
mulDiv
sqrt
log2
min
Sci
onlyGovOps
<Constructor>
setGovOps
mint
Unauthorized
decimals
_grantRole
_mint

Summary

PoSciDonDAO Token contract implements a token mechanism. This audit investigates security issues, business logic concerns and potential improvements. There are some functions that can be abused by the owner like mint tokens. if the contract owner abuses the mint functionality, then the contract will be highly inflated. A multi-wallet signing pattern will provide security against potential hacks. Temporarily locking the contract or renouncing ownership will eliminate all the contract threats.

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The Cyberscope team

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