

# DEERE & COMPANY

JOHN DEERE ROAD, MOLINE, ILLINOIS 61265 U.S.A.

Manufacturing Engineering



**J.D. CONFIDENTIAL**

28 May 1982

TO: MANAGERS OF MANUFACTURING ENGINEERING

SUBJECT: 1982 ROBOTICS FORECAST

Attached are the 1982 Robotics Forecast survey results. This survey was taken in January and February 1982. The results were derived from Managers of Manufacturing Engineering forecasts for the number of robots that will be installed or on order in their facilities in five years. The results can be treated essentially as an internal Delphi forecast and should be kept confidential.

Optimistic, most probable, and pessimistic forecasts were obtained to establish a range. It was suggested that production forecasts and trends in the robot industry be considered. An optional response tally form was supplied and used by most units, providing a more detailed picture of yearly forecasts (98% detailed response) and application usage (90% detailed response). The forecasts are not necessarily linked to specific budget categories, spending plans, or in-depth detailed studies.

In summary, the forecasts indicate the following:

- The yearly growth rate will be slow through 2/84 and will accelerate afterwards.
- Welding and material handling applications will grow and represent the greatest percent of robots.
- Deere currently has a greater distribution of robots in painting than industry has.

Descriptions of each chart is provided. I hope you will find these results informative. Please distribute this information as you see necessary. If you have any questions please call me on extension 2-5285.

Richard J. Jerz  
Mfg., Research & Development

## DESCRIPTION OF CHARTS

### Chart #1 - Robotic Forecast

This chart summarizes each Deere units' optimistic, most probable, and pessimistic five-year forecasts of the total number of robots ordered or installed, and Deere's grand totals. Parts Distribution Warehouse (PDW) figures, which were not obtained last year, are shown last.

### Chart #2 - Robotic Five-Year Forecast - 1982 (bar chart)

This chart graphically shows the data provided in Chart #1 in the order of highest to lowest most probable forecasts. Relative differences in forecasts can be seen.

### Chart #3 - Robotics Five-Year Forecast - 1982 (line chart)

This chart shows the growth trends in the robotic forecasts. The yearly figures are only those provided on the detailed talley form and are approximately 98% of the grand totals shown on Chart #1. The growth rate (G.R.) percentages were calculated assuming compounded growth between 2/82 and 2/87. Note that the Deere "most-probable" five-year forecast growth rate is very close to the industry ten-year forecast growth rate.

### Chart #4 - Robotic Five Year Forecasts - 1981 & 1982 (line chart)

This chart shows a comparison of this year's forecasts range and last year's forecasts range. The 1981 yearly figures were calculated assuming compounded growth from 2/81 to 2/86 since yearly details were not provided. Note that the 1982 range is lower than the 1981 range through 2/84, then is encompassed by the 1981 range through 2/86, and finally surpasses the 2/86 figures in 2/87. This indicates increased overall optimism for robot applications in the future.

### Chart #5 - Robotic Five Year Forecast by Application - 1982 (bar chart)

This chart shows by application - welding, machine loading/material handling, painting, assembly, and "other", Deere current and forecasted figures. The application forecast figures shown are only those provided in the detailed talley form, and approximately 90% of the grand totals in Chart #1.

### Chart #6 - Actual Distribution of Robot Application - Deere vs. Industry

This chart shows by application the distribution of current robot applications in Deere and in industry.

CHART 1  
ROBOTICS FORECAST

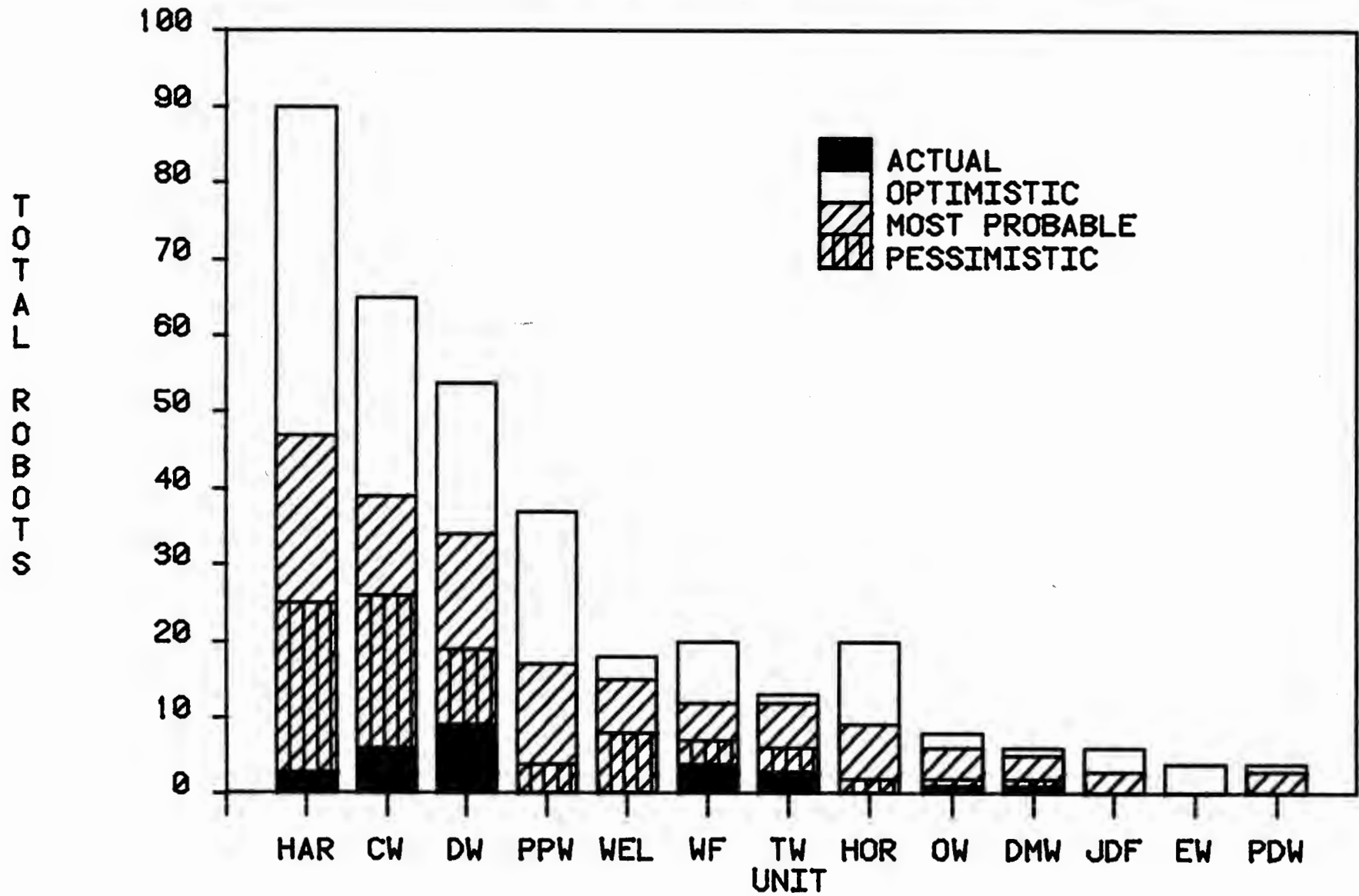
FEB 82  
MFG. R & D  
D & C

(INSTALLED OR ON ORDER BY FEBRUARY 1987)

FACTORY	CURRENT 2/82	PESSIMISTIC	OPTIMISTIC	MOST PROBABLE
TRACTOR WORKS	6	8	13	12
COMPONENT WORKS	6	26	65	39
ENGINE WORKS	0	0	4	0
WATERLOO FOUNDRY	4	7	20	12
PLOW/PLANTER WORKS	0	4	37	17
HARVESTER WORKS	3	25	90	47
JOHN DEERE FOUNDRY	0	2	6	3
WELLAND WORKS	0	8	18	15
HORICON WORKS	0	3	20	9
DES MOINES WORKS	1	1	6	5
OTTUMWA	2	2	8	6
DUBUQUE WORKS	9	19	54	34
TOTAL	31	105	341	199
PARTS DISTRIBUTION		0	4	2

CHART #2

ROBOTIC FIVE YEAR FORECAST - 1982  
TOTAL ROBOTS INSTALLED OR ON ORDER



CODE DESCRIPTION

TRACTOR WORKS - TW

COMPONENT WORKS - CW

ENGINE WORKS - EW

WATERLOO FOUNDRY - WF

PLOW/PLANTER WORKS - PPW

HARVESTER WORKS - HAR

JOHN DEERE FOUNDRY - JDF

WELLAND WORKS - WEL

HORICON WORKS - HOR

DES MOINES WORKS - DMW

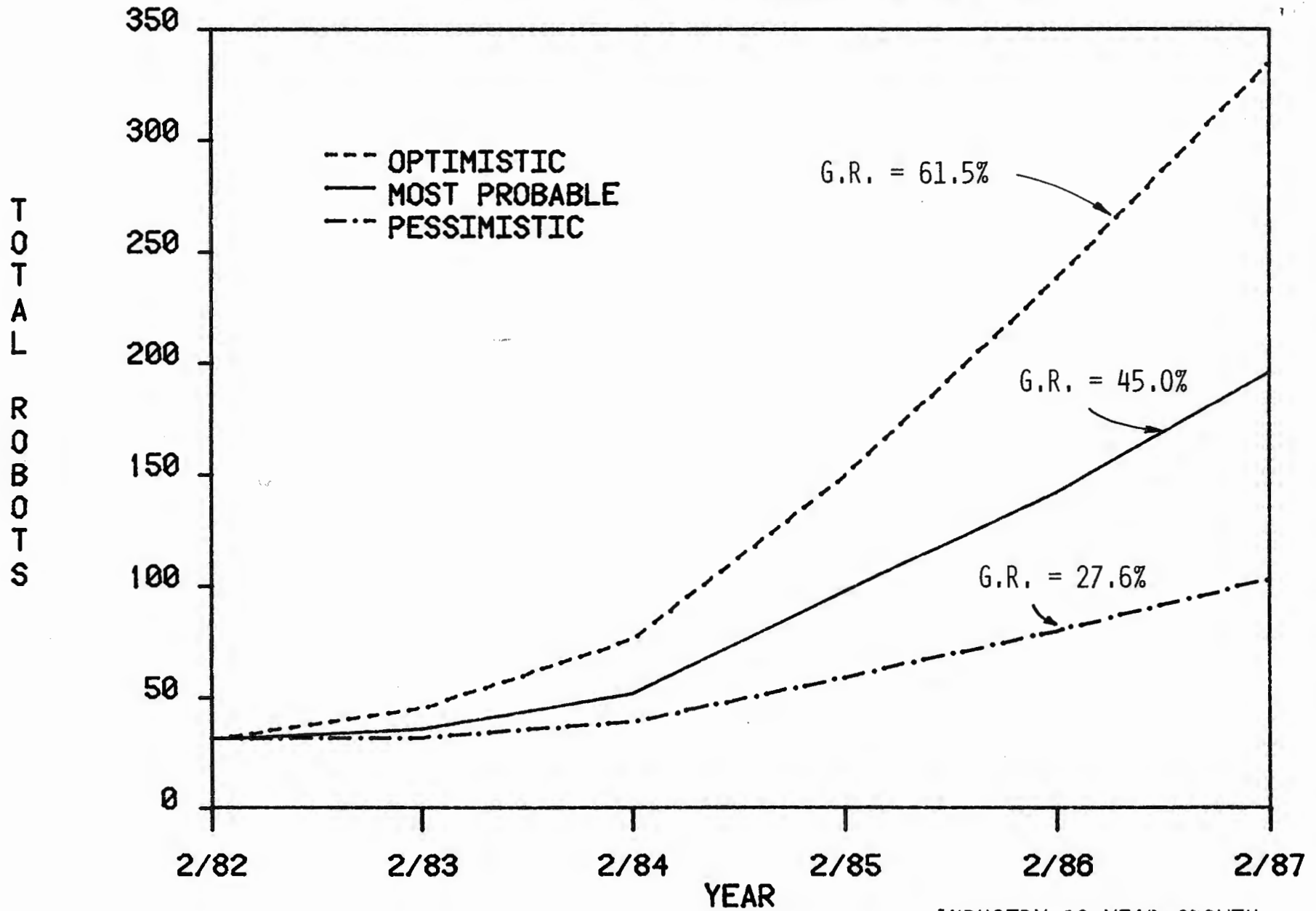
OTTUMWA - OW

DUBUQUE WORKS - DW

PARTS DISTRIBUTION - PDW

CHART #3

ROBOTIC FIVE YEAR FORECAST - 1982  
TOTAL ROBOTS INSTALLED OR ON ORDER



INDUSTRY 10 YEAR GROWTH  
RATE FORECAST = 47.9%

CHART #4

ROBOTIC FIVE YEAR FORECASTS - 1981 & 1982  
TOTAL ROBOTS INSTALLED OR ON ORDER

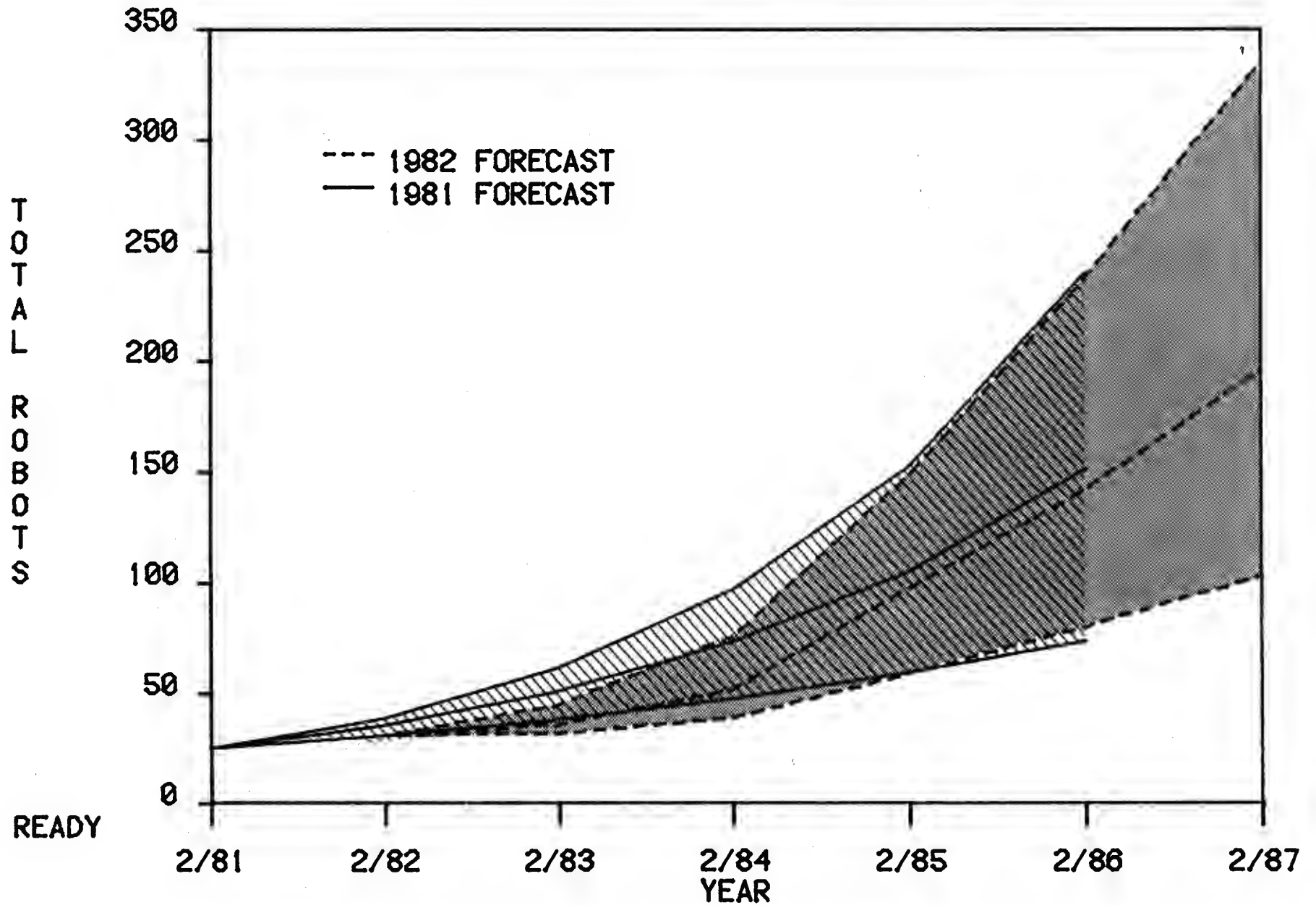


CHART #5

ROBOTIC FIVE YEAR FORECAST BY APPLICATION - 1982  
TOTAL ROBOTS INSTALLED OR ON ORDER

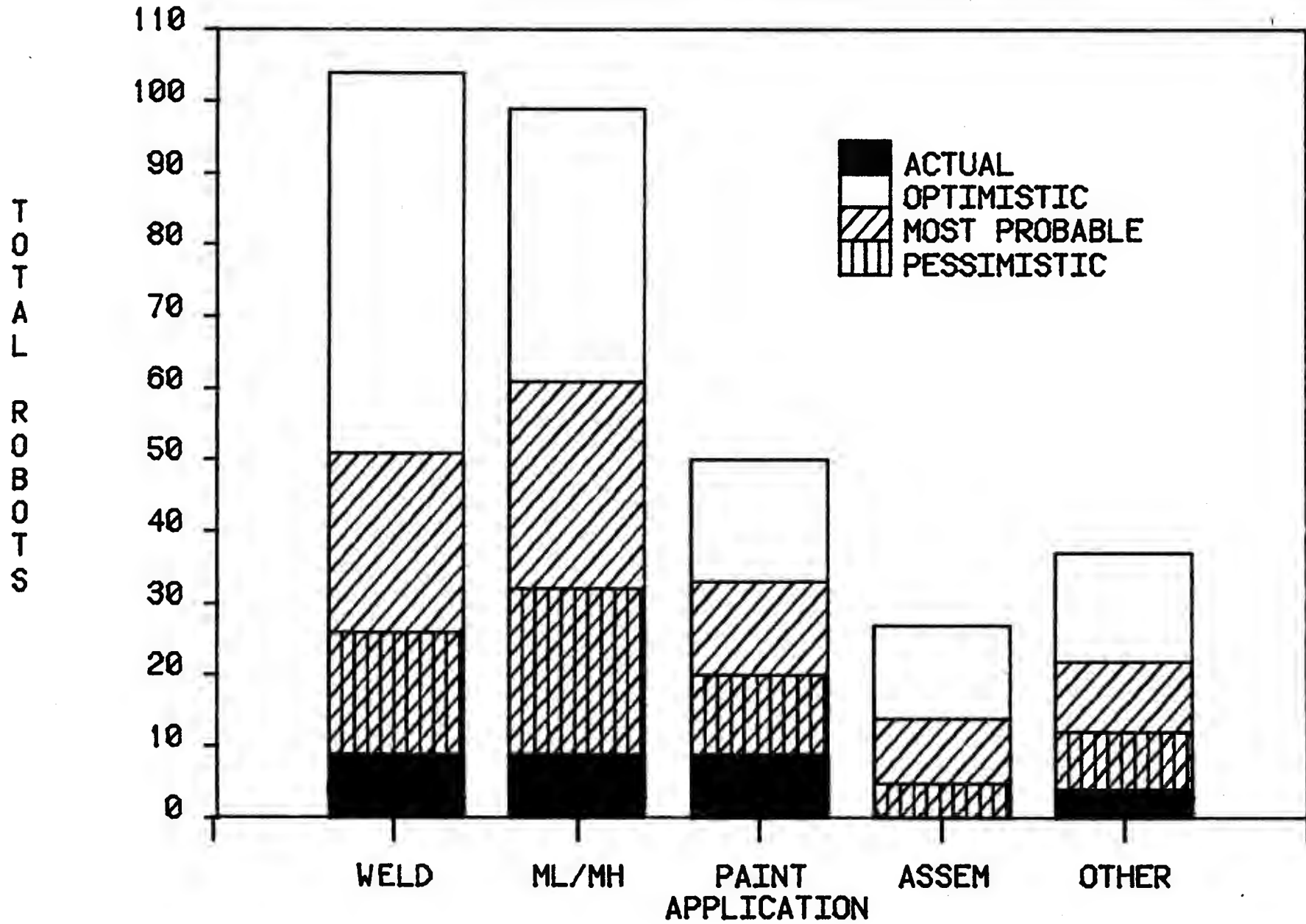




CHART #6

ACTUAL DISTRIBUTION OF ROBOTS BY APPLICATION  
DEERE VERSUS INDUSTRY - 1982

