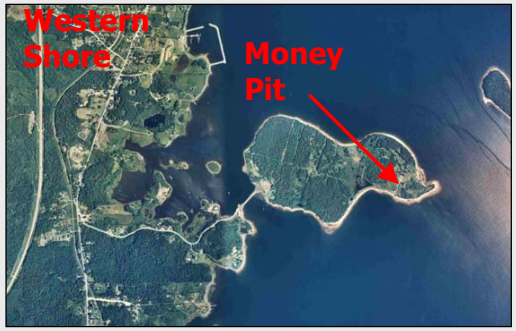
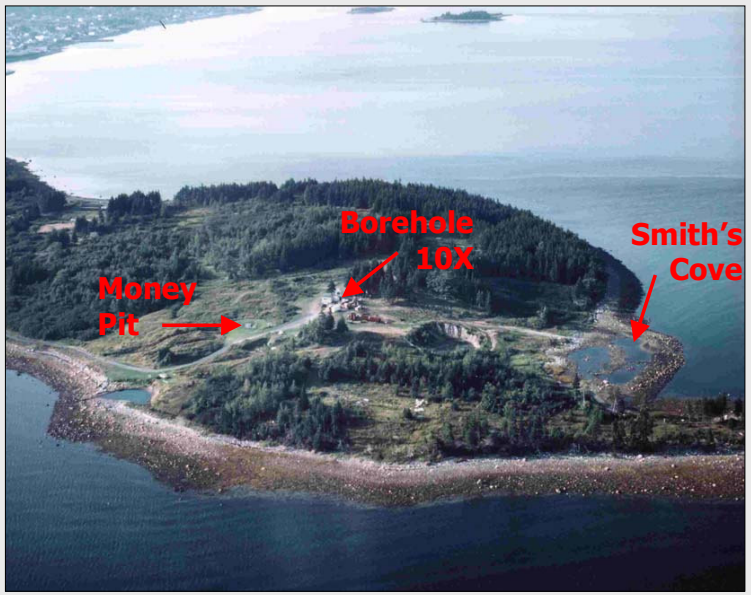
Review of Geophysical Investigations
Oak Island, Nova Scotia



Oak Island 1992



Oak Island 1986

Presentation by
Les MacPhie
Explore Oak Island Days 08
Western Shore
Nova Scotia
June 22, 2008

Outline of Presentation

1. Introduction
2. Geological Conditions
3. Geophysical Survey by Peter Beamish 1965 and 1966
4. Barringer Geophysical Survey 1988
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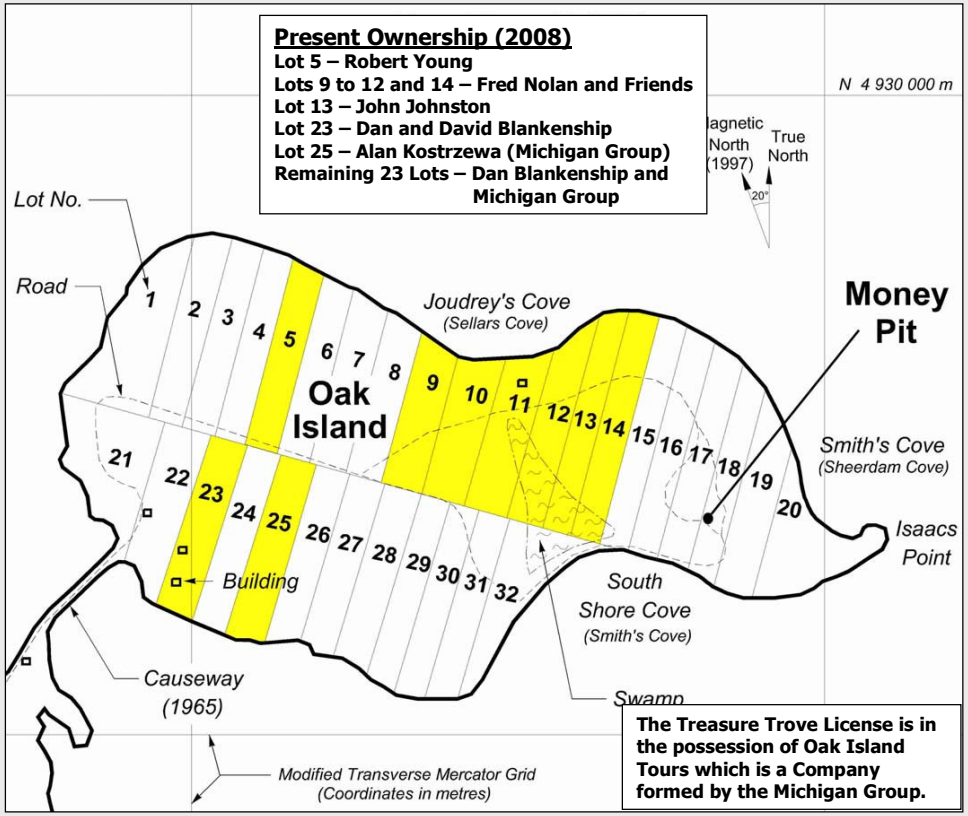
9. Conclusions

Location of Oak Island, Nova Scotia

Oak Island Lot Distribution



Geophysical Investigations and Reviews at Oak Island

Name	Year	Description	Reference
Peter Beamish	1965/66	Magnetic survey and other geophysical methods	Barber and Beamish 1965
Barringer	1988	Magnetic and Very Low Frequency (VLF) surface surveys	Barringer 1988
Oak Island Detection Program	1992/93	Review of geophysical methods	Triton 1994
	1994	Down hole and cross hole surveys in five deep holes at Money Pit	
	1994	Magnetic survey west of Money Pit	
Radarscan	2001	Ground Penetrating Radar (GPR) survey north of Hole 10X	Radarscan 2001
Vincent Murphy	1989	Review of Barringer survey	Murphy 1989

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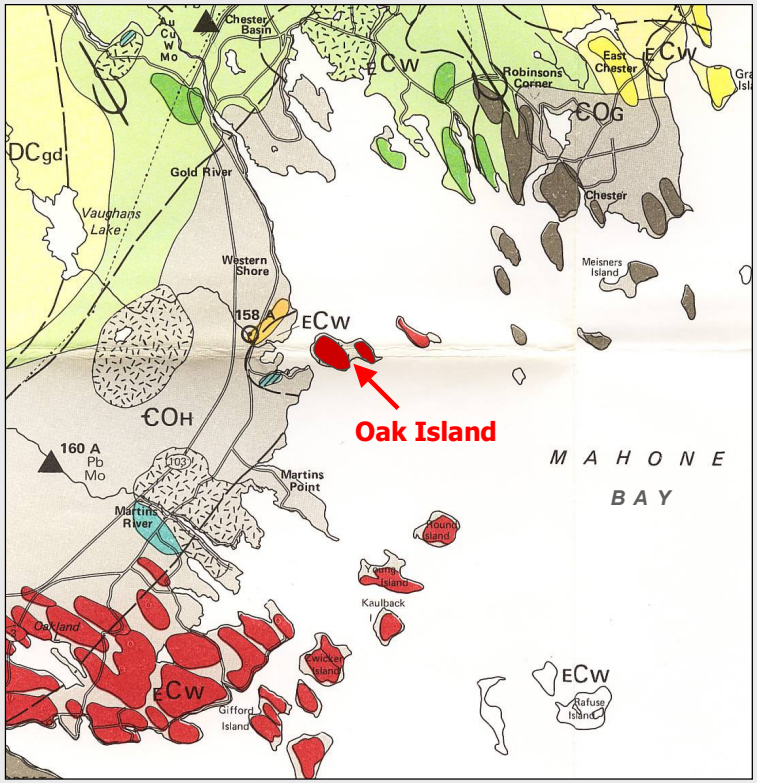
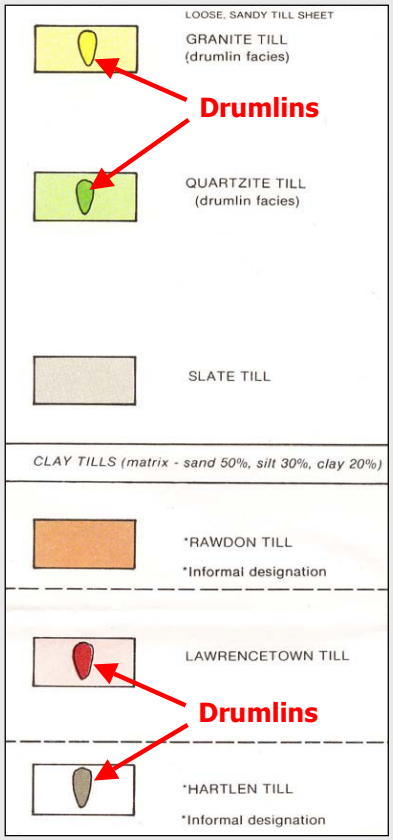
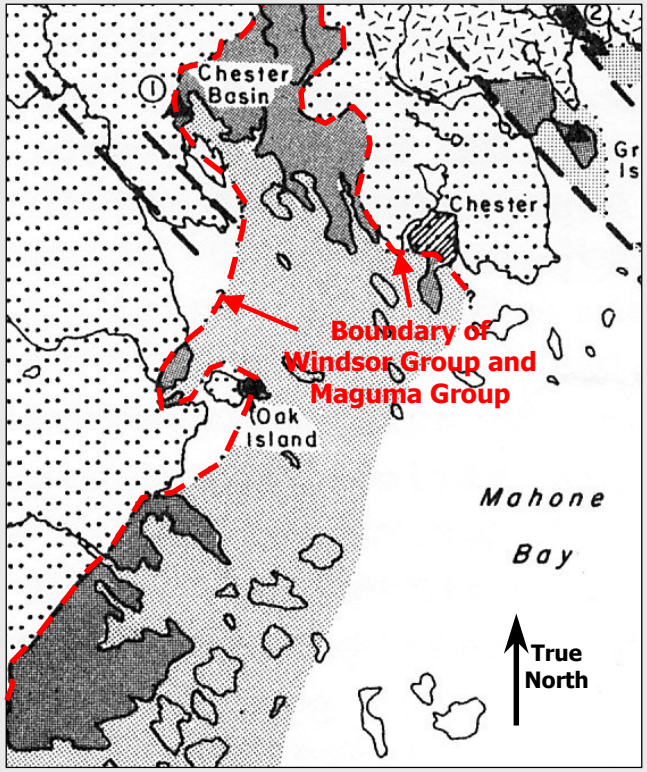
Surface Geology and Drumlins
Western Mahone Bay





Ref: Stae and Fowler 1981

Bedrock Geology Western Mahone Bay



LEGEND

EARLY CARBONIFEROUS

WINDSOR GROUP

Limestone, gypsum, shale; possible submarine extent indicated

DEVONIAN

Undivided granitic rocks

CAMBRO-ORDOVICIAN

MEGUMA GROUP

Undivided slate, metasiltstone and meta-greywacke of the Goldenville and Halifax Formations

Geological boundary, dotted in submarine areas

② ▲ *Bedrock locality cited in text*

⚒ *Quarry in bedrock*

● *Diamond-drill hole(s)*

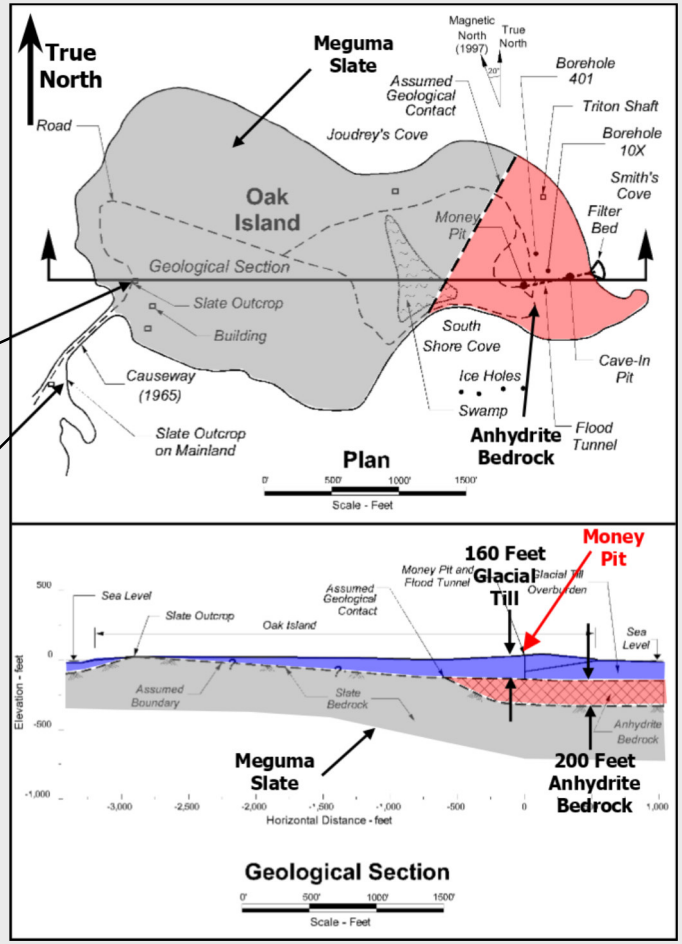
Fault, (known, and/or inferred)

Geology modified after Sage (1954) Cameron (1956) and Taylor (1969). Submarine extension of boundaries in north-eastern Mahone Bay modified after Barnes (1976).

Ref: Giles 1981

Geology of Oak Island

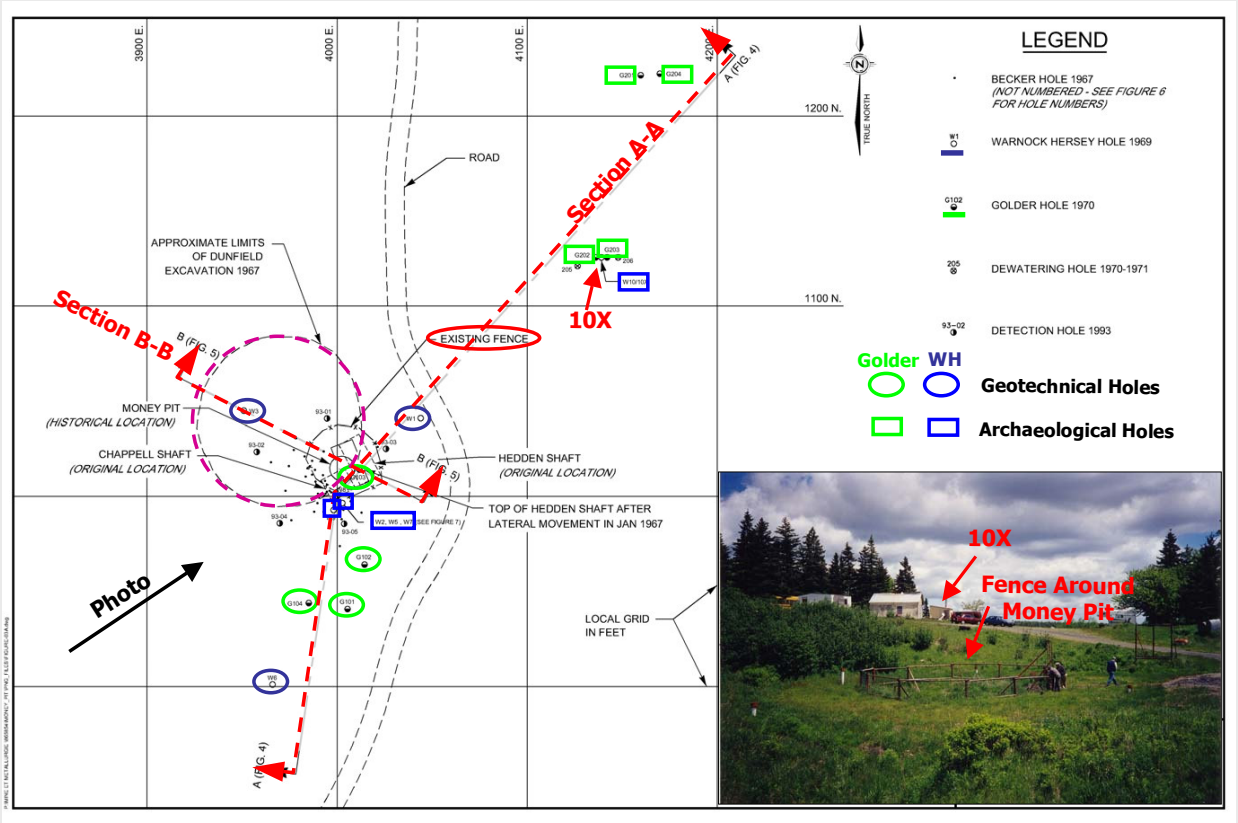
Meguma Slate Outcrops



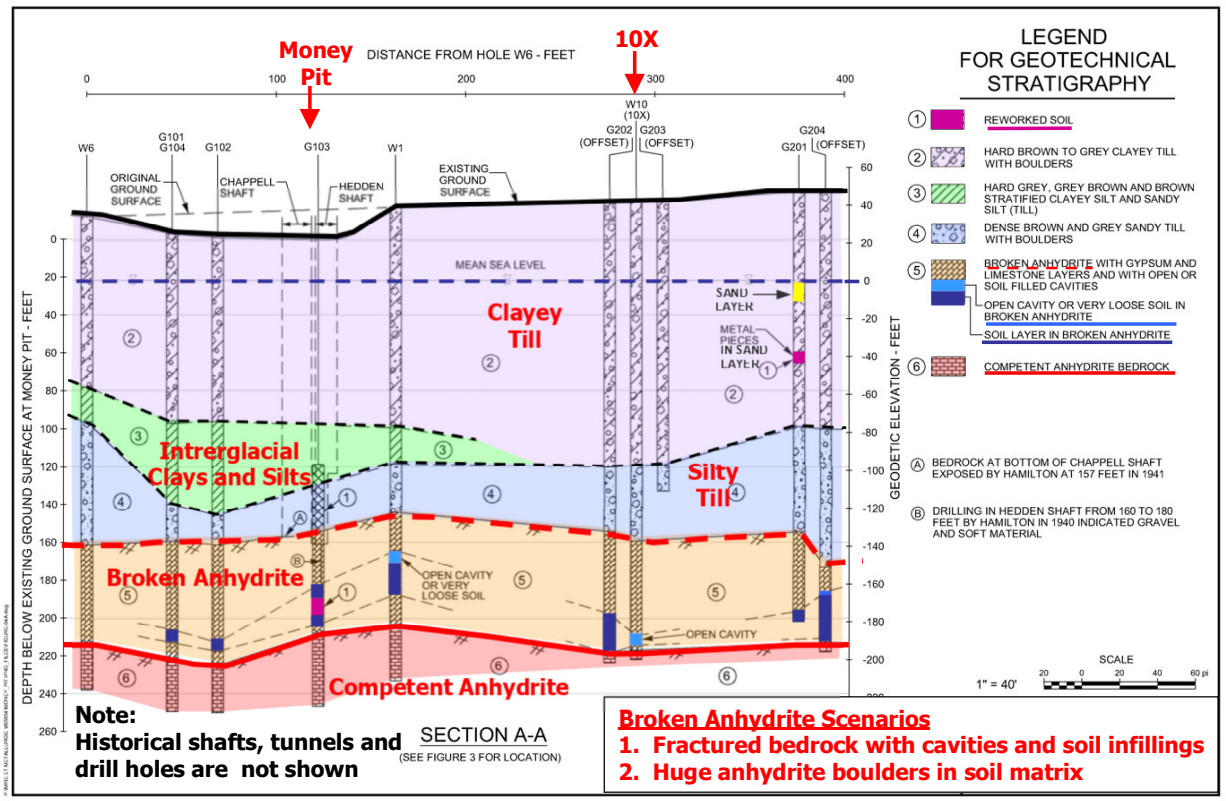
Drilling Investigations at the Money Pit

1. Becker Drilling 1967 (Archaeological)
2. Warnock Hersey 1969 (Geotechnical/Archaeological)
3. Golder Associates 1970 (Geotechnical/Archaeological)
4. Detection Program Drilling 1993 (Geophysical)

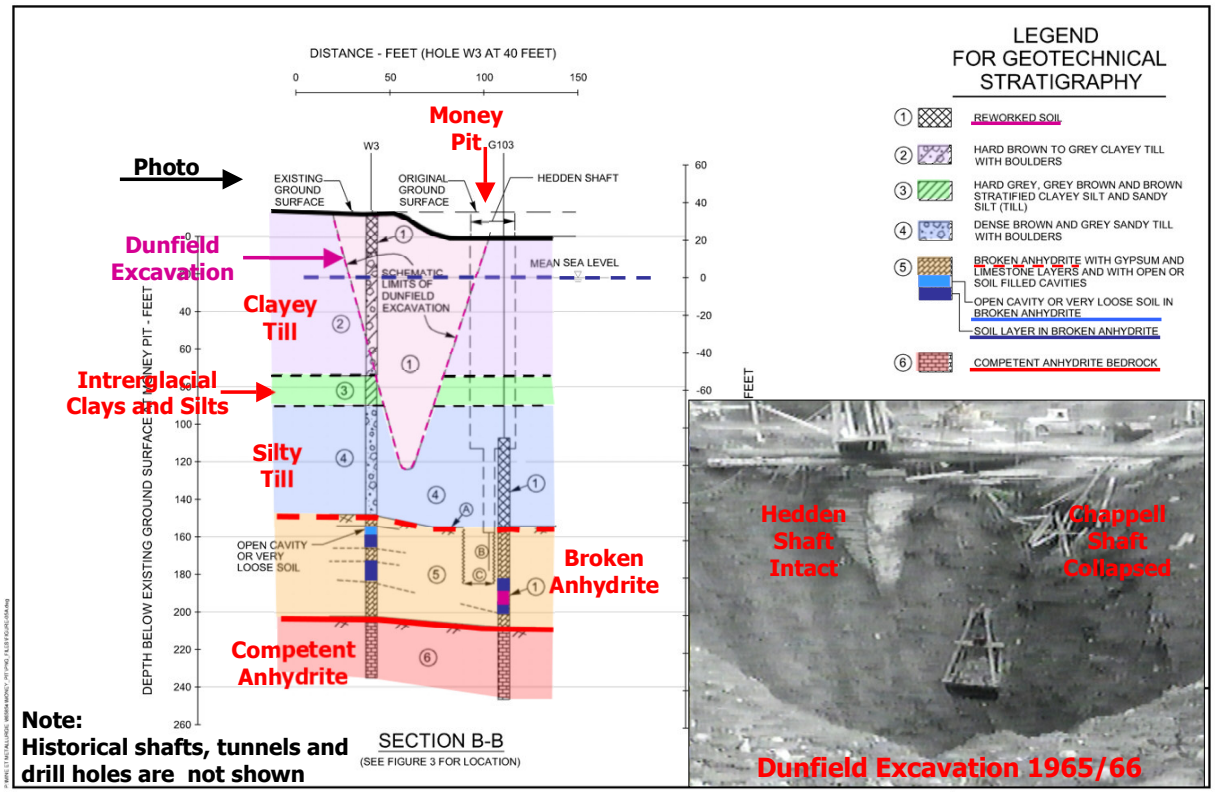
Plan of Geotechnical/Archaeological Holes



Geotechnical Section A-A at Money Pit and 10X



Geotechnical Section B-B at Money Pit and Dunfield Excavation

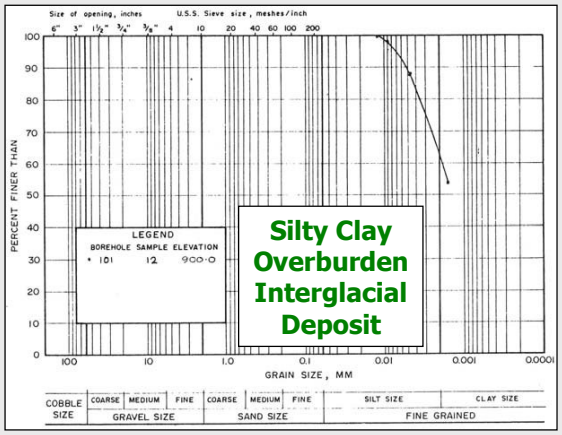


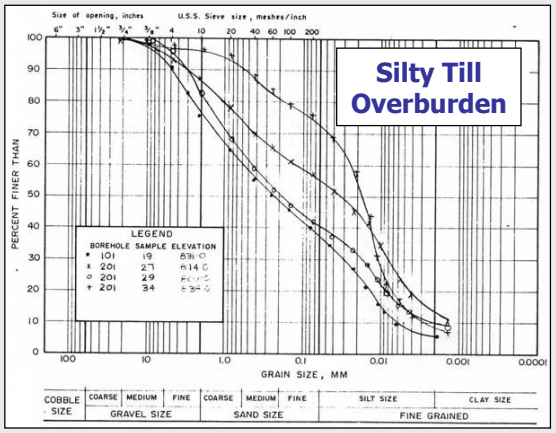
Depth of Cavity/Soil Zones in Broken Anhydrite

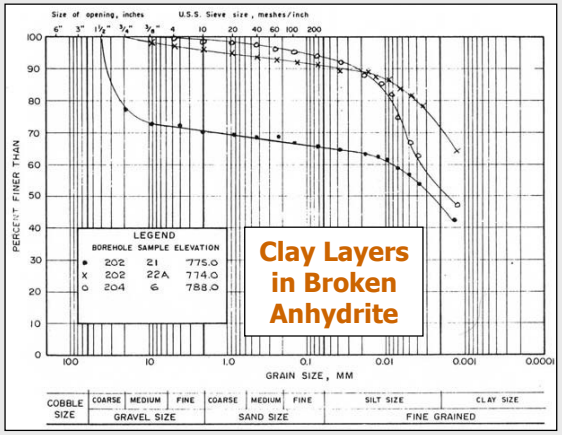
Hole No	Distance and Direction from Money Pit (Feet)	Anhydrite Thickness Above Zone (Feet)	Depth of Cavity/Soil Zone Within Anhydrite (Feet)				Thickness of Zone (Feet)	Anhydrite Thickness Below Zone (Feet)
			Cavity	Cavity or Loose Soil	Loose Soil	Dense Soil		
W1	50 NE	20	-	181 - 186	186 – 195?	195? – 204 N=58	24	46
W3	61 NW	5	166 – 170	-	170 – 178		12	70 Inc Soil Layer
		8	-	-	186 - 197		11	51
W5	19 S	8	-	-	180 - 206		26	4
W6	120 SSW	No cavities or soil zones encountered in broken anhydrite						
W7	17 S	15	-	-	180 - 209		29	9
10X	176 NE	50	230 - 235	-	-	-	5	26
G101	73 S	53	-	-	-	217 – 227 N>100	10	23
G102	50 S	52	-	-	-	214 – 219 N=61, 58	5	22
G103	10 E	28	-	-	185 – 200 Reworked	200 – 205 N>100	20	43
G104	72 SSW	47	-	-	-	209 – 216 N=41, 67	7	36
G202	174 NE	43	-	-	217 – 238 Ft		21	5
G204	267 NE	13	211 - 213	-	213 - 217	217 – 236 N=34-100	23	7

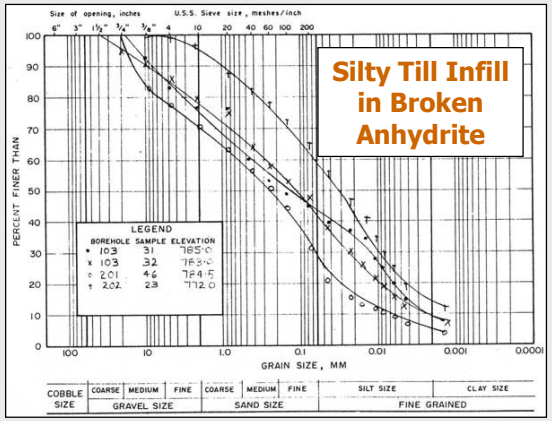
Note: Twelve geotechnical and archaeological holes extended into the broken anhydrite. Eleven of the 12 holes encountered cavity/soil zones in the broken anhydrite.

Gradation of Overburden and Soil Infill in Anhydrite









Ref: Golder 1971

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Peter Beamish Geophysical Survey 1965

1. **Peter Beamish, by arrangements through his colleague Donald Barrett (Mel Chappell's nephew), organized a two-week summer geophysical program on Oak Island in 1965 for his students at Phillips Academy, Andover, Massachusetts with some students from Phillips Academy, Exeter, New Hampshire.**

2. **Geophysical equipment borrowed from MIT, Cambridge, Massachusetts, included coin detector and electromagnetic (EM) unit for shallow depth exploration. Equipment from Bedford Institute of Oceanography (BIO), Bedford, Nova Scotia, included a two-coil EM unit for deeper penetration.**

3. **The 1965 survey was done over a two-week period in August by 19 students and two instructors (Peter Beamish and Richard Barber) who camped on the island. Donald Barrett from BIO also attended and provided some geophysical survey equipment.**

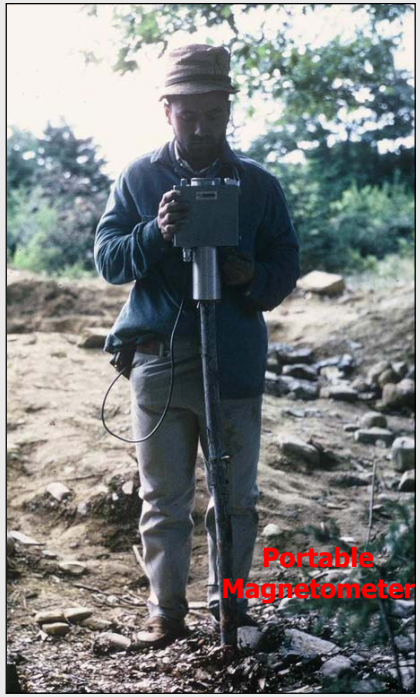
4. **A geophysical survey was done by Peter Beamish in 1966 and the results of this survey are not available.**

Phillips Academy Students Digging

Southwest area of Oak Island where anchor was found

Photos courtesy Peter Beamish

Geophysical Instruments Used by Peter Beamish in 1965 Survey



Photos courtesy Peter Beamish

Anchor Found by Peter Beamish 1965 and Geophysical Instruments for 1966 Survey

Photos courtesy Peter Beamish

Beamish Anchor from 1965 and Anchor Fluke from Chappell Shaft 1931

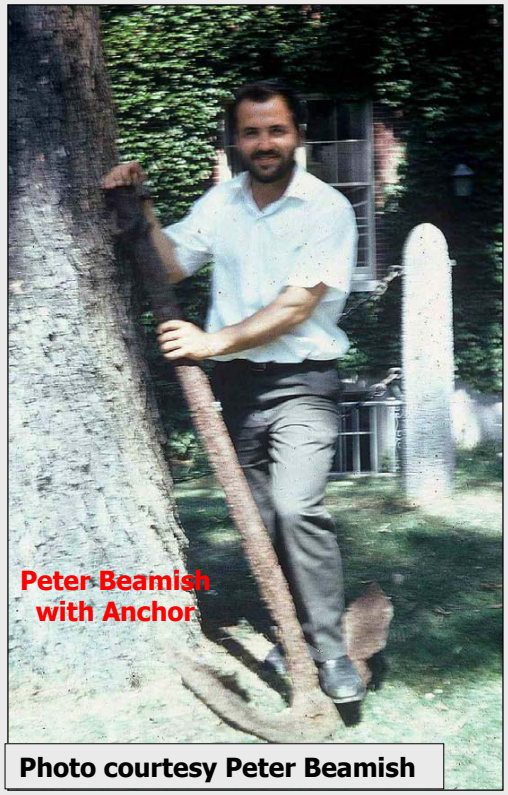
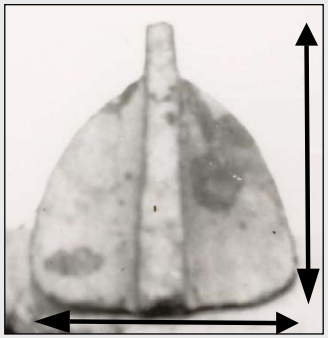


Photo courtesy Peter Beamish



Anchor Fluke dimensions recorded by Mel Chappell

Artifacts Found by Peter Beamish 1965 Survey

Spanish 10 Merevedi similar to coin found by Student on beach at Smith's cove and identified by J J Teaparty Inc., Boston as Merevedi 11, 1598

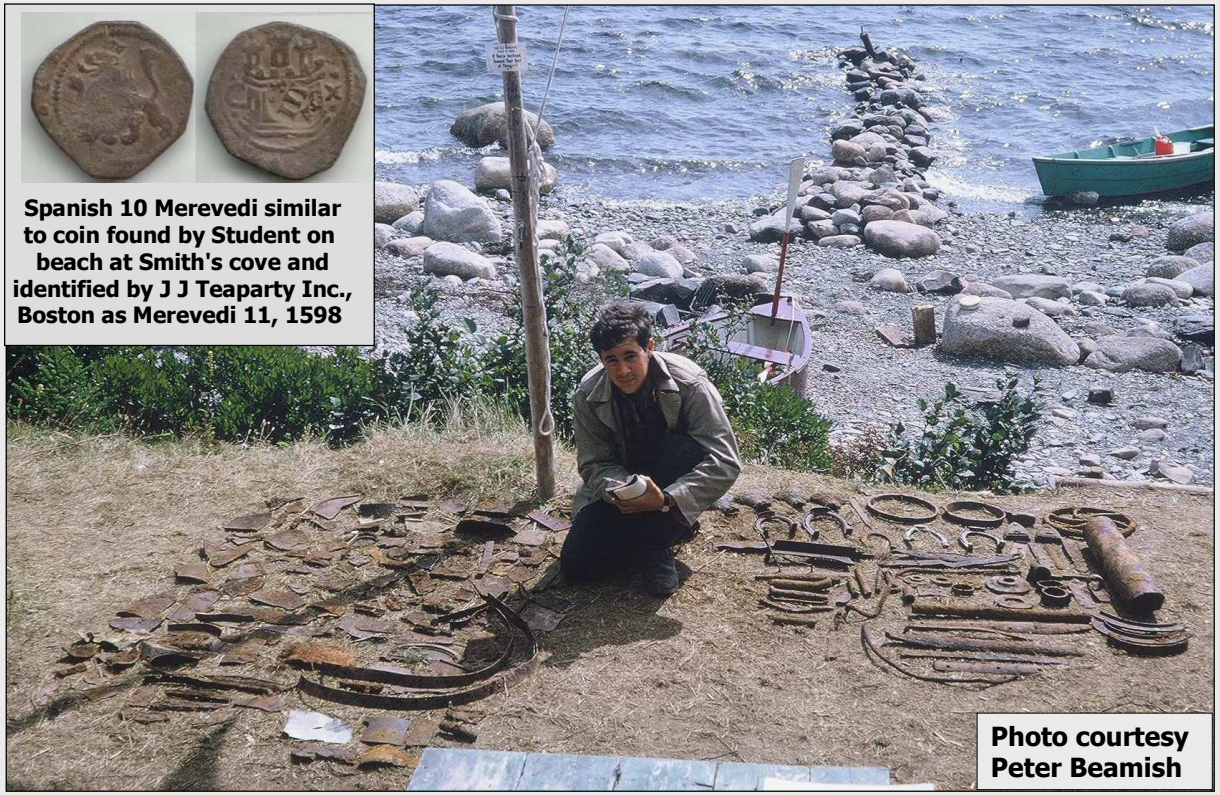


Photo courtesy Peter Beamish

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Barringer Geophysical Survey 1988

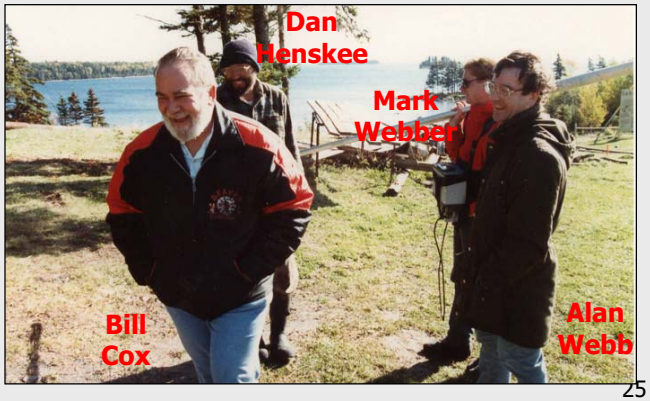
OBJECTIVES

1. Detect possible salt water filled tunnels
2. Detect concentrations of non-ferrous metals
3. Detect concentrations of ferrous metals

PROCEDURES

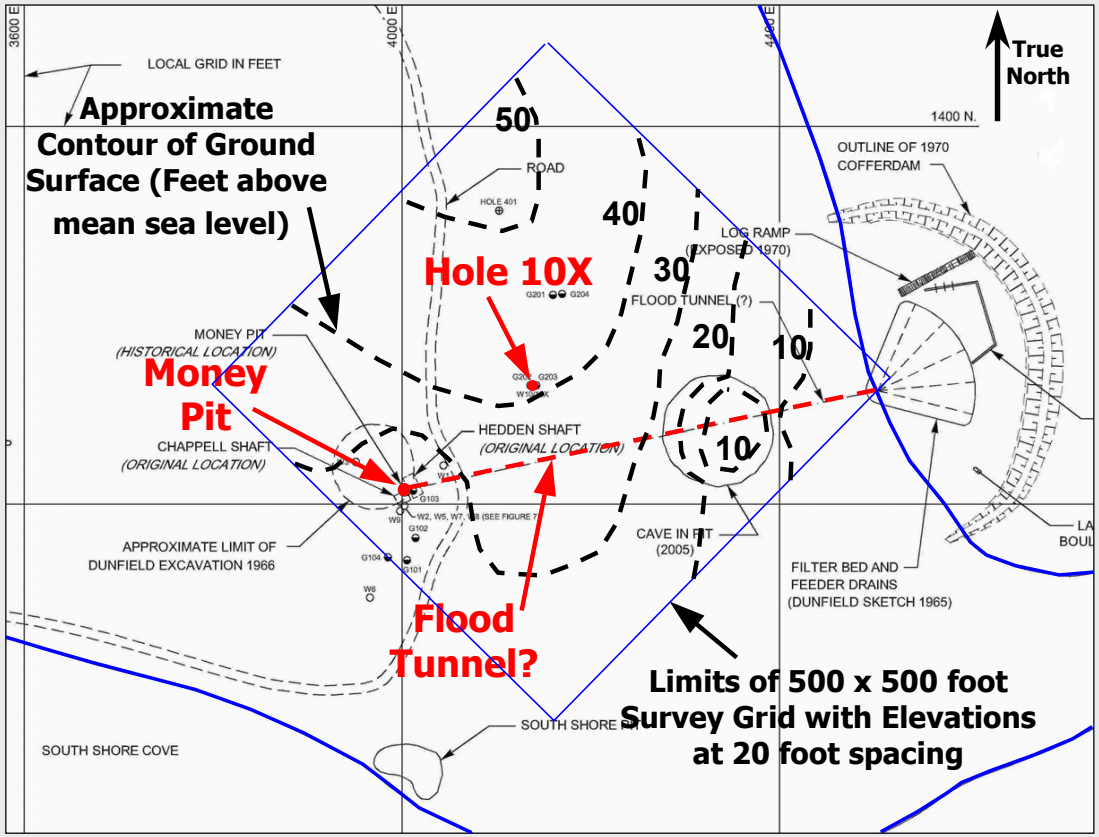
1. Survey grid at 20 feet spacing at east end of Oak Island
2. Magnetic Survey for ferrous metals
3. Very Low Frequency (VLF) Survey for salt water filled tunnels and possible detection of non-ferrous metals

Barringer Geophysical Survey – People Present

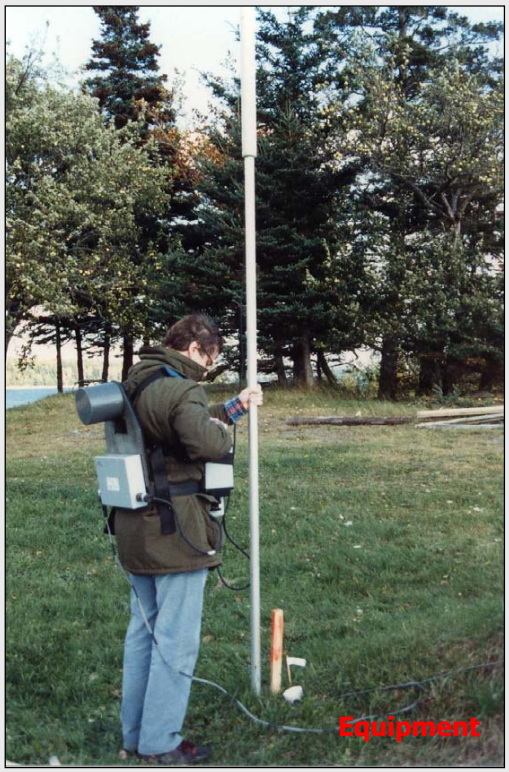


Barringer Geophysical Survey – Setting out Grid

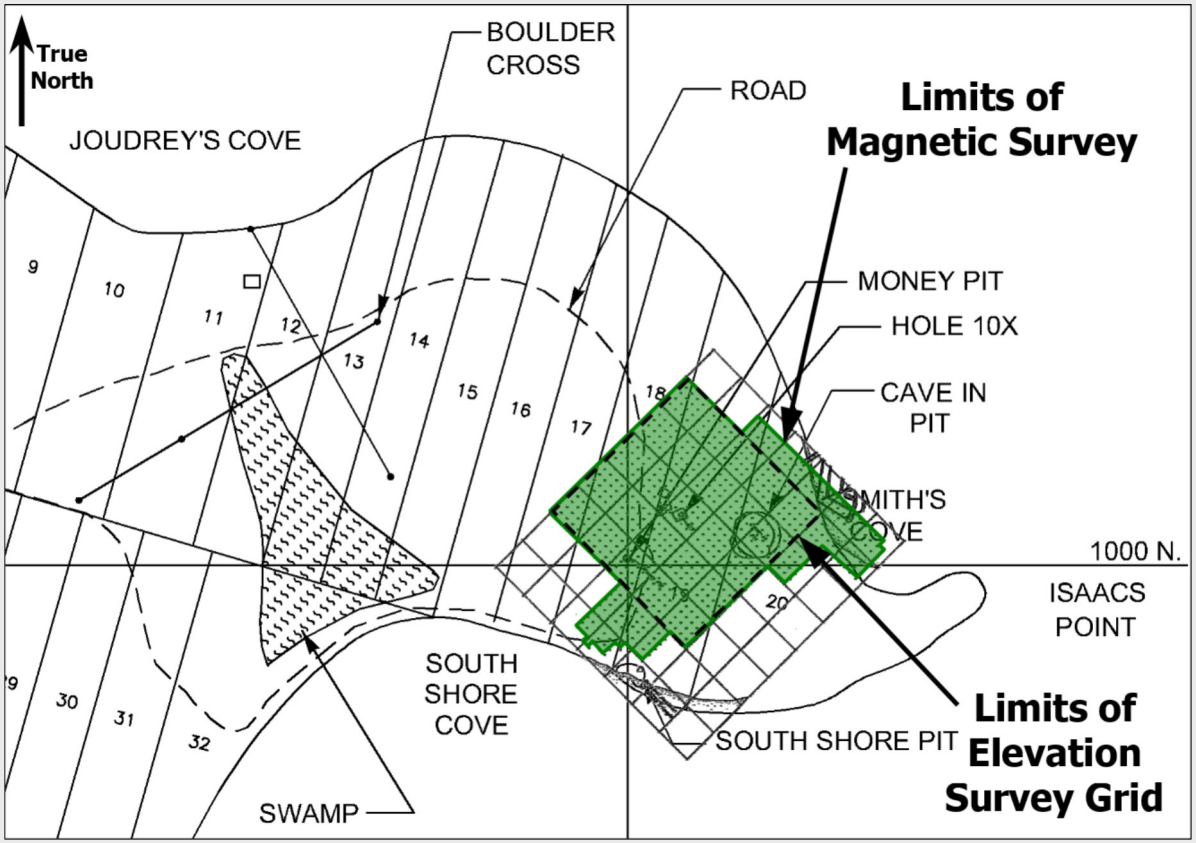
Ground Surface Contours in 1988 from Barringer Elevation Survey Grid



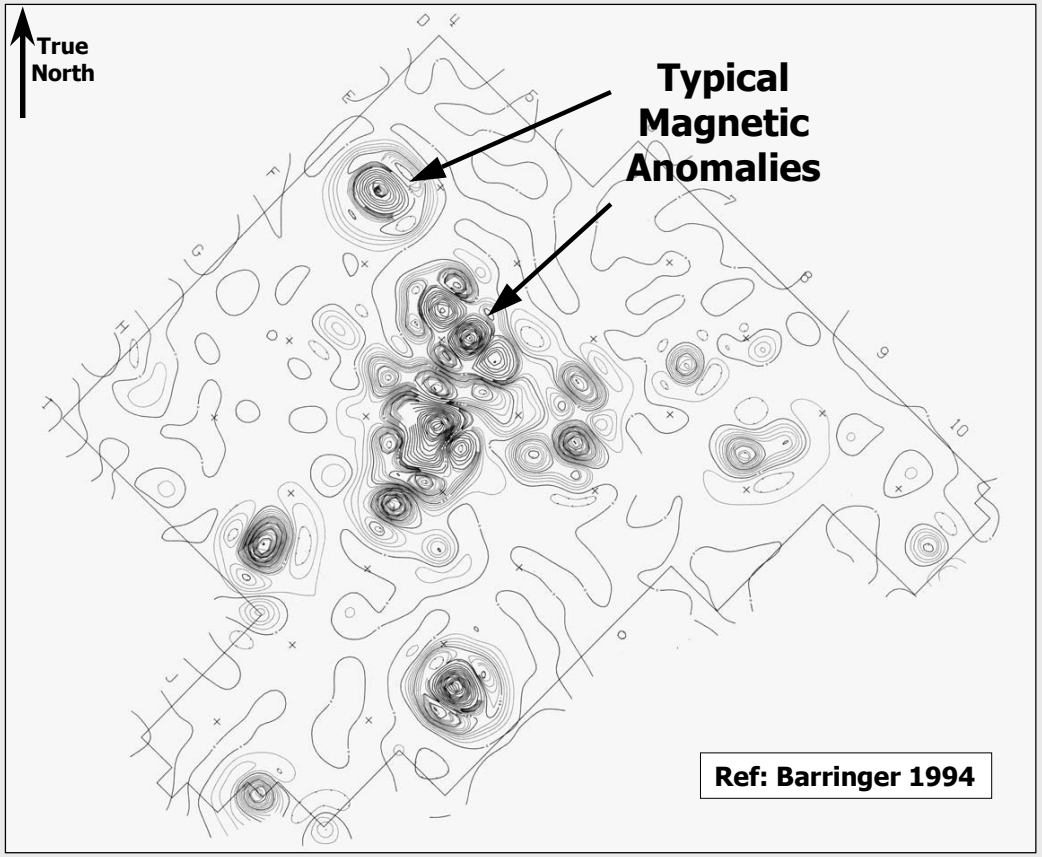
Barringer Geophysical Survey
Magnetic and EM Measurements



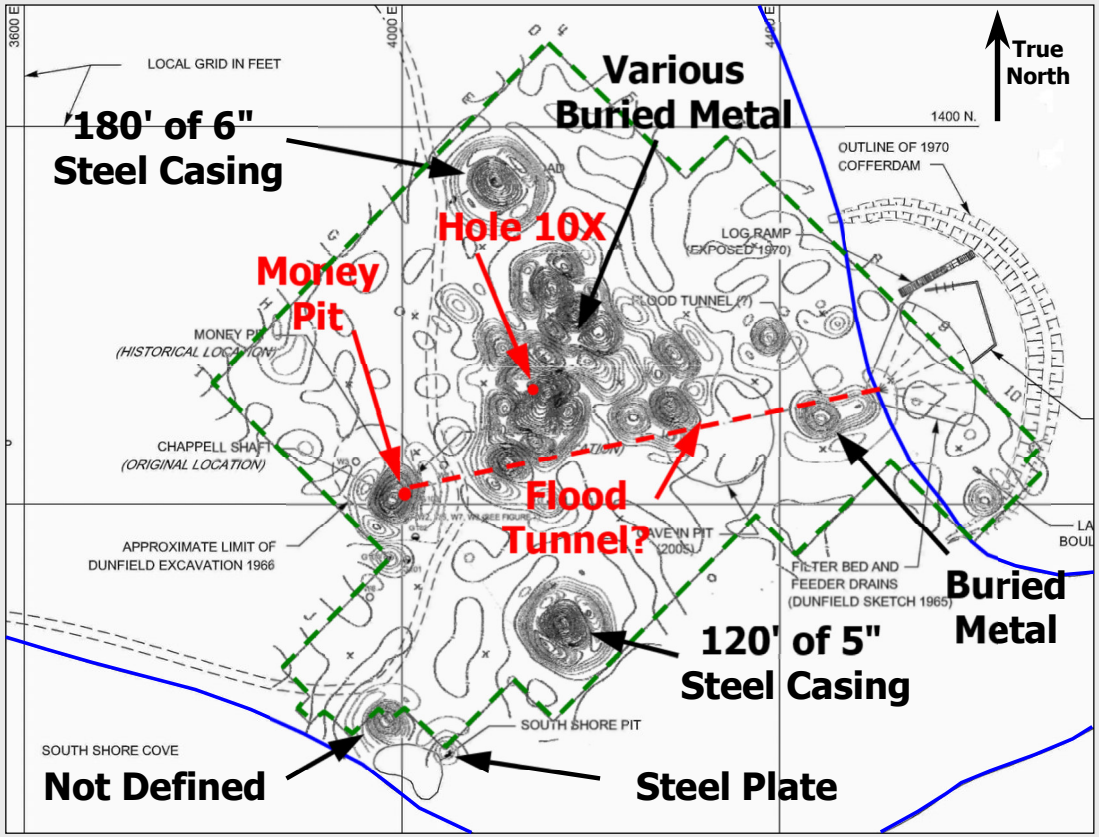
Limits of Barringer Magnetic Survey 1988



Results of Barringer Magnetic Survey – Plate 2



Magnetic Anomalies Superimposed on Map



Findings of Barringer Magnetic Survey

1. **Except for one location, the magnetic anomalies were associated with known occurrences of metal objects.**

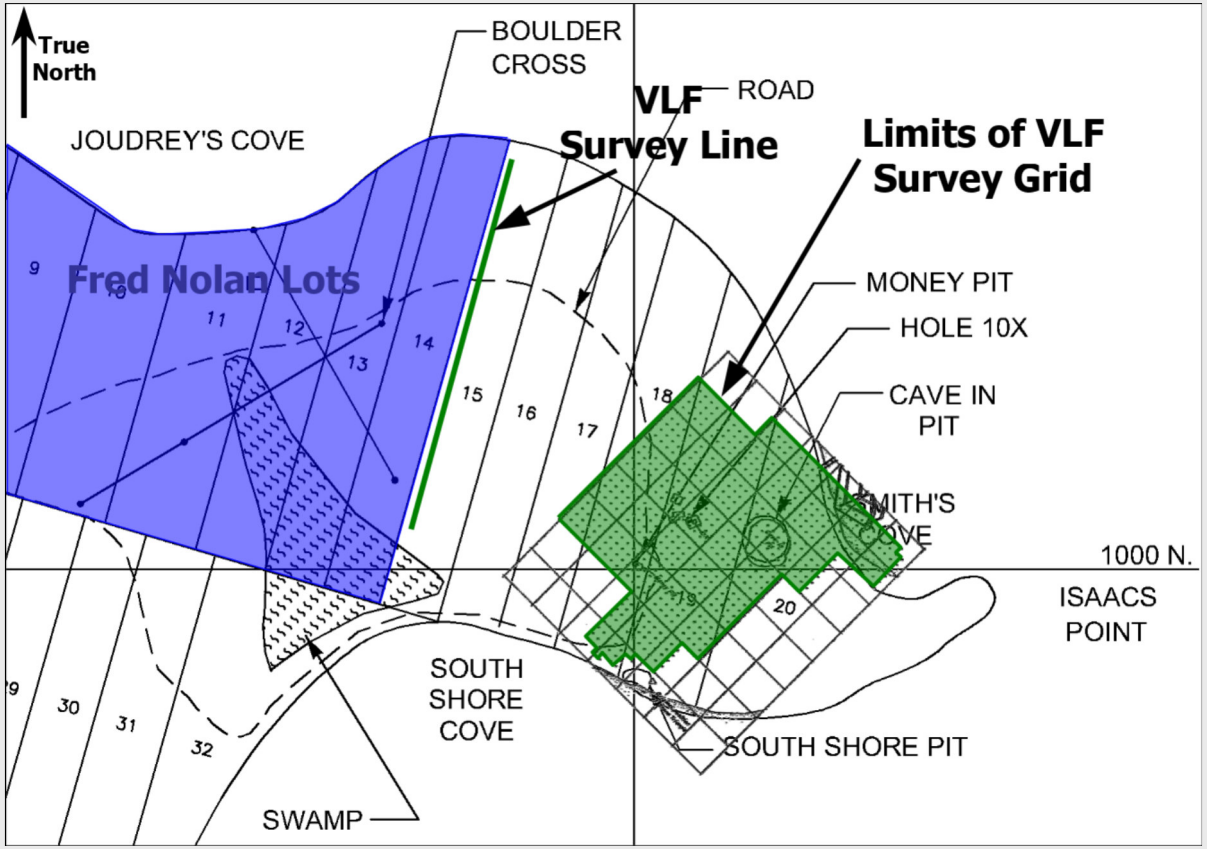
2. **At the one location in the southwest sector of the grid, the source of the magnetic anomaly was not known or defined.**

Note:
Magnetic surveys define only ferrous metals (iron and steel) and are not able to detect non-ferrous metals (silver and gold).

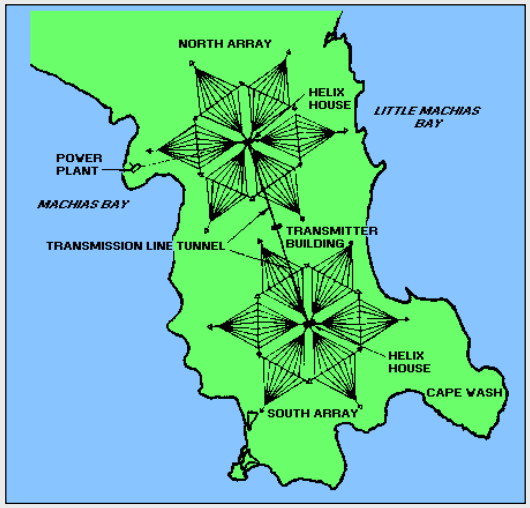
Digging at magnetic anomaly beside South Shore Pit

Steel plate found at depth of 1 to 4 feet beside South Shore Pit

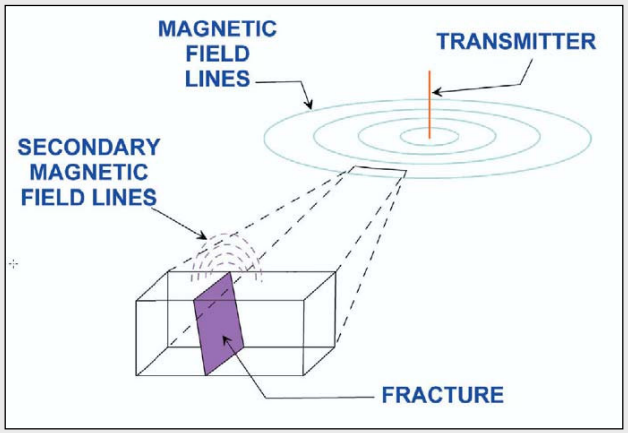
Limits of Barringer VLF Geophysical Survey 1988

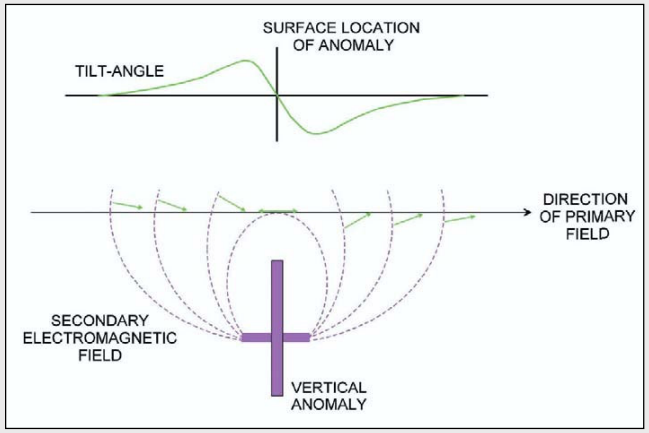


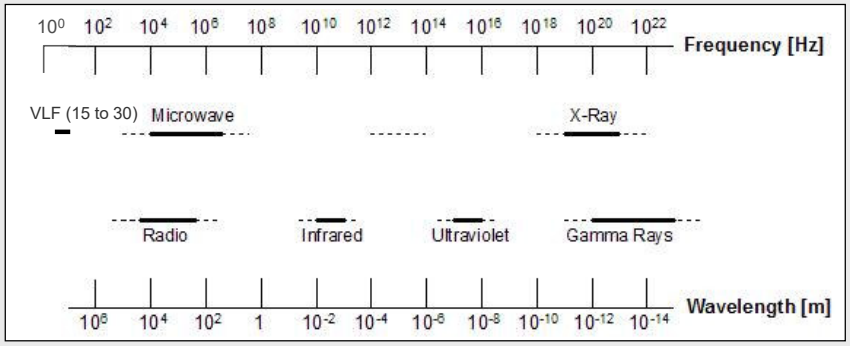
Very Low Frequency (VLF) Transmitter Station Cutler, Maine



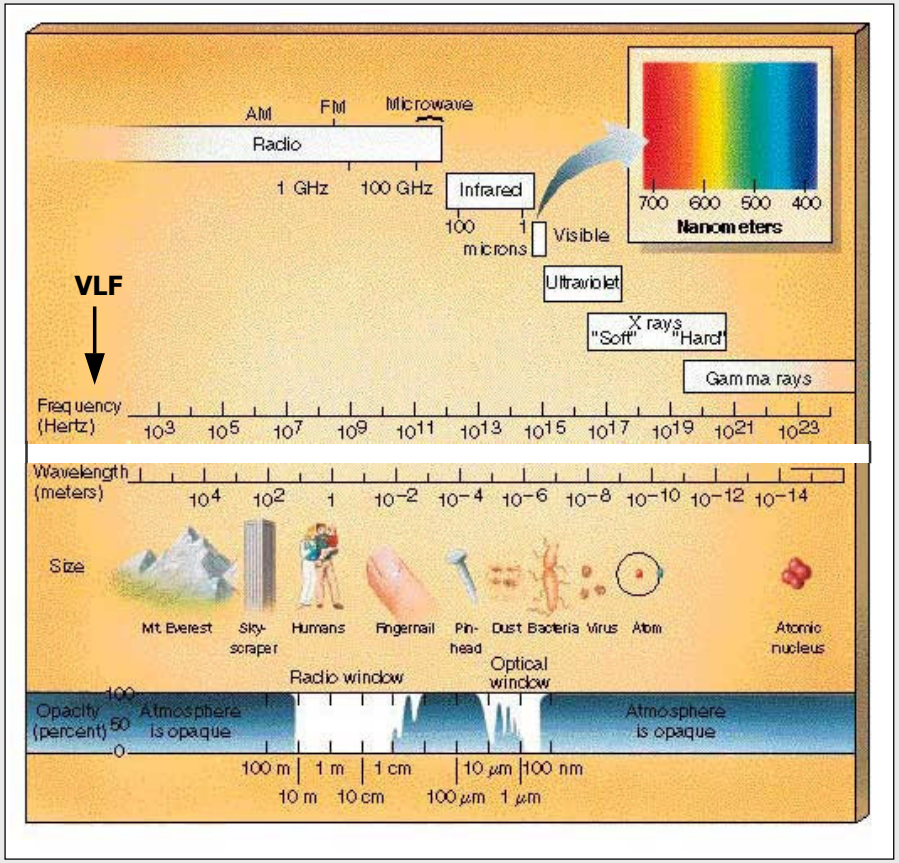
Concept of VLF Geophysical Survey







Electromagnetic Waves



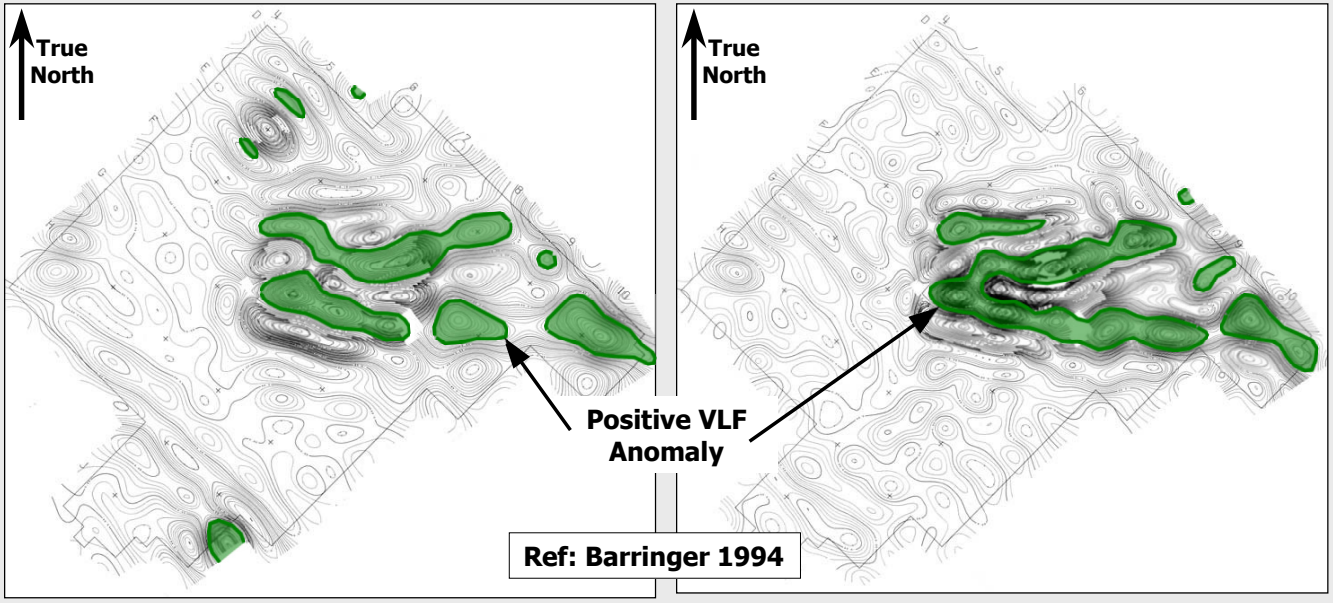
Barringer VLF Survey Program

VLF Station	Field Measured (See Notes)	Pre Pumping Results	Post Pumping Results
Cutler Maine	SVD of Total VLF Field	Plate 3	Plate 4
	FHD of VLF Tilt	Plate 6	Plate 7
Annapolis Maryland	SVD of Total VLF Field	Not Reported	Plate 5
	FHD of VLF Tilt	Not Reported	Plate 8

Notes:

1. **"SVD of Total VLF Field" means Second Vertical Derivative of Total Very Low Frequency Field.**
2. **"FHD of VLF Tilt" means First Horizontal Derivative of Very Low Frequency Tilt.**

Pre and Post Pumping – SVD of Total VLF Cutler, Maine Transmitter



Positive VLF Anomaly

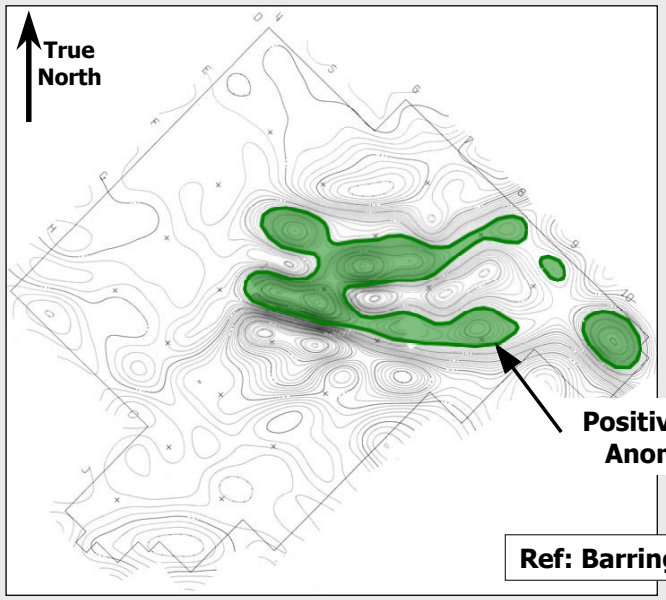
Ref: Barringer 1994

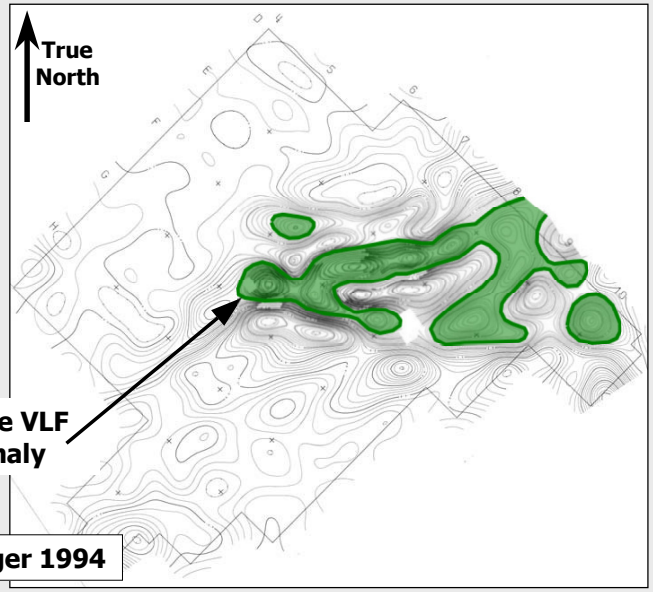
Plate 3
Pre Pumping
SVD of Total VLF
Cutler, Maine

Note: The limits of the anomalies are shown at 0.1 SVD Units

Plate 4
Post Pumping
SVD of Total VLF
Cutler, Maine

Pre and Post Pumping – FHD of VLF Tilt
Cutler, Maine Transmitter





Positive VLF Anomaly

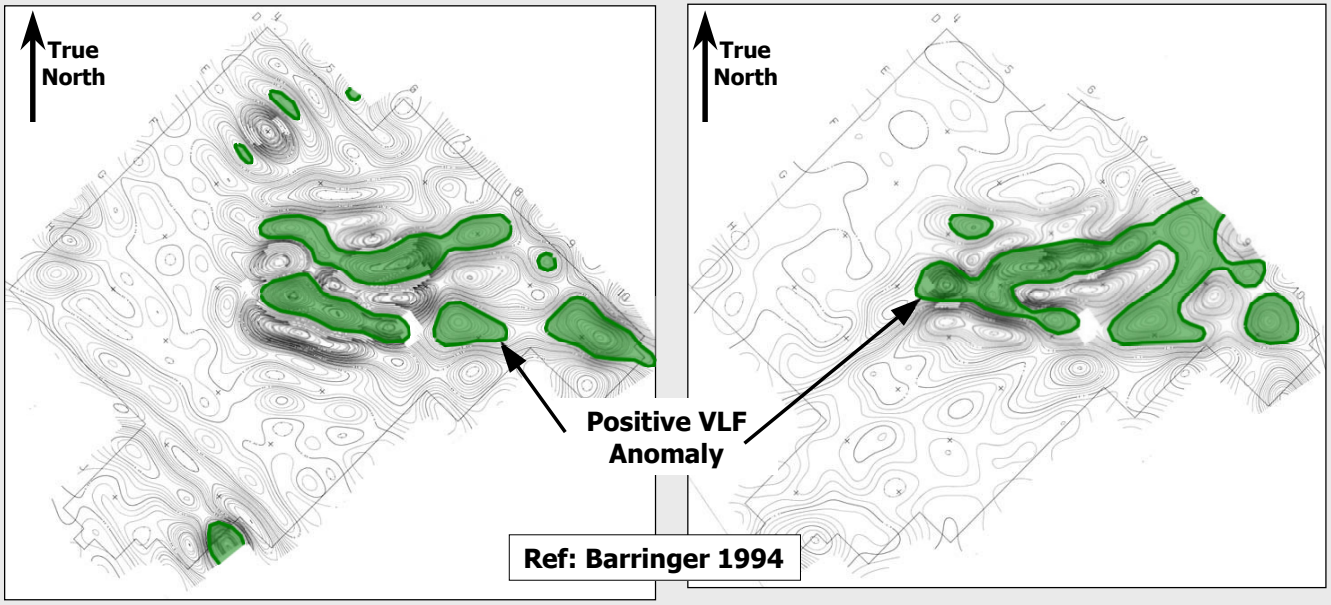
Ref: Barringer 1994

Plate 6
Pre Pumping
FHD of VLF Tilt
Cutler, Maine

Note: The limits of the anomalies are shown at 5.0 FHD Units

Plate 7
Post Pumping
FHD of VLF Tilt
Cutler, Maine

SVD of Total VLF and FHD of VLF Tilt
Post Pumping - Cutler, Maine Transmitter



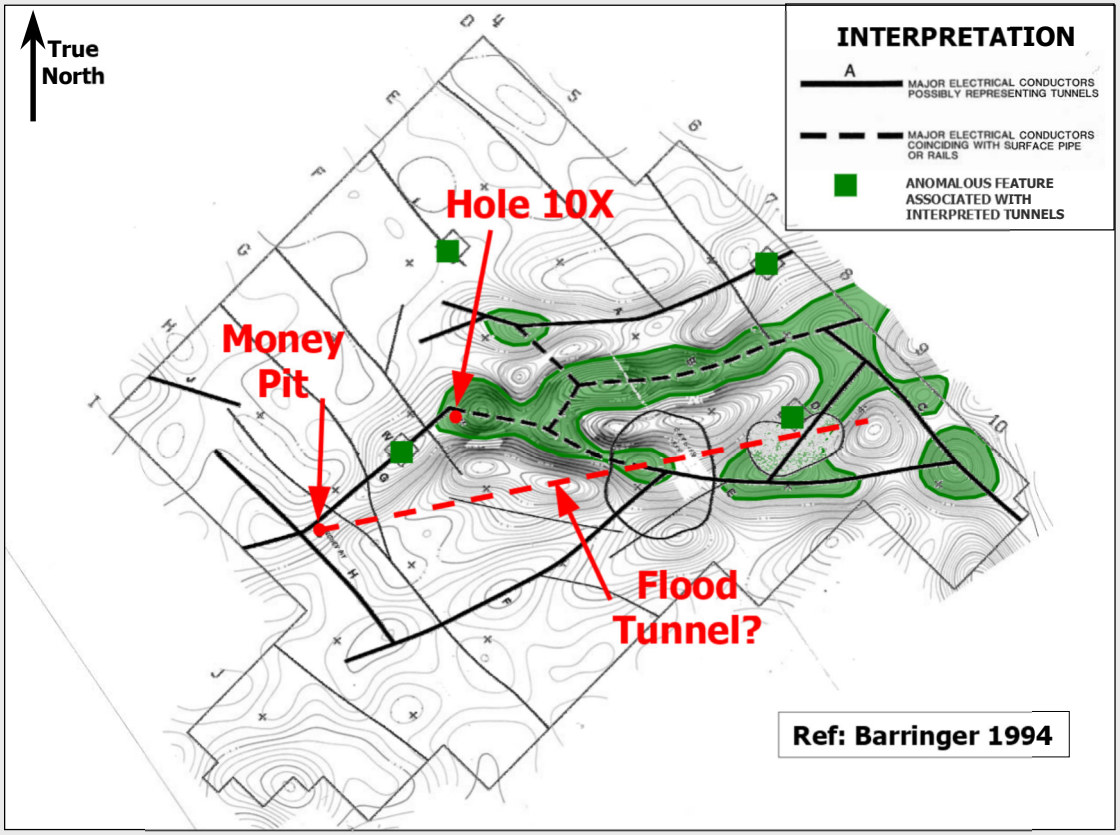
Positive VLF
Anomaly

Ref: Barringer 1994

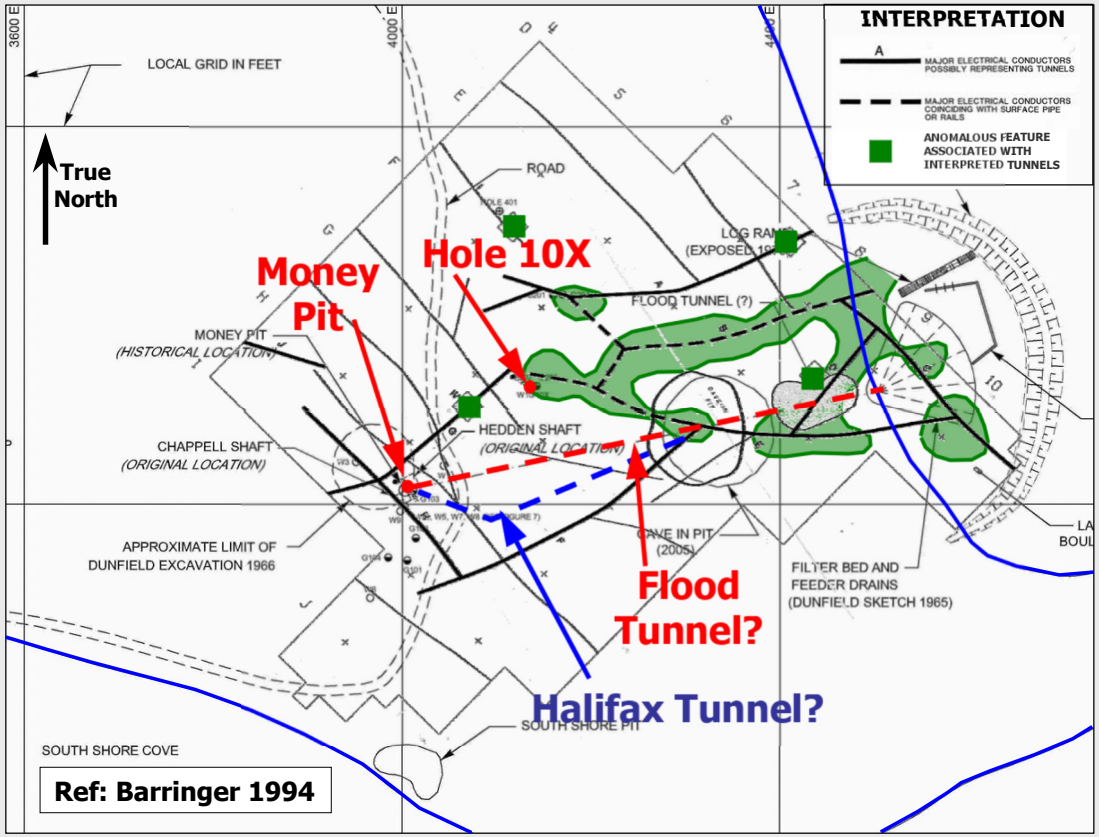
Plate 4
Post Pumping
SVD of Total VLF
Cutler, Maine

Plate 7
Post Pumping
FHD of VLF Tilt
Cutler, Maine

Interpretation Superimposed on VLF Anomalies from Plate 7 FHD of VLF Tilt – Post Pumping



Interpretation and Anomalies Superimposed on Map



Findings of Barringer VLF survey

Main Conclusions of Barringer Report

1. **Some VLF anomalies (electromagnetic conductors) resulted from the presence of steel pipes and rails on surface and these were identified separately.**
2. **Some of the other VLF anomalies (electromagnetic conductors) were interpreted as tunnels at a depth of 70 to 120 feet.**
3. **Four features along these anomalies were interpreted to probably indicate a localized cavity or collapse in the tunnels but could be concentrations of non-ferrous metals.**

Evaluation by Triton and Independent Specialists

1. **The identification of tunnel locations by Barringer does not correspond to the historical understanding of old tunnel locations.**
2. **The identification of tunnel locations by Barringer does not appear to be supported by significant VLF anomalies.**
3. **The detection of non-ferrous metals using VLF surveys is not an effective approach and such features could be background effects.**
4. **The results of the Barringer Geophysical Survey are disappointing.**

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Objectives and Components of Oak Island Detection Program

Progressive Objectives of Program

1. **Identify non ferrous metals in Money Pit area with down hole surveys.**

2. **Identify chambers and tunnels below 80 feet depth in Money Pit area with cross hole surveys.**

3. **Identify ferrous metals in the area west of the Money Pit with a magnetic survey (possibly locate iron chests containing treasure).**

Components of Program

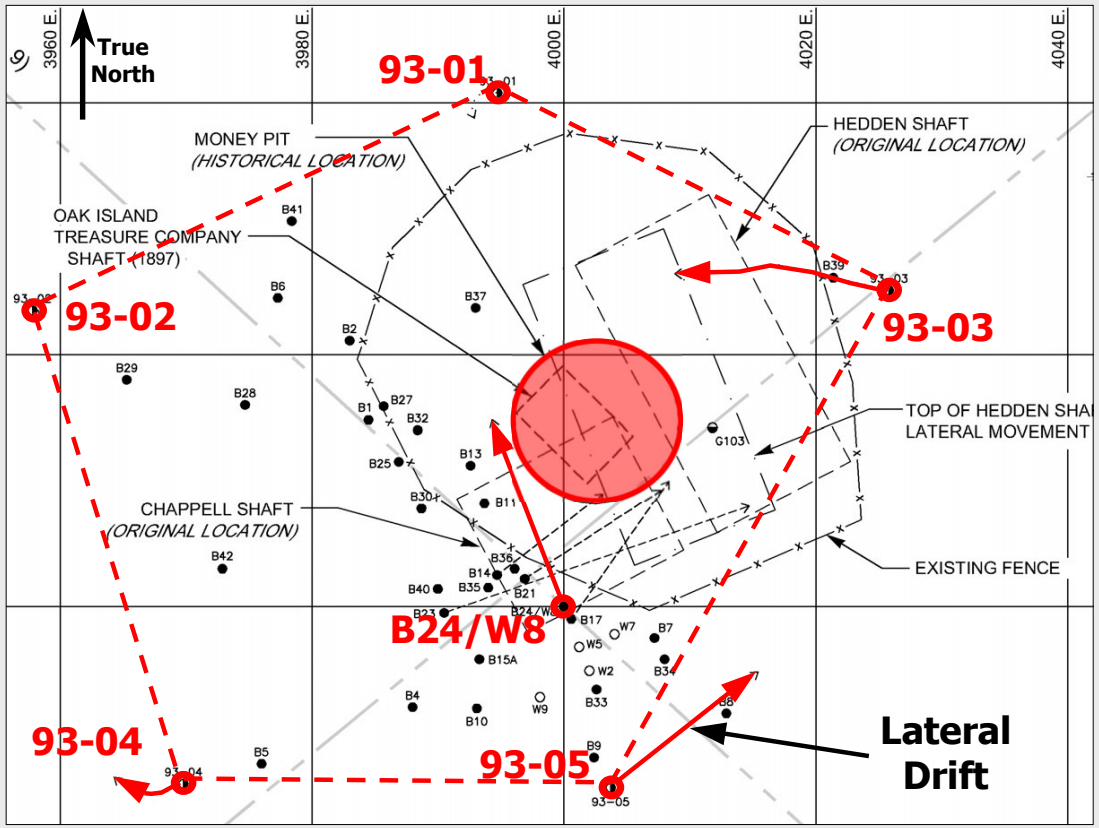
1. **Five deep holes were drilled to about 250 feet depth around the Money Pit forming a ring of approximately 60 to 70 feet diameter. Existing Hole B24/W8 was to be used as a central hole within the ring.**

2. **Down hole magnetic and electromagnetic (EM) surveys were done in each hole.**

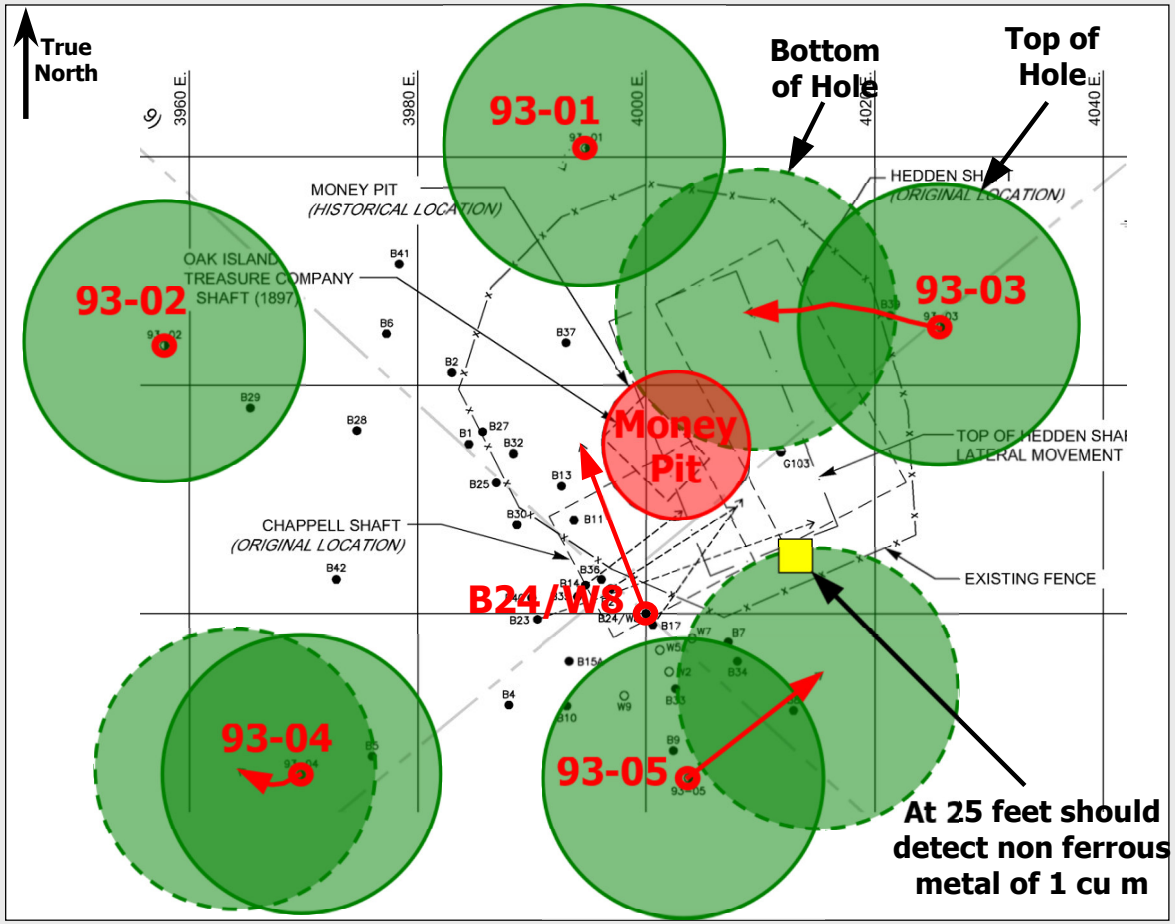
3. **Cross hole seismic surveys were done across the Money Pit area.**

4. **A magnetic survey was done to the west of the Money Pit area.**

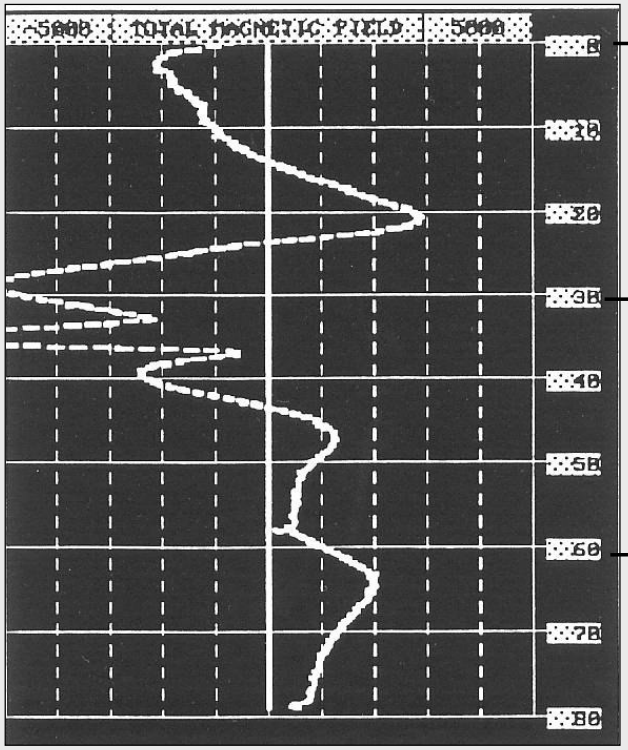
Plan of Five Deep Geophysical Holes and B24/W8 at Money Pit



Down Hole EM Survey Limits at 25 Ft Diameter



Typical Magnetic and EM Profiles from Hole 93-03

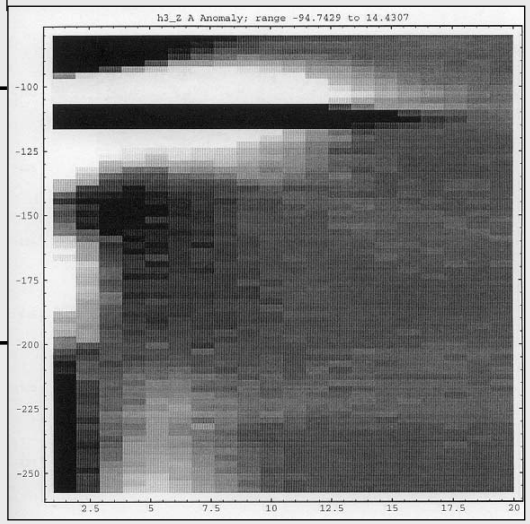


Depth
0

100 Ft
30.5 m

200 Ft
61.0 m

Interference from steel casing in the ground prevented definition of non ferrous metals in the EM profile



Magnetic Profile

Ref: Triton 1994

EM Profile

Plan of Cross Hole Seismic Tomography Panels B, C, D and G at Money Pit

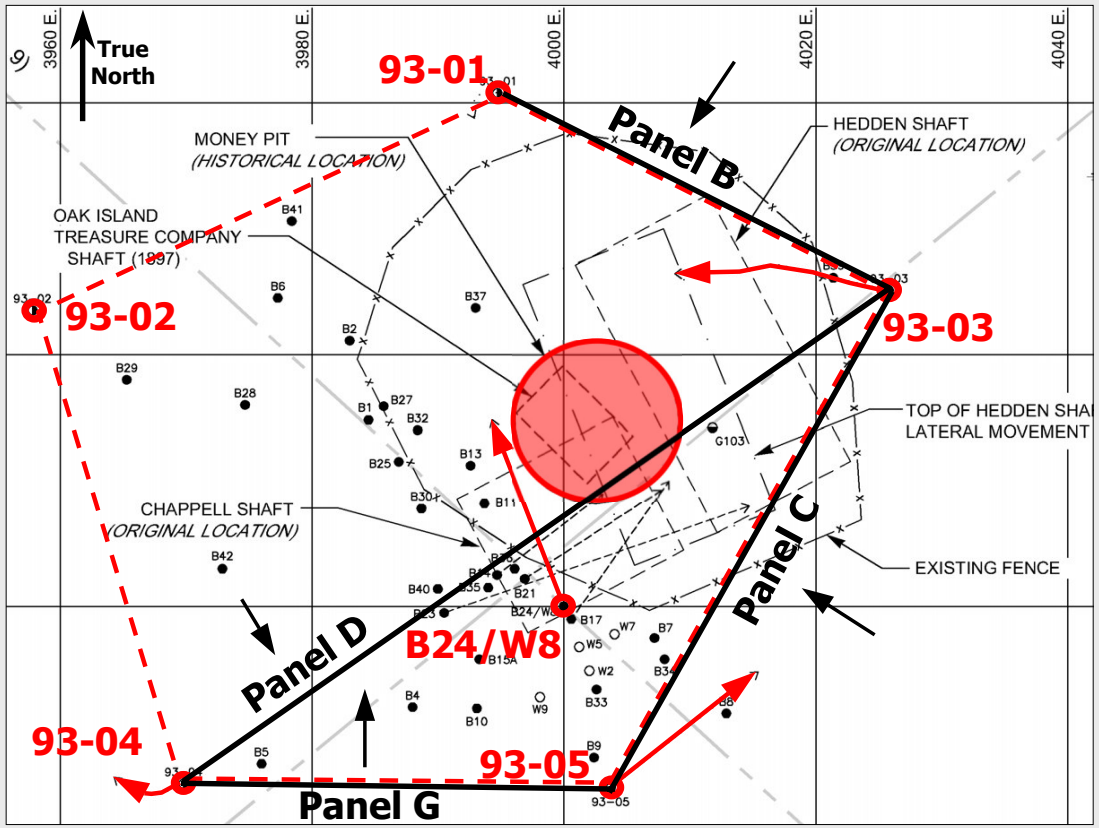
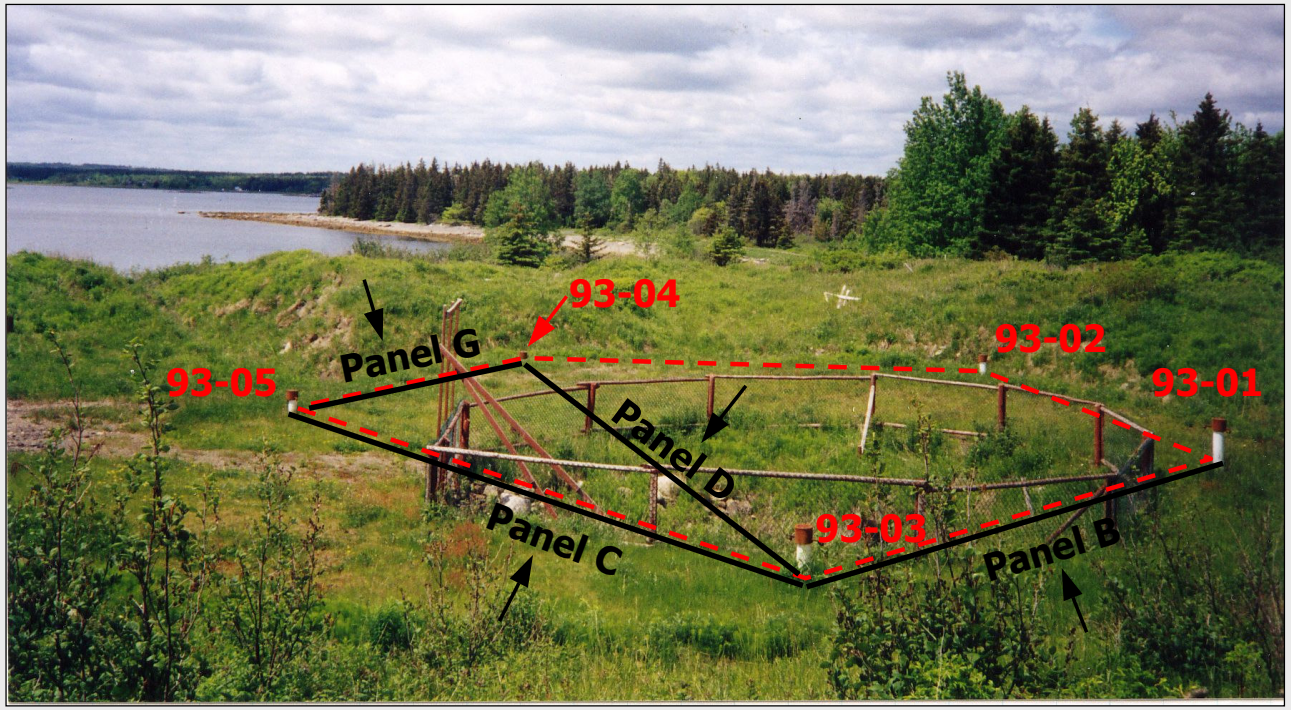


Photo Showing Location of Seismic Cross Hole Tomography Panels B, C, D and G at Money Pit



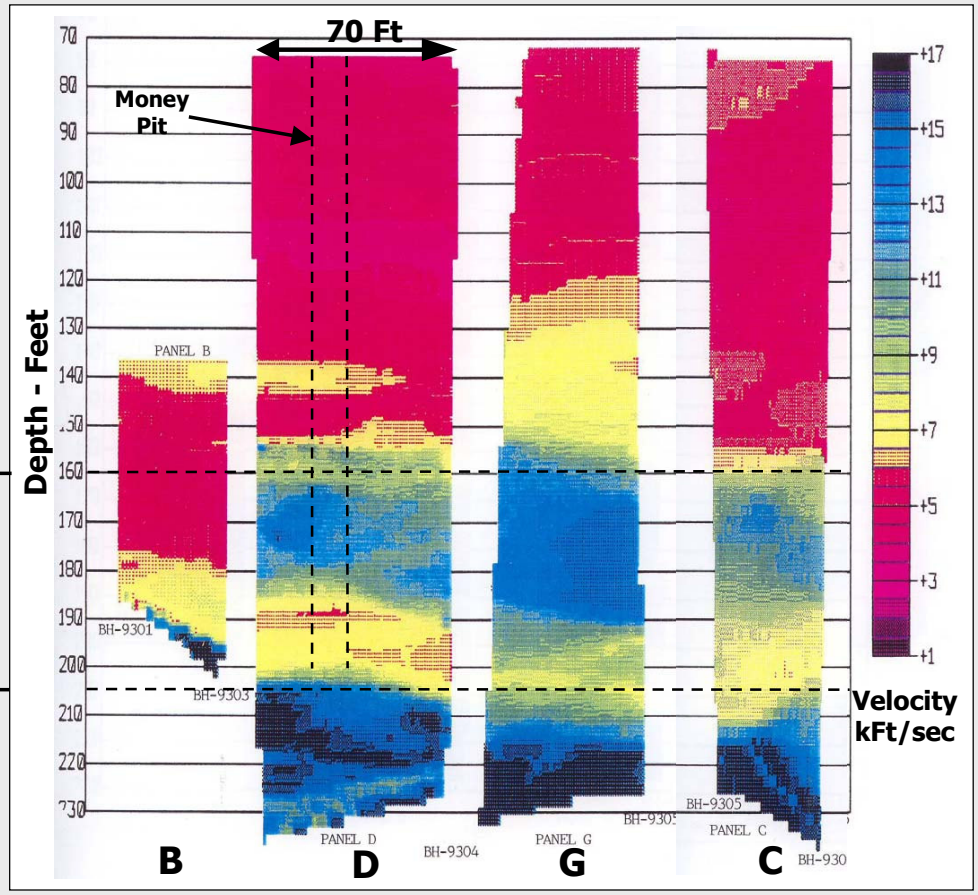
Initial Straight Ray Results Panels B, D, G and C

Generalized Stratigraphy at Money Pit

Glacial Till

160 Ft — **Broken Anhydrite**

205 Ft — **Competent Anhydrite**



Ref: Triton 1994

Plan of Cross Hole Seismic Tomography Panel D Used for Enhanced Interpretation

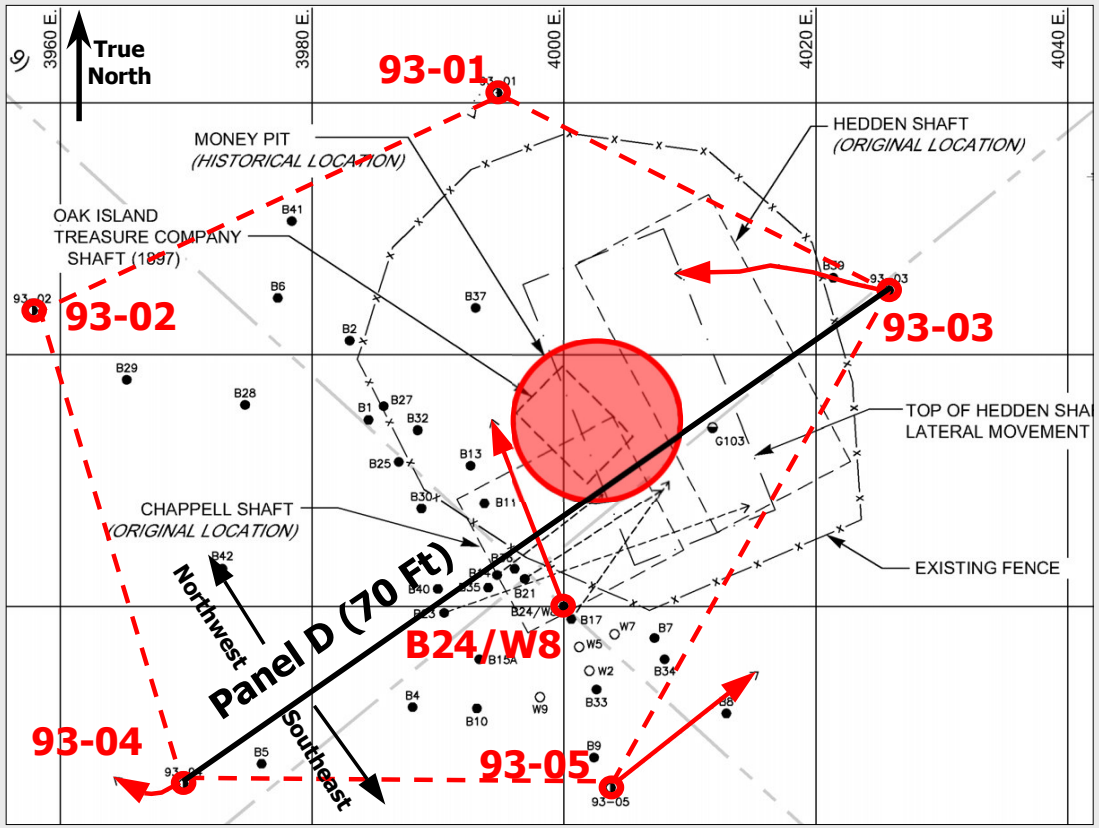
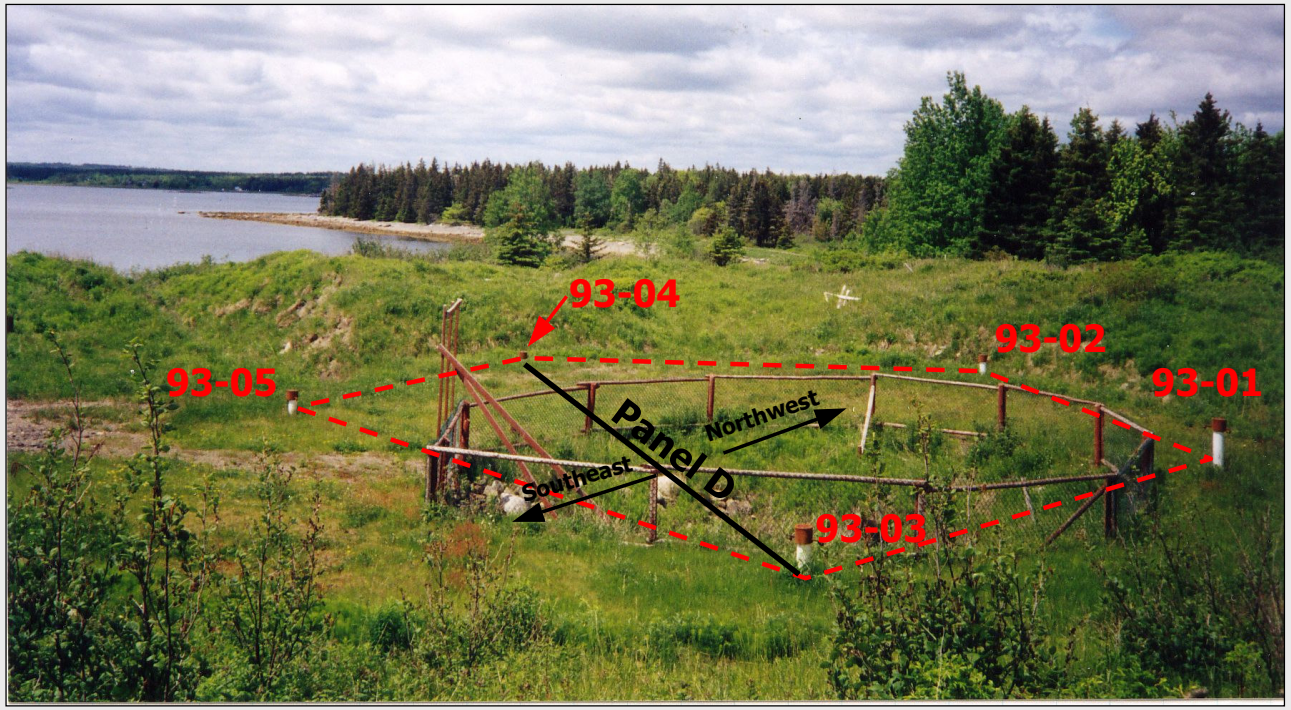


Photo Showing Location of Cross Hole Seismic Tomography Panel D at Money Pit



Enhanced Straight Ray and Curved Ray Results for Panel D Looking Southeast

Generalized Stratigraphy at Money Pit

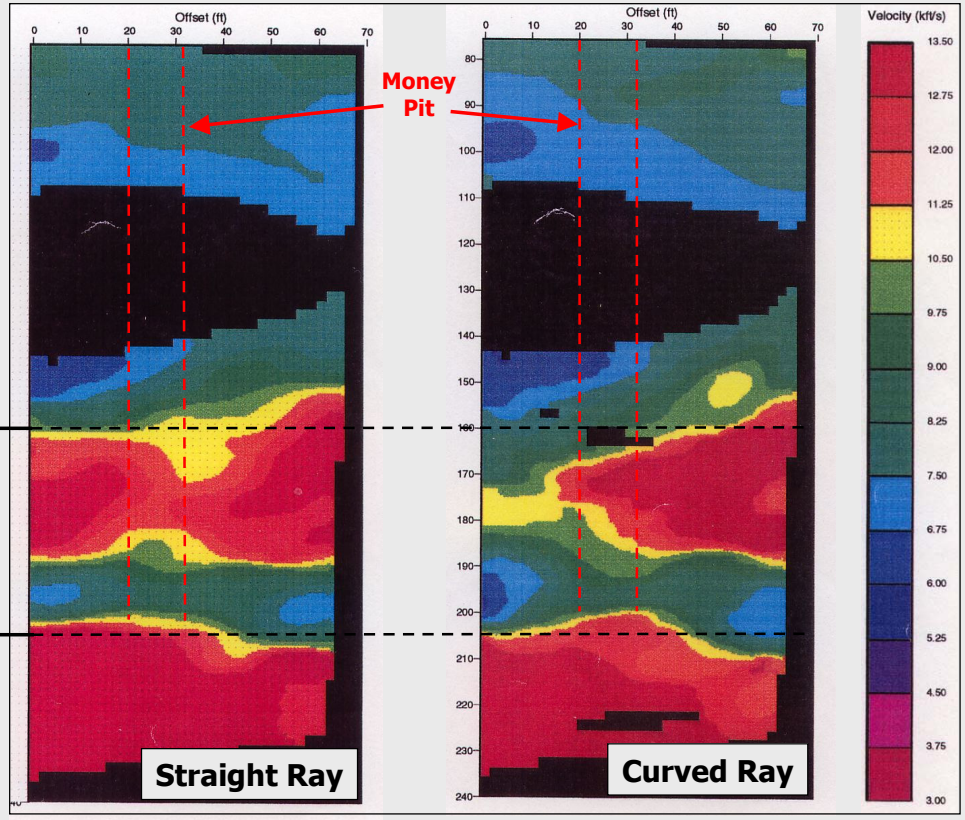
Glacial Till

160 Ft

Broken Anhydrite

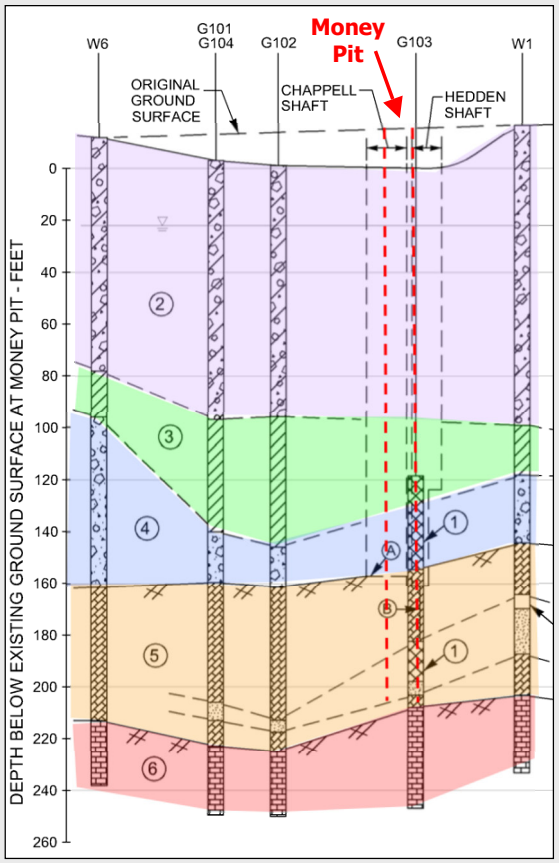
205 Ft

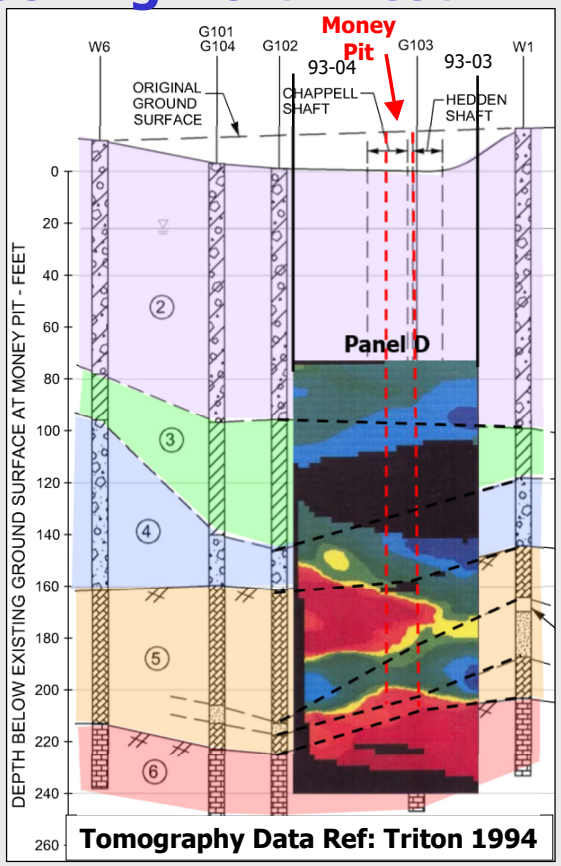
Competent Anhydrite

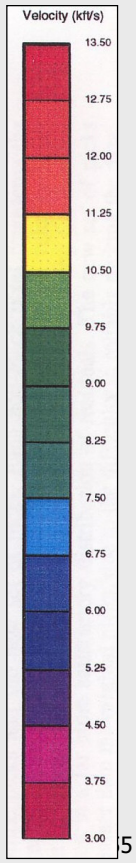


Ref: Triton 1994

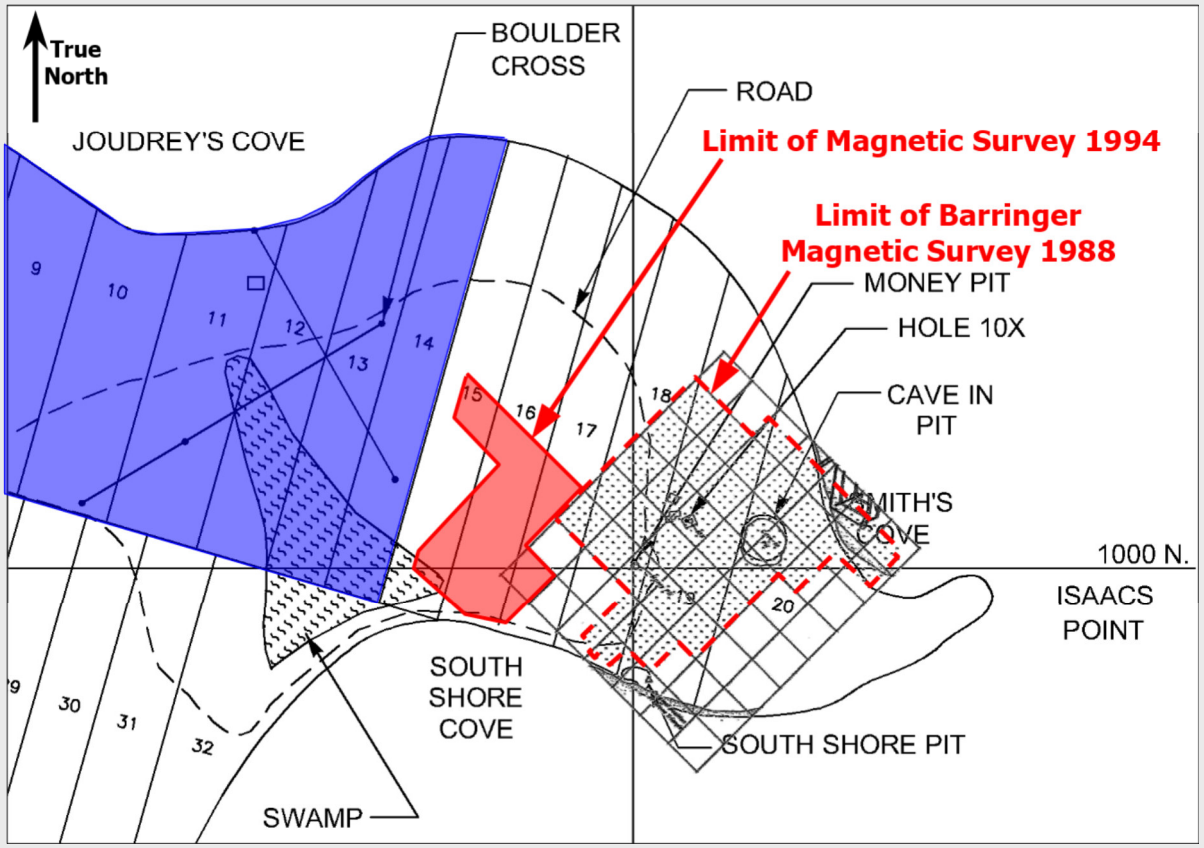
Profile of Curved Ray Tomography Results for Panel D Looking Northwest







Magnetic Survey 1994



Conclusions of Oak Island Detection Program

1. During down hole surveys a great deal of interference occurred due to the presence of steel drill rods and casings in the area of the Money Pit.

2. Hole B24/W8 could not be used for down hole magnetic and EM surveys because it had steel casing to a depth of about 200 feet.

3. The down hole magnetic testing was not able to identify the inferred ½ inch thick iron plate drilled through at a depth of 198 feet in Hole B25 located about 30 feet from the detection holes.

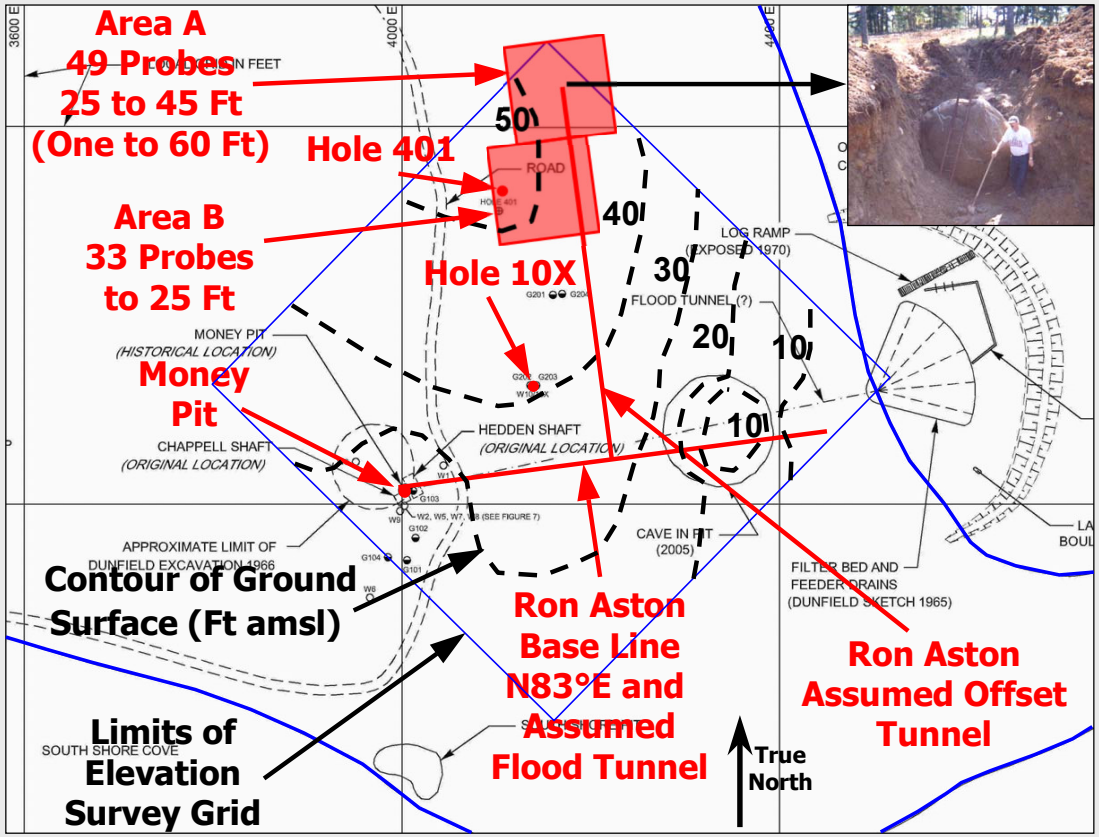
4. The down hole EM testing (after allowance for magnetic effects) did not identify reliable anomalous features which may represent non ferrous metals.

5. The cross hole seismic tomography survey at the Money Pit defined the geological zones of soil and rock but would not have been able to define regular shapes of underground chambers or tunnels (if they were not collapsed) due to the complex and irregular subsurface conditions in the broken anhydrite zone.

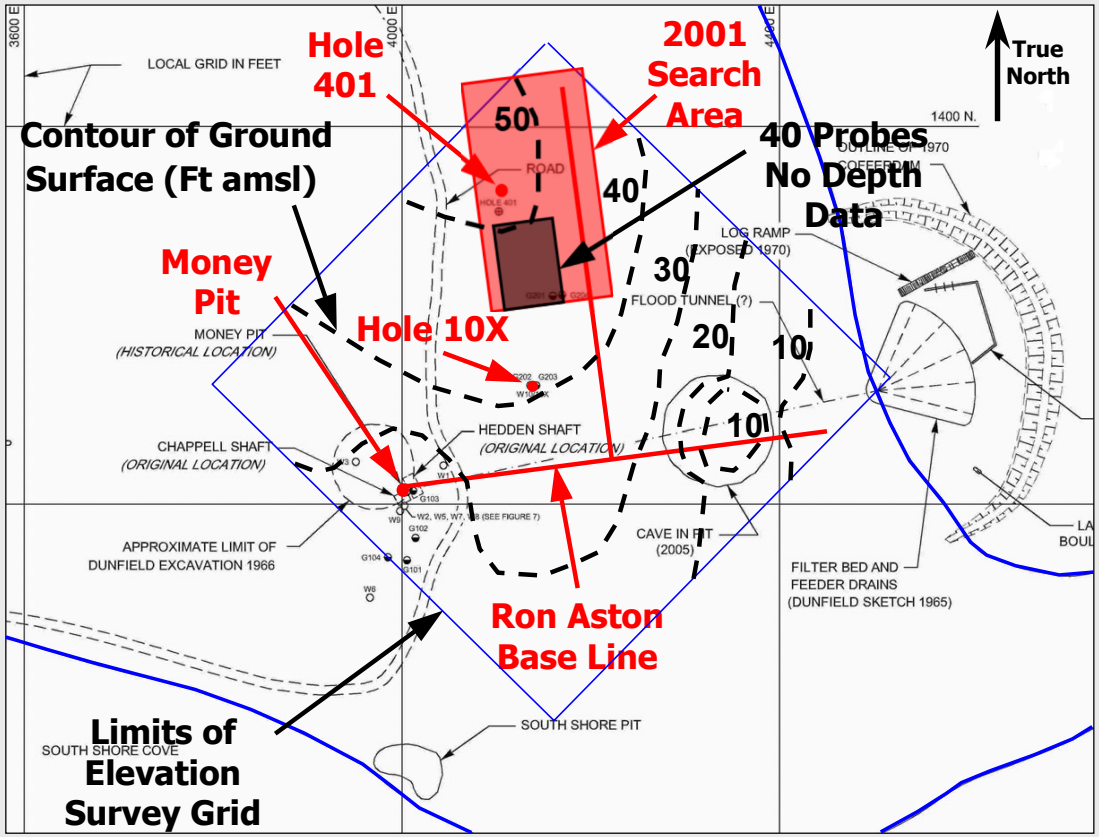
Outline of Presentation

1. Introduction
2. Geological Conditions
3. Geophysical Survey by Peter Beamish 1965 and 1966
4. Barringer Geophysical Survey 1988
5. Oak Island Detection Program 1992 to 1994
6. Ground Penetrating Radar Survey 2001
7. Review of Theories to Define Future Targets for Geophysical Surveys
8. Methods of Exploration and Prospects for Success in Future Geophysical Surveys
9. Conclusions

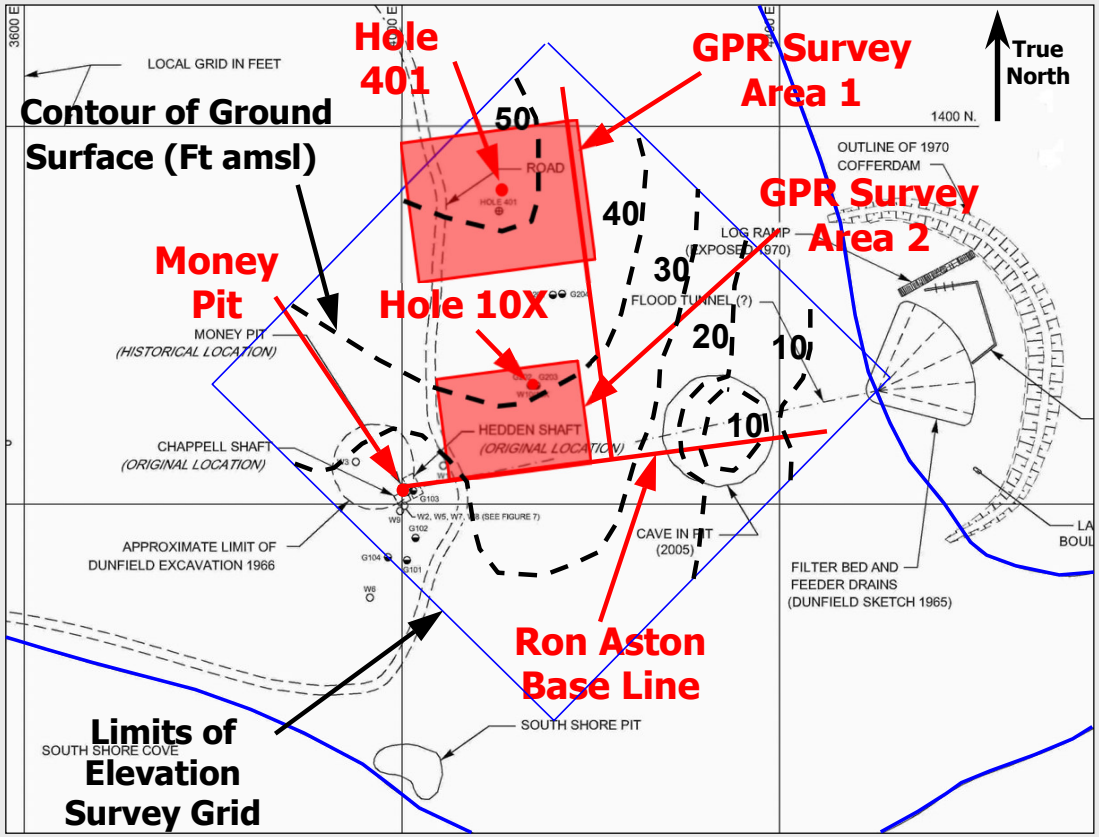
Location of Ron Aston Drilling Sites 1999 Leading to GPR Survey in 2001



Location of Ron Aston Search Area and Drilling Site 2001



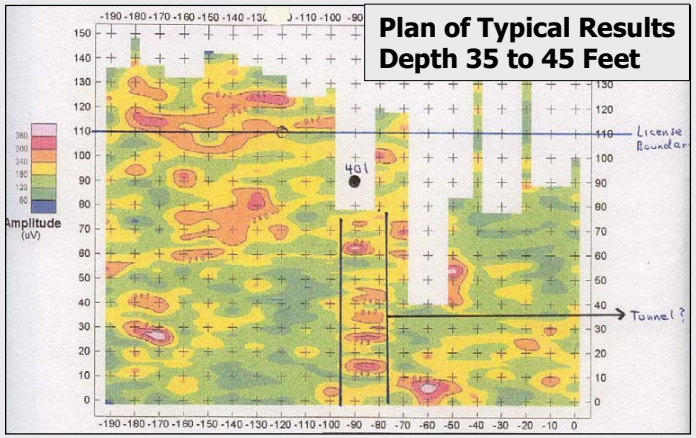
Location of GPR Surveys 2001

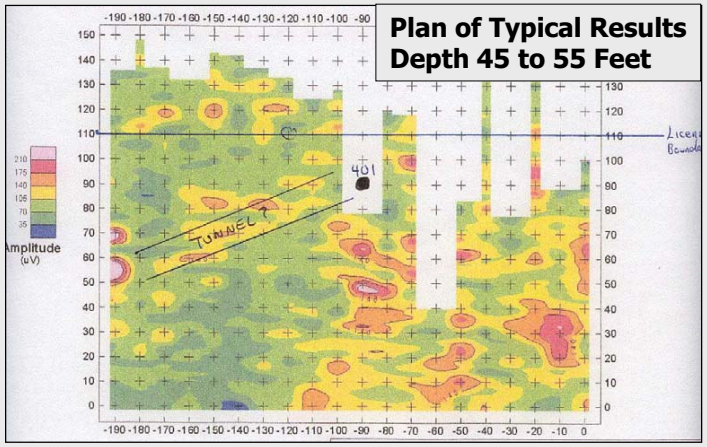


Typical Results of 2001 GPR Survey of Area 1

1. **GPR Equipment used: Sensors & Software Inc. Pulse Ekko 100**
2. **Survey done November 14 to 18, 2001.**
3. **More work recommended to define the nature of three anomalies found.**

Ref: Radarscan 2001





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Knights Templar

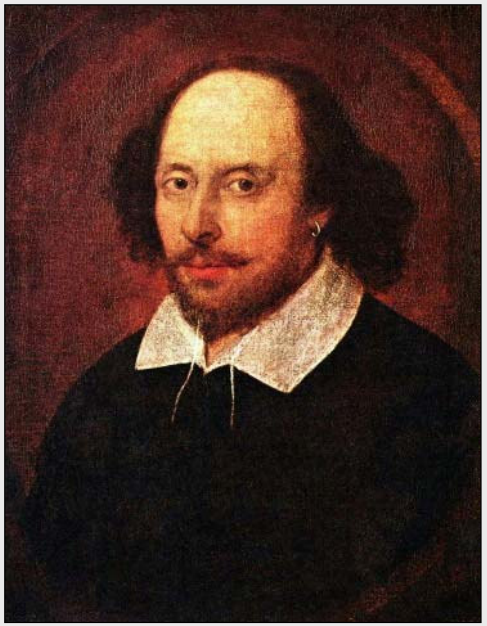
Sir Francis Drake and Queen Elizabeth 1
Did Drake Deceive the Queen?

Queen Elizabeth I 1533 - 1603

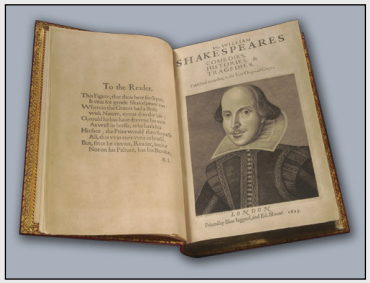
Sir Francis Drake 1540 - 1596

Sir Francis Bacon and William Shakespeare
The Missing Original Manuscripts and
The Bacon-Shakespeare Authorship Controversy

Sir Francis Bacon
1561 - 1626

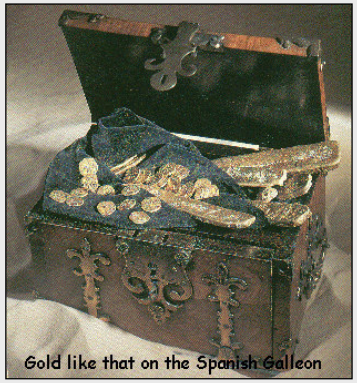


William Shakespeare
1564 - 1616

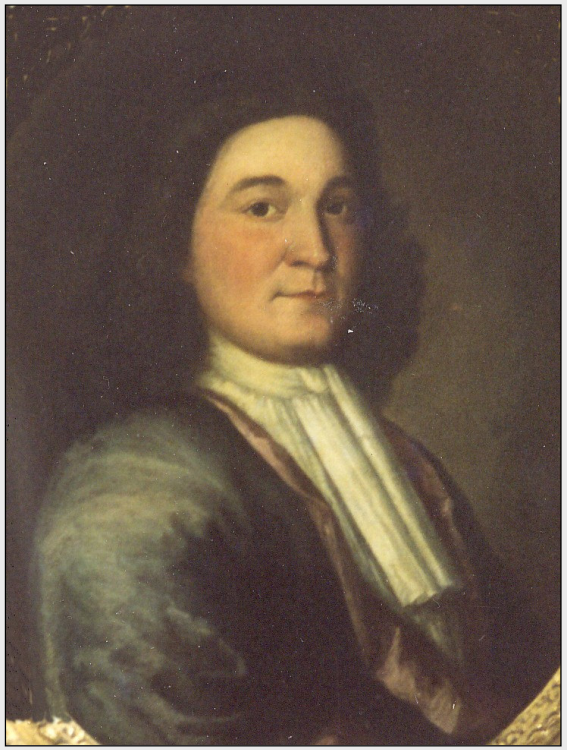


Shakespeare's First Folio
1623

Spanish Galleon Lost at Sea



Sir William Phips and Recovery of the Treasure from the Concepción 1688/89



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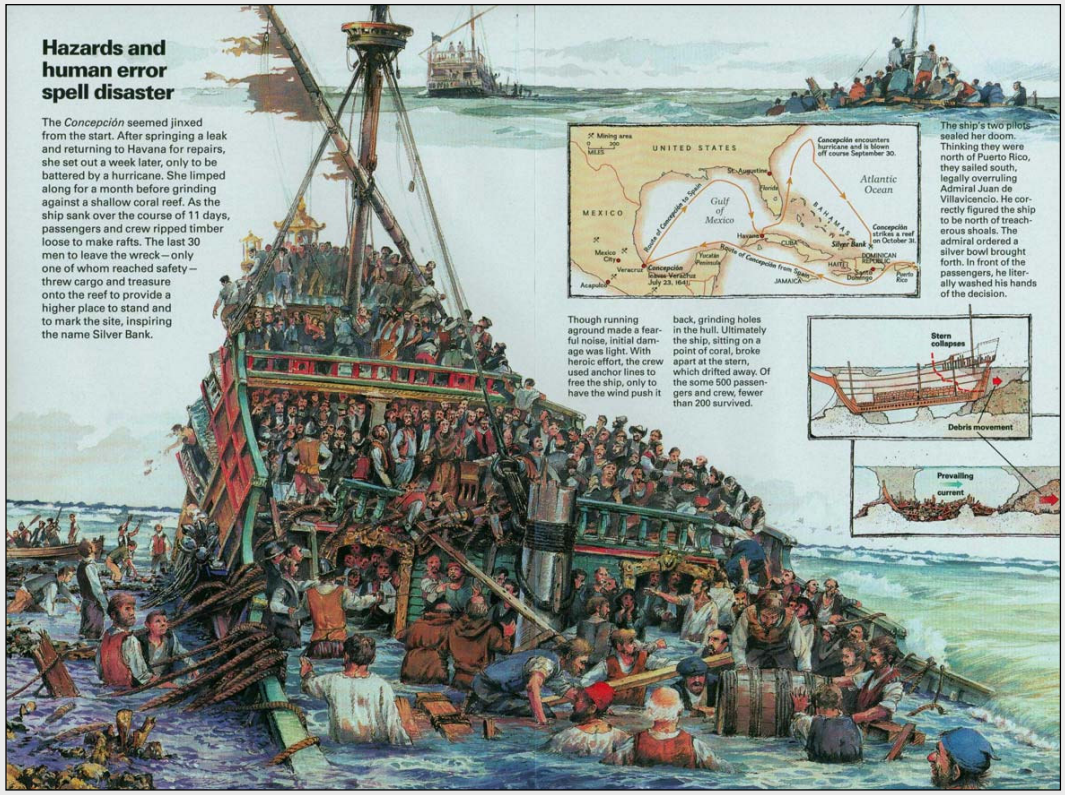


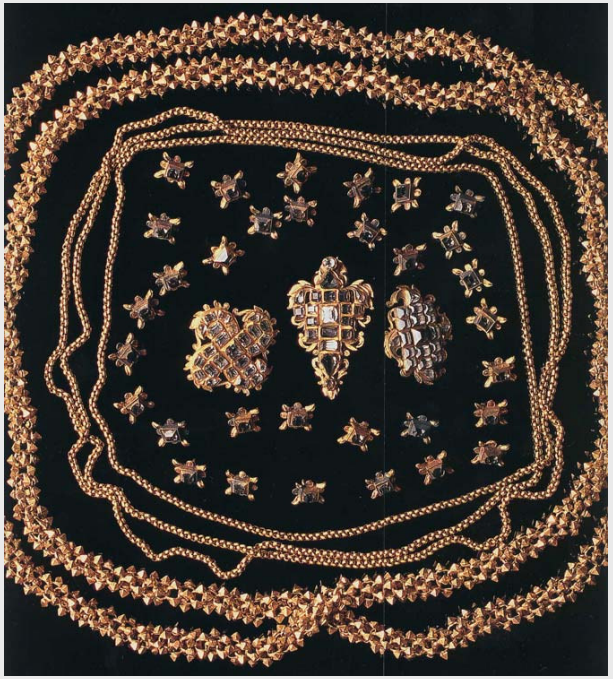
Sinking of the Concepción 1641

- **500 people on board**
- **300 people lost**
- **200 people survived**

Ref: Bowden 1996 (National Geographic)

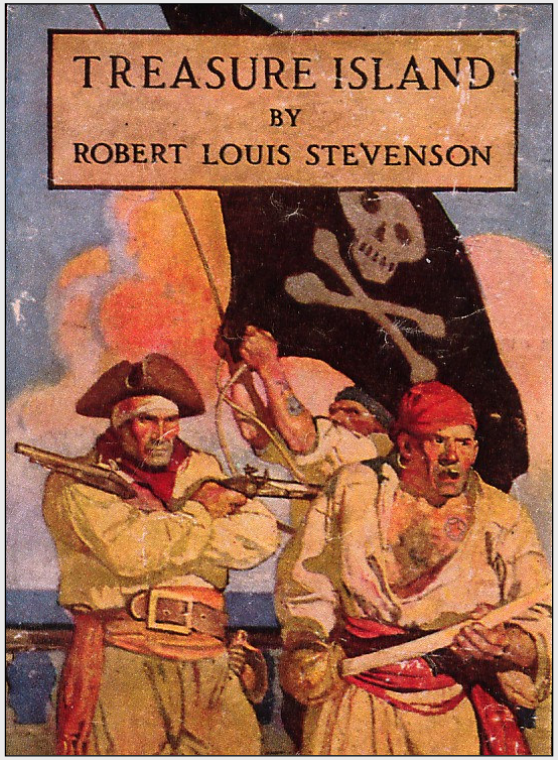
Treasure from the Concepción (Leftovers)

(Nuesta Señora de la pura y limpia Concepción)



Articles recovered in 1978 by Burt Webber
Ref: Bowden 1996 (National Geographic)

Pirates



1883

2006

A Recent Theory - The Portuguese

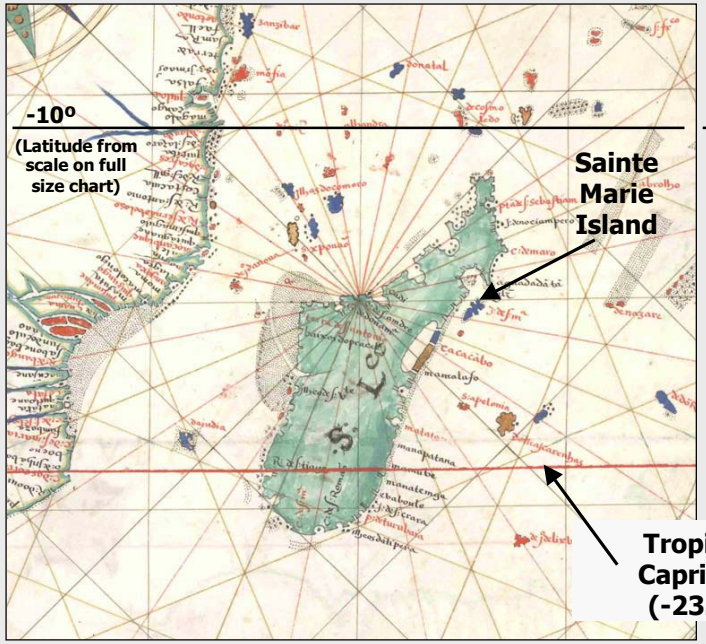
1. **In the 1500s, during the Portuguese voyages of discovery, Portuguese cartographers mapped the east coast of America in considerable detail with highly accurate latitudes (Woodward 2007).**

2. **In the 1500s, the Barcelos family from the Azores was granted land in Portuguese controlled North America. They used islands and mainland areas of the New World to raise livestock for colonization and future voyages (Vigneras 1973).**

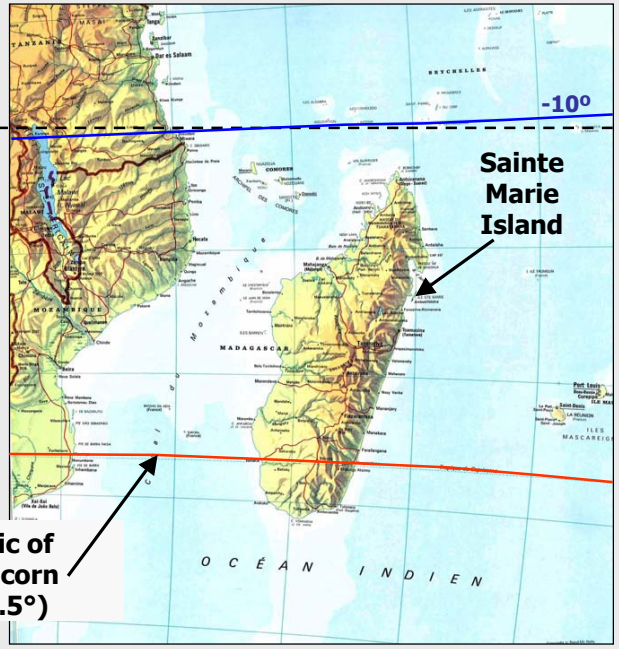
3. **Based on documents dated 1568, the Barcelos family petitioned to the King's Purveyor to settle on an island in North America called "Barcellona de Sam Bardão" where the family was "breeding herds of cows, sheep, goats and swine" (Vigneras 1973). This is believed to be the island identified on Velho Chart 3v (1560) as "Ilha Barcelonas" and this island appears to be in Mahone Bay.**

4. **The theory proposed is that the Barcelos family, and other wealthy families of the Azores, buried their gold, silver and jewels on an island in Mahone Bay before the Spanish take over in 1583.**

1560 Portuguese Chart of Madagascar and Modern Map to Illustrate Latitude Accuracy

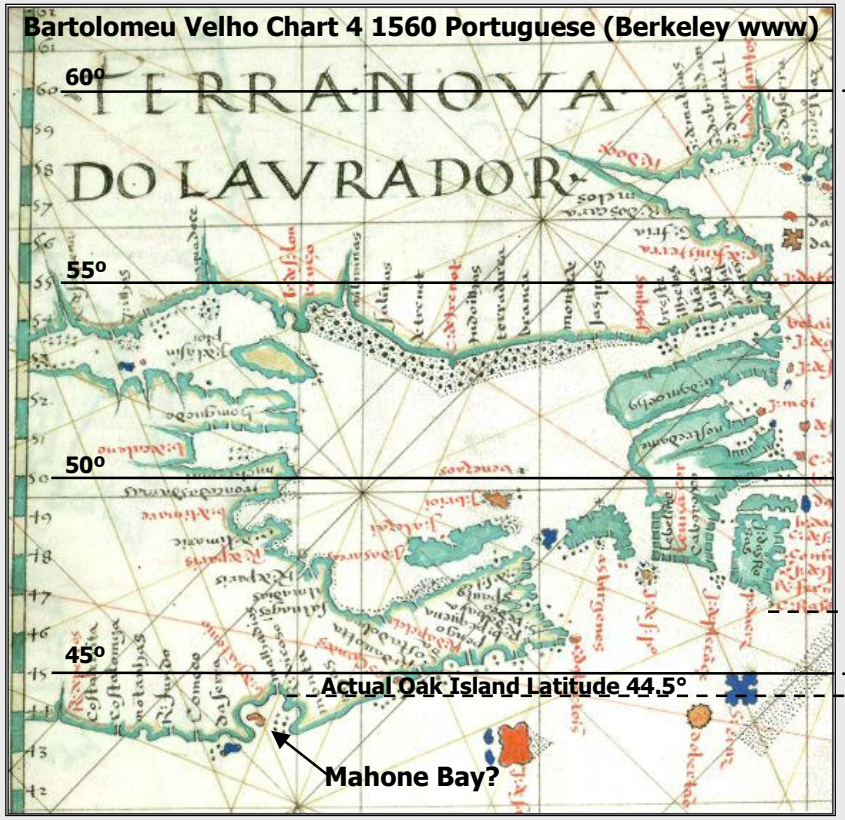


Bartholomeu Velho Chart 7v 1560 Portuguese (Berkeley www)

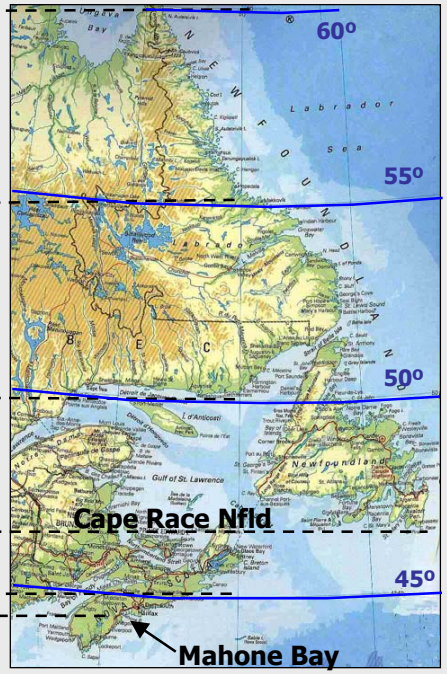


Modern Map

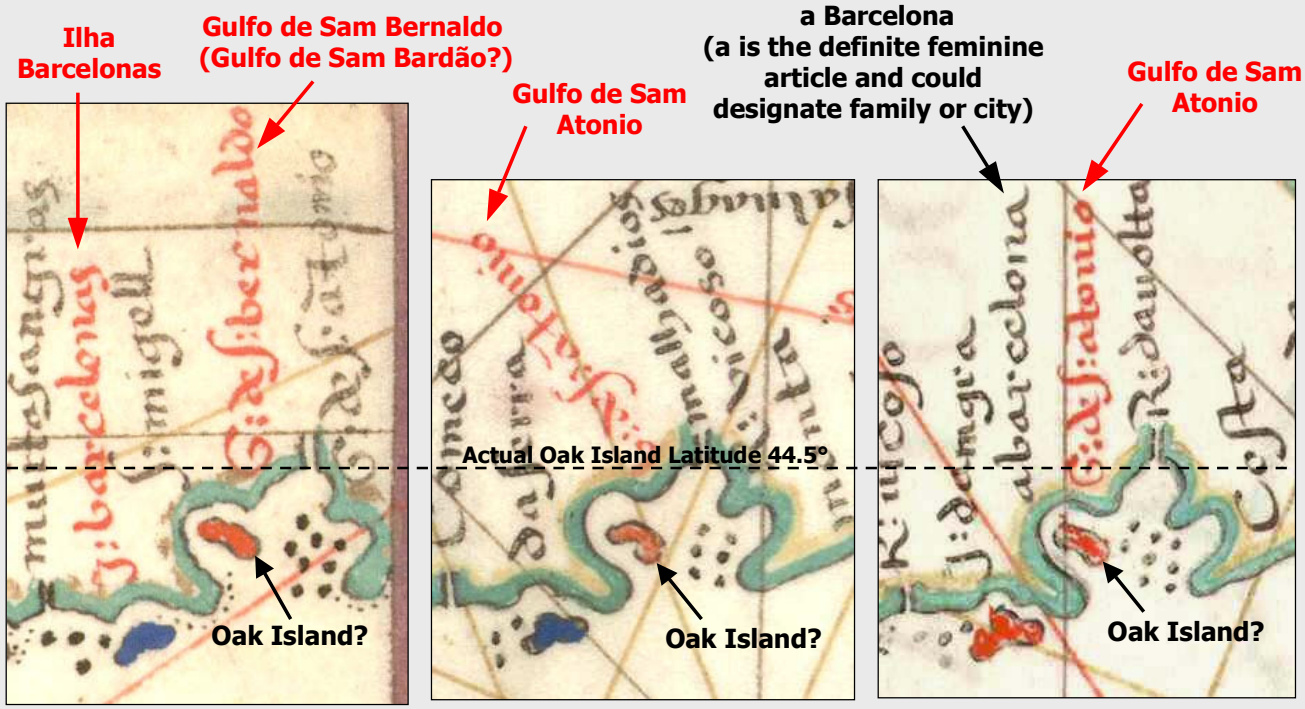
1560 Portuguese Chart of the New World and Modern Map to Illustrate Latitude 44.5°



Modern Map



Comparison of Three Velho Charts at Lat. 44.5°



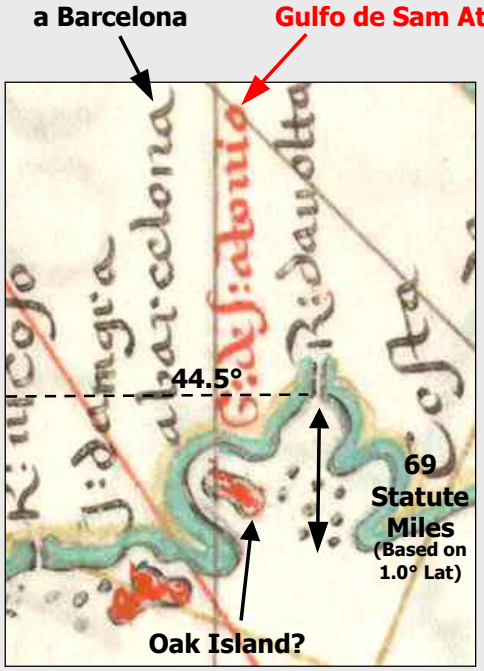
Velho Chart 3v
West Indies and Surrounding Coasts

Velho Chart 4
North Atlantic and Nfld

Velho Chart 4v
South America and Nfld

Bartolomeu Velho Charts 1560 Portuguese (Berkeley www)

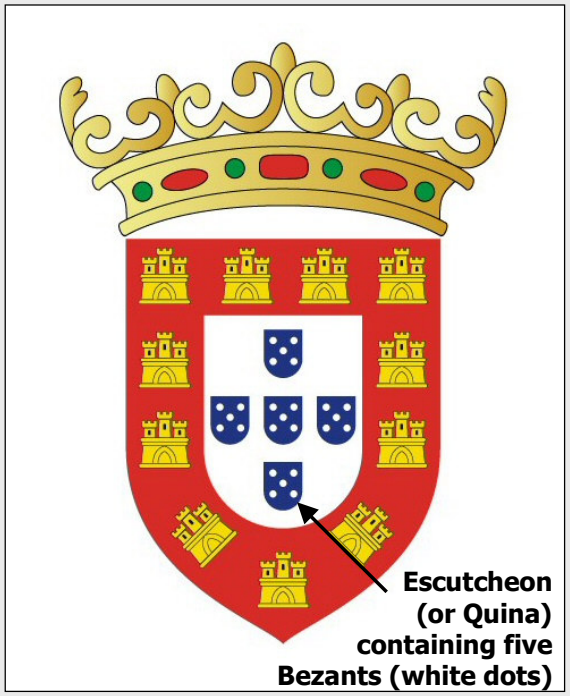
Velho Chart 4v and Modern Map Showing Gulf at Latitude 44.5°



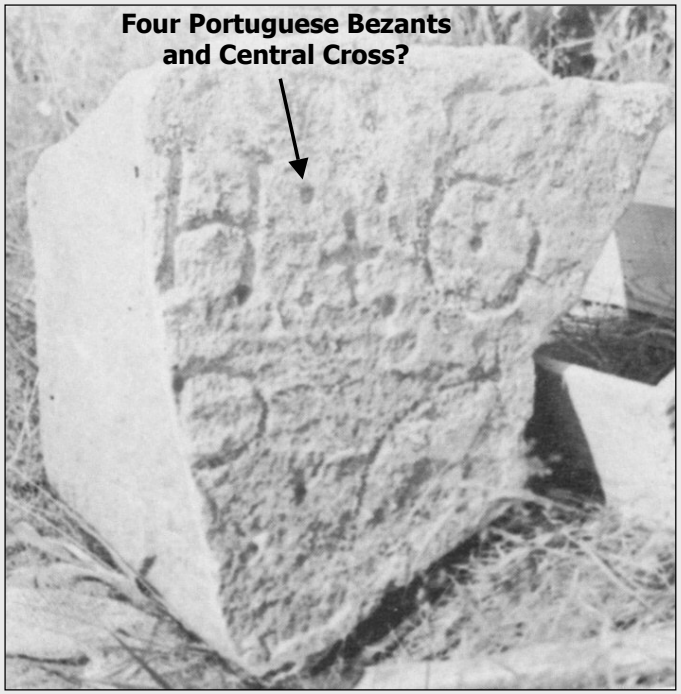
Velho Chart 4v
South America and Nfld
(Berkeley www)

Modern Map

Portuguese Flag Symbol from 1500s Compared to Engraved Hedden Stone



Portuguese Flag 1495 to 1577



Engraved granite stone found by Hedden in 1936

Evaluation of the Portuguese Theory

The Portuguese Theory is evaluated against the essential elements of motive, opportunity, means and circumstance proposed by Kinkor (1993) for such theories:

1. **Motive:**
   The Spanish claim to Portugal in 1580 during the Portuguese succession crisis was resisted by the Azores. In 1583, a Spanish invasion of the Azores was imminent. The citizens of the Azores had a strong motive to hide and protect their collective wealth from the Spanish.

2. **Opportunity:**
   After the unsuccessful invasion of the Azores by the Spanish in 1580, the influential families of the Azores had ample time to devise a well thought out plan to protect their wealth before the Spanish invasion of 1583.

3. **Means:**
   There were facilities and personnel on the Azores with the ability to construct fortresses and civil works such as sewers. The work force included Italian hydraulic engineers and African slaves. The influential families of the Azores had the ships and navigation skills to make the voyage as well as the means to construct the underground works at Oak Island.

4. **Circumstance:**
   The selection of Oak Island is consistent with the premise that valuables would be hidden at a remote location (Gulfo de Sam Benaldo) know to the Portuguese but relatively unknown to others.

Theories - Who Buried What and When?

Who	What	When
1. The Knights Templar	The treasure of the Knights Templar (The Holy Grail)	1300s to 1400s
2. Spanish	Treasure from damaged Spanish Galleon which sunk on way home	1500s
3. Spanish	Treasure stored on several occasions in underground vaults	1500s
4. Portuguese	Treasure from the Azores	1580s
5. Sir Francis Drake	Plundered Spanish treasure	Late 1500s
6. Sir Francis Bacon	The original Shakespearean Manuscripts	1600s
7. Masons	Sacred treasure	1600s to mid 1700s
8. French	Treasure from French pay ship destined for Fortress Louisbourg	Mid 1700s
9. Sir William Phips	Treasure recovered from the Spanish Galleon Concepción sunk in 1641	Money Pit 1688-89 Flood Tunnel 1752-54
10. Conspirators from the British Military	Spoils from the sack of Havana in 1762	Shortly after 1762
11. Not Yet Identified	Not Yet Identified	Not Yet Identified

Note: Other less credible theories include Early Civilizations, Egyptians, Incas, Mayans, Aztecs, Mi'kmaq, Vikings, Acadians, Pirates and Aliens.

Theories – Where is the Treasure?

Who	Where
1. Many Researchers	Money Pit
2. Laverne Johnson	Offset chamber northwest of Money Pit
3. Ron Aston	Offset chamber north of Flood Tunnel
4. Several Researchers	Offset chamber from Money Pit
5. Fred Nolan (and others)	Fred Nolan's lots, swamp
6. Petter Amundsen	Locations referenced to Boulder Cross
7. Several Researchers	Various locations on Oak Island by separate groups at different times
8. Several Researchers	Other Islands in Mahone Bay
9. Michael Bradley	New Ross, Nova Scotia, 20 miles inland from Oak Island
10. Not Yet Identified	Money Pit and/or elsewhere

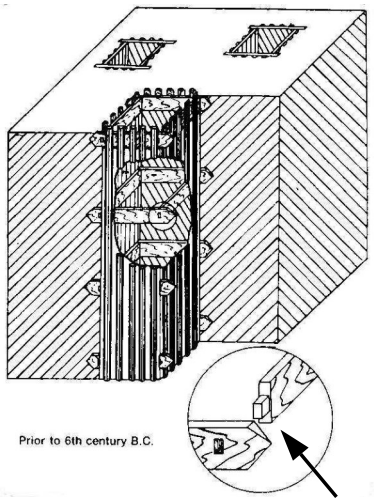
Theories – What Type of Underground Works were Constructed?

1. **Historical mining activities typically involve rectangular shafts. It is exceptional that the initial excavation of the Money Pit was circular in shape.**

2. **Much research has been done to find historical construction similar to the filter bed and flood system at Oak Island. Although no similar system has been found, three sites have been identified as having some resemblance to the Oak Island works.**

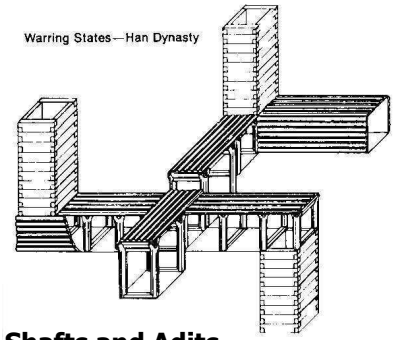
3. **All of the three sites are associated with Pirate "Banks" and are:**
   Kavanach Hill, Haiti
   Port Royal, Jamaica
   Sainte Marie Island, Madagascar

Ancient Chinese Gold Mine
Tong Lu Shan, Hubei Province, China



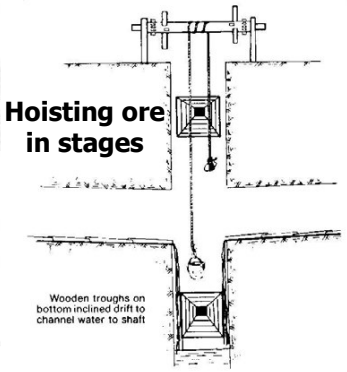
Mortice and Tennon Jointing

Prior to Sixth Century BC

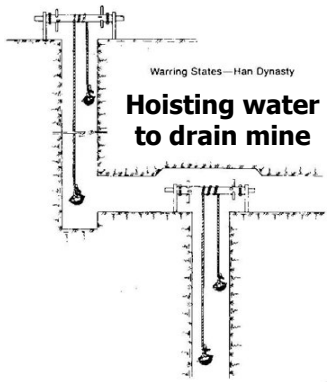


Shafts and Adits

Fifth Century BC to Third Century AD



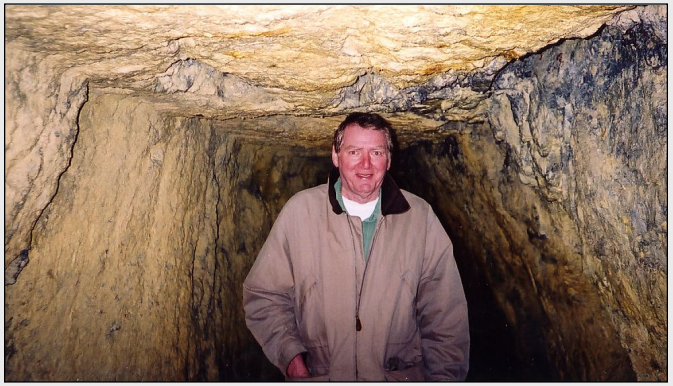
Hoisting ore in stages



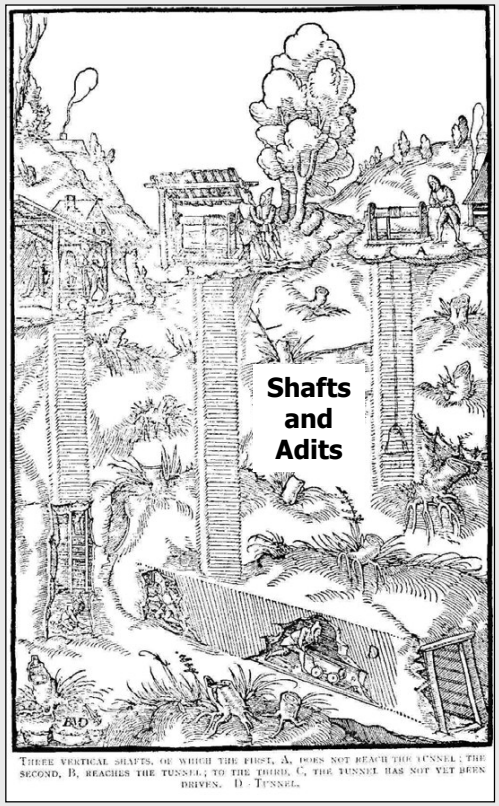
Hoisting water to drain mine

Ref: Argall 1981

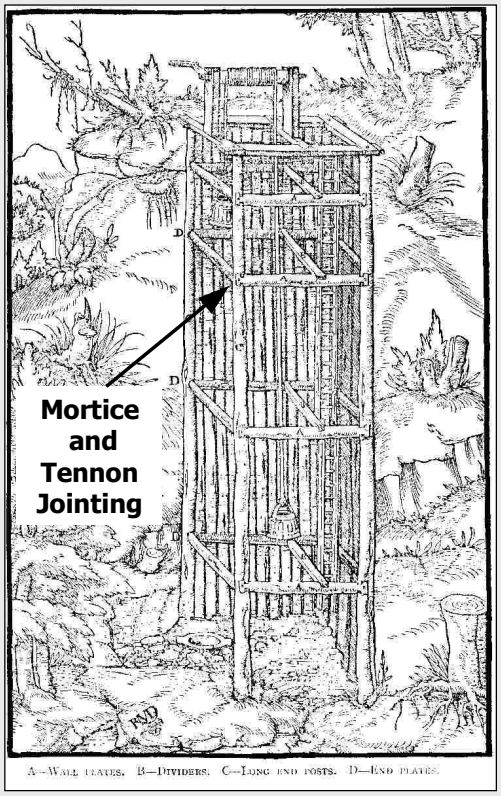
Roman Gold Mine in Romania
Second to Third Century AD



16th Century European Mining



THREE VERTICAL SHAFTS, OF WHICH THE FIRST, A, DOES NOT REACH THE TUNNEL; THE SECOND, B, REACHES THE TUNNEL; TO THE THIRD, C, THE TUNNEL HAS NOT YET BEEN DRIVEN. D - TUNNEL.

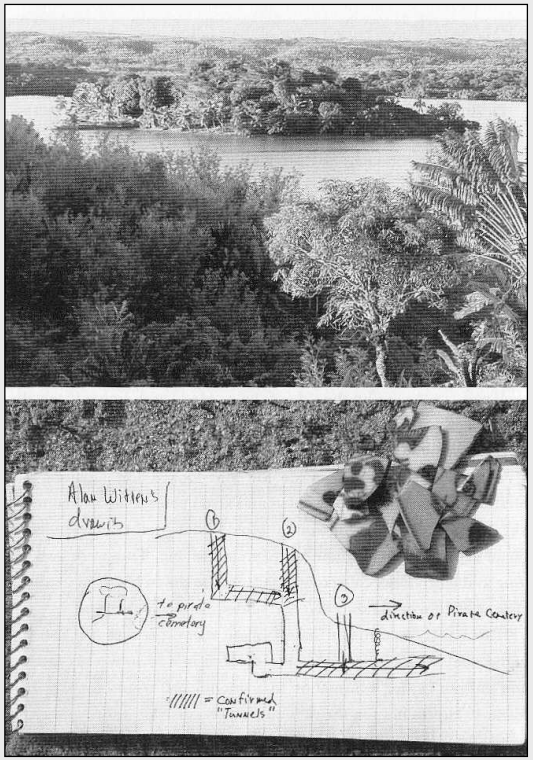


A—WALL PLATES. B—DIVIDERS. C—LONG END POSTS. D—END PLATES.

Ref: Agricola 1556

Pirate Tunnels, Sainte Marie Island, Madagascar (1650 to 1725)

Typical Geophex EM unit used to define Pirate Tunnels



Ref: Clifford 2003

Pirate Cemetery North of Pirate Island

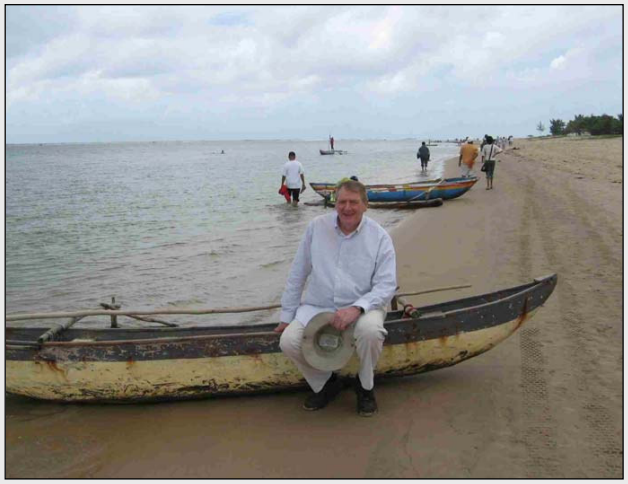
Photos courtesy Tim Clinton

Sainte Marie Island, Madagascar

Photos courtesy Slav Domurat

Madagascar

Lemur



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Outline of Presentation

1. Introduction
2. Geological Conditions
3. Geophysical Survey by Peter Beamish 1965 and 1966
4. Barringer Geophysical Survey 1988
5. Oak Island Detection Program 1992 to 1994
6. Ground Penetrating Radar Survey 2001
7. Review of Theories to Define Future Targets for Geophysical Surveys
8. Methods of Exploration and Prospects for Success in Future Geophysical Surveys
9. Conclusions

Methods of Exploration and Prospects for Success

Methods of Exploration

1. One application of geophysical methods would be to explore the reasonably undisturbed areas surrounding the Money Pit with the objective of finding an offset chamber. There is only limited potential for successful use of geophysical exploration in other areas of Oak Island.
2. The geophysical technology of Ground Penetrating Radar (GPR) should identify significant underground openings (or partially collapsed openings) to a depth of about 30 feet in a homogenous and undisturbed soil profile.
3. The geophysical technology of Electromagnetic (EM) survey should be able to verify the presence of shallow underground openings and may be able to locate non ferrous metals at shallow depth in a homogenous and undisturbed soil profile. Shallow depth is some 30 to 50 feet.

Prospects for Success

1. The prospects for success of GPR used in the context described above are about 50/50 or less.
2. The prospects for success of EM surveys used in the context described above are about 50/50 or less.
3. The prospects for success are based on the assumption that a feature exists at shallow depth and thus there is less than a 50/50 chance of finding that feature using geophysical methods.

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Conclusions

1. **There are no new "silver bullet" geophysical technologies available today which are significantly superior to the technology used during the Barringer Survey of 1988 and the Oak Island Detection Program from 1992 to 1994.**

2. **Definition of non ferrous metals in the Money Pit area by geophysical methods cannot be expected to be successful mainly due to the presence of steel rods and casings remaining in the ground from numerous past drilling programs.**

3. **Definition of chambers and tunnels (even if they are not collapsed) in the broken anhydrite zone from 160 to 205 feet in the Money Pit area by geophysical methods cannot be expected to be successful due to the complex and irregular subsurface conditions which are know to exist.**

4. **Beyond the Money Pit area, geophysical investigation would be useful to identify anomalies for investigation by drilling or shafting. Preferably such anomalies should be verified by at least two different geophysical methods.**

Acknowledgements

- Jo Atherton
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- Vincent Murphy (Geophysics)
- D'Arcy O'Connor
- Dick Pflederer (Cartography)
- David Tobias
- Paul Wroclawski (Portuguese Theory)

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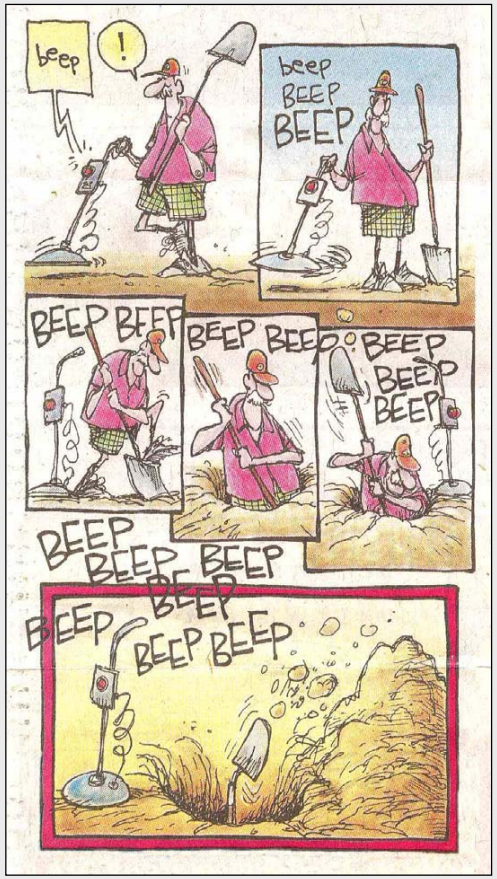
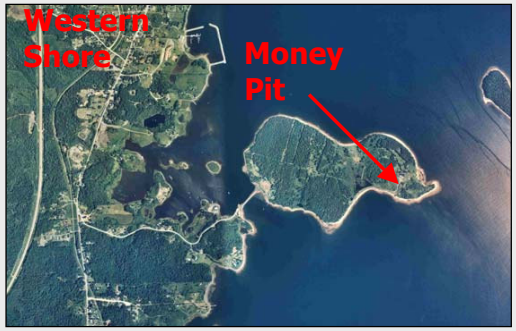
Don't Give Up the Search

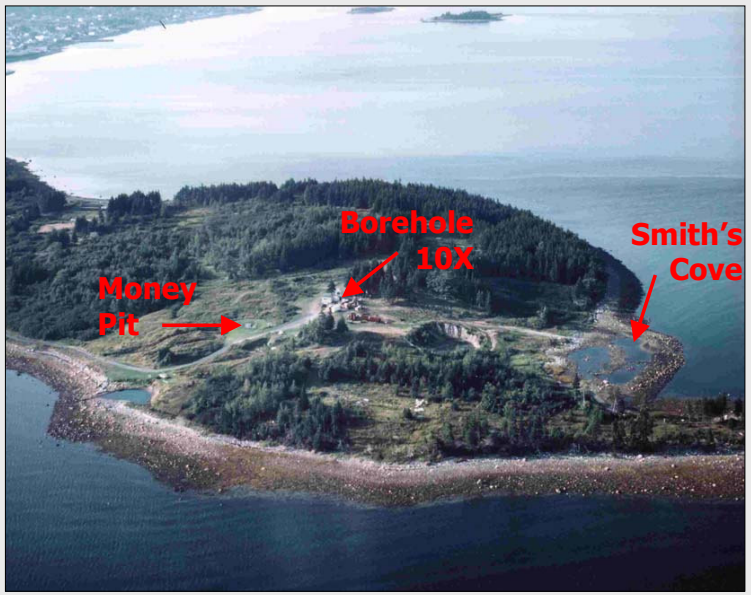


When Treasure is Recovered

Review of Geophysical Investigations
Oak Island, Nova Scotia



Oak Island 1992



Oak Island 1986

Presentation by
Les MacPhie
Explore Oak Island Days 08
Western Shore
Nova Scotia
June 22, 2008