

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

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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-REMANDED 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_{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-REMANNED

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.

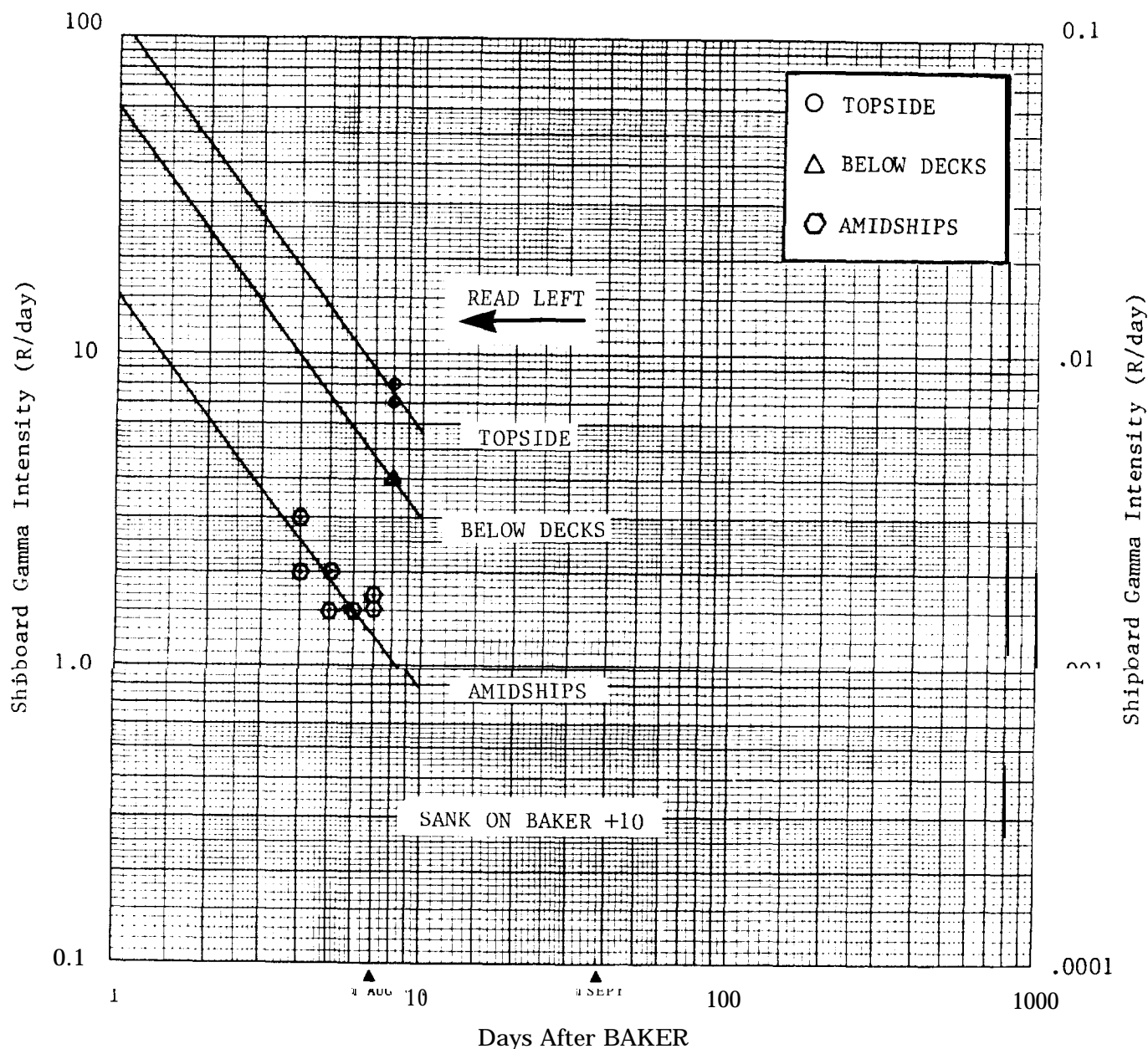
| SHOT DATA: | <u>TEST</u> | <u>DATE (TIME)</u> | <u>YIELD</u> | <u>TYPE DETONATION</u> |
|------------|-------------|--------------------|--------------|-----------------------------|
| | ABLE | 1 July 46 (0900) | 23 KT | Air Burst (+520 ft) |
| | BAKER | 25 July 46 (0835) | 23 KT | Shallow Underwater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



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-REMANNED

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

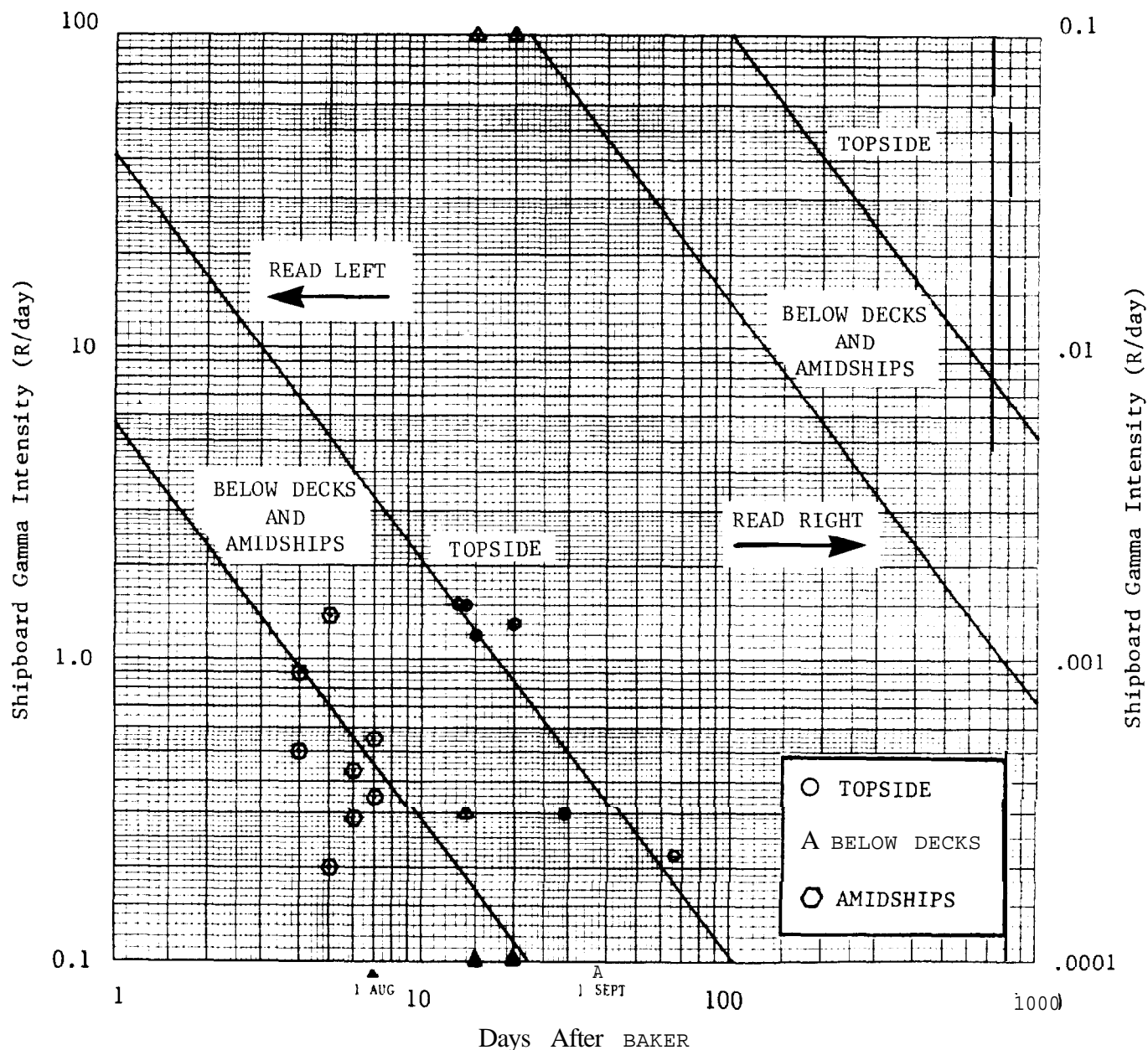
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated 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

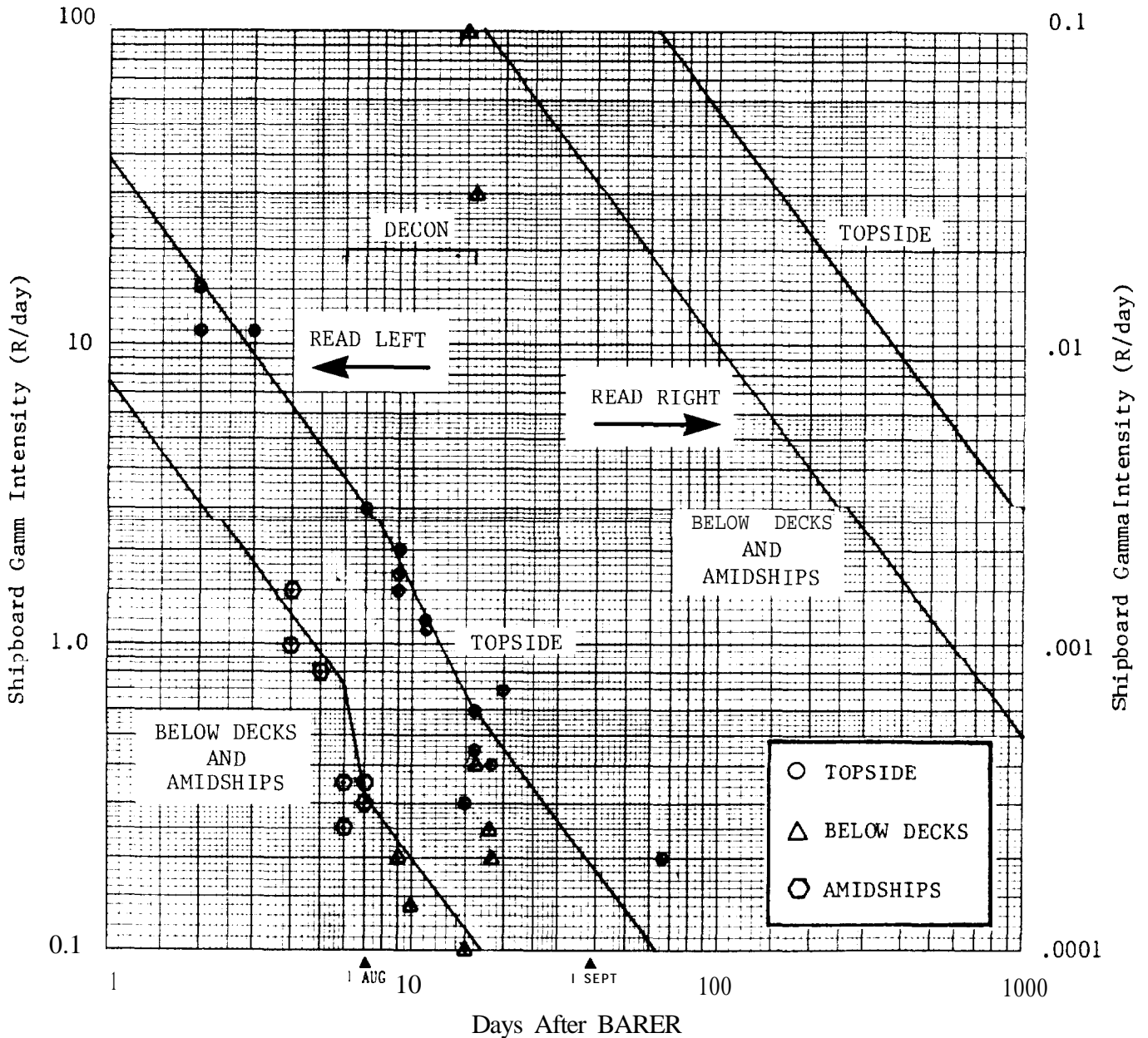
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated 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

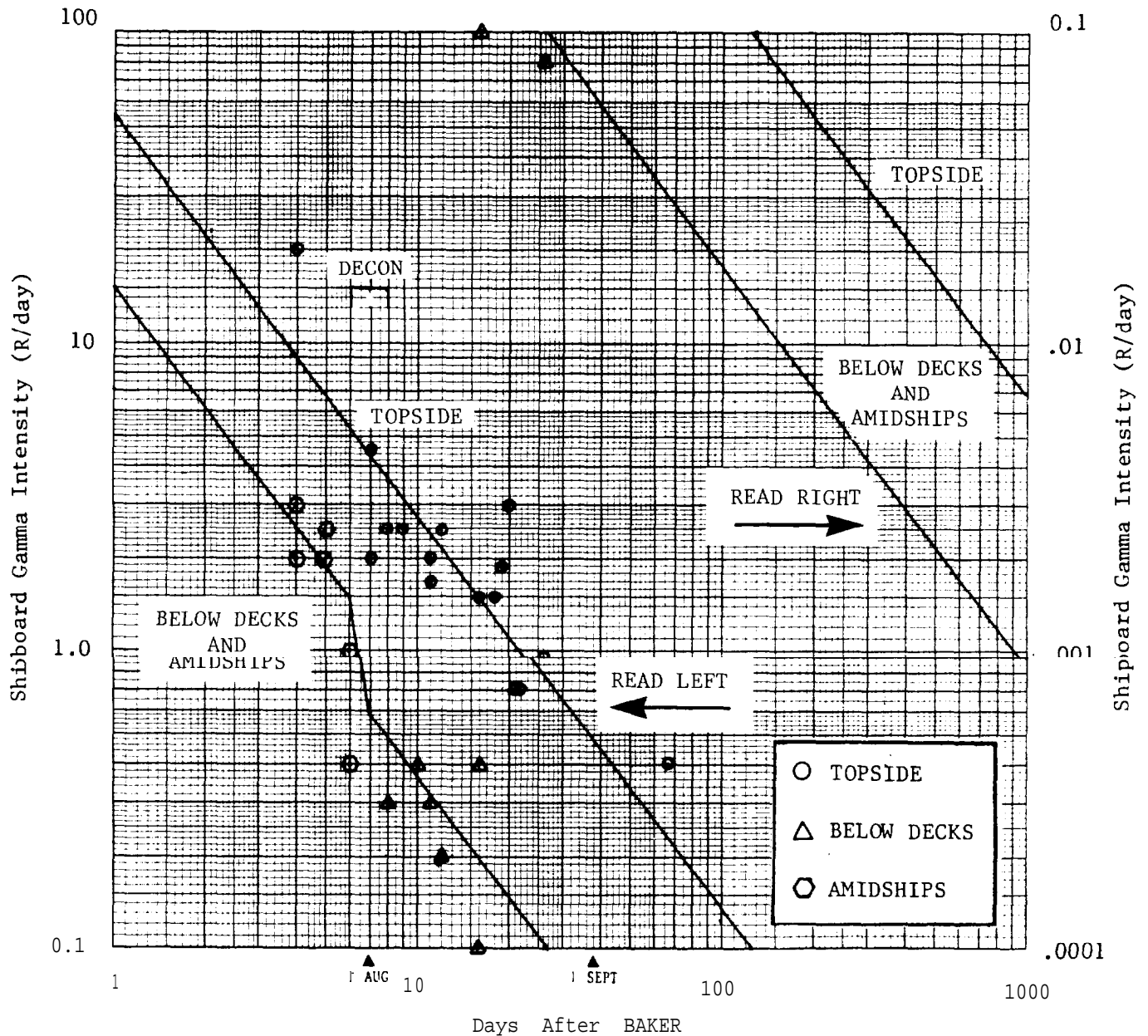
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated 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

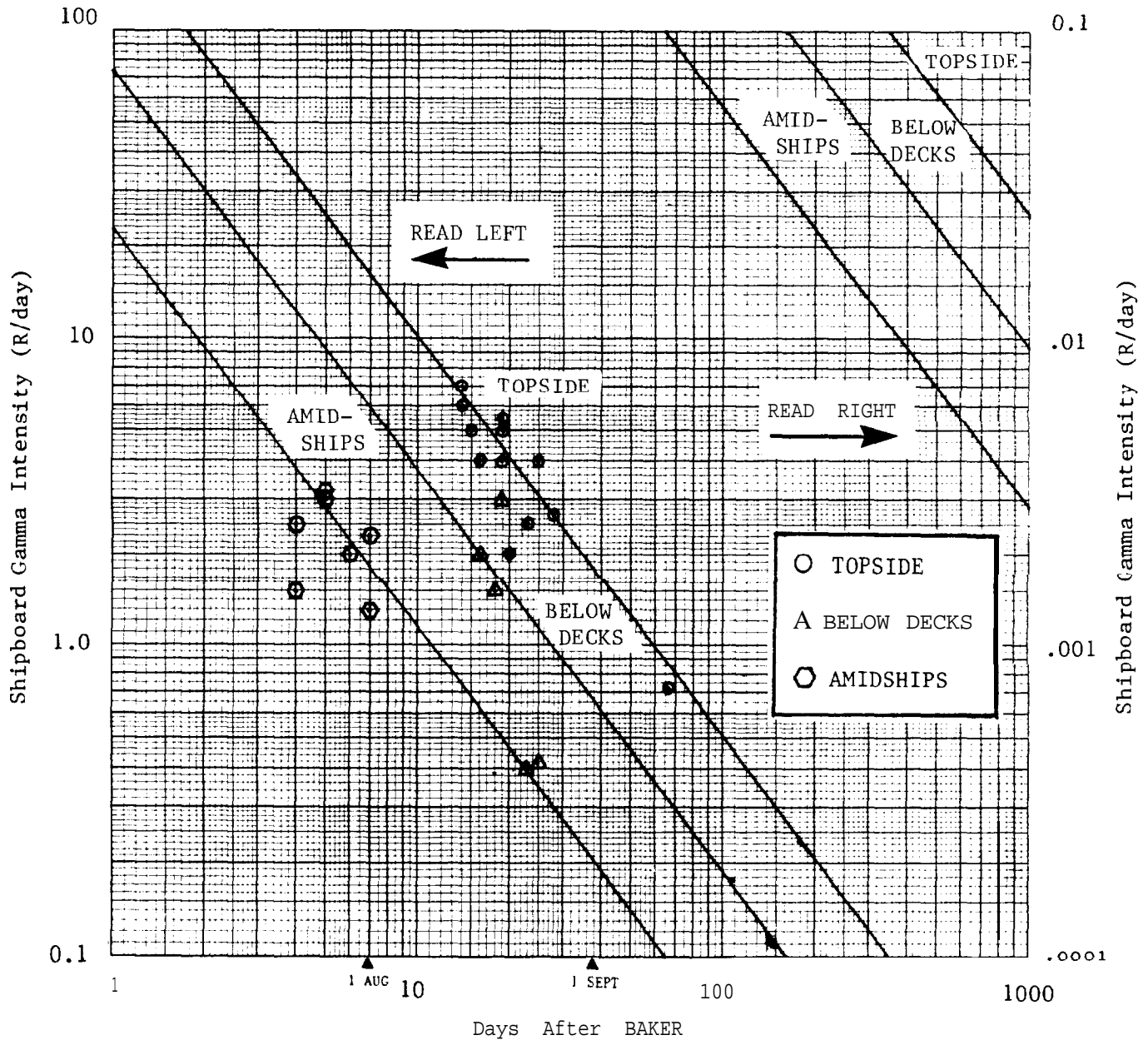
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 2 July | Evacuated 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 KT | Air Burst (+520 ft) |
| | BAKER | 25 July 46 (0835) | 23 KT | Shallow Underwater (-90 ft) |

AVERAGE CREW MEMBER DOSE HISTORY

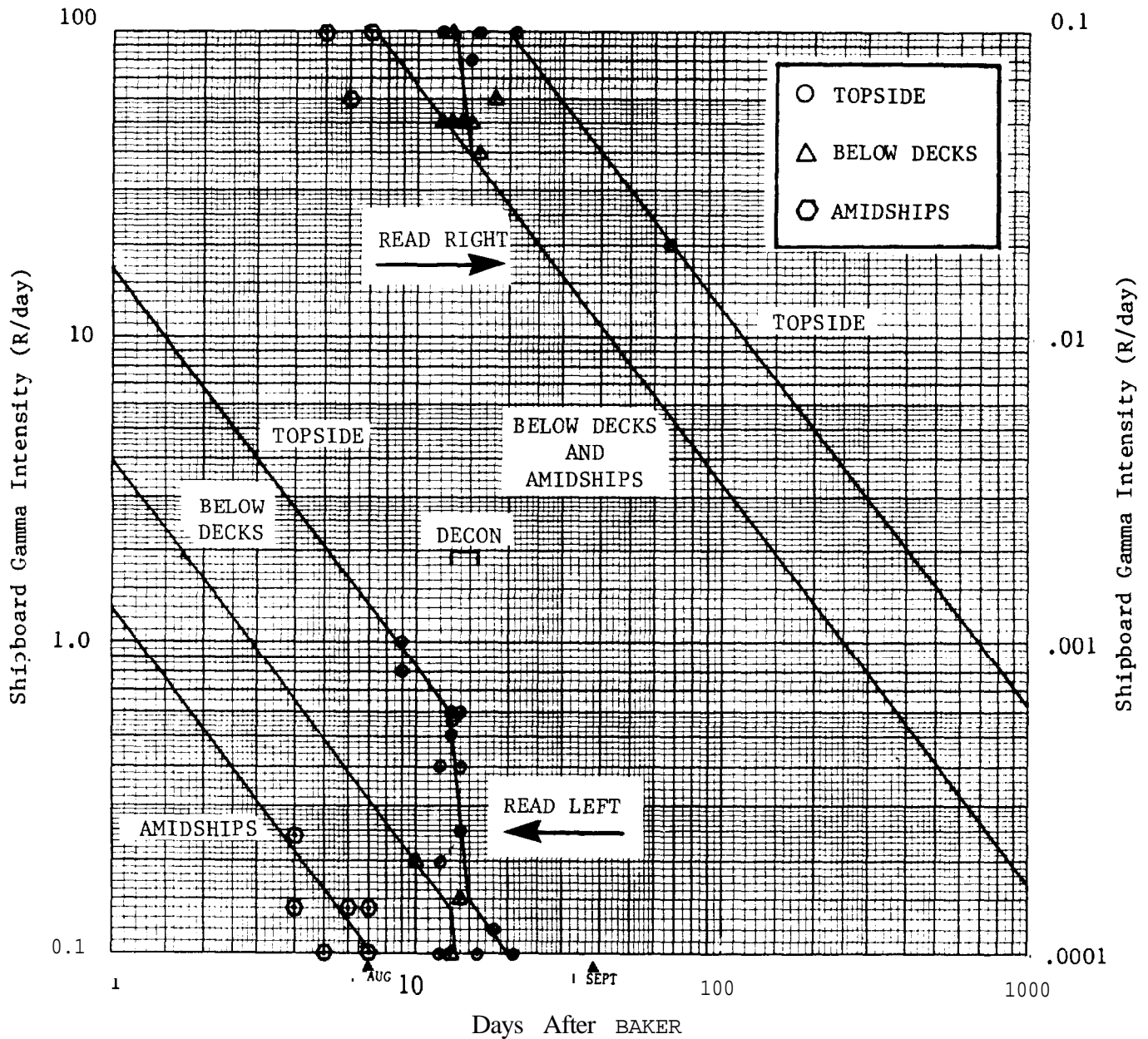
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|-------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 2 July | Evacuated aboard 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: TEST | DATE (TIME) | SPEED | 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

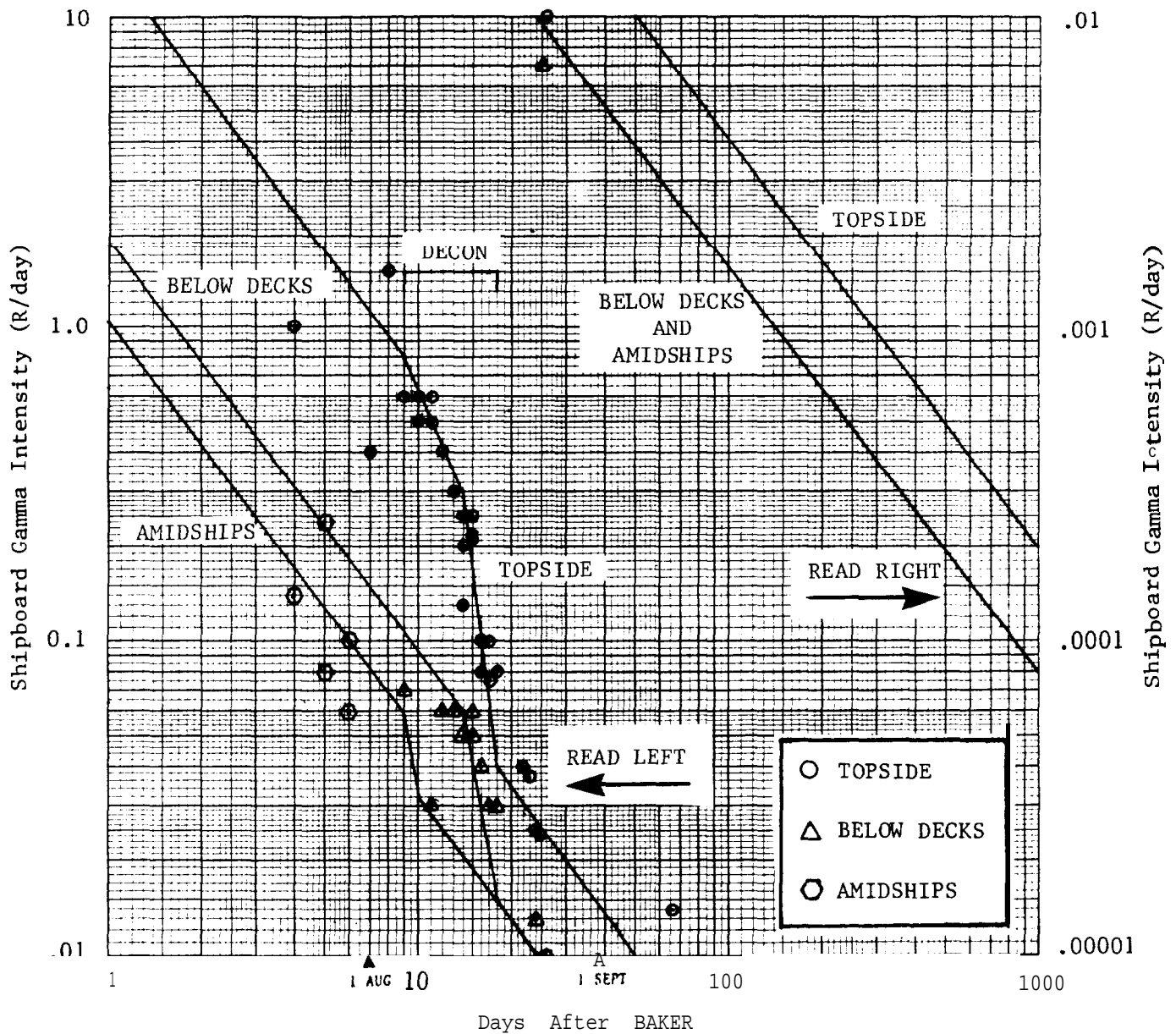
| DATE (1946) | CREW LOCATION | RECONSTRUCTED FILM BADGE DOSE (REM) |
|--------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------|
| 30 June - 1 July | ABLE Evacuated aboard BEXAR (APA-237) (Observed 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

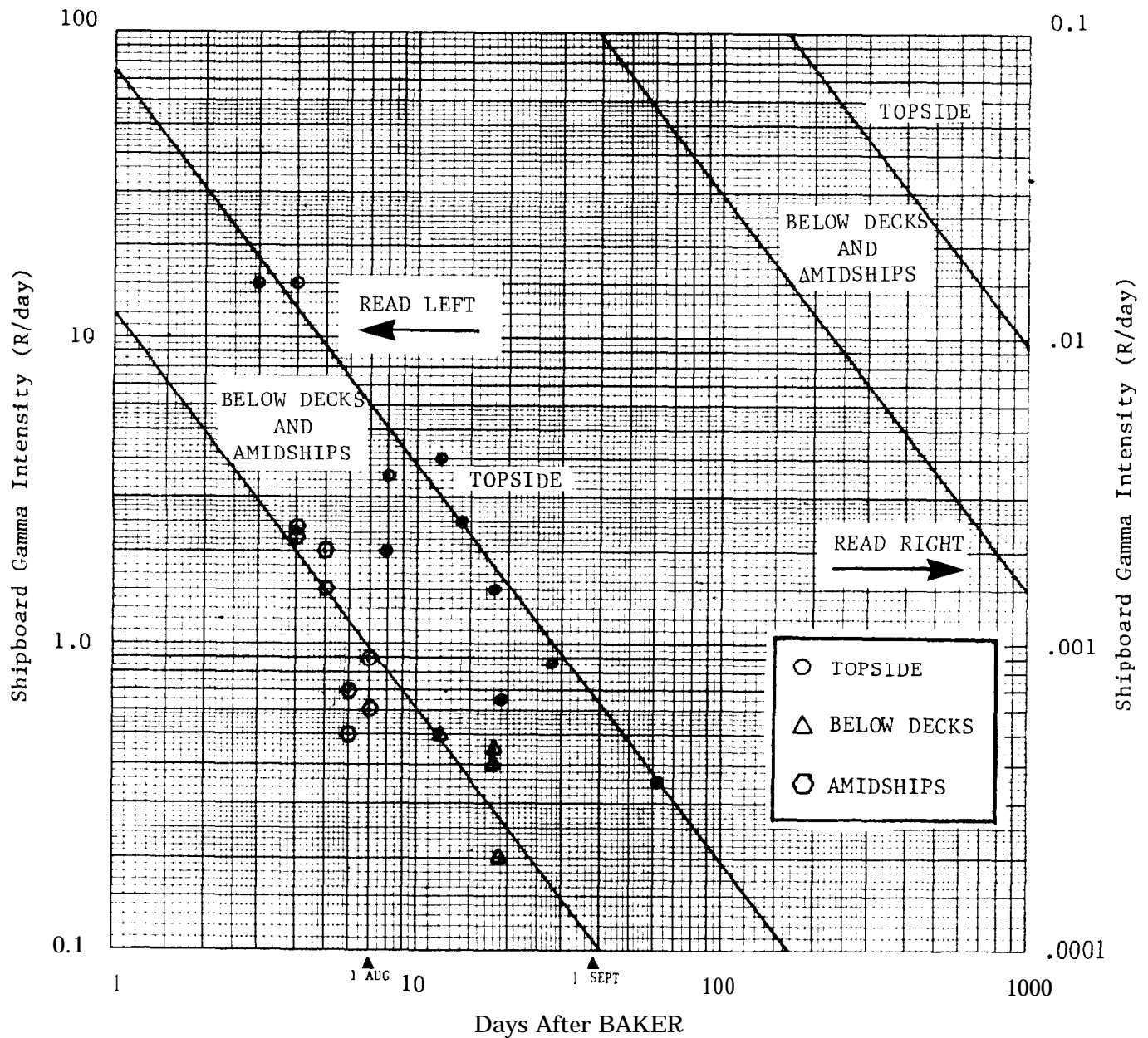
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|----------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------|
| 30 June - 1 July | ABLE Evacuated aboard HENRICO (APA-45) (Observed Shot ABLE from a distance of 12 miles) | 0.000 |
| 2 July -23 July | Aboard CATRON | 0.003 |
| 24 July -12 August | BAKER 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

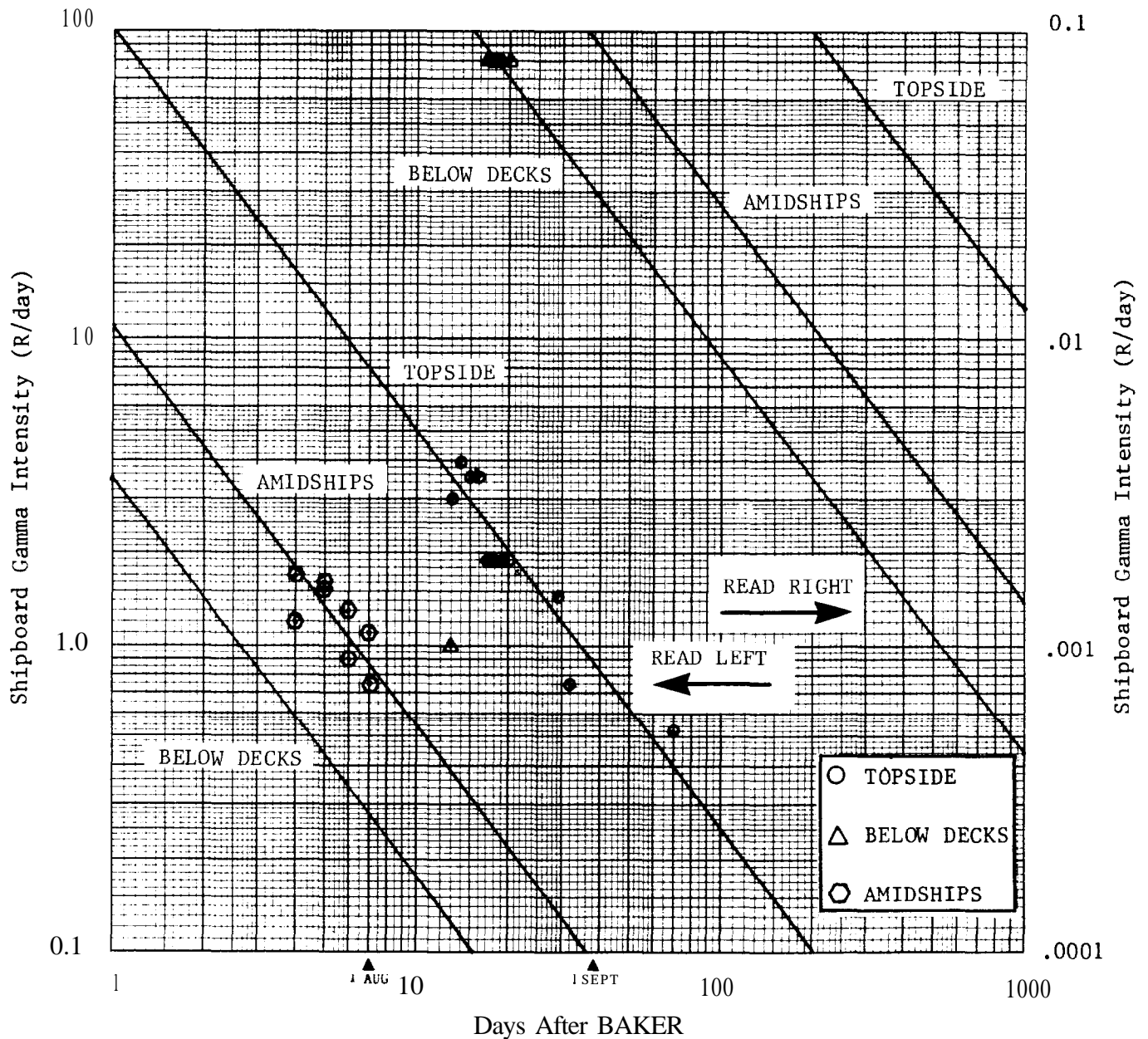
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June-3 July | Evacuated aboard 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 E D)</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

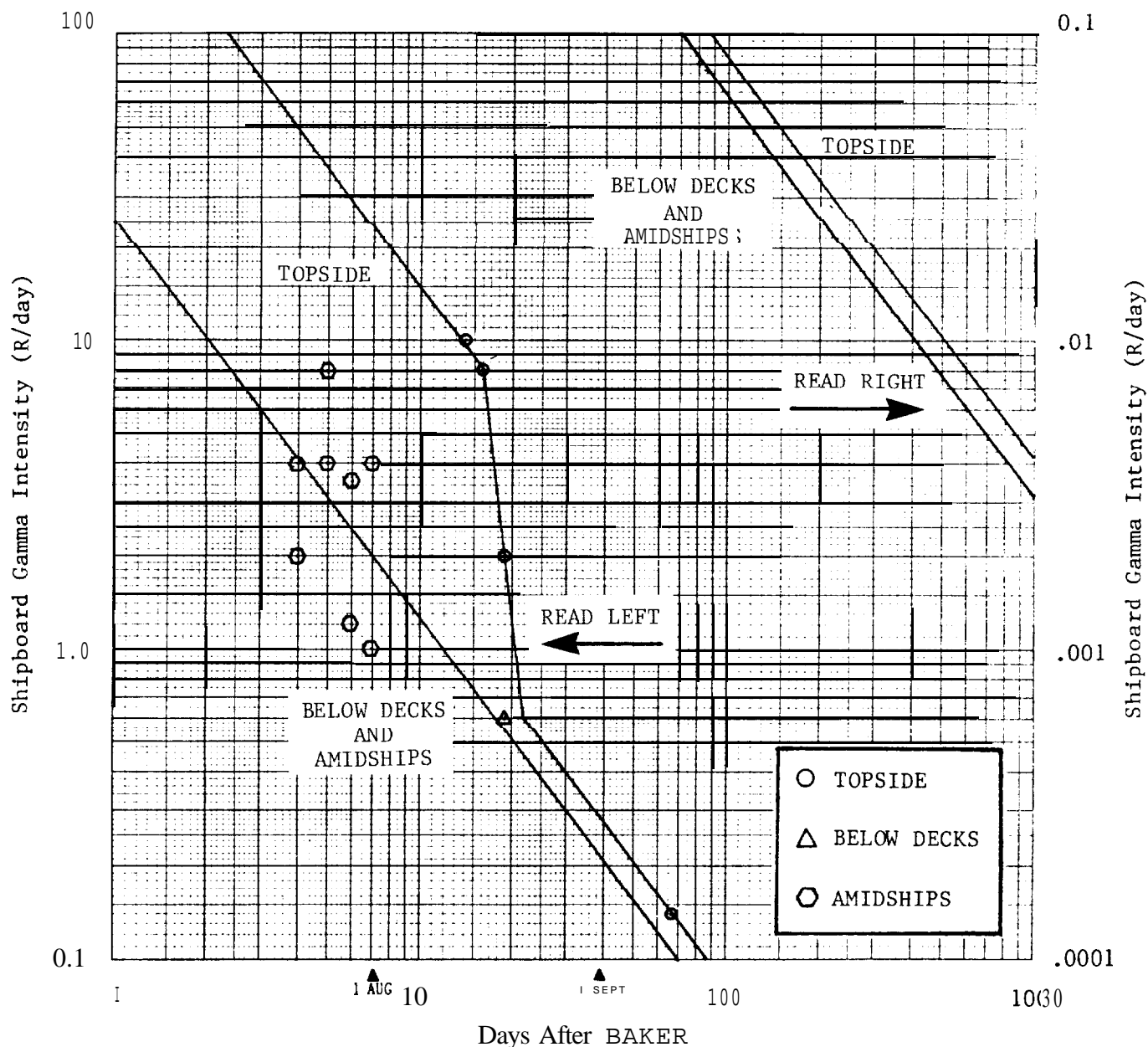
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 2 July | Evacuated 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

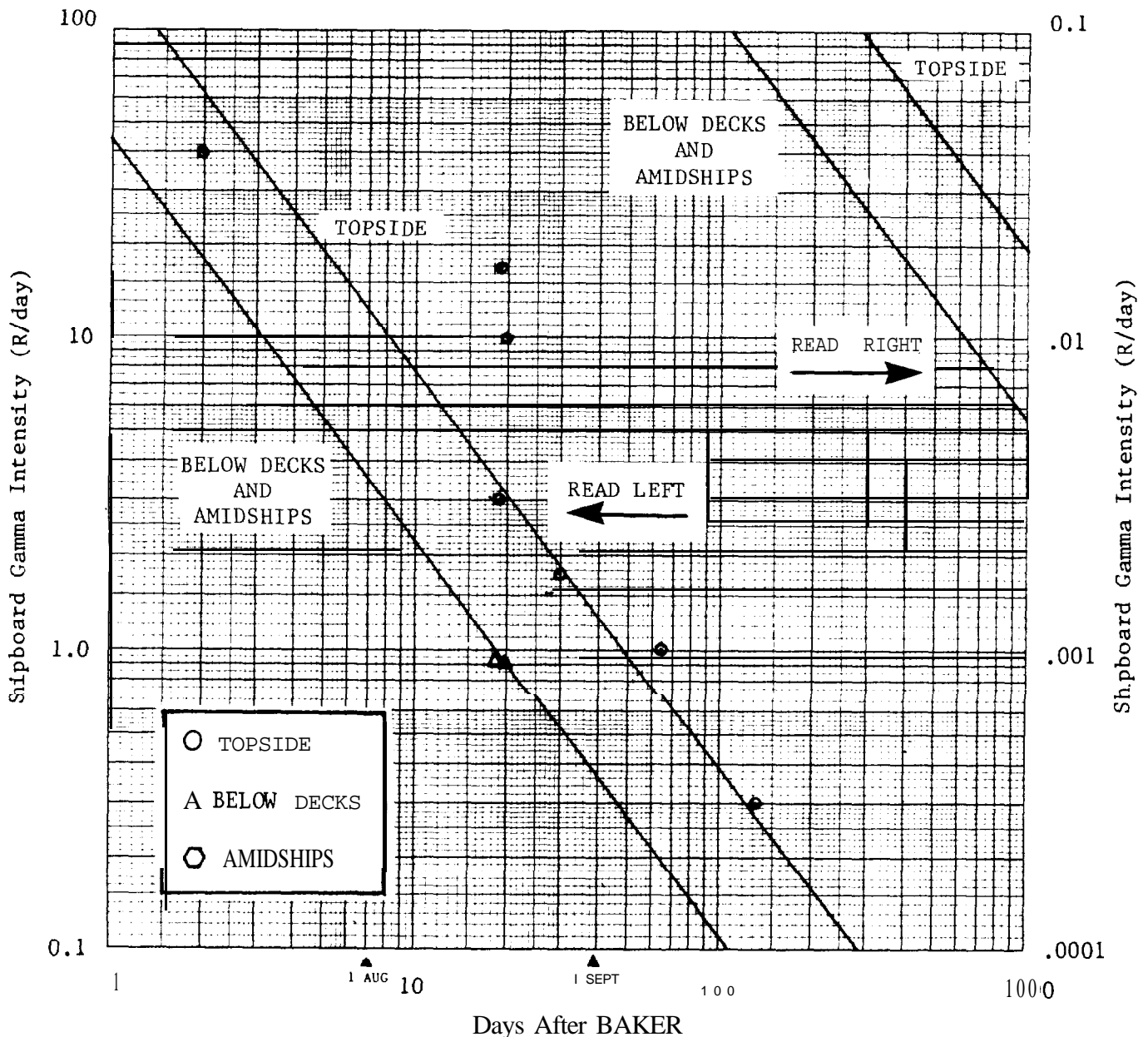
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 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

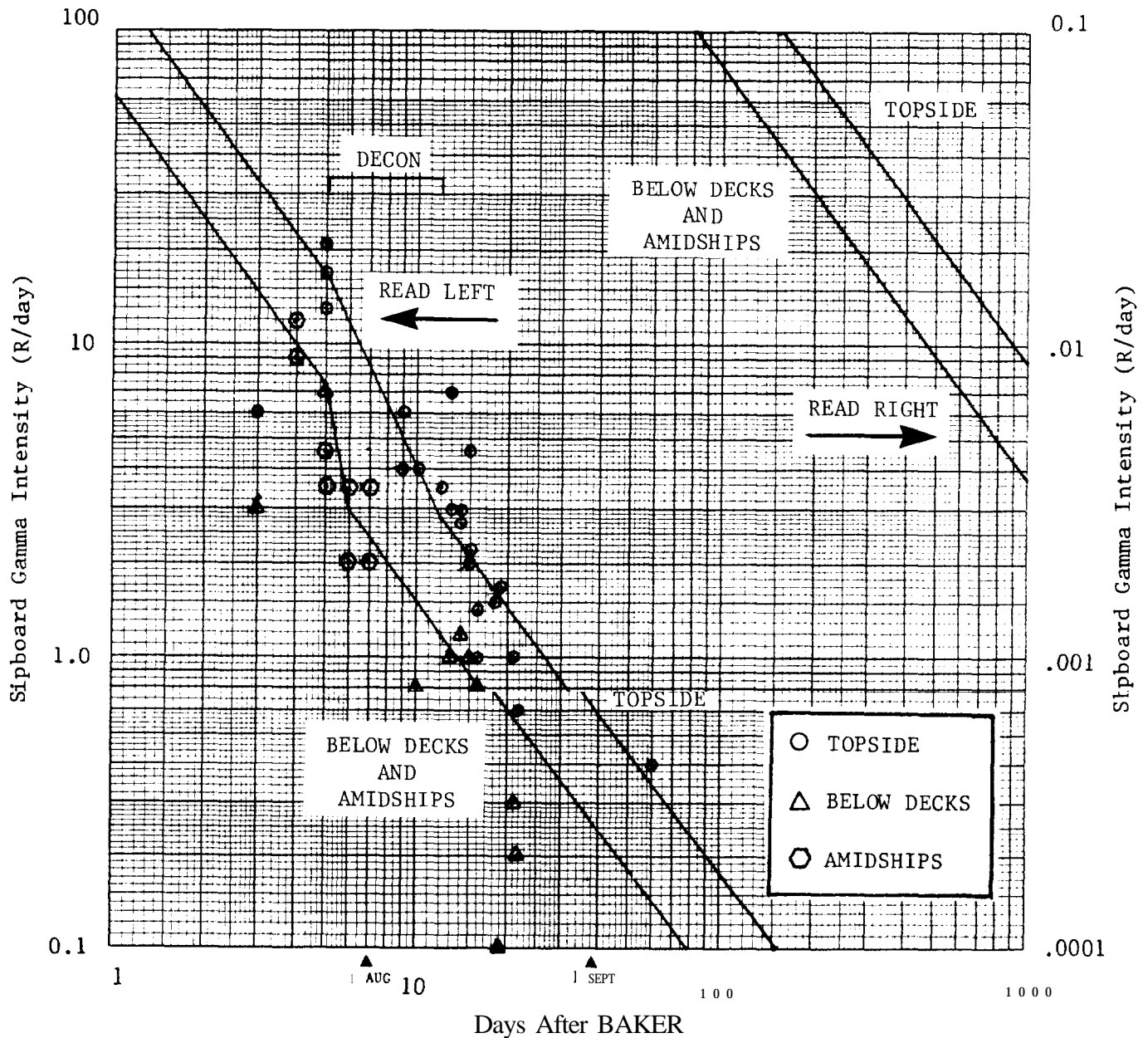
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------|
| ABLE | | |
| 30 June - 1 July | Evacuated 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

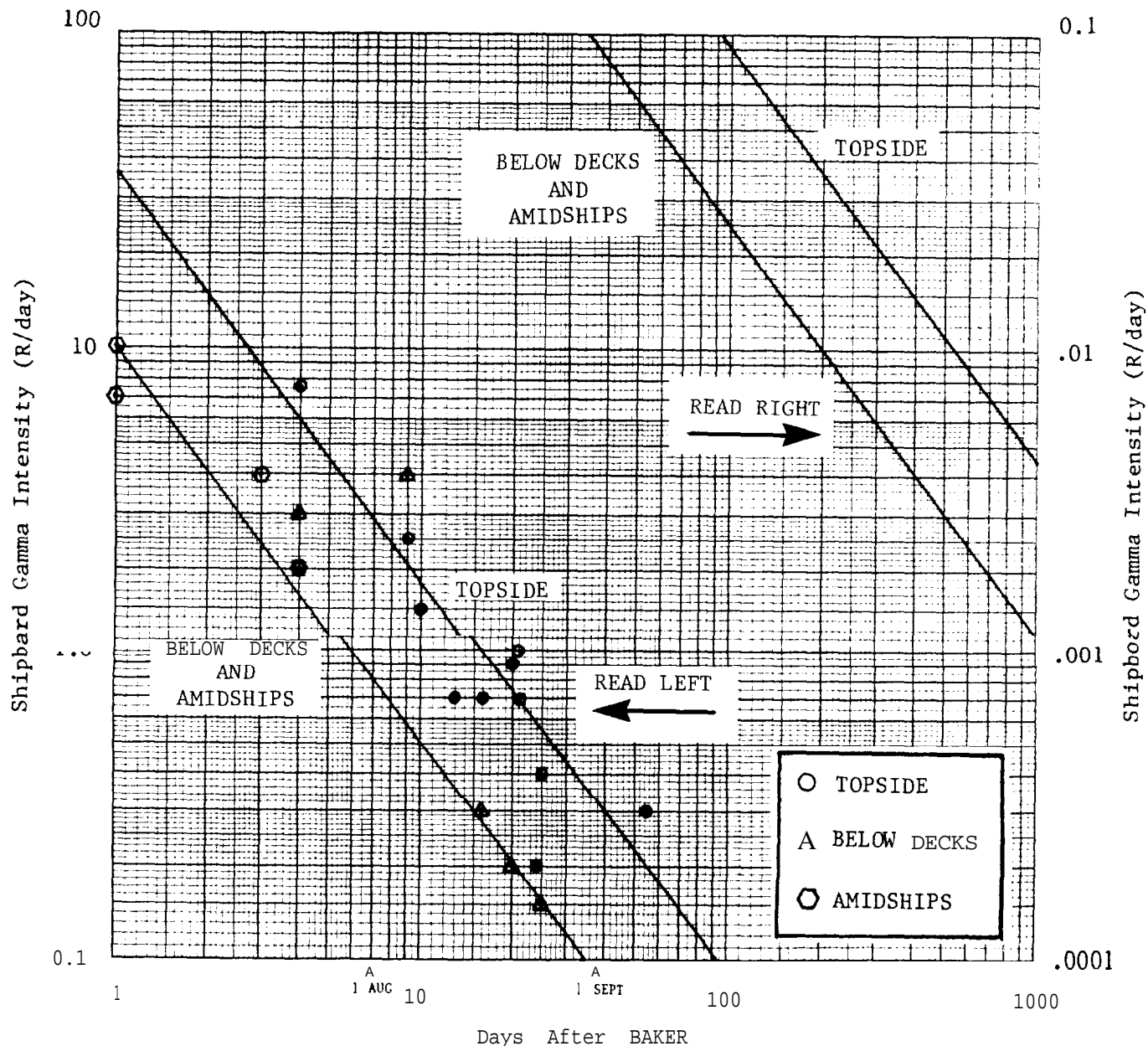
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------|
| 30 June - 1 July | ABLE Evacuated 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 |
| 24 July -31 July | BAKER 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

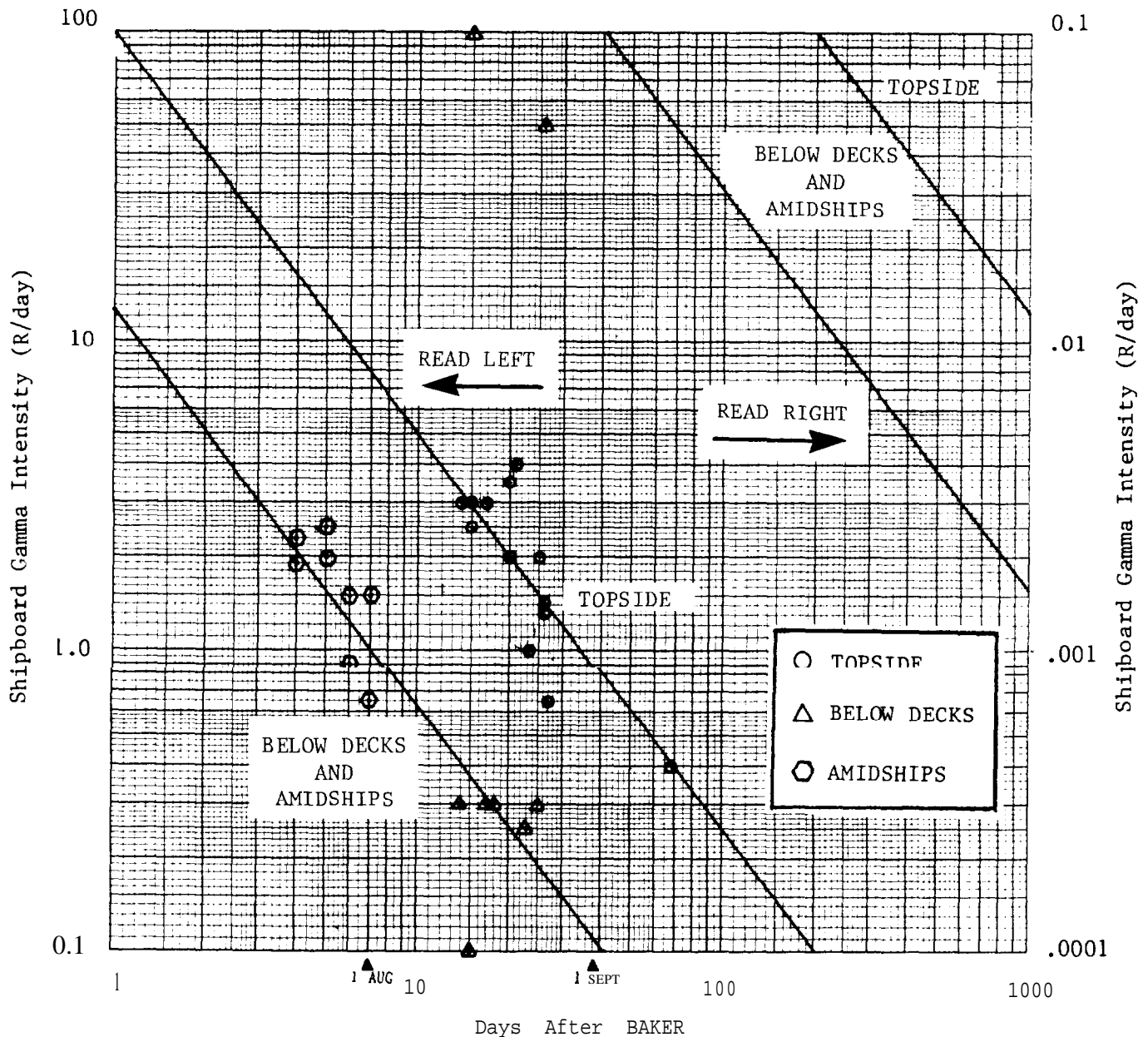
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| 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 (TIME)</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 - 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 L E S</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

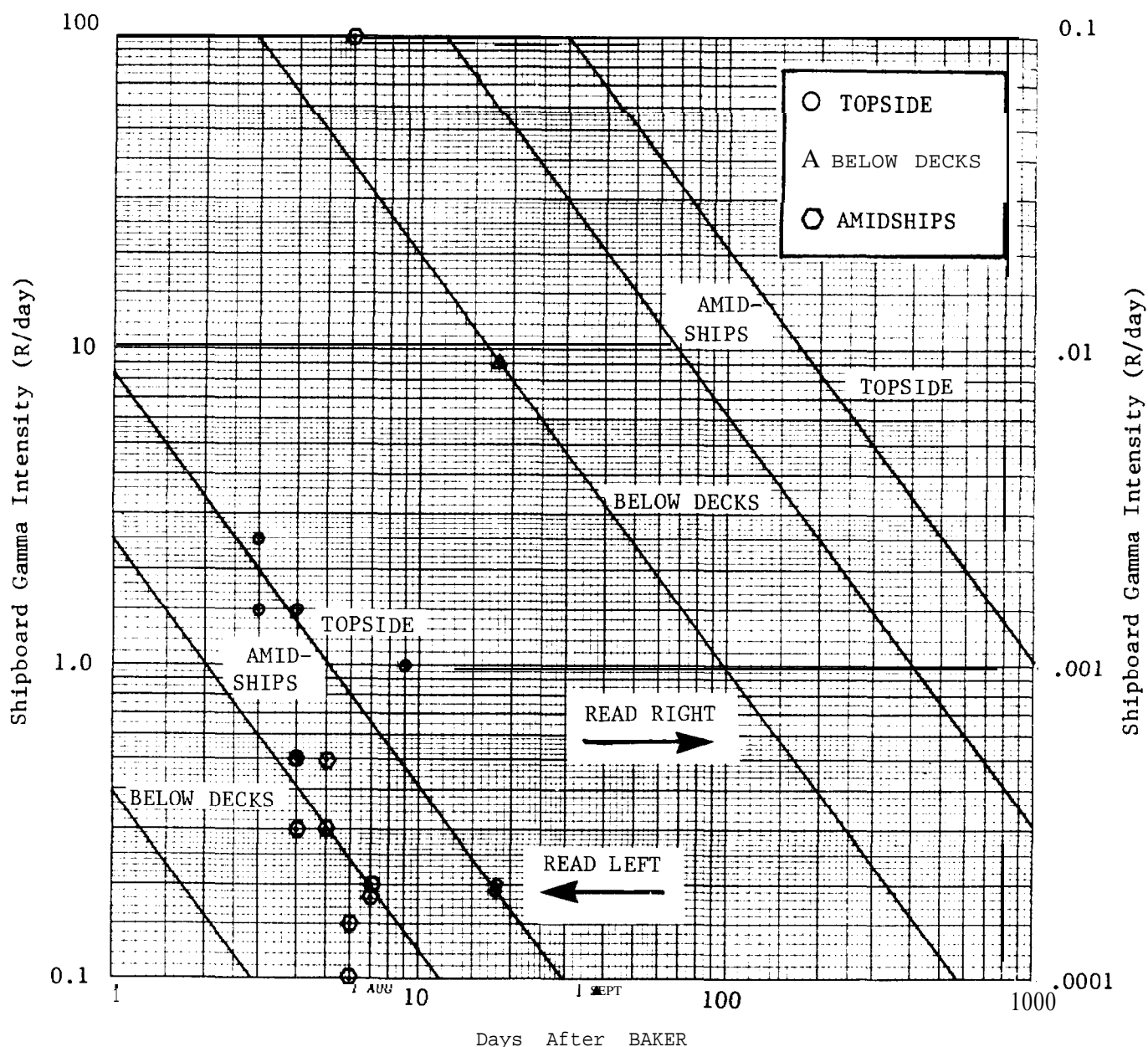
| <u>D A T E (1 9 4 6)</u> | <u>C R E W L O C A T I O N</u> | <u>R E C O N S T R U C T E D F I L M B A D G E D O S E (R E M)</u> |
|----------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| | 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

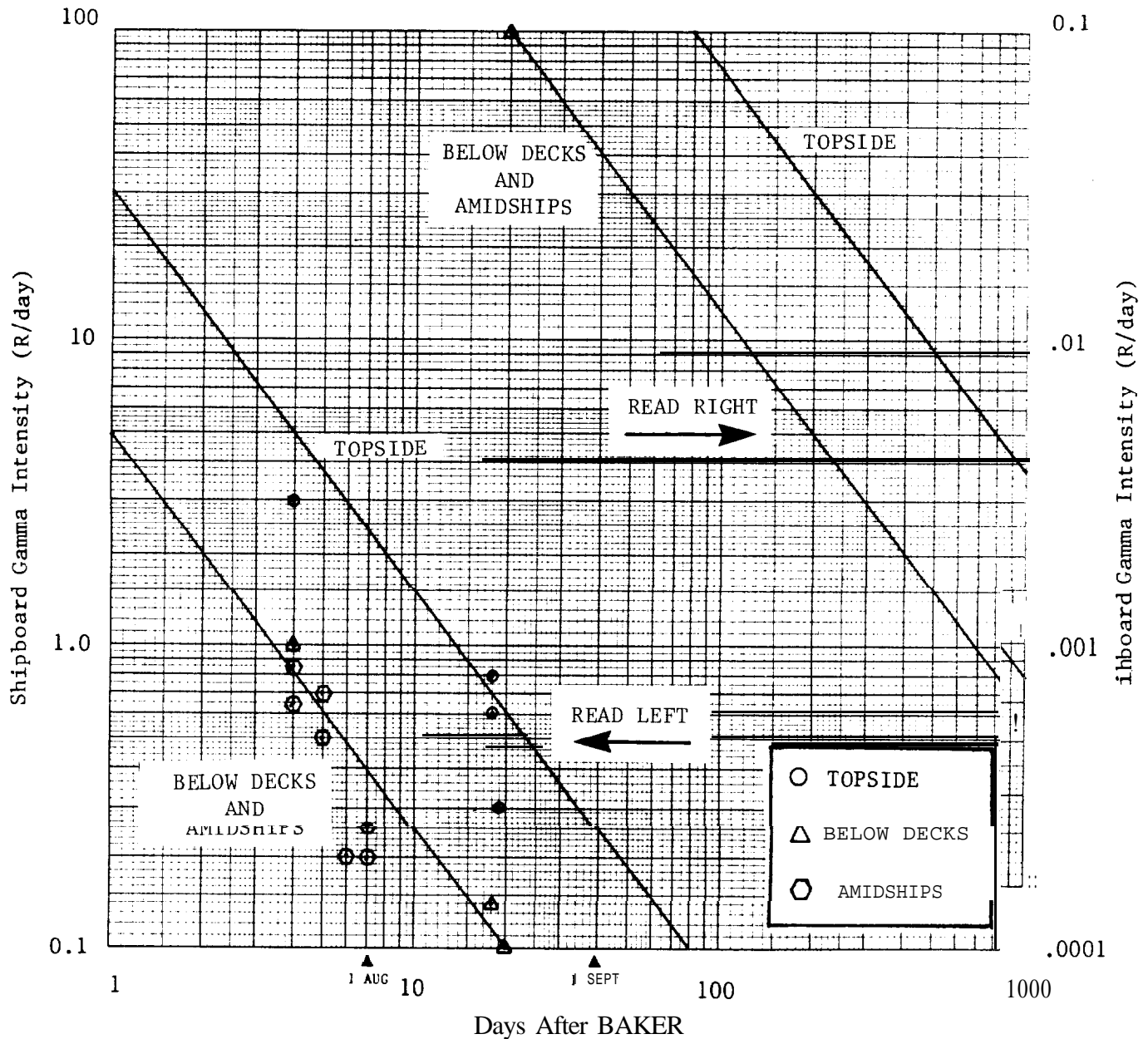
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FIL M BADGE DOSE (REM)</u> |
|--------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated 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

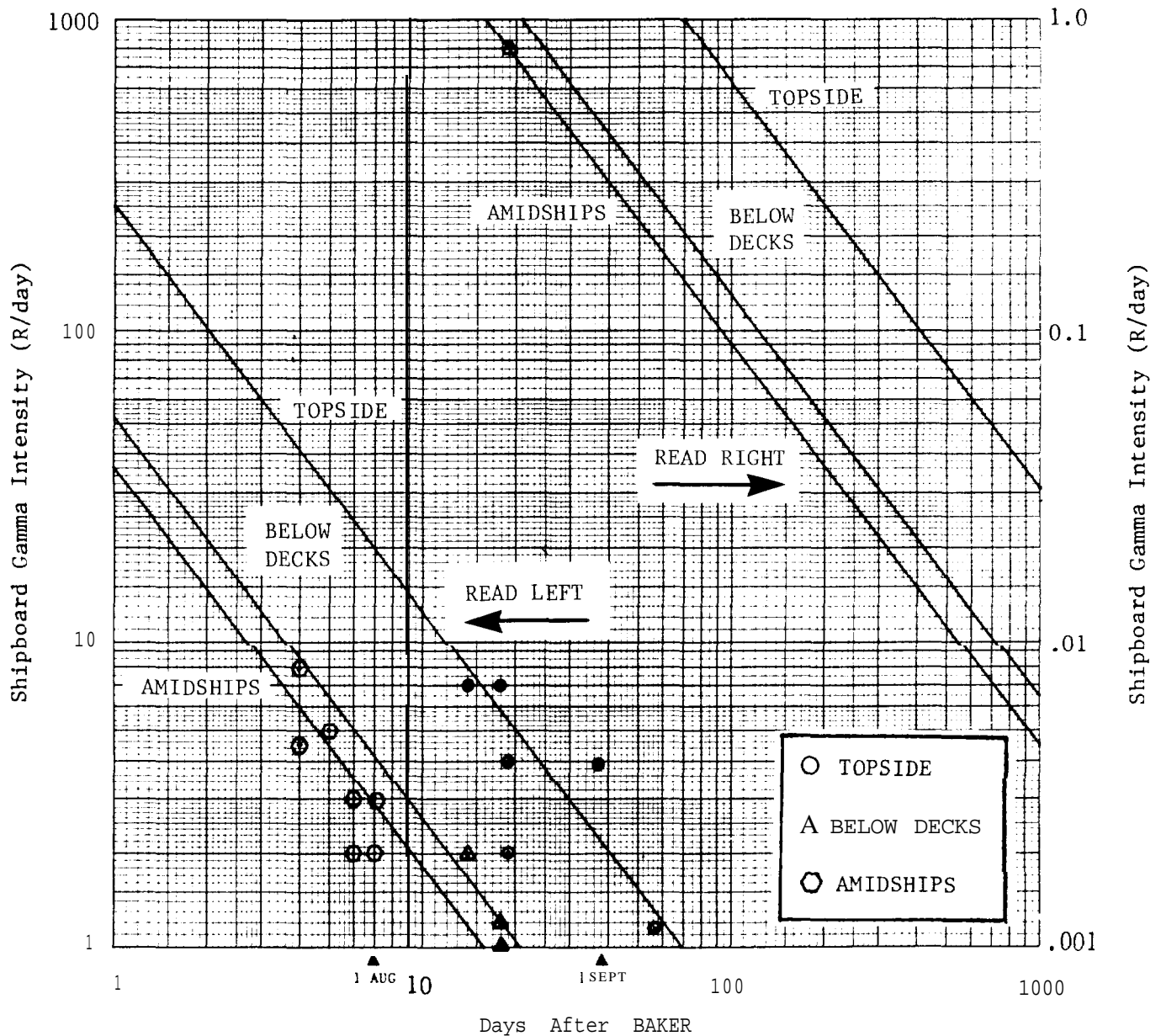
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - I July | Evacuated 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> | RECONSTRUCTED FILM BADGE <u>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

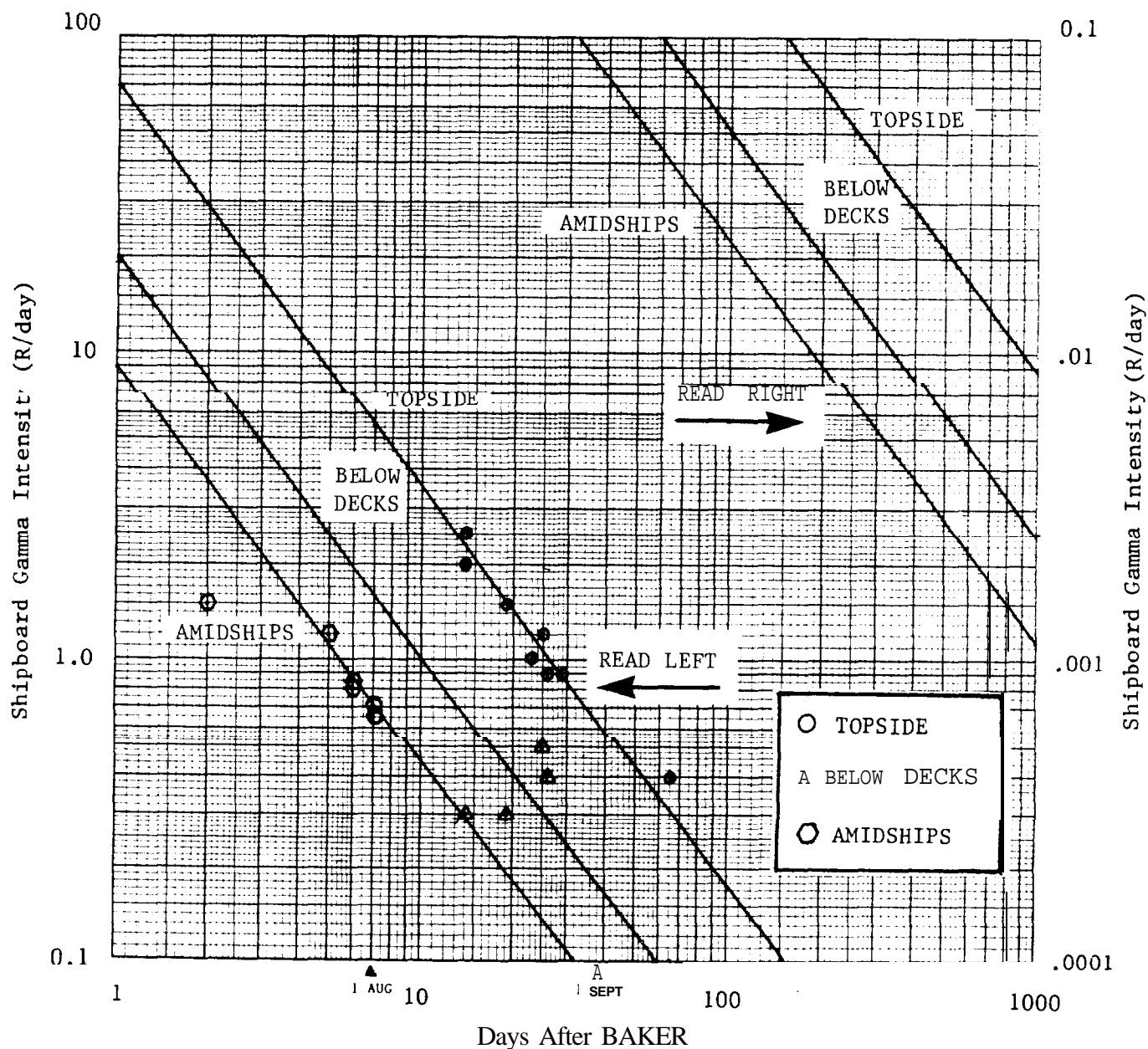
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 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

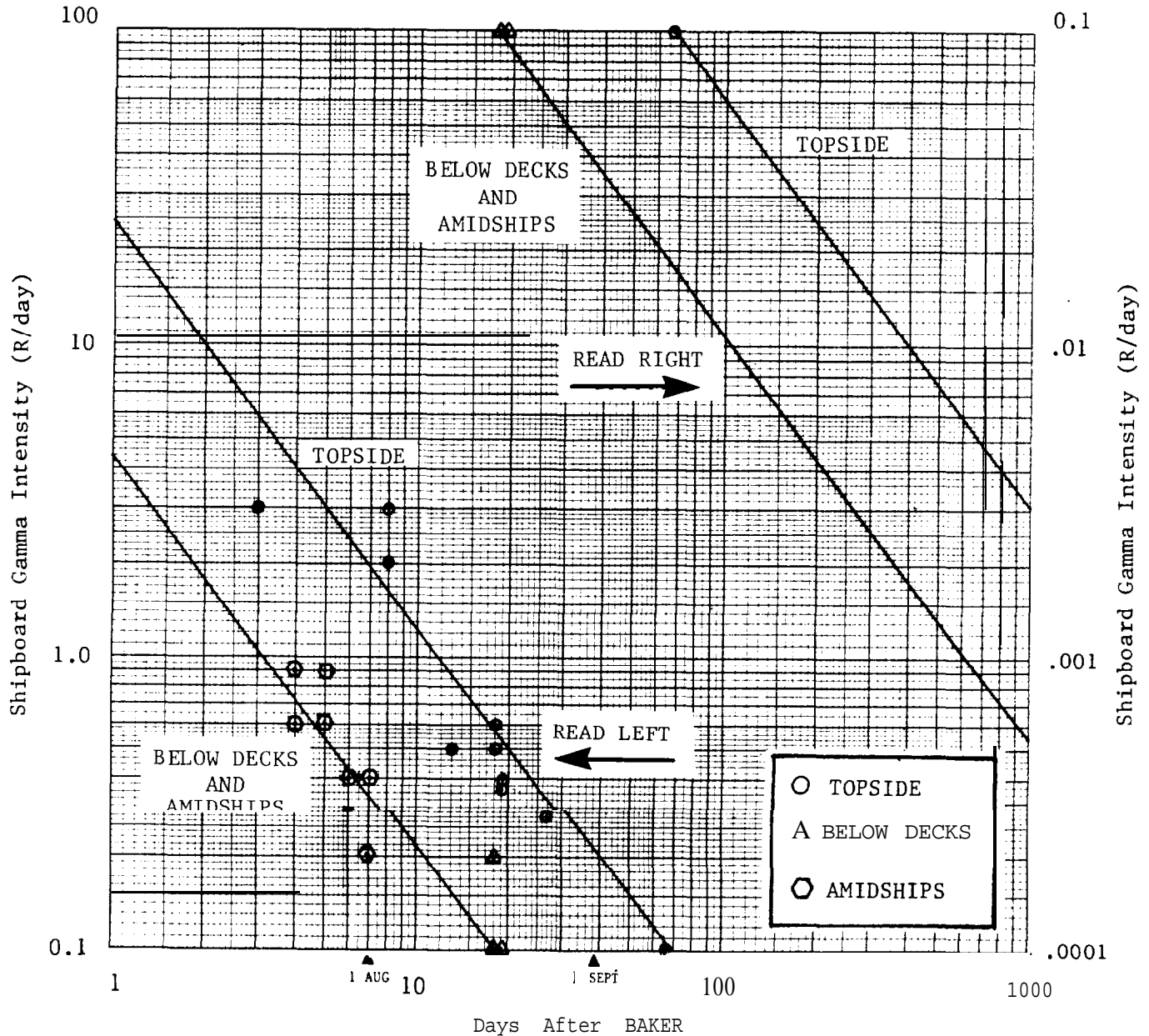
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 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

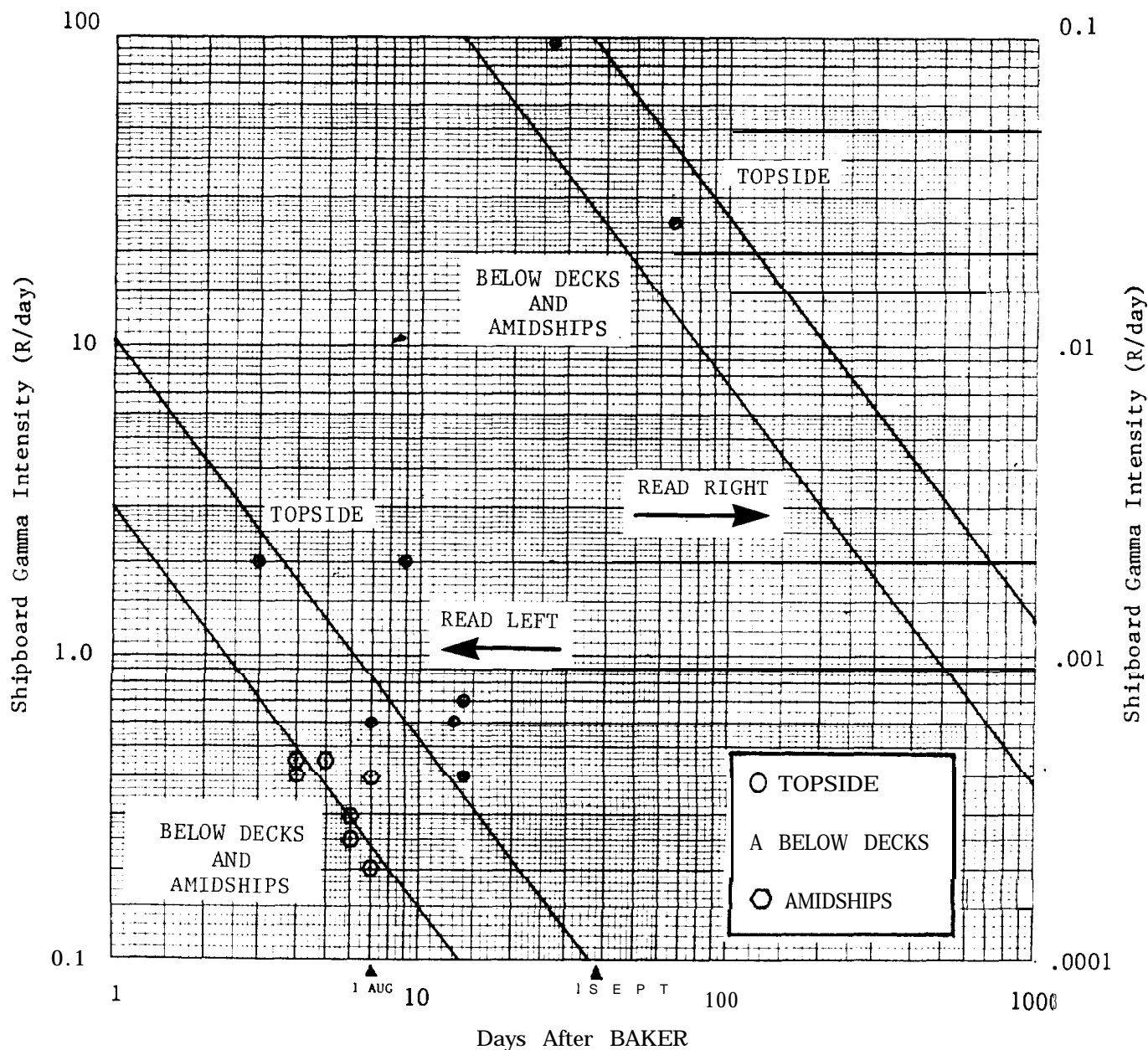
| DATE (1946) | CREW LOCATION | RECONSTRUCTED FILM BADGE DOSE (REM) |
|-----------------------|--------------------------------------------------------------------------------------------|-------------------------------------------|
| | ABLE | |
| 29 June - 1 July | Evacuated aboard ROCKWALL (APA-230) (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: | <u>TEST</u> | <u>D A T E (T I M E E D)</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

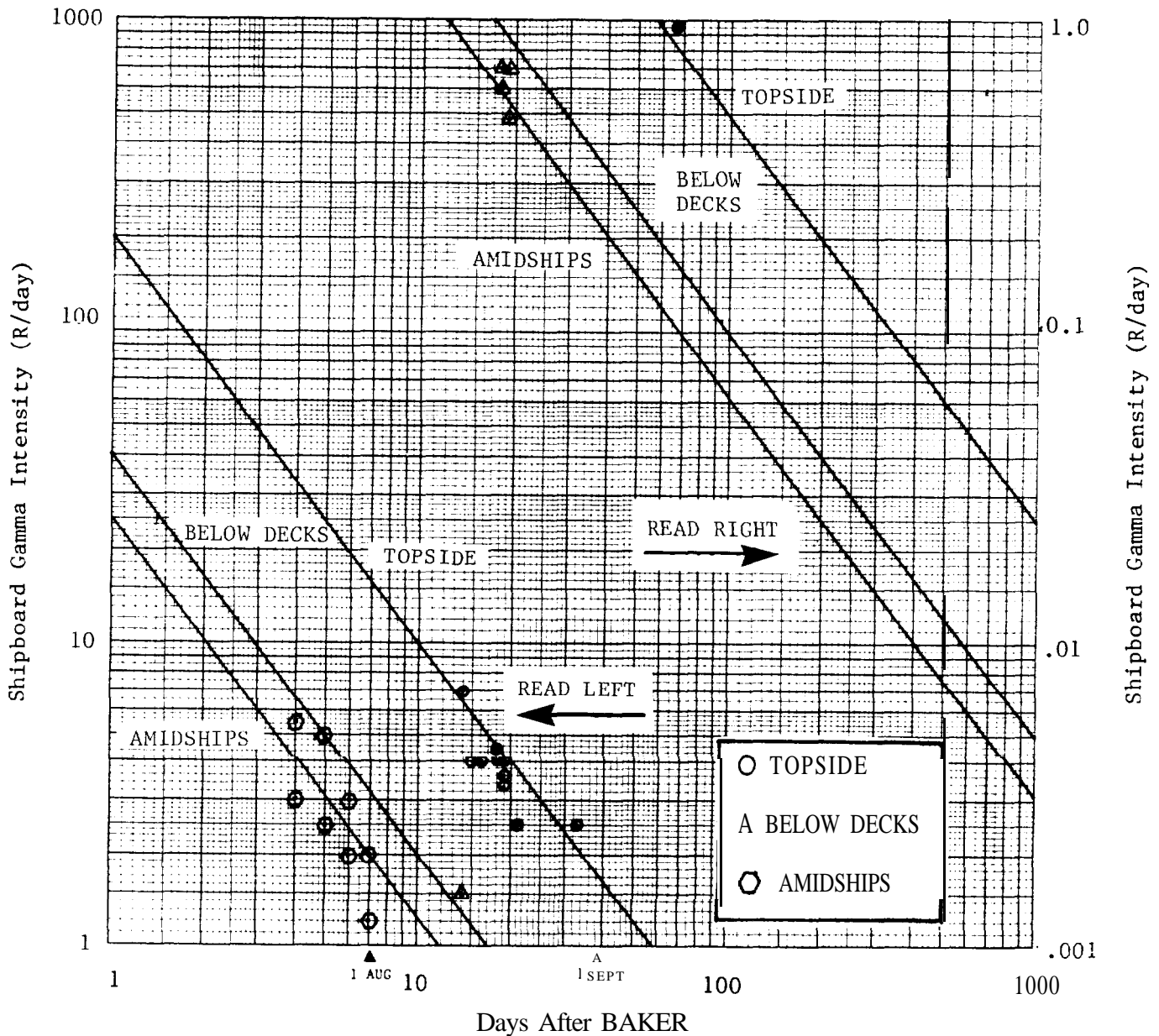
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 29 June - 1 July | Evacuated 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-REMANNED

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

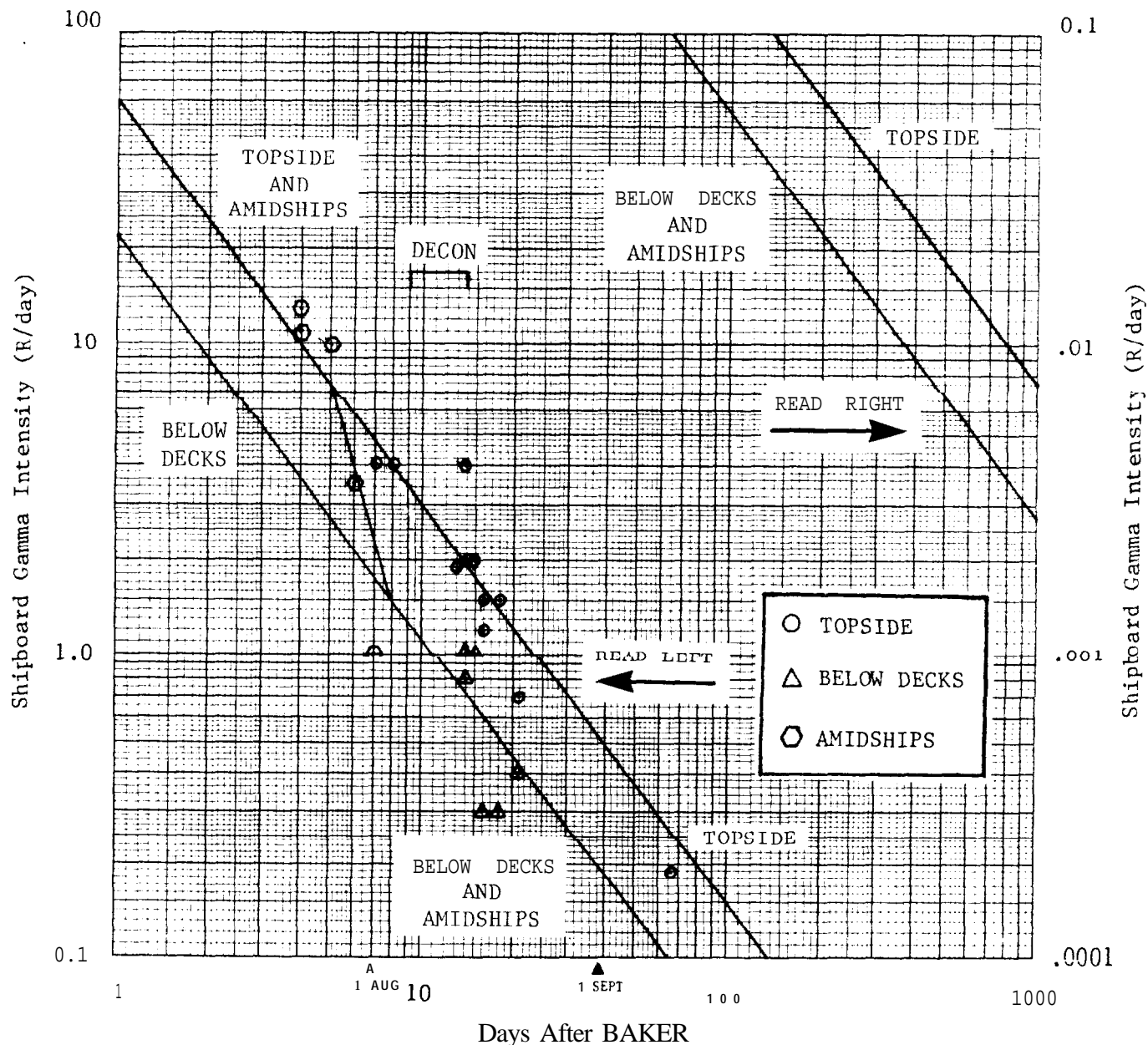
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 2 July | Evacuated 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-11 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

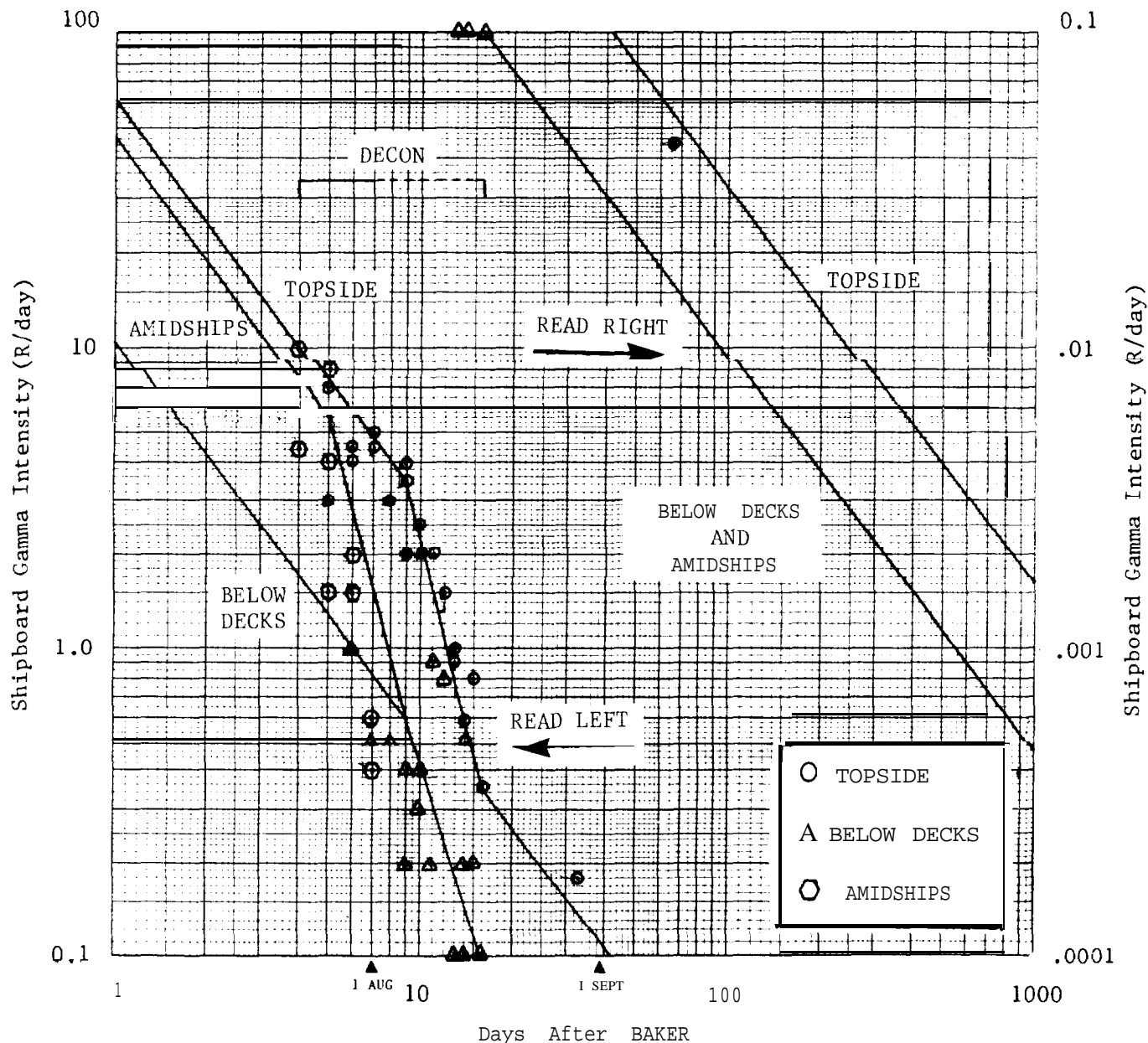
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|----------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June- 1 July | Evacuated aboard BOTTINEAU (APA-235) (Observed Shot ABLE from a distance of 25 miles) | 0.000 |
| 2 July -17 July | Aboard MUGFORD | 0.000 |
| 18 July -19 July | Evacuated aboard BOTTINEAU | 0.000 |
| 20 July -23 July | Aboard MUGFORD | 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 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 MLJGFORD (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

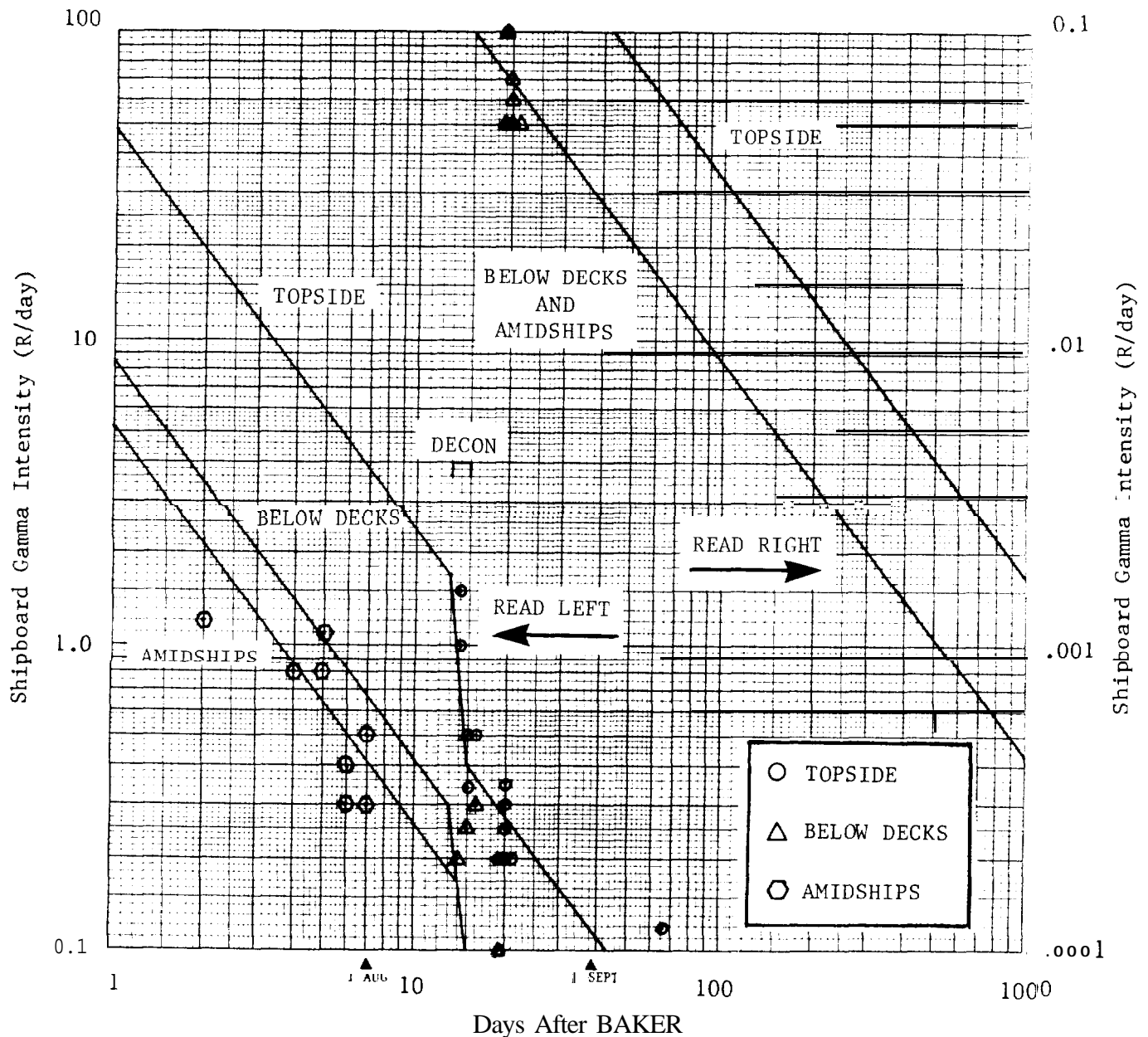
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated 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 - USS 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

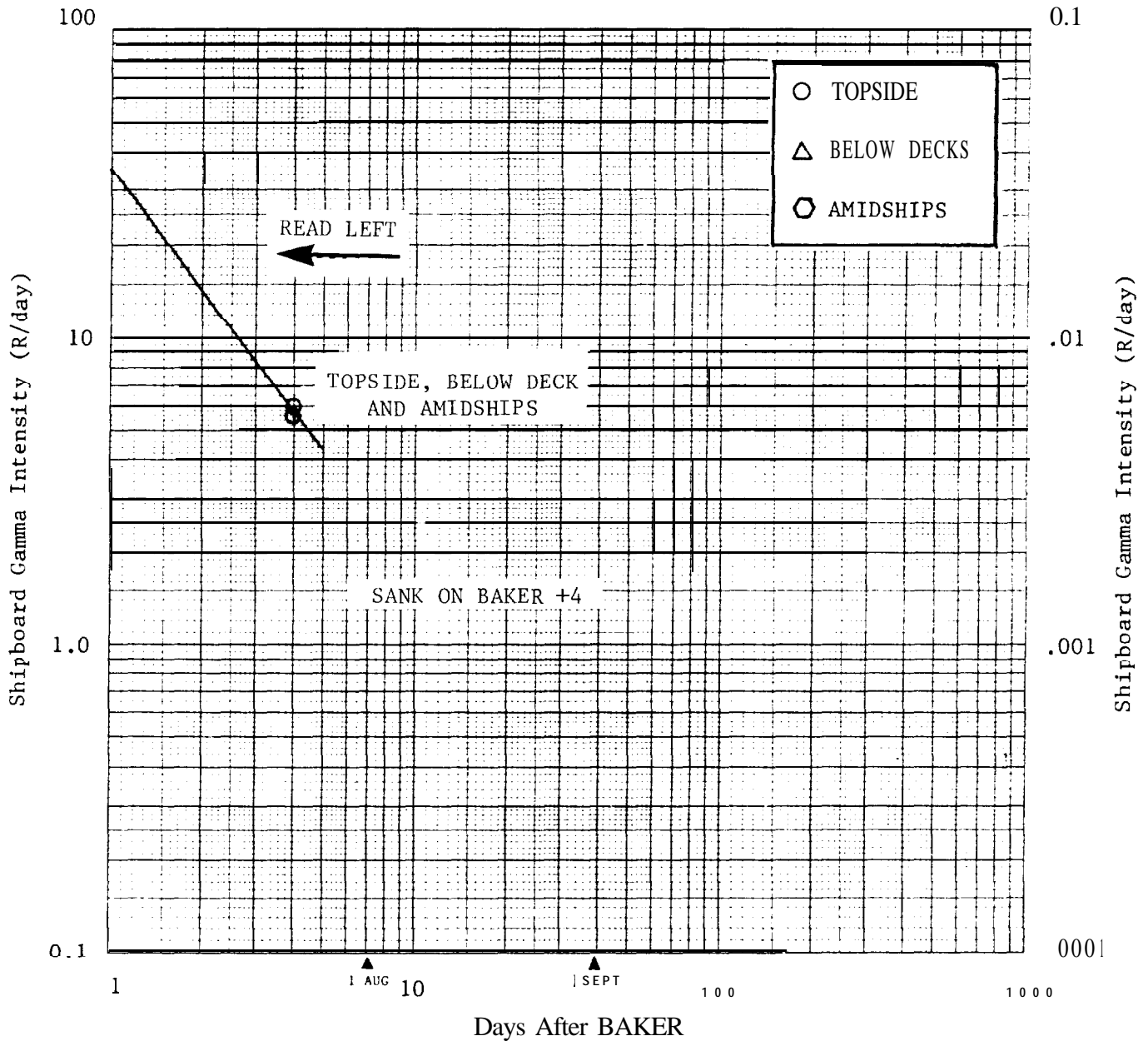
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 6 July | Evacuated 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 CREW MEMBER DOSE HISTORY

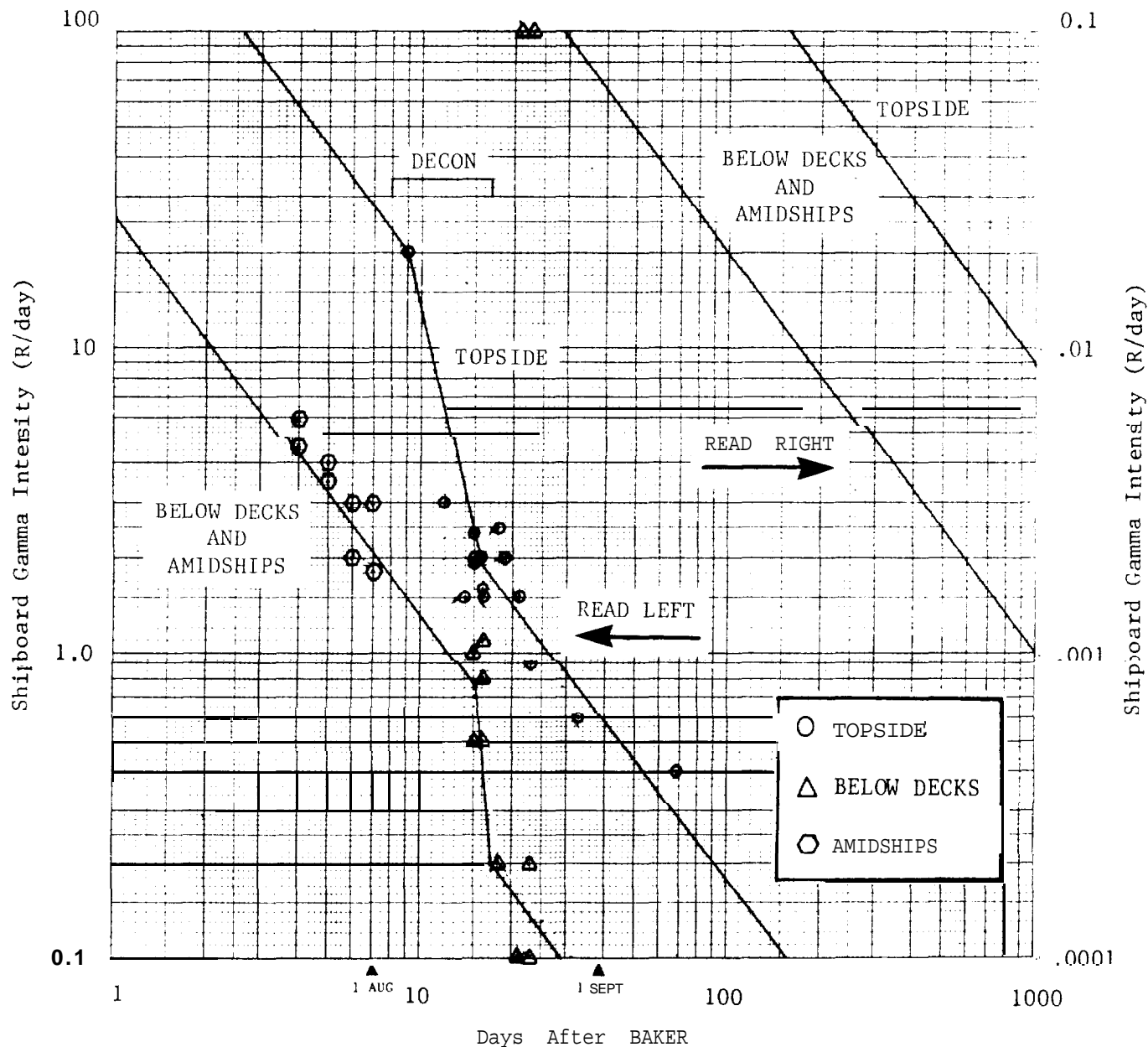
| DATE (1946) | CREW LOCATION | RECONSTRUCTED FILM BADGE DOSE (REM) |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| | ABLE | |
| 1 July - 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

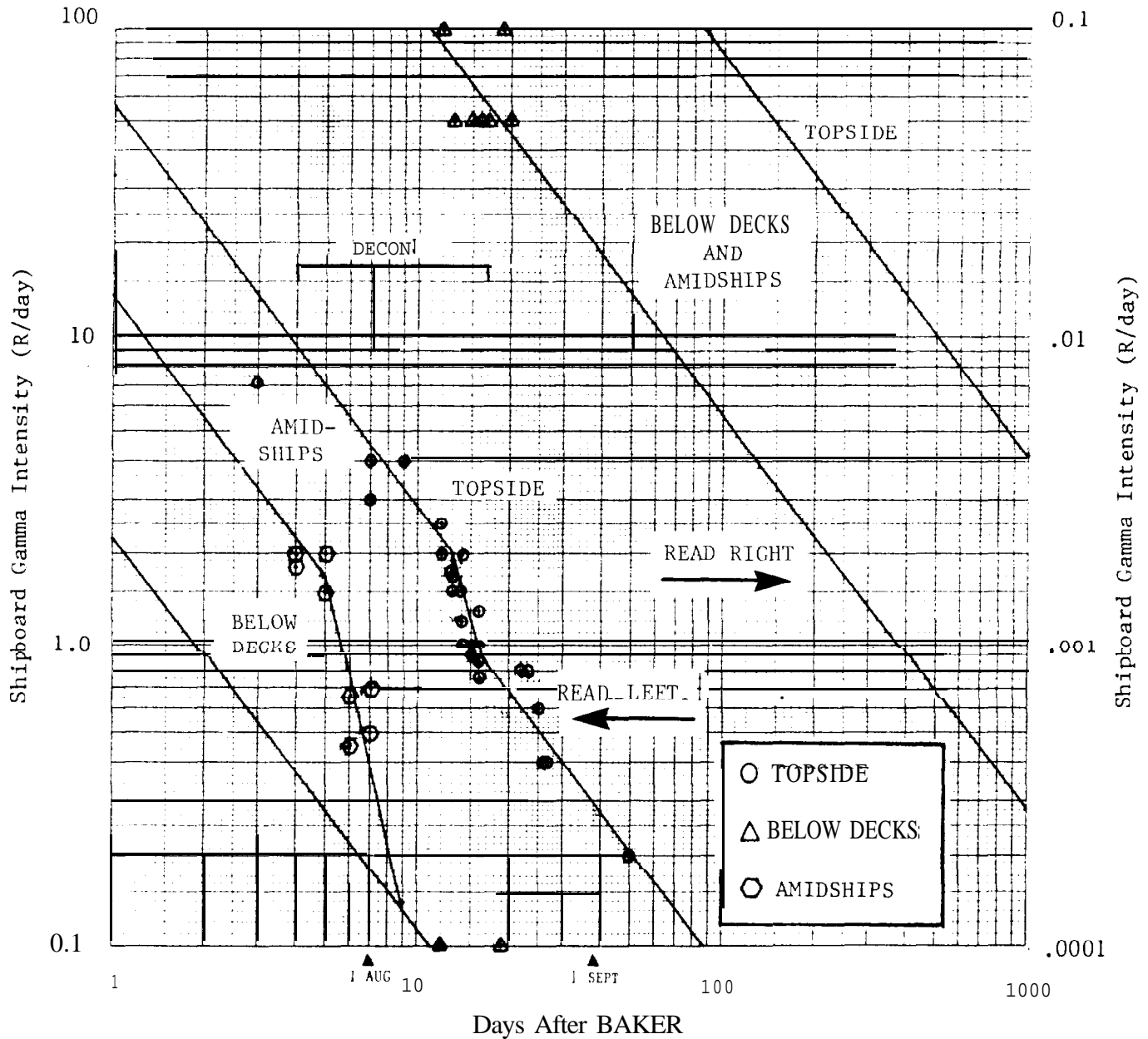
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| ABLE | | |
| 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 |
| 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 |
| 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

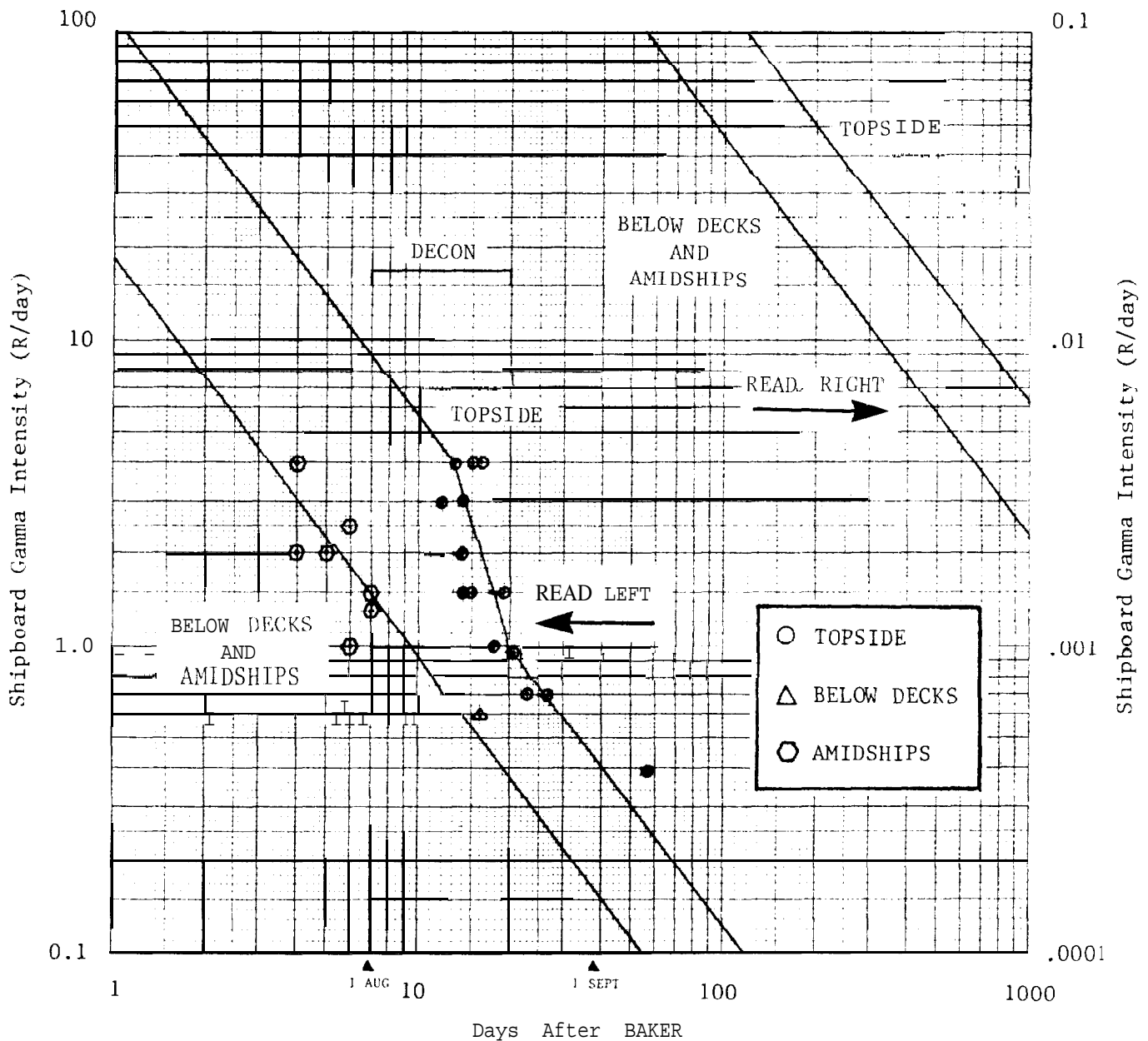
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTKUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | 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 KT | Shallow Underwater (-90 ft) | |

AVERAGE CREW MEMBER DOSE HISTORY

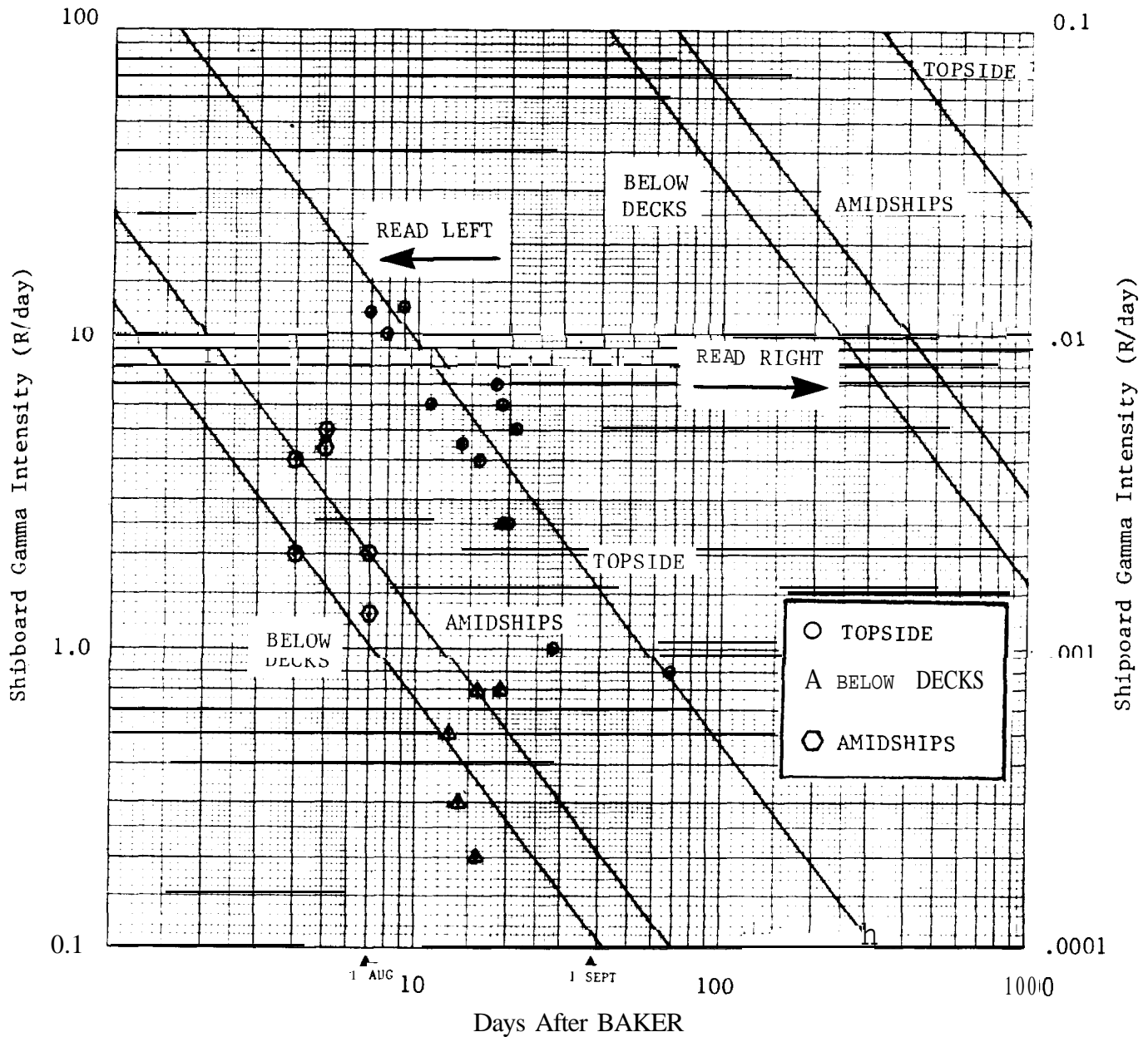
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 6 July | Evacuated aboard ROCKINGHAM (APA-229) (Observed Shot ABLE from a distance of 18 miles) | 0.001 |
| 7 July -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> | RECONSTRUCTED FILM BADGE <u>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) |

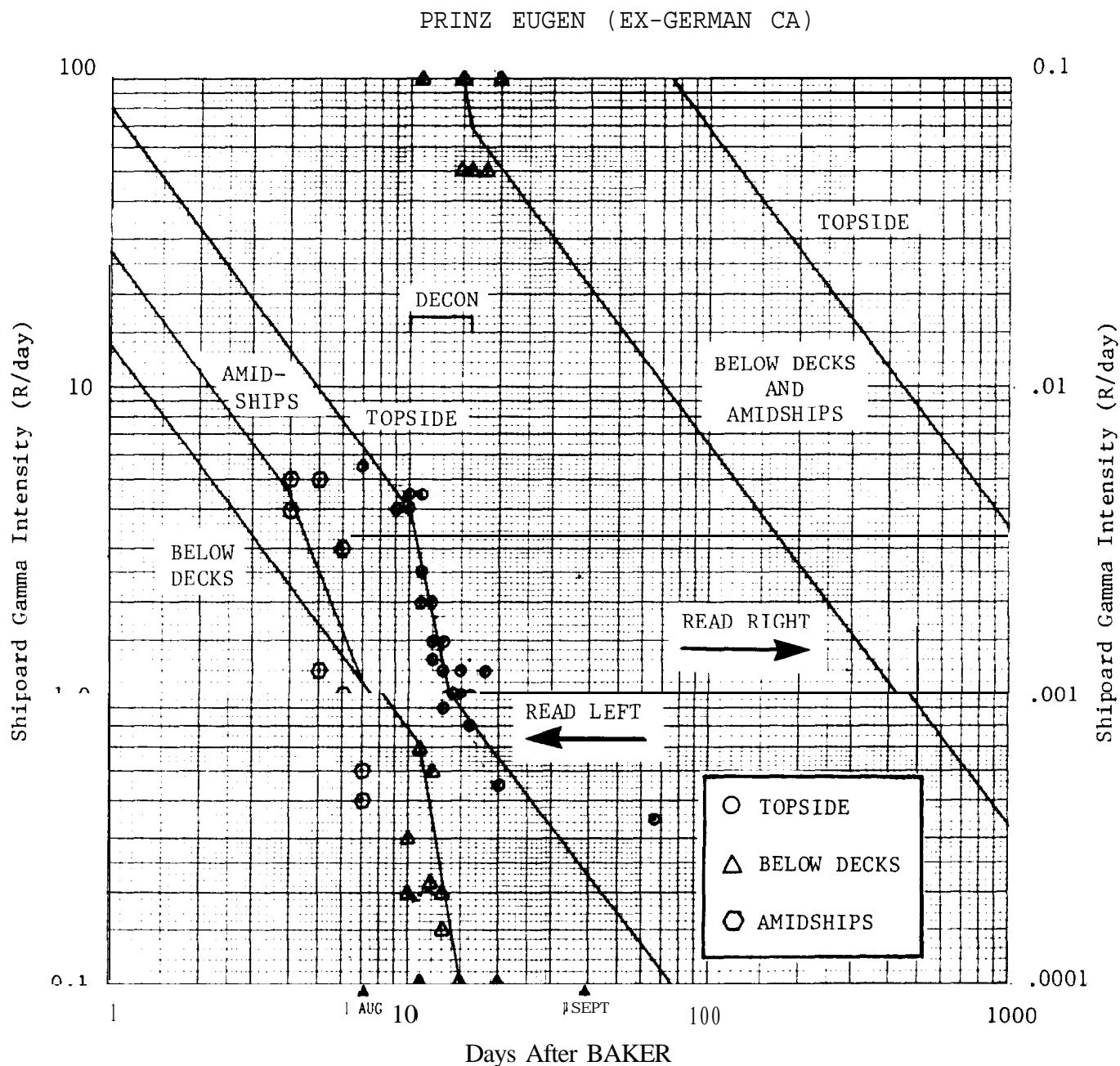
AVERAGE CREW MEMBER DOSE HISTORY

| <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) | 0.001 |
| | 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-REMANED

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

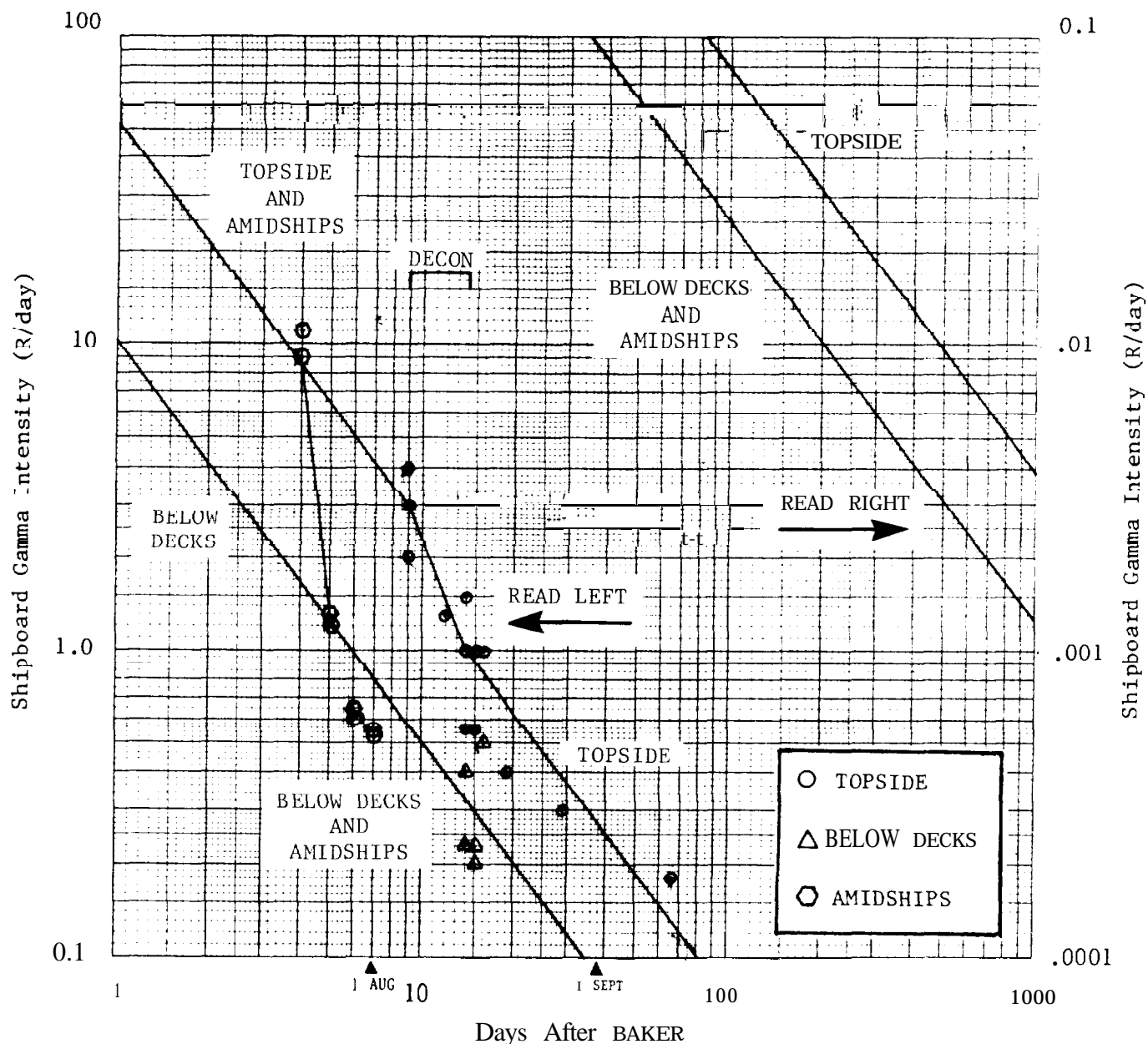
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated 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

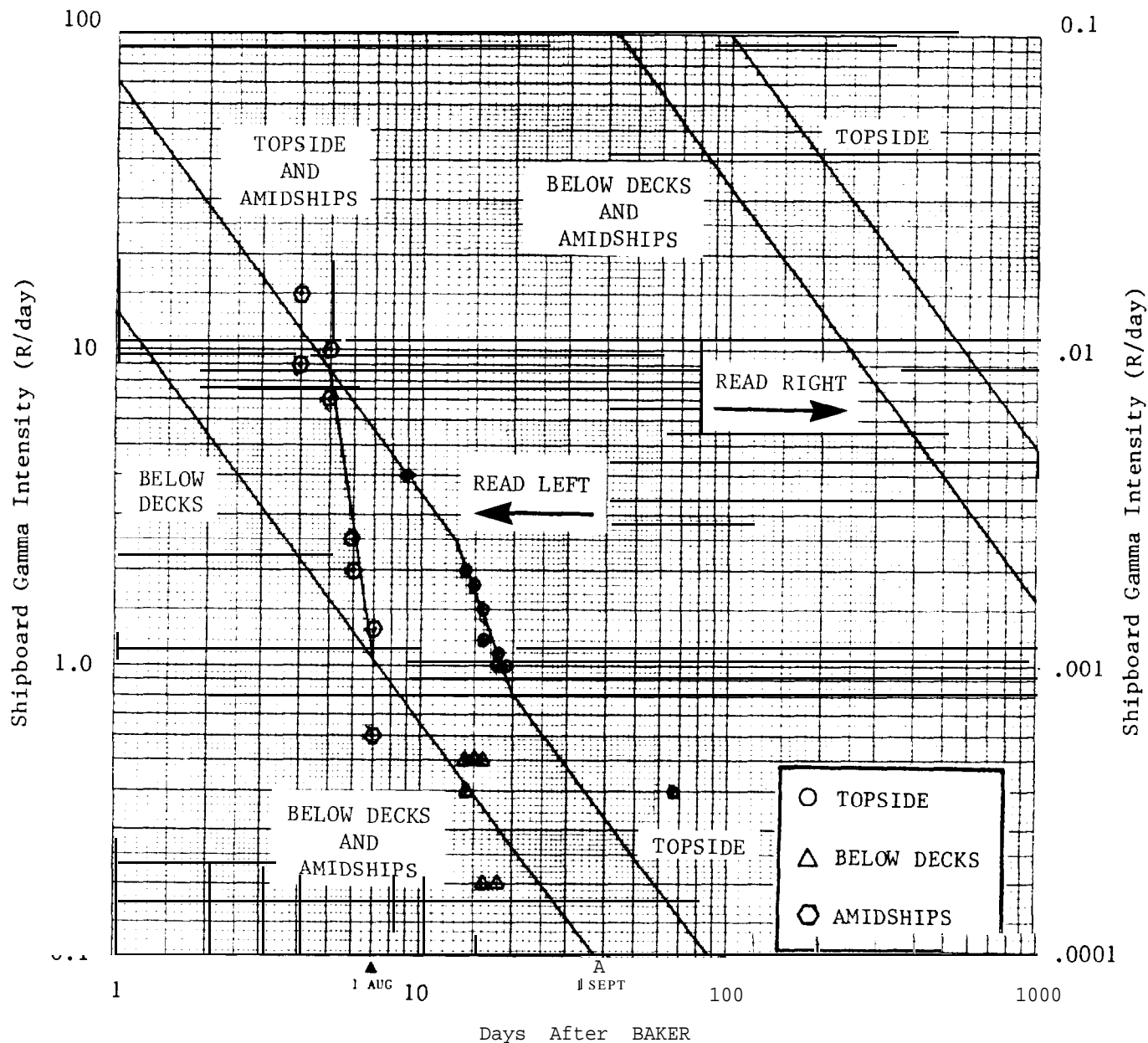
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|----------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 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

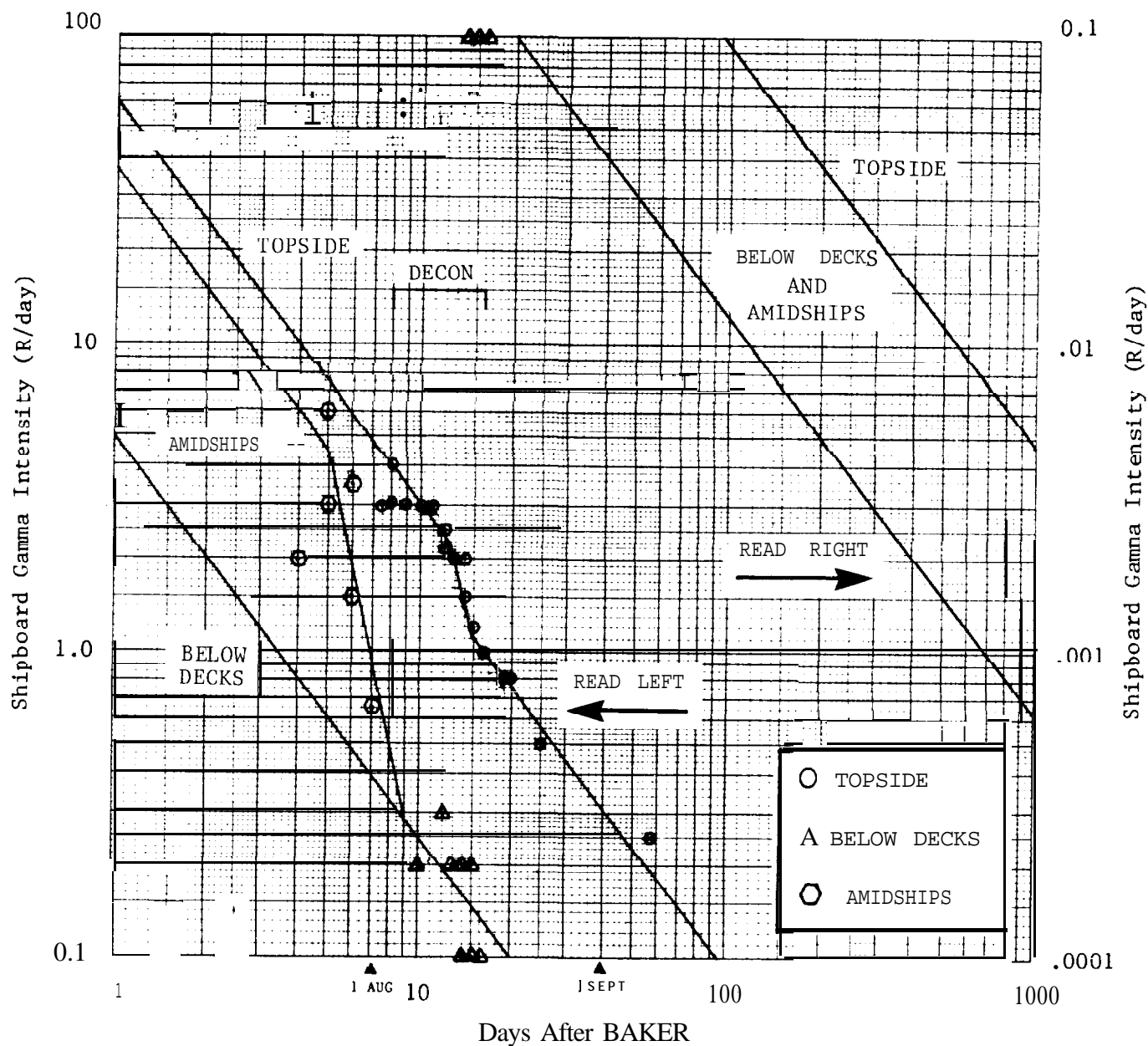
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 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-REMANED

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

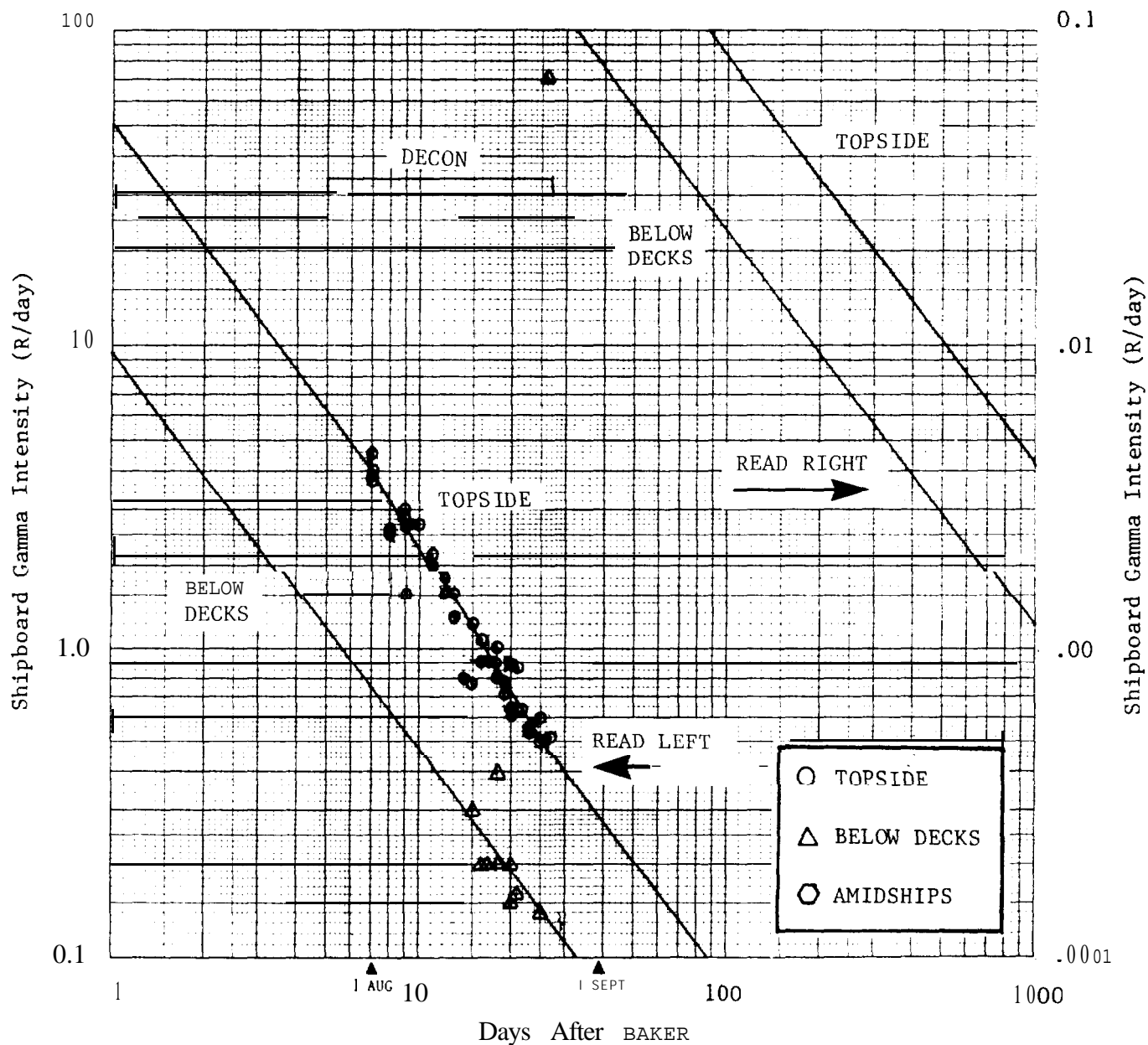
| DATE (1946) | CREW LOCATION | RECONSTRUCTED FILM BADGE DOSE (REM) |
|--------------------|---------------------------------------------------------------------------------------------|-------------------------------------------|
| | ABLE | |
| 30 June - 4 July | Evacuated aboard BOTTINEAU (APA-235) (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: | 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

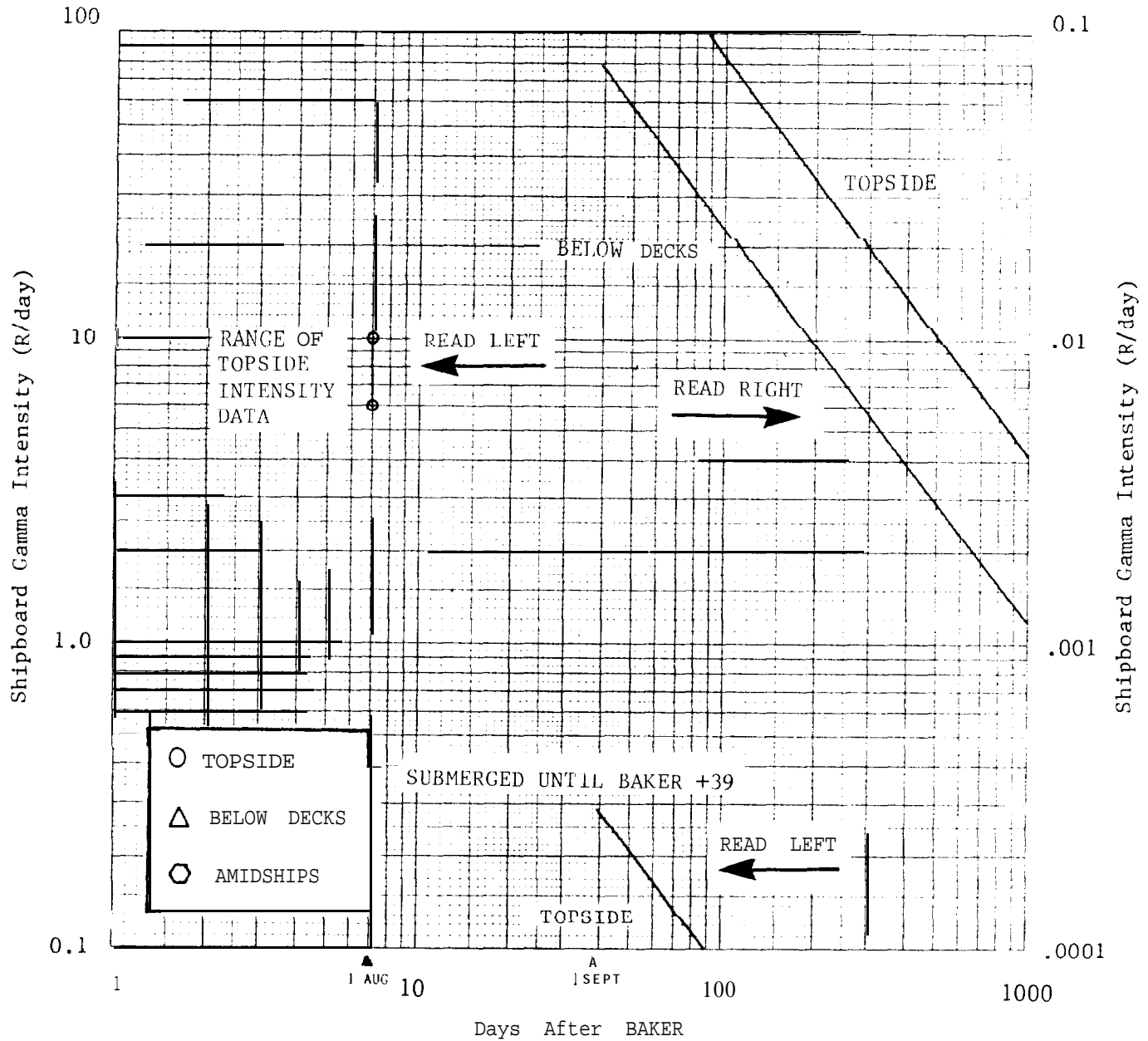
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated 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

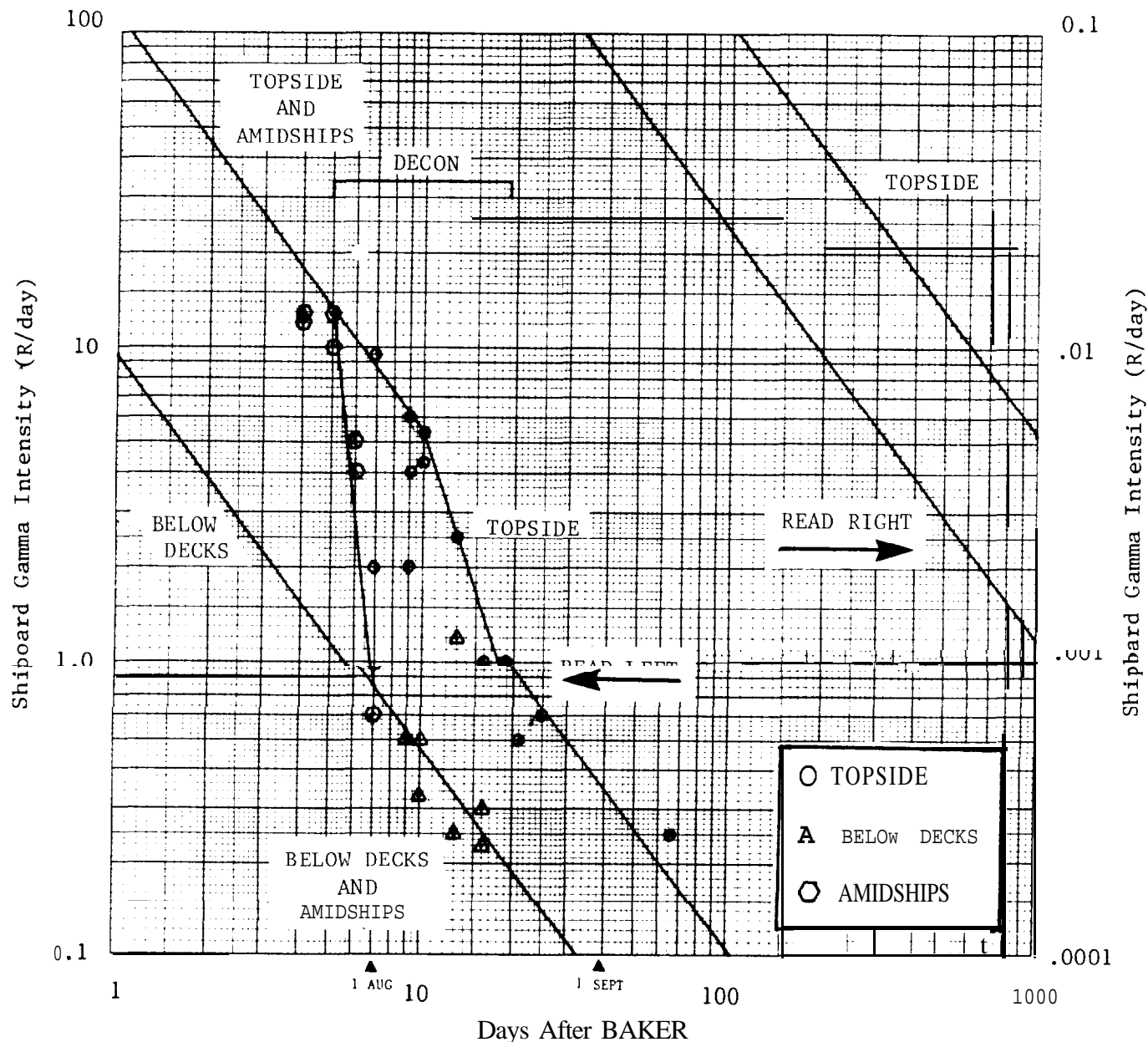
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated 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 |
| 1 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

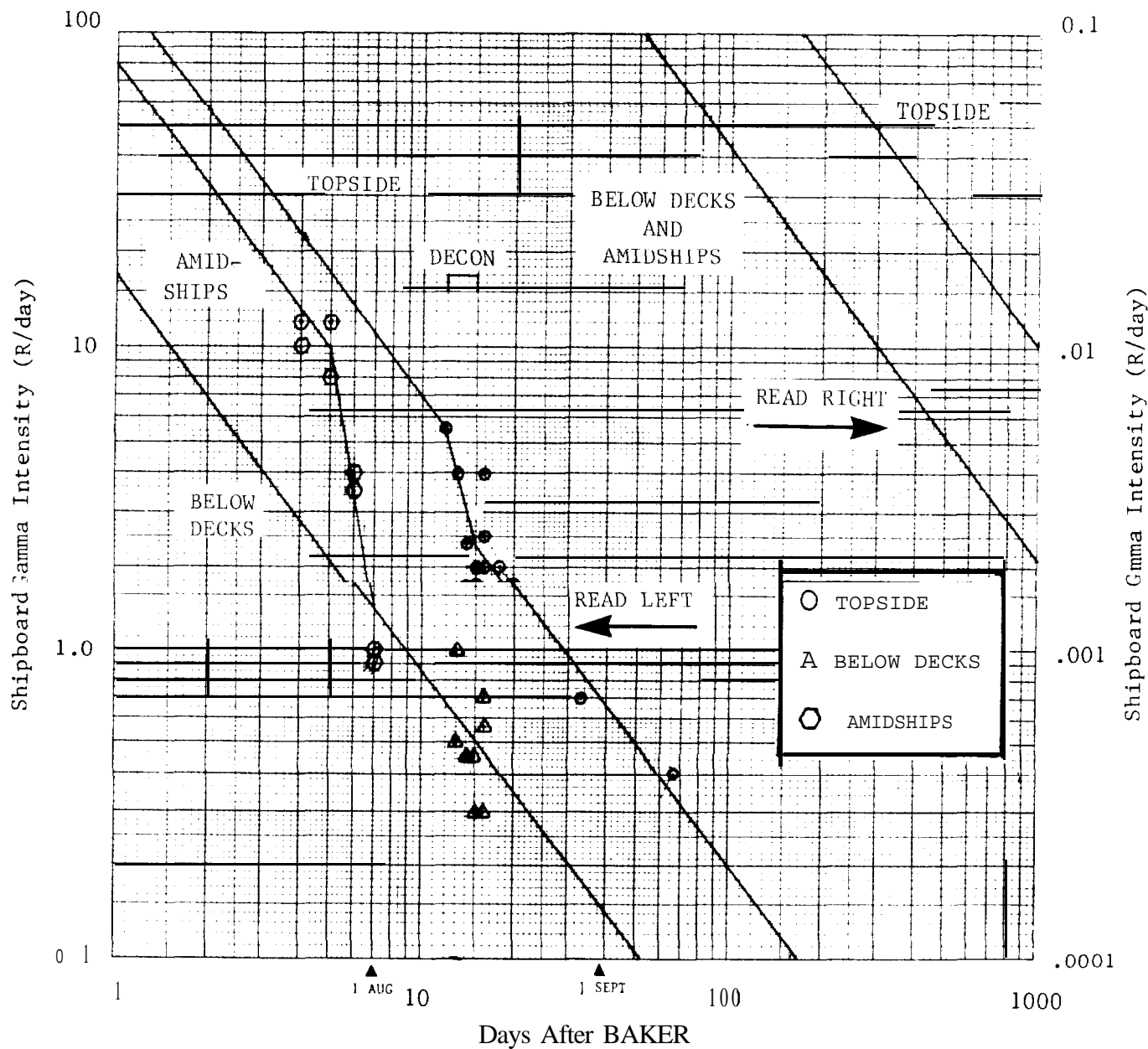
| <u>DATE (1946)</u> | <u>CKEW LOCATION</u> | RECONSTRUCTED FILM BADGE <u>DOSE (REM)</u> |
|---------------------|-----------------------------------------------------------------------------------|--------------------------------------------------|
| 30 June -17 July | Aboard TRIPPE (Observed Shot ABLE 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

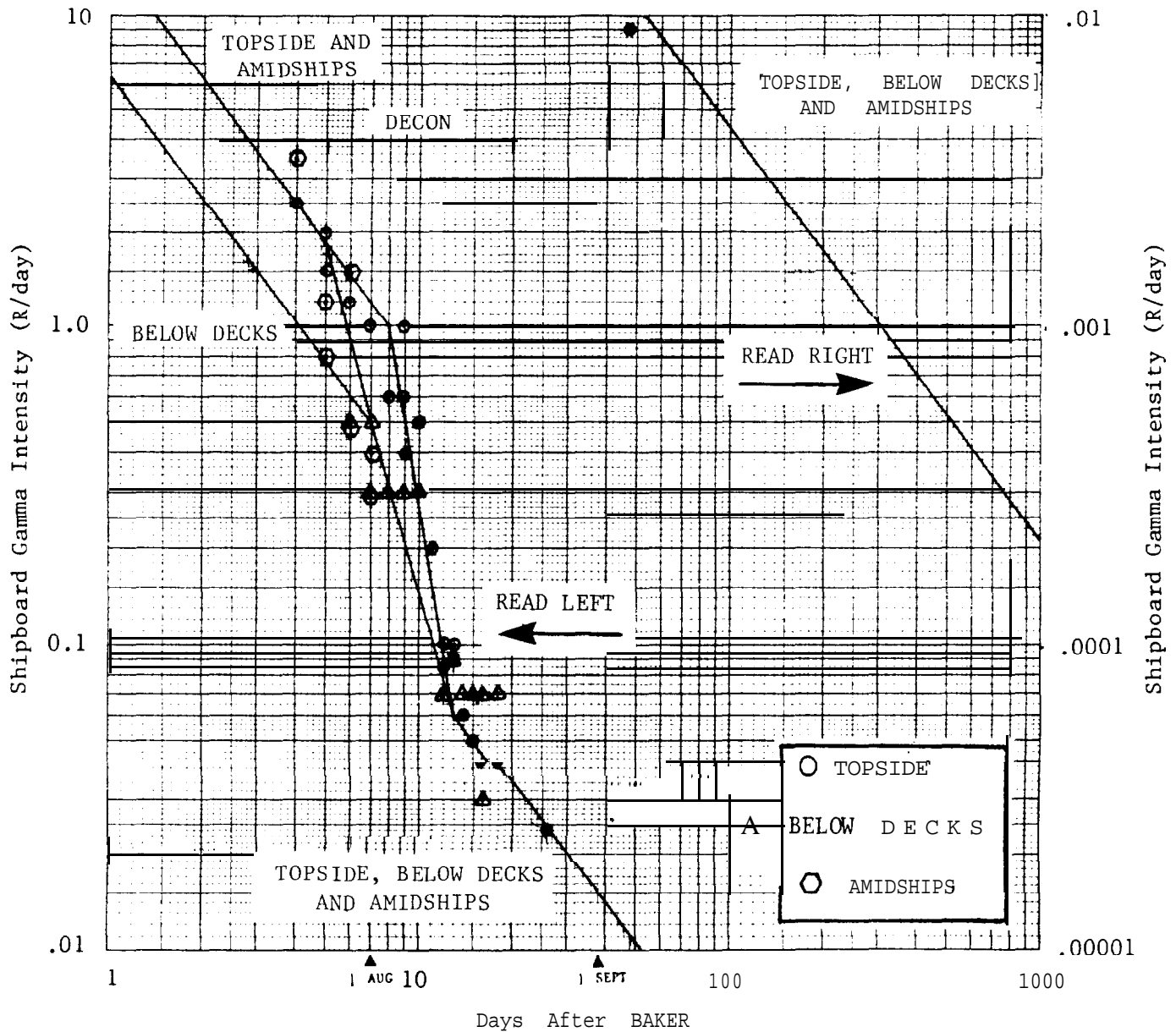
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------|
| ABLE | | |
| 30 June - 1 July | Evacuated 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

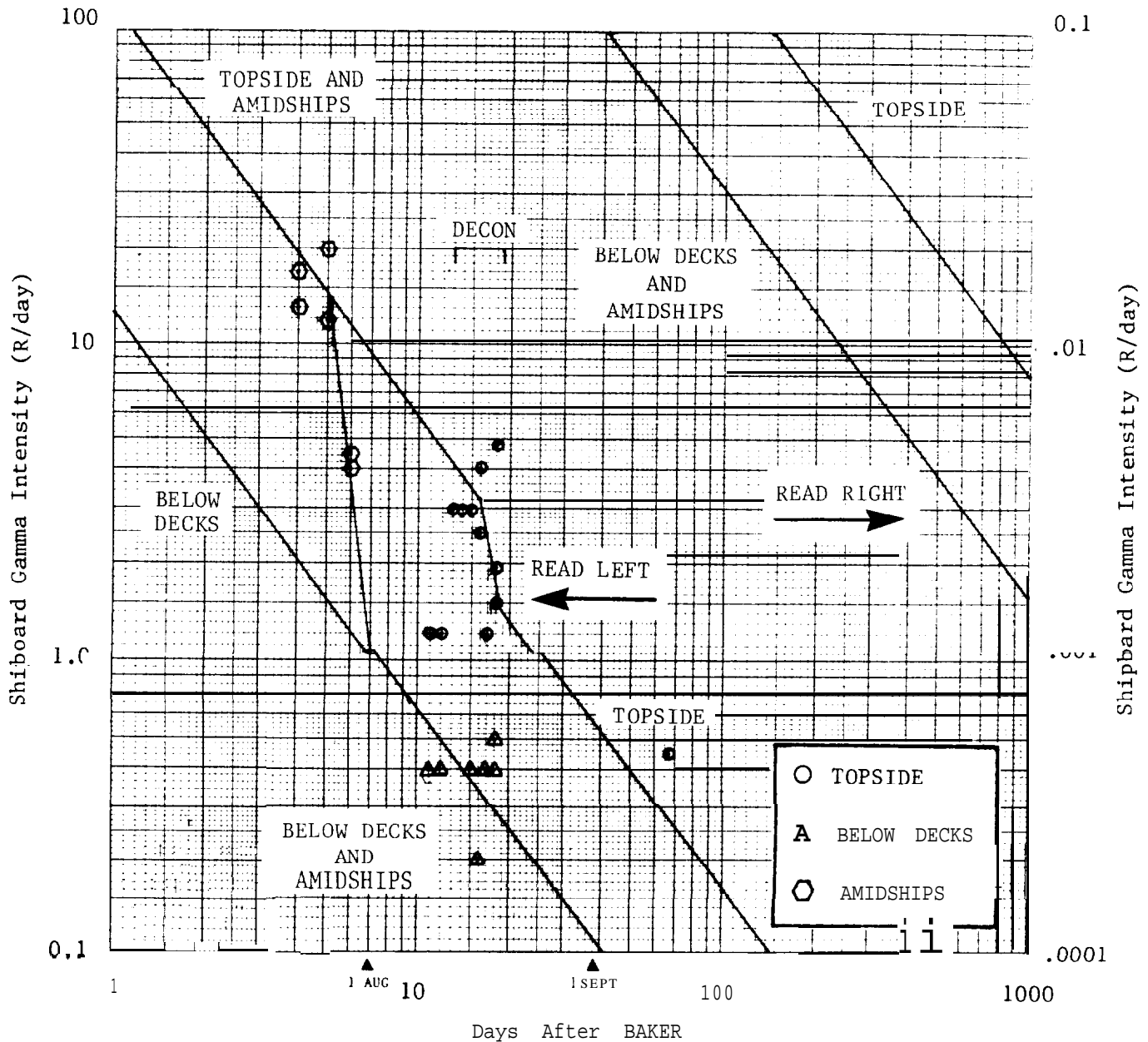
| <u>DATE (1946)</u> | <u>CREW LOCATION</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated 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> | <u>RECONSTRUCTED FILM BADGE 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) |

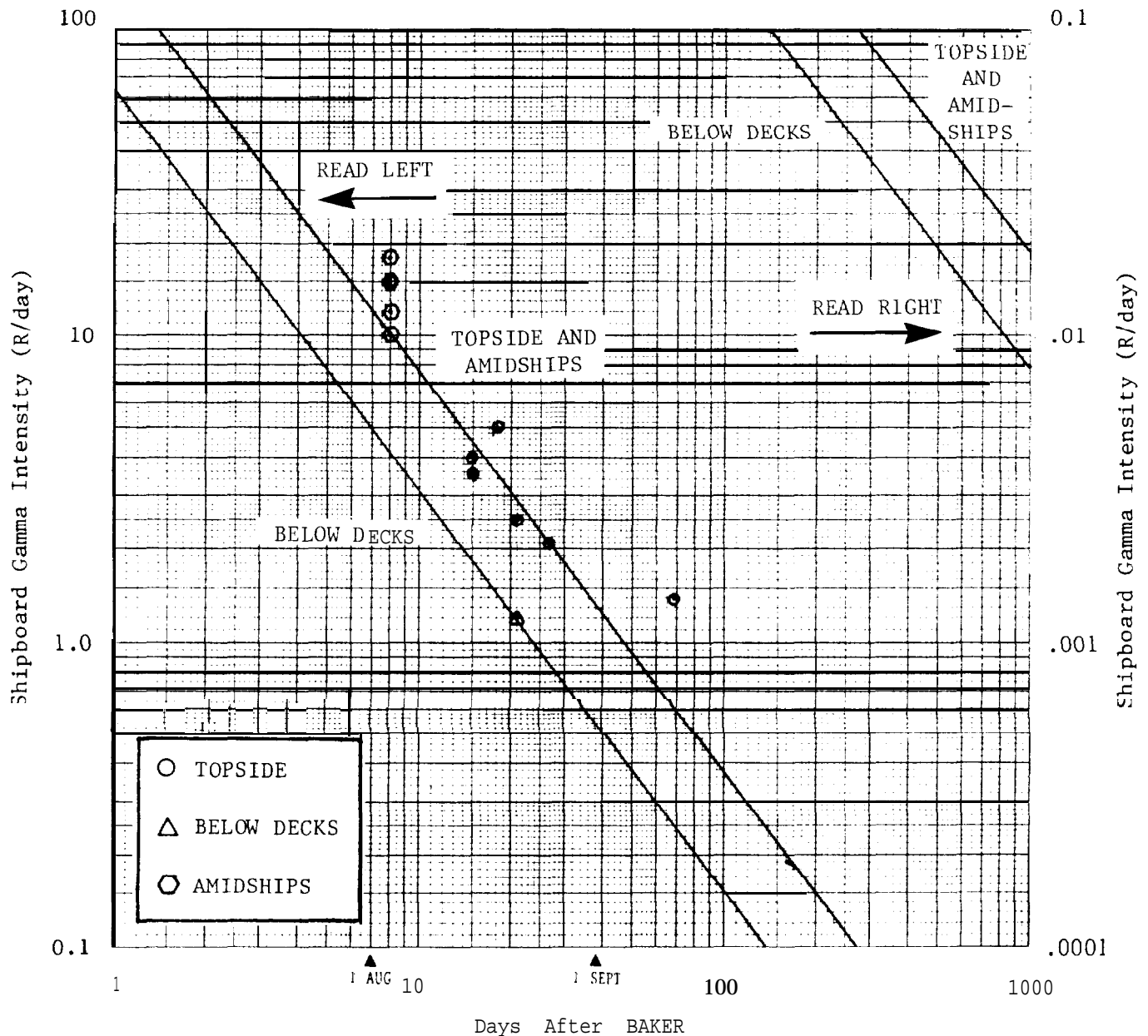
AVERAGE CREW MEMBER DOSE HISTORY

| <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

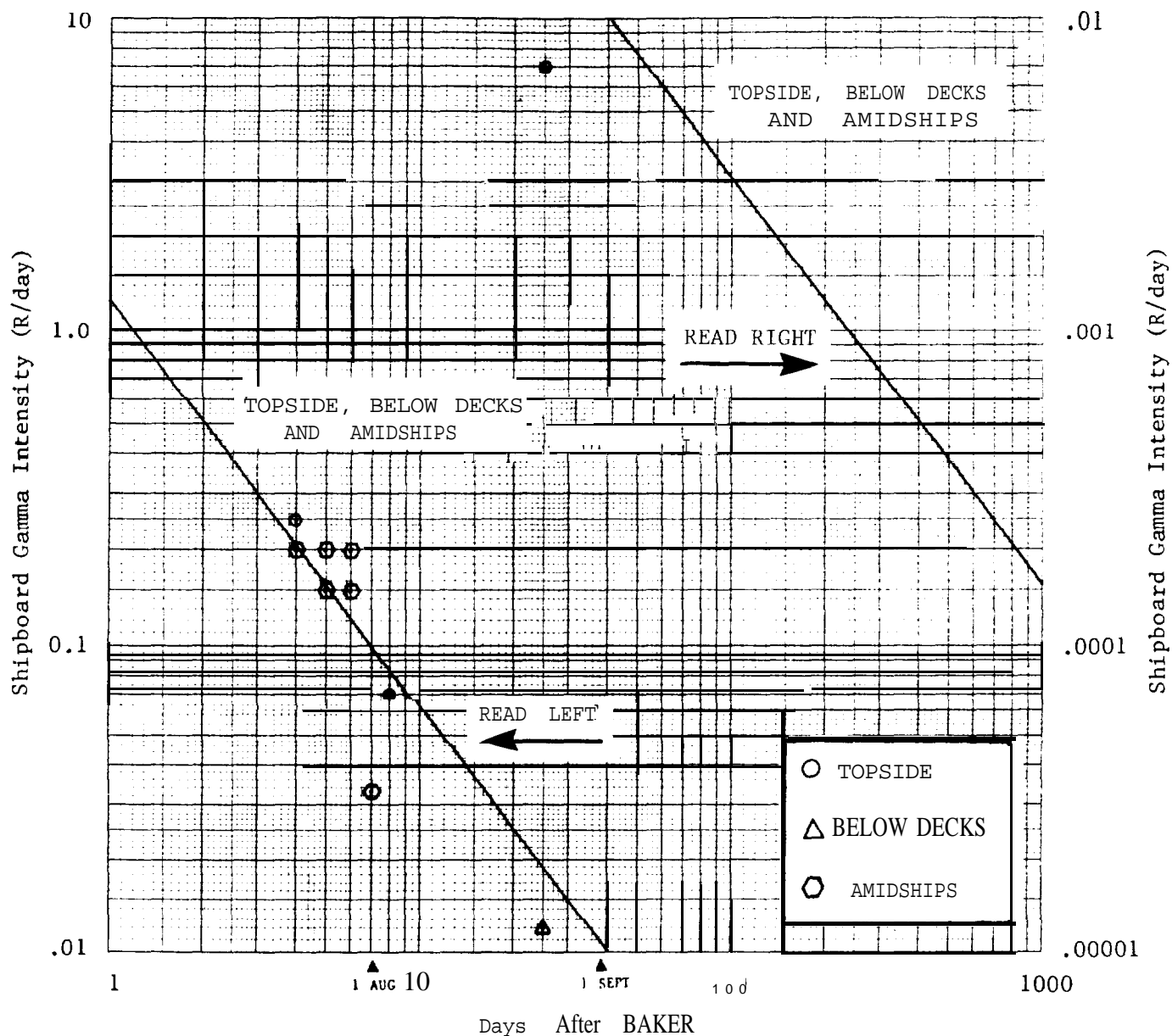
MISSION: USS LCT-705 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

| 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

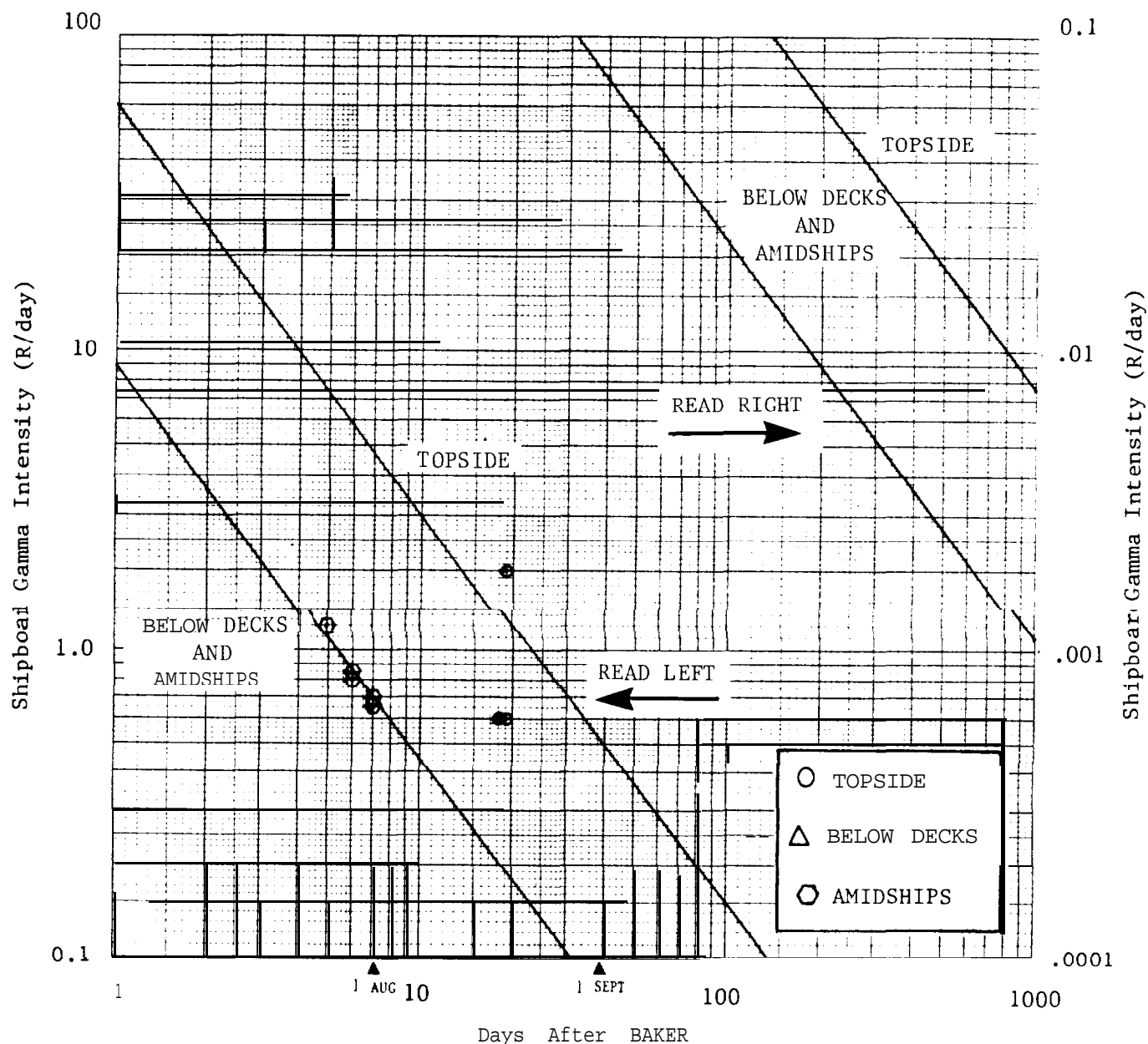
MISSION: USS LCT-816 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

| 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

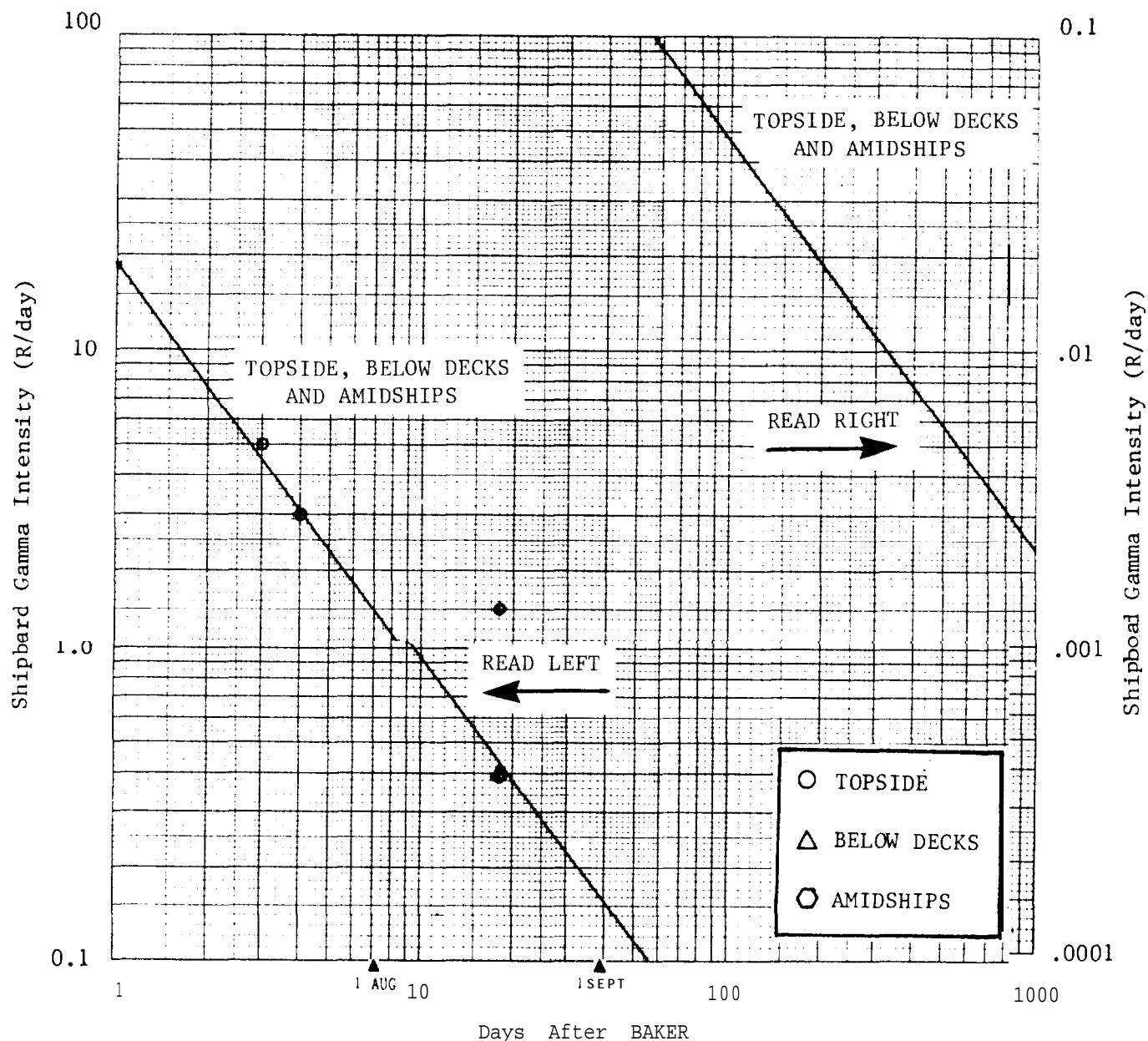
MISSION: USS LCT-818 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

| 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

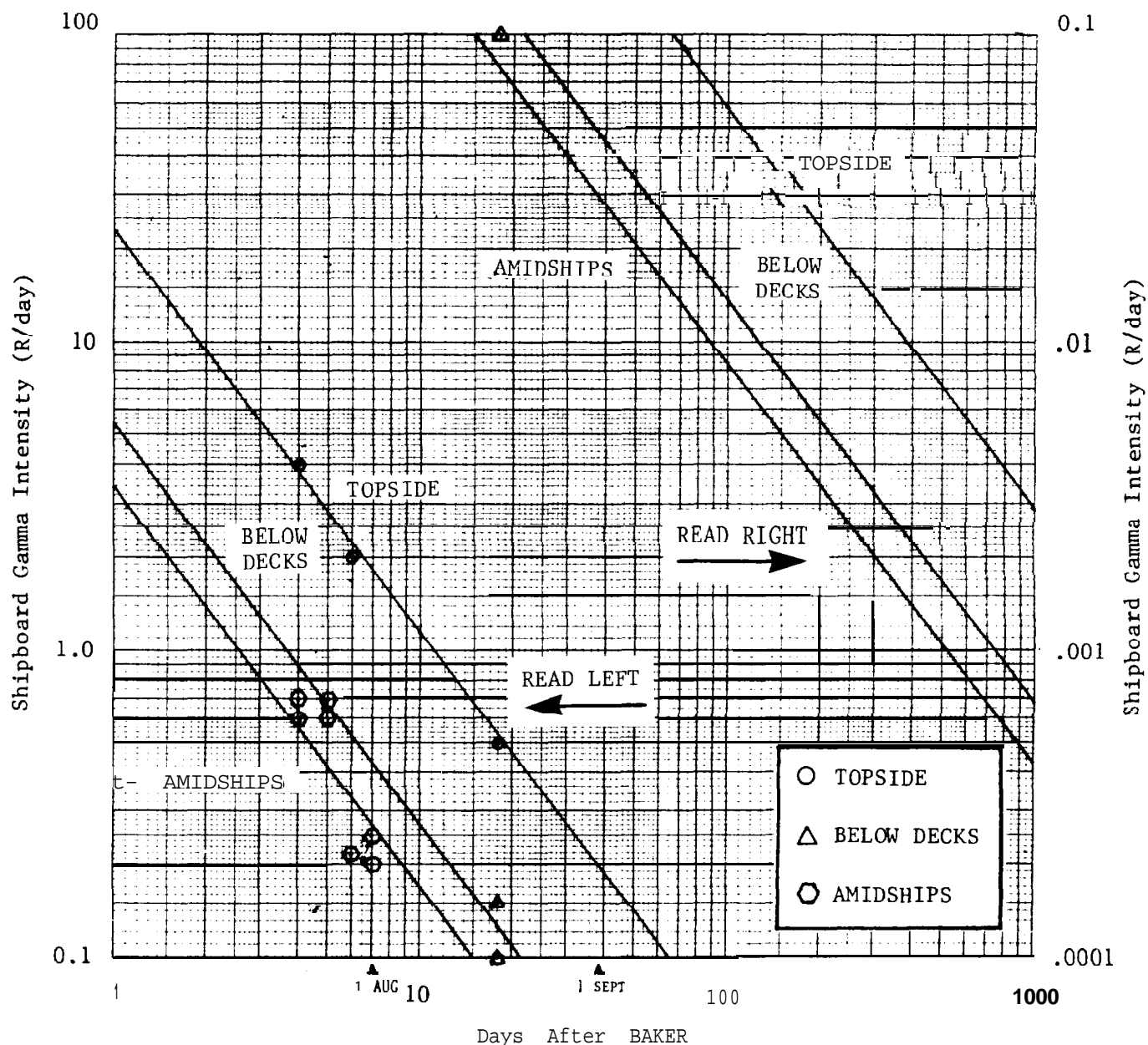
MISSION: USS LCT-874 was a **CROSSROADS** target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

| 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

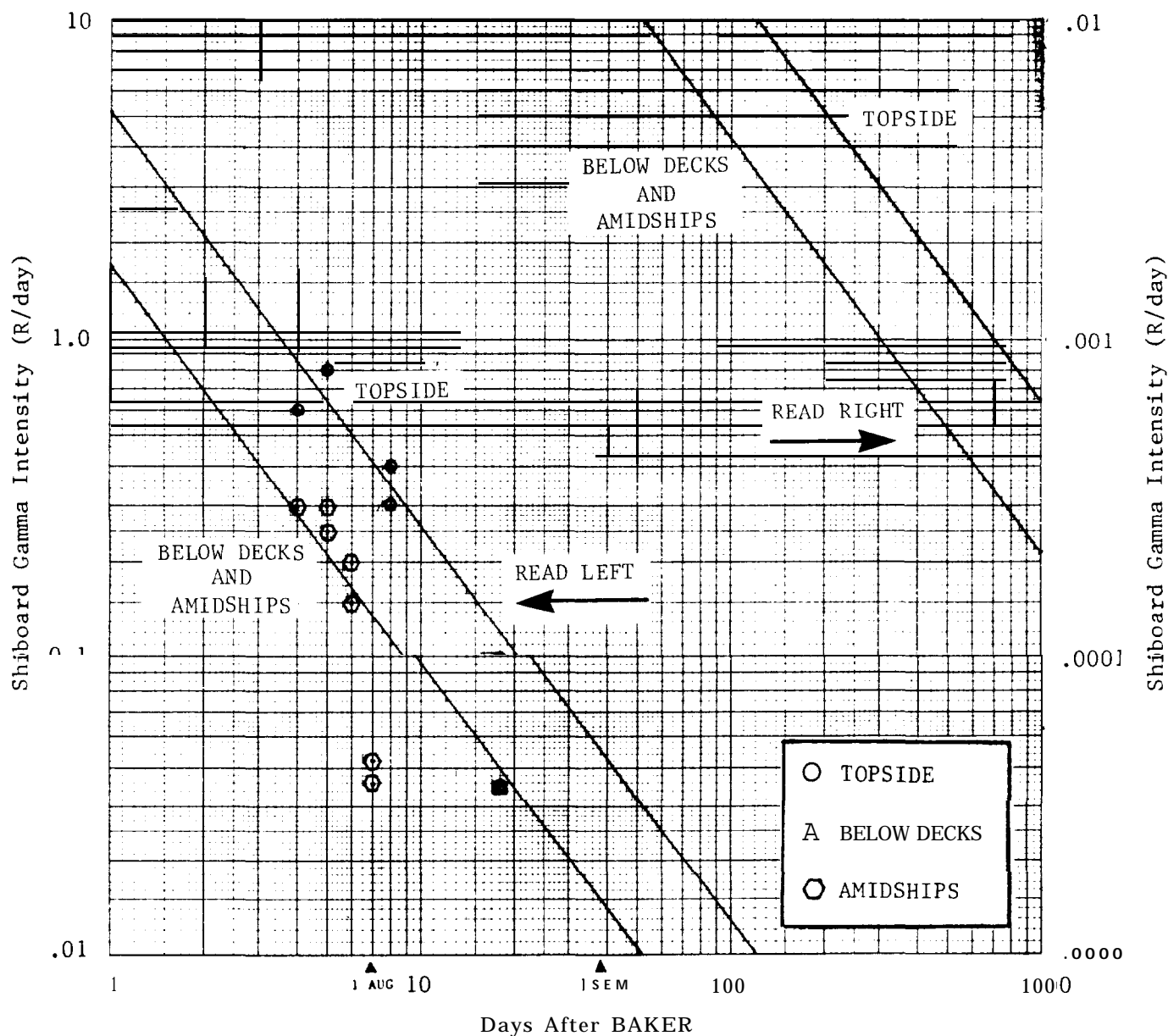
MISSION: USS LCT-1013 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

| 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

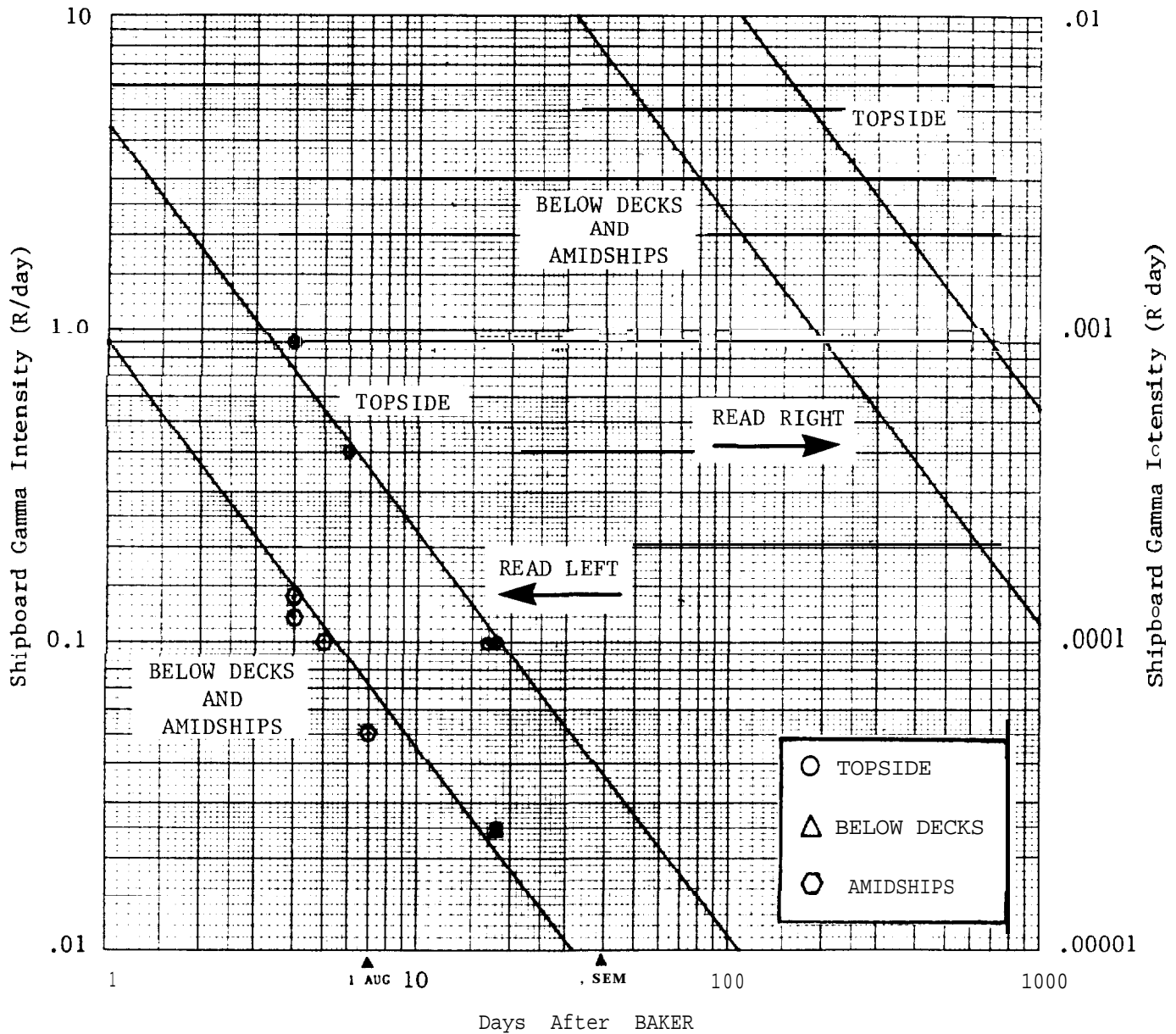
MISSION: USS LCT-1078 was a CROSSROADS target ship and arrived at Rikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

| 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 | 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

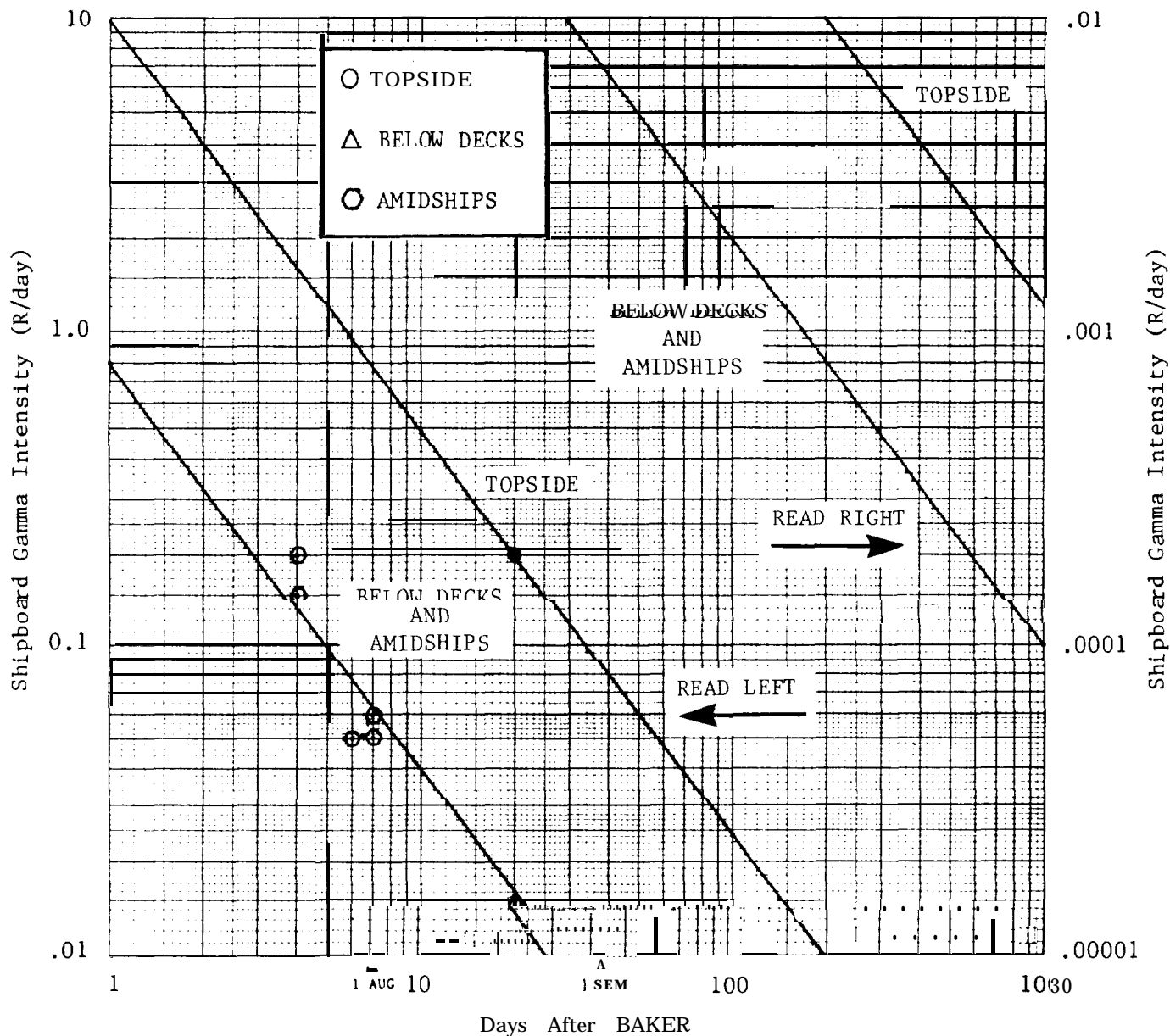
MISSION: USS LCT-1112 was a CROSSROADS target ship and arrived at Bikini prior to June 30, 1946 to participate in the operation. It was anchored in the lagoon and remained there as one of the 84 target ships for the nuclear test detonations that occurred on July 1 and July 25, 1946.

| 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

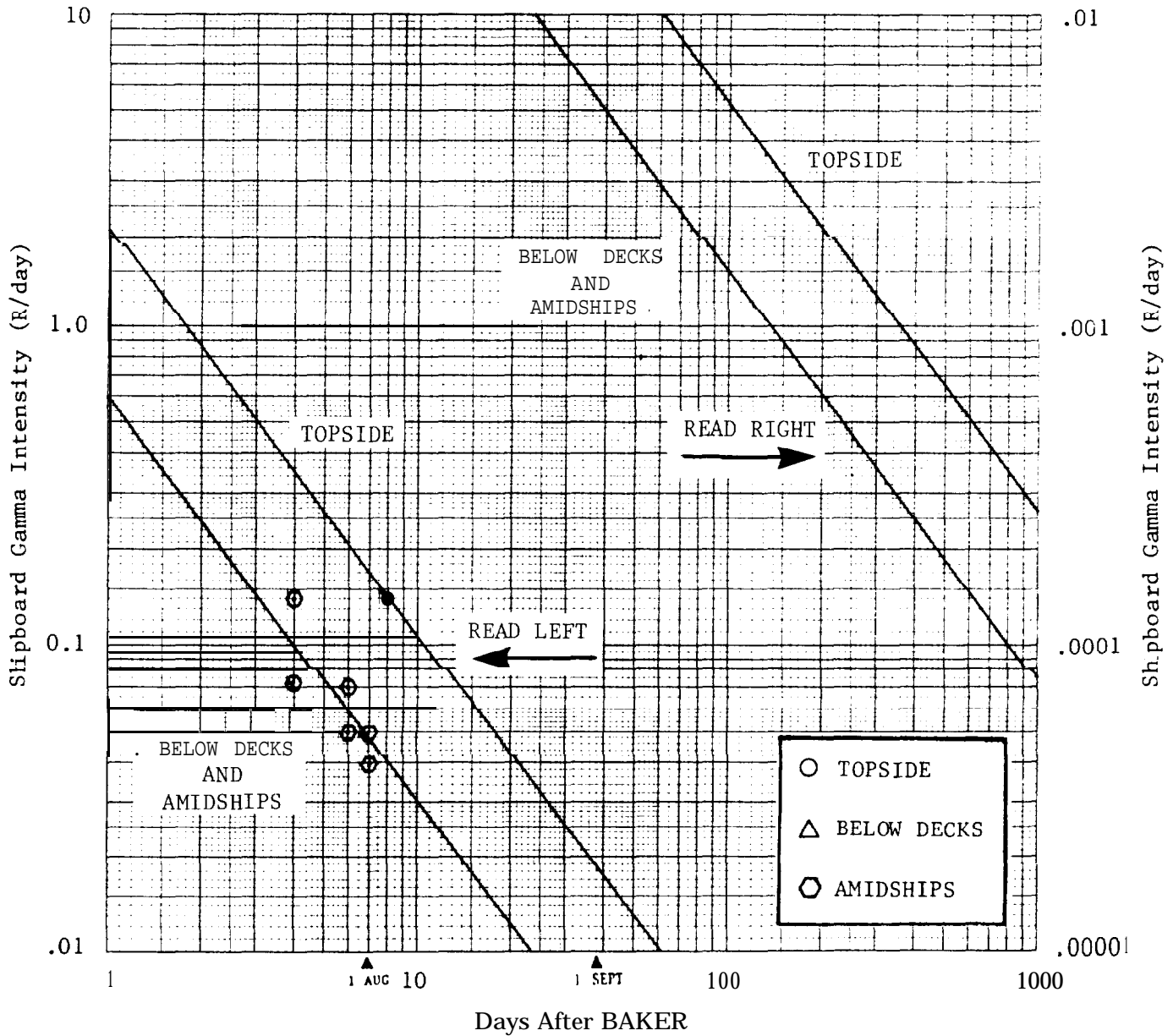
MISSION: USS LCT-1113 was a CROSSROADS target ship **and** arrived at Rikini prior to **June** 30, 1946 to participate in the operation. It was anchored in **the** lagoon and remained there as one of **the** 84 target ships for the nuclear test detonations **that** occurred on July 1 and July 25, 1946.

| 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 | | Shallow Underwater (-90 feet) | | |

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>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 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-I 175 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) |
|-------------------|---------------------------------------------------------------------------------------------|-------------------------------------------|
| ABLE | | |
| 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 |
| BAKER | | |
| 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+ | 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

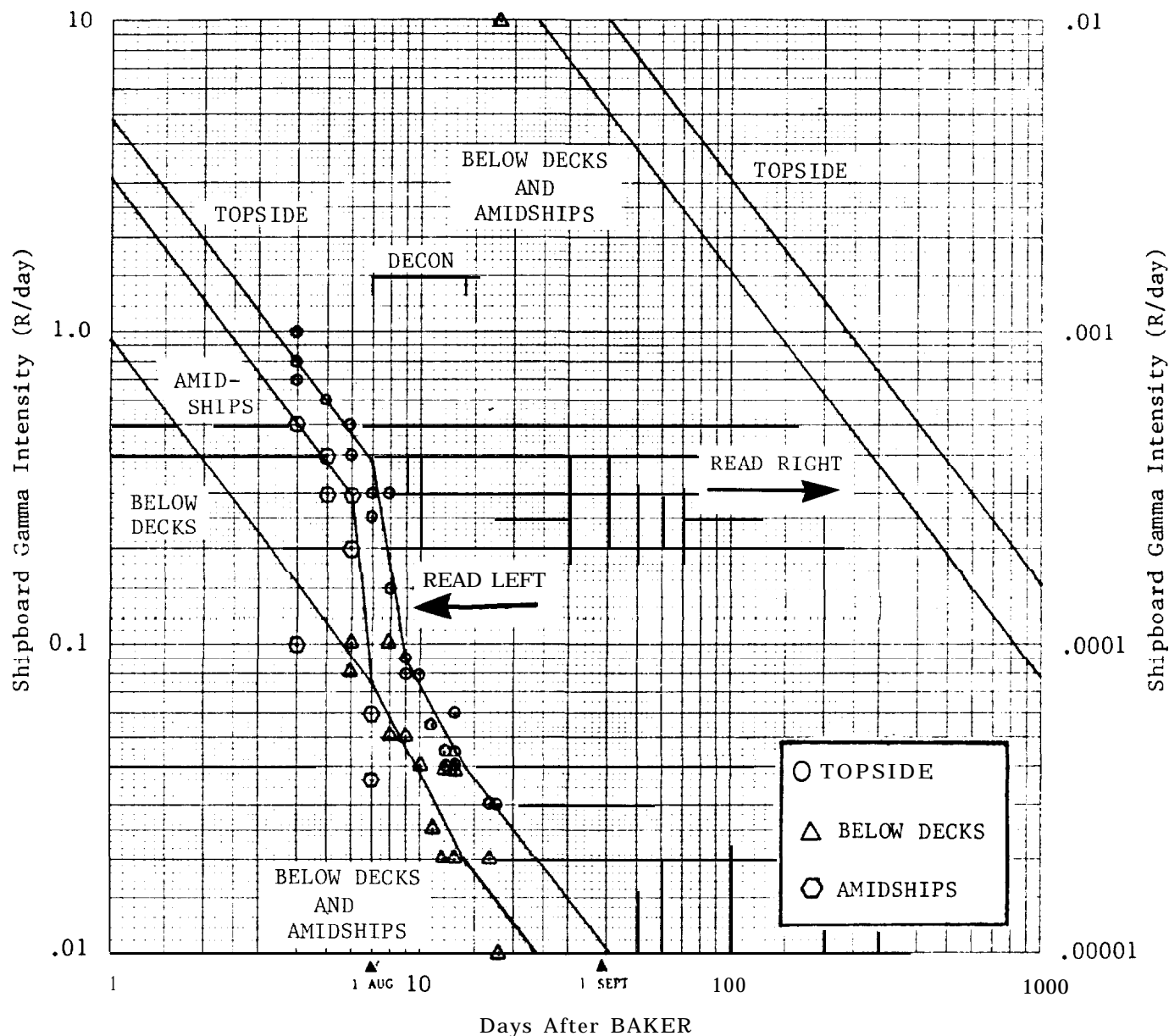
| <u>DATE (1946)</u> | <u>CREW LOCATION-Hours Aboard</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|----------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 1 July | 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

REMANED 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> |
|--------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 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 |
| | BAKER | |
| 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 | 1 |
| JUL 2 | A+1 | 1 | 0 | 28 | 1 |
| JUL 3 | A+2 | 0 | 0 | 22 | 0 |
| JUL 4 | A+3 | 0 | 0 | 17 | 0 |
| JUL 5 THRU 24 | | 0 | 0 | 14 | |
| JUL 25 | B+0 | 189 | 0 | 11 | 192 |
| JUL 26 | B+1 | 147 | 0 | 11 | 175 |
| JUL 27 | B+2 | 54 | 0 | 12 | 76 |
| JUL 28 | B+3 | 26 | 0 | 14 | 43 |
| JUL 29 | B+4 | 18 | 0 | 12 | 32 |
| JUL 30 | B+5 | 12 | 0 | 11 | 24 |
| JUL 31 | B+6 | 12 | 0 | 9 | 23 |
| AUG 1 | B+7 | 14 | 0 | 7 | 23 |
| AUG 2 | B+8 | 10 | 0 | 9 | 19 |
| AUG 3 | B+9 | 0 | 0 | 7 | 7 |
| AUG 4 | B+10 | 0 | 0 | 7 | 7 |
| AUG 5 | B+11 | 0 | 0 | 6 | 6 |
| AUG 6 | B+12 | 0 | 0 | 5 | 5 |
| AUG 7 | B+13 | 6 | 0 | 5 | 11 |
| AUG 8 | E+14 | 10 | 0 | 5 | 15 |
| 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 | E+24 | 3 | 0 | 2 | 5 |
| 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

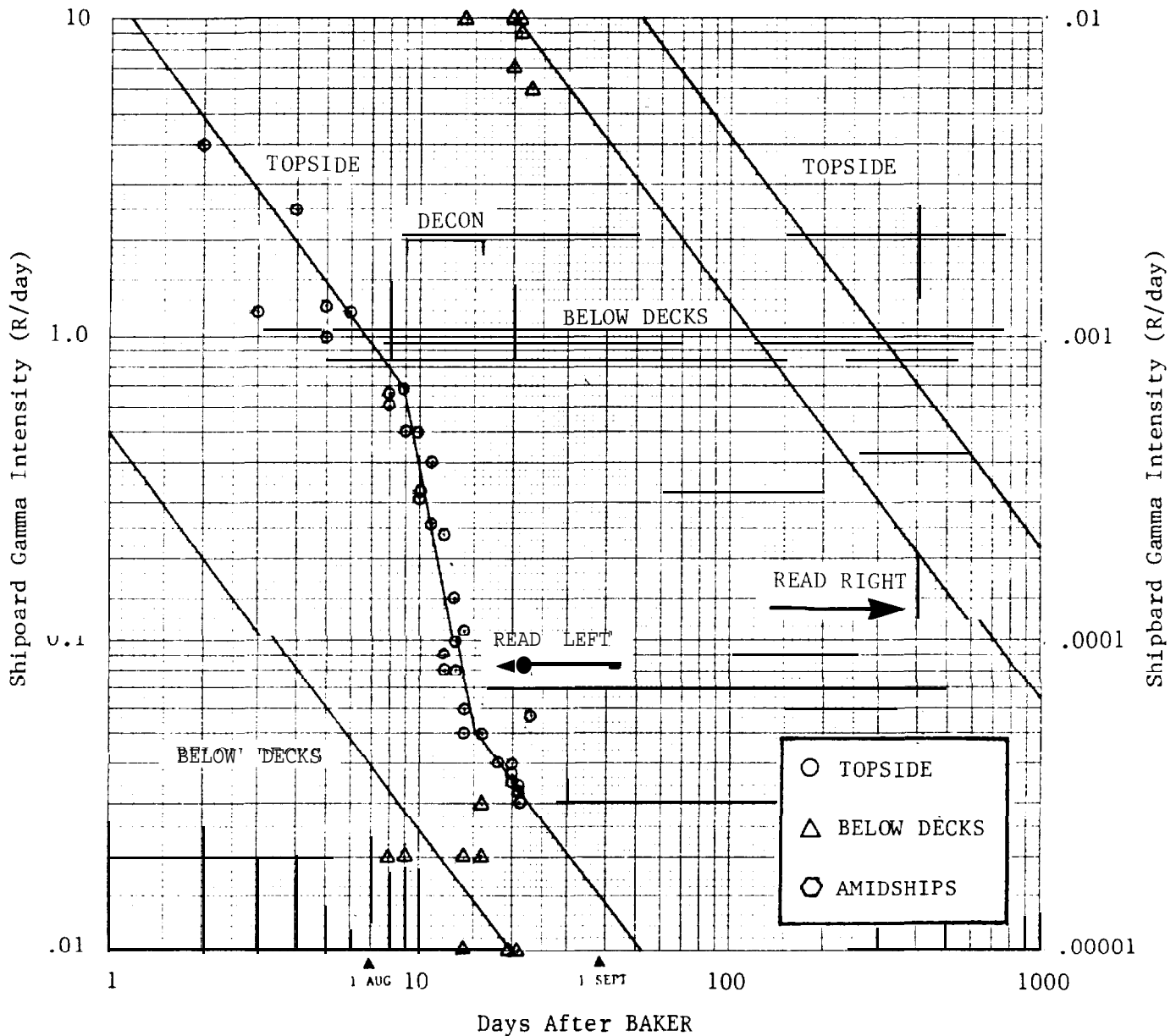
| <u>DATE (1946)</u> | <u>CREW LOCATION-Hours Aboard</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|----------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 1 July | Evacuated aboard BOTTINEAU (APA-235)-24 (Observed Shot ABLE from a distance of 25 miles) | 0.000 |
| 2 July | Aboard BOTTINEAU-7.5 | 0.000 |
| | Aboard DENTIUDA-16.5 | 0.004 |
| 3 July-22 July | Aboard DENTUDA-480 | 0.001 |
| | BAKER | |
| 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 Kwalein, 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-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" |
| 271510 | 2108M | TEAM CHARLIE CAME ABOARD |
| 270014 | 2108M | UNDERWAY TO SHIFT BERTHS |
| 301808 | 1308M | ANCHORED IN BERTH #51 |
| 310050 | 1008M | UNDERWAY FOR 24 HOUR RUN OUTSIDE LAGOON |
| 350948 | 1008M | DEPARTED BIKINI LAGOON |
| 360010 | 2508M | RE-ENTERED BIKINI LAGOON |
| 361016 | 1908M | ANCHORED IN BERTH #751 |
| 381840 | 2400M | UNDERWAY FROM BERTH #113 FOR FWAJALEIN |
| 381710 | 2508M | SHIP DEPARTED BIKINI LAGOON ON 24 AUGUST 1946 - ENROUT E 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

REMANED 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 remanned 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

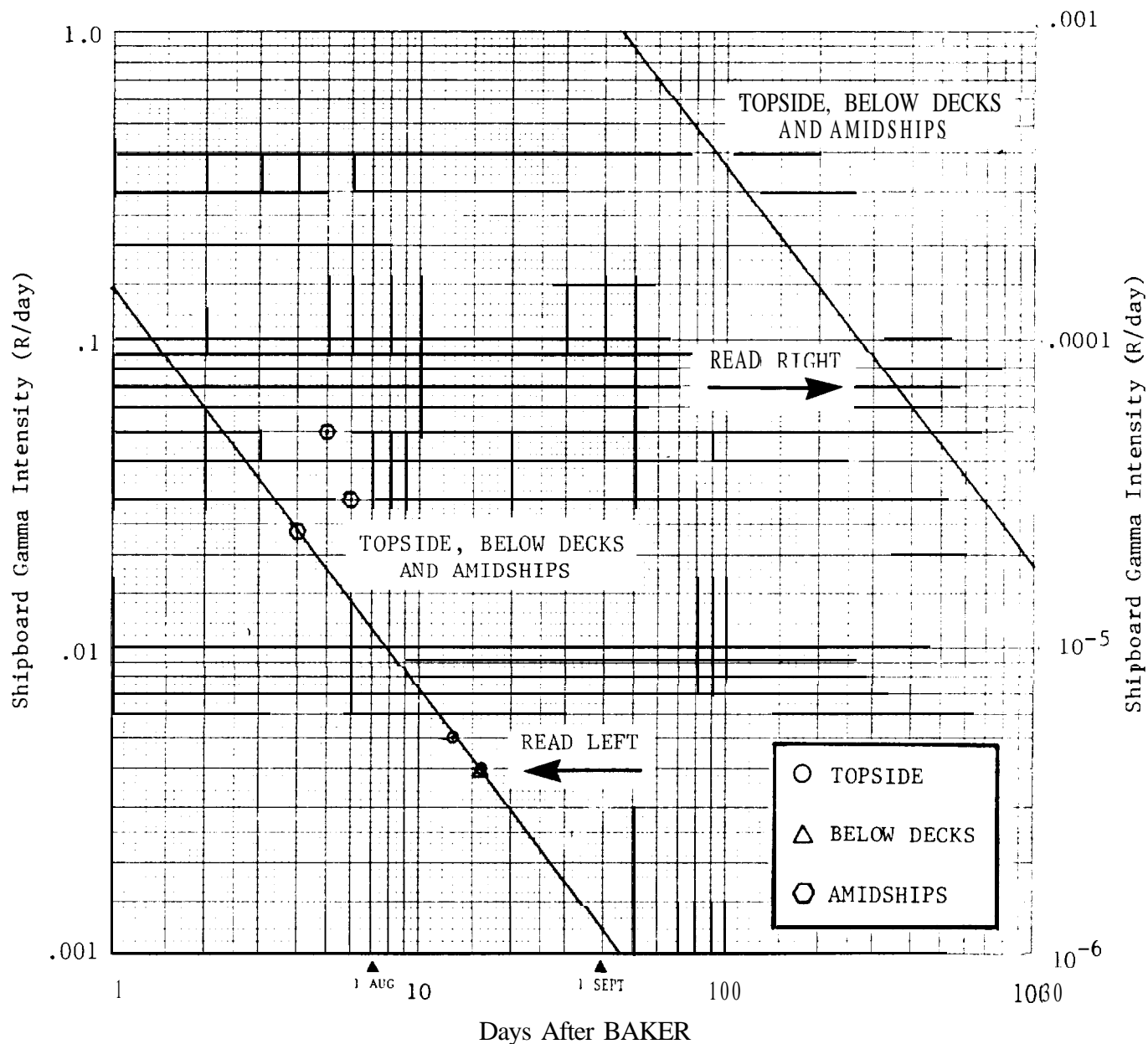
| <u>DATE (1946)</u> | <u>CREW LOCATION • Hours Aboard</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 30 June - 1 July | Evacuated aboard BAYFIELD (APA-33)-48 (Observed Shot ABLE from a distance of 22 miles) | 0.000 |
| 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 |
| | BAKER | |
| 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

REMANED 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

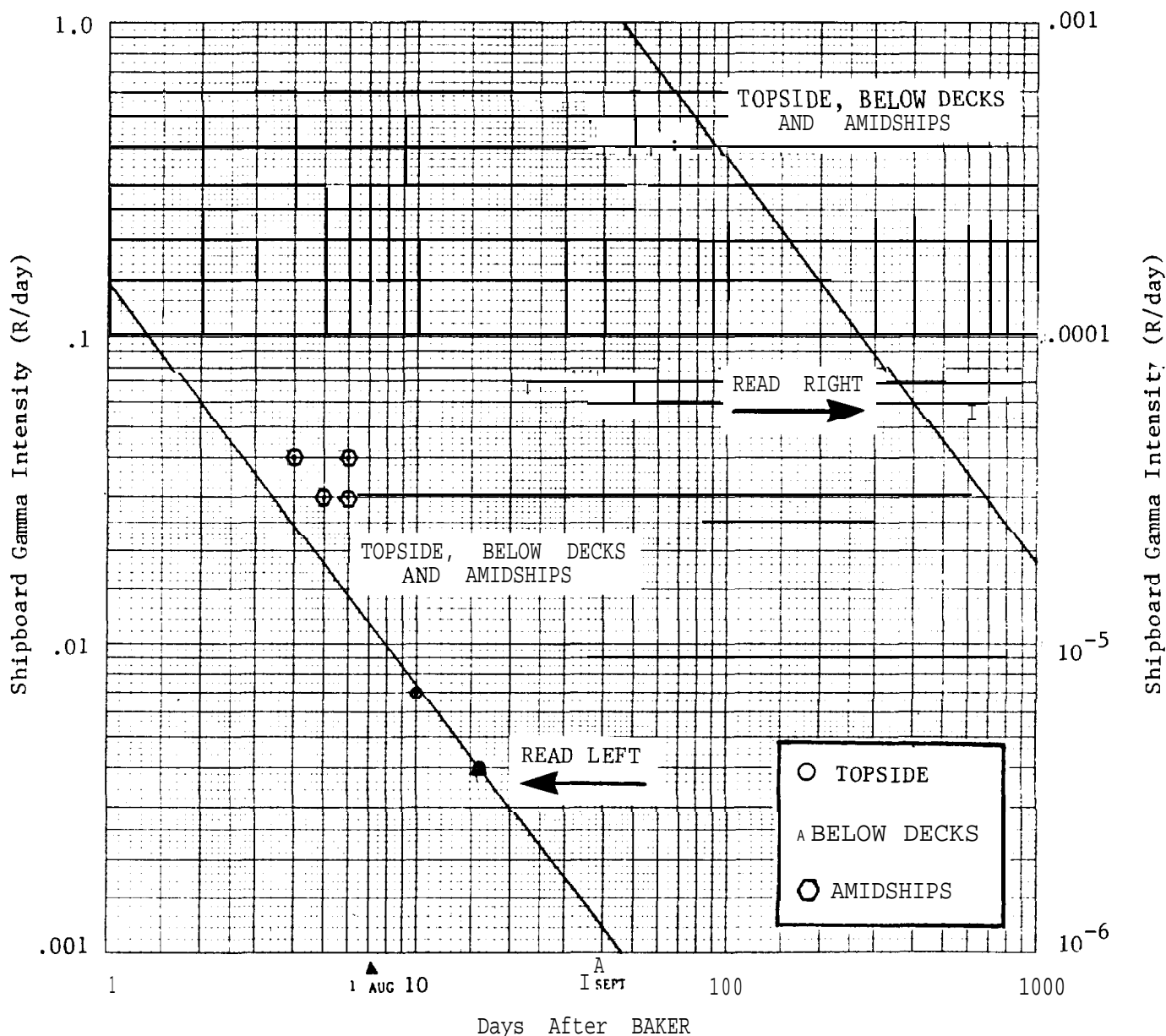
| <u>DATE (1946)</u> | <u>CREW LOCATION-Hours Aboard</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|---------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 1 July | Evacuated aboard BAYFIELD (APA-33)-24 (Observed Shot ABLE from a distance of 22 miles) | 0.000 |
| 2 July | Aboard BAYFIELD-16.5 | 0.001 |
| | Aboard LCI(L) 549-7.5 | 0.000 |
| 3 July-17 July | Aboard LCI(L) 549-360 | 0.000 |
| 18 July-19 July | Evacuated aboard BAYFIELD- 1 | 0.000 |
| | Aboard LCI(L)549-17 | 0.000 |
| 20 July-23 July | Aboard L CI(L) 549-96 | 0.000 |
| | BAKER | |
| 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- 110 (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

REMANNED 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

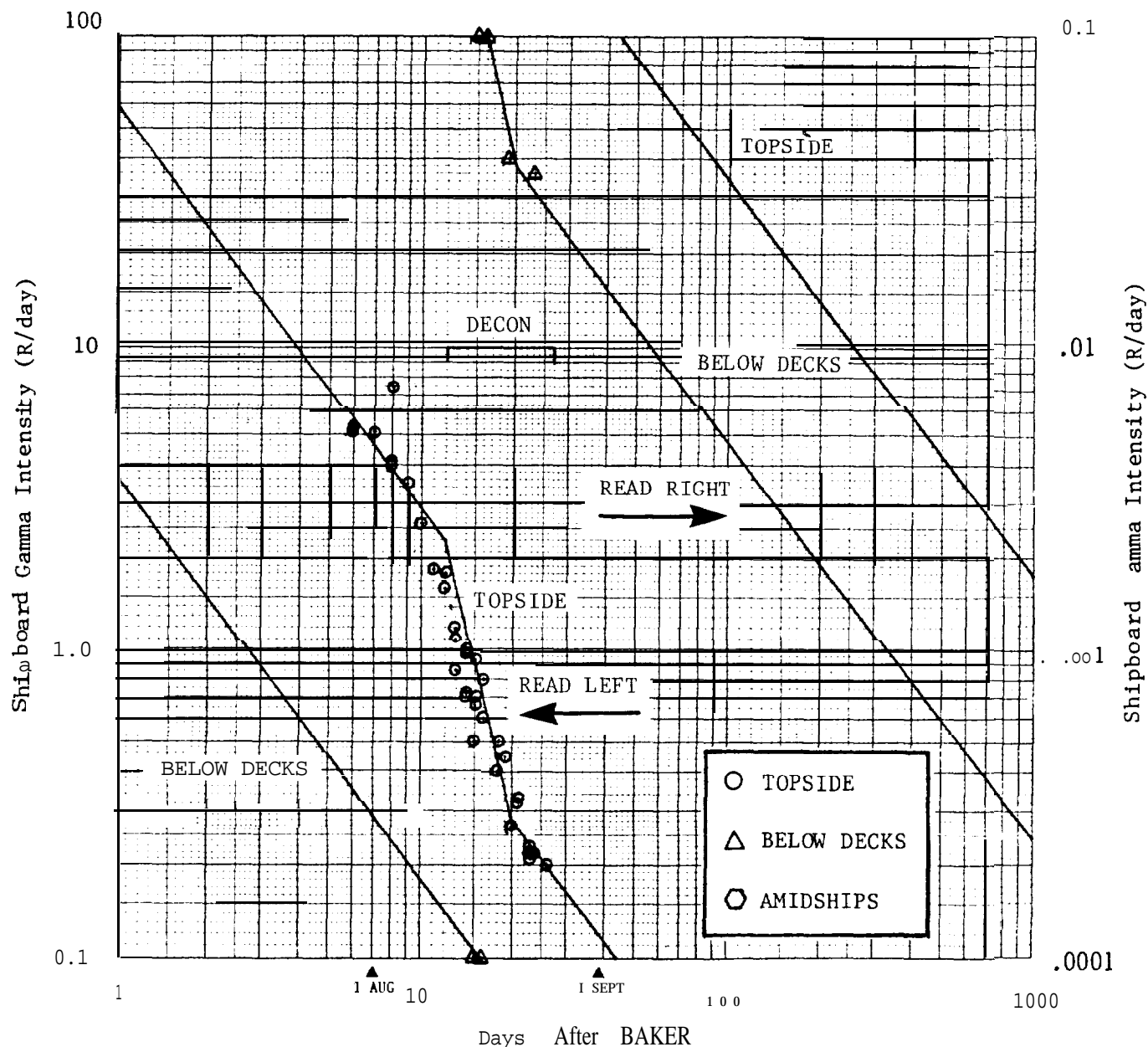
| <u>DATE (1946)</u> | <u>CREW LOCATION-Hours Aboard</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|--------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 1 July | 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

REMANED 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

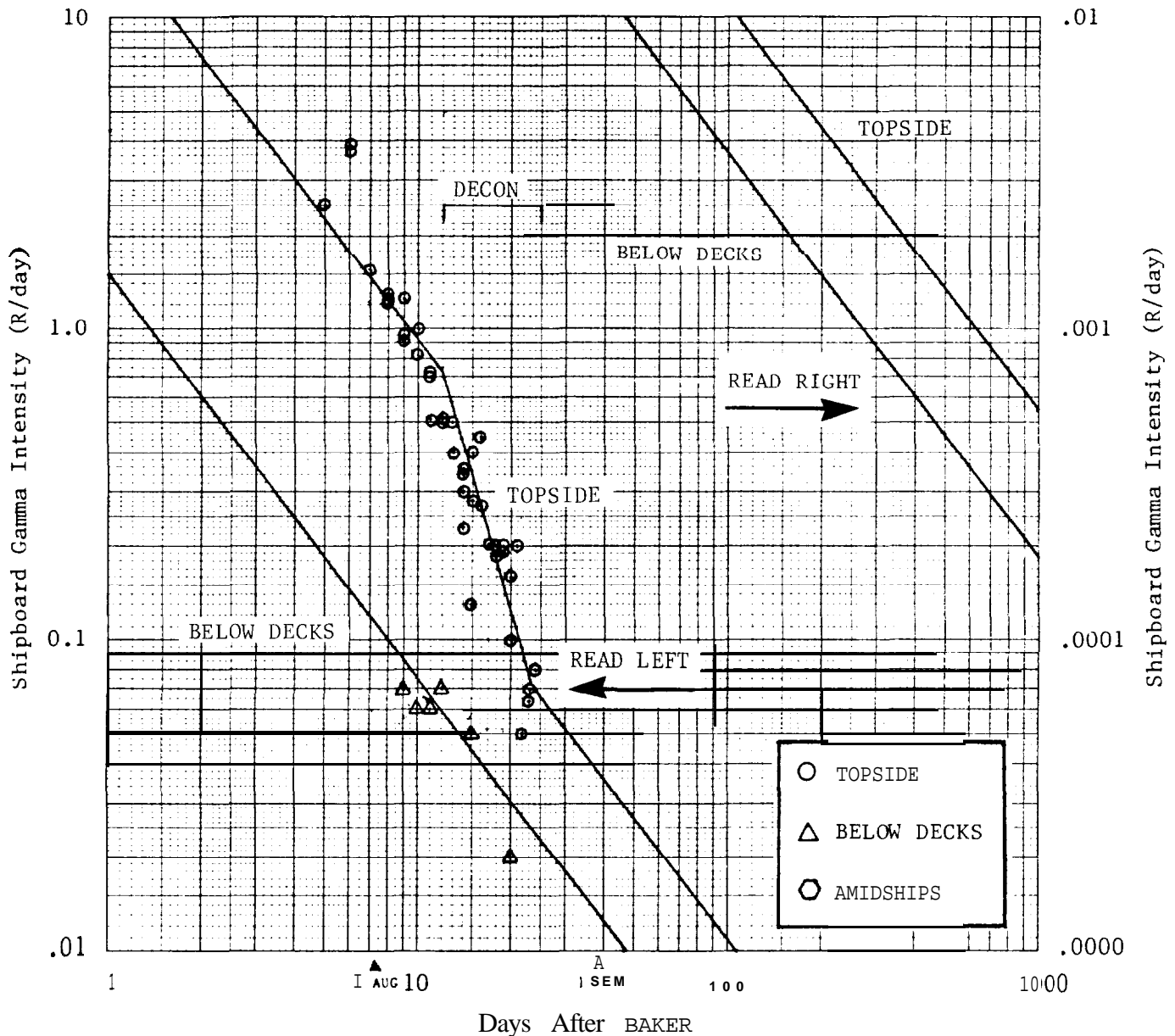
| <u>DATE (1946)</u> | <u>CREW LOCATION-Hours Aboard</u> | <u>RECONSTRUCTED FILM BADGE DOSE (REM)</u> |
|----------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------|
| | ABLE | |
| 1 July | 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 SEARAVEN- | 0.004 |
| 3 July-21 July | Aboard SEARAVEN- | 0.001 |
| | BAKER | |
| 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: | 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

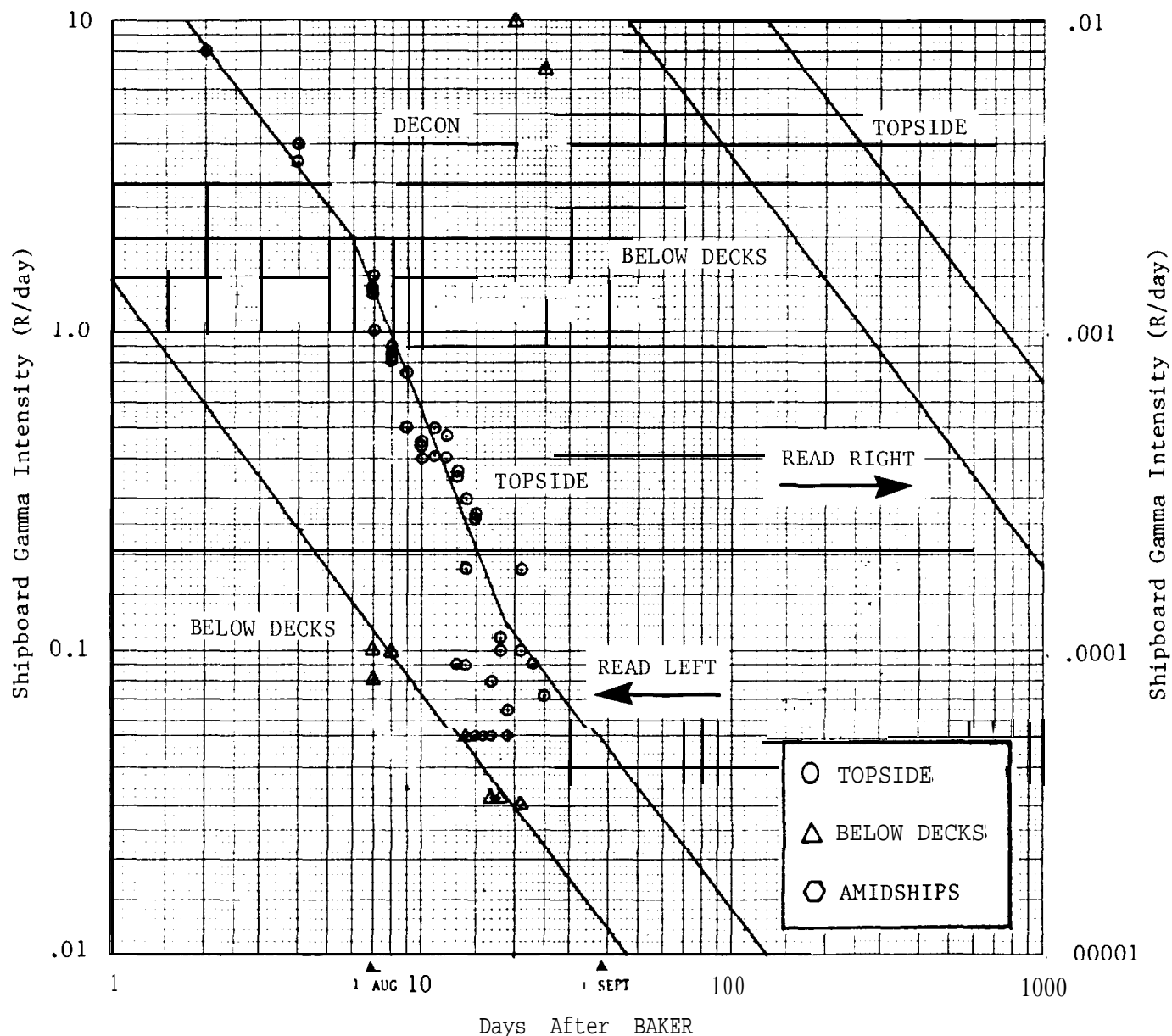
| DATE (1946) | CREW LOCATION-Hours Aboard | RECONSTRUCTED FILM BADGE DOSE (REM) |
|----------------------|------------------------------------------------------------------------------------------------|-------------------------------------------|
| | ABLE | |
| 1 July | Evacuated aboard BOTTINEAU (APA-235)-24 (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)

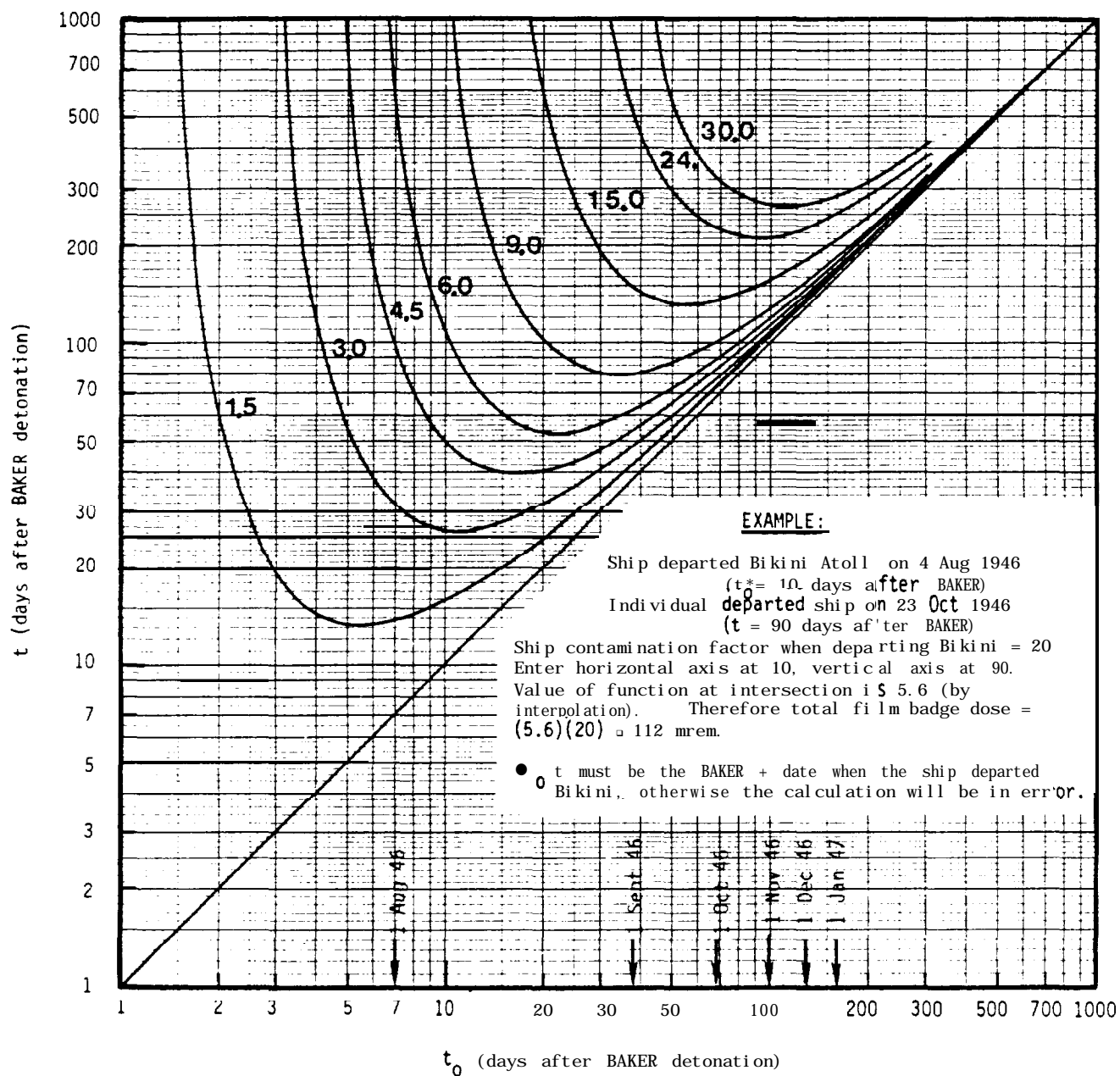


Figure A-57. Post-Bikini Dose Nomograph



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

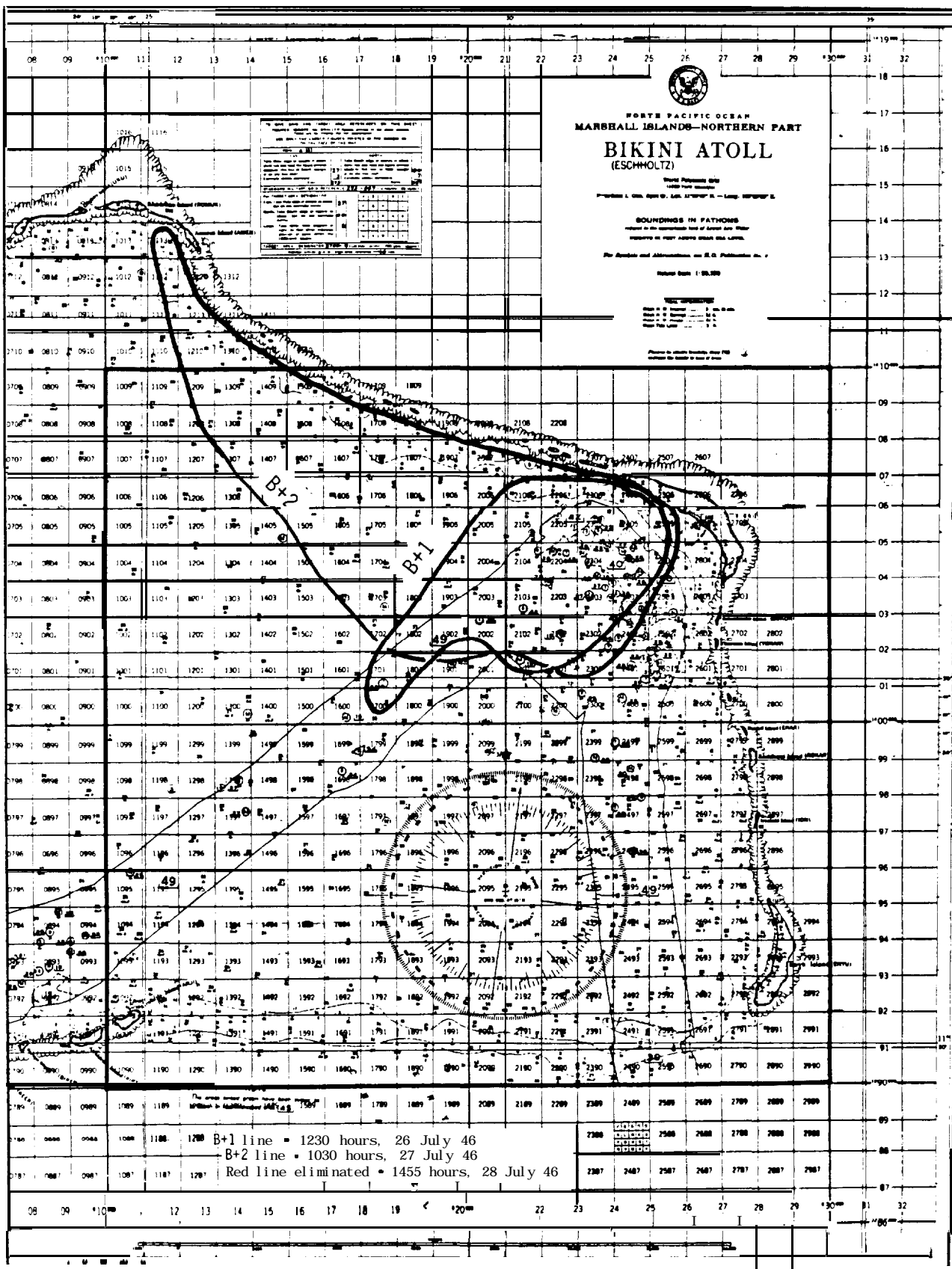


Figure A-60. Shot BAKER Red Lines (I=1.0 R/day)

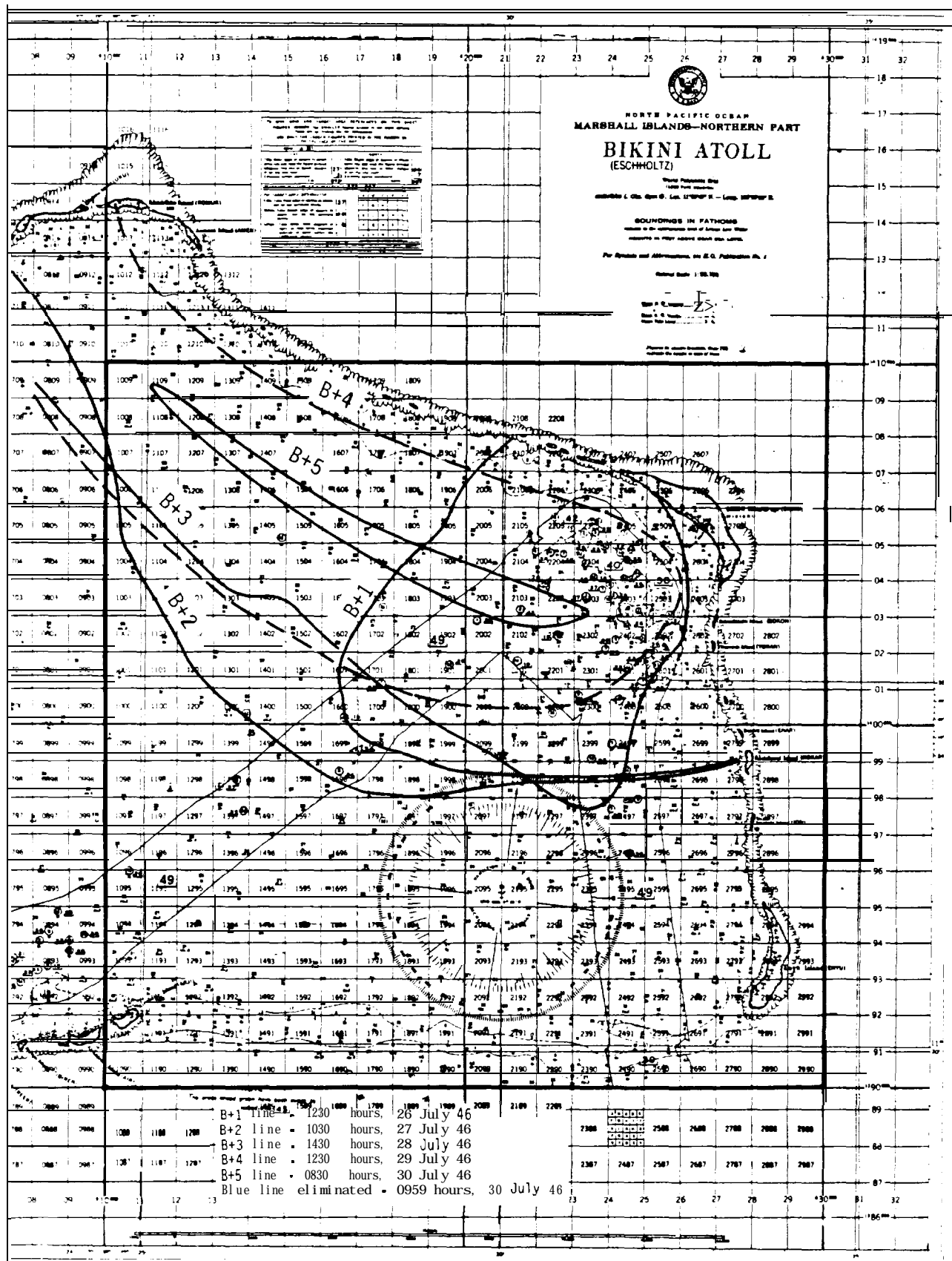


Figure A-61. Shot BAKER Blue Lines ($I=0.1$ R/day)

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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