Financial Regulatory Compliance:
Using Coherent software for Regulation W

Case Study from

Coherent Knowledge Systems, LLC

http://coherentknowledge.com

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Banking Regulation

Problem:

- Complex set of regulations govern wide range of operations and activities that financial institutions engage in every day
- Compliance and *Proof* of compliance are essential
  - External: Outside regulators
  - Internal: Company's management chain
- Automated support needed –
  - Current methods are expensive and unwieldy

Solution:

- Coherent Knowledge Systems – software and services
  - Automates decisions for compliance with banking regulation
  - Advanced database with automated logical reasoning
  - Explains fully how compliance decisions were reached

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

USA Federal Reserve Act: Regulation W

- Concerns activities/transactions between a bank and "affiliates"
- Designed to limit risks
- Defines who is an "affiliate", what is a "covered transaction", whether a particular transaction is permitted

San Francisco's Federal Reserve building

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Interpreting Regulation W: 3 key aspects

1. *Is the transaction's counterparty an affiliate of the bank?*

2. *Is the transaction contemplated a covered transaction?*

3. *Is the amount of the transaction permitted ?*

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Document from Federal Reserve

Determining Whether Regulation W Applies

Two initial questions need to be answered in determining whether a transaction is subject to Regulation W. The first is whether the transaction is between a bank and an "affiliate" of the bank. The second is whether the transaction is a "covered transaction."

Affiliate Definition. Regulation W applies to covered transactions between a bank and an affiliate of the bank.

The definition of an affiliate for purposes of Regulation W is set forth in section 223.2. The definition is broad, and includes:

- Any company that controls the bank;
- Any company that is controlled by a company that controls the bank;
- Any company that is controlled, directly or indirectly, by trust or otherwise, by or for the benefit of shareholders who beneficially or otherwise control, directly or indirectly, by trust or otherwise, the bank or any company that controls the bank;
- Any company in which a majority of its directors, trustees, or general partners (or individuals exercising similar functions) constitute a majority of the persons holding any such office with the bank or any company that controls the bank;
- Any company, including a real estate investment trust, that is sponsored and advised on a contractual basis by the bank or an affiliate of the bank;
- Any registered investment company for which the bank or any affiliate of the bank serves as an investment adviser;
- Any unregistered investment fund for which the bank or any affiliate of the bank serves as an investment adviser, if the bank and its affiliates own or control in the aggregate more than 5 percent of any class of voting securities or more than 5 percent of the equity capital of the fund[1];

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Example Scenario:
A Loan to the Maui Sunset Hotel Group

Pacific Bank is considering a loan of $23 million dollars to the Maui Sunset hotel group to open a new location on the island.

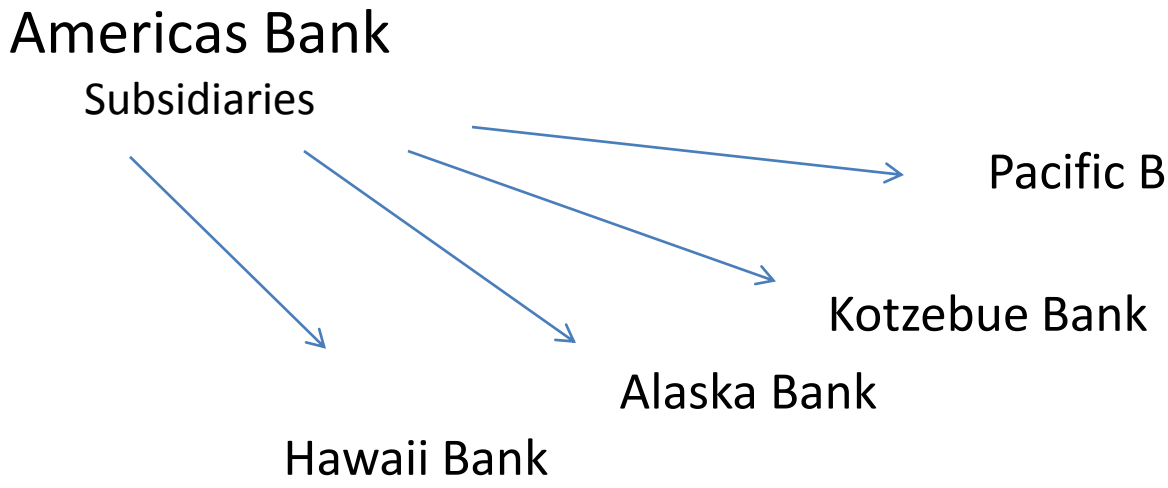
Is this transaction allowed under Regulation W?

As part of that, one must ascertain if Maui Sunset could be considered an affiliate under Regulation W.

To watch the demo video, click here <TBD, on Coherent website>

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Relationships and Other Data in the Demo Scenario



Capital Stock and Surplus

Pacific Bank	$2500 million

Previous Loans

Pacific Bank	Hawaii Bank	$145 million
Pacific Bank	Alaska Bank	$245 million
Pacific Bank	Kotzebue Bank	$100 million

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Pertinent Regulation W Rules and Definitions

For this scenario, the following specific rules and definitions from the Federal Reserve Act were utilized:

Section 223.2 Definition of Affiliate :

- Any company, including a real estate investment trust, that is sponsored and advised on a contractual basis by the bank or an affiliate of the bank.
- A financial subsidiary of the bank

Section 223.3(h) Definition of Covered Transaction:

- An extension of credit to an affiliate

<u>Quantitative Limitations</u>.

- A bank may not engage in a new covered transaction with an affiliate if the aggregate amount of covered transactions between the bank and the affiliate would be in excess of 10 percent of the bank's capital stock and surplus after consummation of the new transaction.
- Aggregate covered transactions between the bank and all affiliates are limited to 20 percent of the bank's capital stock and surplus.

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Regulation W Becomes Coherent Logic

Using Coherent tools:

- Regulation W is translated from English into logic, rapidly.
- A knowledge base is created, ready to make decisions and provide detailed explanations.

Sample English Text:

> Any company that is advised on a contractual basis by the bank or an affiliate of the bank is considered an affiliate of the bank.

Logical representation:

```
114    affiliate(of)(?x1,?x2) :-
115    ( advised(by)(?x1,?x2)
116      or
117      (affiliate(of)(?x3,?x2) and advised(by)(?x1,?x3))).
```

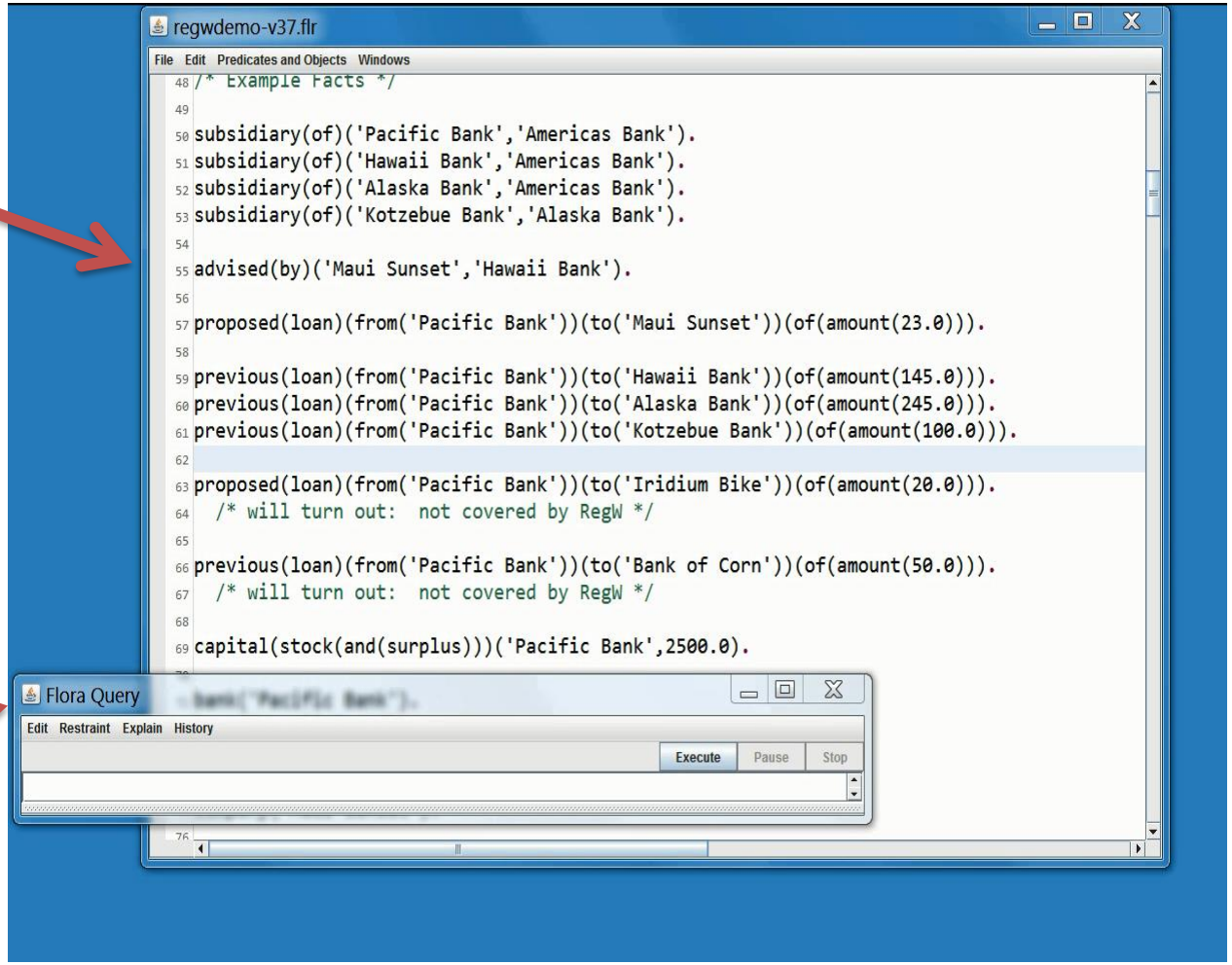

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Coherent User Interface

Coherent software includes various tools. Two are:

- **Knowledge-base editor**
  Regulations, data, and linguistic information are entered here as logical formulations. Additional editing tools (not shown here) start directly from English.

- **Query window**
  Ask the knowledge base and get answers for decision making.



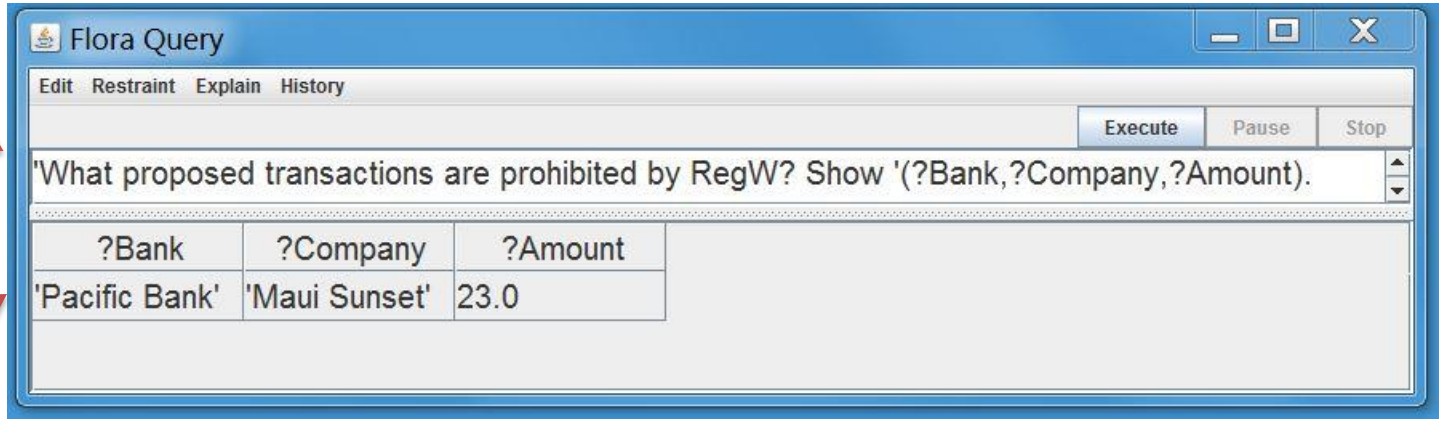
Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Sample Question:

"What proposed transactions are prohibited by Regulation W?"

Query

A decision answer is generated

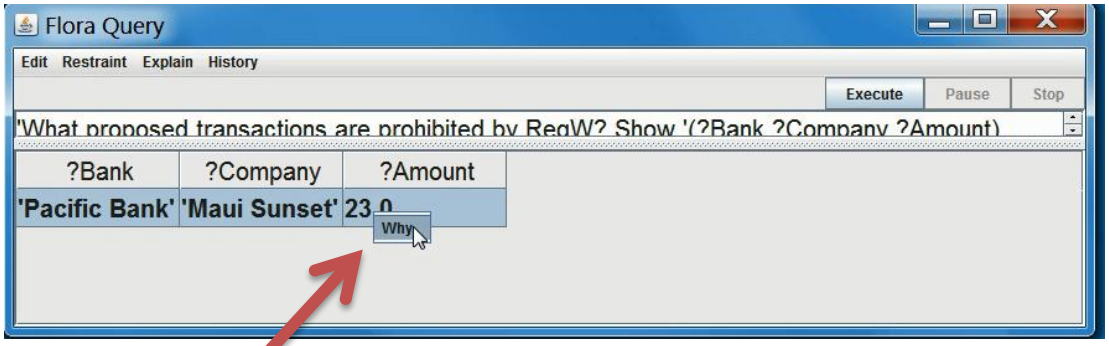


Coherent software automatically makes a decision using the Regulation W knowledge base, including data facts from the example scenario:

The proposed transaction between Pacific Bank and Maui Sunset in the amount of $23.0 million is prohibited.

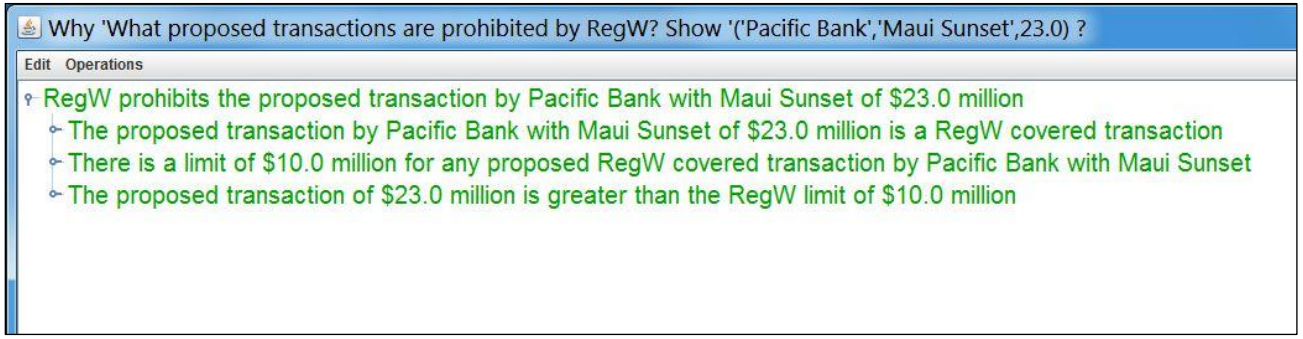
Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Explanation
of How Decisions Are Reached



Explanation Window

Why?



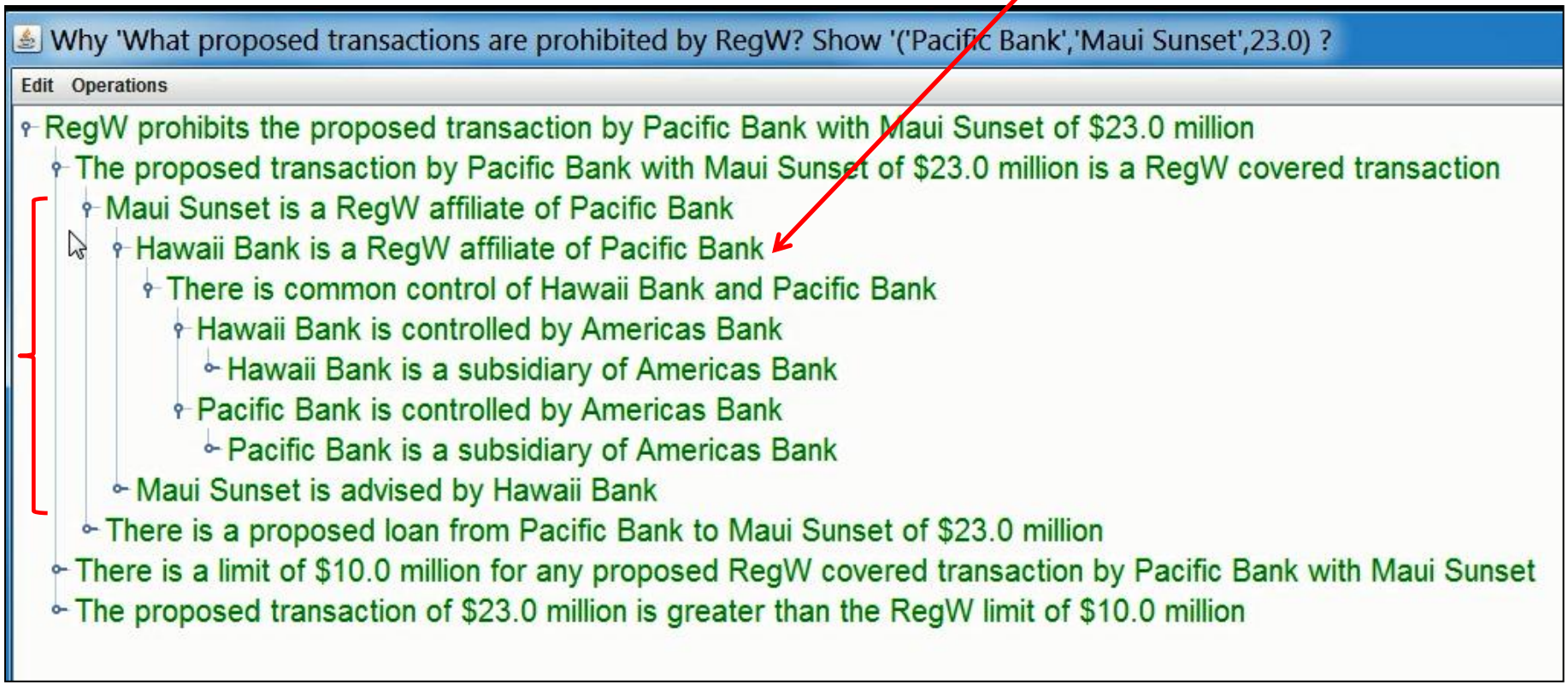
- Clicking on the ‘why’ button for a decision answer opens an explanation window.
- Clicking on any line in the explanation drills down to its supporting steps.

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Why is the proposed transaction prohibited by Regulation W?

1. *Is the transaction's counterparty an "affiliate" of the bank?*

YES.



And here's why …

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Why is the proposed transaction prohibited by Regulation W?

2. *Is the transaction contemplated a "covered transaction"?*

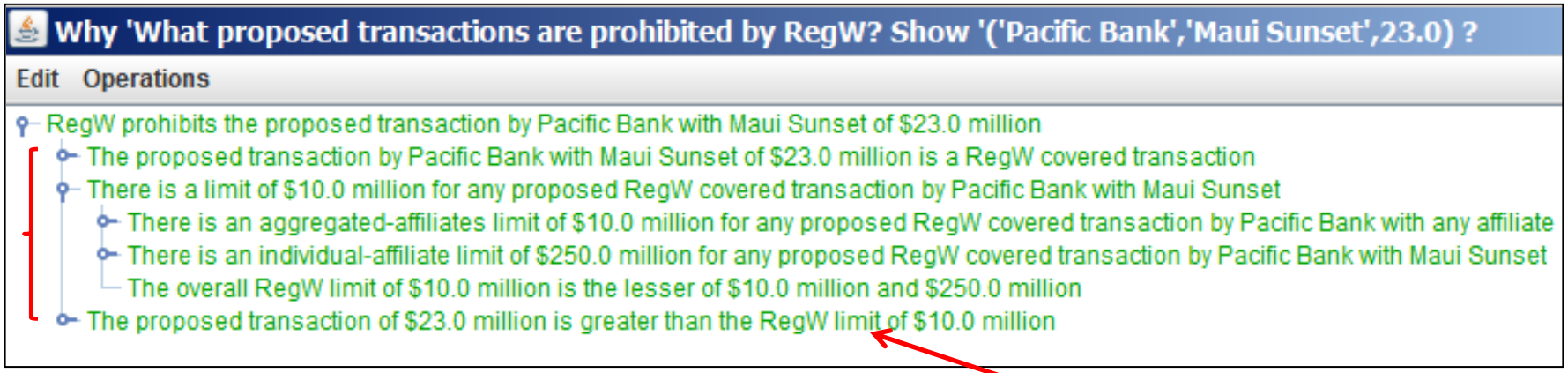
YES.

And here's why …

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Why is the proposed transaction prohibited by Regulation W?

3. *Is the amount of the transaction <u>permitted</u>?*



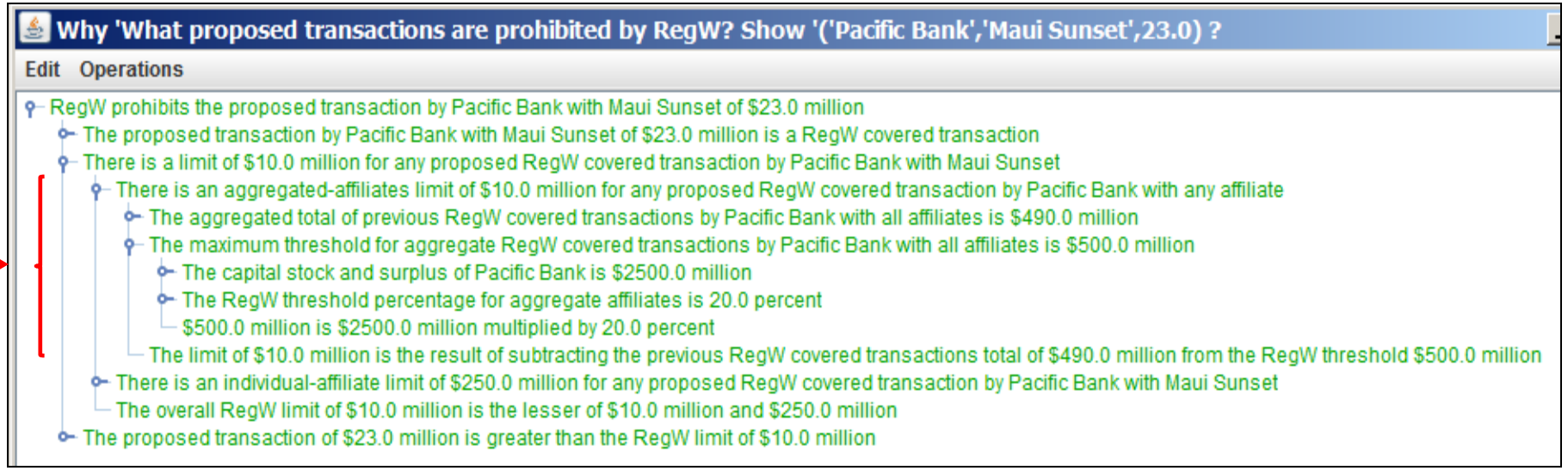
And here's why …

NO.
It went over the limit.

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Why is the proposed transaction prohibited by Regulation W?

3. *(continued) How was the limit calculated, using the bank's capital, to determine whether the covered transaction was permitted?*



Here's how the aggregate-affiliates limit was determined

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.

Demo Summary: Coherent software …

- Translates Regulation W into a Coherent Logic knowledge base, integrated with financial data
- Automates decisions for regulatory compliance
- Explains how conclusions were drawn
  - In readable English
  - The user can select the level of detail wanted
  - Supports human decision making, review, assurance, and *proof* of compliance

Copyright © 2013, Coherent Knowledge Systems, LLC. All Rights Reserved.