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**Blockchain Security | Smart Contract Audits | KYC  
Development | Marketing**

MADE IN GERMANY

# **DegenX Liquidity Backing**

# **Audit**

**Security Assessment**  
**20. April, 2023**

**For**



**SolidProof\_io**



**@solidproof\_io**

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Version	Date	Description
1.0	17. April 2023 - 19. April 2023	<ul style="list-style-type: none"><li>• Layout project</li><li>• Automated- /Manual-Security Testing</li><li>• Summary</li></ul>
1.1	20. April 2023	<ul style="list-style-type: none"><li>• Reaudit</li></ul>

## **Network**

Avalanche

## **Website**

<https://dgnx.finance/>

## **Telegram**

<https://t.me/DegenXportal>

## **Twitter**

<https://twitter.com/degenecosystem>

## **Discord**

<https://discord.com/invite/pyaZqZrS>

## **Facebook**

<https://www.facebook.com/profile.php?id=100078427221036>

## **Reddit**

[https://www.reddit.com/user/degentrader\\_sd](https://www.reddit.com/user/degentrader_sd)

## Description

DegenX is multichain ecosystem that offers a suite of decentralized applications (dApps) and services to provide solutions for projects and individuals in the DeFi space. DegenX is multichain ecosystem that offers a suite of decentralized applications (dApps) and services to provide solutions for projects and individuals in the DeFi space.

## Project Engagement

During the 15th of April 2023, **DGNX Team** engaged Solidproof.io to audit smart contracts that they created. The engagement was technical in nature and focused on identifying 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://github.com/DEGENTOKENTEAM/liquidity-backing>

Commit: bc7dc39

### v1.1

<https://github.com/DEGENTOKENTEAM/liquidity-backing>

Commit: 4c27b8a75cf820dfbe21f74af2f7595c2080810d

**Note-** The FeeManager contract was removed from the repo in v1.1

# 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)
<b>Critical</b>	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.
<b>High</b>	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.
<b>Medium</b>	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.
<b>Low</b>	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.
<b>Informational</b>	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 analysing 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:

Dependency / Import Path	Count
@openzeppelin/contracts-upgradeable/access/AccessControlEnumerableUpgradeable.sol	1
@openzeppelin/contracts-upgradeable/access/IAccessControlEnumerableUpgradeable.sol	1
@openzeppelin/contracts-upgradeable/proxy/utils/Initializable.sol	1
@openzeppelin/contracts-upgradeable/security/ReentrancyGuardUpgradeable.sol	1
@openzeppelin/contracts/access/AccessControlEnumerable.sol	1
@openzeppelin/contracts/interfaces/IERC20.sol	2
@openzeppelin/contracts/token/ERC20/IERC20.sol	3
@openzeppelin/contracts/token/ERC20/extensions/IERC20Metadata.sol	2
@openzeppelin/contracts/utils/introspection/ERC165.sol	1
@openzeppelin/contracts/utils/introspection/ERC165Checker.sol	1
@openzeppelin/contracts/utils/introspection/IERC165.sol	1
@openzeppelin/contracts/utils/math/Math.sol	1
@openzeppelin/contracts/utils/math/SafeMath.sol	1
@openzeppelin/contracts/utils/structs/EnumerableMap.sol	1



## 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.*

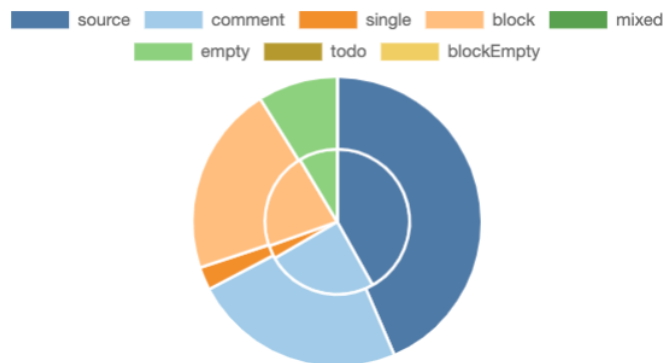
### v1.1

File Name	SHA-1 Hash
contracts/interfaces/ IController.sol	a5c0529e0c3b62d9c80ef33977f03 2b36379b453
contracts/interfaces/IPair.sol	d199631b71eaceb9187c70db145c 04a24289c1ba
contracts/interfaces/ISwapper.sol	a0b310eb465ae65b960ddba5a41a 8555ba219660
contracts/interfaces/ IL1Wrapper.sol	28df279aac3158f75e858c0ecb14e 509b0aa9740
contracts/interfaces/IRouter.sol	79936d719724f0172750cb610dc3 b97b8c78b767
contracts/interfaces/ IFeeManager.sol	6ef41e4f01e2337d0ed9c8a586f17 32b71030fc2
contracts/interfaces/IStrategy.sol	69e1ed9c9224649cb5772781b14d 42e5e5cc2837
contracts/interfaces/IFactory.sol	d3ae4693af2ce2df195a75798f2cb a7a10669249
contracts/interfaces/IVault.sol	c46fbdd3439b396041849c587464 8940f88cf5a7
contracts/interfaces/ IAggregator.sol	3894a8a876ea1698902253b7f6a0 b6c7b7b07eb2
contracts/Aggregator.sol	82833f7c05f26387712f638fbb0933 52721775e1

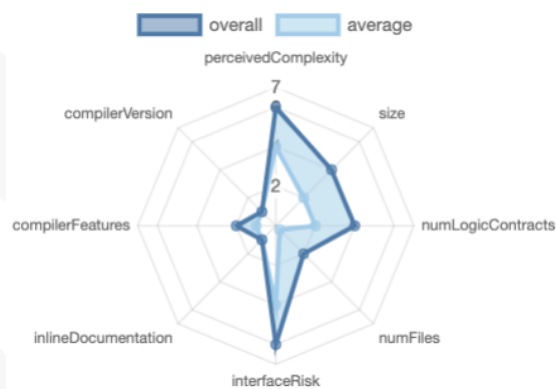
contracts/vaults/VaultBase.sol	b553942e9ef9b6389171a6dedbc6015c3aa66fe4
contracts/vaults/ERC20Vault.sol	90b2c54af8adb5244b5dcc171116c30de3c2ac40
contracts/BaseRoles.sol	c63ddcc68f38ff0a29e5e62511d60bf1ace52a19
contracts/Base.sol	dc7a2274d39fb70413b5b0d2106899738177a234
contracts/libraries/Helper.sol	9848856737ebb1f55486edec6c3691be8b37b759
contracts/libraries/ SwapLibrary.sol	90a8bef242a21810c560d056f02e113bab97393f
contracts/strategies/ StrategyTokenToWAVAX.sol	a1fc2fe931d480b817f0a5fec31ea34cf7601bce
contracts/strategies/ StrategyBase.sol	afb5eaa612ecd3842d60760a320cfe9d32cbaec1
contracts/strategies/ StrategyTokenToToken.sol	566f77c3f150aa63307924df490706209026934d
contracts/BaseUpgradeable.sol	a2bbd7f9aefa2c68506c0ac30f9e8a338c83d89f
contracts/Controller.sol	ec1959b719a9f78925d019590815d4c507abfb89
contracts/swappers/ SwapperWAVAX.sol	f17de88c1baa09b356ab31d60da20c1f8e7b05d1
contracts/swappers/ SwapperBase.sol	f32e169d593eaa392ed15c7b4434be0329cfc2e8
contracts/swappers/ SwapperProxy.sol	5f834205894551c8493c9799eb70a94bac183169

# Metrics

## Source Lines v1.0



## Risk Level v1.0



# Capabilities

## Components

 Contracts	 Libraries	 Interfaces	 Abstract
9	2	10	5

### Exposed Functions

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












 Public	 Payable
166	6

External	Internal	Private	Pure	View
142	127	0	8	82

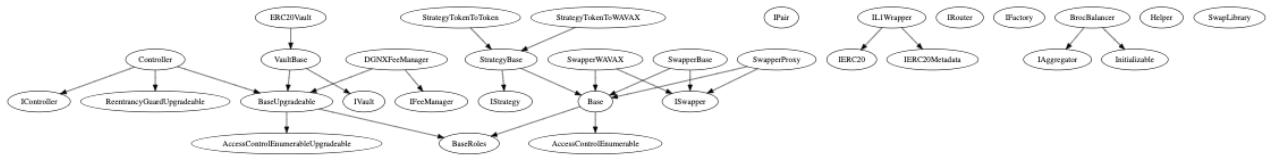
### StateVariables

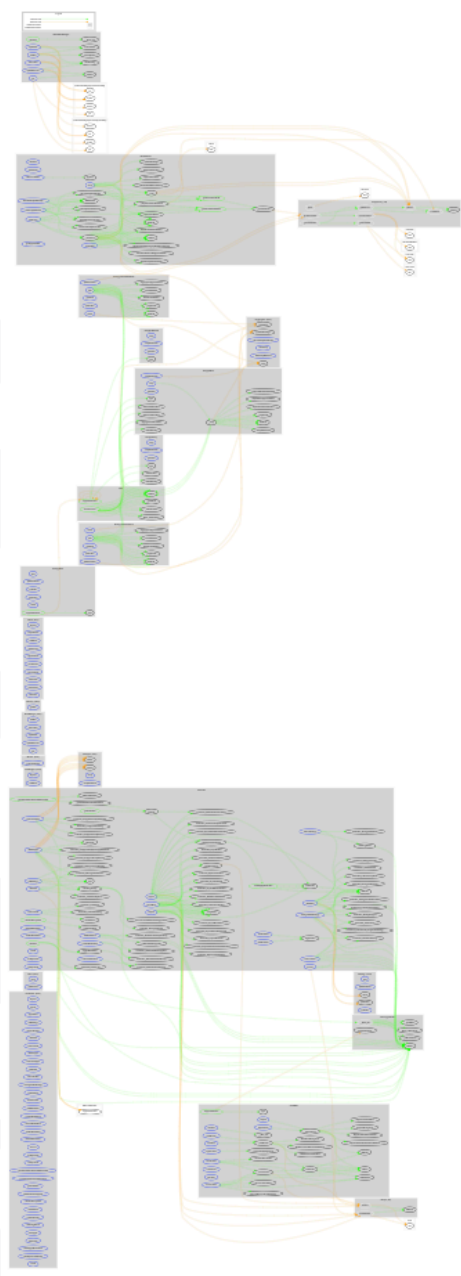
Total	 Public
45	36

### Capabilities

Solidity Versions observed	 Experimental Features	 Can Receive Funds	 Uses Assembly	 Has Destroyable Contracts	
<div>^0.8.0</div>		<div>yes</div>	<div></div>	<div></div>	
 Transfers ETH	 Low-Level Calls	 DelegateCall	 Uses Hash Functions	 ECRecover	 New/Create/Create2
<div>yes</div>	<div></div>	<div></div>	<div>yes</div>	<div></div>	<div></div>
 TryCatch	Σ Unchecked				
<div>yes</div>	<div></div>				

# Inheritance Graph





## 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. Overall checkup (Smart Contract Security)



## Overall checkup (Smart Contract Security)

Tested	Verified
✓	✓

### Legend

Attribute	Symbol
Verified / Checked	✓
Partly Verified	⚠
Unverified / Not checked	✗
Not available	—



# Modifiers and public functions v1.1

## Controller

## Aggregator

```
◆ payout
Ⓜ nonReentrant
◆ payoutRaw
Ⓜ nonReentrant
◆ deposit
Ⓜ onlyRole
Ⓜ nonReentrant
◆ addStrategy
Ⓜ onlyRole
◆ removeStrategy
Ⓜ onlyRole
◆ addVault
Ⓜ onlyRole
◆ removeVault
Ⓜ onlyRole
◆ addSwapper
Ⓜ onlyRole
◆ removeSwapper
Ⓜ onlyRole
◆ addToken
Ⓜ onlyRole
◆ removeToken
Ⓜ onlyRole
◆ enableToken
Ⓜ onlyRole
◆ disableToken
Ⓜ onlyRole
◆ reassignTokenStrategy
Ⓜ onlyRole
◆ addWantToken
Ⓜ onlyRole
◆ renameWantToken
Ⓜ onlyRole
◆ removeWantToken
Ⓜ onlyRole
◆ enableWantToken
Ⓜ onlyRole
◆ disableWantToken
Ⓜ onlyRole
◆ recover
Ⓜ nonReentrant
Ⓜ onlyRole
◆ setDepositOn
Ⓜ onlyRole
◆ setPayoutOn
Ⓜ onlyRole
```

```
◆ initialize
Ⓜ initializer
◆ <Constructor> 💰
◆ swap
◆ multiswap 💰
◆ multiswapBalanced 💰
◆ updateCommission
Ⓜ onlyOwner
◆ updateCommissionReceiver
Ⓜ onlyOwner
```

## Ownership/Authority Privileges

The address/wallet with the “ROLE\_GOVERNANCE” have the following privileges

- [Controller.sol](#)
  - *Deposit a token in the vault*
  - *Add/Change/Remove strategy, vault, and swapper addresses*

- *Add/Remove a new token address that can be deposited into the vault*
  - *Enable/Disable a token for being deposited*
  - *Reassign a token to another strategy for swapping*
  - *Add/Change/Remove Payout token*
  - *Enable/Disable payout tokens*
  - *Recover/Withdraw any token from the contract's balance*
  - *Recover/Withdraw unregistered tokens from the current vault contract's balance*
  - *Enable/Disable deposit and Payout*
- **Aggregator.sol**
    - *Update commission receiver address*
    - *Update commission up to 50% (recommended limit is 25 so do your own research here)*

*The write functions in the Swapper and Vault contracts can only be called by the 'Controller contract'*

**Please check if an OnlyOwner or similar restrictive modifier has been forgotten.**

# Source Units in Scope

## v1.0

File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score
contracts/interfaces/IController.sol	—————	1	200	108	95	7	71
contracts/interfaces/IPair.sol	—————	1	25	10	3	6	5
contracts/interfaces/ISwapper.sol	—————	1	51	29	16	25	9
contracts/interfaces/IL1Wrapper.sol	—————	1	14	11	5	5	12
contracts/interfaces/IRouter.sol	—————	1	11	10	3	6	3
contracts/interfaces/IFeeManager.sol	—————	1	67	26	10	34	11
contracts/interfaces/IStrategy.sol	—————	1	48	24	9	27	11
contracts/interfaces/IFactory.sol	—————	1	11	10	3	6	3
contracts/interfaces/IVault.sol	—————	1	118	40	24	64	21
contracts/interfaces/IAggregator.sol	—————	1	131	96	91	1	19
contracts/Aggregator.sol	1	—————	476	424	293	83	226
contracts/vaults/VaultBase.sol	1	—————	216	200	91	87	109
contracts/vaults/ERC20Vault.sol	1	—————	12	12	4	5	3
contracts/BaseRoles.sol	1	—————	24	24	6	15	10
contracts/Base.sol	1	—————	24	24	15	6	16
contracts/libraries/Helper.sol	1	—————	42	33	12	18	9
contracts/libraries/SwapLibrary.sol	1	—————	115	83	60	13	72
contracts/FeeManager.sol	1	—————	102	90	45	36	66
contracts/strategies/StrategyTokenToWAVAX.sol	1	—————	107	101	44	46	76
contracts/strategies/StrategyBase.sol	1	—————	65	59	18	33	23
contracts/strategies/StrategyTokenToToken.sol	1	—————	102	96	46	39	76
contracts/BaseUpgradeable.sol	1	—————	29	29	15	11	17
contracts/Controller.sol	1	—————	801	779	399	279	521
contracts/swappers/SwapperWAVAX.sol	1	—————	51	51	22	22	22
contracts/swappers/SwapperBase.sol	1	—————	130	130	63	50	83
contracts/swappers/SwapperProxy.sol	1	—————	62	62	33	22	28
<b>Totals</b>	<b>16</b>	<b>10</b>	<b>3034</b>	<b>2561</b>	<b>1425</b>	<b>946</b>	<b>1522</b>

## Legend

Attribute	Description
Lines	total lines of the source unit
nLines	normalised lines of the source unit (e.g. normalises functions spanning multiple lines)
nSLOC	normalised 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

## Critical issues

**No critical issues**

## High issues

**No high issues**

## Medium issues

**No medium issues**

## Low issues

**No low issues**

## Informational issues

**No informational issues**

## Audit Comments

We recommend you to use the special form of comments (NatSpec Format, Follow link for more information <https://docs.soliditylang.org/en/latest/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.

### 20. April 2023:

- Read whole report and modifiers section for more information
- Some of the contracts are upgradeable and they can be deployed again by the owner with new privileges and functionality
- The paidOut in the controller contract is checked for only 1 which means if there is an array which has only 1 paid out it will forever be true because it is not checking for every element in the iteration.
- Do your own research here

## SWC Attacks

ID	Title	Relationships	Status
<a href="#">SW C-1 36</a>	Unencrypted Private Data On-Chain	<a href="#">CWE-767: Access to Critical Private Variable via Public Method</a>	PASSED
<a href="#">SW C-1 35</a>	Code With No Effects	<a href="#">CWE-1164: Irrelevant Code</a>	PASSED
<a href="#">SW C-1 34</a>	Message call with hardcoded gas amount	<a href="#">CWE-655: Improper Initialization</a>	PASSED
<a href="#">SW C-1 33</a>	Hash Collisions With Multiple Variable Length Arguments	<a href="#">CWE-294: Authentication Bypass by Capture-replay</a>	PASSED
<a href="#">SW C-1 32</a>	Unexpected Ether balance	<a href="#">CWE-667: Improper Locking</a>	PASSED
<a href="#">SW C-1 31</a>	Presence of unused variables	<a href="#">CWE-1164: Irrelevant Code</a>	PASSED
<a href="#">SW C-1 30</a>	Right-To-Left-Override control character (U+202E)	<a href="#">CWE-451: User Interface (UI) Misrepresentation of Critical Information</a>	PASSED
<a href="#">SW C-1 29</a>	Typographical Error	<a href="#">CWE-480: Use of Incorrect Operator</a>	PASSED
<a href="#">SW C-1 28</a>	DoS With Block Gas Limit	<a href="#">CWE-400: Uncontrolled Resource Consumption</a>	PASSED

<a href="#">SW C-1 27</a>	Arbitrary Jump with Function Type Variable	<a href="#">CWE-695: Use of Low-Level Functionality</a>	<b>PASSED</b>
<a href="#">SW C-1 25</a>	Incorrect Inheritance Order	<a href="#">CWE-696: Incorrect Behavior Order</a>	<b>PASSED</b>
<a href="#">SW C-1 24</a>	Write to Arbitrary Storage Location	<a href="#">CWE-123: Write-what-where Condition</a>	<b>PASSED</b>
<a href="#">SW C-1 23</a>	Requirement Violation	<a href="#">CWE-573: Improper Following of Specification by Caller</a>	<b>PASSED</b>
<a href="#">SW C-1 22</a>	Lack of Proper Signature Verification	<a href="#">CWE-345: Insufficient Verification of Data Authenticity</a>	<b>PASSED</b>
<a href="#">SW C-1 21</a>	Missing Protection against Signature Replay Attacks	<a href="#">CWE-347: Improper Verification of Cryptographic Signature</a>	<b>PASSED</b>
<a href="#">SW C-1 20</a>	Weak Sources of Randomness from Chain Attributes	<a href="#">CWE-330: Use of Insufficiently Random Values</a>	<b>PASSED</b>
<a href="#">SW C-11 9</a>	Shadowing State Variables	<a href="#">CWE-710: Improper Adherence to Coding Standards</a>	<b>PASSED</b>
<a href="#">SW C-11 8</a>	Incorrect Constructor Name	<a href="#">CWE-665: Improper Initialization</a>	<b>PASSED</b>
<a href="#">SW C-11 7</a>	Signature Malleability	<a href="#">CWE-347: Improper Verification of Cryptographic Signature</a>	<b>PASSED</b>

<a href="#">SW C-11 6</a>	Timestamp Dependence	<a href="#">CWE-829: Inclusion of Functionality from Untrusted Control Sphere</a>	<b>PASSED</b>
<a href="#">SW C-11 5</a>	Authorization through tx.origin	<a href="#">CWE-477: Use of Obsolete Function</a>	<b>PASSED</b>
<a href="#">SW C-11 4</a>	Transaction Order Dependence	<a href="#">CWE-362: Concurrent Execution using Shared Resource with Improper Synchronization ('Race Condition')</a>	<b>PASSED</b>
<a href="#">SW C-11 3</a>	DoS with Failed Call	<a href="#">CWE-703: Improper Check or Handling of Exceptional Conditions</a>	<b>PASSED</b>
<a href="#">SW C-11 2</a>	Delegatecall to Untrusted Callee	<a href="#">CWE-829: Inclusion of Functionality from Untrusted Control Sphere</a>	<b>PASSED</b>
<a href="#">SW C-11 1</a>	Use of Deprecated Solidity Functions	<a href="#">CWE-477: Use of Obsolete Function</a>	<b>PASSED</b>
<a href="#">SW C-11 0</a>	Assert Violation	<a href="#">CWE-670: Always-Incorrect Control Flow Implementation</a>	<b>PASSED</b>
<a href="#">SW C-1 09</a>	Uninitialized Storage Pointer	<a href="#">CWE-824: Access of Uninitialized Pointer</a>	<b>PASSED</b>
<a href="#">SW C-1 08</a>	State Variable Default Visibility	<a href="#">CWE-710: Improper Adherence to Coding Standards</a>	<b>PASSED</b>
<a href="#">SW C-1 07</a>	Reentrancy	<a href="#">CWE-841: Improper Enforcement of Behavioral Workflow</a>	<b>PASSED</b>
<a href="#">SW C-1 06</a>	Unprotected SELFDESTRUCT Instruction	<a href="#">CWE-284: Improper Access Control</a>	<b>PASSED</b>

<a href="#">SW C-1 05</a>	Unprotected Ether Withdrawal	<a href="#">CWE-284: Improper Access Control</a>	<b>PASSED</b>
<a href="#">SW C-1 04</a>	Unchecked Call Return Value	<a href="#">CWE-252: Unchecked Return Value</a>	<b>PASSED</b>
<a href="#">SW C-1 03</a>	Floating Pragma	<a href="#">CWE-664: Improper Control of a Resource Through its Lifetime</a>	<b>PASSED</b>
<a href="#">SW C-1 02</a>	Outdated Compiler Version	<a href="#">CWE-937: Using Components with Known Vulnerabilities</a>	<b>PASSED</b>
<a href="#">SW C-1 01</a>	Integer Overflow and Underflow	<a href="#">CWE-682: Incorrect Calculation</a>	<b>PASSED</b>
<a href="#">SW C-1 00</a>	Function Default Visibility	<a href="#">CWE-710: Improper Adherence to Coding Standards</a>	<b>PASSED</b>



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