

UNC NUCLEAR INDUSTRIES

Subsidiary of United Nuclear Corporation P.O. Box 490
A **UNC RESOURCES** Company Richland, Washington 99352

PREPARED FOR THE
UNITED STATES DEPARTMENT OF ENERGY
UNDER CONTRACT NUMBER DE-AC06-76RL01857

UNI-1993

ACCESS CATEGORY

SERIES AND COPY NO.

DATE

February 25, 1982

DECLASSIFIED

DECLASSIFIED

RESTRICTED DATA
THIS DOCUMENT IS RESTRICTED DATA AS
DEFINED IN EXECUTIVE ORDER 11652
UNAUTHORIZED DISCLOSURE IS SUBJECT TO
ADMINISTRATIVE AND CRIMINAL SANCTIONS.

RESERVED FOR DOCUMENT CONTROL USE

RECORD CENTER FILE
REFERENCE COPY
RECEIVED
MAR 01 1982
UNC NUCLEAR INDUSTRIES
DOCUMENT CONTROL CENTER

TITLE
HANFORD PRODUCTION LEVELS FROM 1945 TO PRESENT

AUTHOR DEPARTMENT AND SECTION
ANNE M. NOLAN
ADVANCED TECHNOLOGY SECTION
ADVANCED PROGRAMS & PLANNING DEPARTMENT

CLASSIFIED BY **CG-PR-1**

DERIVATIVE CLASSIFIER **T. M. HELM**
(NAME AND TITLE)

DECLASSIFY
OR
 REVIEW _____
(DATE OR EVENT)

THIS DOCUMENT MUST BE LEFT UNATTENDED OR WHERE AN UNAUTHORIZED PERSON MAY HAVE ACCESS TO IT. WHEN NOT IN USE, IT MUST BE KEPT IN AN APPROVED STORAGE CONTAINER WITHIN AN UNGUARDED AREA. WHILE IT IS IN YOUR POSSESSION, YOU ARE RESPONSIBLE FOR THE PROTECTION OF THIS DOCUMENT. YOU MUST SIGN A RECEIPT FOR YOUR RESPONSIBILITY TO KEEP IT AND ITS CONTENTS WITHIN THE LIMITS OF THE PROJECT AND FROM ANY UNAUTHORIZED PERSON. ITS TRANSMITTAL TO, AND STORAGE AT, YOUR PLACE OF RESIDENCE IS PROHIBITED. IT IS NOT TO BE REPRODUCED. IF ADDITIONAL COPIES ARE REQUIRED, THEY MUST BE OBTAINED FROM THE RECORDS SECTION. ALL PERSONS WHO HANDLE THIS DOCUMENT ARE REQUESTED TO SIGN IN THE SPACE PROVIDED BELOW.

ROUTE TO:	PAYROLL NO.	LOCATION	FILES ROUTE DATE	SIGNATURE AND DATE
RECORD COPY				
		Reviewed and Approved for - E		Classification cancelled (Change to DECLASSIFIED)
		Public Release by the Hanford		UNCLASSIFIED
		Declassification Project		
		R. M. ITEN PNNL ADD		By Authority of PR-24
		E-3-00 Date		TOPICS 1-2 6/3/91
		W.F. Nicaise, PNNL ADD		By B493 Hammer Sec 5
		2/21/2002		
		APPROVED FOR		Verified By [Signature] 6/3/91
		PUBLIC RELEASE		[Signature] 6/3/91
		C. Stillingsford 3-24-95		PN Eick 5-9-00

BEST AVAILABLE COPY

DECLASSIFIED SECRET
(CLASSIFICATION)

DECLASSIFIED

UNI-1993

This document classified by
Derivative
Classifier T. M. Helm

This document consists of
7 pages. No.
copies. Series

Distribution:

1. D. H. Curtiss
2. T. M. Helm
3. T. J. Trapp
4. A. M. Nolan/UNC FILE
5. UNC RECORD
6. EXTRA
7. EXTRA
8. EXTRA
9. EXTRA
10. EXTRA

Classification cancelled (Change to
DECLASSIFIED)

~~UNCLASSIFIED~~

By Authority of PR-24

TOPICS 1 & 2

By Buzz Hammer ^{6/3/84} SEC SPEC.

Verified By [Signature] ^{6/3/84}

[Signature] ^{6/3/84}
J. R. Shreve 5-1500

HANFORD PRODUCTION LEVELS FROM 1945 TO PRESENT

A. M. NOLAN
ADVANCED TECHNOLOGY SECTION
ADVANCED PROGRAMS & PLANNING DEPARTMENT

NOTICE

THIS REPORT WAS PREPARED AS AN ACCOUNT OF WORK SPONSORED BY THE UNITED STATES GOVERNMENT. NEITHER THE UNITED STATES NOR THE UNITED STATES DEPARTMENT OF ENERGY, NOR ANY OF THEIR EMPLOYEES, NOR ANY OF THEIR CONTRACTORS, SUBCONTRACTORS, OR THEIR EMPLOYEES, MAKES ANY WARRANTY, EXPRESS OR IMPLIED, OR ASSUMES ANY LEGAL LIABILITY OR RESPONSIBILITY FOR THE ACCURACY, COMPLETENESS OR USEFULNESS OF ANY INFORMATION, APPARATUS, PRODUCT OR PROCESS DISCLOSED, OR REPRESENTS THAT ITS USE WOULD NOT INFRINGE PRIVATELY OWNED RIGHTS.

UNC NUCLEAR INDUSTRIES, INC.
RICHLAND, WA 99352

FEBRUARY 25, 1982

DISCLAIMER

THIS REPORT WAS PERPARED FOR USE WITHIN UNC NUCLEAR INDUSTRIES, INC. IN THE COURSE OF WORK UNDER SUPPLEMENTAL AGREEMENT TO THE UNITED STATES DEPARTMENT OF ENERGY CONTRACT DE-AC08-78RL01857. ANY VIEWS OR OPINIONS EXPRESSED IN THE REPORT ARE THOSE OF THE AUTHOR ONLY. THIS REPORT IS SUBJECT TO REVISION UPON COLLECTION OF ADDITIONAL DATA.

80-5100-350 (11-79)

BD-5100-361 (3-78)

~~RESTRICTED DATA~~

DOE - Richland, WA

~~This document contains Restricted Data as defined in the Atomic Energy Act of 1954. The subject matter is of a nature that its unauthorized disclosure would be injurious to the national safety.~~

**APPROVED FOR
PUBLIC RELEASE**

C. Willingham
3-24-95

DECLASSIFIED

HANFORD PRODUCTION LEVELS FROM 1945 TO PRESENT

A survey was made to determine the annual production levels at Hanford for the period from 1945 to present. Production data is available in the form of monthly reports issued from 1945 through 1971. During this time, the nine production reactors were built and became operational. By 1972, all but N Reactor had been shut down. The schedule of startup and shutdown for these reactors is shown in Figure 1.

The reactors produced plutonium primarily, but some tritium was also produced. The annual production levels of plutonium and tritium are shown in Figures 2 and 3. Peak plutonium production of 4983 kg was attained in 1964. Production levels fell as the reactors were shut down during the latter part of the 1960s. Production data from 1972 to present reflects N Reactor operation only.

Figures 4 and 5 show the cumulative plutonium and tritium production at Hanford. More than 64 metric tons of plutonium and nearly 13 kg of tritium have been produced to date.

The nature of the data, especially the plutonium figures, deserves some explanation. The formats and methods of presenting the data in the monthly reports changed many times over the years. From 1945 until 1948, plutonium production was given as the amount of "Product 49 Delivered to the Area Engineer". "Product 49" is Pu-239, and the production figure is apparently the quantity of separated plutonium ready to be shipped offsite.

During part of 1948 and 1949, the plutonium figures reflected the quantity of total plutonium through final chemical processing. After that time, the data appearing here is the quantity discharged from the reactors. Plutonium data was given in MWD until mid-1953, and in kilograms afterwards. Conversion factors from MWD to kilograms were provided by several months of data presented in both units.

When tritium was first produced, the data showed quantities of tritium extracted and was given in units of cubic centimeters or liters. Tritium production was given in grams starting in late 1953, and discharge quantities became available in 1958. Conversion of data from cm^3 to grams was made possible by one month of data available in both units.

HANFORD PRODUCTION REACTOR HISTORY

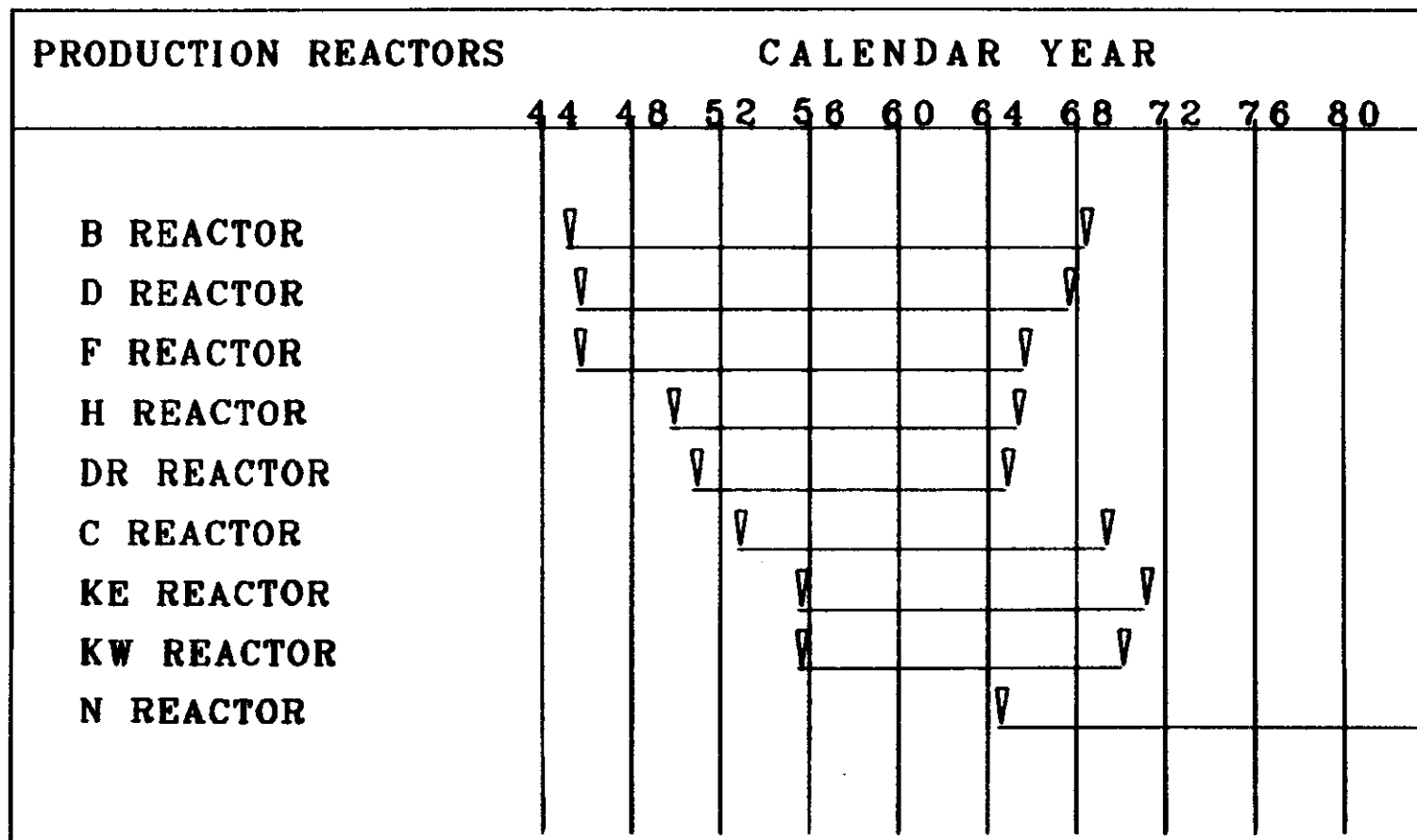


FIGURE 1

DECLASSIFIED

-2-
DECLASSIFIED
UNI-1993

HANFORD ANNUAL PRODUCTION LEVELS PLUTONIUM

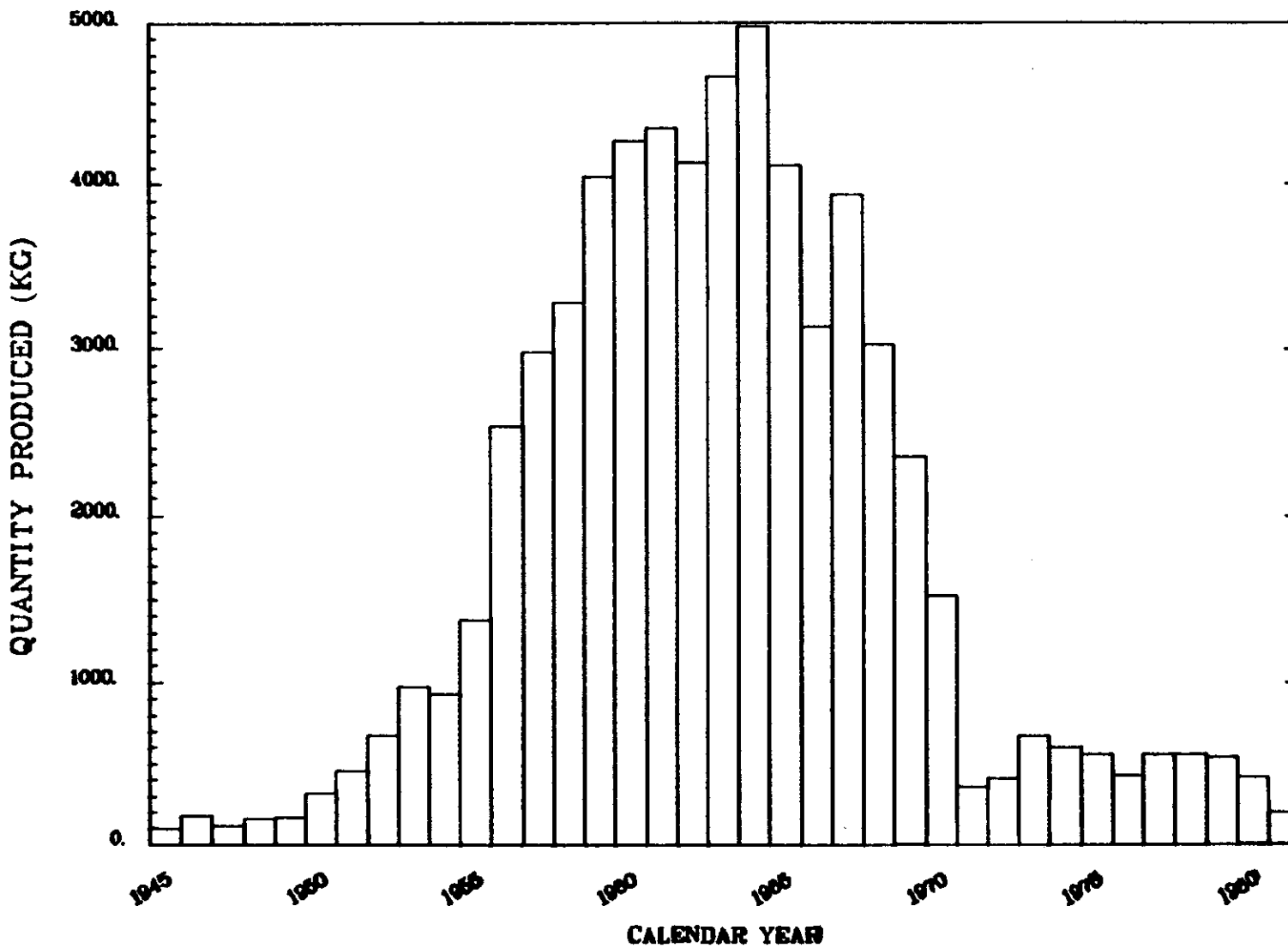
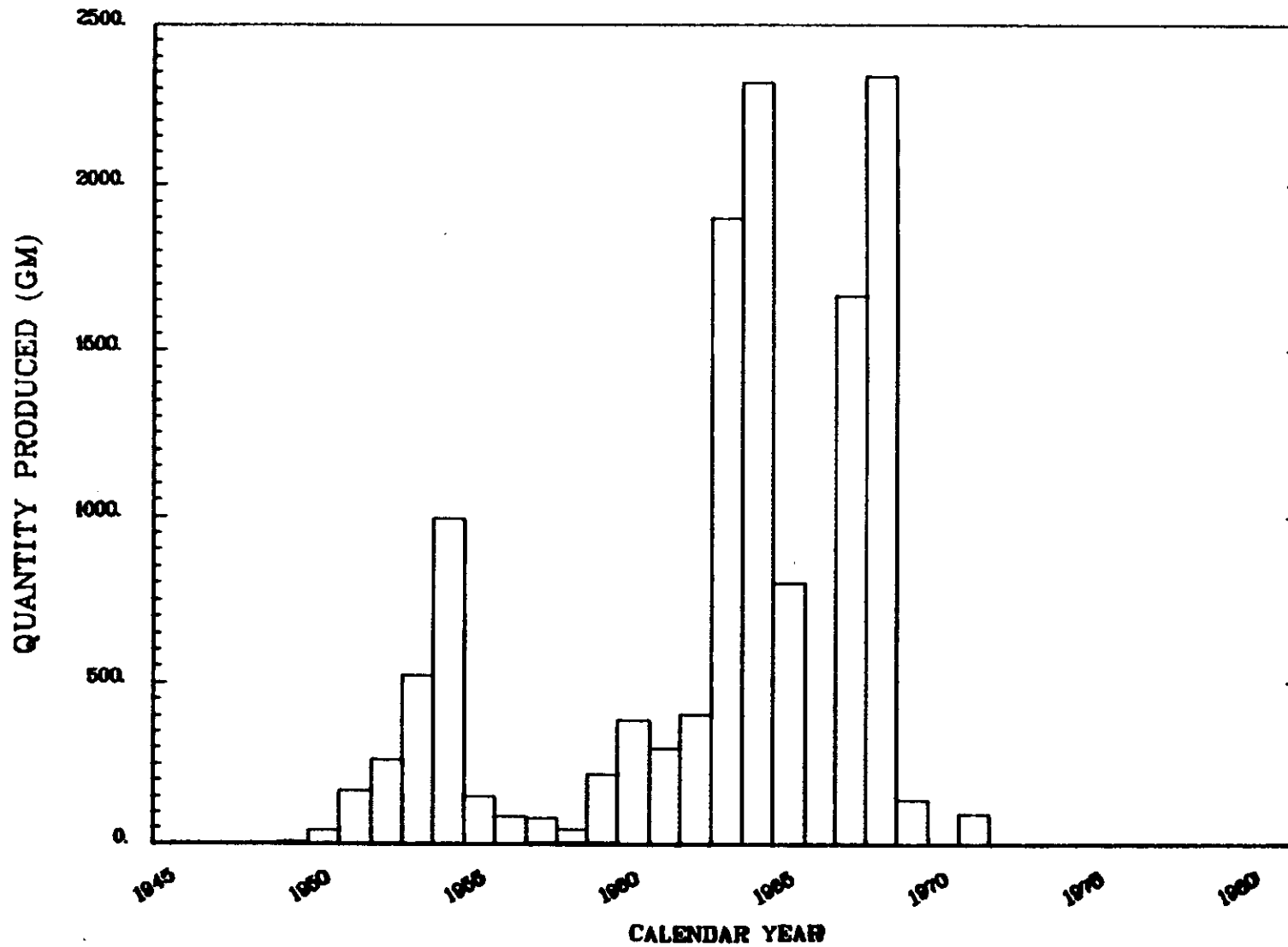


FIGURE 2

DECLASSIFIED

DECLASSIFIED

HANFORD ANNUAL PRODUCTION LEVELS TRITIUM



DECLASSIFIED

DECLASSIFIED

FIGURE 3

HANFORD CUMULATIVE PRODUCTION PLUTONIUM

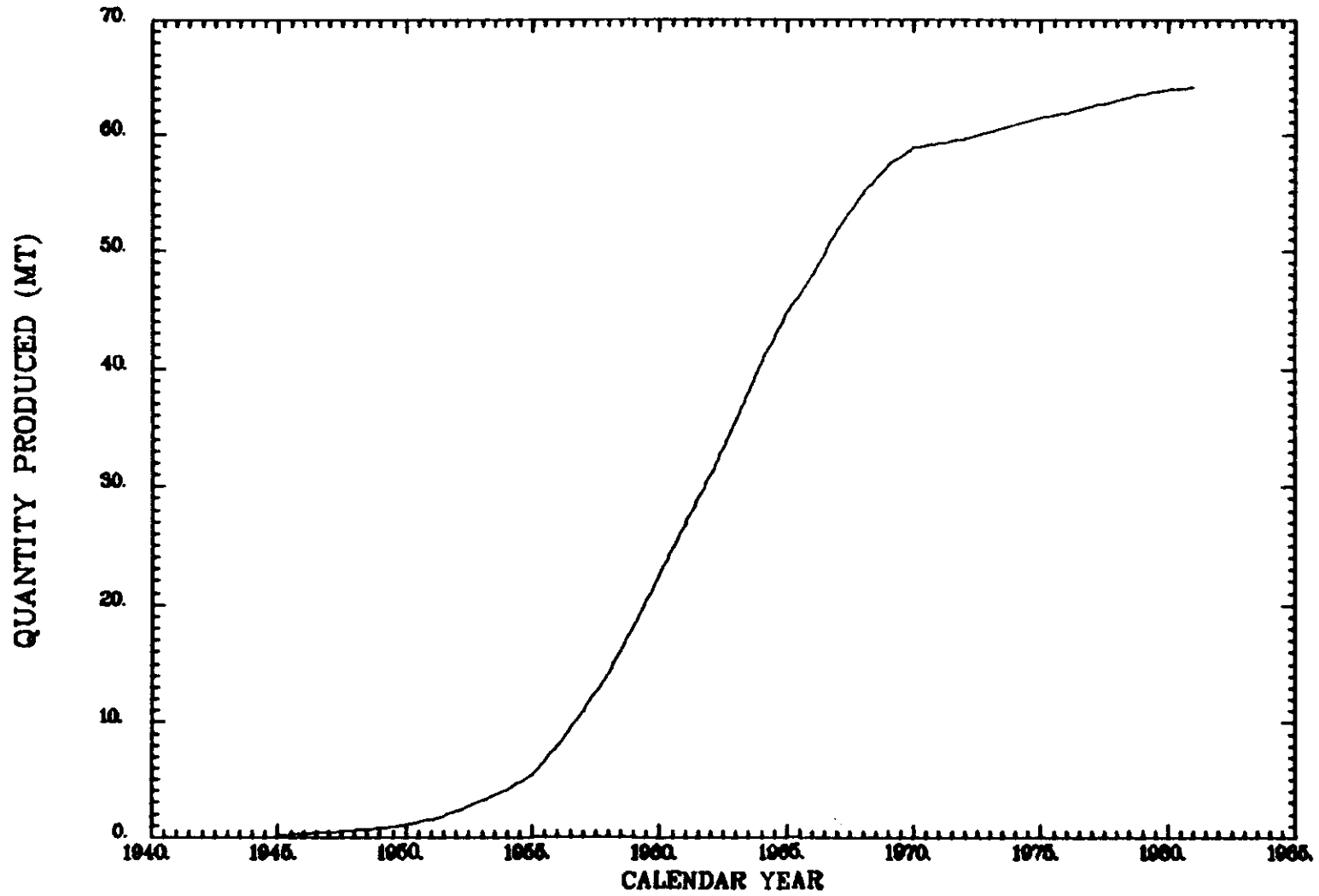


FIGURE 4

DECLASSIFIED

DECLASSIFIED

UNI-1993

-5-

HANFORD CUMULATIVE PRODUCTION TRITIUM

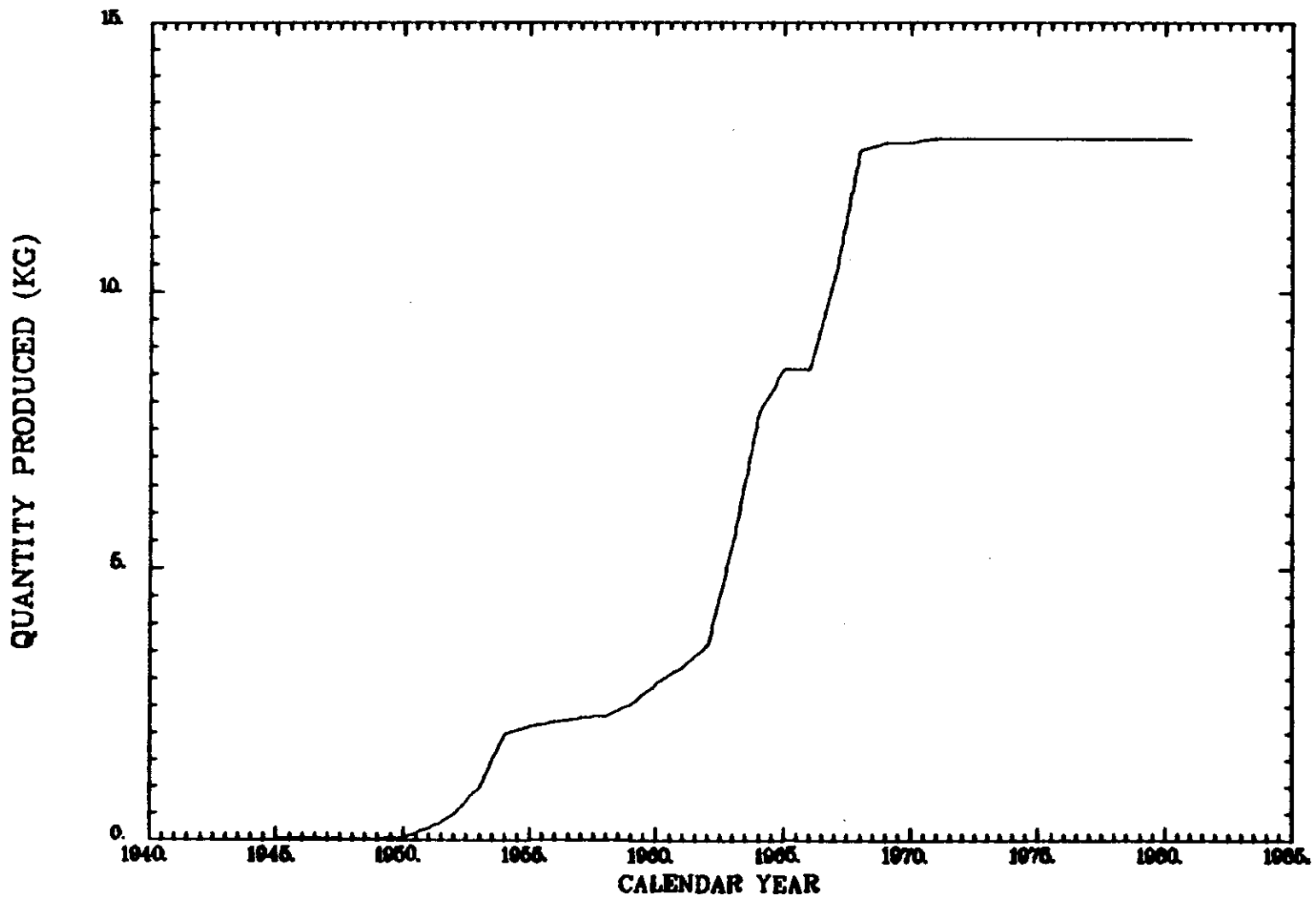


FIGURE 5

DECLASSIFIED

-6-
DECLASSIFIED
UNI-1993