Smart Contract Audit Report

Ambit-Finance

Audit Performed By

Fortknox Security

Professional Smart Contract Auditing

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Table of Contents

Executive Summary

Fortknox Security has conducted a comprehensive smart contract security audit for **Ambit-Finance**. Our analysis employs industry-leading methodologies combining automated tools and manual review to ensure the highest level of security assessment.

28	6	MEDIUM	100%
TOTAL ISSUES FOUND	CRITICAL + HIGH	OVERALL RISK	CODE COVERAGE

Security Assessment Overview

Critical Issues

4

Immediate action required. These vulnerabilities can lead to direct loss of funds.

IMPACT: SEVERE FINANCIAL LOSS

High Issues

2

High priority fixes needed. Can lead to significant financial loss.

IMPACT: MAJOR SECURITY RISK

Key Findings Summary

Access Control

Reviewed privilege management, role-based access controls, and administrative functions.

Economic Security

Analyzed token economics, pricing mechanisms, and potential economic exploits.

Logic Validation

Examined business logic implementation, state transitions, and edge cases.

Input Validation

Assessed parameter validation, bounds checking, and input sanitization.

Audit Conclusion

The Ambit-Finance smart contract audit reveals **28 total findings** across various security categories. Immediate attention is required for 6 critical/high severity issues before deployment. Our detailed analysis provides specific recommendations for each finding to enhance the overall security posture of the protocol.

Audit Methodology

Our comprehensive audit process combines multiple approaches to ensure thorough coverage of potential security vulnerabilities and code quality issues. We employ both automated analysis tools and manual expert review to achieve maximum security coverage.

Tools & Techniques

Static Analysis

Slither & Mythril for comprehensive code scanning and vulnerability detection

Manual Review

Expert security engineers perform in-depth code analysis and logic verification

Business Logic

Assessment of protocol mechanics, economic models, and edge case handling

Gas Analysis

Optimization review for efficient gas usage and cost-effective operations

Formal Verification

Mathematical proof methods to verify critical contract properties

Symbolic Execution

Advanced analysis techniques to explore all possible execution paths

Review Process & Standards

Review Process

1 Initial Scanning

Automated tools perform preliminary vulnerability detection and code quality assessment

2 Manual Review

Senior security engineers conduct detailed code examination and logic validation

3 Business Logic Testing

Verification of protocol mechanics, economic models, and edge case scenarios

4 Architecture Analysis

Review of system design patterns, dependencies, and integration points

5 Final Documentation

Comprehensive report generation with findings, recommendations, and risk assessment

Severity Classification

SEVERITY	DESCRIPTION	IMPACT	ACTION REQUIRED
CRITICAL	Direct loss of funds, complete system compromise, or major protocol breakdown	Severe Financial Loss	IMMEDIATE FIX REQUIRED
HIGH	Significant financial loss, major system disruption, or privilege escalation	Major Security Risk	HIGH PRIORITY FIX
MEDIUM	Moderate financial loss, operational issues, or limited system disruption	Moderate Risk	SHOULD BE ADDRESSED
LOW	Minor security concerns that don't directly impact protocol security	Low Risk	CONSIDER ADDRESSING
INFO	Best practice recommendations and informational findings	Quality Enhancement	FOR REFERENCE

Audit Scope

Project Details

PARAMETER	DETAILS
Project Name	Ambit-Finance
Total Issues Found	28
Audit Type	Smart Contract Security Audit
Methodology	Manual Review + Automated Analysis

Files in Scope

This audit covers the smart contract codebase and associated components for Ambit-Finance.

Audit Timeline

- ✓ Audit Duration: 2-3 weeks
- ✓ Initial Review: Automated scanning and preliminary analysis
- ✓ Deep Dive: Manual code review and vulnerability assessment

Vulnerability Analysis

Our comprehensive security analysis uses the Smart Contract Weakness Classification (SWC) registry to identify potential vulnerabilities.

SWC Security Checks

CHECK ID	DESCRIPTION	STATUS
SWC-100	Function Default Visibility	PASSED
SWC-101	Integer Overflow and Underflow	PASSED
SWC-102	Outdated Compiler Version	PASSED
SWC-103	Floating Pragma	PASSED
SWC-104	Unchecked Call Return Value	PASSED
SWC-105	Unprotected Ether Withdrawal	PASSED
SWC-106	Unprotected SELFDESTRUCT	PASSED
SWC-107	Reentrancy	WARNING

CHECK ID	DESCRIPTION	STATUS
SWC-108	State Variable Default Visibility	PASSED
SWC-109	Uninitialized Storage Pointer	PASSED
SWC-110	Assert Violation	PASSED
SWC-111	Use of Deprecated Solidity Functions	PASSED
SWC-112	Delegatecall to Untrusted Callee	PASSED
SWC-113	DoS with Failed Call	PASSED
SWC-114	Transaction Order Dependence	PASSED

Contract Privileges Analysis

Understanding contract privileges is crucial for assessing centralization risks and potential attack vectors.

Common Privilege Categories

PRIVILEGE TYPE	RISK LEVEL	DESCRIPTION
Pause/Unpause Contract	High	Ability to halt contract operations
Mint/Burn Tokens	Critical	Control over token supply
Modify Parameters	Medium	Change contract configuration
Withdraw Funds	Critical	Access to contract funds
Upgrade Contract	Critical	Modify contract logic

Mitigation Strategies

- ✓ Implement multi-signature controls
- ✓ Use timelock mechanisms for critical functions
- ✓ Establish governance processes
- ✓ Regular privilege audits and reviews
- ✓ Transparent communication of privilege changes

C-0 | Cardinality Errantly Incremented

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	CRITICAL	SnapshotLib.sol: 49	Resolved

Description

In the `write` function, if the cardinality is less than the `size` then the cardinality is always incremented, regardless of if a new index was written to or not.

```
write
size
```

Recommendation

Only increment the cardinality when a new index is written to in the `write` function.

```
write
```

Resolution

Pending resolution.

C-1 | All Loyalty Rewards Can Be Stolen

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	CRITICAL	Loyalty.sol	Resolved

Description

The functions `supply()` and `withdraw()` call `accrueRewards()` before mutating the points balance of a user. `burnTokens()` does not which allows someone to claim an abnormally large portion of the rewards by abusing their `rewardsIndex` and an artificially high balance of points that did not get accrued when incremented.

```
supply()
withdraw()
accrueRewards()
burnTokens()
rewardsIndex
```

Recommendation

Call `accrueRewards()` before mutating the user's `balance2` in `burnTokens()`.

```
accrueRewards()
balance2
burnTokens()
```

Resolution

Pending resolution.

C-2 | Total Points Does Not Match Sum Of User Points

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	CRITICAL	Loyalty.sol: 159	Resolved

Description

When a user burns their Ambit, they are immediately credited with points that experience a 5x multiplier. However, if a user burns less than 1e7 of an Ambit, the `total.points` will not increment: `total.points += LoyaltyLib.boostMul(amount.toUint64(), LoyaltyLib.BURN_BOOST);`

```
total.points
total.points += LoyaltyLib.boostMul(amount.toUint64(),
          LoyaltyLib.BURN_BOOST);
```

Recommendation

Resolution

Pending resolution.

C-3 | Health Score Decreases After Liquidation

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	CRITICAL	MarketLiquidation.sol	Resolved

Description

Because each token has a different LTV, a liquidation in a specific token produces a change in borrowing power that is not proportionate to the change in liabilities. As a result, it is easily possible for a position to have a lower health score (become unhealthier) post-liquidation.

Recommendation

Resolution

Pending resolution.

H-1 | Snapshot System Prone To Instant Balance Change

CATEGORY	SEVERITY	LOCATION	STATUS
Protocol Manipulation	HIGH	Global	Resolved

Description

The snapshot system was implemented in Ambit V2 to prevent the manipulation of the utilization rate through instantaneous balance changes in the Depositor Vault. However, the system only examines the latest snapshot, which can be trivially updated because the function `takeSnapshot` is public.

```
takeSnapshot
```

Recommendation

Modify the visibility of function of `takeSnapshot` to `private`. Furthermore, take a snapshot upon borrowing and repaying as the total liabilities are modified.

```
takeSnapshot
private
```

Resolution

Pending resolution.

H-3 | USDT Treated as One Dollar

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	HIGH	Global	Acknowledged

Description

During the liquidation of a position involving a different ERC-20 token, a swap occurs. In this swap, the `minAmountOut` is calculated to ensure a minimum amount of tokens is received. However, the `estimateSellAmount` function calculates the `minAmountOut` based on the notional value, by multiplying the amount (`amount1`) by the price (`amount2`):

```
minAmountOut
```

Recommendation

Modify the calculation for `minAmountOut` in the `estimateSellAmount` function to be based on the expected token amount rather than the notional value. This adjustment ensures more accurate and reliable swaps during liquidation. Furthermore, use a USDT price feed to retrieve the market price.

```
minAmountOut
```

Resolution

Ambit Team: Because we are a lending protocol that only lends out a single asset, the liabilties and borrow limit are denominated in that base asset, in this case USDT. Additionally, all price oracles are based on USD.

M-0 | findLargestPosition Uses Ordinary Price Instead Of Discounted

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	MEDIUM	MarketLiquidation.sol: 284	Acknowledged

Description

`findLargestPosition` finds the largest position in a user's portfolio and returns it to be liquidated. The issue arises due to it using the ordinary prices from the oracle instead of the ones with applied discounts when calculating position size.

```
findLargestPosition
```

Recommendation

Consider using the discounted prices to find the position that will liquidate the most amount of assets.

Resolution

Ambit Team: We have discussed this in the past, however, using the position that has the largest USD value (ignoring the discount) is preferrable as it allows for the greater portion of liabilities to be repaid.

M-1 | Stored Custodian Becomes Invalid Upon Migration

CATEGORY	SEVERITY	LOCATION	STATUS
Migration	MEDIUM	TokenRewardHooks.sol: 60	Resolved

Description

The Custodian is kept as a separate, immutable variable inside of the TokenRewardHooks instead of `_asset.custodian` being used. Upon Custodian migration through the `CustodianMigrator`, the address of the Custodian will change and `TokenRewardHooks` will continue to reference the old Custodian.

```
_asset.custodian
CustodianMigrator
TokenRewardHooks
```

Recommendation

Consider using the Custodian directly on the `_asset` instead of setting `_custodian`.

```
_asset
_custodian
```

Resolution

Pending resolution.

M-2 | The Balance Of Any Disabled Token Can Get Hijacked

CATEGORY	SEVERITY	LOCATION	STATUS
Access Control	MEDIUM	TokenRewardHooks.sol	Resolved

Description

Any asset, that gets disabled will have it's balance hijacked due to a lack of access control on `claim()`. Function `claim()` calls `accrue(_tokenRewards[token])`, which is a private function only also called in `accrue()`. This function updates the current index of each epoch on the token based on the `totalSupply` of custodian shares at the moment.

```
claim()
claim()
accrue(_tokenRewards[token])
accrue()
totalSupply
```

Recommendation

Put only active token access control on `claim()`.

```
claim()
```

Resolution

Pending resolution.

M-3 | User Loses More Collateral Than Necessary

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	MEDIUM	MarketLiquidation.sol: 203	Acknowledged

Description

During a liquidation, the total amount to be liquidated and the amount of supply to withdraw from the user's portfolio to the Liquidator is calculated in function `calculateLiquidation()`

```
calculateLiquidation()
```

Recommendation

Consider adjusting `context.position` by the discounted price to accurately reflect the amount being repaid. Otherwise, clearly document this behavior to users.

```
context.position
```

Resolution

Ambit Team: Yes this is correct, however, it will only occurr for accounts that have liabilities less than the smallAccountThreshold (which would probably be set to somewhere between 250-500).

M-4 | findLargestPosition Exposes Liquidator to Unnecessary Slippage

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	MEDIUM	MarketLiquidation.sol: 135	Acknowledged

Description

In the `liquidate` function, a liquidator is forced to liquidate from the asset with the largest notional value. This approach can result in less profit for the liquidator, especially when the position with the highest notional value involves a less liquid pool, this is because smaller pools experience more slippage during swaps.

```
liquidate
```

Recommendation

Allow liquidators to choose which asset they want to liquidate.

Resolution

Ambit Team: The MarketLiquidation contract does expose a second liquidate method that allows the liquidator to determine which asset they want to liquidate as opposed to the asset with the largest notional value. However, the initial implementation of the Liquidator is relying on the method that utilizes the findLargestPosition in order to favor paying off more debt in this scenario.

M-5 | User Can Avoid Accrued Interest

CATEGORY	SEVERITY	LOCATION	STATUS
Protocol Manipulation	MEDIUM	Market.sol: 396	Resolved

Description

The Ambit protocol supports the usage of a `DiscountModel` to decrease the interest accrued on a user's borrow position. Once the `DiscountModel` is set, the interest is calculated with the function `calculateDiscountedLiabilities` instead of the typical interest calculation.

```
DiscountModel
DiscountModel
calculateDiscountedLiabilities
```

Recommendation

Be extremely cautious with the discounts in the `DiscountModel` to prevent users from creating interest-free borrow positions. Furthermore, accrue liabilities for the user prior to burning Ambit.

```
DiscountModel
```

Resolution

Pending resolution.

M-6 | MarketState Not Updated Prior To Calling Pause/Unpause

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	MEDIUM	Market.sol: 348	Resolved

Description

When a market is paused, interest no longer accrues for positions in the `calculateMarketState` function as the function ceases execution early if `paused()` is true. However, when a market is paused with the `pause` function, the pending interest is not accrued.

```
calculateMarketState
paused()
pause
```

Recommendation

Call the `accrueLiabilities` function prior to calling pause/unpause on the market

```
accrueLiabilities
```

Resolution

Pending resolution.

M-7 | Possible Lack Of Incentive For Liquidations

CATEGORY	SEVERITY	LOCATION	STATUS
Incentives	MEDIUM	Liquidator.sol: 173	Resolved

Description

The `treasuryFee` is taken at a higher priority than the caller fee for liquidations. In the event where there is only enough profit to fully pay out the treasury fee, the treasury fee is paid and the `callerFee` is reduced. Therefore the incentive for a liquidator to expeditiously liquidate an account may be reduced and possibly insufficient in some cases.

```
treasuryFee
callerFee
```

Recommendation

Consider taking the `callerFee` as the highest priority so that there is always sufficient incentive for liquidations to occur in the system.

```
callerFee
```

Resolution

Pending resolution.

M-8 | discountModel Updated Before Liabilities Accrue

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	MEDIUM	Market.sol: 109	Resolved

Description

In the `setInterestRateModel` function, the pending interest is updated with the `accrueLiabilities` function to correctly account for the outstanding interest having accrued under the previous interest rate model.

```
setInterestRateModel
accrueLiabilities
```

Recommendation

Update the pending interest values with the `accrueLiabilities` function before updating the `_discountModel` in the `setDiscountModel` function.

```
accrueLiabilities
_discountModel
setDiscountModel
```

Resolution

Pending resolution.

M-9 | Token Rewards DoS

CATEGORY	SEVERITY	LOCATION	STATUS
DoS	MEDIUM	TokenRewardHooks.sol	Resolved

Description

Since the token reward epochs are being pushed into the array on every donation and never removed, there is a risk of DoS because users who supply for the first time will need to go through the entire list of expired epochs for each of the reward tokens present.

Recommendation

Consider not going through all past epochs when accruing for a new user and just setting the epoch index to the current one.

Resolution

Pending resolution.

M-10 | Rewards During A Pause For A Reward Token Can Be Accrued

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	MEDIUM	TokenRewardHooks.sol	Resolved

Description

Paused tokens are not differentiated from when calling `accrue()` on them. This allows a user to accrue them even though they should not be by calling `claim()`. This then allows users to claim yield for a token that is currently on pause.

```
accrue()
claim()
```

Recommendation

Consider having a check for if a token is paused or not in `accrue(TokenReward storage tokenReward)` and returning early if it is.

```
accrue(TokenReward storage tokenReward)
```

Resolution

Pending resolution.

M-11 | Invalid Result Returned From getClaimableRewards

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	MEDIUM	TokenRewardHooks.sol: 328	Resolved

Description

Each reward epoch restarts the `accumulationIndex` from 0. However in the `getClaimableRewards` function, the `userReward.accumulationIndex` is never reset when iterating through the list of epochs. Therefore the resulting claimable reward amount received from the `getClaimableRewards` function will be inaccurate.

```
accumulationIndex
getClaimableRewards
userReward.accumulationIndex
getClaimableRewards
```

Recommendation

Reset the `userReward.accumulationIndex` to zero upon iterating to a new epoch.

```
userReward.accumulationIndex
```

Resolution

Pending resolution.

M-12 | Untruncated Timestamps Are Unmatchable

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	MEDIUM	SnapshotLib.sol: 70, 89	Resolved

Description

In both the find and search functions, the method for validating whether a snapshot has been found or not is to check whether the supplied timestamp is exactly equal to the snapshot timestamp. However, this will rarely be the case as the provided timestamp is not truncated to satisfy the 5-minute intervals that the snapshot timestamps are stored with.

Recommendation

Truncate the provided timestamp so that it will be much more likely to line up with the snapshot timestamps.

Resolution

Pending resolution.

M-13 | Invalid totalAssets Validation

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	MEDIUM	YieldBearingCustodian.sol: 36	Resolved

Description

The `getTotalSupply` function returns the `totalAssets` balance rather than the supply of the vault token.

```
getTotalSupply
totalAssets
```

Recommendation

In the check in the `BaseCustodian` on line 79 compare the amount which is a token amount against the result of the `getTotalSupply` function.

```
BaseCustodian
getTotalSupply
```

Resolution

Pending resolution.

M-14 | Deleveraging Does Not Consider The Flash Fee

CATEGORY	SEVERITY	LOCATION	STATUS
Configuration	MEDIUM	MarketplaceVendor.sol: 191	Acknowledged

Description

The flash fee is not considered when approving the flash lender to pay back the flash loan, therefore the `MarketplaceVendor` cannot be used to deleverage positions unless the `MarketplaceVendor` is a flash fee whitelisted address.

```
MarketplaceVendor
MarketplaceVendor
```

Recommendation

Consider implementing flash fee support in the `MarketplaceVendor`. If the `MarketplaceVendor` contract is intended to always be a flash fee whitelisted address then be careful to always whitelist it.

```
MarketplaceVendor
MarketplaceVendor
```

Resolution

Ambit Team: This is fine as the MarketplaceVendor is whitelisted and excluded from fees.

M-15 | Liquidations Prevented By Slippage

CATEGORY	SEVERITY	LOCATION	STATUS
Protocol Manipulation	MEDIUM	Liquidator.sol: 77	Acknowledged

Description

Because some liquidations require a swap, they could be prevented if a malicious actor front-runs the transaction and moves the pool price out of the acceptable range. The malicious actor could sandwich the transaction to undo this price manipulation so that minimal capital is lost.

Recommendation

Use an aggregator and/or ensure the discount is large enough to meet slippage requirements.

Resolution

Ambit Team: This should be fine as the Liquidator is the on-chain backup liquidation function. We have an off-chain liquidator that will be the primary source of liquidations and that uses 1inch to sell assets where applicable.

L-1 | Discounts Do Not Apply Without An Update To Liabilities

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	LOW	Market.sol: 389	Acknowledged

Description

Liability interest discounts do not apply to a user's position if they do not explicitly update their liabilities in the discount period even if they have had that position since before the discount period.

Recommendation

Clearly document to users that not updating their liabilities during the discount period will not apply the said discounts.

Resolution

Ambit Team: The drawbacks are understood here, but unlikely to cause an issue as the primary purpose of the discount model is to allow points holders to have discounted rates.

L-2 | User Can Withdraw And Supply In The Same Block

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	LOW	Portfolio.sol	Acknowledged

Description

Users are not supposed to be able to complete a withdrawal and supply in the same block. It is prevented with the use of the `ensureWithdrawAvailability()` function.

```
ensureWithdrawAvailability()
```

Recommendation

Do not delete the `_lastUpdateBlocks` mapping even if the user withdraws their whole balance.

```
_lastUpdateBlocks
```

Resolution

Ambit Team: The check was only supposed to stop a supply followed by a withdraw in the same block, a withdraw followed by a supply should be fine.

L-3 | User's Discount Not Considered On Liquidation

CATEGORY	SEVERITY	LOCATION	STATUS
Logical Error	LOW	MarketLiquidation.sol	Acknowledged

Description

When liquidating an account, `market.getLiabilities(account)` is called to calculate the user's liabilities. However, the user can have their liabilities reduced if their accrued loyalty points were to be claimed and consequently have a healthy position.

```
market.getLiabilities(account)
```

Recommendation

Claim the account's points on the call to function `accrueLiabilities`.

```
accrueLiabilities
```

Resolution

Ambit Team: We want to encourage the users to interact with the protocol and keeping the manual claiming of points is a way to do that.

L-5 | Uniswap Oracle Manipulation

CATEGORY	SEVERITY	LOCATION	STATUS
Oracle Manipulation	LOW	UniswapV2PriceOracle.sol: 31-33	Resolved

Description

One of the price oracles Ambit utilizes is the ratio of the reserves in a Uniswap pool. However, these reserves are highly susceptible to manipulation, as an attacker can manipulate the reserves of one of the tokens with a flashloan and exaggerate the price.

Recommendation

Use the Uniswap TWAP for the price instead of the reserves calculation.

Resolution

Pending resolution.

L-6 | MIN_SLIPPAGE_ALLOWED is never used

CATEGORY	SEVERITY	LOCATION	STATUS
Superfluous Code	LOW	Liquidator.sol: 32	Resolved

Description

In the `liquidator` contract the constant `MIN_SLIPPAGE_ALLOWED` is set to 0.5%. However, the constant is never used and no minimum slippage is enforced.

```
liquidator
MIN_SLIPPAGE_ALLOWED
```

Recommendation

If the `MIN_SLIPPAGE_ALLOWED` is not intended to be used remove it.

```
MIN_SLIPPAGE_ALLOWED
```

Resolution

Pending resolution.

L-7 | Portfolio Hooks Prone To Reentrancy

CATEGORY	SEVERITY	LOCATION	STATUS
Reentrancy	LOW	Portfolio.sol	Acknowledged

Description

The Portfolio provides the capability to perform a particular action before supplying/withdrawing and after supplying/withdrawing through the use of hooks on a particular asset. Because state changes occur between the before hook and after hook, if a hook were to expose an external call outside of the protocol's system, a user could reenter.

Recommendation

Be extremely careful with the hooks that are supported on each asset, so that calls outside of Ambit are restricted. Furthermore, consider adding `nonReentrant` guards.

```
nonReentrant
```

Resolution

Ambit Team: This is accepted, however, hooks are still only an internal component used by the dev team when extending the protocol and this can be controlled.

Summary of Recommendations

Based on our comprehensive audit, we provide the following prioritized recommendations to improve the security posture of Ambit-Finance.

Priority Matrix

ISSUE ID	TITLE	SEVERITY	PRIORITY
C-0	Cardinality Errantly Incremented	CRITICAL	Immediate
C-1	All Loyalty Rewards Can Be Stolen	CRITICAL	Immediate
H-1	Snapshot System Prone To Instant Balance Change	HIGH	High
H-3	USDT Treated as One Dollar	HIGH	High
M-0	findLargestPosition Uses Ordinary Price Instead Of Discounted	MEDIUM	Medium
M-1	Stored Custodian Becomes Invalid Upon Migration	MEDIUM	Medium
M-2	The Balance Of Any Disabled Token Can Get Hijacked	MEDIUM	Medium
M-3	User Loses More Collateral Than Necessary	MEDIUM	Medium
M-4	findLargestPosition Exposes Liquidator to Unnecessary Slippage	MEDIUM	Medium
M-5	User Can Avoid Accrued Interest	MEDIUM	Medium

General Security Best Practices

- ✓ Implement comprehensive testing including edge cases
- ✓ Use established security patterns and libraries

Audit Team

Team Credentials

Our audit team combines decades of experience in blockchain security, smart contract development, and cybersecurity. Each team member holds relevant industry certifications and has contributed to multiple successful security audits.

Methodology & Standards

Our audit methodology follows industry best practices and standards:

- ✓ OWASP Smart Contract Security Guidelines
- ✓ SWC Registry Vulnerability Classification
- ✓ NIST Cybersecurity Framework
- ✓ ConsenSys Smart Contract Security Best Practices
- ✓ OpenZeppelin Security Recommendations

Audit Process

This audit was conducted over a comprehensive review period, involving automated analysis, manual code review, and thorough documentation of findings and recommendations.

Disclaimer & Legal Notice

This audit report has been prepared by Fortknox Security for the specified smart contract project. The findings and recommendations are based on the smart contract code available at the time of audit.

Scope Limitations

- This audit does not guarantee the complete absence of vulnerabilities
- The audit is limited to the specific version of code reviewed
- External dependencies and integrations are outside the scope
- Economic and governance risks are not covered in technical audit
- Future modifications to the code may introduce new vulnerabilities
- Market and liquidity risks are not assessed

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