

**ANNEX 20**  
**TO**  
**EXHIBIT A**

*Black Swan Coin Conservation Report.*

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## EXHIBIT 1: BLACK SWAN COIN CONSERVATION STATUS REPORT

### I. Inventory of Coins from the “Black Swan” Site

Conservation of the inventory of coins occurs in several stages. Stage One involves the creation of a rudimentary count of coins. For the purposes of this count, a coin is a complete, round (or nearly round) recovery artifact that is close in size to its original size at time of minting, allowing for minor to moderate loss of mass resulting from saltwater exposure. A fragment is either a fractional piece of a coin (non-round), a round-coin missing a segment, the region between a chord and its associated arc, or possibly a coin of smaller denomination than the 1 oz silver coins.

The total number of coins and fragments of coins from the site referred to as “Black Swan” is approximately 595,000. This figure is based on a mathematical extrapolation from the counts performed on a sample group; detail follows.

Coins were received by conservators in 551 buckets weighing 22 kg to 33 kg and one single large chest. Many buckets contain clumps, clusters, or groups of coins. After a preliminary inventory of the coins, the first conservation stage involves solvent rinsing and removal of surface amalgam to separate them into individual coins. At this stage more detailed coin counts are conducted. As of December 31, 2007, conservators have sorted and counted approximately 33% or 183 of 551 buckets. The average bucket contains 1,065 coins and coin fragments. A total of 194,930 coins and fragments have been counted as of the above-referenced date.

Upon completion of the primary counts, coins are still heavily encrusted and are typically not legible. It is usually impossible to make assumptions about the constituents. In addition, approximately 7% of the coins recovered to date are fragments. Many fragments may, in fact, be smaller denomination coins not yet readily identifiable, but this can only be determined through later stages of conservation.

#### *Coin Types Identified for Post-Conservation “Test” Group*

The small number of coins recovered from the “Black Swan” site evaluated to date are almost exclusively milled coinage struck in South American Spanish Crown Colonies. Milled coinage is a general term used to refer to coins struck by machine. The planchets (or coin blanks) required for milled coinage are prepared using roller presses and die cut to size. The coins themselves are struck on screw presses and later (1850’s) on steam presses.

Wide scale production of milled coinage began in South America in 1733, following the arrival of minting equipment from Europe. However, introduction of milled coinage in Europe pre-dates 1621 in peninsular Spain, and the mid-1600’s in England and other European states. In the small sample which has been analyzed so far, milled coinage recovered from the “Black Swan” site date from 1773 to 1804.

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Earlier coinage struck in the Americas exists in two forms, cob coinage and klippe coinage. Cob coins are made from coin-shaped clippings removed from a silver bar. The coins are then hammer struck. While this method of coinage production was crude, it prevailed from 1572 to 1773. Thus far, two cob coins dated 1772 have been documented from the “Black Swan” site coin sample inspected. Klippe coinage is a transitional type that generally precedes milled coinage. No klippe coins have yet been found among the coins recovered from the “Black Swan” site.

Coins recovered and identified so far include four denominations of silver coins. These are 8 Reales (large silver dollar-sized coins), 4 Reales, 2 Reales (a quarter-sized denomination), and 1 Real coins. Half-real and quarter-real coins were also produced during this period, but none have yet been identified in the artifacts presented for conservation, although they could be discovered in the pieces labeled as fragments.

While the dates for milled coinage recovered from the “Black Swan” site range from 1773 to 1804, the heaviest concentration come from the 1790’s to the early 1800’s. The plurality of coins recovered and thus far identified were struck at the mint in Lima, Peru. The Potosi Mint in Bolivia is also well represented. More exacting counts and data collection is ongoing, and precise figures are not yet available. It is inappropriate to draw conclusions about the greater composition of coins recovered based on these observations (see below for discussion of limitations of statistical analysis).

The overall condition of the coins in the test group covers the full spectrum of grading. Some coins are heavily corroded, but identifiable and desirable as shipwreck recovery artifacts. Other coins show no signs of corrosion and have retained some original surface. These coins will be sought after by collectors and have greater numismatic worth. Until the conservation process is completed on a majority of the coins, it is impossible to predict the final condition of the coins across the population of the entire collection.

#### *Limitations of Inventory Assessment from Study Group*

While statistical models, such as t-tests, are often employed to measure significance of variation within two populations, this type of analysis is very limited in this application. For example, dates of coins are limited by a termination date (i.e. date cargo was loaded), but are essentially unbounded in the opposite direction. The distribution of dates is therefore expected to be non-normal.

The loci of coin caches and their constituents are also highly variable. Denominations of coins, per discussion above, appear to be found in “veins,” suggesting a non-random positioning of coins on the site.

As the true population of coins is both knowable and quantifiable, any comparison of a sub-population to the whole is prone to a high degree of error or uncertainty. For this reason, the conservators cannot state with confidence the actual date or mint composition of coins that have not yet been conserved and attributed, and will not speculate as to their composition, or the terminus date of the coins in the collection.

At this point, considering that the dates have been observed on fewer than 2% of the coins, and especially considering that the 2% fail to comprise a random sample, it would be inappropriate to draw any conclusions as to the date this cargo was loaded for the purposes of the identification of the source of the coins.

## **II. Current Status of “Black Swan” Coin Conservation**

The following is an overview of the current status of the conservation of coins from the “Black Swan” site.

All of the approximately 595,000 coins recovered from the “Black Swan” site are currently in one of four stages of conservation.

Roughly 392,000 coins are in Stage One conservation. An exact count is not possible at this stage, as coins are still grouped together or adhered to foreign media. Coins at this stage have been inventoried and evaluated for the conservation process, and have been introduced to an aqueous priming solution. The initial period following first recovery of artifacts is critical to assure a high-quality conservation result. Conservators are moving rapidly to move coins through this process so that coins can begin a neutralization process. This is the priority and primary focus of initial conservation efforts.

Conservation Stage Two currently involves 194,930 coins. This four-week neutralization process is critical to assuring the stability of the artifacts. It cannot be arrested mid-stream, and must be fully completed to lessen further deterioration and to render coins suitable for temporary storage.

8,642 have completed Stage Two conservation. Of that group, 3,606 are entering Stage Three. While the surface contaminants are removed during this phase, the coins must undergo a subsequent process of surface stabilization in Stage Four. Approximately 2,901 have completed Stage Three and now being prepped for Stage Four. Ideally, coins should not pause between stages to render the best result for long-term preservation. From this initial group, 2,135 coins have completed conservation, and are being photographed and attributed by expert numismatists. Of the 2,135 now being catalogued, 211 are gold coins and 1,924 are silver coins.

## **III. Budget Guidelines for Conservation, Documentation, Attributions, and Encapsulation**

As outlined above, each coin is conserved in a multistage process. Following conservation, coins are attributed, encapsulated, and photographed. Data records and reporting are provided to measure progress and for other analytics.



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The cost for the conservation, documentation, attribution, and encapsulation varies based on coin type. The negotiated price of these services for silver coins is \$25 per coin. The cost of these services for gold coins is \$80 each. These prices reflect a substantial discount from the prices for conservation, documentation and encapsulation of coins in lesser quantities.