



**DcentraLab  
Diligence**



**HORD**

**Audit Report**

# **Hord ETHStaking**

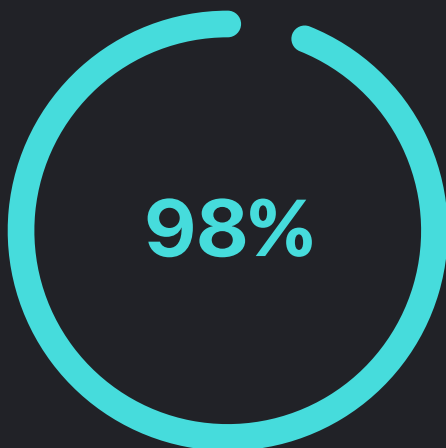
<https://www.app.hord.fi>

Provided By  **DcentraLab** on February 23, 2023

# Security Audit Score

## Pass

The DcentraLab Diligence team have confirmed that the security requirements to list this smart contract on digital asset exchanges have been met.



-  Low Risk
-  Small Risk
-  Medium Risk
-  High Risk

## Audit Report | Hord ETHStaking

### CodeBase:

<https://github.com/hord/smart-contracts>

### Commit:

[0c7c529e44958df8a0ba94fd63040f8dcb58f952](#)

### Fix Commit:

[f592b9b24e474953d4067585d3c4356204a731b9](#)

### Contracts Audited:

HETH and HordETHStakingManager

### Summary:

DcentraLab Diligence (DD) has performed all checks and verifications in its capacity to ascertain the safety of the code. However, it should be noted that misuse of the code, bad deployment practices, bad key management, exposing of private keys of the deployer and/or owner address and/or multi-sig signer addresses

### Risks:

DcentraLab Diligence (DD) has performed all checks and verifications in its capacity to ascertain the safety of the code. However, it should be noted that misuse of the code, bad deployment practices, bad key management, exposing of private keys of the deployer and/or owner address and/or multi-sig signer addresses and/or fee collector address and/or any exposition of the code to malicious actors may result in an exploit of the code and loss of state and/or funds.

Furthermore, there is always a chance that other Smart Contracts code could be written and deployed to cause the provided code by DD to act outside the intended scope by the client, to the point of causing state corruption or loss of funds to the client of the users of the code.

## Issues Severity Reference Table

### Type

#### Informational

This issue is not critical and does not pose an immediate threat to the functionality or security of the smart contract. It is simply an informational item that the auditors have identified and recommends addressing for best practices or to improve the overall performance of the contract.

#### Low

This issue is relatively minor and does not pose a significant risk to the functionality or security of the smart contract. While it is recommended to address these issues to ensure the highest level of quality and security, they are not likely to cause significant problems if left unaddressed.

#### Medium

This issue poses a moderate risk to the functionality or security of the smart contract. While it may not be immediately exploitable, it has the potential to cause problems in the future if left unaddressed. It is recommended to address these issues as soon as possible to prevent any potential negative impact on the contract.

#### High

This issue poses a significant risk to the functionality or security of the smart contract. Addressing these issues as soon as possible is recommended to prevent any potential negative impact on the contract. Failure to address these issues could result in significant problems and potential loss of funds or other assets.

#### Critical

This issue poses an immediate and severe risk to the functionality or security of the smart contract. It is recommended to address these issues immediately to prevent any potential negative impact on the contract. Failure to address these issues could result in catastrophic problems and significant loss of funds or other assets.



## Findings Summary

**7**  
Issues

- **Informational**
- **Low**
- **Medium Risk**
- **High Risk**
- **Critical Risk**

| ID | Title   | Severity      | Status       |
|----|---|---------------|--------------|
| 1  | SafeMath library usage should be specified for uint256 instead of   | Informational | Resolved     |
| 2  | No need for setting hordCongressMembersRegistry as it can be retrieved/accessed through hordCongress which is already part of hordUpgradeable | Informational | Acknowledged |
| 3  | getAmountOfHETHforETH() getter function takes arbitrary data which can lead to wrong calculations   | Informational | Acknowledged |
| 4  | Precision value hardcoded   | Informational | Resolved     |
| 5  | Function userDepositETH() does not follow CEI standard  | Informational | Resolved     |
| 6  | Unnecessary first brackets as calculations are done in linear order without operation based prioritization                                    | Informational | Resolved     |
| 7  | Precision value hardcoded   | Informational | Resolved     |

## Complete Analysis

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### HETH Findings:

ID 1:

Status: Resolved

**Informational | SafeMath library usage should be specified for uint256 instead of**

@ L17;

Description: SafeMath library which is only usable with uint256 type is defined for \* or in other words general use.

Recommendation: We recommend restricting SafeMath usage only to uint256.

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### HordETHStakingManager Findings:

ID 2:

Status: Acknowledged

**Informational | No need for setting hordCongressMembersRegistry as it can be retrieved/accessed through hordCongress which is already part of hordUpgradeable**

@ L38; L99;

Description: Inside HordETHStakingManager contract we're setting the hordCongressMembersRegistry, which is either way accessible through hordCongress.

Recommendation: Consider retrieving the congress members registry through congress on contract initialization, or retrieve it dynamically on isMember function calls when needed without saving it in contract storage.

## Complete Analysis

ID 3:

Status: Acknowledged

**Informational | `getAmountOfHETHforETH()` getter function takes arbitrary data which can lead to wrong calculations**

@ L269-L290

Description: Getter function takes data which is arbitrary and can therefore be unreliable, since there is no data sanitization users can potentially receive wrong return data.

Recommendation: We recommend sanitizing data through the existing flow.

ID 4:

Status: Resolved

**Informational | Precision value hardcoded**

@ L282

Description: Precision value is hardcoded.

Recommendation: We recommend storing precision value in a constant instead of hardcoding it.

ID 5:

Status: Resolved

**Informational | Function `userDepositETH()` does not follow CEI standard**

L226-L257

Description: Function does not follow Checks-effects-interactions standard, which could in some cases lead to vulnerabilities exploitable through reentrancy.

Recommendation: Reorder function flow to follow the CEI standard - in this case move deposit call to be after the information update section.

## Complete Analysis

ID 6:

Status: Resolved

**Informational | Unnecessary first brackets as calculations are done in linear order without operation based prioritization**

@ L172

Description: There are unnecessary brackets present in calculation at line 172. Brackets are unnecessary because there is no operation prioritization when it comes to function calls.

Recommendation: Remove the brackets from the computation.

ID 7:

Status: Resolved

**Informational | Precision value hardcoded**

@ L151-L193

Description: We noticed quite a lack of documentation in the `setValidatorStats()` function.

Recommendation: Add proper annotations to the function so external parties can understand it more easily.

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# **DcentraLab Diligence**

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