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(NASA-CR-176370) A MOSAIC INFRARED SENSOR FOR SPACE ASTRONOMY, PHASE 3 Quarterly Report (Honeywell, Inc.) 8 p HC A02/MF A01 CSCL 03A

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Unclas G3/89 04867

A MOSAIC INFRARED SENSOR

FOR SPACE ASTRONOMY

THIRD QUARTERLY REPORT

PHASE III

FOR

NASA HEADQUARTERS

ASTROPHYSICS DIVISION

WASHINGTON, D.C.

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LEXINGTON, MA 02173

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Note that the array with the lowest $s_o f(b)$ has a very low carrier concentration. It is possible that the $s_o f(b)$ obtained on ST11 and ST06 is artificially high due to an inversion layer that would increase the area of g-r current generation. Further investigations are necessary to determine the exact source of the high g-r current.

CONCLUSION

One of the three arrays fabricated this quarter with very low carrier concentration shows excellent low temperature performance. Extremely low g-r currents were observed indicating a well passivated surface. It is anticipated that very low tunneling currents will be observed at very low temperatures due to the low base carrier concentration. This array will be sent to D. Hall for further investigation.

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TABLE 1

WAFER ID	p(77) Cm^{-3}		co(300K) um		Sof(b)(175K) cm/S
ST06	$6x10^{14}$		2.41		$8x10^{5}$
ST09	$1.6x10^{14}$	2.40		$1x10^{4}$	
ST11	$1x10^{14}$		2.41		$2x10^{5}$

Summary of the measured electrical characteristic of the three wafers evaluated this quarter.

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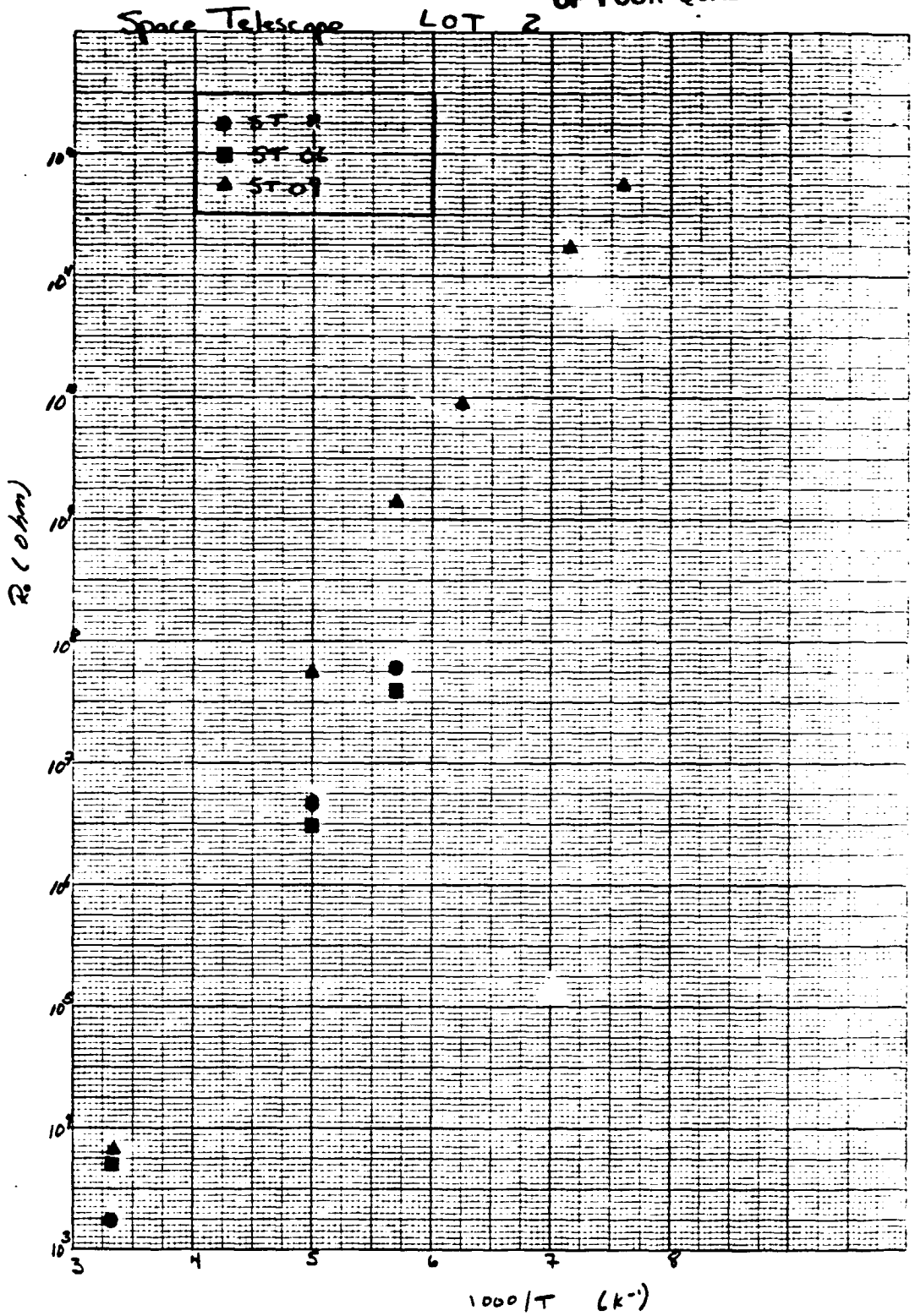

FIGURE 1. Ro TEMPERATURE DEPENDANCE OF THE THREE ARRAYS ANALYZED

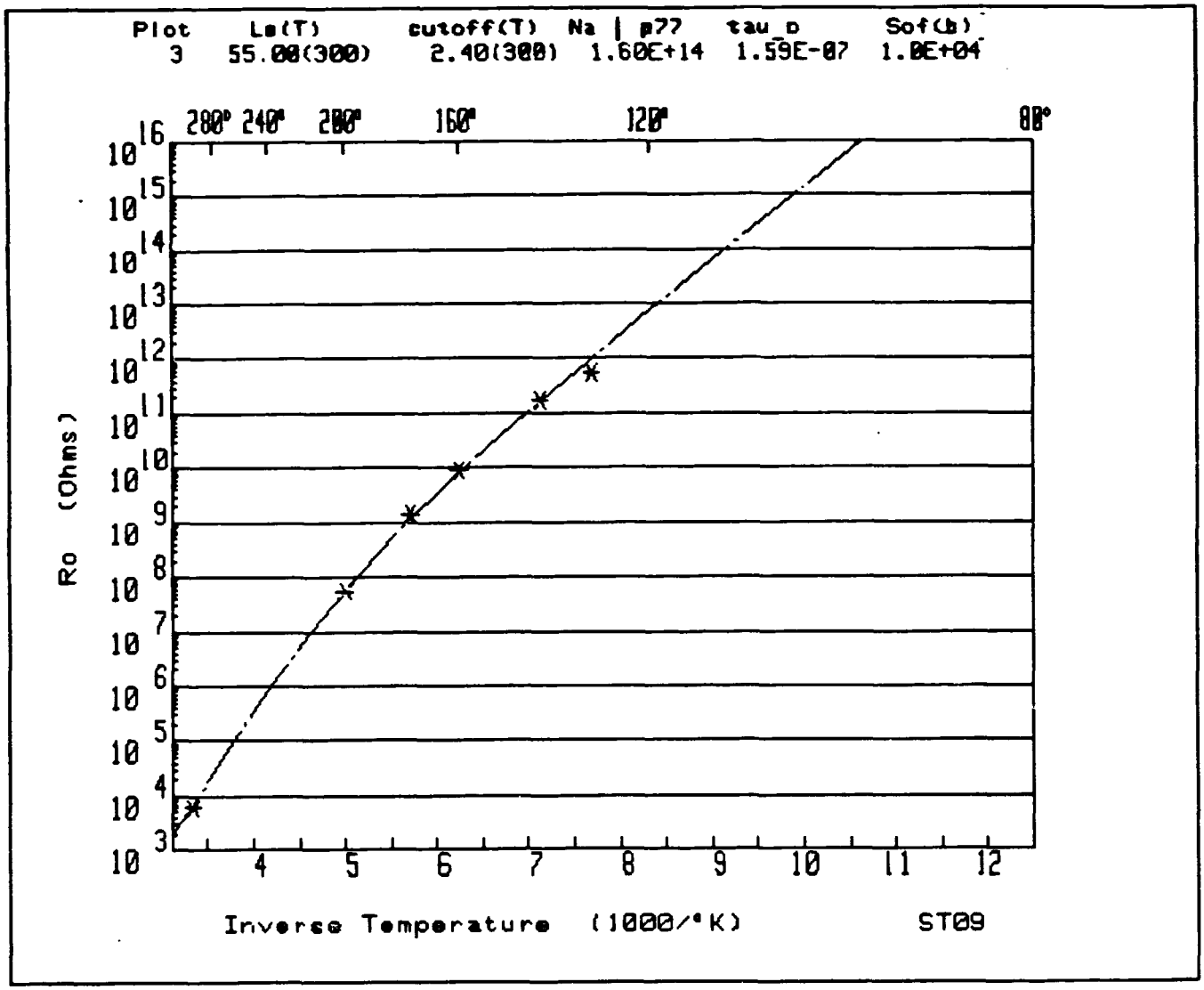

FIGURE 2. ANALYSIS OF THE Ro TEMPERATURE SHOWS LOW GENERATION RECOMBINATION CURRENTS ARE RESPONSIBLE FOR EXCELLENT MODERATE TEMPERATURE PERFORMANCE.

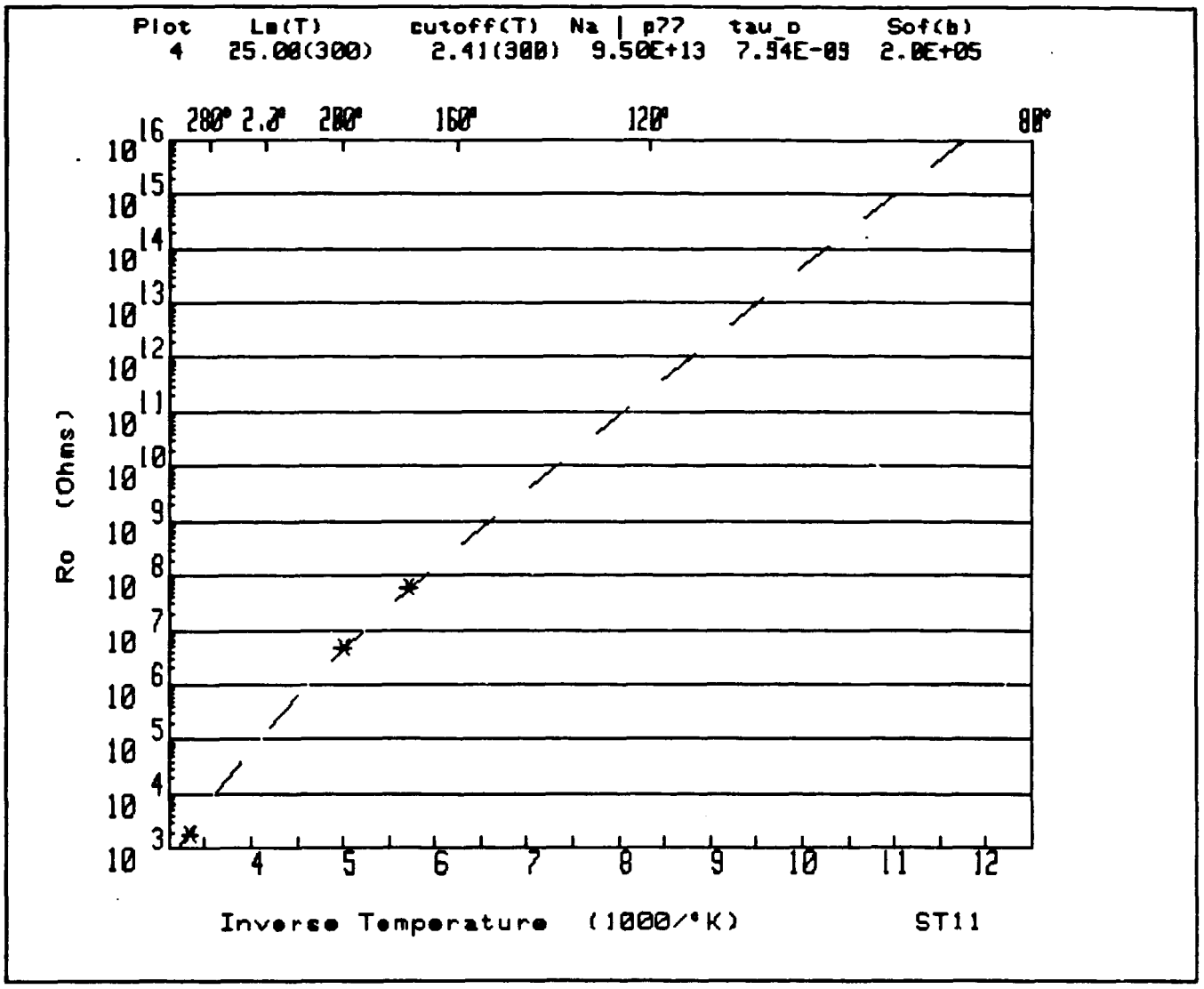

FIGURE 3. ANALYSIS OF THE Ro TEMPERATURE DEPENDANCE SHOWS HIGH GR CURRENTS DOMINATE MODERATE TEMPERATURE PERFORMANCE.

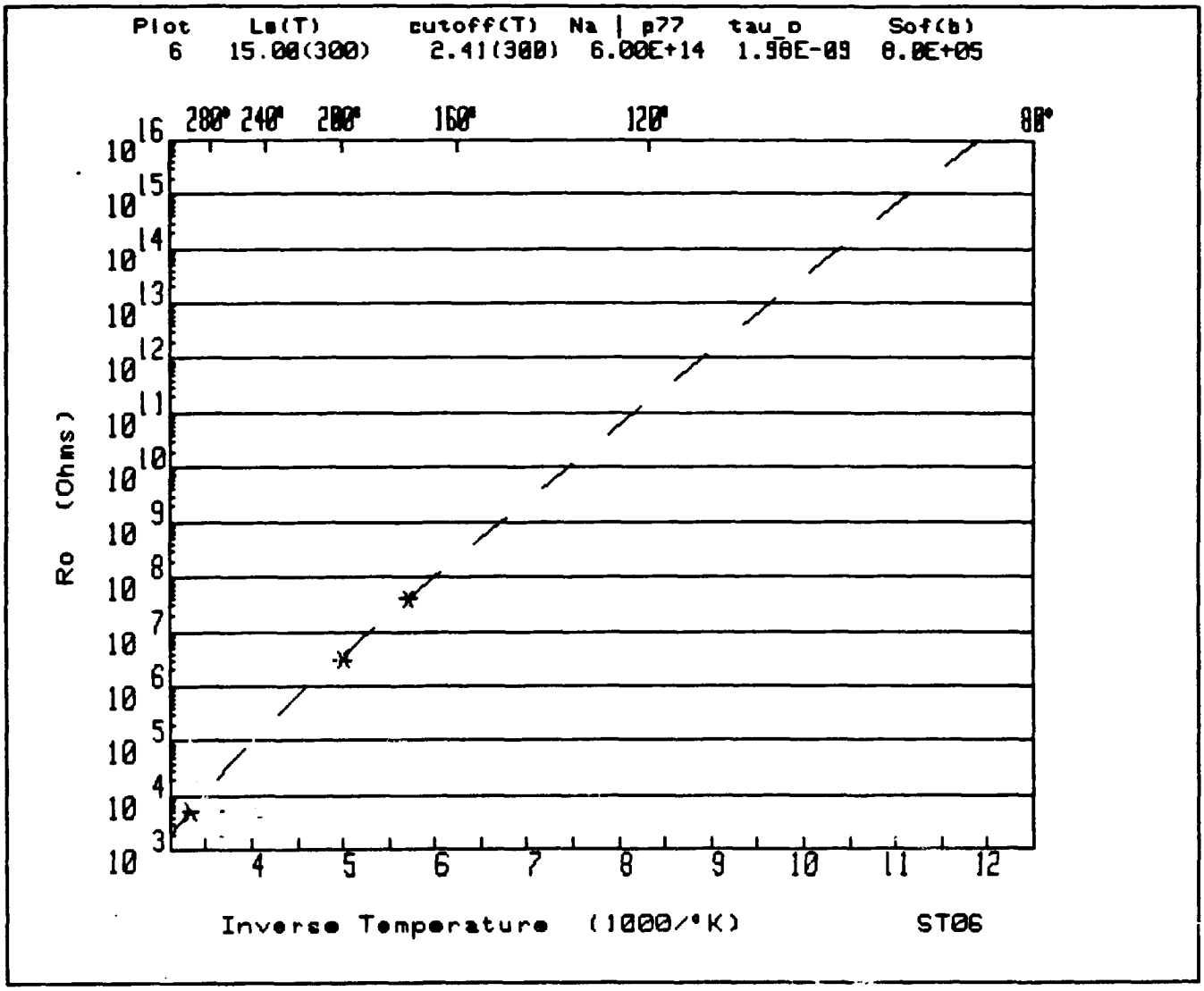

FIGURE 4. ANALYSIS OF THE Ro TEMPERATURE DEPENDANCE SHOWS HIGH GR CURRENTS DOMINATE MODERATE TEMPERATURE PERFORMANCE.