FIELD PARTY WEATHER FILE No. CLEAR IN CHARGE SNOW SUBJECT_ CLOUDY HOT VALUABLE INSTRUMENT WINDY MODERATE FLDR. No ._ COLD RAIN NOTES FAIR FOG SHEET 10 4 RETURN TO TAPE READ FIGURED BY_ PUBLIC WORKS TAPE OR ROD NOTES CHECKED BY. DATE 8 - 28 OFFICE TAPE OR ROD PLOTTED BY. CAMP LEJEUNE TRUMENT NO ._ NORTH CAROLINA Quad. No. TAPE NO. ANGLE H. I. VER: ANG. DIST. STATION ELEVATION BEARING DIFF. 3.09 6.20 3:62 7 2.64 × 96

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RETURN TO PUBLIC WORKS OFFICE CAMP LEJEUNE NORTH CAROLINA STATION DIST.		UBJECT E Benche New A	4 G. R	14 2 3 14 2	t Di	Tid.		• TR	IN CHAILINGTEN IN CHA	RGE MENT EAD R ROD R ROD	CLEAR CLOUDY WINDY RAIN FAIR	SNOW HOT MODERAT COLD FOG FIGURED BY CHECKED BY PLOTTED BY	F s	LDR. NO	10F	
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//			1.73	***	4.51	6.19										
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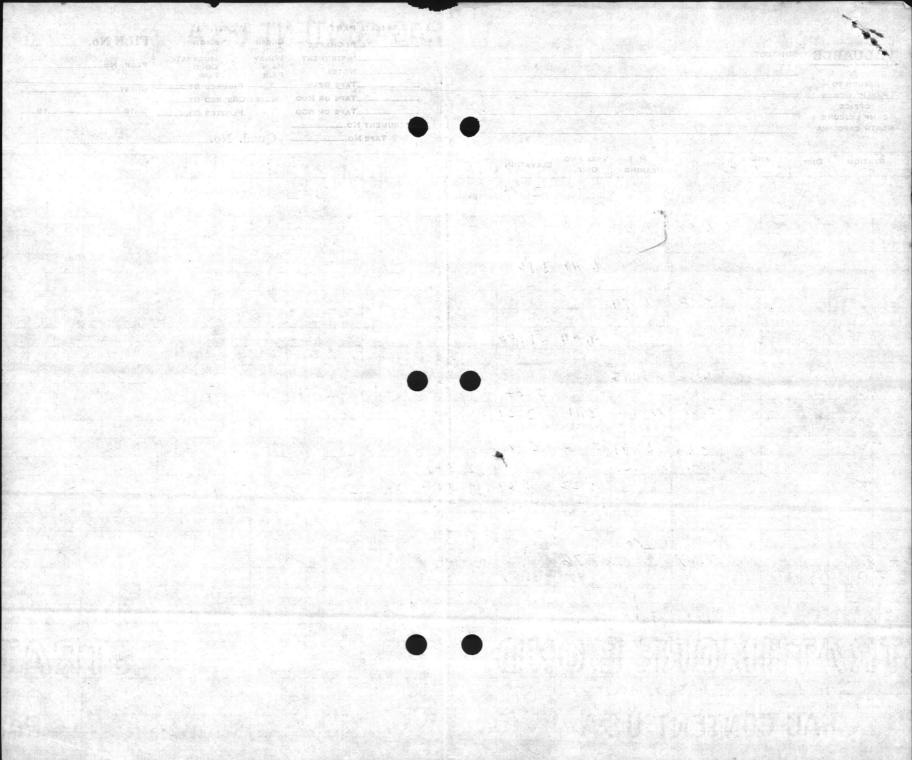
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VALUABLE S	SUBJECT	fri	Chell	Con	<u> </u>	FIELD PARTY IN CHARGE INSTRUMENT NOTES TAPE READ	CLEAR CLOUDY WINDY RAIN FAIR	EATHER SNOW HOT MODERATE COLD FOG IGURED BY	FILE N	
PUBLIC WORKS - OFFICE CAMP LEJEUNE NORTH CAROLINA						TAPE OR ROD TAPE OR ROD TRUMENT NO	P	LOTTED BY		<u>- 3 /-</u> 19 <i>22</i>
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		4.41	10.38							
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· / ·				3.4/	2. 51					
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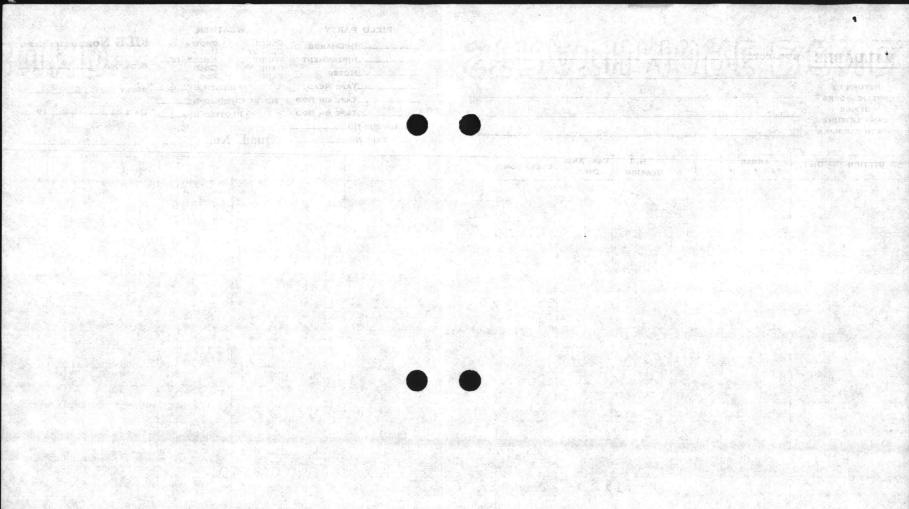
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OFFICE									TAPE OR ROD		OTTED BY	DATE 8	-27 1953
NORTH CAROLII									ENT No.	- Quad.	No		
									APE NO.	- Quau.	N0		
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				1 76	0 67.14	,							
T.P#3						3.453	61.689	•					
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T.P. # 4						3.63	60.747						
				5 205	5 65.952								
T.P.45						2835	43.117						
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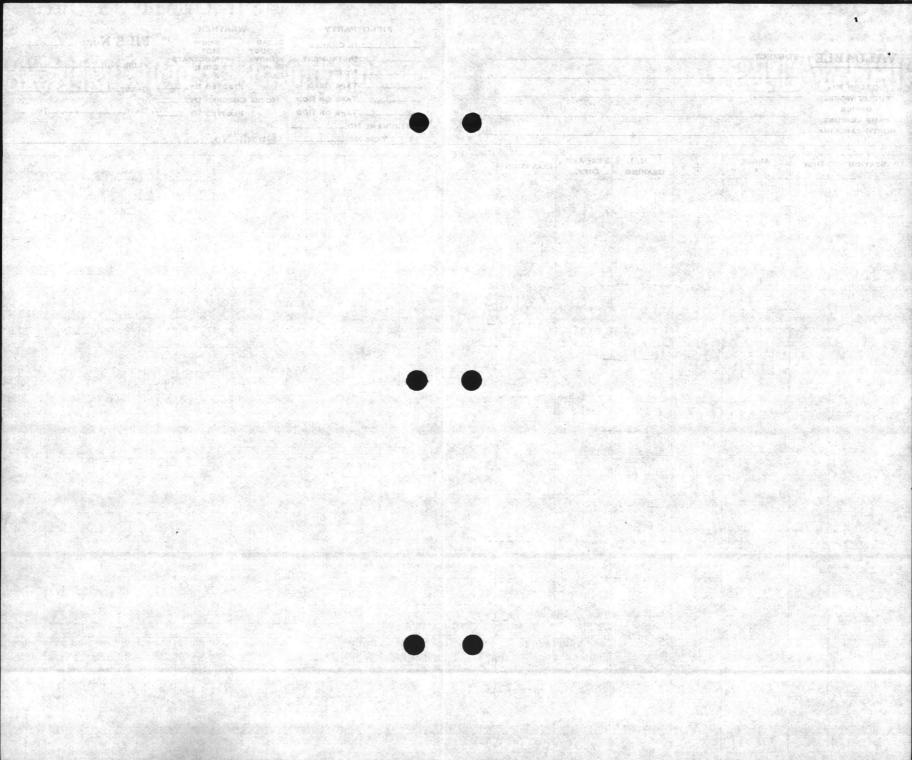
FIELD PARTY WEATHER FILE No CLEAR SNOW IN CHARGE CLOUDY Нот VALUABLE SUBJECT_ INSTRUMENT WINDY MODERATE FLDR. No .. COLD RAIN NOTES Fog FAIR RETURN TO TAPE READ FIGURED BY_ SHEET. PUBLIC WORKS TAPE OR ROD NOTES CHECKED BY OFFICE TAPE OR ROD DATE PLOTTED BY____ CAMP LEJEUNE TRUMENT NO .. NORTH CAROLINA Quad. No ... TAPE NO ._ VER: ANG. ANGLE H. I. STATION DIST. ELEVATION . . BEARING DIFF. 58.326 T.P.# 8 61.061 2 735 62 031 9 970 57 581 T.P. # 9 59.036 2.445 60 026 54.131 4 905 55 121 T.P. # 10 55.841 1710 56 831 581051,021 T.P. # 11 1793 32 814 5 830 46 984 T.P. #12 1 530 48519 42.890 (134 42.380 T.P.# 13 1 500 43 880 8 175 35.705 T.P. # 14 35.648 0 933 36 638 £ 805 29 833 T.P # 15 1 595 31.428



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STATION	DIST.	ANGLE		Н. І.	VER: ANG.		TAPE NO.	Quad. No.	
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T.P. #2					0 225	57.698			
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T.P.# 3	b				4 500	57,563			
3			*	60.92	8				
			2 86	63.41	8-	56.178			
T.P.# 31					4 250	59.168			



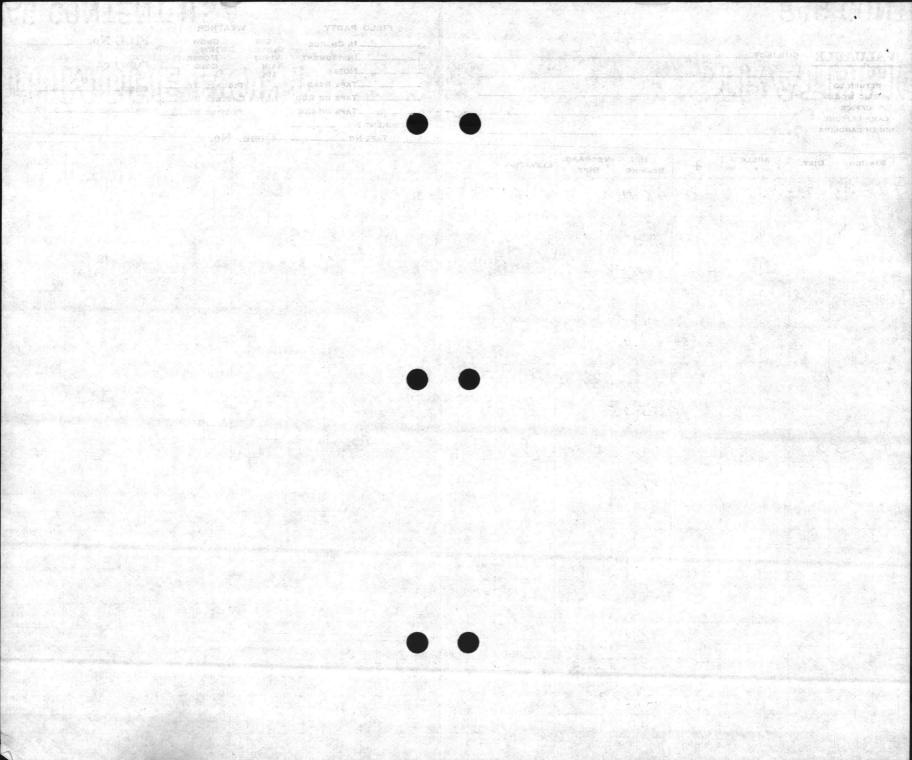
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						50,209						
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						48.642						
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			2 725	54.33								
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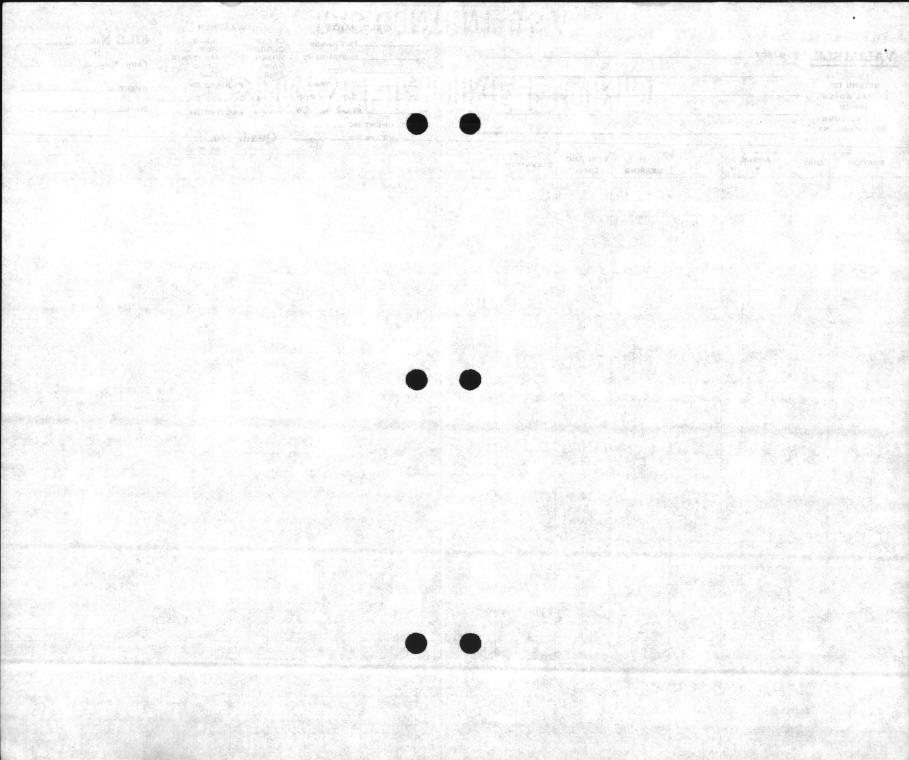
RETURN TO	UBJECT	10.000				FIELD PARTY IN CHARGE INSTRUMENT NOTES TAPE READ	WEATHER CLEAR SNOW CLOUDY HOT WINDY MODERATE RAIN COLD FAIR FOG FIGURED BY	FILE No.	o
PUBLIC WORKS — OFFICE — CAMP LEJEUNE NORTH CAROLINA _					•	TAPE OR ROD		_ DATE	19
STATION DIST.	ANGLE , ,	+	H. I. BEARING	VER: ANG.	ELEVATION				
T.P. 5 39 V			61 70t 58.716		57 829 60 819				
		4 ,843	65 66	7					
USMC. MONA	12 = T.P.#	10		6.200	59,474	56.34			
		7.170	63.64	4					
TPHAI				2.70	60,937				
		5.010	6594	7					
T.P. # 42				2 625	63,322				
		4 ,625	67.94	7					
TP-#43				2.686	65.267				
		4 ,41;	7 69.68	4					
TRHAS		8		3,3/0	16.374				
		3 52	54994	9					
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		3.600	48.94	2					
T.P. #45 T.J	8. M.			3320	45,622				

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		and another parent set is before a 19					
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T.P.# 5	/						5 000	46.	280			0										
			2	.065	48.	34	5															
T.P.H 52	ζ						4 695	43.	150													
			3	840	47	49																
T.P.H.53	3						1 790	45	700										7			
			5	.977	51.	67																
T.P. #54							1 955	49.	722													



VALUABI	<u>√E</u> s∪	BJECT					FIELD PARTY IN CHARGE INSTRUMENT NOTES	CLEAR CLOUDY WINDY RAIN FAIR	WEATHER SNOW HOT MODERATE COLD FOG	FILE FLDR. N	
RETURN TO PUBLIC WORK OFFICE CAMP LEJEUN NORTH CAROLII	E -						TAPE READ TAPE OR ROD TAPE OR ROD TRUMENT NO. TAPE NO.	Notes	FIGURED BY CHECKED BY PLOTTED BY	- SHEET - DATE	19_
STATION	DIST.	ANGLE	+	н. г.	VER: ANG.	ELEVATION		- Quau	. 10.		
TP-# 51				BEARING	5 65 11	49.812					
			A 475	54 2	97	17,012					
			7 773	J-7.20		19057					
T.P. #5	5				1 24;	49950					
				0	700 A 10 Aug.						
			3 893	53,9	33						
						6/3					
T.P. #54	,				3 830	50,43					
			1077	8	Maria Carlos Company						
			3 797	53,8	90						
						535		PO .			
T-P-#5	7			190	2.265	51,535	WAIL IN T	-L. POL	E # 159	?	
				54 3					4+1-15		
			2 885	54.5	16				+ + + + +-		
TD4 5	0				2 941	580					
T.P.+1 5	8				3 840	50.60					
7			2 90 %	515	97						
			3,/2/	975	7	117				7	
T.P.# 5	9				A 340	167			36	2	
				52,85	3	1 m 1 m			3	0	
			2.685	529	42				./	_	
						47.362					
T.P.A	60				5 490	47.36 V 47,452 44.397 44.487					
			100	49.70	07						
			2 345	49.7	97						
						44.397 44.487					
T.P. # 6	-1				5.310	44.487					
				47.0:	57						
			2,460	47.10	9>						



VALUABI	7	JBJECT					FIELD PARTY IN CHARGE INSTRUMENT NOTES TAPE READ	CLEAR CLOUDY WINDY RAIN FAIR	WEATHER SNOW HOT MODERATE COLD FOG FIGURED BY	FILE FLDR. I	and the second
OFFICE	· -						TAPE OR ROL	A APPLICATION OF THE PROPERTY	CHECKED BY	- D	••
CAMP LEJEUN					Variation .		TAPE OR ROL		PLOTTED BY	_ DATE	19
NORTH CAROLI	NA						TAPE NO.	- Quad	. No		
		ANGLE		н. і.	VER: ANG.						
STATION	DIST.	o , ,,	+	BEARING	DIFF.	ELEVATION					
				47 115		42472					
T.P. + L	2			47.057	0 585	42.472					
				1-12	4-	12 2 12 12 12 12 12 12 12 12 12 12 12 12					
			2963	45.43	5_						
			2/63	1- 05	9	1000					
T.A.H L	3					40.847					
1.7-14	_				9 38	40.937					
				44.107	7						
144.09			3260	14.19	7			444			
						39.712					
ナチャレ.	4				4 453	39.712					
				A	-						11. 第二十十段
			3 370	13.11	2						
*						38.622					
T.P. # 6	5				A 400	38.622 38.742 39.102 39.192					
				17 68	7	3011			-16		
			1 2/5	12 75	27						
			7 200	75.77		29 107 2					
T.P-++ 6	,				2 100	79 19					
1-1-17				151	3 383	39,192					
				43.10							
			9 005	43.17	7						
-						38.747					
T.P. # 6	7				4 360	38 837					
				42.94	72						
			4.195	-43.03	2						
						39-692					
T.P. # 6	8			1 1	3 ,250	39.692					
6				43.96	7						
			4 270	1400	2						
				1,10		10110					
T.P.#7	5		36.6		3 7	40.147					
1.1.4	-				0/3	70,50					

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LOW THE W	ATTY CALVE CITY OF THE CONTROL OF	1 (1818) THE COLUMN TWO IS NOT THE COLUMN TWIND TWO IS NOT THE COLUMN TWO IS NOT THE COLUMN TWO IS NOT THE CO			ระวร์เลียล	PLEAU IA
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		Program (services)	MOTAVELS ONA S	nav H Germana	AKELL	Thursday the
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WEATHER FIELD PARTY FILE No. CLEAR SNOW IN CHARGE CLOUDY HOT VALUABLE SUBJECT_ INSTRUMENT MODERATE WINDY FLDR. No ._ RAIN COLD NOTES FAIR FOG TAPE READ FIGURED BY RETURN TO SHEET_ PUBLIC WORKS TAPE OR ROD NOTES CHECKED BY OFFICE TAPE OR ROD PLOTTED BY DATE CAMP LEJEUNE RUMENT NO .. NORTH CAROLINA Quad. No. TAPE NO._ VER: ANG. ANGLE STATION DIST. ELEVATION . . BEARING T.P. H 70 1 155 44.392 3 390 41.002 T.P.# 71 T.P. # 72 TP-#73 3 580 43.475 ナターヤン4 HUB ON EASTSIDE OF HUWAY 122 APPRO T. P. H 75 T. B. M. 200° SOUTH SMEEDS FEARY Rd. 1 685 43,55 TP-# 76 T. P. # 77

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VALUABL:	E somi	ЕСТ						IELD PARTY IN CHARGEINSTRUMENT	CLEAR CLOUDY WINDY RAIN	1	HER SNOW HOT MODE COLD	RATE		ILE				
RETURN TO PUBLIC WORKS OFFICE	-				<			NOTES TAPE READ TAPE OR ROD	FAIR I NOTES C	FIGUR	FOG ED B	Y	- SH	EET	11	rf		
CAMP LEJEUNE NORTH CAROLIN		100					STRUM	TAPE OR ROD				Υ	- DA	TE			19	
STATION 1		ANGLE	+	H. I. BEARING	VER: ANG.	ELEVATION	Is I - I		111	T					111			
		1.1		Constitution only		352367												
T. P. # 78					4 520	35:367												
				38.54	12									17				
			3 175	3862	2													Ī
						32-682												
T.P-# 79	7				5 860	32.682												
1.336				33.93	7													
	dis. 8		ALTO ELECTION OF	- 2	The state of the s			164										
						27.772												
T.P.#80)	100			6 163	27.772												
				29.92	2													
			2 150	3000														
TD 10						24.392				-		-					4	
T. P. # 8	1			0000	3 53 0	24.471												
30 A				29.73	2					-				-1-		\pm	-1	
			3 340	21,01		73-1-							-		+-1			
TP.# 8	2				0116	29.171									-	+		
11.20				73 0	0 640	27.171				+-								+
			3 808	32.90	9												+	+
						19150				+					127		100	
T.P. # 8	3				3 750	29.150												T
				33,89	0	7.21				1-								T
			4 740	2700	1													
				183		30.415			1									1
TP. + 84			55	-54-4-12	3.475	30.415												I
	136			35,25	0					1							2.5	
			1 000	The second division and in second	The Print					1960			The second			2		
				Ter-		30805												
T.P. 4 8	5		100	35.023	4 445	30.904	HIP											
			7220	35 ,/2	-	1. 14. 19										3799	2	3

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				MOUNTAIN ON SERVICE TO BE SERVICE TO SERVICE	9810 106/17/18
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VALUAE RETURN TO PUBLIC WOF OFFICE CAMP LEJEU NORTH CAROL	ORKS -	UBJECT	-				FIELD PARTY IN CHARGE INSTRUMENT NOTES TAPE READ TAPE OR ROD TAPE OR ROD	PLOTTED BY	FILE No. FLDR. NO. SHEET / 2 14
STATION	DIST.	ANGLE		н. і.	VER: ANG.	ELEVATION	TAPE NO.	- Quad. No.	
		0 1 11	+	BEARING	DIFF.				
-0				35/2	#	29.620			
T.P.H	86			33.86	5,403	29.719			
				33,5	20				
100			3 950	3366	19				
					9	30,675			
J.P.+	87		# * * ·		2 89.5	30,774			
	· · · · · · · ·		Lake	3405	757				
			3 380	34.15	7				
						3/.020			
T.P. #	88				3 035	3/,/19			
				35.59	10 THE R. P. LEWIS CO., LANSING, MICH.				
	-		4570	35,68	7				
						31.600			
TP.H	89			- 4	3.990	31,699			
404				34.615	5				
		1441	3.015	3-1,71	4-				
				100		30,655			
T.P. #	90				3 960	30754			
				34.49	5	19 12 13			
	1 1		3 840	34,59	7				
	1					30.265			
T.P. +	91	k 156			4 230	30,364			
	1.00			32,91	5				
	1 4		2650	33 01	7	29.5200 29.719			
						29.520			
TPH	72			- yalla	3 395	29.719			
				33,5	80				
100	1		4060	33.77	29	28.390 28.589			The second secon
- 1				1939		28.390			
TP. H	93			3/127	5 190	28589			
	1	l vialación	9 987	21 1/	9				

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		Guadi Vo	OR THE STATE	H.A. VERLAND DIA 1827 B.M.	STATION COLDS
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VALUABLI RETURN TO PUBLIC WORKS	E su	BJECT						FIELD PARTY IN CHARGE INSTRUMENT NOTES TAPE READ TAPE OR ROD	CLEAR CLOUDY WINDY RAIN FAIR	EATHER SNOW HOT MODERATE COLD FOG IGURED BY	FILE N	3 04
OFFICE								TAPE OR ROD		LOTTED BY	DATE	19
NORTH CAROLINA							STR	UMENT No				
							4.1	TAPE NO.	Quad.	No		
STATION [DIST.	ANGLE , ,	+	H. I. BEARING	VER: ANG.	ELEVATION						
				3/1/	9	26.815					JES.	
TP.+29.	A			77.77	1 455	27 014						
1917				29.92	7 750							
			2 105									
			3/05	30.11	7	4121					+ +	
T7 ()					3 500	26.340						
TPHI	5					24,557				1 12 11 1		
				31.10	3				1-1-1-			
			4763	31.30	2		- 12/15 h					
						27.158						
TP. # 9	26				3 945	27357						
				30,463)							
			3 307	3066	+					10 10 10 10		
						27,090						
TP.#9	7				3 375	27,289						
1 1 1				31.44	-							
			1 755	31.64								
			7 757	27.67	7					1 2 - 1		
T.P. # 98	+ 0	200	4 2/1		1 11/2		1/11/12	EAST SIO	1- 51	DET X 1	PAWE	P POZE
1.7 2 7 8	-4	. 0.112	4060		-	22,234	HUB	- 54)))10	E RO	1 1 7		
	1 6 5				-	27.120				7	2 REA	. 141
	UDI	FOR	HECK		9,325	27.319	NAZ	LINE Rd	10	MILEN	PATH J.	R.LUCAS
				31.09	0				4444	1 2	TORE	
	E-MC I		3.970	3/28	2							
						30.005						
TP # 98.		45			1 085	30200		9/1	152			
				35,41	2							
			3 407	35.61	+				6.17			
			1			32.922						
T.P. # 99					2 490	33/21						
			A company of the	36.82	2		150.74		1 1			
			3 905	3,7 02	1		7					
			703	Spare 1 = 1								

FIGURE PARTY PORT STATE TO STATE T MEAULA TAPE TE OR POD CONTROL OF STATE OF STAT MANUEL A SILVERIA 95,410 MOTESTER CHIEF PROPERTY ON A STREET ON A S

VALUABLE	SUBJECT						4 <u> </u>	FIELD PARTY IN CHARGE INSTRUMENT	CLEAR CLOUDY WINDY	VEATHER SNOW HOT MODERATE	FILE 1	
RETURN TO						=	NOTES TAPE READ TAPE OR ROD	RAIN COLD FAIR FOG FIGURED BY NOTES CHECKED BY		SHEET 14 04		
OFFICE CAMP LEJEUNE NORTH CAROLINA						TAPE OR ROD	DATE			19_		
APART CARREST		1		VER: ANG.	T			TAPE NO.	Quad.	No		
STATION DIS	r. ANGLE	+	H. I. BEARING	DIFF.	ELEVATION							
			36.82	1	32.4	02						
T.P.#100				9 425	326							
			32.69	2								
		0 290		7		13.5						
			The second		23.07	7						
T.P.# 101			28.91	9615	272	4						
			28.91	7	Auto A							
		5 840	2911	4								a set
					24.56	7						
TP#102		1000		4 350	29 76	4						
			28,70	7								
		A 140	28,90	6								
					23,8	37	1-04					
T.P. H 103				4 870	23,8	6						
ta Ma			27.29	82								
		3 445	27.48	4		A STATE OF THE PARTY OF THE PAR						
					21.13	2						
TP # 10A				6 150	2/.3	3/-			144			
			23.40	5								
		2 273	2360	1	12							
					18,00	10						
TP-HVO	5				1823	7			144			
			24.2	90		100						
		6 236	24.48	9				17.220	1 1			
					20.72	0		17.220				
TP# 106					2092	7		19013				
	TV.		24-190	2		Collings of		015 H.S.L	,			
		3 465	24 38	7			17.0	0/5 /401				
100					17.2	20	Page 10 and 10 a	And the state of t	And the second s	ANIER'S.		
T.P. #107	-15-1-		14.06	0 - 970	17.11	9	U,5	ARMY E	YGINE	FR SUR.	LEY	EDEN!
		C 840	247		La Maria				1>5	5-5		

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VALUABLE	SUBJECT					FIELD PARTY IN CHARGE INSTRUMENT NOTES	WEATHER CLEAR SNOW CLOUDY HOT WINDY MODERATE RAIN COLD FAIR FOG		FILE No.	
RETURN TO PUBLIC WORKS OFFICE CAMP LEJEUNE NORTH CAROLINA				TAPE READ TAPE OR ROD TAPE OR ROD STRUMENT NO	FAIR FOG FIGURED BY NOTES CHECKED BY PLOTTED BY Quad. No.		- SHEET / S	19		
STATION D	IST. ANGLE	,	H. I.	VER: ANG.	ELEVATION		Qua	1 1		
17.75	• , ,		BEARING	DIFF.						
					20.830					
T.P. # 10	8			3 231	20.830					
198			24.16	57						
		3335	24.36	77	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
				1	18.075					
T.P.+10	9	-	25.5		18 274					
		3 210	23.29	83						
Labella		22/0	72,70		21.100					
T.P.H 110			1 1 1	2 185	21,277					
	3. Lit		27-15	0						
		6 050	27.34							
					23.830					
T.P-# 111			000		24:329					
		1100	28,48						100	1111
		4650	20 67		20,530					
T.P. #1/2	TBM-			7 950	20729	NAILINILIVE	EOA	WEST:	SIJEdi	RTURK
			25.98	3-		APPRO. 75'S	OUTH	INT. FU	LCHER	LANDING
		5-455	26.20	1		Rd & EXI				The state of the s
		1			21,280					441
TP-# 11	3		411	4703	21999					
		4 5	21.62		7.00					
		2 545	2184	7	19.565					
T.P.# 11A				2 067	19,784					
			20.17							
		0 410	2039	7			da			
kes as a second			residence of		13.445					
TP. #11	5	1		4 730	4366A					

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VALUABLE RETURN TO PUBLIC WORKS OFFICE CAMP LEJEUNE NORTH CAROLINA						- !! - N - T	N CHARGE NSTRUMENT LOTES 'APE READ 'APE OR ROD 'APE OR ROD O.	CLEAR CLOUDY WINDY RAIN FAIR NOTES	WEATHER SNOW HOT MODERA COLD FOG FIGURED BY_ CHECKED BY_ PLOTTED BY_	TE F	TLE N				
STATION	DIST.	ANGLE , ,	+	H. I. BEARING	VER: ANG.	ELEVATION 3	HILL III.			1 1 M					
TS+411	5		2.020	15.46	55-	13.664									
T.P. + 1	16			19.40	0 387	15.078									
T.P#11;	7		4330		2 855	11.553									
			0 090	11.65	43	8.373									
T.PH	118		1 563	9.93	3.27	8,592									
T. P-2J	149			10.72	3 460	6.4760									
T.P. # 12	Þ =		4.245	70,75	668	4.041	U.S. AA					PVE	у	B. D.	
				9			AT M	AKKX	EV.	4.42 + 5 R S	441	JIA	16.		
120 T.1	p5		32.7/4		496.012	. 9									
	7		30 31								4.92				
										4	37	9			

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DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY WASHINGTON 25

IN REPLY ADDRESS THE DIRECTOR
U. S. COAST AND GEODETIC SURVEY
AND NOT THE SIGNER OF THIS LETTER
AND REFER TO NO. 65 2

30 August 1948

My dear Sir:

The data requested in your recent communication are being sent to you herewith. If this Office can be of further service to you at any time, please do not hesitate to call on us.

Line 89 N. Car.

Leveling---"Hollyridge to New Topsail and New River Inlets, North Carolina." has not been published---photostatic copies sent. Very truly yours,

Director.

M-2270-2(5)

NOTIFIED AND ADDRESS OF THE STATE OF THE STA

DARK TRANSPORT

Line 89 M. var.

Leveling -- "Hollyridge to hew Topsail and New Miver Imlets, forth Carolina." has not Leen published -- pao ostetic copies sent.

SUMMARY SHEET

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1947

HOLLYRIDGE TO NEW TOPSMIL

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CAROLINA NEW RIVER INLETS, C. R. REED ND-ORT L-12115 SHEET 1 OF 3 088 ORTHO MOJ. REMARKS B. M. DISTRICT CORRN CORRW (PT) 69. 045 TONO TO THE PART, NO. 21.044 0 21.0446 0.0000 0.0000 T27 20.536 67. 375 24 20.5340 K230 3 20.540 67.388 20.5379 U27 5 20.501 67.260 20.4987 25 2229 22.203 72.844 NOT DESCRIBED +0.0025 TBA7 22.2009 0.0000 SPUR TO CAMP DAVIS A.A.F. 72.844 DESCRIBED 0.0000 +0.0025 22.203 TBM 7. 22.2009 66.998 25 20.421 20.4183 L230 66.237 20.189 20.1861. M230 6× 64. 734 19.731 19. 7225 N230 7× 65.295 19.902 HIGH PT. OF ROW WAYS TBMI 19.9000 MAIN LINE CONTINUES 72.844 22.203 22.2009 TBA7 0.0000 +0.0025 6 × 25 17.988 (2) 59.016 17.9856 J230 7 65.131 19.8500 19.852 V229 7× 66.312 20.212 20.2090 V27 64.239 N.W. RAIL (2) 19.580 IM FROM YOUR TOWARD WEEK 7 19.5780 25 8 18.894 61. 988 18.8910 25 W229 10 29.816 9.0854 9.088 X229 25 12 31. 850 9. 708 9. 7054 25 Y229 LEME NORTH OF S 12 32.080 9.778 ANDING BRIDGE. 9. 7758 25 (3) RO. INT. 9. 849 B 2.30 (UNKNOWN) 9.8465 32.313 13 25 14 3. 694 1.126 1.1239 + 25 3.33 SEARS RML SEARS RMI 1.194 14 3.917 1.1911 + 25 14X 5.479 1.670 1.6676 25 7.963 NOT DESCRIBED 15 2.427 2. 4241 25 TBM 15 (5) 2.361 7.746 LANDING BRIDGE. + 0.0025 JeT. 15 2. 3588 0.0000 SPUR TO TOWER ONE 15 7.963 NOT DESCRIBER 2.427 2.4241 .0000 to .0025 T8M 15 16× 2.601 8.533 2.5981 C230 25 TOWER FOOR
RMI
TOWER
FOUR 18 14.016 4.272 4.2691 25 18 13.4148 13.417 44.019 25 19 12.730 3.8779 3.880 D230 TOWER THE 21.624 +0.0025 0.0000 +0.0742 406.389 1333. 293 406.3152 0.0000

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TOWER EMNT

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HOLLYRIDGE TO NEW TOPSAIL

1947 P INLETS, No. CAROLINA NEW RIVER C. R. REED SECOND - ORDER L-12115 1947 SHEET 2 OF 3 ORTHO. ADJ. 085 ADJUSTED ELEVATION REMARKS B. M. CORRN CORR'N TOWER (5) 51.634 15.7351 0.0000 +0.0025 15.738 21 25 3.783 12.411 A230 22 3.7805 O. 45MI. FROM ALSO (3) 2.497 8.192 2.4945 TOWARD ZERO/997. JeT. 23 TOWER THO (5) 9.459 2. 883 + 23 2.8802 25 (3) 15.0618 25 15.064 49.422 23 + CONTROL (5) 25 5.692 1. 735 1. 7321 25 (2) 1.869 6.132 1.8669 CAMERA 25 25 RANGE ONE 1747 (3) 2.352 7.717 2.3492 25 25 14.839 25 4.5203 4.523 25 ZERO LINE MARK (5) X 4.896 4.8931 16.063 25 25 4.9213 4.924 16.155 25 25 PIN TOWER ONE RMI TOWER (3) 25 5.1188 5.121 16.801 25 26 3.747 3.7447 12.293 25 12.8802 + 0.0025 12.883 42.267 0.0000 LINE MAIN CONTINUES 15 2.4241 TBM15 0.0000 +0.0025 2.42 7.963 NOT DESCRIBED CENTRAL (3) 2.0708 25 2.073 15 6.801 TOWER FINE 16 6.2953 6.298 20.663 25 TOWER AVE (\$) 15.428 16 15.4259 50.617 HIGH 12 5. 3273 5. 330 17.487 25 12 HIGH RM 5.1155 5.118 16.791 25 19 3.9889 25 3.991 13.094 E 230 BANKS RM (3) 20' 11.2194 36.818 25 11. 222 BANKS (2) 20 11.2642 36.965 25 11.267 TOWER SIE 21 4.7511 4. 754 15.597 TOWER SIE (5) 13.8864 25 13.889 21 45.567 + 22 7.6304 7. 633 25.043 PED RMI +0.0025 PED 1933 7.7/89 25.331 25 7. 721 22 F 230 Towar Savan 3.4661 3.469 24 11.381 25 26 4.0671 25 4.070 13. 353 RM! TOWER (S) 26 13.2084 25 13.211 43.343 THO 26 4.583 4.5801 15.036 27

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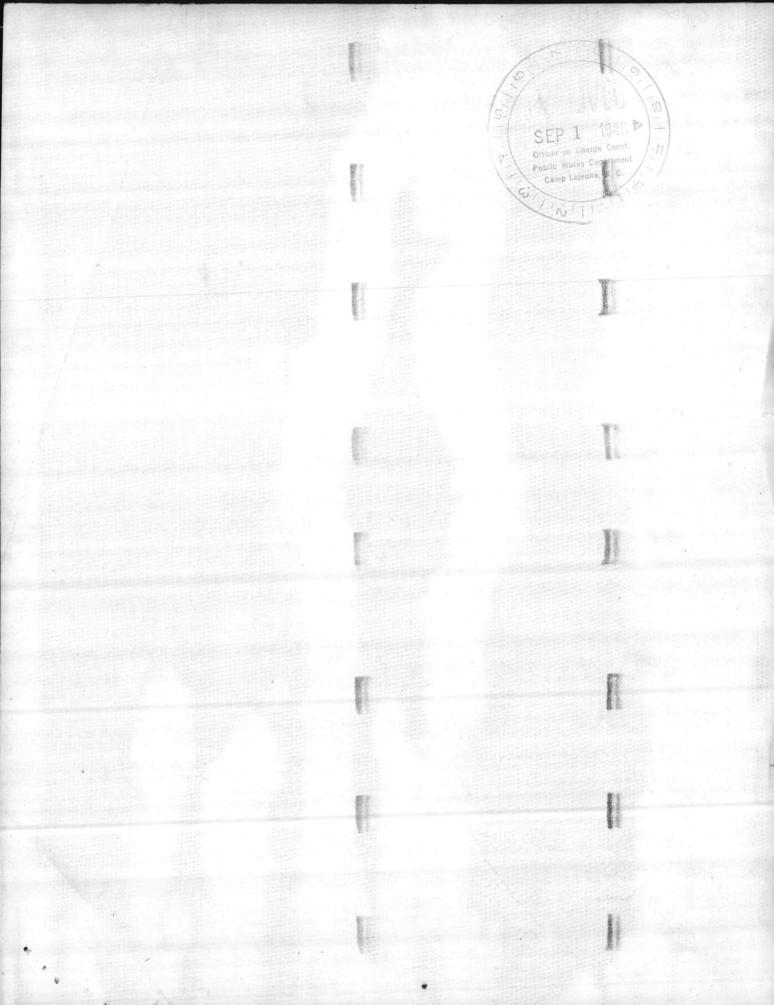
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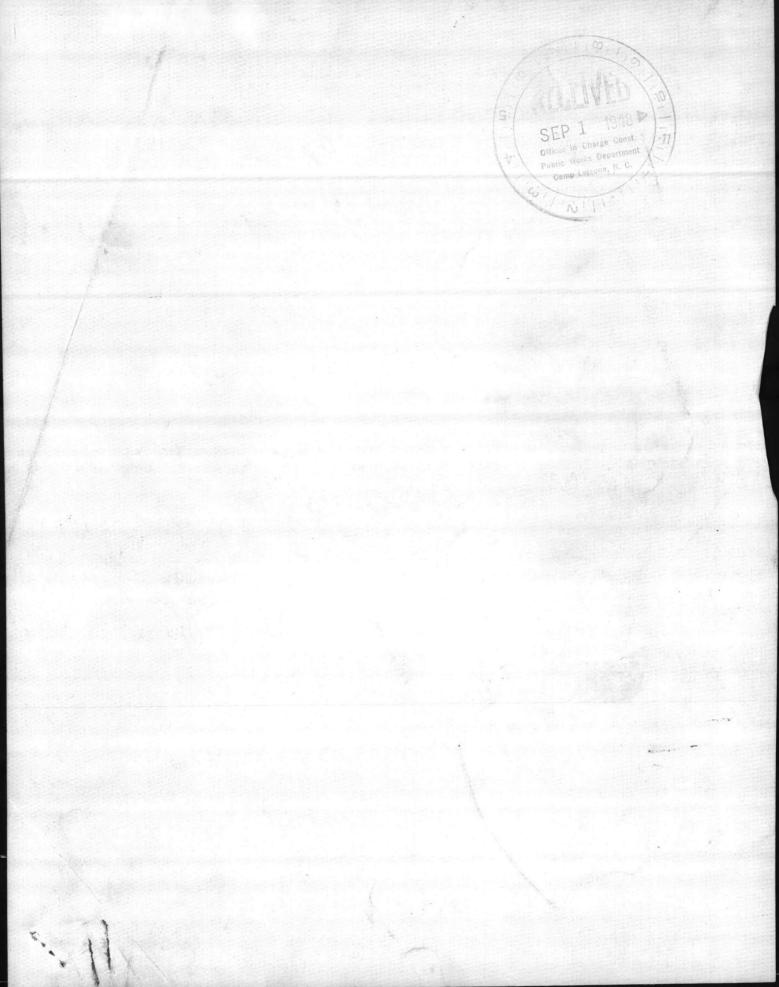
SUMMARY SHEET

HOLLYRIDGE TO NEW TOPSAIL

AND

865 HGZ 1947

SHEET 3 OF 3 B. M. DISTANCE ELEV. CORPW CORPW (KM) LOA (3) 31 8.3968 + 25 8.399 27.556 LOA (3) 31 7.2820 + 25 8.399 27.556 LOA (3) 31 4.0770 + 25 4.080 13.386 MAJON 32 3.1999 + 25 3.202 10.508 MAJON 34 2.9032 + 25 2.964 9.504 MAN 36 2.9032 + 25 2.964 9.504 MIN 36 3.3048 + 25 3.870 12.487 MIN 36 2.3048 + 25 3.870 12.487 MIN 36 3.3868 + 25 3.370 12.487 MIN 36 3.3868 + 25 3.370 12.487 MIN 36 3.3868 + 25 3.3870 12.487 MIN 36 3.3868 + 25 3.3870 12.487 MIN 37 4.0555 + 25 3.3870 12.487 MIN 38 38 1.9618 + 25 1.964 6.444 MIN 38 2.2344 0.0000 +0.0025 2.237 7.889 MIN 38 2	19
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New River Inlet Entrance (Sea Island House)

BENCH MARK 1 (1926) is a standard disk set in concrete and projecting a few inches above the ground. It is located 1 foot south of the southwest corner of the long low fisherman's shack that is on the south shore of New River Inlet and just inside the point. It is about 100 yards east of the first slough that makes into the south shore of the inlet and 33 feet from high water line to the north. Elevation; 5.59 feet above mean low water; 4.09 feet above half tide level; 2.59 feet above mean high water.

BENCH MARK 2 (1926) is a standard disk set in concrete and projecting a few inches above the ground. It is located 10 feet from a small hand pump, and about 492 feet south-southwest from Bench Mark 1 and the fisherman's shack, about 98 feet from high water line to the east and 328 feet east from the north end of a slough that makes up from the south, and on sandy ground covered with short grass. Elevation: 6.18 feet above mean low water; 4.68 feet above half tide level; 3.18 feet above mean high water.

BENCH MARK 3 (1926) is a standard disk set in concrete and projecting a few inches above the ground. It is located 1 foot south of the southwest corner of the main building of the fish camp about 3/4 mile south of New River Inlet. The building is an open shed and in about the center of the camp. The bench mark is about 49 feet from high water line and 164 feet south of triangulation station "HILT." Elevation: 13.14 feet above mean low water; 11.64 feet above half tide level; 10.14 feet above mean high water.

BENCH MARK 1 (1933) is a standard disk set in concrete in the top of a 6-inch terra cotta pipe which extends $2\frac{1}{2}$ feet into the ground. The bench mark is 4 inches above the surface of the ground and is located $36\frac{1}{2}$ feet from high water mark, $93\frac{1}{2}$ feet from face of dock, 90 feet from Bench Mark 2 (1933), 107 feet from Bench Mark 3 (1933), and about 92 feet from the northeast corner of a house that bears the name "SEA ISIAND." The bench mark is located on the west shore of New River Inlet about 164 feet north of the first slough that makes into the west shore of the inlet from the mouth, and $1\frac{1}{2}$ miles (nautical) 138° (true) from Peru, North Carolina. Elevation: 8.65 feet above mean low water; 7.15 feet above half tide level; 5.65 feet above mean high water.

BENCH MARK 2 (1933) is a standard disk set in concrete in the top of a 6-inch terra cotta pipe which extends $2\frac{1}{2}$ feet into the ground. The bench mark is about 4 inches above the surface of the ground and is located about 4 yards east of a hand pump and 4 yards north of the northwesterly corner of the "Sea Island" house. The bench mark is 27 yards from Bench Mark 1 (1933) in a southwesterly direction and is located on the west shore of New River Inlet about 35 yards north of the first slough from the mouth of the inlet. Elevation: 8.34 feet above mean low water; 6.84 feet above half tide level; 5.34 feet above mean high water.

BENCH MARK 3 (1933) is a standard disk set in concrete in the top of a 6-inch terra cotta pipe which extends $2\frac{1}{2}$ feet into the ground. The bench mark is about 4 inches above the surface of the ground and is located about 8 yards from the southeast corner of the "Sea Island" house. The bench mark is about 33 yards from Bench Mark 1 (1933), on the west shore of New River Inlet about 66 feet north of the first slough from the mouth that makes into the west shore of the inlet and runs in a southerly direction. Elevation: 7.77 feet above mean low water: 6.27 feet above half tide level; 4.77 feet above mean high water.

Elevations are based on 113 high waters and 112 low waters, December 9, 1926 - February 28, 1927, reduced to mean values.

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M.S.L. L.W.D. V.S.C+G. B.M - C148 (1935) at Dixon U.S.E. B.M - Edens at Lewis Landing 17.015 0.54 17.555 U.S.E. B.M- BD at Mark Fulcher's handing 3.81 0.61 4.42 U.S.E. B.M. Ward at New River Inlet 13.18 0,60 (13.28 Used.) 13.78 8.65 U.S.C.+G. B.M. Tidal #1 at New River Inlet 7.34 (1.31) 8.34 7.03 (1.3) 11 11 Tidal # 3 " " " " (1.33) 7.77 6.44

On Run from BM C-148 to Tidal B. Ms at New River luket;

139 Turns in approx 16 miles, we hit the Tidal B. M 0.27 High.

Adjustment = .00194 perturn. Allowable error = .05 V16 = 0.20

Project Depth of -12 h.W. D-Besufirt

13.78

-12.00

17.01 17.55 17.55

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Site plan for Diedsnig, ong job.

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6 Cards K# # #6490; Plumb Bob Cord, 25 yds. Medium, Linen, @ \$1.00 ---- \$6.00 1 Box K+E # 6495-5 Steel Stake Tooks, 5 165. @ d, 85 - - - the there is the same of the s 14.50 1 Gross, Dixons #3405, Lumber Crayons, Blue ---7,50 1 K+E, # 6299, Rod Level, circular \$ 3,90 1 HAE # N6970C, Reading Glass -6 H4E # N7452D, 50+t. Refill non-metallic woven topes
@ #7.20 - - 43,20 d 94.35

ADDRESS REPLY TO
DISTRICT ENGINEER
U. S. ENGINEER OFFICE
WILMINGTON, NORTH CAROLINA

WAR DEPARTMENT

UNITED STATES ENGINEER OFFICE

308 CUSTOMHOUSE

WILMINGTON, NORTH CAROLINA

REFER TO FILE No. SAWGS

11 December 1951

SUBJECT: Hydrographic Survey and Jetties at Entrance Channel of Mile Hammock Bay, Marine Barracks, Camp Lejeune, N. C.

TO:

Resident Officer in Charge of Construction Office of Public Works Officer Marine Barracks Camp Lejeune, North Carolina

- 1. Reference is made to your letter, subject as above, file No. SJR: bb, dated 5 December 1951.
- 2. The vertical control for the hydrographic survey at the Entrance Channel to Mile Hammock Bay was based on the elevation given for triangulation station "Ward," which is 13.78 feet above Beaufort Datum. This datum is mean low water at Beaufort Inlet, N. C., as established by the Corps of Engineers, and is used as the plane of reference for all soundings taken in the Intracoastal Waterway between Beaufort and the Cape Fear River, N. C. This office has found thru years of use that this datum has been very satisfactory for all hydrographic survey work on the Intracoastal Waterway and adjacent inlets between Beaufort and the Cape Fear River.
- 3. In 1935, the U. S. Coast and Geodetic Survey determined that Beaufort Datum is 2.01 feet below mean sea level at Beaufort. This gives triangulation sterion "Ward" a mean sea level elevation of 11.77 feet.
- 4. In regard to triangulation station "NEW" being destroyed by storm tides, this office has been aware of that, and a new station "NEW No. 2" has been established. It has not been triangulated in yet.
- 5. Your inquiry and information concerning the above subject is appreciated.

FOR AND IN THE ABSENCE OF THE DISTRICT ENGINEER:

BUY
UNITED
STATES
WAR
BONDS
AND
STAMPS

T. J. HEWITT Executive Officer

Disrejard - by direction if Mr. W. F. Fowler U.S.C.E. 9/3/53 . Difference in field = 0.50



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WILLMINGTON, MONTH CAROLINA

BOTTHO STATISTICALE OBTINO

THEN DEPOSIT NEWS

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From V.S.E. Mark & BD at Folker's Landing at Swan Point (Elen. 4.42) assumed as Low Water Datum, on run to Sta. "Ward" at New River Inlet, we establish on elevation of 13.83 which compares favorably with the elevation of 13.78 M.L. W as shown on the Hydrographic Map made by the Corps of Engineers and used as their Vertical Control for New River Inlet.

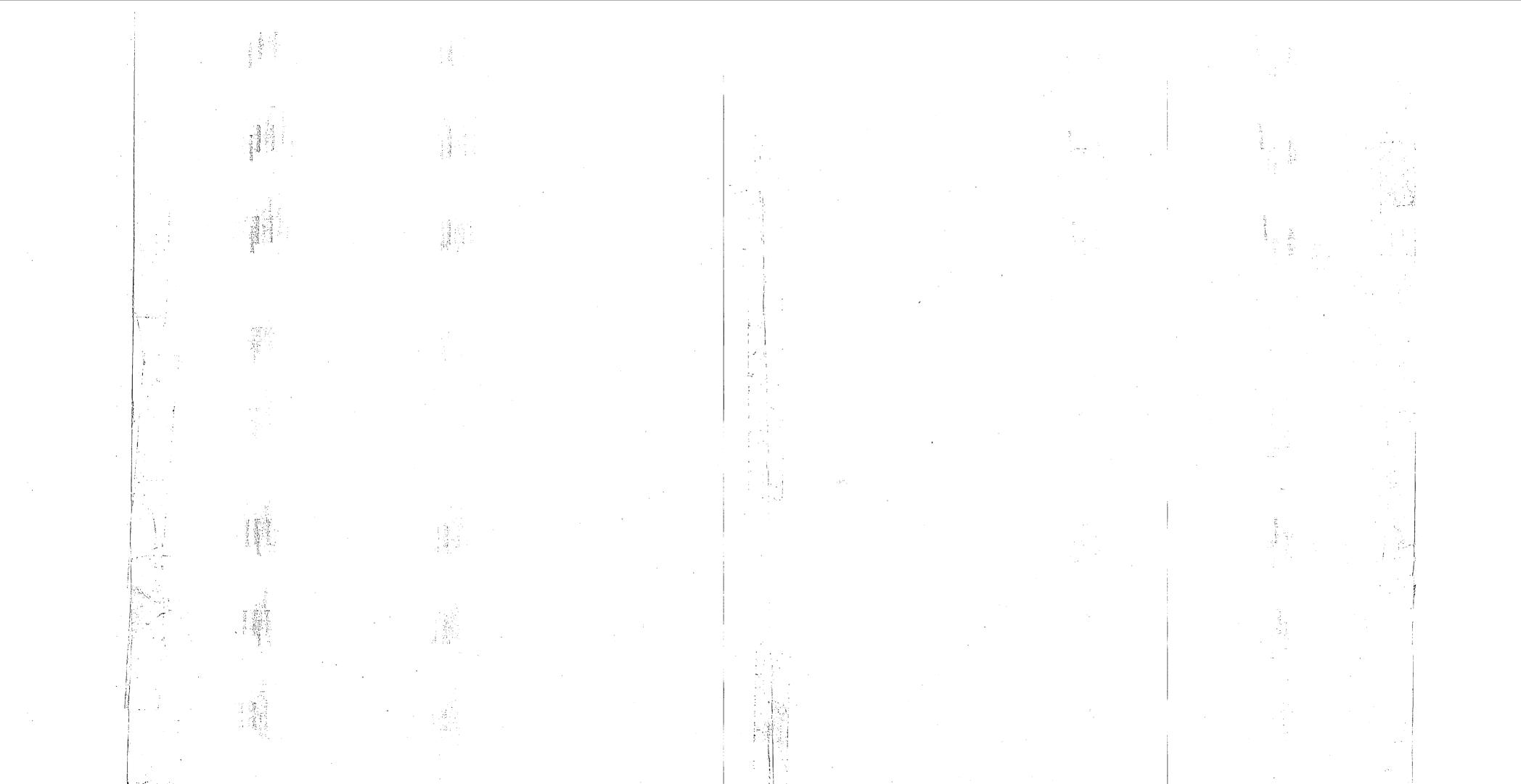
In tying Level Run to Tidal B.Ms (1933) on West Side of
New Priver Inlet, we establish an elevation of 7.99 M.L.Was
compared to an elevation of 7.34 Hear Sea Level Datum as established
by the U.S. Coast and Geodetic Surveys for Ventical Control at
Camp Davis. This difference, = 0.65, does not compare formably
with the difference of 2.01 as stated to be the accepted
variation between Mean Sea Level Datum and Hear Low Water
Datum as established by the C & G Surveys for this area.

15.78 H.L.W

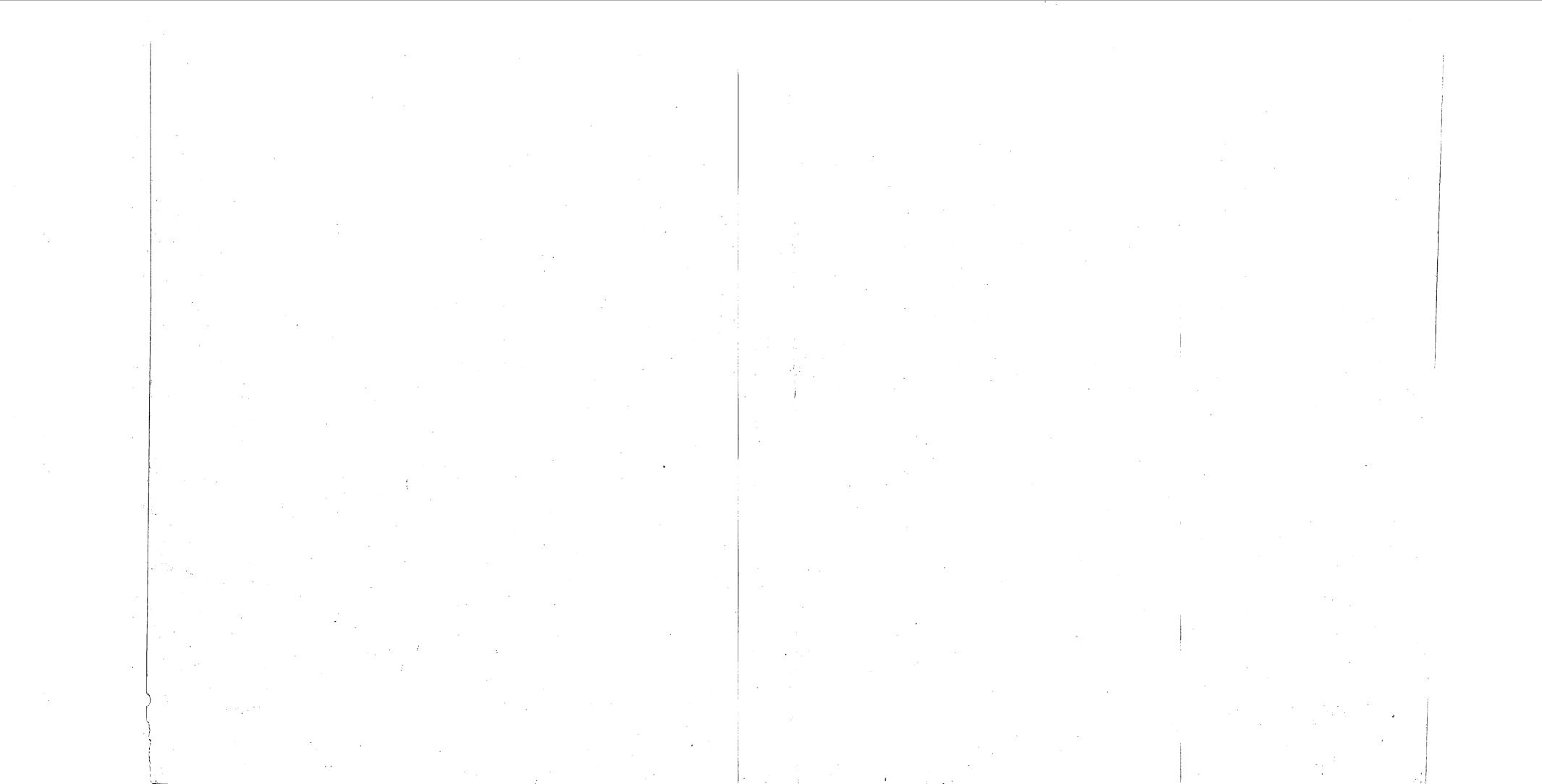
7.34 M.S.L. 137.99 M.L.W 13.28 M.S.L. 13.28

12.0 9 2.0 1. M.L. W

Hollyredge to New Topsail and New Rever Inlets, No. Caroline 70-638 12-685	Designation U 27 Nearest town Hollyridge County One of C	DESCRIPTION OF BENCH MARK State North Carolina nslow Learner and fort a form regard town to Hollyridge Contains and fort a form regard town to Hollyridge Contains and fort a form regard town to Hollyridge Contains and fort a form regard town to Hollyridge Contains and fort a form regard town to Hollyridge Detailed description At Hollyridge, at Camp Davis, C.9 mile northwest along 27th Stroet, 366.0 feet southeast of the southeast edge of the most southeasterly concrete taxinary at the Camp Davis Army Africid measured along the centerline of 27th Stroet, 213.0 feet northwest of the conterline of F Street, 19.0 feet southwest of the southwest face of frams theatre building, set in the tor of a 12-inch source concrete postablich was formerly the anchor base for suy wire supporting large steel stack for the theatre furnace, 1.3 foot above the ground, 35.0 feet northeast of the centerline of 27th Street.	DESCRIPTION OF BENCH MARK State North Carolina County Onslow County Ons
	Chief of Party Clarence R. Reed Date Peb. 1917 4 Recovered by C. K. Withrow Checked by	Chief of party Clarence R. Roed Date Feb. 1947 Described by C. K. Withrow Checked by U. S. Castlers Geoste's Survey-Portin Circ (No. 1980)	Chief of party Clarence R. Reed Date Peb. 1947 /2 Described by C. K. Withrow Checked by
Designation T 27 State North Carolina County Onslow Nearest town Folkstone County Onslow Distance and direction from nearest town At Folkstone Character of mark A bench mark disk. Stamping T 27 1932 Established by U.S. Coast & Geodetic Survey Present condition Good Detailed report At Folkstone, 40.1 feet north of the northeast corner of the Atlantic Coast Line Railroad station-sized platform, 30.7 feet east of the east rail of the main track, 15.7 feet east of the east rail of siding track, 67.0 feet north of the extension to west across U.S. Highway 17 the centerline of a sublic dirt road leading east, 54.5 feet nest of the west face of the 2-story frame store of Hora Everett, 31 rails north of the crossing of a private durt road leading to a white frame dwelling, 1.5 foot east of white reference post, 1.2 foot southwest of a telegraph pole, set in the top of a concrete post projecting 0.3 foot above the ground. Note: The disk is slightly tilted. The rod was held over the "4" marked in the metal between the letters "I" and "5" of the word "IMPRISONAEMT".	Designation Z 229 State North Caroline County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town 1,2 mile northeast Character of mark A bench mark disk Established by U. S. C. & 7. Survey Detailed description 1,2 mile northeast along the Atlantic Coast Line Railroad from the station at Mollyridge. 0,3 mile northeast of the 27 th Street gate to Camm Davis, 0.35 mile southmost of mileoost CB 275 - W 31, 30.1 feet southeast of the southeast rail, 36.5 feet northmest of the northmest edge of U. S. Highmay 17 (3-lane road), corroximately 80.0 feet southment of the northeast end of low sand hank along the side of railroad drainse ditch, in line with the telegraph holes, 1.5 feet southment of a white reference roat, set in the top of a concrete nost projecting 1:3 foot above the ground.	DESCRIPTION OF BENCH MARK Designation N 230 Nearest town Hollyridge County Chelow Distance and direction from nearest town At Hollyridge Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description At Hollyridge, at Comm Davis, at the Comm Davis Army Airfield, 0.9 mile northwest along the Atlantic Coast Line Reilroad from the station, thence 0.5 nile northwest along 27th Street, 56.0 feet southwest of the centerline of the street, 69.0 feet southeast of the southeast error to southeasterly concrete taxingy, 17.5 feet northwest of the north corner of the hanger on tom of which the control tower is located, 7.0 feet northwest of the northwest edge of the concrete arms in front of the hanger, 2.0 feet southwest of the northwest deep of the concrete arms in front of the hanger, 2.0 feet northwest of a white reference nost, set in the top of a concrete post projecting 0.8 foot above the ground.	Designation V 27 Nearest town Hollyridge Character of mark A bench mark disk Established by U. S. C. & G. Survey Present condition Destroyed Detailed report The concrete post in which the disk was set was knocked over during the construction of Cenn Davis. The post was located and recet near the old noint. Por the description of the reset cost see V 27 NEXET 1947.
Chief of Party Clarence R. Reed Date Feb. 1947 Recovered by C. K. Withrow Checked by	Chief of party Clarence R. Reed Date Feb. 1947 Described by C. K. Withrow Checked by U.S. Coast and Geodatic Screen-Partm Gas (Rev. 1946)	Chief of party Clarence R. Rood Date Pob. 1947 / Described by C. K. withrow Checked by U.S. Cault and Grocetic Survey - Portm 535 (Rev. 1969)	Chief of Party Clarence R. Reed Dato Feb. 1947 /3 Recovered by C. K. Withrow Checked by
Designation E 148 Designation E 148 Nearest town Folkstone County Character of mark Established by Present condition Detailed report U. S. Hirhway 17 has been rebuilt and the culvert in which the mark was set has been replaced with a concrete pipe culvert without headwalls. The disk	Designation F 148 Designation F 148 Nearest town Hellyridge Distance and direction from nearest town Character of mark A bench mark disk: Established by U. S. C. & G. Survey Present condition Destance and mark disk as set was found broken and portion containing the disk was recovered. The mark is definitely destroyed.	DESCRIPTION OF BENCH MARK Designation TBM 1 State North Carolina County Chelow Nearest town Hollyridge County Chelow Distance and direction from nearest lown At Hollyridge Character of mark surface of the runway Stamping None Established by U.S. C. & G. Survey Detailed description At Hollyridge, at Camo Davis Army Airfield, 0.4 mile southwest of the control tower, at the point where the the ashhalt runway meets the landing apron for the southwest end of the runway, the highest point of the runway.	DESCRIPTION OF BENCH MARK Designation V 27 RESET 1917 State North Carolina County Onolow Nearest town Hollyridge County Onslow Distance and direction from nearest town At Hollyridge Character of mark A bench mark disk Stamping V 27 1932 Established by U. S. C. & C. Survey Detailed description The original bost containing the disk was found talled from ground and react near the same location. At Hollyridge, O.1 mile northeast of the Atlantic Coast Line Railroad station, 13; rails northeast of the center of the crossing of tar road leading to the main sate to Carp Davis, directly across the highway from the junction of a tar road leading east and U. S. Highway 17, 31,5 feet northwest of the northwest rail of the main track, 18.1 feet northwest of the northwest rail of a siding, 11.5 feet southeast of the Camp Davis fence ling, 1,5 foot southment of a white reference next, set in the top of a concrete past projecting 0,2 foot above the ground. Note: The top of the northeast side of the bost has been broken.
Chief of Party C. R. Reed Date Feb. 1947 Recovered by C. K. Withrest Checked by	Chief of Party Recovered by C. R. Reed C. K. Withrow Lambert Party C. W.	Chief of party Clarence R. Roed Date March 1947 Described by C. K. Withrow Checked by	Chief of party Clarence R. Reed Date Warch 1947 Described by C. K. Withrow Checked by
Designation K 230 State North Carolina County Chalow Nearest town Polkatone County Chalow Distance and direction from nearest town 1,35 mile south Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 1,35 mile south along the Atlantic Coast Line Railroad from the atlation at Folkatone, 2,75 miles northeast of the station at Hollyridge, 33½ rails northeast of milepost CB 276 - W 32, 27.3 feet southeast of the coutheast rail, 15.0 feet northeast of the first tolerraph pole southwest of the northeast end of low and ridge along the southeast side of small railroad cut and side ditch, 2.0 feet northwest of the line of the telegraph voles, 2.0 feet southwest of a white reference post, set in the top of a concrete post projecting 0.7 foot above the ground.	Designation L 230 Nearest town Hollyridge Distance and direction from nearest town At Hollyridge Character of mark A bench mark disk Stamping L 230 1947 Established by U. S. C. & G. Survey Detailed description At Hollyridge, at Camp Davis, 0.9 mile northeast along the Atlantic Coast Line Railread from the station, thence 0.15 mile northeast along 27th Street, at the second tall steel mater tank southwest of the northeast boundary of Camp Davis, 133.5 feet southeast of the conterline of C Street, 111.0 feet northeast of the centerline of 26th Street, 69.0 feet southwest of the conterlor of 27th Street. set in the top of the northeast corner of the concrete foundation supporting the east steel leg of the water tank, 1.0 foct above the ground.	DESCRIPTION OF BENCH MARK Designation J 230 State North Carolina County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town At Hollyridge Character of mark A bench mark disk Established by U. S. Coast & Geodetic Survey Detailed description At Hollyridge, 0.45 mile northeast along the Atlantic Coast Line Railroad from the station, 0.1 mile southwest of milecost CB 274 - W 30, 55.5 feet southeast of the southeast rail, 10.5 feet northwest of the northwest edge of U. S. Highway 17 (3-lane road), set in the too of northwest concrete headwall for large concrete box culvert under the highway, 1.0 foot southwest of the northweat end of the headwall, 0.3 foot below the level of the highway.	DEPARTMENT OF COMMERCE U. A COMPLETE COMPLETE U. A C
Chief of party Clarence R. Reed Described by C. K. Withrew Described by C. K. Withrew Date Peb. 1947 Checked by	Chief of party Clarence R. Reed Date Feb. 1947 7 Described by C. K. Withrow Checked by	Chief of party Clarence R. Reed Date Feb. 1947 //	14
U. S. Creat and Geodet's Survey—Forms GAS (Rev. 1946) 15—1754-1 6. 1. MILLIANTE GRANDE STAGE	U.S. Ceast and Geodetic Survey—Form 638 (Rev. 1949) 18—18742-1 6. a personne error recents certain	Described by C. K. Withness Checked by U. S. Cossi and Goodes's Survey-Portin G38 (Rev. 1842) 18—1318-1 S. S. Britished Print	Chief of Party Recovered by B. Augustania Application: 19—199-1



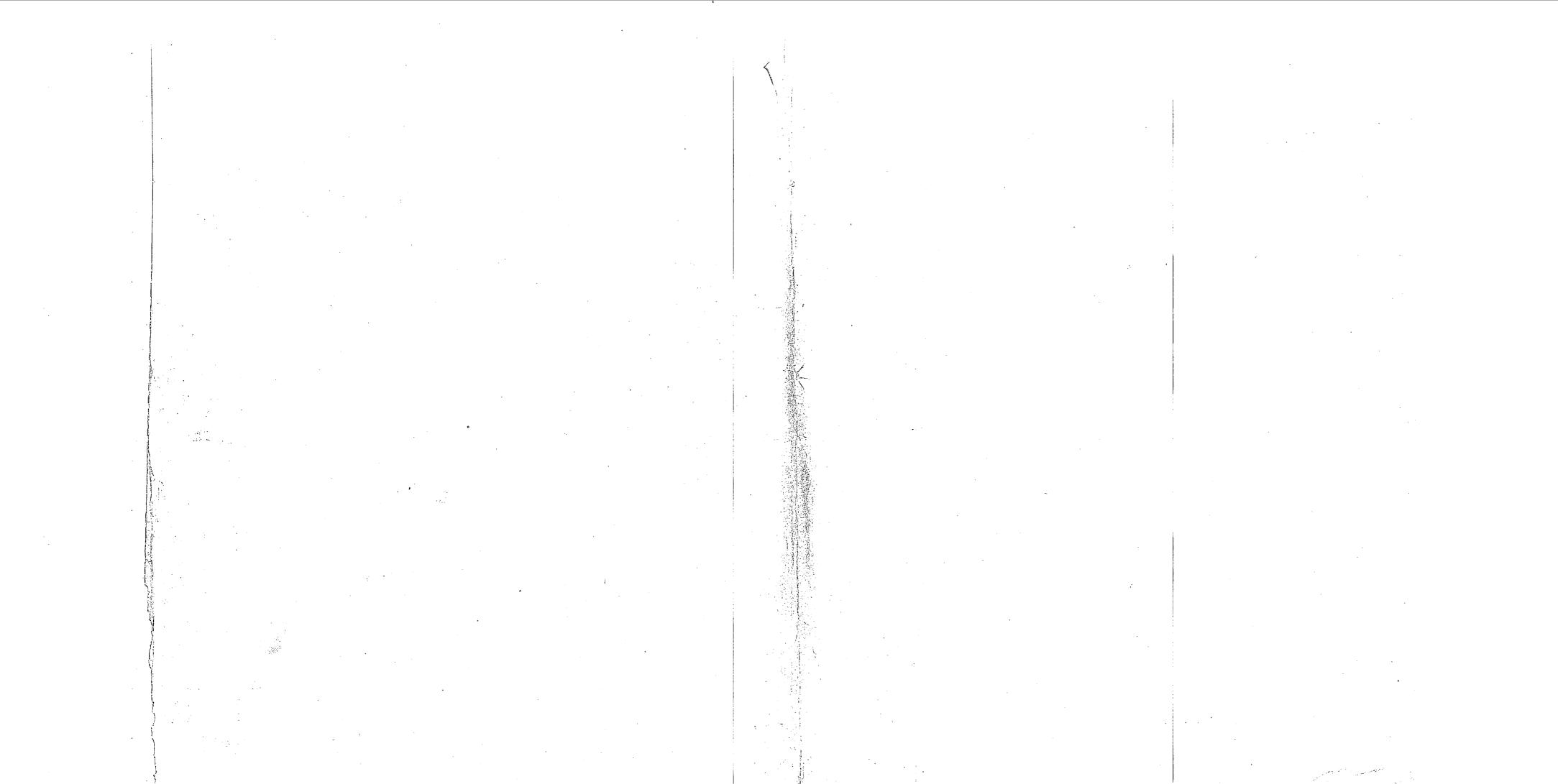
	DESCRIPTION OF BENCH MARK Designation W.229 State North Carolina County Onalog	DEPARTMENT OF COMMERCE RECOVERY NOTE, BENCH MARK P.	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK
	Distance and direction from nearest town C.95 mile south	Designation 1. H. 3 P. 10 1 State Hearth Carolina County Pender Nearest town nollyridge County Chalc's County Pender Distince, and direction from bearest town 22 miles counthwest	III Designation y 229 State North Carolina County Ponder Nearest town Hollyridge County Onslow	Designation SEARS BH 2 State Forth Grant County
	Established by U. 5. C. & G. Survey Octailed description 0.95 mile south along the Sears Landing Road from the railroad station at Hollyridge, 0.2 mile south of the parking area for old CCC Camp,	Established by Stamping	Established by U. S. C. & R. Survey Detailed description 2.2 41.	Distance and direction from nearest fown 4.75 miles centh Character of mark A roforonce mark disk Stamping STARS NO 1 1947 Detailed description 1.75 miles centh Stamping STARS NO 1 1947
	leading west to old CCC Camp garage area and a dirt road leading cast through the	Detailed report U. S. Highway 17 has been rebuilt and widened and it is very	Detailed description 3.3 miles south along the Sears Landing Road from the railroad station at Hollyridge, 183.5 feet southwest of the contorline of the Sears Landing Road measured from a point at the conter of the crossing of a dirt road, 27.0 feet southeast of the contorline of the dirt road, 47.0 feet northeast of the contorline of dirt drive to the home of Til this contorline.	Detailed description 4.75 ratios south along the Scaro Landing Road from the railroad station at Hollyridge, 184.5 feet northmest of the northmest end of the Searo Landing bridge, 28.9 feet southmest of the centerline of the Searo Landing road,
	from the northeast corner of area from which dirt was removed to construct highway fills, near point where highway begins downgrade to south, 5.0 feet north of a 6-inch pine tree, 1.5 feet couth of reference cost, not in the top of a concrete cost projecting 1.0 foot above the ground.	places the location of the mark along the graded shoulder of the reed and no trace of the post could be found.	of dirt drive to the home of Tim Atkinson, 116.5 feet northwest of the centerline corner of the Atkinson home, 5.0 feet west of a 25-inch pine tree, set in the top of a concrete cost projecting 1.0 foot above the ground.	Obstance and direction from nearest lown 4.75 miles centh Callot Character of mark A reference mark disk Established by U. 3. Cenat & Goodctic Survey Detailed description 4.75 miles south along the Scars Landing Road from the railread station at Hollyridge, 181.5 foot northwest of the northwest end of the Sears Landing tridge, 28.9 foot southmest of the centerline of the Scars Landing road, 42.5 feet southwest of reference mark Ho. 2, 2.7 feet morth of a tolenhene pole, into an 8-inch tile projecting 0.1 foot above the ground.
			and the ground.	
4	Chief of party Clarence R. Reed	A CONTRACTOR OF THE CONTRACTOR		
	Described by C. K. Withrow Checked by U. S. Coast and Geodetic Survey - Form Cits (for June)	Chief of Party Clarence R. Reed Date Feb. 1947	Chief of party Clarence R. Reed Date Feb. 1947 Checked by C. K. Nithrow Checked by	Chief of party Claronce R. Roed Described by C. K. WALL-L. Described by C. K. WALL-L. Described by C. K. WALL-L. Date Fob. 1947 28
	UPARTMENT OF COUNTRY	Checked by	U.S. Cash and Geology Survey-Porm dat (flar, last) U.S. Cash and Geology Survey-Porm dat (flar, last)	U.S. Coast and Geroetic Survey—Form Gas (her. 196)
	Designation R. M. 1 PENDER State North Carolina County Dealer	REPORT ON CONDITION OF BENCH MARK	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK
	Character of mark Character of mark Stamping	Nearest town Edgecombo State North Carolina County Pender Distance and direction from nearest town 0.3 mile northeast Character of mark	Designation B 230 State North Carolina County Pender Nearest town Hollyridge County Onslow Oistance and direction from nearest town Character of mark A bonch mark disk Stamping B 230 1967	Designation C 230 State North Carolina County Pender Nearest town Hollyridge County Onslow Distance and discreting from parent laws
	Present condition Destroyed Detailed report U. S. Highway 17 has been rebuilt and the culvert in which the mark was located has been replaced. A new mark was set at the time the old culvert was replaced; however the present line of levels did not fell.	Established by Stamping Present condition Detailed Report U. S. Wichman J. C. L.	Established by U. S. C. & G. Survey Detailed description 2.75 = 110 - 1	Established by U. S. C. & G. Survey Detailed description 5-25 at a survey Detailed description 5-25 at a survey
	replaced; however the present line of levels did not follow the railroad to this point so the new azimuth mark has no elevation established for it.	U. S. Highmay 17 has been rebuilt and the concrete culvert in which the mark was set has been replaced with a concrete pipe culvert without headwalls.	area from which dirt was removed to construct hickway fill, 46.0 feet northeast of the conterline of the road, 47.5 feet northwest of the centerline of dirt road leading northeast to farm 60 feet northeast to	Sand Spit between New Topsail Inlet and New River Inlet, 0.3 mile southwest of
			white reference roat, set in the ton of a concrete rost projecting 1.0 foot above the ground.	about 200.0 feet southeast of the edge of the marsh, near the first curve in the
				a low east-west sand dume ridge, about 30.0 feet north elect of the dume ridge, 70.5 feet southeast of the conterline of the road, about 5.0 feet above the level of the road, 2.0 feet southmest of a white reference most, set in the top of a concrete most projecting 1.3 foot above the ground.
				containing any root above the ground.
	Chief of Party C. R. Reed Recovered by C. K. Withrox Date Feb. 1947 /7	Chief of Party Clarence R. Reed		
, , , , , , , , , , , , , , , , , , ,	Checked by	Reported by C. K. Withrow Date Feb. 1947 Checked by C. K. Withrow Checked by	Chief of party Clarence R. Reed Date Pob. 1947 C. K. Withrow Checked by	Chief of party Clarence R. Reed Date Feb. 1947 29 C. K. Withrow Checked by
	DEPARTMENT OF COMMERCE U.S. COLUT. 195 GROOTIC SEASET RECOVERY NOTE DENCH MADE		U. S. Cost and Geodetic Survey—From: 608 (Rev. 1942) 18—22315 1 s. 6. serreceive relative service	U. S. Coast and Goodeth Survey-Forms G38 (New, 1981)
	Designation was an analysis of the property of	DEPARTMENT OF COMMERCE	The State Control of the State	H-LOU-1 to be consented returns and the cons
	Designation FEMDER RV-2 State North Carolina County Pender Distance and direction from nearest town 2.0 miles gouthpast.	Designation U 27 Designation U 27 State Horti Carolina County RECOVERY NOTE, BENCH MARK RECOVERY NOTE, BENCH MARK RECOVERY NOTE, BENCH MARK Recovery Notes and Recovery Page 1985 Recovery Notes and Recovery Notes and Recovery Page 1985 Recovery Notes and Recovery Notes	DESCRIPTION OF BENCH MARK Designation 3.33 (Unknown) State North Carolina County Ponder	DESCRIPTION OF BENCH MARK
	Designation FENDER RV-2 Nearest town Hollyridge County One Low Character of mark A reference mark diek Established by U. S. G. & G. Survey Present condition Good Detailed report	Designation V 27 Nearest town 24geocabe Distance and direction from nearest town Character of mark Established Land	Designation 3.33 (Unknown) State North Carolina County Ponder Nearest town Hollyridge County Onelow Distance and direction from nearest town Character of mark & railroad spike Established by Pondelow Stamping None	DESCRIPTION OF BENCH MARK Designation TOMER POUR RM 1 Nearest town Hollyridge County Onslow Distance and direction from nearest town Character of mark 1 County Onslow 5.25 miles bouth, thonce 1.55 miles bouthmost
	Designation FENDER RV-2 State North Carolina County Pender Nearest town Hollyridge County Onslow Character of mark A reference mark diek Stamping PENDER NO 2 1932 Present condition Good Detailed report 2,0 miles southwest along the Atlantic Coast Line Railroad from the station at Hollyridge, 0,4 mile northeast of milepoat CR 272	Designation U 27 Nearest town Edgecombe Distance and direction from nearest town Character of mark Established by Present condition Dotalled report Designation U 27 State Horth Carolina County Pender County Pender County Pender County Pender County Pender Stampling Stampling Present condition Dotalled report	Designation 3.33 (Unknown) Nearest town Hollyridge County Onnlow Distance and direction from nearest town Character of mark & railroad spike Established by Probably Army or contractor in construction of Camp Davis Detailed description 4,5 miles south along the Sears Landing Rood from the railroad spate of the Camp of the Sears Landing Bridge, at the	DESCRIPTION OF BENCH MARK Designation TOKER FOUR RM 1 State Morth Carolina County Pender Nearest town Hollyridge County Onslow Distance and direction from nearest town 5,25 miles couth, thonce 1.55 miles couthmest Character of mark A reforence mark disk Stamping TOKER FOUR RM Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thonce 1.55 miles southmest
	Designation FENDER RM-2 Nearest town Hollyridge County Onslow Character of mark A reference mark diek Established by U. S. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Goast Line Railroad from the east of the triangulation station, 84.5 feet southeast of the southwest east of the triangulation station, 84.5 feet southeast of the southeast edge of dirt road leading southeast, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet south of the centerline of little-plant connections.	Designation V 27 Nearest town 24geocabe Distance and direction from nearest town Character of mark Established Land	Designation 3.33 (Unknown) State North Carolina County Ponder Nearest town Hollyridge County Onnlow Distance and direction from nearest town 4.6 miles south Character of mark A railroad spike Stamping None Established by Probably Army or contractor in construction of Camo Davis Detailed describing	DESCRIPTION OF BENCH MARK Designation TOKER POUR RM 1 State Morth Carolina County Pender Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles couth, thonce 1.55 miles southwest. Character of mark A reforence mark disk Stamping TOKER FOUR RM Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station, at Hollyridge, thence 1.55 miles southwest along the Sand Soit Road, on the oand spit between Now Topsail Inlet and New River Inlet. O.I mile southwest of mileport 5, just inside the main ridge of sand dumos, at the U. S. Navy Test Range Tower No. & 78 5 fort southwest of the company of the company of the southwest of the company
	Designation FENDER RV-2 State North Carolina County Pender Nearest town Hollyridge County Onslow Character of mark A reference mark diek Stamping PENDER NO 2 1932 Present condition Good Detailed report 2,0 miles southwest along the Atlantic Coast Line Railroad from the station at Hollyridge, 0,4 mile northeast of milepoat CR 272	Designation U 27 Nearest town Edgecombe Distance and direction from nearest town Character of mark Established by Present condition Dotalled report Designation U 27 State Horth Carolina County Pender County Pender County Pender County Pender County Pender Stampling Stampling Present condition Dotalled report	Designation 3.33 (Unknown) Nearest town Hollyridge County County County Distance and direction from nearest town 4.6 miles south Character of mark A railroad spike Established by Probably Army or contractor in construction of Camp Davis Detailed description 4.6 miles south along the Sears Landing Raped from the railroad station at Hollyridge, 0.2 mile northwest of the Sears Landing Bridge, at the southeast oder of the first woods area northwest of the bridge, 103,0 feet	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RN 1 State North Carolina County Pender Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 1.55 miles southwest Character of mark A reforence mark disk Stamping TOMER FOUR RN Established by U.S. C. & G. Survey NO 1.947 Detailed description 5.25 miles south along the Sears Landing Road from the ratiroad station, at Hollyridge, thence 1.55 miles southwest along the Sand Spit Road, on
	Designation FENDER RM-2 Nearest town Hollyridge County Onslow Character of mark A reference mark diek Established by U. S. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Goast Line Railroad from the east of the triangulation station, 84.5 feet southeast of the southwest east of the triangulation station, 84.5 feet southeast of the southeast edge of dirt road leading southeast, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet south of the centerline of little-plant connections.	Designation U 27 Nearest town Edgecombe Distance and direction from nearest town Character of mark Established by Present condition Dotalled report Designation U 27 State Horth Carolina County Pender County Pender County Pender County Pender County Pender Stampling Stampling Present condition Dotalled report	Designation 3.33 (Unknown) Nearest town Hollyridge County County County Distance and direction from nearest town 4.6 miles south Character of mark A railroad spike Established by Probably Army or contractor in construction of Camp Davis Detailed description 4.6 miles south along the Sears Landing Raped from the railroad station at Hollyridge, 0.2 mile northwest of the Sears Landing Bridge, at the southeast oder of the first woods area northwest of the bridge, 103,0 feet	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RM 1 State North Carolina County Pender Nearest town Hollyridge County Conslow County
	Designation PENDER RE-2 State North Carolina County Pender Nearest town Hollyridge County Onelow Onelow Onelow Character of mark A reference mark diek Stamping PENDER NO 2 1932 Present condition Good Octalled report 2.0 miles southwest along the Atlantic Coast Line Railroad from the station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet U. S. Highway 17 measured from a point 265.0 feet southwest of the southeast edge of dirt road leading southeast, 128.0 feet southmest of the south corner of concrete road leading to main dirt road; 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground.	Designation U 27 Nearest town Edgecombe Distance and direction from nearest town Character of mark Established by Present condition Dotalled report Designation U 27 State Horth Carolina County Pender County Pender County Pender County Pender County Pender Stampling Stampling Present condition Dotalled report	Designation 3.33 (Unknown) Nearest town Hollyridge County County County Distance and direction from nearest town 4.6 miles south Character of mark A railroad spike Established by Probably Army or contractor in construction of Camp Davis Detailed description 4.6 miles south along the Sears Landing Raped from the railroad station at Hollyridge, 0.2 mile northwest of the Sears Landing Bridge, at the southeast oder of the first woods area northwest of the bridge, 103,0 feet	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RM 1 State North Carolina County Pender Nearest town Hollyridge County County County Pender Obstance and direction from nearest town 5,25 miles south, thonce 1.55 miles southmest Character of mark A reforence mark disk Stamping TOWER FOUR RM Established by U.S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thonce 1.55 miles southmest along the Sand Soit Road, on the cand epit between New Topsail Inlet and New River Inlet. O.1 mile southmest of milepost 5, just inside the min ridge of sand dunce, at the U.S. Mavy Test Range Tower No. 4, 78.5 feet southmest of the conterline of the road, 7.6 feet north of
	Designation FENDER RM-2 Nearest town Hollyridge County Onslow Character of mark A reference mark diek Established by U. S. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Goast Line Railroad from the east of the triangulation station, 84.5 feet southeast of the southwest east of the triangulation station, 84.5 feet southeast of the southeast edge of dirt road leading southeast, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet southeast of the south corner of concrete road leading to make 1, 128.0 feet south of the centerline of little-plant connections.	Designation W 27 Nearest town Zigocombe Distance and direction from nearest town Character of mark Established by Present condition Destroyed Detailed report U. S. Highway 17 has been rebuilt and the concrete culvert in which the mark was not has been replaced with a concrete pipe culvert without headwalls. Chief of Party, Clayson R. R.	Designation 3.33 (Unknown) Nearest town Hollyridge County Conty Conlow Distance and direction from nearest town Lof miles south Character of mark A railroad spike Established by Probably Army or contractor in construction of Commo Davis Detailed description Lof miles south along the Sears Landing Road from the railroad station at Hollyridge, 0.2 mile northwest of the Sears Landing Bridge, at the southeast ofte of the first woods area northwest of the bridge, 108.0 feet northeast of the centerline of the road, driven into the southwest side of a 20-inch live oak tree, 1.0 feet above the ground.	DESCRIPTION OF BENCH MARK Designation TORER FOUR RM 1 State Morth Carolina County Pender Nearest town Mollyridge County Onelow Clistance and direction from nearest town 5,25 miles south, thonce 1.55 miles southwest Character of mark A reforence mark disk Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station, at Hollyridge, thonce 1.55 miles southwest along the Sand Solt Road, on the eand spit between Now Topsail Inlet and Now River Inlet, 0.1 mile southwest of mileport 5, just inside the min ridge of sand dumos, at the U. S. Many Test Range Tower No. 4, 78.5 foot southmeat of the conterline of the road, 7,6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron.
	Designation FENDER RW-2 State North Carolina County Pender Nearest town Hollyridge County Onslow Distance and direction from nearest town 2.0 miles southwest Character of mark A reference mark diek Stamping PENDER NO 2 1932 Present condition Detailed report 2.0 miles southwest along the Atlantic Coast Line Railroad from the station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148,7 feet east of the transpulation station, 84.5 feet southeast of the southeast edge of U.S. Highway 17 measured from a point 265.0 feet southwest of the southeast edge of dirt road leading southeast, 128,0 feet southwest of the south corner of concrete block store building, 12.0 feet south of the centerline of little-used connecting road leading to main dirt road, 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground. Chief of Party Clarence R. Reed Recovered by C. K. Withrow RECOVERY NOTE: Detailed Date Feb. 1947 Checked by RECOVERY NOTE: Detailed County Pender C	Designation W 27 Nearest town Edgecombe County Pender Distance and direction from nearest town Character of mark Established by Present condition Destroyed Detailed report W. S. Highway 17 has been rebuilt and the concrete culvert in which the mark was set has been replaced with a cenerate pipe culvert without headwalls. The disk was not recovered.	Designation 3.33 (Unknown) Nearest town Hollyridge County Onnlow Distance and direction from nearest town Character of mark A railroad spike Established by Probably Army or contractor in construction of Camp Davis Detailed description 4.5 miles south along the Sears Landing Road from the railroad station at Hollyridge, 0.2 mile northwest of the Sears Landing Bridge, at the southeast edge of the first woods area northwest of the bridge, 108,0 feet northeast of the centerline of the road, driven into the southwest side of a 20-inch live oak trae, 1.0 feet above the ground. Chief of party Clarence R. Reed Described by C. K. Withrow Date Feb. 1947 Checked by U.S. Contact Gazzene Sergy-Term 635 (Rev. 1969)	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RM 1 State North Carolina County Pender Nearest town Hollyridge County Onelow Obstance and direction from nearest town 5,25 miles south, thonce 1.55 miles southmest Character of mark A reforence mark disk Stamping TOWER FOUR RM Established by U.S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the rail frond station, at Hollyridge, thonce 1.55 miles southmest along the Sand Soit Road, on the eand spit between New Topsail Inlet and New River Inlet, 0.1 mile southmest of milepost 5, just inside the main ridge of sand dunes, at the U.S. Navy Test Range Tower No. 4, 78.5 feet southeast of the conterline of the road, 7.6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron. Chief of party Clarence R. Reed Date Feb. 1947 30 Checked by C. K. Nithrow Checked by
	Designation PENDER RW-2 State North Carolina County Pender Nearest town Hollyridge County Onslow Distance and direction from nearest town 2.0 miles southwest Character of mark A reference mark diek Established by U. S. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Coast Line Railroad from the station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet U. S. Highway 17 measured from a point 265.0 feet southwest of the southeast edge of dirt road leading southeast, 128.0 feet southwest of the southeast edge of dirt road leading southeast, 128.0 feet south of the south corner of concrete road leading to main dirt road; 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground. Chief of Party Checked by Chief of Party Clarence R. Reed Recovered by C. K. Withrow RECOVERY NOTE, BENCH MARK RECOVERY NOTE, BENCH MARK RECOVERY NOTE, BENCH MARK Recovered by C. State North Carolina County Pender North Carolina County Pender Cou	Designation W 27 Nearest town Edgecombe County Pender Distance and direction from nearest town Character of mark Established by Present condition Destroyed Detailed report W. S. Highway 17 has been rebuilt and the concrete culvert in which the mark was set has been replaced with a cenerate pipe culvert without headwalls. The disk was not recovered. Chief of Party Charance R. Reed Recovered by C. K. Mithrow DESCRIPTION OF BENCH MARK Designation Y 220 Designation W 27 State Horth Carolina County Pender County P	Designation 3.33 (Unknown) Nearest town Hollyridge County Onnlow Distance and direction from nearest town 1.6 miles south Character of mark A railroad spike Established by Probably Army or contractor in construction of Camo Davis Detailed description 1.6 miles south along the Sears Landing Road From the railroad station at Hollyridge, 0.2 mile northwest of the Sears Landing Bridge, at the southeast ode of the first woods area northwest of the bridge, 108,0 feet northeast of the centerline of the road, driven into the southwest side of a 20-inch live oak trae, 1.0 foot above the ground. Chief of party Clarence R. Reed Described by C. K. Withrow Checked by U.S. Contract Gestell Stray-Torm 615 (Br. 1989) DESCRIPTION OF BENCH MARK	Designation TOMER FOUR RM 1 State Morth Carolina County Pender Nearest town Hollyridge County County County Pender Nearest town Hollyridge County County County Character of mark A reforence mark disk Stamping TOWER FOUR RM Stablished by U.S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station, at Hollyridge, thomse 1.55 miles southwest along the Sears Landing Road from the railroad station, at Hollyridge, thomse 1.55 miles southwest along the Sears Landing Road from the railroad station, at Hollyridge, thomse 1.55 miles southwest along the Sears Landing Road from the railroad station, at Hollyridge, thomse 1.55 miles southwest along the Road Soit Road, on the south post 5, just inside the main ridge of sand dunes, at the U.S. Mavy Test Range Tower No. 4, 78.5 feet southeast of the conterline of the road, 7.6 feet north of the south corner of the concrete apron around the base of the towar, 1.4 feet south of the south corner of the concrete towar, set in the concrete apron. Chief of party Clarence H. Roed Date Fob. 1947 30 Checked by U.S. Cantaed Goodn't Europy-Form CR (Ref. 1949)
	Designation PENDER RE 2 State North Carolina County Pender Nearest town Hollyridge County Onelow Onelow Distance and direction from nearest town 2.0 miles southwest Character of mark A reference mark diek Established by U. S. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Coast Line Railroad from the station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet station at Hollyridge from a point 265.0 feet southwest of the southeast edge of dirt road leading southeast, 128.0 feet southwest of the south corner of concrete foot dirt road leading southeast, 128.0 feet southwest of the south corner of concrete road leading to main dirt road, 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground. Chief of Party Clarence R. Reed Recovered by C. K. Withrow Checked by Checked by RECOVERY NOTE, BENCH MARK R Designation Pender 1932 State North Carolina County Pender Distance and direction from nearest town 2.0 miles southwest Stabilished by U. S. Coast & Geodetic Survey Stamping FENDER 1932 Stamping FENDER 1932	Designation W 27 Nearest town Edgeocombe Distance and direction from nearest town Character of mark Established by Present condition Dostroyed Dotalled report W. S. Highray 17 has been rebuilt and the concrete culvert in which the mark was set has been replaced with a cenerate pipe culvert without headwalls. The disk was not recovered. Chief of Party Clarence R. Reed Recovered by C. E. Eithrow Designation X 229 Nearest town Hollyridge State North Carolina County Pender County Onnlow Character of mark A bench mark disk Canton Pender State North Carolina County Pender County Onnlow Character of mark A bench mark disk Ferthelic Mark State North Carolina County Pender County Onnlow Character of mark A bench mark disk	Designation 3.33 (Unknown) Nearest town Hollyridge County Conty Condow Distance and direction from nearest town 4.6 miles south Character of mark A railroad spike Established by Probably Army or contractor in construction of Camo Davis Detailed description 4.6 miles south Character of mark A railroad spike Established by Probably Army or contractor in construction of Camo Davis Detailed description 4.5 miles south A.6 miles south County Connormal Name of Camo Davis Detailed description 4.5 miles south A.6 miles south County Character of mark A railroad spike Stamping None Established by Probably Army or contractor in construction of Camo Davis Bears Landing Render the railroad station at Hollyridge, 0.2 mile northwest of the Sears Landing Bridge, at the southeast of the centerline of the road, driven into the southwest side of a 20-inch live oak trae, 1.0 foot above the ground. Chief of party Clarence R. Reed Described by C. K. Withrow Checked by U.3. Coutant Gasselle Servy-Porm 615 (Rev. 1969) DESCRIPTION OF BENCH MARK Designation SEARS RM 2 Nearest town Hollyridge County Onslow County Onslow Distance and direction from particular the south was a such as a such a county onslow County Onslow Stamping None Sta	DESCRIPTION OF BENCH MARK Designation TOWER FOUR RM 1 State Horth Carolina County Pender Nearest town Hollyridge County Onelow Stamping TOWER FOUR RM 5.25 miles south, thonce 1.55 miles southwest Stamping TOWER FOUR RM Established by U. S. C. & G. Survey No 1 1947 Detailed description 5.25 miles south along the Sears Landing Road from the real froad station, at Hollyridge, thonce 1.55 miles southment along the Sand Solt Road, on the sand spit between New Topsall Inlet and New River Inlet, O.1 mile southment of milepost 5, just inside the main ridge of sand dunes, at the U. S. Many Test Range Tower No. 4, 78.5 foot southeast of the conterline of the road, 7.6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron. Chief of party Clarence R. Reed Described by C. K. Mithrow Checked by U.1. Centraled Geodelic Lowey-Down CM (Rev. 1860) DESCRIPTION OF BENCH MARK Designation TOWER FOUR 1947 State Morth Carolina County Pender Nazerst Lower Mediantides.
	Designation PENDER RE 2 State North Carolina County Pender Nearest town Hollyridge County Onelow Distance and direction from nearest town 2.0 miles southwest Character of mark A reference mark diek Established by U. S. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Goast Line Railroad from the station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148.7 feet station at Hollyridge of the southwest of the southeast edge of U. S. Highway 17 measured from a point 265.0 feet southwest of the junction of main dirt road leading southeast, 128.0 feet southwest of the south corner of concrete road leading to main dirt road, 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground. Chief of Party Clarence R. Reed Recovered by C. K. Withrow Checked by RECOVERY NOTE, BENCH MARK R Designation Pender 1932 Nearest fown Hollyridge County Onslow Distance and direction from nearest town 2.0 miles southwest Stabilished by U. S. Coast & Geodetic Survey Appears undisturbed but close to the road near the foot of the shoulder of the road. The mark appears to be undisturbed How description.	Designation W 27 Nearest town Edgeocombe Distance and direction from nearest town Character of mark Established by Present condition Destroyed Detailed report W. S. Highway 17 has been rebuilt and the concrete culvert in which the mark was set has been replaced with a cenerate pipe culvert without headwalls. The disk was not recovered. Chief of Party Clarence R. Reed Recovered by C. E. Mithrow DESCRIPTION OF BENCH MARK Designation X 229 Nearest town Hollyridge Distance and direction from nearest town 2.35 miles south Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 2.35 miles south along the Sears Landing Road from the realread	Designation 3.33 (Unknown) Nearest town Hollyridge County County Condow Distance and direction from nearest town 4.6 miles south Character of mark A railroad spike Established by Probably Army or contractor in construction of Camp Davis Detailed description 4.5 miles south along the Sears Landing Road from the railroad station at Hollyridge, 0.2 mile northwest of the Sears Landing Bridge, at the southeast edge of the first woods area northwest of the bridge, 108,0 feet northeast of the centerline of the road, driven into the southwest side of a 20-inch live oak trae, 1.0 feet above the ground. Chief of party Checked by U.S. Contact Gessell Sergy-Torm 635 (Rev. 1869) DESCRIPTION OF BENCH MARK Designation SEARS RM 2 State North Carolina County County Character of mark A reference mark discussed Stamping County County Checked by Described by U.S. Ca & G. Survey Stamping SEARS NO 2 1943 Stamping SEARS NO 2 1943 Stamping SEARS NO 2 1943 Checked by Destailed description County Character of mark A reference mark discussed County County Character of mark County Co	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RM 1 State North Carolina County Pender Nearest town Hollyridge County Chalow Distance and direction from nearest town 5.25 miles bouth, thoneo 1.55 miles bouthmost Character of mark A reforence mark disk Stamping TOMER FOUR RM Established by U. S. C. & G. Survey NO 1.947 Detailed description 5.25 miles bouth along the Sears Landing Road from the refiread station, at Hollyridge, thence 1.55 miles bouthwest along the Sand Soit Road, on the oand gnit botheon Now Topsail Linet and New River Index. 0.1 mile southmost of milepost 5, just inside the main ridge of sand dunes, at the U. S. Navy Test Range Tower No. 4, 78.5 foot southmost of the conterline of the road, 7.6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, but in the concrete apron. Chief of party Clarence R. Reed Described by C. K. Withrow Designation Tower No. 4, 8 mithrow Designation Tower Four 1947 Designation Tower Four 1947 State North Carolina County Pender Nearest town Hollyridge County Chalow Stamping Tower Four 1947 Nearest town Hollyridge State North Carolina County Englished by 0.5 care and direction from mearest town 5.25 miles south, thence 1.55 miles southmost Stamping Tower Four 1947
	Designation FENDER RI'-2 Nearest town Hollyridge County Onslow Distance and direction from nearest town 2.0 miles southwest Established by U. S. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Coast Line Reilroad from the station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148,7 feet estat of the triangulation station, 84,5 feet southwest of the southcast edge of U. S. Highway 17 measured from a point 265,0 feet southwest of the southcoart edge of dirt road leading southeast, 128,0 feet southwest of the south corner of concrete block store building, 12,0 feet south of the centerline of little-used connecting road leading to main dirt road; 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground, Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Recovered by C. K. Withrow Chief of Party C	Designation W 27 Nearest town Zigocombe Distance and direction from nearest town 0.2 mile coutingout Character of mark Established by Present condition Doutroyed Dotalled report U. S. Hightany 17 has been rebuilt and the concrete culvert in which the rank was not has been replaced with a concrete pipe culvert without headwalls. The diel was not recovered. Chief of Party Clarence R. Reed Recovered by C. E. Mithrow DESCRIPTION OF BENCH MARK Designation X 229 Nearest town Hollyridge Nearest town Hollyridge County Onelow Character of mark A bench mark diek Established by U. S. C. & G. Survey Detailed description 2.35 miles south of the crossing of a dirt road leading west on the east side of the main road and parallelis Established for short distance. 1400. Feet centerline of the dirt road which parallels The state of mark and the property of the conterline of the dirt road which parallels	Designation 3.33 (Unknown) Nearest town Hollyridge County Onnlow Distance and direction from nearest town Character of mark A railroad spike Established by Probably Army or contractor in construction of Camo Davis Detailed description Designation 4.6 miles south along the Sears Landing Bridge, at the southeast of the Olyridge, 0.2 mile northwest of the Sears Landing Bridge, at the southeast of the Centerline of the first woods area northwest of the bridge, 109.0 foet northeast of the centerline of the road, driven into the southwest side of a 20-inch live oak tree, 1.0 foot above the ground. Chief of party Clarence R. Reed Date Fob. 1947 Checked by U.1. Center Gestill Surger-Form 65 (Br. 1849 DESCRIPTION OF BENCH MARK Designation SEARS RM 2 Nearest town Hollyridge County Onslow Distance and direction from nearest town 4.75 miles south Character of mark A reference mark disk Established by U. 3, C. & G. Survey Detailed description Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing Read Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot southwest of the centerline of the Sears Landing bridge, 47,0 foot south along the sears Landing bridge and	Description of Bench Mark Designation Toker four RM 1 Nearest town Hollyridge Distance and direction from nearest town 5.25 niles couthy Chalow Character of mark A reforence mark dick Established by U. S. C. & G. Survey Detailed description 5.25 niles south along the Sears Landing Road from the refirence station, at Hollyridge, thence 1.55 niles southmeet along the Sand Soit Road, on the onand spit between Now Topsail Inlet and New River Inlet, 0.1 miles outhwest of mileport 5, just inside the main ridge of sand dunes, at the U. S. Navy Test Range Tower No. 4, 74.5 foot southeast of the centerline of the road, 7.6 foot north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron. Chief of party Clarence H. Road Described by C. K. Mithrom Checked by U. S. Charles Greenix Eurry-Torm CM (Ret. BE) DESCRIPTION OF BENCH MARK Designation Tower Four 1947 State North Carolina County Pender County Chalow Distance and direction from nearest town 5.25 miles south, thence 1.55 miles couthmeet Character of mark A triangulation station dick Established by U. S. C. & G. Survey Detailed description 5.25 miles couth ment along the Sand Spit Road, at the U. S. New Tort 2 are the second county and the sand Spit Road, at
	Designation FENDER RI-2 State North Carolina County Pender Nearest town Hollyridge County Onslow County Onslow Character of mark A reference mark disk Stamping PENDER NO 2 1932 Established by U. S. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Coast Line Railroad from the station at Hollyridge, O.4 mile northeast of milespost CB 271 - W 27, 148,7 feet east of the triangulation station, 82.5 feet southeast of the southeast adject of dirt road leading southeast, 126,0 feet southwest of the southeast adject of dirt road leading southeast, 126,0 feet southwest of the southeast of main of the southeast of the southeast block store building, 12,0 feet south of the centerline of little-used connecting road leading to main dirt road, 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground. Chief of Party Clarence R. Reed Recovered by C. K. Withrow Checked Checked Checked	Designation W 27 Nearest town Edgeocombe Distance and direction from nearest town Character of mark Established by Present condition Destroyed Detailed report W. S. Highway 17 has been rebuilt and the concrete culvert in which the mark was set has been replaced with a cenerate pipe culvert without headwalls. The disk was not recovered. Chief of Party Clarence R. Reed Recovered by C. E. Mithrow DESCRIPTION OF BENCH MARK Designation X 229 Nearest town Hollyridge Distance and direction from nearest town 2.35 miles south Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 2.35 miles south along the Sears Landing Road from the realread	Designation 3.33 (Unknown) Nearest town Mollyridge County Onnlow Distance and direction from nearest town Low Described by C. K. Withrow DESCRIPTION OF BENCH MARK Designation SEARS RM 2 Nearest town Hollyridge County Onnlow Stamping None Stampi	DESCRIPTION OF BENCH MARK Designation TONER FOUR RM 1 State North Carolina County Pendor Nearest town Hollyridge County Onelow Distance and direction from nearest town 5,25 miles couth, thonce 1.55 miles couthwest Stamping TONER FOUR RM Stambiaded by U.S.C. & G. Surroy Detailed description 5,25 miles south along the Sears Landing Road from the railroad station, at Hollyridge, thonce 1.55 miles southmest along the 5and Sult Road, on the onand spit bothween Now Topsail Inlet and New River Inlet, 0.1 mile southwest of mileport 5, just inside the main ridge of sand dunes, at the U.S. May Test Range Tower No. 4, 74.5 feet southeast of the centerline of the road, 7.6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron. Chief of party Clarence R. Road Described by C. K. Mithrow Checked by U.S. Cauted Geoluk Survy-round CM (RM. BM) DESCRIPTION OF BENCH MARK Designation TOMER FOUR 1947 State North Carolina County Pender County Chalow Distance and direction from nearest town 5,25 miles couth, thence 1,55 miles conthnoct Character of mark A triangulation station dick Stabilished by U.S. C. & G. Survey Detailed description 5,25 miles couth along the Sears Landing Road from the reilroad station at thail gridge.
	Designation FENDER RI'-2 Nearest town Hollyridge County Onslow Distance and direction from nearest town 2.0 miles southwest Established by U. S. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Coast Line Reilroad from the station at Hollyridge, 0.4 mile northeast of milepost CB 271 - W 27, 148,7 feet estat of the triangulation station, 84,5 feet southwest of the southcast edge of U. S. Highway 17 measured from a point 265,0 feet southwest of the southcoart edge of dirt road leading southeast, 128,0 feet southwest of the south corner of concrete block store building, 12,0 feet south of the centerline of little-used connecting road leading to main dirt road; 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground, Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow Recovered by C. K. Withrow Chief of Party C	Designation W 27 Nearest town Zigocombe County Pander Distance and direction from nearest town O.2 mile continued Character of mark Established by Present condition The district of Party Clarence R, Reed Recovered by C. E. Mithrow DESCRIPTION OF BENCH MARK Designation X 229 Designation X 229 Designation X 229 State North Carolina County Pander Checked by Description of Bench Mark Designation S 229 Nearest town Hollyridge County Onelow Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 2,35 miles south elong the Sears Landing Road from the railroad station at Hollyridge, O.1 mile south of the crossing of a dirt road leading west on the east side, 24.5 feet east of the center-line of the dirt road which parallels 60,0 feat south of the center-line of the center-line of the main road, along the real leading and target on the center-line of the center-line of the main road.	Designation 3.33 (Unknown) Nearest town Hollyridge Distance and direction from nearest town Character of mark A reilroad spike Established by Probably Army Datailed description Lof miles south along the Sears Landing Road from the railroad station at Hollyridge, 0,2 mile northwest of the Sears Landing Bridge, at the southeast of the centerline of the road, driven into the southwest side of a 20-inch live cak tree, 1.0 foot above the ground. Chief of party Clarence R. Reed Described by C. K. Withrom	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RM 1 Nearest town Rellyridge Oistance and direction from nearest town 5,25 niles couth, thonco 1.55 miles couthwest. Character of mark A reforence mark disk Established by U. S. G. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the realroad on the cand opti between Now Topsail Inlet and Now River Inlet, 0.1 mile southwest of mileset 5, just inside the main ridge of sand dunes, at the U. S. Navy Test Range Tower No. 4, 78.5 foot southeast of the centerline of the road, 7.6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron. Chief of party Clarence H. Reed Described by C. K. Mithrew Distance and direction from nearest town 5,25 miles south, thonce 1,55 miles couthmeat of the acceptance of milesection from nearest town 5,25 miles south, thonce 1,55 miles couthmeat Character of mark A triangulation station disk Established by U. S. C. & G. Survey Detailed description 5,25 miles couth along the Sears Lending Road from the reliroad station at Hollyridge, thence 1,55 miles couth near the Sand Spit Road, at the U. S. Navy Test Range Tower No. 4, set in the ton of the concrete dock on tep of the concrete tower, 2,5 ten in the ton of the concrete dock on tep of the concrete tower, 3,0 feet anothers of the concrete dock on tep of the concrete tower, 3,0 feet anothers of the concrete dock on tep of the concrete tower, 3,0 feet anothers of the concrete dock on tep of the concrete tower, 3,0 feet anothers of the concrete dock on tep of the concrete tower, 3,0 feet anothers of the concrete dock on tep of the concrete tower.
	Designation PENDER RE'2 State North Carolina County Pender Nearest town Hollyridge Distance and direction from nearest town 2.0 miles southwest Character of mark A reference mark diek Established by U. 3. G. & G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Coast Line Railroad from the station at Hollyridge, O.4 mile northeast of milespot CB 271 - W 27, 1AB.7 feet east of the triangulation station, 84.5 feet southeast of the southeast deep of U. G. Righmay 17 measured from a point 255,0 feet southwest of the junction of main dirt road leading southeast, 128,0 feet southwest of the south corner of concrete block store building, 12.0 feet south of the centerline of little-used connecting road leading to main dirt road, 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground. Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow RECOVERY NOTE, BENCH MARK R County Pender Checked by Checked by R Chief of Party Clarence R. Reed Recovered by C. K. Withrow Checked by R Chief of Party Clarence R. Reed Recovered by C. K. Withrow Checked by Checked by R Chief of Party Clarence R. Reed Recovered by C. K. Withrow R Chief of Party Clarence R. Reed Recovered by C. K. Withrow Checked by Checked by R Chief of Party Clarence R. Reed Recovered by C. K. Withrow R Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow R Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow R Chief of Party Clarence R. Reed Recovered by C. K. Withrow Chief of Party Clarence R. Reed Recovered by C. K. Withrow R Chief of Party Clarence R. Reed Recovered by C. K. Withrow R Chief of Party Clarence R. Reed Recovered by C. K. Withrow R Chief of Party Clarence R. Reed Recovered by C. K. Withrow R Chief of Party Clarence R. Reed Recovered by C.	Designation W 27 Nearest town Zigocombe County Pander Distance and direction from nearest town O.2 mile continued Character of mark Established by Present condition The district of Party Clarence R, Reed Recovered by C. E. Mithrow DESCRIPTION OF BENCH MARK Designation X 229 Designation X 229 Designation X 229 State North Carolina County Pander Checked by Description of Bench Mark Designation S 229 Nearest town Hollyridge County Onelow Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 2,35 miles south elong the Sears Landing Road from the railroad station at Hollyridge, O.1 mile south of the crossing of a dirt road leading west on the east side, 24.5 feet east of the center-line of the dirt road which parallels 60,0 feat south of the center-line of the center-line of the main road, along the real leading and target on the center-line of the center-line of the main road.	Designation 3.33 (Unknown) Nearest town Hollyridge Distance and direction from nearest town Character of mark A reilroad spike Established by Probably Army Datailed description Lof miles south along the Sears Landing Road from the railroad station at Hollyridge, 0,2 mile northwest of the Sears Landing Bridge, at the southeast of the centerline of the road, driven into the southwest side of a 20-inch live oak tree, 1.0 foot above the ground. Chief of party Clarence R. Reed Described by C. K. Withrom	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RM 1 Nearest town Rellyridge Oistance and direction from nearest town 5,25 niles couth, thonco 1,55 niles couthwest Character of mark A reforence mark disk Established by U. S. C, & G, Survey Detailed description 5,25 niles south along the Sears Landing Road from the refirence of the control of the control to the control of the southwest along the Sand Solt Road, on the cand opti between Now Topsail Inlet and Now River Inlet, 0.1 mile southwest of milepost 5, just inside the main ridge of sand dunes, at the U. S. Navy Test Range Tomer No. 4, 78.5 foot southeast of the centerine of the read, 7,6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron. Chief of party Clarence H. Reed Described by C. K. Mithrow Distance Green's Lurry-Torne CM (Re. BE) DESCRIPTION OF BENCH MARK Designation TORER FOUR 1947 State North Carolina County Pender Nearest town Hollyridge Distance and direction from nearest town 5,25 miles south, thonce 1,55 miles couthmost Stamping TOVER FOUR 1947 Established by U. S. C, & G, Survey Detailed description 5,25 miles couth along the Sears Lending Road from the reilroad station at Hollyridge, thence 1,55 miles couth not control to Sand Spit Road, at the U. S. Navy Toth Range Tower No. 4, set in the ton of the concrete deek on ten of the concr
	Designation FENDER RM 2 State North Carolina County Pender Distance and direction from nearest town 2.0 miles southmest Character of mark A reference mark diek Stamping PENDER NO 2 1932 Established by U. S. Q. & G. Survey Present condition Good Desilded report 2.0 miles southmest along the Atlantic Coast Line Railroad from the station at Hollyridge, 0.4 mile northeast of milespoit CB 271 - W 27, 148,7 feet east of the triangulation station, 84,5 feet southeast of the southeast edge of U. S. Highway 17 measured from a point 255,0 feet southmest of the junction of main dirt road leading southeast, 120, feet southeast of the south corner of concrete block store building, 12,0 feet south of the centerline of little-used connecting road leading to main dirt road, 1.5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground. Chief of Party Clarence R. Reed Recovered by C. K. Withrow RECOVERY NOTE, BENCH MARK Recovered by C. K. Withrow RECOVERY NOTE, BENCH MARK Recovered by C. K. Withrow Recovered by C	Designation 12 27 Nearest town Edgeocabe County Pender County Pender County Pender County Pender County Pender County Pender Character and direction from measest town Character and the Character and the County Pender Character and the Character and the County Pender Chief of Party Characog R, Reed Recovered by C. E. Mithrow Chief of Party Characog R, Reed Recovered by C. E. Mithrow DESCRIPTION OF BENCH MARK Designation X 229 Nearest town Hollyridge County Onnlow County Onnlow Character of mark A bonch mark disk Causty Onnlow Character of mark A bonch mark disk Catabliands by U. S. C. & G. Surger Detailed description 2,35 miles south along the Sears Landing Read from the railroad station at Hollyridge, O.1 mile south along the Sears Landing Read from the railroad station at Hollyridge, O.1 mile south along the Sears Landing Read from the railroad station at Hollyridge, O.1 mile south and and paralloling the main road of or short distance from the west aide of the main road and paralloling the main road for short distance the main road for short distance, 1600 feet enact of the centerline of the dirt road milet bereal County on the cast of the canterine of a dirt road leading west the main road for short distance, 1600 feet enact of the centerline of the main road, Concrete noat projecting 1.0 foot above the ground.	Designation 3.33 (Unknown) Nearest town Hollyridge Distance and direction from nearest town Character of mark A reilroad spike Established by Probably Army Datailed description Lof miles south along the Sears Landing Road from the railroad station at Hollyridge, 0,2 mile northwest of the Sears Landing Bridge, at the southeast of the centerline of the road, driven into the southwest side of a 20-inch live oak tree, 1.0 foot above the ground. Chief of party Clarence R. Reed Described by C. K. Withrom	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RM 1 Nearest town Rellyridge Oistance and direction from nearest town 5,25 niles couth, thonco 1,55 niles couthwest Character of mark A reforence mark disk Established by U. S. C, & G, Survey Detailed description 5,25 niles south along the Sears Landing Road from the refirence of the control of the control to the control of the southwest along the Sand Solt Road, on the cand opti between Now Topsail Inlet and Now River Inlet, 0.1 mile southwest of milepost 5, just inside the main ridge of sand dunes, at the U. S. Navy Test Range Tomer No. 4, 78.5 foot southeast of the centerine of the read, 7,6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron. Chief of party Clarence H. Reed Described by C. K. Mithrow Distance Green's Lurry-Torne CM (Re. BE) DESCRIPTION OF BENCH MARK Designation TORER FOUR 1947 State North Carolina County Pender Nearest town Hollyridge Distance and direction from nearest town 5,25 miles south, thonce 1,55 miles couthmost Stamping TOVER FOUR 1947 Established by U. S. C, & G, Survey Detailed description 5,25 miles couth along the Sears Lending Road from the reilroad station at Hollyridge, thence 1,55 miles couth not control to Sand Spit Road, at the U. S. Navy Toth Range Tower No. 4, set in the ton of the concrete deek on ten of the concr
	Designation FENDER RE'2 Nearest town Hollyridge County Onalow Distance and direction from nearest town 2.0 miles southmest Character of mark A reference mark diek Stamping PENDER NO 2 1932 Established by U. 3. G. & G. Survey Fresent condition Good Detailed report 2.0 miles southmest along the Atlantic Goast Line Railroad from the station at Hollyridge, O.4 mile northeast of milepost CB 271 - W 27, 148,7 feet east of the triangulation stating, 86,5 feet southeast of the southeast edge of U. S. Highway 17 measured from a point 250 feet southmest of the junction of main dirt road leading southeast, 1230 feet southmest of the south corner of concrete block store building, 12,0 feet south for enterthine of little-west connecting road leading to main dirt road, 1,5 feet east of reference post, set in the top of a concrete post projecting 0.3 foot above the ground, Chief of Party Clarence R. Reed Recovered by C. K. Withrow RECOVERY NOTE, BENCH MARK R Date Recovered by C. K. Withrow RECOVERY NOTE, BENCH MARK R Date Recovered by C. S. Withrow RECOVERY NOTE, BENCH MARK R Date Recovered by C. S. Withrow RECOVERY NOTE, BENCH MARK R Date Recovered by C. S. Withrow RECOVERY NOTE, BENCH MARK R Date Recovered by C. S. Withrow RECOVERY NOTE, BENCH MARK R Date Recovered by C. S. Withrow RECOVERY NOTE, BENCH MARK R Date Recovered by C. S. Withrow RECOVERY NOTE, BENCH MARK R Date Recovered by C. S. Withrow Stamping PENDER 1932 State North Carolina County Pender Checked by Recovered by C. S. Withrow Stamping PENDER 1932 State North Carolina County Pender Checked by Recovered by C. S. Withrow Stamping PENDER 1932 State North Carolina County Pender Checked by Recovered by C. S. Withrow Stamping PENDER 1932 State North Carolina County Pender Checked by Recovered by C. S. Withrow Stamping PENDER 1932 State North Carolina Checked by Recovered by C.	Designation 127 Nearest town Algocombe Distance and direction from earest town O.2 mile coutinged Character of mark Established by U. 3. Highway 17 has been rebuilt and the conserved culvert in which the mark was set has been replaced with a concrete pipe culvert without headwalls. Chief of Party Clarence R. Reed Recovered by C. E. Nithrow DESCRIPTION OF BENCH MARK Designation X 229 Nearest town Hollyridge State North Carolina County Pender County Onlow Character of metion from nearest town 2,35 miles south Established by U. 3. Ed. G. Survey Detailed description 1,25 miles south along the Sears Landing Read from the railroad on the east side, 0,1 mile south of the crossing of a dirt road leading west from the west side of the main road and paralleline the main road for short distance on the east of short distance, 150.0 feet cant of the centerline of the main road of the carefulacine of the main road of the carefulacine of the main road for short distance the main road for short distance, 150.0 feet cant of the centerline of the main road, 1 large pine trong, 2,0 feet south of a white reference noot, set in the top of a concrete noat projecting 1.0 foot above the ground. Chief of party Clarence R. Reed Described by C. E. Withrow Chief of party Clarence R. Reed Described by C. E. Withrow Date Pech 1947 23 Chief of party Clarence R. Reed Described by C. E. Withrow Date Pech 24 Date Pech 25 Date Pech 25 Stamping County Pender Checked by C	Designation 3.33 (Unknown) Nearest town Hollyridge Distance and direction from nearest town Character of mark A reilroad spike Established by Probably Army Datailed description Lof miles south along the Sears Landing Road from the railroad station at Hollyridge, 0,2 mile northwest of the Sears Landing Bridge, at the southeast of the centerline of the road, driven into the southwest side of a 20-inch live oak tree, 1.0 foot above the ground. Chief of party Clarence R. Reed Described by C. K. Withrom	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RM 1 Nearest town Rellyridge Oistance and direction from nearest town 5,25 niles couth, thonco 1,55 niles couthwest Character of mark A reforence mark disk Established by U. S. C, & G, Survey Detailed description 5,25 niles south along the Sears Landing Road from the refirence of the control of the control to the control of the southwest along the Sand Solt Road, on the cand opti between Now Topsail Inlet and Now River Inlet, 0.1 mile southwest of milepost 5, just inside the main ridge of sand dunes, at the U. S. Navy Test Range Tomer No. 4, 78.5 foot southeast of the centerine of the read, 7,6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron. Chief of party Clarence H. Reed Described by C. K. Mithrow Distance Green's Lurry-Torne CM (Re. BE) DESCRIPTION OF BENCH MARK Designation TORER FOUR 1947 State North Carolina County Pender Nearest town Hollyridge Distance and direction from nearest town 5,25 miles south, thonce 1,55 miles couthmost Stamping TOVER FOUR 1947 Established by U. S. C, & G, Survey Detailed description 5,25 miles couth along the Sears Lending Road from the reilroad station at Hollyridge, thence 1,55 miles couth not control to Sand Spit Road, at the U. S. Navy Toth Range Tower No. 4, set in the ton of the concrete deek on ten of the concr



	CONSTRUCTION OF THE PROPERTY O		
DESCRIPTION OF BENCH MARK Designation D 230 Nearestiewn Hollyridge Distance and direction from nearest town 5.25 miles south, thence 2.45 miles southwest Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 2.45 miles southwest of high peak in the sand dure ridge and a tall iron flagpole, about midway between the main dume ridge and the road, 43.0 feet southeast of the centerline of the road, 2.5 feet southwest of a white reference post, set in the top of a concrete post projecting 1.2 foot above the ground.	Designation TOWER THO RM 1 State North Carolina County Forder Nearest town Rollyridgo County Onsion Distance and direction from nearest town 5.25 miles south, thence 5.0 miles southment Character of mark A reference mark disk Stamping TOWER TWO RM Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Read from the railroad station at Hellyridge, thence 5.0 miles southment along the Sand Soit Read, 0.15 miles northwest of the Sand Soit Read, survey Log of the concrete agree around the concrete town, 7.7 foot north of the sauth corner of the apron, 1.1 foot south of the south corner of the concrete tower.	DESCRIPTION OF BENCH MARK Designation RANGE UNE 1947 State North Carolina County Pondor Nearest town HollyTidgo County Onology Distance and direction from nearest town 5.25 miles south, thonco 6.15 miles southwost Character of mark A traverse station disk Stamping RANGE CNE 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Soars Lending Road from the railroad station at HollyTidgo, thonco 6.15 miles southwest along the Sand Spit Road, on the Sand Spit Road, in line with the extension to northwest of the centerline of the sarl covered road leading to the range tower (frame), 41.0 feet southeast of the coutheast bank of the Banks Channel, 10.5 feet south of the cast log of the frame range tower, 9.0 feet east of the south less of the tower, 1.3 feet northeast of a white reference most, set in the top of a concrete most flush with the ground.	DESCRIPTION OF EXACH MARK Designation PIB State Heath Garolina County Position Rearest form Hollyridgo County Caster Distance and direction from nearest form 5.25 miles counth, themes 6.3 miles acathment Character of mark A 3-inch iron pin Established by U. S. C. A G. Survey Detailed description 5.25 miles couth along the Seare Landing Road from the railroad station at Hollyridge, themes 6.3 miles contheart along the Sear Sear Search Est Sopsail Inlet and Now River Inlet, 35.2 foot contract of the northeast edge of the platform, 24.8 foot southeast of the northwest odre of the platform, oct in and errotecting 0.65 foot above the concerts platform. Hote: Rod was held on the center of the top of the pin.
Chief of party Clarence R. Reed Date Feb. 1947 32 Described by C. K. Withrow Checked by U.S. Cassised Geodesic Screen-Form 639 (Ber. 1949	Chief of party Clarence R. Reed Date Fob. 1947 36 Described by C. K. Hithrow Checked by U. B. Court and Geodetic Surray—Form 618 (Rev. 1960)	Chief of party Clurence R. Roed Date Feb. 1947 Described by C. K. Withrow Checked by U.S. Coast and Gooden't Survey-Ports GSS (Ear. 1940)	Chief of party Clarence R. Roed Date March 1947 Described by C. K. Withrew Chocked by U.S. Coult and Goodal's Survey-Form Cls (Ext. 1992)
DESCRIPTION OF BENCH MARK Designation TOKER THREE RN1 State North Carolina County Pender Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 3.6 miles southwest Character of mark A reference mark disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the ratiroad station at Hollyridge, thence 3.6 miles southwest of miles and spit Road, along the main ridge of dunes, 0.15 miles southwest of milesest 3, at the U. S. Navy Test Range Tower No. 3, 63.0 feet southeast of the centerline of the road, in the top of the concrete apron around the base of the concrete tower, 7.6 feet north of the south corner of the apron, 1.4 feet south of the south corner of the tower.	Designation TOWER TWO 1947 State North Carolina County Pender Nearest town Hollyridge County Onclow Distance and direction from nearest town 5.25 miles south, thence 5.0 miles southwest Character of mark A triangulation station disk Stamping TOWER TWO 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 5.0 miles southwest along the Sand Soit Road, on the sand shit between New Topasi Inlet and New River Inlet, 0.15 mile northwest of the Sand Spit Road, at U. S. Navy Test Range Tower No. 2, in the top of the concrete deck on the top of the concrete tower, 3.1 feet southwest of the northeast edge of the dock, 3.2 feet southeast of the northwest edge of the deck, 2.6 feet northeast of the northeast edge of the low concrete wall around the head of the stairway.	Description of Bench Mark Designation ZERO 1947 State North Carolina County Pender County Onslow Distance and direction from nearest town 5.25 miles south, thence 6.3 miles southwest Character of mark A triangulation station disk Established by U.S.C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 6.3 miles southwest along the Sand Spit Road, on the Sand Spit between New Topsail Inlet and How River Inlet, approximately 1.0 mile mortheast of New Topsail Inlet, at the U.S.Navy Test Range launching platform, 0.05 mile southeast of the Sand Spit Road, 46.6 foot northwest of the south corner of the concrete platform, 61.0 feet southeast of the west corner of the slatform, 20.1 feet southwest of the southwest edge of the platform, 2.0 feet northwest white painted reference past, set in the top of a concrete post, 0.3 foot underground.	Description of Bench Mark Designation Toker CE RM 1 State Korth Carolina County Pender Nearest town Hollyridge County Canlow Distance and direction from nearest town 5.25 miles south, thence 6.6 miles southwest Character of mark A reference mark dick StampingToker CERM Established by U. S. C. & G. Survey Etc. 11547 Detailed description 5.25 miles south along the Sears Londing Road from the railroad station at Hollyridge, thence 6.6 miles southwest along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, at the U. S. Lavy Test Range Tower No. 1, 0.3 mile southwest of the launching platform, about 100.0 feet southwest of the highwater line of the Banks Channel, in the top of the concrete apron around the tower, 4.6 feet northwest of the southeast edge of the platform, 2.1 feet cast of the east corner of the concrete tower.
Chief of party Clarence R. Reed Date Peb. 1947 33 Described by C. K. Withrow Checked by U.S. Cast and Geodetic Survey-Form Six (Ref. 1949	Chief of party Clarence R. Reed Date Feb. 1947 37 Described by C. K. Withrow Checked by U.S. Cessi and Geodatic Burvey—Form GIS (Rev. 1949)	Chief of party Clarence R. Reed Date Feb. 1947 9/ Described by C. K. Withrow Checked by U.3. Cault and Contains Survey—Form Cité (Rec. 1840	Chief of party Clarenco R. Reed Date March 1947 45 Described by C. K. Withren Checked by U.S. Casat and Cooked Survey—Form 639 (Her. 1819
Description of Bench Mark Designation Toker Three 1947 State North Carolina County Pender Nearest town Hollyridge County Caslow Distance and direction from nearest town 5.25 miles south, thence 3.6 miles southwest Character of mark A triangulation station disk Slamping Toker Three 1947 Established by U. S. C. & G. Survey Dotailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.6 miles southwest along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, at the U. S. Navy Test Range Tower No. 3, in the top of the concrete dock on top of the tower, 3.0 feet southwest of the northwest edge of the tower, 3.0 feet southwest of the northeast edge of the tower.	DESCRIPTION OF BENCH MARK Designation CONTROL 1947 Nearest town Hellyridge Distance and direction from nearest town 5.25 miles south, thence 6.3 miles southwest Character of mark A traverse station disk Established by U. 3. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Helly ridge, thence 6.3 miles southwest along the Sand 3pit Road, on the sand spit between New Topsail Inlet and New River Inlet, approximately 1.0 mile northeast of the New Topsail Inlet, 30.5 feet southwest of the centerline of road leading from the Launching platform to warehouse area, 18.0 feet northwest of the centerline of the Sand Spit Road, 9.2 feet cast of the south corner of the concrete control tower for the U. S. Navy Test Range, 9.4 foot south of the east cerner of the tower, 3.6 feet southeast of the southeast face of the tower, set in the top of a concrete post flush with the ground.	DESCRIPTION OF BENCH MARK Designation LIKE MARK CME State North Carolina County Pender Nearest town Hollyridge County Onelow Distance and direction from nearest town 5.25 miles south, thence 6.3 miles southmest Character of mark A reference mark disk Established by U. S. C. & G. Survey Detailed description 5.25 miles couth along the Sears Landing Road from the railroad station at Hollyridge, thence 6.3 miles couthmest along the Sand Spit Road, on the sand spit between New Topsail Inlet and Now River Inlet, at the U. S. Navy Tost Range launching platform, 39.4 feet northwest of the southeast edge of the platform, 7.9 feet southwest of the northeast edge of the platform, set in the too of the concrete platform.	DESCRIPTION OF BENCH MARK Designation TOWER GE 1947 State North Carolina County Pender Nearest town Hollyridge County Chalow Distance and direction from nearest town 5.25 falles couth and 6.6 miles southwest Character of mark A triangulation station disk Stamping TOWER CE 1947 Established by U. S. C. & G. Suryoy Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 6.6 miles southwest along the Sand Spit Road, on the sandspit between New Topsail Inlet and New River Inlet, at the U. S. Navy Test Range Tower No. 1, 0.3 mile southwest of the launching platform, in the top of the concrete dock on the top of the concrete tower, 2.9 feet northwest of the southwest edge of the platform, 2.8 feet southeast of the northwest edge of the platform.
Chief of party Clarence R. Reed Dato Feb. 15/17 34 Described by C. K. Withrow Checked by U. B. Constand Geodetic Surger-Form Gay (Rec. 1949)	Chief of party Described by C. K. Withrow Checked by C. K. Withrow Checked by	Chief of party Clarence R. Reed Date March 1947 Described by C. K. Withrow Checked by	Chief of party Clarence R. Reed Date March 1947 Described by C. K. Withron Checked by
Description of Bench Mark Designation A 230 Nearest town Hellyridge Distance and direction from nearest town 5.25 riles south, thence 4.5 miles southwest Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 4.5 miles southwest along the Sand Spit Raod, on the junction of road leading to U. S. Havy Test Range Twee No. 2, 0.1 mile southwest of milepost 2, at a point where a view is obtained of the narsh and inland waterway to the northwest through a break in the sand ridges and the live cak trees, about northwest of the base of the top of the main ridge of sand dunes, about 10.0 feet road, 7.0 feet northwest of the dune ridge, 32.0 feet southeast of the centerline of the of a white painted reference bost, set in the top of a concrete bost projecting 1.3 foot above the ground.	DESCRIPTION OF BENCH MARK Designation CAMERA 1947 Nearest town Hollyridge County Onelow Distance and direction from nearest town 5.25 miles south, thence 6.15 miles southwest Character of mark A traverse station disk Established by U. S. Coast & Goodetic Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 6.15 miles southwest along the Sand Spit Road, on the concrete U. S. Navy Test Range control tower, 24.0 feet northwest of the centerline of the Sand Spit Road, 49.0 feet northeast of the centerline of a road leading 1.5 foot northeast of a white painted reference next, set in the too of a concrete post projecting 0.1 foot above the ground.	DESCRIPTION OF BENCH MARK Designation LINE MARK TWO State North Carolina County Pender Nearest town Hellyridge County Onalow Distance and direction from nearest lown 5,25 miles south, thence 6,3 miles nouthwest Character of mark A reference mark diek Stamping TWO Established by U. S. C. & G. Survey Petailed description 5,25 miles south along the Sears Landing Road from the railroad ghation at Hellyridge, thence 6,3 miles southwest along the Sand Soit Read, on the sand spit between New Topasil Inlet and New River Inlet, 1,0 mile northwest of New Topasil Inlet (estimated), 0.05 mile southwest of the Sand Soit Read, at the U. S. Navy Test Range launching platform, 16,9 feet southwest of the northwest edge of the platform, 8,3 feet southwest of the northwest edge of the platform, sot in the top of the concrete platform.	DESCRIPTION OF BENCH MARK Designation CENTRAL 1947 State North Carolina Count: Pender Nearest town Hollyridge County Onolow Distance and direction from nearest town 5.25 miles south Character of mark A traverse station disk Stamping CENTRAL 1947 Established by U.S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, on the Sand Spit between New Toppadl Inlet and New River Inlet, at the junction of the Sand Spit Road and the Sears Landing Road, 90.5 feet southeast of the center in of the Sand Spit Road measured from a point 38.0 feet northeast of the center of the road junction, 10.6 feet east of the south leg of frame range tower, 10.3 feet south of the oast leg of the range tower, 2.0 feet southment of a white reference post, set in the top of a concrete post projecting C.1 feet above the ground.
Chief of party Clarence R. Reed Described by C.K. Hithrow Date Feb. 1947 35 Checked by U. S. Cosstand Goodett Survey—Form CM (fler. 1949)	Chief of party Clarence R. Reed Described by C. K. Athrow Checked by U.S. Cautard Goodrik Surry-Form Cis (Eur. 1840)	Chief of party Clorence R. Reed Date Feb. 1947 43 Described by C. K. Withrow Checked by U.S. Ceast and Geodetic Sunsy-Purps GIS (Ecr. 1989)	Chief of party Clarence R. Reed Dato Feb. 1947 Described by C. K. Withrow Checked by U.S. Cisitad Geodatic Survey-Iverm GIS (Rev. 1949)

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	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK
	Cesignation TOWER FIVE RM 1 State North Carolina County Pendor	Designation B 230 State Horth Carolina County Onels । Nearest town Hollyridge County Onels	Designation TONER SIX 1947 State North Carolina County Onelow	Designation TOWER SEVEN RM 1 State North Carolina County Dublem
	Nearest town Hollyridge County Onslow - Distance and direction from nearest town 5,25 mles south, thence 0,4 mile northeast - Character of mark 4 - ** ** ** ** ** ** ** ** ** ** ** ** *	Nearest town Hollyridge County Onelow Distance and direction from nearest town 5.25 miles south, thence 2.4 miles northeast Character of mark A bonch mark disk Stamping E 230 1947	Nearest town Hollyridgo County Omslow Distance and direction from nearest town 5.25 miles south, thouse 3.4 miles northeast	Distance and direction from nearest town 5.25 miles south, thance 6.5 miles northeast
	Character of mark A reference mark disk Stamping TOWER FAUS HE E. Established by U. 3. C. & C. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad	Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad	Character of mark A triangulation station disk Stamping TOTAL SIX 1947 Established by U. S. C. & G. Survey	Established by H. S. C. A. G. Starten Standing TOTH SEVEN PM
	station at Hollyridge, thence 0.4 mile northeast along the Sant pth Sand Spit Road, on the gand spit between New Topsail Inlet and New River Inlet, 0.05 mile southeast of the	station at Hollyridge, thence 2,4 miles northeast along the Sand Spit Road, on the sand spit between Now Topsail Inlet and New River Inlet, 0.7 mile southwest of 30-	Detailed description 5.25 miles south along the Soars Landing Road from the railroad station at Hollyridge, thence 3.4 miles northeast along the Sand Soit Road, on the	Detailed description 5.25 miles south along the Seare Landing Road from the relirond station at Hollyridge, thence 6.5 miles northeast along the Sand Spit Road, on the
	road, at U. S. Navy Test Range Tower No. 5, set in the top of the concrete agron around the base of the tower, 1.4 foot south of the eauth corner of the concrete	foot cut where the road passes through a northwest-scutheast dune ridge, 0.55 mile northeast of point where the road makes turn to west away from the min dune ridge,	eard spit between New Topsail Inlot and New River Inlot, 0.05 mile southwest of milepost 10, at U. S.Navy Test Range Tower No. 6, set in the top of the concrete	cand spit botween Hem Topsail Inlet and Hew River Inlet, 0.05 mile Northeant of milepost 13, set in the top of the concrete apron which surrounds U. S. Mayy Test Range Town Ho. 7, 1.3 foct south of the control of the concrete tower, 7.7 feet
	tower, 7.6 feet north of the south corner of the concrete apron.	about 125.0 feet west of the top of lone tall sand dune meak in the main dune ridge,	deck on top of the concrete tower, 2.8 feet southwest of the northeast edge of the concrete dack, 2.9 feet southeast of the northwest edge of the deck.	north of the south corner of the concrete agree. 7.7 feet
		the top of the main dune ridge, L4,5 feet southeast of the centerline of the rout		
		white painted reference poot, set in the top of a concrete post projecting 1.3 foot above the ground and about 5.0 feet above the level of the road.		
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	Chief of party Clarence R. Reed Date March 1947 Described by C. K. Withrow Checked by	Chief of party Clarence R. Reed Date March 1947	Chief of party Clarence R. Reed Date March 1947	Chief of party Clarence R. Reed Dote Larch 1947 60
	U. B. Cesst and Geodate Sovery—Form 636 (Rev. 1945) 18—casia-1 b. 6. detectors processed arrived.	Described by C. K. Withrow Checked by U.S. Coart and Geodelic Survey-From 638 (Per. 1949)	Described by C. K. Withrow Checked by	Doscribed by C. R. Withmon Chocked by U.S. Cent and Geodetic Survey—Form CES (Rev. 1969)
	The first speed along the state of the state	The state of the s	U. S. Crist and Geodelic Survey—Portin 426 (fler, 1940) 19—2015-1 a. c. sero-sect recimal strikt And 1947-1941	The state of the s
	DESCRIPTION OF BENCH MARK Designation TOXER FIVE State North Carolina County Pender	DESCRIPTION OF BENCH MARK Designation BANKS RU State North Carolina County Onelow	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK Designation TOWER SEVEN 1947 State Forth Canalism County County
	Nearast town Hollyridge County Onelow Distance and direction from nearest town 5.25 miles south, thence 0.4 mile northeast	Designation BAINS RU State North Carolina County Onelow Nearest town Hollyridge County Onelow Distance and direction from nearest town 5,25 miles south, thence 3.1 miles northeast	Designation PED RM 1 State North Carolina County Chelow Nearest town Hollyridge County Chelow	Nearest lown Hollymidge County Challen
\$ 1	Character of mark A triangulation station disk Stamping TOWER FIVE 1947 Established by U. S. C.& G.Survey	Character of mark A forerence mark disk Stamping BANKS 1933 Established by U. S. C. & G. Survey	Distance and direction from nearest town 5.25 miles south, thence 4.45 miles northeast Character of mark A reference mark disk Stamping PED NO 1 1933	Distance and direction from nearest town 5.25 miles mouth, thence 6.5 miles northeast Character of mark A triangulation station diek Established by U. S. Coast & Geodetic Survey Stamping TONER SEVEN 1947
	Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 0.4 mile northeast along the Sand Spit Racd, on the	Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3,1 miles northeast along the Sand Suit Road, on the	Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 4.45 miles northeast along the Sand Spit Road, on the	Detailed description 5,25 miles south along the Sears Landing Road from the railroad
	sand spit between New Topsail Inlet and New River Inlet, 0.05 mile southeast of the sand spit road, at U. S. Navy Test Ronge Tower No. 5. set in the top of the concrete	sand spit between New Topsail Inlet and New River Inlet, 0,3 mile southwest of U. S. Navy Test Range Tower No. 6 and milesest 10, at point where the read cuts through	eand spit between New Topsail Inlet and New River Inlet, about 0.1 mile southwest of coint where the road makes an 8-foot cut through a northwest-southeast ridge of	mileport 13 and in the tor of the and kew hiver inlet, 0.05 mile northeast of
	dack on the top of the concrete tower, 2.9 feet southeast of the northwest edge of the deck, 2.9 feet southwest of the northeast edge of the deck.	a 30-foot tall northwest-southeast sand dune ridge, on the ton of the dune ridge which is the tallest and most prominent dune in the vicinity, 116,0 feet northwest	sand dunes, 179,0 feet southeast of the centerline of the road measured from a point 75,0 feet northeast of milepost 11, along the sharp top of the main ridge of sand	Tower No. 7, 2,9 feet southwest of the northeast edge of the concrete deck, 2,9 feet southwest of the northeast edge of the concrete deck, 2,9 feet southeast of the north-est edge of the deck.
		of the centerline of the road and the center of the cut, 34,5 feet northwest of the triangulation station, 1.5 foot northwest of a white painted reference post, in the	dunes, 37.6 feet southwest of the triangulation station, 1.8 feet northeast of a white painted reference post, set in the top of concrete poured into an 8-inch tile	
		top of concrete noured into an 8-inch tile which projects 1.0 foot above the ground.	which projects 1.4 foot above the ground.	·
	Chief of party Clarence R. Reed Date March 1947 Described by C. K. Withrow Checked by	Chief of party Clarence R. Reed Date Warch 1947	Chief of party Clarence R. Reed Date Warch 1947 57	Chief of party glarence R. Reed Date March 1947 6/
	U.S. Contact Ground Scripp—Ports 639 (for 1949)	Doscribed by C. K. Withrow Checked by U. B. Coast and Geodetic Survey—Form 636 (Ref. 1940)	Described by C. K. Withrow Checked by	Described by G. K. Withrow Checked by U.S. Ceattand October Survey-Torm and Cher. 1900
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	DESCRIPTION OF BENCH MARK Designation HTGH State North Carolina County Pender	DESCRIPTION OF BENCH MARK Designation BANKS State North Carolina County Onalow	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK
	Dosignation HIGH State North Carolina County Pender Nearest town Hollyridge County Onelow Distance and direction from nearest town 5.25 miles south, thence 1,6miles northeast	Designation BANKS State North Carolina County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town 5,25 miles south, thence 3,1 miles northeast	Designation PED 1933 State North Carolina County Cnslow Nearest town Hollyridge County Onslow	Designation RANGE TWO 1947 State North Carolina County Cnolow Nearest town Hollyridge County Cnolow
	Designation HIGH State North Carolina County Pender Nearest town Hollyridge County Onslow Distance and direction from nearest lown 5,25 miles south, thence 1,6miles northeast Character of mark A triangulation station disk Stamping HIGH 1933 1947 Established by 11 S. C. & Surveys	Designation BARKS Nearest town Hollyridge Distance and direction from nearest town Character of mark A triangulation station dick Established by US C AC SUPPORT	Designation FED 1933 State North Carolina County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town 5,25 miles mouth, thence 4.45 miles northcast Character of mark A triangulation station disk Stamping FED 1933	Designation RANGE TWO 1947 State North Carolina County Onslow Nearest town Hollyridgo County Onslow Distance and direction from nearest town 5.25 miles Bouth, thence 6.8 miles northeast Character of mark A.trayerse static
	Designation HIGH State North Carolina County Pender Nearest town Hollyridge County Onslow Distance and direction from nearest town 5,25 miles south, thence 1,6miles northeast Character of mark A triangulation station disk Established by U.S.C. & C. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad	Designation BANKS State North Carolina County Onclow Nearest town Hollyridge County Onclow Distance and direction from nearest town 5,25 miles south, thence 3,1 miles northeast Character of mark A triangulation station dick Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Read from the railroad station at Hollyridge, thonce 3,1 miles northeast along the Searl Seat Read on the	Designation PED 1933 State North Carolina County Cnslow Nearest town Hollyridge County Cnslow Distance and direction from nearest town 5.25 miles south, thence 4.45 miles northeast Character of mark A triangulation station disk Stamping PED 1933 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad	Designation RANGE TWO 1947 Nearest town Hollyridgo Distance and direction from nearest town Character of mark A. traverse' statich disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Follyridge, thence 6,8 miles northeast along the Sand Spit Road, on the
	Designation HIGH State North Carolina County Pender Nearest town Hollyridge County Onelow Distance and direction from nearest town 5,25 miles south, thence 1,6miles northeast Character of mark A triangulation station disk Stamping HIGH 1933 1947 Established by U.S.C. & C. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1,6 miles northeast along the Sand Soit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0,3 mile southwest of point	Designation BANKS Nearest town Hollyridge County Onslow Distance and direction from nearest tewn Stamping Character of mark A triangulation station dick Stamping Established by U, S, C, & G, Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thones 3.1 miles northeast along the Sand Soit Road, on the sand soit between Now Tossail Inlut and Now River Inlet, O.3 mile southmest of U. S Navy Test Range Tower No. 6 and mileoset no. 10. on the peak of the town of the	Designation FED 1933 State North Carolina County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town 5,25 miles south, thence 4.45 miles northeast Character of mark A triangulation station disk Established by U, S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 4.45 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 180,0 feet southeast of the conterline of the road measured from a point 113,0 feet northeast of nilepost	Designation RANGE TWO 1947 State North Carolina County Chalow Nearest town Hollyridge County Chalow Distance and direction from nearest town 5.25 miles south, thence 6.8 miles northeast Character of mark A.trayerse statich disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thonce 6.8 miles northeast along the Sand Soit Road, on the sand opth between New Topanil Inlet and Now River Inlet, 0.35 mile northeast of U. S. New Test Range Tener No. 7 and mileopet No. 13, about 200,0 feet southwest of
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	Designation HIGH State North Carolina County Pender Nearest town Hellyridge County Onslow Distance and direction from nearest town 5,25 miles south, thence 1,6miles northeast Character of mark A triangulation station disk Established by U.S.C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hellyridge, thence 1,6 miles northeast along the Sand Soit Road, on the sand spit between Now Topsail Inlet and New River Inlet, 0,3 mile southwest of point where the marl covered road makes turn to went away from the sand dunes (main ridge), approximately 500.0 feet southeast of a point on the main road which is about 0.1 mile northeast of road milepost No. 8, 164,8 feet southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, 95,0 foot southeast of the centerline of sand road paralleling the main ridge of dunes (measured from a cold tobust 285 of feet southwat of the portheast end of out where	Designation BANKS Nearest town Hollyridge County Co	Designation FED 1933 State North Carolina County Chelow Nearest town Hollyridge County Chelow Distance and direction from nearest town 5,25 miles south, thence 4.45 miles northeast Character of mark A triangulation station disk Stamping FED 1933 Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 4.45 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 180.0 feet southeast of the centerline of the road measured from a point 113,0 feet northeast of milepost 11, along the sharp top of the main sand dune ridge. 1.5 foot southwest of a	Designation RANGE TWO 1947 Nearest town Hollyridgo County C
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	Dosignation HIGH Nearest town Hollyridge County Cou	Designation BANKS Nearest town Hollyridge County Co	Designation FED 1933 Nearest town Rollyridge County Chelow Distance and direction from nearest town 5,25 miles south, thence 4,45 miles northeast Character of mark A triangulation station disk Established by U, S. C. & G. Survey Detailed description 5,25 miles south along the Scars Landing Road from the railroad station at Hollyridge, tbehace 4,45 miles northeast along the Sand Spit Road, on the sand spit between New Topasil Inlet and New River Inlet, 180,0 feet southeast of the centerline of the road measured from a point 113,0 feet northeast of milepost 11, along the sharp top of the main sand dune ridge, 1,5 foot southwest of a white painted reference post, set in concrete poured into an 8-inch tile which projects 1,5 foot above the ground. Chief of party Clarence R. Reed Described by C. K. Withrow Checked by DESCRIPTION OF BENCH MARK	Designation RANGE 770 1947 Nearest town Hollyridgo County C
	Dosignation HIGH Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 1,6miles northeast Character of mark A triangulation station disk Stamping HIGH 1933 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad stution at Hollyridge, thence 1.6 miles northeast along the Sand Soit Road, on the sand spit between Now Topsail Inlet and New River Inlet, 0.3 mile southwest of point where the marl covered road makes turn to wort away from the sand dunor (main ridge), approximately 500.0 feet southeast of a point on the main road which is about 0.1 mile northeast of road milepost No. 8, 164,8 feet southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, 96,0 feet southeast of the centerline of sand road paralleling the main ridge of dunos (measured from a point about 285,0 feet southwest of the northeast end of out where the road passes through the first northwest-southeast dune ridge southwest of curve in the main road, 1.5 feet southwest of a white painted reference post, set in the top of a concrete post projecting 0.4 foot above the ground. Chief of party Clarence R. Reed Doscribed by C. K. Withrow Checked by U.S. Cantasad Occopic Ecory-Form CS (Not. 1989)	Designation BANKS Nearest town Hollyridge County Onslow Distance and direction from nearest tewn 5.25 miles south, thence 3.1 miles northeast Character of mark A triangulation station dick Stamping BANKS 1933 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad atation at Hollyridge, thence 3.1 miles northeast along the Sand Soit Road, on the send soit between Now Toward Index and How River Index, 0.3 mile southmest of U. S Navy Test Ronge Tower No. 6 and milepost no. 10, on the peak of the top of the northwest-southeast ridge of send dunes (thit is the highest and most wreathent dune peak in the vicinity) approximately 300.0 feet southeast of point where the north-south dirt road and telenhone line leading north across the march join the send area and the northwest end of the northwest-southeast dune ridge, 33.5 feet northwest of the conterline of the marl covered read massured from a point at the center of 30-foot cut through the sand ridge, 1.5 feet southwest of a white painted reference post, in the top of cencrete poured into an 8-inch tile which projects Chief of party Clarence R. Reed Described by C. K. Withrow Described by C. K. Withrow Chief of party Clarence R. Reed Described by C. K. Withrow Described by C. K.	Designation FED 1933 Nearest town Hollyridge County Chelow Distance and direction from nearest town Character of mark A triangulation station disk Established by U, S. C. A G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, tabence 4,45 miles northeast along the Sand Spit Road, on the sand spit between New Topasil Inlet and New River Inlet, 180,0 feet southeast of the centerline of the road measured from a point 113,0 feet northeast of milepost 11, along the sharp top of the main sand dume ridge, 1.5 foot southwest of a white painted reference post, set in concrete poured into an 8-inch tile which projects 1,5 foot above the ground. Chief of party Clarence R. Roed Date March 1947 Checked by U.S. Charland Gessit's Survey-Form 528 (Mar. 1910) DESCRIPTION OF BENCH MARK Designation F 230 Nearest town Hollyridge State North Carolina County Cholow Nearest town Hollyridge County Onslow	Designation RANGE 770 1947 Nearest town Hollyridgo County C
	Dosignation HIGH Nearest town Hollyridge County Onslow Distance and direction from nearest town 5,25 miles south, thence 1,6-miles northeast Charactor of mark A triangulation station disk Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1,6 miles northeast along the Sand Soit Road, on the sand spit between Now Topsail Inlet and New River Inlet, 0,3 mile southwest of point where the marl covered road makes turn to work away from the sand dunes (main ridge), approximately 500.0 feet southeast of a point on the main road which is about 0.1 mile northeast of road milepost No. 8, 164,8 feet southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, 75.0 feet southeast of the centerline of sand road paralleling the cain ridge of dunes (measured from a point about 285.0 feet southwest of the northeast end of cut where the road passes through the first northwest-southeast dune ridge southwest of curve in the main road, 1.5 feet southwest of a white mainted reference cost, set in the top of a concrete post projecting 0.4 foot above the ground. Chief of party Clorence R. Reed Described by C. K. Tithrow Dosignation HIGH RM Described By C. K. Tithrow Described By C. K. Tithrow Distance and direction from nearest town 5,25 miles south, thonce 1,6 miles northeast Character of mark the performance and the through the performance and the through the performance and the transfer and the performance and the transfer and the performance and	Designation BANKS Nearest town Hollyridge County Onslow Nearest town Hollyridge Distance and direction from nearest town 5.25 miles south, thence 3.1 miles northeast Character of mark A triangulation station dick Stamping BANKS 1933 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.1 miles northeast along the Sand Spit Road, on the sand spit between Now Townall Inlet and New River Inlet, 0.3 mile southwest of U. S Navy Test Ronge Tower No. 6 and milepost no. 10, on the peak of the top of the northwest-southeast ridge of sand dunes (this is the highest and most precainent dune peak in the vicinity, approximately 300.0 feet southeast of point where the north-south dirt road and tolenhone line leading north across the marsh join the sand area and the northwest end of the northwest-southeast dune ridge, 83.5 feet northwest of the conterline of the marl covered road measured from a point at the center of 30-foot cut through the sand ridge, 1.5 foot southwest of a white painted reference post, in the top of cenerate poured into an 8-inch tile which projects Chief of party Clarence R. Reed Described by C. K. Withrow DESCRIPTION OF BENCH MARK Designation TOWER SIX RH 1 State North Carolina County Onelow Nearest town Hollyridge County Onelow Distance and direction from nearest town 5.25 miles south, thence 3.4 miles northeast Character of mark A reference mark disk Established by W. S. C. & G. Survey DESCRIPTION OF BENCH MARK Stamping TOWER SIX RH Established by W. S. C. & G. Survey	Designation FED 1933 Nearest town Hollyridge County Onslow Distance and direction from nearest town 5,25 miles south, thence 4,45 miles northeast Character of mark A triangulation station disk Established by U, S. C. A G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 4,45 miles northeast along the Sand Snit Road, on the sand spit between New Topasil Inlet and New River Inlet, 180,0 feet southeast of the centerline of the road measured from a point 113,0 feet northeast of allepost 11, along the sharp top of the main sand dune ridge, 1,5 foot southwest of a white painted reference post, set in concrete poured into an 8-inch tile which projects 1,5 foot above the ground. Chief of party Clarence R. Reed Described by C. K. Withrow Cliecked by U.S. Crest and Geofate Survey-Form SSS (Rev. 1910) DESCRIPTION OF BENCH MARK Designation F 230 State Horth Carolina County Onclow Nearest town Hollyridge County Onclow County Onclow Distance and direction from nearest town 5,25 miles south, thence 5,5 miles northeast Character of mark A bench mark dick Stamping F230 1947	Designation RANGE TWO 1947 Nearest town Hollyridgo County C
	Dosignation HIGH Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 1.6miles northeast Charactor of mark A triangulation station disk Established by U.S.C.&C. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Soit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.3 mile southwest of point where the marl covered road makes turn to weat may from the sand dunes (main ridge), approximately 500.0 feet southeast of a point on the main road which is about 0.1 mile northeast of road milepost No. 8, 164,8 feet southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, 96.0 feet southeast of the centerline of sand road paralleling the main ridge of dunes (measured from a point about 285,0 feet southwast of the northeast end of out where the road passes through the first northwest-southeast dune ridge southwest of curve in the main road, 1.5 feet southwest of a white mainted reference bost, set in the top of a concrete post projecting 0.4 foot above the ground. Date March 1947 Checked by U.S. Cantast County Forms GS (Nor. 1869 Date March 1947 Checked by Date March 1947 Checked by U.S. Cantast County Fonder Distance and direction from mearest town 5,25 miles south, thence 1.6 miles northeast Character of mark A reference mark disk Established by U.S. C. & G. Survey Dotalied description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Spit Road, on the	Designation BANKS Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 3.1 miles northeast Character of mark A triangulation station dick Stamping BANKS 1933 1947 Established by U.S.C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.1 miles northeast along the Sand Soit Road, on the seard soit between Now Towasil Inlet and Now River Inlet, 0.3 mile southmest of U.S Navy Test Range Tower No. 6 and milepost no. 10, on the peak of the top of the northmeat-southeast ridge of sand dunes (this is the highest and most wreatheat dune peak in the vicinity), approximately 300.0 feet southeast of boint where the northmeat of the contention of the northmeat-southeast dune ridge, 33.5 foot northmeat of the contentine of the marl covered road measured from a point at the center of 30-feet cut through the sand ridge, 1.5 feet southmeat of a white painted reference post, in the top of concrete poured into an 8-inch tile which projects O.6 foot above the ground. Designation TOWER SIX RM 1 State North Carolina County Onelow Described by U.S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road Sand From the railroad stating at Hollyridge, thence 3.4 miles northeast along the Sand from the railroad stating at Hollyridge, 1, 25 miles south along the Sears Landing Road Sand Sand Sond on the	Designation FED 1933 State North Carolina County Chelow Nearest town Hollyridge County Chelow Distance and direction from nearest town Character of mark A triangulation station disk Established by U, S, C, & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad estation at Hollyridge, thence 4,45 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 180,0 feet northeast of the centerline of the road measured from a point 113,0 feet northeast of milepost 11, along the sharp top of the tain sand dune ridge, 1.5 foot southwest of a white painted reference post, set in concrete poured into an 8-inch tile which projects 1.5 foot above the ground. Chief of party Described by C, K, Withrow Distance and direction from nearest lown 5,25 miles south, thence Character of mark A bench mark diok Established by U, S, C, & G, Survey Detailed description 5,25 miles south along the Seare Landing Road from the railroad totation at Hollyridge, thence 5,5 miles northeast along the Stand Soit Road, on the	Designation RANGE TWO 1947 Nearest town Hollyridge Distance and direction from nearest town County
	Dosignation HIGH Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 1.6miles northeast Character of mark A triangulation station disk Established by U.S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Soit Road, on the sand spit between Now Topsail Inlet and New River Inlet, 0.3 mile southwest of point where the marl covered road makes turn to went away from the sand dunes (main ridge), approximately 500.0 feet southeast of a point on the main road which is about 0.1 mile northeast of road milepost No. 8, 164,8 feet southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, 95,0 feet southeast of the centerline of sand road paralleling the cain ridge of dunes (measured from a point about 285.0 feet southwest of the northeast end of out where the road passes through the first northwest-southwest of une ridge southwest of curve in the main road, 1.5 feet southwest of a white mainted reference post, set in the top of a concrete post projecting 0.4 foot above the ground. Chief of party Clorence R. Reed Described by C. X. Withrow Distance and direction from nearest town 5.25 miles south, thence 1.6 miles northeast Character of mark A reference mark disk Established by U.S. C. & G. Survey Desided description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Spit Road, on the sand spit between Rew Topsail Inlet and Row River Inlet, 0.3 mile southmest of a point where the marl covered road which has paralleled the main ridge of dunes from the where the marl covered road which has paralleled the main ridge of dunes from the	Designation BANKS Nearest town Hollyridge County Onslow Distance and direction from nearest tewn Stamping Distance and direction from nearest town	Designation FED 1933 Nearest town Rollyridge Distance and direction from nearest town 5,25 miles south, thence 4,45 miles northeast Character of mark A triangulation station disk Stamping FED 1933 Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 4,45 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Index and New River Inlet, 180,0 feet noutheast of the centerline of the road seasured from a point 113,0 feet northeast of an inlend the centerline of the road seasured from a point 113,0 feet northeast of a white painted reference post, set in concrete poured into an 8-inch tile which projects 1,5 foot above the ground. Chief of party Clarence R. Reed Described by C. K. Withrow Checked by Designation F 230 Nearest lown Hollyridge County Onslow Distance and direction from nearest lown 5,25 miles south, thence 5,5 miles northeast Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Searn Landing Road from the railroad on the cand out between New Topsail Inlet and New River Inlet, 9,0 feet east of miles post 12, at the foot of the main ridge of east dead durse, reast the read from	Designation RANGE TWO 1947 Nearest town Hollyridgo County Chelow Distance and direction from nearest town 5.25 miles south, thence 6.8 miles northeast Character of mark A. traverse statical disk Stamping RANGE TWO 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 6.8 miles northeast along the Sand Spit Road, on the sand spit between Her Topasil Inlet and Now River Inlet, 0.35 mile northeast of U. S. Havy Test Range Tower No. 7 and milepost No. 13, about 200,0 feet southwest of the beginning of the first curve in the road northeast of Town 7, about 200,0 feet northwest of the main ridge of the dunes, 131,0 feet northwest of the centerline of the goad measured from a point at the northeast end of road cut through an 8-foot high sand ridge, 75.5 feet west northwest of the first commination line noles, 10.0 feet ent of the south leg of frame range tower, 10.5 feet south of the east leg of the tower, 2.0 feet southwest of a white cainted reference nost, not in the top of a cencreto nost flush with the ground, Chief of party Clarence R. Reed Described by C. K. Kithrow Designation G 230 State North Carolina County Onelow Distance and direction from nearest town 5.25 miles couth, thence 7.5 miles northeast Character of mark A bonch mark disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Read from the relired of action at Hollyridge, thence 7.5 miles northeast along the Sand Spit Read, on the sand opt between live Topasil Inlet and Now River Inlet, 27.7 feet eact of mileocost 14, 80.5 feet southeast of the lone of the occurrence and north mand on the sand optic between live Topasil Inlet and Now River Inlet, 27.7 feet eact of mileocost 14, 80.5 feet southeast of the line of the occurrence after no lone.
	Dosignation HIGH Nearest town Hollyridge County Onslow Distance and direction from nearest town 5,25 miles south, thence 1,6miles northeast Character of mark A triangulation station disk Established by U, S, C. & G. Survey Dotailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Soit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.3 mile southment of point where the marl covered road nakes turn to west away from the sand dunos (main ridge), approximately 500.0 feet southeast of a point on the main road which is about 0.1 mile northeast of road milepost No. 8, 164.8 feat southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, 96.0 feet southeast of the centerline of sand road paralleling the main road, 96.0 feet southeast of the centerline of sand road paralleling the main road, 96.0 feet southeast of the centerline of sand road paralleling the main road, 96.0 feet southwest of main road, 1.5 feet southwest-southeast dune ridge southwest of curve the road passes through the first northwest-southeast dune ridge southwest of curve in the main road, 1.5 feet southwest of a white mainted reference most, set in the top of a concrete post projecting 0.4 feet above the ground. Chief of party Clarence R. Reed Described by C. K. Withrow Designation HIGH RM State North Carolina County Pender Checked by U.S. Causad County Chalcy Distance and direction from nearest town 5.25 miles south, thence 1.6 miles northeast Character of mark A reference mark disk Established by U.S. C. & G. Survey Dotaided description 5.25 miles south along the Sears Landing Road fron the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.3 mile southwest of a point where the marl covered road which has paralleled the main ridge of dunes from the northeast makes a turn to west away	Designation BANKS Nearest town Hollyridge County Onslow Distance and direction from nearest tewn 5.25 miles south, thence 3.1 miles northeast Character of mark A triangulation station dick Stamping BANKS 1933 1947 Established by U. S. C. & G. Survey Dotailed description 5.25 miles south along the Sears Landing Road from the railroad atation at Hollyridge, thence 3.1 miles northeast along the Sand Soit Road, on the send soit between Now Townsall Inlet and Now River Inlet, 0.3 mile southmest of U. S Navy Test Ronge Tower No. 6 and milepost no. 10, on the peak of the top of the northwest-southeast ridge of send dunes (this is the highest and most wreathent dune peak in the vicinity) approximately 300.0 feet southeast of point where the north-south dirt road and telephone line leading north across the marsh join the send area and the northwest end of the northwest-southeast dune ridge, 33.5 feet northwest of the controlline of the marl covered road measured from a point at the center of 30-foot cut through the sand ridge, 1.5 feet southwest of a white painted reference post, in the top of cencrete poured into an 8-inch tile which projects Chief of party Clarence R. Reed Described by C. K. Withrow DESCRIPTION OF BENCH MARK Designation TOWER SIX RM 1 State North Carolina County Onelow Nearest town Hellyridge County Onslow Nearest town Hellyridge County Onslow Character of mark A reference mark disk Stampin; TOWER SIX RM Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Read from the railroad station at Hellyridge, thence 3,4 miles northeast alone the Sard Spit Road, on the sand soit between Hony Townshi Inlet and Now River Tales to O.6 sipht Road, on the sand soit between Hony Townshi Inlet and Now River Tales to O.6 sipht Road, on the sand soit between Hony Townshi Inlet and Now River Tales to O.6 sipht Road to sand soit to the town to the sand soit between Hony Townshi Inlet and Now River Tales to O.6 sipht Road to sand soit townships.	Designation FED 1933 Nearest town Mollyridge Distance and direction from nearest town 5,25 miles south, themce 4,45 miles northeast Character of mark A triangulation station disk Stamping FED 1933 Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hellyridge, thence 4,45 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 180,0 feet northeast of the centerline of the road measured from a point 113,0 feet northeast of milepost 11, along the sharp top of the rain sand dune ridge, 1,5 foot suthwest of a white painted reference post, set in concrete poured into an 8-inch tile which projects 1,5 foot above the ground. Chief of party Clarence R. Roed Described by C. K. Withrow Clecked by DESCRIPTION OF BENCH MARK Designation F 230 Nearest lown Hollyridge County Onelow Distance and direction from nearest town 5,25 miles south, thence 5,5 miles northeast Character of mark A bench mark disk Established by U. S. C. & C. Survey Detailed description 5,25 miles meth along the Sear's Landing Road from the railroad station at Hollyridge, thence 5,5 miles northeast along the Sand Soit Road, on the sand spit between New Topsail Inlet and New River Inlet, 9,0 feet cast of milement zide of the road, 26,0 feet southeast of the centerly need from northwest side of the road, 26,0 feet southeast of the centerly need from	Designation RANGE TWO 1947 Nearest town Hollyridgo Distance and direction from nearest town 5.25 miles south, thence 6.8 miles northeast Character of mark A. traverse statich disk Character of mark A. traverse statich disk Character of mark A. traverse statich disk Stamping RANGE TWO 1947 Established by U. S. C. C. G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 6.8 miles northeast along the Sand Spit Road, on the sand opth between Hew Topanil Inlet and More River Inlet, 0,35 mile northeast of U. S. Navy Test Range Tower No. 7 and milopost No. 13, about 200,0 feet southwest of the beginning of the first curve in the road northeast of Tower 7, about 200,0 feet northmest of the main ridge of the dunes, 131,0 feet northmest of the centerline of the goad measured from a point at the northmest end of road cut through an 8-foot lifth sand ridge, 75,5 feet west northmest of the first occumination line vole northmest of the northmest end of long straight section of occumination line noles, 10.0 feet enst of the south leg of frame range fower, 10.5 feet south of the east leg of the tower, 2.0 feet southwest of a white painted reference post, set in the top of a concrete post flush with the ground. Date March 1947 Checked by U.S. Caster Greeck Surge-Porm CE [Et. 185] DESCRIPTION OF BENCH MARK Designation G 230 Nearest town Hollyridge Distance and direction from nearest town State Borth Carolina County Onelow County Onelow Distance and direction from nearest town State Borth Carolina Road from the railroad station at Hollyridge, thence 7.5 miles northeast along the Sand Spit Road, on the south of the State State State of miles of the lone of the Searce Landing Road from the railroad station at Hollyridge, thence 7.5 miles northeast along the Sand Spit Road, on the south of the Sand Spit Road, on the south of the Sand Spit Road, on the south of the scuthwest of the Sto pole northeast of the southwest on of fileost 11, 80,5 ficet southwest o
	Designation HIGH Nowrest town Hollyridge Distance and direction from nearest town 5.25 miles south, thence 1.6 miles northeast Character of mark A triangulation station disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Soit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.3 mile southwest of point where the mark covered road makes turn to went away from the sand dunes (main ridge), approximately 500.0 feet southeast of a point on the main road which is about 0.1 mile northeast of road milepost No. 8, 164.8 feet southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, 95.0 feet southeast of the centerline of sand road paralleling the main ridge of dunes (measured from a point about 285.0 feet southwest of the northeast end of out where the road passes through the first northwest-southeast dune ridge southwest of curve in the main road, 1.5 feet southmest of a white mainted reference book, set in the top of a concrete post projecting 0.4 feet above the ground. Chief of party Clarence R. Reed Described by C. K. Mithrow Designation HIGH RM State North Carolina County Pender Hearest town Hollyridge Distance and direction from nearest town 5.25 miles south, thence 1.6 miles northeast Established by U. S. C. & G. Survey Desided description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sannying HIGH 1933 Desided description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.3 mile southwest of a point where the main road which has paralleled the main ridge of dunes from the northeast makes a turn to west away from the dune ridge and communication lines, approximately 500.0 fee	Designation BANKS Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 3.1 miles northeast Character of mark A triangulation station dick Stamping BANKS 1933 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.1 miles northeast along the Sand Spit Road, on the sand spit between Now Toosall Inlet and New River Inlet, 0.3 mile southwest of U. S Navy Test Ronge Tower No. 6 and milepost no. 10, on the peak of the top of the northwest-southeast ridge of sand dunes (this is the highest and most precainent dune peak in the vicinity, approximately 300.0 feet southeast of point where the north-south dirt road and tolenhone line leading north across the marsh join the sand area and the northwest end of the northwest-southeast dune ridge, 33.5 feet northwest of the centerline of the marl covered road massured from a point at the center of 30-foot cut through the sand ridge, 1.5 foot southwest of a white spainted reference post, in the top of cencrete poured into an 8-inch tile which projects O.6 foet above the ground. DESCRIPTION OF BENCH MARK Designation Tower SIX RM 1 State North Carolina County Onelow Nearest town Hollyridge County Conslow Character of mark A reference mark disk Stampin; Tower SIX RM Established by W. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.4 miles northeast along the Sard Spit Road, on the sand spit between Now Topsail Inlet and Now River Inlet, 0.05 mile southwest of nilepost 10, at W. S. Navy Test Range Tower No. 6, set in the top of the concrete appron which surrounds the concrete towers of the south correr of	Designation FED 1933 Nearest town Mollyridge Distance and direction from nearest town Standards of mark A triangulation station disk Established by U. S. C. A. G. Survey Detailed description 5,25 miles south along the Scars Landing Road from the railroad station at Hollyridge, thence 4,45 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlot and New River Inlot, 180,0 feet southeast of the centerline of the road sousured from a point 113,0 feet northeast of milescal link and mark to post the sain sand dune ridge, 1.5 foot southeast of a white painted reference post, set in concrete poured into an 8-inch tile which projects 1.5 foot above the ground. Chief of party Clarence R. Road Described by C. K. Withrow Clicked by DESCRIPTION OF BENCH MARK Designation F 230 Nearest town Hollyridge Distance and direction from nearest town 5,25 miles south, thence 5,5 miles northeast Charactor of mark A bonch mark disk Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sear's Landing Road from the railroad of station at Hollyridge, thence 5,5 miles northeast along from the railroad of milescal 12, at the foot of the main railwood dunes, across the road from and near the southwest end of a 200,0-feet long and A-feet high fill on the northwest end of a reflect the foot of the main railwood a mile noath can be northwest of a mile noath main can be to the content poot of the content poot of a mile noath can be northwest of the top of the main sand duner idea, 2,0 feet southmost of a mile noath can be not reference oset, set in the top of a concrete poot orgiesting	Designation RANGE TWO 1947 Nearest town Hollyridgo Distance and direction from nearest town Character of mark A. traverse staticn disk Stamping RANGE TWO 1947 Established by U. S. C. G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 6.8 miles northeast along the Sand Spit Road, on the sand opth between Hew Topanil Indet and Now River Indet, 0,35 mile northeast of U. S. Navy Test Range Tower No. 7 and milopost No. 13, about 200,0 feat southwest of the beginning of the first curve in the road northeast of Towor 7, about 200,0 feat northeast of the main ridge of the dunes, 131.0 feet northwest of the centerline of the good measured from'a point at the northeast end of road cut through an 2-foot ligh sand ridge, 75,5 feet west northwest of the first occumination line vole northeast of the northeast end of lone straight section of occumination line noles, 10.0 feet east of the south leg of frame range tower, 10.5 feet south of the east log of the tower, 2.0 feet southwest of a white valued reference nost, set in the top of a concrete nost flush with the ground. Date Date Date Larch 1947 Checked by U. Casted Greecks Survey-Down Caster. No. State North Carolina County Onelow County Onelow Oistance and direction from nearest town 5,25 miles south, thence 7,5 miles northeast Stamping G 230 1847 Established by U. S. C. & G. Survey Detailed description Detail Legacy Detailed description State North Carolina County Onelow County Onelow Stamping Caponic Research Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description Detailed description State North Carolina County Onelow County Onelow Stamping RANEE TWO 1947 Checked by U. Casted Greecks Survey-Porn Caster. No. Chief of party Clarence R. Reed Date Larch 1947 Chec
	Designation HIGH New County County County County Pender Distance and direction from nearest town 5.25 miles south, thence 1.6miles northeast Character of mark A triangulation station disk Established by U. 3. C. 2. G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Soit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.3 miles southwest of point where the marl covered road makes turn to west away from the sand dumos (main ridge), approximately SOO, feet southeast of a point on the main road which is about 0.1 miles northeast of road milepost No. 8, 164,8 feet southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, 95,0 feet southeast of the centerline of sand road paralleling the main ridge of dumos (measured from a point about 285,0 feet southwest of the northeast end of cut where the road passes through the first northwest-outheast dume ridge southmest of curve in the main road, 1.5 feet southwest of a white valued one ridge southwest of curve in the main road, 1.5 feet southwest of a white valued one ridge southwest of curve in the main road, 2.5 miles south along the ground. Date DESCRIPTION OF BENCH MARK Designation HIGH RM State North Carolina County Pender County Chalces County Chalces Distance and direction from nearest town 5,25 miles south, thence 1.6 miles northeast Character of mark A reference mark disk Established by U. 3. C. & 6, Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Spit Road, on the sand apit between New Topsail Inlet and New River Inlet, 0.3 mile southwest of a point where the main road which has paralleled the main ridge of dumes from the northeast main road alle poet No. 8, along the top of the main ridge of dumes from the northeast of read aile poet No. 8, along the top of the main ridge of	Designation BANKS Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 3.1 miles northeast Character of mark A triangulation station dick Stamping BANKS 1933 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.1 miles northeast along the Sand Spit Road, on the sand spit between Now Toosall Inlet and New River Inlet, 0.3 mile southwest of U. S Navy Test Ronge Tower No. 6 and milepost no. 10, on the peak of the top of the northwest-southeast ridge of sand dunes (this is the highest and most precainent dune peak in the vicinity, approximately 300.0 feet southeast of point where the north-south dirt road and tolenhone line leading north across the marsh join the sand area and the northwest end of the northwest-southeast dune ridge, 33.5 feet northwest of the centerline of the marl covered road massured from a point at the center of 30-foot cut through the sand ridge, 1.5 foot southwest of a white spainted reference post, in the top of cencrete poured into an 8-inch tile which projects O.6 foet above the ground. DESCRIPTION OF BENCH MARK Designation Tower SIX RM 1 State North Carolina County Onelow Nearest town Hollyridge County Conslow Character of mark A reference mark disk Stampin; Tower SIX RM Established by W. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.4 miles northeast along the Sard Spit Road, on the sand spit between Now Topsail Inlet and Now River Inlet, 0.05 mile southwest of nilepost 10, at W. S. Navy Test Range Tower No. 6, set in the top of the concrete appron which surrounds the concrete towers of the south correr of	Designation FED 1933 Nearest town Mollyridge Distance and direction from nearest town 5.25 miles seath, thence 4.45 miles northeast Character of mark A triangulation station disk Established by U, S. C. & O. 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Survey Detailed description 5.25 miles south along the Seare Landing Road from the railroad station at Hellyridge, thence 5.5 miles northeast along the Sand Soit Road, on the send soit between New Topsail Inlet and New River Inlet, 9,0 feet caut of milesoat 12, at the foot of the main ridge of cand duner, across the read from and near the southwest end of a 200,0-foot long and A-foot high fill on the northwest side of the road, 26,0 feet southeast of the contriline of the road, 450 feet morthwest of the tow of the main radge of the contriline of the road, 450 feet morthwest of the tow of the main radge of the contriline of the road, 450 feet morthwest of the tow of the main radge of the contriline of the road, 450 feet morthwest of the tow of the main radge of the controlline of the road,	Designation RANGE TWO 1947 Nearest town Hollyridge County Chalow Distance and direction from nearest town 5.25 miles south, thence 6.8 miles northeast Character of mark A traverse statical disk Stamping RANGE TWO 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 6.8 miles northeast along the Sand Soit Road, on the sond outh between Herr Topanil Indet and More River Indet, 0.35 mile northeast of U. S. Navy Teat Range Tever No. 7 and milespest No. 13, about 200.0 feet southwest of the beginning of the first curve in the road northeast of Tower 7, about 200.0 feet northment of the main ridge of the dunes, 131.0 feet northwast of the centerline of the good measured from a point at the northeast end of road cut through an 8-70ct high sand ridge, 75.5 feet west northment of the first occumination line vole northeast of the northeast end of long straight section of occumination line noles, 10.0 feet east of the south leg of frame range tower, 10.5 feet south of the east leg of the tower, 2.0 feet southwest of a white painted reference post, set in the top of a concrete next flush with the ground, Described by C. K. Kithron DESCRIPTION OF BENCH MARK Designation G 230 Nearest town Hollyridge County Onclow County Onclow Distance and direction from nearest town 5.25 miles south, thence 7.5 miles northeast Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad abution at Hollyridge, thence 7.5 miles northeast along the San ground and spit between New Topacil Inlet and New River Inlet, 27.7 feet east of milescet 11, 80.5 feet southment of the line of the communication colos resoured from a coint 25.0 feet southprest of the 5th pole northeast of the southwost of the road, 88.0 The main reand done ridge, 28.0 The main reand done ridge and the controlline of the read, 88.0
	Designation HIGH Nearest town Hollyridge Distance and direction from nearest town 5,25 miles south, thence 1,6miles northeast Character of mark A triangulation station disk Established by U. S. C. 20. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Soit Road, on the sand spit between New Topsail Inlet and New Hiver Inlet, 0.3 mile southwest of point where the marl covered road makes turn to west away from the sand dumes (main ridge), approximately SOO, Of feet southeast of a point on the main road which is about 0.1 mile northeast of road milepost No. 8, 164,8 feet southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, \$5.0 feet southeast of the centerline of sand road paralleling the main ridge of dumes (measured from a point about 285.0 feet southwest of the northeast end of out where the read passes through the first northwest-outheast dume ridge southwest of curve in the main road, 1.5 feet outhwest of a white valued and ridge southwest of curve in the main road, 20. 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DESCRIPTION OF BENCH MARK Designation Tower SIX RM 1 State North Carolina County Onelow Nearest town Hollyridge County Conslow Character of mark A reference mark disk Stampin; Tower SIX RM Established by W. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.4 miles northeast along the Sard Spit Road, on the sand spit between Now Topsail Inlet and Now River Inlet, 0.05 mile southwest of nilepost 10, at W. S. Navy Test Range Tower No. 6, set in the top of the concrete appron which surrounds the concrete towers of the south correr of	Designation FED 1933 Nearest town Mollyridge Distance and direction from nearest town Standards of mark A triangulation station disk Established by U. S. C. A. G. 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Survey Detailed description 5,25 miles south along the Sear's Landing Road from the railroad of station at Hollyridge, thence 5,5 miles northeast along from the railroad of milescal 12, at the foot of the main railwood dunes, across the road from and near the southwest end of a 200,0-feet long and A-feet high fill on the northwest end of a reflect the foot of the main railwood a mile noath can be northwest of a mile noath main can be to the content poot of the content poot of a mile noath can be northwest of the top of the main sand duner idea, 2,0 feet southmost of a mile noath can be not reference oset, set in the top of a concrete poot orgiesting	Designation RANGE TWO 1947 Nearest town Hollyridgo Distance and direction from nearest town 5.25 miles south, thence 6.8 miles northeast Character of mark A.trayerre statich disk Established by U. S. C. & G. 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Reed Described by C, X, Withrow DESCRIPTION OF BENCH MARK Designation HIGH RM Ilearest town Hellyridge Distance and direction from nearest town 5,25 miles south, thence 1,6 miles northeast Character of mark A triangulation state of a superior state of mark A reference mark date Established by U, 9, 2, & 6, Survey Debiled description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1,6 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0,3 mile southment of a point where the marl accover coad which has paralleled the main ridge of dumes from the northeast arkes a turn to west away from the dume ridge and communication line only approximately 50,0,0 feet southwest of a point on the main ridge of the dumos, 165,0 feet o	Designation BANKS Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 3.1 miles northeast Character of mark A triangulation station dick Stamping BANKS 1933 1947 Established by U. 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Survey Detailed description 5,25 miles south along the Sear's Landing Road from the railroad of station at Hollyridge, thence 5,5 miles northeast along from the railroad of milescal 12, at the foot of the main railwood dunes, across the road from and near the southwest end of a 200,0-feet long and A-feet high fill on the northwest end of a reflect the foot of the main railwood a mile noath can be northwest of a mile noath main can be to the content poot of the content poot of a mile noath can be northwest of the top of the main sand duner idea, 2,0 feet southmost of a mile noath can be not reference oset, set in the top of a concrete poot orgiesting	Designation RANGE TWO 1947 Nearest town Hollyridgo Distance and direction from nearest town 5.25 miles south, thence 6.8 miles northeast Character of mark A.trayerre statich disk Established by U. S. C. & G. 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	Designation HIGH Nearest town Hollyridge Distance and direction from nearest town 5,25 miles south, thence 1,6miles northeast Character of mark A triangulation station disk Established by U. S. C. 20. 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Survey Dotailed description 5,25 miles south along the Sears Landing Road from the railroad nation at Hollyridge, thomeo 3,1 miles northeast along the Sand Smitz Road, on the sand soit between Now Toward I miles northeast along the Sand Smitz Road, on the sand soit between Now Toward I miles northeast along the Sand Smitz Road, on the sand soit between Now Toward I miles northeast along the Sand Smitz Road, on the sand soit between Now Toward I miles northeast along the Sand Smitz Road, on the sand soit between Now Toward I miles northeast along the Sand Smitz Road, on the sand soit between Now Toward I miles northeast along the Sand Smitz Road, on the sand soit between Now Toward dune (this is the Highest and root wreathens the northeast—southeast ridge of sand dunes (this is the Highest and root wreathens dune peak in the vicinity) approximately 300,0 feet southeast of Soin North House the north-south dirt road and telenhone line leading north across the saroh North sond area and the northwest end of the northwest-acutheast dune pridge, 33,5 feet northwest of the contorline of the northwest-acutheast dune pridge, 33,5 feet northwest of the contorline of the northwest-acutheast dune pridge, 33,5 feet northwest of the contorline of the northwest-acutheast dune pridge, 33,5 feet northwest of the contorline of the northwest and the sand seed the product of the contorline of the sand contorline of the sand seed by the product of the contorline of the sand seed by the product of a miles of the sand seed by the product of the contorline of the sand seed by the product of the san	Designation FZD 1933 Nearest town Rollyridge County Onelow County Onelow Distance and direction from nearest town 5,25 miles south, thence 4,45 miles northeast Character of mark A triangulation station disk Established by U. S. C. A. G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at hollyridge, thence 4,45 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 180,0 feet contheast of the centerline of the road seasured from a point 113,0 feet northeast of milesport 11, along the sharp top of the main sand dune ridge, 1.5 foot southwest of a white painted reference port, set in concrete poured into an 8-inch tile which projects 1.5 foot above the ground. Chief of party Clarence R. Roed Described by C. K. Withrow DESCRIPTION OF BENCH MARK Designation F 230 State North Carolina County Onelow Nearest town North Spit Res. NO Nearest town North Spit Res. NO Designation F 230 State North Carolina County Onelow Nearest town North Spit Res. No County Onelow Distance and direction from nearest town 5,25 miles south, thence 5,5 miles northeast Character of mark A bongch mark disk Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road-from the railroad station at Hollyridge, thence 5,5 miles northeast along the Stand from the count of th	Designation RANGE TWO 1947 Nearest town Hollyridgo Distance and direction from nearest town Character of mark A.traverse statics disk Stamping RANGE TWO 1947 Established by U. 5. C. A. G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Follyridge, thence 6.8 miles northeast along the Sand Spit Road, on the sand spit between New Topasil Inlet and Now River Inlet, 0.35 mile northeast of U. S. Navy Test Range Town To. 7 and railropast No. 13, about 200.0 feet southwest of the beginning of the first curve in the road northeast of Town 7, about 200.0 feet northwest of the main ridge of the dunes, 131.0 feet on-threast of the centraline of the good measured from a point at the northeast on of road cut through an 8-foet high sand ridge, 75.5 feet west northwest of the first occumination line soles northwest of the northeast end of long straight section of occumination line noles, 10.0 feet east of the south Neg of frame range town; 10.5 feet south of the east log of the town, 2.0 feet southwest of a white sainted reference nost, not in the top of a concrete nost flush with the ground, Date March 1947 Checked by U. 3. Casted Geoch's form, New Caster's form, New Caster's of mark A horse mark disk Established by U. S. C. & G. Survey Detailed description S. 25 miles south along the Sears Landing Road from the railroad station at Hollyridge, belone 7,5 miles northeast along the Sand Spit Road, on the sand opth between lier Topasil Index and Now Hiver Index, 27, feet care of milescent 14, 80,5 feet southmost of the 11ne of the commissation color resourced from a coint 25,0 feet southmost of the 5th pole northeast along the Sand Spit Road, on the sand apth between lier Topasil Index and Now Hiver Index, 27, feet care of milescent 14, 80,5 feet southmost of the line of the commissation color resourced from a coint 25,0 feet southmost of the 15th pole northeast of the controline of the read 1,2 foot above the ground,
	Designation HIGH Nearect town Hollyridge County Onelow Distance and direction from searest town 5,25 miles south, thence 1,6miles northeast Character of mark A triangulation station disk Established by U. 3, C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1,6 miles northeast along the Sand Soit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0,3 miles southwest of point where the sarl covered road rakes turn to west away from the sand dumes (main ridge), approximately 500.0 feet southeast of a point on the main road which is about 0,1 mile northeast of road milepost No. 8, 164,8 feat southeast of the 10th communication lines pole southwest of the point where the line crosses the main road, 96,0 feet southeast of the centerline of sand road paralleling the main ridge of dumes (measured from a point about 285,0 foot southwest of the northeast end of out where the road passes through the first northwest-coutheast dume ridge southwest of curve in the main road, 1.5 feet southwest of a white sainted reference boost, set in the top of a concrete post projecting 0.4 foot above the ground. DESCRIPTION OF BENCH MARK Designation HIGH RM Designation HIGH RM State North Carolina County Pender County Chalcy Distance and direction from nearest town 5,25 miles south, thence 1,6 miles northeast Character of mark A reference mark disk Established by U. 9, C. & G. Survey Delaide description 5,25 miles south along the Sears Landing Road from the railroad station at Boiltyridge, thence 1,6 miles northeast along the Sand Spit Road, on the sand apit between New Topsail Inlet and Now Niver High Boothman High 1933 Established by U. 9, C. & G. Survey Delaide description 5,25 miles south along the Sears Landing Road from the railroad station at Boiltyridge, thence 1,6 miles northeast along the Sand Spit Road, on the sand apit between New Topsail Inlet and Now Niver High Boothman High High Boothman High High Boothman High High High	Designation BANKS Nearest town Hollyridge Distance and direction from nearest town Character of mark A triangulation extation dick Stambilished by U.S.C. & G. Survey Dotailed description 5.25 miles couth along the Sears Landing Road from the railroad station at Hollyridge, thomeo 3.1 riles northeast along the Sand Smit Road, on the sand soit between Now Towall Inlot and Now River Inlet, 0.3 mile southment of U.S Navy Test Range Tower No. 6 and milespost no. 10, on the peak of the top of the northwest-southeast ridge of sand dunes (this is the highest and root orreinent dune peak in the vicinity) approximately 300.0 feet southeast of coint where the north-south dirt road and telenhere line leading north across the march join the sand area and the northwest-southeast dune ridge, 32,5 feet northwest of the conterline of the sarl covered road measured from a point at the conter of 30-foot cut through the sand ridge, 1.5 feet southment of a white painted reference peat, in the top of cenerate poured into an 8-inch tile which projects Chief of party Clarence R. Reed Described by C. K. Withrow Described by C. K. Withrow Described by C. K. Withrow Described by C. K. Sand Research along the Sear Lending Road from the sail cannot greate town Hollyridge County Onelow Character of mark A reference mark disk Stabilised by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Lending Road from the railroad staticg at Hollyridge, thence 3.4 miles northwest alone the Sand Spit Road, on the sand spit between New Topesti Inlot and New River Inlot, 0,05 mile southment of milepeat 10, at U. S. Ray Toet Range Town No. 6, set in the top of the concrete agreen which surrounds the concrete towort, 1.3 foot south of the southment of milepeat 10, at U. S. Ray Toet Range Town No. 6, set in the top of the concrete agreen which surrounds the concrete towort, 1.3 foot south of the southment of the concrete tener, 7.7 feet north of the south corner of the concrete agreen Chief of party Clarence R. Reed	Designation FED 1933 Nearest town Rellyridge County Onslow County Onslow Distance and direction from nearest town 5,25 falles sucth, thence 4,45 falles northeast Character of mark A triangulation station disk Stamping FED 1933 Established by J. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Rond from the railroad station at Rellyridge, Submere 4,45 falles northeast along the Sand Smit Road, on the sand spit between New Topsail inlet and New River Inlet, 180,0 feet nontheast of the sand spit between New Topsail inlet and New River Inlet, 180,0 feet nontheast of the sand spit between New Topsail inlet and size falled, 1,5 foot southwest of a white painted reference post, set in concrete poured into an 8-inch tile which projects 1,5 foot above the ground. Chief of party Claronce R. Road Described by C. K. Withrow DESCRIPTION OF BENCH MARK Designation F 230 Rearest lown Hollyridge Distance and direction from nearest lown 5,25 raises south, thence 5,5 miles northeast Character of mark A bonch mark disk Stamping P230 1947 Established by U. S. C. & G. Survey Desialed description 5,25 miles south along the Search Landing Road from the railroad station at Hollyridge, thence 5,5 miles northeast along the Sand Sait Read, on the cand outh between New Topsail inlet and New River Inlet, 9,0 feet, cast of miles and to between New Topsail in the dark miles of the card duming the Sand Sait Read, on the cand outh between New Topsail in the along the Search Landing Road from the railroad station at the Sand Sait Read, on the cand outh between New Topsail in the dark miles of cand duming the Sand Sait Read, on the cand outh between New Topsail in the dark miles of cand duming the tree of miles out 1,2 of the cand control of the topsail in the sain sand dum rideo, 2,0 feet couthers of a white nainted reference cost, set in the top of a concrete next cross at the control from the road, 45,0 feet northwest of a white nainted reference cost, set in the top of a concrete next crossection of the	Designation RANGE TWO 1947 Nearest town Hollyridge Distance and direction from nearest town Character of mark A.traverse statics disk Established by U. 5.2 C. A.G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 6,8 miles northeast along the Sand spit Read, on the sand spit between New Topanil Inlet and Now River Inlet, 0,35 miles northeast of U. S. Navy Test Range Tower No. 7 and filespoet No. 13, about 200, feet southwest of the beginning of the first curve in the road northeast of Tower 7, about 200, of the northeast of the main ridge of the dune, 131, of the committee of the centerline of the good measured from a point at the northeast end of road cut through an 8-foot Yigh sand ridge, 75,5 feet went northeast of the first committee of the centerline of the good measured from a point at the northeast end of road cut through an 8-foot Yigh sand ridge, 75,5 feet south and the northeast of the first committee of the centerline of the good measured from a point at the northeast of the first committee in line noles, 10,0 feet east of the south leg of frame range tower, 10,5 feet south of the east leg of the tower, 2,0 feet southwest of a white sainted reference nost, not in the top of a concrete nost flush with the ground, Date Earch 1947 Chief of party Clarence R. Reed Described by C. K. Estimon Described by C. K. Estimon State North Carolina County Onelow Character of mark A bonch cark disk Established by U. S. C. & G. Survey Described by C. K. Estimon Tynacia Inlet on Nor Biver Inlet, 27,7 feet seat of milesot established by U. S. C. & G. Survey Description 5,25 miles south along the Sears Landing Reed from the relired obstitue at Hollyridge, themco 7,5 miles northeast along the sead of mileson resoured from a noint 25,0 feet southmost of the 5th pole northeast of the connectation one resoured from a noint 25,0 feet southmost of the 5th pole northeast of the confortine of the hand of the main ridge of the dunce, 1,5 feet southwes



Designation CAB . State North Carolina County Onelow Mearest town Hollyridge County Onelow County Onelow Character of mark & triangulation station disk Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 7.8 miles northeast along the Sand Spit Road, on the station at Hollyridge, thence 7.8 miles northeast along the Sand Spit Road, on the silepost 1th, along the top of the main ridge of the sand dunes, 12th,0 feet coutheast of the centerline of the road measured from a point about 150.0 feet southwest of the sunthwest end of a 10.0-foot cut through a northwest-southeast 2.0 feet northwest of white painted reference post, set in the top of a concrete	DESCRIPTION OF BENCH MARK Designation LCC RM 2 State North Carolina County Onsico Noarest town Hollyridgo County Onsico Distance and direction from nearest town 5.25 niles scuth, thorace 9.9 miles northcast Character of mark A reference tark disk Established by U. S. C. & G. Survey Detailed description 5.25 niles south along the Soars Landing Road from the railroad station at Hollyridgo, thence 9.9 miles northcast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.5 mile northcast of nilepost 16, 166.5 feet west of LOG, 70.0 feet northwest of the centerline of the road consumed from a coint 60.0 feet southwest of the scuthwest end of a 20- foot cut through a sand dune, 59.0 feet north of the first pole southwest of the cand ridge, 1.5 foot northcast of white mainted reference most, set in the top of concrete poured into a 6-inch tile projecting 0.3 foot above the ground.	DESCRIPTION OF BENCH MARK Designation H Z30 Nearest form Hollyridgo County County	Designation VIEW BY 1 Stats Earth Carelina County Chalce Nearest town Hollyridgo County Onalow Distance and direction from nearest town 5.25 miles couth, themce 13.0 miles northeast Character of mark A reference mark direction from nearest town 5.25 miles couth, themce 13.0 miles northeast Established by U. 3. C. & G. Survey Detailed description 5.25 miles couth along the Sears Landing Boad from the railroad attain at Hollyridge, thence 13.0 miles northeast along the Sand Spit Réad, on the cand apit botheren Her Topcail Inde and Her Hiver Indet, 1.0 mile couthwast of Her River Indet, 0.45 mile couthwest of Hilepeat 20, 355.0 feet northwest of the controllation of the read measured from a point 0.15 mile couthwest of a group of fish casp shacks and the junction of an east-west sand road, 150.0 feet southeast of point where the east-most sand read enters the march tunkes, 12.0 feet mertheast of the triangulation station, 35.0 feet northeast of the base of the dune peak on the top of which the triangulation station is located, set on the top of low sand ridge running between two sand dune peaks about 200 feet apart, in the northeast- southwest opening between march bushes, set in the too of a concrete filled 6-inch tile which projects 0.2 foot above the ground, 2.0 feet northwest of a 3-foot high 6-inch creesets reference post.
Chief of party Clarence R. Reed Described by C. K. Withrow Date Harch 1947 6 4 U. S. Castled Geodule Sovery-Florin 638 (Rev. 1949	Chief of party Clorence R. Reed Date Harch 1947 Described by C. K. Withrow Checked by U.S. Content of Goodst's Strong-Furm SIS (Res. 1945)	Chief of party Clarence R. Reed Described by C. K. Filthow Checked by U.S. Casti and Goodelic Survey—Force Cas (En. 1962	Chief of party Clarence R. Reed Date April 1947 76 Described by C. K. Hithrow Checked by U.S. Coon and Consists Survey—Form can (LP. 1967)
Designation MUSH Nearest town Hollyridge County Onslow Distance and direction from nearest town 5,25 miles south, thence 8.6 miles northeast Character of mark A triangulation statton disk Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad statton at Hollyridge, thence 8.6 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.15 mile northeast of milepost 15, along the line of the topof the main sand dune ridge, 136.0 feet southmeat of a point midway between the third and fourth communication line poles southmeat of the controllate and of lang straight section of poles, 59.0 feet southmeat of the centerline of the road, 55.0 feet east of the foot of the northeast end of 15-foot cut on the southeast side of the road, 17.0 feet southwest of the top of peak in the dune ridge and about 3.0 feet lower than the peak, 1.3 foot west of white painted reference post, set in the top of concrete boured into a 5-inch tile which projects 1.0 foot above the ground.	DESCRIPTION OF BENCH MARK Designation LOG Nearest town Hollyridge County Onelow County Onelow Distance and direction from nearest town 5.25 miles south, thence 9.9 miles northeast Character of mark a triangulation station disk Stamping None Established by U. S. C. & C. Survey Detailed description 5.25 miles south alons the Sears Landing Road from the Railroad station at Hollyridge, thence 9.9 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and Kew River Inlet, 0.5 mile northeast of nilepost 16, at a 20.0-foot cut through a prominent sand ridge, at the top of the southeast edge of the cut, 43.0 feet southeast of the centerline of the road, 55.0-feet northwest of the top of the main ridge of the sand dunes, 3.0 feet southeast of the sharp edge of the cut, 4.2 feet northwest of a white painted reference post, set in the top of concrete poured into a 5-inch tile mojecting 0.5 foot above the ground. Note: The sand is falling along the top of the cut and the mark will probably be lost in a short time.	Description of Bench Mark Designation FISH 1932 Nearest town Hollyridge State North Carolina County Onslow Distance and direction from nearest town 5.25 miles south, thonce 11.75 miles northeast Character of mark A triangulation station disk Stamping FISH 1932 Etablished by U. S. C.& G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 11.75 miles northeast along the Sand Spit Road, on the sand spit between New Toppasi Inlet and How River Inlet, O.4 mile northeast of miles and overlocking the march and inland waterray about 0.2 mile to the inghrsay and overlocking the march and inland waterray about 0.2 mile to the northwest, 90.0 feet northwest of the condributed for the road, about 200.0 feet northwest of the top of a high peak in the main dune ridge (there is a break in the main dune ridge to the southwest of this peak and the dune ridge drops to the approximate level of the read for a very short distance, 1.5 foot northeast of a white painted reference post, set in the top of concrete boured into an 8-inch tile which projects 0.4 foot above the ground.	Description of Bench Mark Designation RAFIE THEE 1947 State North Carolina County Onslow Nearest thym Hollyridge County Chalow Distance and direction from nearest town 5,25 ciles south, thence 13,5 miles northeast Character of mark A traverse station of the Stamping RAFIE THEE 1947 Established by U.S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the relirond station at Hollyridge, thence 13,5 miles northeant along the Sand Spit Road, on the sand but between New River Inlet and New Topsail Inlet. 344,8 feet west of TONER HINE 1947, 157,0 feet northeast of the centerline of the road neasured from a point 47.0 feet northeast of milepost 20, 11.0 feet east of the south pole leg of frame tower, 10,0 feet south of the east leg of the frame tower, 1.5 foot couthwest of a white painted reference post, set in the top of a cenerate post projecting 0,1 foot above the ground.
Date March 1947 Described by C. K. Withrow Checked by U.a. Cesitand Geodel: Survey-Phorm and (Rev. 1940)	Chief of party Clarence R. Reed Doscribed by C. K. Withrow Checked by U. S. Coast and Generally Servey—Form 618 (Per. 1949) 18—2018-1	Chief of party Clarence R. Reed Date March 1947 73 Described by C. K. Withrow Checked by U.S. Coast and Goodst's Survey-Form Cas (Eer. 1949	Chief of party Clarence R. Reed Date April 1947 77 Described by C. K. Withrow Checked by U. S. Cecus and Geodetic Survey - Form Ass (Ext. 1989)
Designation Tower Eight RM 1 State North Carolina County Onslow Distance and direction from nearest town 5.25 miles south, thence 9.5 miles northeast Character of mark A reference mark disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Scars Landing Road from the railroad station at Hollyridge, thence 9.5 miles northeast along the Sand Spit Road, on the cand spit between New Toosail Inlet and New River Inlet, 0.1 mile northeast of milepost 16, set in the top of the concrete apron around U. S. Navy Test Range Tower No. 8, 1,4 foot south of the south corner of the concrete tower, 7.6 feet north of the scuth corner of the concrete apron.	Designation LOG 2 1947 Nearest town Hollyridge Distance and direction from nearest town 5.25 miles south thence 9.9 miles northeast Character of mark A triangulation station disk Stamping LOG 2 1947 Detailed description 5.25 miles south thence 9.9 miles northeast Statablished by U.S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landine Read from the railroad station at Hollyridge, thence 9.9 miles northeast along the Send 3pit Boad, on the sand spit between New Topsail Inlet and New River Inlet, 0.5 mile northeast of ridge, 61.5 fect southeast of the conterline of the read and prominent sand dune ridge, 61.5 fect southeast of the conterline of the read and the center of the cut, of the main sand dune ridge, 57.6 fect northeast of LOG 2 RM 3, 18.5 fect southeast of LOG and the top of the highest part of the ridge, 2.0 feet northwest of a 3-foot light 8-inch creesote reference post, set in the top of a concrete post projecting	Description of Bench Mark Designation VIEW RM 2 Nearest town Hollyridgo County Chalow Distance and direction from nearest town 5.25 miles south, thence 13.0 miles northeast Character of mark A reference mark disk Established by U: S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 13.0 miles northeast along the Sand Spit Road, on the sand spit between New Aiver Inlet and Hew Topsail Inlet, 1.0 miles outhwest of New Aiver Inlet, 0.45 mile southwest of milepost 20, 280.0 feet northmest of the centerline of the road measured from a point 0.15 mile southwest of agroup of fish camp shacks and the junction of an east-west sand road, 109.4 feet south southeast of the triangulation tathion, 187.0 feet south southwest of reference mark No. 1, about 20.0 feet south of the base of the large dume on top of which the triangulation station is located, on the top of a low sand dune, set in the top of a concrete filled 6-inch tile which projects 0.4 foot above the ground, 1.5 foot southwest of a white painted reference post.	DESCRIPTION OF BENCH MARK Designation Toker Hills RM 1 State Korth Carolina County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 13.5 miles northeast Character of mark A reference mark disk Established by U. S. C.& G. Survoy Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 13.5 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New Miver Inlet, 0.5 mile southmest of New River Inlet, 0.1 mile northeast of Milepost 20, set in the top of the concrete appron for U. S. Navy Test Range Tower No. 9 (the concrete tower has not been constructed in March 1947), 15.8 feet southeast of TOTAL NIME 1947, 5.2 feet northwest of the southeast edge of the appron, 5.4 feet scuthwest of the northeast edge of the
Chief of party Clarence R. Reed Described by C. K. Withrow Checked by U. a. Ceast and Occodes Server—Form 618 (Ref. 1942)	Chief of party Clarence R. Reed Date April 1947 70 Described by C. K. Withrow Checked by U.S. Coast and Geodetic Survey - Furni COS (Der. 1840)	Chief of party Clarence R. Reed Date Atril 1947 74 Described by C. K. Withrow Checked by U.S. Costs and Ground Survey-Form CMS (Dar. 1949)	Chief of party Cleronce R. Reed Described by C. K. Withrow Date Harch 1947 Checked by U.S. Cest and Geodetic Survey—Form Gis (Not. 1949)
Designation TOWER EIGHT 1947 Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence Character of mark A triangulation station disk Established by U. S. C. & G. Survey Datailed description 5.25 miles south along the Sears Lending Road from the railroad station at Hollyridge, thence 9.5 miles northeast along the Sand Spit Road, on the sand spit between Hem Topsail Inlet and New River Inlet, O.1 mile northeast of milepost 16, set in the top of the concrete deck on top of U. S. Mavy Teat Range Tower No. 8, 2.9 feet southeast of the northwest edge of the concrete deck, 3.0	Designation LGC 2 RM 3 Nearest town Nollyridge County Chalen Distance and direction from nearest town 5,25 miles south, thence 9.9 miles northeast Character of mark A reference mark diok Established by U. S. C. & C. Survey Detailed description 5,25 miles south along the Scare Landing Road from the reilroad station at Hollyridge, thence 9,9 miles northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0,5 mile northeast of milepost 16, at a point where the road cuts through a high and prominent sand dune ridge, cn a shelf - like cove between the northmeat-coutheast ridge of dunds and the main dune ridge, 164.0 feet east southeast of LGC RM 2, 86.0 feet southeast of the centerline of the road measured from a point near the southwest of the 57.6 feet southeast of LGC RM 2, 26.0 feet southeast of the sand dune ridge, 2.0 feet southeast of a 3-foot high 8-inch creosete reference post, set inthe top of a concrete post projecting 0.7 foot above the ground.	Designation VIEW Nearest town Hollyridge State North Carolina County Onslow Distance and direction from nearest town 5.5 miles south, thence 13.0 miles northeast Character of mark A triangulation station disk Stamping None Established by U. S. C. & C. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 13.0 miles northeast along the Sand Smit Read, on the sand spit between New Topsail Indet and New River Indet, 1.0 mile southwest of New River Indet, 0.45 mile southwest of milespost 20, 361.0 feet northwest of the centerline of the road measured from a point 0.15 mile southwest of the interior of east-west sand road and a group of fish camp shacks, at the center of a broken-top sand dune peak (base of dune is surrounded by marsh bushes except on the south side), 190.0 feet south of the point where the east-west sand road enters the marsh bushes, 2.0 feet north of a 4-foot high 6-inch crossote reference pole, set in the top of concrete poured into an 8-inch tile which projects 0.6 foot above the ground.	Designation TOWER MINE 1947 State Horth Carolina County Onglow Nearest town Hollyridge County Onglow Distance and direction from nearest town 5.25 miles mouth, themso 13.5 miles northeast Character of mark A triangulation station disk Stamping TOWER MINE 1947 Established by U. S.C. & G. Survey Detailed description 5.25 miles mouth along the Sears Landing Read from the railroad station at Hollyridge, thence 13.5 miles northeast along the Sand Spit Read, on the sand spit between New Topcail Inlet and New River Inlet, 0.5 mile southwest of New River Inlet, 0.1 mile northeast of milesest 20, set in the top of the concrete agron for U. S. Navy Test Range Tower No. 9 (the concrete tower has not been constructed in March 1947), 7.5 feet southwest of the northeast edge of the agron, 9.0 feet southeast of the northwest edge of the agron.
Chief of party Clarence R. Reed Date March 1947 C. K. Withhow Checked by U. S. Cossis and Geodetic Surry - Form GM (Ref. 1940	Chief of party Clarence R, Reed Described by C. K. Withrow Checked by U.S. Casti and Goodalk: Survey-Education Gas (Rec. 1845)	Chief of party Clarence R. Reed Date March 1947 75" Described by C. K.Withrow Checked by U.S. Crist and Geodelic Survey—Form GIS (Eer. 1949)	Chief of party Clurence R. Reed Date March 1947 77 Described by C. K. Withrow Checked by U. S. Ceatten Geototh Survey-Torm 638 (Not. 1949

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Occignation TIDAL 1 (1933)
State North Carolina County Onsign
Nearest Name Notifying County Onology
Distance and direction from nearest town 5,25 miles south, thence 14.0 miles northeast
Chiratter oleans A bench mark disk
Established by 9.5.5 c. & G. Survey
Othical distription 5,25 miles south along the Sears Landing Road from the railroad station
at Hellyridge, thence 13.5 miles northeast along the Sand Spit Road, thence 0.55 miles
north along the send on the southeast side of slough, about 0.15 mile northwest of the
mouth of the New Miver Inlet, about 500,0 feet southwest across open sand area
the 1947 southwest bank of the Inlet channel (the sand area now covers old channel
location and blocks the mouth of old slough), about 400,0 feet north of the north
covered area (the bank is northwest bank of old slough) begins curve to scuth and
southwent, at the extreme northeast corner of the tree and bush covered area which was
probably at one time an island, at former location of house known as Sea Island House
(now destroyed) which was located on the northwest side of the large trees (do not
confuse with the small wooded area which is located to the south and southwest and
across a 75-foot wide marsh strip from the larger wooded area), about 100,0 feet
North of point where the 75-foot marsh strip between the wooded area herine, 12.6
foet southwest of the northermost one of large live oak trees, 4,0 feet southeast of
3-foot hole, 1.0 foot northeast of reference post, in 6-inch tile 0.1 foot above ground. DESCRIPTION OF BENCH MARK

Chief of part, Clarence H. Reod Descriedly C. L. Withrow

U.S. and the tel Silver Ferrit Chatter (see

from April 1947

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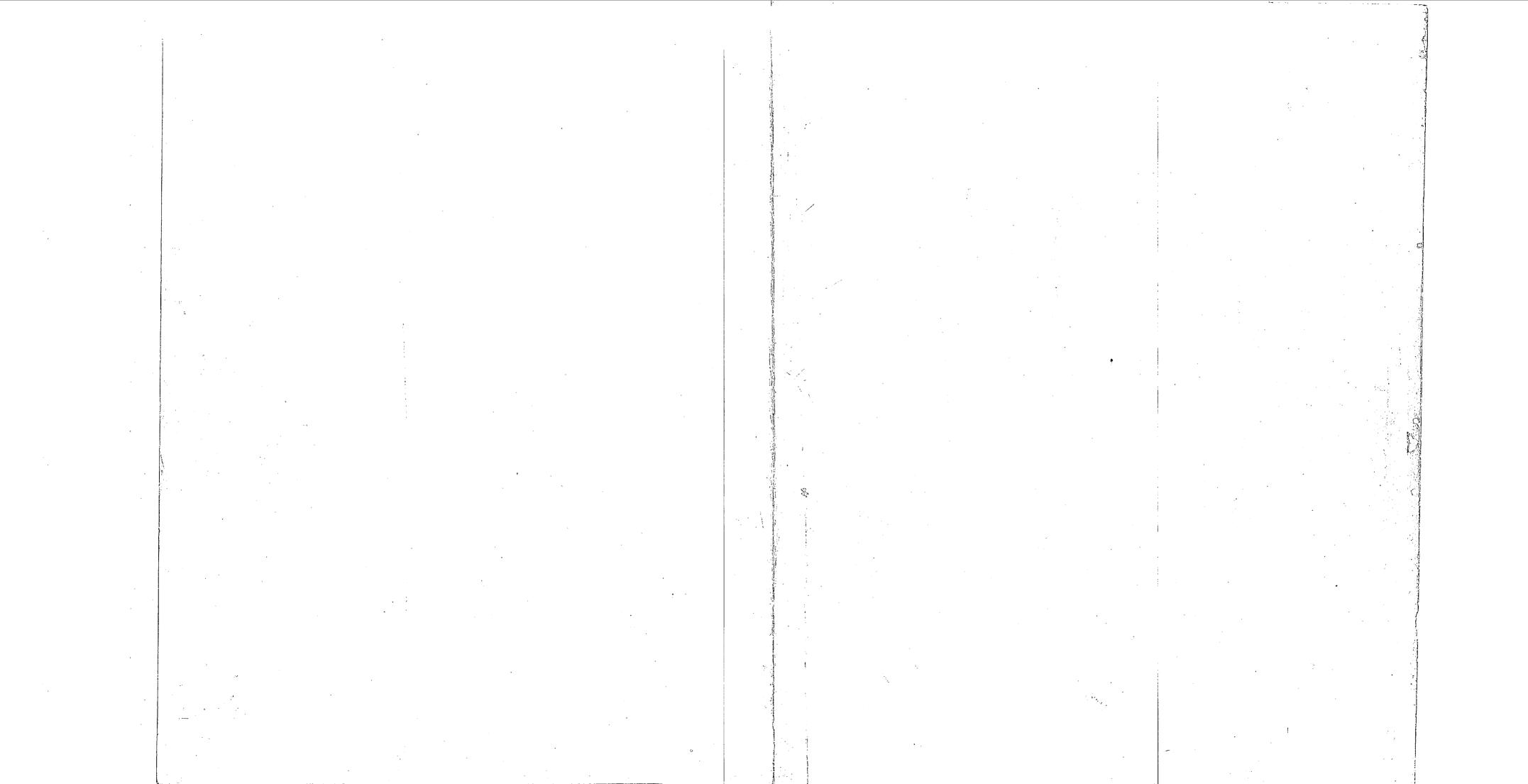
the end by

DESCRIPTION OF BENCH MARK

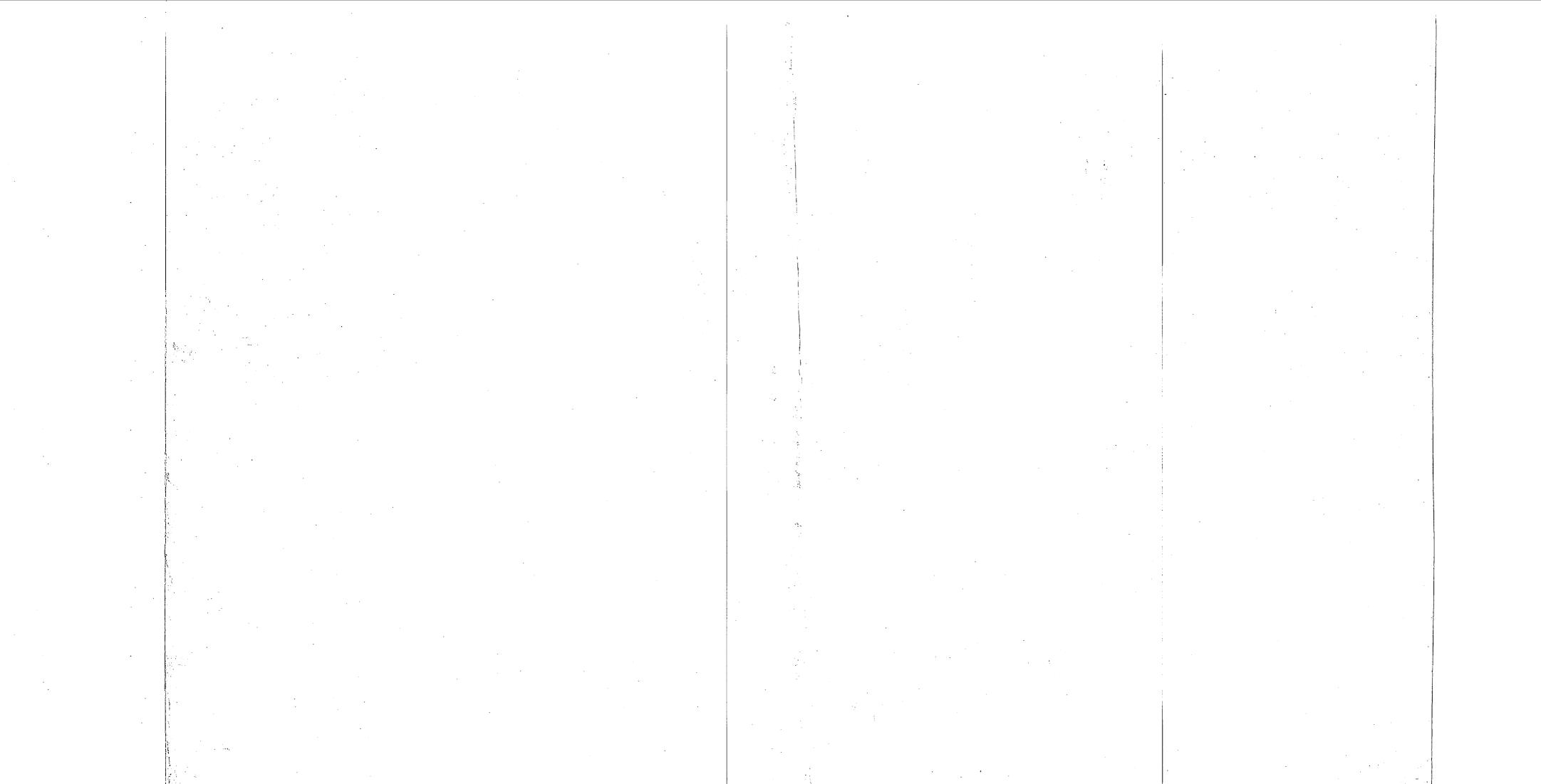
State North Dirillos ... Coslow County Coslow A sench mark disk continue 5,25 miles contr. to the ... miles northead Find the Louis (1), 1) have a Sendetic Murvey of the interior of the matter and halomethe Search Lengthon the from the mail of the search the Search Lengthon the Fand Orit Road, there a Life don't be along the a not and the southeast along the Fand Orit Road, there a Life don't be a long the and the southeast air of the original terms mouth of the original block about \$60.0 feet or interest across come maind and the southeast air of the Inlet channel the seal work the operated of the control and blocks the across old shough, about a long feet operated the control of the told slough), angut a lifet your told slough and inlet lifeties of the property of the tree of the tre at covered area tie extense : , as former location of them at which as located on the norther trails and area which is located to the state out. ea Inland House our ar throughwest ar in feet souther th hank of the other from the larger a sige tree and bush covered at 3, 49.5 feet worth Cost, souther reference role, in the red into 5-

DESCRIPTION OF BENCH MARK

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L-12114	PRINTED OF CONTROL RECOVERY NOTE, BENCH MARK R	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK
Holyridge to New Topsail and New Rose Inlets, No. Caroline. 70-638 12-685	Designation B 27 State Kerth Carelina County Cuslow Nearest town Rollyridgo County Cuslow Distance and Cirction from nearest town 2.1 miles northeast Charatter of mark A bench mark disk Stamping B 27 1932 Established by U.S. C. & G. Survey Present condition Good Detailed report 2.1 miles northeast along the Atlantic Coast Line Railroad from the station at Rollyridge, O.4 mile southwest of Hilenost CB 276-W 32, approximately 100.0 feet northeast of the beginning of the first curve northeast of Hollyridge and the point where the hierary which has paralled the railroad northeast from Hollyridge, begins curve to east away from the railroad, &6.5 feet northwest of the northwest edge of U.S. Highway 17 (3-lane road), 23.8 feet southeast of the southwest of a white follows to the line of the telegraph poles, in the east angle of the crossing of the railroad and a dim woods road, 1.5 foot southwest of a white reference post, set in the top of a cenerate post projecting 1.5 foot above the ground. Note: Mark appears to be leaning to the northwest but close inspection shows that this illusion is caused by the shape of the form in which the concrete was poured.	constituen # 230 State Sorth Carolina (1994). Inside Count, Casics State and tentum from measestown of Hollyridge Character of mark a bench mark disk Stanging # 230 1947 States and tentum from measestown of Hollyridge States description at Hollyridge, at Camm Davis, C.9 mile northeast along the Atlantic Coast Line Reitroad from the station, thence 0.45 mile northwest along 27th Street, 366.0 feet southeast of the southeast edge of the most southeasterly concrete taxing at the Camp Davis Army Africald measured along the centerline of 27th Street, 213.0 feet northwest of the conterline of F Street, 10.0 feet southwest of the southwest face of frame thoatre building, set in the to- of a 12-inch separac concrete postwhich was formerly the anchor base for say wire supporting large steel stack for the theatre furnace, 1.3 foot above the ground, 35.0 feet northweat of the centerline of 27th Street.	interestions W 229 State North Carolina County Onalow County Chalow Chalow
	Chief of Party Clarence R. Read Date Feb. 1947 4 Recovered by C. K. Withrow Checked by	Chief of party Clarence R. Roed Date Pob. 1947 Described by C. K. Withrow Cherked by U. S. Centural Gooden Survey-Porm Can (Ber 1980)	Chief of party Clarence R. Reed Date Pob. 1947 Described by C. K. #1threm Checked by U. S. Court of Geodetic Screen-Power Graft (Let 1860)
Designation T 27 State North Carolina County Onslow Designation T 27 Nearest town Folkstone County Onslow Distance and direction from nearest town At Folkstone Character of mark A bench mark disk. Stamping T 27 1932 State North Carolina Stamping T 27 1932 Stamping T 27 1932	Description of Bench Mark Designation Z 229 Nearest town Hollyridge County Onalow Distance and direction from nearest town 1,2 mile northeast Character of mark A beach mark diok Established by U. S. C. & G. Survey Detailed description 1,2 mile northeast along the Atlantic Coast Line Railroad from the station at Hollyridge, 0,3 mile northeast of the 27 th Street gate to Camp Davis, 0,35 mile southeast of mileoast CB 275 - W 31, 30,1 feet southeast of the southeast of line and bank along the side of railroad drainage ditch, in line with the telegraph hales, 1,5 feet southeast of a white reference host, set in the top of a concrete host projecting 1,3 foot above the ground.	Designation N 230 State North Carolina County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town At Hollyridge Character of mark A bench mark disk Established by N. S. C. A 7. Survey Detailed description At Hollyridge, at Camp Davis, at the Camp Davis Army Airfield, 0.9 mile northeast along the Atlantic Coast Line Sailroad from the station, thence C.5 mile northeast along 27th Street, 56.0 feet suithwest of the centerline of the street, 69.0 feet southeast of the southeast edge of the most southeasterly concrete taximay, 17.5 feet northwest of the north corner of the hanger on ton of which the control tower is located, 7.0 feet northeast of the northeast edge of the concrete annon in front of the hanger, 2.0 feet southwest of a white reference post, set in the top of a concrete post projecting 0.8 foot above the ground.	Designation V 27 State North Carolina County Chalca: Nearest town Hollyridge Distance and direction from nearest town Character of mark A bench mark citck Established by U. S. C. & G. Survey Present condition Destroyed Detailed report The concrete post in which the disk was set was knocked over during the construction of Community. The post was ideated and reset near the old noint. For the description of the reset post see V 27 RESET 1947.
Chief of Party Clarence R. Reed Date Feb. 1947 Recovered by C, K. Withrow	Chief of party Clarence R. Reed Date Feb. 1947 Described by C. K. Withrow Checked by U.S. Crast and Geodetic Survey—Form CDS (Rev. 1849)	Chief of party Clarence R. Reed Date Peb. 1947 / Described by C. K. withrow Checked by U. S. Coult and Greekit's Survey - Ports Gas (flar, 1959)	Chief of Party Clarence R. Reed . Date Feb. 1947 /3 Recovered by C. K. Withrow . Checked by
Designation E 148 Nearest town Folkstone Olstance and direction from nearest town Character of mark Established by Present condition Destroyed Detailed report 'U.S. Highway 17 has been rebuilt and the culvert in which the mark was set has been replaced with a concrete pipe culvert without headwalls. The disk wan not recovered.	Designation F 148 Designation F 148 Nearest town Hellyridge Distance and direction from nearest town Character of mark A bench wark disk Established by U. 3. G. & G. Survey Present condition Destroyed Detailed report Detailed report Destroyed Des	Designation TBM 1 State North Carolina County Onslow Nearest town Hollyridge County Onelow Distance and direction from nearest town At Hollyridge Character of mark surface of the runway Stamping None Established by U.S., C. & G. Survey Detailed description At Hollyridge, at Camp Davis Army Airfield, O.4 mile southwest of the control tower, at the point where the the asphalt runway meets the landing apron for the southwest end of the runway, the highest point of the runway.	Designation V 27 RESET 1947 State North Carolina County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town At Hollyridge Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description The original post containing the disk was found pulled from ground and reset near the same location. At Hollyridge, O.1 mile northeast of the Atlantic Coast Line Railroad station, 13% rails northeast of the center of the crossing of tar road leading to the main gate to Camp Bavis, directly across the highway from the junction of a tar road leading east and U. S. Highmay 17, 31.5 feet northwest of the northwest rail of the main track, 18.1 feet northwest of the northwest rail of a siding, 11.5 feet southeast of the Camp Bavis fence line, 1.5 foot southwest of a mile reference post, set in the top of a concrete post projecting 0.2 foot above the ground. Note: The top of the northeast side of the post has been broken.
2	Deta Feb. 1947 6		
Chief of Party C. R. Reed Date Feb. 1947 Recovered by C. K. Withrow Checked by	Chief of Party Recovered by C. R. Reed Checked by C. K. Withrow DESCRIPTION OF BENCH MARK	Chief of party Clarence R. Reed Date Harch 1947 Date Harch 1947 Checked by U. S. Coultand Geodetic Survey—Form CSS (Ref. 1949) Date Harch 1947 Checked by	Chief of party Clarence R. Reed Date March 1947 Described by C. K. Withrow Checked by U.S. Contrard Geodelic Survey—Form C38 (Rev. 1910)
Designation K 230 Nearest town Folkstone Distance and direction from nearest-town 1.35 mile south Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 1.35 mile south along the Atlantic Coast Line Railroad from the station at Folkstone, 2.75 miles northeast of the station at Hollyridge, 335 rails northeast of inlepost CB 276 - W 32, 27.3 feet southeast of the southeast rail, 15.0 feet northeast of the first telegraph pole southwest of the northeast end of low sand ridge along the southeast side of small railroad cut and side ditch. 2.0 feet northwest of the line of the telegraph poles, 2.0 feet southmest of a mhite reference post, set in the top of a concrete cost projecting 0.7 foot above the ground.	Designation L 230 Nearest town Hollyridge County Onelow Distance and direction from nearest town At Hollyridge Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description At Hollyridge, at Camp Davis; 0.9 mile northeast along the Atlantic Coast Line Railroad from the station, thence 0.15 mile northrest along 27th Street, at the second tall steel water tank southwest of the northeast boundary of Camp Davis, 133.5 feet southeast of the centerline of C Street, 111.0 feet northeast of the centerline of 26th Street, 69.0 feet southwest of the centerline of 27th Street set in the top of the northeast corner of the concrete foundation supporting the east steel leg of the water tank, 1.0 foot above the ground.	Description of Bench Mark Designation J 230 State North Carolina County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town At Hollyridge Character of mark A bench mark disk Stamping J 230 1947 Established by U. S. Coast & Geodetic Survey Dotailed description At Hollyridge, 0.45 mile northeast along the Atlantic Coast Line Railroad from the station, 0.1 mile southwest of milepost CB 274 - V 30, 55.5 feet southeast of the southeast rail, 10.5 feet northwest of the northwest edge of U. S. Highway 17 (3-lane road), set in the top of northwest concrete headwall for large concrete box culvert under the highway, 1.0 foot southwest of the northeast end of the headwall, 0.3 foot below the level of the highway.	Designation G 143 Designation G 143 Nearest town Hollyridge Distance and direction from nearest town O.9 mile southwest Character of mark Established by Present condition Destroyed Detailed report U. S. Highway 17 has been rebuilt and the guivert in which the mark mas set has been replaced with a concrete pipe culvert without headwalls. The
	Chief of party Clarence R. Reed Date Feb. 1947 7		



DESCRIPTION OF BENCH MARK Designation if 229 State North Carolina County Onelow Distance and direction from nearest town Character of mark A bench mark dick: Established by U. S. C. & C. Survey Detailed description 0.95 mile south along the Sears Landing Road from the railroad station at Hollyridge, 0.2 mile south of the parking area for old CCC Camp, about 300.0 feet south of the junction with the Sears Landing Road of a tar road leading went to old CCC Camp garage area and a dirt road leading cast through the woods, 46.0 feet east of the east edge of the Sears Landing Road, across the highest from the northeast corner of area from which dirt was removed to construct highway fills, near point where highway begins downgrade to south, 5.0 feet north of a projecting 1.0 foot above the ground.	Unitarity decisions Unitarity and active and an active and and and trace of the port could be found. Decignation P. II. 3 Fained State Earth Carolina County Pender Nearest town Mollyridge County Chalcis Distance and direction from hearest town 2; relico cruthwest Character of mark Established by Present condition Detailed report U. S. Highary 17 has been rebuilt and widened and it is very likely that the mark was destroyed during the construction. Heasurements places the location of the mark along the graded shoulder of the read and no trace of the post could be found.	DESCRIPTION OF BENCH MARK Description y 229 Nearest town Hollyridge Distance and direction from nearest town 3.3 miles south Chiracter of mark	DESCRIPTION OF BENCH MARK Designation SEARS RU I State North Carolina County Tender Nearest town Hollyridge County Conlear Distance and direction from nearest town 4.75 miles swoth Established by U. S. Coant & Geodotic Survey Detailed description 4.75 miles south along the Sears Landing Read from the reilroad station at Hollyridge, 184.; feet northwest of the northwest and of the Sears Landing bridge, 28,9 feet southmest of the centerline of the Sears Landing read, 42,5 feet southmest of reference mark No. 2, 2,7 feet north of a telephone pole, 1.5 foot southonat of a white reference nost, set in the top of concrete poured into an 9-inch tile protecting 0,1 foot above the ground.
Chief of party Clarence R. Reed Doscribed by C. K. Withrow U. B. Court and Geodetic Survey-Ports Call (Rev. 1940) DEPARTMENT OF COLMERCE THE COURT FOR GRANT RECOVERY NOTE BENICH MADDIA RECOVERY NOTE BENICH MADDIA	Chief of Party Clarenco R. Reed Date Feb. 1947 20 Recovered by C. S. Hithrow Checked by	Chief of party Clarence R. Reed Date Peb. 1947 Described by C. K. Hithron Checked by U.S. Court and Garcelle Subvey-Form that (Res. 1949)	Chief of party Clarence R. Roed Date Pob. 1947 Described by C. K. Withness Checked by U. S. Could and Geocolic Survey-Draw Cide (Res. 1984)
Designation R. M. 1 FENDER State North Carolina County Cholow Nearest town Hollyridge County Cholow Character of mark Established by Stamping Present condition Destroyed. Detailed proof U. S. Highway 17 has been rebuilt and the culvert in which the mark was located has been replaced. A new mark was set at the time the old culvert was replaced; however the present line of levels did not follow the railroad to this point so the new azimuth park has no elevation established for it.	REPORT ON CONDITION OF BENCH MARK Designation II 148 Nearest town Edgaceabe County Pender County Pender County Pender County Pender County Pender County Pender Character of mark Established by Present condition Detailed Report U. 3. Highway 17 has been robuilt and the concrete culvert in which The dick was not recovered.	Description of Bench Mark Designation B 230 Nearest lown Hollyridge Distance and direction from nearest town 3.75 miles south Character of mark A bench mark disk Established by 1. S. C. & G. Survey Detailed description 3.75 mile south along the Sears Landing Road from the railroad station at Hollyridge, at the south corner of woods area, near the wast corner of area from which dirt was removed to construct highway fill. &6.0 feet northeast of the centerline of the road, 47.5 feet northwest of borrow of bank, 2.0 feet northwest of white reference most, set in the too of a concrete most projecting 1.0 foot above the ground.	DESCRIPTION OF BENCH MARK Designation C 230 Nearest town Hollyridge County Onslow Distance and direction from pearest town 5.25 miles south, thence 0.75 mile southwest Character of mark A bench mark disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 0.75 mile southwest along Sand Soit Road, on the Sand Spit between New Tonsail Inlet and New River Inlet, 0.3 mile southwest of milepost 6, 0.5 mile northeast of the point where the road crosses under the cammination lines, approximately 500.0 feet northwest of the main ridge of dunes, about 200.0 feet southeast of the odre of the careh, near the first curve in the road southwest of the junction of the Sears Landing Road, on the north alone of a low east—west sand dune ridge, about 30.0 feet north of the ton of the dune ridge, 70.5 feet southeast of the centerline of the road, about 5.0 feet above the level of the road, 2.0 feet southmest of a white reference cost, set in the ton of a concrete cost projecting 1.3 feet above the ground.
Chief of Party: C. R. Reed Date Feb. 1947 /7 Recovered by G. K. Withrow Checked by	Chief of Party Clarence R. Reed Reported by C. K. Mithron Checked by U. E. Contrad Confession Process 1946	Chief of party Clarence R. Reed Date Feb. 1947 25 Described by C. K. Withrow Checked by U.S. Casul and Guestile Survey-Form CM (Par. 1869)	Chief of party Claronce R. Rood Date Pob. 1947 Described by C. K. Withrow Checked by
Designation Fember RM 2 Nearest town. Hollyridge County Onelow Distance and direction from nearest town 2.0 miles southwest Character of mark. A reference mark disk Established by U.S.C.&G. Survey Present condition Good Detailed report 2.0 miles southwest along the Atlantic Coast Line Railroad from the station at Hollyridge, O.4 mile northeast of milepost CB 271 - W 27, 148,7 feet east of the triangulation station, 84.5 feet southwest of the southeast edge of U.S. Highway 17 measured from a point 265,0 feet southwest of the junction of main dirt road leading southeast, 128,0 feet southwest of the south corner of concrete block store building, 12.0 feet south of the centerline of little-used connecting road leading to main dirt road, 1.5 feet east of reference post, set in the top of a concrete post projecting 0,3 foot above the ground.	RECOVERY NOTE, BENCH MARK Designation if 27 Nearest town Edge Cambridge County Fender County Fender Character of mark Established by Present condition Destroyed Detailed report U. S. Highway 17 has been rebuilt and the concrete culvert in which the mark was not recovered. The diek was not recovered.	Designation 3.33 (Unknown) Nearest town Hollyridge Distance and direction from mearest town Character of mark A railroad spike Established by Probably Army or contractor in construction of Camo Davis Detailed description L.6 miles south along the Sears Landing Bridge, at the southeast edre of the first woods area northwest of the Soars Landing Bridge, at the northeast of the centerline of the read, driven into the southwest side of a 20-inch live cak tree, 1.0 foot above the ground.	DESCRIPTION OF BENCH MARK Designation TOMER FOUR RH 1 State North Carolina County Pender Nearest town Hellyridge County County County County Character of Mark Character of Mark A reference mark diok Stamping TOMER FOUR RM Established by U. S. C. & G. Survey No. 1 1947 Detailed description 5.25 miles south along the Sears Landing Road from the railread station at Hellyridge, thence 1.55 miles southment along the Sand Soft Road, on the sand soit between New Topsail Inlet and New River Inlet, O.1 mile southment of milepost 5, junt inside the main ridge of sand dune, at the U. S. Navy Test Range Tower No. 4, 78.5 feet southeast of the controline of the read, 7.6 feet north of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete apron around the base of the tower, 1.4 feet south of the south corner of the concrete tower, set in the concrete apron.
Chief of Party Clarence R. Reed Date Feb. 1947 Recovered by C. K. Withrow Checked by Checked by	Chief of Party Glarenco R, Reed Data Feb. 1947 22 Recovered by C. E. Withrow Checked by	Chief of party Claronce R. Roed Date Feb. 1947 26 Described by C. K. Withrow Checked by	Chief of party Clarence it. Roed Date Pob. 1947 Described by C. K. Hithrox
Designation FENDER 1932 State North Carolina County Pender Nearest town Hollyridge Distance and direction from nearest town 2.0 miles southwest Character of mark A triangulation station disk Established by U. C. Coast & Geodetic Survey Present chaddion Detailed report The highway has been widened to a three lane road and the mark is now near the foot of the shoulder of the road. The mark appears to be undisturbed. New description: 2.0 miles southwest along the Atlantid Coast Line Railroad from the station at Hollyridge, C.A mile northeast of milenost CB 271 - W 27 and a curve in the highway and the reilroad, 0.3 mile southwest of the Pender-Conslow county line, 9 rails northeast of the center of the crossing of a ter road leading to a Coap Dayls firing range, 9 rails southwest of the extension to northwest of the centerline of a public dirt road leading road leading to the main dirt road, 19,5 feet southeast of the couthwast of the contribute of the couthwast of the contribute of the southeast rail, 17.0 feet northwest of the onthrest edge of U. 3. Highway 17, projecting 0.7 foot above the ground. Note: Levels were not extended to this mark in 19/7.	DESCRIPTION OF BENCH MARK Designation X 229 Nearest town Hollyridgo County Onalow County Onalow Character of mark A bonch mark disk Established by U. S. C. & G. Survey Detailed description 2.35 miles south along the Sears Lending Road from the railroad from the west side of the rain road and caralleling the main road for short distance the cant old, 24.5 fost east of the centerline of the dist road which parallels 60.0 feet south of the centerline of a dist road lending road, large ofne trees, 2.0 feet south of a white reference most, in a grove of several concrete most projecting 1.0 foot above the ground.	DESCRIPTION OF BENCH MARK Designation SEARS RM 2 State North Carolina Count Pender Destance from Hollyridge County Unales Detailed description A reference mark disk Stamping SEARS 80 2 1943 Established by U. S. C. & G. Survey Detailed description A.75 miles south along the Sears Landing Road from the railroad station at Hollyridge, 273,5 feet northwest of the centerline of the Sears Landing Road A2.5 feet northwest of reference mark No. 1, 15,0 feet southwest of the line of the telephone poles, 1.5 foot southeast of a white reference sont, set in concrete roured in to an 9-inch tile projecting 0.1 foot above the ground.	DESCRIPTION OF BENCH MARK Designation TWER FOUR 1947 State North Carolina County Pondor County Onslow Distance and direction from nearest town 5.25 miles south, thence 1.55 miles southwest Character of mark A triengulation station disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Read from the relired station at Hollyridge, thence 1.55 miles southwest along the Sand Spit Read, at the U. S. Navy Test Range Town No. 4, set in the ten of the cencrete deck on top of the concrete tower, 3.0 feet southeast of the northwest edge of the dock, 3.0 foot southwest of the northwest edge of the dock, 3.0 foot
Chief of Party Clarenco R. Reed Party Clarenco R. Reed Pecovered by C. E. Withrow Checked by	Chief of party Clarenco R. Roed Described by C. K. Withrow Date Feb. 1947 23 U.S. Contand Guidate Europy-Form and (flux, 1949)	Chief of party Clarence R. Reed Date Fob. 1947 Checked by C. K. Withrow Checked by	Chief of party Clarence R. Reed Date Feb. 1947 Described by C. K. Withrow Checked by

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	Designation p 230 State North Carolina County Pender Rearest town Hollyridge County Cnslow	Usignation TGMER THO RE 1 State North Carolina County Pendor Nearest town Hollyridgo County Chalom Distance and direction from nearest town 5.25 mileo south, thence 5.0 mileo southmost	Designation RANGE ONE 1947 State North Carolina County Person Hearest town Hollyridge County Chelox District and discription	Distance and direction County Complete
	Distance and direction from nearest town 5.25 miles south, thence 2.45 miles acuthment Charecter of mark A beach mark disk	Character of mark A reference mark diek Stamping TOWER THO RM Established by U. S. C. & C. Surrey NO 1 1947	Distance and direction from nearest town 5,25 miles south, thence 6.15 miles southwort Character of mark A traverse station dick Established by U.S.C.&G.Surrey U.S.C.&G.Surrey	Established by the plant from plant and plant
	Established by U. S. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollymidge, thence 2,45 miles southwest along the Sand Spit Road, 29,5	otation at Hollyridge, thence 5.0 miles southwest along the Sand from the railroad	Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thousand 6.15 miles negtioned the Sand Smit Road, on	station at Hollyridge, thoras 6.3 wiles gorthuge 3 days at 5 and 5 and 5 and 5 at 10
	feet south of mileport h, approximately 250.0 feet southment of high peak in the sand dune ridge and a tall iron flagpole, about midway between the main dune ridge	northwest of the Sand Spit Road, at U. S. Navy Test Hance Tower No. 2, in the top of the concrete agreen around the concrete tower. 7.7 feet north of the south	the mand soit between Now Topsail Inlet and Now River Inlet, 0.1 mile northwest of the Sand Spit Road, in line with the extension to northwest of the centerline of the	U. S. Navy Toot Rendo launching platform, on the tend Spit between New Topsail Inlet and How Rivor Inlet, 35.2 feet coutherent of the northeast edge of the platform, 24.8 feet southeast of the northwest edge of the platform, set in
	and the read, 43.0 feet southeast of the centerline of the read, 2.5 feet southwest of a white reference post, set in the top of a concrete post projecting 1.2 feet above the ground.	corner of the arron, i.1 foot south of the south corner of the concrete tower.	mark covered road leading to the range tower (frams), 41.0 feet southeast of the southeast bank of the Banks Channel, 10.5 feet south of the east leg of the frame range tower, 9.0 feet east of the south leg of the tower, 1.3 feet northeast of	and protecting C.65 foot above the concrete platform.
		57.75	a white reference nost, set in the top of a concrete rost flush with the ground.	Note: Rod was hold on the center of the top of the win.
		S. C.		
	Chief of party Clarence R. Reed Date Feb. 1947	Chief of party Clarence H. Reed Date Feb. 1947	Chief of party Clurence x, heed Date Feb. 1947	Chief of party Clarence R. Reed Date Warch 1947
	U.S. Coast and Geodetic Survey—Form 603 (Res. 1999	Described by C. K. Withrow Checked by	Chief of party Clurence n., heed Date Feb. 1947 Described by C. K. Sithrow Checked by	Descriped by C. E. Athron Checked by Checked by
		19 - adult 1 - 1 demonstration and	Figure 25 of the Control of the Cont	TO STORY OF THE PROPERTY OF TH
	DESCRIPTION OF BENCH MARK Designation TOTER THREE RM 1 State North Carolina County Pender Nearest town Hollyridge	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK Designation FORTR ONE RUl State North Carolina County Funder
	Distance and direction from nearest town 5,25 miles south, thence 3,6 miles southment	Designation TONER TWO 1947 State North Carolina Count, Sender Nearest town Hollyridge County Onslow Distance and direction from nearest town Character of mark A between the carolina South, thence 5.0 miles southwest	Design from ZriiG 1947 State North Carolina County Pender Rearest town Hellyridge County inslow Distance and deretion from nearest from 5,25 miles south, thence 6,3 miles southwest	Hearest town Hollyridge County Chalco
	Established by U. S. C. & G. Survey Detailed description 5.25 - 11-2-2	Established by 1 S 1 C 1947	Character of mark & triangulation station disk Stamping ZERO 1947 Established for TR. S. C. & S. Survey	Established by U. S. C. & G. Survey
	Rance Tower No. 3 67 0 e.15 mile southwest of milepost 3, at the N. S. Navy Tost	Detailed description 5.25 miles scuth along the Sears Landing Road from the railroad station at Hollyridge, thence 5.0 miles southwest along the Sand Soit Road, on the sand soit between New Tousail Inlet and New River Inlet, 0.15 mile northwest of the Sand Soit Road at M. Sand Soit Road Soit Road at M. Sand Soit Road at M. Sand Soit Road So	Detailed desception 5,25 miles south along the Sears Lending Road from the railroad station at Hollyridge, thence 6.3 miles scattment along the Send Spit Road, on the Sand Spit between New Tonsail Inlet and New River Inlet, approximately 1.0 mile	station at Hollyridge, thence 6.6 miles southwast alone the U. S. Navy cand spit between New Torsell Inlet and New River Inlet, at the U. S. Navy about 100.0
	of the concrete apron around the base of the concrete tower, 7.6 feet north of the south corner of the apron, 1.4 feet south of the south corner of the tower.	on the ton of the concrete trans 1 feet awar 10. 2, in the ton of the concrete deck	northeast of New Topsail Inlet, at the U. S.Navy Test Range launching platform,	feet coutheast of the highwater line of the southeast edge of the
	section of the during,	deck, 3.2 feet smutheast of the northwest edge of the deck, 2.2 feet northeast of the northwest edge of the law concrete wall around the head of the stairmay.	of the concrete platform, 61.0 feet southeast of the mest corner of the platform, 20.1 feet southwest of the southmest edge of the platform, 2.0 feet northwest of a white painted reference most, set in the top of a concrete most, 6.3 foot	platform. 1.1 feet east of the east compar of the concrete teror.
			underground.	
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ž(Chief of party Clarence R. Reed			Chief of party Clarence R. Reed Date March 1947
	U. S. Coatt and Capacity Survey—Form CDS (Err. 1910	Chief of party Clarenco R. Reed Date Feb. 1947 Described by C. K. Withrow Checked by	Chief of party Charence R. Reed Date Feb. 1947 77 Described by C. E. Sithron Checked by	Described by C. K. Withren Checked by Checked by Checked by Co. K. Withren Checked by Co. K. Withren Checked by Checked b
	16-mill t p. 1 politicus monte profit	U. S. Coast and Georgetic Survey - From Gibe (flee, 1986)	U.S. Cartanggar for Servey Porting 250 filter 1586.	
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	DESCRIPTION OF BENCH MARK Designation TOTER THREE 1947 State March County	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK	DESCRIPTION OF BENCH MARK Description TOWER ONE 1947 State North Carolina County Pender
	Designation TOTER THREE 1947 State Horth Carolina County Fender Nearest town Hollyridge County Onslow	DESCRIPTION OF BENCH MARK Designation CONTROL 1947 State North Carolina County ender	DESCRIPTION OF BENCH MARK Designation 1.52 MARK CRL State North Turollina County Lender Report from Hellwridge County Lender	Designation TOWER ONE 1947 State North Carolina County Pender Nearest town Hollyridge County Onalco Designation from nearest town 5.25 miles south and 6.6 miles southwest
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Reed Disance and direction from enearest town 5,25 miles south Character of mark A traverse of tation disk Character of mark A traverse of the foad Spit Read and the Scare Landing Road fron the railroad station at Hollyridge, on the Sand Spit Road and the Scare Landing Road fron the railroad of tation at Hollyridge, on the Sand Spit Road and the Scare Landing Road fron a control of feet anothenest of the center line of the Sand Spit Road and the Scare Landing Road fron a control of feet northenest of the center line of the Sand Spit Road procured from a control of feet anothenest of the center line of the Sand Spit Road procured from a control of feet anothenest of the center line of the Sand Spit Road procured from a control of the scath large of the range tower, 10.3 feet south of the cast large tower, 10.3 feet south of the cast large tower, 10.3 feet south of the cast large tower the scare and the

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DESCRIPTION OF BENCH MARK Designation Tower Five Rel 1. State North Carolina County Pender Meach town Hollyridge County Chelow Distance and direction from nearest town 5.25 miles south, thence 0.4 mile northeast Character of mark A reference mark disk Established by U. 9. 6. 6. Survey Debilled description 5.25 miles south along the Sears Landing Road from the railroad station at Pollyridge, these 0.4 mile northeast along the Sand Spit Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.05 mile southeast of the road, at U. 8. Rayy Test Range Tower No. 5, set in the top of the concrete apron around the base of the tower, 1.4 foot south of the south corner of the concrete tower, 7.6 feet north of the south corner of the concrete	Designation E 230 State North Careling County Onelow Nearest town Hollyridgo County Cholom Distance and direction from nearest town 5.25 miles couth, thonco 2.4 miles northeast Character of mark A bonch mark dilkt Established by U. S. C. & G. Survey Detailed description 5.25 miles couth along the Seare Landing Road from the railroad station at Hollyridge, thence 2.4 miles northeast along the Sand Spit Road, on the sand spit between New Topeall Inlet and New River Inlet, 0.7 mile southwest of 30- foot cut where the road masses through a northwest-southeast dume ridge, 0.55 mile northeast of point where the road makes turn to mest away from the main dume ridge, about 125.0 feet west of the top of lone tail sand dume noak in the main dume ridge, about 14.0.0 feet northeast of slight rise in the road, about 70.0 feet northwest of the top of the main dume ridge, 14.5 feet southeast of the conterlire of the road maximumed from a point 347.0 feet southwest of milesout 9, 2.5 feet southwest of white painted reference post, set in the top of a concrete cost profecting 1.3 foot above the ground and about 5.0 feet showe the level of the road.	DESCRIPTION OF BENCH MARK Designation TGWER SIX 1947 Nearest town Hollyridge County Onalcor Distance and direction from moment town 5.25 miles south, thenco 3.4 miles northeast Character of mark A triangulation station disk Established by U. S. C. & G. Survey Desided description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.4 miles northeast along the Sard South Road, on the sand spit between New Topsail Inlet and New River Inlet, 0.05 mile southwest of milepost 10, at U. S.Navy Test Range Tower No. 6, set in the too of the concrete deck on top of the concrete tower, 2.8 feet southwest of the northeast edge of the concrete deck, 2.9 feet southeast of the northwest edge of the deck.	DESCRIPTION OF BENCH WARK Designation TOWER SEVEN RM 1 Sinto North Expedites County Onelow Nearest town Rellyridge County Onelow Distance and direction from nearest town 5.25 miles county, themse 6.35 miles northeast Character of mark A reference mark diek Established by U. S. C.& G. Survey Detailed description 5.25 miles south along the Soars Landing Road from the realroad station at Hellyridge, thence 6.5 miles northeast along the Sand spit Road, on the sand spit between New Topsail Inlot and Now River Inlot, 0.05 miles northeast of milesout 13, set in the top of the concrete appear which surrounds U. S.Mary Tost Roage north of the south corner of the concrete appear.
Chief of party Clarence R. Reed Date Earch 1947 Described by C. K. Withrow Checked by U.S. Coast and Graduita Survey. Form 838 (Rev. 1960)	Chief of party Clarence R. Reed Date March 1947 Checked by C. K. Withrow Checked by U.S. Contrard Geodelic Survey—Form 638 (Rev. 1949) 14—14] 1 T. T. Million 1945 15—14] 1 T. T. Million 1945 Checked by	Chief of party Clarence R. Reed Date March 1947 C6 Described by C. K. Withrow Checked by U.S. Contrard Gratetic Survey-Ports cas (Bay, 194)	Chief of party Clarence R. Reed Date March 1947 60 Described by C. K. Withrow Checked by U.S. Castl and Greedate Survey—Form cas (Rev. 1969)
Designation TOWER FIVE State North Carolina County Pender Nearest town Hollyridge County County C	Designation BANKS RM State North Carolina County Onelow Nearest town Hollyridge County Onelow Distance and direction from nearest town 5,25 miles south, thence 3,1 miles northeast Character of mark A fererence mark disk Stamping BANKS 1933 Established by U. S. C. & G. Survey Detailed description 5,25 miles bouth along the Sears Landing Road from the railroad station at Hollyridge, thence 3,1 miles northeast along the Sand Smit Road, on the sand spit between Nor Topsail Inlet and New River Inlet, 0,3 mile scuthwart of U. S. Navy Test Rango Tower No. 6 and milebeat 10, at boint where the read cuts through a 30-foot tall northwest-southeast sand dune ridge, on the too of the dune ridge which is the tallest and mest prominent dune in the vicinity, 118,0 feet northwest of the centerline of the road and the center of the cut, 34,5 feet northwest of the triangulation station, 1,5 foot northwest of a white bainted reference bour in the top of concrete boured into an 8-inch tile which projects 1,0 foot above the ground.	DESCRIPTION OF BENCH MARK Designation PED RM 1 State North Carolina County Onslow Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 4.45 miles northeast Character of mark A reference mark disk Stamping PED NO 1 1933 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Soars Landing Road from the railroad station at Hollyridge, thence 4.45 miles northeast along the Sand Spit Road, on the cand spit between New Topsail Inlet and New River Inlet, about 0.1 mile southwest of point where the road makes an 8-foot cut through a northward-southeast ridge of sand dunes, 179.0 feet southeast of the centerline of the road measured from a point 75.0 feet northeast of milepost 11, along the sharp top of the main ridge of sand dunes, 37.6 foet southwest of the triangulation station, 1.8 foot northeast of a white painted reference post, set in the top of concrete poured into an 8-inch tile which projects 1.4 foot above the ground.	Designation TOWER SEVEN 1947 State North Carolina County Onglow Nearest town Hollyridge County Onglow Distance and direction from nearest town 5.25 miles south, thence 6.5 miles northeast Character of mark A triangulation station disk Stamping TOWER SEVEN 1947 Established by U. S. Coast & Geodetic Survey Detailed description 5.25 miles south along the Soars Landing Read from the railroad station at Hollyridge, thence 6.5 miles northeast along the Sand Spit Road, on the sand soit between New Topsail Inlot and Her River Inlet, 0.05 mile northeast of mileport 13, set in the top of the concrete deck an the top of U. S. Kavy Test Range Tower No. 7, 2.9 feet southwest of the northeast edge of the concrete deck, 2.9 feet southeast of the northwest edge of the deck.
Chief of party Clarence R. Reed Date March 1947 Described by C. K. Withrest Checked by U. B. Coattand George's Survey-Form Clos (Ref. 1949)	Chief of party Clarence R. Reed Described by C. K. Withrow Checked by U. B. Casal and Guedatic Survey—Form 325 (Ber. 1949	Chief of party Clarence R. Reed Date Karch 1947 57 Described by C. K. Withrow Checked by V.3. Coattand Goodstill Survey—Form GBS (Rev. 1949)	Chief of party Clarenco R. Reed Date March 1947 61 Described by C. K. Withmen Checked by U.S. Cessi and Guedells Surgey-Perm GDS (Err. 1969)
Designation HEGH Nearest town Hellyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 1.6miles northeast Character of mark A triangulation station disk Stamping HEGH 1933 1947 Established by U. S. C. & G. Survey Detailed description: 5.25 miles south along the Sears Landing Road from the railroad station at Hellyridge, thence 1.5 miles northeast along the Sand Soit Road, on the sand spit between New Topsail Indet and New Haver Indet, 0.3 mile southwest of point where the mark covered road rakes turn to west away from the sand dunes (rain ridge), approximately 500.0 feet southeast of a point on the main road which is about 0.1 mile northeast of road milepost No. 8, 164.8 feet southeast of the both communication lines pole southwest of the point where the line crosses the main ridge of dunes (measured from a point about 285.0 feet southwest of the northeast end of cut where (measured from a point about 285.0 feet southwest of the northeast end of cut where the road passes through the first northwest-southeast dune ridge southwest of curve in the main road, 1.5 feet southwest of a white natured reference post, set in the top of a cenerate post projecting 0.4 foot above the ground.	Designation BANKS Nearest town Hollyridge Distance and direction from nearest town 5.25 miles acoust, thence 3.1 miles northeast Character of mark A triangulation station disk Stamping BANKS 1933 1947 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.1 miles northeast along the Sand Solt Road, on the sand soit between New Tossail Inlet and New River Inlet, 0.3 mile southwest of U. S. Navy Test Range Tower No. 6 and milepost no. 10, on the peak of the top of the northwest-southeast ridge of sand dumes (this is the highest and most preclaiment dume seak in the vicinity, appraximately 300.0 feet southeast on only where the north-south dirt read and telephone line leading north across the mirch join the sand area and the northwest end of the northwest-southeast dume ridge, 83.5 foot northwest of the centerline of the mark covered road measured from a point at the center of 30-foot cut through the sand ridge, 1.5 foot southwest of a white spainted reference seat, in the tee of concrete poured into an 8-inch tile which projects 0.6 foot above the ground.	DESCRIPTION OF BENCH MARK Designation PZD 1933 State North Carolina County Cnslow Nearest town Hellyridge County Cnslow Distance and direction from nearest town 5.25 miles scath, thence 4.45 miles northeast Character of mark & triangulation station disk Stamping PZD 1933 Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Scars Landing Road from the railroad station at Hellyridge, behave 4.45 miles northeast along the Sand Spit Road, on the cand spit between New Topsail Inlet and New River Inlet, 180.0 feet southeast of the centerline of the road measured from a point 113.0 feet northeast of milepost 11, along the sharp top of the main sand dume ridge, 1.5 foot southwest of a white painted reference poot, set in concrete poured into an 8-inch tile which projects 1.5 foot above the ground.	Designation RANGE INO 1947 State North Carolina County Cholow Nearest town Hollyridge County Chalew Distance and direction from nearest town 5.25 miles couth, thence 6.8 miles northeast Character of mark A. traverse otation disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 6.8 miles northeast along the Sand Spit Road, on the cand spit between New Topsail Inlet and New River Inlet, 0.35 mile northeast of U. S. Navy Test Range Tower No. 7 and milepost No. 13, about 200.0 feet southwest of the beginning of the first curve in the road northeast of Tower 7, about 200.0 feet northwest of the main ridge of the dunes, 131.0 feet merthwest of the centerline of the road measured from a point at the mertheast end of road cut through an 8-foot high sand ridge, 75.5 feet west northwest of the first communication line vole northeast of the northeast end of long straight section of communication line poloc, 10.0 feet end of the south leg of frame range tower, 10.5 feet couth of the east leg of the tower, 2.0 feet southwest of a white painted reference post, set in the top of a concrete cost flush with the ground.
Chief of party Clarence R. Reed Date March 1947 So Described by C. K. Withrow Checked by U. S. Cautani Conduct Durcey—Form GIS (Ecr. 1947 10-4004	Chief of party Clarence R. Reed Described by C. K. Withrow Checked by U. S. Cost and Gescenic Survey-Form Cas (Dec. 1917) [5-4] [6-4] [1947] [1947] [1947] [1948]	Chief of party Clerenco R. Reed Date March 1947 Checked by C. K. Withrow Checked by U.S. Coast and Geodetic Survey-Porm C36 (Rev. 1940)	Chief of party Clarence R. Reed Date Earch 1947 (2 Described by C. K. Withrow Checked by
Description of Bench Mark Designation High RM Nearest town Hollyridge County Chalow Distance and direction from nearest town 5,25 miles south, thence 1.6 miles northeast Character of mark A reference mark disk Established by U. 3. C. & G. Survey Detailed description 5,25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 1.6 miles northeast along the Sand Spit Road, on the eard opit between New Topsail Inlet and New River Inlet, 0.3 mile southwest of a point where the marl covered road which has paralleled the main ridge of dumes from the northeast makes a turn to west away from the dume ridge and communication lines, approximately 500.0 feet southeast of a point on the main ridge of the dumes, 165.0 feet southeast of the line of the communication lines of the dumes, 165.0 feet southeast of the line of the communication line onles, 99.0 feet southeast of the centerline of sand road paralleling the dume ridge (measured from a point about 225.0 feet southwest of the northeast of out where the road passes through the first northwest-southeast dume ridge southwart of curve in the main road, 60.0 feet northeast of the tringulation station, 1,3 foot	Designation TOWER SIX RILL State North Carolina County Conflow Nearest town Hollyrides County Conflow Distance and direction from nearest town 5.25 miles south, thence 3.4 miles northeast Character of mark A reforence mark disk Stamping TOWER SIX RIL Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sears Landing Road from the railroad station at Hollyridge, thence 3.4 miles northeast along the Sand Srit Read, on the sound soit between Now Toppsail Inlet and Now River Inlet, 0.05 mile southmeat of milepout 10, at U. S. Navy Test Range Tower No. 6, set in the conditional form the countries of the concrete tener, 7.7 feet north of the south corner of the concrete tener, 7.7 feet north of the south corner of the concrete tener, 7.7 feet north of the south corner of the concrete	Description of Bench Mark Designation F 230 Rearest town Hollyridge County Onelow Distance and direction from nearest town 5,25 miles south, thence 5,5 miles northeart Character of mark A bonch mark disk Stamping F230 1947 Established by U.S.C. & G. Survey Detailed description 5,25 miles south along the Seare Landing Read-from the railroad station at Hollyridge, thence 5,5 miles northeast along the Sand Soit Read, on the sand soit between New Torsail Inlet and New River Inlet, 9.0 feet seat of milesont 12,1 at the feet of the main ridge of send dumes, across the read from and near the seuthwest end of a 200,0-feet long and 1-feet high fill on the northwest side of the read, 26,0 feet southeast of the conterine of the road, 46.0 feet northwest of the ton of the main sand dume ridge, 2,0 feet southwest of a white mainted reference most, set in the ton of a concrete most orejecting 1,2 feet above the ground.	Description of Bench Mark Designation G 230 Nearest town Hollyridge County Onslow Distance and direction from nearest town 5.25 miles south, thence 7.5 miles northeast Character of mark A bonch mark disk Established by U. S. C. & G. Survey Detailed description 5.25 miles south along the Sours Landing Read from the railroad station at Hollyridge, thence 7.5 miles northeast along the Sand Spit Read, on the sand spit between New Tepsail Inlet and New River Inlet, 27.7 feet eact of milesost 14, 80.5 foot southwast of the line of the communication plos measured from a roint 25.0 feet southwast of the 5th pole northeast of the southwast end of long straight spection of coles, on the top of low send ridge which runs from the read to the base of the main cand dune ridge, 38.0 feet southeast of the contraction of the read, 83.0 feet northwest of the top of the main ridge of the dunes, 1.5 foot southwest of a white nathed reference cost, set in the top of a concrete post projecting 1.2 foot above the ground.
southwest of a white painted reference post, set in the top of a concrete most flush with the ground.			

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TESCRIPTION OF BENCH MARK

State Herth Carolina County Onslow
Character of mark A bonch mark disk
Established by U. S. C. & G. Survey
Detailed description 5.25 miles south along the Sears Laming Road from the railroad station
at Hollyridge, themse 13.5 miles northeast along the Sand Suit Road, themse 0.55 mile
month along the sand on the southeast side of slough, about 0.15 mile northmost of the
month of the New River Inlet, about 500.0 feet southmest across soon sand area from
the 1947 southment bank of the Inlet channel (the sand area now covers old channel
location and blocks the mouth of old slough), about 400.0 feet north of the north
covered area (the bank in northmost bank of old slough) bowins surve to south and
southment at the extrems northmast corner of the tree and bush covered area which was
(now destroyed) which was located on the northmest side of the large trees (do not
confuse with the small wooded area which is located to the south and southment and
North of point where the 75-foot marsh strip from the larger wooded area, about 100.0 feet
feet southment of the morthment one of large live had the law law had, 12 feet west
left tools. I feet wortheast of the morthment of reference mar, in method areas before, 100
southment of the morthment one of large live had types, feet southment of
left southment of the morthment of reference mar, in method areas market of
left southment of the morthment of reference mar, in method areas before the most
left tools. nin en Clarebre i Beed Discussión Annersa

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	oth oral ∞			
A	of 1.75 miles course of the disk	-	of northern	
	to detto Hurvey		•	
Althoration (Medical States of State	with eline the Searcher lies with a northeast strend to could be and the course of the		coult, thempe (1) or (1) or file month even of the month	-

ESCRIPTION OF BETWEEN MEDIC The control of the co

TOTAL POID

2226

North Carolina Holly Ridge

Line Mark to Tower Three is 13.15 feet from the station in the direction of Tower e. The disk is a standard Reference Mark disk stamped THREE.

Line Mark to Tower Five is 13,30 Feet from the station in the opposite direction Tower Five. The disk is a standard Reference Mark disk stamped FIVE.

An elevation has been determined.

was made to triangulation station A traverse connection was made to triangulation TOWER FIVE and the distance was found to be 3070.9335 meters.

PENDER (Pender County, N.C., C.D.M., 1932)—About 30 miles by road northeast of Wilmington, on north side of highway right-of-way, and is reached by following route 17 direct to station site. Station is 15 meters (49 feet) south of south rail of Atlantic Coast line Railroad, 10 meters (33 feet) north of center line of route 17, and 13 meters (43 feet) west of interwection of sand road with highway. Surface and underground marks are standard disk station marks in concrete, notes la and 7a. Reference mark No. 1 is standard reference disk, on south end of cement bridge on highway, and approximately one-fourth mile from station in azimuth 200-30;45. Reference marks Nos. 2 and 3 are standard reference disks in concrete, note 11a. No. 2 is 4 meters (13 feet) west of the center line of sand road leading south, and 45.29 meters (145.6 feet) from station in azimuth 28409. No. 3 is 10 meters (33 feet) north of center line of route 17, approximately 15 meters (49 feet) south of south rail of railroad, and 45.67 meters (159.7 feet) from station in azimuth 39023. from station in azimuth 39°23'.

RECOVERY NOTE, TRIANGULATION STATION

1680 R

NAME OF STATION: PENDER YEAR: 1932 LOCALE

State: North Carolina County Pender County Original description is published in

RECOVERED BY: C. D. Meaney Year: 1932 Localey:
RECOVERED BY: R. A. Pollock, Year: 1940 Original description is
State Highway & Public Works Corn.
Decialed electrons as to the fitness of the original description.

On August 2, 1940, Mr. R. A. Pollock, Resident Engineer, Stat Highway and Public Works Comm., Jacksonville, N. C., was sent a new reference mark disk stamped "PENDER NO. 1 RESET 1940". A lester dated Nov. 2, 1940, from Mr. Pollock stemped "FREDER RG. I RESET 1990". A rester mark printer NO. 1 was not changed; so, all "THE location of the new reference mark PRINTER NO. 1 was not changed; so, all

previous data will remain the same."

738 / / / 3 DEPARTMENT OF COMMERCE B. C. COLLY AND GEOGRYD SURVEY FOREID, 536

RECOVERY NOTE, TRIANGULATION STATION

1917 R

NAME OF STATION: PENDER RETABLISHED BY: C.D. M. RECOVERED BY: H. C.A.

Pender But 193 4. 163 STATE: North Carolina County: YEAR: 1932 LOCALITY: Camp Davis YHAR: 1913

Detailed statement as to the Stoces of the original description: The original description is inadequate because of much recent construction which has caused the locality to become known as gamp Davis instead of Holly Ridge which is the name of the radiroad station and the old post office. The station is 2.1 miles southwast of the Holly Ridge (or Gamp Davis) ratiroad station, about 1/h mile southwast of the Pender-Onslow Gounty Line, 19 feat southmast of the southwast rail of the Atlentic Coast Line Penleroad, and 35 feet northwast of the center-southwast rail of the Atlentic Coast Line Penleroad, and 35 feet northwast of the center-southwast rail of the Atlentic Coast Line Penleroad, and 35 feet northwast of the center-line of U. S. Route 17. The surface and underground marks are described by notes la and line of U. S. Route 17. The surface and underground marks are described by notes la and line of U. S. Route 17. The surface and underground marks are described by notes la and Part Theorems mark loc. I was set in 1910 near but definitely not in the same location as Reference mark loc. I was set in 1910 near but definitely not in the same location as ending and the conterline of the culvert. It is a Coast Survey reference mark disk surface, and near the center-line of the culvert. It is a Coast Survey reference mark disk commented into the culvert floor which is cowered by about 10 inches of earth, and it is stamped PENDER NO. 1858T 1910. A U. S. Engineers azimuth mark disk in a concrete post stamped PENDER NO. 2 is 15 feet and set alongside the railroad about 0.2 mile northeast of the country line should not be confused with the Coast Survey mark.

Reference mark No. 2 is 15 feet southwast of the center-line of a sand road leading Southeast. It is 15.29 meters or 118.6 feet about east of the station and is stemped FENDER NO. 2 1932.

Reference mark No. 3 was destroyed by bishows to the station and is stemped FENDER NO. 2 1932.

southeast. It is 15.29 meters or 118.6 feet about east of the s FEIDER NO. 2 1932. Reference mark No. 3 was destroyed by highway construction.

M.C. applyin

ould sign his name at the end of the reco

RECOVERY NOTE, TRIANGULATION STATION

County: Pender

NAME OF STATION: PENDER C.D.M. C.R. Reed ESTABLISHED BY:

YEAR: 1932

STATE: North Carolina LOCALITY: Holly Ridge

pp Put. 192 p 163

Detailed statement as to the finces of the original description:

The station was recovered as described and all marks were found in good condition that were recovered by H.C.A. in 1943. A complete new description follows:

The station is located about 28 miles northeast of Wilmington and O2.2 miles southwest of the Holly Ridge Post Office along the northwest of O2.5 miles southeast of the centerline of the hirmay and 49 feet southeast of the southeast rail of the Atlantic Coast Line Railroad. The mark projects about 8 inches and the disk is FENDER 1932.

Reference mark WG 3 (Tenet 2010)

Reference mark No. 1 (reset 1940) is used as an Azimuth Mark. It is 0.3 mile northeast of the station on the southeast side of U.S. Highway 17 at the Onslow-Pender County-Line. The disk is in a drill hole in the flat too of a concrete culvert 20 feet southeast of the centerline of the Highway at the approximate centerline of the culvert. The disk is stamped PENDER NO 1 RESET 1940.

Reference mark No. 2 is 148.66 fest southeast of the station, 10% feet southeast of the centerline of U.S. Highway 17 and 15 feet south of the approximate centerline of a dirt side road. The mark projects about 8 inches and the disk is stamped PENDER NO 2 1932.

Objects V.G. Old Distance Direction New Distance Object 0 00 16 11 312 51 00.0 HETHEA 1932
Reference Mark No. 2
Reference Mark No. 1 reset 1940 0.3 miles
'Name of their of party should be inserted here. The effort was used in
'Name of their of party should be inserted here. The effort was used in
'Norm-One of those forms used to used it meters

DEPARTMENT OF CO. RECOVERY NOTE, TRIANGULATION STATION

STATE: North Carolina County: Pender NAME OF STATION: APAINTON

YEAR: 1914 LOCALITY: Holly Ridge YEAR: 1947 ESTABLISHED ST: R.I.S.
RECOVERED ST: C.R. Reed

Detailed statement as to the fitness of the original description: See p. 13

The station was recovered as described and all marks were found in good condition with the exception of R.M. No. 1 which could not be found and R.M. No. 3 which had been run over by a tractor and moved slightly. A complete new describtion follows:

The station is located about 25 miles northeast of Wilmington and 8 miles south of

run over by a tractor and moved slichtly. A complete new describtion follows:

The station is located about 25 miles northeast of Wilmington and 8 miles south of
Holly Ridge on the west edge of The Inland Waterway about 10 feet west of high water.

The mark projects about 10 inches and the disk is stamped ATKINSON 1914 1925, note la 7a.

Reference Mark No. 2 is 88.19 feet southwest of the station and about 40 feet west
of high water. The mark projects about 10 inches and the disk is stamped ATKINSON NO 2.1932.

Reference Mark No. 3 was used as an Azimuth Mark. IX. a approximately 0.2 mile west
of the station and 15 feet south of a track road. The mark projects about 8 inches and
the disk is stamped ATKINSON NO 3 1932. note lla

Reference Mark No. 4 is 97.67 feet northwest of the station and 10 feet south of the
track road leading to the station. The mark projects about 8 inches and the disk is
stamped ATKINSON NO 4 1932. note lla.

To reach the station from the Post Office in Holly Ridge, no southwest on U.S. Highway
17 for 06.4 miles, turn left on a main travelled dirt road for 01.85 miles, take right fork
for 0.2 miles, turn right on track road for 0.7 miles and turn left along edge of field
just before coming to white house on the right. Go along edge of field for 0.45 mile to
the Azimuth Mark (R.M. No. 3) on the right abearing left, them right thru woods to the beach and the station as described.

Objects V.G:

Object	old distance	new distance	Directio	on
HAMPSTEAD 2	feet	feet meters	0 00	0.0
Reference Mark No. 2	88.15	88.19 26.880	19 11	51
Reference Mark No. 3	Approximately 0.2	mile	65 39	15.5
Reference Mark No. 4	98.57	97.67 29.770	99 45	00
TOWER THREE			218 07	17.6
TOWER TWO			282 22	57.4
TOWER ONE			312 25	43.4 -

U7 40. 1 W SEPARTMENT OF COMMERCE U. S. COAST AND GEOCHTIC SURVEY FORM 536 RECOVERY NOTE, TRIANGULATION STATION

2198 R

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:152

4 Put. 192 p 120

b. P. p.132

Countr: Pender NAME OF STATION: BUMBLE STATE: North Carolina GA 70059 % YEAR: 1914 LOCALITY: Holly Ridge YEAR: 1947 1.0.7.118 C.R. Reed RECOVERED BY: Detailed statement as to the fitness of the original description: See p. 12
The station was recovered as described and the

The station mark was found to be in good condition. The deference Mark was as described and the station mark was found to be in good condition. The deference Mark was asearched for but not recovered. It has probably been destroyed due to the erosion of the beath. A complete description follows:

new description follows:

The station is on the inland side of the banks, opposite Virginia Creek, on the marsh at the curve of the channel from sloop point to the banks. The station is on the beach and is under water at extreme high tide. The mark is a standard unstamped bronze disk in the end of a 4" tile which projects about 12" above the surface of the ground.

To reach the station from the bridge at Sears Landing, go across bridge towards the beach for 0.5 mile, turn right and go 03.2 miles to E.T.T. (end of truck travel). Go northwest through the scrub trees and brush for about \(\frac{1}{2}\) mile to the beach and the station as

Go northdescribed.

Objects V.G. ATKINSON 1914 1932 0 00 00 TOWER THREE TOWER TWO 303 12 45.0 321 09 19.8

card 1 of 2 DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY FORM 595 £60, Oct., 1952 DESCRIPTION OF TRIANGULATION STATION COUNTY:

TOWER THREE STATE: North Carolina YEAR: 1947 LOCALITY: Pender NAME OF STATION: Holly Ridge C.R. Reed DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PR Underground-station mark, Note,* 80 00 51 54 60 14 58.0 12.1 57 40.3 ZERO TO ER TWO TOWER FOUR Reference mark, Azimuth mark. Reference Mark No. 1 7.334 BUMBLE 1914

Witness mark, Note,* Note,* Height of light above station mark 3 meters. BUNBLE 1914

Height of lescope above station mark 3 meters. BUNBLE 1914

Detailed description: The station is located about 4 miles northeast of the southwest end of Topsail Island, 29 miles northeast of Wilmin-ton and 7 miles south of Holly Ridge. The disk is in a drill hole in the roof of a white concrete observing tower which is about 40 feet tall. It is 4.0 feet southwest of the north corner, 2.8 feet southeast of the northwest side and 2.9 feet southwest of the northeast side of the tower. The disk is stamped TOWAR PERSE 1947. TOWER THREE 1947.

TOWER THREE 1947.

Reference Mark No. 1 is 21.52 feet south of the station and 1 foot south of the south corner of the tower in a drill hole in the concrete arron around the foot of the tower. The disk is stamped TOWER THREE RM NO 1 19/7.

To reach the station from the Holly Ridge Post Office, so 0.1 mile southwest on U.S. Hirhway 17 to a sidercal left, 60 left for 4.85 miles to Sears Landing. Continue straight ahead across bridge for 0.5 mile to a T-road. Turn right and go 3.65 mile to a white concrete tower, and the station as described on the left state he.

Hammark to Tower Two is 13,20 feet from the station in the direction of Tower Two. The disk is a standard Reference Mark disk stamped TWO. Line Mark to Tower Four is 13,30 feet from the station in the opposite direction from Tower Four. The disk is a standard Reference Mark disk stamped FOUR.

An elevation has been determined.

HTG P.13 DEPARTMENT OF CO U. B. COAST AND GEODET FORZI 536 MERCE RECOVERY NOTE, TRIANGULATION STATION 2197 Countr: Pender STATE: North Carolina NAME OF STATION: BLAKE

YEAR: 1914 YEAR: 1947 ESTABLISHED BY: R.P.S.
RECOVERED BY:* C.R. Reed

LOCALITY: Holly Ridge 6A 70059 =

Detailed statement as to the fitness of the original description: See p. 13

The station was recovered as described. The mark was found in bad condition and will not last maich longer due to erosion of the beach. A complete new description follows:
The station is located on the inshore side of Toosail Island about 2½ miles northeast of Toosail Inlet. It is about 1 foot from the bank at high tide and projects about 18 inches. The disk is in the end of a ½" tile and is unstamped. A traverse connection was made to TOWER TWO R.M. No. 1 and the distance was found to be92.123 meters.
To reach from Holly Ridge, go southwest on U.S. Highway 17 for 0.1 mile, turn left and go ½.85 miles to Sears Landing. Continue straight shead across bridge for 0.5 mile to T-road, turn right and go 5.0 mile to side road, turn right and go 0.1 mile to a white concrete observing tower about 40 feet tall. The station is about 100 yards west of this tower at the water's edge.

Object

Direction 0 00 00.0 111 48 45.2 Object Distance meters 90.326 92.123 ATKINSON 1914-1932 115 43 15.8 -TOWER TWO, R.M. No. 1 . .

Traverse connection made to TOWER TWO, distance found to be 90.326 maters.

C.R. Reed

STATE: North Carolina County:Onslow LOCALITY: Holly Ridge YEAR: 1932

Sp. Part. 192 p. 163 S.P. p.41

ent as to the fitness of the original description: See p. 11
The station was recovered as described and all marks were found to be in good condition. An accurate measurment could not be made to the marks due to various fences and outbuildings which were on line. A complete new descrip-

marks due to various fences and outbuildings which were on line. A complete new description follows:

The station is located 2 3/4 miles east of Holly Ridge on Land owned by R.H. Bethea. It is about 200 feet southwest of the farmhouse, 30 feet west of a 36" Live Oak tree and 25 feet north of a track road leading to the farm. The mark projects about 6" and the disk is stamped BETHEA 1932, notes la 7a

Reference Mark No. 1 is 170.3 feet northeast of the station, 50 feet northwest of the northwest corner of the house and 40 feet northwest of a 12" Magnolia tree. The disk is stamped BETHEA NO 1 1932, notes lla

Reference Mark No. 2 is 150.2 feet northwest of the station, 1 foot southwest of a tall, chicken wire fence and 25 feet northwest of the track road leading to the farm. The

YEAR: 1947

tall, chicken wire fence and 25 feet northeast of the track road leading to the farm. The mark projects about 6" and the disk is stamped BETHEA NO 2 1932, note 11a Reference Mark No. 3 (Azimuth Mark) is 0.2 mile northwest of the station and 15 feet west of the approximate centerline of a main travelled dirt road where the farm road enters it diagonally. The mark prejects about 6 inches and the disk is stamped RETHEA NO 3 1932. To reach the station form the Post Office at Holly Ridge, so northeast on U.S. Highway 17 for about one block to first street right. Turn right and so easterly for 1.6 miles to a fork. Take right fork and go 1.2 miles to the Azimuth Mark (cont on card 2 of 2)

me of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note

Norg.—One of these forms must be used for every station recovered.

(continued from card 1 of 2) on the right as described. Go left diagonally for U.2 mile and the station on the left just before coming to the farm buildings.

Objects V.C.

DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY FORTH 828 Rev. Oct., 1932

NAME OF STATION:

STABLISHED BY:

	Object				Distance	Di	rect	ion
TÓ	R SIX				meters	0	00	00.0
	Reference	Sark	No.	2	1,2.773			52 -
	Reference							09.8
	Reference					256	45	46 -

DEPARTMENT OF COLU. S. COAST AND GEODETH FORM 526 RECOVERY NOTE, TRIANGULATION STATION

2207 R STATE: North Carolina County: Locality: Holly Ridge NAME OF STATION: PED YEAR: 1933 ESTABLISHED BY: J.A.B. C.R. Reed Den. card 1469 YEAR: 1947 SP. p. 519

Detailed statement as to the fitness of the original description. See p. 11
The station was recovered as described and all
marks were found to be in good condition except Reference Mark No. 2 which is believed to have been destroyed when the road which runs the length of the island was constructed. A complete new description follows:

The station is located near the middle of Topsail Island along the seaward side on

The station is located near the middle of Torsail Island along the seaward side on the high ridge of dunes. It is about 35 yards from the road and 35 yards from the ocean. The mark is an 8" tile projecting about 8" and the disk is stamped PED 1933.

Reference Mark No. 1 is 37.63 feet (11.470 meters) northeast of the station. The mark is an 8" tile projecting about 8" and the disk is stamped PED NO 1 1933.

To reach the station from the bridge at Sears Landing, go southeast toward the ocean for 0.5 mile, turn left and go 4.5 miles to the station on the right on the ridge of dunes as described. as described.

An elevation has been determined.

TOWER STX

BANKS

J.A.B.

C.R. Reed

NAME OF STATION:

DESCRIPTION OF TRIANGULATION STATION

- PK 2229 STATE: North Carolina County: Onslow Holly Ridge

CHIEF OF PARTY: Surface-station mark, C.R. Reed Note,* YEAR: 1947 LOCALITY: Holly Ridg
DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PR
CAN BE SEEN FROM THE GROUND NENT OBJECTS WHICH Inderground-station mark. Note.* Note,* бo ZERO °o do leference mark, Note, meters Note.* TOWER FIVE 03 28 28.0 Note,* Ident of light above station mark 1 meters. leight of light above station mark 1 meters. Reference Mark No. 1 6.568 318 43 07 leading to felescope above station mark 1 meters. Banks 1933 1470.947 08 06 02.44 letailed description: The station is located at the approximate midpoint of Topsail Island. The tisk is in the roof of a concrete observation tower, 4.1 feet south of the north corner, 2.8 feet southwest of the northeast side and 2.9 feet southeast of the northwest side of the tower. The disk is stamped TOWER SIX 1947.

Reference Mark No. 1 is 21.55 feet south of the station and 1 foot south of the south corner of the tower. The disk is stamped TOWER SIX RM NO 1 1947.

Line mark five is 13.22 feet from the station in the direction of TOWER FIVE. The itsk is a standard reference mark disk stamped FIVE in the opposite direction from TOWER EVEN. TOWER SEVEN 186 40 35.8 318 43 07

BEVEN. The disk is a standard reference mark disk stamped SEVEN.

To reach the station from the bridge at Sears Landing, go southeast toward the ocean

for 0.5 mile, turn left and go 3.5 miles to a concrete observation tower and the station

Marked by

A Despite 1 on nas been determined. Marked by

A Despite 1 on nas been determined. Marked by

*Refers to pages 100 and 100, Special Publication No. 120, or to pages

Norz.—The initial direction must be to main scheme station.

To assent motor only, when no trigocontric leveling is being done.

31 telta! DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY FORM 596 RECOVERY NOTE, TRIANGULATION STATION

YEAR: 1947

ok 2194 R STATE: North Carolina Pender YEAR: 1933 LOCALITY: Holly Ridge Dan. card 1459 b. P. p. 579

See p.13,17,18

Detailed statement as to the finess of the original description. The station was recovered as described and all marks were found to be in good condition. A complete new description follows:

The station is located about 10 miles south of New River Inlet and 3 miles northeast of Sears Landing on Topsail Island. It is on a very high sand dune just at the curve of the main road which runs the length of the Island. The disk is in a 6" tile which projects about 8" and is stamed BANKS 1933.1947.

Reference Mark No. 1 is 34.57 feet northwest of the station. The disk is in the top of a 6" tile which projects shout 8" and is stammed BANKS 1933.

To reach the station from the bridge at Sears Landing, go southeast toward the ocean for 0.5 mile, turn left and so 3.2 miles to a curve in the road around a high sand dune and the station as described.

Direction Objects V.G. Distance 0 00 00 TOWER SIX 17 30.5 47 00.9 10.537 meters Reference Mark No. 1 PED 1933

An elevation has been determined.

A traverse connection made to TOWER SIX, distance found to be

471.242 meters.

* Name of chief of party should be inserted hers. The officer who actually visited the stat.

Norm.—One of these forms must be used for every statio.

Bogue Inlet to Wrightsville Inlet, North Carolina

CONTROL OF COMMEN U. S. COAST AND GEODETIC BURY FORD. 526 2204° R RECOVERY NOTE, TRIANGULATION STATION NAME OF STATION:

HIGH STATE: North Carolina COUNTY: Pender

J.A.B. Year: 1933 Locality: Holly Ridge

C.R. Reed Year: 1947 See 12-11

be fitness of the original description: The Station was recovered as described and the ESTABLISHED BY RECOVERED BY:

Detailed statement as to the fitness of the original description:

The Station was recovered as described and the "eference Mark was found to be in good condition. The station mark was loose and was replaced by a standard disk station mark, notes la-7a, A complete new description follows:

The station is located alone the ridge of dunes on the seaward sideoff Tepseal Island about 2 miles east of Sears Landing. It is 100 feet north of high tide and 100 feet south of a telephone and power line. The mark projects about 6" and the disk is stamped HIGH

1933 1947 The Reference Mark is 60,26 feet northeast of the station on the ridge of dunes. The

The Reference MARK is 00,20 feet northeast of the station on the ridge of quies. The mark is flush and the disk is stamped HOH 1933.

To reach from the bridge at Sears Landing, go east toward the beach for 0.5 mile, turn left at T-road and go 0.8 mile to point where main road bears left. Continue stasight ahead following telephone and power line next to the dunes for 0.8 mile and the station on the right as described.

Direction 0 00 00.0 177 47 59.5 181 21 28 Objects V.G. Distance TOWER FIVE 1908.119 **BANKS 1933** Reference Mark 18.367 -

A traverse connection was made to TOWER FIVE, the distance found to be 1908.119 meters An elevation has been determined. 0 B. of . [.]

JOH. DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY FORD 526 Rev. Oct. 1932 DESCRIPTION OF TRIANGULATION STATION 2227 NAME OF STATION: TOWER FIVE STATE: North Carolina C.R. Reed Surface-station mark, COUNTY Pender YEAR: 1947 LOCALITY: Holly Ridge
DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PROCESS OF THE OFFICE AND PROCESS OF THE Underground-station mark, Reference mark, Note.* Note,* ZERO TOWER FOUR TOWER SIX meters 00 49 02 03 185 00 30.9 17.2 Azimuth mark,

Administrative full mark, Note, Note

across bridge for U. > mile to 1 - roug. furn lest and go U.s. mile to stated, and go U.s. mile to white concrete tower and the station as described.

Line mark four is 13.42 feet from the station in the direction of TOWER FOUR. The disk is a standard reference mark disk stamped FOUR.

Line mark six is 13.17 feet from the station in the opposite direction from TOWER SIX. The disk is a standard reference mark disk stamped SIX.

A traverse connection was made to Triangulation station HIGH 1914 1947 and the distance was found to be 1908.119 meters.

A traverse connection was made to CENTRAL , the distance found to be 599.770 meters. An elevation has been determined.

A traverse connection was made to triangulation station TOWER FOUR and the distance was found to be 3070.9335 meters.

DESCRIPTION OF TRIANGULATION STATION 2211 NAME OF STATION: STATE North Carolina CENTRAL. COUNTY: Pender YEAR: 10/7 LOCALITY: HOlly Ridge
DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PROMINENT OBJECTS WHI
CAN BE SEEN PROM THE GROUND CHIFF OF PARTY C.R. Reed Surface-station mark, Underground-station mark. Note.* Reference mark. Note,* Reference mark. Note.* Azimuth mark, Note.* Note, This is a traverse station Height of light above station mark meters. Height of telescope above station mark
Detailed description: The station meters, t

Detailed description: The station is located near the middle of Topsail Island on the seaward side of a wooden range tower. It is 95 feet east of a T-road intersection, 12 feet east of the south leg of the range tower and 12 feet south of the east leg of the range tower the mark is flush with the ground and the disk is stamped C-NNTAL 1947.

The mark is flush with the ground and the disk is stamped CENTRAL 1947.

A traverse connection was made to Triangulation station TOWER FIVE and the distance was found to be 599.770 meters.

To reach the station from Sears Landing, go 0.5 mile southeast toward the ocean to a T-road intersection and the wooden range tower just across the road and the station as described. An elevation has been determined.

card 1 of 2 2225 DEPARTMENT OF COMMERCE U. 8. COAST AND GEODETIC SURVEY FORM 525 Boy. Oct., 1932 DESCRIPTION OF TRIANGULATION STATION NAME OF STATION: TOWER FOUR STATE: North Carolina YEAR: 1947 LOCALITY: C.R. Reed Holly Ridge CHIEF OF PARTY: DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PROCESS OF THE GROUND Surface-station mark. Underground-station mark, Note,* Reference mark, Note.* DISTANCE Reference mark ZERO TOWER THREE TOWER FIVE 00 41 21 neters 11. Witness mark 185 Reference Mark No. 1 7,303 Height of light above station leight of light above station mark 3 meters, leight of telescope above station mark 3 meters.† 16 12

Meight of telescope above station mark y meteral!

Detailed description: The station is located about 5½ miles northeast of the southwest end of Topsail Island, about 30 miles northeast of Wilmington and 5½ miles couth of Holly Ridge. The disk is in a drill bole in the roof of a white concrete observing tower about 40 feet tall. It is 1,2 feet south of the north corner, 2.8 feet coutheast of the northwest side, and 3.2 feet southwest of the northeast side of the tower. The disk is stamped TOWER FOUR

Reference Mark No. 1 is 21.43 feet south of the station and 1 foot south of the south

Reference Mark No. 1 is 21.63 reet south of the station and 1 foot south of the south corner of the tower in a drill hole in the concrete arron around the foot of the tower. To reach the station from the Holly Ridge Post Office, so southwest on U.S. Righway 17 for C.1 mile, turn left between two brick pillars for A.85 miles to Bears Landing. Continue straight ahead across bridge for C.5 mile to T-road. Turn right and ol.6 miles to a white expenses, tower on the left and the station as described. (cont on card 2)

(Tower Four continued on page 22)

FILE No. 240 Gen FIELD PARTY WEATHER Turling In Charge of new River From Waterway at Milo Snow Clear -VALUABLE Cloudy Hot Moderate Coop & Tinstrument Fldr. No. Cold / Notes Rain Fair Ketch Tape Read Return To Fog Figured By____ Sheet / Public Works Padael Tape or Rod Office Notes Checked By____ Date 7-8 19 48 Row Exape or Rod Camp Lejeune North Carolina strument No.__ Quad. No ._ Tape No ._ Angle " H. I. Bearing Ver: Ang. Station Dist. Elevation Albert Diff. Alton PI 1B Adonis "Albert" Andrew 53 32 30 6 Arthur (3) 160 37 45 533233 45 07 00" August Aaron Aprille 81 2045 (3) 244 0215 Adem V 10 81 2045 Ainsworth 20 Allen 3 C 8120:35 Austin Angus L 752.57 Albie PI # 2 Ambrose 45 07 15 1352130 Anthony c 450710 Alexis Alonso Ashley Aubrey Adolph Adrian

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FIELD PARTY WEATHER VALUABLE SUBJECT FILE No.____ Clear Snow In Charge Cloudy Hot Moderate Instrument Windy Fldr. No .__ Rain Cold Notes Return To Fair Fog _Tape Read Public Works Figured By____ Office _Tape or Rod Notes Checked By____ Camp Lejeune ___Tape or Rod Plotted By____ Date_ North Carolina trument No .__ Quad. No. Tape No._ angle " H.I. Bearing Ver: Ang. Diff. Station Elevation 4 18 to 28 5/ 12 51-20 153 36 57 05 180-00 25 Andrew" 1B < 2 to 2B Adonis 98 51 15 296.34 985120 M. Ton 28 6 2 to 18 29 57 89 51 15 41-00-20 M 29 57 05 37-26-20 2 3B to 20 40 410515 12316 "Axel" 41 0520 M 10n 2B L18+03B 372615 V 11219 37 26 20 1B+02B PII P1 2 101 28 45 304 2600 101 28 40

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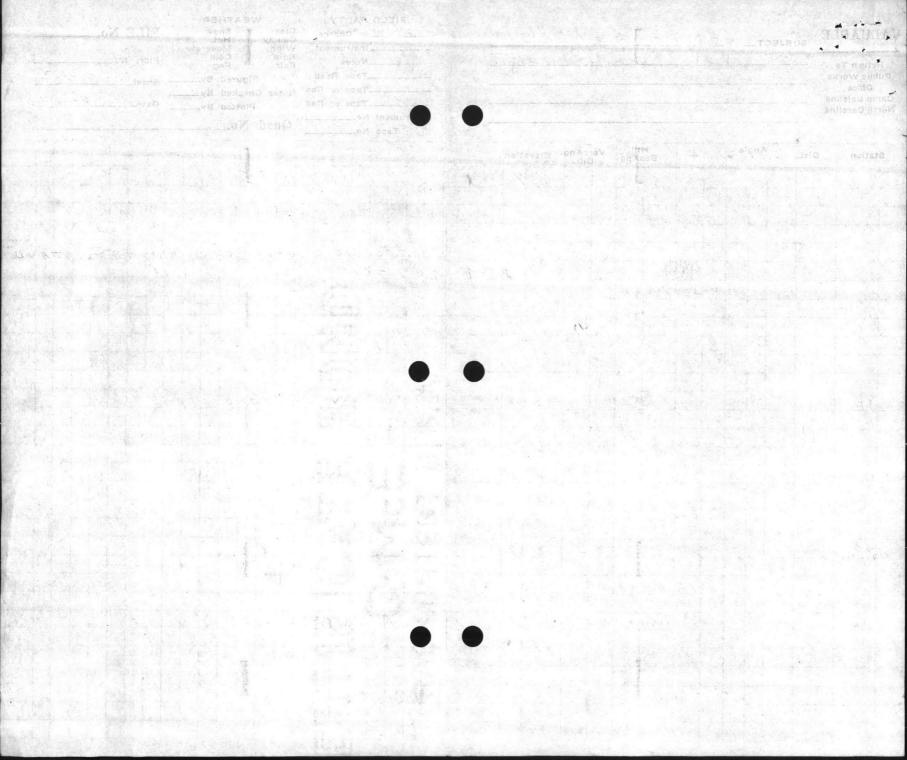
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RETURN TO PUBLIC WORK OFFICE CAMP LEJEUN	ks —	Ele	rations	of Water	n Level			NOTESTAPE READTAPE OR RODTAPE OR ROD	NOTES C	FOG IGURED BY	SHEET #	#/of 	
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1 FIELD PARTY WEATHER FILE No. CLEAR SNOW IN CHARGE CLOUDY Нот VALUABLE SUBJECT_ INSTRUMENT WINDY MODERATE FLDR. No ._ COLD RAIN NOTES FAIR Fog RETURN TO TAPE READ FIGURED BY_ PUBLIC WORKS TAPE OR ROD NOTES CHECKED BY OFFICE TAPE OR ROD DATE PLOTTED BY_ CAMP LEJEUNE TRUMENT NO. NORTH CAROLINA Quad. No.... TAPE NO ._ H. I. VER: ANG. ANGLE STATION DIST. ELEVATION + , " BEARING DIFF. Match Line 1 Bay New River 1345 +0.40 +0.35 +0,24 +0.55 1400 +0.36 +0.23 1415 +0.75 +0.37 40.22 14.38 to.21 1430 +0.90 +0.42 1445 +0.49 +0,213 +1,05 1500 +1,10 +0.52 +0.25 15/5 +1.25 + 9.59 +0.31 1530 +1.40 +0.62 +0.34 1545 +1.45 +0,65 1600 +1,60 1615 +1,70 1630 +1.85 1645 +1.95 1700 H. +2.00 1715 +1.95 +1.80 1745 +1,70 1800 +1.60 1815 1830 1845 1900 1915 1930 1945 2000 2015 2030

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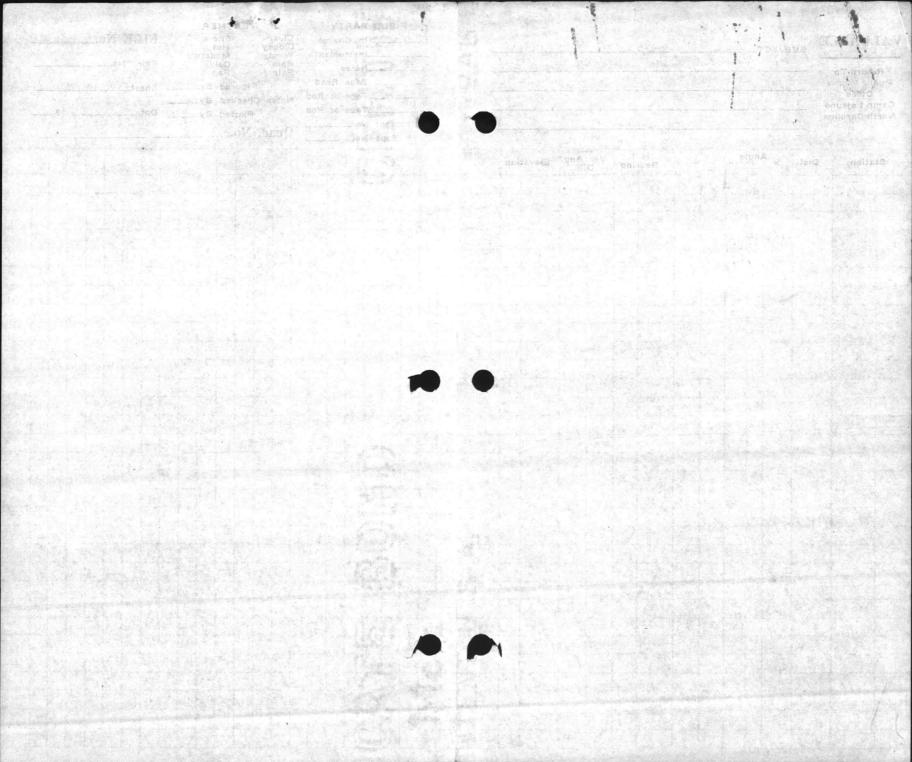
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PUBLIC WORKS DEPARTMENT Camp Lejeune, North Carolina Survey Department

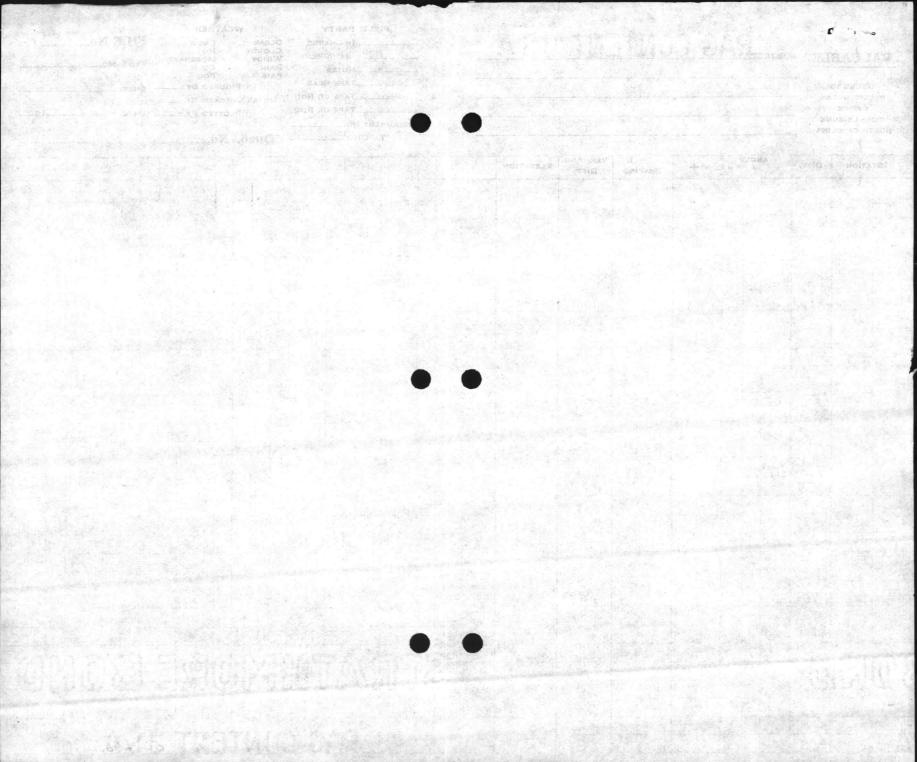
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FIELD PARTY WEATHER ----FILE No. 246-60N IN CHARGE CLEAR SNOW SUBJECT Stadia CLOUDY HOT VALUABLE INSTRUMENT WINDY MODERATE FLDR. No .. RAIN COLD NOTES FAIR FOG TAPE READ SHEET # RETURN TO East Side of New River Inlet FIGURED BY_ Surick TAPE OR ROD PUBLIC WORKS NOTES CHECKED BY_ DATE 6 / 20 1955 OFFICE TAPE OR ROD PLOTTED BY_ CAMP LEJEUNE STRUMENT NO. NORTH CAROLINA Quad. No. TAPE NO .. ANGLE H. I. VER: ANG. STATION DIST. ELEVATION BEARING DIFF. Triangulation Sta. for Soundings on East Side of New River 1st. 107° 17 45" Clockwise 402 T. B. M. Sight on Tri. Sta. 4.31 100 of HUD. 9.55 89'26' 183 2700 - 100 0.0 E/e/i 6.4 31 Johnso Hyla 380 5.0 4.5 412 2.8 1170 25 1, 2 8,3 515 465 4.6 4.9 11 410 3.0 385 4.4 345 11 2.1 305 11 3.8 11 5.3 280 170 16 3.4 139 45 200' 6.0 35 5.0 4.5 270 320 3.6 5.9 370 29 11 385 11 3.9 415 11 28 6.7 Bottom of 8 ft. Dune A" 50 Dia. 2 16



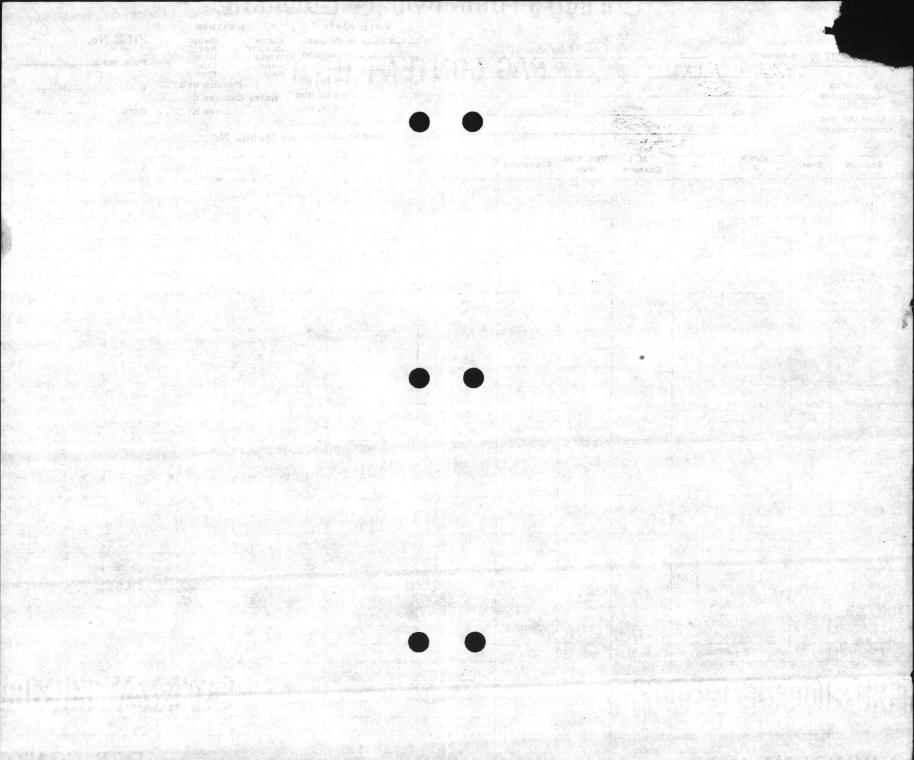
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FIELD PARTY WEATHER -4. > FILE No ... IN CHARGE CLEAR SNOW CLOUDY Нот INSTRUMENT SUBJECT_ VALUABLE WINDY MODERATE FLDR. No .. RAIN COLD NOTES FAIR Fog #3 TAPE READ FIGURED BY_ RETURN TO SHEET_ TAPE OR ROD PUBLIC WORKS NOTES CHECKED BY_ OFFICE TAPE OR ROD PLOTTED BY_ _ DATE CAMP LEJEUNE STRUMENT NO._ NORTH CAROLINA TAPE NO ._ Quad. No. ANGLE H. I. VER: ANG. STATION DIST. ELEVATION DIFF. BEARING 10.0 901 2.7 7.3 Edge of 6 ft. Done some Dune "C 120 1801 Dones washed away 225 275 325 485' 157051 3.0 7.0 380 250 6.5 5.6 315' 440 5.1

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PUBLIC WORKS DEPARTMENT Camp Lejeune, North Carolina Survey Department

Traverse Computation Description

File 260-C
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NORTH CAROLINA SHORE LINE, BEACH EROSION STUDY

LETTER

FROM

THE SECRETARY OF THE ARMY

TRANSMITTING

A LETTER FROM THE CHIEF OF ENGINEERS, UNITED STATES ARMY, DATED DECEMBER 5, 1947, SUBMITTING A REPORT, TOGETHER WITH ACCOMPANYING PAPERS AND ILLUSTRATIONS ON A COOPERATIVE BEACH EROSION STUDY OF CERTAIN PORTIONS OF THE SHORE LINE OF NORTH CAROLINA, MADE UNDER THE PROVISIONS OF SECTION 2 OF THE RIVER AND HARBOR ACT APPROVED JULY 3, 1930, AS AMENDED AND SUPPLEMENTED

(Pursuant to Public Law 296, 80th Cong.)

DECEMBER 22, 1948.—Referred to the Committee on Public Works and ordered to be printed, with 13 illustrations

DEPARTMENT OF THE ARMY, Washington, D. C., December 9, 1948.

The Speaker of the House of Representatives.

Dear Mr. Speaker: I am transmitting herewith a report dated December 5, 1947, from the Chief of Engineers, United States Army, together with accompanying papers and illustrations, on a cooperative beach-erosion study of certain portions of the shore line of North Carolina, made under the provisions of section 2 of the River and Harbor Act approved on July 3, 1930, as amended and supplemented.

The Bureau of the Budget advises that there is no objection to the submission of the report to Congress.

Sincerely yours,

Kenneth C. Royall, Secretary of the Army.

83193 0-49-1

DEPARTMENT OF THE ARMY, OFFICE OF THE CHIEF OF ENGINEERS, Washington, D. C., December 5, 1947.

Subject: Beach-erosion study, shore line of North Carolina. To: The Secretary of the Army.

1. I submit for transmission to Congress my report with accompanying illustrations, on a beach-erosion study of certain portions of the shore line of North Carolina, made by the Beach Erosion Board in cooperation with the State of North Carolina, under the provisions of section 2 of the River and Harbor Act approved July 3, 1930, as amended and supplemented.

2. The investigation covered the shore line of the State with partic-

ular reference to four detached portions as follows:

(a) From Paul Gamiels Hill Coast Guard Station, about 4 miles northerly of Kitty Hawk Beach downcoast to New Inlet, about 34 miles;
(b) Atlantic Beach for about 4 miles west from Fort Macon Point at the west

side of Beaufort Inlet:

(c) Wrightsville Beach, including Moore and Masonboro Inlets, about 3 miles;

(d) Carolina Beach and the beach in front of Fort Fisher, about 7 miles.

Except for the shore from Carolina Beach to Fort Fisher, which lies on the mainland peninsula separating Cape Fear River from Atlantic Ocean, all the areas studied lie on relatively narrow barrier beaches. These barriers are separated from the mainland by tidal sounds interconnected by a navigation channel maintained as an integral part of the federally improved Intracoastal Waterway.

3. The purpose of the Board's study was to obtain data which would contribute to the advancement of the technical knowledge of the processes of North Carolina beach and inlet changes, be useful in planning for the proper development of the beaches as recreational areas and serve as a guide for further cooperative studies. The Board has reviewed the geological history of the area and has studied the tides, currents, winds and wave action, changes in hydrographic detail, movement of beach material and effect of storms on the shore. These tech-

nical data are summarized in its report.

4. The Board concludes that (a) the data obtained, although inadequate for the formulation of definite conclusions concerning the technical phases of shore processes, will be of value in connection with laboratory and field studies now being undertaken by the Board for the further development of the science of shore protection; (b) the ocean shore line of North Carolina is, in general, retreating slowly and will continue to retreat; (c) protection of the entire length of the study area is unwarranted at this time; (d) existing dunes afford valuable protection and should be preserved: (e) threatened structures or low portions of the barrier can be protected by dunes constructed artificially or formed by sand fences or planting; (f) histories of accretion and erosion of the shore line should be considered in planning future development; (q) stabilization of inlets is generally impracticable, but partial control of inlet changes may be effected by dune building to prevent breaching or by excavation to facilitate breaching by natural forces where desired.

5. The Board further concludes that the justification of protective measures for Fort Macon Point may be the subject of further study if desired by the State, that at Wrightsville Beach existing protective measures should be maintained, that the north shore of Masonboro

Inlet should be stabilized by revetment, and that closure of Moore Inlet would be beneficial to Wrightsville Beach. Copy of the Board's

report has been furnished the cooperating agency.

6. The Board also states that, as the application by the State of North Carolina for this study was made prior to enactment of legislation requiring a statement of the Board's opinion as to the public interest involved in any improvement, no item was included for study of estimated costs and benefits on which to base an evaluation of such interest. The State, informed of the additional work necessary to evaluate the public interest, indicated it desired no additional work under the study for this purpose and agreed to the scope of the report herewith. The Board therefore is unable at this time to state its opinion as to the extent of public interest, the advisability of adopting a Federal project for participation in the first cost of protective works, or what share, if any, of the expense of such works should be borne by the United States. It is the opinion of the Board that under existing law no Federal interest is involved in any of the improvements considered. If additional cooperative studies of localities on the North Carolina coast are arranged, they will include when requested by the cooperating agency the determination of possible Federal aid under the provisions of Public Law 727, Seventy-ninth Congress, approved August 13, 1946.

7. Public Law 727. Seventy-ninth Congress, declared it to be the policy of the Federal Government to assist in the construction, but not the maintenance, of works for the improvement and protection against erosion by waves and currents of the shores of the United States that are owned by States, municipalities, or other political subdivisions. The Federal contribution toward the construction of protective works for such publicly owned shores is limited by that law to not more than one-third of the first cost. Federal participation in the construction of works for protecting privately owned shores is not authorized by the

afore-mentioned act.

8. After due consideration of the report, I concur in the views and conclusions of the Board. Because of the general value of this report, I recommend that it be published with illustrations.

> R. A. WHEELER, Lieutenant General, Chief of Engineers.

REPORT OF THE BEACH EROSION BOARD

SYLLABUS

This report covers study of the coast of North Carolina with particular reference to four detached areas. The objectives of the investigation were (a) to obtain data which would contribute to the advancement of the technical knowledge of the processes of beach changes, and (b) to obtain data useful in planning for the proper development of the beaches as recreational areas.

The Board concludes that (a) the data obtained, although inadequate for the formulation of definite conclusions concerning the technical phases of shore processes, will be of value in connection with laboratory and field studies now being undertaken by the Board for the further development of the science of shore protection: (b) the ocean shore line of North Carolina is, in general, retreating slowly and will continue to retreat; (c) protection of the entire length of the study area is unwarranted at this time; (d) existing dunes afford valuable protection and should be preserved; (e) threatened structures or low portions of the barrier can be

protected by dunes constructed artificially or formed by sand fences or planting; (f) histories of accretion and erosion of the shore line should be considered in planning future development; (g) stabilization of inlets is generally impracticable, but partial control of inlet changes may be effected by dune building to prevent breaching or by excavation to facilitate breaching by natural forces where desired.

The Board further concludes that the justification of protective measures for Fort Macon Point may be the subject of further study if desired by the State, and that at Wrightsville Beach existing protective measures should be maintained and the north shore of Masonboro Inlet should be stabilized by revetment. Closure of Moore Inlet would be beneficial to Wrightsville Beach.

As this study did not include an item for evaluation of the public interest involved in improvement of these shores, the Board is unable to state its opinion as to the extent of that interest, the advisability of adopting a Federal project for participation in the first cost of protective works, or what share, if any, of the expense of such works should be borne by the United States.

WAR DEPARTMENT, BEACH EROSION BOARD, Washington, D. C., May 22, 1947.

Subject: Beach erosion report on cooperative study of the shore line of the State of North Carolina.To: The Chief of Engineers, United States Army.

I. GENERAL

*1. Authority.—This cooperative study of the North Carolina shore has been made by the United States (acting through the Chief of Engineers, the Beach Erosion Board, the division engineer, South Atlantic Division, and the district engineers at Norfolk, Va., and Wilmington, N. C.), and the State of North Carolina (acting through its Department of Conservation and Development) under authority of section 2 of the River and Harbor Act approved July 3, 1930 (Public No. 520, 71st Cong.), as amended and supplemented. Formal application for the investigation was made by the North Carolina Department of Conservation and Development to the district engineers at Norfolk, Va., and Wilmington, N. C., on January 13, 1936. The Norfolk and Wilmington districts' portions of the study were approved by the Chief of Engineers on February 6 and 17, 1936. Modification of the scope of the work and of the cooperative agreement, requested by the State on May 5, 1937, was approved by the Chief of Engineers on June 4, 1937.

2. Purpose.—As stated in the letters of application and subsequent correspondence, the study was intended to cover investigations as to the cause and extent of beach erosion and inlet changes along the coast of North Carolina with particular reference to the following four detached areas:

(a) From Paul Gamiels Hill Coast Guard Station to and including New Inlet, about 34 miles;

(b) Atlantic Beach from Fort Macon Point to and including the beach in front of the Atlantic Beach Hotel, about 4 miles;

(c) Wrightsville Beach including both inlets, about 3 miles; and (d) Carolina Beach and the beach in front of Fort Fisher, about 7 miles.

The distances along shore between the foregoing detached study areas are approximately as follows: (a) to (b), 120 miles; (b) to (c), 70 miles; and (c) to (d), 9 miles. The application contemplated that this study would constitute a continuation of the studies previously reported on, as described in the following paragraph. It was felt that such continued studies would provide a marked contribution to beach-erosion

technology, as well as to specific purposes. Subsequent correspondence between the State and the Board indicated a desire that the data secured would be useful in State planning to assure an orderly and properly controlled development of the beaches as recreational areas, and to prevent mistakes which usually result from unplanned development. To secure these results, the study covers the general character of past shore changes, the causes of such changes, the probable future trends, and the need for protective works. The original application proposed a continuing study to be terminated at the pleasure of either cooperating agency. As application for this study was made prior to enactment of Public Law 727, Seventy-ninth Congress on August 13, 1946, the outline of work did not include an item for evaluation of the public interest in improvement of these shores, upon which a recommendation for Federal participation in the cost of construction could be based. At a meeting held on October 10, 1946, it was agreed between representatives of the State and of the Beach Erosion Board that a complete report on work covered to date would be prepared as a guide to future studies, without data on which to base a determination of public interest. The State indicated its inability at that time to request additional work under the study, and confirmed the acceptability of a report of the scope proposed by letter of January 9, 1947 thereby waiving any rights to Federal participation under the present

3. Prior reports.—There have been prior Beach Erosion Board reports on three localities in North Carolina as follows:

(a) Fort Fisher, 1931.—A report published in House Document No. 204, Seventy-second Congress, first session, recommended protection of Fort Fisher by a

bulkhead and four groins of steel sheet-pile construction.

(b) Wrightsville Beach, 1934.—A report published in House Document No. 218, Seventy-third Congress, second session, recommended protection of Wrightsville Beach by artificial fill, a bulkhead, and 16 groins of steel sheet-pile construction.

(c) Kitty Hawk, Nags Head, and Oregon Inlet, 1935.—A report published in House Document No. 155, Seventy-fourth Congress, first session, discussed means of increasing the salinity of Albemarle and Pamlico Sounds waters. The Board considered it advisable for the State to keep well informed as to the condition of New Inlet by periodic surveys, and to have funds available for maintenance dredging in case it showed signs of closing.

4. In addition to the foregoing reports on beach erosion, War Department reports have been prepared on proposed navigation improvements at localities within the area of this study. The findings and recommendations of pertinent reports have been reviewed insofar as they bear upon problems here involved and are summarized as follows:

(a) Beaufort Inlet, 1881.—A report published on pages 1013 to 1017 of the Annual Report of the Chief of Engineers for 1881 stated that five short stone jetties previously built at Fort Macon Point had served their purpose of preserving the site. It recommended installation of three similar stone jetties each 200 feet long on Shackleford Point.

(b) Beaufort Inlet, 1934.—An unpublished report by the Shore Protection Board (Beach Erosion Board) included data indicating a predominant eastward littoral drift averaging 29,500 cubic yards per year at Fort Macon Point, Beaufort Inlet. It was the opinion of the Board that a safe and reliable channel 25 feet deep could be maintained across the ocean bar at this inlet by dredging alone, but that a deeper channel would require the construction of two jetties.

5. The inlets of the North Carolina coast have also been the subject of a report to the North Carolina Fisheries Commission Board. This report, published in 1923 by that board and entitled "Additional

Inlets on the North Carolina Coast," includes a report by B. S. Drane on the proposal to open additional inlets. Of the proposed locations north of Cape Lookout, the report found that New Inlet could be opened at the lowest cost, but that conditions were not favorable for

long life of an inlet at that location.

6. Description.—The ocean shore line of North Carolina is shown on United States Coast and Geodetic Survey Charts Nos. 1227, 1229, 1232, 1233, 1234, 1235, and 1236, and on plate I of this report. It has a total length of approximately 330 miles, almost all of which consists of barrier beach separated from the mainland by lagoons or sounds. The barrier beach is not continuous, but is broken by many tidal inlets which connect the inner waters with the ocean. These inlets have a long history of migration, closure, and reopening. Figure 1 is an aerial view of Oregon, New, and Beaufort Inlets. Severe storms frequently cause new openings through the beach, which varies in width from a few hundred feet to several miles and is composed principally of sand. Sand dunes averaging from 10 to 20 feet high exist along most of the beach. A few large dunes rise to 75 feet or more.

7. From the Virginia line to Beaufort Inlet, the water areas behind the barrier consist of large shallow sounds, connecting waterways. and estuaries. In order from the north, they are Back Bay, which lies principally in Virginia, at the north end of which the barrier separates from the mainland; Currituck Sound, about 30 miles long from north to south, and averaging 4 miles wide; Albemarle Sound with a maximum width of about 13 miles and extending westward inland about 55 miles; Croatan and Roanoke Sounds, relatively narrow bodies of water lying respectively west and cast of Roanoke Island: Pamlico Sound, the largest of all, and finally Core and Back Sounds. Albemarle and Pamlico Sounds extend deeply into the State and receive the drainage of large rivers. Croatan and Roanoke Sounds are in effect two straits connecting Albemarle and Pamlico Sounds. Currituck Sound and Back Bay form a narrow arm of Albemarle Sound, extending northward behind the barrier beach. Core and Back Sounds average about 3 miles in width and have a combined length of about 36 miles from Pamlico Sound to Beaufort Inlet. The maximum depth of these sounds is about 20 feet, the average probably about 10 feet.

8. The land areas of eastern North Carolina are generally low, sometimes marshy, and frequently wooded. The population is rather sparse, especially in areas on and near the barrier, although farther to the west, on the mainland shores of Albemarle and Pamlico Sounds, there is considerable farming and some lumbering. Several small prosperous communities are located there. The fish of these waters and the game birds that visit them on their annual migration are important elements in the economic life of the territory, both as a

food supply and as an attraction to sportsmen.

9. Within the eastern coastal portion of the State, there are two points of considerable historical interest. South of Kitty Hawk are located the high sand dunes known as Kill Devil Hills, from which the Wright brothers took off on their first airplane flights. A monument to the Wright brothers has been erected on one of the dunes. About 10 miles south of Kill Devil Hills, and at the north end of Pamlico Sound, lies Roanoke Island, reported to have been the location of the first English-speaking settlement in America. At Fort

Raleigh, a State reservation at the north end of this island, there is a stone monument commemorating the birth in 1587 of Virginia Dare, the first white child of English colonists born in America. These two historic points are reached by the Wright Memorial Bridge across Currituck Sound and by a hard-surfaced highway, known as Virginia Dare Trail, along the barrier beach.

10. Atlantic Beach, a small recreational beach resort on the barrier beach known as Bogue Banks, extends about 4 miles west of Beaufort Inlet. This inlet and Atlantic Beach are shown on figure 1. The barrier is separated from the mainland by Bogue Sound, which averages about 1 mile in width. A highway bridge connects Atlantic Beach with the mainland highway system at Morehead City on the north side of Bogue Sound. Morehead City and Beaufort, located respectively on the west and east sides of the estuary known as Newport River had a combined population of about 7,000 in 1940.

River, had a combined population of about 7,000 in 1940.

11. Wrightsville Beach is an incorporated town having a summer population of about 4,000. It occupies the entire island of the same name, which is about 3 miles long and has a width varying from about 250 to 1,500 feet. The island is a typical part of the barrier beach, separated from other portions of the beach by Moore Inlet at its north end, by Masonboro Inlet to the south, and from the mainland by a sound about 1½ miles in width, which consists of open channels, salt marsh, and small islands. Wrightsville Beach and the inlets are shown on figure 2.

12. Wrightsville is the largest and most important beach resort in North Carolina. The Atlantic Coast Line and Seaboard Air Line railways have terminals at Wilmington, about 8 miles to the west from which the beach is accessible by paved highways. The resort draws visitors from all parts of the State and from other States. Adequate hotel and other accommodations are available. The beach is open to

the public without restriction.

13. Carolina Beach is on the ocean front of the mainland peninsula which separates Cape Fear River from the ocean. It is about 15 miles south of Wilmington. The peninsula is about 1.5 miles wide at Carolina Beach. The town is a small resort area. Figures 3 1 and 4 1 are aerial views of the coastal area from Carolina Beach to Fort Fisher.

14. Fort Fisher is also located on the ocean front of the peninsula separating Cape Fear River from the ocean. It is located at Federal Point, about 5 miles south of Carolina Beach and 9 miles north of Cape Fear. The fort, constructed by the Confederate Army during the Civil War, has been destroyed by erosion of the ocean shore line.

15. Geology.—The area under study is part of the coastal plain, which is the name applied to the low and partially submerged area of width varying up to 125 miles confined between the Piedmont Plateau on the west and the Continental Shelf on the east. The area of the plain exceeds 20,000 square miles in the State, or about 40 percent of the State's total area. A series of marine deposits attesting to several cycles of uplift and submergence were deposited upon the ancient rocks of the area. The source of these materials was probably adjacent portions of the Piedmont Plateau. The fluctuations in sea level appear to be correlated with the Pleistocene glacial and interglacial

¹ Not printed.

stages during which great quantities of water were alternately withdrawn and returned to the sea by the freezing and melting of the

continental ice sheets.

16. The coastal plain area of North Carolina was submerged in early Pleistocene time. With each emergence and subsequent submergence increasingly larger areas were left above the sea. Several well-defined terraces have been recognized in North Carolina. The seaward part of the coastal plain was covered by a thin mantle of the lowest of these terraces-the Pamlico. This covering, composed almost entirely of sand, was deposited by waves and currents during the flooding attending the last interglacial stage. When, finally, the sea withdrew during the last glacial stage (the Wisconsin), it never

rose again to a level higher than its present one.

17. Along the emergent coast of North Carolina with its gently sloping shore covered by the sandy Pleistocene formations, barrier beaches have formed under wave and current action in geologically recent times. They are composed of recent marine deposits consisting of sand and shell in varying mixtures. Available evidence is not conclusive as to the source of the sand. At the present time, material moves southward from the beaches as far north as Cape Henry at the south side of the Chesapeake Bay entrance. Some authorities doubt that the extensive barrier beaches could have been formed in this manner. They believe that the barriers are composed of material reworked from other deposits in the vicinity, the bar being thrown up to restore a stable gradient where the slope of the emerging offshore bottom was too flat.

18. Along the north shore of Roanoke Island, there are some large sand dunes, now largely covered with foliage, which are indicative of the seacoast line. They could not have formed on the shore of the sound under existing conditions. Albemarle Sound is the sunken valley of the Roanoke River, which evidently once flowed to the sea past the present location of Nags Head. Roanoke Island was then simply a part of the south shore of the estuary. Croatan Sound was evidently only a low place in the divide between the Albemarle and Pamlico estuaries. Roanoke Sound and the barrier beach at Nags Head did not then exist. During this period the dunes on Roanoke Island were formed. The formation of the barrier beach reclaimed Currituck and Roanoke Sounds from the ocean and closed the entrance to Albemarle Sound, thus shutting Roanoke Island off from the sea.

19. Composition of beaches.—The composition of the beaches was determined by test of samples taken generally at mid-tide level. In the area from Paul Gamiels Hill Coast Guard Station to New Inlet the sand was generally a medium size with median diameters between 0.5 and 0.4 millimeter. The shell content was generally less than 3 percent. At Atlantic, Wrightsville, and Carolina Beaches and at Fort Fisher, the sand was also generally of medium size with median diameters of 0.2 to 0.3 millimeter, except that a few samples with shell contents of 22 to 35 percent had median diameters between 0.4 and 0.7 millimeter. There is a ledge of coquina rock exposed on the beach to the north of Fort Fisher. A tabulation giving the location and analysis data for samples is included as Appendix A.1

II. FACTORS AFFECTING SHORE PROCESSES

20. Winds and storms.—Records of the United States Weather Bureau stations at Hatteras and Wilmington, N. C., were used in compiling the wind data for this study. In addition, offshore wind charts of the United States Hydrographic Office were included in the study. Hurricane paths and frequency were also examined. (See

pl. II.) 21. Wind data for Hatteras have been considered applicable to the shore north of Cape Lookout, those for Wilmington applicable to the shore south of Cape Lookout. The portion of the coast north of Cape Hatteras is exposed to waves induced by winds from the north through east to south. South of Cape Hatteras, the coast generally is exposed to waves induced by winds from the northeast through east and south to southwest. The exposure to waves created by winds from the northeast, east, and southeast is over the practically unlimited fetch across the Atlantic Ocean. Fetches to the south and southwest are less, but still are extensive.

22. Of the waves that affect the shore north of Cape Hatteras those formed by winds from the north and northeast are more frequent and stronger than those from the east, southeast and south, as shown by the wind diagram for Hatteras and by the offshore wind chart. Of the winds that produce waves which affect the shore south and west of Cape Lookout, the lighter winds tending to produce northward drift and those tending to produce southward drift are about equal, but of the stronger winds, those tending to produce northward and eastward drift are more frequent, as shown by the wind diagram for Wilmington.

23. Records of the United States Weather Bureau station at Hatteras show that between 1911 and 1935 there were 52 storms with wind velocities of over 45 miles per hour. The following table shows the occurrence of these storm winds by months with the average velocity of the winds for each month. Although there were more storms in March than in any other month, those in August and September had higher wind velocities.

Month	Number of winds over 45 miles per hour	Average wind ve- locity	Month	Number of winds over 45 miles per hour	Average wind ve- locity
January February March April May June	5 4 13 3 0 2 1	Miles per hour 49 49 49 48 48	August September October November December Total	7 6 1 6 4	Miles per hour 53 61 45 49 49

The directions of these storm winds were as follows:

Land a series to be a series of the series of			-			9	100	
Direction	N	NE	E	SE	S	sw	w	NW
Number of storms.	11	4	1	4	1	. 3	9	19

24. Of the storms in the North Carolina coastal area from 1879 to 1943, 16 were tropical storms of hurricane intensity. The variation in frequency of these storms from 1879 to 1941 by months was as follows:

 July
 1
 September
 8

 August
 5
 October
 1

The paths of the major tropical storms affecting the coastal region of North Carolina during the past 70 years are shown on Plate II.

25. Effects of storms.—The major changes in the barrier beach, such as opening and closing of inlets, occur during storms. The most notable storms in this respect during this century occurred in January 1922 when New Inlet closed, in March 1932 when New Inlet reopened, and in September 1933 when Drum Inlet was cut through the beach. In each of these cases of breaching of the barrier, the breach was caused by washing from the sound to the ocean and not by high water in the ocean. A change in direction of the storm wind, which had driven the sound water away from the barrier, swept the water back rapidly, overtopping the beach from the sound side. Appendix B ¹ contains available date on storms and their effects on the beaches for the past 70 years. Figures 5 and 6 illustrate the erosive effects of storm waves on the beach and bluff in the vicinity of Kure Beach and at Fort Fisher during the fall of 1946.

26. Swells.—The swell diagrams shown on Plate II were compiled from records of the United States Hydrographic Office. The data from which the swell diagrams were derived were obtained by ships operating offshore within the entire area between latitudes 30° and 39° N. and from the shore eastward for an average distance of about 5°. The data thus secured include swells moving from the direction of the land, which do not exist along the shore, and which obviously would

have no effect on the shore in the study area.

27. For the portion of the study area north of Cape Hatteras the swell diagram indicates for swell movements toward shore a preponderance of light swells that would tend to produce northward littoral drift, but a far greater predominance of medium and heavy swells from directions that would tend to cause southward drift. For the Atlantic Beach area the swell diagram indicates that the effective swells of all magnitudes are from the east and southeast. For the remainder of the study area, comprising Wrightsville and Carolina Beaches, swells of all magnitudes are more frequent from directions that would tend to produce southward littoral drift.

28. Tides.—The tides along the outer coast of North Carolina and in the inlets, as given in the United States Coast and Geodetic Survey

Tide Tables, are as follows:

	Tidal rang	ges in feet
Location .	Mean	Spring
Currituck Beach Light.	3. 6 1. 8	4.3
Cape Hatteras	3. 6 3. 7 2. 5	4. 3
Bogne Inlet. Moore Inlet. Carolina Beach	2. 2 3. 8 4. 2	2. 6 4. 5 4. 8
Cape Fear.	4. 5	5.

¹ Not printed.

It will be noted that the mean tidal range in the ocean gradually increases from about 3½ feet near the Virginia State line to about 4½ feet near the South Carolina line. The ranges in the inlets close to the ocean are generally considerably smaller than those in the ocean outside, depending on the size of the inlet and of the sound connected thereto, and the proximity of the point of observations to the ocean. In the larger sounds regular tides are observed only at locations close to the inlets. Elsewhere in those sounds the major fluctuations in surface elevations are caused by variations in winds and barometric pressures.

29. Higher tides in the ocean and sounds occur occasionally as a result of storms. The following tabulation contains reported extreme

tidal heights for several coastal localities:

Location Location	Date	Tidal height in feet above mean low water
Pamlico Sound at New Inlet. Ocean at Hatteras Core Sound at Atlantic.	Mar. 6, 1932 Sept. 14, 1944 Sept. 16, 1933	12 7 8
Core Sound near Drum Inlet	do	15 10. 7 8 7. 8

It will be noted that the two highest tides reported are those in the sounds just inside the barrier beach, and that these two caused the

opening of New and Drum Inlets.

30. Offshore currents.—An extensive study of ocean currents at lightships off the North Carolina coast has been made by the United States Coast and Geodetic Survey. Observations were made for 175 months from 1909 to 1928 at Diamond Shoal Lightship about 13 miles southeast of Cape Hatteras, for 13 months in 1918 and 1919 at Cape Lookout Shoals Lightship about 19 miles south of Cape Lookout, and for 37 months from 1912 to 1921 at Frying Pan Shoals Lightship about 18 miles south of Cape Fear. Analysis of the currents revealed that the tidal components are of the rotary type and are weak. The velocities were from 0.03 to 0.04 knot at Diamond Shoal, from 0.07 to 0.18 knot at Cape Lookout Shoals, and from 0.19 to 0.32 knot at Frying Pan Shoals. Somewhat higher velocities were observed for the latter two stations during an earlier short period of observations. Analysis of the nontidal currents by months revealed seasonal differences in direction, as shown by current diagrams on plate II. The velocities of nontidal currents varied from 0.13 knot in September to 0.83 knot in July at Diamond Shoal, from 0.15 knot in November to 0.51 knot in July at Cape Lookout Shoals, and from 0.03 knot in September to 0.45 knot in July at Frying Pan Shoals. The effect of the Gulf Stream is evident at Diamond Shoal, as the currents flow approximately northeastward during all months of the year. A study of the relation between winds and currents was also made. It indicated that current velocities in knots averaged from 1.7 to 2.6 percent of the wind velocities in statute miles per hour, and that on the average the currents set from 18° to 20° to the right of the wind direction.

FORT FISHER

Tide	Method	Current di- rection	Maximum velocities (feet per minute)	Wind
Flood	Floats	South North South	34 124 47 100	Light east to south. Do. Light northwest to northeast. Do.

32. Inlet investigations.—Two sets of current measurements were made at each of the following inlets: Oregon, New, Moore, and Masonboro. Approximate tidal inflows and outflows were computed from these surveys, although in no case did observations cover a complete tidal cycle. The results of these observations are tabulated below. The results of previous observations at Oregon Inlet reported in House Document No. 155, Seventy-fourth, Congress, are also given for comparison.

OREGON INLET

Date	Cross section (square	Predicted tidal ranges (feet)		Maximum ve- locities (feet per second)			m rates of cubic feet ond)	Total flows (acrefeet)	
temando les did operatorivo dell	feet)1	Flood	Ebb	Flood	Ebb	Inflow	Outflow	Inflow	Outflow
Sept. 9, 1931 Aug. 31, 1932 Oct. 11, 1932 Aug. 24, 1937 Aug. 14, 1939	39, 400 44, 400 56, 000	2. 0 2. 2 1. 7 2. 2 2. 5	1. 5 1. 8 1. 8 2. 1 2. 2	2. 5 2. 4 2. 4 3. 7 2. 8	2. 3 2. 6 3. 2 3. 3 3. 8	134, 050 129, 100 126, 500 180, 000 152, 000	89, 150 102, 700 127, 300 142, 000 141, 000	47, 769 42, 726 34, 873 63, 500 37, 800	37, 39 40, 05 57, 20 55, 90 71, 50
e solution and an	Sec. 1	170 01	N	EW IN	LET	dr.		d le s	
Aug. 26, 1937 Aug. 11, 1939	4, 250 4, 500	2. 3 2. 0	2. 0 1. 5	2. 9 3. 4	2. 8 2. 5	15, 000 11, 100	10, 000 4, 800	4, 800 4, 500	4, 00 1, 20
e guardiar	apupd L	alf oq.	M	OORE I	NLET	to mint	Total Tests	miyer	KITTL.
June 30, 1937 June 15, 1938	2, 830 2, 240	3. 5 2. 9	3, 1 2, 9	3. 2 2. 3	4. 3 3. 1	26, 900 14, 300	21, 000 15, 600	9, 000 4, 500	6, 60 4, 80
only special	A Long.	Depti-	MASO	ONBOR	INLE	T	mi na	Logica	dTol
June 25, 1937 June 17, 1938	10, 000 4, 450	2. 9 2. 9	3. 0 2. 7	2. 6 2. 0	4. 1 3. 6	37, 000 17, 400	50, 500 21, 500	12, 900 4, 700	18, 90 8, 20

¹ Below datum plane used in the surveys.

33. It will be noted that the tidal flows for any inlet vary considerably. These variations are due to differences in the tidal range, differences in water levels in the sounds, especially for Oregon and New Inlets, and differences in the conditions of the inlet, as evidenced by the differences in cross-sectional area.

III. EFFECTS OF SHORE PROCESSES

34. Shore-line changes-General.—The changes in the ocean shore line of the entire State have been studied by comparing surveys of record made by the United States Coast and Geodetic Survey between

observed by means of colored water inside the breakers.

NORTH CAROLINA SHORE LINE, BEACH EROSION STUDY

31. Littoral currents.—Observations of currents were made at Nags Head, at Atlantic, Wrightsville and Carolina Beaches, and at Fort Fisher. Subsurface floats were used offshore and colored water was used inside the breakers. The floats moved generally parallel to the shore except at slack water, when their movements were erratic. The tabulation on the following page summarizes general information regarding these observations. More detailed data are included as appendix C.1 The data secured are too incomplete to form the basis of definite conclusions as to directions and strengths of currents. At

Nags Head the currents flowed northward on the rising tide. On the ebb the floats moved southward, but the colored water moved northward. At Atlantic Beach currents were eastward on the flood, as

might be expected just to the west of Beaufort Inlet. On the ebb

the floats moved westward, but the colored water moved eastward

with light northwest winds and failed to move with light southeast

winds. At Wrightsville Beach the tidal currents are apparently

weak, as the floats moved southwest on both flood and ebb tides,

light north to east winds during the ebbs probably controlling their direction. Colored water moved northeast on both flood and ebb tides. At Carolina Beach all currents observed moved northward, probably as a result of light to moderate southerly winds. At Fort Fisher the floats moved generally southward during both flood and ebb tides, while the colored water moved northward during the same period. Probably the direction of wave approach, no data on which were obtained, was the controlling influence on direction of currents

		NAG	S HEAD	
Tide	Method	Current di- rection	Maximum velocities (feet per minute)	Wind
FloodEbb	Floats	North South	70 to 89	Light southeast to southwest. Do. Do. Do. Do.
pullet and agree	ene bracisc	ATLANT	TIC BEACH	enoughtos (sintesci
Flood	Floats Colored water Floats Colored water	East do West East	52 to 94 0 to 248 30 to 37 0 to 133	Light variable. Do. Do. Do. Do.
	era i ellasteri zer i acent	WRIGHTS	VILLE BEACH	In the last to the last to the
Flood	Floats Floats Colored water	Southwest Northeast Southwest Northeast	26 to 55 35 to 168 18 to 120 92 to 185	Light east and southeast. Light to moderate southeast and light east. Light northeast and north to east. Light north to east and calm.
And the State of		CAROLI	NA BEACH	eadison yleanute ogo
Flood	Floats	Northdodododo	66	Light southwest to south. Do. Moderate south. Do.

¹ Not printed.

1848 and 1934. The changes have been separated into three categories: (a) For unbroken stretches of shore beyond the influence of the inlets and capes; (b) for the capes; and (c) for the vicinities of existing inlets.

35. The net erosion and accretion along the unbroken reaches of beach beyond the immediate influence of inlets or capes are shown on plate IV and in table 1 of appendix D. From the Virginia line to Cape Hatteras, a distance of about 100 miles, there was an average annual accretion of 0.8 foot over the 56 miles of shore considered. Plate IV shows that the area of erosion generally was located near where the coast changes direction between miles 50 and 80 from the Virginia line. From Cape Hatteras to Cape Lookout the coast forms a concave arc, the center portion of which shows accretion while the ends show erosion. The average change over the 60 miles considered in this 80-mile stretch of coast was erosion of 2.2 feet per year. The coast from Cape Lookout to Cape Fear also forms a concave arc. The most stable portion of this shore is a 13-mile stretch east from Bogue Inlet, where accretion averaged 2.66 feet per year. Of the 110 miles of coast in this area, the entire 83 miles considered showed an average change amounting to about 0.5 foot of erosion per year. Between Cape Fear and the South Carolina line, the net erosion averaged 2.7 feet per year. Considering the entire 330 miles of coast line of the State, except the areas near inlets, capes, and where no surveys are available, there has been an average erosion of 0.9 foot per year over 224 miles of beach. The average period between survevs compared was 66 years.

36. At Cape Hatteras over the 65-year period there has been progressive erosion of the eastern face averaging 21 feet per year for a distance of 4½ miles. The southwestern face of the cape has shown accretion averaging 24.2 feet per year for 2½ miles. The net change in the shore lines over the 7 miles indicates a loss of 127 acres during the period of record. Since the survey of 1853 Cape Lookout has shown a much different pattern of change from Cape Hatteras. The tip of the cape has moved progressively eastward with accretion along the eastern face and erosion on the west. The net change over 60 years has been an increase in area amounting to 321 acres. At Cape Fear the changes have been of the same nature as at Cape Hatteras. The east face has eroded and the southwest face accreted. The erosion along the east face of the cape has averaged nearly 20 feet per year during the past 75 years for a distance of 9½ miles. This represents a total loss of 1,684 acres. The accretion on the southwest face between the tip of the cape and the Cape Fear River, a distance of 3½ miles, has averaged nearly 8 feet per year for the past 80 years. This total gain in area amounted to 259 acres, but for the cape as a whole the resulting net loss was 1,425 acres. The shore-line changes at the capes are shown on plates V, VI, and VII.

37. Inlet changes.—The existence and histories of inlets along the

37. Inlet changes.—The existence and histories of inlets along the North Carolina coast so far as can be determined from maps, charts, and reports are shown in table 2 of appendix D. The surveys shown are so widely spaced in point of time that they do not show all the changes which have taken place. The table does show the impermanence of most of the inlets. Of those shown in Hariot's chart of 1585, only three from Cape Henry to Cape Lookout—Oregon, Hatteras, and Ocracoke—have remained open at all times. Numer-

ous other inlets along the North Carolina shore have closed, or opened and closed during this time. None of these inlets has been stabilized by jetties. New Inlet was opened artificially in 1924, but remained opened only a few months. The Beaufort Inlet and Cape Fear River entrance channels have been improved by dredging.

38. The prevalence of inlets increases to the southward along the coast. The latest information indicates that there is only 1 inlet open along the 100 miles of coast from the Virginia line to Cape Hatteras, 6 in the second hundred miles, 12 in the third hundred miles and 6 between the Cape Fear River and the South Carolina line, a distance of 32 miles.

39. Plates VIII through XI and table 3 of appendix D show the changes at the inlets which were open during the first and latest surveys by the United States Coast and Geodetic Survey. In all cases except that of Rich Inlet the migration has been down coast (southward or westward), with a resultant movement of the inlet gorge inward from the coast. Data for Rich Inlet are insufficient to provide a basis for conclusions as to its movement. For the shore line affected by the inlets the areas of erosion and accretion are summarized in table 2. The net result in the 39 miles of shore line considered is a loss of over 960 acres, or an average shore line recession of 3 feet per year.

40. A comparison of the low-water shore lines at Oregon Inlet from 1931 to 1939 is shown on plate III. At the base line, the width of the inlet in 1931 was 2,770 feet. By 1935 it had widened to 4,300 feet. It varied from 4,000 feet in 1936 to nearly 4,300 feet again in 1937, and in 1939 was about 4,350 feet in width. During the entire period the increase in width was nearly equal on the two sides of the inlet, so that no marked tendency toward migration was evidenced, although previously this inlet had migrated southward about 1.5 miles in 65 years.

41. New Inlet was reopened during the storm of March 6, 1932. It originally consisted of several small openings in addition to the main opening about 800 feet wide at mean low water. By 1935 all had closed except the main opening which had shifted southward nearly 1,200 feet and had narrowed to a least width of about 400 feet. Surveys in 1936, 1937, and 1939 showed successive southward shifts, making a total migration from 1932 to 1939 of about one-half mile. The low water width had increased by 1939 to about 600 feet. These changes in the inlet are shown on plate III. This inlet is now closed.

42. Although the survey of 1857 did not show Moore Inlet, it showed

an inlet about 3,500 feet north of the present position of Moore Inlet, which was named Barren Inlet. This inlet is not shown on any later surveys, but the 1887 survey shows Moore Inlet about 3,200 feet south of its present position. It seems probable that Barren Inlet was a forerunner of Moore Inlet, migrating southward about 6,700 feet between 1857 and 1887. By 1910 it was located northward about 700 feet, thence about 2,400 feet farther northward by 1930. Surveys of Moore Inlet from 1927 to 1940 are shown on plates XV 1 and XVIII. They indicate relative stability of the north low-water shore line of this inlet over the period, but the south shore and intervening shoals varied widely. By 1940 the secondary channels had closed, leaving only the main opening about 250 feet wide at low water. Comparison of the high-water shore lines shows that these lines on both sides of

¹ Not printed.

the inlet occupied positions separated by more than 1,000 feet between 1927 and 1939, but no marked tendency to migrate was apparent.

43. Masonboro Inlet has had a history somewhat similar to Moore Inlet. Between 1857 and 1887 it migrated southward about 3,800 feet, returning to within 700 feet of its 1857 position by 1932. Greater stability of the north shore of Masonboro Inlet compared to the south shore is indicated by comparison of surveys from 1927 to 1940. As at Moore Inlet, the south shore alternately elongates northward and is cut through leaving middle-ground shoals in the inlet. The lowwater width thus varied from about 1,700 feet in 1935 to about 900 feet in 1940. These changes are shown on plates XVII and XX.

44. Shore-line changes-Paul Gamiels Hill Coast Guard Station to New Inlet (now closed).—This section of the North Carolina coast is 34 miles in length, its north end being 32 miles from the Virginia line. As indicated in table 1 of appendix D, surveys from 1848-52 to 1915-17 showed erosion along sections of the shore aggregating about one-half of this length and accretion along the other half. A study of profiles (pl. XII)1 taken between 1928 and 1939 revealed a mixed pattern of erosion and accretion over that period as given in table 4¹ of appendix D. Erosion occurred at most stations prior to 1935. From 1935 to 1937 accretion prevailed. Likewise, from 1937 to 1939 accretion occurred at more stations than erosion. However, the net result for all stations except for those close to inlets was erosion of from 5 to 95 feet, or at a maximum rate of nearly 12 feet per year. From 1931 to 1939 there was recession of 1,020 feet at the station near the north side of Oregon Inlet, but accretion of 165 feet at the station near its south side. The station north of New Inlet had accretion of 35 feet during the same period.

45. Shore-line changes-Atlantic Beach.-This beach lies immediately west of Beaufort Inlet. As indicated in table 1 of appendix D, surveys from 1854 to 1933 showed slight erosion for the first mile west of Beaufort Inlet, thence accretion averaging 0.9 foot per year for the next 2 miles, and erosion averaging 1.1 feet per year for the remaining mile. Comparative profiles of this beach, taken from 1927 to 1940, are shown on plate XIII. These profiles show, at station 20, near the end of the point, accretion of 100 feet from 1927 to 1930. This occurred when the area between the point and the small offshore island filled in between 1928 and 1929, as shown on plate XIV.1 Since 1930, erosion at station 20 has been continuous, amounting to 675 feet. Available profiles for stations farther west show less erosion. Those at stations 190 and 219 show some accretion, but for these stations no profiles are available after 1935. The period 1935-40 may have shown erosion at these stations as well as at stations farther east. As shown on plate XIV,1 the 1947 low-water shore line indicates that erosion of the point has continued. Table 51 of appendix D contains tabulated data on shore-line changes at Atlantic

46. Shore-line changes—Wrightsville Beach.—The previous study of this beach, published in House Document No. 218, Seventy-third Congress, disclosed average annual erosion of about 12 feet per year over the period from 1927 to 1932. Beach profiles (pl. XIII) taken near each end and near the midpoint of the island from 1931 to 1938

revealed an average annual recession of the mean-high-water shore line of about 29 feet near the south end of the island, about 3.6 feet near the midpoint, and about 15 feet near the north end. Except at the south end these losses were somewhat more than replaced by artificial fill in 1939. From January 1941 to July 1946, five examinations were made of profiles generally 100 feet north and 100 feet south of alternate groins in order to determine the effectiveness of the groin system installed in 1939. During the first period of 7 months, accretion occurred on both sides of nearly all groins. Subsequently, there was a mixed pattern of accretion and erosion, but the net result of the 5-year period of observations indicated a condition of approximate stability. Although there was erosion on both sides of the most southerly groin, there was accretion on both sides of the next groin and also on both sides of the most northerly groin. At all other groins, erosion on the north side was approximately balanced by accretion on the south side. The tabulated results of this investigation are given in table 6 1 of appendix D. High- and low-water shoreline changes for Wrightsville Beach are shown on plates XV 1 through

47. Shore-line changes—Carolina Beach to Fort Fisher.—This portion of the coast, about 7 miles in length lies between 9 and 16 miles south of Masonboro Inlet. The mean high-water lines from surveys of 1852 to 1942 are shown on plate XXI.¹ As indicated in table 1 of appendix D, comparative surveys from 1857 to 1934 showed an average recession of the mean high-water line amounting to about 2.3 feet. Comparative profiles of the beaches in this area taken between 1927 and 1940 are shown on plate XXII.¹ A tabulation of changes in the mean high-water shore line as shown by these profiles is included as table 7,¹ of appendix D. These data show that the shore line moved both landward and seaward during the interval between 1927 and 1940, but that the resultant movement over the whole period was landward. The landward movement amounted to from 0 to 4 feet per year, except at Fort Fisher, where the most southerly two profiles showed erosion averaging over 16 feet per year from 1931 to 1940. (See fig. 5.)

48. Offshore depth changes-General.- The hydrographic surveys of the offshore area are generally so incomplete as to prevent a comparison of conditions at different dates. On Diamond Shoal off Cape Hatteras the only complete survey by the United States Coast and Geodetic Survey was made in 1872. Prior and subsequent surveys have not covered the entire shoal in any one year and cannot be used for comparison. The same condition exists in the surveys of the shoals off Cape Lookout. The only complete survey in this area was made in 1865-66. At Cape Fear a comparison for Frying Pan Shoals is afforded by a complete survey in 1851 and another in 1923. Elsewhere alongshore the scattered surveys are insufficient for comparison. Plate XXIV 1 shows the underwater conditions on Diamond Shoal and the outer shoal off Cape Hatteras from a survey by the United States Coast and Geodetic Survey in 1872. From the tip of the cape the shoals extend 8.5 miles in a direction 33° east of south. The area enclosed by the 18-foot depth curve was 2,843 acres, by the

¹ Not printed.

¹ Not printed.

12-foot depth curve 795 acres, and by the 6-foot depth curve, 23 acres. Plate XXV 1 shows the underwater conditions on the Cape Lookout Shoals from the survey of 1865-66 by the United States Coast and Geodetic Survey. The shoal extends 9.3 miles from the tip of the cape in a direction 22° east of south. The area enclosed by the 18-foot depth curve was 6,532 acres; by the 12-foot depth curve. 2,419 acres; and by the 6-foot depth curve, 750 acres. There have been two surveys by the United States Coast and Geodetic Survey which covered the entire area of Frying Pan Shoals off Cape Fear. The first survey was made in 1851 and the last in 1923. Plates XXVI 1 through XXVIII 1 show the comparison between the 6-, 12-, and 18-foot-depth curves for the two surveys. The axis of the shoal has not changed. It extends 16.3 miles from the tip of the cape in a direction 20° east of south. The areas enclosed by the depth curves of the 1851 survey were 18-foot, 11,109 acres; 12-foot, 3,077 acres; 6-foot, none. In the 1923 survey the areas were 18-foot, 10,647 acres: 12-foot, 5,072 acres; 6-foot, 1,016 acres. Assuming a uniform slope between the depth curves, these changes in area would represent an accretion on the shoal of 4,842,000 cubic yards in 72 years, or an average of 67.250 cubic vards per year.

NORTH CAROLINA SHORE LINE, BEACH EROSION STUDY

49. Offshore depth changes—Paul Gamiels Hill Coast Guard Station to New Inlet (now closed).—Comparison has been made of profiles surveyed in 1931, 1935, 1937, and 1939. The changes in the 6-, 12-, 18-, and 24-foot-depth curves from available data are shown on plate XII and given in tables 81 and 91 of appendix D. From table 81 it will be noted that the 6-foot contour generally moved shoreward from 1931 to 1937 and seaward from 1937 to 1939, but that the net effect over the whole period was generally recession of the 6-foot contour. The amount of recession varied up to 85 feet, except for one profile at Oregon Inlet which showed much greater recession. In table 91 the tabulated values show general accretion of the 12-, 18-, and 24-foot contours. These changes are associated with the formation, enlarge-

ment, and shifting of an offshore bar.

50. Offshore depth changes-Atlantic Beach.-Profiles of this beach taken from 1928 to 1940 are shown on plate XIII.1 Tabulated data on changes in the 6- and 12-foot-depth contours are given in table 10 of appendix D. The generally unstable condition of the bottom is quite evident, varying from erosion of over 200 feet in a year for the 12-foot contour at one station to accretion of 300 feet in the same year at another station. The net result for both the 6- and 12-foot contours, was recession of from 100 to 300 feet in 4 years. Comparative profiles 7 miles in length from surveys made by the United States Coast and Geodetic Survey in 1857 and 1927 are shown on plate XXVIII.1 The depth increases from shore nearly to 50 feet in 2 miles, thence only about 5 feet more in the next 5 miles. The first 2 miles show general shoaling of from 0 to 5 feet. The remaining distance shows generally smaller and inconclusive changes.

51. Offshore depth changes-Wrightsville Beach. The changes in the offshore depth contours as revealed by comparison of the 1937, 1938, and 1940 profiles of this beach are given in table 2 of appendix D. Typical profiles are shown on plate XIII.1 The tabulated changes indicate a mixed pattern of accretion and erosion, with accretion predominating from 1937 to 1938. In spite of artificial fill placed on this beach in 1939, erosion predominated for the period from 1938 to 1940, to such an extent that it generally offset earlier accretion and was predominant over the entire period from 1937 to 1940. The 6-foot contour receded at four of the six profiles studied, the 12-foot receded at three and advanced at the other three profiles, but the 18-foot contour receded on all profiles. Changes on a profile 7 miles long from surveys of 1879 and 1927 are shown on plate XXVIII.1 Increases in depths varying from 0 to 5 feet are indicated along the inner 2,000 feet of this profile, out to a depth of about 22 feet. The remainder of the profile generally shows shoaling with a maximum of about 5 feet. From a point about 1 mile offshore the slope of the bottom is quite uniform, amounting to about 20 feet in the remaining 6 miles. A depth of 50 feet is reached about 4 miles offshore.

52. Offshore depth changes-Carolina Beach to Fort Fisher.-The changes in the 6-, 12-, 18-, and 24-foot offshore depth contours as indicated by a comparison of the 1938 and 1940 profiles of the beaches along this stretch of coast are shown on plate XXII1 and tabulated in table 121 of appendix D. The tabulation indicates considerable erosion of the offshore bottom at all except the most southerly profile at Fort Fisher. The 6-foot contour generally receded from 65 to 180 feet, the 12-foot contour from 50 to 240 feet, the 18-foot contour from 40 to 640 feet, and the 24-foot contour from 65 to about 600 feet. At the most southerly profile at Fort Fisher, advances of the 6-, 12-, and 18-foot contours were respectively 150, 240, and 320 feet. Profiles at Carolina Beach 7 miles long from surveys of 1879 and 1927 are shown on plate XXVIII.1 The inshore portion of this profile is relatively steep, a depth of 20 feet being reached in about 600 feet. This section shows erosion to a depth of 7 feet below mean low water, thence accretion. The next 2 miles have a fairly uniform slope to a depth of about 43 feet. They show both erosion and shoaling. The remaining 5 miles of bottom are irregular, depths of 54 and 58 feet being reached 7 miles offshore. Shoaling predominates over this area, the maximum being about 5 feet.

53. Littoral drift-north of Cape Hatteras. - Of the winds and swells to which this portion of the study area is exposed, those from directions that would tend to produce southward littoral drift are of greater magnitude than those that would cause northward drift, and all except the light swells are more frequent from the former than from the latter directions. Consequently a marked predominance of southward drift as a result of wave action would be expected. Other available data such as southward migration of inlets and southward trailing of underwater spits at Cape Hatteras confirm the existence of a predominant southward drift. The volume of drift must be large, as indicated by

early closure of most of the breaches through the barrier beach.

54. Littoral drift—Atlantic Beach.—This portion of the North Carolina coast receives some protection from the east by Cape Lookout, but is exposed to winds and waves from southeast, south, and southwest. Of the winds and swells to which this area is exposed, those from the southeast would tend to produce westward drift and those 1 Not printed.

¹ Not printed.

from the southwest would tend to produce eastward drift, while those from the south probably would not produce much littoral movement. As winds of all magnitudes are more frequent from the southwest than from the southeast, a predominent eastward drift would be expected. However, as the most effective swells are from the east and southeast. they would tend to produce westward drift. A reversing drift would therefore be expected, with little predominance in either direction. The Shore Protection Board study referred to in paragraph 4 (b) indicated a predominant eastward drift, the volume of which was determined by computation of the volume of accretion in the offshore area from 1850 to 1908 to average 29,500 cubic vards per year. The formation of the small island off Fort Macon Point and the later filling of the intervening area appear to have been the result of eastward drift. (See pl. XIV.) A short groin at the point has accumulated sand on its south side. In the absence of other sources of supply, the material must be provided by erosion of the beaches to the westward.

55. Littoral drift—Wrightsville Beach.—This portion of the coast is exposed to winds and waves from the northeast through east to south. As indicated by the diagram on plate II, swells of all magnitudes from the northeast and east, which would cause southward littoral drift are more frequent than those that would cause northward drift. The wind diagram for Wilmington indicates that the stronger winds tending to produce northward drift are more frequent than those tending to produce southward drift. Under these conditions a reversing drift would be expected, with no great predominance in either direction. The probable southward migration of Moore Inlet prior to 1887 and the shift northward thereafter until 1930 present no conclusive evidence of a predominant direction of drift. The similar history of Masonboro Inlet is also inconclusive. The general accretion south of and erosion north of the Wrightsville Beach groins, as indicated by the study of shore line changes in paragraph 46, indicates a predominant northward drift, but a recent inspection showed no marked differences in beach elevations between the north and south sides of these structures. The northward elongation of the south shores of Moore and Masonboro Inlets as noted in paragraphs 42 and 43, also evidences northward drift. The fact that these inlets remain open indicates that the volume of material moving at Wrightsville Beach is not great. The groins constructed in 1939 also reduce the amount of littoral drift. It appears that little new material reaches Wrightsville Beach by natural processes, as the transfer of sand across Moore and Masonboro Inlets is uncertain.

56. Littoral drift—Carolina Beach to Fort Fisher.—This stretch of shore has a direction slightly closer to north-south than Wrightsville Beach. With this similarity of exposure, a reversing drift like that at Wrightsville would be expected. However, the greater length of unbroken beach north of Carolina Beach (as far as Masonboro Inlet) than north of Wrightsville provides a larger source of supply for the area from Carolina Beach to Fort Fisher. The slightly higher beach north of the intake structure at Kure Beach, the good beach north of the coquina outcrop at Fort Fisher and erosion south thereof, the southward extension of the spit just south of Fort Fisher, as reported in House Document No. 204, Seventy-second Congress, and shown

on plate XXI, and the extensive shoals off Cape Fear all indicate some predominance toward the south.

IV. PRIOR CORRECTIVE ACTION AND EXISTING STRUCTURES

57. Kitty Hawk to Oregon Inlet.—In this area sand fences were built prior to 1940 for the purpose of building up a continuous dune line. They were placed parallel to the shore line and about 200 feet shoreward of the mean low water line. Inspections in 1940 and 1947 indicate that they were quite effective, having been almost covered with sand, as shown by the upper photograph on figure 7 1 taken at Kitty Hawk. However, similar fences in the immediate vicinity of Oregon Inlet were completely ineffective, as shown on the lower photograph on the same figure.

58. New Inlet.—Closure of New Inlet in 1922 caused the State to study means of reopening this inlet or forming an additional inlet at some other locality in order to provide salinity of sound waters necessary for the propagation of fish and shellfish. As a result of this study an opening was dredged in 1924, through the barrier beach in the vicinity of the former location of New Inlet. Three short pile-and-timber groins, connected to a light wooden bulkhead, were built along the beach on the north side of the dredged cut. These structures did not afford much protection to the inlet, which completely filled and closed during the following winter. As stated in paragraph 41, natural forces reopened the inlet in 1932 and have since closed in again.

59. Fort Macon Point.—There are five short stone groins around the end of Fort Macon Point, which are probably the remains of those built prior to 1881 (par. 4a). Only one of these was reported as being seen on inspection in 1940. Now all are visible, apparently having been uncovered by erosion since 1940. Some of these structures are now being flanked and the dunes behind them are being eroded. Some accretion to the south of these groins indicates that they are of some value, but they are so short that their influence extends only a short distance. Considerable planting of grass and shrubs around the point was done about 1938. This work was entirely ineffective. Inspection in 1940 disclosed that most of the plants had died.

60. Wrightsville Beach.—In 1939 the town of Wrightsville Beach completed construction of a beach-improvement project with the aid of PWA funds. The completed work consisted of 16 creosoted pile-and-timber groins each 325 feet long with an average spacing of about 800 feet, and artificial fill in amount of approximately 700,000 cubic yards. Two of these groins are shown on figure 8. The completed project differed somewhat from that recommended by the Beach Erosion Board in 1934 (H. Doc. No. 218, 73d Cong., 2d sess.). The principal differences were the elimination of the recommended bulk-head and the substitution of timber for steel sheet piling. The groins are generally about 1 foot higher than those recommended. The profile of the groin slopes from an elevation of +10 feet at the shore end to +8.5 feet in a distance of 90 feet, thence to +3 feet in the next 140 feet, the seaward 95 feet having a uniform elevation of 3 feet above mean low water. Between 1939 and 1942, the most southerly

¹ Not printed.

¹ Not printed.

groin was extended 160 feet landward in an attempt to prevent flanking. The two southerly groins have since been flanked. Repairs and extension of the southerly groin were being made in April 1947. Recent inspection disclosed serious erosion of the south end of the island. The seaward ends of all the groins have deteriorated and are in need of repairs. The investigation of shore-line changes outlined in paragraph 46 indicates that this groin system has been effective in stabilizing all except the extreme southern end of this beach.

61. Kure Beach.—At this beach a water intake about 100 feet long has been built out into the ocean. It consists of solid steel sheet piling, except for an opening about 30 feet from the shore line, which permits sand to pass the structure. A recent inspection disclosed a slightly higher beach on the north side than on the south side of the structure. but the opening permits the passage of sand so that the north side does not fill to the top of the structure. The sand on the north side of the intake pipe inside the structure was level with the top of the pipe, as shown on figure 9.1

v. DISCUSSION

62. General.—The objectives of this study, as stated in paragraph 2,

(a) To obtain data which would contribute to the advancement of the technical knowledge of the processes of beach changes;
(b) To obtain data useful in planning for the proper development of the beaches

as recreational areas.

The cooperating agency has requested that this report include consideration of the desirability of further studies.

63. With reference to item (a) of paragraph 62, the original program provided for annual surveys of beach profiles, inlet cross sections and topography, offshore currents and inlet tidal prisms each for one complete tidal cycle. When it became evident that this schedule could not be adhered to because of financial and personnel limitations, it was modified to include the same items biennially instead of annually. The study included only a general study of wind and weather conditions from existing records. The outline of work did not contemplate an attempt to correlate wind, wave, and current data during the study period with changes in beaches disclosed by periodic surveys. Obviously such an attempt would require more intensive observations of all known variables during the entire period between surveys. To secure these data over the widespread areas included in the present study would necessitate a far greater expenditure than the funds available for this investigation. A more productive plan for such a general investigation of shore processes would be continuous or daily observation of winds, waves, currents, and any other factors involved, with frequent surveys of beach profiles for a short stretch of beach. In this manner it may be possible to determine how natural forces operate to cause beach changes. For these reasons the data obtained are not adequate for the formulation of definite conclusions concerning shore processes. They will, however, be available for further studies in connection with other data to be obtained in the laboratory and in the field under the Board's program of general investigations authorized by Public Law 166, Seventy-ninth Congress. Further studies of a general nature to advance the technical knowledge of shore processes are desirable, but they should only be attempted by intensive investigation over small areas.

64. With reference to item (b) of paragraph 62, data obtained from the study which are considered useful in planning future beach and inlet development are discussed in the following paragraphs.

65. The coastal region of North Carolina is characterized by narrow barrier beaches separating protected sounds from the Atlantic Ocean. The barriers are composed generally of medium sand which is easily moved by winds, waves, and littoral currents. These natural forces erode the beaches and transport the material in both directions along these shores. There are no headlands of importance forming natural sources of additional beach material. Therefore, unless material is moved to the beaches from the offshore bottom, the effect of natural forces must be a redistribution of material now composing the beaches. The variations in rate of supply and loss at any point cause alternate advances and recessions of the shore line at that point, as indicated by studies of comparative profiles. Over the entire area studied during the period covered by historical surveys recession has generally prevailed. At some localities sand is washed or blown across the barrier beaches, causing a gradual retreat of the barrier as a whole. The net general effect of recession is probably due to this movement across the barrier and to losses of material from the ends of the several areas to form the extensive shoals off Capes Hatteras, Lookout, and Fear. Although continuation of such recession can be expected. costly protective measures for the entire length of the study areas are obviously unwarranted at this time.

66. Existing dunes constitute valuable protection to buildings and highways and a reservoir of beach material. They should be preserved. The cutting of paths through or the erection of buildings on the dunes should be prevented. In some localities existing dunes are too low to afford desirable protection to present structures. A recent case of the wash-out of a street end could have been prevented if the dune had not been cut down across the street end. Where necessary, dunes could be constructed artificially. Dune building could also be encouraged by sand fences and planting. The importance of the dunes in protecting property behind them cannot be overemphasized.

67. The rate of recession of the shore line and the extent of development to date have not been sufficient, except at Wrightsville Beach. to cause the construction of structures extending into the ocean for the protection of beaches. This is a fortunate condition, since once such structures are erected, the stoppage of littoral drift for the benefit of one beach area frequently results in starvation of adjacent areas. The knowledge that continued slow recession of the shore line is, in general, to be expected, should be of value in planning future development of shore areas. Construction of costly permanent buildings close to the ocean should not be permitted, unless the interests in-

¹ Not printed.

volved are prepared to meet the costs of beach stabilization. There are, however, portions of the shore of the west side of Cape Hatteras and on the east side of Cape Lookout that have benefited by continuous and extensive accretion during the period of record. Such areas should receive first consideration in the planning of recreational development. Other areas indicated in table 1 of appendix D, such as the 9-mile section between Kitty Hawk and Nags Head, the 12-mile section north of Cape Hatteras and the 13-mile section east of Bogue Inlet have advanced over the period of record. Such areas have a favorable outlook for continued accretion and should receive more. favorable consideration in planning future development than areas such as Fort Fisher which have had a history of erosion.

NORTH CAROLINA SHORE LINE, BEACH EROSION STUDY

68. Inlets to Pamlico Sound.—Oregon Inlet is the only inlet now open from the Virginia State line to Cape Hatteras, and only two of importance, Hatteras and Ocracoke, connect Pamlico Sound with the ocean west of Cape Hatteras, in spite of the extensive drainage area tributary to this sound. The changes in New Inlet have been noted in paragraphs 41 and 58. It closed in 1922 and was opened artificially in 1924, but closed during the following winter. Natural forces reopened it in 1932 and have since closed it again during the period of this study. The littoral drift and the inlet currents are two opposing forces, the former tending to close inlets and the latter tending to prevent sand from depositing in the inlets and closing them. The closure of all but three of the inlets that have connected Albemarle and Pamlico Sounds with the ocean at one time or another attests to the large volume of sand moving along these shores. The

69. Reports of the opening of inlets through the barrier beach indicate that the usual combination of events causing such breaches of the barrier in this area begins with a sudden shifting of the waters from the landward to the seaward side of the sounds, caused by changes in wind direction during infrequent cyclonic storms of great intensity. The resulting high sound waters overtop low places in the barrier and sometimes flow toward the ocean for many hours. cutting a deep gorge through the beach. These openings persist until overcome by the sand drifting alongshore and entering the cuts.

construction of jetties or other works to prevent closure of any of

these inlets would be very costly.

70. The past history of inlets indicates that the waters of Albemarle and Pamlico Sounds will again overtop the barrier beach during future storms to form additional inlets. The importance of these inlets in increasing the salinity of sound waters and in permitting the entrance of fish makes the opening of additional inlets desirable. The dredging of a cut through the beach is an expensive operation, and unless attended by unusual tidal flows to scour a deep gorge, is unlikely to be more successful than the attempt in 1924 to reopen New Inlet. However, reopening of New Inlet could be encouraged by keeping the elevation of the barrier down as close to mean high water as possible by land equipment and thus assuring overtopping during future storms. The highest part of the barrier is a relatively narrow ridge, which could be cut through at little cost.

71. Shore north of Cape Hatteras.—Profiles surveyed prior to and during this study indicate a general recession of the shore line of the study area north of Cape Hatteras. There was also general recession of the 6-foot-depth contour, but general advance of the 12-, 18-, and 24-foot contours, associated with the formation, enlargement, and shifting of an offshore bar in this area. These data on past shore changes indicate that recession of the shore line north of Cape Hatteras will continue at a slow rate. However, as a result of transportation of material across low, narrow portions of the barrier by winds and waves the whole barrier will also move landward. The continued existence of the barrier beach will thus be assured for many years. This retreat of the barrier may be retarded by dune formation, which may be promoted by sand fences, and dune fixation by planting. However, the extent of present development of this area does not warrant the expenditure of funds in such amount as would be necessary for complete stabilization of these shores. Such work would be warranted at low sections of the barrier where undesirable breaching by storm action is likely. Planning for future development should take cognizance of the probable future changes as outlined

72. Atlantic Beach.—Study of profiles at this beach indicated general recession of the mean high-water shore line and of the 6- and 12foot-depth contours. Unless protection is provided, continuation of this erosion is to be expected, although some littoral drift may reach the area from beaches to the west. Although the quantity of sand reaching the area does not appear to be large, the accumulation south of the existing groins indicates that groins or a jetty would be effective in improving the beach. Present development of the threatened portion of this beach does not appear to warrant extensive works for protection of the beach itself. No surveys of this beach have been made since 1940. The eastern portion of this beach is part of Fort Macon State Park. If the State considers stabilization of its beach essential, the study of this area should be brought up to date with new surveys, at which time a definite plan of improvement could be devised.

73. Wrightsville Beach.—The improvement of this beach by a groin system and artificial fill has stabilized its shore line, except at its southern end. Recession of the offshore contours was general in spite of the placement of artificial fill. However, no surveys of the offshore area have been made since 1940. In connection with repairing the groin system, a determination of the present condition of the offshore area would be desirable. If that area has shown further deepening, the rebuilding of the outer ends of the groins will require greater penetration of piling. Additional fill or riprap to protect the ends of the groins may be desirable. The shore ends of the two most southerly groins need shoreward extensions as they have been flanked. Unless the groin system and fill are maintained in good condition, increasing erosion of the beach may be anticipated. Replacement of lost fill must be regarded as an essential feature of any adequate program for the continued existence of a satisfactory beach at Wrightsville.

74. The previous report on Wrightsville Beach (H. Doc. No. 218. 73d Cong., pars. 23 and 24) pointed out that bulkheads and groins could be built in such a manner as to conserve the existing supply of beach material, but that the structures would not prevent some loss of material. It stated that artificial replacement of lost sand would be necessary. Replenishment could be effected periodically by hydraulic dredge, in the same way the artificial fill was provided in 1939. Ample material is available in the sound west of the island. Whenever suitable material is dredged in the vicinity for any other purpose, it should be placed on the beach. In some localities the dredging of pleasurecraft basins or channels and replenishment of beaches have been combined to form a beneficial project at a much lower cost than if the two operations had been accomplished separately. The dependability of the supply of material from beaches to the north of Moore Inlet by natural forces could be improved by closure of Moore Inlet. Although the volume of material that would reach Wrightsville Beach following such closure might not be sufficient to eliminate the necessity of periodic nourishment by other means, it would at least reduce the frequency and volume of such nourishment. It would also provide additional land for expansion of recreational facilities. In such event, erection of permanent buildings close to the shore should be prevented. as erosion of the beach would create a demand for costly northward extension of the groin system. Such northward extension and stabilization of that beach would, by depriving Wrightsville Beach of an improved supply of material, defeat the major purpose for which closure of Moore Inlet has been considered.

75. As noted in a previous paragraph, the two most southerly groins at Wrightsville Beach have been flanked and the south end of the island is being seriously eroded. Prior to construction of the groin system in 1939, the southward littoral drift along Wrightsville Beach and the northward drift south of Masonboro Inlet apparently caused the alternate southward and northward migration of the inlet previously noted. During periods of northward drift the south shore of the inlet moves northward forcing the channel against the south end of the island, thereby eroding the end of the island. The southward drift along the island, which replaced the losses at the end of the island and occasionally caused southward migration of the inlet, has been retarded by the groin system. Therefore, continued erosion of the south end of the island may be expected unless protective measures are provided. The south end of the island could be effectively

stabilized by revetment.

76. Carolina Beach to Fort Fisher.—Profiles taken from 1927 to 1940 indicate a continuation of the slow recession of the high-water shore line shown by earlier surveys for all of this area except Fort Fisher. The same portion of the coast lost a large quantity of material from the offshore bottom with resultant steepening of bottom profiles. Continued recession of the shore line may be anticipated. Prevention of this recession could be accomplished by supplying artificially a greater quantity of material to these beaches than is now reaching them naturally. The installation of groins would reduce the amount of artificial nourishment that would be required. However, the present development of this area does not appear to warrant expensive remedial measures. In view of the slow recession of the shore line, a less costly plan would be the shifting of threatened buildings to safer positions.

77. At Fort Fisher the recession of the shore line from 1926 to 1931. indicated in the previous report (H. Doc. No. 204, 72d Cong.) to have averaged 56 feet per year, has continued, although at a considerably slower rate. The average rate at two profiles from 1931 to 1940 has exceeded 16 feet per year. The changes of the offshore bottom varied from heavy erosion at the north end to not quite so extensive accretion at the south end. Continued recession of this shore line may be expected unless protective measures are taken. However, the sand mounds which constituted the principal historic features of Fort Fisher have disappeared as a result of erosion since the Board recommended a bulkhead and groin system to preserve them in 1931. The groin system was designed to retard recession of the beach and the bulkhead to preserve the historic mounds. No protective structures have been built to date. Since the mounds have already been lost, a groin system alone could be constructed now to retard erosion of the shore providing it were extended sufficiently shoreward to prevent outflanking. However, the value of the land now being lost is too small to warrant construction of protective works at this time.

VI. CONCLUSIONS

78. The Board concludes that with respect to the shores of the State in general:

(a) The data obtained in this study, while not adequate for the formulation of definite conclusions concerning the general technical phases of shore processes, will be of value in connection with laboratory and field studies now being undertaken by the Board for the further development of the science of shore protection. Further field studies of this nature should be based on more intensive coverage of smaller areas:

(b) The ocean shore line of North Carolina is, in general, slowly retreating under the attack of winds, waves, and currents. It will continue to retreat in the future; (c) Protection of the entire length of the study areas against further erosion is

obviously unwarranted at this time;
(d) Existing dunes afford valuable protection and should be preserved;

(e) Threatened structures can be protected by dunes, either constructed artificially or formed as a result of sand fences and planting. Low portions of the barrier beach can be similarly protected except where the opening of new inlets

(f) The anticipated general slow recession of the shore line should be considered in planning future development of shore areas. If permanent buildings are erected too close to the ocean, expensive protective measures will be required sooner or later. Areas indicated in this report as having a history of accretion should receive more favorable consideration in planning future development than those having a history of erosion.

79. Consideration of the history of inlets through the barrier beach leads to the conclusions that:

(a) Existing inlets will be unstable in the future as they have been in the past;

Stabilization of these inlets cannot be effected at reasonable cost;

(c) New inlets will open, migrate and eventually close. The only measures considered by the Board to be practicable in effecting partial control of inlet changes comprise the construction of dunes to prevent breaching at low sections where new inlets are not desired, and dry excavation at low sections to facilitate breaching during storms where inlets are desired.

80. The areas for which protective measures may be justified at this time are Fort Macon Point at the east end of Atlantic Beach, and

Wrightsville Beach. The Board concludes that the following actions should be taken with respect to these localities:

(a) Atlantic Beach.—If the State considers stabilization of the Fort Macon State Park Beach essential, it should initiate a new cooperative study with a view to securing a definite plan of improvement with economic analysis based on new

(b) Wrightsville Beach.—It is essential that existing groins be maintained and the artificial fill be replenished periodically. Repairs of the groins should be initiated promptly. Replenishment of artificial fill can be effected by placement of fill by hydraulic dredge. Closure of Moore Inlet would be beneficial to the beach in lessening the frequency and volume of artificial nourishment. A determination of the condition of the offshore bottom should be made to ascertain the necessity of additional fill around the ends of the groins. The north shore of Masonboro Inlet should be stabilized by revetment.

81. The application for this cooperative study did not call for estimates of costs and benefits. It has not been deemed proper to increase the expense to the applicant for the purpose of obtaining economic data not desired by it. In the absence of such data no statement can be made as to what public interest, other than Federal. is involved in the proposed improvements. It is the opinion of the Board that under existing law no Federal interest is involved in the proposed improvements. In accordance with the desires of the cooperating agency stated in paragraph 2, the scope of the study was not increased to provide for determination of possible Federal aid in accordance with the provisions of Public Law 727, Seventy-ninth Congress, which was approved after the study was initiated. Accordingly, the Board is unable to state its opinion as to the advisability of adopting a Federal project for participation in the first cost of protective works, or what share, if any, of the expense of such works should be borne by the United States. If additional cooperative studies of localities on the North Carolina coast are arranged, they will include the determination of possible Federal aid under Public Law 727, Seventy-ninth Congress.

For the Board:

C. L. HALL, Colonel, Corps of Engineers, Senior Member.

At the time of adoption of this report the members of the Board were: Col. C. L. Hall, Corps of Engineers, senior member; Col. L. H. Hewitt, Corps of Engineers; Col. H. D. Vogel, Corps of Engineers; Lt. Col. W. B. Stelzenmuller, Corps of Engineers, assistant resident member; Richard K. Hale, Commonwealth of Massachusetts; Morrough P. O'Brien, State of California: Thorndike Saville, State of

APPENDIXES

(Only tables 1-3 of appendix D printed)

- A. Analysis of sand samples.
- Major storms and their effects.
- Littoral currents.
- D. Shore line, inlet, and offshore depth changes: Table 1. Shore-line changes along unbroken reaches of the coast.
 - Table 2. Comparative conditions of inlets on North Carolina coast.
 - Table 3. Inlet changes.
 - Table 4. Shore-line changes—Paul Gamiels Hill Coast Guard Station to New Inlet.
 - Table 5. Shore-line changes—Atlantic Beach.
 - Table 6. Shore-line changes-Wrightsville Beach.
 - Table 7. Shore-line changes—Carolina Beach to Fort Fisher.
 - Table 8. Changes in 6-foot contours—Paul Gamiels Hill Coast Guard Station to New Inlet.
 - Table 9. Changes in offshore contours—Paul Gamiels Hill Coast Guard Station to New Inlet.
 - Table 10. Changes in offishere contours—Atlantic Beach.
 - Table 11. Changes in offshore contours Wrightsville Beach.
 - Table 12. Changes in offshore contours—Carolina Beach to Fort Fisher.

PLATES

(Only pls. I, II, IV, and V to XI printed)

- I. Locality map.
- II. Hurricanes, swells, and wind diagrams, and nontidal currents.
- III. Changes in low-water shore line—New Inlet and Oregon Inlet.
- IV. Areas of erosion and accretion.
- V. Cape Hatteras, N. C.—shore-line changes.
 VI. Cape Lookout, N. C.—shore-line changes.
- VII. Cape Fear, N. C.—shore-line changes.
- VIII. Movement of inlets on North Carolina coast.
- IX. Movement of inlets on North Carolina coast.

 X. Movement of inlets on North Carolina coast.
- Movement of inlets on North Carolina coast.
- Comparative profiles—Paul Gamiels Hill Coast Guard station to New
- Comparative profiles—Atlantic Beach and Wrightsville Beach.
- Shore-line changes—Fort Macon Point.
- XV. High-water-shore-line changes—Wrightsville Beach and Moore Inlet. XVI. High-water-shore-line changes—Wrightsville Beach.
- XVII. High-water-shore-line changes-Wrightsville Beach and Masonboro
- XVIII. Low-water-shore-line changes—Wrightsville Beach and Moore Inlet. XIX. Low-water-shore-line changes—Wrightsville Beach.
- XX. Low-water-shore-line changes-Wrightsville Beach and Masonboro
- XXI. High-water-shore-line changes-Fort Fisher and Carolina Beach.
- XXII. Comparative profiles—Carolina Beach—Fort Fisher.
- XXIII. Shoals offshore at Cape Hatteras.
- XXIV. Shoals offshore at Cape Lookout.
- XXV. Comparison of shore-line and offshore conditions (6-foot curve) at Cape Fear, N. C.
- XXVI. Comparison of shore-line and offshore conditions (12-foot curve) at
- Cape Fear, N. C. XXVII. Comparison of shore-line and offshore conditions (18-foot curve) at
- Cape Fear, N. C. XXVIII. Comparative profiles—offshore.

FIGURES

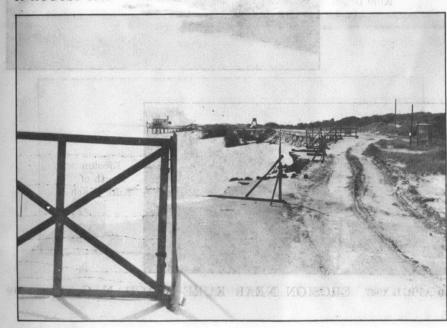
(Only figs. 5, 6, and 8 printed)

- Oregon, New, and Beaufort Inlets, N. C.
 Wrightsville Beach, N. C.
 Carolina Beach, N. C.
 Fort Fisher, N. C.
 Erosion at Fort Fisher, N. C.
 Erosion near Kure Beach, N. C.

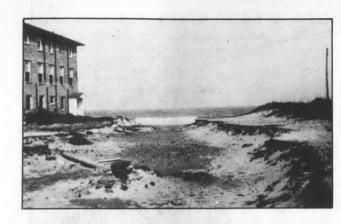
- 7. Effects of sand fences.
- 8. Groins—Wrightsville Beach, N. C.
 9. Intake structure, Kure Beach, N. C.



19 AUGUST 1946



6 DECEMBER 1946 EROSION AT FORT FISHER, N. C. FIGURE 5



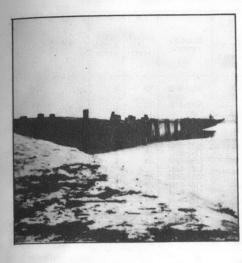
Washout of Street End North of Kure Beach





Erosion South of Kure Beach

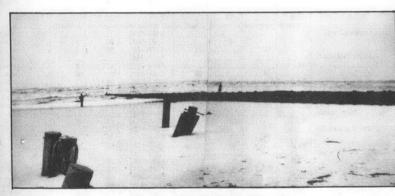
10 APRIL 1947 EROSION NEAR KURE BEACH, N. C. FIGURE 6



Groin at South End of Beach Showing South Side Exposed



Sand Accumulation on North Side of Groin



Groin at North End of Beach

9 OCTOBER 1946 GROINS-WRIGHTSVILLE BEACH, N.C. FIGURE 8

APPENDIX D

Table 1.—Shore-line changes along unbroken reaches of the coast

Location	Num-	Period	Dates of	Net cha		Average	annual in feet	
mile No.1	ber of miles	in years	surveys	Accre-	Ero- sion	Accre-	Ero- sion	Remarks
-4. -32.	4	67	1858–1925 1857	239		3, 56		Only 1 survey.
2-34	2	67	1848-1915		63	20171007	0.94	Only I survey.
-43	9	65. 7	1849-1915	312		4.78		
-43 -45	2	64	1849–1915 1851–1915		131		2.05	
-46	1	64	1851-1915	10		. 15		
-55	9	66	1849–1915 1849–1915		249		3.77	Oromon Inlet
-59 -62	3	65	1849-1915		148		2. 24	Oregon Inlet.
-64	2	65	1852-1917	105	140	1, 60	2. 21	
-69			1852-1917					New Inlet.
1–69 1–74	5	65	1852-1917		395		6, 07	
1-75	1	65	1852-1917	119		1.84		
5-77	2	65	1852–1917 1852–1917		118	F 00	1.81	
-89	12	65 65	1852-1917	379	15	5. 83	. 23	8715-1
)-90)-91	outoita <mark>l</mark>	65	1852-1917	63	10	, 96	. 20	The same of the sa
-93	2	65	1852-1917	00	160		2.46	100
		-	0 -			10 102 1		Level and the second
0-93	56	65. 6		55		. 84		CONTRACTOR OF THE PARTY OF THE
3-100			1852-1917					Cape Hatteras.
00-102	2	57	1860-1917	348	588	6. 10	10.32	
02-110	8	57	1860-1917		588		10. 32	Hatteras Inlet.
10-112 12-119	7	56	1860-1917 1860-1916		563		10.05	7 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
9-124	5	50	1866-1916	171	1	3. 42		Notes Village
24-125	1	64	1852-1916 1852-1916		87		1.36	122 - 225-0
25-127	2	64	1852-1916	353		5. 51		O
27-130			1852-1916	182		3. 64	27777777	Ocracoke Inlet.
30-139	9.	50 50	1866-1016	182	91	3. 04	1.82	
39–142 42–144		50	1866-1916		91		1.02	Sand Inlet.
44-148	4	70	1866-1916 1866-1916 1866-1916 1866-1936	302		4. 31		1201 1201 120 11 11
48-149			1866-1936 1866-1936					Drum Inlet.
49–157 57–158	8	70	1866-1936				1.88	0 1 1
57-158	1		1866-1936		241	teteerer	3. 44	Only 1 survey.
58-159	1	70 70	1866-1936		241		3. 44	Only 1 survey.
59–161 61–163	2	70	1866-1936 1866-1936		101		1. 44	01113 2 001 1 03 1
63-164	1	70	1866-1936	38		. 54		
64-171	7	60	1853-1913		354		6. 26	a Tum vije
93-171	60	59			131		2. 22	firm of
71-179			1853-1913					Cape Lookout.
79-185	6	60	1853-1913		93		1. 55	
85-186	1	62	1851-1913	15		. 24		Beaufort Inlet.
86-190 90-191	1	79	1851-1913 1854-1933				. 14	Doduloi v Illiet.
91-193	2	79	1854-1933	70		. 90		
93-200	7	66	1867-1933 1871-1933		77		1.14	thursten.
00-213	13	62	1871-1933	165		2.66		The same of the sa
13-216			1871-1933	125		2, 06		Bogue Inlet.
16-217	1	61	1872-1933	125		2.00	0	Bear Inlet.
17-219	2	61	1872–1933 1872–1933	7	62		1, 02	The second second
21-222	NE BERTON		1872-1933					Brown's Inlet.
22-223	1	61	1872–1933 1872–1933	47		. 78		The second of the second
23-228	5	61	1872-1933		67		1, 10	New River Inlet.
28-230 30-242	12	77	1856-1933	*******	100		1.31	IVEW ILIVEI IIICU.
42-244	2	75	1858-1933	125	1	1.66		
42-244 44-246	2	75 75	1856–1933 1856–1933 1858–1933 1858–1933		36		. 48	
46-247	1	75	1858-1933	40		. 53		La Dentaria
47-248 48-249	1	75 75	1858-1933 1858-1933		25	41	. 33	THE RESERVE OF THE PERSON OF T
48-249	1	75	1858-1933 1858-1933	31		41		New Topsail Inlet.
251-252	1	75	1858-1933		669	1.0	8. 92	1000000
52-253	7 BB #	1	1858–1933 1858–1933					Old Topsail Inlet.
253-254	1	75	1959 1022		110		1.47	
254-256	2	76	1857-1933	148		1. 95		Rich Inlet.
256-257 257-260	3	76	1857-1933 1857-1933 1857-1933 1857-1933		409		5. 38	Telefi Hillet.
60-261	3	10	1857-1933		109		0.00	Mason Inlet.
	i	76	1857-1933	7	630		8.30	A CONTRACTOR OF THE PARTY OF TH

¹ Measured from Virginia State line.

Table 1.—Shore-line changes along unbroken reaches of the coast—Continued

Location	Num- ber of	Period	Dates of		ange in et		annual in feet	Remarks
mile No.1	miles	years	surveys	Accre-	Ero- sion	Accre-	Ero- sion	Remarks
262–264 264–265 265–266 266–268 268–272 272–275 275–282	1 2 4 3 7	77 77 77 77 77	1857-1933 1857-1934 1857-1934 1857-1934 1857-1934 1857-1934 1857-1934	149	107 179	1.94	1, 39	Barren and Moore Inlets Masonboro Inlet.
171-282	83	70. 4			43		. 52	
282-298	11	82	1852-1934 1852-1934 1856-1933		189		2, 31	Cape Fear. Lockwoods Folly.
311–316 316–318 318–319	5 2	76 74 74	1857-1933 1859-1933 1859-1933 1859-1933	201	61	2,72	3. 58 . 82	Shallotte Inlet.
320–323 323–324 324–325	3 1	74 10	1859–1933 1859–1933 1924–34 1924–34	45	355	4. 50	4. 79	Tubbs Inlet.
325–326 326–327 327–328	1 1 1	10 62	1924–34 1872–1934 1872–1934		32 500		3. 20 16. 25	Mad Inlet.
282-328	25	72.3			196		2, 71	
0-328	224	66. 2			59		0.9	

¹ Measured from Virginia State line.

Table 2.—Comparative conditions of inlets on North Carolina coast O indicates open; C, closed; -, not given

[Table originally given in Annual Report of Chief of Engineers for 1876]

		Co	nditio	n as sh	own by	map	of—		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Name	Hariot, 1585	Lawson, 1708	Wimble, 1738	Mouzin, 1775	Atlantic Nep- tune, 1780	Lewis, 1795	U. S. Coast Survey, 1875	1936	Remarks
Currituck New Currituck Caffeys	0 C 0	0 - 0	0 0 0	0 0 0	COCO	C 0 0 0	0000	0000	Closed in 1828.
Oregon	0	-	0	0	0	0	0	0	Known as New 1838; as Hatorask in 1590; as Gunt
New (Dare County)	C		С	C	С	C	0	0	in 1775 and as Gant in 1795. Closed in January 1922. Artifically reopened in 1924 but closed immediately. Reopened by storm in March 1932. Now closed (1947).
Loggerhead	C	=	CO	CO	CO	CO	0	C	Known as Chickinockcomi-
Hatteras Ocracoke	0	0	0	0	0	0	0	0	ock in 1775. Known as Wokoken in 1590; as Okeracock in 1738 and as Oceacock in 1775.
Whalebone New Normans (Sand) Drum	0 0 0		000	cc		CCC	0 0 0 C	000	Reopened by storm in Sep-
CedarThe Drain (Lookout	=	=	C	C	=	C	C	CO	tember 1933.
Bight). Beaufort	-	0	0	0	0	0	0	0	Known as Core Sound in 1708, and 1738, 1775.

Table 2.—Comparative conditions of inlets on North Carolina coast—Continued

-		Con	dition	as sho	wn by	map o	f—		n n		
Name	Hariot, 1585	Lawson, 1708	Wimble, 1738	Mouzin, 1775	Atlantic Nep- tune, 1780	Lewis, 1795	U. S. Coast Survey, 1875	1936	Remarks		
Bogue Bear Browns Little New River Stump New Topsail Old Topsail Rich Queen (Mason) Barren (Moore) Sandy Bread Shoal Masonboro			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000000000000000000000000000000000000			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000000000000000000000000000000000000	Known as Boug in 1738. Known as Sandy in 1738. Known as Reach in 1738. Open in 1868. Open in 1871. Known as Cabbage in 1738		
New (Cape Fear)	-	->	С	С	_	C	0	С	and 1775. Open in 1774 according to map of John Collet and it 1806 according to map of Cole & Price. Closed it 1876 by Col. Craighill, C. E.		
Corncake Cape Fear River Lockwoods Folly Mary Bacon Shallotte Tubs Mad Little River		- 0 - - - - -	0	0		- - - - - -	- - - - - -	0 0 0 0 0 0 0			

Table 3.—Inlet changes

Inlet	Years	Dis- tance	Area change	A verage change	Direction of coast	Mig	ration	Gorge in f	
		(miles)	(acres) 1	(feet per year)	or coast	Distance	Direction	First	Last
Oregon	66	4 5	-589. 0 -132. 0	-18. 40 -3. 35	S-27° E	7,000	S-8° E	1, 400	2, 200
Hatteras	57	2	-43.5	-3.14	S-68° W	3,800	S-73° W	4, 150	5, 150
Ocracoke	64	3	+206.0	+8.88	S-57° W	1,500	S-32° W	10, 400	10, 100
Drum 3	70	1	-52.4	-6.17					
Beaufort	62	4	-200.0	-6.68	N-72° W	1,600	N-74° W	5, 400	8,000
Bogue	62	3	-1.9	09	S-72° W		S-80° W	3, 700	2,600
Bear	61	2	+26.0	+1.75	S-61° W		S-71° W	1,200	2, 200
Browns	61	1	-1.9	25	S-56° W		S-56° W S-58° W	1,000	1, 200
New Biver	77	2 2	-27.5 $+43.5$	-1.47	S-58° W	3, 100	5-58 W	1,900	1, 900
New Topsail 4	75 75	2	-129.0	+2. 40 -14. 20					
Rich	76	1	-129.0 $+48.3$	+5. 24	S-41° W	400	N-18° E	6,800	1,800
Mason 6	76	1	-40.4	-4.38	0 11 11 ==	100			
Moore 6	76	2	-47.5	-2.58					
Masonboro	77	1.	-28.3	-3.03	S-41° W	1,000	S-44° W	1,900	2, 100
Lockwoods Folly_	77	1	+6.4	+. 69	W	2, 200	N-82° W	1,600	1,20
Bacon 7	74	1	+6.7	+. 74				0.000	1 50
Shallotte	74	1	+52.6	+5.87	S-77° W	800	N-78° W	2,600	1,500
Mad 8	61	1	-60.6	-8. 20					
Average	67.5	39	-964.7	-3.02					

¹ Area of accretion or erosion along section of shore considered to be affected by inlet.
2 Open and closed several times.
3 Closed in survey of 1866.
4 Barrier between Old and New Topsail.
5 Inlet has broken leaving two high water islands.
6 Barren Inlet closed and Mason and Moore opened between surveys.
7 Closed in latest survey.
8 Closed in earliest survey.

Over Size Form

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☐ Fragile		Other	
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COL., CORPS OF ENGINEERS, CONTROL SENIOR MEMBER

COMPILED BY: 10 ACCOMPANY REPORT:
DATED: 22 MAY 1947

FILE NO: 8-30-008

PLATE I 83193 O - 49 (Face p. 34) No. 1

Over Size Form

	Too Large	X	Bound Book
	Fragile		Other
Sh	eet Number:		
Dr	awing/NAVFAC	Nur	mber:
Ti	tle State of Nor	-th	Carolina
4			
	nd Nontidal C		Wind Diagrams,
	ina montgar C	urr	PATE

TO NEW INLET

CORPS OF ENGINEERS, U.S.ARMY

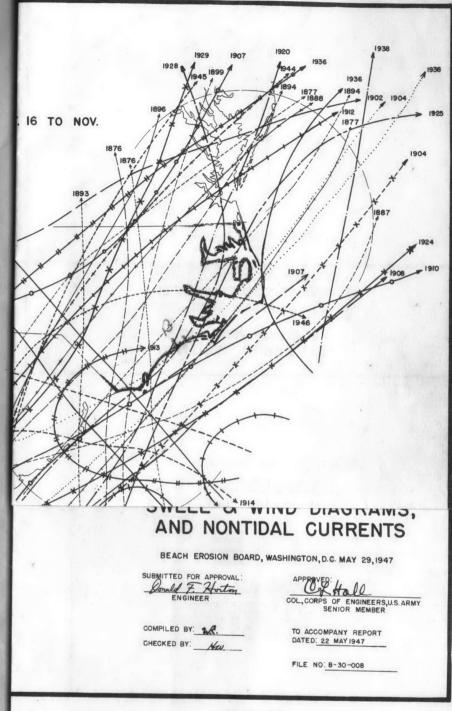


PLATE II

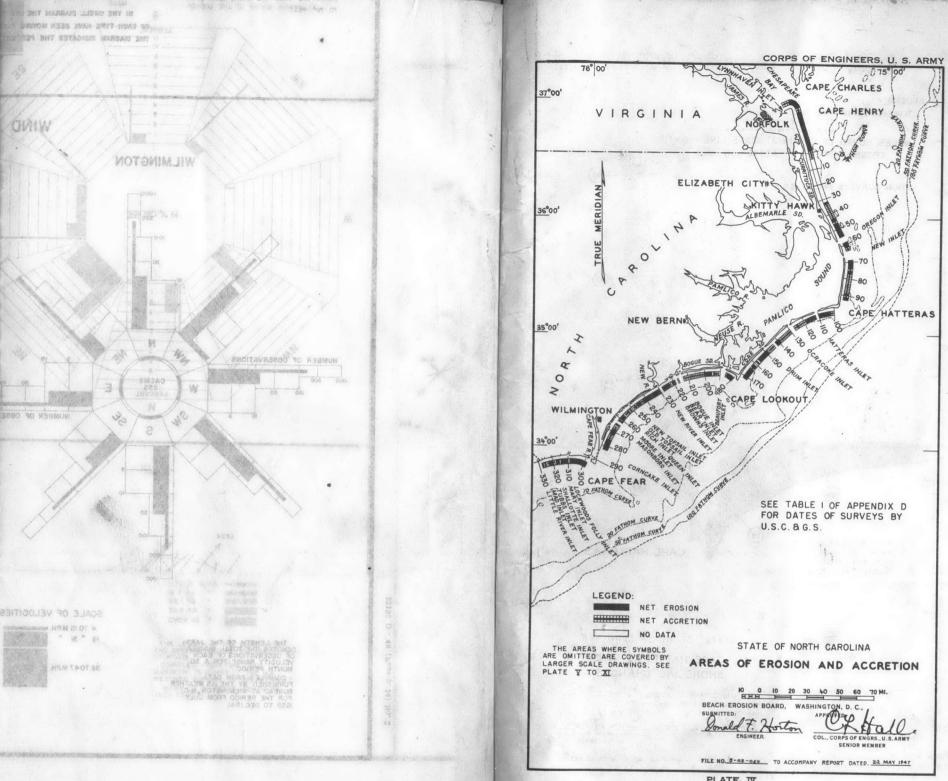


PLATE IV

CAPE HATTERAS

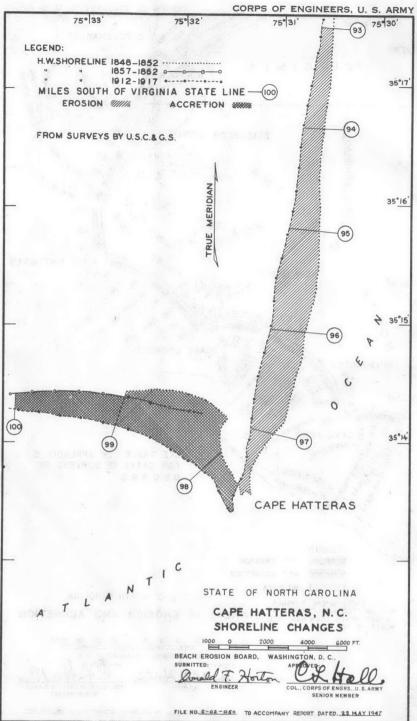


PLATE Y

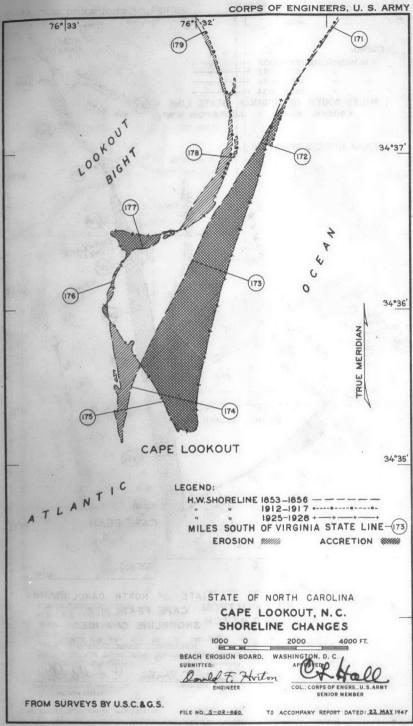


PLATE VI

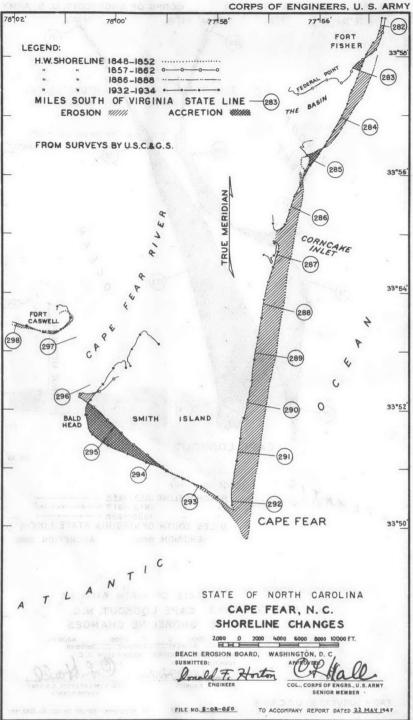
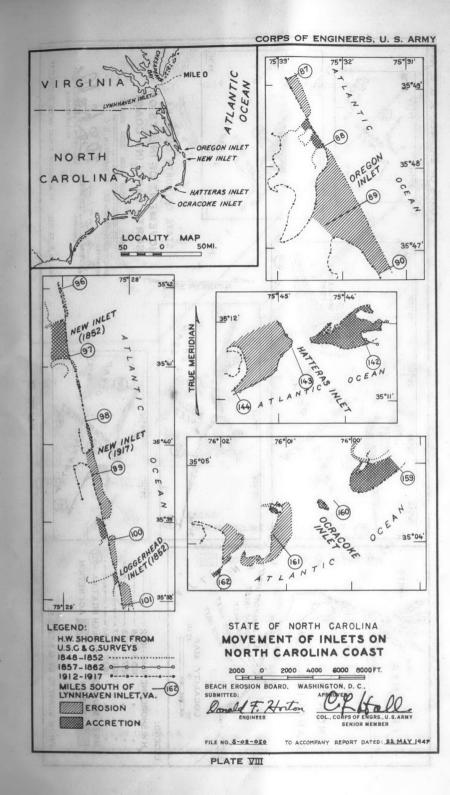
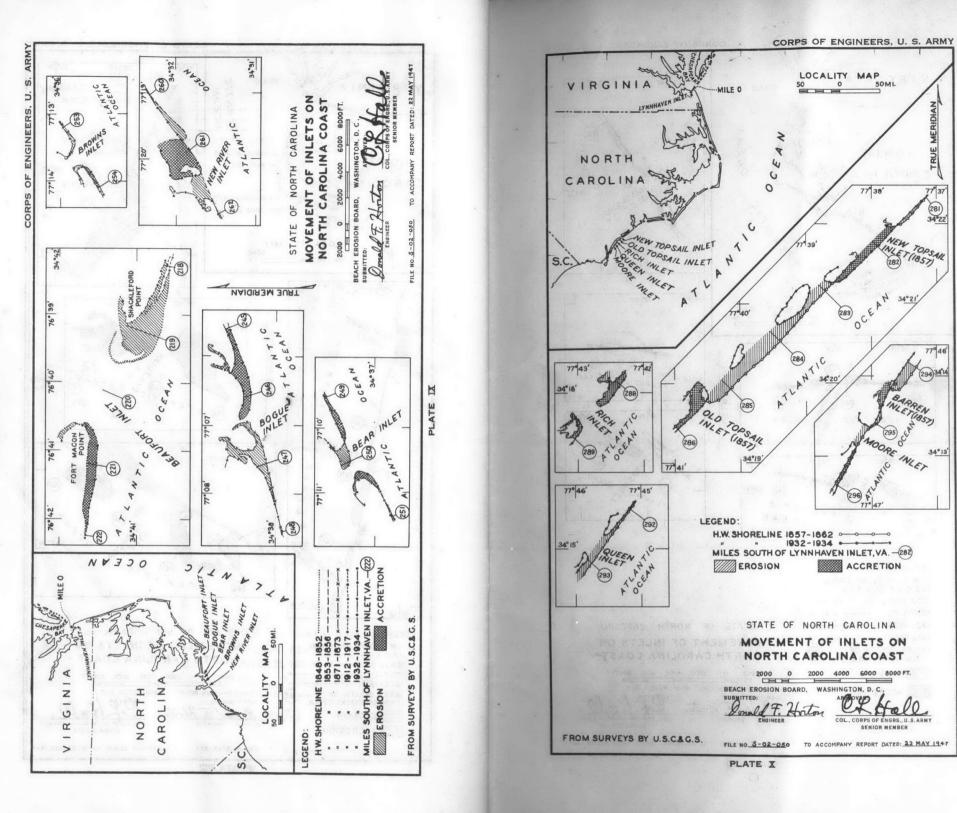


PLATE VI





77 37' 281 34°22

34°13'

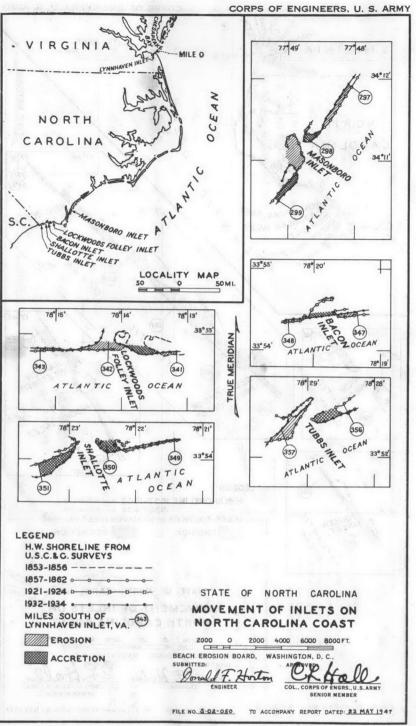


PLATE XI 0

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