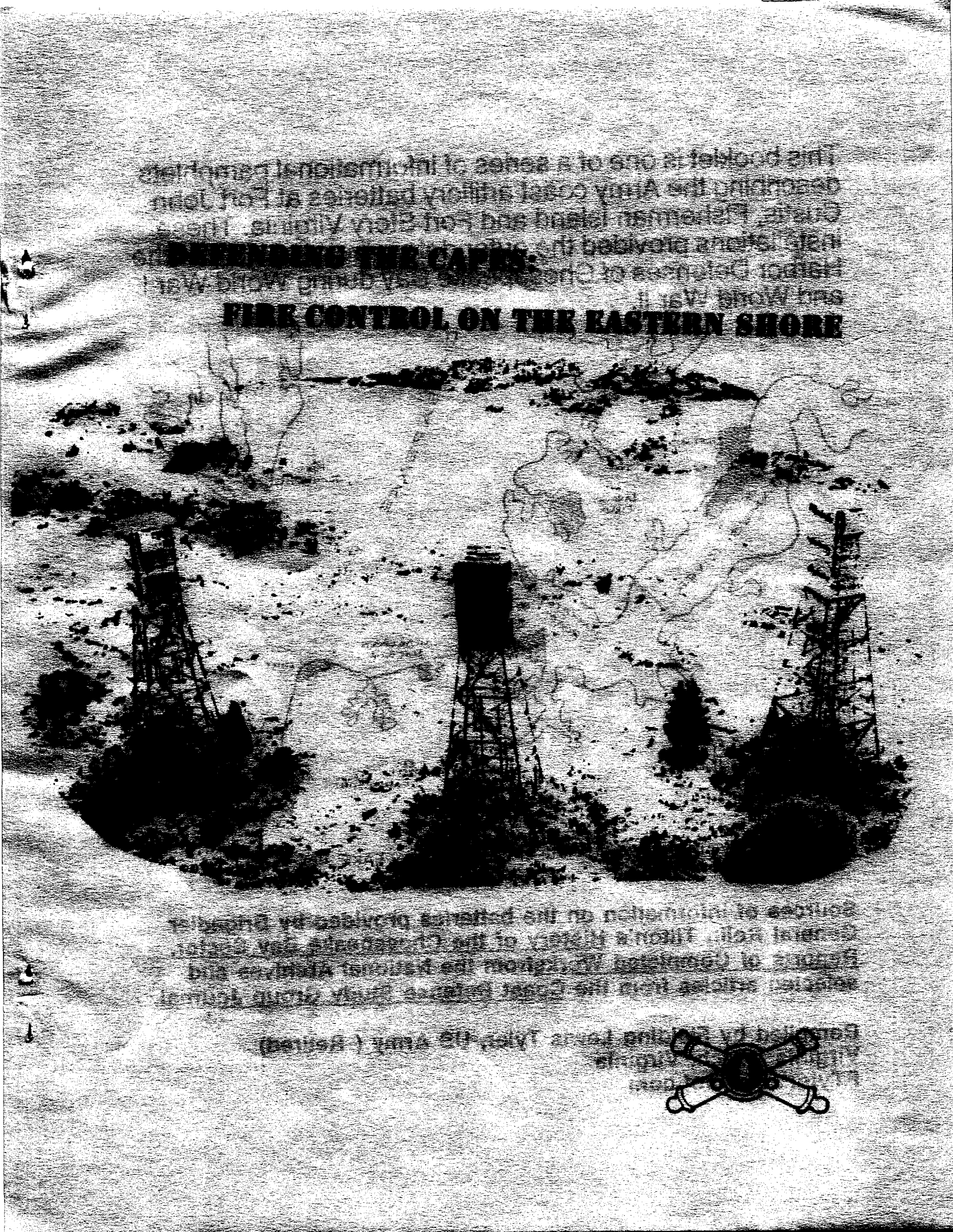
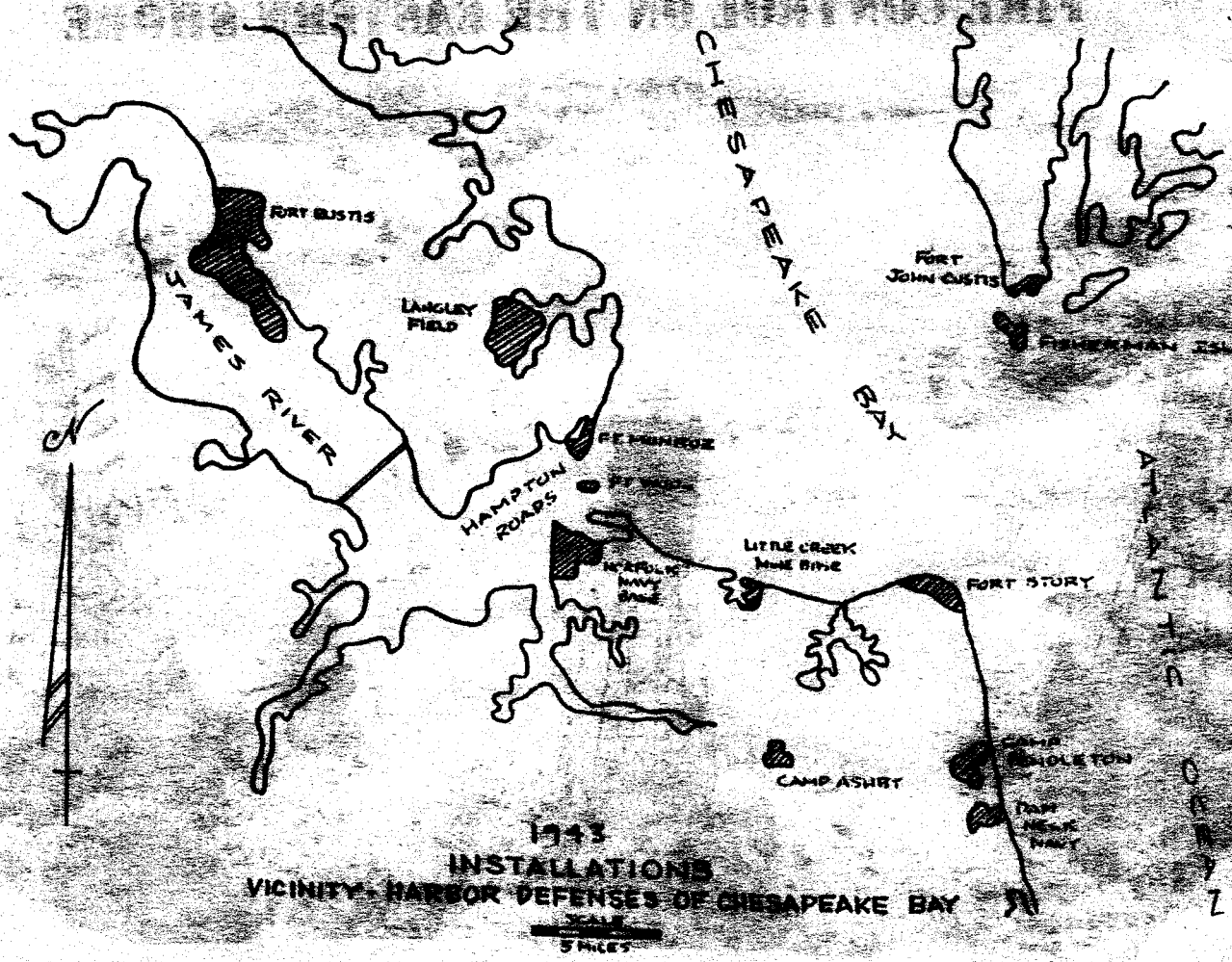
DEFENDING THE CAPES:

FIRE CONTROL ON THE EASTERN SHORE



This booklet is one of a series of informational pamphlets describing the Army coast artillery batteries at Fort John Custis, Fisherman Island and Fort Story Virginia. These installations provided the outer defensive positions for the Harbor Defenses of Chesapeake Bay during World War I and World War II.



Sources of information on the batteries provided by Brigadier General Rolin Tilton's History of the Chesapeake Bay Sector, Reports of Completed Worksfrom the National Archives and selected articles from the Coast Defense Study Group Journal.

Compiled by Fielding Lewis Tyler, US Army (Retired)
Virginia Beach, Virginia
FTylerVB2@aol.com

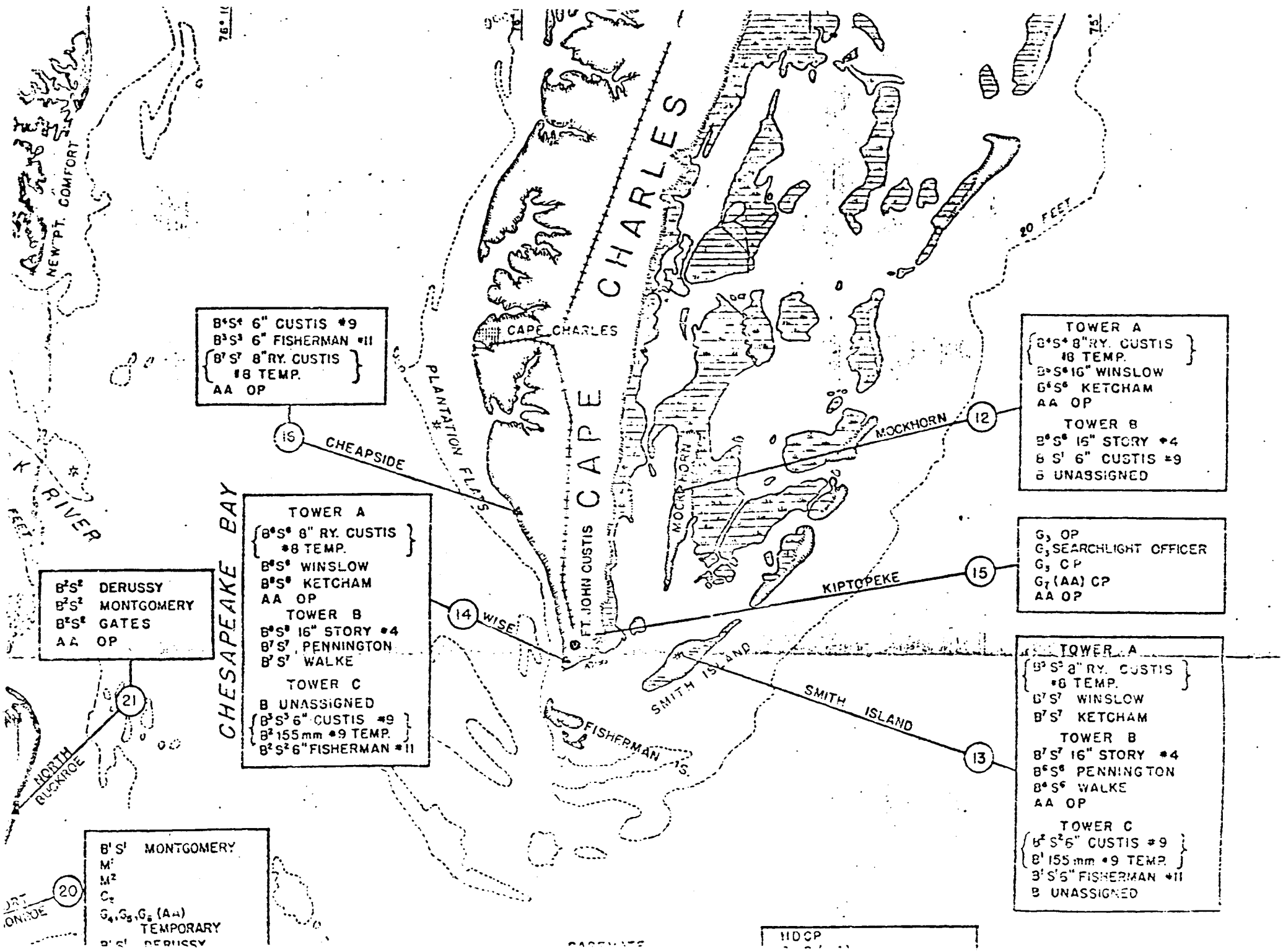
DEFENDING THE CAPES: FIRE CONTROL STATIONS ON THE EASTERN SHORE OF VIRGINIA

Across the Chesapeake Bay from the mainland lies the fabled Eastern Shore of Virginia.. It was so designated by Captain John Smith following explorations from Jamestown in 1608. The southern tip of the Eastern Shore is commonly referred to as Cape Charles. Cape Charles, together with Cape Henry to the south form the entrance to the Chesapeake Bay. These locations would provide ideal sites for military fortifications to defend the important Chesapeake Bay and Hampton Roads.

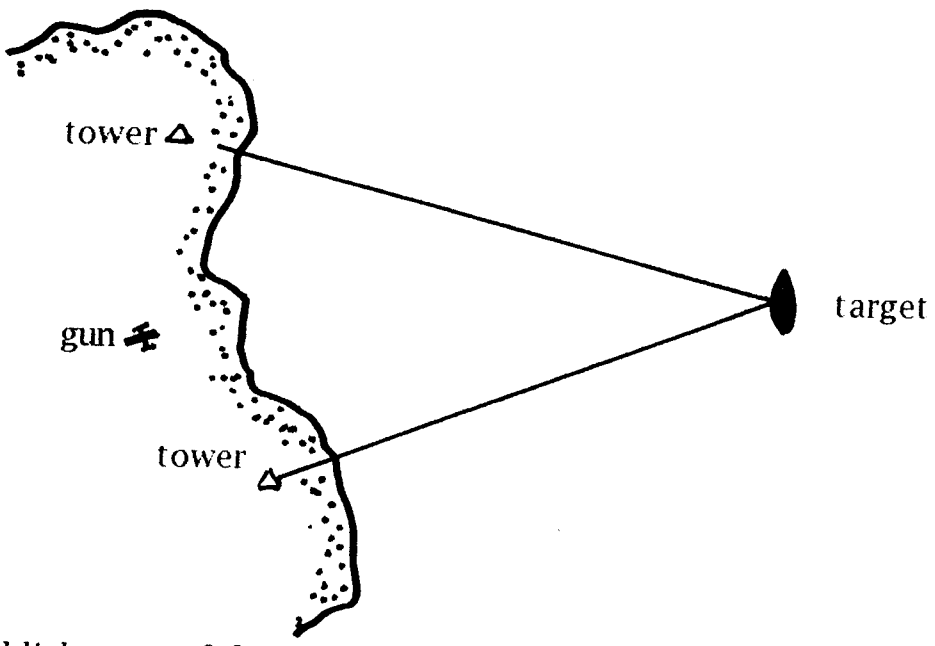
The first military activity involving seacoast defense on the Eastern Shore occurred in May 1917, when 5-inch seacoast artillery was installed on Fisherman Island, a small island on the southern tip of Cape Charles. Additional weapons were emplaced at Cape Henry, but neither could effectively cover the entrance to the bay. Following hostilities in Europe, the artillery was removed and the soldiers departed the Eastern Shore . The War Department continued to own Fisherman Island, but no military activity took place at Cape Charles until just prior to World War II.

With the increase in hostilities in Europe, the Army again determined to fortify Cape Charles. This time, in addition to Fisherman Island, the Army took over the property designated as Wise point at the tip of Cape Charles as a military reservation. The installation was designated as Fort Winslow and in the summer of 1941, railway tracks were laid to possible gun positions. Following Pearl harbor, elements of the 246th Coast Artillery moved into position on the Eastern Shore.

An important element of seacoast artillery was a fire control system which located and directed fire on the target. Until radar came into general use in 1943, the only system available for tracking and measuring distance to targets at sea was optical. A number of open steel base end stations using instruments would determine the azimuth to the target and pass it to the battery commander. This was the triangulation method of tracking the target. The Depression Position Finder (DPF) was an instrument used to determine range as well as azimuth. The later SCR-296A radar and Gun Data Computers provided fire control for assigned gun batteries.



CAPE CHARLES
CAPE CHARLES
NEW PT. COMFORT
K RIVER
CHESAPEAKE BAY
PLANTATION FLATS
FT. JOHN CUSTIS
MOCKHORN
SMITH ISLAND
FISHERMAN IS.
NORTH BUCKROE
20 FEET
CHEAPSIDE
WISE
KIPTOPEKE
MOCKHORN
SMITH ISLAND
B⁴S⁴ 6" CUSTIS #9
B³S³ 6" FISHERMAN #11
B⁷S⁷ 8" RY. CUSTIS #8 TEMP.
AA OP
TOWER A
B⁶S⁶ 8" RY. CUSTIS #8 TEMP.
B⁸S⁸ WINSLOW
B⁸S⁸ KETCHAM
AA OP
TOWER B
B⁸S⁸ 16" STORY #4
B⁷S⁷ PENNINGTON
B⁷S⁷ WALKE
TOWER C
B UNASSIGNED
B³S³ 6" CUSTIS #9
B² 155 mm #9 TEMP.
B²S² 6" FISHERMAN #11
B²S² DERUSSY
B²S² MONTGOMERY
B²S² GATES
AA OP
B¹S¹ MONTGOMERY
M¹
M²
C₂
G₄, G₅, G₆ (AA)
TEMPORARY
TOWER A
B⁴S⁴ 8" RY. CUSTIS #8 TEMP.
B⁵S⁶ 16" WINSLOW
B⁶S⁶ KETCHAM
AA OP
TOWER B
B⁶S⁶ 16" STORY #4
B S¹ 6" CUSTIS #9
B UNASSIGNED
G₃ OP
G₃ SEARCHLIGHT OFFICER
G₃ CP
G₇ (AA) CP
AA OP
TOWER A
B³S³ 8" RY. CUSTIS #8 TEMP.
B⁷S⁷ WINSLOW
B⁷S⁷ KETCHAM
TOWER B
B⁷S⁷ 16" STORY #4
B⁶S⁶ PENNINGTON
B⁴S⁶ WALKE
AA OP
TOWER C
B²S² 6" CUSTIS #9
B¹ 155 mm #9 TEMP.
B¹S¹ 6" FISHERMAN #11
B UNASSIGNED
HDCP



The establishment of fire control towers or base end stations on the Eastern Shore had preceded hostilities. In March 1941, steel fire control towers were constructed on Wise Point and on Smith Island. The following June a third fire control tower was built on Mockhorn Island, a barrier Island facing the Atlantic Ocean. In June 1942, additional steel towers at Wise Point and Smith Island were built plus one at Cheapside on the Chesapeake Bay . In July the only concrete tower was completed on the main reservation, which by this time was redesignated as Fort Custis . In September additional towers were added at Wise Point and Smith Island. The final tower on the Eastern Shore was completed on Mockhorn Island at the end of 1943.

Smith Island

Smith Island is among the southernmost of the 70 mile chain of barrier Islands on the Eastern Shore of Virginia. The strategically located island is named for Captain John Smith who landed there in 1608 and over the years the island was used as a shipping depot and a pirates hideout. The US Lighthouse Service and later the US Coast Guard have maintained a series of lighthouses on the island. The US Life-Saving Service maintained stations on the island from 1875 until 1950. Smith Island today is uninhabited and consists of 2,800 acres of land and marsh which extends along 6 miles of oceanfront. With the exception of the light station, Smith Island is owned by The Nature Conservancy's Virginia Coast Reserve.

The Army acquired over 5 acres in three parcels of land by condemnation proceedings. In April 2 acres was acquired from Percy R. Pyne,II of New York for the erection of 3 fire control towers near the Smith Island Light Station. In 1941 and 1942 land was additionally acquired for erecting a

with 660B (Chesapeake) 17

REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS.
(Fire Control or Torpedo Structure)

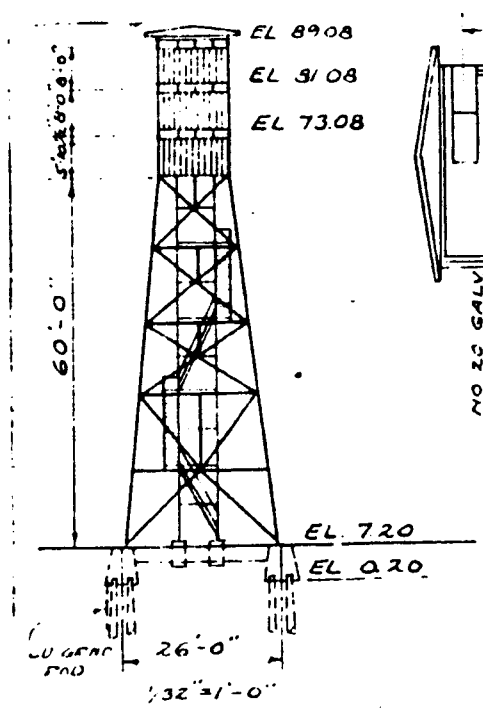
HARBOR DEFENSES OF CHESAPEAKE BAY
CAPE CHARLES, VIRGINIA.
STRUCTURES: STEEL FIRE CONTROL TOWER AND CONCRETE CABLE HUT - SMITH ISLAND "B"

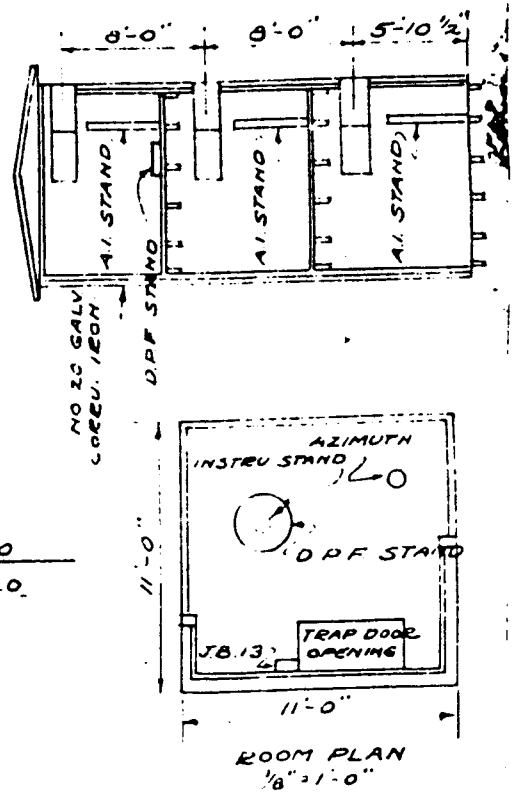
Form 2 Corrected to March 31, 1941.

STRUCTURE	
Location	On Smith Island, Eastern Shore of Va., about 1½ miles to east of the southerly point of Cape Charles peninsula and in vicinity of Smith Island Lighthouse.
Date of transfer	March 28, 1941
Cost to that date:	
Concrete foundation & steel tower	$8,591.06 (total cost of 2 towers and concrete cable hut under one contract $17,582.12)
Concrete cable hut	$400.00
Type of construction:	
(a) Foundation	Concrete on piles
(b) Tower	Steel
(c) Observing Room	Corru. iron siding O.S.; wood wainscoting, ceiling and floors; copper roof and steel shutters
(d) Instrument Pedestals	Steel pipe
How concealed	No concealment
How protected	No protection
Height above concealment	No concealment
Height above protection	No protection
Conspicuous at ..... yards	12,000
ELECTRIC CURRENT	
Source of	None
Kilowatts required	None
Type of lighting fixtures	None
HEAT	
How heated	Not heated
WATER & SEWER	
Connected to water main	No
Connected to sewer	No
Type of latrine	None
Permanent or temporary installation	Permanent
Present condition	New
REFERENCE	
Reference of site	7.20
Reference of instrument axis	Upper room 89.08 M.L.W. Intermediate room 81.08 MLW Lower room 73.08 M.L.W.

INSTRUMENT & EQUIPMENT	
Type of observing Instrument	Not installed to date
Type of plotting board	None
Data transmission:	
Type of	Not installed to date
Date of transfer	" " " "
Cost of data transmission equipment	" " " "
Cost of installing transmission equipment	Cable & JB Cans $300.00

SMITH ISLAND, TOWER "B"





radar tower and 2 searchlights. The first steel tower was completed at a cost of $8,600 and turned over the the Army in March 1941. Designated as **Smith Island B**, the structure was mounted on a concrete foundation. The observation rooms were covered with corrugated steel siding and azimuth instruments were mounted inside. A concrete cable hut was also constructed nearby.Smith Island B provided fire control for the 2 16-inch howitzer batteries and a battery of modern 16-inch guns at Fort Story. A second steel tower to the west of the first tower was completed on the island in June 1942 and designated as **Smith Island A.** This tower had a foundation of concrete on piles with a reinforced concrete superstructure protecting the observation rooms. Azimuth instruments and Depression Position Finder(DPF) instruments were located in each of the rooms. Smith Island A provided fire control for the 8-inch railway guns and the 16-inch battery at Fort John Custis and the modern 16-inch battery at Fort Story. In September 1942, the third fire control tower was completed on Smith Island. This was also a reinforced concrete superstructure on a steel tower. It had a aircraft observation platform on the roof. **Smith Island C** had azimuth and DPF instruments in each of the observation rooms. The observers in this tower provided fire control data to the 6-inch batteries at Fisherman Island and Fort John Custis. In September 1943 a fourth tower was constructed on Smith Island. This tower mounted a SCR 296-A radar like the facility at Wise Point. At the base of the tower were 2 power buildings and a transmission building. It was designated as **SCR 296-A No. 5** and provided data for the new 16-inch Battery Winslow on the mainland at Cape Charles. Access to these towers was from a dock located at the Coast Guard Reservation. Following hostilities in 1946 the Army abandoned the fire control facilities on Smith Island. The SCR-A radar was declared obsolete in January 1946 and all of the equipment was removed. The radar tower was removed at some period after 1946. Access to the island is limited to private boat. **The three fire control towers remain on the island**

Mockhorn Island

Mockhorn Island is a large interior barrier island on the seaside of the Eastern Shore. There are no records of prolonged habitation on the island. The US life-Saving Service never established a station on the island. The island is over 7,000 acres of tidal marshland and much of the island is under water when the tide is full. Today the Mockhorn Wildlife Management Area is managed by the Virginia Department of Game and Inland Fisheries. Access is by private boat from the ramp in Oyster, Virginia.

The one acre site for two fire control towers was acquired from

600.914 (Chesapeake) CM 78471

$B_4^6 S_4^6$ #121
$B_9^1 S_9^1$ #228
Spare

SECRET

SPEKM-1

REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS
(Fire Control or Submarine Mine Structures)

HARBOR DEFENSES OF CHESAPEAKE BAY
FORT JOHN CUSTIS, VIRGINIA
STRUCTURE: FIRE CONTROL TOWER B, MOCKHORN

78471

PART II Corrected to 22 October 1943

STRUCTURE:
Location (by coordinates) x 109,175.78 yds. y 145,387.01 yds.
Location (by site description) Located 9125.33 yds., azimuth 0.756° from Cape Charles Lighthouse.
Date of transfer - 24 December 1943
Cost to that date - $19,623.00
Type - Steel tower, 60' high
Type of construction - Reinforced concrete
How concealed - None
How protected - Concrete roof and walls
Height above concealment - ~~None~~ 60'
Height above protection - ~~None~~ 60'
Conspicuous at 10,000 yards

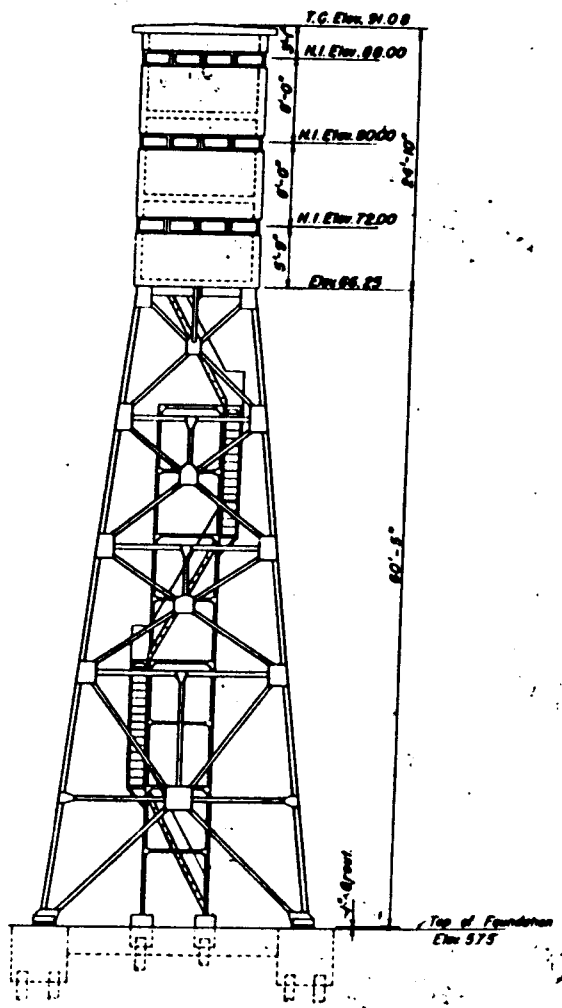
UTILITIES:
Electric Power - None
Heat - None
Water Sewer - None

REFERENCE:
Reference of site - 5' MLW
Reference of instrument axis - 1st floor, 72' MLW
2nd floor, 80' MLW
3rd floor, 88' MLW

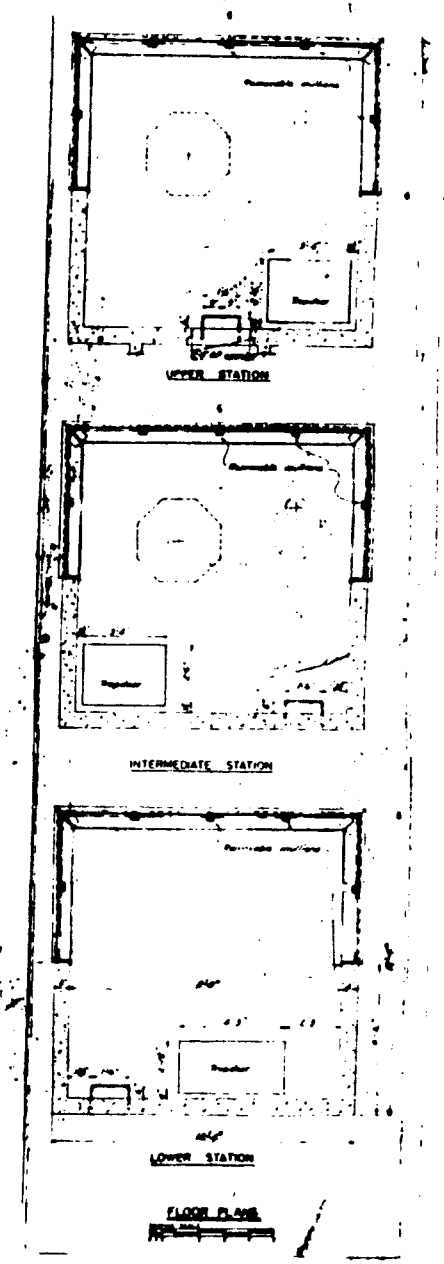
INSTRUMENTS & EQUIPMENT:
Type of observing inst. - 1 azimuth) 1 DPF) 2nd and 3rd floors
Type of plotting board - None

DATA TRANSMISSION:
Type - Telephone
Date of transfer - Unknown, installed by Signal Corps

DATUM POINTS:
Give Forts from which visible - Fort John Custis



SOUTHEAST ELEVATION



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Larrimer A. Cushman by condemnation proceedings in April 1940. The first tower was completed on Mockhorn Island adjacent to Margothy Bay in June,1941 at a cost of just over $12,000. It was designated as **Mockhorn A**. The foundation was concrete on piles with a steel tower and corrugated iron observing rooms. The upper room was 100 feet above mean low water. The observation rooms were assigned to fire control for the 8-inch railway guns and the 16-inch battery at Fort John Custis as well as Battery Ketcham at Fort Story. An aircraft observation platform was on the roof. The second tower on Mockhorn Island was completed in December 1943. **Mockhorn B** was a steel tower and had reinforced concrete observation rooms. Azimuth instruments were mounted on the second and third floors. Mockhorn B provided fire control for the 6-inch battery at Fort Custis and a 16-inch battery at Fort Story. The towers were abandoned by the US Army at some time after 1946. Access is by boat from Oyster. **Both towers remain on the island.**

Kiptopeke

On the tip of the Eastern Shore is the area referred to as Kiptopeke. John A. Wise named the area for a younger brother of the "Laughing King" of the Accowmack Indians and literally means *Big Water*. For many years much of the property was in the hands of the Wise family. The Military Reservation at Kiptopeke Village was acquired in fee from several owners in August-October 1941. Among them was Edna L. Fitchett and Henry A. Wise.

With the coming hostilities the Army decided to build a **Command Post for Gun Group 3 (G3)** at Kiptopeke. The three story tower had reinforced concrete walls, floors and roof with steel doors and sash. An aircraft observation platform was on the roof. The tower was transferred to the Coast Artillery on 25 July 1942 at a cost of $18,500. The Command Post was initially operated by Headquarters Battery, 1st Bn, 52d Coast Artillery and controlled the railway artillery and 155 mm guns. When more modern armament came on line at Cape Charles the G3 Command Post was operated by Headquarters Battery, 2nd Battalion, 246th Coast Artillery. **The tower today remains on the National Wildlife Refuge.**

Town of Cape Charles

The 1941 Fire Control Project for the Harbor Defenses of Chesapeake Bay listed a proposed fire control tower on the south side of the harbor on Pennsylvania Railroad property in the Town of Cape Charles. A single tower with two observation rooms and an aircraft observer platform was planned. This tower was to be designated as fire control for the proposed 16-inch battery at Fort Monroe. That battery was later removed from the proposed

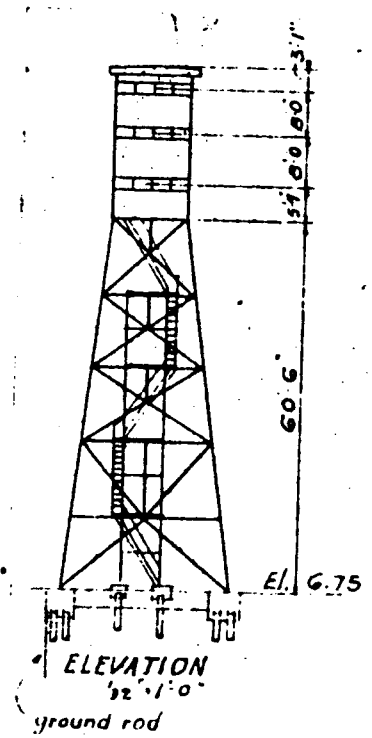
REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS.
(Fire Control or Torpedo Structures)

HARBOR DEFENSES OF CHESAPEAKE BAY
FORT CUSTIS, CAPE CHARLES, VA.
STRUCTURE: Steel Fire Control Tower
Wise "C"

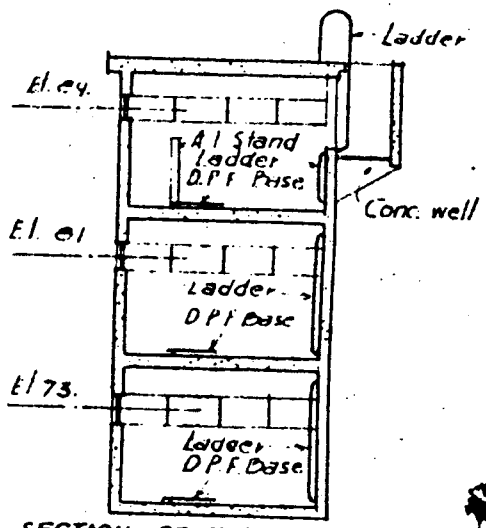
Form 2. Corrected to October 1, 1942.

STRUCTURE:	
Location	On Cape Charles Peninsula Eastern Shore of Va. about 1½ miles to south of village of Kiptopeke, Va.
Date of transfer	September 1, 1942
Cost to that date	$19,643.88
Type of construction	
(a) Foundation	Concrete on piles
(b) Tower	Steel
(c) Remainder of bldg.	Reinforced concrete
How concealed	No concealment
How protected	No protection
Height above concealment	No concealment
Height above protection	No protection
Conspicuous at ..... yards	12,000
ELECTRIC CURRENT:	
Source of	None
Kilowatts required	None
Type of lighting fixtures	None
HEAT:	
How heated	Stoves, oil
WATER & SEWER:	
Connected to water mains	No
Connected to sewer	No
Type of latrine	None
Permanent or temporary inst'ln	Permanent
Present condition	New
REFERENCE:	
Reference of site	6.36 M.L.W.
Reference of instrument axis	Upper room 89.00 M.L.W. Intermediate room 81.00 M.L.W. Lower room 73.00 M.L.W.

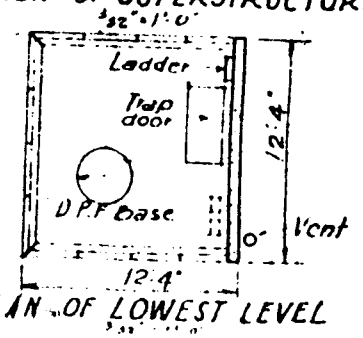
INSTRUMENTS AND EQUIPMENT:	
Type of observing inst.	Azimuth and D.P.F.
Type of plotting board	Not installed to date
	None
DATA TRANSMISSION:	
Type of	EE-91 Telephones, T.I. Bells & J.B. Cans
Date of transfer	
Cost of data transmission equip.	$650.00



WISE TOWER "C"



SECTION OF SUPERSTRUCTURE



PLAN OF LOWEST LEVEL

armament for the harbor defenses and the tower at Cape Charles was never built.

Wise Point

Also at the extreme tip of the Eastern Shore of Virginia is Wise Point,so named for Henry Alexander Wise, whose family owned much of the property in the area. The Army acquired all of the property from the Wise Estate with the exception of a small parcel maintained by the US Coast Guard. Custis Road ran to Wise Point pier located at the extreme end To provide fire control for the guns, the Army erected three base end stations and a radar tower on Wise Point. The first steel tower designated as **Wise B** was completed in March 1941 at a cost of $8,600. The concrete foundation was on piles and the observing rooms were covered with corrugated iron siding. The structure provided rooms for observers assigned to the 16-inch mortars and later a battery of 16-inch guns at Fort Story on Cape Henry. Also at that time a reinforced concrete building was constructed southeast of the tower and was designated as Switchboard Room No.1. Cables from Smith Island, Fisherman Island, Kiptopeke switchboard and Cape Henry terminated at this location. A second tower was completed to the west of the first tower in June 1942 and designated as **Wise A**. This structure also consisted of a steel tower, but the observing rooms were built of reinforced concrete as added protection for the crews. Wise A contained azimuth instruments and provided observation rooms for the 8-inch railway guns at Cape Charles, the 16-inch battery also at Cape Charles and a 16-inch battery at Fort Story. An aircraft observation platform was also on the roof. In September 1942 the third fire control tower was completed on Wise Point. **Wise C** was also a steel structure with reinforced concrete superstructure. The tower provided observation rooms for 6-inch guns at Fort John Custis and Fisherman Island.

A fourth tower was completed in February 1944 at Wise Point on the west side of Custis Road. This prefabricated steel lattice tower was sited behind the fire control towers. This 116 foot tower was built to resemble a contemporary water tower and concealed the antenna of the SCR-296A Radar. Two power plant buildings and a operating/transmitter building of corrugated steel were also on the site. A crew of 5 men were assigned to the operating room. The newly employed radar was designated as **SCR-296A Number 10** provided range and azimuth of targets to the assigned batteries. This radar supported Batteries 9 and 11, both of which were modern 6 inch batteries at Cape Charles.

By 1948 all of the steel towers at Wise Point had been demolished. At some time after that year Tower C was taken down. **Nothing remains on site except foundations.**

Cheapside

Cheapside is a small farming community on the bay side of the Eastern Shore. The Army acquired a nearby parcel of land of over 2 acres by condemnation proceedings starting in June of 1940 for a fire control tower and later for land to accomodate a searchlight platform and power plant. The property for the fire control tower was located on the shore at Pickett's Harbor overlooking Chesapeake Bay.. It consisted of 1.16 acres and was acquired from the estate of Mrs. Henrietta S. Trower. The steel fire control station was emplaced in a pine thicket at Pickett's harbor in June 1942 at a cost of over $17,000. The observation rooms were of reinforced concrete and an aircraft observation platform was located on the roof. Azimuth and DPF instruments were located on all three floors. Telephone fire control cables were laid from this location to the switchboard at Fort John Custis. The **Cheapside** tower provided fire control for the 8-inch railway guns and the 6-inch battery at Fort John Custis as well as the 6-inch battery on Fisherman Island. Following the conflict the property reverted to private ownership. **The single tower today remains intact at the end of Route 646 on private property.**

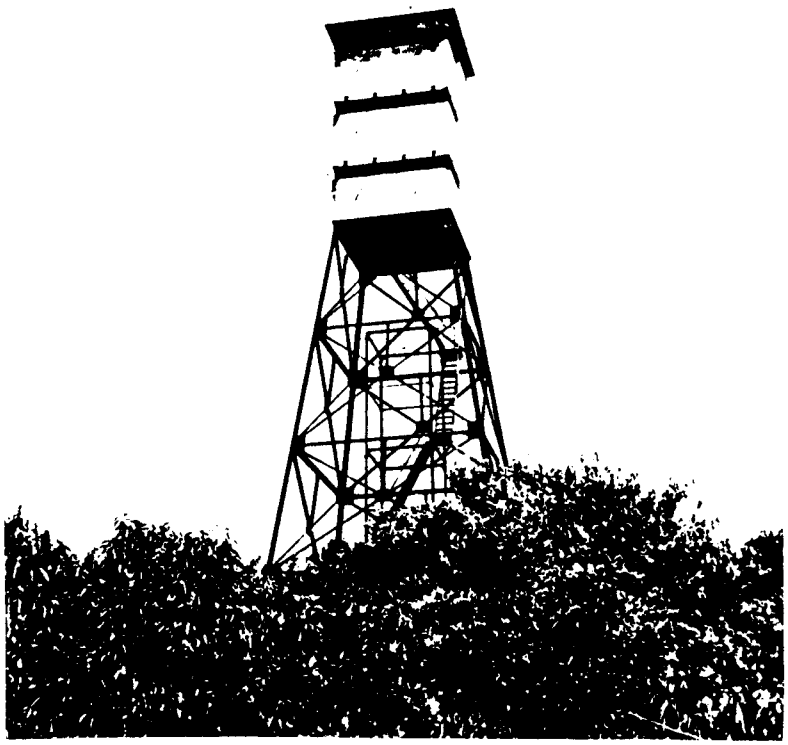


photo by: Ann Caldwell Dearman

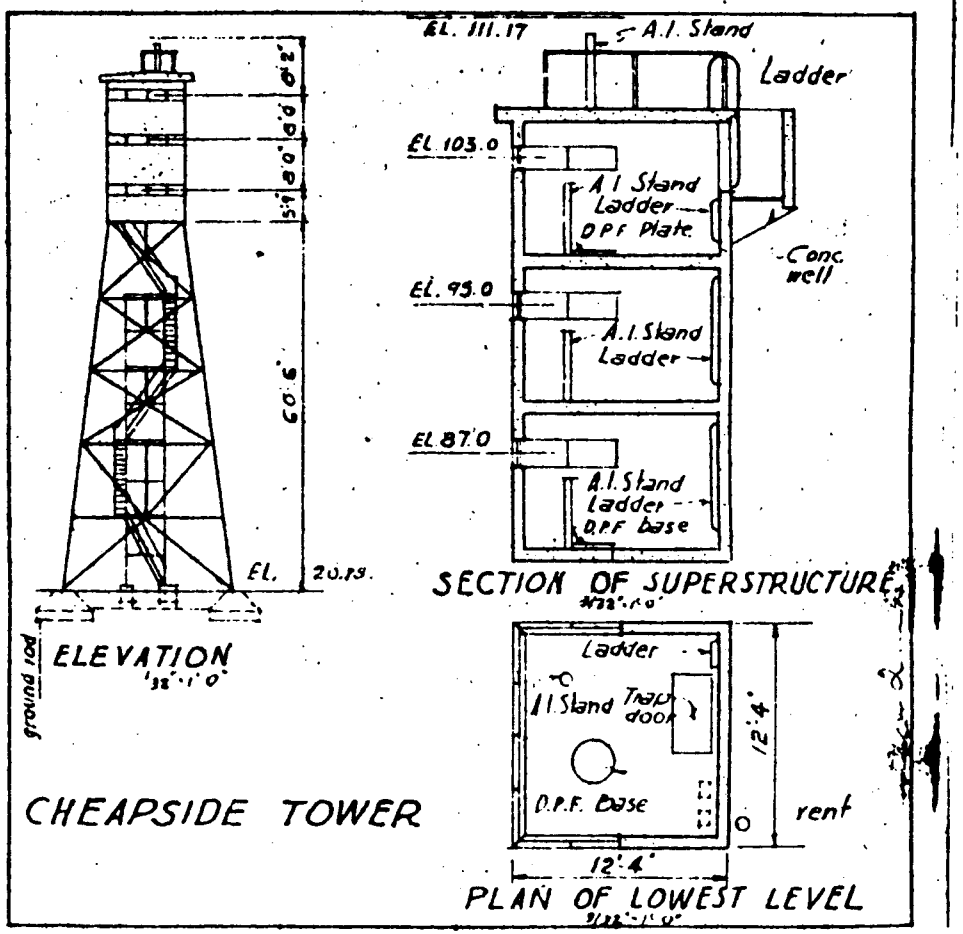
Cheapside tower, August 1995

REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS
(Fire Control or Torpedo Structures)

HARBOR DEFENSES OF CHESAPEAKE BAY
FORT CUSTIS, CAPE CHARLES, VIRGINIA
STRUCTURE: Steel Fire Control Tower
Cheapside

Form 2. Corrected to October 1, 1942

STRUCTURE:	On Eastern Shore of Chesapeake	INSTRUMENTS AND EQUIPMENT:	
Location	Bay between Cape Charles City and Wise Point approx. 9,000 yds. north of Wise Point	Type of observing inst.	Azimuth & D.P.F. Instrument
		Type of plotting board	None
Date of transfer	June 23, 1942	DATA TRANSMISSION:	
Cost to that date	$17,341.29	Type of	EE-91 Telephones, T.I. Bells & JB Cans
Type of construction			
(a) Foundation	Concrete		
(b) Tower	Steel	Date of transfer	
(c) Remainder of bldg.	Reinforced Concrete	Cost of data transmission equip.	$650.00
How concealed	Located in Pine Thicket		
How protected	No protection		
Height above concealment	Approx. 8'		
Height above protection	No protection		
Conspicuous at .... yards	5,000 in Pine Thicket		
ELECTRIC CURRENT:			
Source of	None		
Kilowatts required	None		
Type of lighting fixtures	None		
HEAT:			
How heated	Stoves, oil		
WATER & SEWER:			
Connected to water mains	No		
Connected to sewer	No		
Type of latrine	None		
Permanent or temporary inst'ln	Permanent		
Present condition	New		
REFERENCE:			
Reference of site	20.75 M.L.W.		
Reference of instrument axis	Upper room 103.00 M.L.W.		
	Intermediate room 95.00		
	Lower room 87.00 M.L.W.		



Fort John Custis/ Fisherman Island Military Reservation

o Circa 1890 Marine Hospital and Quarantine Station established on Fisherman Island

o In 1917 US Army deployed guns and troops to Fisherman Island for duration of War.

o In 1940 US Army condemned property at the southern tip of Cape Charles

o In April 1941 the newly acquired property was designated Fort Winslow

o In 1941, following the attack on Pearl Harbor, artillery units arrived at Ft.Winslow

o In February 1942, the first seacoast artillery guns arrived at Fisherman Island

o In early 1942 Fort Winslow redesignated Fort Custis after a prominent local family.

o In October 1942 the post was redesignated as Fort John Custis

o By February 1943 there were 776 coast artillery soldiers assigned to Ft.John Custis.

o In the summer 1944, coast artillery units were redesignated and downsized..

o By summer 1945, the garrison at both posts was reduced to a single artillery company

o In July 1946, Ft. John Custis and Fisherman Island reverted to caretaker status.

o Into 1948, both posts and their guns were in "maintenance" status.

o In 1949, the fixed guns were dismantled and sold for scrap.

o In 1949, the US Air Force occupied the post with the 503rd AC&W Detachment

o Subsequently,Fort John Custis was redesignated as Cape Charles Air Force Station.

o Later Fisherman Island transferred from Army to US Navy.

o In 1962, 52 acres given to Chesapeake Bay Ferry District for bridge and causeway.

o In 1969, Fisherman Island declared excess to the needs of the Navy.

o In 1960s and 1970s 771st Radar Squadron operated LORAN station at Cape Charles.

o In January 1973 the title of the island reverted to the Department of the Interior.

o In July 1980, US Air Force closed station and it reverted to caretaker status.

o In late 1984, Cape Charles AFS and a portion of the island to US Fish & Wildlife Service.

o In 2000 former posts operated as the Eastern Shore of Virginia National Wildlife Refuge.