

NATIONAL AIR AND SPACE ARCHIVES

Reimar and Walter Horten Interviews

Accession No. 1999-0065



National Air and Space Museum
Smithsonian Institution
Washington, DC

M. Beth Lee
Mark Kahn

© Smithsonian Institution, 2002

Reimar and Walter Horten Interviews
8.03 cu. ft. (20 boxes)

Biographical Note

Reimar Horten and his brother Walter, two largely self-taught aircraft designers, were born in Bonn, Germany; Walter was born on March 3, 1912 and Reimar on March 12, 1915. Their interest in aircraft began as early as 1925 when they joined a fliers club in Bonn. In 1932 Reimar and Walter commenced work on their first piloted all-wing sailplane the Ho 1. The basic concept of the flying wing dates from the dawn of aviation, but the Horten brothers became the virtuosos of this aircraft. The Horten all-wing sailplanes were gliders without a fuselage or tail section. The fuselage and the tail section of a conventional plane produce 30% to 50% of an airplane's drag and generate no lift. The Horten-designed wing also produced drag but, as the by-product of lift. This was crucial to the brothers as they did not want a single aerodynamic surface on their wings that did not produce lift. During the time preceding World War II, the brothers improved upon the Ho I glider, creating other models including the Ho II, Ho III, and the Ho IV. Engines were added to the Ho II and Ho III models before World War II. Both brothers joined the German army prior to the start of World War II. Reimar and Walter then joined the Luftwaffe (German Air Force) during the course of the war where Walter flew the Messerschmitt Bf -109 for six months and Reimar worked for Operation Sea Lion, whose objective was the invasion of England. Upon the cancellation of this operation, the brothers were able to continue their projects, developing many enhanced versions of their original flying-wing. In 1942 Reimar began working on the Ho VII at the Luftwaffe's request, a machine equipped with two pusher type propellers. This model was an interim step to the Ho IX which Reimar also designed. Designated by the German Air Ministry (RLM) as Ho 229, this type was the first functional jet-propelled flying wing. The ending of the war in 1945 halted any further development of this aircraft. After the war, Reimar moved to Argentina where he continued with his unorthodox aeronautical designs while Walter stayed in Germany. Reimar died in 1993 while Walter died three years later in 1996.

Scope and Content Note

This collection contains interviews with Reimar and Walter Horten taped by David Myhra, author of three books on the Hortens including, *The Horten Brothers and Their All-Winged Aircraft*. The collection consists of 60 original audiotapes donated by Myhra. The National Air and Space Museum (NASM) Archives had the original audiotapes remastered onto 61 master reel-to-reels and 120 CD-Rs. The interviews cover the Hortens' aeronautical work, war and postwar experiences and family life. Also included in this collection is a box of transcriptions for some of these audiotapes. These transcriptions are unidentified and consequently, cannot be matched to the correct audiotapes.

Mr. Myhra labeled most of the original audiotapes but each group of tapes is labeled differently. When the audiotapes were remastered, the NASM Archives assigned to each audiotape a new number that follows consecutively from one through 60. Both the assigned numbers and the new NASM numbers are listed in the finding aid description of each audiotape along with the original title.

Abstracts of the sessions were compiled by Russell Lee, NASM Aeronautics Division curator during 2002-03. Frank Carr, NASM volunteer, assisted Lee by transcribing his notes. The abstracts are not structured

NASM Archives
Reimar and Walter Horten Interviews
1999-0065

in complete sentences. Also, the numbers in brackets that are found throughout the abstracts refer to specific time periods (minute and second) within the CD-R. For information on obtaining copies of CD-Rs, please contact the NASM Archives.

CONTAINER LIST

The following boxes contain the original audiotapes of conversations with Reimar and Walter Horten, master reel-to-reel copies, and user CD-R copies. The list was generated from labels on the original tapes.

Original Cassettes

<u>Box</u>	<u>NASM Tape Number</u>	
1	1	Walter Horten No.1 April 20, 1988
	2	Walter Horten No.2 April 20, 1988
	3	Walter Horten No.3 April 21, 1988
	4	Walter Horten No.4 April 21, 1988
	5	Walter Horten No.5 April 22, 1988
	6	Walter Horten No.1
	7	Walter Horten No.2 Autobiography
	8	Walter Horten No.3 [also interview with Mr. Heinz]
	9	Walter Horten No.1 July 1982
	10	Walter Horten No.2 April 8, 1982
	11	Walter Horten No.3 August 23, 1982
	12	Walter Horten No.4
	13	Walter Horten No.5
	14	Walter Horten No.1 Talks about model gliders from age 12
	15	Walter Horten No.2
	16	Walter Horten No.3
	17	Walter Horten No.4
	18	Walter Horten No.5
	19	Walter Horten No.6
	20	Walter Horten No.7
	21	Walter Horten No.8
	22	Walter Horten No.9
	23	Walter Horten No.10
	24	Walter Horten No.11
	25	Walter Horten No.12
	26	Walter Horten No.13
	27	Walter Horten No.14
	28	Walter Horten No.15
	29	Walter Horten No.16
	30	Walter Horten No.17
	31	Walter Horten No.18
	32	Walter Horten No.19
	33	Walter Horten No.1
	34	Walter Horten No.2
<u>Box</u>	<u>NASM Tape Number</u>	
2	35	Walter Horten No.3
	36	Walter Horten No.4
	37	Walter Horten No.5
	38	Walter Horten No.6
	39	Walter Horten No.7
	40	Reimar Horten No.1 August 23, 1986
	41	Reimar Horten No.2 August 24, 1986

NASM Archives
 Reimar and Walter Horten Interviews
 1999-0065

<u>Box</u>	<u>NASM Tape Number</u>	
2	42	Reimar Horten No.3 August 24, 1986
	43	Reimar Horten No.4 August 24, 1986
	44	Reimar Horten No.5
	45	Reimar Horten No.6
	46	Reimar Horten No.7 August 24, 1986
	47	Reimar Horten No.8 August 1986
	48	Reimar Horten No.9 August 1986
	49	Reimar Horten No.10 August 29, 1986
	50	Reimar Horten No.11 August 29, 1986
	51	Reimar Horten No.12 August 30, 1986
	52	Reimar Horten No.13 August 30, 1986
	53	Reimar Horten No.14 September 1, 1986
	54	Walter Horten No.1 May 30, 1987
	55	Walter Horten No.2 May 31, 1987
	56	Walter Horten No.3 May 31, 1987
	57	Walter Horten No.1 April 18, 1986
	58	Walter Horten
	59	Walter Horten No.3 Autobiography
	60	Reimar Horten 1983

**Master
 Reel-to-reels**

<u>Box</u>	<u>NASM Reel Number</u>	
3	1	Walter Horten No.1 April 20, 1988
	2	Walter Horten No.2 April 20, 1988
	3	Walter Horten No.3 April 21, 1988
	4	Walter Horten No.4 April 21, 1988
	5	Walter Horten No.5 April 22, 1988
	6	Walter Horten No.1

<u>Box</u>	<u>NASM Reel Number</u>	
4	7	Walter Horten No.2 Autobiography
	8	Walter Horten No.3 [also interview with Mr. Heinz]
	9	Walter Horten No.1 July 1982
	10	Walter Horten No.2 April 8, 1982
	11	Walter Horten No.3 August 23, 1982
	12	Walter Horten No.4

<u>Box</u>	<u>NASM Reel Number</u>	
5	13	Walter Horten No.5
	14	Walter Horten No.1 Talks about model gliders from age 12
	15	Walter Horten No.2
	16	Walter Horten No.3
	17	Walter Horten No.4
	18	Walter Horten No.5

<u>Box</u>	<u>NASM Reel Number</u>	
6	19	Walter Horten No.6
	20	Walter Horten No.7
	21	Walter Horten No.8
	22	Walter Horten No.9

NASM Archives
 Reimar and Walter Horten Interviews
 1999-0065

<u>Box</u>	<u>NASM Reel Number</u>	
6	23	Walter Horten No.10
	24	Walter Horten No.11
<u>Box</u>	<u>NASM Reel Number</u>	
7	25	Walter Horten No.12
	26	Walter Horten No.13
	27	Walter Horten No.14
	28	Walter Horten No.15
	29	Walter Horten No.16
	30	Walter Horten No.17
<u>Box</u>	<u>NASM Reel Number</u>	
8	31	Walter Horten No.18
	32	Walter Horten No.19
	33	Walter Horten No.1
	34	Walter Horten No.2
	35	Walter Horten No.3
	36	Walter Horten No.4
<u>Box</u>	<u>NASM Reel Number</u>	
9	37	Walter Horten No.5
	38	Walter Horten No.6
	39	Walter Horten No.7
	40	Reimar Horten No.1 August 23, 1986
	41	Reimar Horten No.2 August 24, 1986
	42	Reimar Horten No.3 August 24, 1986
<u>Box</u>	<u>NASM Reel Number</u>	
10	43	Reimar Horten No.4 August 24, 1986
	44	Reimar Horten No.5
	45	Reimar Horten No.6
	46	Reimar Horten No.7 August 24, 1986
	47	Reimar Horten No.8 August 1986
	48	Reimar Horten No.9 August 1986
<u>Box</u>	<u>NASM Reel Number</u>	
11	49	Reimar Horten No.10 August 29,1986
	50	Reimar Horten No.11 August 29, 1986
	51	Reimar Horten No.12 August 30, 1986
	52	Reimar Horten No.13 August 30, 1986
	53	Reimar Horten No.14 September 1, 1986
	54	Walter Horten No.1 May 30, 1987
<u>Box</u>	<u>NASM Reel Number</u>	
12	55	Walter Horten No.2 May 31, 1987
	56	Walter Horten No.3 May 31, 1987 [two copies]
	57	Walter Horten No.1 April 18, 1986
	58	Walter Horten
	59	Walter Horten No.3 Autobiography
<u>Box</u>	<u>NASM Reel Number</u>	
13	60	Reimar Horten 1983

User
CD-Rs

The following abstracts were compiled by Russell Lee, Aeronautics Division curator for the Smithsonian's National Air and Space Museum (NASM) during 2002-03. Frank Carr, NASM volunteer, assisted Lee by transcribing his notes. The Selinger/Horten *Nürflugel* book is referred to in the text. Full citation is Horten, Reimar, and Selinger, Peter F. *Nürflugel: Die Geschichte der Horten-Flugzeuge 1933-1960*, Graz, Germany: Herbert Weishaupt, 1983. Please note that the following abstracts are not structured in complete sentences.

The following abbreviations are found in the abstracts.

AR – Aspect Ratio
AOA – Angle of Attack
BD – Bell Distribution, or Bell-Shape Lift Distribution
BSLD – Bell-Shape Lift Distribution
DVL – Deutsche Versuchsanstalt für Luftfahrt
ESLD – Elliptical-Shape Lift Distribution
Ho – Horten-type aircraft
RLM – Reichsluftfahrtministerium, German Air Ministry

<u>Box</u>	<u>NASM CD Number</u>
14	1a

Walter Horten No.1 April 20, 1988 Side 1 of 2
CD 1a, Walter Horten #1, 04-22-88

Myhra interviews Walter (Walter's English is understandable; he occasionally slips into German), Walter comments on photo of early Horten flying model with gull wing, wooden aircraft construction with thin plywood covering.... taper and sweep of wing (referring to photos, Walter talks in English and German - hard to comprehend what they are talking about). The Rhön model competition was held in June. Walter and Myhra discuss photo of flying model (seen in Selinger/Horten *Nürflugel*, page 24 with 'B 13d' on top of wing), #'s refer to category of the model and contest number given by contest officials [19:30]. Walter: Model tests not very successful because models could not be controlled in flight, ala radio-control [26:57]. Need to build man-carrying experimental flying model led to Horten I [28:57]. Most of Horten I wing covered with linen [36:11]. Walter talks about photos in *Nurflugel*, pages 31-32, of Horten I [Myhra CD 1a, 43:00]. Walter talks about his crash on first flight of Horten I [43:42]. Walter on Horten II control system [46:00]... Horten I at Wasserkuppe just before brothers destroyed it...Walter on Schmitt's (or F. W. Schmitz?) personality.

1b

Walter Horten No.1 April 20, 1988 Side 2 of 2
CD 1b, Walter Horten #1, 04-22-88

Myhra talks to Walter about photos of Horten aircraft...Horten III D-Habicht, etc., painting vs. not painting the Horten aircraft [4:25]; Walter on his early career, "I came from the bombers to the fighters," his aerodrome was at Lipstatt...Horten teams made ribs and spars for two new Horten IIs, assembled at Köln Ostheim...three hangars for three squadrons (of JG26), Oscar Dinort "air-minded for sailplanes" [25:06]; about Ernst Udet, "our

<u>Box</u>	<u>NASM CD Number</u>	
		best time" to work was under Dinort and Udet, said Walter [25:34]. Walter on various cockpits, different aircraft including Horten III. Myhra and Walter discuss Scheidhauer's accident when flying Horten III in 1938 Rhön competition, due to hail encountered in a thunderstorm [while looking at pictures, 58:09].
14	2a	Walter Horten No.2 April 20, 1988 Side 1 of 2 CD 2a, Walter Horten #2, 4-20-88 Myhra and Walter discuss the waggie-wingtip installed on Horten III. Walter elaborates on Myhra picture of an experimental wheeled landing gear [4:50], a VW-powered Horten III (IIIe or g model?). [8:39] Walter on the prone pilot position on a Horten III, very good performance in weak lift conditions, very low sinking speed. Walter then talks about contests one-on-one D-30 vs. H IIIf and H IV. Walter talks about Reimar's desire for best sailplane in the world [27:20]. Photos of wool tuft tests; Horten aircraft equipped with silenced motor; [41:23] Walter and Myhra discuss the Horten III with two seats, now at The National Air and Space Museum and called the Horten IIIh. Walter says it was a ground trainer to prepare pilots to fly the Horten VII; they also discuss various pieces of equipment seen to hang from Horten IIIh in photos. [47:25] Walter talks about Horten Parabola, why it was destroyed; [56:00]; Myhra and Walter discuss the redrawing of many Horten aircraft construction drawings, and other needs, for Myhra's book on Horten aircraft.
	2b	Walter Horten No.2 April 20, 1988 Side 2 of 2 CD 2b, Walter Horten #2, 4-20-88 Myhra and Walter discuss photos; [3:00] Horten Vb...military priest; [5:49] H Vc. [7:50] Horten Vc too underpowered for Walter; [11:51] Horten Vd with tail gunner; 'the Horten VI should be returned to Germany, it will never be restored at the Smithsonian [27:27]; lengthy discussion about a two-seat, all-wing heavy fighter; Horten IX details.
	3a	Walter Horten No.3 April 21, 1988 Side 1 of 2 CD3a, Walter Horten #3, 4-21-88 Myhra and Walter discuss a photo of a Horten aircraft - not identified; Walter discusses air battle with a Spitfire; Galland ordered Walter to escape [6:30]; [22:58] They talk about a Messerschmitt Gigant seen in a photo; [26:04] Horten IX V1 found at Brandeis, aircraft moved there as Russians secured Oranienburgh, Walter thinks it was towed there by a He III aircraft, probably in beginning of April 1945; Walter talks about cockpit noise levels in Horten IX V2; photos of Horten IX V3 with discussion; [41:00] Myhra and Walter discuss Horten IX V3 at NASM. Aircraft related to Horten IX talked about - Horten IX b and c, not handed over to RLM; [45:05] Walter apparently wanted a fin on the Horten IXc, Reimar did <u>not</u> want a fin; Horten XI, delta wing sailplane, never built, only preliminary sketches [53:56]; [57:41] Horten XII mockup discussed, this was intended

<u>Box</u>	<u>NASM CD Number</u>	
		to be a postwar sport trainer, keep his team busy [61:37].
	3b	Walter Horten No. 3 April 21, 1988 Side 2 of 2 CD 3b, Walter Horten #3, 4-21-88 Horten XIIIb, Horten XIIIc that Reimar designed in Argentina; Horton XIV for postwar Olympic Games, rumored in Poland, Horten IV with 16-meter wingspan (contradictions in <i>Nurflügel</i> , page 163) [5:09]; [9:00] Horten XVIII; [10:57] Horten XVIIIb and different engine configurations, jettison landing gear and land on air bags; [20:00] Discussion whether Horten XV (see 47:00) should be included in Myhra's Horten book - is it a real Horten design? Walter insists that Reimar designed it. [35:38] Walter on the Fw 190; [39:06] I. A. e 48?, last aircraft Reimar worked on before he retired; [42:57] Discussion on pilot seating position in Argentina, prone not accepted. [56:43] Walter on Hitler, Wolfram played the accordion [63:00].
14	4a	Walter Horten No.4 April 21, 1988 Side 1 of 2 CD 4a, Walter Horten #4, 4-21-88 Walter talks about family and spouses, Wolfram's wife and son, Sef (?) and Koons (?), Hanna Reitch (sp?), her military pilot badge and Iron Cross awarded by Göring after her Me163 crash; [13:04] Walter's early military career; talking about photographs; [23:53] Photos of Horten II constructed in Bonn family house; Reimar's helpers [25:18] Sheffer (sp?), Franz Berger, Dr. Schrodter, Christian Kaufmann (sp?); Walter on General Walther Wever [31:40]; photos of various German military and wartime personalities; [36:37] Walter talks about getting his license to fly aircraft on instruments in a Junkers Ju 52, his instructor Lufthansa Captain Hankel(sp?) at Geibelstadt (sp?); 1928 Chrysler and "goat's heaven"; more photo ID's on military personalities.
	4b	Walter Horten No.4 April 21, 1988 Side 2 of 2 CD 4b, Walter Horten #4, 4-21-88 Walter, speaking to photos, identifying people; [1:50] Lt. Ziller, his wartime flying career, born in 1915; Reimar's 'grosse Kamera' [4:18], obtained from Bildschule Hildesheim (sp?), recon camera with very good lens; [4:47] Horten IX crash, Scheidhauer's role, Walter does not think Scheidhauer was to blame for the crash (he left control tower), [6:36] Ziller was Focke-Wulf factory test pilot (from Radinger via Myhra); designer of BMW 003, "we got shells (003 engine shells?) from him" [8:51] "he was very helpful"; Wolfgang Späte, won '38 Rhön, Reiher I pilot [12:16] most points. Walter claims idea for gull wings a Horten original, Späte's medals...; [19:31] Walter on Klippeneck, near Bödensee, a soaring school was there, Myhra and Walter talking about a technician working on Horten team, photo of a large flying model that he made (?); Goethert (sp?) of Gotha [25:36], Walter on various Goethert all-wing configurations, Goethert tried to get RLM to cancel Horten IX and produce his own design; Walter on Simone who worked at Dynamit AG; Christian Kaufmann (sp?) died in bomber in Battle of Britain in 1940; Hermann Strebel died in

<u>Box</u>	<u>NASM CD Number</u>	
		Horten IVb with Mustang wing profile in 1944, parachute not hooked in, at Klippeneck; Walter and Myhra discuss photos of various German aircraft; Ted Rossarius flew Horten IIIId [49:37]; Horten's dog Victor (or Vector) was a present from Scheidhauer [57:18] to Walter and his wife when they married in May 1943. Walter flew Do 23 [60:08] bombers [63:02] at Keibelstadt (sp?)?
14	5a	Walter Horten No.5 April 22, 1988 Side 1 of 2 CD 5a, Walter Horten, 4-22-88 Myhra and Walter continue to talk about various personalities seen in photographs; Walter on Horten I [11:00]; [21:27] February 1942 issue of <i>Flugsport</i> shows Northrop flying wing, [53:54] Walter acknowledges that the Northrop may have influenced RLM to become interested in all-wing, lead to support for Horten IX; "Reimar did not like Udet's staff engineers... Lucht [63:21] - was he an Udet staff engineer?"
	5b	Walter Horten No.5 April 22, 1988 Side 2 of 2 CD 5b, Walter Horten, 4-22-88 Myhra and Walter talk about photographs, Walter identifies people; [12:36] Walter was technical representative/officer, every Tuesday, he flew between Instaburg (sp?) and Berlin, to represent Galland at meeting with General Weis, Quartermaster of Luftwaffe, serviceability number's on aircraft, damaged, repaired, etc. Galland, not a desk man, wanted to visit his former unit, JG 26, now on Eastern Front, Walter checked out Galland to fly multi-engine Me 110 [17:00]; [50:19] Walter on Northrop flying wing bombers, postwar; [51:53] Walter thinks that a postwar photo of Reimar (probably pages 239 and 245 in Myhra's <i>Horten Brothers</i>) is unflattering, tells Myhra not to use it; Walter laments Reimar's [62:13] distance from "all activity."
	6a	Walter Horten No.1 Side 1 of 2 CD 6a, Reimar Horten, #1, 1982 History of Klemm aircraft; [8:00] Robert Lusser (sp?), much here about he and Reimar and Walter; [24:58] Lusser one of the first major influences on Reimar's career in aircraft design; Reimar on lift distribution [31:20]; [38:34] Reimar publishes article on bell lift distribution in <i>Soaring</i> "the last year" (June 1981); Myhra calls him Reimar [44:00]; [47:23] 1927 Düsseldorf aviation exhibition. Reimar makes his first model for the exposition, a glider, Walter made a rubber band driven model; Reimar describes his model [to 53:50] and how it flew [53:56].
	6b	Walter Horten No.1 Side 2 of 2 CD 6b, Reimar Horten, 1982? Myhra and Reimar discuss a specific aircraft (unidentified), Myhra sketches as Reimar describes it, bicycle rubber (inner-tube) held the wing on; many flights to investigate [3:27] center of gravity, [4:10] time and distance; glider was hand-chucked from a hill; [4:20] "after about ten flights, we put two rockets here. We made the first start with rockets (and it) was gliding well but it was

<u>Box</u>	<u>NASM CD Number</u>	
14	7a	<p>burning the tail." [10:45] Reynolds number at wingtips, effect of tapering on wingtips; [12:59] aspect ratio and effect Reynolds numbers (talking to sketches) [14:35]; Reimar and Walter made model with tapered and non-tapered wings; [15:26] Model with tapered wings failed; Reimar decided to remove tail in "about 1930;" Reimar and Walter made a model for 1930 "of 20 with taper" but not successful [17:09]; another model flew much better - less taper, profile 8%, middle 10%, root 50% (thickness?) and this one flew 1,800 meters (see above?); Reimar on dihedral, 5 degrees some models, some only had dihedral in wingtips [20:46]. [23:38] Reynolds numbers and "wingtips with slow (Reynolds?) should not be used for rolling moment in sideslip..." [24:55] Model completed in May, man carrying aircraft completed in August; [26:27] Dusseldorf 1927, first time he entered a contest with a model; [27:00] Reimar and Walter's model for 1931... "it flew very good;" Reimar wrote article for <i>Jungfleiger</i>, published in January 1931 [30:22] in which he commented negatively on plan to reduce span limit rule for contest models; Model tested from hill, first hand-chuck and if it flew well, then a large rubber band [31:15] 5 meters long when extended was used, using the same procedure for each launch; [36:00] observing dutch rolls in models; [42:00] prizes were awarded for distance flown, etc. [44:00] the trophies Reimar won : an eagle statue, a mantle clock, a plate with painted tiger; [46:00] Reimar won Rhön soaring contests in 1931 and 1932, Reimar describes his flights, [46:46] Reimar describes the model and the flight in the 1932 contest; [52:00] Reimar begins to think about man-carrying aircraft; [53:00] About 200 contestants in 1932; August 1933, Horten I at Wasserkuppe, began construction in February, first flight in June; [59:24] short segment not related to Horten.</p> <p>Walter Horten No.2 Autobiography Side 1 of 2 CD 7a, Walter Horten #1 [Actually an unnamed WWII German fighter pilot veteran translating Walter's reminiscences] Myhra and interviewer? discussing Me 110 in Battle of Britain etc., Me 110 as night fighter; [19:00] interviewer? on Horten very briefly; [34:45] Professor Dr. Rolf, Bonn University student and leader of Bonn Akafleig 1930-32, Walter's flight instructor at Bonn Hangelar; Walter's theories on aerial gunnery; [50:00] Gunsight technology on WWII German aircraft.</p>
	7b	<p>Walter Horten No.2 Autobiography Side 2 of 2 CD 7b, Walter Horten #2 [WWII German fighter pilot continues translating Walter Horten's reminiscences] Walter's experiences as a fighter pilot during the Battle of Britain; [21:00] Walter's philosophy on kill credits; [28:00] Spitfire high altitude performance vs. Me 109; [33:30] Walter on decoration and awards process; [40:00] various model of Me 109 and their performance characteristics; [50:35] Walter comments on flying qualities of Spitfire V he flew in 1941; [53:29] Walter on U.S. P 51 Mustang; [54:19] Walter on</p>

<u>Box</u>	<u>NASM CD Number</u>	
14	8a	<p>advantages of all-wing configuration; [54:40] Walter transferred from Brest in May 1941, to Galin (sp?) as Technical Advisor to staff of General of fighters; [58:50] experimental ammunition.</p> <p>Walter Horten No.3 [also interview with Mr. Heinz] Side 1 of 2 CD 8a, Interview with Mr. Heinz ____?/Walter Horten #3, no date</p> <p>Unidentified man explaining details about the M 26 aircraft designed by Messerschmidt for U.S. production during late 1920s/early 1930s; [2:38] Kurt Tank's early career; [4:47] Rudolph Hess and M 23 aircraft; [8:00] discussion of crash of a Lufthansa M 20 aircraft during late 1920s; [16:50] Myhra interview with Walter begins, Walter talks about superiority of Spitfire pilots over German pilots; [20:08] Walter on Me 109T carrier-born fighter; [23:55] Walter on importance of high altitude performance in fighter aircraft during the war; Walter and Galland disagreed on the value of Me 109T for high-altitude combat [25:13], Galland could not believe the Me 109T could be better and faster at high altitude; Galland to Goring: "Give us Spitfires" [26:48]; Walter on value of flying wing fighter [27:44]; Walter on photo of Horten IX V2 [30:38]; Walter on [31:06] meeting the mechanic who serviced the Horten IX V2 mechanic, Rössler - the last to see Ziller alive, Rössler had different version of Horten IX V2 crash; [34:00] last flight conditions: Ziller made three passes over a team from Rechlin there to measure speed and altitude, using a theodolite, Z came in to land, gear out at 1,500 meters, aircraft made wide circling turn, then crashed. Walter: blackout possible, problems with one engine caused fumes in cockpit, no visible attempt to line up with runway, no sign of control movements (Walter does not believe that yaw-control problem, caused by the engine-out, caused the crash), Walter then dicusses his last kill of an American pilot of a Hurricane, with pilot dead or unconscious, the damaged fighter made same wide circles like the Horten IX V2 just before crash; Horten IX V2 [42:15] crashed outside airfield boundaries; Rossler's version [42:15] very different from Scheidhauer's account (second-hand); [45:12] Walter also suggests that the Horten IX V2 could have been sabotaged, as easy as dropping a handkerchief in the oil tank; Walter continues the story of his last dogfight; [59:00] Ziller's flight was probably never higher than 2,000 meters, Myhra says Ziller made four flights in the Horten IX V2, according to Ziller's logbook (Scheidhauer has logbook), Rössler's version more logical than Scheidhauer's.</p>
	8b	<p>Walter Horten No.3 [also interview with Mr. Heinz] Side 2 of 2 CD 8b, Walter Horten (not Heinz), no date</p> <p>Myhra and Walter discussing Galland's refusal to take seriously Walter's theories on aerial gunnery; [2:40] on Galland and the Me 262, armament for this aircraft; [11:10] Walter on General Weise (sp?), Quartermaster General, and Eschenauer; [21:35] Fighter Wing JG 400 and Me 163; [22:42] First Horten 229 to first squadron JG 54, August/September 1945, according to Walter; [23:39] 1,000 x 1,000 x 1,000, raids on airfields in Britain, JG 54; [28:00] helplessness of Me 163 after fuel expended, [30:00] Wolfgang Spate; [36:56] Take-off run of Ho 229 short compared</p>

<u>Box</u>	<u>NASM CD Number</u>	
		to other jet fighters such as the Me 262, only three airfields could accommodate the Messerschmitt, Allies bombed them, Walter: Ho 229 could fly from all the German fighter airfields, due to low wing loading; [40:30] trouble with Belko (sp?) on labor, Horten's aircraft performance calculations, RLM and aircraft manufacturers obsessed with high wing loading? [44:00, 47:13] Reimar and Walter payed very close attention to wing loading, horsepower requirement, "performance loading," for flying wings at all altitudes; [49:52] Spitfire designers designed for a fighting height of 7,000 meters, Messerschmitt designed for high speed at low altitude, had small wing with high wing loading, and performed poorly at high altitude; Walter on [52:42] Mustang as dogfighter; [56:12] Walter on Myhra's notion that Me 109 had a weak empennage; weak wings on Spitfire.
14	9a	Walter Horten No.1 July 1982 Side 1 of 2 CD 9a, Walter Horten #1, side 1 of 2, July 1982 Poor quality recording of Walter speaking (Myhra not interviewing) German only, translate and transcribe.
	9b	Walter Horten No.1 July 1982 Side 2 of 2 CD 9b, Walter Horten #1, side 2 of 2, July 1982 Walter only, speaking German, Myhra not interviewing. Translate and transcribe.
	10a	Walter Horten No.2 April 8, 1982 Side 1 of 2 CD 10a, Walter Horten #2, side 1 of 2, 4-8-82 Only Walter dictating, or reading, in German, not interviewed by Myhra.
	10b	Walter Horten No.2 April 8, 1982 Side 2 of 2 CD 10b, Walter Horten #2, side 2 of 2, 4-8-82 Only Walter dictating, or reading, in German, not interviewed by Myhra.
	11a	Walter Horten No.3 August 23, 1982 Side 1 of 2 CD 11a, Walter Horten #3, side 1 of 2, no date Walter only, speaking in German. Myhra does not interview him.
	11b	Walter Horten No.3 August 23, 1982 Side 2 of 2 CD 11b, Walter Horten #3, side 2 of 2, August 1982 Walter only, speaking in German. Myhra does not interview him.
	12a	Walter Horten No.4 Side 1 of 2 CD 12a, Walter Horten #4, side 1 of 2, no date Walter only, speaking in German, Myhra does not interview him.
	12b	Walter Horten No.4 Side 2 of 2 CD 12b, Walter Horten #4, side 2 of 2, no date Walter only, speaking in German, Myhra does not interview him.
<u>Box</u>	<u>NASM CD Number</u>	
15	13a	Walter Horten No.5 Side 1 of 2 CD 13a, Walter Horten #5, side 1 of 2, no date Walter only, speaking in German, Myhra does not interview him.
	13b	Walter Horten No.5 Side 2 of 2 CD 13b, Walter Horten #5, side 2 of 2, no date Walter only, speaking in German, Myhra does not interview him. Nothing on CD after [34:54].

<u>Box</u>	<u>NASM CD Number</u>	
	14a	<p>Walter Horten No.1 Talks about model gliders from age 12 Side 1 of 2 CD 14a, Walter Horten #1, "Talks about model gliders from age 12," side 1 of 2, no date Unidentified speaker (veteran WWII German fighter pilot?), see CD 7a and 7b. Walter was borne November 13, 1913 [3:40] in Bonn, he was the second son; by 1934 Walter had earned his A, B, C Glider certificate; [5:42] Walter volunteered to join Infantry Regiment 17 in Braunschweig rather than be conscripted into Arbeitsdienst; February 4, 1934, Walter enlisted in Third Battalion, 17th Infantry Regiment, commanded by then Major Irwin Rommel, Walter was the tallest man in the regiment and became a machine gunner; gunnery experience Walter learned as infantryman, he later applied to aerial fighting [12:00]. [14:40] Walter transferred to the 11th Infantry Regiment at Braunschweig as an officer candidate at the end of 1934...sent to [14:57] War College at Munich; out of about 500 soldiers, Walter the only one without a tailored uniform, Walter's was army issue; [19:50] After asking for a transfer to the Luftwaffe, Walter transferred to the army infantry war college at Dresden in April 1935, the Luftwaffe had no war college at this time; [23:00] Walter was sent to three aviation schools scattered around Germany; [25:11] Walter was sent to KG 155 equipped with Do 23 aircraft at Giebelstadt, near Wurtzburg; Walter, disappointed, had wanted fighters; [29:12] Walter showed General Walter Wever (sp?) photos of all-wing aircraft; [29:47] on Dynamit AG at Troisdorf, near Cologne; [30:32] Walter asked for transfer to a garrison close to Cologne so he could help Reimar after his regular duty hours. Wever, "very interested" in all-wing aircraft; Walter transferred in early 1936 to JG 134 at Lippstadt, near Cologne; [35:30] Walter shared a room with Trautlaf; Walter's Commanding Officer was Dinort [35:40]; [39:38] Dinort offered Walter his own Ar 65 for flight training and practice; [41:39] Walter moved to Cologne Östheim where he became a Technical Officer, used facilities to build all-wing aircraft, went to Troisdorf whenever possible to help Reimar; [42:30] Dinort made Reimar a reserve officer in JG 134 too; Walter on his gunnery training experiences; [52:49] Walter assigned to First Squadron as ? (unintelligible); [56:06] Udet ordered Walter to complete two semesters at the technical university in Berlin Charlottenburg where he remained until WWII began in September 1939; [56:36] Walter was transferred back to his old squadron (234?) and Reimar was transferred to Königsburg Neuhaus, a glider transport unit; [57:18] ----translator describes details about crash of Horten IX V2, "hear small starter motor," proof of lost engine.</p> <p>Walter Horten No.1 Talks about model gliders from age 12 Side 2 of 2 CD 14b, Walter Horten #1, "Talks about model gliders....," side 2 of 2, no date WWII veteran translating as on CD 14a. Discussion on CD 14a about crash of Horten IX V2 continues; Reimar said that (?) engine had given trouble before, "foreign objects in oil tank...,"</p>
15	14b	

<u>Box</u>	<u>NASM CD Number</u>	
15	15a	<p>...sabotage; acute oil failure, Ziller got airborne without planning to...[12:13]; translator and Myhra speculate on causes; [24:50] speculation on Horten IX flight capability; [29:00] back to speculating about crash causes...to [37:00]; Walter's fighter pilot career continues; [42:00] Walter on Me 110 twin-engine destroyer fighter aircraft; mock combat between Walter in an Me 109 and the best local Me 109 pilot.</p> <p>Walter Horten No.2 Side 1 of 2 CD 15a, Walter Horten #2, side 1 of 2, no date [Myhra interviewing Walter in English] Walter on wartime events, Galland choosing Mercedes Benz SSK as personal car, etc.; VIP visitor to JG 26 one day before Christmas 1940, Adolph Hitler [7:02]; [9:45] Walter on manufacture of all-wing designs in Germany; Walter and Myhra go over photos of Horten aircraft; [14:50] Myhra shows Walter some type of contract regarding royalties (for both Myhra and Walter), Walter speculates on how popular books on the Horten brothers and their aircraft would be; [18:57] "He [Reimar] didn't like to make warplanes, he was more interested to make sailplanes." [19:45] Walter, postwar was more interested in designing and building all-wing motorgliders; [20:41] Myhra and Walter discuss contract for books again--to [27:29]; Walter and Myhra discuss various books and book projects; [29:49] Myhra and Walter discuss various non-Horten German wartime aircraft projects [32:50]; Walter's job after being Galland's Technical Officer at JG 26 was to work for Inspector of Fighters. Walter went to Berlin, ... serviceability of fighters, those in service and those aircraft planned? Walter goes to _____? as Technical Officer under Göring, then Mölders, then Galland, then to Göttingen to oversee Horten IX development, 1,000 x 1,000 x 1,000 Project, Walter found Gaier (sp?) to replace him as Technical Officer on Galland's staff; [39:07] Walter's earliest thoughts on Horten IX, jet engines, Udet's influence; [51:43] Walter's experiences on Mölder's staff, General of Fighters, Walter asked whether 190 better than 109 by Udet.</p>
	15b	<p>Walter Horten No.2 Side 2 of 2 CD 15b, Walter Horten , #2, side 2 of 2, no date Myhra and Walter continue discussions about the Fw 190; [3:21] Walter on Heinkel 177; [6:10] Walter's first meeting with Udet; [7:36] Horten I at Rhön competition, first time a flying wing gains height while soaring; [9:56] Walter recaps his career in the army and Luftwaffe during the 1930s, Rommel's regiment, Kriegsschule München, Dresden Kriegsschule, etc., V1 and V2 licenses, flew Junkers 33, Ju 52; [16:30] Walter meets with Wever, discusses all-wing aircraft, In May 1936, Walter asks for transfer to place near Troisdorf to work on Dynamit AG projects with Reimar, Dinort at Cologne; [28:09] Walter believes that Udet may have told Dinort to support the Horten brother's work on all-wing aircraft; (32:02) new airbase _____? finished April/May 1937...Horten team began to work there, Horten Vb flight there. Walter found Scheidhauer there, built II's, III's, base CO Dinort - Udet behind it all, new CO did not like Horten work; [34:55] Horten IX</p>

<u>Box</u>	<u>NASM CD Number</u>	
15	16a	<p>development, Walter saw real possibility of joining new jet engine to [35:15] all-wing - "very good"; [37:52] Walter's account of the death of Blech during 1938 Rhön competition, Blech flew without belts fastened....; [45:01] Walter's career 1938-39; [48:16] Walter on Prof. Dr. Sigfreid Ruff at Bonn, Walter's aeronautics instructor, Fluglehrer, 1930-33, Chief medical officer at Lufthansa at time of interview, to [52:06]; [52:07] Walter on his first wife; [53:42] Also in '38, worked at factory run by Bruno Warmun (sp?), manufactured parts to build 10 H III sailplanes near Mittelstelle (sp?) für Luftfahrt Technik; [57:39] Udet arranged for the brothers to talk to Heinkel, Walter met Heinkel, Reimar only talked to Hertel (sp?).</p> <p>Walter Horten No.3 Side 1 of 2 CD 16a, Walter Horten #3, side 1 of 2, no date Walter describes aspects of crash of H IX V2 that killed Ziller; [8:50] Walter on Ziller's piloting skills - good. [11:27] Ziller was impatient, too anxious to fly, did not want to wait for Reimar and Walter (they were in Göttingen working on Amerika bomber). Walter then talks about origins of Amerika bomber; [24:50] Discussion returns to H IX V2 crash; [27:10] German A-bomb; [27:58] Walter stopped at border by SS, add 2 train cars carrying ___?; [35:14] Walter on combining elevator and aileron, on H II, but not on H I - very strong structure, H II combined elevator and aileron and flew very well, "reverse spin characteristics" on H I [40:55]; Walter made world's first aerotow (he claims) of a flying wing when he towed Reimar to Wasserkuppe [42:04]; Walter on Dr. Ing. Schroedter [42:18]; pilot licenses in 1911; Walter on using an engine in the H II [43:37]; Walter on Blech's flying wing experiences, H II, H III, aerobatics [49:44]; VW engine, "right out of the car" [52:32], complete with battery, starter, exhaust, and folding airscrew on H III, Walter Micron engine, details on two-wheeled landing gear [54:00]; Walter compares forewing mounted on Blech's H III with canard seen on Saab Dracken and French Dassault.</p>
	16b	<p>Walter Horten No.3 Side 2 of 2 CD 16b, Walter Horten #3, side 2 of 2, no date Walter's education, on working for Messerschmitt; Walter's earliest acquaintance with Udet [2:31]; Walter on General Wever [11:30], Hauptman/Captain Dinort [13:34]; Udet succeeded Wever end of 1936/37; Horten's publicized within Luftwaffe, mid-late 30's, 'working on plastic flying wings at Dynamit AG'. Walter very busy at this time with fighter pilot training, and working with Reimar at Troisdorf; DLV [17:41] Deutscher Luftsportverband; [21:12] German a-bombs; Walter's first wife; Walter's speed record flight [29:00]; [33:30] training aircraft to transition pilots to H IX, pulsejet powered; [40:00] Brothers got their engines via RLM, and they paid for them, an official military project, Walter's contact with Schelp (sp?) - engines no problem; [44:00] H VIII built at Peschke near Minden; [45:26] First takeoff of H IX V1, had to be from Oranienburg (longer runway); H IX armament; Walter on other armament issues, on Vietnam war; back to H IX [56:46].</p>

Box NASM CD Number
17a

Walter Horten No.4 Side 1 of 2

CD 17a, Reimar Horten #4, side 1 of 2, no date

Reimar describing his flight in H I at the Wasserkuppe, hard landing that shattered the skid (very poor recording quality), during 1934 Rhön competition. [18:07] Reimar on trying to get the H I home, Reimar calls Bonn, Essen, Lippisch also refused, even though Lippisch had been to Horten and talked to Max about Reimar [21:00]; (Reimar's pride in H I still evident); cost of Wasserkuppe appearance vs. prize money [27:00]; Super Falke pilot's reaction to Reimar and H I; [31:00] where Reimar ate and slept during the contest and after; [33:40] on saving H I Hangwind; [36:35] Lippisch answers Reimar's plea for help; [38:00] impact of Reimar's young age; [41:21] Birthdates: Wolfram 3 March 1912; Walter 13 November 1913; Reimar 12 March 1915; Gunhilde 21 January 1921; prewar careers; Walter married 1938, son 1939 who is now married with 2 children; [58:04] cost to build H I.

15 17b

Walter Horten No.4 Side 2 of 2

CD 17b, Reimar Horten #4, side 2 of 2, no date

[audio quality poor] Reimar and Wolfram as boys, Wolfram did not help with aircraft model work, more interested when H I built, Wolfram's Kriegsmarine career during 1930s, sailed to Argentina, Spain, India, and Japan; [4:54] Reimar influenced Wolfram to go into flying, German maritime industry, Wolfram's flying career and piloting skills, [10:53] Wolfram's help to build the HI and HII, 1,000 hours to build H I, but 5,000 hours to build H II [11:25]; [16:55] Wolfram's attack on Polish destroyer; [20:22] Wolfram's character, interest in Reimar's work, Walter gone a lot so Reimar relies on Wolfram ("not good to be alone" - Reimar); [23:00] Bonn young fliers club, not Akaflieg, was best preparation for Reimar's career, details, 1927 --, heavy on theory, spar calculation, lift distribution, Reimar was the leader; [27:50] Reimar's father; [28:19] profile calculations, Biernbaum(sp?), calculate L and M, form of Glaupert (sp?) - "profile with center sustentation fixed... the leading edge is negative," father asks about Reimar's work; [30:00] in discussion with brother?; Reimar discovering that lift distribution should not be elliptical, but Reimar still doubted that negative drag could produce wingtip thrust. At Wolfram's urging, Reimar went to Schmitz (F.W.) to tell him that "induced drag should be negative in the wingtip locale... distribution of lift over the span should be the distribution of induced resistance," Schmitz said "keep elliptical distribution. The downwash is constant and induced distribution _____?, there is [no way] to calculate." Reimar told Dr. Schrodter about bell distribution [32:39], Schrodter could not help, Reimar asks father for help to determine whether he is on the right track with bell distribution, he is going to calculate the wing twist for the H II, as a "philosopher, what is most important, physics or mathematics [34:27]? If a system of numbers will not [generate] ... the [desired] result, it will not be logic [logical?] The error is physical or the error is mathematical." Reimar goes to university math professor, Reimar takes class on functions in early 1935, math vs. philosophy with Reimar's father,

<u>Box</u>	<u>NASM CD Number</u>	
15	18a	<p>goes to class with Reimar, mathematical contradiction; [38:25] "negative thrust is physics;" [38:39] write to Prandtl; Lippisch and elliptical distribution [43:02] "...Prandtl had said it, it was optimal and the downwash was constant without this point" [43:35]. Reimar's wing design; whether wing stalls at center section or wingtip; "I was building the H II to prove it" [48:50]; [55:12] Myhra summary: Reimar to Lippisch for help, University of Bonn professor for help; Reimar on use of wind tunnel to investigate bell distribution.</p> <p>Walter Horten No.5 Side 1 of 2 CD 18a, Reimar Horten #5, side 1 of 2 Reimar on aileron changes to H I, design details that required new sailplane, H II - width of center section, "independence" from tow plane; [5:11] Reimar on Lippisch, patience; results of first flights [7:05]; <i>Flugsport</i> article about H II [11:05]; Working for Northrop [15:00]; on working with Prandtl [16:35]; Reimar on Kupper [24:09]; Reimar on his young personal life [26:59], dating; Reimar's first experience with tools working on _____? like Wolfram and Walter; [28:17] at 10, 11 years old, Reimar begins to help with any sailplane or glider project he can find in Bonn; Reimar gained more and more experience in woodworking, with Walter, helped to repair damaged aircraft; [29:53] worked on Professor sailplane (designed by Lippisch) and met Ruff (Siegfried), "chief of the group"; Reimar on another mentor, Landmann (sp?) [30:52], a professor who lived in Stettin, Landmann (sp?) [32:23] helped Reimar recalculate the loads on the H I, due to Reimar's errors; [33:32] as teenager, aviation was all consuming, "for girls, I didn't have time," [35:21] too busy with school, aircraft theory and calculation, construction and testing, "we were [completely occupied] with it [37:46]; Reimar "was angry" that Walter would not help him with work on all-wing aircraft but Walter preferred to date, etc., enjoy life [38:04], Reimar had to spend more time on work, without Walter; [38:40] Reimar on value of his own enthusiasm, Walter's failure to grasp importance of lift distribution theory to the all-wing concept; Reimar on sports as a "bad thing," money spent for military uniforms that he needed for aircraft development work; [42:57] Reimar on flight test results with H I, another defect in the H I; [43:42] Reimar on developing the prone (reclined) pilot position, using his bed, then testing his ideas using the H II; on CG of H II and use of ballast; [49:52] number of hours Reimar flew the HII and H I; [51:00] Reimar on good performance of H II motorglider; [52:07] Reimar on quality of the airscrew; more impressions of flying the first H II in prone (reclined) position; maximum speed, stall and climbing speed, engine overheated and damaged, Reimar very pleased with H II performance, Reimar flew 1,000 hours? during about 4 months, Reimar enjoyed flying the aircraft, during this period he felt like a pilot for the first time.</p>
	18b	<p>Walter Horten No.5 Side 2 of 2 CD 18b, Reimar Horten #5, side 2 of 2, 1982 - (?) Reimar continues to discuss loan of second engine used in H II, lent by Helmut Hirth (Wolf's brother) but returned, per agreement,</p>

<u>Box</u>	<u>NASM CD Number</u>	
		in 1937; Reimar on lift distribution [3:44] decided to experiment with waggle wingtip configuration to measure effect on wingtip negative drag/thrust, work done at Lohmar(sp) near, 7 kilometers, from Troisdorf, details on design and construction of waggle-wingtips; [9:55] results of flight tests; end of the first H II [14:00]; more on properties of materials used to make waggle-wingtips, spars; [19:03] Hanna Reitsch flew H IIIc? D-11-347?; [19:37] Reimar on father and mother, 3 doctorate degrees, around 30 books [24:14], spoke several languages; [24:37] father lost his money after the war, offered better paying job in University of Breslau, Max retired in 1934 with pension; Elizabeth died in 1945; moved parents to Gut Tierstein to avoid bombing, father suffered heart attack at 71 and died about a week later; [31:41] Reimar on he and Walter, working in Bonn while their father worked in Breslau; Max's philosophy of life to Reimar at age 14 [33:00]; Reimar continues discussion on relationship with his father; [37:13] Reimar's grandfather and grandmother, great houses, stone quarry, loss of foreign investments; [42:47] working on H I in the family home, damage to the home not great; [45:00] 12-room house but Reimar only used 3-4 rooms; [47:05] Reimar's relationship with teachers at school, he got along with math/physics/chemistry teacher, Reimar was "a poor student" because he had little time to study; age 67 at time of interview [53:28]; Reimar's publishing record; [55:52] Reimar's favorite books as a boy, engineering and aerodynamics, Prandtl.
15	19a	Walter Horten No.6 Side 1 of 2 CD 19a, Reimar Horten #6, side 1 of 2, 1982 Reimar on Prandtl and the important books that Reimar read, <i>Flugsport</i> and <i>Flight</i> from UK [3:03]; [3:47] Reimar on Walter from 1925-26 in aviation, date by date on flight ratings, etc.; career as fighter pilot [9:44]; Reimar on Walter' opinion of the Fw 190 [19:00] vs Me 109, Walter and Reimar both favor Me 109; [21:00] Reimar works with Walter, to postwar and Argentine; [25:40] Walter retires about 1972-75 for political reasons, Walter did not make colonel; [32:15] Walter as a boy, his interest in aviation, extent of his influence on Reimar's research; [37:45] Walter's help on bell lift distribution; [43:02] Walter's help on H I and H II, Reimars busy schedule during mid-1930s, accomplishments due to Walter; [51:05] Walter and Reimar together on all aviation experiences during early days, only difference was Walter's age allowed him to fly sooner; [53:23] ease of working together, no friction unless girlfriends interrupted, "no time for differences, we were really brothers," it was "our work" and "our plane"[56:24]; [58:28] Reimar's anger over the requirement to do physical training, maintain uniforms, and march, etc., for his military service, 3 and 1/2 months basic training at the same time Reimar had six men working at Troisdorf.
	19b	Walter Horten No.6 Side 2 of 2 CD 19b, Reimar Horten #6, side 2 of 2, no date Reimar continues on military duties as distraction; [1:28] Reimar wanted to be independent on design and construction of H I,

<u>Box</u>	<u>NASM CD Number</u>	
		"responsibility.....is mine," the H I project, experimental testing, not a public demonstrator, once some bugs worked out, Reimar took H I to Rhön for public demonstration and possibly state support, Bruno Loertzer, chief/asst. chief of Nazi aviation, took notice but no state support; [10:00] Reimar on marriage and family vs. all-wing research; [12:15] Reimar on Antz and Wentland(sp?) witnessing Walter's flight in 1935 H II (Antz was engineer charged with promoting experimental aircraft for RLM), Antz "a man without ideas," RLM stayed with biplane designs for too long [23:29]. Reimar on biplane structure, RLM affinity for, Hitler's lack of expertise in aeronautics; [27:01] if Walter Wever had lived...; [36:39] public reaction to Reimar's flight of H I at Wasserkuppe; [43:57] Why Reimar considered himself a bad pilot; Wasserkuppe regulars told him to bring tools to repair the glider whenever Reimar came to airfield to fly; [50:35] H II, no airbrake and no wheel landing gear other than skid, not suited to Wasserkuppe's short landing area, pilots like Reimar, with low time and modest skills, easily crashed; [52:40] Reimar damaged H II undercarriage 2-3 times in 1937 landing at Wasserkuppe - Reimar's crashes undermined his own effort to 'sell' the all-wing as easy to fly; [54:20] Reimar on H I as dangerous aircraft to fly; [55:17] Reimar: a baby could fly the H II and III, they flew themselves. [55:34] H Ib that Reimar designed and built in Argentina was flown without an accident for " 28 years without crash" by hundreds of pilots, different airfoil than H I but the same otherwise, Grunau Baby performance; [58:04] Reimar believed that there was tremendous interest, more than in any other design, among Wasserkuppe contestants, Horten all-wing won design prize over the Darmstadt D-30.
15	20a	(Reimar pronounces word difficult as 'difisle') Walter Horten No.7 Side 1 of 2 CD 20a, Reimar Horten #7, side 1 of 2, no date (poor audio quality) Reimar on Walter's early aviation and military career; H II design goals, compared to H I [2:01], very difficult to attach and remove H I outer wing panels, elevator rework for H II, etc., more plywood in the nose, rearrange pilot seat placement vice wingspar, change about "50%" of H I design, Hirth 60 horsepower engine; [8:11] the aerodynamic calculations that Reimar wanted to test on the H II, airfoil characteristics, etc., center of gravity; [10:40] Reimar meets with Dr. Schroedter to discuss characteristics of steel tubing; [16:09] Reimar submits his design to Wasserkuppe design board; [18:00] Reimar's intention to win the design prize at the Wasserkuppe, use the prize money to build the H II, then fly both aircraft and compare them; [20:00] Flying conditions, H I flights at the 1934 Rhön competition; [25:00] Reimar working alone on the H II, Reimar simplified H II control system layout; [30:29] Reimar and Myhra refer to a drawing or photo as they discuss H II control layout; [33:11] a problem with the H II, center of pressure and center of gravity were not the same; [34:34] Reimar on idea behind lack of adverse yaw in the H II, bell

<u>Box</u>	<u>NASM CD Number</u>	
15	20b	<p>distribution, H II engine; [39:45] plastic materiel to cover nose section, Reimar goes to Troisdorf to get this transparent 'Mipolan,' beginning of work with Dynamit AG, discolored in sunlight so Reimar switches to new materiel; [43:30] H II speed range and climb performance; [48:45] Dr. Leysiefer invites Reimar to Troisdorf; construction details of the Hols der Teufel [53:29]; properties of the materiel, resists fuel etc., but hard to glue; ratio of chemicals/varnish to paper [58:00], problems with manufacture.</p>
		<p>Walter Horten No.7 Side 2 of 2 CD20b, Reimar Horten #7, side 2 of 2, no date Reimar continues discussion of work at Troisdorf; [11:25] Leysiefer green-lights Reimar to build H Va, Reimar design philosophy, questions to answer-loss of lift over the center section, construction details; [19:00] Reimar called to the Army, serious interruption to work at Troisdorf, Reimar finishes basic training, gets permission to return to design work with very limited military duties; first flight in H V in 1937, Walter and Reimar, ground-loop crash destroys aircraft [22:27] at Bonn-Hangelar; [24:00] H V? project cost 40,000 Marks, but company claimed several patents, good experience fabricating, to justify cost, then Dr. Leysiefer died, ending work with Dynamit AG, more on crash; [28:30] Reimar sums up Troisdorf work, "thousands of tests" with materiel strengths, bending, gluing, etc. [29:07] Reimar on Dr. Pinton, glue specialist who worked throughout the war; [30:10] Reimar on the three H IIs that Dinort asked the Hortens to build, one each for Reimar, Walter, and Dinort to tour Germany in 1936 or 1937(?), Reimar to make a few changes, aerobatic, strengthen airframe, etc., first H II finished June 1937, paid for by Luftwaffe in Köln, via Dinort; Dinort to supply new Hirth engines [38:25], all three H IIs flown during 1937 Rhön competition, very little training to fly in contest, Reimar had problems with landings, crashed his H II several times; [43:01] Kunz, chief of competition in 1934 and 1937, wrote letter to Dinort saying Horten wing in no condition to compete at Rhön; [45:34] In 1937 Dinort orders two H III sailplanes for 1938 Rhön, Reimar discusses details about H III, 20 meter span; [49:10] Reimar asks Dinort for new, trained pilots for H IIIs; [49:44] Reimar meets Scheidhauer when Scheidhauer offers to fly one of the H IIIs in the 1938 Rhön contest; [52:07] Reimar finds other pilots, Blech; [53:37] Reimar goes to Bonn with three H IIs, later one H III, now had four Luftwaffe pilots on Horten team but a sponsor (Luftwaffe) could only field two pilots, so Reimar and Walter held a fly-off to determine two best pilots; Reimar discovers various calculations and strategies to get the most from the Horten gliders.</p>
	21a	<p>Walter Horten No.8 Side 1 of 2 CD 21a, [No data on this disk?]</p>
	21b	<p>Walter Horten No.8 Side 2 of 2 CD 21b, Reimar Horten #8, side 2 of 2, no date Reimar talks about long-range obs/bomber, fly around England, war begins, activities at this time; Reimar not called up with many other pilots; [2:45] Reimar assigned to a flying school at</p>

Box

NASM CD Number

Halberstadt, flew Ju 33 and Ju 34, flew 1,000 kilometers per day as a student pilot, Reimar sent to fighter training school, summer 1940; [6:57] Battle of France over, prepare for war with England, Reimar sent to Braunschweig, prepare five H IIIs and two H II gliders for invasion of England, eight boxes/400 kilograms of ammunition, 20 kilogram/square meter loading, Scheidhauer soaring; [10:15] Walter visits Reimar at Braunschweig, began mockup of center section of H IV, move to Königsbergh-Nerehausen; [14:41] Mid-1941, school moves from Königsbergh-Neuhausen to Frankfurt-am-Main; [16:15] Walter gets permission to repair H V(b?) to present to authorities at RLM to encourage all-wing development; [17:56] details of H V rebuild, b to c two seater; [18:41] Reimar begins to conceive the next aircraft, an H V with heavier engines; [20:00] R considered building an H VII powered by two Argus engines and one ramjet; [22:41] Berger built an H III at Bonn, Reimar modified to be motorglider; [26:46] Reimar and his team begin H VII at Göttingen; Creation of Sonderkommando LEN III to build H VII [28:13]; but no money; Luftwaffe [29:05] helped with materials and payroll; order to build went to Peschke, sent from either Udet's or Galland's office; [31:37] Reimar had his own hangar, free labor including a draftsman; [34:39] other projects including the first turbojet engine, Reimar began to think about H IX; [36:48] Walter pushing to get design of H IX done more quickly. [46:00] H XIII born, work on the H IX proceeds; [48:30] Walter speaks to Col. Diesing who arranges meeting with Göring, August, 1943 - Göring orders work to continue on H IX, Walter changes Sonderkommando LEN III to Sonderkommando IX, very risky subterfuge for Walter; [53:15] Reimar on error in dimensions supplied to Horten for the 004, main spar of H IX already built to 60 centimeter diameter, Horten not part of industry mainstream, a Luftwaffe unit so communication from RLM poor; [57:37] Reimar on similarities one to one of H VI and H IX, same aerodynamic effects on the center section, Reimar anxious to fly the H VI and study the aerodynamics over the center section before the H IX V2 flies; [58:53] September/October 1944 an H VI to Göttingen from Aegidienburg; H IX V2 finished and shipped to Oranienburg, [60:39] Reimar "wanted to see that the stability had changed with this effect of the center" when Scheidhauer flew the H VI.

15

22a

Walter Horten No.9 Side 1 of 2

CD 22a, Reimar Horten #9, side 1 of 2, no date

Reimar continues discussion on H VI, Scheidhauer reports the sailplane difficult to fly, H IV flown to compare with H IX, Strebel flew the H IV, H VI superior in all respects, took off in darkness for fear of air attack; [5:02] To Kirtorf, near Kassel, where H XII was built, Walter put 30 men from Oranienburg SS detachment to work on ____?, H IVb project started in Hersfeld, other aircraft project movements, _____ aircraft to Göppingen Hornberg in southern Germany; [7:13] Reimar on H IVb with plastic wing components, Reimar on preparing Röttweil workshop with 10-12 men to build H IVb; research required on H IVb with laminar wing profile from P 51 Mustang, Reimar talked with Prandtl at end of

<u>Box</u>	<u>NASM CD Number</u>	
		1944; [11:56] Reimar continues research on bell distribution, H IV Werk Nr. 24 wingtips broken, so span shortened. [15:16] Reimar on development of H XIV, hoping for 0.5 meters per second minimum sink, 30:1 Lift/Drag ratio and handle as well as H IV but weighing 100 kilograms less; [18:18] Reimar on H VIII, compared to H III, powered with 6 Argus motors, interim test aircraft leading to H XVIII Long Range bomber; [20:17] Reimar on H IV with aerodynamic quarter-line, H VI had different quarter-line, Reimar on ramifications of these aircraft and H IX; for H IX at high-speed, lower stick forces; Reimar discusses the CL range he sought in the H IX, importance of Scheidhauer's test flights to validating Reimar's calculations on the H IX [23:22]; [25:57] Scheidhauer flew the H VI 5-10 times each about 1-1.5 hours, about 10 hours total, Reimar on distribution of the two H VIs, one to USA, the other (flown by Scheidhauer) was destroyed by a British team in August/September 1945; [30:27] Reimar on second H VI, not flown, chief of Hersfeld shop, turned the sailplane over to Allies, aircraft and trailer loaded on ship at Bremen - to U.S. [33:00] H IV Werk Number 25, its fate.[38:33] Reimar, end of 1938, Horten activities, Hanna Reitsch to fly a Horten sailplane, an H II, how it happened, number of flights, Hanna <u>not</u> dressed for flying, Walter towed, Horten reaction to Hanna's comments, concern for Udet's reaction to Reitsch's report; [55:15] Reimar on Udet's secretary, Walter's relationship with her, drafting work orders and telegrams she typed for Udet's signature - kept the Hortens in business; [58:40] Udet first meets the Hortens; Reimar and Myhra discuss photos.
15	22b	Walter Horten No.9 Side 2 of 2 CD 22b, Reimar Horten #9, side 2 of 2, no date Reimar on Udet, on development of dive bomber by Udet, his work on Me 109; [5:00] Chief of aircraft development for the Reich was former head of Flak, destroyer of aircraft; various aspects of aircraft development and how the RLM administrators prevented or discouraged it; [7:58] Udet's aid to the Horten brothers, Udet's problems with Heinkel and Messerschmitt - He 177, Me 210, Me 410, Udet's responsibility for these failures [13:00]; [13:59] cause of his suicide; [22:15] Reimar on what he could have accomplished working with Heinkel, on the H IX, for example; [25:08] Reimar discusses working relationship between Lippisch and Messerschmitt, Reimar wanted this same type of arrangement with Heinkel; Horten met Hertel instead of Heinkel, Hertel "the brake" to making something work out with Heinkel; [31:00] Reimar on Walter's chances to work with Heinkel, Reimar wanted to keep the five men and their families working with him; [34:45] Reimar on continuing his education versus going to work for Heinkel; [38:00] Reimar on relationships with Messerschmitt, Tank, what kind of men they were; Reimar on H X [53:00]; Prof. Ruuff taught Reimar flying in 1930, on acceleration testing to increase pilot G-tolerance, Reimar made calculations on cabin filled with water; animal testing [57:00], more details on Reimar's experimental aircraft cabins.

<u>Box</u>	<u>NASM CD Number</u>	
	23a	<p>Walter Horten No.10 Side 1 of 2 CD 23a, Reimar Horten #10, side 1 of 2, no date Reimar on Klemeyer who wanted to fly a Horten all-wing, H III motorglider, RLM ordered 50 H IIIa's with VW engines, Klemm to build, Klemeyer chief of experimental aircraft, like Udet; [8:00] field kitchens; [9:33] facilities at Göttingen; [12:19] Reimar returned to Germany in 1962 expecting hostilities, 16-hour days at end of war, Walter sent train tickets to save; [14:40] Reimar on Walter's administrative skills, care for work, Walter's first marriage; [18:00] How much money did Göring give Reimar and Walter and how Reimar spent it; [26:49] Reimar on his personal finances, means of living; [28:52] Reimar lost all money at war's end. [29:10] Reimar on H VII fate at war's end, burned everything including tow planes, only folding propellor spared; [31:49] only H Vc given to AVA test group, its fate, burned during crash landing at end of 1943, 3 H V's built, Reimar details; [36:29] Reimar on number of H VII's built and their fate; [37:27] Reimar on H III h preserved at NASM; [38:10] Reimar on H XIII, crashed and repaired in 1944, flew at Göttingen more than 10 times; [41:27] Reimar on Strobel's death in an H IVb; [45:15] Horten built 42 sailplanes and motorgliders, Klemm-Peschke-Gotha aircraft not included, survive today (early 1980s?) in USA, one H VI and one H IV, in Poland pieces of the H XIV, and one 2-seat H III in USA, possibly H IIIh; [48:10] Reimar on patents, he did not patent much if anything; [52:30] Reimar speculates on working for other German aircraft manufacturers; [54:18] Reimar on conflicts between government aircraft inspectors and the need to sometimes cut corners in materials (Reimar used Gaboon plywood instead of aircraft grade to repair aileron on H III in 1938) inspector reported the problem to Dinort.</p>
15	23b	<p>Walter Horten No.10 Side 2 of 2 CD 23b, Reimar Horten #10, side 2 of 2, no date Reimar on structural characteristics of wing, design goals and trade-offs, "pressure dynamic," design of H VII; [4:26] Walter brought drawings of Junkers 004 engine to Reimar in Minden in winter 1942; [6:09] Reimar calculates dynamic pressure loading on the H IX (or modified H VII?), 3,000 kilograms, 5,000 kilograms, 6,000 kilograms, wooden wing could not withstand, started anew on the H IX, began by using 15- millimeter-thick plywood, etc., many problems encountered, weight varied 5-6.5 tons, size of control surface varied, etc., Reimar pushing the strength limitations of wood in a jet aircraft; [10:14] H IX design came out lacking ultimate strength required of a combat aircraft but satisfactory for testing, Reimar's attempt to modify the H VII to accept jet turbines failed and he had to start the H IX design from scratch, Reimar remarks again and again on requirement on '22 millimeter for gluing' (spar depth?)...additional spars required; [17:55] why not use metal, aluminum for H IX parts? Reimar: reduce radar reflectivity, 9 centimeter radar wavelength, use of coal to reduce radar reflectivity on aluminum; [21:25] Reimar on building from metal instead of wood for the H IX; [23:43] Reimar planned to build H VII from metal but RLM ordered it all-wood as</p>

<u>Box</u>	<u>NASM CD Number</u>	
15	24a	<p>it would remain a trainer; [24:32] Why a turbojet powered all-wing? - for speed. [24:59] Göring's speech beginning of 1942, 2-engine German aircraft, 17 different types, complex parts but none interchangeable. Göring reasoning behind 1,000 x 1,000 x 1,000 edict; [34:30] Walter first heard about turbojet engine October/November 1941, Reimar and Walter witness Heini Dittman fly the Me163; [38:44] overall impressions of people watching this flight, Walter and Scheidhauer both flew the Me163. [43:37] Reimar and Walter ask Dr. Frantz for two 004 engines, Reimar estimated 50,000 Marks for each 004 engine, only 20 men, including apprentices, working to build 004 engines; [47:15] Horten received first one mockup, then two complete engines. The mockup was actually a complete run-out engine with accessories <u>inside</u>, new engines had accessories on the outside. [53:00] Reimar on status of BMW 003, why he wanted Junkers 004; merits of different turbojet engines and designers.</p> <p>Walter Horten No.11 Side 1 of 2 CD 24a, Reimar Horten #11, side 1 of 2, no date Reimar continues discussion about Junkers turbojet designers and engineers, centrifugal-flow design and axial-flow; [4:32] Dr. Frantz's reply to Horten request for 004 engines; [6:04] H IX a secret project but a few knew of it at RLM, Junkers, Milch; [7:06] confusion between Myhra and Reimar over timeline for H IX engine work, not 1941 but 1943; [11:30] various configurations considered - 2 Argus pulse jets with 004 mounted below, etc. [14:03] Reimar quickly came to belief that the turbojet was ideal for tailless aircraft, RLM saw conventional airframe application - Me262; [16:11] Reimar on worldwide lack of confidence in all-wing aircraft, RLM engineers such as Reidenback; [18:00] Freudenberg (sp?) gave prize to Reimar and Walter for innovative design, all-wing to turbojet. [22:42] H VII Walter's favorite Horten aircraft, Scheidhauer liked H IV best, H VI difficult; [23:20] mathematician asked to help solve bending problem with H IV and H VI (Karl Nickel?), said make spar bigger; [26:00] Many designers appeared to have trouble with RLM, [32:51] Reimar to RLM, why build all-wing aircraft, Reimar remarks on better efficiency, no wasted structure - all produces lift in all-wing - compares Me262 to H IX, H IX had much lower landing speed, etc. [39:10] Why not more designers work with all-wing configuration? Reimar discusses 1910 Junkers all-wing patent, Reimar on Junkers cantilever wing, fears of adopting it, swept wing [41:38] took considerable time before designers accepted it, Reimar recalls Scheidhauer's demonstration in the H III d for Prandtl and others, proving stability of swept wing, revised papers based on Reimar's demonstration; [44:58] Reimar explains to Prandtl that he is using bell distribution, how it works to allow full control, even in a stall.</p> <p>Walter Horten No.11 Side 2 of 2 CD 24b, Reimar Horten #11, side 2 of 2, no date Reimar continues explanation of all-wing advantages over tailed aircraft; [1:40] Prandtl agreed with Reimar's theories "immediately;" Reimar recounts several all-wing aircraft accidents</p>
	24b	

Box NASM CD Number

and the causes, crash of Kasperwing; [14:27] Reimar on moment of inertia effects, uses H VI as example, compares to a delta configuration, compensate for low longitudinal inertia by varying sweepback angle; [15:42] low longitudinal (aileron) axis inertia important in sailplane when trying to turn tightly at low speed to stay in thermals; [18:32] Reimar on the need for a vertical stabilizer; not required for (subsonic) all-wing aircraft such as H IX, but necessary for (low-AR) delta; [26:57] Reimar on function of streamlined landing fairings, did they serve as vertical stabilizers?... roll due to sideslip can be controlled/reduced using wing dihedral and by using tapered wingtips; [28:41] Reimar on disagreement with RLM over frequency and duration of yaw oscillations on the H IX (vertical axis/yaw axis), RLM sent team from Adlershof to measure H IX V1 yaw oscillations, Scheidhauer flew...Reimar: dutch roll or not...[35:13] Reimar on hang gliders; [36:41] Reimar on changes in philosophy and technology of soaring, simple hill gliding to ridge soaring, etc., from emphasis on glider angle to sinking speed, etc....to the ultimate point today (early 1980s).

Box NASM CD Number
16 25a

Walter Horten No.12 Side 1 of 2

CD 25a, Reimar Horten #12, side 1 of 2, no date

Reimar continues discussion of progress in soaring technology, future is soaring by hang glider or motor glider, Reimar on the Concorde [12:40]; Reimar on rebirth of very large transport seaplanes [16:30], development of transport aircraft; [23:32] Max weight of H IX V2 nine tons, heavy twin required military pilot with experience in heavy twin-engine aircraft, Scheidhauer lacked these skills, Ziller brought in, Reimar was present for Ziller's first flight in December 1944; [29:02] Reimar recounts Ziller's first flight, lasting about 30 minutes, engine exhaust color good, gear retracted...temperature-sensitive paint to check heat levels in exhaust decking behind engines, about 1,000 meters altitude, turns; [35:22] Working in control tower hard work, stressful, but Ziller did a good job testing the aircraft, Reimar and Ziller agreed the airplane was flying well and as expected, Reimar very interested in control forces, Ziller estimated about 3-5 kilograms, Ziller had sufficient elevator and aileron during landing, the problems Reimar expected did not appear; [40:44] RLM reponse to Ziller crash (during third flight), Reimar did not entirely agree with Walter's accident report, Reimar explains other factors, color of engine "plugs"(?), location of railroad, etc., Reimar and Myhra continue to discuss different aspects of Ziller's fatal crash; [51:04] Number of H IXs Göring ordered built; [52:20] Reimar talks about the development of aircraft done at Hersfeld, Reimar and Walter next logical step in H IX development as supersonic speed capability, he began, as usual, to work with sailplanes as test vehicles, H XIII, this site in Hersfeld and work there was secret from RLM, they would never have approved of such an advanced program, Reimar describes his calculations for building a

<u>Box</u>	<u>NASM CD Number</u>	
	25b	<p>successful delta test vehicle; [59:41] Reimar on other projects he worked on at Hersfeld, very long-range, high-altitude bomber/recon aircraft with turbine engines.</p> <p>Walter Horten No.12 Side 2 of 2 CD 25b, Reimar Horten #12, side 2 of 2, no date Reimar continues explaining his work on very long-range, turbine jet aircraft; Reimar on performance of subsonic, transonic and supersonic speeds; [6:10] British photographed pieces at Göttingen, Reimar worked with 100 or so men on the H XVIII, British not interested in finishing the aircraft after the war; [8:18] Reimar talks about H X, speed goals, Reimar discussed with Prandtl, Reimar also discusses drawings of H X and H XIII, various design features; [16:00] <u>audio quality poor</u>; [18:00] Reimar continues to explain his aerodynamic theories on tailless, delta configurations, low and supersonic speeds; [23:20] Reimar on Ta-183; [24:59] Reimar on delta configuration popularity with designers; [31:00] efficiency of delta wing; [32:00] Reimar: Convair B-58 "very interesting ship;" (poor audio from 16:00 to 33:39) Reimar explains events in Argentina, Reimar asked to have Walter, Scheidhauer, and Nickel; Walter had rejoined the new Luftwaffe; Reimar on living conditions in Argentina; [40:00] Reimar compares Argentina to Germany; [43:55] 170 men at Göttingen working for the Horten brothers, the most at any one time, also groups in Leipzig, Minden, Gotha, Klemm, Reimar not sure, 400-450 total working on Horten aircraft, also Hersfeld, Röttweil, most men were soldiers assigned to work for Horten...; [46:25] Reimar on how the men were paid...[50:55]; Reimar only had to file paperwork to obtain military equipment, such as turbine engines, but to build a sailplane trailer, he had to pay for it, every sailplane he built required a trailer; [52:11] Reimar on distances he drove during the war, to visit all the work sites, about 1,000 kilometers of driving, Reimar visited usually twice a month, near end of war he only drove at night.</p>
16	26a	<p>Walter Horten No.13 Side 1 of 2 CD 26a, Reimar Horten #13, side 1 of 2, no date Reimar on his social activities during latter part of World War II; [3:01] where Reimar slept during his shop visits; [4:16] on multi-engine aircraft, Göring decreed only designs with 1,000 kilometer action radius x 1,000 kilometer per hour speed x 1,000 kilogram load capacity; [5:40] Reimar on problems with glue, 2,000 kilogram bomb capacity, 004 thrust, H IX performance, promised thrust from 004 was not available, Reimar had to increase wing area, etc.; [9:58] How Horten got the work order to build the H VII and H IV, repairs on H V, project #254 for fighter trainer, mechanism by which Reimar and Walter could get RLM to provide materials to build H VII, telegrams sent referring to to project number, etc..., working through Udet's secretary; [18:30] Use of 'secret' classification to prevent wide knowledge of H VII; [19:00] Göring orders H IX program, proposed from Reimar going to Göring through Doring (sp?), Görings technical adjutant; [22:34] When Reimar and Walter met Göring, he asked them about the H III and H IV, Walter got on the floor to demonstrate</p>

Box

NASM CD Number

the prone pilot position, very informal meeting with Göring "like a father to a son" [23:13], Göring saw something different in the Horten proposal, not the same as other proposals from German aircraft industry for conventional types...[33:01] on nosewheel shimmy problems with H IX V1; [35:30] Reimar describes how he found his personnel during H IX project; [36:30] Reimar on getting spare parts and raw materials, difficult for Walter to get large quantities, say 500 tons but easy to get 500 kilograms; [38:27] Reimar explains his requirements for electrical power, how he got it at each shop...; [41:04] RLM regard for the H IX V1, flying qualities...[43:40] Reimar describes an aircraft flying in the performance envelope "for shooting(?)" [45:09] end of 1944, H IX V1 sent to Leipzig, groups fly the aircraft...; [46:52] Goethert (sp?), what he did and what kind of man studied swept wing... [48:18] Reimar on bell distribution, effect of taper and twist of wing...; Reimar says the twist we needed had to be done for the ailerons, I think he means to twist the wing at the aileron part of the wing; aileron - polar of equilibrium: Center of Lift and Center of Gravity located at the same point, regardless of Center of Lift and up to maximum [49:02]... Reimar is comparing Horten method of wing design with Goethert (sp?) design, twist (aero and geometric), swept taper Center of Gravity, to show why Goethert's (sp?) conclusions about the swept wing were faulty - Goethert's (sp?) report from DVL issued about mid-1944, Horten reaction to Goethert (sp?) report [51:06]; Gotha's selection by RLM to build H IX [52:52], process started mid-1944, Klemm to build also [57:54] Gotha hired Goethert (sp?).

16

26b

Walter Horten No.13 Side 2 of 2

CD 26b, Reimar Horten #13, side 2 of 2, no date

Goethert (sp?) discussion continues, Reimar describes design pluses and minuses of Gotha _____ (P.60?, apparently resembles H IX but many changes); [4:05] What happened to H IX V4, V5, V6, V7 under construction at Gotha at war's end... Reimar watches U.S. troops haul away H IX V3, "5th of May" [7:45] Reimar on fate of the H IX V1; Reimar on whether H IX V3 was meant to fly, changes made by Reimar for series production, these changes appeared in the H IX V3, simplify rib construction...; [14:20] Reimar again on Goethert (sp?)... Reimar and Myhra look at photo of unidentified aircraft, Scheidhauer does not want to fly it - a "submarine" because very difficult for pilot to see out; H XIII discussed, various models of it...[20:00] Reimar on H XVIII; [21:50] Reimar on jet engine performance ... Reimar and Myhra discuss various photos; [30:59] on design of air intakes on the H IX... [33:55] Reimar asked for a modification to the H IX V2 intake, not made... [35:14] Reimar on problems Northrop had with directional stability on N1M/N9M series, Reimar on Northrop's techniques for controlling all-wing... down-drooped wingtips required if Northrop did not use bell distribution... analyzes control systems on XB-35...various photos discussed... [44:59] Reimar on H XVI, a one-piece wing made in Buenos Aires in 1953, light-weight, good trainer, flown a number of times but Scheidhauer crashed during aero-tow, Reimar on crash causes [46:43] Reimar

<u>Box</u>	<u>NASM CD Number</u>	
		explains about need in wartime Germany for acrobatic sailplane, none or few available, design details and aerodynamic features vs. speed of various designs.
	27a	<p>Walter Horten No.14 Side 1 of 2 CD 27a, Reimar Horten #13, side 2 of 2, no date Goethert (sp?) discussion continues, Reimar describes design pluses and minuses of Gotha _____ (P.60?, apparently resembles H IX but many changes); [4:05] What happened to H IX V4, V5, V6, V7 under construction at Gotha at war's end... Reimar watches U.S. troops haul away H IX V3, "5th of May" [7:45] Reimar on fate of the H IX V1; Reimar on whether H IX V3 was meant to fly, changes made by Reimar for series production, these changes appeared in the H IX V3, simplify rib construction...; [14:20] Reimar again on Goethert (sp?)... Reimar and Myhra look at photo of unidentified aircraft, Scheidhauer does not want to fly it - a "submarine" because very difficult for pilot to see out; H XIII discussed, various models of it...[20:00] Reimar on H XVIII; [21:50] Reimar on jet engine performance ... Reimar and Myhra discuss various photos; [30:59] on design of air intakes on the H IX... [33:55] Reimar asked for a modification to the H IX V2 intake, not made... [35:14] Reimar on problems Northrop had with directional stability on N1M/N9M series, Reimar on Northrop's techniques for controlling all-wing... down-drooped wingtips required if Northrop did not use bell distribution... analyzes control systems on XB-35...various photos discussed... [44:59] Reimar on H XVI, a one-piece wing made in Buenos Aires in 1953, light-weight, good trainer, flown a number of times but Scheidhauer crashed during aero-tow, Reimar on crash causes [46:43] Reimar explains about need in wartime Germany for acrobatic sailplane, none or few available, design details and aerodynamic features vs. speed of various designs.</p>
16	27b	<p>Walter Horten No.14 Side 2 of 2 CD 27b, Reimar Horten #14, side 2 of 2, no date Reimar on background of H XVIII long-range bomber, performance issues, etc...[10:11]; Reimar on H XVIIIa replacing H XVIIIb, building schedule...difficulties with Sauer...[16:08] location of massive hangers for H XVIII construction [17:21] H XVIII to be built from wood, Reimar on stealth qualities, mix coal dust with glue...[22:14] Reimar and Myhra discuss a collaborative design (the H XVIII?)... use of vertical surface, over Reimar's objections...undercarriage design (Reimar favored dropping wheels after takeoff and landing on skid); [28:30] Reimar on Heinkel and failed attempt to work for him, other firms competing for long-range bomber contract...[41:30] Reimar discusses design details of H XVIIIb...[48:16] landing speed...</p>
	28a	<p>Walter Horten No.15 Side 1 of 2 [two copies] CD 28a, Reimar Horten#15, side 1 of 2, no date Reimar discusses immediate postwar period, living in London flat, waiting with Messerschmitt, and Heinkel, Walter, for interrogation...[6:15] Reimar on Berger's account of Horten work to the Allies, [8:56] deHavilland seemed interested in employing Reimar; [10:41] Reimar receives questionnaire on his role in</p>

<u>Box</u>	<u>NASM CD Number</u>	
16	28b	<p>Nazification...did not join the party [13:46] Reimar on Wilkinson the man, [16:00] Kronfeld visits Göttingen, borrows H IV with promise to return; [18:00] Reimar and Walter return to family home in Bonn, Reimar returns to obtain his PhD in mathematics,...visits Fairey after son flew an H IV at Köln, good impression so he spoke to his father who contacted Reimar, meetings... Fairey workers refuse to work with a German [26:00]; Reimar returns to Bonn autumn 1947 [31:00]...more on potential to work with de Havilland and Armstrong, Reimar eager to share bell lift distribution concept [35:00]; when was Reimar picked up by Allied troops? [38:03] April 1, 1945... the PW camp where they spent three days...meet with von Karmen... Reimar saw H IX V3 center section being towed down autobahn [44:15]... Reimar on Berger [50:40] and whether he was well-informed about all Horten activities...Berger worked on the H VI and pre-war H II d, etc.; [52:30] Reimar discusses fate of various Horten sailplanes...Kronfeld borrows H IV; [55:10] Reimar on an all-wing transport he worked on at Göttingen soon after end of war.</p> <p>Walter Horten No.15 Side 2 of 2 [two copies] CD 28b, Reimar Horten #15, side 2 of 2, no date Begins with non-Horten audio, [1:55] Reimar on his need for a wind tunnel after the H II in 1934-35 but too difficult and expensive so he used the sailplanes to test various design aspects, tuft tests on H II...small pieces of paper...listening devices (stethoscope) attached to sensors on the wing surface to listen for turbulent flow; Reimar compares Horten all-wing ideas with Goethert (sp?) concept; [14:00] the H VIII flying wind tunnel [poor audio quality]; [18:00] Prandtl's letter to RLM in 1943 saying Horten's work was interesting; [21:23] glider tests compared to wind tunnel, value of each type of testing method...British/Wilkinson may have overvalued wind tunnel, graded Reimar too harshly for not using; [24:57] non-Horten audio begins and continues to end of CD.</p>
	29a	<p>CD 28a, Reimar Horten #15, side 1 of 2, no date [second copy] [Appears to be a duplicate of CD 28a]</p> <p>CD 28b, Reimar Horten #15, side 2 of 2, no date [second copy] [This is third duplicate of 28a, not 28b]</p> <p>Walter Horten No.16 Side 1 of 2 CD 29a, Reimar Horten, #16, side 1 of 2, no date Reimar continues to justify the merit of his work in face of Wilkinson's negative appraisal; [3:57] Reimar uses development history of the H IX as example of his testing methods sans wind tunnel, begin with H IX V1 to validate concept...critical Reynolds number [6:20]; [8:53] working in a factory would not have worked for Reimar, limitations of factory work environment... Reimar enjoyed much freedom to design and test anything that he wanted [10:39]; Reimar on Wilkinson's charge that Reimar wasted money and resources on Reimar's own personal designs [12:40]... Reimar continues to defend his actions versus Wilkinson...[19:40] Reimar</p>

<u>Box</u>	<u>NASM CD Number</u>	
16	29b	<p>summarizes the aircraft and work done at each workshop...importance of fix for adverse yaw, discussion continues to [23:50]. Why Reimar did not work in a single shop...H IX most significant contribution to the war, sailplanes supported H IX program [29:00]...Reimar on Lippisch's wartime accomplishments, Me163...[34:00] Wilkinson compliments Reimar's work...but Reimar did not spend Göring's 500,000 Deutsch Marks wisely...[42:00] Reimar's work added to aerodynamic knowledge - bell lift distribution...Reimar on postwar propaganda and its effects on his chances for employment [53:00].</p> <p>Walter Horten No.16 Side 2 of 2 CD 29b, Reimar Horten #16, side 2 of 2, no date Reimar on Berger's account of Horten work told to the British, point-of-view of a helper, not an informed authority, but taken as gospel by the British...[2:15] "tailless propaganda" ...Scheidhauer after his first H IV flight, "it is a very good ship,"Reimar mentions H IV, VI, laminar flow H IVb...[5:37] Reimar contacts Tank in Argentina through the Argentine embassy in Rome...Reimar's journey to Argentina, arrives after 3 day trip [11:00]; first contact with Tank in 1945 [12:50] and Reimar discusses offer to work in China, Tank agrees to go to China [20:00], then China goes communist and Chiang flees [21:40], China plans abandoned. [23:10] Tank invites Reimar to Argentina January-February 1947... Reimar trying to find work in England at this time...interest in working in France...[32:40] August 1948, Elizabeth Horten tells Reimar she will visit Reimar in Argentina; [32:50] Walter is back in Bonn at this time, trying to help reconstitute new German government, Walter went to work for new government in 1949...Walter's retirement about 1970, Reimar wanted Walter to permanently relocate to Argentina...[37:00] Reimar on Argentina, living conditions good, politics not good...First work with Tank on Pulqui 2...[41:00] planeador (sailplane in Spanish) Pulqui Dos test aircraft with delta wing, various modifications... I. A. e 34 [45:00]; [51:50] Reimar works on all-wing aircraft after Pulqui Dos...bomber trainer...twin-engine turboprop; [58:20] Reimar and workshop of 60-70 men built I. A. e. 33 or 34? that Reimar's wife flew until the birth of their son.</p>
	30a	<p>Walter Horten No.17 Side 1 of 2 CD 30a, Reimar Horten #17, side 1 of 2, no date Reimar on his relationship with Kurt Tank...Argentine economy, Reimar starts teaching; [10:00] I. A. e 38, four-engine all-wing...Reimar's activities during the late 1950s and 1960s; Reimar visits Scheidhauer at end of war, discussed foot-launch ultralight sailplane that could operate independent of airfields [16:45]; [20:00] Reimar on problems getting the German authorities to approve sometimes unorthodox design and construction methods...wood used in H III in 1938 [21:30] ...100-page report filed to explain Reimar's modifications; [27:40] Reimar discusses how other firms, Junkers for example, were treated by the authorities; [28:53] Reimar on Junkers support of the turbojet engines supplied for the 004 engines used on the H IX. [32:13] Who taught the Hortens the procedures for operating the Jumo 004</p>

<u>Box</u>	<u>NASM CD Number</u>	
16	30b	<p>engines? Ziller was not well trained on the H IX turbojets...Reimar compares spool up time of the Jumo 004 to the British Derwent motor he saw in Argentina; Rössler (sp?), a state employee in charge of paper work on the H IX engines?... [36:54] Reimar back to ultralight sailplane, Reimar made drawings for an architect who lived nearby, built in about two years but little flying because of rocky ground and snakes in the mountains, Scheidhauer flew this aircraft and later tried to build his own. [42:13] Reimar on I. Ae. 37... tests using wind tunnel and model testing in a lake...full-size glider tests began in 1954 [46:30]; problems with Pulqui Dos [48:14] ... underpowered aircraft? [52:00] comparable performance to the Gloster Meteor but Peron bought North American F-86, [55:22] Tank's response. Reimar on H I b first flown in 1953 [55:36], request for a new all-wing design from the glider club in Buenos Aires [61:17].</p> <p>Walter Horten No.17 Side 2 of 2 CD 30b, Reimar Horten #17, side 2 of 2, no date</p> <p>Reimar on aircraft design ideas he wanted to try but never got the chance - laminar profiles [4:14], urgent need for a capable air transport in Argentina to get goods from the coastal areas to the interior and back [10:30]; Reimar discusses lack of quality power plants in Argentina; [19:40] what Reimar would like to be remembered for; [24:27] Reimar on trying to use the wind tunnels in Argentina, visitors all the time so Reimar could not use, months passed, Reimar discovered the copper wire was stolen [26:30]...not interested in progress on important aeronautical questions. [30:24] Would Reimar wished to have stayed in England after the war?....on working in Argentina; [35:03] Bonn University 1935, Reimar learned "equations differential and integral combined with my thinking about the theory of lift distribution...[it] opened [my] eye." Reimar saw that his ideas were good and he was on the right track. [38:00] Had Reimar had his Phd in 1940, 'he would have been not a boy building sailplanes but a respected colleague worth our time'Reimar on Lippisch academic career, his work on lift distribution in 1932-33 was good. [43:25] Reimar on his desire to work independently - he preferred to be with an established firm, such as Heinkel, working with his own team, rather than working outside on his own [44:30] with worries about labor resources, tools, organization, etc. After touching briefly on Walter's career, Reimar goes into the failure to work with Heinkel. [51:40] Reimar holds a grudge against none for the way his career evolved. [52:33] Reimar on the director of the school (Bonn technical school? university?) somehow discouraged Reimar or held him back, expressed regret to Elizabeth Horten in 1962 but Reimar refuses to visit the old man. Leysieffer at IG Farben, "a gentleman in all things...", [55:28] Prandtl a "very good gentleman..." math Prof. Kalousa at Göttingen and Pohl, "these three had been good teachers." An Argentine minister for I. Ae. 37 & 38, another good man to Reimar...what Reimar does not like about Argentine character.</p> <p>Walter Horten No.18 Side 1 of 2 CD 31a, Reimar Horten #18, side 1 of 2, no date</p>
	31a	

Box

NASM CD Number

Reimar on director general of sailplanes in Argentina; [2:24] his wife, Gisela Hardt; Reimar most pleased with the H IV aircraft [6:44], this aircraft demonstrated that Reimar had solved both loss of center section lift and adverse yaw due to aileron movement...lift distribution with "concave" form at the tips and positive thrust was the key...Reimar on AR of H IV and H VI limited by flexibility of wood...[13:40] laminar flow airfoils; [14:30] super sailplane with 30-meter span and laminar flow over 80% of the chord, etc...[17:03] Prandtl found it hard to believe that Reimar was about to build the H VI with 45:1 lift to drag ratio...[18:26] Reimar on problems he saw with the H IV flown in America (MSU?), 1) turbulent (?) air around the center section and air brakes open slightly in flight, robbing performance. [19:51] Reimar on the people who visit him, interested in flying wing design, calculate lift distribution...[31:05] Reimar also very satisfied with the success of the H V... and the H IX up to war's end, a promising design never finished...in Argentina Reimar most satisfied with the I.Ae. 41 Urubu [32:22] or H XVc... Argentines use of prototypes... [33:43] why the '41 was successful, built 4 examples but about 100 needed for clubs etc., only 2 flown about 100 hours, other 2 flown a few hours, then left to deteriorate outside in the weather... public relations in the Argentine aviation environment, more important to display for public than to actually fly and develop... Reimar regrets the Argentine military did not support development of the delta aircraft [37:05] ...H IV at Königsberg [41:35] very satisfactory re. center section lift losses and bell lift distribution... Göttingen builds 3 more H IV sailplanes for testing and development; [43:13] H VII application of bell lift distribution... flaps very effective, speed range 80-300 kilometers per hour [43:46] cruise and max 340... CL max... [45:52] Reimar very disappointed in the first H V a , glue failures, crash... too much of a leap to attempt to develop new materials, and aerodynamics in one aircraft. [51:01] Reimar on the waggle-tips tested once on the H V a... H XVI [52:04]. Designs and ideas Reimar wanted built but never got the chance [59:18], H II with waggle tips and motor, H XI to test wing taper and aileron kinematics, H XIV, laminar profiles at low Reynolds numbers.

Walter Horten No.18 Side 2 of 2

CD 31b, Reimar Horten #18, side 2 of 2, no date

Reimar describes a competition glider he designed and built in Argentina, not for students, the H XVI, summer 1954, crashed during first test, not developed further; Scheidhauer overconfident when he tested this aircraft [5:20]. Reimar on I. Ae. 41 [6:00] 2 seats side-by-side, trainer...3 built... Reimar on building aircraft, then sending them on public "exhibitions" [9:25] many Horten sailplanes suffered neglect and exposure, Reimar thought I. Ae. 38 too big to exhibit, built in 3 pieces and permanently assembled; [11:05] prototype delta jet I. Ae. 37... cut-off wings to move down street [12:00]... I. Ae. 41 [14:40], Reimar and Scheidhauer soared together in I. Ae. 41, Reimar on Scheidhauer's night flight and trans-Andes crossing, details on both flights, Andes flight [19:45], Scheidhauer's crop-dusting work, retirement to Germany. [22:45]

16

31b

<u>Box</u>	<u>NASM CD Number</u>	
		I. Ae. 48 delta, aerodynamic tests, schlieren photos of shock waves... [25:35] Reimar uses "coke-bottle" fuselage... military role [29:00]... performance and technical details... development history. Reimar on his retirement in 1978 at 30 years service [38:00], career frustrations; I. Ae. 35, twin-engine training bomber and utility transport... lost engine in flight with Scheidhauer flying... Reimar proposes to re-engine with turboprops in 1958, rebuffed! [59:00] general political atmosphere... other improvements to I. Ae. 35. Reimar got married [53:40]. - audio quality poor -
16	32a	Walter Horten No.19 Side 1 of 2 CD 32a, Reimar Horten #19, side 1 of 2, no date Reimar on one of his students at the _____ (design institute in Cordoba), unnamed Venezuelan vice colonel, designed tailed motor glider, invited Reimar to Venezuela to supervise building new H VII airplanes... Reimar needed H VII drawings [3:25] ...1965... Walter refused to turn over plans. [10:49] How would Reimar like to be remembered?... not a good pilot, a good designer... no ill will... rates himself; [18:00] on working at Northrup - refused, 1950 or '51... [22:50] working with _____. Horten interview ends at [27:16].
	32b	Walter Horten No.19 Side 2 of 2
	33a	CD 32b, No Horten interviews on this CD Walter Horten No.1 Side 1 of 2 CD 33a, Walter Horten #1, side 1 of 2, no date Walter describes the difficulty of being Adolph Galland's wingman, compares Galland to Mölders; [1:09] August - September 1940, Galland lost 12 wingmen, nobody wants to fly with him... Walter on Spitfire maximum diving speed [13:00]; Walter and Myhra discuss photographs [17:40]; gunnery tactics, cannon convergence distance [21:00]; Walter's aerial victories and missions with Galland [23:00]... [27:33] Walter on desire for the H IX... needed to combat American aircraft, production rates in the United States and German and Britain... Lend-Lease... German ace Marseille [36:00] Walter and Myhra go over several photos to identify individuals... Me 110 destroyer fighter [43:00], Walter discusses weaknesses of Hurricane [48:00]...Walter on war in France [51:00]...; they continue going over photos.
	33b	Walter Horten No.1 Side 2 of 2 CD 33b, Walter Horten #1, side 2 of 2, no date Walter discusses performance of fighters attacking American heavy bombers (B-17), the effect of using Walter's special 3-centimeter cannon; [7:09] the point in Walter's career when he had to choose to take over a fighter squadron or devote his career to develop the flying wing fighter. [11:35] Udet supported the Horten's work... Udet "will submit this idea" to design, develop, and build the ultimate all-wing fighter. Walter on Kleymeyer, career and influence over the Horten work. [16:18] ...Walter on German A-bomb [22:00] ...Bomber competition held by DVL Aldershof [27:18]... companies represented at this meeting; [47:00] Walter and Myhra look at project concepts... B49 bomber... de Havilland Swallow [52:00]; Walter again discusses

<u>Box</u>	<u>NASM CD Number</u>	
		photos [55:03] of his Me 109 squadron early in the war... on Marseille in N. Africa, Walter gave him a gunnery "trick" and Marseille shot down six allied aircraft in six minutes, gave trick to Erich Hartmann too [57:05].
16	34a	<p>Walter Horten No.2 Side 1 of 2 CD 34a, Reimar Horten Reimar discussing his airfoil experiments and calculations, Reimar and Myhra talk to drawings of airfoils, reflex airfoil to produce zero pitching moment, Reimar and Myhra talking to photos of models and drawings of airfoils, [7:15] March 1931 model, construction materials and dimensions. [8:10] Reimar flew his models 2 or 3 times a week, 10 to 20 flights each day, 20 to 30 weeks, 50 to 70 days, 500 flights on a typical model; [18:00] other school incidents... new design of ellipse [20:00]; [25:03] Reimar kept work secret. Man who owned large wood shop supplied Reimar with 700 Marks worth of wood [28:20], Reimar implies he was surprised to be charged for the wood. [32:00] Max gave Reimar authority to write checks at age 18 (minimum age), set up an account for him and deposited money. Cost of the Horten I sailplane was 320 Marks, said Walter; weathercock stability [37:50]. Reimar talks about the finish applied to these models, sandpaper and varnish [41:06]... wallpaper with printed design used on models? [42:00]. Horten I plywood mostly inferior (model plywood, not suitable/legal for man carrying aircraft?) [43:55]. Most successful model and other models, Reimar and Myhra talking to photos [47:10]; when Reimar decided to remove the tail from his models [49:15]; one of most important goals for model work was to improve side-slip stability [52:58], straightest line flight for maximum ground distance from launch, despite rough air... use roll moment to correct from gust upset, curving flight usually resulted in damaged or destroyed model as it flew back into the hill.</p>
	34b	<p>Walter Horten No.2 Side 2 of 2 CD 34b, Reimar Horten, side __?, no date Reimar continues to describe mechanics of model side-slip in rough air, talks to sketches and drawings. [5:31] Reimar explains the transition to building man-carrying model, control flight path and landing... Walter to Reimar: 'Do you want to do research or fly?' [8:30]... Hitler takes control [10:28] and closes schools to investigate teachers... [11:50] Reimar and Walter take advantage of break from school to begin the Horten I, drawings made of spars, ribs; talking to friends about help to build... Dr. Schroedter and his influence [12:28]. Why no tail? Reimar responds [17:30]... Junkers patent on all-wing span loader [19:10], lapsed 1932... Reimar on Schmitz, how they met [22:50]. Reimar on Zindl [27:00]. Reimar on his work after the war for the British in 1946-1947 [29:46]. Reimar on visiting Prandtl [31:21] at Göttingen in 1941 and asking to run H IV in the wind tunnel, refused by Berlin, Prandtl did not control access, H VIII flying wind tunnel sprang from this setback... Reimar on experiments he wanted to conduct, etc. Göring - six months to build and fly H IX</p>

<u>Box</u>	<u>NASM CD Number</u>	
16	35a	<p>V1 [39:00]. Reimar on H XVIII [42:00], a Horten III doubled in size. Göring on 16 different twin-engine aircraft [47:00]... Reimar on how close he came to achieving the 1,000 x 1,000 x 1,000 specifications, R: 950 kilometers/hour x 700 kilometer range x 2,000 kilogram bomb [50:18]... Reimar submitted 20-page H IX proposal to Goring, through General Diesing, in August 1943... Reimar on working without official authority [54:00]. Walter protested Reimar's continued work on sailplanes during the war [57:33]... [58:37] Reimar cites loss of lift at chord quarter line (Mittleffekt) as reason to experiment with sailplanes, Reimar talking to drawings to explain physics.</p> <p>Walter Horten No.3 Side 1 of 2 CD 35a, Reimar Horten #3, side 1 of 2, no date, this CD divided into 2 tracks</p> <p>Track 1 (starts at 1:09): Extended discourse by Reimar on why sailplane work during the war was so important, Reimar's response to Walter, the aerodynamic characteristics that Reimar was trying to understand, problems to solve, H I, H II, II, IV, VI, IX and the Parabola, all mentioned and why significant to Reimar's research; [19:43] all of Reimar's work leading up to the success of the H IX... [23:30] H IX control forces required varying stick force depending on speed; [25:22] Reimar on purpose of waggle-tips, generate thrust, etc. [27:03] Reimar on mechanical function of waggle-tips, Reimar and Myhra use simple models to illustrate function of waggle-tips. [31:54] 1927 model work, failure of Lippisch design, this discussion continues on Track 2 after Track 1 ends at 33:05.</p> <p>Track 2: Reimar on Lippisch design with two seats and a push-pull engine layout, Reimar relates Lippisch work to the building of the Horten I, other background to the design of H I. [6:32] Tried to keep work hidden from all but close friends, Dr Schroedter, many materials including wood and fabric were donated; [9:00] Reimar describes problems removing finished H I from the house, sawing the support column inside the house [10:25]... first flight of H I [14:57], used bungee cord to stay close to ground for first flight test, moving the stick revealed control reversal [18:00]... on lead ballast used in H I [23:00] ...Reimar continues to evaluate elevator control reversal [24:40], changed aileron angle, dangers involved.</p>
	35b	<p>Walter Horten No.3 Side 2 of 2 CD 35b, Reimar Horten #3, side 2 of 2, no date</p> <p>Reimar picks up discussion of H I flight control (discussion had ended on CD 35a Track 2), he makes some adjustments to the flight control, continues flight tests. Reimar describes the results of several tests, 'do not use aileron, but rudder is OK', [12:50]. H I crash [15:00] caused by different weights of Reimar and Walter, Walter heavier but Reimar did not calculate for the new CG point. Flying hours on H I [17:20], Reimar less than one hour, Walter much more; Reimar continues to describe his test flights, ideas tested, etc. Thinking about the H II, needed a motorglider and fix other problems, September/October 1933 [30:59]. Invitation to 1934 Bonn flying meet in June and planning begins [32:53]. H I named <i>Hangwind</i> to honor Lippisch [33:51]... authorities inspect</p>

<u>Box</u>	<u>NASM CD Number</u>	
		H I and watch it fly [36:28], Reimar asked to loop the H I [37:01]. Crash! Rosenberg granted permission for Reimar to fly Horten I anyway. [42:47] Bonn air meet 15 days later... now ready to fly in Rhön competition. Reimar explains problems with H I aileron, solutions... wing twist and thrust at wingtips. [47:48] Reimar attempts to make adjustments to wings, chewed out by airport police, 'can't change aircraft after certified to fly'. Reimar plans to attend Rhön meet [52:05], school gets in his way. Walter tows Reimar to Rhön, weather bad, Reimar and Walter take off anyway, Reimar compares flight characteristics of H I and Granau Baby.
<u>Box</u> 17	<u>NASM CD Number</u> 36a	Walter Horten No.4 Side 1 of 2 CD 36a, Walter Horten #__, side 1 of 2, no date Walter and Myhra discussing photos of Zanon seed, Horten aircraft, Mr. Peschke, etc.; laminar profile from Mustang; [5:29] Scheidhauer's dog flew with him occasionally; [9:59] competition with D30 at Darmstadt. [13:00] Spar in H IV "doubled" (in size, strength?) for use in H VI... [15:00] some details on the H V discussed... [23:23] Scheidhauer flew Heinkel He III towplane during many H IX VI flights, Ziller flew first H IX VI test flight. [26:04] Walter on H XII, used V6 engine from automobile, laminar-flow airfoil, postwar sport and training aircraft. [29:15] Walter on the book that Reimar and Selinger wrote and published. [35:24] Walter on Prandtl, refers to photo of Prandtl, Kohl (Prandtl's assistant), Scheidhauer in cockpit, Urisinus, at Göttingen (in hangar). [53:41] Various photos, H IX, etc... discuss H IX V3 at a museum in America (NASM)... more photos.
	36b	Walter Horten No.4 Side 2 of 2 CD 36b, Walter Horten #__, side 2 of 2, no date Walter and Myhra continue to discuss various photos; [7:00] H IX drawing used with proposal to Göring, Walter the draftsman? [11:00] Walter talks about tactics of German fighters attacking American bombers, gunnery problems, traits of a successful fighter pilot... discuss photos of Me 109, etc. [18:00] Walter's technique for high-angle deflection shooting, Galland's reaction; [21:00] Spitfires, quality of airplane... [34:00] Me 109T, limitations of German fighters with small wing areas. [43:00] on Udet; [46:00] lack of training to protect German dive bombers... He 177, FW 190 etc... Milch was jewish, Udet clashed over this and other issues... [52:00] on Göring's support for Udet; [55:00] propaganda about American military capability...
	37a	Walter Horten No.5 Side 1 of 2 CD 37a, Walter Horten, #__, side 1 of 2, no date NSFK training that emphasized duties of a soldier with less emphasis on flight training or aircraft design, Reimar disliked; [1:56] Herr Heldenklau (sp?) came to remove Horten workers to draft in army for eastern front, August/September 1944. [8:00] Messerschmitt tried to take over the Horten group during the fall of 1943, by working through the RLM. Bilco (sp?) for Messerschmitt but authorized by someone else? [21:54] Walter tries to shield Reimar from many problems and distractions at this

<u>Box</u>	<u>NASM CD Number</u>	
		time. [26:00] Milch vs. Messerschmitt; [33:00] Seven workshops around Germany. On possibility of arrest [36:00]. Reimar's view of work required to build a sailplane superior to D-30, possible but very difficult and expensive to build a modern (circa 1980's) all-wing sailplane that is superior to conventional types [39:00]; [41:22] Hoffman, a good glider pilot, asks to fly H III g (?) with Volkswagen engine, started and stopped, then soared for seven hours, gave glowing report on the aircraft, soared from Göppingen to Frankfurt. [45:10] Göttingen bombed by Americans, Walter warned after announcement on British radio... bombs hit runways, missed buildings and workshops... Hortens dispersed what they could away from the airfield. [57:00] Walter talks about his scientist father, wrote many books, obscure and mainstream... Junkers never came to Horten shops to study their designs... [59:08] Göring told the Hortens to work with Junkers on H XVIII but too late; [60:27] H II d "the butterfly" -- "more butter for them."
17	37b	<p>Walter Horten No.5 Side 2 of 2 CD 37b, Walter Horten # __, side 2 of 2, no date Walter talks about importance of a vertical fin and rudder for precise gunnery, 1,500-2,000 meter target range, Walter believed a vertical fin and rudder were needed on the H IX. [4:30] H XVIII had no vertical surfaces - DeHavilland Comet employed jet engines buried in wing roots, ala Horten. [10:05] Reimar wanted "the best sailplane in the world," D-30 better at high speed, H IV better performance at slow speed... [14:17] We had no favorite Horten model, all flew well. [15:07] Walter and Myhra discuss a photo of H V, synthetic materials, "hard paper"... [20:10] student gunnery technique... Marseille's gunnery techniques... Walter's experience in combat vs. what gunnery school taught... [30:00] Walter's technique for 90 degree deflection shooting... [35:37] Walter explained his theory to British ace Stanford Tuck, Erich Hartman used these methods as well... Walter shot down several aircraft at 800-1,000 meters with his machine guns [48:00]. Walter made calculations used by a specialist at the Tarnowitz armament center who developed the "game" to show other pilots how it was done [49:53]... discussion continues on Walter's gunnery "game."</p>
	38a	<p>Walter Horten No.6 Side 1 of 2 CD 38a, Walter Horten # __, side 1 of 2, no date Walter continues gunnery discussion, Eastern Front results, etc... [8:00] gunnery... remote guided cannons, remote sight [16:10]... "Jaegerspiel," the Fighter's Game [18:00]... [20:00] game came out in February 1944?, on western front?, but Walter told Galland about the theory in 1940! [27:52] Walter begins to discuss number of rounds required to down an aircraft, Fiesler's technique used in WWI to attack from below... talking about various photographs... [51:00] fighter game, Walter reads a story about the technique, in German, then Walter tells story in English.</p>
	38b	<p>Walter Horten No.6 Side 2 of 2 CD 38b, Walter Horten # __, side __, no date</p>

Box

NASM CD Number

17

39a

Walter continues the story in English that he started at end of CD 38a... same deflection angle a duck hunter used, a new fighter pilot used to down 3 aircraft on his first mission. [6:00] Walter and Myhra discuss photos of various people; [11:52] projects that were mostly Walter's idea, according to Reimar - H XIII with delta wing and tail, Volksjaeger requirements. [17:20] Why vertical tails on Walter's fighter projects... [19:41] H IX was stable, "flies rather good," but in "pumping air" a bit less stable than ideal or desirable,... but for soaring and flying for fun, it was fine. [24:00] Walter has drawings for the H VII? Walter to interrogation camp after the war [30:15]. Aircraft designers came to interview them, etc. [34:00] Walter on Wilkinson [36:00]. Prandtl tested swept wings in wind tunnel and drew the wrong conclusions [37:31]. Prandtl could not see the big picture and the very different requirements for flying aircraft vs. wind tunnel model [40:02], came to Hortens to see demonstration of H III b stall characteristics. [43:50] What Walter did often returning from interrogation in London, continued studying at technical high school in Braunschweig, had taken two semesters at Berlin early in war, worked in coal industry selling coal -- 1951, Col. Eschenauer asked Walter [Wolfram died 20 May 1940] to work for him in group formed to create new German ministry of defense... man named Schlageter who blew up French trains, executed.

Walter Horten No.7 Side 1 of 2

CD 39a, Walter Horten #7, side 1 of 2, no date

Walter and Myhra discuss Walter's schoolmate, _____ Schaffer, wartime career, Stuka dive bomber pilot... his awards. [2:14] Eschenauer calls Walter in 1951, asks for his help to build the new German air force, Walter was a civilian until November 1955 when he became a Lt. Col. in new air force, nature of the work, 1951-1955, etc. Walter involved in the logistics of setting up the new organization. [11:00] Walter retired in 1970... [14:10] Walter explains what various groups of Germans thought about the new air force... [17:35] fate of the German aircraft and equipment left in Germany when the war ended... [22:00] Walter discusses the relocation of German designers and engineers to Russia at end of war... on Reimar's relocation to Argentina, his invitation to Walter to move to Argentina... Walter chose to stay [24:00], if Reimar did not need him and join the new German Air Force... mother Elizabeth visited, decided to remain in Bonn, not happy when Reimar married Gisela. [27:00] Reimar wanted to collaborate with Venezuela to build new H VIIIs, Reimar proposed that 5 technicians and their families migrate from Germany to Venezuela to build H VII, Walter believed more would be interested... [31:00] all complex parts, engines, instruments, etc. would have to be imported to Venezuela. Walter's roots, friends, family, cars, TV, amenities in Germany [34:20]. Walter and Myhra talk about Germans going to work in Russia. [38:30] Walter on the Berlin Wall. [39:19] Walter thought the best all-around Horten was the H III g motorglider... H VII [41:30]... "fast, nice handling" [43:22] worst Horten aircraft, the H I, "dangerous in low (sic) flying situations" [46:00] Klemeyer's enthusiasm about _____ Horten

<u>Box</u>	<u>NASM CD Number</u>	
17	39b	<p>aircraft that he flew at Oranienburg... [48:11] Horten experiment with pressure suit for pilot, received too late to modify the H IX cockpit to accommodate the suit. [51:10] Suits made by Draeger, possibly. [53:59] Ziller did not wear a pressure suit when he flew the H IX V2... why so many experimental projects at the end of the war [58:00]. Also, fin important for stability during bombing.</p> <p>Walter Horten No.7 Side 2 of 2 CD 39b, Walter Horten #7, side 2 of 2, no date Walter continues discussion of importance of directional stability, needed vertical fin... very high velocity cannon shell... [4:10] Diesing's reaction to H IX Horten project. Extended discussion about engine selection, first smaller diameter BMW 003, then larger Junkers 004 [8:38], procurement details, first mockup engines... [12:28] Walter talks about his fighter pilot career, uses photos, describes his squadron and personal markings... [14:40] Walter's first marriage may 1943, one son working at a bank in Bonn, Klaus born 3 November 1948. [16:34] H 33, designed 1955-56 and manufactured by Putzer in Bonn -- motorgliders... [19:00] brief reference to powered aircraft that Walter designed after the war called the Bussard, H VII wing sections. [21:24] Myhra and Walter discuss photos available on the H IX, [this CD ends at 31:04].</p>
	40a	<p>Reimar Horten No.1 August 23, 1986 Side 1 of 2 CD 40a, Reimar Horten #1, 8-23-86 Reimar on different "styles" of flying - sailplanes vs. 737; Scheidhauer's flying skills; Ziller's flying background, Ziller & H IX V2 [19:00], circumstances of last flight of H IX V2, Chang Wan (sp?), Reimar's colleague, also mathematician, invited Reimar to China; Luzor (sp?) most successful designer of conventional aircraft in Germany; Reimar's activities immediate postwar; contact with Tank and travel to Argentina.</p>
	40b	<p>Reimar Horten No.1 August 23, 1986 Side 2 of 2 CD 40b, Reimar Horten, 8-23-86 Early years in aviation; test flying Pulquoi II [19:00]; German propulsion engineer Schmidt; Reimar's view of Wilkinson; Walter's appraisal of Reimar's work; [30:00] Reimar on access to wind tunnels in Germany; [44:30 - 53:35] Scheidhauer demos the spin stability and recovery performance of swept, all-wing motorglider, the H III d, for Prandtl, BSLD; aileron deflections. Reimar to Betz (Prandtl's assistant) span load vs. fore and aft load, Prandtl's calculations not borne out by flight tests of Horten III d; [53.35] Kopper (sp?) sailplane designer for Gotha and Horten IX; prone position; Reimar and Walter won't discuss BSLD but save for later, "...we will make our future with that (BSLD) later on." Reimar first revealed BSLD to Jan Scott [in 1980?]. First published in <i>Soaring</i>, Reimar "readers did not understand" another article, 1983 <i>Nurflügel</i>, only a few understand, claims Reimar; [60.25] Reimar - Prandtl 1918 ESLD, Prandtl "theoretical man."</p>
	41a	<p>Reimar Horten No.2 August 24, 1986 Side 1 of 2 CD 41a, Reimar Horten, 8-24-86 Horten V crash repairs, H IV Scheidhauer spin tests at Minden over Steinruder Maier (sp? sea?) with weights [3:30], fly 50 hours</p>

<u>Box</u>	<u>NASM CD Number</u>	
17	41b	<p>a month, extensive flight test program; Reimar studies math two days per week in Bonn University, Saturday - Tuesday in Bonn, Wednesday - Friday in Minden [7:40]; Reimar asks Prandtl for wind tunnel [8:53], Bernard Goethert (sp?) head of all wind tunnels in Germany; Horten V performance problems; Reimar goes to Göttingen [12:00]; Peschke to do metal work in building H VII, 1942; [15:50] Horten IX begins in 1943; Dorsch (sp?), [17:00]; Göttingen and Hersfeld [20:16]; [21:30] Dorsch helps Reimar set up at Göttingen; Reimar has trouble with...labor, no draftsman...H III f [27:00]. Building series of Horten IIIs, both powered and gliders [28:50]. Horten III g glider [30:00]. Wenzel and two brothers worked at Göttingen [31:10]. Problems with center section brake in Horten IIIb [33:00]; new form of air brake [34:45]; Göttingen layout [35:06]. [40:10] Göttingen, March 1943 Horten IX, telegram from RLM ending work of Horten group [44:50] contact Kunz (sp?) of NSFK, Hortens knew for ten years, "C" rating. [46:00] Opinion on war, justice; dispersal of men and work to Hersfeld, Tierstein, etc., to show RLM, then work starts at Göttingen on Horten IX [53:20]. [53:34] Walter in LIN (LEN?) III at Göttingen; [57:45] Crash of Horten IX, failure of one engine, Reimar analyzes.</p> <p>Reimar Horten No.2 August 24, 1986 Side 2 of 2 CD 41b, Reimar Horten, 8-24-86</p> <p>Reimar discusses Scheidhauer response to Ziller and crash, Reimar files short accident report, Scheidhauer upset that Ziller, not Scheidhauer, would fly Horten IX; [2:45] Ziller's ME-262 experience; Reimar describes working conditions at Kalla (sp?) where Sauer tried to transfer Göttingen Horten team and Reimar, "POW environment." [10:15] Where is Scheidhauer? [11:10] He went to Rechlin to get some 262 time, to fly Horten IX, "Scheidhauer without discipline," "you call me Reimar, I call you Heinz," conflict with Walter over rank? [19:30] Reimar declines to send Scheidhauer packing and condemn him to death on Eastern Front; [20:00] No one (Scheidhauer) at Oranienburg to help Ziller, Reimar wanted Hanna Reich as test pilot "better pilot than Ziller," Scheidhauer's lack of education gives him an "inferiority complex," [23:10] Reimar had to go to the university and missed flight of Horten IV [25:25] mechanical problems with Horten IX, impact on Ziller; condition of Horten IX V3 at Smithsonian; various names discussed as Horten and Myhra look at photographs; [32:15] Horten VII and Klemm production, Herr Klemm returned his Nazi uniform, almost sent to concentration camp, relegated to secondary work thereafter. [38:20] Peshke at Minden, planned to build 20 Horten VIIIs, finished one. [41:53] Reimar on vertical tail, discusses dutch roll [53:00] on Horten IX, effect of vertical tail, worse with fin. Russian POWs damage Horten XIII, Hermann Strabel flew, not Scheidhauer.</p>
	42a	<p>Reimar Horten No.3 August 24, 1986 Side 1 of 2 CD 42a, Reimar Horten, 8-24-86</p> <p>Three years, March 1942 - March 1945, Reimar summarizes work, to account for inaccuracies in Wilkinson Report. BD on Horten IX [6:00], BD 0.3, have to go to 1.2 on Horten IX..."0.3 with aileron</p>

<u>Box</u>	<u>NASM CD Number</u>	
		in position 0; with aileron deflected, I tell you, 7 or 8 degrees above we have 0.6." [7:14] Berger's role in misinforming Wilkinson [8:45]; August 1945 - December 1946, RAE study of passenger aircraft, report to DeHaviland, "Can't finish Horten IX." Reimar math diploma [13:00], PhD end of 1946 [14:50] from University of Göttingen. Wilkinson - Myhra tried to contact him twice, no reply. [22:00] lack of wind tunnels. [25:25] Copper wires stolen, not able to use wind tunnel in Argentina. [27:20] Reimar summarizes his work - he had done good work, better than others, but he did not have a factory, compares advance of small group compared to large factory, Galland and ME-262 [37:30], back to Wilkinson [38:20]. [41:15] PhD not necessary in Argentina. [43:22] Göring gave 500,000 DMarks to develop ... [45:05]. [45:15] Reimar tells Göring about his postwar plans to use 500,000 Dmarks... [53:10]; [53:14] Reason Reimar designed the Horten VIII flying wind tunnel [to 56:34]; Franz Berger, an uneducated workman, only man Wilkinson interviewed [57:18]; tape finishes with more on Wilkinson.
17	42b	<p>Reimar Horten No.3 August 24, 1986 Side 2 of 2 CD 42b, Reimar Horten, 8-24-86</p> <p>Continues with Berger and Wilkinson, Berger was a cigarette addict. [3:50]; Reimar compares performance of several WWII aircraft, then postwar Lockheed F-104, their weights, trans-sonic capability, point is RLM insists on extra equipment - more weight, performance suffers. [16:45] Reimar talks about bad attributes of FW 190...German version of I-16 Rata...(Walter claimed)...refines ailerons on BF 109 (Messerschmitt 109). More on Wilkinson Report...circumstances of Reimar going to Argentina and finding Tank already there [48:00]; Pulqui I [57:10] - Reimar talks about this aircraft, its speed, would have made a good trainer [58:17] Pulqui II...60:00] Reimar evaluates Tanks team, compares it to an unnamed team in Italy.</p>
	43a	<p>Reimar Horten No.4 August 24, 1986 Side 1 of 2 CD 43a, Reimar Horten, 8-24-86</p> <p>Reimar's politics and Wilkinson... [2:45] Pulqui I not supersonic, neither Pulqui II, Argentina propaganda newspapers said it was supersonic, "mind of Italian people here," not Spanish in Argentina; Kurt Tank and Ta 183 microfilm, [16:15]; Argentina's aircraft design philosophy [21:00] - Reimar compares to automobile design and construction [27:20] Great (large, complex) aircraft vs. small simple (glider) aircraft; advantages for testing and development. Wilkinson Reports; Horten V about 2 years premature [29:00]; [32:17] Kracht, Myhra describes anger and bitterness over WWII. [36:52] Margarite helps Myhra interview Scheidhauer; Reimar on quality of Prossler (sp?) as aviation inspector [39:45] Myhra describes fate of various German aviation personalities [43:00]. Interview ends at about [44:00].</p>
	43b	<p>Reimar Horten No.4 August 24, 1986 Side 2 of 2 CD 43b, Reimar Horten, 8-24-86</p> <p>Interview starts at [00:54], Myhra says that according to Scheidhauer, Ziller was daring, bold, arrogant; Reimar said no,</p>

<u>Box</u>	<u>NASM CD Number</u>	
17	44a	<p>"Ziller was not arrogant, he was still and he was modest, bescheiden,...he was a good comrade;" [5:35] Reimar explains how Ziller came to Horten team; [13:47] Reimar's work schedule mid-war, 1943; [21:14] Reimar gives his account of Scheidhauer's report on Ziller's fatal crash in Horten IX V2. [30:33] Reimar tells how he kept his work on the I. A. e. 48 secret from both Nickel and Scheidhauer...."lies, lies...;" Reimar offers his opinion on Nickel's account of the Horten work. Myhra: Walter wants me to do a book on Horten IX – R: Walter did not know all the personalities; he is not in a good position to do the book. Reimar will not comment on Walter's aerial gunnery theories, Reimar did not fly in combat. [40:00] Reimar and Myhra discuss loss of Battle of Britain by Germany [44:43].</p> <p>Reimar Horten No.5 Side 1 of 2 CD 44a, Reimar Horten, n. d.</p> <p>Reimar and Myhra continue discussing Battle of Britain, Walter's preoccupation with battle, that time and place, the loss of so many fellow pilots [4:30]; Reimar talks about the variable or gradient force control stick used on the Horten IX [4:44] R: "Cinematic" (same as kinematic?) between stick movement and control surface movement [6:59]; Reimar talks about problems acquiring, or building, noses for Horten IX ribs [11:15]; [11:37] Reimar describes what he did when the war began, his work on Horten III as ammo carriers for invasion of England. [16:00] Repairs to the Horten V; [18:21] Reimar on Walter's career at this time, Daimler-Benz DB601N engine was installed in his BF 109, demo for Reichsmarschall Göring just before Battle of France started, engine not used during Battle of Britain. [22:41]. Lessons of Battle of Britain; [29:57] Lessons of Battle of Britain used to build better twin-engined fighter - Horten IX, Luftwaffe Inspection 3, [34:00] wanted technical expert with combat flying experience, lead by General Van Doering (sp?), invited Walter to Berlin, Reimar encourages him to go to Berlin, so that Walter could get Reimar authorization to rebuild the Horten V. At this time, Reimar transferred [34:56] "with the school" (from Braunschweig?) to Königsberg Neuhausen. Reimar separated from Walter for six months. Numerous references to designing and constructing Horten IV [33:50, 40:45]; Reimar discusses various configurations that he considered as he thought about rebuilding the Horten V, Schmitt-Argus pulsejets, turbines, etc. [45:00]; Reimar on Lippisch [56:21] - much discussion on finding suitable engine for fighter, alternate wing; general discussion of other engines Reimar considered using in the Horten IX.</p>
	44b	<p>Reimar Horten No.5 Side 2 of 2 CD 44b, Reimar Horten, n. d.</p> <p>Continued discussion of background and context for design and build Horten IX; [6:00] Reimar discusses scheduling conflicts, projects in work vs. Horten IX; Göring rants about 1,000 x 1,000 x 1,000 aircraft projects [13:20]; Reimar believed he could come close to achieving 1,000 x 1,000 x 1,000, thought Göring not a fool (RLM, Walter); Göring's technical officer Diesing (sp?) called Reimar's proposal unachievable [17:50]; [6:25] Discussion</p>

<u>Box</u>	<u>NASM CD Number</u>	
		between Myhra and Reimar about scheduling problems in trying to work on Horten V, VII, IV, and IX; amount of work required (number of drawings), finishing other's projects delayed work on the Horten IX, six months or more lost, Reimar also needed a draftsman to begin drawings for the Horten IX so that Reimar could continue his calculations [9:00], Reimar explains Göring's demands for 1,000 x 1,000 x 1,000 [14:20], Reimar was a 2nd Lt. until he made a Captain and was awarded the Iron Cross for Distinguished Service, Walter a Captain in 1943?, promoted to Major by end of war (Reimar got <i>Kriegsverdienst</i> , <i>Kross mit Schwertens</i> (sabers) first class) [47:00] German industry opinion on <i>Lutwaffe</i> designing aircraft (Horten IX) [49:50]. Reimar on difference between aerodynamicist and aircraft designer [50:44]; problems with Pulqui II wing placements [51:44] as example of something an aerodynamicist with no practical experience as designer would do; [57:02] Reimar on vagaries of placement of horizontal tail on Pulqui II, then says that to answer such questions, actual flight trials with gliders are better than wind tunnel tests; [58:59] Reimar on RLM investigation of Reimar about building sailplanes during Horten IX project. [22:31] Reimar working at Göttingen on Horten III f with prone position; [23:58] Reimar describes the meeting he and Walter had with Göring. [29:00] Reimar discusses the pluses and minuses of book he wrote with Peter Selinger. [32:00] Reimar returns to the meeting with Göring, Göring's ideas on three types of people, Walter demonstrates prone-pilot position, they chat about Horten all-wing work, [43:00] value of Reichsmark double at this time and from RLM suppliers; [50:00] Kurt Tank, Multhopp on tailless aircraft.
17	45a	Reimar Horten No.6 Side 1 of 2 CD 45a, Reimar Horten, n. d. Reimar continues to talk about RLM investigation into Horten sailplane work, General Jung, etc., [05:43] Reidenbach against Reimar Horten and all his work [6:09]; [8:26] Getting Horten IX V2 to Oranienburg - [17:45] to [20:15] Reimar on Goethert (sp?) at Gotha, [21:59] Reimar speaks to Prandtl about Bell distribution, Reimar implies that <u>he</u> introduced Bell to Prandtl. Reimar asked Prandtl to vouch for Horten in writing; he did, very positive. [25:46] Reimar on Goethert (sp?), tested all-wing aircraft in wind tunnel, swept wings; [32:20] Reimar discusses problems with Gotha and Horten IX [33:37]; Reimar discusses Horten IX V3 landing gear manufacturer, Fraudi (sp?) and Reinmetall, [46:00]; builder and technical details on Horten V, VII, IX [50:00]; use of parts from damaged aircraft Me210 and He177 that passed through Göttingen.
	45b	Reimar Horten No.6 Side 2 of 2 CD 45b, Reimar Horten, n. d. Reimar continues to talk about Horten IX V3 undercarriage, nose gear from the He177 and two main gear units from Bf109, [4:07] details about Hans Brunner, sent to Gotha to assist with Horten IX; [5:09] special glue used with wood and composite construction, wet-wing; [9:05] adding coal to glue to reduce radar cross-section,

<u>Box</u>	<u>NASM CD Number</u>	
17	46a	<p>"camouflaged" the radar cross-section of 90% of the IX" according to R, low radar cross-section useful if attacking ships or bombing; [15:43] discussion of altitude and range performance of Amerika bomber-Horten XVIII; [39:18] Reimar discusses atomic bomb that Horten XVIII was supposed to carry; [44:40] Reimar returns to discussion on range performance of Amerika bomber, fuel consumption and engine performance; [31:35] Reimar on Sauer's lack of understanding of difficulties in setting up production of Horten XVIII, unrealistic schedule to build and fly first example. [36:40] Reimar compares Horten XVIII to his recent DC-8 flight to Spain, same performance requirements; [46:22] Reimar goes to Prandtl, Reimar's teacher to talk about specific fuel consumption of jet turbines, atmospheric pressure inside turbines (more pressure inside turbine, better specific fuel consumption); [50:45] Prandtl on turbine pressures, Dr Walz; [54:40] Dr. Walz (sp?) on turbines, capacity to propel an aircraft to America and back, more on turbine specific fuel consumption; [59:35] Reimar worked on XVIII and IX simultaneously.</p> <p>Reimar Horten No.7 August 24, 1986 Side 1 of 2 CD 46a, Reimar Horten, 8-24-86</p> <p>Various Amerika bomber projects, Junkers, Messerschmitt, Reimar goes over performance numbers; [9:40] Reimar on additional problems with Horten XVIII compared to Horten IX; [11:45] Retake France to launch Horten XVIII and shorter flight, said Sauer; [13:27] Personality dead, his heart was not in his work, passive, "he was a zero" said Reimar to describe Antz? who was in RLM because he was not good enough to work in the aircraft industry, good people went to industry, poor workers to RLM. [16:35] Reimar on Flugbaumeister's purpose and role, flying engineers, combination of engineer and pilot, Flugbaufuhrer - more education. PhD in engineering, University degree, 10-15 flug-fuhrer, about 100 flugmeister. [22:10] Reimar points out his and Walter's rooms in building at Göttingen (on photo or map) ca. 42-43; more photos discussed, photos of 004 engine and Reimar compares with BMW 003; [32:34] Reimar on problems that arose when 004 substituted for 003, amount of airflow in cubic meters per second, etc. [33:57] Reimar and Walter did not have as much power as many think; Reimar on Hans Hermann, came to Göttingen to help Hortens; [35:21] Reimar on Hanna Reitsch, she was too light to fly Horten II or III, pilot had to weigh between 60 and 90 kg., very dangerous to fly at this aft center of gravity, lift distribution depended on proper center of gravity. [38:05] Reimar on RLM asking for vertical fin on ____? (Reidenbach, Lucht, Antz against all-wing with lack of fin); [39:15] When Reidenbach examined Horten V at Berlin Staaken he said it was built by amateurs, says Reimar; [40:14] Reimar: Reidenbach wanted biplane, went to Fiesler in 1941 to build a biplane! - also Me 262 neglected for months, Reimar on Horten XIII supersonic delta; Reimar on testing supersonic design [45:30]; [47:45] Reimar discusses various features of a model of __ delta?; [50:50] Reimar on Horten VII design, a fighter version - Reimar made some drawings, Reimar and Walter discussed it at Braunschweig mid</p>

<u>Box</u>	<u>NASM CD Number</u>	
	46b	<p>and late 1940; [59:10] Wolfram talked to Reimar about long-range recon aircraft, Walter flew Dornier Super Wal, He 59 twin-engine biplane, during Polish campaign Walter attacked and sank a Polish destroyer while flying the He 51 (or 59) - 180 kph.</p> <p>Reimar Horten No.7 August 24, 1986 Side 2 of 2 CD 46b, Reimar Horten, 8-24-86</p> <p>Reimar on long-range strike Horten VIII recon aircraft to fly beyond England, search up and down European coast, 2-3 man crew, twice the wingspan of the Horten III, 400 kph, 24-hour endurance, Junkers 210 engine, 4-6 engines; [9:30] Reimar won Lilienthal prize, 1938, discharged from the army; [15:00] Reimar talks about use of Fw 200 as military transport...back on the Horten VIII to [21:03]; [21:04] August 1940, Reimar in Berlin where two Horten IIIs are under construction, builders asked whether any universities or schools wanted to build more Horten IIIs but Reimar not interested, on to Horten IV and VI; [22:44] - [36:45] Reimar on Ernst Heinkel; [38:17] Captain Manuel killed while testing Pulqui Dos?; [40:00] Reimar talks while sketching aerodynamic principles to Myhra - to illustrate problems with stability of Pulqui Dos.</p>
17	47a	<p>Reimar Horten No.8 August 1986 Side 1 of 2 CD 47a, Reimar Horten, 8-1-86</p> <p>Reimar continues on problems with wing placement on Pulqui Dos, several crashes, Behrens, Manuel killed, Reimar disagreed with Tank [16:00]; [18:00] Reimar continues to discuss problems with Pulqui Dos, using photos; [26:33] Tank was an excellent pilot, as an engineer OK, not a very good designer, he was not an "architect" - combination of engineer and designer. [26:58]...Therefore the Pulqui had failed, but you didn't write that it had failed, the Argentine authorities would be outraged, you said "the Pulqui has been in difficulties" - Peron's personality, lack of education, inferiority complex, Reimar draws parallels to Scheidhauer (did not finish secondary school) and his personality traits [43:05]. [45:07] Reimar discusses why Multhopp and Tank could not work together to fix Pulqui II. [52:47] to [54:10] niceties about Myhra's next visit, etc... [54:12] Reimar elaborates on Tank, "one of the best pilots I ever have seen," Tank flew Pulqui II most times. Reimar on Manuel, title and rank, tasks Scheidhauer to help him fly Pulqui II, Scheidhauer refuses, flying qualities of Pulqui II, etc. [60:24] Reimar draws Pulqui II, talks about lift distribution and aerodynamics.</p>
	47b	<p>Reimar Horten No.8 August 1986 Side 2 of 2 CD 47b, Reimar Horten, 8-1-86</p> <p>Reimar discusses aerodynamics, lift distribution, on Pulqui II; a sailplane flown to test Pulqui II characteristics, problems with lift distribution and flow [8:20]; [8:22] Reimar on tailless, first bell distribution "for twist" (using sketch or photo)... "a secret...[9:24] and therefore I told, and Walter knows also, that I have, since number two (Horten II all-wing glider design) always designed with bell-wing distributions," Reimar back to Pulqui II...too little taper and twist made the Pulqui II a dangerous airplane...[17:00] Reimar on Mig 15 wing twist; more aerodynamics, comparison</p>

Box NASM CD Number

between Mig 15 and F-86. Reimar on qualities of Mig 15 and F-86 (R reads extended passage from reference book) Reimar on new wing for Pulqui II; Reimar and Myhra discuss various aspects of Ta 183 built by Soviets...to [57:00] Tank's unwillingness to accept criticism..."overestimating of himself" doomed Tank in Argentina, now Tank without Multhopp.

Box
18 NASM CD Number
48a

Reimar Horten No.9 August 1986 Side 1 of 2
CD 48a, Reimar Horten #9, side 1 of 2, August 1986

Myhra and Reimar discuss photographs, General San Martin, first Director of Reimar's aeronautical institute, etc.; name and duties, pastime activities of Tank's personal business manager. [3:50] Cesare Oheda (sp?), Minister of Aeronautics in Argentina, founder of Institute of Soaring, lived nearby, family history, associated with construction of Pulqui II, treated Reimar well [9:40]; Tank's wives [10:33], how Tank came to Argentina [12:02], other former Luftwaffe officials contacted by Argentines, Turbomeca (French) engineers, Mercedes engineers. Reimar also discusses the use of German experts in various fields by U. S., Soviets, Von Braun's rocket work [18:58], the organization of his labor. [20:09] American interest in German technology; [21:54] Tank and the Pulqui I and II, Tank arrived summer 1947, Reimar arrived Argentina May 1948 [23:15]. Lösser's refusal to team with Tank, Lösser's entry in light airplane competition, Klemm powered by 20 horsepower Mercedes engine. [29:03] Who went with Tank to India? Schubert, Chief of Blohm und Voss, went to Argentina, [32:00] more on Schubert. [38:20] Middelhober's (sp?) work on Pulqui II, Reimar and Myhra discuss the work of various members of Tank's staff; [47:05] who made the landing gear parts for Pulqui II, process of building Pulqui II glider; [56:50] glue prepared in chemical shop, not in workshop, Reimar talks about poor quality control in mixing glues.

48b

Reimar Horten No.9 August 1986 Side 2 of 2
CD 48b, Reimar Horten #9, August 1986, side 2 of 2

Reimar continues discussing problems with glue, [3:17]. Did Reimar ask any of his former employees from wartime Horten workshops to join him in Argentina? No, for them, inflation and cost of living too high...[7:00] scientists and engineers paid well, less skilled labor paid low wages, [7:33] laborers about 200 pesos per month, draftsmen about 400, engineers 6-800, Reimar 2,700 per month, Reimar talks about difficulties to design and manufacturer complex components. [11:47] Reimar on the sailplane that competed in 1952 world meet in Spain [I. Ae. 34m], 1 survived to 1986 but only good for museum – not flyable. [14:03] Fate of Pulqui II sailplane prototypes, [16:00] Pulqui II details top secret, Sanders got year-and-a-half in prison for having a small drawing as he went through customs. [18:17] Flight test results – Pulqui II glider, Behrens test pilot: 1st flight, "rudder is impossible ... aileron" very difficult. Modifications incorporated into 2nd Pulqui II sailplane, new tail, fin and rudder, aileron control ...other problems with Pulqui II [to 26:28]; Reimar blamed for

<u>Box</u>	<u>NASM CD Number</u>	
18	49a	<p>failure of Pulqui II. Tank flew sailplane but he did not stall the aircraft. Reimar arrived in Argentina 10 May 1948 [31:59] and first Pulqui II sailplane flew end of August, [33:00] why two Pulqui II sailplanes required. [35:11] Why use skid gear instead of more conventional (and complex) landing gear on these sailplanes? [39:50] Tank refused to change Pulqui II design as Reimar advised, because Argentine officials already had models of the aircraft that showed design details. [43:37] Who measured Pulqui II design in Cordoba wind tunnel, Buford (sp?) repaired tunnel, improved operation. [47:00] Tank would not accept Reimar's recommendations to improve Pulqui II, Reimar left Tank in 1949. [50:45] Reimar wanted more taper and twist for the wing, other solutions to Pulqui II problems difficult for Tank for various reasons. [51:51] Northrop B-49 had fixed slots with laminar profile wingtips – Reimar: how can you have good laminar flow with the airflow disturbed by the slots? [55:31] Who ordered Pulqui II project terminated? [56:30] Reimar on inferior engines installed in Argentine transport aircraft, used in Ju 52 that Reimar used to tow delta glider, tow plane has engine failure and force-lands in soccer stadium, lucky no injuries.</p> <p>Reimar Horten No.10 August 29, 1986 Side 1 of 2 CD 49a, Reimar Horten #10, 29 August 1986, side 1 of 2 Working conditions in Argentina, quality of labor, and other difficulties designing, building, and flying airplanes in that country; [4:52] towed Pulqui II with Ju 52. [9:42] Reimar's work on H IX center section, Reimar discusses the 17mm-thick plywood used to cover the center section, different layers of wood, glue, experimenting with Horten II to work out design of turbine air intakes without turbulence, angle of intake relative to wing chord ... [16:00] Schiedhauer flew the test Horten II (Horten IX nose intakes), [17:03] BMW 003 engines considered for Horten IX but not ready; [18:10] Franz told Reimar he could turn 004 ninety degrees to accommodate 004 in center section, as originally designed, but RLM said no. [21:00] Reimar describes problems with resizing the center section to accept 004 with accessories, [25:48] center section geometry (of steel tubes) changed four times – changes in air intake placement and geometry, 003 to 004, then when Junkers arrived with accessories on the exterior of the engine, (4th change?) ... 003 size changed and clearance between engine and structure, temperature and maintenance concerns. [28:24] Turbine mockup <u>different</u> from actual engine (BMW 003). After all changes, Center of Gravity balanced without need for ballast [29:21]. [31:15] RLM did not allow Reimar to rotate 004 to make diameter smaller, but Franz at Junkers agreed to turn the engine; [34:31] Junkers/Franz gave Reimar no assistance, had no men to spare to send to Reimar to help him design the 004 installation in Horten IX. [35:30] Reimar sent his own men to visit Franz for guidance to use 004 ...more details on rotating 004 to fit center section, Reimar and Myhra refer to photos of the Horten IX V3 center section, “rotated about 15 degrees” on the drawing ...extended discussion about placement of engines with reference to drawings or photographs of Horten IX V2 and V3</p>

<u>Box</u>	<u>NASM CD Number</u>	
18	49b	<p>...Myhra and Reimar agree that the top wing surface on the Horten IX V2 (Reimar's exclusive design) was much smoother than Horten IX V3 altered by Gotha, Reimar cannot explain why the changes. More discussion about shape of center section on V3, engine placement, surface details. [59:03] "The drawing is bad." – Reimar detects error in the drawing they are studying.</p> <p>Reimar Horten No.10 August 29, 1986 Side 2 of 2 CD 49b, Reimar Horten #10, 29 August 1986, side 2 of 2</p> <p>Discussion of error in drawing of Horten IX center section continues, changes Gotha made to Horten IX V3, Myhra and Reimar refer to drawings and photographs. [21:05] Reimar talks to photograph to explain why top surface Horten IX V2 is smoother than V3 ...[33:00] Reimar explains what RLM allowed him to remove from the front of the engine as he talks to photos (not much specific information recorded). [41:53, music in background, audio quality mediocre], Reimar discusses Horten IX engine modifications. [45:59] January 1945, Reimar in Göttingen working on the Horten VIII, Walter in Oranienburg to oversee Horten IX, Sauer ordered Horten works moved from Göttingen to Kala (sp?), near Weimar, in 48 hours ...unsuitable so Reimar stayed. [49:23] Horten IX V2 completed 1st week in February 1945, Ziller makes "2nd and 3rd" (1st and 2nd?) flights, Reimar spoke by telephone with Ziller often to discuss the Horten IX flight test program, Ziller crash about February 8, ensuing events ...about 15 February Sauer again orders Horten to move from Göttingen to Kala, Reimar and Walter go there but decide they cannot work there ...Sauer orders both brothers to Berlin ...brothers travels and actions in last months of the war.</p>
	50a	<p>Reimar Horten No.11 August 29, 1986 Side 1 of 2 CD 50a, Reimar Horten #11, 29 August 1986, side 1 of 2</p> <p>Continue discussion from end of CD 50a, last days of the war for Reimar and Walter, contact with Sauer, visit to Nordhausen, Americans in Kassel. [6:10] Reimar destroys some, but not all, the documents he carried about the Junkes 004 engine; [9:00] Reimar picked up by Americans in the Harz Mountains, by jeep to Göttingen, DC-3 aircraft to London, arrived 7 April 1945 [11:54]. Reimar on some problems with the 004 engine (as installed in Horten IX at Göttingen?). [14:14] Reimar heard "propaganda" about concentration camps, the situation in the concentration camps "was a thing of propaganda" [15:10] ...Reimar visited Sachsenhausen, Nordhausen. [18:20] Reimar on Klemperer flying the Horten III at Oranienburg ...Reimar visits concentration camp there (Sachsenhausen). [25:20] Walter gets 30 SS men to help his team until the end of the war, "good hard workers." [26:27] Flight test program at Oranienburg on Horten IX V2, Reimar and Walter told Ziller to make 30-minute flights at 4,000 meters altitude or less, Ziller reported that the Horten IX could out-turn Me 262 in mock dogfights (so flown more than 3 times?!), landed more slowly, could out-climb that aircraft, Horten IX could climb about 20-22 meters per second, based on telephone reports from Ziller, these were Reimar's "impressions," precise measurements not made. [34:12] Fastest speed, not over 500 kph or over 4000 m =</p>

<u>Box</u>	<u>NASM CD Number</u>	
18	50b	<p>600 kph, Ziller climbed at full throttle but did not use full throttle in level flight. [41:30] Ziller made 8-10 flights in Horten IX V2, says Reimar. Reimar on Rössler, he needed to be “protected,” medical condition, other trauma? [46:39] Ziller landed “hard” in Horten IX V2, bent struts, lost 14 days repairing the aircraft in January 1945 ... Reimar discusses these repairs, allocation of men, tools, etc. [55:06] Horten IX V2 a sensational airplane to other personnel at Oranienburg, Myhra says they called it “Fledermaus,” or bat. [56:00] Walter ordered a Horten IV brought to Oranienburg to demonstrate high-performance sailplane to Göring’s staff, RLM officials visited, to sell aero community on all-wing potential, Schiedhauer could fly in spare time. [59:00] Walter reported one of the turbines stalled ... Reimar believed engine ok, Walter reported engine sometimes stalled during start, Junkers mechanics found nothing wrong.</p> <p>Reimar Horten No.11 August 29, 1986 Side 2 of 2 CD 50b, Reimar Horten #11, 29 August 1986, side 2 of 2 Discussion continues about Junkers 004 engine, difficult to restart in flight; Schiedhauer required to train on Me 262 at Rechlin before allowed to fly Horten IX; [6:00] Reimar on Scheidhauer’s veracity and character regarding crash of Horten IX V2, same problems with Horten XVI, foot-launched H Ib?, in Argentina. [10:20] 120-130 kph landing approach speed Horten IX V2, Reimar told Ziller not to exceed 500 kph indicated (600 kph @ 4,000 m), takeoff in 300 m with light load. Did Reimar meet Eschenaur [12:26]? Schiedhauer on Ziller, as reported by Myhra [16:39], Ziller piloted sailplane during high-altitude research flights, Reimar describes Ziller’s character and background, an excellent pilot; Ziller more engineer-pilot than Schiedhauer [21:01], aptitude for flying tailless aircraft, Reimar on the differences in his relationship with Ziller and with Schiedhauer, Ziller very systematic, Schiedhauer more interested in going up and coming down; “this jump [short test flight] is to make little curves right and left to look for bell distribution,” [26:20] as Reimar gives examples of various types of test flights. Schiedhauer was undisciplined, Walter wanted to send him to the front, Walter liked Ziller; [29:00] Ziller with Horten about 8-9 months [see 40:45, to Horten end of 1943], Schiedhauer flew sailplanes by feel, Ziller flew by “knowing,” used his head, fly at best glide speed, etc. [33:00] Schiedhauer had better endurance. Ziller flew Horten IIIf, maybe ‘IV, Horten II and Horten VII. Reimar describes Schiedhauer’s crash in Horten VII, pilot error. [40:45] Reimar on when Ziller came to work for him ... probably January 1944. [45:00] Ziller had hepatitis before going to Horten at Göttingen. Reimar talks about preparation to fly Horten IX V2. [53:00] Reimar on Prössler (sp?), also carried his tools, bed, etc., in a trailer behind his car. Reimar describes Strebel’s flight to ferry Horten IIIId (motorglider?) to Göttingen, landed 10 km short, had to retrieve [56:00]. A number of Horten aircraft at Oranienburg.</p> <p>Reimar Horten No.12 August 30, 1986 Side 1 of 2 CD 51a, Reimar Horten #12, 30 August 1986, side 1 of 2</p>
	51a	

Box

NASM CD Number

Discussion about Gassler (?), designer at Klemm, Fiesler, worked on Me 108, '109, V-1. [2:20] Reimar discusses Dr. Dietrich, worked for Argus on pulse-jet engine, Horten brothers considered using in Horten VII ...met Peron in Argentina ...[7:20] Dietrich told Reimar pulse-jet too noisy for practical use ...discussion on various engines considered for Horten wings. [10:56] Walter as originator, through Diesing, of Göring's 1000x1000x1000 edict to German aircraft industry. [12:51] Character of Gen. Diesing. [15:00] Reimar: Walter cultivated many contacts throughout Luftwaffe. [18:00] What Milch thought about Horten IX and all-wing ...Milch made Heinkel 177 into a dive bomber ...[22:00] Milch approved Horten IX ...Milch wanted to give Me 262 to Horten GmbH to produce, swept wing expertise, according to Myhra. [27:15] Engine placement on Horten IX ...[28:35] Reimar on Heinkel and von Ohain and turbojet engine ...[33:00] Discussions between Walter and Udet about new all-wing fighter for Germany. Multhopp on Horten IX [35:30]. 1943 Lilienthal Gesellschaft conference, Tank, Multhopp, Lippisch, for and against the flying wing, also present at this meeting professors from Darmstadt, Braunschweig, Adlershof; Reimar never mentioned bell lift distribution, "all against" flying wing except Lippisch, Reimar decided not to mention bell distribution, all professors but no pilots ...[38:20] "...great tapering, small wingtips and great root ..." element of bell distribution ...Lippisch agree with us [on benefits of flying wing] and [he was] attacking them..." [40:00] Clout of Antz at RLM. Reimar then describes possible speed range of jet aircraft, 747, Horten IX, with original small center section 960 kph, with larger center section 920 kph, Reimar estimated these speeds and he did not want to claim 1,000 kph, as Walter urged. Ziller thought Horten IX capable of 900 kph [45:00]. Reimar on dynamic pressure vis-a-vie wing skin thickness, etc. [48:18] Horten IX wingtips required reinforcement of wood with metal strips, Dr. Pinton at Dynamit AG had a glue that would bond aluminum and wood, Reimar tested concept and practiced bonding procedure on Horten IV b, but Wilkenson dismissed IV b work as wasteful diversion [50:30] ...also had to reinforce Horten IX V3 but hide metal strips from radar. [53:29] Reimar on glue developed by Dr. Pinton at Dynamit AG to bond plastics, also good for fuel-proof coating inside Horten IX wet-wing, etc... Reimar's ideas for increasing torsional stiffness in wingtip, aiming to withstand 5,000 kg/m² dynamic pressure.

18

51b

Reimar Horten No.12 August 30, 1986 Side 2 of 2

CD 51b, Reimar Horten #12, 30 August 1986, side 2 of 2

Reimar continues to talk about reinforcing the outer wings on the Horten IX to withstand dynamic pressure. [1:40] Reimar discusses modifications made to Horten II to test jet engine intakes for Horten IX, tests made mid-1944, Reimar and Myhra talking to photos. [10:45] Thirty girls that Walter accepted to join Horten group in Göttingen. [16:00] Details about rear main landing gear on Horten IX ...Reimar and Myhra continue to discuss various photos. [18:40] Myhra tells Reimar that Gotha eliminated bottom half of drag rudders on Horten IX, 'a bomber not a fighter,' but top

<u>Box</u>	<u>NASM CD Number</u>	
		and bottom rudder required for single-engine flight...discussing photos...[40:30] fuel pump, other components from captured/crashed B-24 Liberator used in Horten IX...plexiglass used in Horten IX V2, source, etc...Reimar and Myhra continue to go over various details about design, construction, and operation of Horten IX.
18	52a	Reimar Horten No.13 August 30, 1986 Side 1 of 2 CD 52a, Reimar Horten #13, 30 August 1986, side 1 of 2 Reimar and Myhra continue to discuss Horten IX technical details, referring to photographs...[19:45] spring-powered ejection seat in Horten IX, “one of the first ejection seats...[recording ends at 60:00].
	52b	Reimar Horten No.13 August 30, 1986 Side 2 of 2 CD 52b, Reimar Horten #13, 30 August 1986, side 2 of 2 Reimar and Myhra continue to refer to photos as they go over various mechanical details related to the Horten IX. Reimar describes trials and tribulations associated with the turbine engine selected for the Horten IX. [7:50] Franz building 004 engines with only 20 men, no official priority for the program to obtain materials. [11:00] Franz himself helped Hortens load an engine on a trailer...discussion about finding suitable quarters for 30 men from the SS. [14:40] Reimar on working in India after the war ended...Reimar discussed going to India, about 1953. Kurt Tank censoring all mail to his employees, including Reimar [20:00]. Tank went instead in '54 or '55...[24:00] on Blohm und Voss workers. [26:20] Reimar declined Tank's offer to accompany him to India. Reimar glad to see Tank and his team leave – too many aero engineers in Argentina, a country that could not keep them all busy with useful work...a 5-turbine engine project for Focke-Wulf engineers. [34:20] Reimar on Tank and his team leaving India and moving to Egypt, remainder of Tank's career... [38:00] Schiedhauer retired to Germany with pension from Argentina, started an aerial agriculture business in 1957. [40:37] Multhopp came to Argentina about the time that Tank left...Reimar describes the last years of his engineering and design career in Argentina. [46:00] German engine production...on Hitler's decision to use the Me 262 as a bomber, to “hold it back” from fighter role...suitability of Me 262 to dogfighting...Reimar on Hitler's desire for bombers, '262 as bomber, bomb capacity, etc...qualities of P-51 Mustang, Spitfire, speed capabilities [57:00].
	53a	Reimar Horten No.14 September 1, 1986 Side 1 of 2 CD 53a, Reimar Horten #14, 1 September 1986, side 1 of 2 Discussion continues on relative merits of Horten IX and Me 262, other fighter aircraft... [4:00] Schiedhauer's lack of experience with high-performance aircraft, landing difficulties, land the fighter with power, why Walter would not allow him to fly Horten IX...[8:00] more about differences between Horten IX and Me 262... [10:00] Armament for Horten IX...[15:00] importance of slatted wing on Me 262, [16:15] Ziller outturned '262 in mock dogfight because Horten IX had less wing loading. [19:00] Schiedhauer's style not suited to jet fighter. Reimar on Ziller's crash in Horten IX [27:00]... Reimar on types of pilots [31:00].

<u>Box</u>	<u>NASM CD Number</u>	
18	53b	<p>for example, engineer-pilots... [35:50] Hans Rudel as a pilot... Horten IX had to land with some power on [39:00]... Move Horten IX project to Brandeis if Horten IX had not crashed. [46:99] Reimar on Wolfgang Späte... [57:00] Three important attributes for all-wing aircraft, “commandability” – pilot can impose his will to make aircraft do exactly what he wants; “equilibrium” – “trim is good” ...dutch roll apparently acceptable to Reimar, just a part of good dynamic stability, etc.</p> <p>Reimar Horten No.14 September 1, 1986 Side 2 of 2 CD 53b, Reimar Horten #14, 1 September 1986 (1 October 1986 on disc), side 2 of 2</p> <p>Discussion on aircraft stability continues, [3:00] weathercock stability... [3:12] Dutch roll more possible with vertical fin, a-periodic movement without fin instead of oscillation. Reimar uses analogy of pointer movement on voltage indicator to explain various types of stability to Myhra, [10:00] stability issues so complex that weeks of study required to understand it. [11:18] Vertical fin on aircraft with small wingspan, Reimar admired Lippisch Me 163 Komet design... [17:00] Stability of various aircraft and Horten IX discussed. [17:37] Reimar on Wolfgang Späte’s career [very brief, recording ends at 18:18].</p>
	54a	<p>Walter Horten No.1 May 30, 1987 Side 1 of 2 CD 54a, Walter Horten #1, 30 May 1987 (30 March 1987 on disc), side 1 of 2</p> <p>Reimar and Walter talk to photographs, one depicts Walter flying an Arado 66 biplane at Göttingen about 1943... Wolfram’s accordion pictured in either Walter’s or Reimar’s hands [9:00]...discussion of Walter’s dog, Victor, gift from Schiedhauer for Walter’s wedding in 1943 [12:00], Walter wearing British flight jacket recovered at Dunkirk in many photos. [19:00] More photo identification, many of these photos probably appear in Myhra’s books about the Horten brothers published by Schiffer. Walter talks about demonstrating an Me 109 powered by DB 601N engine for Göring [28:00]. Walter describes receiving an Me 109F, teething problems [34:00]. Me 163, 1st aircraft to reach speed of sound, photo of Walter with dignitaries [39:20]. Photo of Prandtl with other men [46:00], Prandtl believed it impossible to fly, and stall (as proved in wind tunnel tests), a tailless delta (Horten all-wing) and not crash, Prandtl’s assistant arranges a demonstration [49:00]. Schiedhauer flew Horten III motorglider [50:00], various maneuvers – proved to Prandtl that all-wing did not stall and spin at 300 m altitude “he [Prandtl] was in fear that we make a demonstration in fields which are dangerous according to wind tunnel tests ...but nothing happened, yes, the nose down, he [Schiedhauer] get speed and was flyable. And now, he put it upwards till speed zero and nothing happened, only he put the nose down ...and the speed comes on again ...nothing spinning.” Prandtl leaned over and whispered to Walter: “How do you make this, how do you make this?” Wing twist, aileron deflection at high AOA and low airspeed prevented spin, “backloading” (aft CG?) caused airplane to spin. Prandtl not an aircraft designer, minsinterpretation of tunnel tests. Prandtl withdrew his warning to</p>

<u>Box</u>	<u>NASM CD Number</u>	
	54b	<p>industry against using swept back wings because of stall spin. Walter Horten No.1 May 30, 1987 Side 2 of 2 CD 54b, Walter Horten #1, 30 May 1987 (30 March on disc), side 2 of 2 (1 of 2 on disc) Walter and Myhra continue to discuss photos. [24:50] Walter on Eschenauer, history, personality; [29:58] General Ritter von Schliech (sp?), called the ‘Black Knight’ by the French in World War I... [32:20] Walter on attitude of twin-engine Me 110 destroyer pilots, Walter’s evaluation flight in Me 110 ... tactical advantages of single-engine fighter vs. twin-engine fighter ... [46:00] best pilots wasted in twin-engine destroyer squadrons during Battle of Britain, assigned to protect bombers. [52:00] Discussion returns to Eschenauer. [54:40] Huth, wing commander of ZG 26 (destroyer wing, Me 110) ... U. S., Britain production capabilities vs. German, fighter and bombers.</p>
18	55a	<p>Walter Horten No.2 May 31, 1987 Side 1 of 2 CD 55a, Walter Horten #2, 31 May 1987 (31 March 1987 on disc), side 1 of 2 Walter on war strategy, on U. S. ability to fight two-front war... [7:00] Walter on heavy bomber development in Germany, He 177, death of General Wever. [11:00] Walter talks about the Focke-Wulf Fw 190 vs. Messerschmitt Me 109, men supporting the ‘190, many against it, flight characteristics of both aircraft compared ... [21:50] Galland on the Me 109, I-16 Rata in Spanish Civil War ... [26:00] no one spoke against Galland when he ordered the Fw 190. Walter on the type of test pilots at Rechlin. Me 109 tactics used to attack bombers [34:00] ... Walter talks about Werner Mölders [44:00]. Walter and Myhra study and discuss photographs [45:20].</p>
	55b	<p>Walter Horten No.2 May 31, 1987 Side 2 of 2 CD 55b, Walter Horten #2, 31 May 1987 (31 March on disc), side 2 of 2 Walter and Myhra talk about various photographs, Walter on Göthert (sp?) but he did not know him well... Walter on Östrich (sp?), Schelp (sp?) who was in charge of developing turbine engines... Isendor (sp?) [4:00], various other personalities seen in photographs. Discussion about a drawing of Horten VII with turbine engines [8:00]. Remote-controlled cannon [8:50] ... continue going over photos. [20:14] Air Force photo school at Hildesheim sent someone to Göttingen every few months to photograph Horten aircraft. [26:00] “Bomber Keller.” [37:50] Walter confirms that Horten IX V1 burned by American troops at Brandeis. [39:00] BMW 003 could not be delivered (1st airframe change to Horten IX), 004 drawings (2nd airframe change), 004 arrives but too big (3rd airframe change). Talking to photos ... Walter’s interest in seeing Horten IX V3 restored.</p>
	56a	<p>Walter Horten No.3 May 31, 1987 Side 1 of 2 [two copies] CD 56a, Walter Horten #3, 31 May 1987 (31 March on disc), side 1 of 2 Walters explains why the MK 108 cannon was an effective weapon ... Tarnowitz (sp?) not far from Rechlin, technicians there made Walter’s “Jägerspiel” training device to help teach deflection</p>

<u>Box</u>	<u>NASM CD Number</u>	
		shooting during aerial combat. [4:00] Photo of Horten IX V3 in storage at Garber Facility ...[5:00] both Reimar and Walter angry to see that Gotha had made extensive changes to the Horten IX design without consulting them... Horten project drawing, a tailed and swept-wing aircraft, Walter's design, better directional stability with a vertical tail... discussion of various project drawings, photos of project models [11:00] ...[17:00] Walter on the highway equipment building that was used as a workshop, Horten IX project disbursed to this location. [21:00] Photo of main spars (Horten IX?) ...Myhra's sources for photos [24:00] ...stress testing Horten IX (photos) [30:00] ...'most exciting time in his life,' said Reimar, according to Myhra [32:00] ...various photos of Horten IX components. 800 people employed by Horten GmbH at high-point [34:00] ...more components discussed, control surfaces, etc. [50:00] Modifications to Horten IX V3 by Gotha, speed brake ...[53:50] photo of Junker 004, Walter: 'American pilots feared it ...the Swallow [Me 262?], the Swallow, they would call out on the radio.' [56:00] More photos but little meaningful information on CD.
18	56b	CD 56a, [second copy] Walter Horten No.3 May 31, 1987 Side 2 of 2 [two copies] CD 56b, Walter Horten #3, 31 May 1987 (31 March on disc), side 2 of 2 (Tessner)
	57a	Unable to play back this CD on computer, 7-2-03 Walter Horten No.1 April 18, 1986 Side 1 of 2 CD 57a, Walter Horten #1, 18 April 1986, side 1 of 2 Walter begins in German, [3:00, audio quality poor] he is probably reading a letter ...Walter now speaking in English [6:18]. Walter explains origins of idea to design Horten IX, while he was in combat during Battle of Britain in 1940 ...an all-wing aircraft would have lower wing loading than the Spitfire which many times would bounce the German pilots from high-altitude [poor audio quality] ...discussion about Horten IX V2 wing loading ...[10:10] Walter recalls 100 kg/m ² for Horten IX, Me 262 200 kg/m ² for an empty(?) aircraft. [11:40] Horten relationship with Udet, Dinort first told Udet [14:00] about Horten brothers when they were working at Cologne, they had seen Udet perform in airshow at Bonn Hangelaar in 1931-32 [16:00]. Walter worked Döring (sp?), Mölders, and Galland when they were General of Fighters [17:00]. Mölders, July-November 1941, Galland January 1942 to _____ [18:00]. How Walter interacted with Udet. Flaws in Focke-Wulf Fw 190 vs. Messerschmitt Me 109 [21:00], background to Fw 190 development [23:00, poor audio quality]. Walter test-flew a captured Spitfire against Fw 190 [26:50]. More on Fw 190 background ...Walter on positive aspects of Fw 190 [32:00]. All-wing aircraft competition in 1937 [36:00] and Dinort... Myhra and Walter appear to be discussing photographs... Walter's career during the war ...Walter grounded as a technical officer, September 1940. Sonder Kommando 3 [46:00] named for Fighter Command III(?), test unit for all-wing aircraft, unknown to the Luftwaffe, LIN 3 – Luftwaffe Inspection 3 (Sonder Kommando a branch of LIN 3?). Eschenauer's role in Sonder Kommando III

<u>Box</u>	<u>NASM CD Number</u>	
		[54:00], not possible to set up at Göttingen without Eschenauer, Reimar about to be transferred to Fallschirmjäger. [61:20] May 1942, Walter working with Eschenauer to plan moving Horten works to Göttingen (from Cologne?).
	57b	<p>Walter Horten No.1 April 18, 1986 Side 2 of 2 CD 57b, Walter Horten #1, 18 April 1986, side 2 of 2 Procedure for getting a new fighter design from concept to production; Diesing...1000x1000x1000 project, Walter claims the idea [2:00] was his to tell Diesing who then told Göring ...[3:00] Horten IX required less runway to takeoff than Messerschmitt Me 262 [audio quality poor]. German atomic bomb [8:40] ...on Klemeyer [10:40] ...Telenius (sp?) [12:30]. Irwin Ziller [16:00] ...functional elements of the Sonder Kommando IX organization [18:40] ...500K Deutsch Mark awarded for Horten XVIII, not Horten IX, according to Walter. Ziller's procedures to test Horten IX, begin with short hops just above runway [22:00] ...Bauer assigned to Göttingen ...Walter's squadron named for a German executed by the French in 1922 [30:00] ...on damage to _____ all-wing aircraft [33:00]. Why Schiedhauer not chosen to fly Horten IX, Walter wanted someone with Me 262 experience...Walter believes Ziller was overcome by fumes, causing the crash. Arado engineer assigned to observe the Horten IX project for Gotha [42:00] ...back to Ziller's crash ...Ziller made inadvertent flight in Horten IX V2 on 18 December 1944 [other references to this flights earlier on this CD] ...damage to Horten IX V2 as a result of this accidental flight, hard landing? Horten XVIII [53:50] ...reference to maps ...Augsburg ...plan to build Horten XVIII underground ...team Horten with Junkers on the Horten XVIII program [59:00] ...Horten X [poor audio].</p> <p>Walter Horten Side 1 of 1 CD 58a, Walter Horten, side 1 of 1, n. d. [poor audio] Walter describes the crash of a Messerschmitt Bf 108 license-built by the French firm Beauveau (sp?), Walter discusses aircraft development and procurement post-World War II, F-104 for Germany, problems training for instrument flight in the U. S. vs. actual inclement weather encountered in Europe ...a tail on the Horten IX [9:00]. Sequence for testing new aircraft [10:00]. How fast did Ziller fly the Horten IX [12:40] ...perhaps 800-850 kph. How many times Ziller flew Horten IX [14:00], three flights in V2, crashed on third flight. Ziller made flights that he did not log [19:00]. Eschenhauer on the Horten brothers [20:00]. Galland did not like using external fuel tanks [23:30] ...German tactics during Battle of Britain. Cleanliness of American and British aircraft engines, compared to German engines that leaked oil [26:50]. Finding Rechlin on a map...now located in Poland ...Heinkel He 162 Volksjäger [32:00] ...could not train pilots because Germans had no fuel, because of Allied bombing...Hitler's conduct of the war [36:00] and state of the world in the mid-1980s. Horten XVIII [39:00] and Walter on the atomic bomb [dialog ends at 46:10].</p> <p>[no further recording on this tape after 46:10 – no CD 58b]</p>
18	58a	

<u>Box</u>	<u>NASM CD Number</u>	
19	59a	<p>Walter Horten No.3 Autobiography Side 1 of 2 CD 59a, Walter Horten #3 Autobiography, side 1 of 2, n. d. [audio quality poor] Unidentified person apparently translating a passage that Walter wrote in German, _____ 1941, Galland _____ Göring...? ...Me 110 ...he enjoyed it [as his personal aircraft?] ...quality of Soviet pilots [4:00] ...Horten apparently assigned to entertain visitors to Berlin... [6:00] windage system for firing at aircraft as they passed, more details on Horten's system for deflection shooting in aerial combat... the only pilot to use Horten's system was ace Hans Joachim Marseille [9:45] ...met Stanford Tuck ...[11:30] November 1941, Galland became his successor...never requested information on Walter's windage [shooting] system. Two 20mm cannons fixed in his Me 110, periscope gunsight [14:00]...mounted to fire backwards...(flew his?) Me 108 Taifun back to Berlin (from Eastern Front?) not realizing that his armament training system had been distributed to fighter groups on the Eastern Front [19:00]...Marseille's ordnance man [21:00]. A naval engineer invented circular cross-hair gunsight [25:00]...the Horten gunsight [28:00]. Knemeyer of the RLM asked Horten to develop long-range bomber, range to bomb the U. S. [30:00]. Planning the new postwar German air force in 1955 [34:40]. Transferred to Flensburg in 1961? [40:30]. Walter given a Dornier 27 and a Piaggio 149 to keep up his flying skills [41:00]. Klemeyer requests long-range bomber...immediate postwar, capture and interrogation in England [48:40]...Reimar to Argentina, Walter to Bonn [52:00]. Walter retired in 1970 [61:00].</p>
19	59b	<p>Walter Horten No.3 Autobiography Side 2 of 2 CD 59b, Walter Horten #3 Autobiography, side 2 of 2, n. d. [poor audio quality] Garbled reference to a speech (by Walter?)... circular cross-hair system designed by Walter and used by Eric "Bubbi" Hartmann [2:50]. Walter's fears of nuclear Armageddon [5:00, recording ends at 6:08].</p>
	60a	<p>Reimar Horten 1983 Side 1 of 2 60a, Reimar Horten/Reimar/Lefler 1983, side 1 of 2 [poor audio quality] Unidentified person reading German account written by Reimar Horten, describes Jan Scott's involvement in publishing <i>Nurflügel</i> in the U. S., only 1000 copies printed (this is a letter Reimar Horten wrote to David Myhra). Another letter/translation [2:50], Reimar reports on his health, working with Myhra on a book. Myhra relates the story of Jungflieger Bonn instructor Hermann Landmann (sp?) who examined Horten I, tells brothers better to spend their money on drink than waste it on a flying wing. He and translator discuss slightly different versions of this story. Walter's "shooting stories" [11:00]...craftsmen and technicians who helped build Horten aircraft [13:00], Horten IX markings, swastika [15:50], discussion about markings continues...[22:00] manuscript corrections? Another correspondence from Reimar to Myhra, corrections to manuscript, working together [this lengthy letter continues until recording ends at 44:12]</p>
	60b	<p>Reimar Horten 1983 Side 2 of 2 60b, Reimar Horten/Reimar/Lefler 1983, side 2 of 2</p>

NASM Archives
Reimar and Walter Horten Interviews
1999-0065

<u>Box</u>	<u>NASM CD Number</u>	[No audio on this CD]
<u>Box</u> 20	<u>NASM No.</u> None	Interview "Transcriptions" [miscellaneous transcriptions from taped interviews with few, if any, identifiers to them]