

SSC-100

**INDEX OF SHIP STRUCTURE COMMITTEE
PUBLICATIONS**

by

M. B. Fisher

SHIP STRUCTURE COMMITTEE

SHIP STRUCTURE COMMITTEE

MEMBER AGENCIES:

BUREAU OF SHIPS, DEPT. OF NAVY
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AMERICAN BUREAU OF SHIPPING

ADDRESS CORRESPONDENCE TO:

SECRETARY
SHIP STRUCTURE COMMITTEE
U. S. COAST GUARD HEADQUARTERS
WASHINGTON 25, D. C.

April 30, 1958

Dear Sir:

Since 1946, the Ship Structure Committee has conducted a research program directed toward improving the hull structures of ships. The results of many of the studies under this program have from time to time been published by the Ship Structure Committee, as well as in other technical publications.

As an aid for quick reference to the published results of Ship Structure Committee research, herewith is a Special Report, SSC-100, entitled "Index of Ship Structure Committee Publications" by M. B. Fisher.

This report is being distributed to individuals and groups associated with or interested in the work of the Ship Structure Committee. Please submit any comments that you may have to the Secretary, Ship Structure Committee.

Yours sincerely,



K. K. Cowart
Rear Admiral, U. S. Coast Guard
Chairman, Ship Structure
Committee

Serial No. SSC-100

Special Report

to the

SHIP STRUCTURE COMMITTEE

on

INDEX OF SHIP STRUCTURE COMMITTEE PUBLICATIONS

by

M. B. Fisher

Committee on Ship Steel and Committee on Ship Structural Design
Division of Engineering and Industrial Research
National Academy of Sciences-National Research Council
Washington, D. C.

under

Department of the Navy
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Washington, D. C.
National Academy of Sciences-National Research Council
April 30, 1958

INDEX OF SHIP STRUCTURE COMMITTEE PUBLICATIONS

INTRODUCTION

This report is an index to all publications of the Ship Structure Committee between the time of its formation in 1946 and February 28, 1958, including reports that are tentatively planned for publication sometime during 1958. The index is divided into three sections.

Section I consists of three portions that contain all of the reports distributed by the Ship Structure Committee. Part A is a listing of all Ship Structure Committee reports by serial number from 1 through 110, including other pertinent information such as authors, type of report (progress, final, special, survey, or interpretive), and date of publication. Part B includes Ship Structure Committee reports that do not bear serial numbers. Part C contains a listing of miscellaneous reports and papers that were not published by the Ship Structure Committee but are closely related to the Ship Structure Committee program.

Section II lists research projects together with all Ship Structure Committee reports published in connection with each project as set forth in Section I.

Section III cites references to reports listed in Section I that have been reproduced in whole or in part in other technical literature. In addition, references are given to articles that have been published as a result of Ship Structure Committee sponsored work. Reports disseminated by the Ship Structure Committee are generally available from the Secretary without charge to persons and/or organizations working in fields related to work of the Ship Structure Committee. Certain reports, however, are now out of print, and others have a very limited number of copies available for distribution. Reports marked with an asterisk (*) are in limited supply; those marked with a double asterisk (**) are no longer available from the Ship Structure Committee; all unmarked reports in Sections I and II are available at present.

SECTION I

SHIP STRUCTURE COMMITTEE REPORTS LISTED BY SERIAL NUMBER

Part A

This section consists of a serial number listing of all reports published to date by the Ship Structure Committee. The greater portion of these reports are either progress or final reports on specific research investigations supported by the Committee. The balance of the reports are designated as interpretive, review, or survey reports which generally cover a number of related investigations or an entire area of research.

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
1*	Cleavage Fracture of Ship Plate: Hatch Corner Tests	E. P. DeGarmo J. L. Meriam R. C. Grassi J. W. Harman M. P. O'Brien	Progress	92	7/24/46
2*	Causes of Cleavage Fracture in Ship Plate: Flat Plate Tests	H. E. Davis G. E. Troxell A. Boodberg E. R. Parker M. P. O'Brien	Progress	92	8/23/46
3	Cleavage Fracture of Ship Plates as Influenced by Size Effect	W. M. Wilson R. A. Hechtman W. H. Bruckner	Progress	93	8/20/46

*Limited number of copies available.

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
4	Direct Explosion Test for Welded Armor and Ship Plate: Prime and Welded Plate Tests	W. A. Snelling	Final	25	8/30/46
5*	Causes of Cleavage Fracture in Ship Plate: Hatch Corner Tests	E. P. DeGarmo J. L. Meriam M. P. O'Brien	Final	92	10/23/46
6	Investigations of Brittle Cleavage Fracture of Welded Flat Plate by Means of a Bend Test	H. E. Davis G. E. Troxell E. R. Parker A. Boodberg	Final	92	3/10/48
7*	Fatigue Tests of Ship Welds	S. C. Hollister J. Garcia T. R. Cuykendall	Progress	89	12/13/46
8*	Causes of Cleavage Fracture in Ship Plate: Flat Plate Tests and Additional Tests on Large Tubes	H. E. Davis G. E. Troxell E. R. Parker A. Boodberg M. P. O'Brien	Final	92	1/17/47
9*	Correlation of Laboratory Tests with Full-Scale Ship Plate Fracture Tests	M. Gensamer E. P. Klier T. A. Prater F. C. Wagner J. O. Mack J. L. Fisher	Progress	96	3/19/47

*Limited number of copies available

<u>Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
10	Cleavage Fracture of Ship Plates as Influenced by Size Effect	W. M. Wilson R. A. Hechtman W. H. Bruckner	Final	93	6/12/47
11	Metallurgical Quality of Steels Used for Hull Construction	C. E. Sims H. M. Banta A. L. Walters	Summary	87	5/5/47
12	Investigation of Means for Evaluating the Quality of Hull Plate Steel by Tests Conducted on Furnace or Ladle Samples	W. G. N. Heer S. A. Herres C. H. Lorig	Progress	97	10/15/47
13	Metallurgical Quality of Steels Used for Hull Construction	C. E. Sims H. M. Banta A. L. Walters	Progress	87	11/17/47
14	Fatigue Tests of Ship Welds	S. C. Hollister J. Garcia T. R. Cuykendall	Final	89	2/4/48
15	Correlation of Laboratory Tests with Full-Scale Ship Plate Fracture Tests	M. Gensamer C. Wagner E. P. Klier	Progress	96	12/31/47
16*	Causes of Cleavage Fracture in Ship Plate: Hatch Corner Design Tests	E. P. DeGarmo A. Boodberg	Final	92	12/4/47

*Limited number of copies available.

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
17	Correlation of Laboratory Tests with Full-Scale Ship Plate Fracture Tests: A Study of Strain Gradients	E. P. Klier F. C. Wagner J. L. Fisher M. Gensamer	Progress	96	6/8/49
18	Correlation of Laboratory Tests with Full-Scale Ship Plate Fracture Tests	C. Wagner E. P. Klier	Progress	96	5/12/48
19	Correlation of Laboratory Tests with Full-Scale Ship Plate Fracture Tests: Analysis of True-Stress True-Strain Data on Project Steels	E. P. Klier J. O. Mack F. C. Wagner M. Gensamer	Progress	96	6/21/50
20	Investigation of Means for Evaluating the Quality of Hull Plate Steel by Tests Conducted on Furnace or Ladle Samples	J. A. Davis S. A. Herres C. T. Greenridge C. H. Lorig	Final	97	11/30/48
21	Twelve-Inch Flat Plate Tests	S. T. Carpenter W. P. Roop N. Barr E. Kasten A. Zell	Progress	98	4/15/49
22	Correlation of Laboratory Tests with Full-Scale Ship Plate Fracture Tests	C. Wagner E. P. Klier	Progress	96	10/20/48
23	Evaluation of Improved Materials and Methods of Fabrication for Welded Steel Ships	R. W. Bennett P. J. Rieppel C. B. Voldrich	Progress	100	3/30/49

<u>Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
24	The Fundamental Factors Influencing the Behavior of Welded Structures under Conditions of Multiaxial Stress and Variations of Temperature, Stress Concentration, and Rates of Strain	G. Sachs L. J. Ebert A. W. Dana	Progress	99	5/10/49
25	Metallurgical Quality of Steels Used for Hull Construction	C. E. Sims H. M. Banta A. L. Walters	Final Progress	87	5/10/49
26*	Metallurgical Quality of Steels Used for Hull Construction	C. E. Sims H. M. Banta A. L. Walters	Final and Summary	87	6/8/49
27	Causes of Cleavage Fracture in Ship Plate, Tests of Restrained Welded Specimens and Hatch Corner Specimens of Mild Steel	A. Boodberg E. R. Parker	Progress	92	8/19/49
28	Causes of Cleavage Fracture in Ship Plate, High Yield Strength Structural Steel	A. Boodberg E. R. Parker	Final	92	9/21/49

*Limited number of copies available

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
29	Application of the Explosive Test to Evaluate Shock Properties of High Yield Strength Steels		Final	25	7/13/49
	Part I: Preliminary Investigation of Techniques for Direct Explosion Testing of High Yield Strength Steels	A. Muller W. G. Benz W. A. Snelling			
	Part II: Theoretical Investigation of the Fracture of Steel Plates under Explosive Loading	E. Saibel			
30	Correlation of Laboratory Tests with Full-Scale Ship Plate Fracture Tests	E. P. Klier M. Gensamer	Final	96	1/30/53
31	The Effect of Cyclic Stress on the Transition Temperature of Steel	H. E. Jacques	Final	101	7/18/49
32	High-Speed Rotating Disk Project	C. W. MacGregor W. D. Tierney H. Majors, Jr.	Final	102	8/29/49
33	Evaluation of Improved Materials and Methods of Fabrication for Welded Steel Ships	R. W. Bennett R. G. Kline M. Forman P. J. Rieppel C. B. Voldrich	Progress	100	11/15/49

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
34	The Fundamental Factors Influencing the Behavior of Welded Structures under Conditions of Multiaxial Stress and Variations of Temperature, Stress Concentration, and Rates of Strain	L. J. Klingler L. J. Ebert W. M. Baldwin, Jr.	Progress	99	11/28/49
35	Part I: Twelve-Inch Flat Plate Tests Part II: Aspect Ratio Program	S. T. Carpenter W. P. Roop E. Kasten A. Zell	Progress	98	12/15/49
36	Evaluation of Improved Materials and Methods of Fabrication for Welded Steel Ships	R. F. Baysinger R. G. Kline P. J. Rieppel C. B. Voldrich	Progress	100	12/20/50
37	Considerations of Welded Hatch Corner Design	Ship Structure Committee	Survey	117	10/1/52
38	A Study of Plastic Deformation and Fracturing by Strain Energy Distribution	S. I. Liu S. T. Carpenter	Progress	98	12/20/50
39**	Welded Reinforcement of Openings in Structural Steel Members	D. Vasarhelyi R. A. Hechtman	First Progress	119	12/15/51

**Out of print.

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
40	Evaluation of Improved Materials and Methods of Fabrication for Welded Steel Ships	R. F. Baysinger R. G. Kline P. J. Rieppel C. B. Voldrich	Progress	100	10/1/51
41	Evaluation of Improved Materials and Methods of Fabrication for Welded Steel Ships	R. F. Baysinger R. G. Kline P. J. Rieppel C. B. Voldrich	Progress	100	10/1/51
42	Determination of Initial Stresses in Steel Plates	C. Riparbelli E. W. Suppiger E. R. Ward	Final	113	9/15/58
43*	Evaluation of Notch Sensitivity of Mild Steel Ship Plate by Direct Explosion Test	G. S. Mikhalapov	Final	120	3/15/51
44	The Effects of Width and Thickness on Strength, Energy Absorption, and Transition Temperature for Internally Notched Flat Steel Plates	S. T. Carpenter W. P. Roop A. W. Zell E. Kasten	Progress	98	11/15/51
45	Evaluation of Improved Materials and Methods of Fabrication for Welded Steel Ships	R. F. Baysinger P. J. Rieppel C. B. Voldrich	Final	100	12/20/51

~~†~~Publication anticipated during 1958.

*Limited number of copies available.

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
46*	Evaluation of Ship Welding Procedures by Direct Explosion Testing	G. S. Mikhalapov	Final	120	8/31/51
47	The Strength, Energy Absorption, and Transition Temperature of Internally Notched Flat Steel Plates	S. T. Carpenter W. P. Roop	Final	98	1/19/53
48*	A Study of the Structural Action of Superstructures on Ships	H. H. Bleich	Progress	121	12/21/51
49	An Investigation of the Influence of De-oxidation and Chemical Composition on Notched-Bar Properties of Semikilled Ship Steel	H. M. Banta R. H. Frazier C. H. Lorig	First Progress	110	6/27/52
50	Welded Reinforcement of Openings in Structural Steel Members: A Determination of Strain Energy Distribution and True Stresses in the Plastic Range in Plates with Openings	D. Vasarhelyi R. A. Hechtman	Second Progress	119	3/10/52
51	Cracking of Simple Structural Geometries: The Effects of Edge Notch Geometry on Flat Steel Plates	S. T. Carpenter R. F. Linsenmeyer	First Progress	118	5/12/52
52	The Low-Temperature Properties of Relatively High Purity Iron-Carbon Alloys	R. L. Smith R. V. Fostini R. M. Brick	First Progress	109	8/29/52

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<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR-No.</u>	<u>Date of Publication</u>
53	An Investigation of the Influence of De-oxidation and Chemical Composition on Notched-Bar Properties of Semikilled Ship Steel	R. H. Frazier F. W. Boulger C. H. Lorig	Second Progress	110	11/28/52
54	The Fundamental Factors Influencing the Behavior of Welded Structures under Conditions of Multiaxial Stress and Variations of Temperature	E. B. Evans L. J. Klingler	Third Progress	99	10/14/52
55	Welded Reinforcement of Openings in Structural Steel Members: Room and Low Temperature Tests of Plates with Reinforced Openings	D. Vasarhelyi R. A. Hechtman	Third Progress	119	6/30/53
56	Welded Reinforcement of Openings in Structural Steel Members: Cleavage Fracture and Plastic Flow in Structural Steel Plates with Openings	D. Vasarhelyi R. A. Hechtman Y. T. Yoshimi	Fourth Progress	119	3/1/54
57	Cracking of Simple Structural Geometries: Investigation of Welded Ship Details	S. T. Carpenter R. F. Linsenmeyer	Second Progress	118	6/15/53
58	Low-Temperature Embrittlement Mechanics Deduced from Zinc Single Crystal Fracture Studies	P. H. Morton W. M. Baldwin, Jr.	First Progress	111	5/1/53
59	Critical Stress for Slip, Twinning, and Cleavage in Single Crystals of Iron	J. J. Cox, Jr. G. T. Horne R. F. Mehl	First Progress	108	5/15/53

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
60	The Fundamental Factors Influencing the Behavior of Welded Structures: The Effect of Subcritical Heat Treatment on the Transition Temperature of a Low-Carbon Ship Plate Steel and Supplement on Embrittlement of "C" Steel by Nitrogen	E. B. Evans L. J. Klingler	Fourth Progress	99	10/30/53
61	The Fundamental Factors Influencing the Behavior of Welded Structures: The Effect of Subcritical Heat Treatment on the Transition Temperature of a Low-Carbon Ship Plate Steel	E. B. Evans D. J. Garibotti	Fifth Progress	99	10/30/53
62	Review of Past Structural Studies Related to the Ship and Ship Components and for Determining Loads and Strains on Ships at Sea	J. H. Evans	Review	None	12/15/53
63	Review of Welded Ship Failures	H. G. Acker	Review	None	12/15/53
64	Part I: The Fundamental Factors Influencing the Behavior of Welded Structures under Conditions of Multiaxial Stress and Variations of Temperature Part II: The Effect of Subcritical Heat Treatment on the Transition Temperature of a Low-Carbon Ship Plate Steel	W. M. Baldwin, Jr. E. B. Evans	Final	99	11/6/53

<u>Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
65**	A Critical Survey of Brittle Failure in Carbon Plate Steel Structures other than Ships	M. E. Shank	Survey	None	12/1/53
66	Critical Stresses for Slip, Twinning, and Cleavage in Single Crystals of Iron	J. J. Cox, Jr.	Final	108	2/1/54
67	Model Tests on Hull-Deckhouse Interaction	L. Crawford W. J. Ruby	Final	121	1/17/55
68	Tensile Tests of Large Specimens Representing the Intersection of a Bottom Longitudinal with a Transverse Bulkhead in Welded Tankers	L. K. Irwin W. R. Campbell	Final	103	1/18/54
69**	An Evaluation of Current Knowledge of the Mechanics of Brittle Fracture	D. C. Drucker	Interpretive	None	5/17/54
70	A Review of Ship Steel Research and Recommendations for Future Studies	C. S. Barrett W. E. Mahin	Review	None	2/15/54
71	The Influence of Heat Treatment on the Notched-Bar Properties of Semikilled Steel Plate	R. H. Frazier F. W. Boulger C. H. Lorig	Third Progress	110	3/15/54
72	The Present Status of Nondestructive Test Methods for Inspection of Welded Joints in Ship Structures	R. J. Krieger S. A. Wenk R. C. McMaster	Survey	127	10/5/53

**Out of print.

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
73	A Review of the Influence of Composition and Deoxidation on the Properties of Ship Plate Steels	Advisory Committee for Ship Structure Committee Project SR-110	Review	110	11/16/53
74‡	Electron Microscope Techniques for Study of Fractured Surfaces of Ship Plate Steels	A. Revere R. Jaccodine	Final	122	
75	Welded Reinforcement of Openings in Structural Steel Tension Members	D. Vasarhelyi R. A. Hechtman	Final	119	3/21/55
76	Investigation of Performance of Semi-killed Carbon Steel ABS Class B and Rimmed Steel ABS Class A under Direct Explosion Test	G. S. Mikhalapov W. A. Snelling	Final	120	7/9/54
77	Part I: Crack-Starter Tests of Ship Fracture and Project Steels	P. P. Puzak M. E. Schuster W. S. Pellini	Final	124	6/18/54
78	Part II: Investigation of the Performance of Weldments and Prime Plate of ABS-B Steel	W. S. Pellini E. W. Eschbacher	Final	124	6/18/54
79	Cracking of Simple Structural Geometries	S. T. Carpenter	Final	118	1/31/55

‡Publication anticipated during 1958.

<u>Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
80	Metallurgical and Economic Aspects of Ship Steels and their Relation to Ship Failures	W. J. Harris, Jr. Clyde Williams	Interpretive	135	8/15/56
81	Effect of Grain Size and Carbon Content on the Low-Temperature Tensile Properties of High Purity Fe-C Alloys	R. L. Smith G. E. Spangler	Second Progress	109	5/28/54
82	The Influence of Carbon and Manganese on the Properties of Semikilled Hot-Rolled Steel	F. W. Boulger	Fourth Progress	110	10/28/54
83	Reproducibility of Keyhole Charpy and Tear Test Data on Laboratory Heats of Semikilled Steel	R. H. Frazier F. W. Boulger J. W. Spretnak	Fifth Progress	110	2/7/55
84	An Appraisal of the Properties and Methods of Production of Laminated or Composite Ship Steel Plate	Committee on Ship Steel	Review	133	1/12/56
85†	Low-Temperature Embrittlement Mechanics Deduced from Zinc Single Crystal Fracture Studies	R. Treon, Jr. W. M. Baldwin, Jr.		111	
86	Evaluation of Weld-Joint Flaws as Initiating Points of Brittle Fracture	D. C. Martin R. S. Ryan P. J. Rieppel	First Progress	131	9/4/56

†Publication anticipated during 1958. However, the material originally contained in this report has been combined with that in SSC-92, and the final report on Project SR-111 will be published as SSC-92.

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
87	Rapid Propagation of a Crack in a Brittle Material	M. J. Schilhansl	First Progress	130	3/25/55
88	Influence of Silicon and Aluminum on the Properties of Hot-Rolled Steel	R. H. Frazier F. W. Boulger C. H. Lorig	Sixth Progress	110	7/1/55
89*	Effect of Accelerated Cooling after Hot Rolling on the Notched-Bar Properties of Ship Plate Steel	R. H. Frazier F. W. Boulger C. H. Lorig	Seventh Progress	110	7/1/55
90	Effects of Aluminum Additions and Variations in Finishing Temperature on Properties of Hot-Rolled Experimental Open-Hearth Steels	R. H. Frazier F. W. Boulger C. H. Lorig	Eighth Progress	110	7/15/55
91	Investigation of the Influence of De-oxidation and Chemical Composition on Notched-Bar Properties of Ship Plate Steels	F. W. Boulger R. H. Frazier C. H. Lorig	Final	110	7/15/55
92‡	Low-Temperature Embrittlement Mechanics Deduced from Zinc Single Crystal Studies	Ray Treon, Jr. W. M. Baldwin, Jr.	Final	111	
93‡	Mechanical Properties of High Purity Iron-Carbon Alloys at Low Temperatures	G. J. London G. Spangler R. M. Brick	Third Progress	109	

*Limited number of copies available.

‡Publication anticipated during 1958.

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
94‡	Mechanical Properties of High Purity Iron-Carbon Alloys at Low Temperatures	R. M. Brick	Final	109	
95	Thermal Stresses in Ships	R. A. Hechtman	Final	129	10/30/56
96	Notes on the Influence of Unfair Plating on Ship Failures by Brittle Fracture	H. H. Bleich	Final	132	3/15/56
97	The Mechanism of Brittle Fracture	T. S. Robertson	Special	None	3/22/55
98	Energy Release Rates during Fracturing of Perforated Plates (NRL Memorandum 370)	M. W. Brossman J. A. Kies	Special	None	4/22/55
99*	Notch Toughness Properties of ABS Ship Plate Steels	N. A. Kahn E. A. Imbembo J. J. Gabriel	First Progress	125	6/10/55
100	Index of Ship Structure Committee Publications	M. B. Fisher	Special	None	4/30/58
101	Improved Notch Toughness of Experimental Semikilled Steels over One Inch in Thickness	R. W. Vanderbeck	First Progress	141	8/1/56

‡Publication anticipated during 1958.

*Limited number of copies available.

<u>SSC</u> <u>Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project</u> <u>SR No.</u>	<u>Date of</u> <u>Publication</u>
102*	The Relation of Microstructure to the Charpy Impact and Low-Temperature Tensile Properties of Two Ship Steels	W. S. Owen D. H. Whitmore C. P. Sullivan B. L. Averbach Morris Cohen	First Progress	136	6/18/56
103	The Tensile Yield Behavior of Ship Steel	W. S. Owen B. L. Averbach Morris Cohen	Second Progress	136	9/28/56
104**	Development of Filmless Technique for Recording Defects in Ship Welds	J. I. Bujes	First Progress	140	2/25/57
105†	Weld Flaw Evaluation	S. T. Carpenter R. F. Linsenmeyer	Final	126	7/29/58
106	Mill Sampling Techniques for Quality Determination of Ship Plate Steel	C. L. Staugaitis	First Progress	139	1/31/58
107†	Evaluation of Weld-Joint Flaws as Initiating Points of Brittle Fracture	R. P. Sopher A. L. Lowe, Jr. P. J. Rieppel	Final	131	8/29/58

*Limited number of copies available.

~~**Out of print.~~

~~†Publication anticipated during 1958.~~

<u>SSC</u> <u>Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project</u> <u>SR No.</u>	<u>Date of</u> <u>Publication</u>
108‡	Notch Toughness Properties of Ship Plate Steel as Evaluated by the van der Veen Notched Slow Bend Test	E. A. Imbembo F. Ginsberg	Second Progress	141	
109	Brittle Fracture of Mild Steel in Tension at -196 C	W. S. Owen B. L. Averbach Morris Cohen	Third Progress	136	11/5/57
110	The Investigation of Radioisotopes for the Inspection of Ship Welds	E. L. Criscuolo D. P. Case D. Polansky	First Progress	127	2/28/58
NBS-1*	Investigation of Fractured Steel Plates Removed from Welded Ships	M. L. Williams G. A. Ellinger	First Progress	106	2/25/49
NBS-2	Examinations and Tests of Fractured Steel Plates Removed from Welded Ships	M. L. Williams M. R. Meyerson G. L. Kluge L. R. Dale	Second Progress	106	9/22/49
NBS-3*	Investigation of Fractured Steel Plates Removed from Welded Ships	M. L. Williams M. R. Meyerson G. L. Kluge L. R. Dale	Third Progress	106	6/1/51
NBS-4	Examinations and Tests of Fractured Steel Plates Removed from Welded Ships	M. L. Williams	Fourth Progress	106	4/2/53

‡Publication anticipated during 1958.

*Limited number of copies available.

<u>SSC Serial No.</u>	<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Project SR No.</u>	<u>Date of Publication</u>
NBS-5	Analysis of Brittle Behavior in Ship Plates	M. L. Williams	Fifth Progress	106	2/7/55
NBS-6	Investigation of Fractured Steel Plates Removed from Welded Ships	M. L. Williams	Sixth Progress	106	9/27/57
NBS-7	Correlation of Metallurgical Properties, V-Notch Charpy Energy Criteria, and Service Performance of Steel Plates from Fractured Ships	M. L. Williams	Final	106	11/25/57

Part B

(Ship Structure Committee Reports without Serial Numbers)

<u>Title</u>	<u>Author</u>	<u>Type</u>	<u>Date of Publication</u>
First Technical Progress Report	Ship Structure Committee	Progress	3/1/48
Second Technical Progress Report	Ship Structure Committee	Progress	7/1/50
Third Technical Progress Report	Ship Structure Committee	Progress	8/1/53
Research Summary--Fifth Edition	Ship Structure Committee	Summary	1/1/53

<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Date of Publication</u>
Investigation of Fracture in the T1 Tanker Capitan	M. L. Williams M. R. Meyerson	Special	9/27/49
Report of Visit to England and Scotland	Finn Jonassen	Special	4/1/50
Some Research Activities Related to Welded Structures (Ohio State University Engineering Experiment News, Vol. XXII, No. 3)	Finn Jonassen	Special	June 1950
Research under the Ship Structure Committee	Finn Jonassen H. G. Acker E. A. Wright	Special	1952
A Resume of the Ship Fracture Problem	Finn Jonassen	Special	June 1952
Discussion of Brittle Fracture in Ship Plate	John Chipman	Special	7/18/55

Part C

(Other Reports Distributed by the Ship Structure Committee)

<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Date of Publication</u>
Final Report of a Board of Investigation to Inquire into the Design and Methods of Construction of Welded Steel Merchant Vessels	Board of Investigation	Final	July 1946

<u>Title</u>	<u>Authors</u>	<u>Type</u>	<u>Date of Publication</u>
Cleavage Fracture of Ship Plates (University of Illinois Bulletin, Vol. 48, No. 50)	W. M. Wilson R. A. Hechtman W. H. Bruckner	Special	March 1951
Low-Temperature Brittleness (Excerpts from the 1956 Edward De Mille Campbell Memorial Lecture Reprinted from <u>Metal Progress</u> , December 1956)	C. S. Barrett	Special	December 1956
Thirteen Years of Ship Research (<u>News Report</u> , Vol. VII, No. 1, National Academy of Sciences-National Research Council, January-February 1957)	D. K. Felbeck	Special	Jan.--Feb. 1957

SECTION II

RESEARCH PROJECT LISTING OF SHIP STRUCTURE COMMITTEE REPORTS

This section consists of a listing, according to the appropriate research project, of progress and final reports on specific investigations.

<u>Project SR No.</u>	<u>Project Title</u>	<u>Location</u>	<u>SSC Reports Serial No.</u>
25	Direct Explosion Test for Welded Armor and Ship Plate--Prime and Welded Plate Tests	Trojan Powder Company Air Reduction Company	4, 29
87	Metallurgical Quality of Steels Used for Hull Construction	Battelle Memorial Institute	11, 13, 25, 26*
89	Fatigue Tests of Ship Welds	Cornell University	7*, 14
92	Causes of Cleavage Fracture in Ship Plate	University of California	1*, 2*, 5*, 6, 8*, 16* 27, 28
93	Cleavage Fracture of Ship Plates as Influenced by Size Effect	University of Illinois	3, 10
96	Correlation of Laboratory Tests with Full-Scale Ship Plate Fracture Tests	Pennsylvania State College	9*, 15, 17, 18, 19 22, 30
97	Investigation of Means for Evaluating the Quality of Hull Plate Steel by Tests Conducted on Furnace or Ladle Samples	Battelle Memorial Institute	12, 20
98	Twelve-Inch Flat Plate Tests	Swarthmore College	21, 35, 38, 44, 47

*Limited number of copies available.

<u>Project SR No.</u>	<u>Project Title</u>	<u>Location</u>	<u>SSC Reports Serial No.</u>
99	The Fundamental Factors Influencing the Behavior of Welded Structures under Conditions of Multiaxial Stress and Variations of Temperature, Stress Concentration, and Rates of Strain	Case Institute of Technology	24, 34, 54, 60, 61, 64
100	Evaluation of Improved Materials and Methods of Fabrication for Welded Steel Ships	Battelle Memorial Institute	23, 33, 36, 40, 41, 45
101	The Effects of Cyclic Stress on the Transition Temperature of Steel	Massachusetts Institute of Technology	31
102	Behavior of Steels under Multiaxial Stresses--Spinning Disk	Massachusetts Institute of Technology	32
103	Design Details--Static Tests	National Bureau of Standards	68
106	Examinations and Tests of Fractured Steel Plates Removed from Welded Ships	National Bureau of Standards	(NBS Nos.) 1*, 2, 3*, 4, 5, 6, 7
108	Critical Stresses for Slip, Twinning, and Cleavage in Single Crystals of High Purity Iron	Carnegie Institute of Technology	59, 66
109	The Mechanical Properties of High Purity Iron-Oxygen and Iron-Carbon Alloys at Low Temperatures	University of Pennsylvania	52, 81, 93‡, 94‡

*Limited number of copies available.

‡Publication anticipated during 1958.

<u>Project SR No.</u>	<u>Project Title</u>	<u>Location</u>	<u>SSC Reports Serial No.</u>
110	An Investigation of the Influence of Deoxidation and Composition on Properties of Semikilled Steel Ship Plate	Battelle Memorial Institute	49, 53, 71, 73, 82 83, 88, 89*, 90, 91
111	Transition Temperature in Metals other than Iron	Case Institute of Technology	58, 92‡
113	Determination of Initial Stresses in Steel Plates	Princeton University	42‡
115	Monograph on Residual Stresses	National Academy of Sciences National Research Council	†
116	Brittle Behavior of Engineering Structures	National Academy of Sciences National Research Council	††
117	Hatch Corner Recommendations		37
118	Cracking of Simple Structural Geometries	Swarthmore College	51, 57, 79

*Limited number of copies available.

‡Publication anticipated during 1958.

†The final report on this project is a monograph, RESIDUAL STRESSES IN METALS AND METAL CONSTRUCTION, (ed. W. R. Osgood), published by Reinhold Publishing Company, New York, New York (1954), \$10.00.

††The final report on this project is a book, BRITTLE BEHAVIOR OF ENGINEERING STRUCTURES, by Earl R. Parker, published by John Wiley & Sons, Inc., New York, New York (1957), \$6.00.

<u>Project SR No.</u>	<u>Project Title</u>	<u>Location</u>	<u>SSC Reports Serial No.</u>
119	Investigation of Methods of Reinforcement around Openings	University of Washington	39**, 50, 55, 56, 75
120	Direct Explosion High-Energy Loading Test	Metallurgical Research and Development Co.	43*, 46, 76
121	Effectiveness of a Superstructure	Reed Research, Inc.	48*, 67
122	Electron and Optical Microscopy	Stevens Institute of Technology	74‡
124	Explosion Bulge Test	Naval Research Laboratory	77, 78
125	Survey of Current ABS Steels	New York Naval Shipyard	99*
126	Flaw Evaluation	Swarthmore College	105‡
127	Flaw Detection	Battelle Memorial Institute Naval Ordnance Laboratory	72, 110
129	Thermal Stresses	University of Washington	95

**Out of print.

*Limited number of copies available.

‡Publication anticipated during 1958.

<u>Project SR No.</u>	<u>Project Title</u>	<u>Location</u>	<u>SSC Reports Serial No.</u>
130	Brittle Fracture Mechanics	Brown University	87
131	Flaw Evaluation	Battelle Memorial Institute	86
132	Warped Plating	National Academy of Sciences National Research Council	96
133	Texturally Notch Tough Steel	National Academy of Sciences National Research Council	84
135	Metallurgical and Economic Aspects of Ship Steels and their Relation to Ship Failures	National Academy of Sciences National Research Council	80
136	Metallurgical Structure	Massachusetts Institute of Technology	102*, 103, 109
139	Joint SSC-AISI Study	National Bureau of Standards	106
140	Flaw Detection	Naval Ordnance Test Station	104**
141	Semikilled Steels over One Inch in Thickness	United States Steel Corp.	101

*Limited number of copies available

**Out of print.

SECTION III

CROSS INDEXING AND REFERENCING

In this section an attempt is made to direct the reader to publications or other sources where reports in Section I have been reproduced in whole or in part. Also listed are references to articles published as a result of Ship Structure Committee sponsored work. Known references are cited directly after or under the subject report.

SSC-1. See listing for SSC-16.

SSC-3. Major portions of this report can be found in the following two sources:

- a) "Cleavage Fracture of Plates as Influenced by Size Effect," by Wilbur M. Wilson, Robert A. Hechtman, and Walter H. Bruckner, The Welding Journal, Res. Suppl., April 1948, pp. 200-s--208-s.
- b) "Cleavage Fracture of Ship Plates," by W. M. Wilson, R. A. Hechtman, and W. H. Bruckner, University of Illinois Bulletin No. 388, March 1951.

SSC-5. See listing for SSC-16.

SSC-8. Fourteen conclusions are reprinted in a 15-page article as follows:

"Effect of Temperature and Welding Conditions on the Strength of Large Welded Tubes," by G. E. Troxell, E. R. Parker, H. E. Davis, and A. Boodberg, The Welding Journal, Res. Suppl., February 1948, pp. 34-s--49-s.

Small portions are abstracted in the following article:

"Causes of Cleavage Fracture in Ship Plate--Tests of Wide Notched Plates," by A. Boodberg, H. E. Davis, E. R. Parker, and G. E. Troxell, The Welding Journal, Res. Suppl., April 1948, pp. 186-s--199-s.

SSC-16. Ten papers have been published which contain all of the basic material contained in this report as well as material contained in SSC-1 and SSC-5. These papers are as follows:

- a) "A Method for the Measurement of Residual Welding Stresses," by J. L. Meriam, E. Paul DeGarmo, and Finn Jonassen, The Welding Journal, Res. Suppl., June 1946, pp. 340-s--343-s.
- b) "Residual Stresses in Intersecting Butt Welds," by E. Paul DeGarmo, J. L. Meriam, and Finn Jonassen, The Welding Journal, Res. Suppl., August 1946, pp. 451-s--463-s.
- c) "The Effect of Weld Length upon the Residual Stresses of Unrestrained Butt Welds," by E. Paul DeGarmo, J. L. Meriam, and Finn Jonassen, The Welding Journal, Res. Suppl., August 1946, pp. 485-s--487-s.
- d) "Reduction of Residual Welding Stresses by the Use of Austenitic Electrode," by Finn Jonassen, J. L. Meriam, and E. Paul DeGarmo, The Welding Journal, Res. Suppl., September 1946, pp. 489-s--491-s.
- e) "Effect of Certain Block and other Special Welding Procedures on Residual Welding Stresses," by Finn Jonassen, J. L. Meriam, and E. Paul DeGarmo, The Welding Journal, Res. Suppl., September 1946, pp. 492-s--496-s.
- f) "The Effect of Peening upon Residual Welding Stresses," by E. Paul DeGarmo, Finn Jonassen, and J. L. Meriam, The Welding Journal, Res. Suppl., October 1946, pp. 616-s--623-s.
- g) "Redistribution of Residual Welding Stresses by Tensile Loading along a Unionmelt Weld Joining Two 3-ft x 12-ft x 1-in. Plates," by J. L. Meriam, E. Paul DeGarmo, and Finn Jonassen, The Welding Journal, Res. Suppl., October 1946, pp. 697-s--699-s.
- h) "Variation of Longitudinal Residual Strain through the Thickness of a 1-in. Unionmelt Weld," by J. L. Meriam, Finn Jonassen, and E. Paul DeGarmo, The Welding Journal, Res. Suppl., December 1946, pp. 844-s--847-s.
- i) "Some Tests of Large Welded Structures," by E. Paul DeGarmo, J. L. Meriam, and R. C. Grassi, The Welding Journal, Res. Suppl., May 1947, pp. 257-s--267-s.
- j) "Tests of Various Designs of Welded Hatch Corners for Ships," by E. Paul DeGarmo, The Welding Journal, Res. Suppl., February 1948, pp. 50-s--68-s.

III-3

- SSC-18. For much of the same material the reader is referred to the following two papers:
- a) "The Correlation of Laboratory Tests with Full-Scale Ship Plate Fracture Tests," by E. P. Klier, F. C. Wagner, and M. Gensamer, The Welding Journal, Res. Suppl., February 1948, pp. 71-s--96-s.
 - b) "Fracture Characteristics of Ship Plate in Certain Small-Scale Tests," by E. P. Klier, F. C. Wagner, and M. Gensamer, The Welding Journal, Res. Suppl., February 1949, pp. 50-s--66-s.
- SSC-22. See listing for SSC-18.
- SSC-23. See listing for SSC-45.
- SSC-24. While not an actual reprint, the author suggests that much related material can be found in the following two papers:
- a) "Distribution of Strength and Ductility in Welded Steel Plate as Revealed by Static Notch Bar Tensile Test," by W. F. Brown, Jr., L. J. Ebert, and G. Sachs, The Welding Journal, Res. Suppl., October 1947, pp. 545-s--554-s.
 - b) "Effects of Section Size on the Static Notch Bar Tensile Properties of Mild Steel Plate," by W. F. Brown, Jr., J. D. Lubahn, and L. J. Ebert, The Welding Journal, Res. Suppl., October 1947, pp. 554-s--559-s.
- SSC-26. Portions of this report may be found in the following paper:
- "Development of Weldable High-Strength Steels," by C. E. Sims, and H. M. Banta, The Welding Journal, Res. Suppl., April 1949, pp. 178-s--192-s.
- SSC-28. Test program, results, and nine conclusions are abstracted in the following paper:
- "Transition Temperatures of Structural Steels," by A. Boodberg, and E. R. Parker, The Welding Journal, Res. Suppl., April 1949, pp. 167-s--177-s.

- SSC-32. Much of the material contained in this report appears in the following paper:
"Developments in High-Speed Rotating Disk Research at M. I. T.," by C. W. MacGregor, and W. D. Tierney, The Welding Journal, Res. Suppl., June 1948, pp. 303-s--309-s.
- SSC-33. See listing for SSC-45.
- SSC-34. This report appears as the following paper:
"Distribution of Relative Ductility in Steel Weldments," by L. J. Klingler, and L. J. Ebert, The Welding Journal, Res. Suppl., February 1950, pp. 59-s--73-s.
- SSC-36. See listing for SSC-45.
- SSC-37. This report was reprinted in its entirety in the following publication:
"Considerations of Welded Hatch Corner Design," The Welding Journal, Res. Suppl., July 1953, pp. 316-s--324-s.
- SSC-39. The material in this report appears in condensed form in the following paper:
"Welded Reinforcement of Openings in Structural Steel Members," by D. Vasarhelyi, and R. A. Hechtman, The Welding Journal, Res. Suppl., April 1951, pp. 182-s--192-s.
- SSC-40. See listing for SSC-45.
- SSC-41. See listing for SSC-45.
- SSC-45. Two papers which are based on this final report have been published. They also contain some of the material covered in the progress reports: SSC-23, SSC-33, SSC-36, SSC-40, and SSC-41. These papers are as follows:

- a) "Evaluation of Tests for Steels for Welded Structures," by P. J. Rieppel, R. G. Kline, and C. B. Voldrich, The Welding Journal, Res. Suppl., April 1950, pp. 195-s--212-s.
- b) "Fracture Initiation and Propagation in Welded Ship Steels," by P. J. Rieppel, and C. B. Voldrich, The Welding Journal, Res. Suppl., April 1952, pp. 188-s--197-s.

SSC-48. An extract of this report appears in the following publication:

Journal of Applied Mechanics, Vol. 20, No. 1, 1953, pp. 95--104.

SSC-50. This report was reprinted almost in its entirety in the following paper:

"Welded Reinforcement of Openings in Structural Steel Members," by D. Vasarhelyi, and R. A. Hechtman, The Welding Journal, Res. Suppl., April 1952, pp. 169-s--183-s.

SSC-51. Much of the material contained in this report has been summarized in the following paper:

"Cracking of Simple Structural Geometries," by S. T. Carpenter, and R. F. Linsenmeyer, Welding Research Council Bulletin No. 23, July 1955.

SSC-52. Much of the material contained in this report was presented at the National Bureau of Standards Semicentennial Symposium of May 14 and 15, 1951, and was reprinted as follows:

"Mechanical Properties of High Purity Iron-Carbon Alloys at Low Temperatures," by R. L. Smith, G. A. Moore, and R. M. Brick, appearing in Mechanical Properties of Metals at Low Temperatures, National Bureau of Standards Circular 520, issued May 7, 1952.

SSC-57. Much of the material in this report has been summarized and published in the following paper:

"Cracking of Simple Structural Geometries," by S. T. Carpenter, and R. F. Linsenmeyer, Welding Research Council Bulletin No. 23, July 1955.

- SSC-58. This report was also published in the following periodical:
"Low-Temperature Embrittlement Mechanics Deduced from Zinc Single Crystal Fracture Studies," by P. H. Morton, R. Treon, and W. M. Baldwin, Jr., Journal of the Mechanics and Physics of Solids, Vol. 2, pp. 177--196, 1954.
- SSC-60. All of the material in this report can be found in the following two sources:
a) "Heat Treatment Effects on Transition Temperature of a Ship Steel," by E. B. Evans, and L. J. Klingler, The Welding Journal, Res. Suppl., September 1953, pp. 417-s--431-s.
b) "Embrittlement of a Ship Steel in a Nitrate Salt Bath," by D. J. Garibotti, C. A. Beiser, and E. B. Evans, The Welding Journal, Res. Suppl., August 1956, pp. 383-s--388-s.
- SSC-61. Essentially the same material is presented in the following paper:
"Embrittlement of a Ship Steel in a Nitrate Salt Bath," by D. J. Garibotti, C. A. Beiser, and E. B. Evans, The Welding Journal, Res. Suppl., August 1956, pp. 383-s--388-s.
- SSC-62. Essentially the same material contained in this report may be found in the following source:
"Full-Scale Ship Structural Experiments and the Effects of Unfair Plating in Tension," by J. H. Evans, Journal of the American Society of Naval Engineers, Inc., February 1956.
- SSC-63. This report was reprinted as the following:
Welding Research Council Bulletin No. 19, November 1954.
- SSC-64. See listing for SSC-60. See also the following paper:
"Distribution of Relative Ductility in Steel Weldments," by L. J. Klingler, and L. J. Ebert, The Welding Journal, Res. Suppl., February 1950, pp. 59-s--73-s.
- SSC-65. This report was reprinted as the following:
Welding Research Council Bulletin No. 17, January 1954.
The report also appears in the following:

ASTM Special Technical Publication No. 158, Symposium Volume on Metallic Materials at Low Temperatures, 1953, pp. 45--110.

An abstracted version appears as:

"Brittle Failure of Nonship Steel Plate Structures," Mechanical Engineering, Vol. 76, No. 1, pp. 23--28, January 1954.

SSC-66. Significant details of this work were presented in the following technical paper:

"Slip, Twinning and Fracture in Single Crystals of Iron," by J. J. Cox, G. T. Horne, and R. F. Mehl, at the Fall, 1956, meeting of the American Society for Metals, Cleveland, Ohio. The paper appears in the 1956 Trans. A. S. M., Vol. 49. For complete experimental techniques and details, the microfilm of the complete doctoral thesis is available from the Carnegie Institute of Technology, Pittsburgh, Pennsylvania.

SSC-68. Small portions of this report appear in the following two sources:

a) "Failures in Welded Ships," National Bureau of Standards Technical News Bulletin, Vol. 37, No. 2, pp. 24--29, February 1953.

b) "Structural Failures in Welded Ships," by L. K. Irwin, and W. R. Campbell, The Welding Journal, Res. Suppl., July 1953, pp. 342-s--346-s.

SSC-69. One paper which appears in this report has been reprinted in its entirety in the following source:

"Report on Brittle Fracture Studies," by F. J. Feely, Jr., D. Hrtko, S. R. Kleppe, and M. S. Northup, The Welding Journal, Res. Suppl., February 1954, pp. 99-s--111-s.

SSC-72. This report has been reprinted in its entirety as follows:

"Nondestructive Test Methods for Inspection of Welded Joints," by R. J. Krieger, S. A. Wenk, & R. C. McMaster, The Welding Journal, Res. Suppl., March 1954, pp. 154-s--160-s.

- SSC-75. This report has been reprinted almost in its entirety in the following paper:
"Welded Reinforcement of Openings in Structural-Steel Tension Members," by D. Vasarhelyi, and R. A. Hechtman, The Welding Journal, Res. Suppl., September 1956, pp. 421-s--430-s.
- SSC-77. This report has been reprinted in its entirety in the following paper:
"Crack Starter Tests of Ship Fracture and Project Steels," by P. P. Puzak, M. E. Schuster, and W. S. Pellini, The Welding Journal, Res. Suppl., October 1954, pp. 481-s--495-s.
- SSC-78. This report has been reprinted in its entirety in the following paper:
"Performance of Weldments and Prime Plate of ABS-B Steel," by W. S. Pellini, and E. W. Eschbacher, The Welding Journal, Res. Suppl., October 1954, pp. 524-s--531-s.
- SSC-79. Much of this material has been summarized and published as follows:
"Cracking of Simple Structural Geometries," by S. T. Carpenter, and R. F. Linsenmeyer, Welding Research Council Bulletin No. 23, July 1955.
- SSC-81. This report has been published in the following publication:
Trans. A. S. M., Vol. 46, p. 973, 1954.
- SSC-86. Thirty-nine pages comprising the body of this report are reprinted in their entirety in the following paper:
"Evaluation of Weld-Joint Flaws as Reinitiating Points of Brittle Fracture," by D. C. Martin, R. S. Ryan, and P. J. Rieppel, The Welding Journal, Res. Suppl., May 1957, pp. 244-s--251-s.
Pages 46--88 of the report, which comprise Appendices A--D, are not reprinted.
- SSC-88. All of the material in the body of this report can be found in the following publication:
"Influence of Silicon and Aluminum on the Properties of Hot-Rolled Steel," by R. H. Frazier, F. W. Boulger, and C. H. Lorig, Journal of Metals, Vol. 8, No. 10, October 1956, pp. 1269--1276.
The thirty-nine pages of Appendix tables which appear in the SSC report are omitted from this reference.

SSC-90. Some of the material in this report may be found in the following publication:

"Effect of Finishing Temperatures on Properties of Hot-Rolled Steel Plate," by R. H. Frazier, F. W. Boulger, and C. H. Lorig, Iron and Steel Engineer, October 1956, pp. 67--77.

SSC-97. The subject matter of this report appears in the following British publication:

"Brittle Fracture," Iron and Steel, Vol. 28, No. 5, May 1955, pp. 161--166.

See also:

"Propagation of Brittle Fracture in Steel," Journal of the Iron and Steel Institute, Vol. 175, December 1953, pp. 361--374.

SSC-101. This report has been reprinted in its entirety in the following publication:

"Improved Notch Toughness of Experimental Semikilled Steels over One Inch in Thickness," by R. W. Vanderbeck, The Welding Journal, Res. Suppl., January 1958, pp. 10-s--20-s.

SSC-102. Essentially the same material appears in the following paper:

"Relation of Charpy Impact Properties to Microstructure of Three Ship Steels," by W. S. Owen, D. H. Whitmore, Morris Cohen, and B. L. Averbach, The Welding Journal, Res. Suppl., November 1957, pp. 503-s--511-s.

NBS-1. Most of the material contained in this report can be found in the following three sources:

- a) "Brittle Fractures in Ship Plates," by Morgan L. Williams, National Bureau of Standards Circular 520, Mechanical Properties of Metals at Low Temperatures, Government Printing Office, Washington, D. C., May 1952. Essentially the same paper was presented at the Conference on Materials and Design for Low Temperature Service, Engineer Research and Development Laboratories, Fort Belvoir, Virginia, May 1952. A report of this conference, PB121009, is available from the Office of Technical Services, Department of Commerce, Washington, D. C., at a cost of \$10.00
- b) "Failures in Welded Ships," by Morgan L. Williams, National Bureau of Standards Technical News Bulletin, Vol. 37, pp. 24--29, February 1953.

- c) "Investigation of Structural Failures of Welded Ships," by Morgan L. Williams, and George A. Ellinger, The Welding Journal, Res. Suppl. October 1953, pp. 498-s--528-s. (This material also appears in digest form in Metal Progress, Vol. 66, No. 1A, pp. A156--A166, July 15, 1954).

NBS-2. See listing for NBS-1.

NBS-3. See listing for NBS-1.

NBS-4. See listing for NBS-1.

First Technical Progress Report of the Ship Structure Committee has been reprinted in the following publication:

The Welding Journal, Res. Suppl., July 1948, pp. 377-s--384-s.

Second Technical Progress Report of the Ship Structure Committee has been reprinted in the following publication:

The Welding Journal, Res. Suppl., April 1951, pp. 169-s--181-s.

Third Technical Progress Report of the Ship Structure Committee has been reprinted in the following publication:

Welding Research Council Bulletin No. 16, November 1953.

Final Report of a Board of Investigation to Inquire into the Design and Methods of Construction of Welded Steel Merchant Vessels has been reprinted in its entirety.

The Welding Journal, July 1947, pp. 569--619.

"Research under the Ship Structure Committee," by Finn Jonassen, H. G. Acker, and E. A. Wright has been reprinted in the following publications:

- a) Trans. S. N. A. M. E., Vol. 60, pp. 223--246, 1952. Discussion included in pages 247--272.
- b) Also reprinted as Welding Research Council Bulletin No. 16, November 1953.

"Brittle Fracture of Ship Steels in Terms of Flow Properties at High Strain Rates," by J. M. Krafft and A. M. Sullivan was reprinted from the following:

"Report of NRL Progress," December 1956.

"A Resume of the Ship Fracture Problem," by Finn Jonassen may be found in the following publication:

The Welding Journal, Res. Suppl., June 1952, pp. 316-s--318-s.

"Low-Temperature Brittleness," by C. S. Barrett is abstracted from the 1956 Edward De Mille Campbell Memorial Lecture. The entire lecture may be found in the following publication:

Trans. A. S. M., Vol. 49, 1957, pp. 53--117, and is entitled "Metallurgy at Low Temperatures."

"Brittle Fracture Initiation Tests," by C. Mylonas, D. C. Drucker, and L. Isberg may be found in the following:

The Welding Journal, Res. Suppl., January 1957, pp. 9-s--17-s.

"Arrest of Brittle Fractures in Wide Steel Plates," by R. J. Mosborg, W. J. Hall, and W. H. Munse may be found in the following publication:

The Welding Journal, Res. Suppl., September 1957, pp. 393-s--400-s.