

ANALYSIS OF RADIATION EXPOSURE FOR  
NAVAL UNITS OF OPERATION CROSSROADS  
Volume II-(Appendix A) Target Ships

Science Applications, Inc.  
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Technical Report

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  External radiation doses are reconstructed for crews of support and target ships of Joint Task Force One at Operation CROSSROADS, 1946. Volume I describes the reconstruction methodology, which consists of modeling the radiation environment, to include the radioactivity of lagoon water, target ships, and support ship contamination; retracing ship paths through this environment; and calculating the doses to shipboard personnel. The USS RECLAIMER, a support ship, is selected as a representative ship to demonstrate		

## 20. ABSTRACT (Continued)'

this methodology. Doses for all other ships are summarized. Volume II (Appendix A) details the results for target ship personnel. Volume III (Appendix B) details the results for support ship personnel. Calculated doses for more than 36,000 personnel aboard support ships while at Bikini range from zero to 1.7 rem. Of those, approximately 34,000 are less than 0.5 rem. From the models provided, doses due to target ship reboarding and doses accrued after departure from Bikini can be calculated, based on the individual circumstances of exposure,

# ANALYSIS OF RADIATION EXPOSURES FOR NAVAL UNITS OF OPERATION CROSSROADS

## VOLUME II

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## A- 1 INTRODUCTION

Eighty-four (84) ships were designated as target ships in support of Operation CROSSROADS. With the exception of seventeen (17) LCTs that were transported to Bikini and had no deck logs maintained on them, all of the target ships had been sailed to Bikini with a normal crew complement. The purpose of this appendix is to summarize the radiation dose history of the target ship crews while at Bikini and to provide the user with sufficient data to calculate personnel exposures subsequent to their departure from the lagoon. The final disposition of each target ship is also included.

In the organization of Appendix A, the 84 target ships have been categorized as either being NON-REMANNED (includes UNMANNED) or REMANNED and sailed away. There were seventy-one (71) target ships in the NON-REMANNED category, including the 17 LCTs that were transported to the lagoon. Only thirteen (13) of the target ships were REMANNED after Shot BAKER and sailed away.

Crews of target ships were housed on personnel transports during and following the two detonations. The crews of ships that were subsequently sunk or rendered uninhabitable by Shot ABLE and/or BAKER continued living aboard transport ships. Generally, the crews of non-remanned target ships were disbanded (either at Bikini or Kwajalein) prior to their return to Hawaii or CONIJS. In those instances when a crew was disbanded prior to its departure from Bikini Lagoon, the reconstruction dose is developed until the date the majority of the crew can no longer be identified as a discrete unit. In those instances when a crew was disbanded while at Kwajalein, the reconstructed dose is developed until the transport that housed the crews departed Bikini.

Section A-2 of this appendix contains a Target Ship Participation Summary sheet and a Shipboard Gamma Intensity Curve (unless the vessel sunk as a result of Shot ABLE or BAKER) for each of the NON-REMANNED target ships. The curves are included to permit dose calculations for CROSSROADS participants after they left Bikini. These data sheets are presented in alphabetical order by ship name with the

exception of the **LCTs**, which were unmanned at all times while at Rikini and have been treated as a subset of the NON-REMANED ship category. Where radiological data and ship/crew locations are known for the **LCTs**, this data is provided.

Section A-3 contains similar data sheets for each of the thirteen (13) remanned target ships that were sailed away after Shot RAKER. For six (6) of these ships, the radiological data does not exist to reconstruct their shipboard intensity curves. In these cases, the curves have been replaced with the ship's Path Report, which details the ship's movements through areas of radiological significance while at Bikini, and a Radiological Report, which is a day-by-day compilation of the reconstructed film badge dose for the crew while aboard the ship until its departure from the lagoon. The Target Ship Participation Summary sheets for these six ships include a ship contamination factor when departing Bikini that should be used in conjunction with the nomograph in Figure A-57 to calculate crew **exposures** subsequent to their departure from **Bikini**.

Because these thirteen (13) target ships were remanned and sailed away after Shot RAKER, it was necessary in some instances for the crews to periodically reboard the target vessels while at **Bikini** for decontamination work and to make general repairs to the ship. For the days when this occurred (as extracted from the ship's deck logs), the average crewmember dose is calculated using:

$$D = \frac{N}{24} D_{TS} + \frac{24-N}{24} D_{\text{evac}}$$

where  $D$  = average crewmember film badge dose  
 $N$  = number of hours aboard the target ship (from deck logs)  
 $D_{TS}$  = daily topside film badge dose on the target ship (derived from the ship's gamma intensity curve or the radiological report)  
 $D_{\text{evac}}$  = daily film badge dose on the evacuation ship (from VOLUME III, APPENDIX B, of this report)

**SECTION A-2**

**NON-REMANNED TARGET SHIP  
PARTICIPATION SUMMARIES**

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS ANDERSON (DD-411)

CREW SIZE: 105

MISSION: USS ANDERSON was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonation that occurred on July 1, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
30 June - 8 July	ABLE Evacuated aboard BAYFIELD (APA-33) (Observed Shot ABLE from a distance of 21 miles)	0.001
9 July -23 August	BAKER Evacuated aboard AJAX (AR-6)which departed Bikini on 23 August. (Observed shot Baker from a distance of 15.5 miles)	0.191

Total calculated dose while at Bikini: 0.192 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: ANDERSON sank in Bikini lagoon on July 1, 1946 as a result of Shot ABLE.

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS APOGON (SS-308)

CREW SIZE: 54

MISSION: USS APOGON was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BOTTINEAU (APA-235) (Observed Shot ABLE from a distance of 25 miles)	0.000
2 July-19 July	Aboard APOGON	0.050
	BAKER	
20 July-7 August	Evacuated aboard BOTTINEAU (Observed Shot BAKER from a distance of 16 miles)	0.143
8 August-17 August 17 August	Aboard FILLMORE (APA-83) Crew transferred to various units as SUBRON II.	0.055

Total calculated dose up until the date when the crew splintered: 0.248 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: APOCON sank in Bikini Lagoon on July 25, 1946 as a result of shot BAKER.

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS ARDC-13

CREW SIZE: 4

MISSION: USS ARDC was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

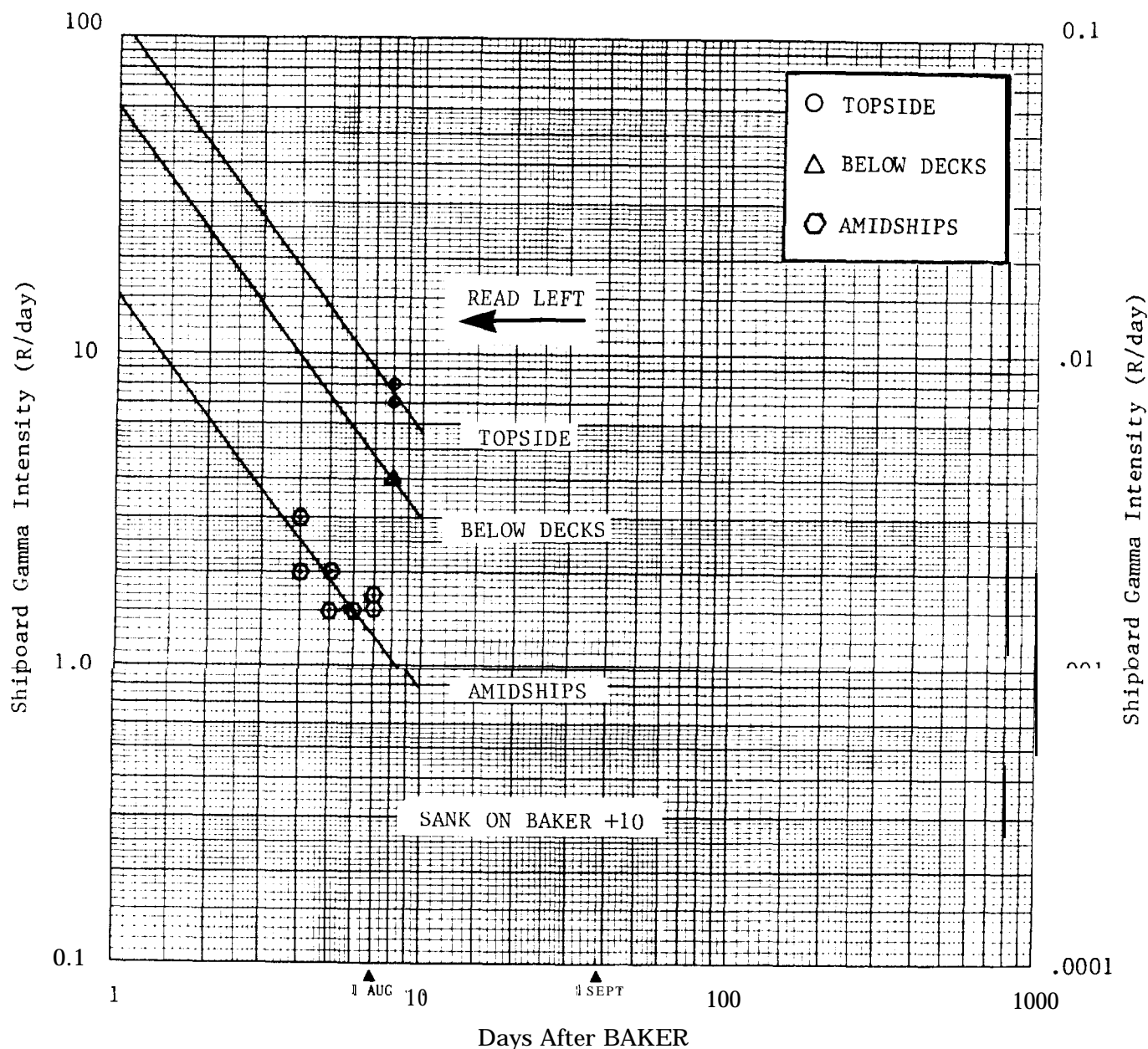
SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

## AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	RECONSTRUCTED FILM BADGE <u>DOSE (REM)</u>
	Unknown	

FINAL DISPOSITION: ARDC-13 sank in Bikini lagoon on August 4, 1946 as a result of progressive flooding due to shot BAKER.

# USS ARDC-13



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-1. Shipboard Gamma Intensity vs. Time - USS ARDC-13

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS ARKANSAS (BB-33)

CREW SIZE: 441

MISSION: USS ARKANSAS was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June- 8 July	Evacuated aboard ROCKBRIDGE (APA-228) (Observed Shot ABLE from a distance of 21 miles)	0.009
9 July-17 July	Aboard ARKANSAS	0.015
18 July	Evacuated aboard ROCKBRIDGE	0.000
19 July-23 July	Aboard ARKANSAS	0.006
	BAKER	
24 July-6 August	Evacuated aboard ROCKBRIDGE (Observed Shot BAKER from a distance of 16 miles)	0.148
6 August	Crew transferred to various units.	

Total calculated dose up until the date when the crew splintered: 0.178 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: ARKANSAS sank in Bikini lagoon on July 25, 1946 as a result of Shot BAKER.



**DATA NOT AVAILABLE TO RECONSTRUCT  
THE SHIPBOARD GAMMA INTENSITY CURVE**

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS BANNER (APA-60)

CREW SIZE: IO4

MISSION: USS BANNER was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BOTTINEAU (APA-235) (Observed Shot ABLE from a distance of 25 miles)	0.000
2 July -17 July	Aboard BANNER	0.009
18 July -19 July	Evacuated aboard BOTTINEAU	0.000
20 July -23 July	Aboard BANNER	0.000
	BAKER	
24 July - 7 August	Evacuated aboard BOTTINEAU (Observed shot BAKER from a distance of 16 miles)	0.143
8 August-17 August	Aboard BEXAR (APA-237)	0.098
17 August	Crew transferred to GEORGE CLYMER 164) BEXAR (27), and others (13).	

Total calculated dose up until the date when the crew splintered: 0.250 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: BANNER was towed to Kwajalein after CROSSROADS for radiological tests. It was retained there until it was scuttled off Kwajalein on February 16, 1948.

[illegible]

Figure A-2. Shipboard Gamma Intensity vs. Time - USS BANNER (APA-60)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS BARROW (APA-61)

CREW SIZE: 114

MISSION: USS BARROW was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1944.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 f t)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

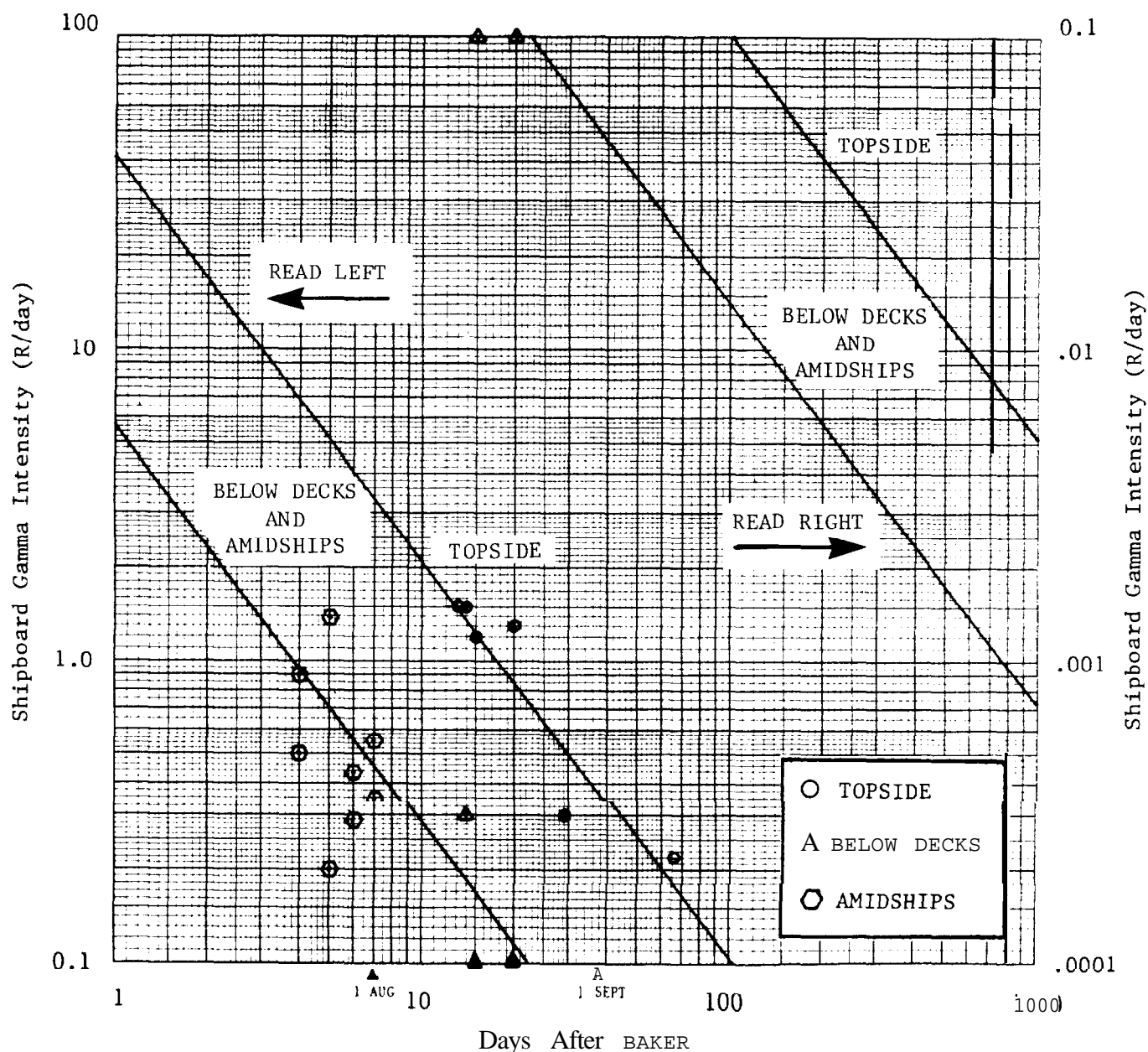
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BEXAR (APA-237) (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July -17 July	Aboard BARROW	0.007
18 July -19 July	Evacuated aboard BEXAR	0.000
20 July -23 July	Aboard BARROW	0.000
	BAKER	
24 July -17 August	Evacuated aboard BEXAR (Observed Shot BAKER from a distance of 16 miles)	0.199
17 August	Crew transferred to GEORGE CLYMER (71) and others (43).	

Total calculated dose up until the date when the crew splintered: 0.206 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: BARROW was towed to Kwajalein after CROSSROADS for radiological tests. It remained there until May 11, 1948, when it was scuttled off Kwajalein.

# USS BARROW (APA-61)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-3. Shipboard Gamma Intensity vs. Time - USS BARROW (APA-61)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS BRACKEN (APA-64)

CREW SIZE: 108

**MISSION:** USS BRACKEN was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow I Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

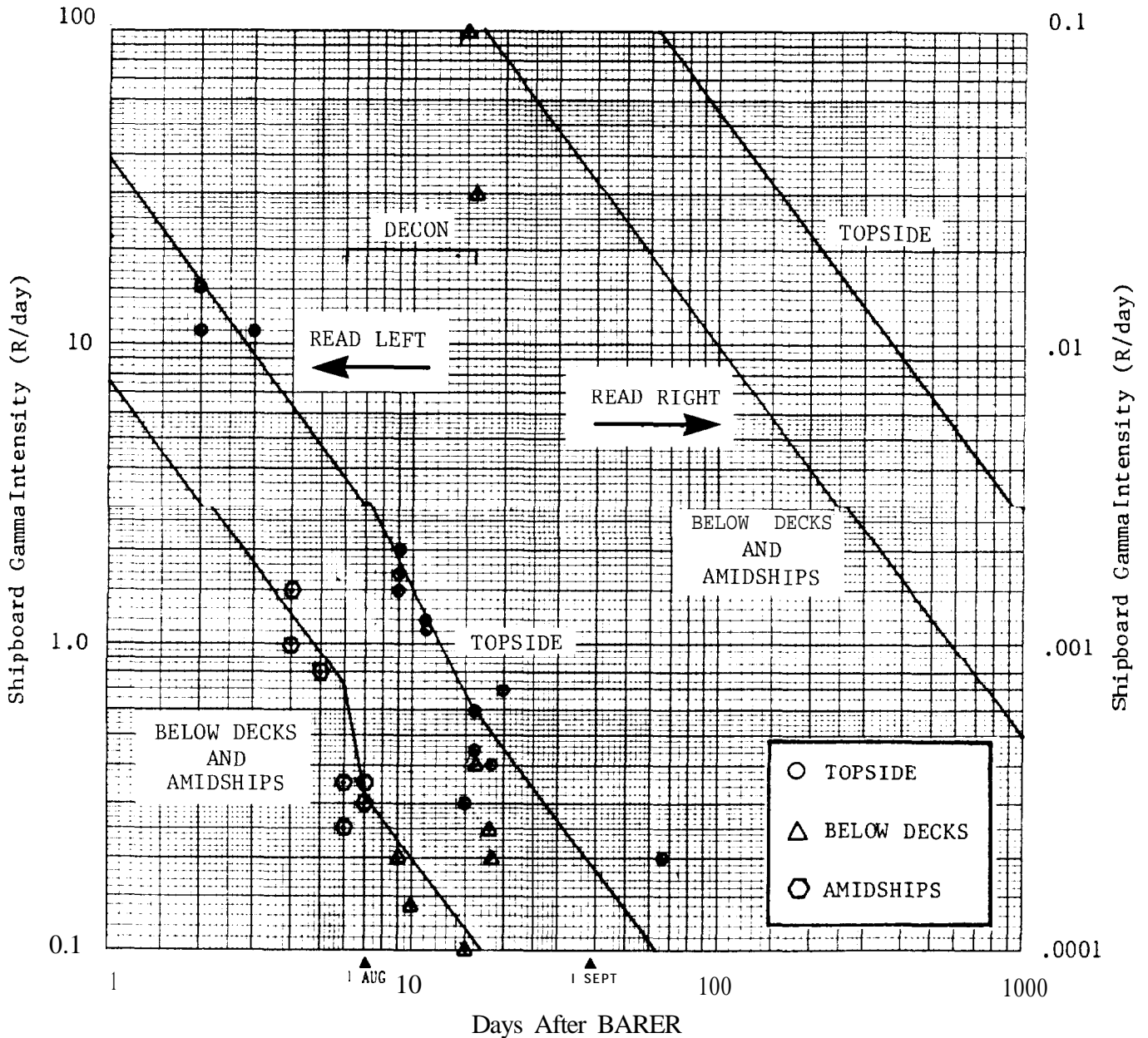
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard HENRICO (APA-45) (Observed Shot ABLE from a distance of 12 miles)	0.000
2 July -23 July	Aboard BRACKEN	0.000
24 July	Crew transferred to ROCKBRIDGE, HENRICO, APPLING, and GUNSTON HALL.	

Total calculated dose up until the date when the crew splintered: 0.000 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

**FINAL DISPOSITION:** BRACKEN was towed to Kwajalein after CROSSROADS where it was retained for radiological test. It was sunk off Kwajalein on March 10, 1948.

# USS BRACKEN (APA-64)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-4. Shipboard Gamma Intensity vs. Time - USS BRACKEN (APA-64)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS BRISCOE (APA-65)

CREW SIZE: 112

[MISSION: USS BRISCOE was a CROSSROADS target ship and arrived at Bikini prior to **June** 30, 1946 to prepare for the operation. It was anchored in the lagoon **and** remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BAYFIELD (APA-33) (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July -17 July	Aboard BRISCOE	0.004
18 July -19 July	Evacuated aboard BAYFIELD	0.000
20 July -23 July	Aboard BRISCOE	0.000
	BAKER	
24 July - 2 August	Evacuated aboard BAYFIELD (Observed Shot BAKER from a distance of 15 miles)	0.062
3 August-17 August	Aboard ROCKWALL (APA-230)	0.136
17 August	Crew transferred to ROCKWALL (42), CORTLAND (28), GENEVA (8), and others.	

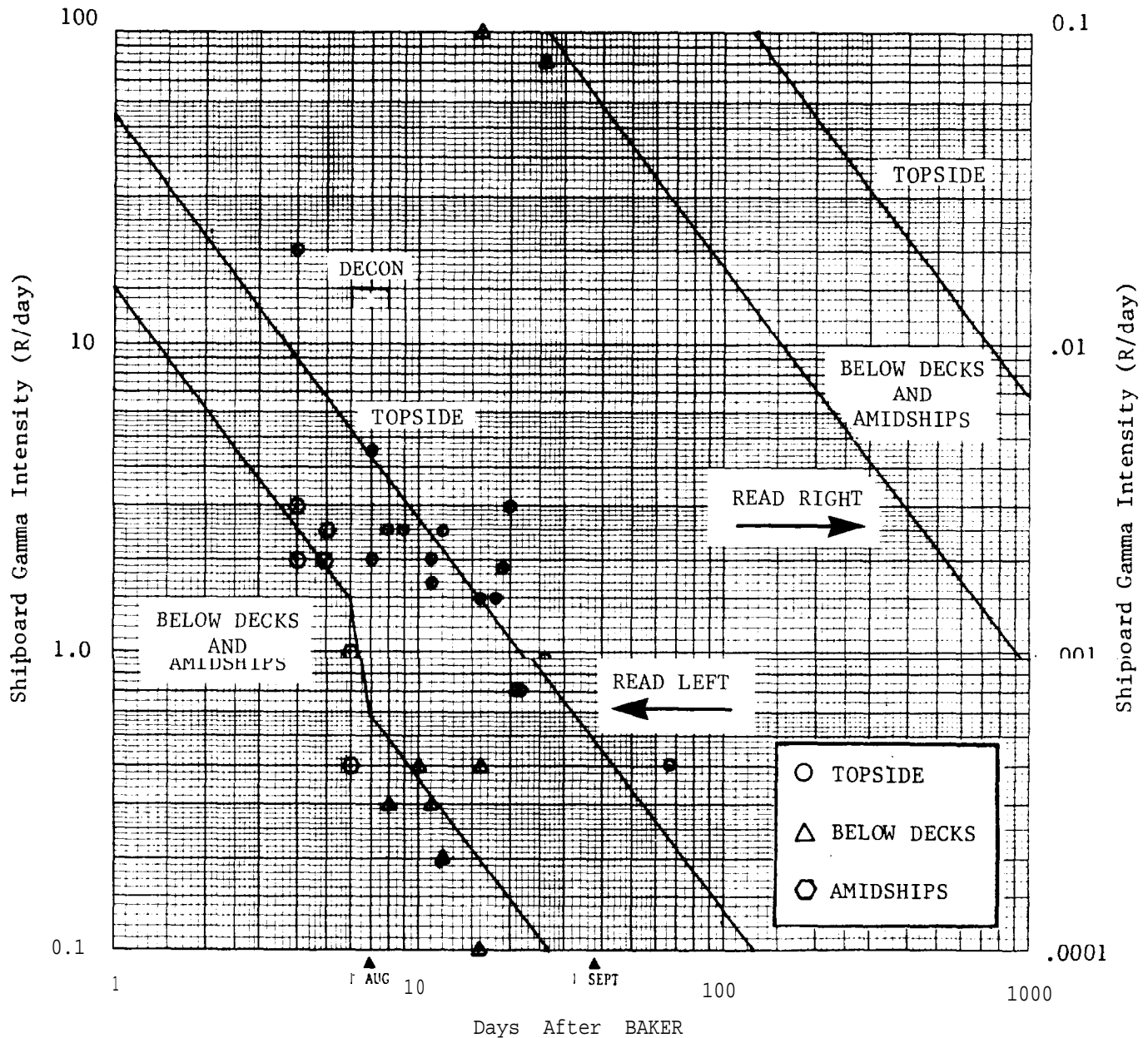
Total calculated dose up until the date when the crew splintered: 0.202 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: USS BRISCOE was **towed to** Kwajalein where it was retained for radiological study. It was scuttled off Kwajalein on May 6, 1948.



# USS BRISCOE (APA-65)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-5. Shipboard Gamma Intensity vs. Time - USS BRISCOE (APA-65)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS BRULE (APA-66)

CREW SIZE: 111

MISSION: USS BRULE was a CROSSROADS target ship **and** arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

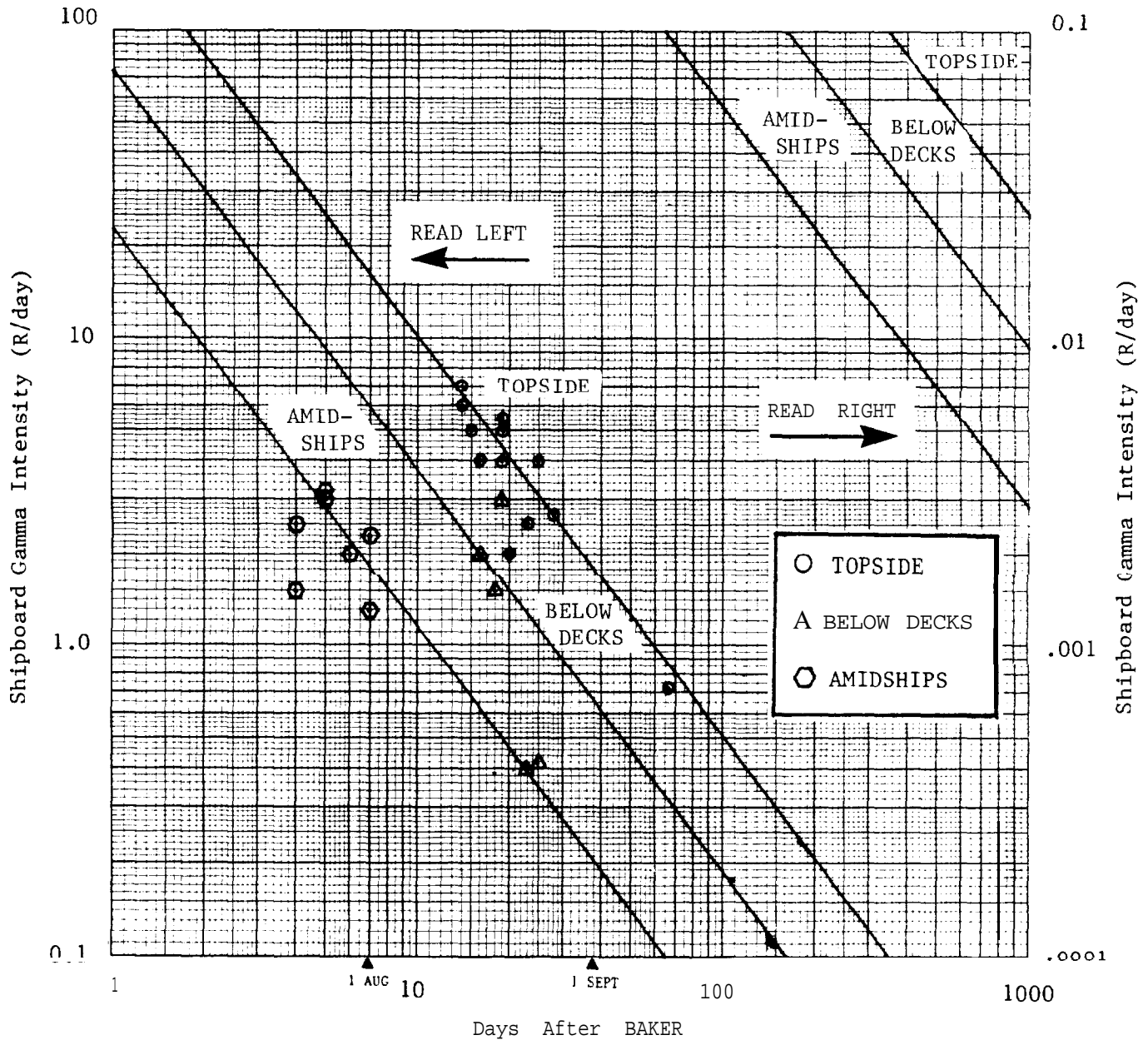
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 2 July	Evacuated aboard BEXAR (APA-237) (Observed Shot ABLE from a distance of 22 miles)	0.004
3 July -17 July	Aboard BRULE	0.004
18 July -19 July	Evacuated aboard BEXAR	0.000
20 July -23 July	Aboard BRULE	0.000
	BAKER	
24 July -19 August	Evacuated aboard BEXAR (Observed Shot BAKER from a distance of 16 miles)	0.209
19 August	Crew transferred to NIAGARA (39), BEXAR (22), GENEVA (29), and others.	

Total calculated dose up until the date when the crew splintered: 0.217 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: BRULE was towed to Kwajalein after CROSSROADS for radiological tests. It was retained there until May 11, 1948 when it was scuttled off Kwajalein at 8-47N, 167-18E.

# USS BRULE (APA-66)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-6. Shipboard Gamma Intensity vs. Time - USS BRULE (APA-66)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS BUTTE (APA-68)

CREW SIZE: 126

MISSION: USS BUTTE was a CROSSROADS target ship **and** arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 <b>KT</b>	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

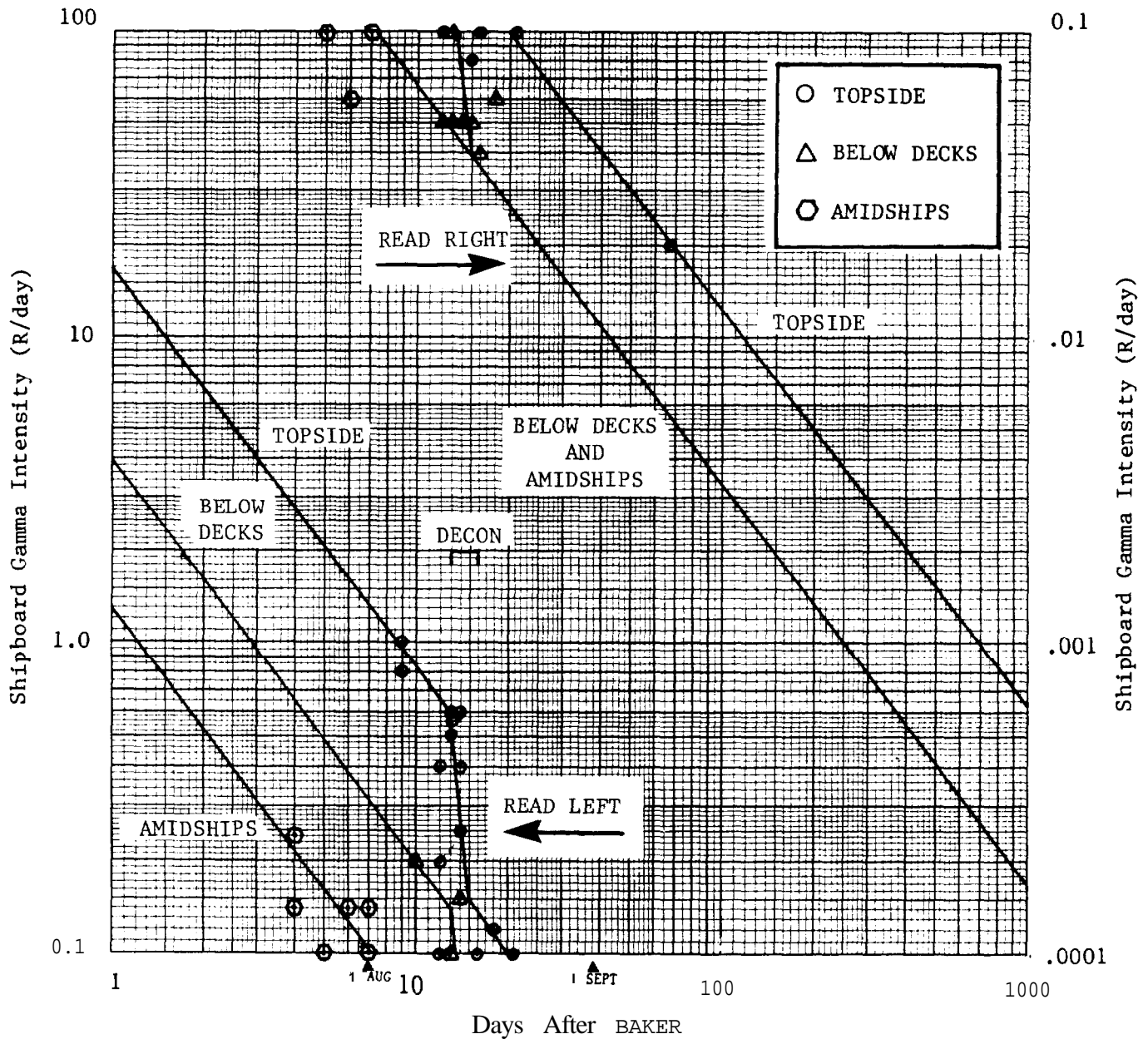
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 <b>June</b> - 2 July	Evacuated aboard BEXAR (APA-237) (Observed Shot ABLE from a distances of 22 miles)	0.004
3 July -17 July	Aboard BUTTE	0.000
18 July -19 July	Evacuated aboard BEXAR	0.000
20 July -23 July	Aboard BUTTE	0.000
	BAKER	
24 July -17 August	Evacuated aboard BEXAR (Observed Shot BAKER from a distance of 16 miles)	0.199
17 August	Crew transferred to GEORGE CLYMER (78), BEXAR (33), and others.	

Total calculated dose up until the date when the crew splintered: 0.203 REM

This reconstruction **does not** include time aboard the target ship for activities **such as** damage **control**, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: BUTTE was **towed** to Kwajalein after CROSSROADS where it was retained for radiological tests. It was scuttled off Kwajalein at 8-40N, 167-15E on **May** 12, 1948.

# USS BUTTE (APA-68)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-7. Shipboard Gamma Intensity vs. Time - USS BUTTE (APA-68)

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANNED

SHIP: USS CARLISLE (APA-69)

CREW SIZE: 104

MISSION: USS CARLISLE was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonation that occurred on July 1, 1946.

SHOT DATA:	<u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>TYPE DETONATION</u>
	ABLE	I July 46 (0900)	23 KT Air Burst (+520 ft)

## AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
30 June - 5 July	ABLE Evacuated aboard BEXAR (APA-237) (Observed Shot ABLE from a distance of 22 miles)	0.005
5 July	Crew transferred to various units.	

Total calculated dose up until the date when the crew splintered: 0.005 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: CARLISLE sank in Bikini lagoon on July 1, 1946 as a result of Shot ABLE.

**DATA NOT AVAILABLE TO RECONSTRUCT  
THE SHIPBOARD GAMMA INTENSITY CURVE**

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS CARTERET (APA-70)

CREW SIZE: 119

MISSION: USS CARTERET was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT Air Burst (+520 f t)
	BAKER	25 July 46 (0835)	23 KT Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
30 June - 1 July	ABLE Evacuated aboard BEXAR (APA-237) (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July -23 July	Aboard CARTERET	0.006
24 July -19 August	BAKER Evacuated aboard BEXAR (Observed Shot BAKER from a distance of 16 miles)	0.209
20 August	Crew aboard GEORGE CLYMER which departed Bikini on 20 August.	0.004

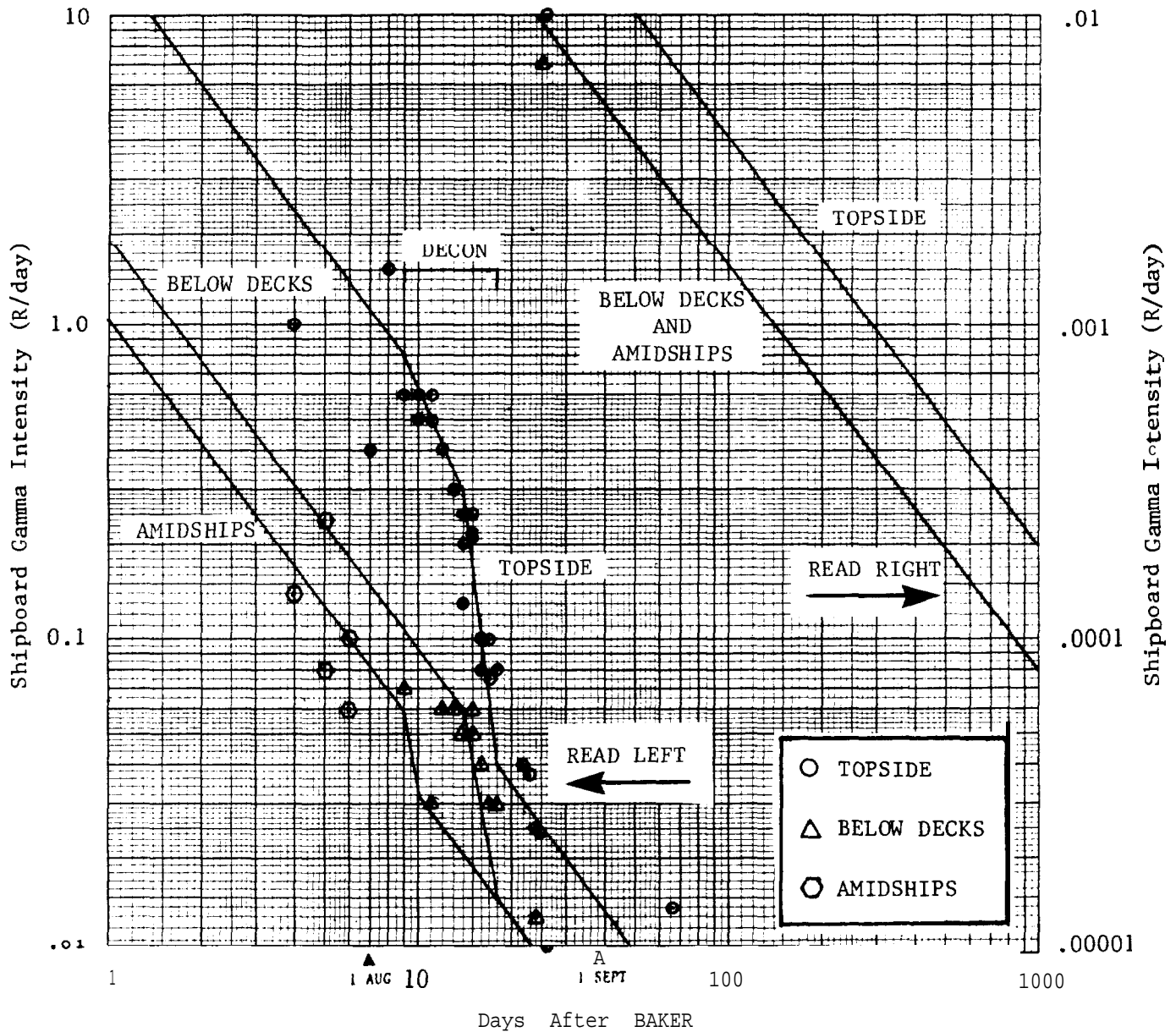
Total calculated dose while at Bikini: 0.219 REM

This reconstruction **does not** include time aboard the target ship for activities **such as** **damage** control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: CARTERET was **towed** to Kwajalein after CROSSROADS for radiological study. It was sunk by gunfire of the USS TOLEDO on April 19, 1948 at 8-42N, 167-05E.



# USS CARTERET (APA- 70)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-8. Shipboard Gamma Intensity vs. Time - USS CARTERET (APA-70)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS CATRON (APA-71)

CREW SIZE: 116

MISSION: USS CATRON was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

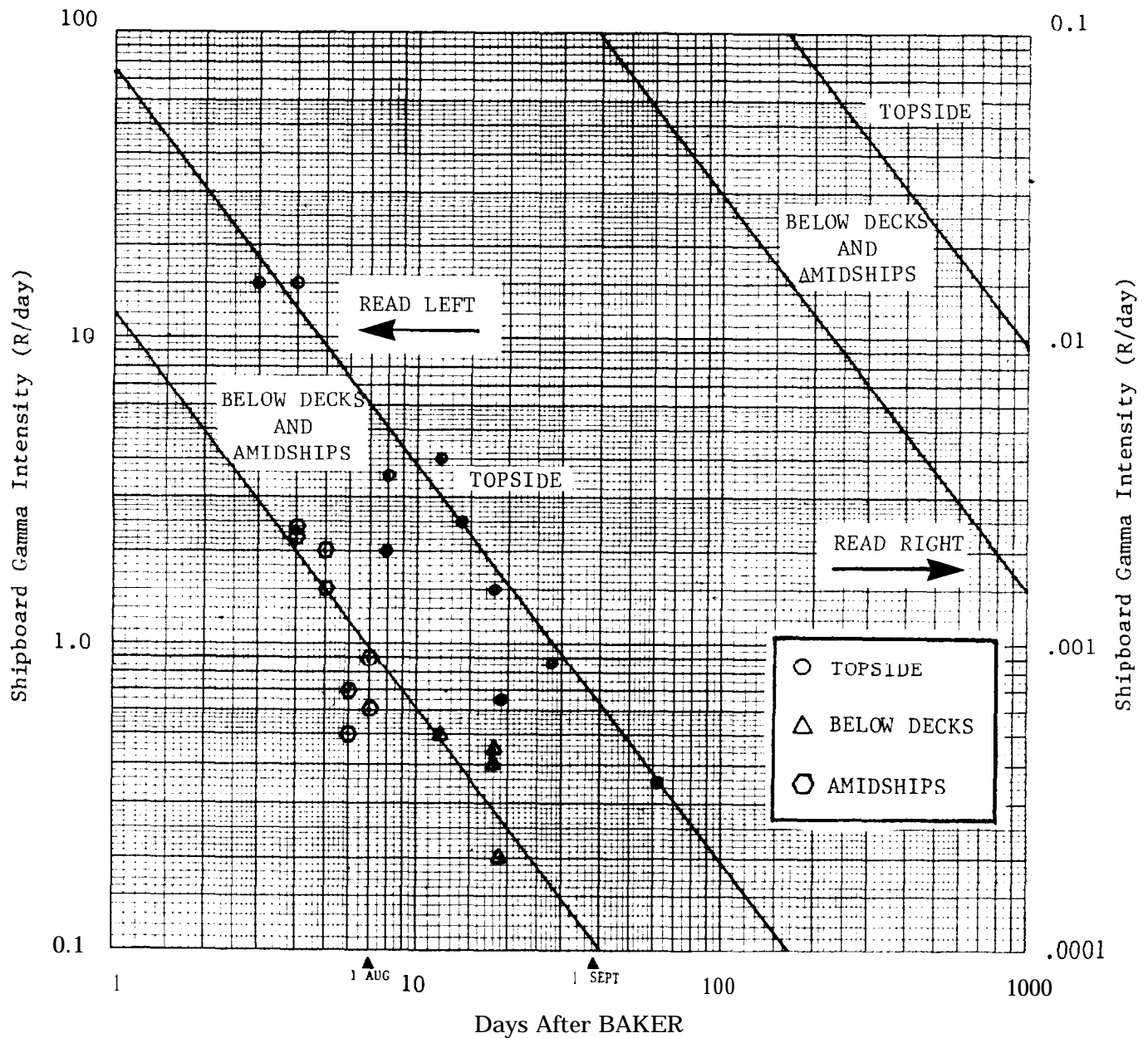
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard HENRICO (APA-45) (Observed Shot ABLE from a distance of 12 miles)	0.000
2 July -23 July	Aboard CATRON	0.003
	BAKER	
24 July -12 August	Evacuated aboard HENRICO (Observed Shot BAKER from a distance of 8 miles)	0.197
13 August-17 August 17 August	Aboard ROCKINGHAM Crew transferred to GEORGE CLYMER (55), rest to ROCKINGHAM (61).	0.038

Total calculated dose up until the date when the crew splintered: 0.238 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: CATRON was towed to Kwajalein after CROSSROADS for radiological tests. It was sunk by the USS ATLANTA on May 6, 1948 at 9-02N, 167-17E.

# USS CATRON (APA-71)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-9. Shipboard Gamma Intensity vs. Time -- USS CATRON (APA-71)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS CRITTENDEN (APA-77)

CREW SIZE: 112

MISSION: USS CRITTENDEN was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

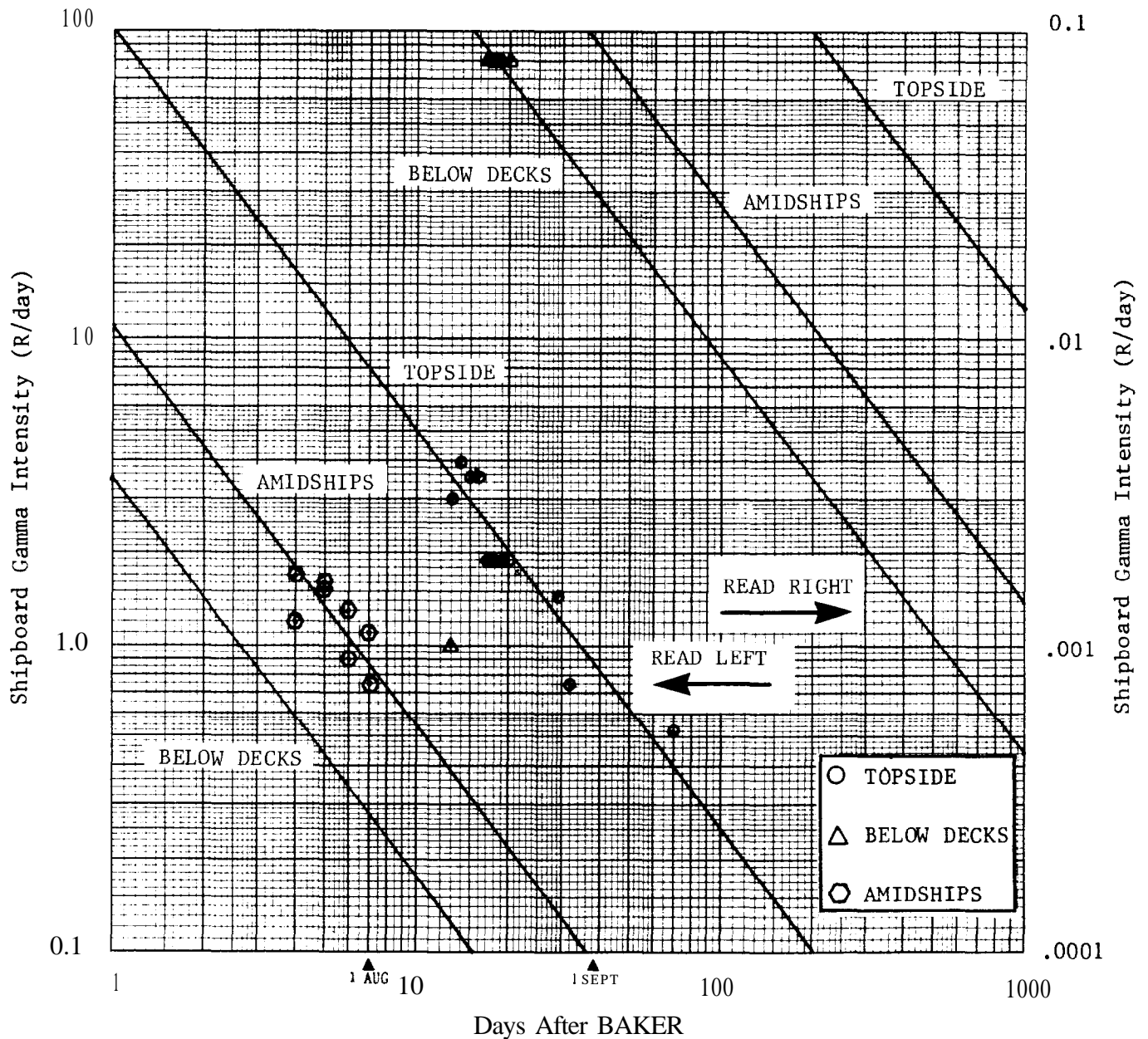
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June-3 July	Evacuated aboard BEXAR (APA-237) (Observed Shot ABLE from a distance of 22 miles)	0.005
4 July -17 July	Aboard CRITTENDEN	0.040
18 July -19 July	Evacuated aboard BEXAR	0.000
20 July -23 July	Aboard CRITTENDEN	0.004
	BAKER	
24 July -19 August	Evacuated aboard BEXAR (Observed Shot BAKER from a distance of 16 miles)	0.209
19 August-28 August	Crew transferred to GENEVA (29), GEORGE CLYMER (36), FILLMORE (31), and others (16).	

Total calculated dose up until the date when the crew splintered: 0.258 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: CRITTENDEN was towed to Kwajalein in August 1946 and then towed to San Francisco in January 1947. While at San Francisco, it underwent radiological tests until October 5, 1948 when it was sunk by explosive tests at 32-05N, 119-05W.

# USS CRITTEM DEN (APA- 77)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-10. Shipboard Gamma Intensity vs. Time - USS CRITTEM DEN (APA-77)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS DAWSON (APA-79)

CREW SIZE: 110

MISSION: USS DAWSON was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>TYPE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT Air Burst (+520 ft)
BAKER	25 July 46 (0835)	23 KT Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

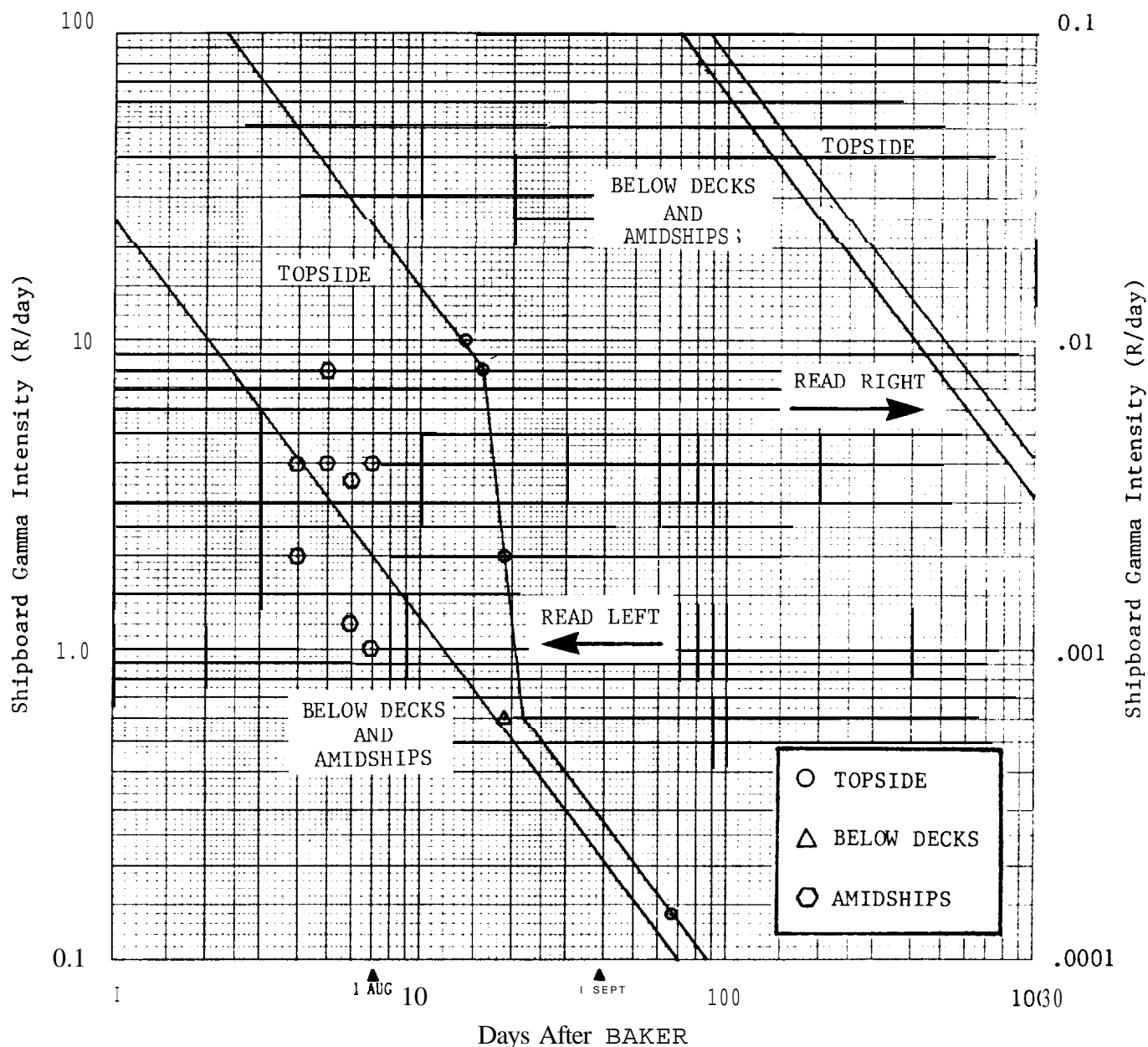
<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 2 July	Evacuated aboard HENRICO (APA-45) (Observed Shot ABLE from a distance of 12 miles)	0.002
3 July -17 July	Aboard DA WSON	0.014
18 July -19 July	Evacuated aboard HENRICO	0.000
20 July -23 July	Aboard DA WSON	0.001
	BAKER	
24 July -12 August	Evacuated aboard HENRICO (Observed Shot BAKER from a distance of 8 miles)	0.197
13 August-18 August	Aboard ROCKBRIDGE (APA-228)	0.056
18 August	Crew transferred to BLADEN (90), SAN MARCOS (7), and others (13).	

Total calculated dose up until the date when the crew splintered: 0.270 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: DAWSON was towed to Kwajalein after CROSSROADS for radiological study. On April 19, 1948, it was sunk by gunfire on USS HELENA at 8-47 N, 167-02E.

# USS DAWSON (APA-79)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-11. Shipboard Gamma Intensity vs. Time - USS DAWSON (APA-79)

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANNED

SHIP: USS FALLON (APA-81)

CREW SIZE: 127

MISSION: USS FALLON was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>TYPE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT Air Burst (+520 ft)
BAKER	25 July 46 (0835)	23 KT Shallow Underwater (-90 ft)

## AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BEXAR (APA-237) Observed Shot ABLE from a distance of 22 miles)	0.000
2 July -17 July	Aboard FALLON	0.006
18 July -19 July	Evacuated aboard BEXAR	0.000
20 July -23 July	Aboard FALLON	0.000
	BAKER	
24 July -23 August	Evacuated aboard BEXAR which departed Bikini on 23 August (Observed Shot BAKER from a distance of 16 miles)	0.226

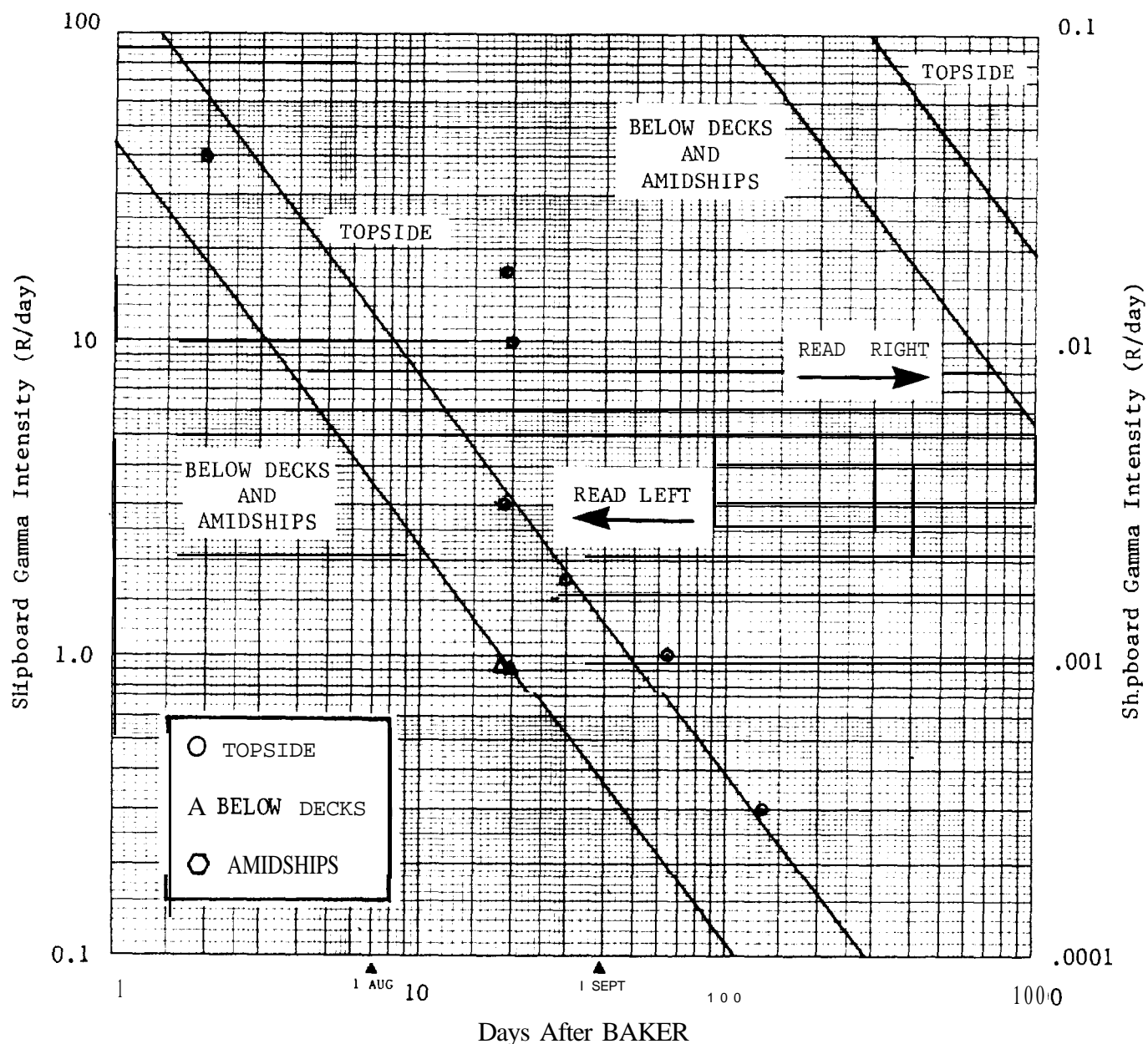
Total calculated dose while at Bikini: 0.232 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: FALLON was towed to Kwajalein after CROSSROADS and was retained there for radiological study. On March 10, 1948 it was scuttled off Kwajalein.



# USS FALLON (APA-81)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-12. Shipboard Gamma Intensity vs. Time - USS FALLON (APA-81)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS GASCONADE (APA-85)

CREW SIZE: 105

**MISSION:** USS GASCONADE was a CROSSROADS target ship and arrived at Bikini prior to **June** 30, 1946 to prepare for the operation. It was anchored in **the lagoon and** remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

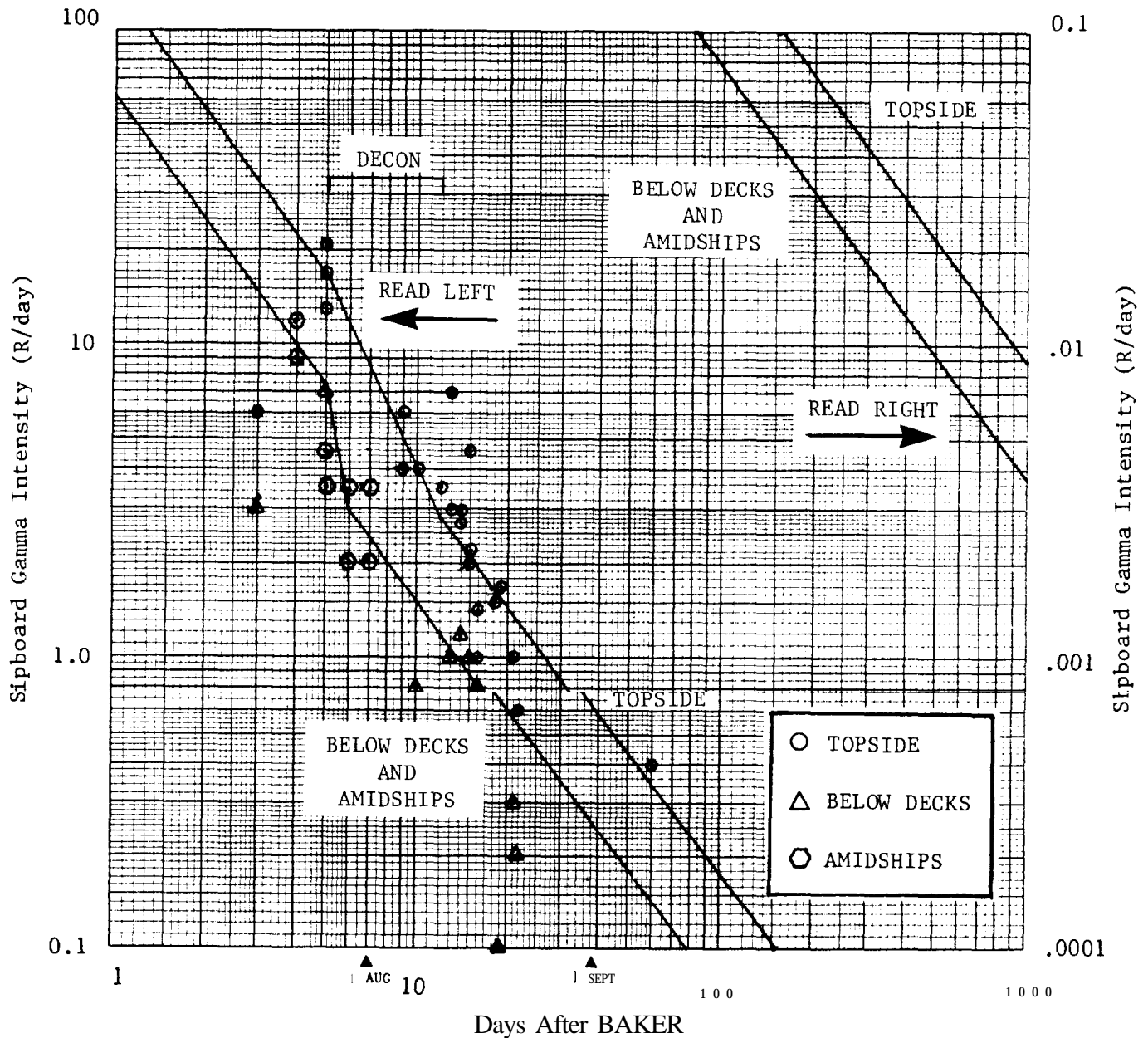
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BEXAR (APA-237) (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July -17 July	Aboard GASCONADE	0.001
18 July -19 July	Evacuated aboard BEXAR	0.000
20 July -23 July	Aboard GASCONADE	0.000
	BAKER	
24 July -12 August	Evacuated aboard BEXAR (Observed Shot BAKER from a distance of 16 miles)	0.161
13 August-22 August	Aboard SYLVANIA (AKA-44)	0.062
22 August	Half of the crew transferred to SYLVANIA and half to BEXAR.	

Total calculated dose up until the date when the crew splintered: 0.224 REM

This reconstruction **does** not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

**FINAL DISPOSITION:** GASCONADE was towed to San Francisco after CROSSROADS, arriving there on January 27, 1947. There it underwent structural and radiological tests prior to being redesignated a target ship in March 1948. It was sunk by torpedoes off southern California on July 21, 1948 at 31-35N, 118-33W.

# USS GASCONADE (APA-85)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The **data** points and average curve are presented as a function of time in days after Shot **Baker**. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for **each** location.

Figure A-13. Shipboard Gamma Intensity vs. Time - USS GASCONADE (APA-85)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS GILLIAM (APA-57)

CREW SIZE: 91

MISSION: USS GILLIAM was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonation that occurred on July 1, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
30 June - 8 July	ABLE Evacuated aboard BOTTINEAU (APA-235) (Observed Shot ABLE from a distance of 25 miles)	0.001
8 July -5 September	Aboard PALMYRA which departed Bikini on 5 September	0.378

Total calculated dose while at Bikini: 0.379 REM

FINAL DISPOSITION: GILLIAM sank in Bikini lagoon on July 1, 1946 as a result of Shot ABLE.

**DATA NOT AVAILABLE TO RECONSTRUCT  
THE SHIPBOARD GAMMA INTENSITY CURVE**

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS HUGHES (DD-410)

CREW SIZE: 81

MISSION: USS HUGHES was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 f t)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

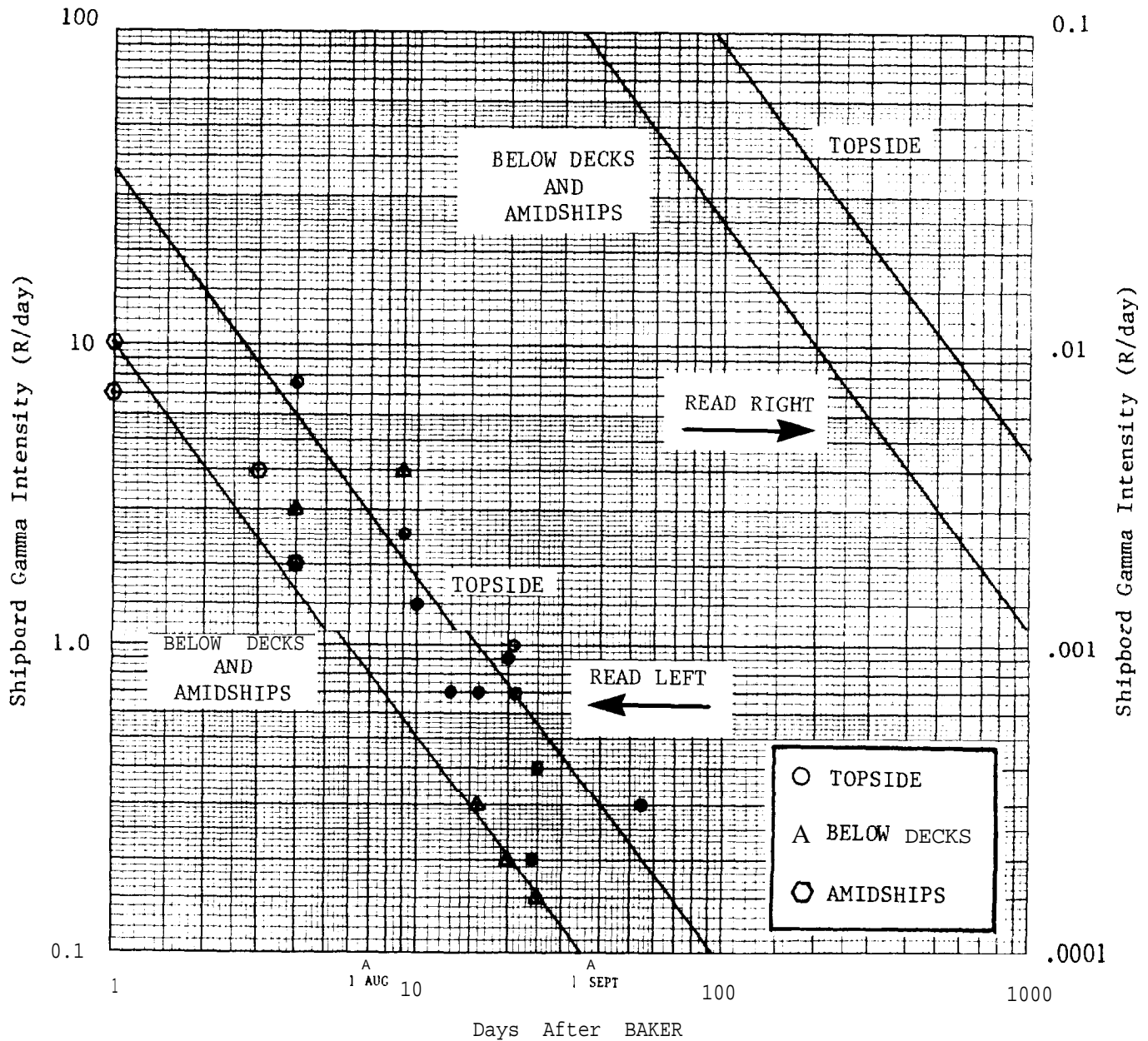
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BAYFIELD (APA-33) (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July -17 July	Aboard HUGHES	0.082
18 July -19 July	Evacuated aboard BAYFIELD	0.000
20 July -23 July	Aboard HUGHES	0.002
	BAKER	
24 July -31 July	Evacuated aboard BAYFIELD (Observed Shot BAKER from a distance of 15 miles)	0.024
1 August-27 August	Aboard ROCKINGHAM (APA-229) which departed Bikini on 24 August	0.206
28 August	Crew transferred to NIAGARA	

Total calculated dose while at Bikini: 0.314 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: HUGHES was beached at Enyu Island on July 26, 1946. It was later towed to San Francisco for radiological tests and subsequently used as a target ship. It was finally sunk by air attack on October 16, 1948 at 31-47N, 118-40W.

# USS HUGHES (DD-410)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-14. Shipboard Gamma Intensity vs. Time - USS HUGHES (DD-410)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS INDEPENDENCE (CVL-22)

CREW SIZE: 343

MISSION: USS INDEPENDENCE was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
30 June - 12 August	ABLE Evacuated aboard ROCKWALL (APA-230) (Observed Shots ABLE and BAKER from distances of 23 and 16 miles, respectively)	0.161
13 August- 18 August 18 August	Aboard AJAX (AR-6) Approximately half the crew transferred to ARTEMIS.	0.039

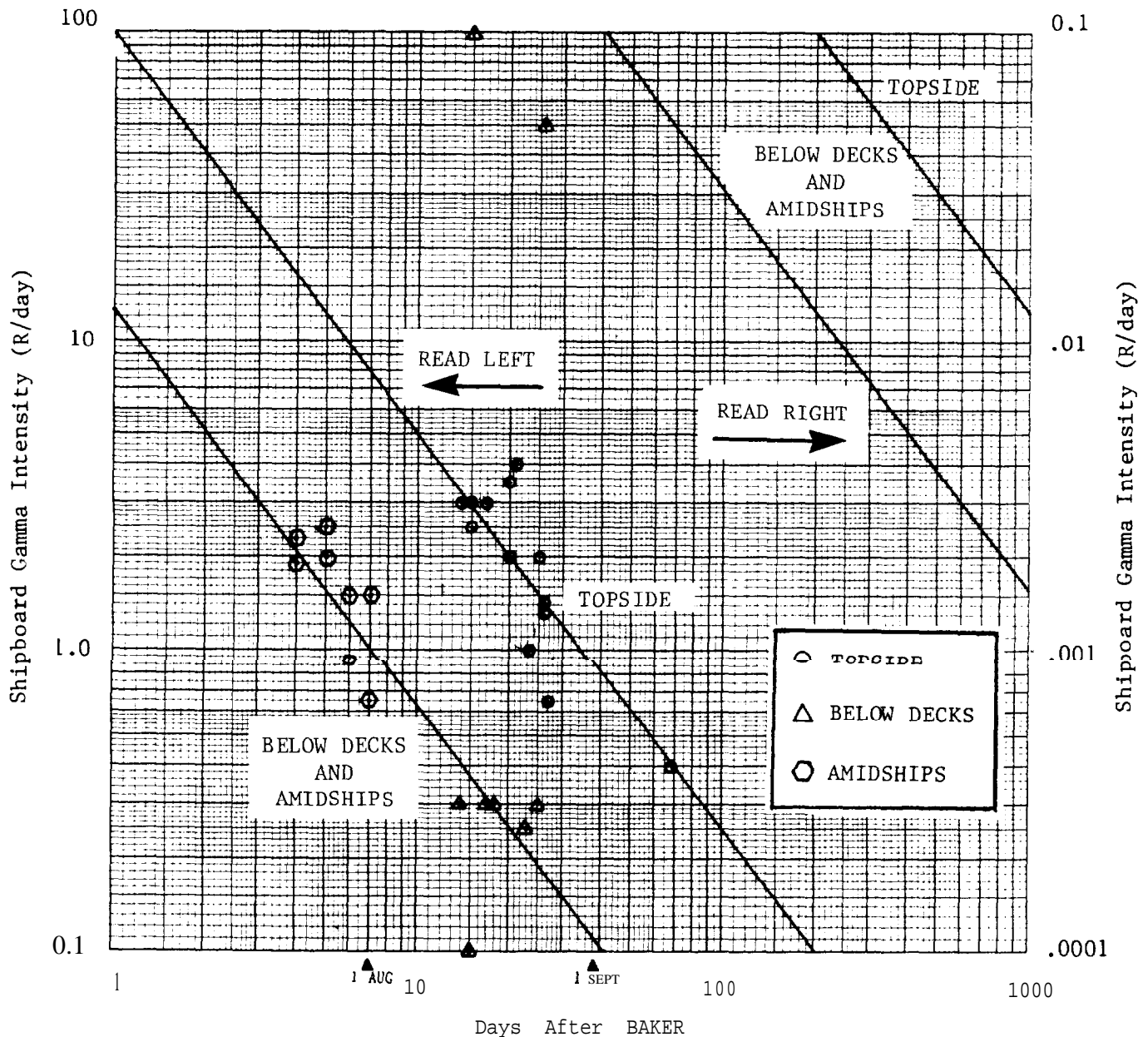
Total calculated dose up until the date when the crew splintered: 0.200 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: INDEPENDENCE was towed to Kwajalein on August 22, 1946. In October 1946, it was towed to San Francisco, arriving there on June 16, 1947. While at San Francisco, it underwent radiological tests and was eventually sunk in special tests of new aerial and undersea weapons on January 26, 1951 at 37-20.3N, 123-04W.



# USS INDEPENDENCE (CVL-22)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-15. Shipboard Gamma Intensity vs. Time ■ USS INDEPENDENCE (CVL-22)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS LAMSON (DD-367)

CREW SIZE: 119

**MISSION:** USS LAMSON was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonation that occurred on July 1, 1946.

SHOT DATA:	<u>TEST</u>	<u>D</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD (KT)</u>	<u>TYPE DETONATION</u>
	ABLE	1	July	46	(0900)	23	Air Burst (+520 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
30 June - 9 July	<p style="text-align: center;">ABLE</p> <p>Evacuated aboard HENRICO (AP-45) (Observed Shot ABLE from a distance of 12 miles) Approximately half the crew transferred to AJAX for further assignment.</p>	0.002

Total calculated dose up until the date when the crew splintered: 0.002 REM

**FINAL DISPOSITION:** LAMSON sank in Bikini lagoon on July 1, 1946 as a result of Shot ABLE.

**DATA NOT AVAILABLE TO RECONSTRUCT  
THE SHIPBOARD GAMMA INTENSITY CURVE**

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS LCI-327

CREW SIZE: 18

**MISSION:** USS LCI-327 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>M I S S I L E</u>	<u>T Y P E D E T O N A T I O N</u>
	ABLE	I July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

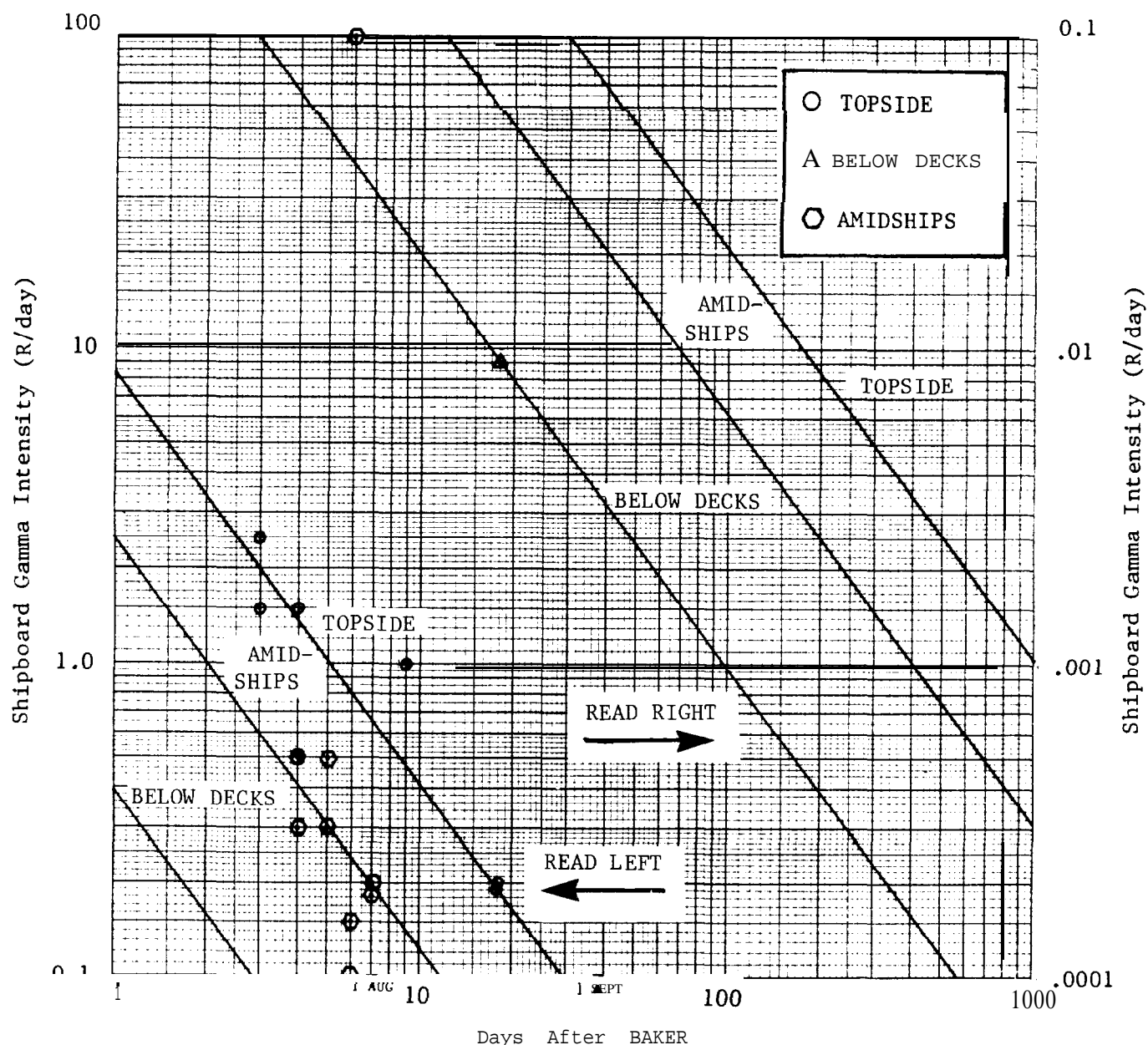
<u>D A T E ( 1 9 4 6 )</u>	<u>C R E W L O C A T I O N</u>	<u>R E C O N S T R U C T E D F I L M B A D G E D O S E ( R E M )</u>
	ABLE	
30 June - 1 July	Evacuated aboard BAYFIELD (APA-33) (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July - 17 July	Aboard LCI-327	0.003
18 July - 19 July	Evacuated aboard BAYFIELD	0.000
20 July - 23 July	Aboard LCI-327	0.000
	BAKER	
24 July - 31 July	Evacuated aboard BAYFIELD (Observed shot BAKER from a distance of 15 miles)	0.024
1 August - 23 August	Aboard ROCKBRIDGE (APA-228) which departed Bikini on 23 August.	0.284
28 August	Crew transferred to FALL RIVER (1), AJAX (14), and GENEVA (3).	

**Total** calculated dose while at Bikini: 0.311 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

**FINAL DISPOSITION:** LCI-327 was towed to Kwajalein after CROSSROADS where it was beached on Bascombe Island. It was destroyed on October 30, 1947.

# USS LCI-327



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-16. Shipboard Gamma Intensity vs. Time - USS LCI-327

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: LCI-332

CREW SIZE: 17

MISSION: USS LCI-332 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1944.

SHOT DATA: <u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

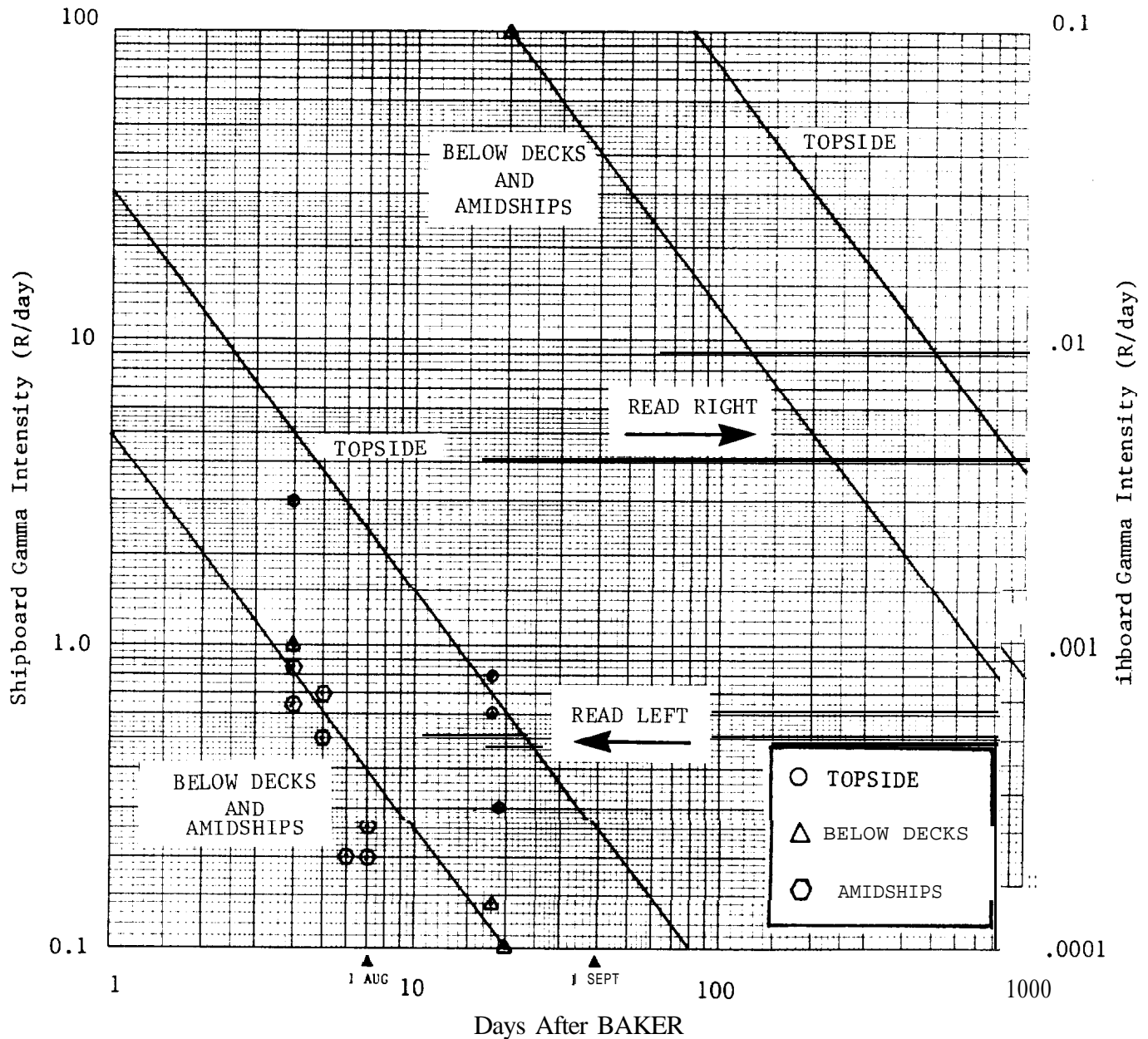
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FIL M BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BAYFIELD (APA-33) (Observed shot ABLE from a distance of 22 miles)	0.000
2 July -17 July	Aboard LCI-332	0.003
18 July -19 July	Evacuated aboard BAYFIELD	0.000
20 July -23 July	Aboard LCI-332	0.000
	BAKER	
24 July -31 July	Evacuated aboard BAYFIELD (Observed Shot BAKER from a distance of 15 miles)	0.024
1 August-23 August	Aboard ROCKBRIDGE (APA-228) which departed Bikini on 23 August.	0.284
28 August	Crew transferred to AJAX (12) and GENEVA (1).	

Total calculated dose while at Bikini: 0.311 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: LCI-332 was towed to Kwajalein after CROSSROADS where it was sunk in deep water in September 1947.

# USS LCI-332



SHIPBOARD GAMMA INTENSITY CURVES: The average **gamma** intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-17. Shipboard Gamma Intensity vs. Time - USS LCT-332

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS LCI-620

CREW SIZE: 16

MISSION: USS LCI-620 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was beached in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u> ---
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE/BAKER	
30 June - 3 August	Evacuated aboard BAYFIELD (APA-33) (Observed Shots ARLE and BAKER from distances of 22 and 15 miles, respectively)	0.063
4 August-13 August	Aboard ROCKBRIDGE	0.137
14 August-22 August	Enlisted crew aboard FILLMORE which departed Bikini on 22 August.	0.049
14 August-23 August	Officers aboard ROCKBRIDGE which departed Bikini on 23 August.	0.074
Total calculated dose while at Bikini: 0.249 REM (Enlisted) 0.274 REM (Officers)		

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: LCI-620 was towed to sea on August 10, 1946 and sunk by gunfire.



## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS LSM-60

CREW SIZE: 44

MISSION: USS LSM-60 was a CROSSROADS target ship and arrived at Bikini on July 4, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonation that occurred July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>@ATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	BAKER	
4 July-17 July	Aboard LSM-60	0.000
18 July-19 July	Evacuated aboard ALBEMARLE (AV-5)	0.000
20 July-24 July	Aboard LSM-60	0.000
25 July	Evacuated aboard ALBEMARLE which departed Bikini on 25 July. (Observed Shot BAKER from a distance of 8 miles).	0.000

Total calculated dose while at Bikini: 0.000 REM

FINAL DISPOSITION: LSM-60 was the bomb carrier for CROSSROADS Shot BAKER and, hence, sank in Bikini lagoon as a result of this detonation.

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANED

SHIP: USS LST-52

CREW SIZE: 63

MISSION: USS LST-52 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>	--
	ABLE	I July 46 (0900)	23 KT	Air Burst (+520 ft)	
	BAKEK	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)	

## AVERAGE CREW MEMBER DOSE HISTORY

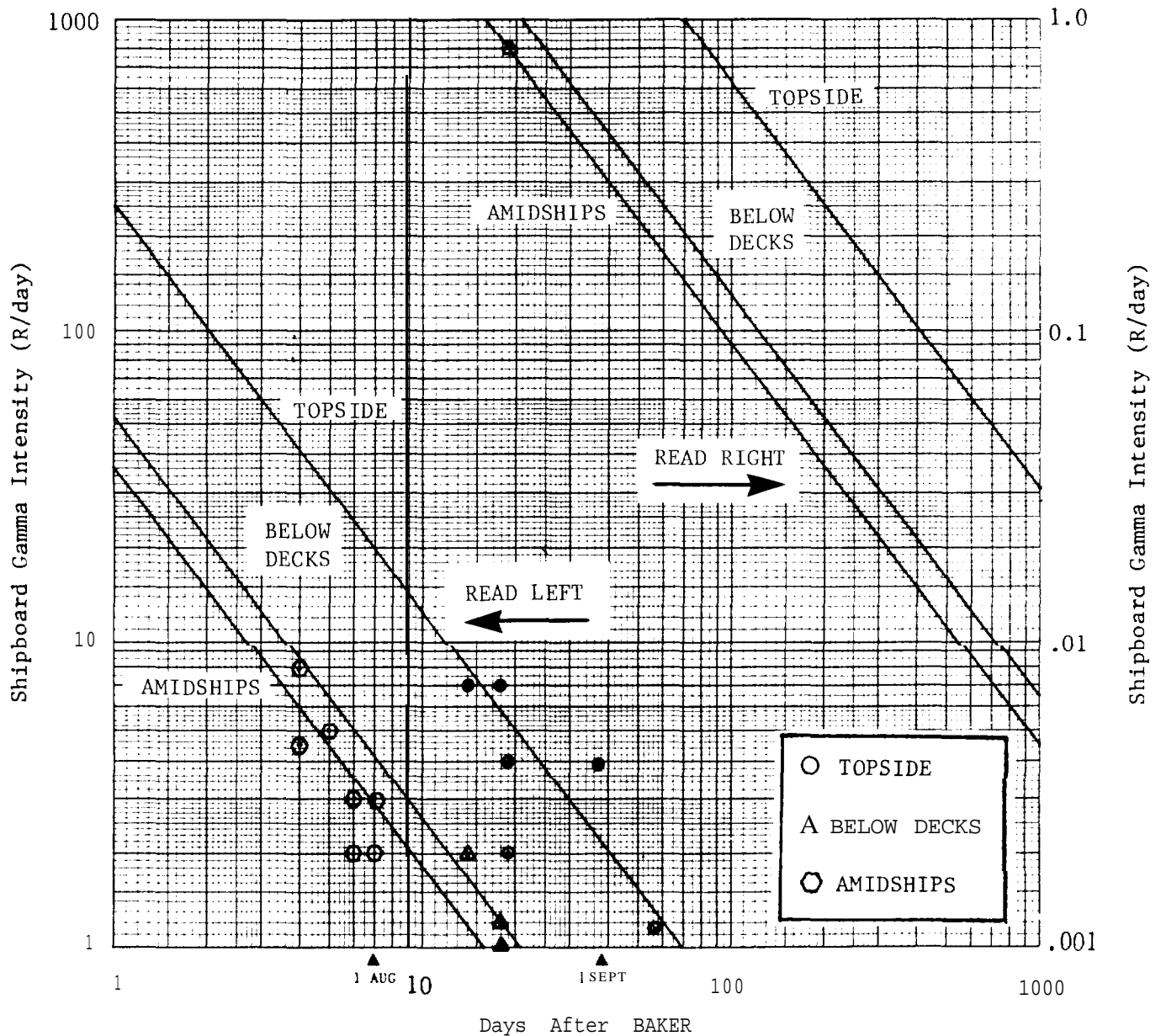
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - I July	Evacuated aboard ROCKWALL (APA-230) (Observed Shot ABLE from a distance of 23 miles)	0.000
2 July -16 July	Aboard LST-52	0.012
17 July -18 July	Evacuated aboard ROCKWALL	0.000
19 July -23 July	Aboard LST-52	0.000
	BAKER	
24 July -18 August	Evacuated aboard ROCKWALL (Observed Shot BAKER from a distance of 16 miles)	0.203
19 August-26 August	Aboard DIXIE which departed Bikini on 25 August.	0.025

Total calculated dose while at Bikini: 0.240 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: LST-52 was decommissioned on August 23, 1946 and towed to Kwajalein. There, it was sunk by gunfire from the USS OAKLAND in April 1948 at 8-47 N, 167-25E.

# USS LST-52



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-18. Shipboard Gamma Intensity vs. Time - USS LST-52

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS LST-125

CREW SIZE: 56 (only 2 remained after 13 July)

**MISSION:** USS LST-125 was a CROSSROADS target ship and arrived at Bikini on July 9, 1946 from Subic Bay, P.I. to prepare for the operation. It was beached in the lagoon and remained there as one of the 84 target ships for the nuclear test detonation that occurred on July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	Unknown	

Total calculated dose while at Bikini: Unknown (All but 2 crew members departed Bikini by 13 July).

**FINAL DISPOSITION:** LST-125 remained beached in Bikini lagoon until August 11, 1946. It was then towed out to sea and sunk by gunfire of the USS FALL RIVER on August 14, 1946 at 11-25N, 165-25E.

**DATA NOT AVAILABLE TO RECONSTRUCT  
THE SHIPBOARD GAMMA INTENSITY CURVE**

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS LST-133

CKEW SIZE: 78

MISSION: USS LST-133 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was beached in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>	--
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)	
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)	

### AVERAGE CREW MEMBER DOSE HISTORY

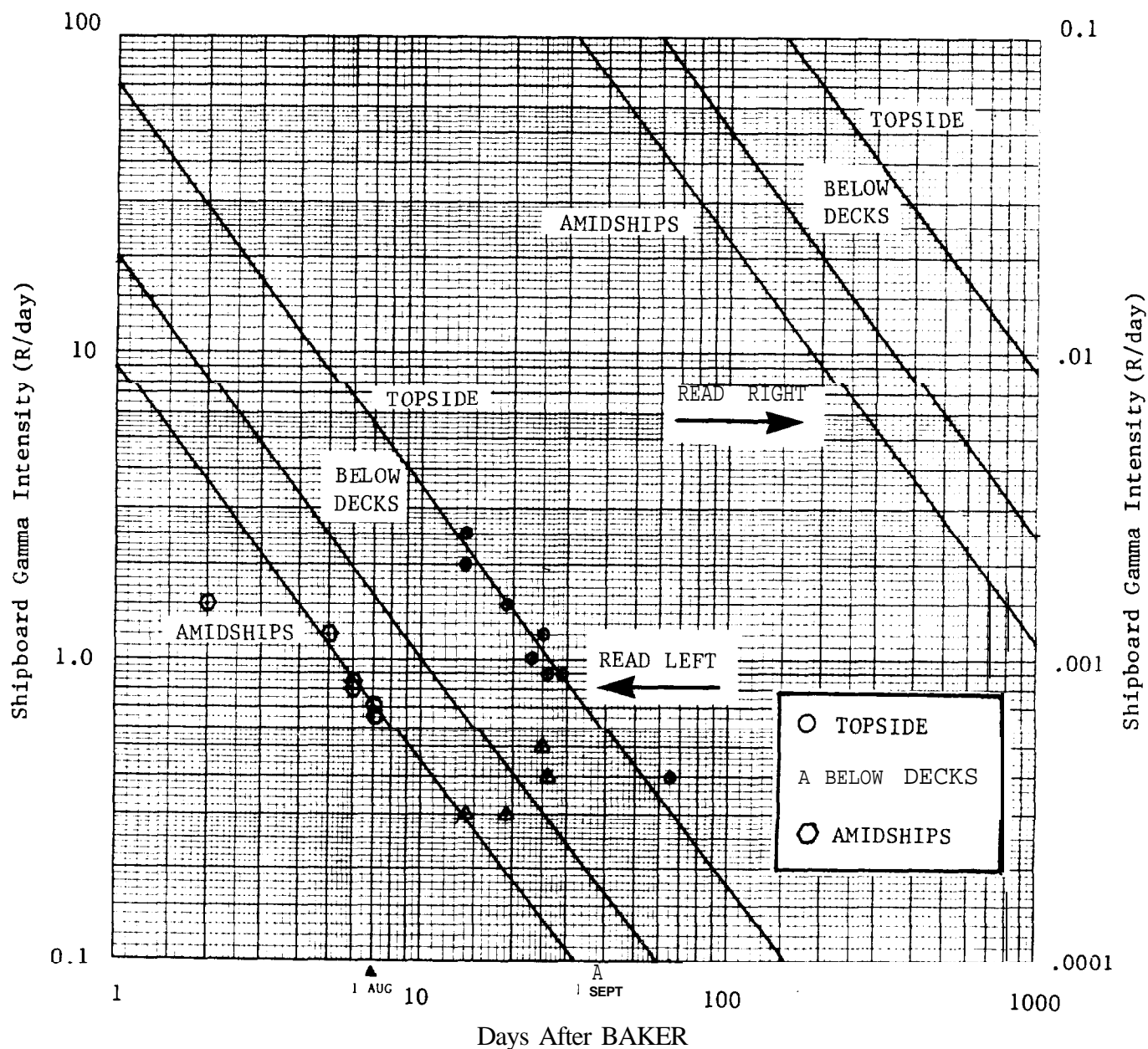
<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
25 June • 1 July	Evacuated aboard ROCKWALL (APA-230) (Observed Shot ABLE from a distance of 23 miles)	0.000
2 July -16 July	Aboard LST- 133	0.000
17 July -18 July	Evacuated aboard ROCK WALL	0.000
19 July -22 July	Aboard LST-133	0.000
	BAKER	
23 July -19 August	Evacuated aboard ROCKWALL which departed Bikini on 19 August. (Observed Shot BAKER from a distance of 16 miles)	0.207
28 August	Majority of crew transferred to AJAX, DIXIE, and GENEVA.	

**Total** calculated dose while at Bikini: 0.207 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: LST-133 was decommissioned on August 28, 1946 and towed to Kwajalein where it was deliberately sunk on May 11, 1948 at 8-48N, 167-10E.

# USS LST-133



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-19. Shipboard Gamma Intensity vs. Time - USS LST-133

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS LST-220

CREW SIZE: 59

MISSION: USS LST-220 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>TYPE</u>	<u>DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard ROCKWALL (APA-230) (Observed Shot ABLE from a distance of 23 miles)	0.000
2 July -23 July	Aboard LST-220	0.005
	BAKER	
24 July -19 August	Evacuated aboard ROCKWALL which departed Bikini on 19 August (Observed Shot BAKER from a distance of 16 miles)	0.207
20 August-23 August	Crew transferred to AJAX which departed bikini on 23 August.	0.014

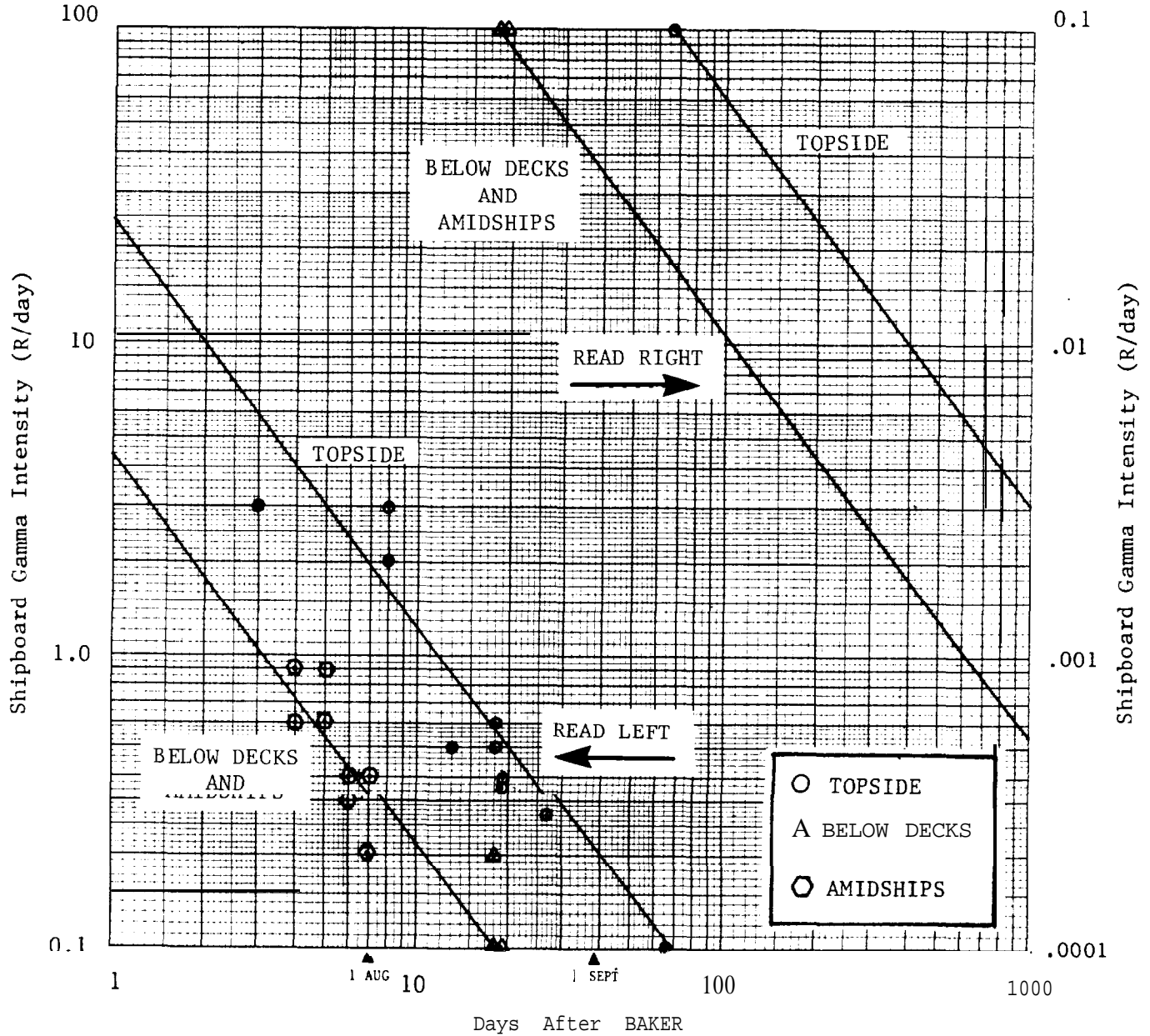
Total calculated dose while at Bikini: 0.226 REM

This reconstruction **does not** include time aboard the target ship for activities **such as** damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: LST-220 was decommissioned on August 27, 1946. It was towed to Kwajalein and deliberately destroyed on May 12, 1948 at 8-44N, 167-25E.



# USS LST-220



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-20. Shipboard Gamma Intensity vs. Time - USS LST-220

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS LST-545

CREW SIZE: 47

MISSION: USS LST-545 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: TEST	DATE (TIME)	TYPE DETONATION
ABLE	1 July 46 (0900)	23 KT Air Burst (+520 f t)
BAKER	25 July 46 (0835)	23 KT Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

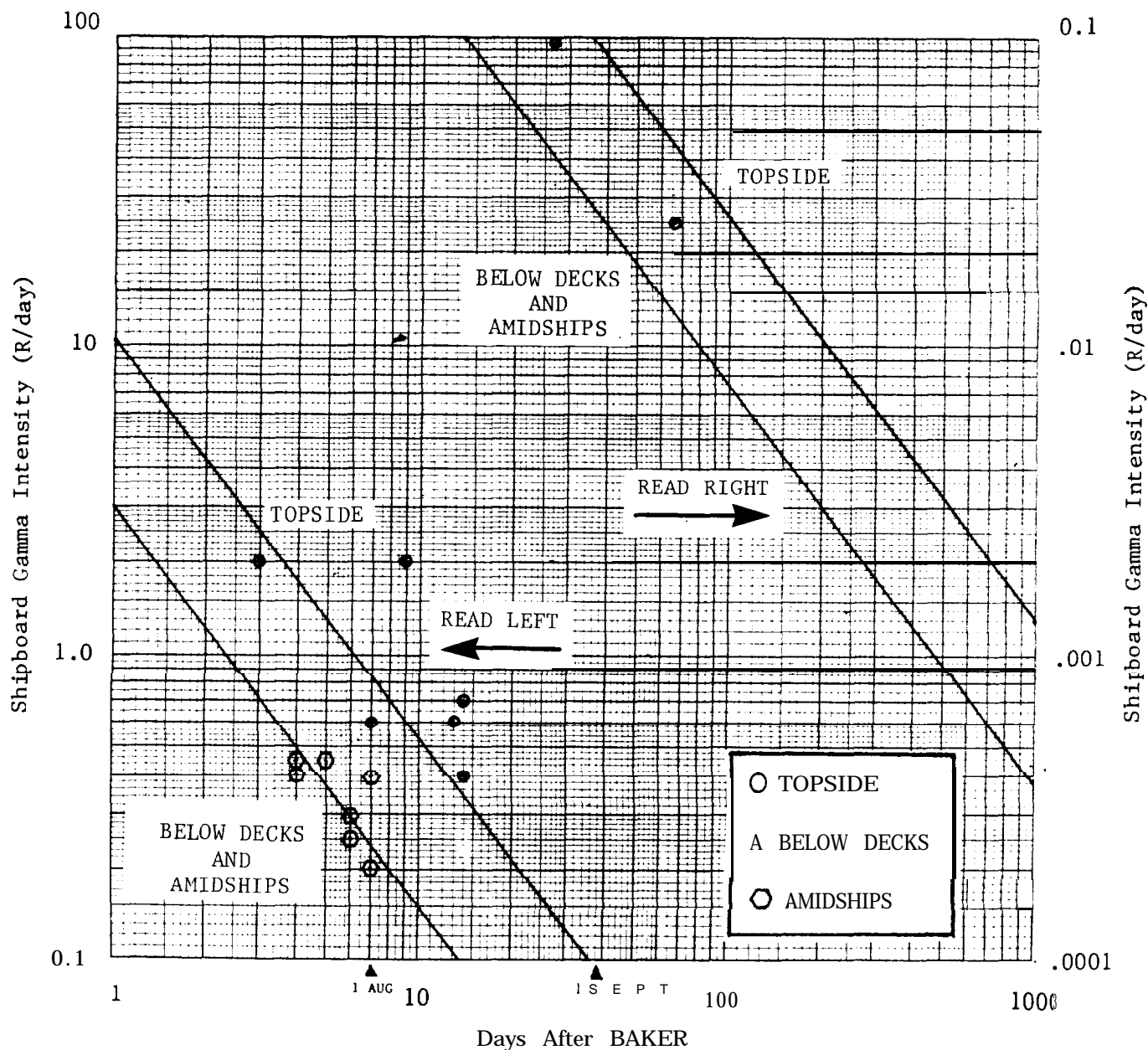
DATE (1946)	CREW LOCATION	RECONSTRUCTED FILM BADGE DOSE (REM)
	ABLE	
29 June - 1 July	Evacuated aboard ROCKWALL (APA-230) (Observed Shot ABLE from a distance of 23 miles)	0.000
2 July - 17 July	Aboard LST-545	0.002
18 July - 19 July	Evacuated aboard ROCKWALL	0.000
20 July - 23 July	Aboard LST-545	0.000
	BAKER	
24 July - 17 August	Evacuated aboard ROCKWALL (Observed Shot BAKER from a distance of 16 miles)	0.198
18 August - 23 August	Crew transferred to AJAX which departed Bikini on 23 August.	0.024

Total calculated dose while at Bikini: 0.224 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: LST-545 was decommissioned on August 27, 1946. It was then towed to Kwajalein where it was deliberately sunk on May 12, 1948 at 8-48N, 167-21E.

# USS LST-545



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-2 1. Shipboard Gamma Intensity vs. Time - USS LST-545

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS LST-661

CREW SIZE: 62 (By 24 July only 18 men still at Bikini)

MISSION: USS LST-661 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	TEST	D A T E ( T I M E )	TYPE DETONATION
	ABLE	1 July 46 (0900)	23 KT Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

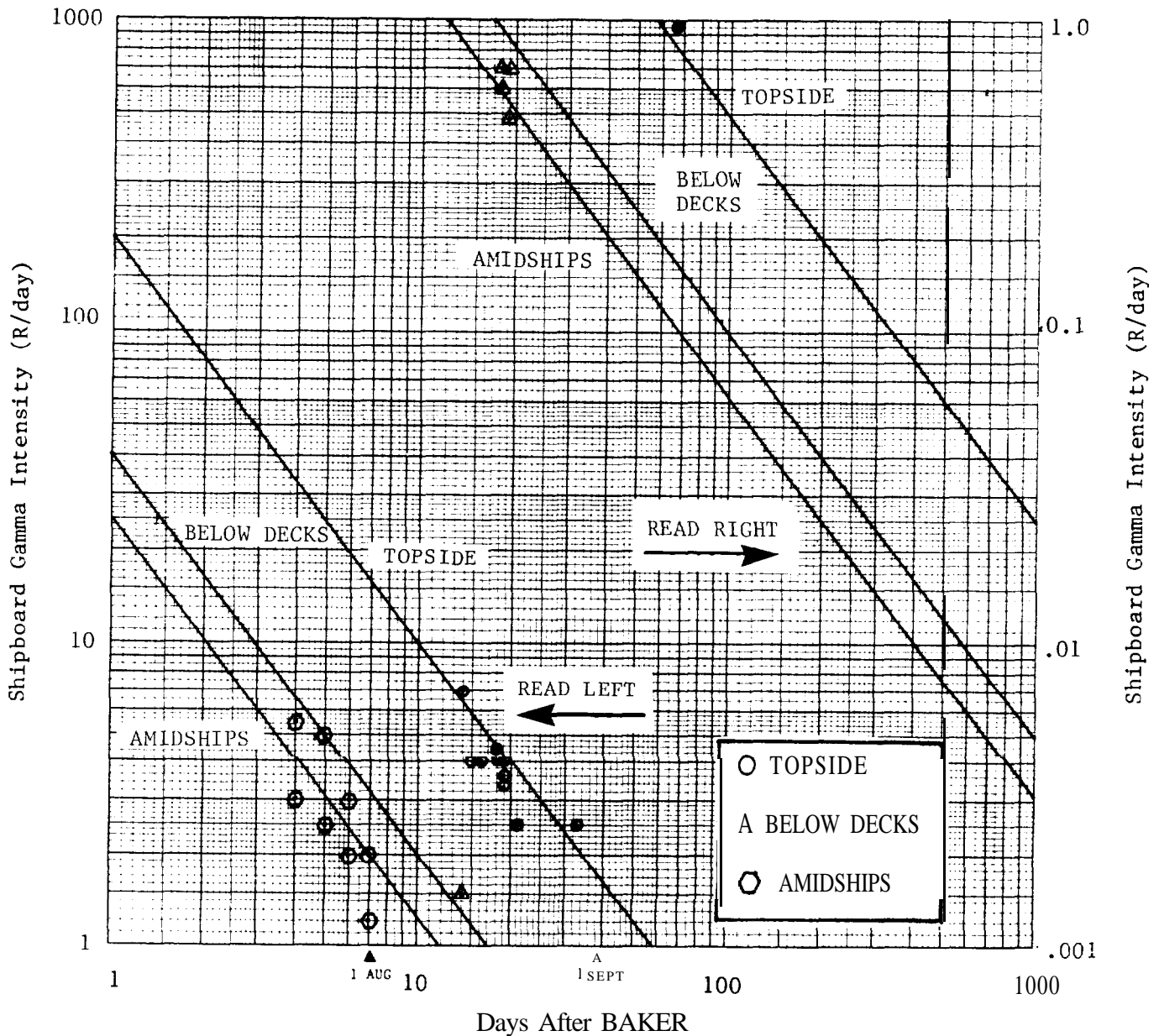
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
29 June - 1 July	Evacuated aboard ROCKWALL (APA-230) (Observed Shot ABLE from a distance of 23 miles)	0.000
2 July -16 July	Aboard LST-66 1	0.007
17 July -18 July	Evacuated aboard ROCKWALL	0.000
19 July -23 July	Aboard LST-661	0.000
	BAKER	
24 July -18 August	Evacuated aboard ROCKWALL (Observed Shot BAKER from a distance of 16 miles)	0.203
19 August-23 August	Aboard AJAX (AR-6) which departed Bikini on 23 August.	0.019
28 August	Crew transferred to GENEVA (8) and others.	

Total calculated dose while at Bikini: 0.229 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: LST-661 was towed to Kwajalein after CROSSROADS where it was deliberately sunk on July 25, 1948 at 8-51.4N, 167-20.3E.

# USS LST-661



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-22. Shipboard Gamma Intensity vs. Time - USS LST-661

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANED

SHIP: USS MAYRANT (DD-402)

CREW SIZE: 109

**MISSION:** USS MAYRANT was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	TEST	D A T E ( T I M E )	TYPE DETONATION
	ABLE	1 July 46 (0900)	23 KT Air Burst (+520 f t)
	BAKER	25 July 46 (0835)	23 KT Shallow Underwater (-90 f t)

## AVERAGE CREW MEMBER DOSE HISTORY

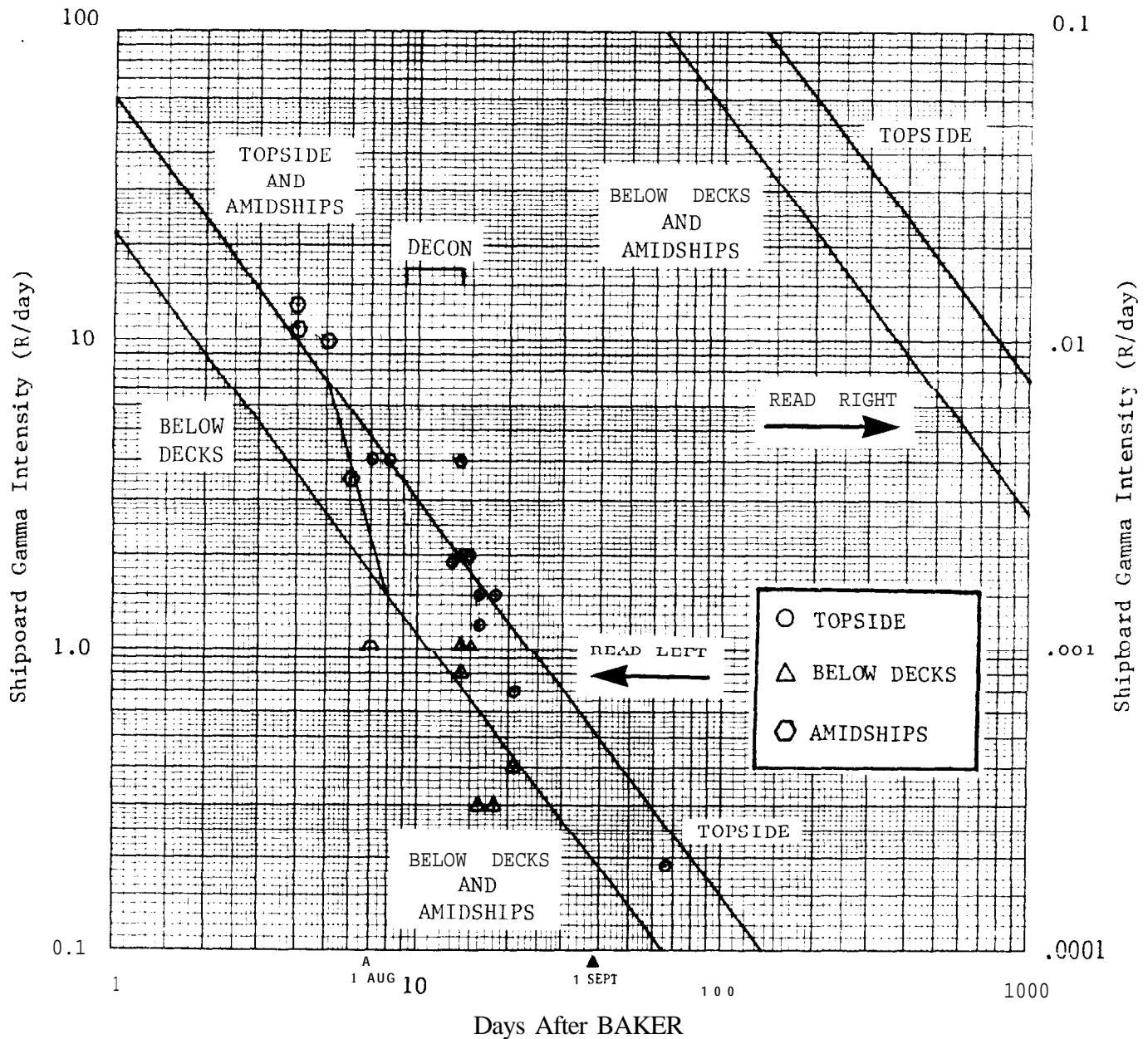
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 2 July	Evacuated aboard BOTTINEAU (APA-234) (Observed Shot ABLE from a distance of 25 miles)	0.001
3 July -17 July	Aboard MAYRANT	0.000
18 July -23 July	Evacuated aboard BOTTINEAU	0.000
	BAKER	
24 July- 6 August	Evacuated aboard BOTTINEAU (Observed Shot BAKER from a distance of 16 miles)	0.131
7 August-II August	Aboard ROCKBRIDGE (APA-228)	0.079
12 August-25 August	Aboard DIXIE (AD-14) which departed Bikini on 25 August.	0.073
27 August	Majority of crew transferred to BLADEN.	

Total calculated dose while at Bikini: 0.284 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

**FINAL DISPOSITION:** MAYRANT was decommissioned on August 28, 1946. It was towed to Kwajalein for radiological tests and was deliberately sunk on April 4, 1948 by guns and torpedoes of DESDIV 12 at 8-49N, 167-23E.

# USS MAYRANT (DD-402)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-23. Shipboard Gamma Intensity vs. Time - USS MAYRANT (DD-402)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS MUGFORD (DD-389)

CREW SIZE: 126

**MISSION:** USS MUGFORD was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June- 1 July	Evacuated aboard BOTTINEAU (APA-235) (Observed Shot ABLE from a distance of 25 miles)	<b>0.000</b>
2 July -17 July	Aboard MUGFORD	<b>0.000</b>
18 July -19 July	Evacuated aboard BOTTINEAU	<b>0.000</b>
20 July -23 July	Aboard MUGFORD	<b>0.000</b>
	BAKER	
24 July -7 August	Evacuated aboard BOTTINEAU (Observed Shot BAKER from a distance of 16 miles)	0.143
8 August-17 August	Aboard ROCKWALL (APA-230)	0.098
18 August -20 August	Half aboard BLADEN (APA-63) which departed Bikini on 20 August. Remaining crew transferred to various units.	0.014

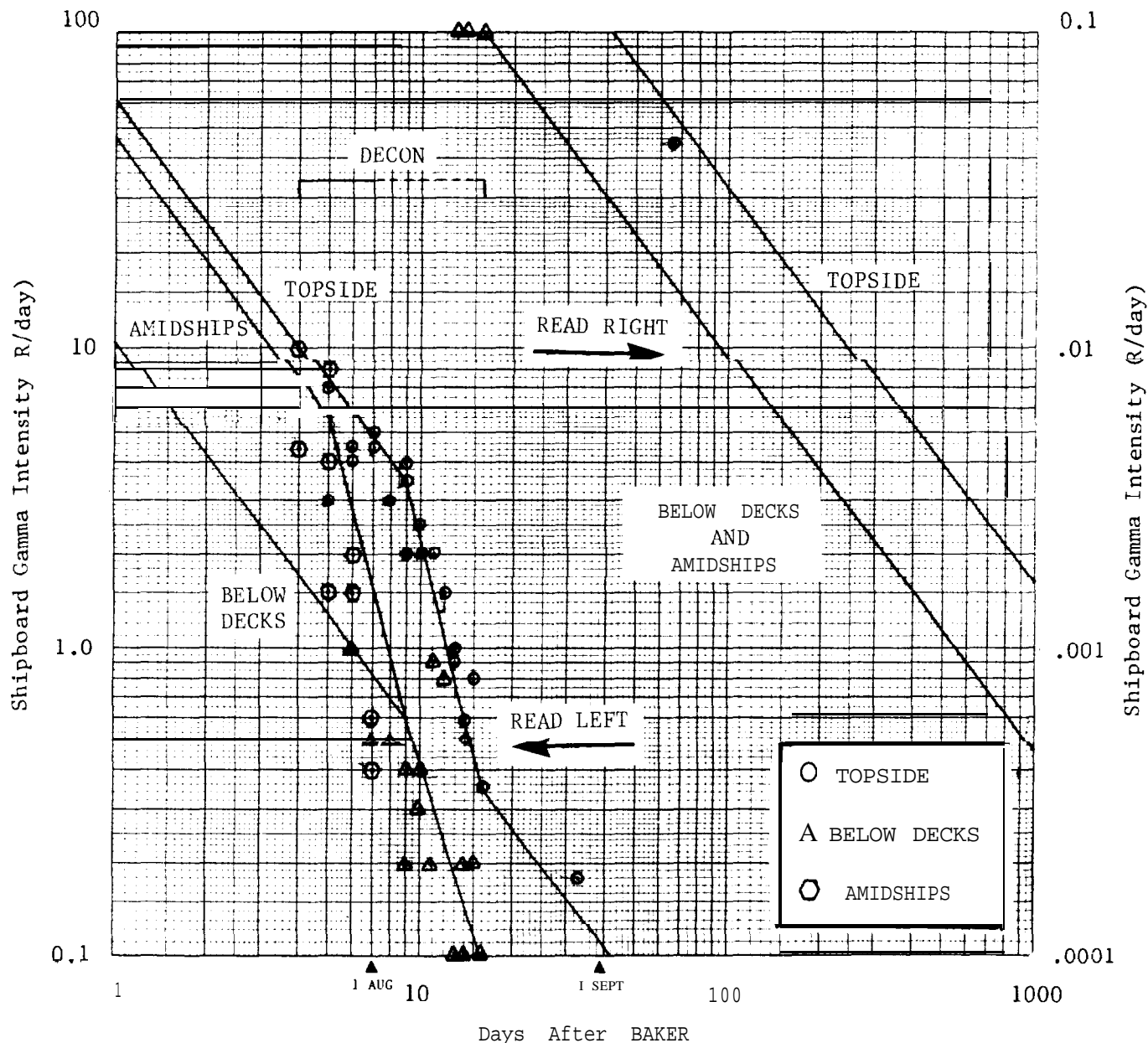
Total calculated dose while at Bikini: 0.255 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

**FINAL DISPOSITION:** MUGFORD was towed to Kwajalein sometime after August 18, 1946. It remained there for decontamination experiments until it was scuttled off Kwajalein on March 22, 1948.



# USS MUGFORD (DD-389)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-24. Shipboard Gamma Intensity vs. Time - USS MUGFORD (DD-389)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS MUSTIN (DD-413)

CREW SIZE: 112

MISSION: USS MUSTIN was a CROSSROADS target ship **and** arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

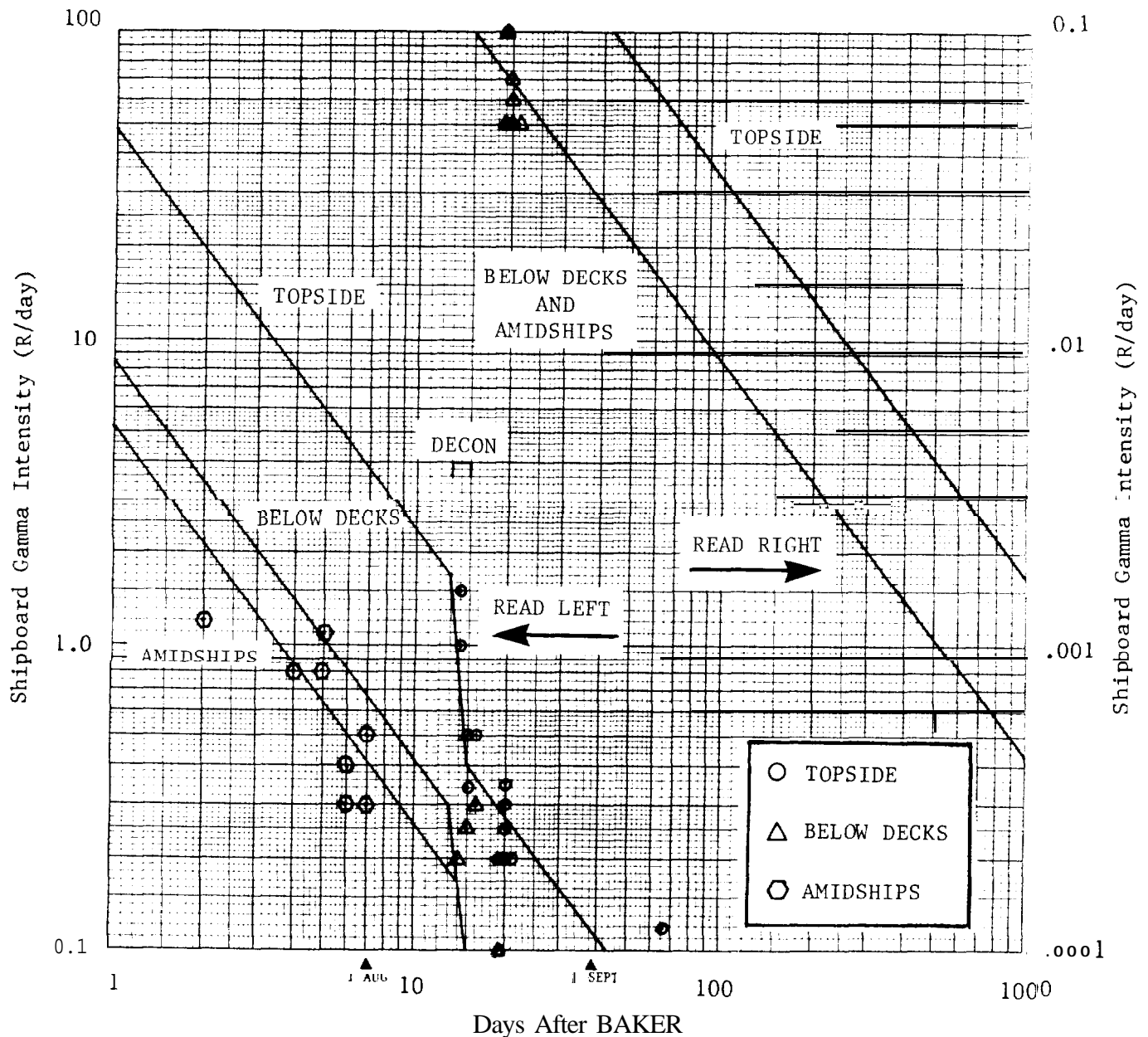
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BOTTINEAU (APA-235) (Observed Shot ABLE from a distance of 25 miles)	0.000
2 July -23 July	Aboard MUSTIN	0.003
	BAKER	
24 July - 6 August	Evacuated aboard BOTTINEAU (Observed Shot BAKER from a distance of 16 miles)	0.131
7 August -17 August	Aboard ROCKBRIDGE (APA-228)	0.140
17 August-28 August	Crew transferred to ROCKWALL (88), PALMYRA (5), and others.	

Total calculated dose up until the date when the crew splintered: 0.274 REM

This reconstruction does not include time aboard the target ship for activities **such as** damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: MUSTIN was decommissioned on August 28, 1946. It had been towed to Kwajalein where it remained until it was destroyed by gunfire on April 18, 1948 at 8-47.8N, 167-11.5E.

# USS MUSTIN (DD-413)



SHIPBOARD GAMMA INTENSITY CURVES: The **average gamma** intensity curves for topside amidships, and below decks locations **on target** ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves **for** each location.

Figure A-25. Shipboard Gamma Intensity vs. Time - LJSS MUSTIN (DD-413)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: NACATO ( Ex-Japanese BB)

CREW SIZE: 172

MISSION: NAGATO was a CROSSROADS target ship **and** arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

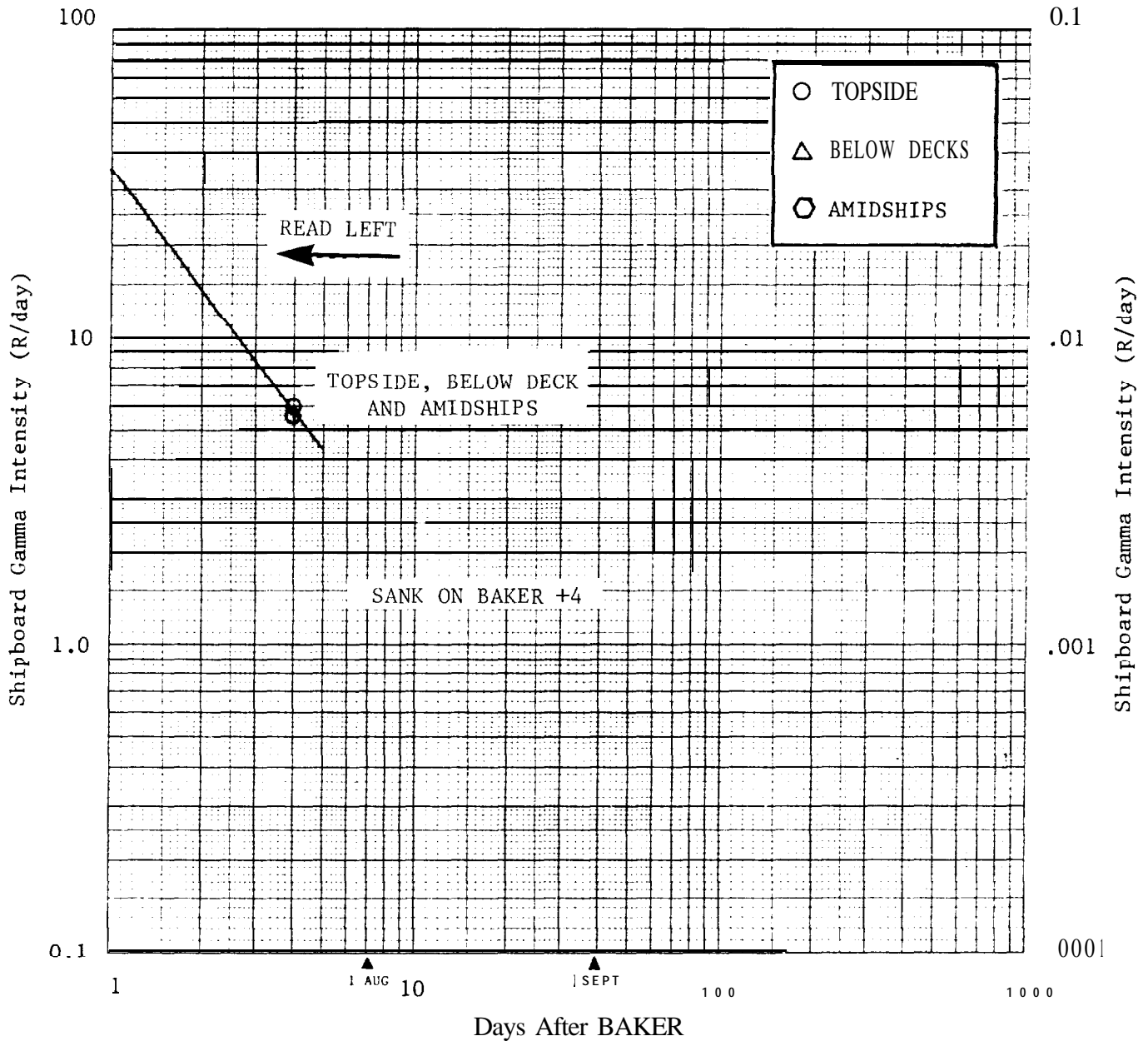
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 6 July	Evacuated aboard ROCKINGHAM (APA-229) (Observed Shot ABLE from a distance of 18 miles)	0.001
7 July - 15 July	Aboard ROCKBRIDGE (APA-288) (75 men transferred to CHILTON and US on 12 July)	0.008
	BAKER	
16 July - 4 August	Aboard ROCKINGHAM (Observed Shot BAKER from a distance of 16 miles)	0.084
4 August	Crew transferred to FALL RIVER (36), APPLING (10), SALT LAKE CITY (14), and others.	

Total calculated dose up until the date when the crew splintered: 0.093 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: NAGATO sank on the night of 29-30 July 1946 in Bikini lagoon as a result of shot BAKER.

# NAGATO (EX-JAPANESE BB)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-26. Shipboard Gamma Intensity vs. Time - NAGATO (EX-JAPANESE BB)

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANED

SHIP: USS NEVADA (BB-36)

CREW SIZE: 403

MISSION: USS NEVADA was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	TEST	DATE (TIME)	YIELD	TYPE DETONATION
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

## AVERAGE CKEW MEMBER DOSE HISTORY

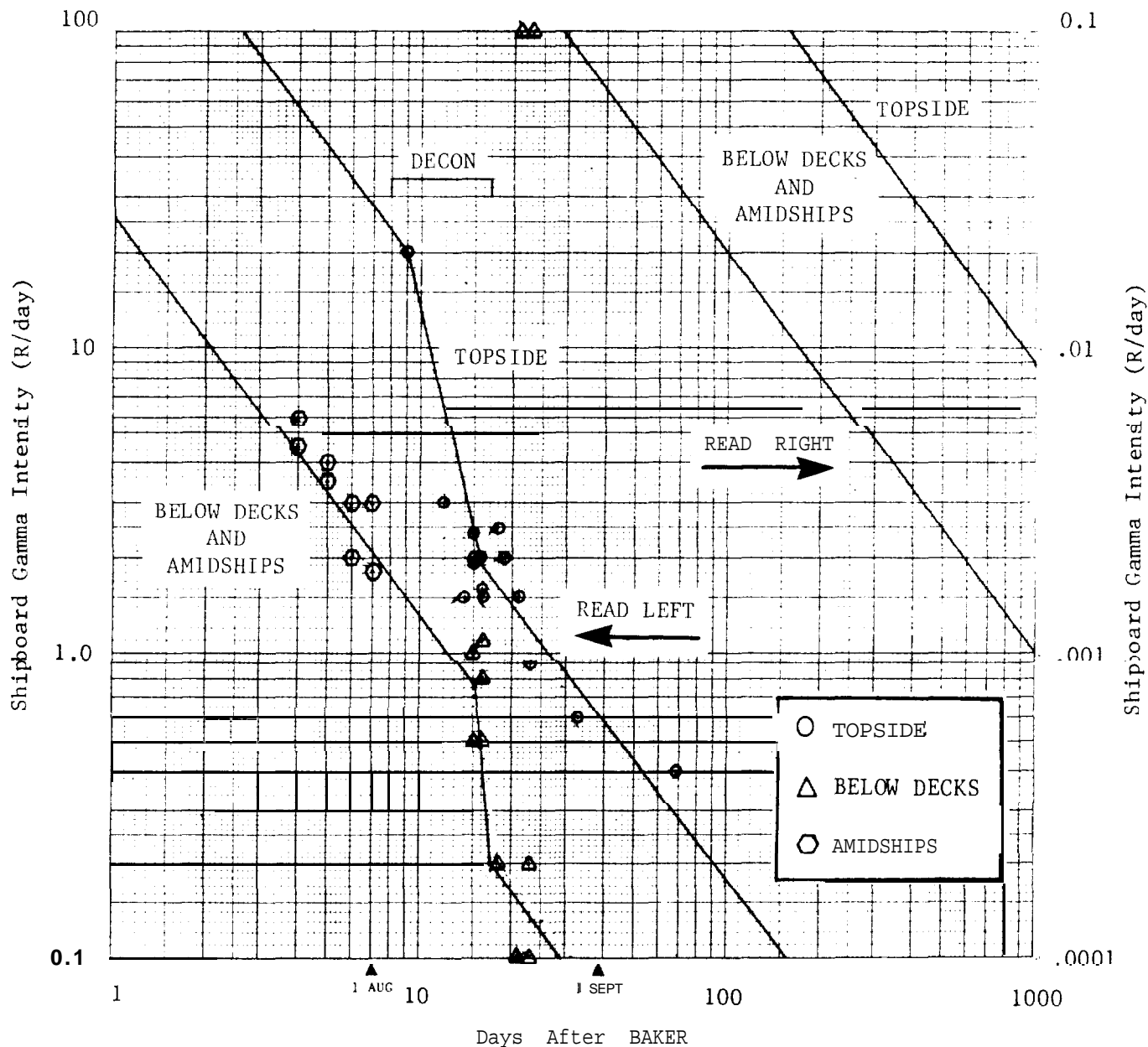
DATE (1946)	CREW LOCATION	RECONSTRUCTED FILM BADGE DOSE (REM)
	ABLE	
1 July - 8 July	Evacuated aboard GEORGE CLYMER (APA-27) (Observed Shot ABLE from a distance of 21 miles)	0.000
9 July -16 July	Aboard NEVADA	0.012
17 July -18 July	Evacuated aboard GEORGE CLYMER	0.000
19 July -23 July	Aboard NEVADA	0.006
	BAKER	
24 July -17 August	Evacuated aboard GEORGE CLYMER (Observed Shot BAKER from a distance of 16 miles)	0.234
18 August-19 August	Aboard CORTLAND (APA-75) which departed Bikini on 19 August	0.009
19 August-29 August	Crew transferred to GENEVA (13) and CORTLAND (224) 29 August, GEORGE CLYMER (71) 19 August, DIXIE (16) and GENEVA (8) 28 August.	

Total calculated dose while at Bikini: 0.261 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: NEVADA was decommissioned at Kwajalein on 29 August 1946 and then towed to Pearl Harbor for radiological testing, arriving 15 May 1947. On 31 July 1948, after four days of gunfire, bombs, rockets, and torpedoes from Task Force 12, it sank 65 miles SW of Pearl Harbor at 20-58N, 159-17W in 2600 fathoms of water.

# USS NEVADA (BB-36)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points **and average curve are presented as a function of time in days after Shot Baker.** The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data **does** not discriminate between individual curves for each location.

Figure A-27. Shipboard Gamma Intensity vs. Time - USS NEVADA (BB-36)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS NEW YORK (55-34)

CREW SIZE: 536

MISSION: USS NEW YORK was a CROSSROADS target ship and arrived at Bikini on June 15, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
<b>ABLE</b>		
30 June - 1 July	Evacuated aboard ROCKBRIDGE (APA-228) (Observed Shot ABLE from a distance of 21 miles)	0.000
2 July -17 July	Aboard NEW YORK	0.006
17 July -18 July	Evacuated aboard ROCKBRIDGE	0.000
19 July -23 July	Aboard NEW YORK	0.000
<b>BAKER</b>		
24 July -23 August	Evacuated aboard ROCKBRIDGE which departed Bikini on 23 August. (Observed shot BAKER from a distance of 16 miles)	0.325
27 August	Crew transferred to ROCKWALL (90), GENEVA (63) and DIXIE (17).	

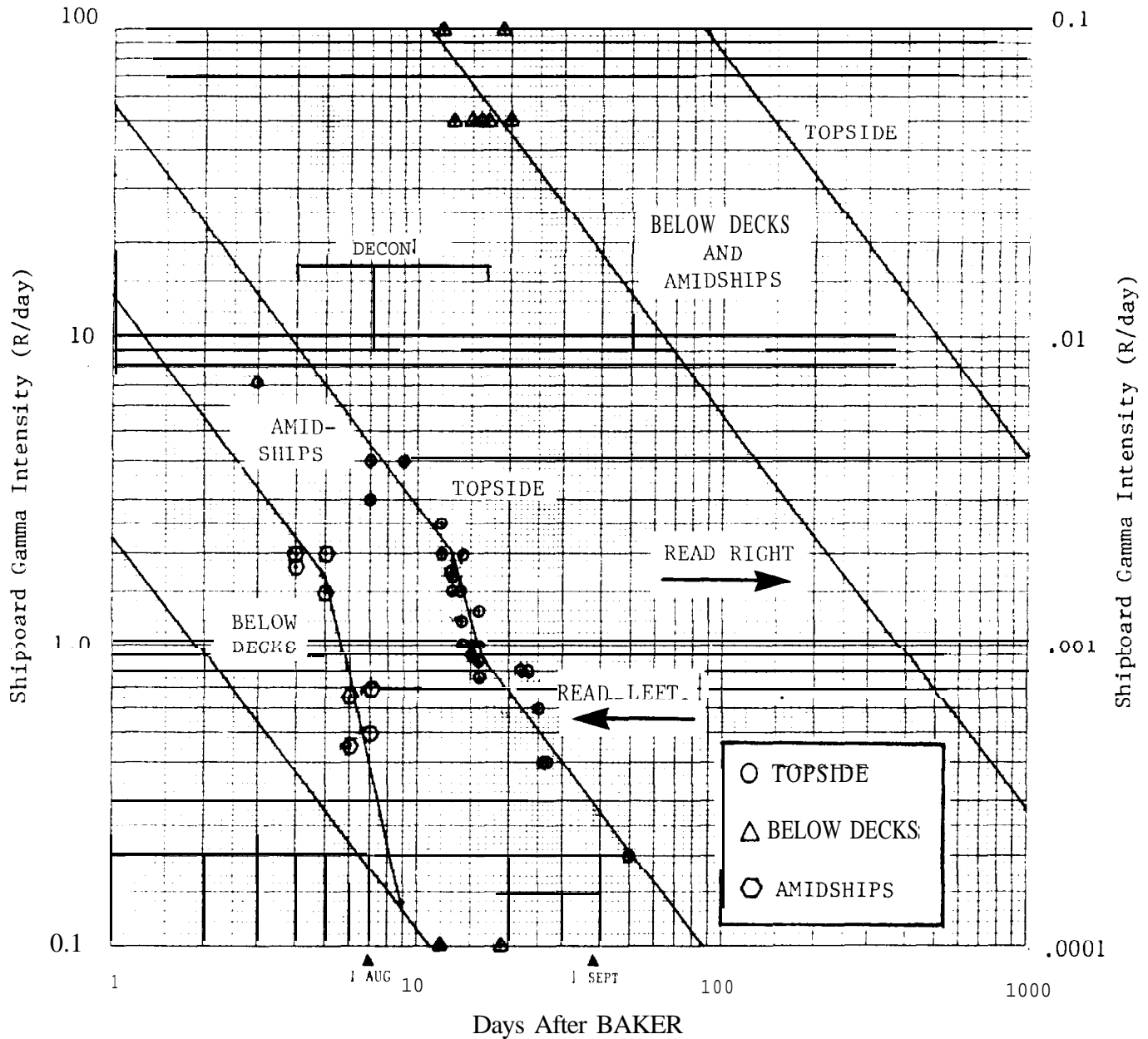
Total calculated dose while at Bikini: 0.331 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: NEW YORK was towed to Kwajalein on August 22, 1946 where it was decommissioned on August 29, 1946. It was then towed to Pearl Harbor for radiological testing, arriving 15 March 1947. It was deliberately sunk 40 miles SW of the harbor on July 8, 1948.



# USS NEW YORK (BB-34)



SHIPBOARD GAMMA INTENSITY CURVES: The **average gamma** intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-28. Shipboard Gamma Intensity vs. Time - USS NEW YORK (BB-34)

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANNED

SHIP: USS PENNSYLVANIA (BB-38)

CKEW SIZE: 434

MISSION: USS PENNSYLVANIA was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE 1 July 46 (0900)	23 KT	Air Burst (+520 f t)
	BAKER 25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

## AVERAGE CKE W MEMBER DOSE HISTOKY

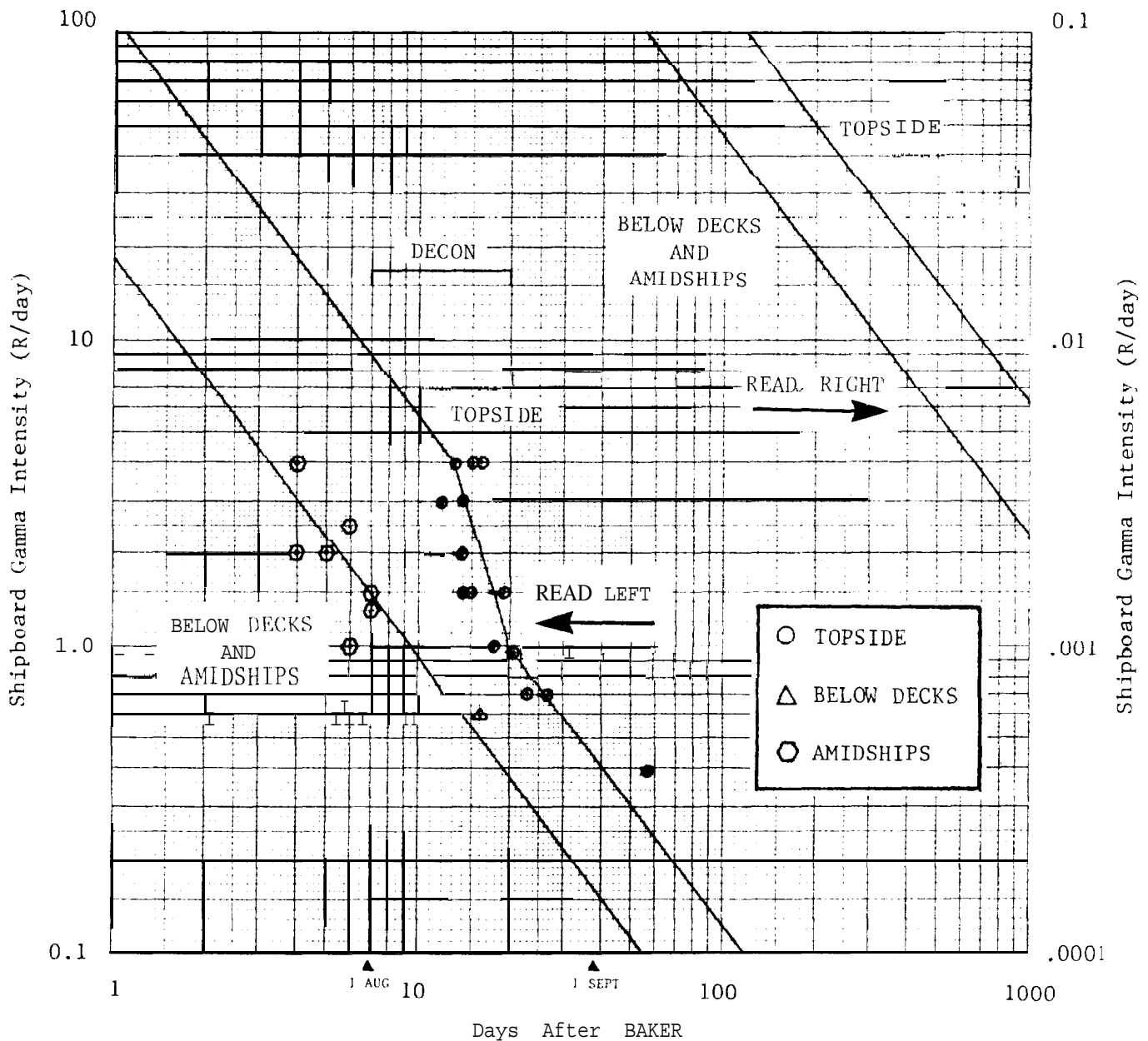
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTKUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 2 July	Majority of crew evacuated aboard GEOKGE CLYMER (APA-27)	0.000
30 June - 2 July	Final detail evacuated aboard ROCKBKIDGE (APA-228) (Observed shot ABLE from a distance of 21 miles)	0.001
3 July -16 July	Aboard PENNSYLVANIA	0.000
17 July -18 July	Evacuated aboard GEOKGE CLYMEK	0.000
19 July -23 July	4board PENNSYLVANIA	0.000
	BAKER	
24 July -26 July	Majority of crew evacuated aboard GEOKGE CLYMER Final detail evacuated aboard ROCKBRIDGE (Observed Shot BAKER from a distance of 16 miles)	0.000 0.000
27 July-15 August	Aboard GEOKGE CL YMER	0.222
16 August-21 August	Aboard NIAGARA (APA-87) which departed Bikini on 21 August.	0.032
28 August	Crew transferred to various units.	

Total calculated dose while at Bikini: 0.255 KEM if aboard ROCKBRIDGE for ABLE  
0.254 REM if aboard GEORGE CLYMER for ABLE

This reconstruction does not include tirne aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DIS POSITION: PENNSYLVANIA was decommissioned on August 29, 1946. It remained in Kwajalein lagoon for radiological and structural studies until it was deliberately sunk off Kwajalein on February 10, 1943.

# USS PENNSYLVANIA (BB-38)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity **curves** for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic **report**. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual **curves** for **each** location.

Figure A-29. Shipboard Gamma Intensity vs. Time - USS PENNSYLVANIA (BB-38)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS PENSACOLA (CA-24)

**CREW SIZE: 354**

**MISSION:** USS PENSACOLA was a CROSSROADS target ship **and** arrived at Bikini prior to **June** 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 *target* ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>	--
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)	
	BAKEK	25 July 46 (0835)	23 <b>KT</b>	Shallow Underwater (-90 ft)	

### AVERAGE CREW MEMBER DOSE HISTORY

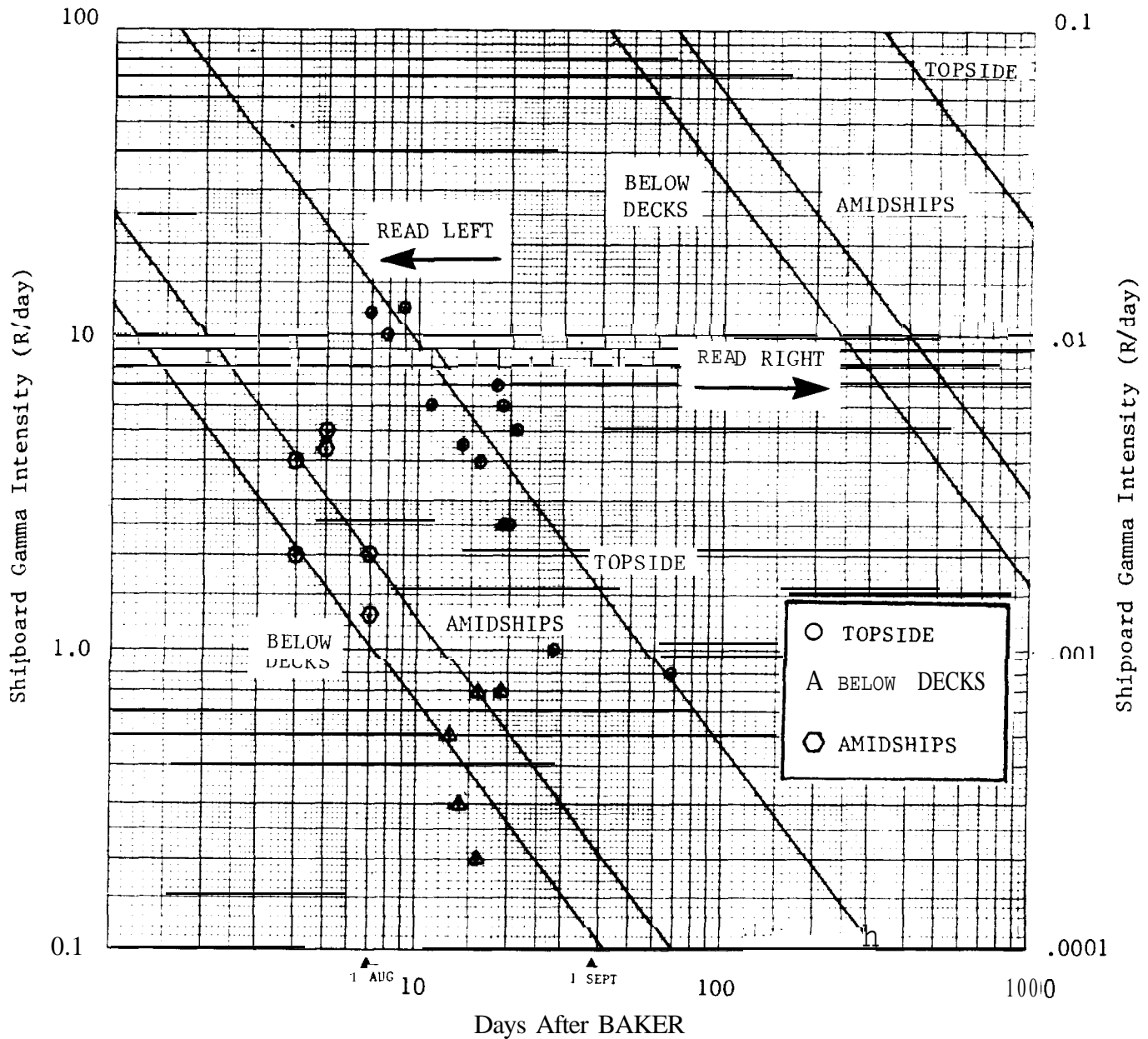
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 6 July	Evacuated aboard ROCKINGHAM (APA-229) (Observed Shot ABLE from a distance of 18 miles)	0.001
7 July -17 July	Aboard PENSACOLA	0.010
18 July	Evacuated aboard ROCKINGHAM	0.000
14 July -24 July	Aboard PENSACOLA	0.004
	BAKER	
25 July -19 August	Evacuated aboard ROCKINGHAM (Observed Shot BAKER from a distance of 16 miles)	0.216
19 August-28 August	Crew transferred to GEORGE CLYMER (189), FILLMORE (5), and HAVEN (3).	

Total calculated dose up until the date when the crew splintered: 0.231 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

**FINAL DISPOSITION:** PENSACOLA was towed to Kwajalein and then to Bremerton for radiological tests. It was deliberately sunk on November 10, 1948 at 48-12N, 127-01W in 1400 fathoms.

# USS PENSACOLA (CA-24)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-30. Shipboard Gamma Intensity vs. Time - USS PENSACOLA (CA-24)

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANNED

SHIP: USS PILOTFISH (SS-386)

CREW SIZE: 52

MISSION: USS PILOTFISH was a CROSSROADS target ship **and** arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	TEST	DATE (TIME)	YIELD	TYPE DETONATION	---
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)	
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)	

## AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 3 July	Evacuated aboard BOTTINEAU (APA-235) (Observed Shot ABLE from a distance of 25 miles)	0.001
3 July -23 July	Aboard PILOTFISH	0.001
	BAKER	
24 July - 8 August	Evacuated aboard BOTTINEAU (APA-235) (Observed Shot BAKER from a distance of 16 miles)	0.158
9 August-18 August 18 August	Aboard FILLMORE (APA-83) Crew transferred to ROCKWALL (8), DENTUDA (4), TUNA (3), SYLVANIA (12), COUCAL (5), and ST. CROIX (5).	0.049

Total calculated dose up until the date when the crew splintered: 0.209 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: PILOTFISH sank in Bikini lagoon as a result of Shot RAKER. It was eventually resurfaced and salvaged for examination, but then, resunk as a target on October 16, 1948.

**DATA NOT AVAILABLE TO RECONSTRUCT  
THE SHIPBOARD GAMMA INTENSITY CURVE**

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: PRINZ EUGEN (Ex-German CA)

CREW SIZE: 444

MISSION: PRINZ EUGEN was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

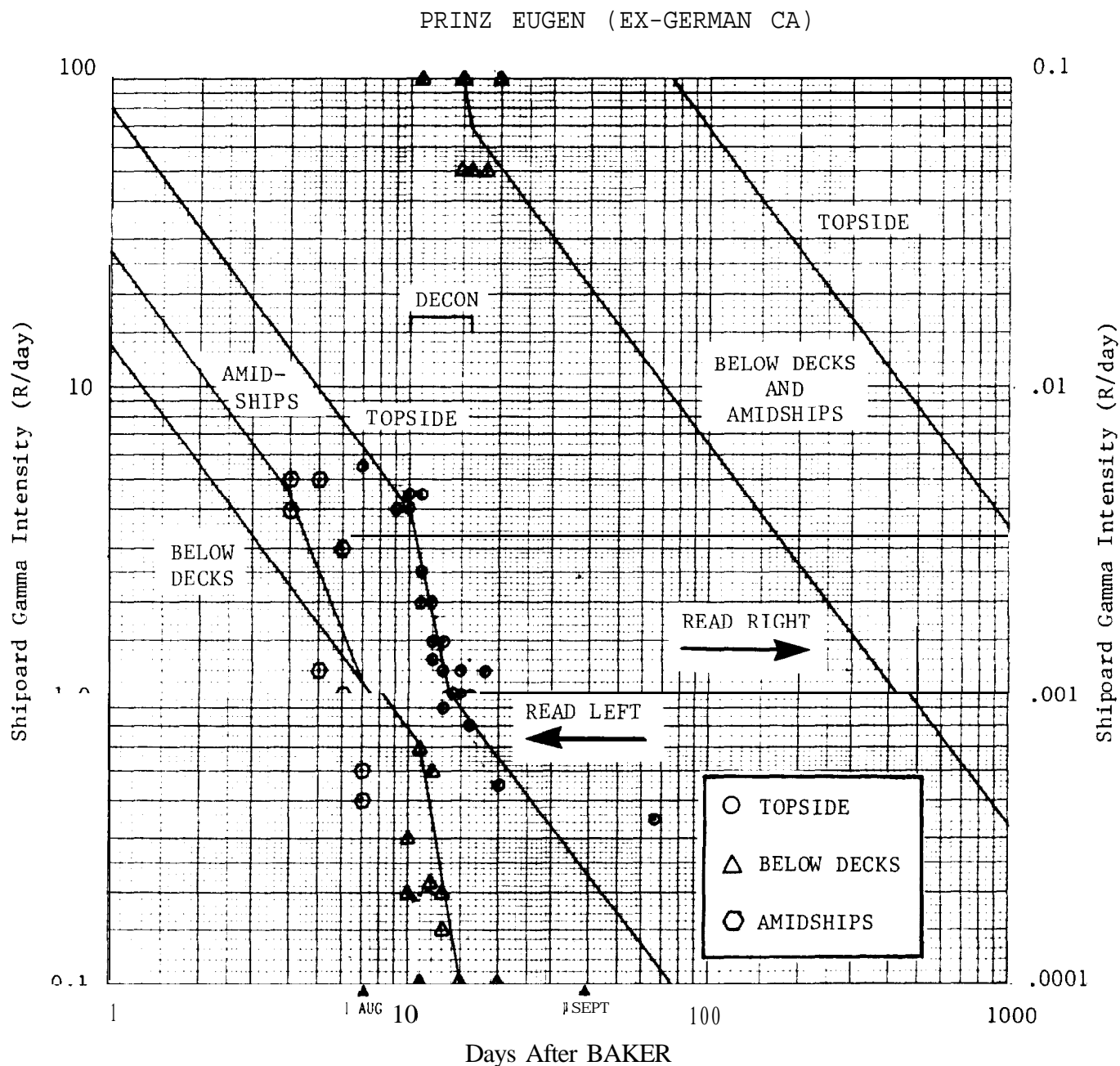
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 2 July	Evacuated aboard ROCKINGHAM (APA-229) (Observed Shot ABLE from a distance of 18 miles)	0.001
3 July -21 July	Aboard PRINZ EUGEN (Probably a practice evacuation aboard the ROCKINGHAM on 18-19 July)	<b>0.001</b>
	BAKER	
22 July -16 August	Evacuated aboard ROCKINGHAM (Observed Shot BAKER from a distance of 16 miles)	0.200
16 August-20 August	Aboard BLADEN (APA-63) which departed Bikini on 20 August	0.027
28 August	Crew transferred to GENEVA (70) and others (41).	

Total calculated dose while at Bikini: 0.229 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: PRINZ EUGEN was towed to Kwajalein after CROSSROADS. It was to be beached at Enubuj Island, but following a storm, it sank nearby on December 22, 1946.





SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-31. Shipboard Gamma Intensity vs. Time - PRINZ ELJGEN (EX-GERMAN CA)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS RALPH TALBOT (DD-390)

CREW SIZE: 132

MISSION: USS RALPH TALBOT was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>	--
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)	
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)	

### AVERAGE CREW MEMBER DOSE HISTORY

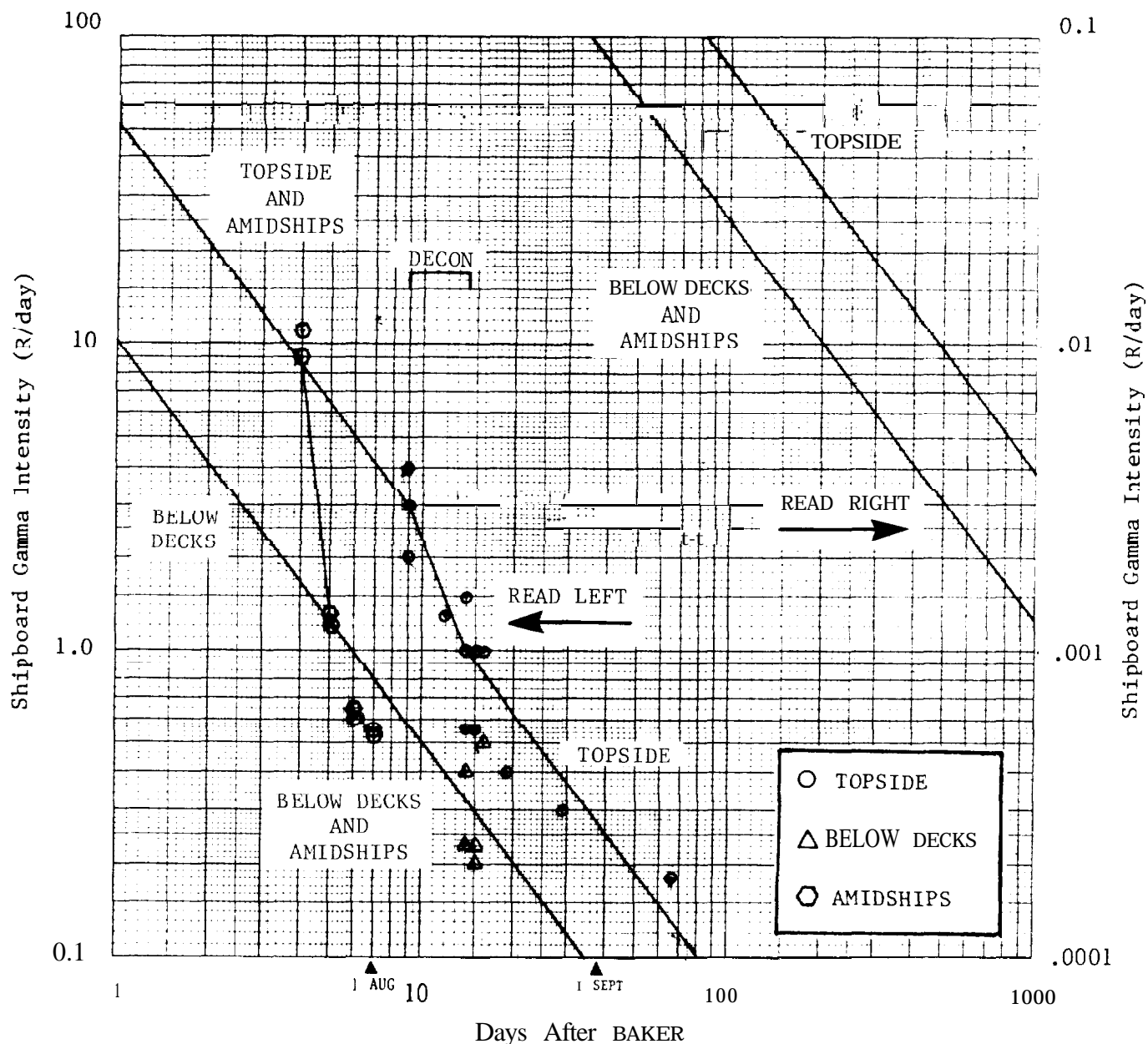
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard HENRICO (APA-45) (Observed Shot ABLE from a distance of 12 miles)	0.000
2 July -17 July	Aboard RALPH TALBOT	0.024
18 July -19 July	Evacuated aboard HENRICO	0.000
20 July -23 July	Aboard RALPH TALBOT	0.000
	BAKER	
24 July -13 August	Evacuated aboard HENRICO (Observed Shot BAKER from a distance of 8 miles)	0.205
14 August-16 August	Aboard ROCKINGHAM (APA-229)	0.023
17 August-19 August	Aboard ROCKWALL which departed Bikini on 19 August.	0.015

Total calculated dose while at Bikini: 0.267 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: RALPH TALBOT was decommissioned on August 28, 1946. It was towed to Kwajalein where it was retained for radiological study until it was deliberately sunk in March 1948.

# USS RALPH TALBOT (DD-390)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure h-32. Shipboard Gamma Intensity vs. Time - USS RALPH TALBOT (DD-390)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS RHIND (DD-404)

CREW SIZE: 104

MISSION: USS RHIND was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

### AVERAGE CREW MEMBER DOSE HISTORY

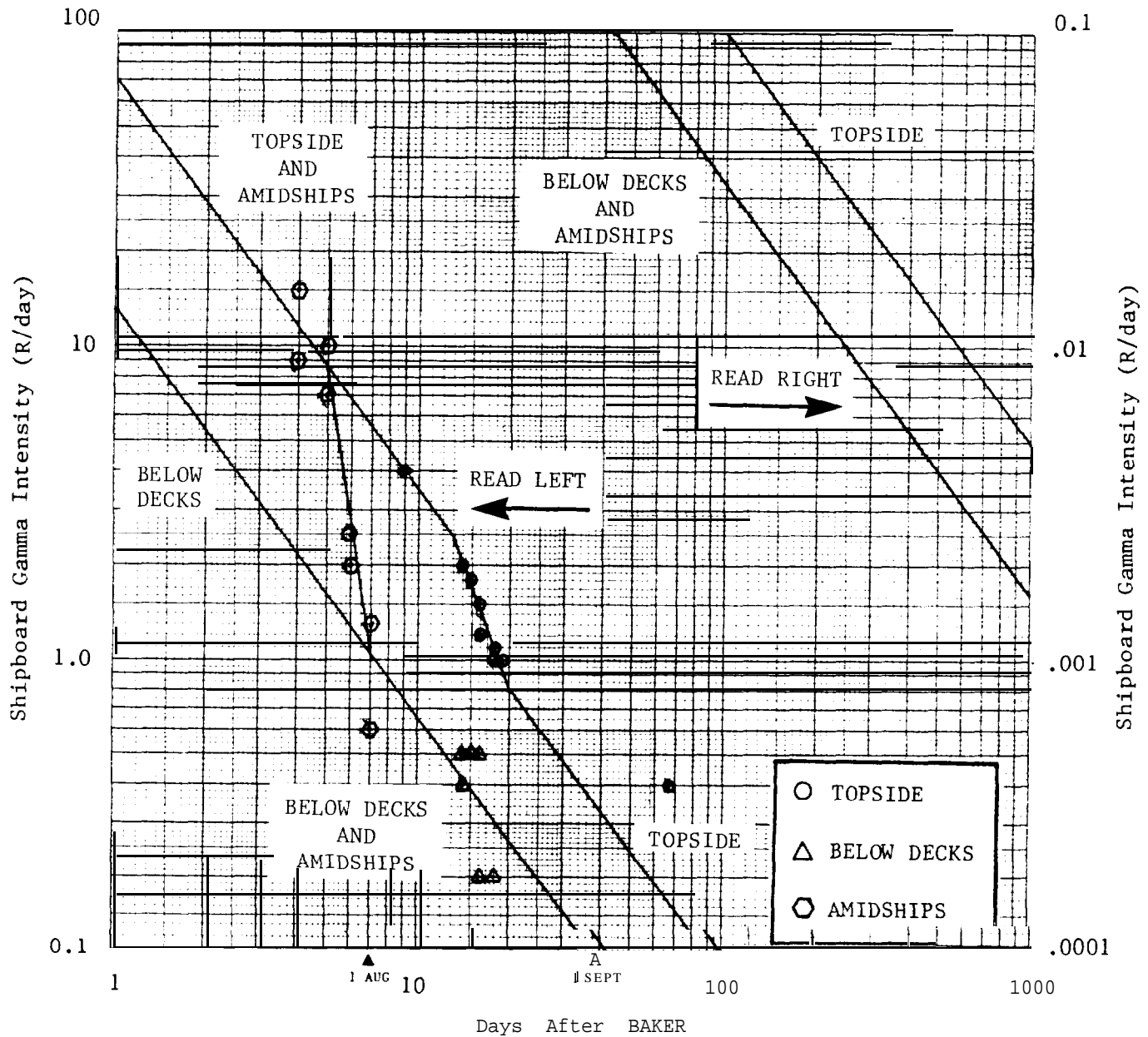
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BAYFIELD (APA-33) (Observed shot ABLE from a distance of 22 miles)	0.000
2 July - 17 July	Aboard RHIND	0.055
18 July - 19 July	Evacuated aboard BAYFIELD	0.000
20 July - 24 July	Aboard RHIND	0.002
	BAKER	
25 July - 31 July	Evacuated aboard BAYFIELD (Observed Shot BAKER from a distance of 15 miles)	0.024
1 August - 19 August	Aboard ROCKINGHAM (APA-229) Crew transferred to ROCKWALL (83), ROCKINGHAM (19), and PALMYRA (5).	0.185

Total calculated dose up until the date when the crew splintered: 0.266 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: RHIND was decommissioned on August 28, 1946. After CROSSROADS it was towed to Kwajalein for radiological tests and subsequently scuttled on March 22, 1948.

# USS RHIND (DD-404)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-33. Shipboard Gamma Intensity vs. Time ■ USS RHIND (DD-404)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: SAKAWA &x-Japanese-CL)

CREW SIZE: 143 (Estimated)

MISSION: SAKAWA was a CQOSSROADC target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonation that occurred on July 1, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>	---
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)	

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
30 June - 8 July	Evacuated aboard ROCKINGHAM (APA-229) (Observed Shot ABLE from a distance of 18 miles)	0.003
8 July	Crew transferred to ROLETTE (17), OTTAWA (16), NIAGARA (5), LST-113 (15), PALMYRA (8), NEW YORK (1), and AJAX (19).	

Total calculated dose up until the date when the crew splintered: 0.003 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: The SAKAWA sank in Bikini lagoon on July 2, 1946 as a result of Shot ABLE.

**DATA NOT AVAILABLE TO RECONSTRUCT  
THE SHIPBOARD GAMMA INTENSITY CURVE**

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS SALT LAKE CITY (CA-25)

CREW SIZE: 335

MISSION: USS SALT LAKE CITY was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>TYPE</u>	<u>DET ONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 f t)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 6 July	Evacuated aboard ROCKBRIDGE (APA-228) (Observed Shot ABLE from a distance of 21 miles)	0.001
7 July -16 July	Aboard SALT LAKE CITY	0.003
17 July -18 July	Evacuated aboard ROCKBRIDGE	0.000
19 July -23 July	Aboard SALT LAKE CITY	0.001
	BAKER	
24 July -23 August	Evacuated aboard ROCKBRIDGE which departed Bikini on 23 August. (Observed Shot BAKER from a distance of 16 miles)	0.325
28 August	Crew transferred to ROCKWALL (19), ROCK- BRIDGE (129), FILLMORE (14) and others.	

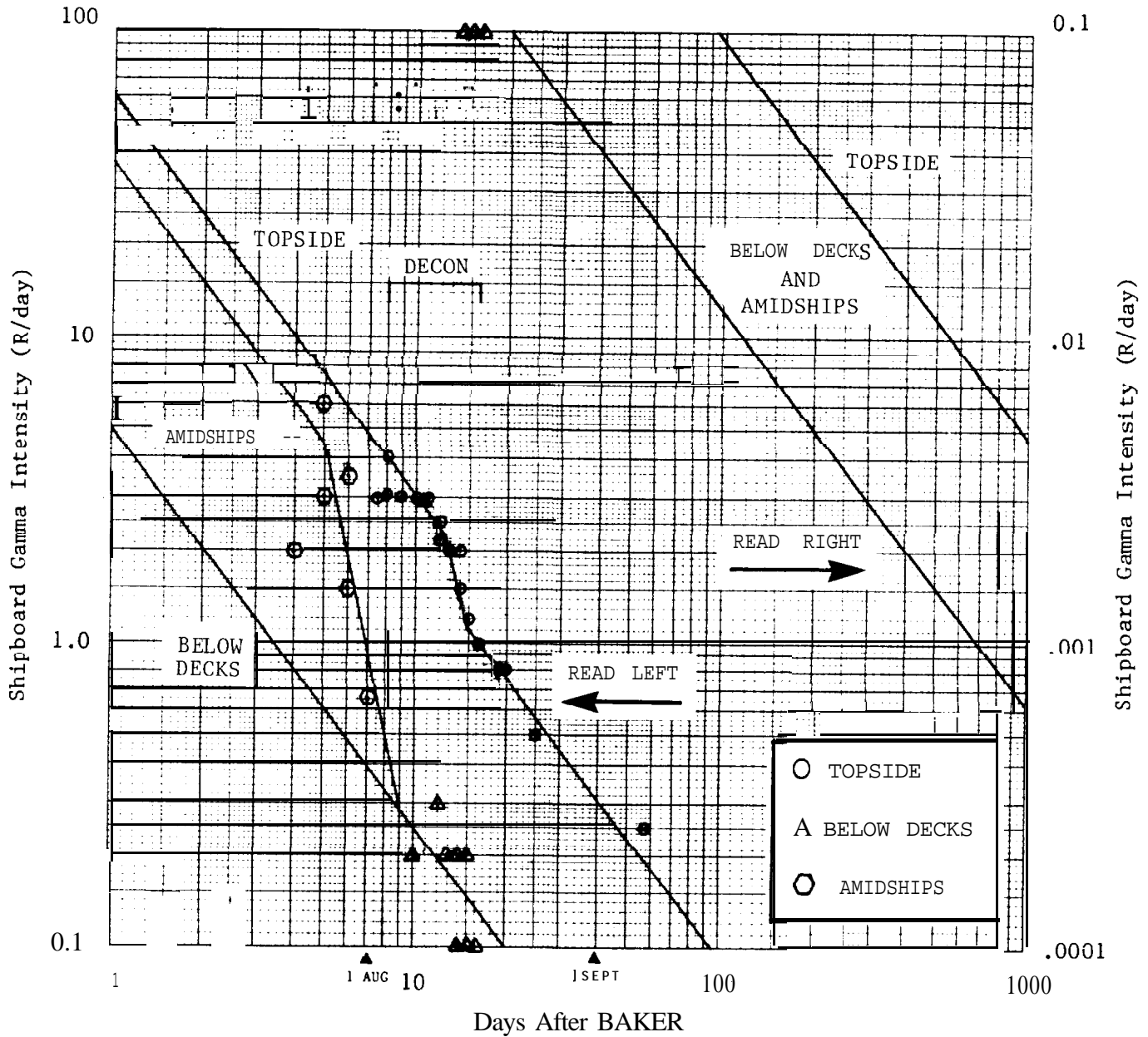
Total calculated dose while at Bikini: 0.330 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: SALT LAKE CITY was decommissioned on August 28, 1946. After CROSSROADS it was towed to Bremerton via Pearl Harbor for radiological tests. On May 25, 1948, it was sunk off San Diego at 31-57N, 119-54W after a 4-hour bombardment from planes and ships.



# USS SALT LAKE CITY (M-25)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-34. Shipboard Gamma Intensity vs. Time - USS SALT LAKE CITY (CA-25)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANNED

SHIP: USS SARATOGA (CV-3)

CREW SIZE: 589

MISSION: USS SARATOGA was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard ROCKWALL (APA-230) (Observed Shot ABLE from a distance of 23 miles)	0.000
2 July -16 July	Aboard SARATOGA	0.002
17 July -18 July	Evacuated aboard ROCKWALL	0.000
19 July -24 July	Aboard SARATOGA	0.000
	BAKER	
25 July - 3 August	Evacuated aboard ROCKWALL (Observed Shot BAKER from a distance of 16 miles)	0.070
3 August- 5 August	Crew transferred to various units.	

Total calculated dose up until the date when the crew splintered: 0.072 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: SARATOGA sank in Bikini lagoon on July 25, 1946 as a result of Shot BAKER.

**DATA NOT AVAILABLE TO RECONSTRUCT  
THE SHIPBOARD GAMMA INTENSITY CURVE**

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANED

SHIP: USS SKATE (SS-305)

CREW SIZE: 53

MISSION: USS SKATE was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	TEST	D A T E ( T I M E )	TYPE DETONATION
	ABLE	1 July 46 (0900)	23 KT Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT Shallow Underwater (-90 f t)

## AVERAGE CREW MEMBER DOSE HISTORY

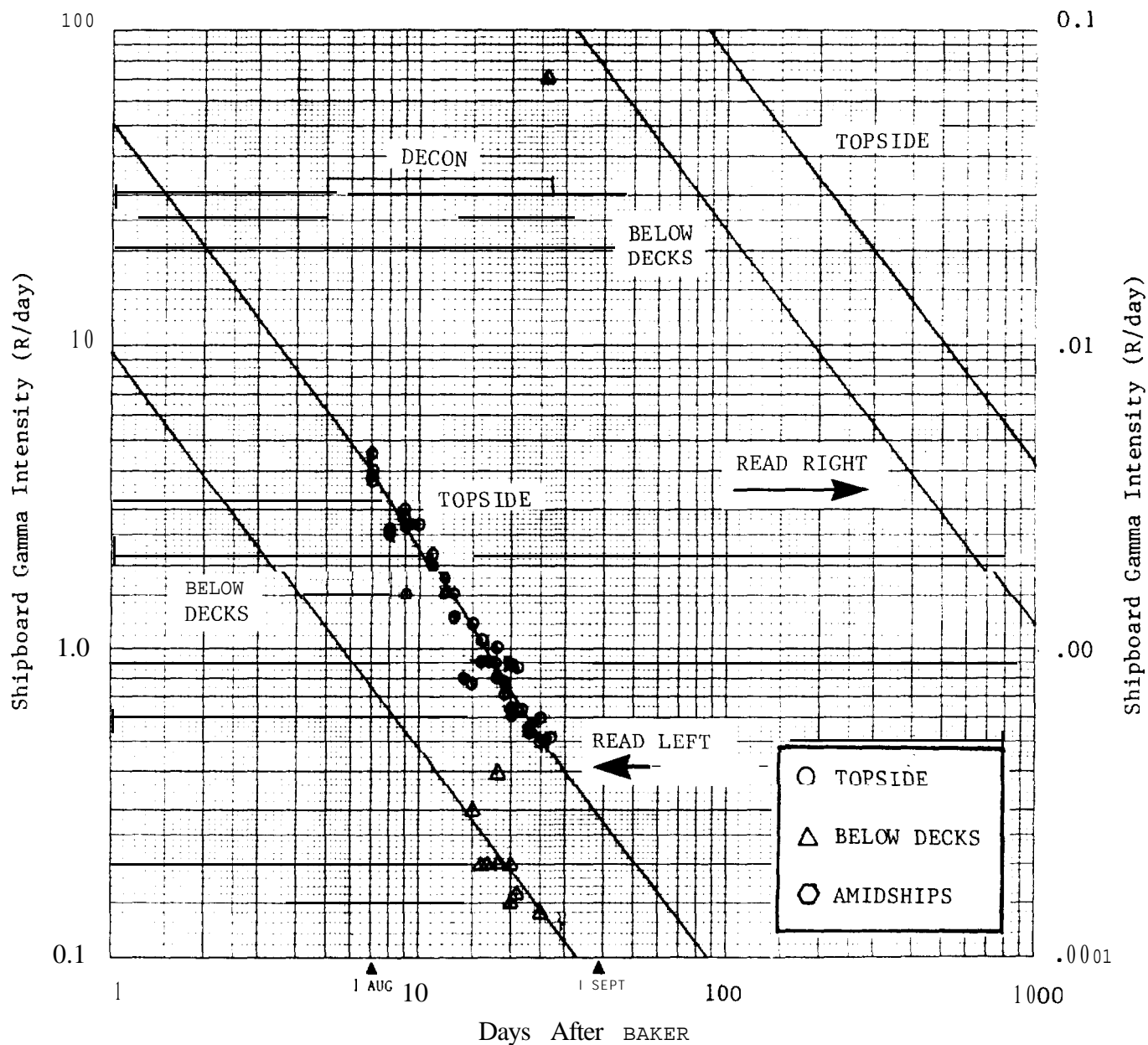
<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 4 July	Evacuated aboard BOTTINEAU (APA-235) (Observed Shot ABLE from a distance of 25 miles)	0.001
5 July -23 July	Aboard SKATE	0.270
	BAKER	
24 July -8 August	Evacuated aboard BOTTINEAU (Observed Shot BAKER from a distance of 16 miles)	0.158
9 August-22 August	Aboard FILLMORE (APA-83) which departed Bikini on 22 August.	0.066
27 August	Aboard FULTON	

Total calculated dose while at Bikini: 0.508 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection alter the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: On August 23, 1946, SKATE was towed to Kwajalein and then on to Pearl Harbor, arriving there on September 5, 1946. It was then towed to San Francisco, arriving there on October 22, 1946 and subsequently placed in drydock at MARE ISLAND. SKATE was decommissioned on December 11, 1946 and deliberaely sunk in 1948 at 32-00N, 119-04W.

# LJSS SKATE (SS-305)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-35. Shipboard Gamma Intensity vs. Time - USS SKATE (SS-305)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-KE MANNE D

SHIP: USS SKIPJACK (SS-184)

CKEW SIZE: 78

MISSION: USS SKIPJACK was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

### AVERAGE CKEW MEMBER DOSE HISTORY

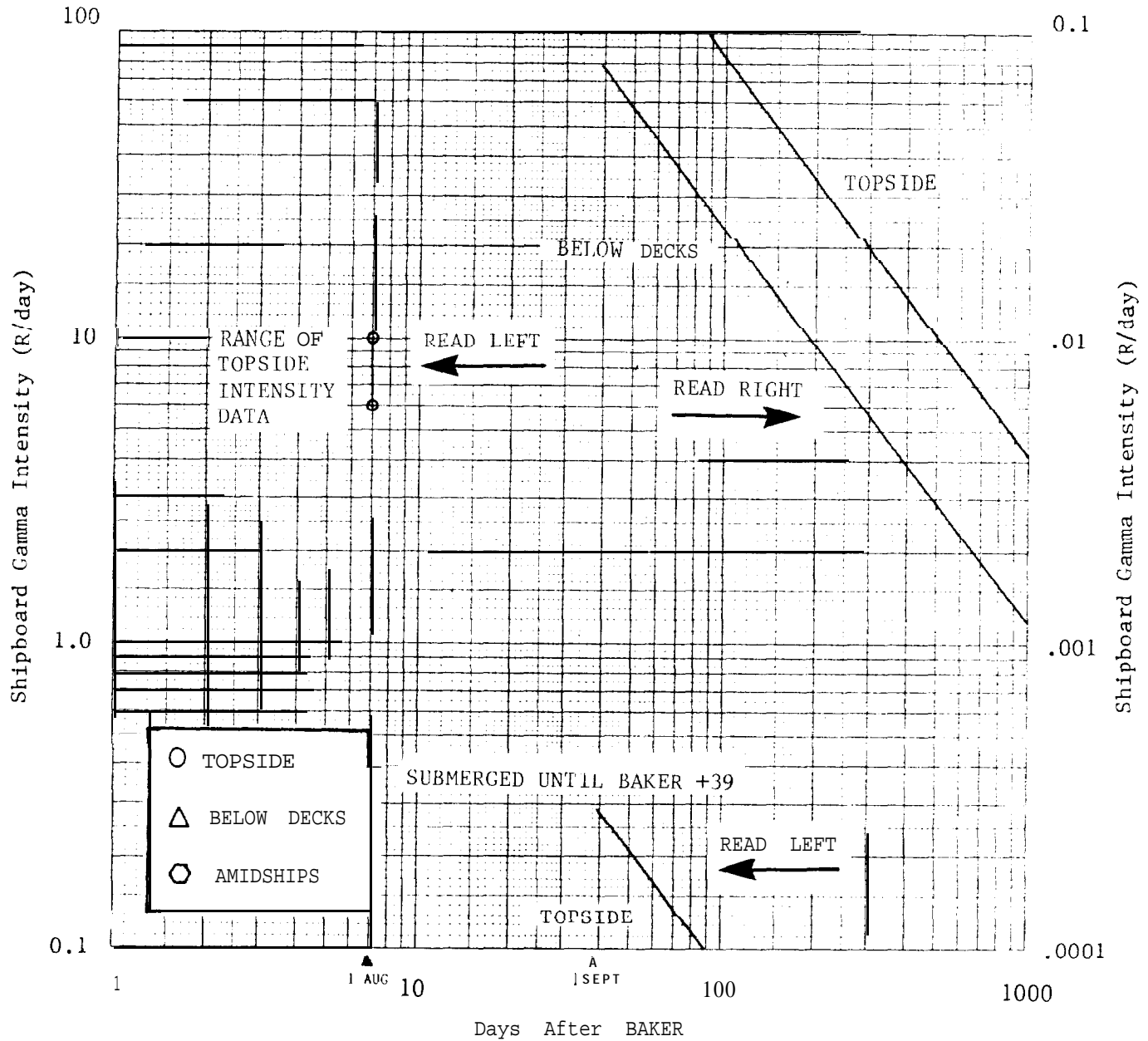
<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BOTTINEAU (APA-235) (Observed shot ABLE from a distance of 25 miles)	0.000
2 July -23 July	Aboard SKIPJACK	0.028
	BAKER	
24 July - 8 August	Evacuated aboard BOTTINEAU (Observed Shot BAKER from a distance of 16 miles)	0.158
9 August- 17 August	Aboard FILLMORE (APA-83)	0.044
17 August-21 August	Crew transferred to ROCKWALL (9), TUNA (6), SEARAVEN (3), SKATE (2), and CHIKASKIA (1).	

Total calculated dose up until the date when the crew splintered: 0.230 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: SKIPJACK sank in Bikini lagoon on July 25, 1946 as a result of Shot BAKER. It was salvaged on September 2, 1946 and towed to Pearl Harbor, arriving there on 22 September. It was subsequently towed to San Francisco (MINSY) and then deliberately sunk by aircraft rocket attack on August 11, 1948 at 32-22.6N, 118-52.7W.

# USS SKIPJACK (SS-184)



SHIPBOARD GAMMA INTENSITY CURVES: The USS SKIPJACK (SS-184) remained submerged in Bikini Lagoon until it was salvaged on September 2, 1946. Several topside radiation readings were obtained while the SKIPJACK was submerged in 150 feet of water. The range in values is depicted in Figure A-36. Radiation data aboard the SKIPJACK after it was surfaced have not been located, hence, the intensity curves shown here have been estimated based on data for the USS SKATE (SS-305), another target submarine that was approximately the same distance from the Shot RAKER surface zero.

Figure A-36. Shipboard Gamma Intensity vs. Time - USS SKIPJACK (SS-184)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS STACK (DD-406)

CREW SIZE: 102

MISSION: USS STACK was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
ABLE		
30 June - 1 July	Evacuated aboard BAYFIELD (APA-33) (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July -17 July	Aboard STACK	0.014
18 July	Evacuated aboard BAYFIELD	0.000
19 July -23 July	Aboard STACK	0.000
BAKER		
24 July -31 July	Evacuated aboard BAYFIELD (Observed Shot BAKER from a distance of 15 miles)	0.024
I August-19 August	Aboard ROCKINGHAM (APA-229)	0.185
19 August	Crew transferred to COM DES PAC (81) and ROCKINGHAM (19).	

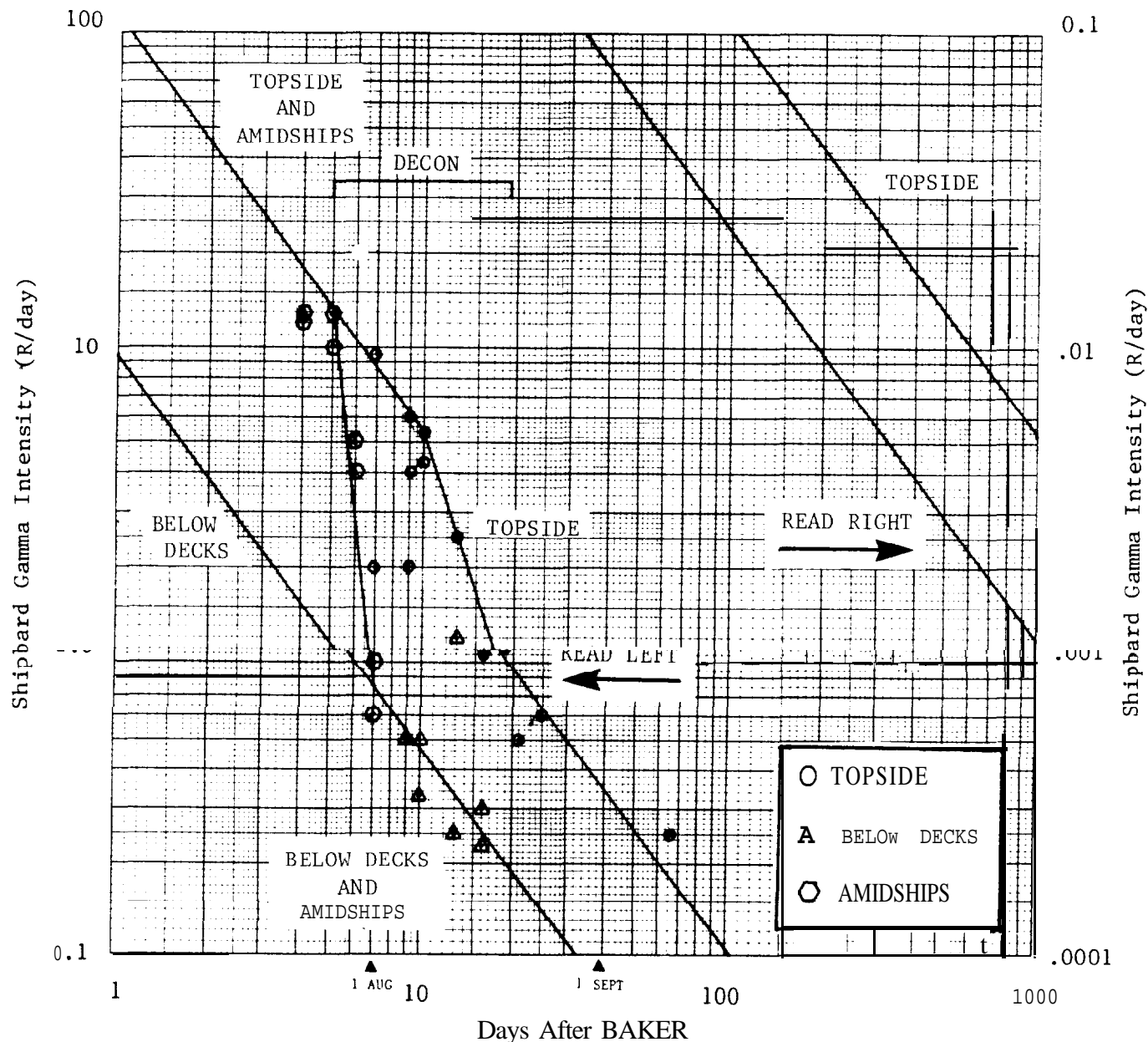
**Total** calculated dose up until the date when the crew splintered: 0.223 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: STACK was decommissioned on August 28, 1946. It was towed to Kwajalein where it was retained for radiological study until April 24, 1948 when it was sunk by gunfire from four destroyers off Kwajalein.



# USS STACK (DD-406)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-37. Shipboard Gamma Intensity vs. Time - USS STACK (DD-406)

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANED

SHIP: USS TKIPPE (DD-403)

CREW SIZE: 135

MISSION: USS TKIPPE was a CROSSROADS target ship and arrived at Bikini on June 1, 1946 to prepare for the operation. It was utilized as a regular operating ship during Test ABLE. On July 16, 1946 it was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonation that occurred on July 25, 1946.

SHOT DATA: TEST    DATE (TIME)    YIELD    TYPE DETONATION    ---  
                  BAKER 25 July 46 (0835)            23 KT    Shallow Underwater (-90 ft)

## AVERAGE CKEW MEMBER DOSE HISTORY

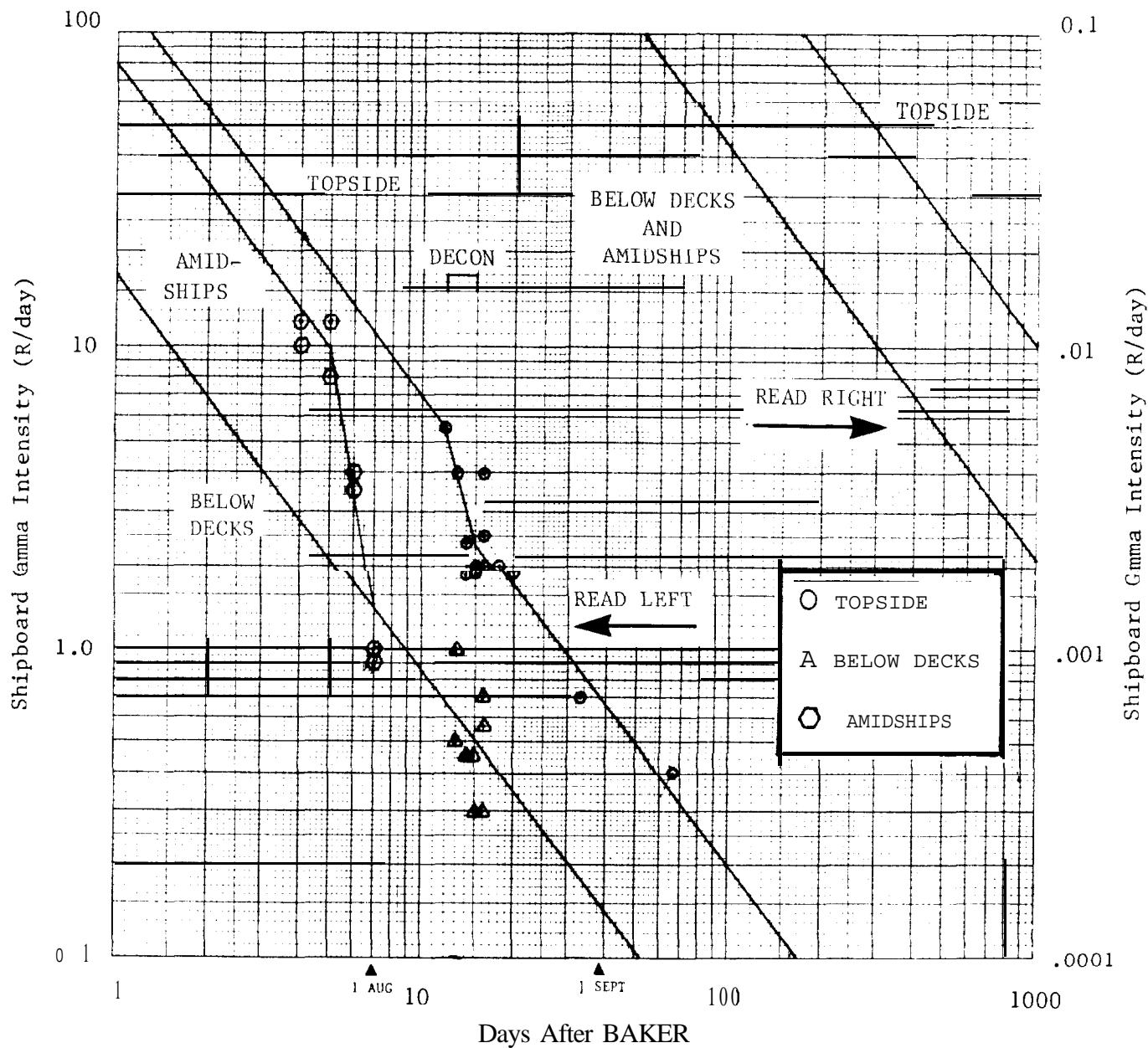
<u>DATE (1946)</u>	<u>CKEW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
30 June -17 July	Aboard TRIPPE (Observed Shot ABLE from a distance of 13 miles)	0.000
18 July -19 July	Evacuated aboard BAYFIELD (APA-33)	0.000
20 July -23 July	Aboard TRIPPE	0.000
	BAKER	
24 July -31 July	Evacuated aboard BAYFIELD (Observed shot BAKER from a distance of 15 miles)	0.024
1 August-II August	Aboard BEXAR (APA-237)	0.127
12 August-25 August	Aboard DIXIE (AD-14) which departed Bikini on 25 August.	0.073
28 August	Crew transferred to CORTLAND (103).	

Total calculated dose while at Bikini: 0.224 REM

This reconstruction does not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: TRIPPE was towed to Kwajalein after CROSSROADS for radiological tests. On February 3, 1948, it was towed to deep water off Kwajalein and deliberately sunk by gunfire.

# USS TRIPPE (DD-403)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-38. Shipboard Gamma Intensity vs. Time - USS TRIPPE (DD-403)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS WAIN WRIGHT (DD-419)

CREW SIZE: 148

**MISSION:** USS WAINWRIGHT was a CROSSROADS target ship **and** arrived at Bikini prior to **June** 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

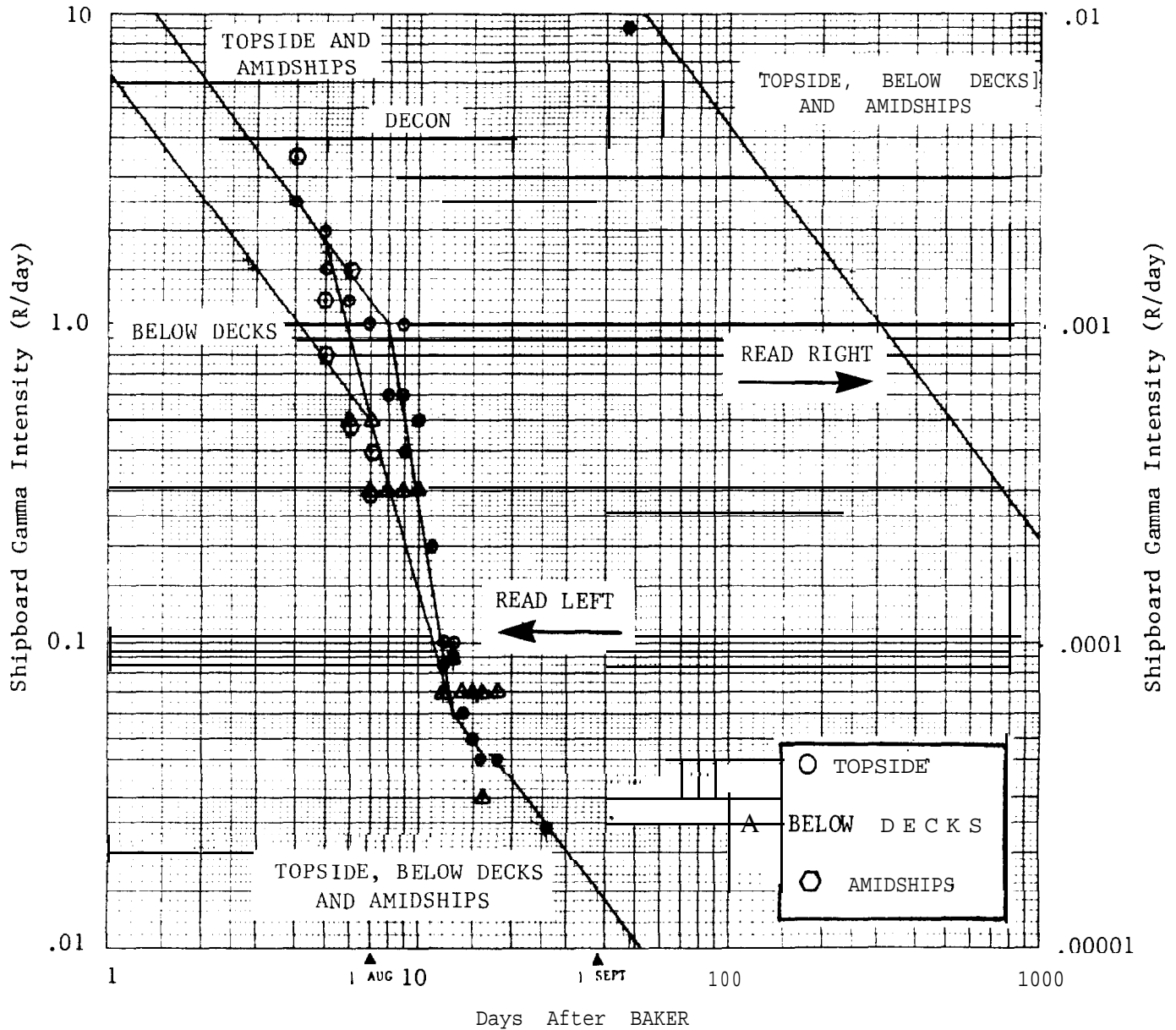
<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
ABLE		
30 June - 1 July	Evacuated aboard BAYFIELD (APA-33) (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July -17 July	Aboard WAINWRIGHT	0.005
18 July	Evacuated aboard BAYFIELD	0.000
19 July -23 July	Aboard WAIN WRIGHT	0.000
BAKER		
24 July -31 July	Evacuated aboard BAYFIELD (Observed Shot BAKER from a distance of 15 miles)	0.024
1 August-20 August	Aboard BEXAR (APA-237)	0.189
20 August	Most of crew transferred to GEORGE CLYMER.	

Total calculated dose up until the date when the crew splintered: 0.218 REM

This reconstruction **does not** include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

**FINAL DISPOSITION:** WAINWRIGHT was towed to Kwajalein on August 23, 1946 and retained for radiological study. Subsequently, it was towed to sea and sunk by Destroyer Division 172 on July 5, 1948.

# USS KAINWRIGHT (DD-419)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves For each location.

Figure A-39. Shipboard Gamma Intensity vs. Time - USS KAINWRIGHT (DD-419)

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANED

SHIP: USS WILSON (DD-408)

CREW SIZE: 115

MISSION: USS WILSON was a CROSSROADS target ship **and** arrived at Bikini prior to **June** 30, 1946 to prepare for the operation, It was anchored in the lagoon and remained there as one of the 84 target ships for **the** nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u> ---
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 f t)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 f t)

## AVERAGE CREW MEMBER DOSE HISTORY

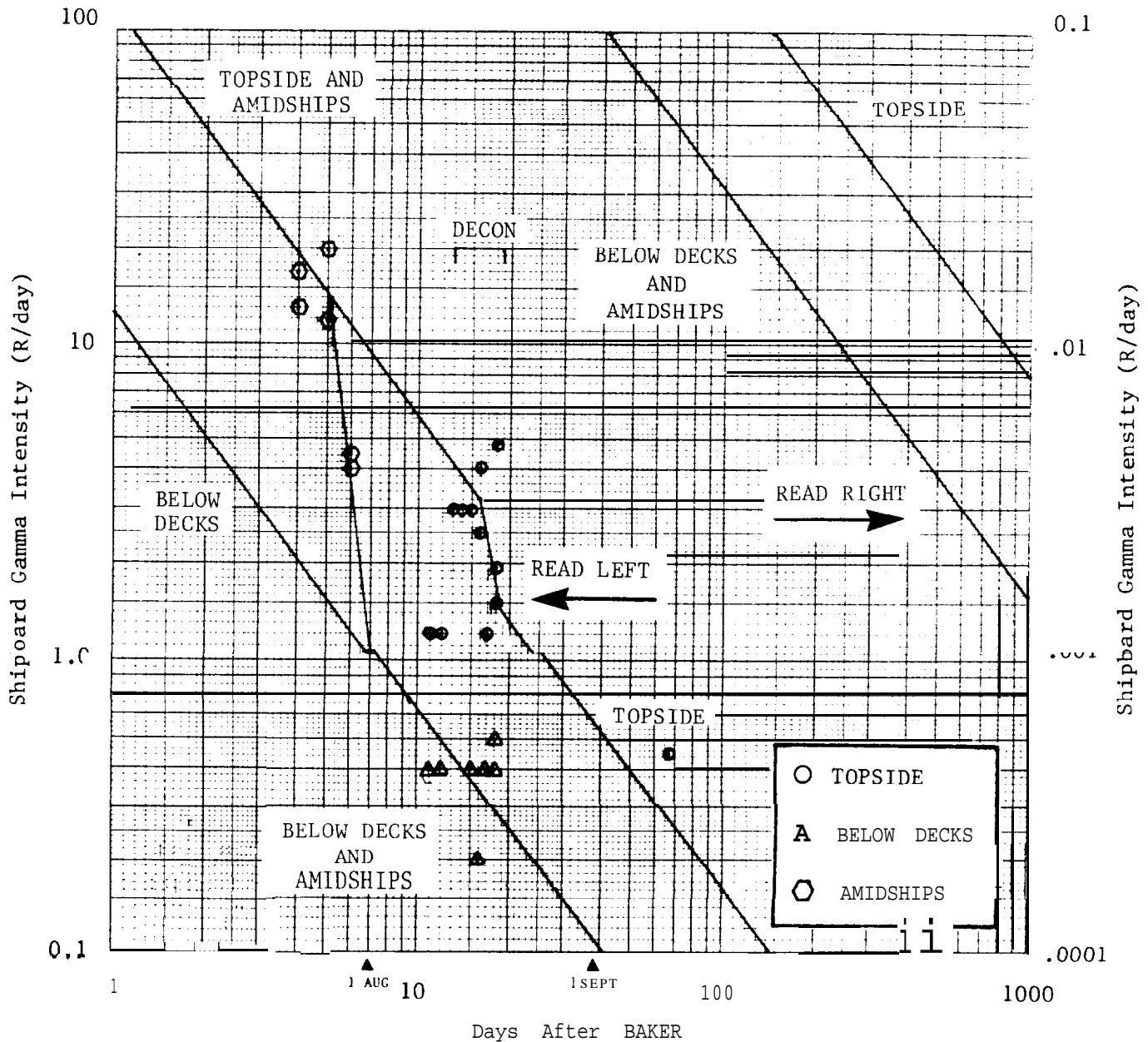
<u>DATE ( 1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
30 June - 1 July	Evacuated aboard BAYFIELD (APA-33) (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July -17 July	Aboard WILSON	0.010
18 July	Evacuated aboard BAYFIELD	0.000
19 July -23 July	Aboard WILSON	0.000
	BAKER	
24 July -31 July	Evacuated aboard BAYFIELD (Observed Shot BAKER from a distance of 15 miles)	0.024
1 August-18 August	Aboard BEXAR (APA-237)	0.179
18 August-19 August	Aboard ROCKWALL which departed Bikini on 19 August.	0.009

Total calculated dose while at Bikini: 0.222 REM

This reconstruction **does** not include time aboard the target ship for activities such as damage control, decontamination or inspection after the detonations except when the entire crew returned to live aboard the ship.

FINAL DISPOSITION: WILSON was decommissioned on August 28, 1946. After CROSSROADS, it was **towed** to Kwajalein for radiological tests until it was scuttled in deep water off Kwajalein on March 8, 1948.

# USS WILSON (DD-408)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity **curves** for topside amidships, and below decks locations on **target** ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-40. Shipboard Gamma Intensity vs. Time - USS WILSON (DD-408)

## TARGET SHIP PARTICIPATION SUMMARY

### NON-REMANED

SHIP: USS YO-160

CREW SIZE: 10

MISSION: USS YO-160 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 f t)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	RECONSTRUCTED FILM BADGE <u>DOSE (REM)</u>
	Unknown	

Total calculated dose while at Bikini: Unknown

FINAL DISPOSITION: YO-160 sank in Bikini lagoon as a result of Shot BAKER.



**DATA NOT AVAILABLE TO RECONSTRUCT  
TYPE SHIPBOARD GAMMA INTENSITY CURVE**

# TARGET SHIP PARTICIPATION SUMMARY

## NON-REMANED

SHIP: USS YOG-83

CREW SIZE: 10

MISSION: USS YOG-83 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>M I L L I</u>	<u>T Y P E D E T O N A T I O N</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)

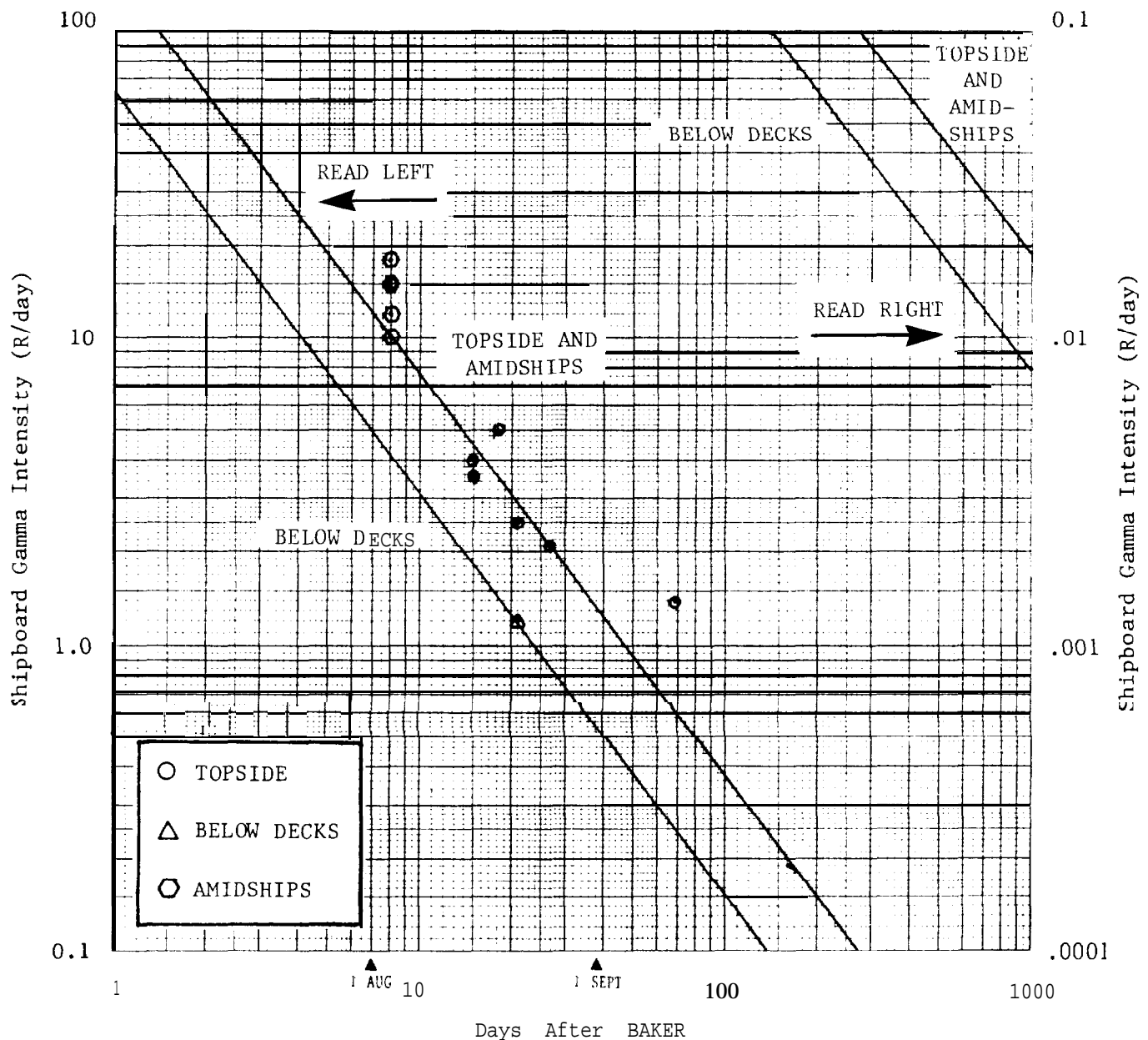
## AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	Unknown	

Total calculated dose while at Bikini: Unknown

FINAL DISPOSITION: YOG-83 was towed to Kwajalein and beached there on September 23, 1946. It was retained for radiological study and ultimately sunk in deep water off Kwajalein on September 16, 1948.

# USS YOG-83



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-41. Shipboard Gamma Intensity vs. Time - USS YOG-83

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-412

CREW SIZE: N/A

**MISSION:** USS LCT-412 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was beached in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>M I L E S</u>	<u>TYPE</u>	<u>DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst	(+520 feet)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater	(-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

**FINAL DISPOSITION:** USS LCT-412 was towed to Kwajalein for further disposition. It was finally sunk in deep water off Kwajalein about September 1947.

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-414

CREW SIZE: N/A

**MISSION:** USS LCT-414 was a CQOSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was beached in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1948.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst	(+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater	(-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

**FINAL DISPOSITION:** USS LCT-414 was sunk by demolition charges at Bikini shortly after Shot BAKE!?

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-705

CREW SIZE: N/A

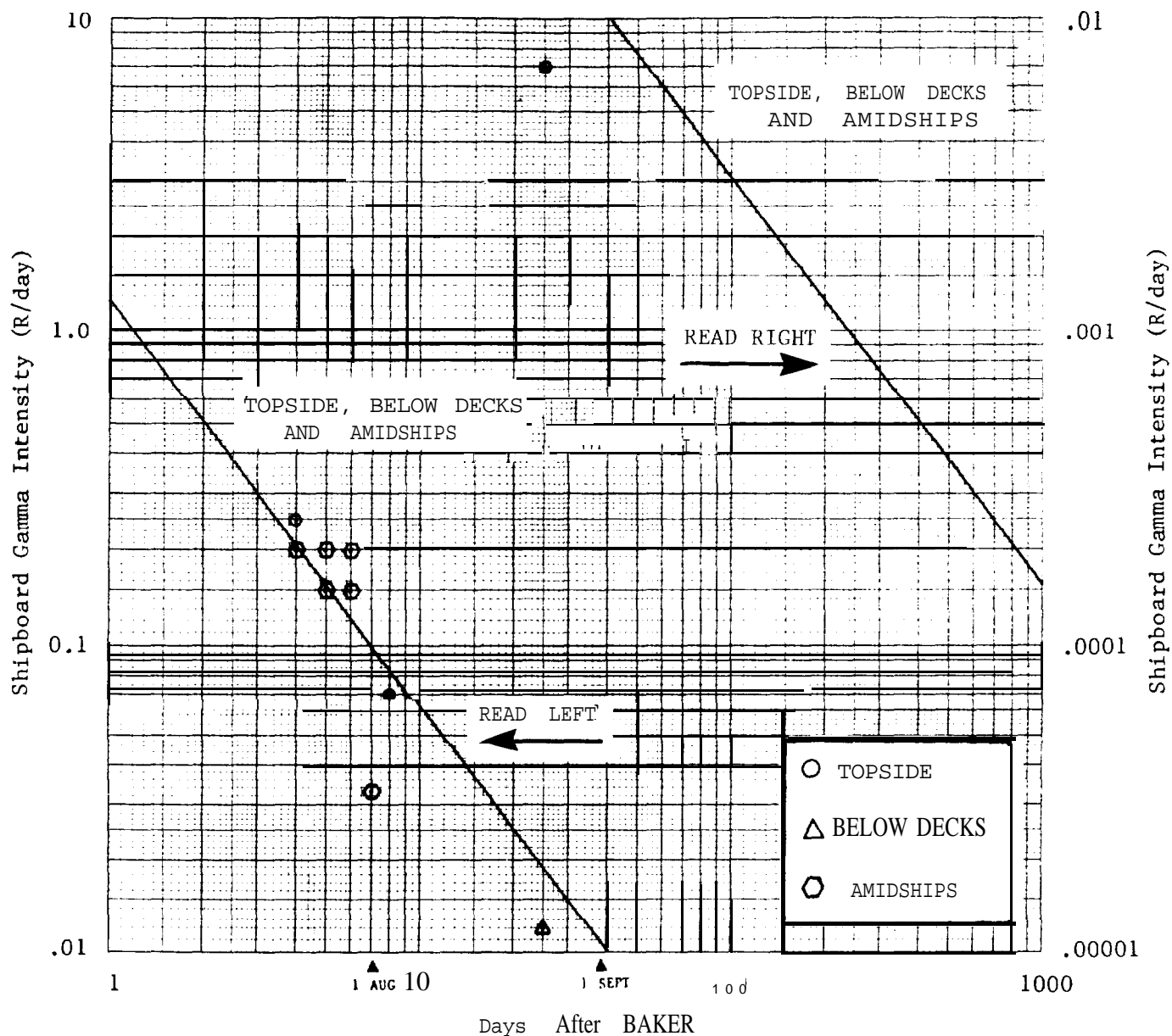
MISSION: USS LCT-705 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
RAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

FINAL DISPOSITION: USS LCT-705 was found to be structurally sound after Operation CROSSROADS. It was towed to Kwajalein and eventually sunk in deep water off Kwajalein in September 1947.

# USS LCT-705



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-42. Shipboard Gamma Intensity vs. Time - USS LCT-705

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-746

CREW SIZE: N/A

MISSION: USS LCT-746 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD</u>	<u>(TIME)</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1	July 46	(0900)	23	KT		Air	Rurst (+520 feet)
	RAKER.	25	July 46	(0835)	23	KT		Shallow	Underwater (-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

FINAL DISPOSITION: With the completion of Operation CROSSROADS, USS LCT-746 was taken to Kwajalein where it was destroyed in March 1947.



## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-812

CREW SIZE: N/A

**MISSION:** USS LCT-812 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to participate in the operation. It was beached in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE</u>	<u>(TIME)</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	I July 46	(0900) 23 KT	Air Burst	(+520 feet)
	BAKER	25 July 46	(0835) 23 KT	Shallow Underwater	(-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

**FINAL DISPOSITION:** USS LCT-812 was sunk by demolition charges at Rikini shortly after Shot RAKER.

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-816

CREW SIZE: Y/A

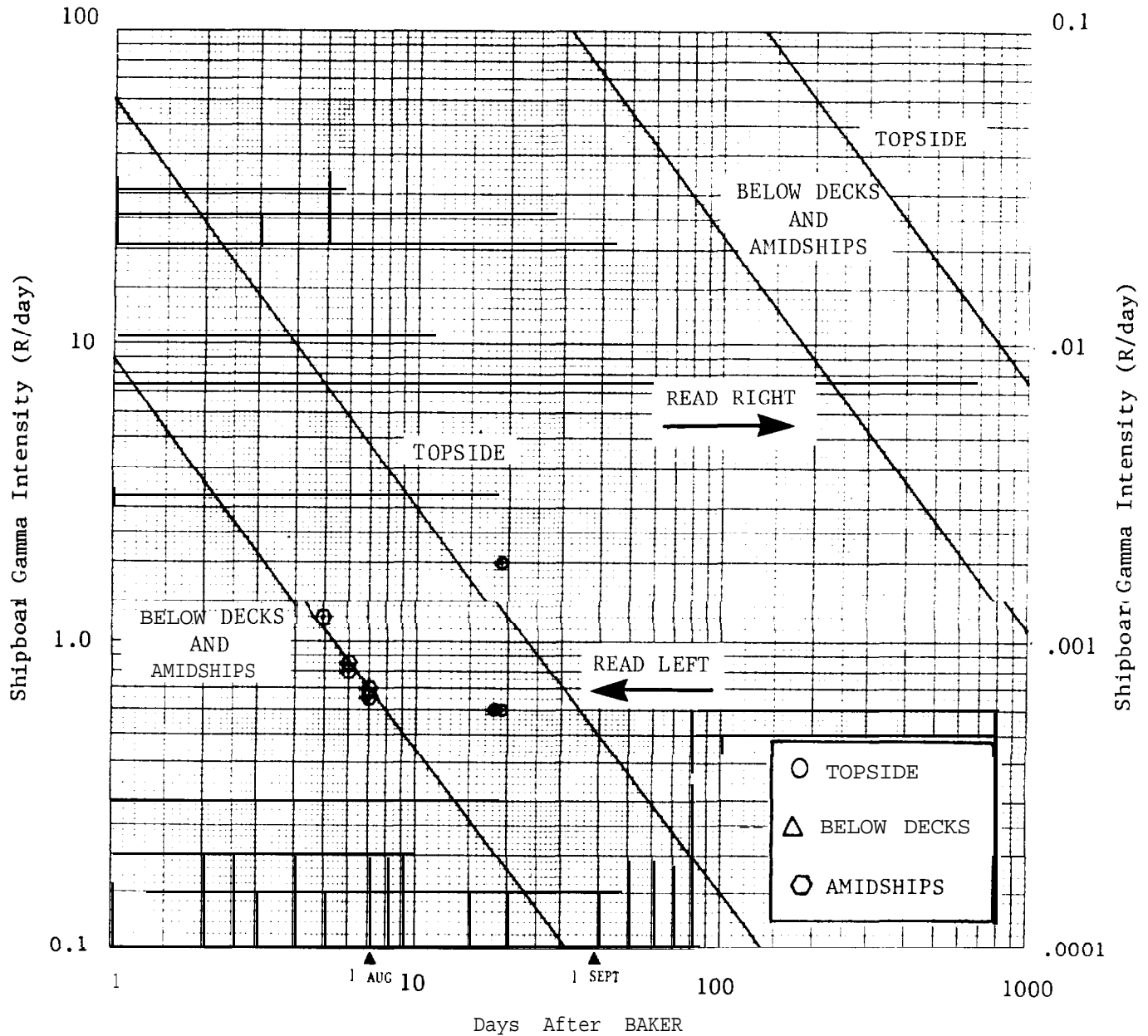
MISSION: USS LCT-816 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD</u>	<u>(TIME)</u>	<u>TYPE</u>	<u>DETONATION</u>
	ARLE	1 July 46	(0900)	23 KT				Air Burst	(+520 feet)
	RAKER	25 July 46	(0835)	23 KT				Shallow Underwater	(-90 feet)

AVERAGE CREW MEMBER DOSE YISTORY: N/A

FINAL DISPOSITION: USS LCT-816 was found badly holed and hard on the beach at Bikini. It was taken to Kwajalien where it was sunk in deep water in June 1947.

uss LCT-816



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-43. Shipboard Gamma Intensity vs. Time - USS LCT-816

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-8 18

CREW SIZE: N/A

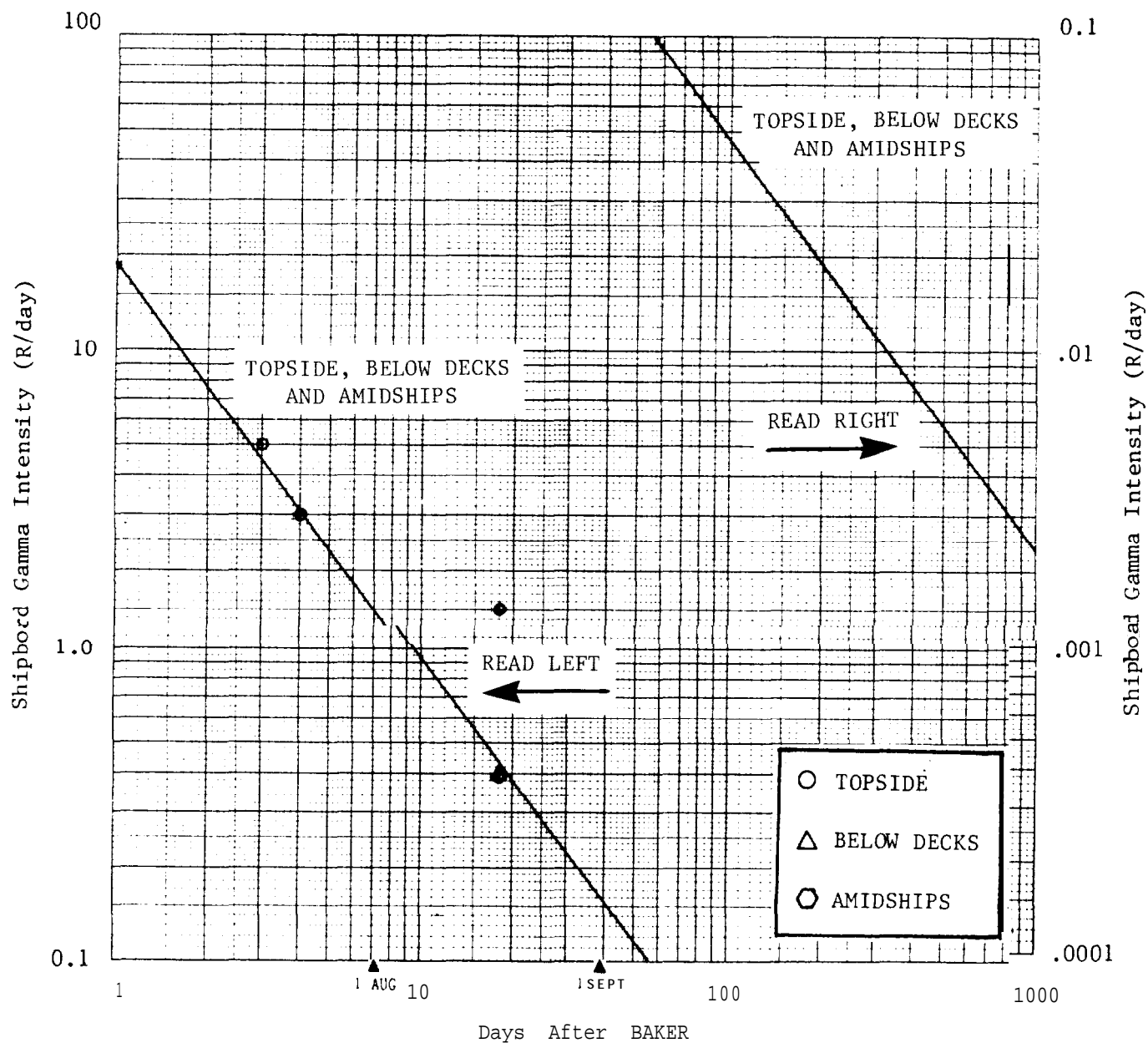
MISSION: USS LCT-818 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
	RAKER	25 July 46 (0835)	23 KT	Shallow ' Jnderwater (-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

FINAL DISPOSITION: USS LCT-818 was found to be structurally sound after Operation CROSSROADS. It was towed to Ywajalein and eventually sunk in deep water off Kwajalein in September 1947.

# USS LCT-818



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-44. Shipboard Gamma Intensity vs. Time - USS LCT-818

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-374

CREW SIZE: N/A

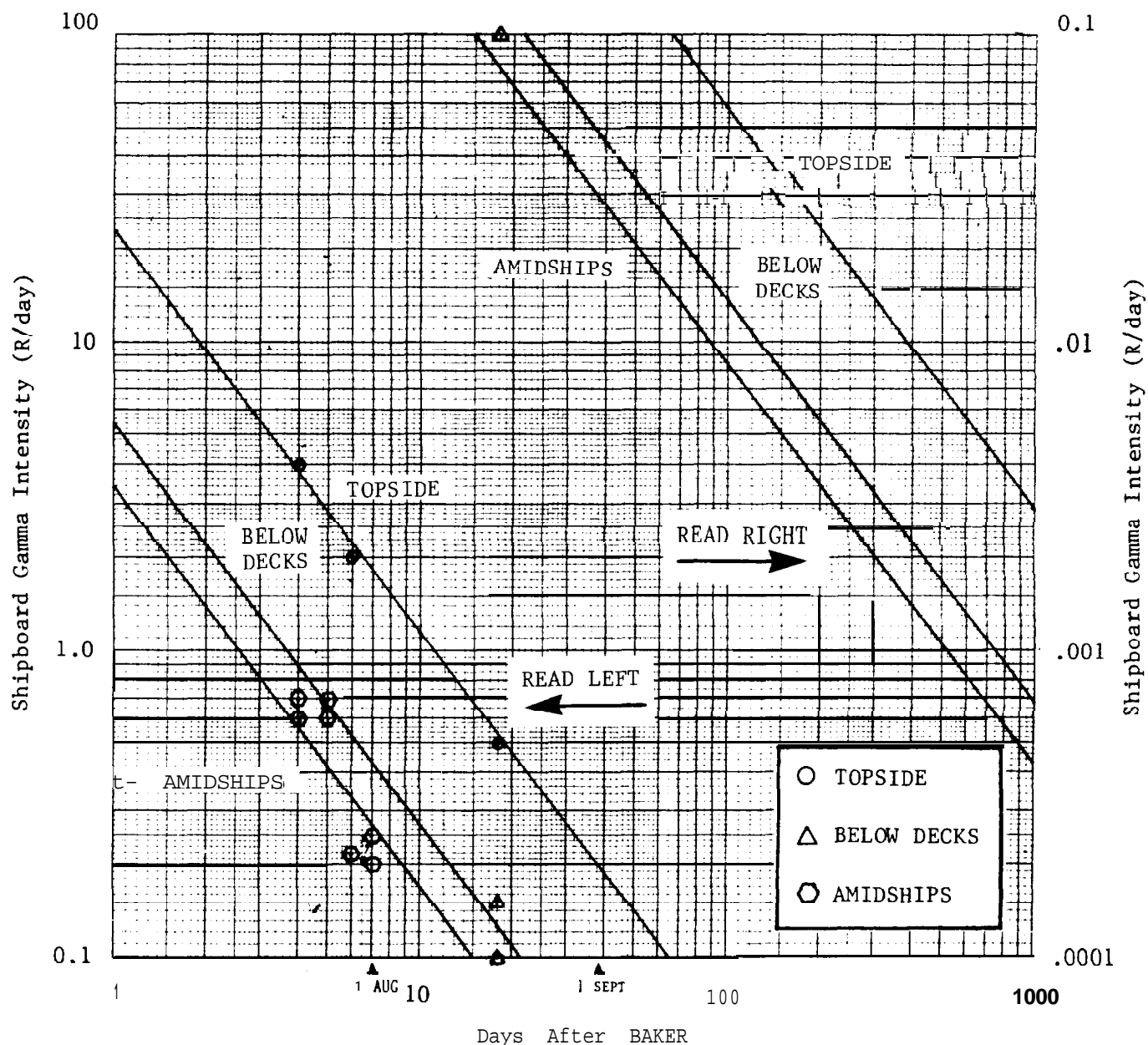
**MISSION:** USS LCT-874 was a **CROSSROADS** target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE</u>	<u>DETONATION</u>
	ARLE	1 July 46 (0900)	23 KT	Air Burst	(+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater	(-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

**FINAL DISPOSITION:** USS LCT-874 was found to be structurally sound after Operation **CROSSROADS**. It was towed to Kwajalein and eventually sunk in deep water off Kwajalein in September 1947.

# USS LCT-874



SHIPBOARD GAMMA INTENSITY CURVES: The average **gamma** intensity **curves** for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The **curves** are sometimes **shown** in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-45. Shipboard Gamma Intensity vs. Time - USS LCT-874

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-1013

CREW SIZE: N/A

MISSION: USS LCT-1013 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

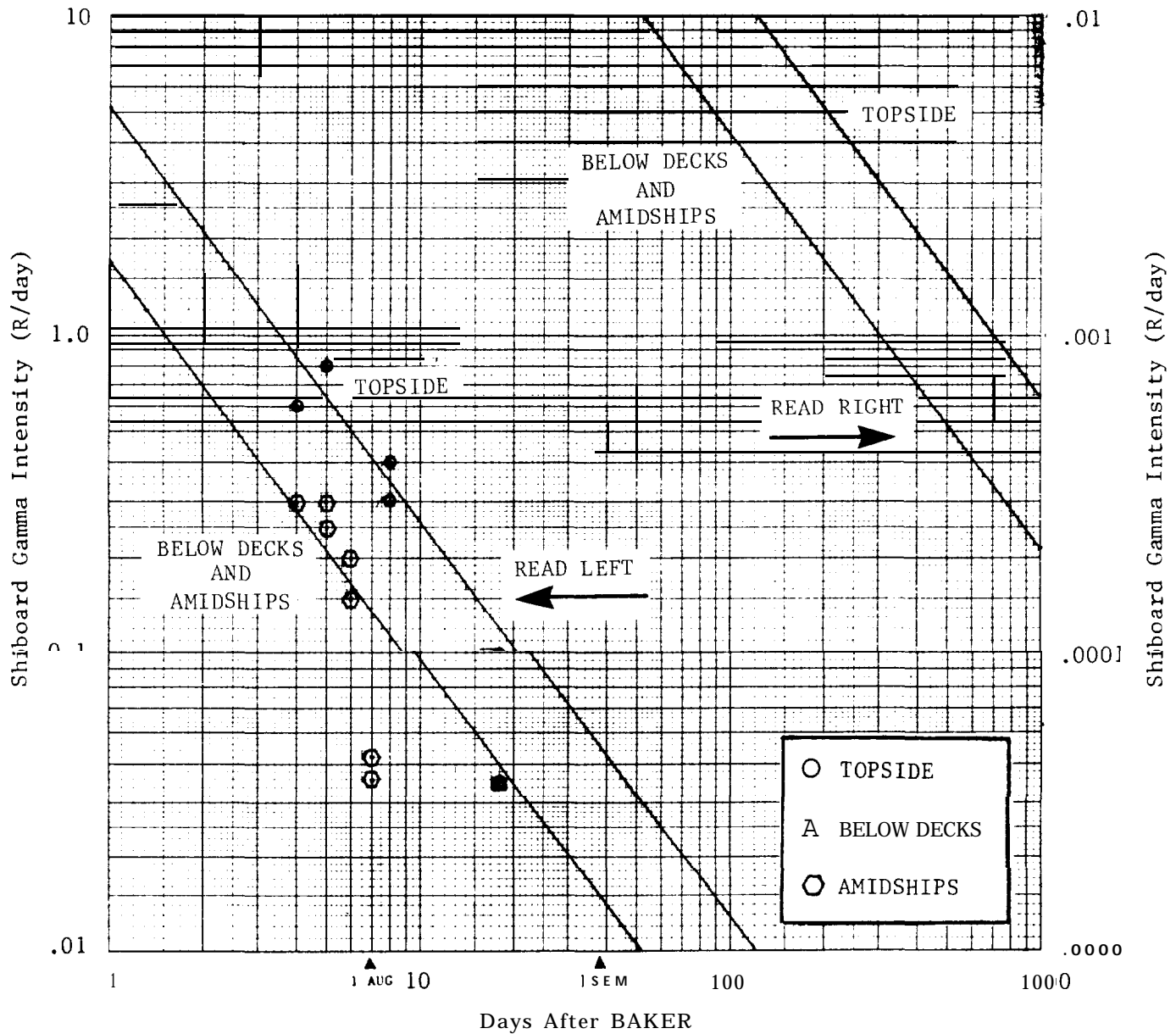
SHOT DATA:	<u>TEST</u>	<u>D A T E</u>	<u>( T I</u>	<u>YIELD)</u>	<u>TYPE DETONATION</u>
	ABLE	I July 46	(0900)	23 KT	Air Burst (+520 feet)
	BAKER	25 July 46	(0835)	23 KT	Shallow Underwater (-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

FINAL DISPOSITION: USS LCT-1013 was found to be structurally sound after Operation CROSSROADS. It was towed to Kwajalein and eventually sunk in deep water off Kwajalein in September 1947.



# USS LCT-1013



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-46. Shipboard Gamma Intensity vs. Time - USS LCT-1013

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-1078

CREW SIZE: N/A

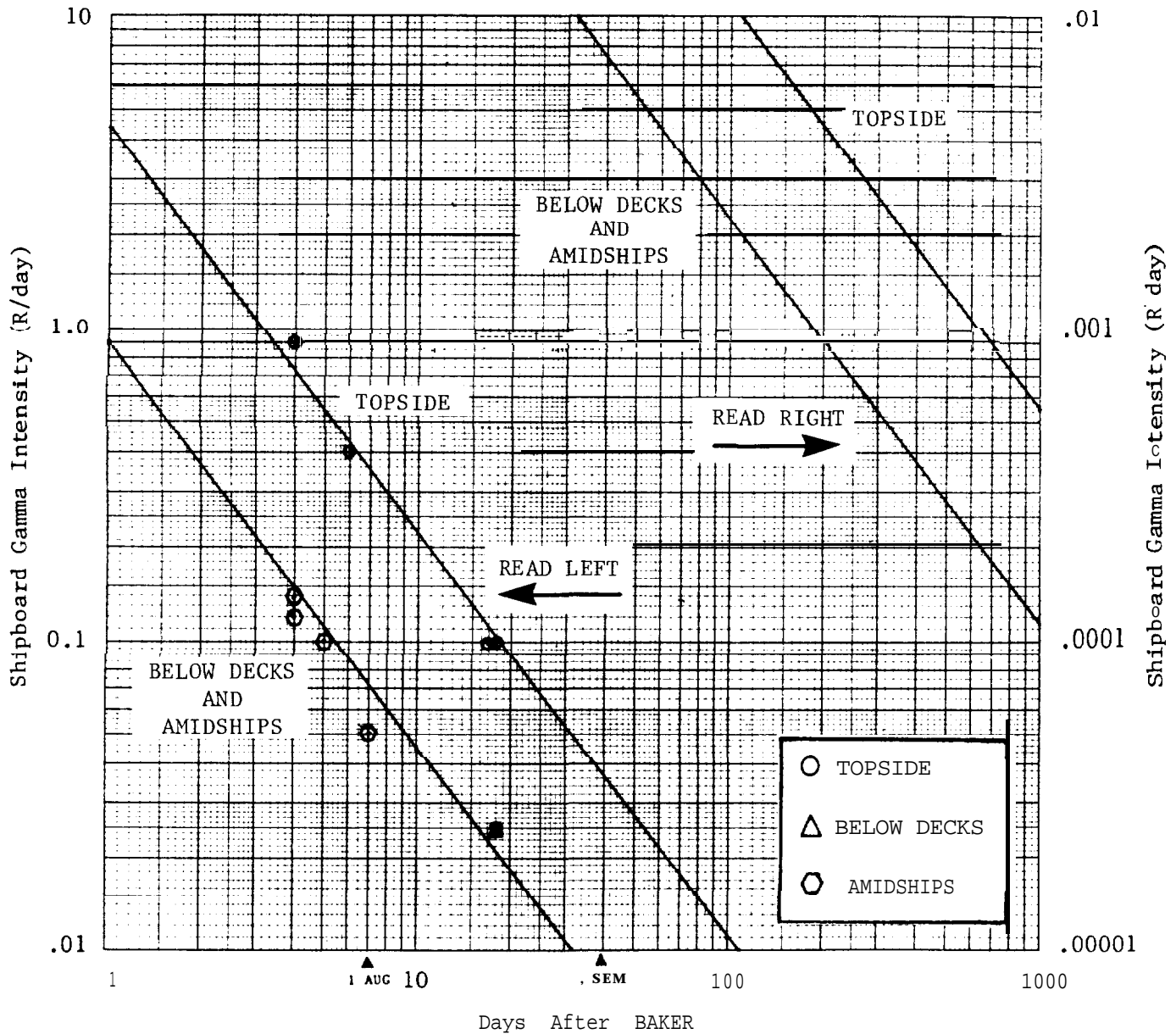
MISSION: USS LCT-1078 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD</u>	<u>(TIME)</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1	July	46	(0900)	23	KT	Air Burst	(+520 feet)
	RAKER	25	July	46	(0835)	23	KT	Shallow Underwater	(-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

FINAL DISPOSITION: USS LCT-1078 was found to be structurally sound after Operation CROSSROADS. It was towed to Kwajalein and eventually sunk in deep water off Xwajalein in September 1947.

# USS LCT-1078



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-47. Shipboard Gamma Intensity vs. Time - USS LCT-1078

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: uss LCT-1112

CREW SIZE: N/A

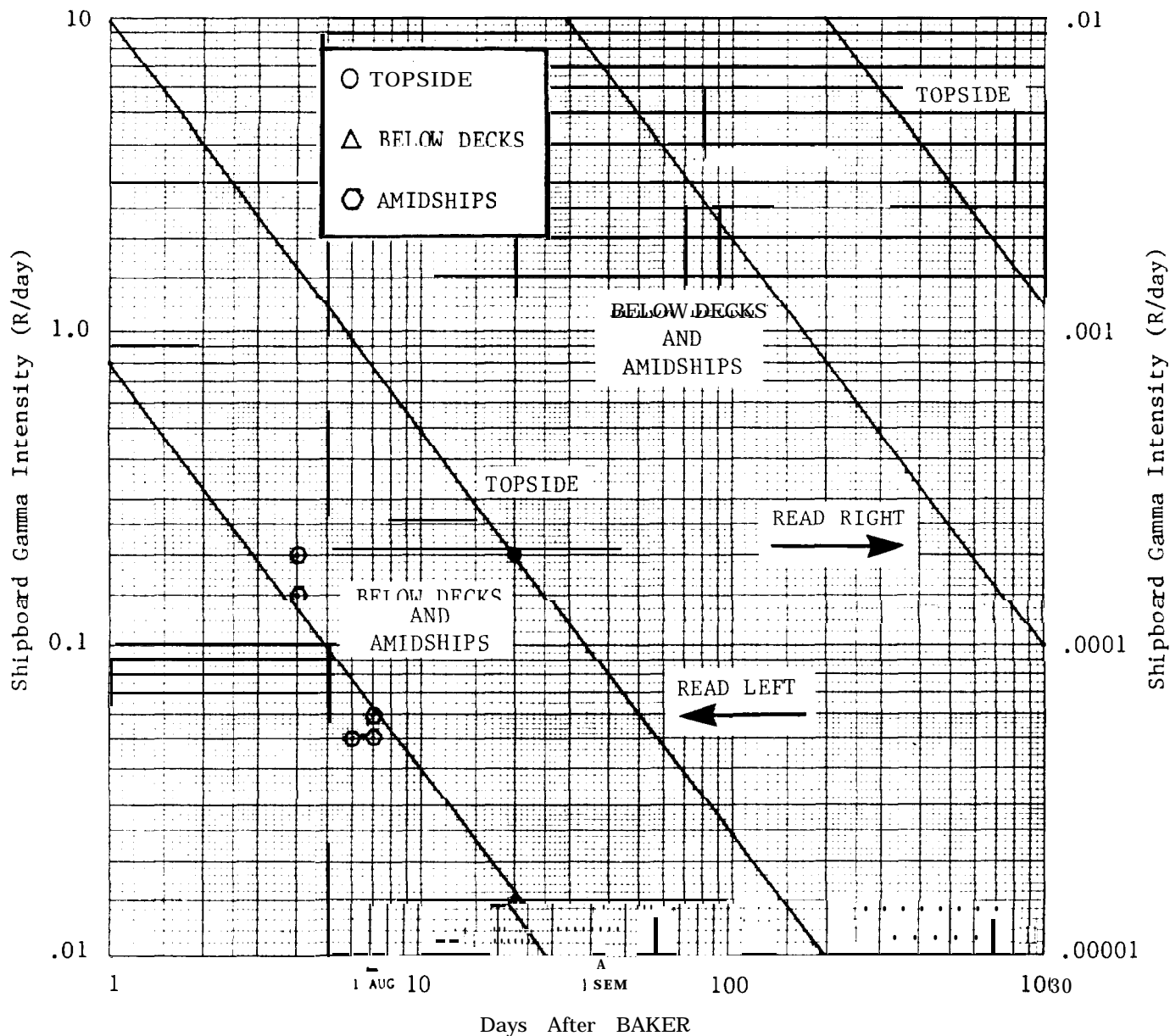
MISSION: USS LCT-1112 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD</u>	<u>(TIME)</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1	July	46	(0900)	23	KT	Air Burst	(+520 feet)
	BAKER	25	July	46	(0835)	23	KT	Shallow Underwater	(-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

FINAL DISPOSITION: USS LCT-1112 was found to be structurally sound after Operation CROSSROADS. It was towed to Kwajalein and eventually sunk in deep water off Kwajalein in September 1947.

# USS LCT-1112



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-48. Shipboard Gamma Intensity vs. Time - USS LCT-1112

## TARGET SHIP PARTICIPATION **SUMMARY**

### UNMANNED

SHIP: USS LCT- 1113

CREW SIZE: N/A

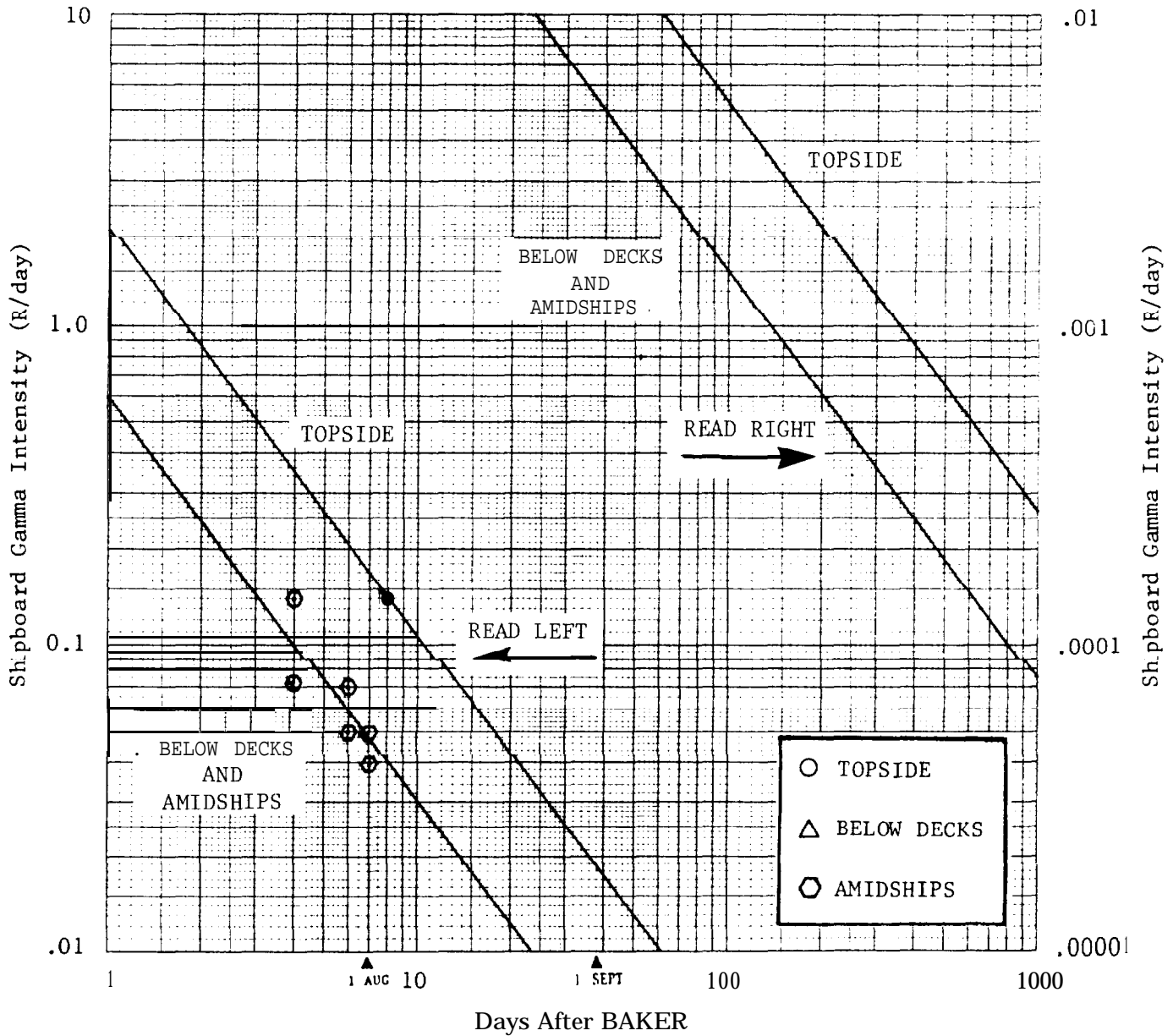
**MISSION:** USS LCT-1113 was a CROSSROADS target ship **and** arrived at Rikini prior to **June** 30, 1946 to participate in the operation. It was anchored in **the** lagoon and remained there as one of **the** 84 target ships for the nuclear test detonations **that** occurred on July 1 and July 25, 1946.

SHOT DATA: <u>TEST</u>	<u>D A T E ( T I M E )</u>	<u>SPEED</u>	<u>TY PE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

**FINAL DISPOSITION:** USS LCT-1113 was found badly holed and hard on the beach at Bikini. It was taken to Kwajalein where it was sunk in deep water in June 1947.

# USS LCT-1113



SHIPBOARD GAMMA INTENSITY CURVES: The average **gamma** intensity **curves** for topside amidships, **and** below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of **the** basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised **when** reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for **each** location.

Figure A-49. Shipboard Gamma Intensity vs. Time - USS LCT-1113

# TARGET **SHIP** PARTICIPATION SUMMARY

## UNMANNED

SHIP: USS LCT-1114

CREW SIZE: N/A

**MISSION:** USS LCT-1 114 was a CROSSROADS target ship and arrived at Bikini prior to **June** 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as **one** of the 84 target ships for **the nuclear** test detonations that occurred **on** July **1** and July 25, 1946.

SYOT DATA: <u>TEST</u>	<u>D</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD (KT)</u>	<u>TYPE</u>	<u>DETONATION</u>
ABLE	1	July	46	(0900)	23 KT	Air Burst	(+520 feet)
BAKER	25	July	46	(0835)	23 KT	<b>Shallow Underwater</b>	<b>(-90 feet)</b>

AVERAGE **CREW MEMBER** DOSE HISTORY: **N/A**

**FINAL DISPOSITION:** 1 JSS LCT-1114 **was was sunk** by demolition charges at Bikini shortly after **Shot RAKER**.



## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-1 115

CREW SIZE: N/A

**MISSION:** USS LCT-1115 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD (KT)</u>	<u>(TIME)</u>	<u>TYPE</u>	<u>DETONATION</u>
	ARLE	1	July	46	(0900)	23	KT	Air	Rurst (+520 feet)
	RAKER	25	July	46	(0835)	23	KT	Shallow	Underwater (-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

**FINAL DISPOSITION:** USS LCT-1115 was found to be structurally sound after Operation CROSSROADS. It was towed to Kwajalein and eventually sunk in deep water off Kwajalein in September 1947.

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-1175

CREW SIZE: N/A

**MISSION:** USS LCT-1175 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to participate in the operation. It was beached in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD</u>	<u>TIME</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1	July	46	(0900)	23	KT	Air Burst	(+520 feet)
	RAKER	25	July	46	(0835)	23	KT	Shallow Underwater	(-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

**FINAL DISPOSITION:** USS LCT-1175 was sunk by demolition charges at Bikini shortly after Shot RAKER.

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-1187

CREW SIZE: N/A

MISSION: USS LCT-1187 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was beached in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>D</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD</u>	<u>(TIME)</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	I	July	46	(0900)	23	KT	Air Burst	(+520 feet)
	BAKER	25	July	46	(0835)	23	KT	Shallow Underwater	(-90 feet)

AVERAGE CREW MEMBER DOSE HISTORY: N/A

FINAL DISPOSITION: USS LCT-1187 was sunk by demolition charges at Bikini shortly after Shot BAKER.

## TARGET SHIP PARTICIPATION SUMMARY

### UNMANNED

SHIP: USS LCT-1237

CREW SIZE: N/A

VISION: USS LCT-1237 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was beached in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

SHOT DATA:	<u>TEST</u>	<u>@</u>	<u>A</u>	<u>T</u>	<u>E</u>	<u>YIELD</u>	<u>(TIME)</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1 July 46	(0900)	23 KT		Air Burst	(+520 feet)		
	BAKER	25 July 46	(0835)	23 KT		Shallow Underwater	(-90 feet)		

AVERAGE CREW MEMBER DOSE HISTORY: N/A

FINAL DISPOSITION: USS LCT-1237 was sunk by demolition charges at Bikini shortly after Shot RAKER.

SECTION A-3

REMANNED TARGET SHIP  
PARTICIPATION **SUMMARIES**

## TARGET SHIP PARTICIPATION SUMMARY

### REMANNED AFTER SHOT BAKER

SHIP: USS BLADEN (APA-63)

CREW SIZE: 111

MISSION: USS BLADEN was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini by May 31, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 20, 1946 enroute to Kwajalein. It eventually steamed to the East Coast where it was decommissioned at Norfolk, VA. on December 26, 1946.

SHOT DATA:	TEST	DATE (TIME)	YIELD	TYPE	DETONATION
	ABLE	1 July 46 (0900)	23 KT	Air Burst	(+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater	(-90 feet)

### AVERAGE CREW MEMBER DOSE HISTORY 'WHILE AT BIKINI

DATE (1946)	CREW LOCATION-Hours Aboard	RECONSTRUCTED FILM BADGE DOSE (REM)
	<b>ABLE</b>	
1 July	Evacuated aboard HENRICO (APA-45)-24 (Observed Shot ABLE from a distance of 12 miles)	0.000
2 July	Aboard HENRICO-13	0.001
	Aboard BLADEN-11	0.001
3 July-17 July	Aboard BLADEN-360	0.000
18 July-19 July	Evacuated aboard HENRICO-28	0.000
	Aboard BLADEN-20	0.000
20 July-23 July	Aboard BLADEN-96	0.000
	<b>BAKER</b>	
24 July-28 July	Evacuated aboard HENRICO-108 (Observed Shot BAKER from a distance of 8 miles)	0.000
29 July	Aboard HENRICO-14.5	0.000
	Aboard BLADEN-9.5	0.008
30 July-20 August	Aboard BLADEN-528	0.212

Total calculated dose received while at Bikini: 0.222 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 20, 1946 (BAKER + 26)

Ship contamination factor when departing Bikini: 3

(this value is for use with the nomograph in Figure A-57)

**PATH REPORT:** This report contains the geographic locations that may be of radiological significance to vessels within Bikini lagoon. The time is in Day-Hours-Minutes and begins on July 1, 1946. All days are July (e.g., 1 August = 32 July, etc.) Place is the grid square within Bikini lagoon from Hydrographics Office, Misc. Chart Number 11854, portions of which are reproduced in Figures A-58, 59, 60, 61.

**RADIOLOGICAL REPORT:** This report is a day by day compilation of the reconstructed film badge dose for this unit from the various radiological sources it encountered while in Bikini lagoon. A daily total is included up to departure from Bikini lagoon. A detailed explanation of each source contribution is contained in the basic report, Section 2.

# PATH REPORT FOR THE USS BLADEN

TIME	PLACE	REMARKS
010900	2298C	SHIP EVACUATED AT TIME OF SHOT ABLE
021245	2298C	COMMANDING OFFICER; TEAMS ABLE AND BAKER REBOARDED
021502	2298C	EX-O AND REMAINDER OF CREW REBOARDED
042400	2298C	ANCHORED AS BEFORE
250835	2298C	SHIP EVACUATED AT TIME OF SHOT BAKER
260001	2298C	SHIP EVACUATED AND ANCHORED AS BEFORE
282400	2298C	SHIP EVACUATED AND ANCHORED AS BEFORE
291430	2298C	COMMANDING OFFICER AND TEAM ABLE REBOARDED
291705	2298C	REMAINDER OF CREW ABOARD
300800	2298C	UNDERWAY TO NEW ANCHORAGE
300830	2298D	ANCHORED
300843	2298D	UNDERWAY TO BERTH #246
301000	2299Y	ANCHORED IN BERTH #246
322400	2299Y	ANCHORED AS BEFORE
321630	2299Y	UNDERWAY TO SHIFT BERTHS
331707	18951	ANCHORED IN BERTH #331
342400	18951	ANCHORED AS BEFORE
350845	18951	UNDERWAY ON TEST CRUISE
350930	2591M	DEPARTED BIKINI LAGOON
360902	2591M	ENTERED BIKINI LAGOON
361052	1894A	ANCHORED - "E" 26.5 DEG "C" 52 DEG
511523	1894A	UNDERWAY TO KWAJALEIN
511554	2591M	DEPARTED BIKINI LAGOON ON 20 AUGUST 1946

USS BLADEN CALCULATED FILM BADGE DOSE (IN MREM)

DATE	TIME	LAGGON WATER	TARGET SHIPS	SHIP CONTAMINATION	DAILY* TOTAL
JUL 1	A+0	2	0		2
JUL 2	A+1	2	0		2
JUL 3	A+2	0	0		0
JUL 4	A+3	0	0		0
JUL 5 THRU 24		0	0		
JUL 25	B+0	113	0	2	115
JUL 26	B+1	22	0	5	27
JUL 27	B+2	18	0	7	25
JUL 28	B+3	24	0	10	34
JUL 29	B+4	11	0	9	20
JUL 30	B+5	6	0	8	14
JUL 31	B+6	9	0	8	17
AUG 1	B+7	11	0	8	19
AUG 2	B+8	9	0	8	17
AUG 3	B+9	0	0	7	7
AUG 4	B+10	0	0	6	6
AUG 5	B+11	0	0	5	5
AUG 6	B+12	0	0	5	5
AUG 7	B+13	6	0	5	11
AUG 8	B+14	10	0	4	14
AUG 9	B+15	9	0	4	13
AUG 10	B+16	8	0	4	12
AUG 11	B+17	7	0	4	11
AUG 12	B+18	6	0	3	9
AUG 13	B+19	6	0	3	9
AUG 14	B+20	5	0	3	8
AUG 15	B+21	5	0	3	8
AUG 16	B+22	4	0	3	7
AUG 17	B+23	4	0	2	6
AUG 18	B+24	3	0	2	5
AUG 19	B+25	3	0	2	5
AUG 20	B+26	2	0	2	4

\*Applies only if the crew was onboard for a 24 hour period.





## TARGET SHIP PARTICIPATION SUMMARY

### REMANDED AFTER SHOT BAKER

SHIP: USS CONYNGHAM (DD-371)

CREW SIZE: 109

**MISSION:** USS CONYNGHAM was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini on May 30, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 22, 1946 enroute to Kwajalein, Pearl Harbor, and eventually San Francisco. It remained at San Francisco until July 1948, when it was scuttled at 31-33.5N, 118-27W.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst	(+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater	(-90 feet)

### AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

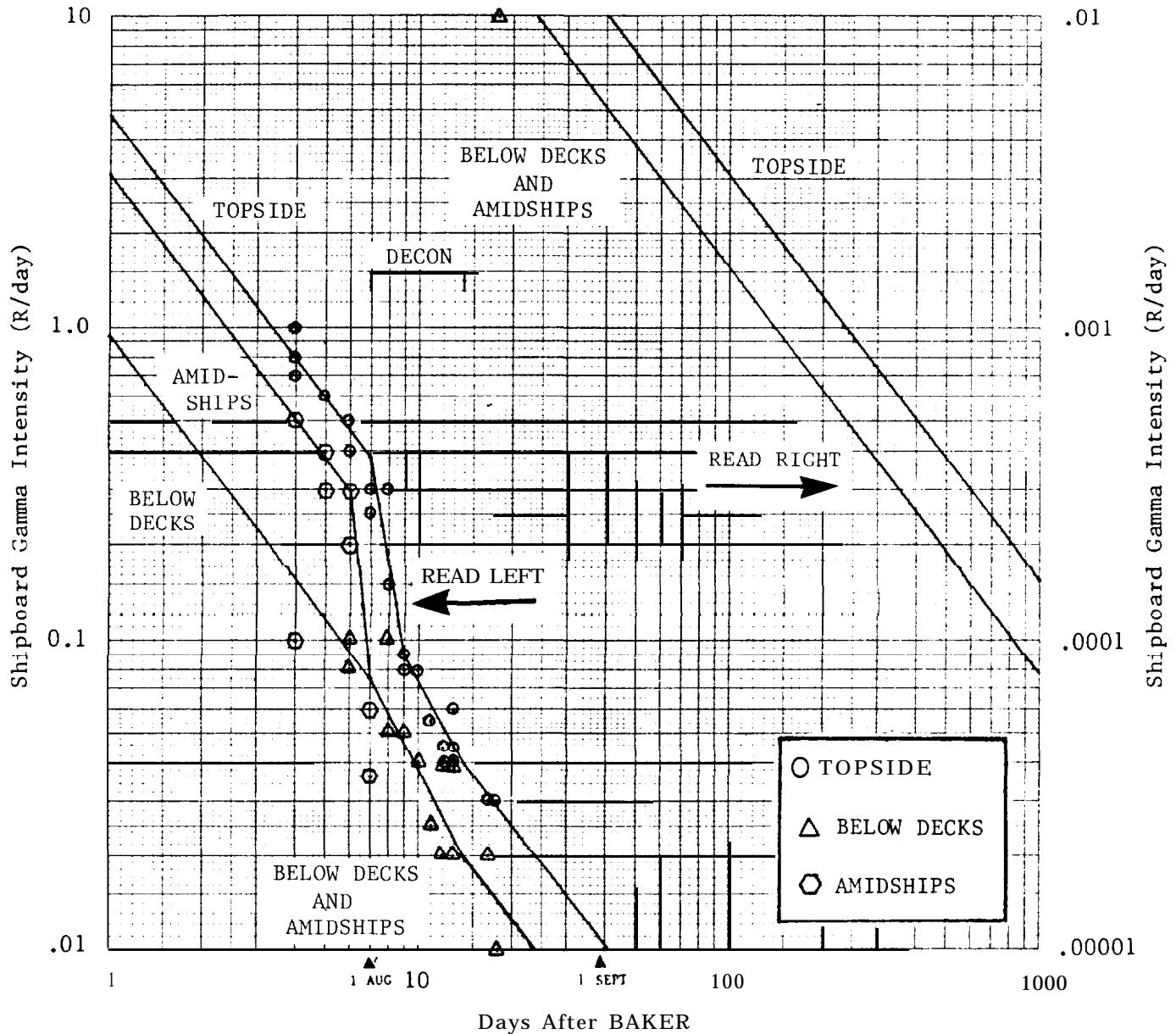
<u>DATE (1946)</u>	<u>CREW LOCATION-Hours Aboard</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
1 July	Evacuated aboard BOTTINEAU (APA-235)-24 (Observed Shot ABLE from a distance of 25 miles)	0.000
2 July	Aboard BOTTINEAU- 13	0.001
	Aboard CONYNGHAM- 11	0.000
3 July-17 July	Aboard CONYNGHAM-360	0.000
18 July-19 July	Evacuated aboard BOTTINEAU-30	0.000
	Aboard CONYNGHAM-18	0.000
20 July-23 July	Aboard CONYNGHAM-96	0.000
	BAKER	
24 July-31 July	Evacuated aboard BOTTINEAU- 181 (Observed Shot BAKER from a distance of 16 miles)	0.032
1 August-7 August	Aboard BOTTINEAU-104	0.073
	Aboard CONYNGHAM-64	0.146
8 August - 22 August	Aboard CONYNGHAM-300	0.216
	Aboard ROCKBRIDGE-	0.027

Total calculated dose received while at Bikini: 0.495 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 22, 1946 (BAKER + 28)

# USS CONYNGHAM (DD-371)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-50. Shipboard Gamma Intensity vs. Time - USS CONYNGHAM (CD-371)

## TARGET SHIP PARTICIPATION SUMMARY

### REMANDED AFTER SHOT BAKER

SHIP: USS CORTLAND (APA-75)

CREW SIZE: 89

**MISSION:** USS CORTLAND was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini on May 30, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 19, 1946 enroute to Norfolk, VA via Kwajalein and Pearl Harbor. It was decommissioned at Norfolk on December 30, 1946.

SHOT DATA: TEST	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)

### AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

<u>DATE (1946)</u>	<u>CREW LOCATION-Hours Aboard</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	<b>ABLE</b>	
1 July	Evacuated aboard ARTEMIS (AKA-21)-24 (Observed Shot Able from a distance of 15 miles)	0.000
2 July	Aboard ART EMIS-15	0.001
	Aboard CORTLAND-9	0.000
3 July-17 July	Aboard CORTLAND-360	0.000
18 July-19 July	Aboard ARTEMIS-30	0.000
	Aboard CORTLAND-18	0.000
20 July-23 July	Aboard CORTLAND-96	0.000
	<b>BAKER</b>	
24 July-29 July	Evacuated aboard ARTEMIS-134 (Observed Shot BAKER from a distance of 8 miles)	0.000
30 July	Aboard ART EMIS-8	0.003
	Aboard CORTLAND-16	0.016
31 July-19 August	Aboard CORTLAND-480	0.208

Total calculated dose received while at Bikini: 0.228 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 19, 1946 (BAKER + 25)

Ship contamination factor when departing Bikini: 3

(this value is for use with the nomograph in Figure A-57)

**PATH REPORT:** This report contains the geographic locations that may be of radiological significance to vessels within Bikini lagoon. The time is in Day-Hours-Minutes and begins on July 1, 1946. All days are July (e.g., 1 August = 32 July, etc.) Place is the grid square within Bikini lagoon from Hydrographics Office, Misc. Chart Number 11854, portions of which are reproduced in Figures A-58, 59, 60, 61.

**RADIOLOGICAL REPORT:** This report is a day-by-day compilation of the reconstructed film badge dose for this unit from the various radiological sources it encountered while in Bikini lagoon. A daily total is included up to departure from Bikini lagoon. A detailed explanation of each source contribution is contained in the basic report, Section 2.

PATH REPORT FOR THE USS CORTLAND

TIME	PLACE	REMARKS
010900	1800W	ANCHORED BERTH #216 AND CREW EVACUATED AT TIME OF SHOT ABLE
021440	1800W	INITIAL BOARDING TEAM RETURNED TO SHIP
021831	1800W	REMAINDER OF CREW REBOARDED
042400	1800W	ANCHORED AS BEFORE
250835	1800W	ANCHORED BERTH #216 AND CREW EVACUATED AT TIME OF SHOT BAKER
260001	1800W	ANCHORED AND EVACUATED AS BEFORE
292400	1800W	ANCHORED AND EVACUATED AS BEFORE
300815	1800W	COMMANDING OFFICER AND INITIAL BOARDING PARTY ABOARD
300848	1800W	REMAINDER OF CREW ON BOARD
331844	1800W	UNDERWAY TO SHIFT BERTHS
331740	1794C	ANCHORED IN BERTH #349
350856	1794C	UNDERWAY
350934	2591M	DEPARTED BIKINI LAGOON
360936	2591M	RE-ENTERED BIKINI LAGOON
361035	1795H	ANCHORED IN BERTH #329
501823	1795H	UNDERWAY TO KWAJALEIN
501707	2591M	DEPARTED BIKINI LAGOON ON 19 AUGUST 1946

USS CORTLAND CALCULATED FILM BADGE DOSE (IN MREM)

DATE	TIME	LAGOON WATER	TARGET SHIPS	SHIP CONTAMINATION	DAILY* TOTAL
JUL 1	A+0	1	0	3	192
JUL 2	A+1	1	0	28	175
JUL 3	A+2	0	0	22	76
JUL 4	A+3	0	0	17	43
JUL 5 THRU 24		0	0	14	32
JUL 25	B+0	189	0	12	24
JUL 26	B+1	147	0	11	23
JUL 27	B+2	54	0	9	23
JUL 28	B+3	26	0	7	19
JUL 29	B+4	18	0	4	7
JUL 30	B+5	12	0	3	6
JUL 31	B+6	12	0	2	5
AUG 1	B+7	14	0	1	4
AUG 2	B+8	10	0	0	3
AUG 3	B+9	0	0	0	2
AUG 4	B+10	0	0	0	1
AUG 5	B+11	0	0	0	0
AUG 6	B+12	0	0	0	0
AUG 7	B+13	6	0	0	0
AUG 8	E+14	10	0	0	0
AUG 9	B+15	9	0	0	0
AUG 10	B+16	8	0	0	0
AUG 11	B+17	7	0	0	0
AUG 12	B+18	6	0	0	0
AUG 13	B+19	6	0	0	0
AUG 14	B+20	5	0	0	0
AUG 15	B+21	5	0	0	0
AUG 16	B+22	4	0	0	0
AUG 17	B+23	4	0	0	0
AUG 18	E+24	3	0	0	0
AUG 19	B+25	2	0	2	4

\*Applies only if the crew was onboard for a 24 hour period.



## TARGET SHIP PARTICIPATION SUMMARY

### REMANNED AFTER SHOT BAKER

SHIP: USS DENTUDA (SS-335)

CREW SIZE: 58

MISSION: USS DENTUDA was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini on May 31, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 22, 1946 enroute to San Francisco via Kwajalein and Pearl Harbor. It was retained at San Francisco for radiological tests until it was decommissioned on December 11, 1946.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)	
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)	

### AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

<u>DATE (1946)</u>	<u>CREW LOCATION-Hours Aboard</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	<b>ABLE</b>	
1 July	Evacuated aboard BOTTINEAU (APA-235)-24 (Observed Shot ABLE from a distance of 25 miles)	<b>0.000</b>
2 July	Aboard BOTTINEAU-7.5	<b>0.000</b>
	Aboard DENTIUDA-16.5	0.004
3 July-22 July	Aboard DENTUDA-480	<b>0.001</b>
	<b>BAKER</b>	
23 July-30 July	Evacuated aboard BOTTINEAU-184 (Observed Shot BAKER from a distance of 16 miles)	0.012
31 July-9 August	Aboard BOTTINEAU- 184.5	0.128
	Aboard FILLMORE (APA-83)-8	0.001
	Aboard DENTUDA-47.5	0.355
10 August- 13 August	Aboard FILLMORE-59	0.008
	Aboard FULTON(AS-11)-8	0.004
	Aboard DENTUDA-29	0.035
14 August-22 August	Duty section aboard DENTUDA-120	0.097
	Remainer of crew aboard FULTON-96	0.048

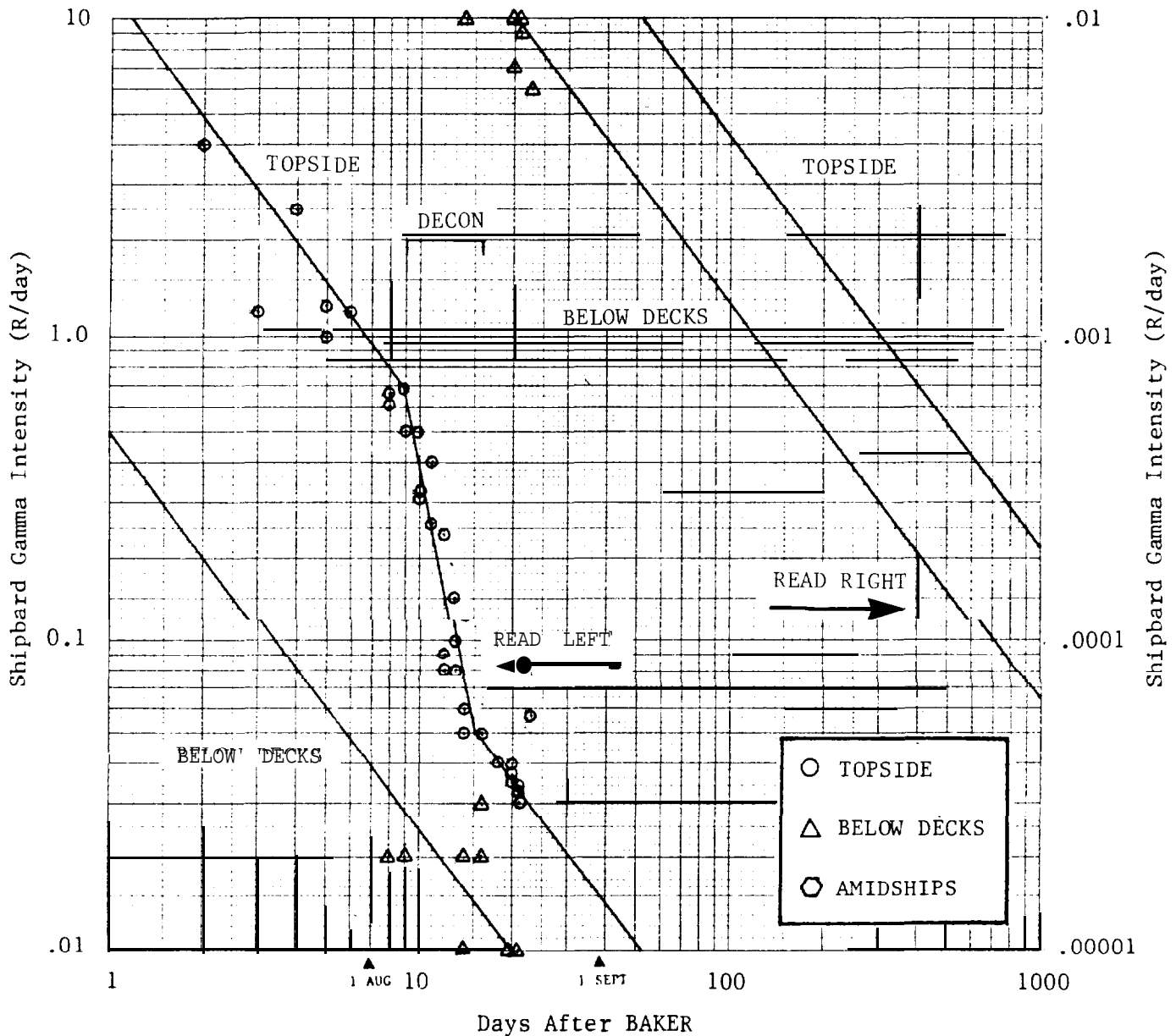
Total calculated dose received while at Bikini: 0.693 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 22, 1946 (BAKER+28)



# USS DENTUDA (SS-335)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-5 1. Shipboard Gamma Intensity vs. Time - LJSS DENTUDA (SS-335)

# TARGET SHIP PARTICIPATION SUMMARY

## REMANDED AFTER SHOT BAKER

SHIP: USS FILLMORE (APA-83)

CREW SIZE: 109

MISSION: USS FILLMORE was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini prior to June 30, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 22, 1946 enroute to Norfolk, VA via Kwajalein and Pearl Harbor. It was decommissioned at Norfolk on January 24, 1947.

SHOT DATA:	TEST	DATE (TIME)	YIELD	TYPE DETONATION
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)

## AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

DATE (1946)	CREW LOCATION-Hours Aboard	RECONSTRUCTED FILM BADGE DOSE (REM)
	ABLE	
1 July	Evacuated aboard BAYFIELD (APA-33)-24 (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July	Aboard BAYFIELD-	0.00 I
	Aboard FILLMORE-II	0.002
3 July-17 July	Aboard FILLMORE-360	0.000
18 July-19 July	Evacuated aboard BAYFIELD-30.5	0.000
	Aboard FILLMORE-17.5	0.000
20 July-23 July	Aboard FILLMORE-96	0.000
	BAKER	
24 July-28 July	Evacuated aboard BAYFIELD- I I (Observed Shot BAKER from a distance of 15 miles)	0.000
29 July	Aboard BAYFIELD-8.5	0.000
	Aboard FILLMORE-15.5	0.021
30 July-22 August	Aboard FILLMORE-576	0.185

Total calculated dose received while at Bikini: 0.209 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini August 22, 1946 (BAKER + 28)

Ship contamination factor when departing Bikini: 3

(this value is for use with the nomograph in Figure A-57)

PATH REPORT: This report contains the geographic locations that may be of radiological significance to vessels within Bikini lagoon. The time is in Day-Hours-Minutes and begins on July 1, 1946. All days are July (e.g., 1 August = 32 July, etc.) Place is the grid square within Bikini lagoon from Hydrographics Office, Misc. Chart Number 11854, portions of which are reproduced in Figures A-58, 59, 60, 61.

RADIOLOGICAL REPORT: This report is a day-by-day compilation of the reconstructed film badge dose for this unit from the various radiological sources it encountered while in Bikini lagoon. A daily total is included up to departure from Bikini lagoon. A detailed explanation of each source contribution is contained in the basic report, Section 2.

# PATH REPORT FOR THE USS FILLMORE

TIME	PLACE	REMARKS
010900	22990	ANCHORED BERTH #245 IN BIKINI LAGOON
010901	22990	POSITIONED IN TARGET SHIP ARRAY
040900	22990	ANCHORED AS BEFORE
250835	22990	ANCHORED IN BERTH #245 TARGET SHIP ARRAY
260001	22990	ANCHORED AS BEFORE
331747	22990	UNDERWAY FROM TARGET SHIP ARRAY
331828	18946	ANCHORED IN BERTH #376
350850	18946	UNDERWAY FOR OPEN SEA
350925	23966	BUOY #5 TO STARBOARD
350937	2493L	BUOY #3 TO STARBOARD
350947	2591U	BUOY #1 TO STARBOARD
360927	2591U	REENTERING BIKINI LAGOON 5 AUGUST 1946
361025	18946	ANCHORED BERTH 376
361550	18946	RADIOLOGICAL MONITORS EXAMINED SHIP AND DECLARED SHIP TO BE RADIOLOGICALLY SAFE
470800	18946	RADIOLOGICAL SAFETY PARTY EMBARKED AND EXAMINED CREW
530817	18946	UNDERWAY FOR KWAJALEIN
530921	2591M	DEPARTED BIKINI LAGOON ON 22 AUGUST 1946

USS FILLMORE CALCULATED FILM BADGE DOSE (IN MREM)

DATE	TIME	LAGDON WATER	TARGET SHIPS	SHIP CONTAMINATION	DAILY* TOTAL
JUL 1	A+0	4	0		4
JUL 2	A+1	4	0		4
JUL 3	A+2	0	0		0
JUL 4	A+3	0	0		0
JUL 5 THRU 24		0	0		
JUL 25	B+0	151	0	3	154
JUL 26	B+1	64	0	13	77
JUL 27	B+2	35	0	14	49
JUL 28	B+3	32	0	15	47
JUL 29	B+4	19	0	13	32
JUL 30	B+5	8	0	11	19
JUL 31	B+6	9	0	10	19
AUG 1	B+7	11	0	9	20
AUG 2	B+8	10	0	8	18
AUG 3	B+9	0	0	7	7
AUG 4	B+10	0	0	6	6
AUG 5	B+11	0	0	6	6
AUG 6	B+12	0	0	5	5
AUG 7	B+13	3	0	5	8
AUG 8	B+14	7	0	4	11
AUG 9	B+15	0	0	4	4
AUG 10	B+16	0	0	4	4
AUG 11	B+17	0	0	3	3
AUG 12	B+18	0	0	3	3
AUG 13	B+19	0	0	3	3
AUG 14	B+20	3	0	3	6
AUG 15	B+21	5	0	3	8
AUG 16	B+22	4	0	3	7
AUG 17	B+23	4	0	2	6
AUG 18	B+24	3	0	2	5
AUG 19	B+25	3	0	2	5
AUG 20	B+26	3	0	2	5
AUG 21	B+27	3	0	2	5
AUG 22	B+28	0	0	2	2

\*Applies only if the crew was onboard for a 24 hour period.

# TARGET SHIP PARTICIPATION SUMMARY

## REMANED AFTER SHOT BAKER

SHIP: USS GENEVA (APA-86)

CREW SIZE: 115

MISSION: USS GENEVA was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini in May 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 24, 1946 enroute to Norfolk, VA via Kwaalein, San Francisco, San Diego, and the Panama Canal. It was decommissioned at Norfolk on January 1, 1947.

SHOT DATA:	TEST	DATE (TIME)	YIELD	TYPE DETONATION
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)

## AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

DATE (1946)	CREW LOCATION-Hours Aboard	RECONSTRUCTED FILM BADGE DOSE (REM)
	ABLE	
1 July	Evacuated aboard APPLINC (APA-58)-24 (Observed Shot ABLE from a distance of 12 miles)	0.000
2 July	Aboard APPLING-12	0.001
	Aboard GENEVA-12	3.000
3 July-17 July	Aboard GENEVA-360	0.000
18 July-19 July	Evacuated aboard APPLING-29.5	0.000
	Aboard GENEVA-IS.5	0.000
20 July-23 July	Aboard GENEVA-96	0.000
	BAKER	
24 July-28 July	Evacuated aboard APPLINC- 111 (Observed Shot BAKER from a distance of 8 miles)	0.000
29 July	Aboard APPLING- 13	3.000
	Aboard GENEVA-I 1	0.009
30 July-24 August	Aboard GENEVA-624	0.220

Total calculated dose received while at Bikini: 0.230 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 24, 1946 (BAKER + 30)

Ship contamination factor when departing Bikini: 3

(this value is for use with the nomograph in Figure A-571)

PATH REPORT: This report contains the geographic locations that may be of radiological significance to vessels within Bikini lagoon. The time is in Day-Hours-Minutes and begins on July 1, 1946. All days are July (e.g., 1 August = 32 July, etc.) Place is the grid square within Bikini lagoon from Hydrographics Office, Misc. Chart Number 11354, portions of which are reproduced in Figures A-58, 59, 60, 61.

RADIOLOGICAL REPORT: This report is a day-by-day compilation of the reconstructed film badge dose for this unit from the various radiological sources it encountered while in Bikini lagoon. A daily total is included up to departure from Bikini lagoon. 4 detailed explanation of each source contribution is contained in the basic report, Section 2.

# PATH REPORT FOR THE USS GENEVA

TIME	PLACE	REMARKS
010000	1208M	SHIP EVACUATED AND CREW ABOARD USS APPLING AT TIME OF SHOT ABLE
021108	1208M	COMMANDING OFFICER AND RAD SAFE MONITOR REBOARDED SHIP
021208	1208M	TEAM ABLE CAME ABOARD
021310	1208M	TEAM BAKER CAME ABOARD
042059	2208M	ANCHORED AS BEFORE
250338	2208M	SHIP EVACUATED AND CREW ABOARD USS APPLING AT TIME OF SHOT BAKER
250410	2208M	ASSIGNED DOSE OF 750 MR FOR BAKER DAY
251015	2208M	COMMANDING OFFICER AND RAD SAFE MONITOR REBOARDED SHIP
251020	2208M	TEAM ABLE CAME ABOARD
251410	2208M	TEAM BAKER CAME ABOARD
260400	2208M	SHIP DECLARED "GEIGER SWEET"
270510	2208M	TEAM CHARLIE CAME ABOARD
270714	2208M	UNDERWAY TO SHIFT BERTHS
301808	1303M	ANCHORED IN BERTH #51
310251	1005M	UNDERWAY FOR 24 HOUR RUN OUTSIDE LAGOON
350948	1001M	DEPARTED BIKINI LAGOON
360010	2501M	RE-ENTERED BIKINI LAGOON
361016	1905M	ANCHORED IN BERTH #751
381847	2400M	UNDERWAY FROM BERTH #113 FOR FWAJALEIN
381710	2501M	SHIP DEPARTED BIKINI LAGOON ON 24 AUGUST 1946 - ENROUTE FWAJALEIN (TIME ESTIMATED BASED ON SHIP SPEED OF 15 KTI)

USS GENEVA CALCULATED FILM BADGE DOSE (IN MREM)

DATE	TIME	LAG-ON WATER	TARGET SHIPS	SHIP CONTAMINATION	DAILY* TOTAL
JUL 1	0-0	0	0		0
JUL 2	0-1	0	0		0
JUL 3	0-2	0	0		0
JUL 4	A-3	0	0		0
JUL 5 THRU 24		0	0		
JUL 25	B+0	75	0	1	76
JUL 26	B+1	22	0	5	27
JUL 27	B+2	18	0	7	25
JUL 28	B+3	24	0	10	34
JUL 29	B+4	11	0	9	20
JUL 30	B+5	5	0	8	13
JUL 31	B+6	7	0	8	15
AUG 1	B+7	10	0	8	18
AUG 2	B+8	9	0	8	17
AUG 3	B+9	0	0	6	6
AUG 4	B+10	0	0	6	6
AUG 5	B+11	0	0	5	5
AUG 6	B+12	0	0	4	4
AUG 7	B+13	4	0	4	8
AUG 8	B+14	10	0	4	14
AUG 9	B+15	9	0	4	13
AUG 10	B+16	8	0	4	12
AUG 11	B+17	7	0	4	11
AUG 12	B+18	6	0	3	9
AUG 13	B+19	6	0	3	9
AUG 14	B+20	5	0	3	8
AUG 15	B+21	5	0	3	8
AUG 16	B+22	4	0	3	7
AUG 17	B+23	4	0	2	6
AUG 18	B+24	3	0	2	5
AUG 19	B+25	3	0	2	5
AUG 20	B+26	3	0	2	5
AUG 21	B+27	3	0	2	5
AUG 22	B+28	2	0	2	4
AUG 23	B+29	2	0	2	4
AUG 24	B+30	1	0	2	3

\*Applies only if the crew was onboard for a 24 hour period.

## TARGET SHIP PARTICIPATION SUMMARY

### REMANDED AFTER SHOT BAKER

SHIP: USS LCI-329

CREW SIZE: 16

**MISSION:** USS LCI-329 was a CROSSROADS target ship **and** arrived at Bikini prior to June 30, 1946 to prepare for the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946. After Shot BAKER, the LCI-329 was remanded and steamed to Kwajalein where it was placed in caretaker status on February 22, 1947. It was finally sunk in deep water off Kwajalein on March 16, 1948.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)

### AVERAGE CREW MEMBER DOSE HISTORY

<u>DATE (1946)</u>	<u>CREW LOCATION • Hours Aboard</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	<b>ABLE</b>	
30 June - 1 July	Evacuated aboard BAYFIELD (APA-33)-48 (Observed Shot ABLE from a distance of 22 miles)	<b>0.000</b>
2 July	Aboard BAYFIELD- 18	0.001
	Aboard LCI-329-6	0.001
3 July-17 July	Aboard LCI-329-360	0.000
13 July-19 July	Evacuated aboard BAYFIELD-	0.000
	Aboard LCI-329-I 9	0.000
20 July-23 July	Aboard LCI-329-96	0.000
	<b>BAKER</b>	
24 July-31 July	Evacuated aboard BAYFIELD-178 (Observed Shot BAKER from a distance of 15 miles)	0.024
1 August-9 August	Aboard BAYFIELD-	0.012
	Aboard ROCKBRIDGE (APA-228)-200	0.138
10 August	Aboard ROCKBRIDGE- 11.5	0.007
	Aboard LCI-329-12.5	0.002
11 August-24 August	Aboard LCI-329-336	0.023

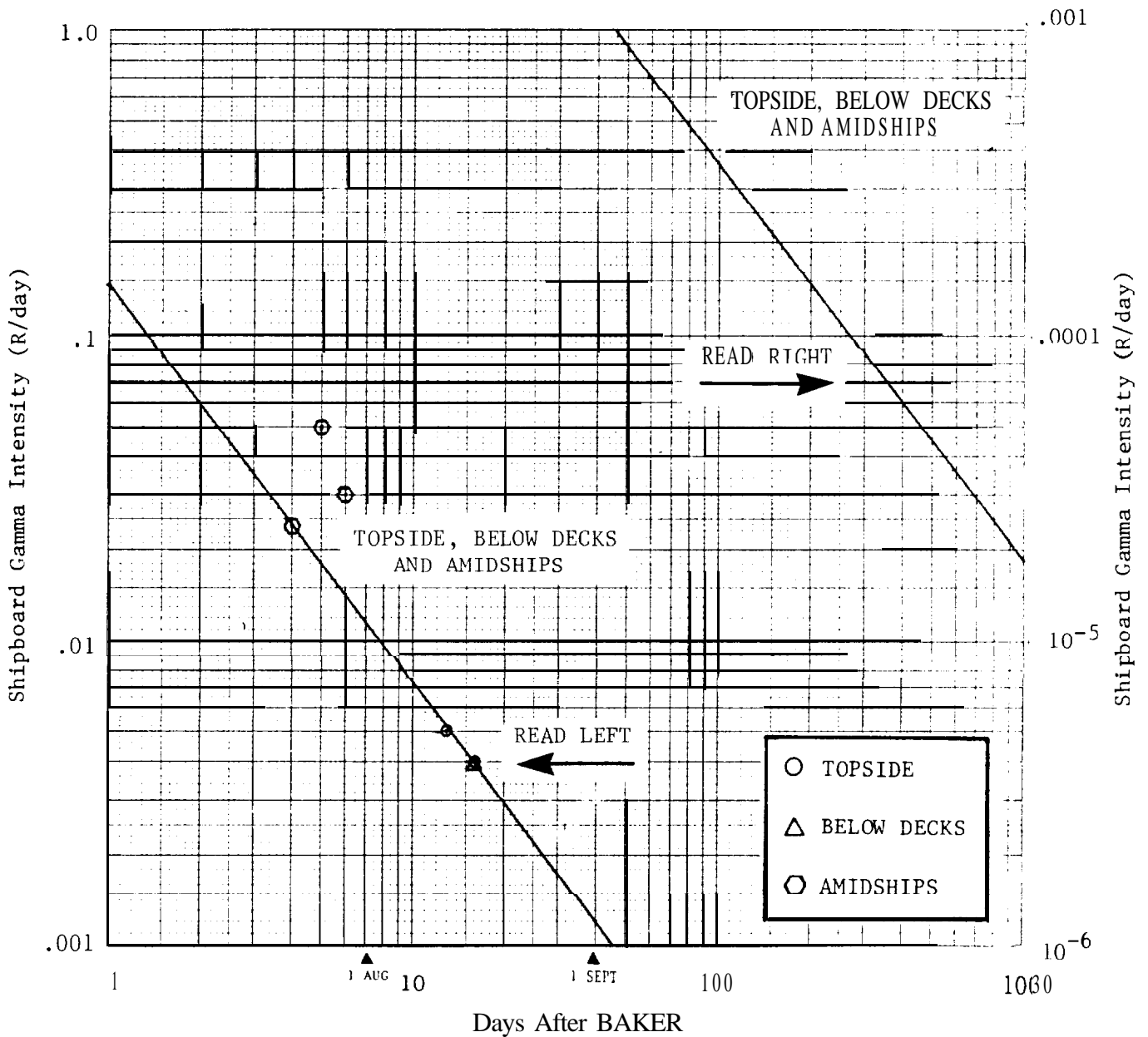
Total calculated dose while at Bikini: 0.208 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 24, 1946 (BAKER + 30)



# USS LCI(L)329



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-52. Shipboard Gamma Intensity vs. Time - USS LCI(L)329

## TARGET SHIP PARTICIPATION SUMMARY

### REMANNED AFTER SHOT BAKER

SHIP: USS LCI(L)549

CREW SIZE: 22

MISSION: USS LCI(L)549 was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini prior to June 30, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 24, 1946 enroute to Kwajalein where it was retained as a patrol vessel until June 1948. It was then sailed to San Francisco where it was stripped and disposed as hulk about January 1949.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 ft)	
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 ft)	

### AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

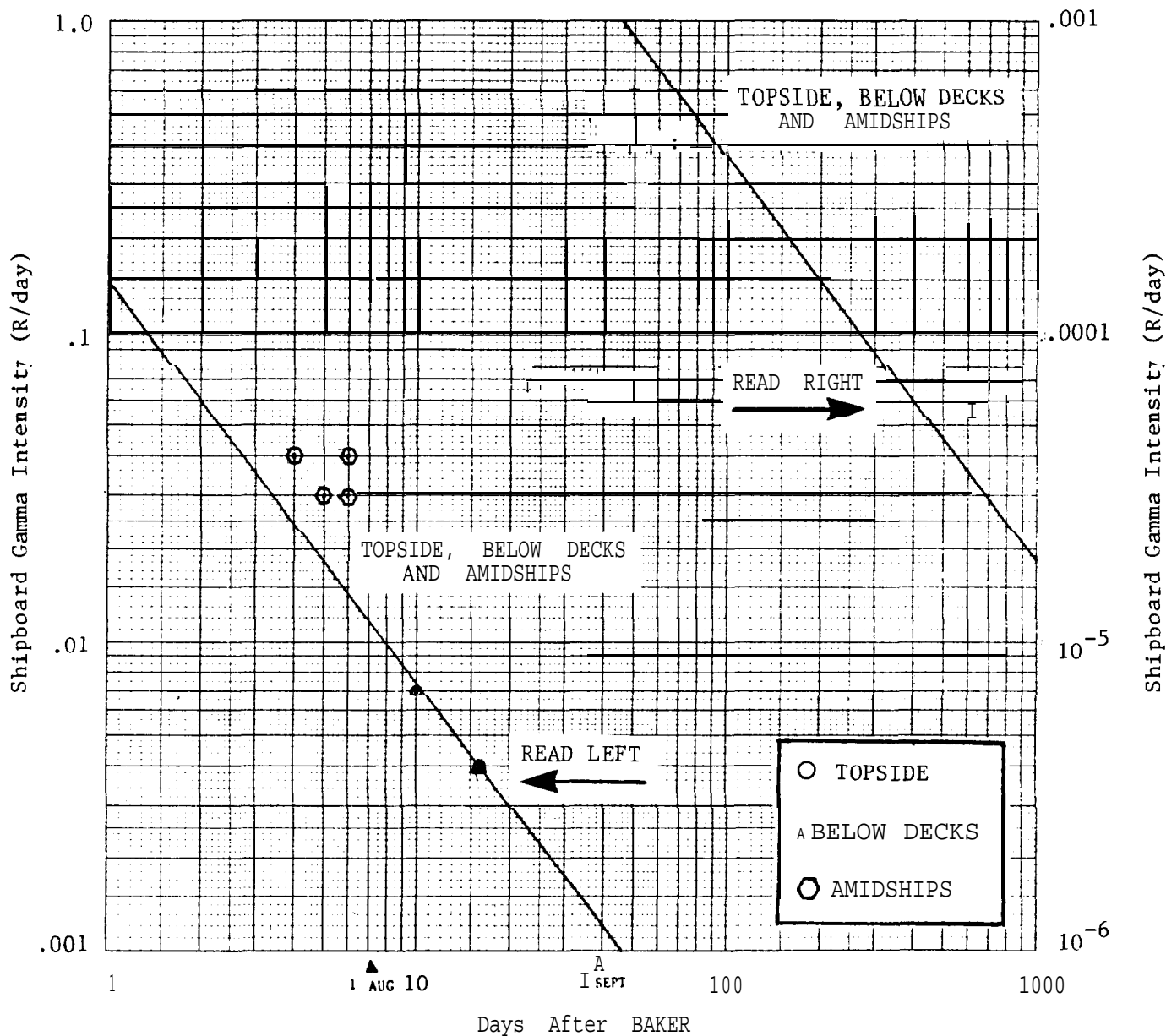
<u>DATE ( 1946)</u>	<u>CREW LOCATION-Hours Aboard</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	<b>ABLE</b>	
1 July	Evacuated aboard BAYFIELD (APA-33)-24 (Observed Shot ABLE from a distance of 22 miles)	<b>0.000</b>
2 July	Aboard BAYFIELD-16.5	<b>0.001</b>
	Aboard LCI(L) 549-7.5	<b>0.000</b>
3 July-17 July	Aboard LCI(L) 549-360	<b>0.000</b>
18 July-19 July	Evacuated aboard BAYFIELD- 1	<b>0.000</b>
	Aboard LCI(L)549-17	<b>0.000</b>
20 July-23 July	Aboard L CI( L) 549-96	<b>0.000</b>
	<b>BAKER</b>	
24 July-31 July	Evacuated aboard BAYFIELD- 183 (Observed Shot BAKER from a distance of 15 miles)	0.024
1 August-9 August	Aboard BAYFIELD-16.5	0.012
	Aboard ROCKBRIDGE (APA-228)-199.5	0.137
10 August	Aboard ROCKBRIDGE-	0.006
	Aboard LCI(L)549-14	0.002
11 August-24 August	Aboard LCI(L)549-336	0.023

Total calculated dose received while at Bikini: 0.205 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 24, 1946 (BAKER + 30)

# USS LCI(L) 549



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-53. Shipboard Gamma Intensity vs. Time - LJSS LCI(L) 549

# TARGET SHIP PARTICIPATION SUMMARY

## REMANED AFTER SHOT BAKER

SHIP: USS LCI(L)615

CREW SIZE: 16

MISSION: USS LCI(L)615 was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini prior to June 30, 1946 and was beached on Bikini Island where it remained as one of the 84 target ships throughout the operation. It departed Bikini on September 4, 1946 enroute to Kwajalein where it was retained as patrol vessel. It participated in a resurvey of Bikini in July 1947 and was sailed to San Francisco for disposal about June 1948.

SHOT DATA: TEST	DATE (TIME)	YIELD	TYPE DETONATION
ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)

## AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

DATE ( 1946)	CREW LOCATION-Hours Aboard	RECONSTRUCTED FILM BADGE DOSE (REM)
	ABLE	
1 July-2 July	Evacuated aboard BAYFIELD (APA-33)-48 (Observed Shot ABLE from a distance of 22 miles)	0.001
3 July	Aboard BAYFIELD-	0.000
	Aboard LCI(L)615-1	0.000
4 July-24 July	Aboard BAYFIELD-	0.000
	BAKER	
25 July-31 July	Evacuated aboard BAYFIELD- (Observed Shot BAKER from a distance of 15 miles)	0.024
1 August	Aboard BAYFIELD- 1	0.008
	Aboard LCI(L)615-13	0.016
2 August-4 September	Aboard LCI(L)615-816	0.595

Total calculated dose received while at Bikini: 0.644 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: September 4, 1946 (BAKER + 4 I)

Ship contamination factor when departing Bikini: 5

(this value is for use with the nomograph in Figure A-57)

PATH REPORT: This report contains the geographic locations that may be of radiological significance to vessels within Bikini lagoon. The time is in Day-Hours-Minutes and begins on July 1, 1946. All days are July (e.g., 1 August = 32 July, etc.) Place is the grid square within Bikini lagoon from Hydrographics Office, Misc. Chart Number 11854, portions of which are reproduced in Figures A-58, 59, 60, 61.

RADIOLOGICAL REPORT: This report is a day-by-day compilation of the reconstructed film badge dose for this unit from the various radiological sources it encountered while in Bikini lagoon. A daily total is included up to departure from Bikini lagoon. A detailed explanation of each source contribution is contained in the basic report, Section 2.

PATH REPORT FOR THE USS LCI-615

TIME	PLACE	REMARKS
010900	2605M	BEACHED IN SLOT #14 AND CREW ABOARD USS BAYFIELD AT TIME OF SHOT ABLE
022400	2605M	BEACHED AND EVACUATED AS BEFORE
031516	2605M	COMMANDING OFFICER AND EXECUTIVE OFFICER AND 6 MEN REBOARDED
031600	2605M	COMMANDING OFFICER; EXECUTIVE OFFICER; AND 6 MEN EVACUATED SHIP TO USS BAYFIELD
042400	2605M	BEACHED AS BEFORE; CREW ABOARD USS BAYFIELD
250835	2605M	BEACHED IN SLOT #14 AND CREW ABOARD USS BAYFIELD AT TIME OF SHOT BAKER
260001	2605M	BEACHED AND EVACUATED AS BEFORE
312400	2605M	BEACHED AND EVACUATED AS BEFORE
321100	2605M	COMMANDING OFFICER; EXECUTIVE OFFICER; AND 4 MEN REBOARDED SHIP (SHIP WAS ABOUT 200 FEET OFFSHORE)
321257	2605M	UNDERWAY TO SHIFT BERTHS
321320	2505X	ANCHORED IN BERTH #44
321400	2505X	COMMANDING OFFICER; EXECUTIVE OFFICER; AND 2 MEN LEAVE SHIP TO GET REMAINING CREW
321705	2505X	REMAINDER OF CREW CAME ABOARD
340937	2505X	UNDERWAY TO GO ALONGSIDE USS PHAON (ARB-3)
341055	2692D	MOORED ALONGSIDE USS PHAON
352400	2692D	MOORED AS BEFORE
361340	2692D	UNDERWAY FROM ALONGSIDE USS PHAON
361547	2698J	IN DRY DOCK (ARD-29) (BERTH #270-A)
391530	2698J	UNDERWAY FROM DRYDOCK
391605	2692D	MOORED ADNGSIDE USS PHAON (OR ARB-29)
401029	2692D	UNDERWAY TO USS WILDCAT AND USS ENOREE
401545	2697W	UNDERWAY FROM ALONGSIDE USS ENOREE
401610	2505X	ANCHORED IN BERTH #44
470910	2003U	ALONGSIDE MUGFORD2
471228	2003U	LEAVING MUGFORD2
471355	2002D	ALONGSIDE STACK2
471645	2002D	LEAVING STACK2
480851	2202K	ALONGSIDE NEVADA2
481527	2202K	LEAVING NEVADA2
500940	2200U	ALONGSIDE PENNSYLVANIA
501458	2200U	LEAVING PENNSYLVANIA
520840	2201Y	ALONGSIDE NEW YORK2
521110	2201Y	LEAVING NEW YORK2
540940	2201N	ALONGSIDE HUGHES
541130	2201N	LEAVING HUGHES
550652	2101I	ALONGSIDE FALLON
551200	2101I	LEAVING FALLON
560842	2102X	ALONGSIDE MAYRANT2
561504	2102X	LEAVING MAYRANT2
570842	2301G	ALONGSIDE MUSTIN2
571309	2301G	LEAVING MUSTIN2
601735	2504V	ALONGSIDE LCT-1113
602002	2504V	LEAVING LCT-1113
631620	2201D	ALONGSIDE LCT-818
631707	2201D	LEAVING LCT-818
661400	2003J	UNDERWAY ENROUTE TO KWAJALEIN (FROM BERTH #88)
661440	2591M	DEPARTED BIKINI LAGOON ON 4 SEPTEMBER 1946

US1 LC1-615 CALCULATED FILM BADGE DOSE (IN MREM)

DATE	TIME	LAGOON WATER	TARGET SHIPS	SHIP CONTAMINATION	DAILY* TOTAL
JUL 1	A+0	0	0		0
JUL 2	A+1	0	0		0
JUL 3	A+2	0	0		0
JUL 4	A+3	0	0		0
JUL 5 THRU 24		0	0		
JUL 25	B+0	0	0	0	0
JUL 26	B+1	113	0	62	175
JUL 27	B+2	84	0	71	155
JUL 28	B+3	29	0	55	84
JUL 29	B+4	13	0	43	56
JUL 30	B+5	9	0	35	44
JUL 31	B+6	6	0	29	35
AUG 1	B+7	4	0	25	29
AUG 2	B+8	1	0	22	23
AUG 3	B+9	0	0	20	21
AUG 4	B+10	0	0	18	18
AUG 5	B+11	0	0	15	15
AUG 6	B+12	0	0	14	14
AUG 7	B+13	0	0	13	13
AUG 8	B+14	0	0	12	12
AUG 9	B+15	7	0	11	18
AUG 10	B+16	2	0	11	13
AUG 11	B+17	7	0	10	17
AUG 12	B+18	2	0	9	11
AUG 13	B+19	3	0	9	12
AUG 14	B+20	5	0	8	13
AUG 15	B+21	3	0	8	11
AUG 16	B+22	4	20	7	31
AUG 17	B+23	4	23	7	34
AUG 18	B+24	1	0	7	10
AUG 19	B+25	3	42	6	51
AUG 20	B+26	3	0	6	9
AUG 21	B+27	3	2	6	11
AUG 22	B+28	2	0	5	7
AUG 23	B+29	2	0	5	10
AUG 24	B+30	2	73	5	80
AUG 25	B+31	2	46	5	53
AUG 26	B+32	1	4	5	10
AUG 27	B+33	1	0	4	5
AUG 28	B+34	1	0	4	5
AUG 29	B+35	1	0	4	5
AUG 30	B+36	1	0	4	5
AUG 31	B+37	1	0	4	5
SEP 1	B+38	0	4	4	8
SEP 2	B+39	0	0	4	4
SEP 3	B+40	0	0	3	3
SEP 4	B+41	0	0	3	3

\*Applies only if the crew was onboard for a 24 hour period.

# TARGET SHIP PARTICIPATION SUMMARY

## REMANED AFTER SHOT BAKER

SHIP: USS NIAGARA (APA-87)

CREW SIZE: 271

MISSION: USS NIAGARA was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini in May 31, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 21, 1946 enroute to Norfolk, VA via Kwajalein, Pearl Harbor, and San Francisco. It was used to test the effects of conventional explosives and then sold as scrap in 1950.

SHOT DATA:	TEST	DATE (TIME)	YIELD	TYPE DETONATION
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)

## AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

DATE (1946)	CREW LOCATION-Hours Aboard	RECONSTRUCTED FILM BADGE DOSE (REM)
	ABLE	
1 July	Evacuated aboard BAYFIELD (APA-33)-24 (Observed Shot ABLE from a distance of 22 miles)	0.000
2 July	Aboard BAYFIELD-10	0.000
	Aboard NIAGARA-14	0.000
3 July-17 July	Aboard NIAGARA-360	0.000
18 July-19 July	Evacuated aboard BAYFIELD-	0.000
	Aboard NIAGARA-18	0.000
20 July-23 July	Aboard NIAGARA-96	0.000
	BAKER	
24 July-28 July	Evacuated aboard BAYFIELD- 1 IO (Observed Shot BAKER from a distance of 15 miles)	0.000
29 July	Aboard BAYFIELD-	0.000
	Aboard NIAGARA-16	0.011
30 July-21 August	Aboard NIAGARA-552	0.186

Total calculated dose received while at Bikini: 0.197 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini August 21, 1946 (BAKER + 27)  
Ship contamination factor when departing Bikini: 3  
(this value is for use with the nomograph in Figure A-57)

PATH REPORT: This report contains the geographic locations that may be of radiological significance to vessels within Bikini lagoon. The time is in Day-Hours-Minutes and begins on July 1, 1946. All days are July (e.g., 1 August = 32 July, etc.) Place is the grid square within Bikini lagoon from Hydrographics Office, Misc. Chart Number 11854, portions of which are reproduced in Figures A-58, 59, 60, 61.

RADIOLOGICAL REPORT: This report is a day-by-day compilation of the reconstructed film badge dose for this unit from the various radiological sources it encountered while in Bikini lagoon. A daily total is included up to departure from Bikini lagoon. A detailed explanation of each source contribution is contained in the basic report, Section 2.

# PATH REPORT FOR THE USS NIAGARA

TIME	PLACE	REMARKS
010900	22980	ANCHORED BERTH #282 AND ALL PERSONNEL EVACUATED AT TIME OF SHOT ABLE
021015	22980	TEAM ABLE REBOARDED (FROM USS BAYFIELD) WITH ONE RAD S AFE MONITOR
021425	22980	TEAM BAKER REBOARDED (FROM USS BAYFIELD)
021559	22980	RAD SAFE MON TOR RETURNED TO USS HAVEN
042400	22980	ANCHORED AS BEFORE
250835	22980	ANCHORED IN BERTH #282 AND ALL PERSONNEL EVACUATED AT TIME OF SHOT BAKER
260001	22980	ANCHORED AND EVACUATED AS BEFORE
282400	22980	ANCHORED AND EVACUATED AS BEFORE
290826	22980	COMMANDING OFFICER AND TEAMS ABLE AND BAKER REBOARDED SHIP
291535	22980	UNDERWAY TO SHIFT BERTHS
291607	2194U	ANCHORED IN BERTH #381
291615	2194U	REMAINDER OF CREW REBOARDED
300831	2194U	UNDERWAY TO SHIFT BERTHS
300859	22980	ANCHORED IN BERTH #282
321502	22980	UNDERWAY STANDING OUT OF LAGOON
321535	2591M	EXITED BIKINI LAGOON
331511	2591M	RE-ENTERED BIKINI LAGOON
331652	1894N	ANCHORED BERTH #377
352400	1894N	ANCHORED AS BEFORE
381004	1894N	UNDERWAY TO SHIFT BERTHS
381047	1999R	ANCHORED BERTH #220
451316	1999R	UNDERWAY TO SHIFT BERTHS
451358	2303N	ANCHORED IN BERTH #112
521549	2303N	UNDERWAY FOR KWAJALEIN
521638	2591M	DEPARTED BIKINI LAGOON ON 21 AUGUST 1946



USS NIAGARA CALCULATED FILM BADGE DOSE (IN MREM)

DATE	TIME	LAGOON WATER	TARGET SHIPS	SHIP CONTAMINATION	DAILY* TOTAL
JUL 1	A+0	0	0		0
JUL 2	A+1	0	0		0
JUL 3	A+2	0	0		0
JUL 4	A+3	0	0		0
JUL 5 THRU 24		0	0		
JUL 25	B+0	9	0	0	9
JUL 26	B+1	22	0	5	27
JUL 27	B+2	18	0	7	25
JUL 28	B+3	24	0	10	34
JUL 29	B+4	8	0	9	17
JUL 30	B+5	3	0	7	10
JUL 31	B+6	7	0	7	14
AUG 1	B+7	6	0	7	13
AUG 2	B+8	0	0	6	6
AUG 3	B+9	0	0	5	5
AUG 4	B+10	0	0	4	4
AUG 5	B+11	0	0	4	4
AUG 6	B+12	0	0	4	4
AUG 7	B+13	6	0	4	10
AUG 8	B+14	10	0	4	14
AUG 9	B+15	9	0	4	13
AUG 10	B+16	8	0	4	12
AUG 11	B+17	7	0	4	11
AUG 12	B+18	6	0	3	9
AUG 13	B+19	6	0	3	9
AUG 14	B+20	5	0	3	8
AUG 15	B+21	5	0	3	8
AUG 16	B+22	4	0	3	7
AUG 17	B+23	4	0	2	6
AUG 18	B+24	3	0	2	5
AUG 19	B+25	3	0	2	5
AUG 20	B+26	3	0	2	5
AUG 21	B+27	2	0	2	4

\*Applies only if the crew was onboard for a 24 hour period.

## TARGET SHIP PARTICIPATION SUMMARY

### REMANED AFTER SHOT BAKER

SHIP: USS PARCHE (SS-384)

CREW SIZE: 61

MISSION: USS PARCHE was a CROSSROADS target ship that was remanned and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini prior to June 30, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 22, 1946 enroute to Mare Island via Kwajalein and Pearl Harbor. It arrived at Mare Island on October 14, 1946 and reported to the 19th Fleet. PARCHE was eventually sold for scrap in July 1970.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst	(+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater	(-90 feet)

### AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

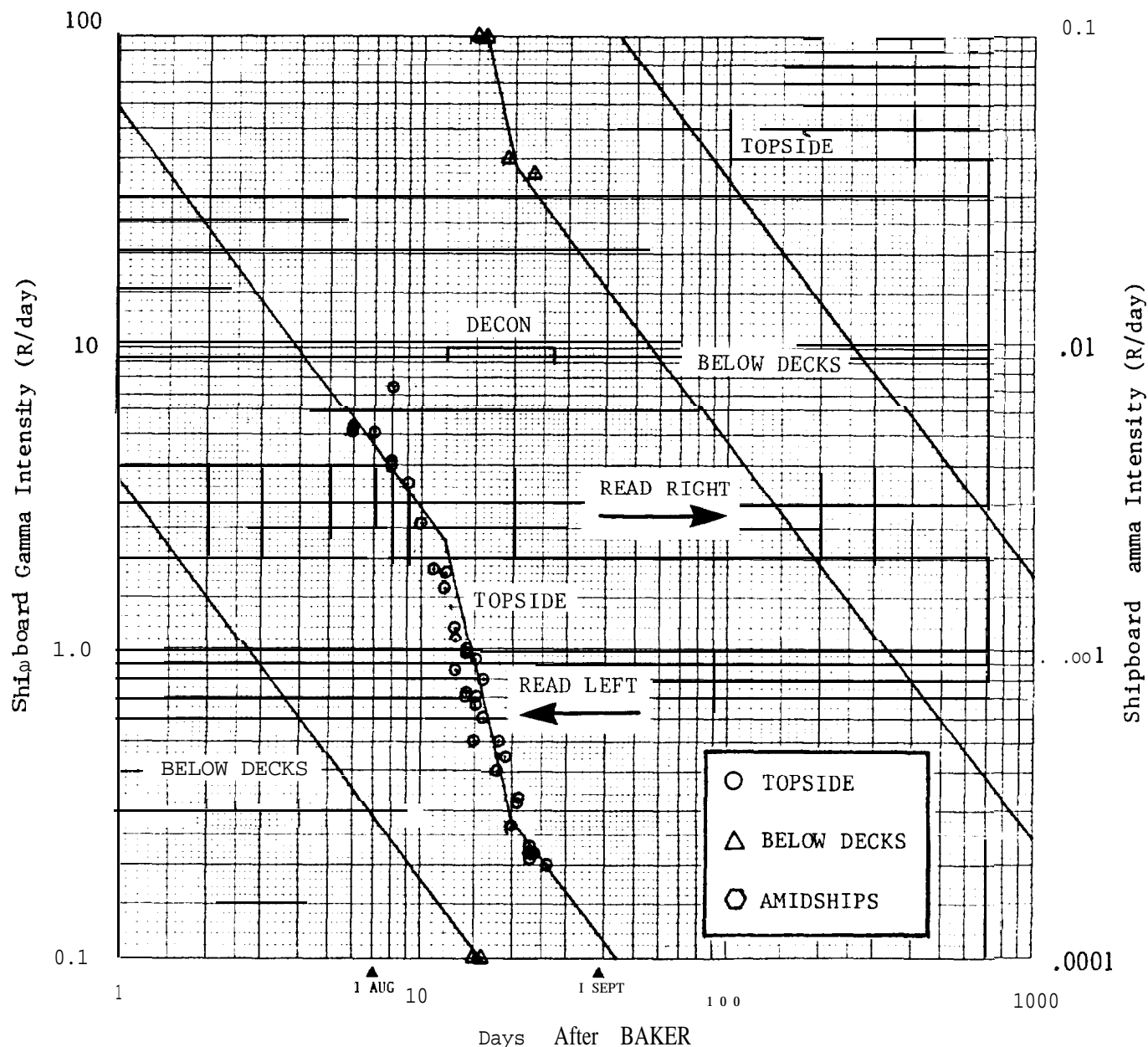
<u>DATE (1946)</u>	<u>CREW LOCATION-Hours Aboard</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
1 July	Evacuated aboard BOTTINEAU (APA-235)-24 (Observed Shot ABLE from a distance of 25 miles)	0.000
2 July	Aboard BOTTINEAU- 12	0.001
	Aboard PARCHE-12	0.003
3 July-24 July	Aboard PARCHE-528	0.002
	BAKER	
25 July-5 August	Evacuated aboard BOTTINEAU-288 (Observed Shot BAKER from a distance of 16 miles)	0.125
6 August- 7 August	Aboard BOTTINEAU-43.5	0.017
	Aboard PARCHE-4.5	0.219
8 August-22 August	Aboard FILLMORE (APA-83)-278.5	0.062
	Aboard PARCHE-81.5	0.668

Total calculated dose received while at Bikini: 1.097 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 22, 1946 (BAKER t 28)

# USS PARCHE (SS-384)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-54. Shipboard Gamma Intensity vs. Time - USS PARCHE (SS-384)

## TARGET SHIP PARTICIPATION SUMMARY

### REMANNED AFTER SHOT BAKER

SHIP: USS SEARAVEN (SS-196)

CREW SIZE: 58

MISSION: USS SEARAVEN was a CROSSROADS target ship that was **remanned** and sailed away after the nuclear test detonations on July 1 and July 25, 1946. It had arrived at Bikini on May 30, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 22, 1946 enroute to San Francisco via Kwajalein and Pearl Harbor. It was eventually sunk as a target on September 11, 1948 by VC-22 at 31-42.3N, 118-26.4W.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst (+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater (-90 feet)

### AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

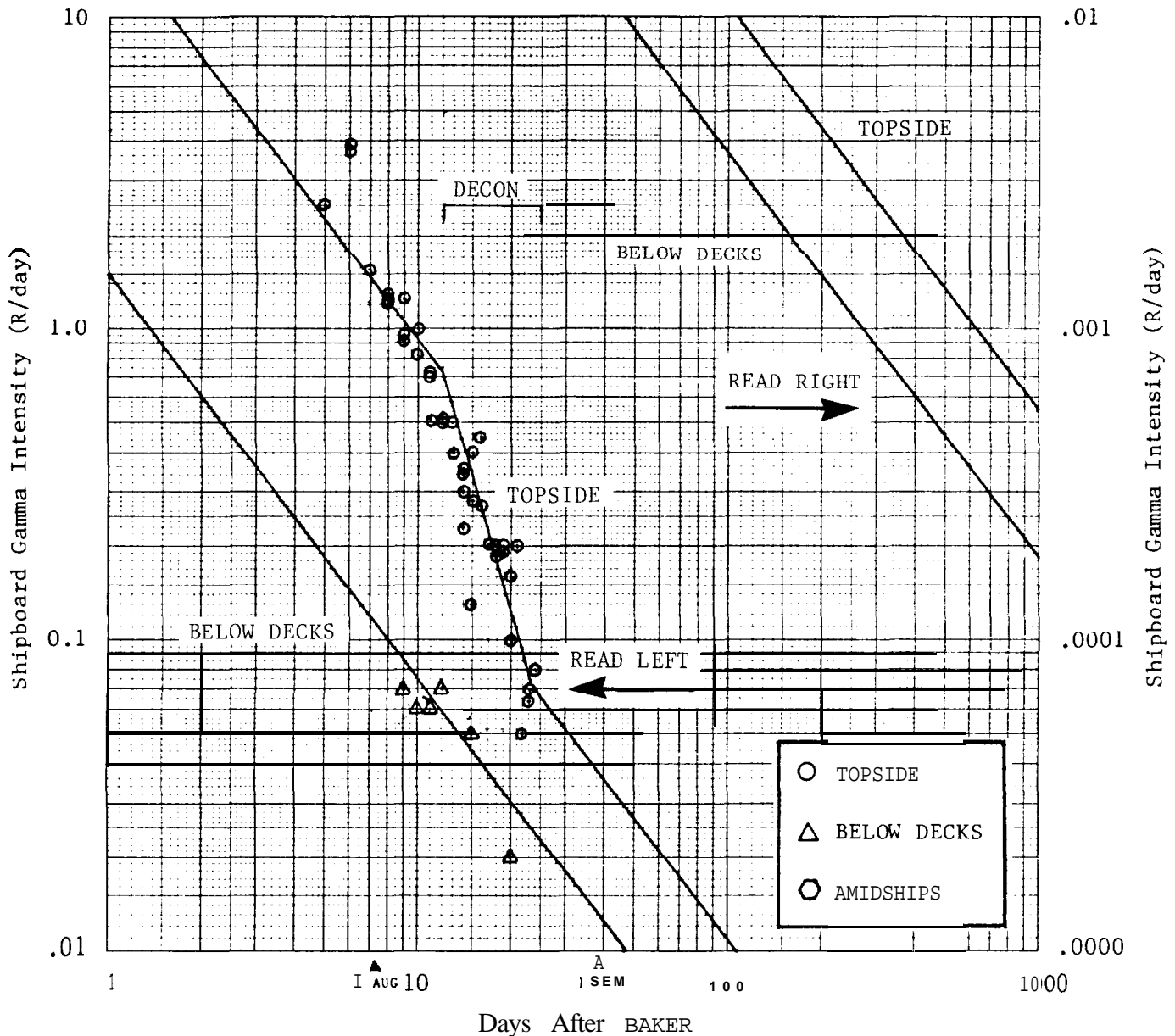
<u>DATE (1946)</u>	<u>CREW LOCATION-Hours Aboard</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	<b>ABLE</b>	
1 July	Evacuated aboard BOTTINEAU (APA-235)-24 (Observed Shot ABLE from a distance of 25 miles)	0.000
2 July	Aboard BOTTINEAU-12	0.001
	Aboard SEARAVEN-	0.004
3 July-21 July	Aboard SEARAVEN-	0.001
	<b>BAKER</b>	
22 July-3 August	Evacuated aboard BOTTINEAU-276 (Observed Shot BAKER from a distance of 16 miles)	0.098
4 August -9 August	Aboard BOTTINEAU- 106	0.054
	Aboard FILLMORE (APA-83)-7	0.001
	Aboard SEARAVEN-	0.492
10 August -22 August	Aboard FILLMORE-245.5	0.049
	Aboard SEARAVEN-66.5	0.196

Total calculated **dose** received while at Bikini: 0.896 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 22, 1946 (BAKER t 28)

# USS SEARAVEN (SS-196)



**SHIPBOARD GAMMA INTENSITY CURVES:** The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Raker. The **curves** are sometimes **shown** in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases **the** available data does not discriminate between individual curves for each location.

Figure A-55. Shipboard Gamma Intensity vs. Time - LJSS SEARAVEN (SS-196)

# TARGET SHIP PARTICIPATION SUMMARY

REMANNED AFTER SHOT BAKER

SHIP: USS TUNA (SS-203)

CREW SIZE: 57

MISSION: USS TUNA was a CROSSROADS target ship that was remanned and sailed away after the nuclear detonations on July 1 and July 25, 1946. It had arrived at Bikini prior to June 30, 1946 and was anchored in the lagoon where it remained as one of the 84 target ships throughout the operation. It departed Bikini on August 22, 1946 enroute to the West Coast (MINSY) via Kwajalein and Pearl Harbor. It was retained at MINSY for radiological studies until it was sunk off the West Coast at 31-40N, 118-30W on September 4, 1948.

SHOT DATA:	<u>TEST</u>	<u>DATE (TIME)</u>	<u>YIELD</u>	<u>TYPE</u>	<u>DETONATION</u>
	ABLE	1 July 46 (0900)	23 KT	Air Burst	(+520 feet)
	BAKER	25 July 46 (0835)	23 KT	Shallow Underwater	(-90 feet)

## AVERAGE CREW MEMBER DOSE HISTORY WHILE AT BIKINI

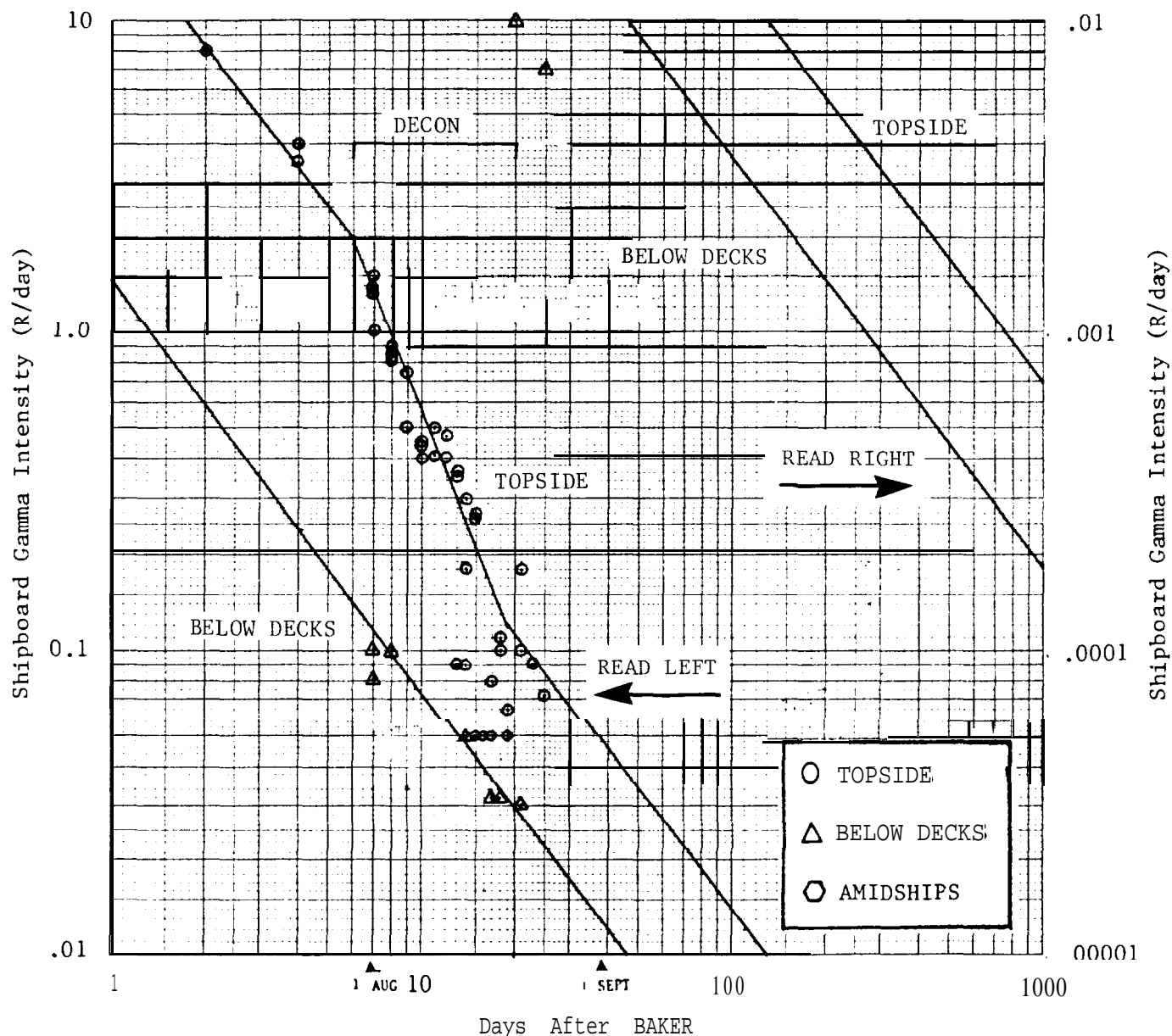
<u>DATE (1946)</u>	<u>CREW LOCATION-Hours Aboard</u>	<u>RECONSTRUCTED FILM BADGE DOSE (REM)</u>
	ABLE	
1 July	Evacuated aboard BOTTINEAU (APA-235)-24 (Observed Shot ABLE from a distance of 25 miles)	0.000
2 July	Aboard BOTTINEAU- 12	0.001
	Aboard TUNA-12	0.004
3 July-23 July	Aboard TUNA-504	0.001
	BAKER	
24 July-31 July	Evacuated aboard BOTTINEAU- 178 (Observed Shot BAKER from a distance of 16 miles)	0.032
1 August-9 August	Aboard BOTTINEAU-151.5	0.098
	Aboard TUNA-64.5	0.955
10 August -22 August	Aboard FILLMORE (APA-83)-186.5	0.039
	Aboard TUNA-125.5	0.359

Total calculated dose received while at Bikini: 1.489 REM

This reconstruction includes time spent aboard the target ship (as indicated) after the detonations and prior to the time that the entire crew returned to live aboard the ship.

Date unit departed Bikini: August 22, 1946 (BAKER + 28)

# USS TUNA (SS-203)



SHIPBOARD GAMMA INTENSITY CURVES: The average gamma intensity curves for topside amidships, and below decks locations on target ships are discussed in detail in sections 2.4 and 4.0 of the basic report. The data points and average curve are presented as a function of time in days after Shot Baker. The curves are sometimes shown in a folded fashion and care should be exercised when reading the proper intensity scale. In some cases the available data does not discriminate between individual curves for each location.

Figure A-56. Shipboard Gamma Intensity vs. Time - USS TUNA (SS-203)

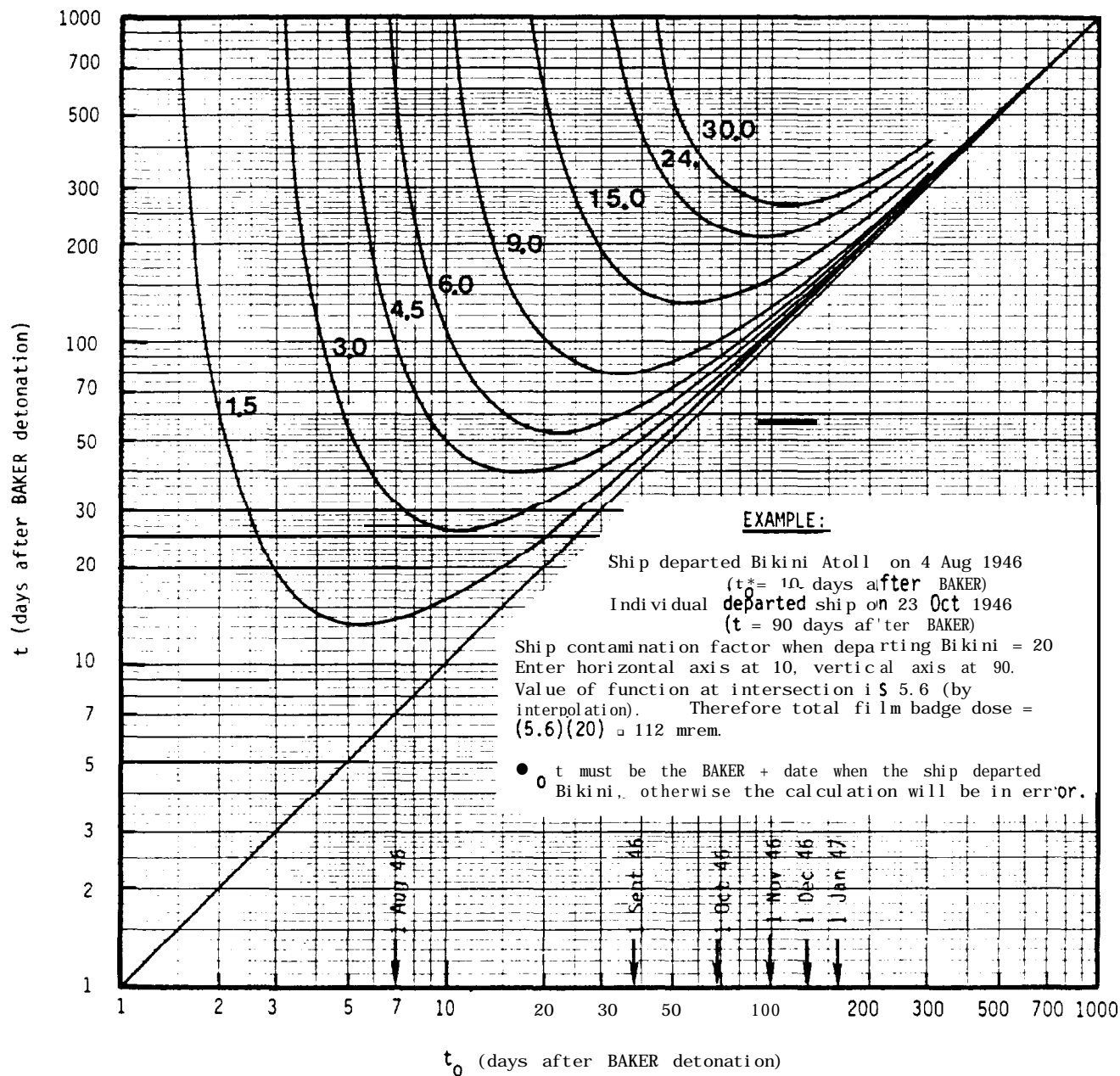


Figure A-57. Post-Bikini Dose Nomograph



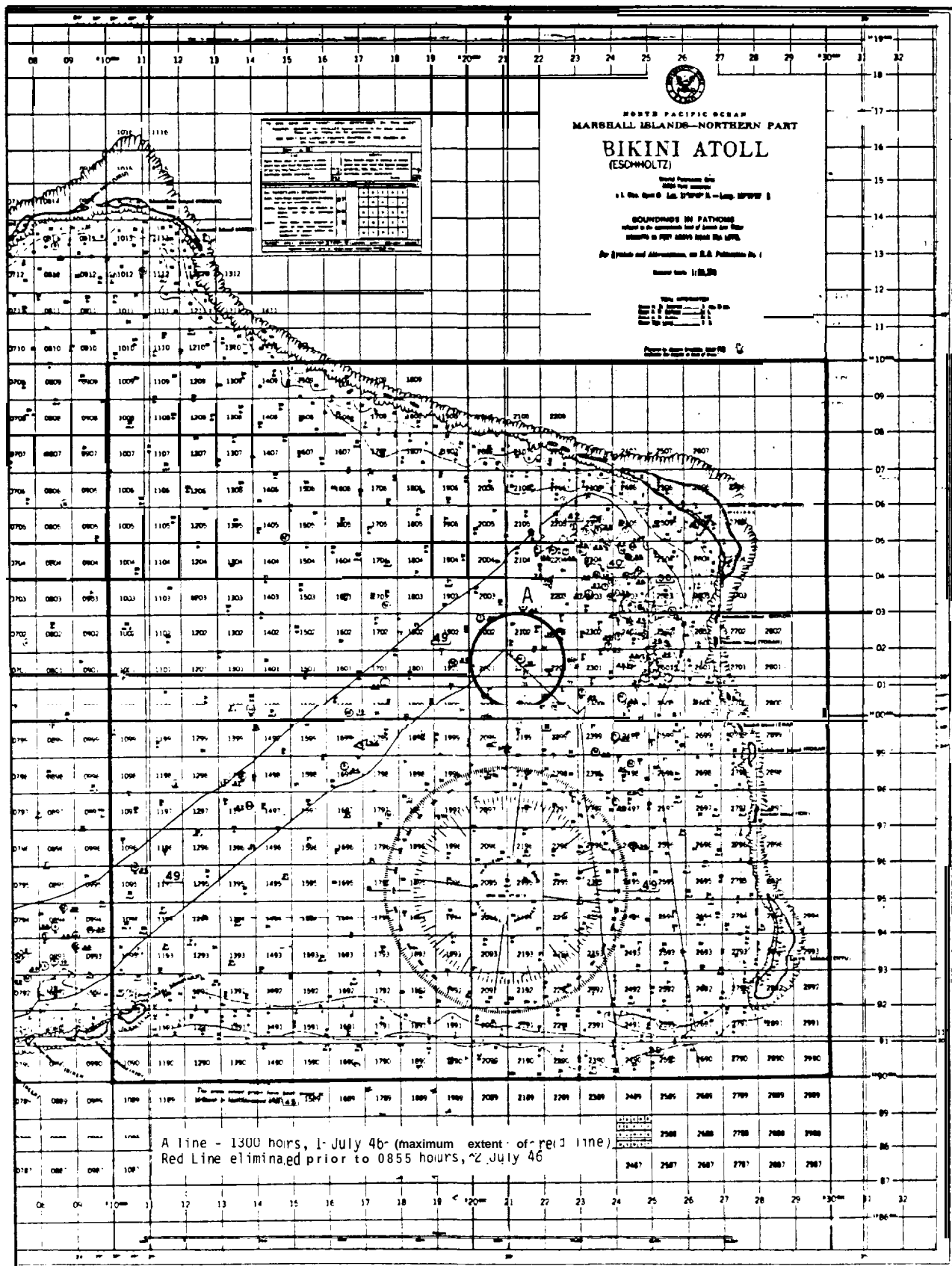


Figure A-58. Shot ABLE Red Lines ( $I=1.0$  R/day)

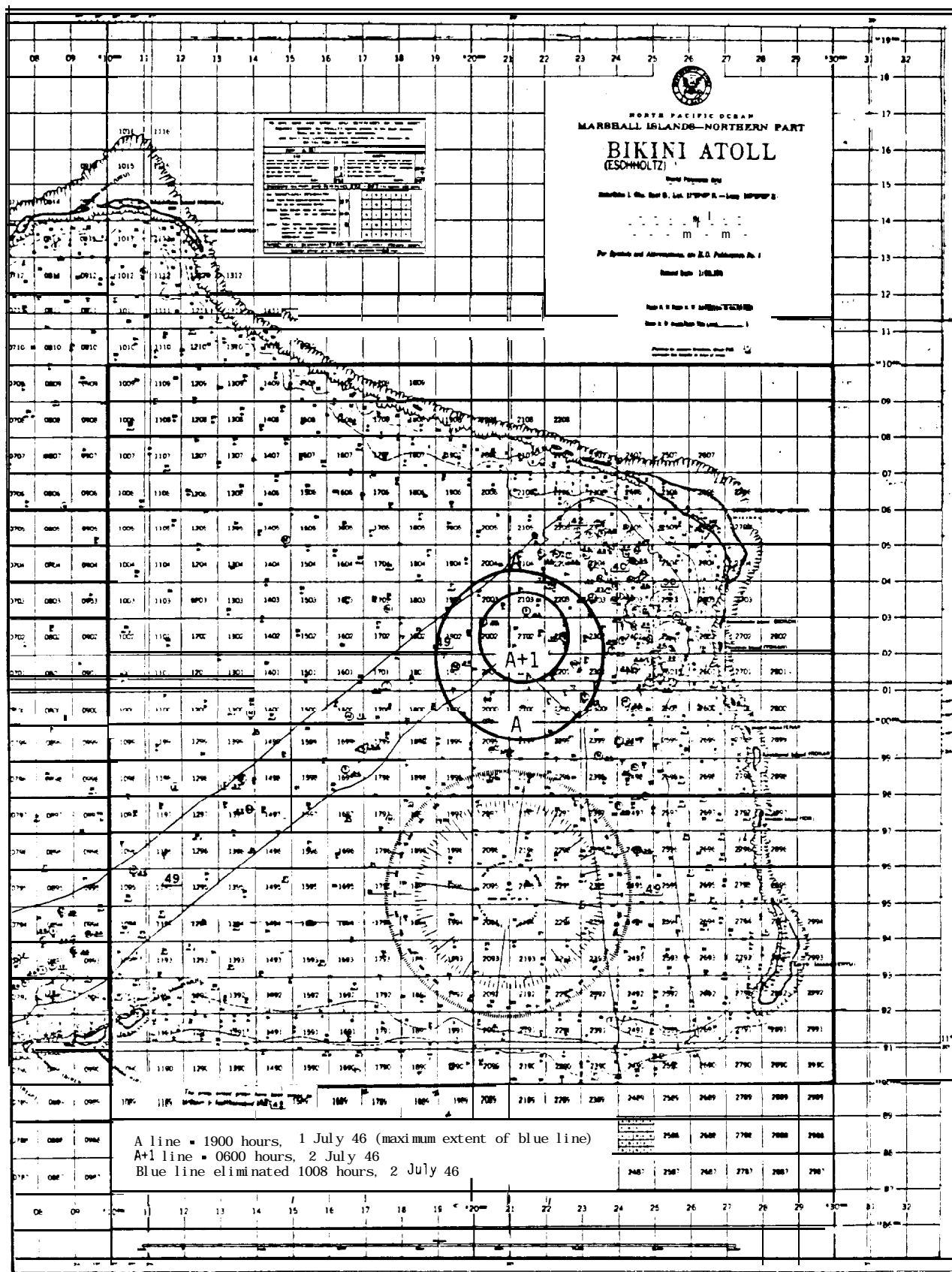


Figure A-59. Shot ABLE Blue Lines ( $I=0.1$  R/day)

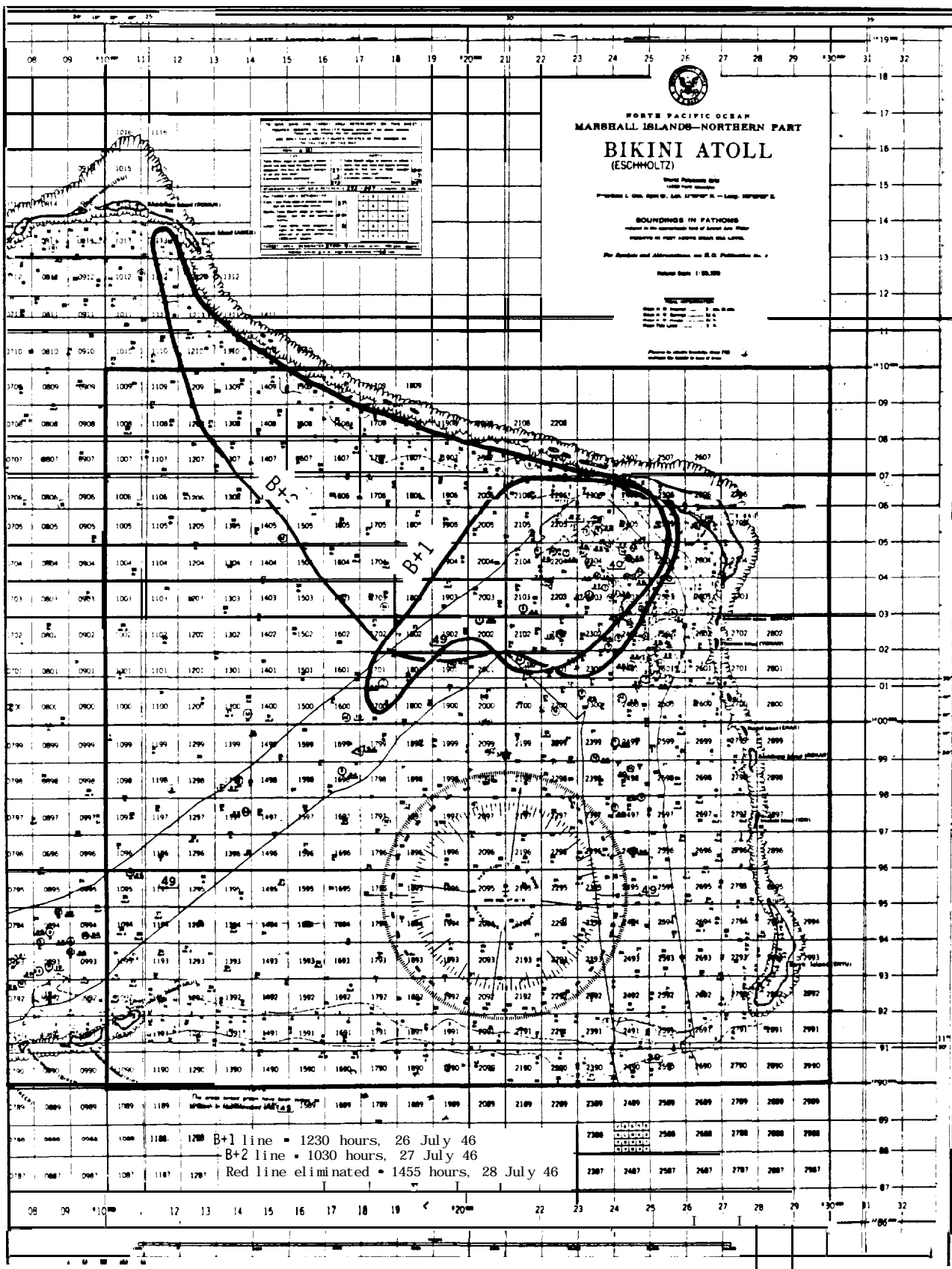


Figure A-60. Shot BAKER Red Lines (I=1.0 R/day)

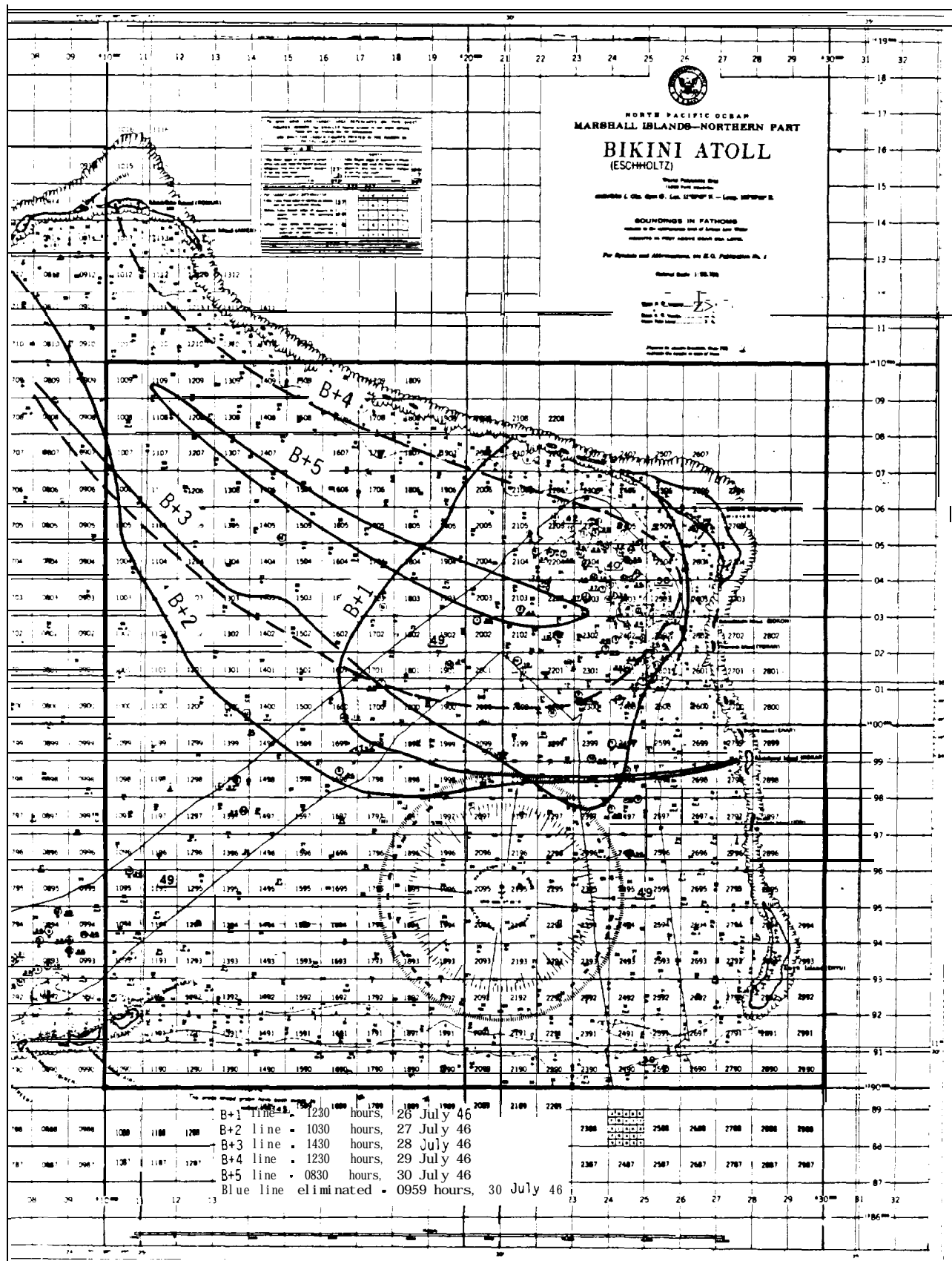


Figure A-61. Shot BAKER Blue Lines ( $I=0.1$  R/day)

**Table A-1. Calendar Date Conversion for Operation CROSSROADS**

<u>Calendar Date</u>	<u>July Date</u>	<u>BAKER+ Date</u>	<u>Calendar Date</u>	<u>July Date</u>	<u>RAKER+ Date</u>	<u>Calendar Date</u>	<u>RAKER+ Date</u>
Jul 1, 1946	01		Aug 1	32	7	Sept 1	38
2	02		2	33	8	5	42
3	03		3	34	9	10	47
4	04		4	35	10	15	52
5	05		5	36	11	20	57
6	06		6	37	12	25	62
7	07		7	38	13	30	67
8	08		8	39	14		
9	09		9	40	15	Oct 1	68
10	10		10	41	16	5	72
11	11		11	42	17	10	77
12	12		12	43	18	15	82
13	13		13	44	19	20	87
14	14		14	45	20	25	92
15	15		15	46	21	31	98
16	16		16	47	22		
17	17		17	48	23	Nov 1	99
18	18		18	49	23	5	103
19	19		19	50	25	10	108
20	20		20	51	26	15	113
21	21		21	52	27	20	118
22	22		22	53	28	25	123
23	23		23	54	29	30	128
24	29		24	55	30		
25	25	0	25	56	31	Dec 1	129
26	26	1	26	57	32	5	133
27	27	2	27	58	33	10	138
28	28	3	28	59	34	15	143
29	29	4	29	60	35	20	148
30	30	5	30	61	36	25	153
31	31	6	31	62	37	31	159
<hr/>			<hr/>			<hr/>	
Jan 1, 1947		160	Feb 1, 1947		191	Mar 1, 1947	219
5		164	5		195	5	223
10		169	10		200	10	228
15		174	15		205	15	233
20		179	20		210	20	238
25		184	25		215	25	243
31		190	28		218	31	249



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