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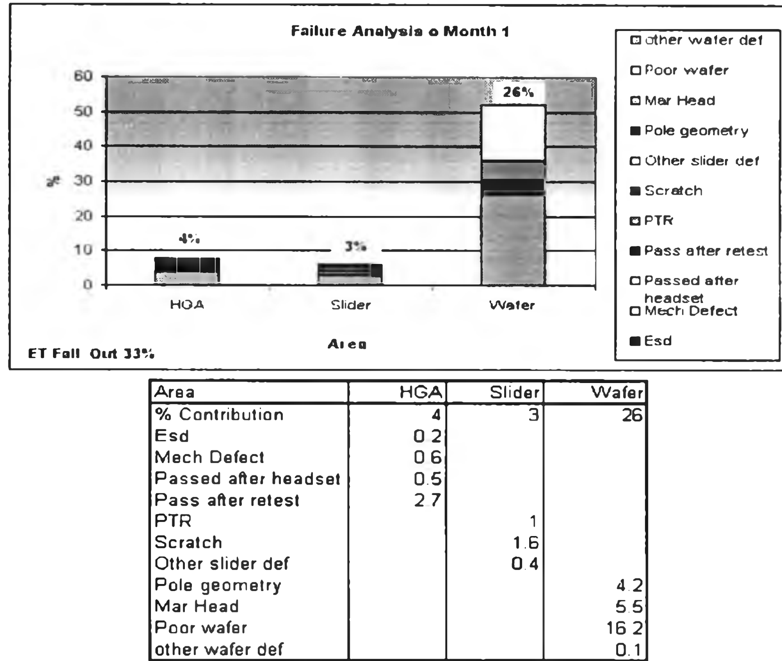
APPENDICES

APPENDIX I

(Failure Analysis)

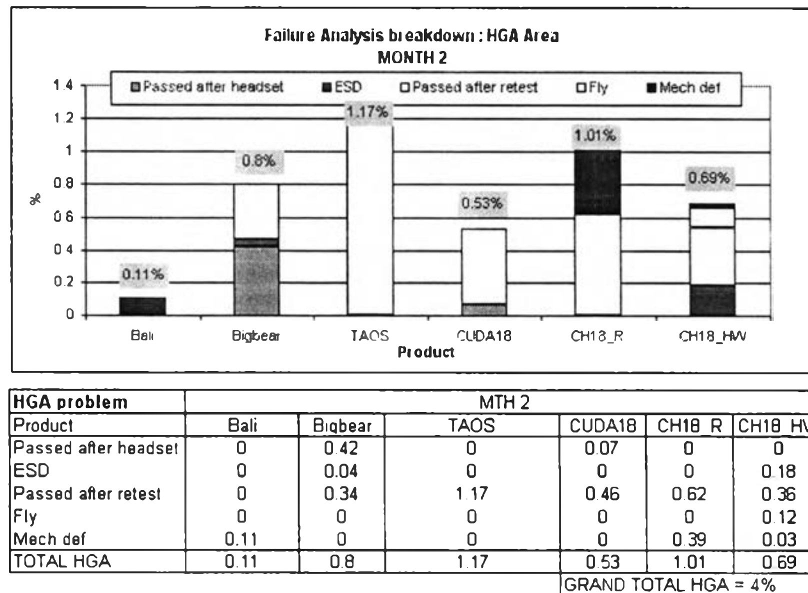
Failure analysis were performed on the major product volume 80% of total volume.

1. Failure analysis of month 1.



Area	HGA	Slider	Wafer
% Contribution	4	3	26
Esd	0 2		
Mech Defect	0 6		
Passed after headset	0.5		
Pass after retest	2 7		
PTR		1	
Scratch		1.6	
Other slider def		0 4	
Pole geometry			4 2
Mar Head			5 5
Poor wafer			16 2
other wafer def			0.1

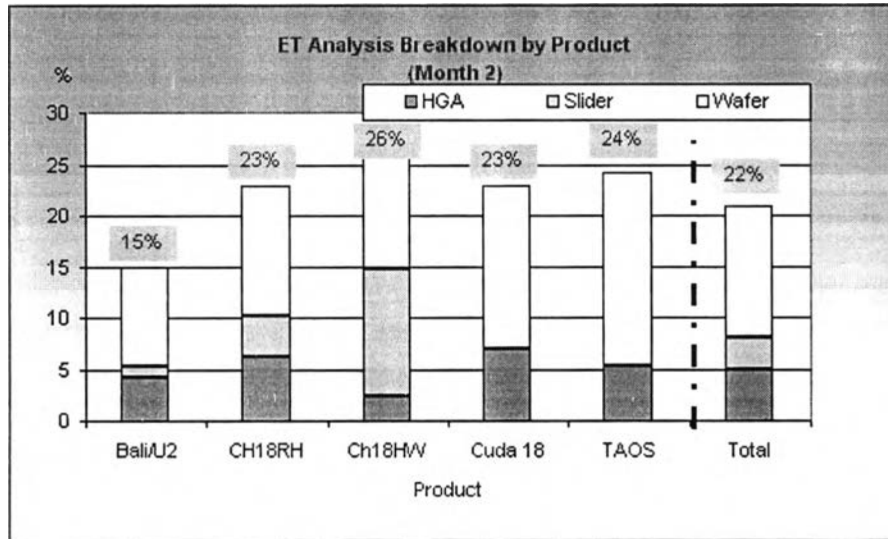
Figure 1(a) Failure Analysis in month 1



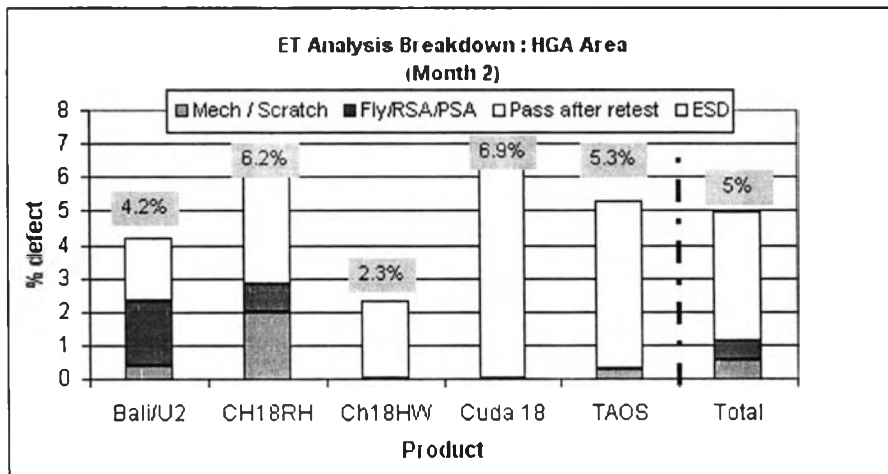
HGA problem	MTH 2					
Product	Bali	Bigbear	TAOS	CUDA18	CH18 R	CH18 HW
Passed after headset	0	0 42	0	0.07	0	0
ESD	0	0.04	0	0	0	0 18
Passed after retest	0	0.34	1 17	0 46	0 62	0 36
Fly	0	0	0	0	0	0 12
Mech def	0.11	0	0	0	0 39	0.03
TOTAL HGA	0 11	0 8	1 17	0 53	1.01	0 69
				GRAND TOTAL HGA = 4%		

Figure 1(b) Failure analysis breakdown by product in HGA area

2. Failure analysis of month 2 as shown in figure 2.



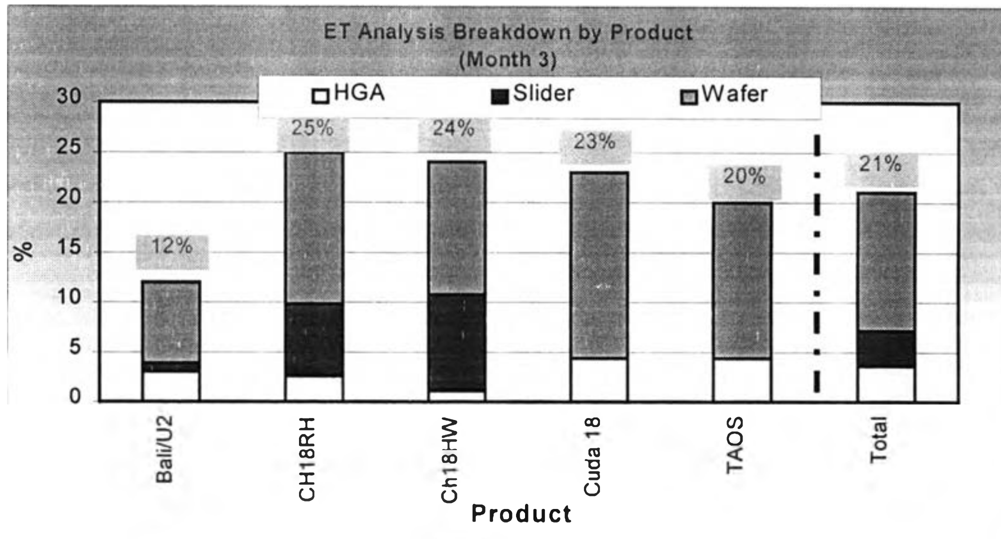
Product	MTH 2					
	Bali/U2	CH18RH	Ch18HW	Cuda 18	TAOS	Total
Volume	25.5	24.8	7.9	2.9	15.4	76.5
ET Yield	85	77	74	77	76	78
Fallout	15	23	26	23	24	22
HGA	4.2	6.1	2.3	6.9	5.3	5
Slider	1.1	4.1	12.4	0	0	3
Wafer	9.7	12.7	11.3	16.1	18.8	13.0



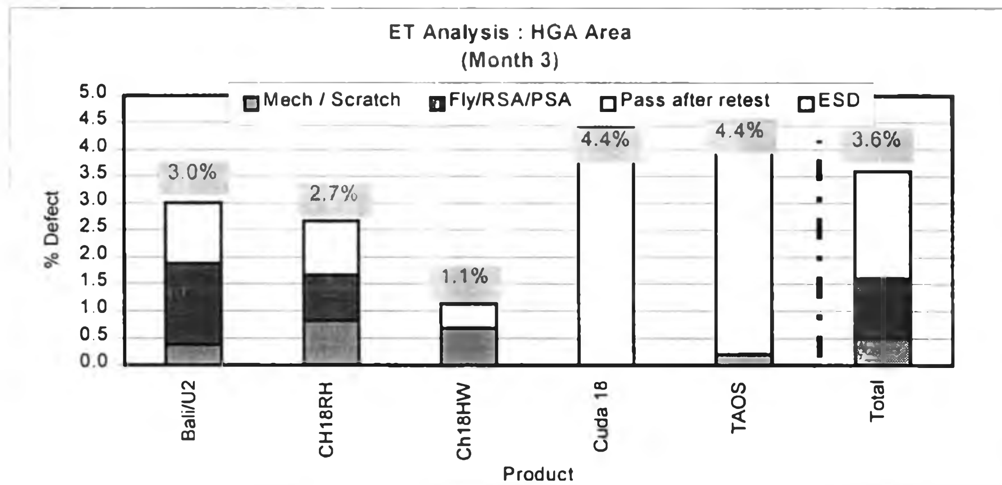
HGA problem	MTH 2					
Product	Bali/U2	CH18RH	Ch18HW	Cuda 18	TAOS	Total
Mech / Scratch	0.4	2	0	0	0.3	0.54
Fly/RSA/PSA	1.9	0.8	0	0	0	0.54
Pass after retest	1.9	3.4	2.3	6.9	5	3.9
ESD	0	0	0	0	0	0

Figure 2 Failure analysis of Month 2

3. Failure analysis of month 3.



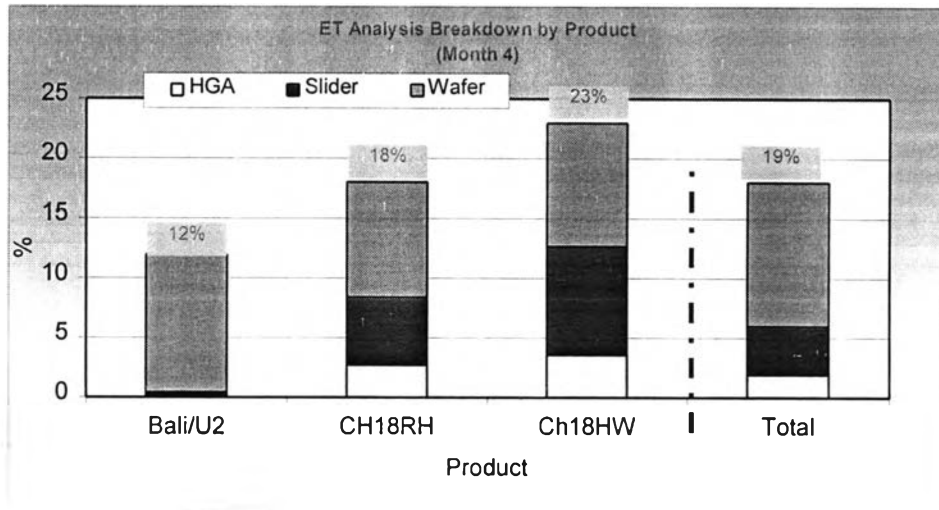
Product	MTH 3					
	Bali/U2	CH18RH	Ch18HW	Cuda 18	TAOS	Total
Volume	27.1	23.7	10	2	15.2	78
ET Yield	88	75	76	77	80	79
Fallout	12	25	24	23	20	21
HGA	3	2.6	1.1	4.4	4.4	3.6
Slider	0.9	7.2	9.7	0	0	3.5
Wafer	8.1	15.2	13.2	18.6	15.6	13.9



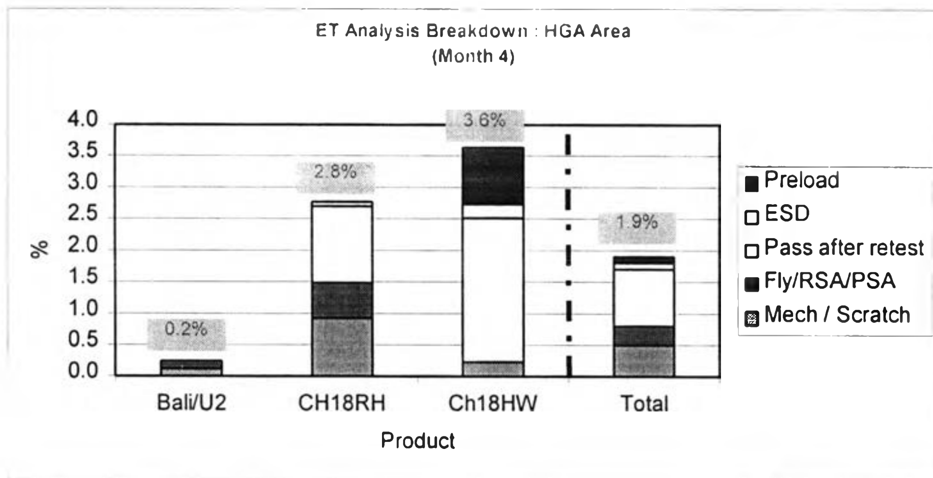
HGA problem	MTH 3					
Product	Bali/U2	CH18RH	Ch18HW	Cuda 18	TAOS	Total
Mech / Scratch	0.4	0.8	0.7	0.0	0.2	0.5
Fly/RSA/PSA	1.5	0.8	0.0	0.0	0.0	1.1
Pass after retest	1.1	1.0	0.5	4.4	4.2	2.0
ESD	0.0	0.0	0.0	0.0	0.0	0.0
Total % fall out	12	25	24	23	20	21

Figure 3 Failure Analysis of Month 3

4. Failure analysis of month 4.



Product	Month 4			
	Bali/U2	CH18RH	Ch18HW	Total
Volume	25	33	13	88.2
ET Yield	88	82	77	81
Fallout	12	18	23	19
HGA	0.2	2.7	3.6	1.9
Slider	0.2	5.7	9.1	4.1
Wafer	11.6	9.6	10.3	12.0



HGA problem	Month 4			
Product	Bali/U2	CH18RH	Ch18HW	Total
Mech / Scratch	0.1	0.9	0.2	0.5
Fly/RSA/PSA	0.1	0.6	0.0	0.3
Pass after retest	0.0	1.2	2.3	0.9
ESD	0.0	0.1	0.2	0.1
Preload	0.0	0.0	0.9	0.1
Total % fall out	12	18	23	19

Figure 4 Failure analysis of Month 4

APPENDIX II

(Diagnosing and Monitoring Model)

Diagnosing & Monitoring Model Explanation
(ROOT : Realtime Object Oriented Testing)

How to get into Diagnosing & Monitoring model

1. At Window, double click Internet explorer icon.
2. Select "ROOT" icon. The screen will be shown as below in figure 1.

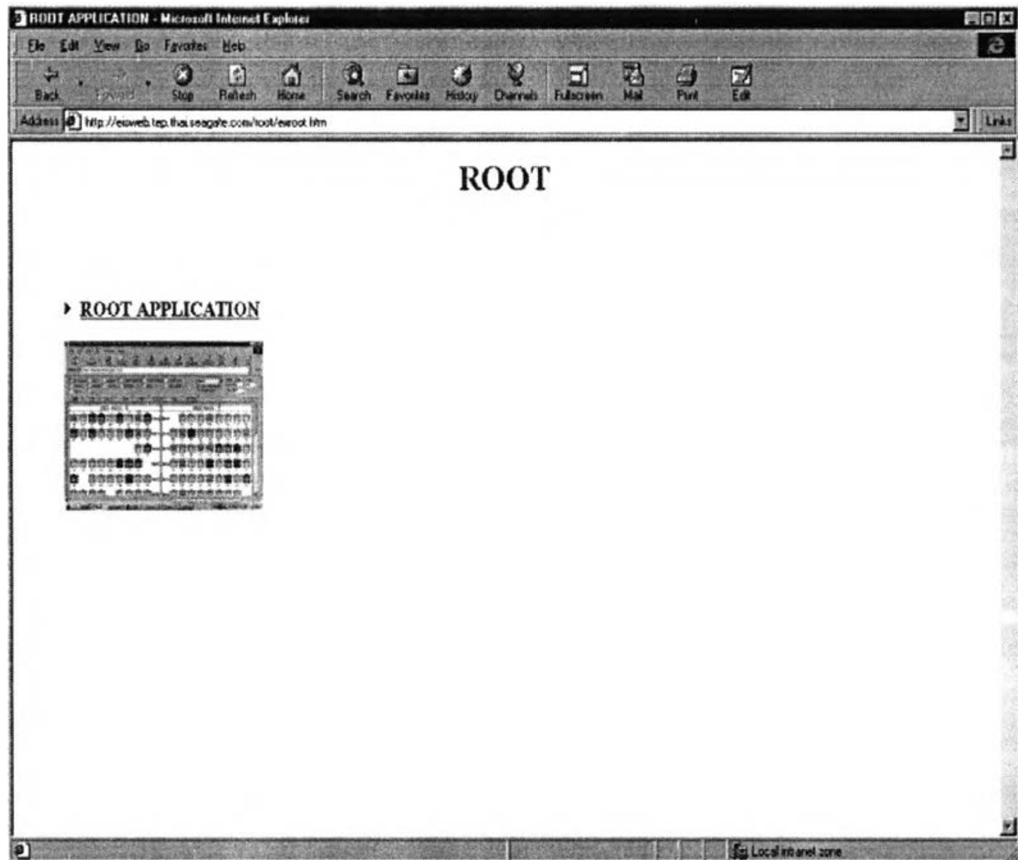


Figure 1 Main Menu of Diagnosing & Monitoring model

3. Double click "ROOT APPLICATION", the following screen in figure 2(a) will be shown which it will show all testers in clean room A/B automatically . It contains main reports and information to access as listed below and demonstrated in figure 2a;

   1) Clean room location
   2) All testers in the selected clean room on screen
   3) List of products to choose
   4) Yield report
   5) UPH (unit per hour report)
   6) Count report (Quantity of HGA tested)

7) Network status of testers in the selected products
8) Executive reports

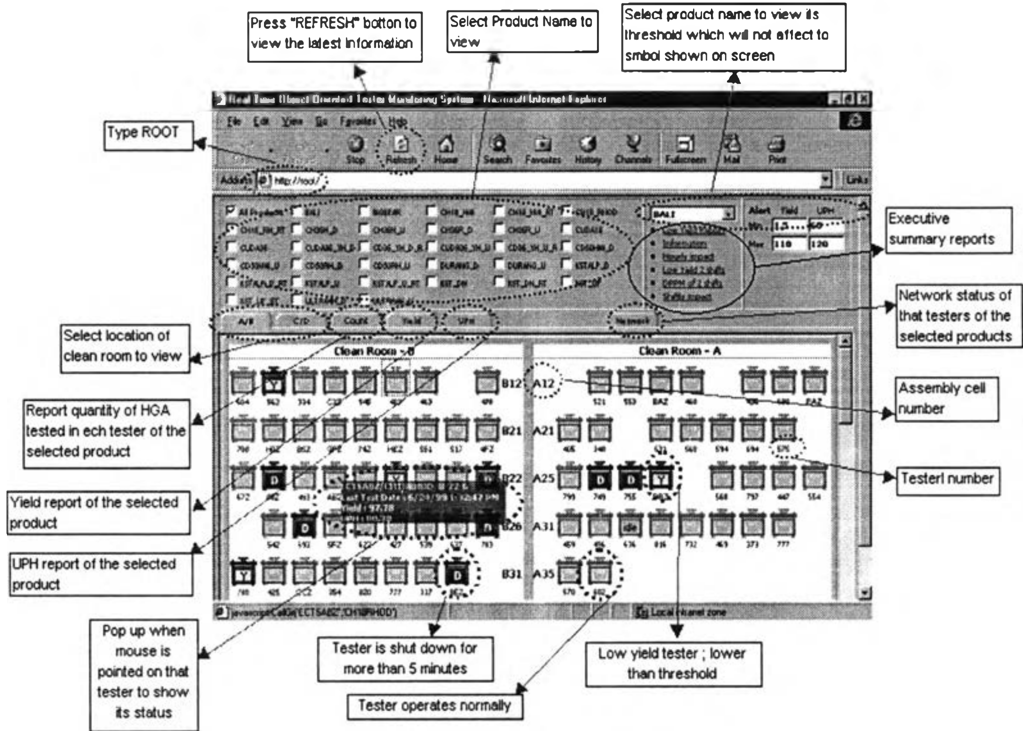


Figure 2(a) Main screen of ROOT Application

Double click on the tester selected, tester status will be shown which are statistics of yield, parametrics and actions taken on that testers. As shown in figure 2(b) is the actions taken on that tester. Figure 2(c) is the statistics of that tester.

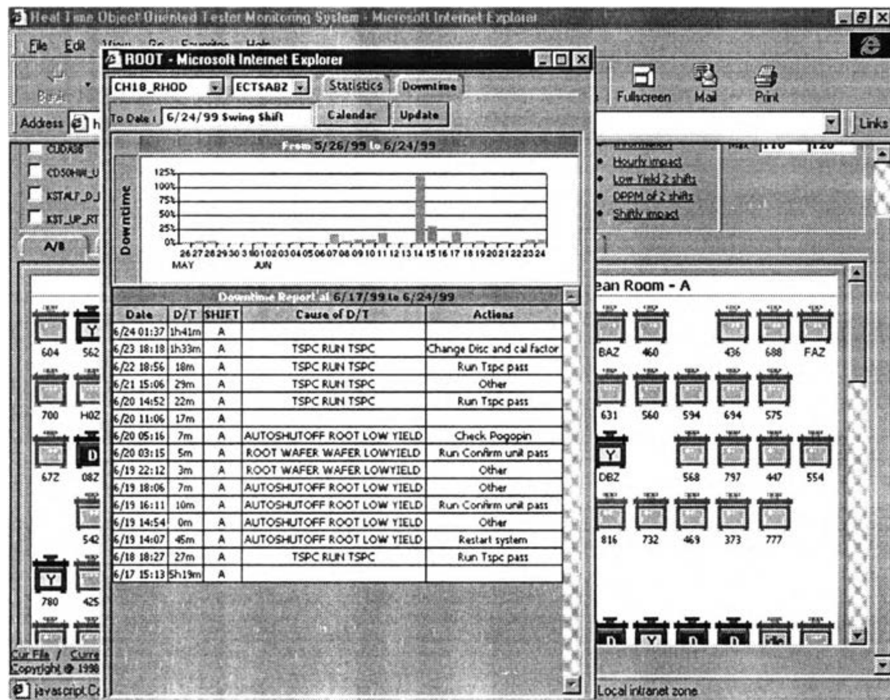


Figure 2(b) Actions taken record of the selected tester

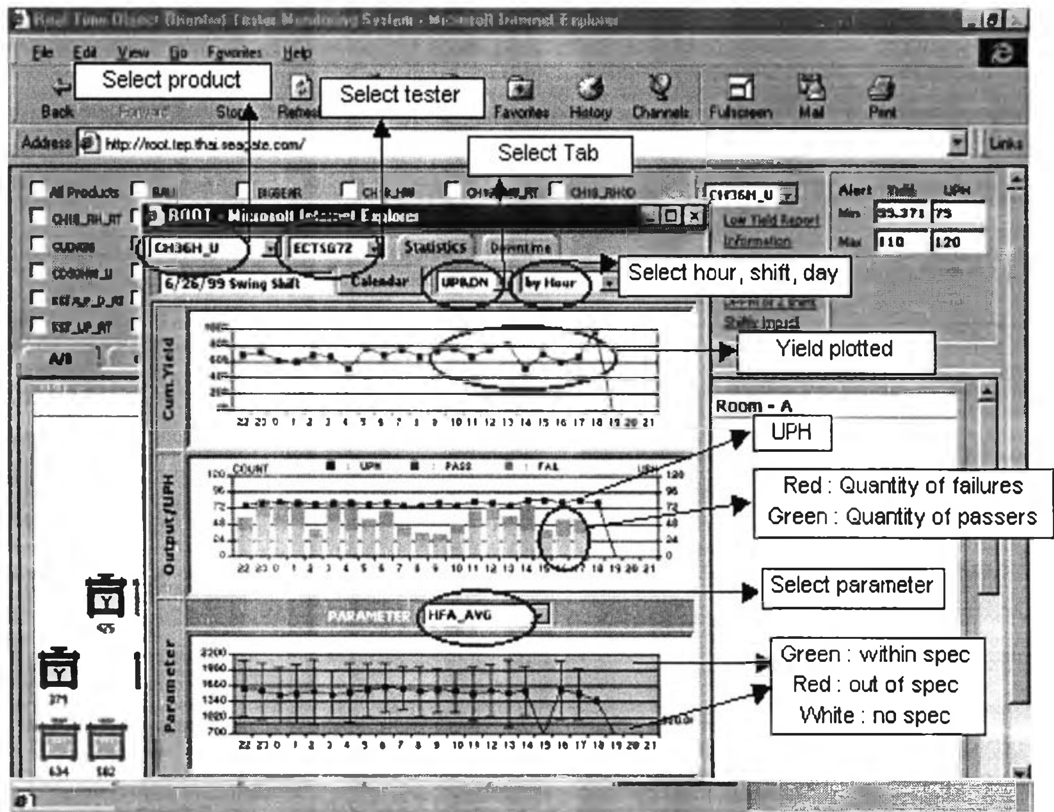


Figure 2(c) Statistic of the selected tester

4. Click "COUNT" to view quantity of HGA tested in each tester. It can report as hourly, shiftly or daily basis as selected.

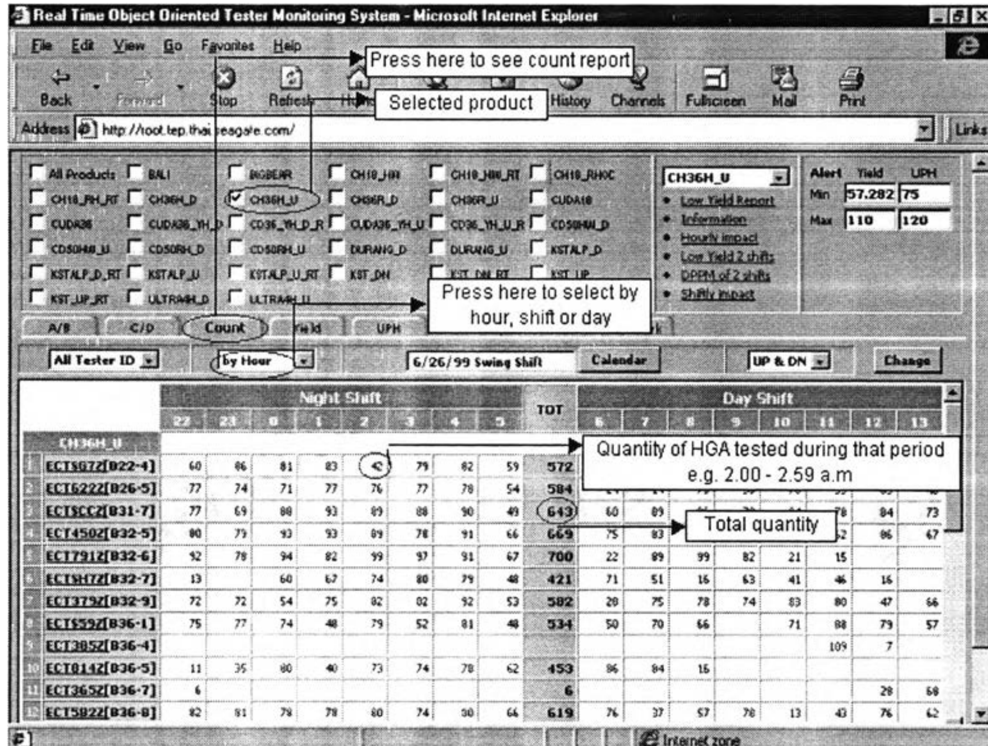


Figure 3 Count report

5. Click "YIELD" to see HGA test yield of each product or selected product. Yield by electric tester and cumulate will be also shown. It can report as hourly, shiftly or daily basis as selected. It will trigger if yield is lower than threshold set by either show RED or BLUE number. The difference between RED and BLUE number is internal and external problems respectively which will be diagnosed by this model. Same quad analysis concept is applied in diagnosis. Results to front line people do not take over action or exercises on the testers. However, if RED number show 2 hours consecutively, that tester will be auto shut off for test group to take actions. As shown in figure 4(a) and 4(b) is yield report and diagnose report respectively.

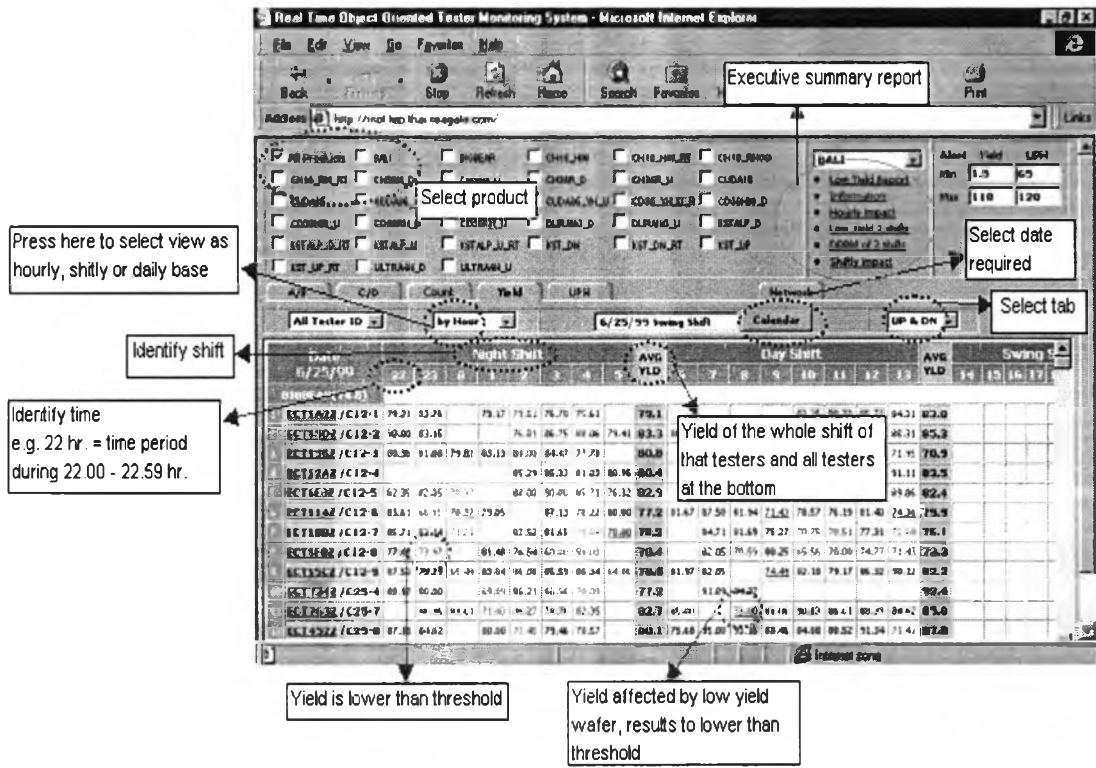
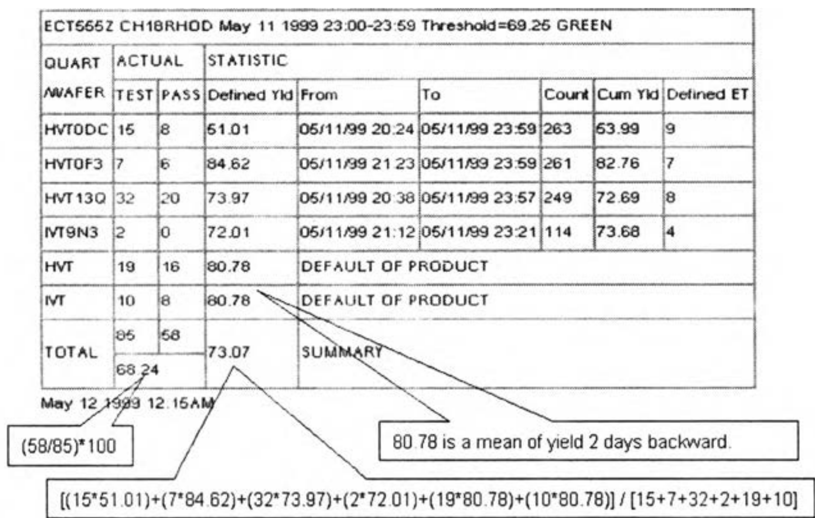


Figure 4(a) Yield report



ECT5657 CH18RHOD May 11 1999 23:00-23:59 Threshold=69.25 GREEN								
QUART	ACTUAL		STATISTIC					
WAFER	TEST	PASS	Defined Yld	From	To	Count	Cum Yld	Defined ET
HVT0DC	15	8	51.01	05/11/99 20:24	05/11/99 23:59	263	63.99	9
HVT0F3	7	6	84.62	05/11/99 21:23	05/11/99 23:59	261	82.76	7
HVT13Q	32	20	73.97	05/11/99 20:38	05/11/99 23:57	249	72.69	8
IVT9N3	2	0	72.01	05/11/99 21:12	05/11/99 23:21	114	73.68	4
HVT	19	16	80.78	DEFAULT OF PRODUCT				
IVT	10	8	80.78	DEFAULT OF PRODUCT				
TOTAL	85	58	73.07	SUMMARY				
	68.24							

May 12 1999 12:15AM

Defined Yld = Average yield of Defined ET (no weight).

From = A time that the 1'st HGA of that quad was tested.

To = A time that the last HGA of that quad was tested.
(If any quads were not tested in 3 days backward, the yield history of that quad will be thrown away.)

Cum Yld = Yield of that quad query from all head (weight).

Defined ET = The amount of ET that test HGA of that quad at least 15 units.
(A wafer quad that was put into the history list must be tested at least 4 Defined ET.)

Figure 4(b) Diagnose report

6. Click "UPH" to see HGA units per hour of all products or selected product. It will show UPH by tester number of the selected product. This report is just the monitoring tool by management to make sure it meets the number of IE planing. The tester will not be shut off if UPH is lower than planned.

$$UPH = 3600 * 0.95 / AVERAGE(test\ time + 4.2)$$

where; Test time unit is seconds
3600 = 60 minutes * 60 second to be 1 hour
0.95 = 5% allowance per IE capacity planning
test time = test time in second per one unit
4.2 = motion time of operator per IE capacity planning

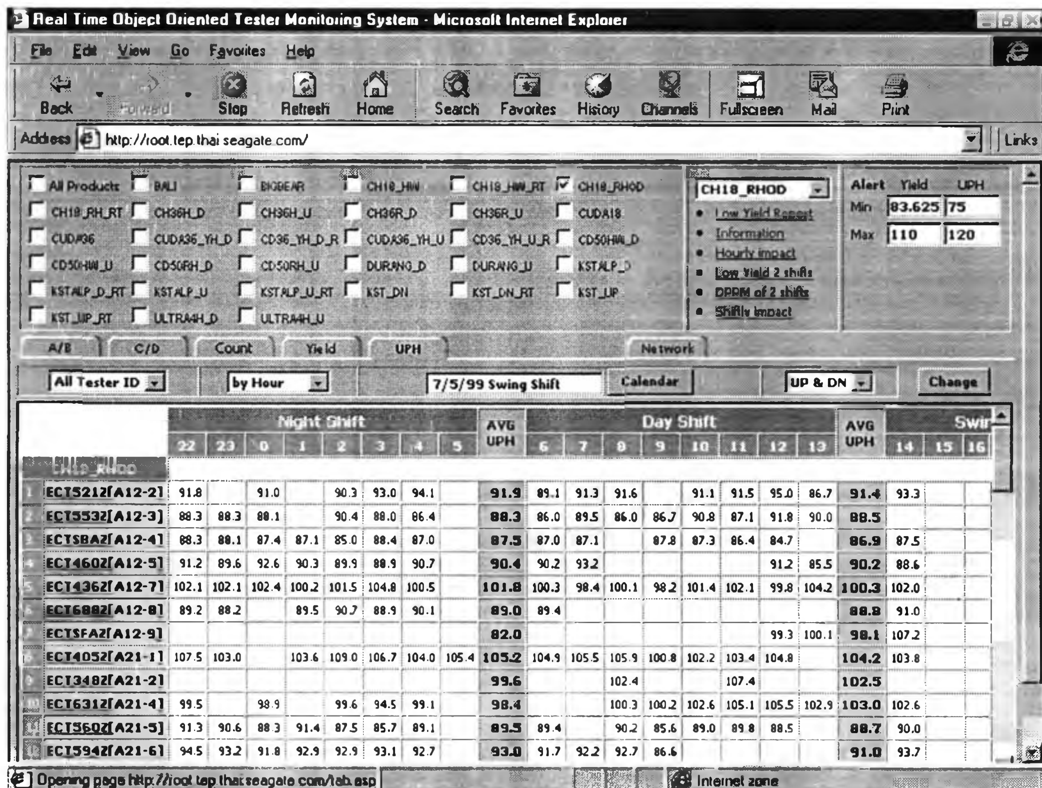


Figure 5 UPH Report

7. Click "NETWORK" to see the network status of each testers of the all or selected product. Users may use it as a reference of times that tester logged into network.

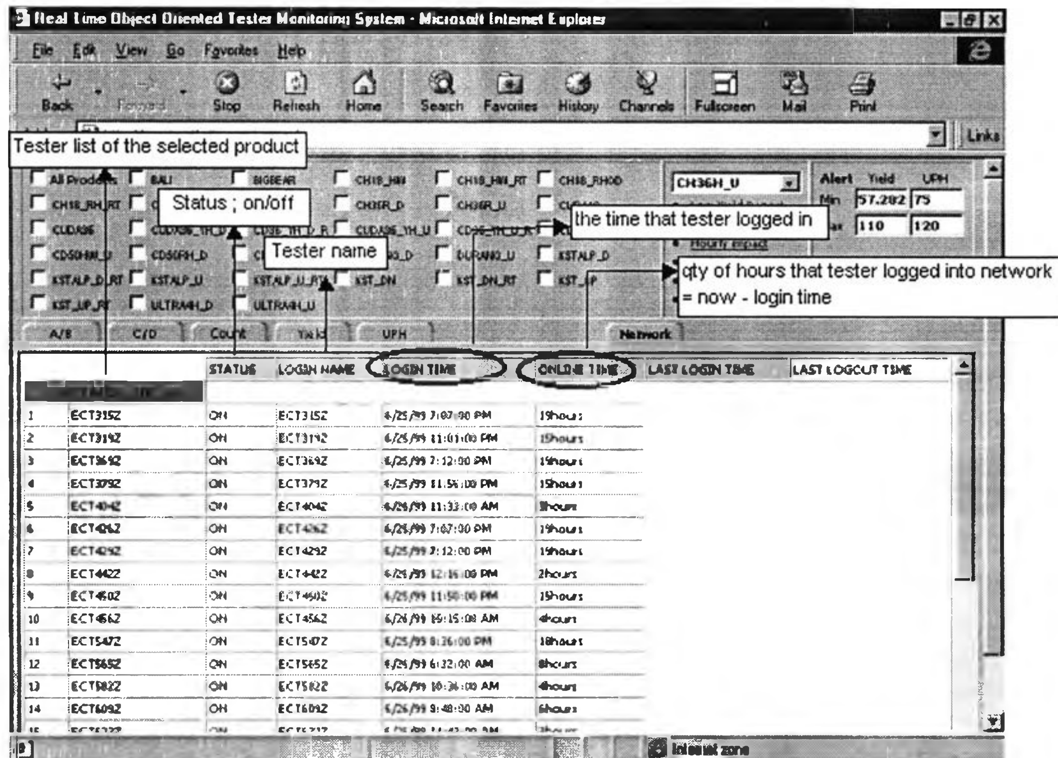


Figure 6 NETWORK Report

8. Executive Summary Reports : Following reports are also contained in the model. They are the summary reports shown in quality aspect as below

   1) Low yield report : It presents number of events that testers show RED yield from total tester working hours, then calculate into percentage as shown in figure 7(b).

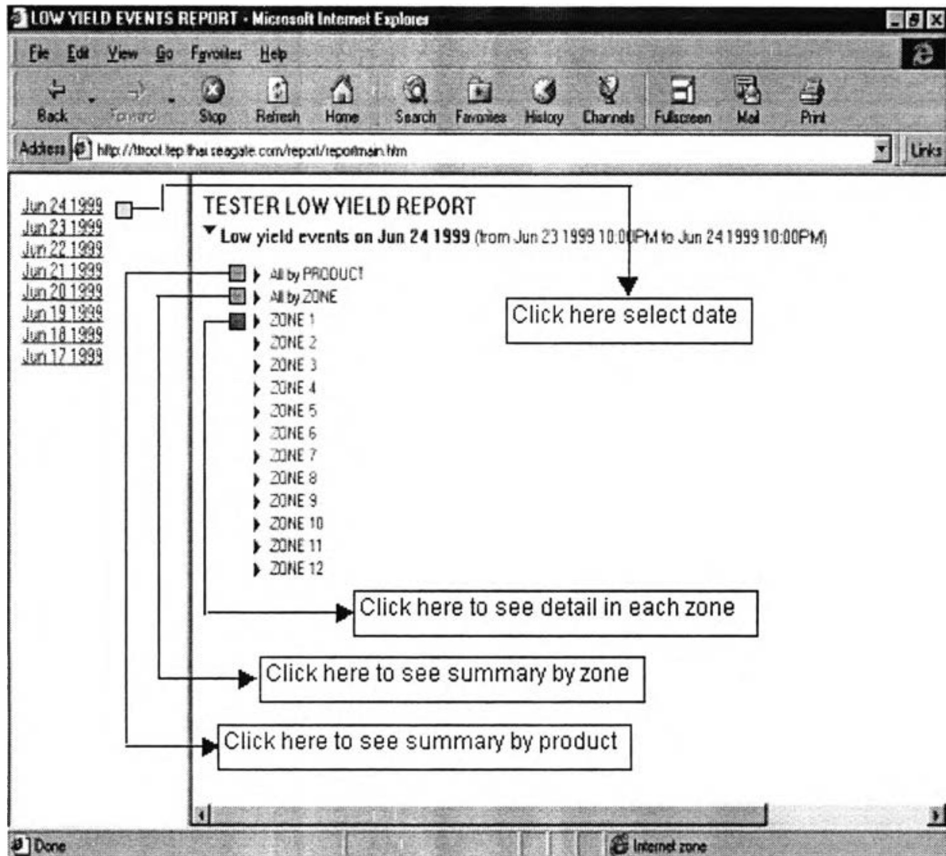


Figure 7(a) Main screen of low yield report

Figure 7(b) below is the explanation that demonstrates how it is calculated. It is to count the number of hours that testers show RED yield consecutively.

Low Yield Report Explanation

TESTER LOW YIELD REPORT

▼ **Low yield events on May 5 1999** (from May 4 1999 10:00PM to May 5 1999 10:00PM)

- ▶ All by PRODUCT
- ▶ All by ZONE
- ▶ ZONE 1
- ▼ ZONE 2

ZONE	PRODUCT	TESTER	1hr	2hrs	3hrs	4hrs	5hrs	6hrs	7hrs	More
		ECT340Z	2	2	-	-	-	-	-	-
		ECT356Z	2	-	-	-	-	-	-	-

ECT340Z was low yield 1 hour 2 events and low yield 2 hours 2 events.

Figure 7(b) Low yield report explanation

LOW YIELD EVENTS REPORT - Microsoft Internet Explorer

Jun 24 1999
Jun 23 1999
Jun 22 1999
Jun 21 1999
Jun 20 1999
Jun 19 1999
Jun 18 1999
Jun 17 1999

TESTER LOW YIELD REPORT

▼ **Low yield events on May 5 1999** (from May 4 1999 10:00PM to May 5 1999 10:00PM)

▼ All by PRODUCT

PRODUCT	Threshold	ET	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	More	Total
BIGBEAR	71.81	22(0)	21	4	-	-	-	-	-	-	25
CH18_HW	72.92	51(0)	36	9	3	-	-	-	-	-	48
CH18_HW_RT	18.59	3(0)	-	-	-	-	-	-	-	-	-
CH18RHOD	74.62	46(0)	32	8	2	-	-	-	-	-	42
CH18RHOD_RT	42.31	3(0)	2	-	-	-	-	-	-	-	2
CHEETAH36_HW_DN	44.56	11(0)	7	2	-	-	-	-	-	-	9
CHEETAH36_HW_UP	50.06	8(0)	7	1	-	1	-	-	-	-	9
CHEETAH36_RHODS_DN	35.67	17(0)	10	3	1	-	1	-	-	-	15
CHEETAH36_RHODS_UP	45.5	19(1)	15	8	-	2	2	-	-	-	27
CUDA36	61.96	24(1)	23	9	5	-	-	-	-	-	37
CUDA36_YH	55.0	50(0)	47	11	1	-	-	-	-	-	59
KEYSTONE_ALPS_DN	55.44	19(0)	17	6	1	-	-	-	1	-	25
KEYSTONE_ALPS_UP	47.97	54(1)	45	25	5	7	2	-	-	-	84
KEYSTONE_DN	78.43	9(0)	8	5	-	-	-	-	-	-	13
KEYSTONE_UP	69.08	10(0)	15	2	1	-	-	-	-	-	18
ULTRA4_HW_DN	72.34	40(0)	39	11	2	-	-	-	-	-	52
ULTRA4_HW_UP	77.47	26(0)	16	3	3	-	-	-	-	-	22
TOTAL		412(3)	340	107	24	10	5	0	1	0	487
		-	5.6%	1.8%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%	8.0%

Figure 7(c) Low yield report of the selected date of all products

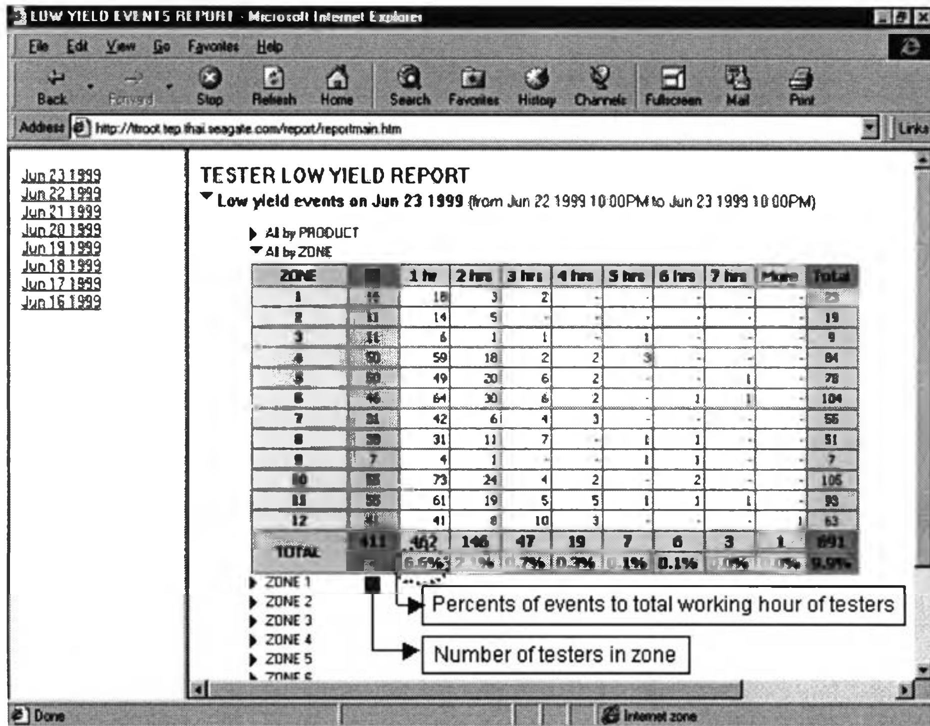


Figure 7(d) Tester low yield report shown by zone

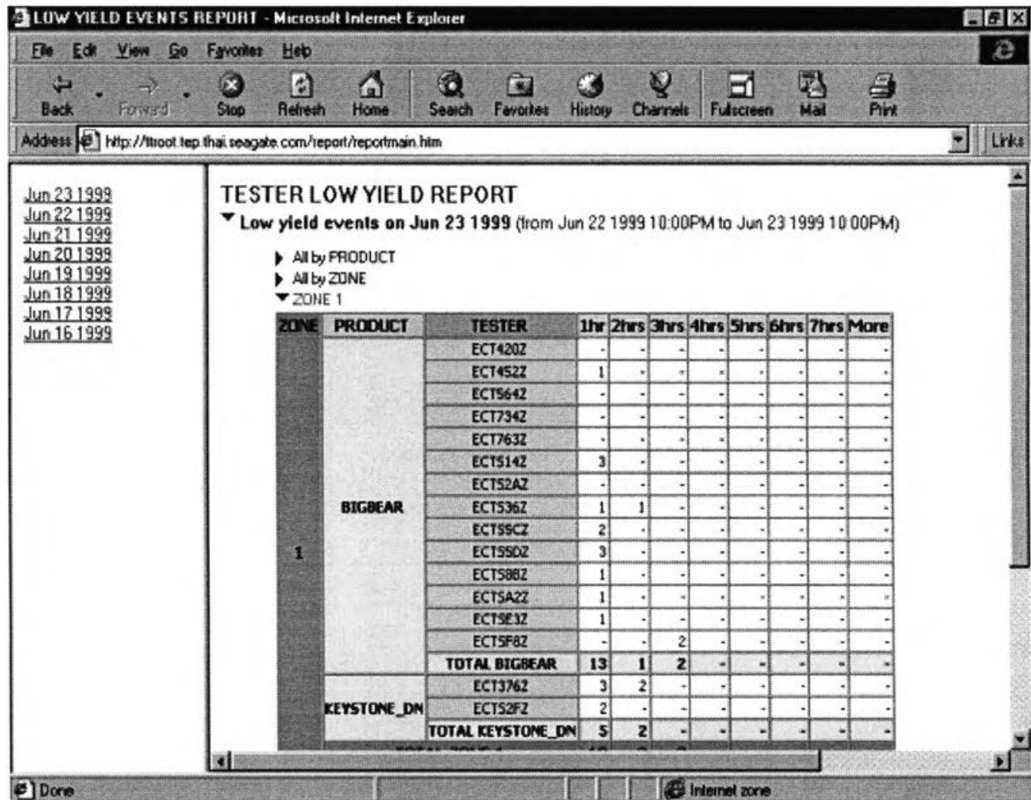
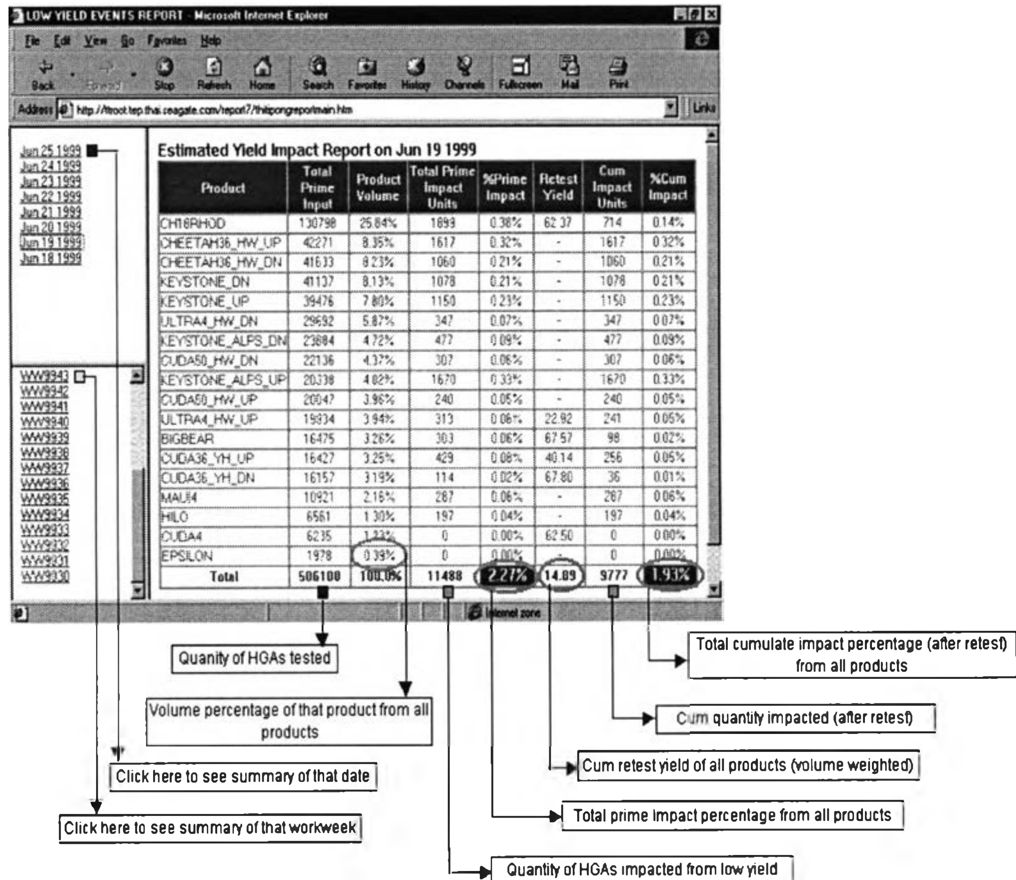


Figure 7(e) Tester low yield report of the selected zone

2) Impact report : It presents the yield impacted which is contributed by yield lower than the limit threshold of the particular product. However, this report presents the impact percentage from all products tested in HGA operation as shown below. Figure 6(a) and figure 6(b) is the example of impact report of all products of the selected date and calculation background respectively.



Estimated Yield Impact Report on Jun 19 1999

Product	Total Prime Input	Product Volume	Total Prime Impact Units	%Prime Impact	Retest Yield	Cum Impact Units	%Cum Impact
CH16RHOD	130798	25.84%	1899	0.38%	62.37	714	0.14%
CHEETAH36_HW_UP	42271	8.35%	1617	0.32%	-	1617	0.32%
CHEETAH36_HW_DN	41633	8.23%	1060	0.21%	-	1060	0.21%
KEYSTONE_DN	41137	8.13%	1078	0.21%	-	1078	0.21%
KEYSTONE_UP	39476	7.80%	1150	0.23%	-	1150	0.23%
ULTRA4_HW_DN	29692	5.87%	347	0.07%	-	347	0.07%
KEYSTONE_ALPS_DN	23884	4.72%	477	0.09%	-	477	0.09%
CUDA50_HW_DN	22136	4.37%	307	0.06%	-	307	0.06%
KEYSTONE_ALPS_UP	20338	4.02%	1670	0.33%	-	1670	0.33%
CUDA50_HW_UP	20047	3.96%	240	0.05%	-	240	0.05%
ULTRA4_HW_UP	19934	3.94%	313	0.06%	22.92	241	0.05%
BIGBEAR	16475	3.26%	303	0.06%	67.57	98	0.02%
CUDA36_YH_UP	16427	3.25%	429	0.08%	40.14	256	0.05%
CUDA36_YH_DN	16157	3.19%	114	0.02%	67.80	36	0.01%
MAUI4	10921	2.16%	287	0.06%	-	287	0.06%
HILO	6561	1.30%	197	0.04%	-	197	0.04%
CUDA4	6235	1.23%	0	0.00%	62.50	0	0.00%
EPSILON	1978	0.39%	0	0.00%	-	0	0.00%
Total	**506100**	**100.0%**	**11488**	**2.27%**	**14.09**	**9777**	**1.93%**

Figure 8(a) Impact report of all products of the selected date

$$(\text{Total Prime Impact Units})_p = \text{Total prime impact units of each products.}$$

$$= \sum_{i=1}^{n} \left[\left\{ (\text{MEAN of hourly yield 2 days backward})_p - (\text{"RED" hourly yield})_i \right\} * (\text{Hourly Prime Input})_i \right]$$

n = the amout of low yield hours in "RED" number of each products

$$\text{Grand Total Prime Impact Units} = \sum_{p=1}^{m} (\text{Total Prime Impact Units})_p$$

m = the amout of products

$$\%\,\text{Prime Impact (overall)} = \left(\frac{\text{Grand Total Prime Impact Units}}{\text{Grand Total Prime Input}} \right) * 100\%$$

$$\%\,\text{Cum Impact (overall)} = \sum_{p=1}^{m} \left[\frac{\{100 - (\text{Retest Yield})_p\} * (\text{Total Prime Impact Units})_p}{\text{Grand Total Prime Input}} \right]$$

m = the amout of products

Figure 8(b) Calculation background

3) Low yield 2 shifts report : The purpose of this report is to show yield by testers which is drawn in simplify format. Shiftly yield of each tester is calculated from yield average of that particular shift based on its volume build. This report will also report for the duration of 7 days. If that tester has low yield 2 shifts consecutively, 2 RED will be shown which is compared to the threshold limit of that date. If that tester shows low yield 2 shifts consecutively, it will shut off automatically.

LOW YIELD 2 SHIFTS CONTINUE... Last updated on **Jun 24 1999 3:00PM**

Tester	Product	18 Jun 1999			19 Jun 1999			20 Jun 1999			21 Jun 1999			22 Jun 1999			23 Jun 1999			24 Jun 1999		
		N	D	S	N	D	S	N	D	S	N	D	S	N	D	S	N	D	S	N	D	S
ECTSE3Z	BIGBEAR	82.7	76.8		79.3	80.9	79.5	•	•		87.1	73.9	84.1	74.1	76.2	83.3	76.6	83.5	88.4	79.6	80.6	•
ECTSF8Z	BIGBEAR	69.9		70.7	71.0		84.2	•	•	•	80.0	62.8	71.0	74.8	66.5	77.9	72.1	73.1	82.3	74.6	74.6	•
ECT420Z	BIGBEAR	85.9	•	•	71.7	78.8	85.6	•	•	•	80.8	82.8	88.6	78.9	71.0	81.4	82.3	85.9	81.7	77.3		•
ECT452Z	BIGBEAR	73.3	•	•	73.4	81.1	73.5	•	•	•	81.0	82.2	90.9	83.5	85.6	79.2	80.7	83.1	87.0	90.6	84.8	•
ECT564Z	BIGBEAR	86.4	•	•	80.5	80.4	87.0	•	•	•	73.4	82.9	90.1	78.9	79.6	83.7	82.1	79.5	80.6	73.0	83.4	•
ECT734Z	BIGBEAR	82.2	•	•	73.8	80.9	85.3	•	•	•	87.9	83.4	75.4	81.1	87.3	83.1	76.9	88.1	83.0	82.2	79.0	•
ECT763Z	BIGBEAR	[illegible]	•	•	75.3	69.4	85.2	•	•	•	82.7	79.1	[illegible]	79.3	78.1	83.2	81.3	87.4	87.8	84.7	83.0	•
ECTS14Z	BIGBEAR	77.6	82.4		78.4	83.9	87.1	•	•		85.6	82.6	81.4	78.4	78.2	76.2	76.5	83.9	82.4	74.2	66.3	•
ECTS2AZ	BIGBEAR		83.3			78.2	87.7	•	•	•	89.7		87.2	81.4	80.8	82.6	79.0	91.5	87.9	77.7	79.8	•
ECTS36Z	BIGBEAR	71.4	78.6		76.4	82.7	85.3	•	•		83.6	74.8	76.2	80.1	83.7	79.0	81.6	78.4	80.2	75.9	73.0	•
ECTS5CZ	BIGBEAR	79.8	84.9	84.2	85.2	79.6	88.4	•	•		85.9	82.5	85.8	81.1	86.6	90.8	81.6	80.4	83.7	76.3	76.4	•
ECTS50Z	BIGBEAR	78.3	77.3		75.8	81.4	84.9	•	•	•	87.1	82.8	87.6	81.9	80.5	81.3	74.6	82.8	81.9	81.8	82.7	•
ECTS88Z	BIGBEAR	74.9	90.7		78.2	84.8	96.7	•	•	•	84.6	75.7	73.3	79.8		67.7	80.3	83.6	87.7	76.7	76.8	•
ECTSA2Z	BIGBEAR	59.4			64.0	78.8	89.0	•	•	•	88.8		81.7	82.0	78.2	79.1	78.6	78.0	83.0	84.4	82.6	•
ECTSE3Z	BIGBEAR_RT																					
ECTSF8Z	BIGBEAR_RT																					
ECT430Z	BIGBEAR_RT																					
ECT564Z	BIGBEAR_RT																					
ECT763Z	BIGBEAR_RT																					
ECTS14Z	BIGBEAR_RT																					
ECTS2AZ	BIGBEAR_RT																					
ECTS36Z	BIGBEAR_RT																					

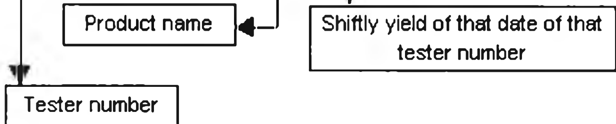


Figure 9 Low yield 2 shifts report

4) DPPM of 2 shifts report : The purpose of this report is same as low yield 2 shifts report but presents in DPPM instead which the calculation is as below.

$$\text{DPPM} = \frac{(\text{Total events that show low yield 2 shifts consecutively} \ \% \ 1{,}000{,}000)}{\text{Feasibility of low yield 2 shifts consecutively}}$$

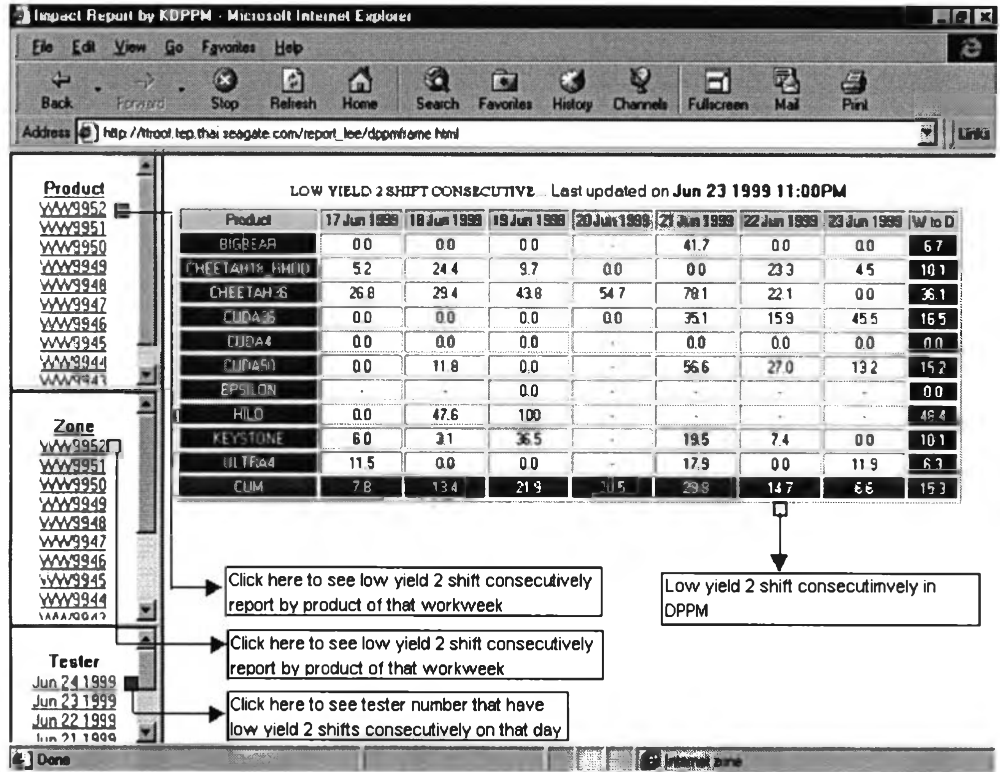


Figure 10 DPPM of 2 Shifts report

APPENDIX III

(Yield Analysis Model Explanation)

1. Double click "Internet Explorer" icon on Window.
2. Click "YIELD SPREAD" icon. Main menu will be shown as figure 1 which contains list of reports. There are two main categories; executive summary report and application report.

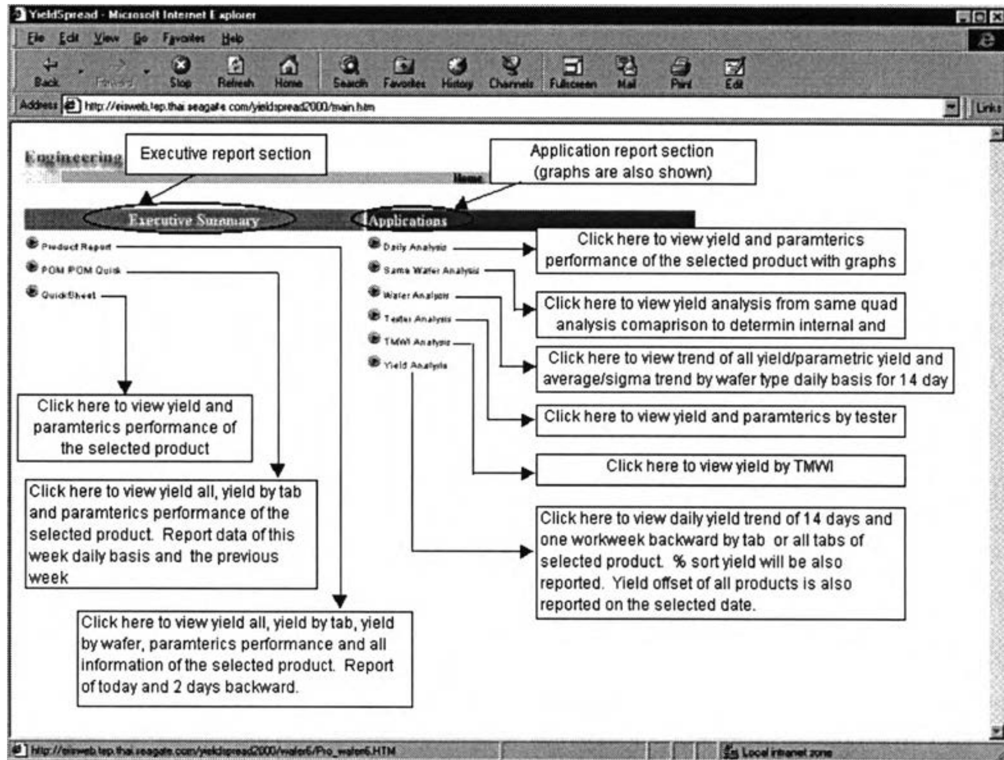


Figure 1 Reports in Analysis Model

3. At the executive summary report section, it is contained of 3 reports.

   1) Product Report : this report contains all necessary information which compares the current situation with the historical information backwards 2 days. See figure 2.

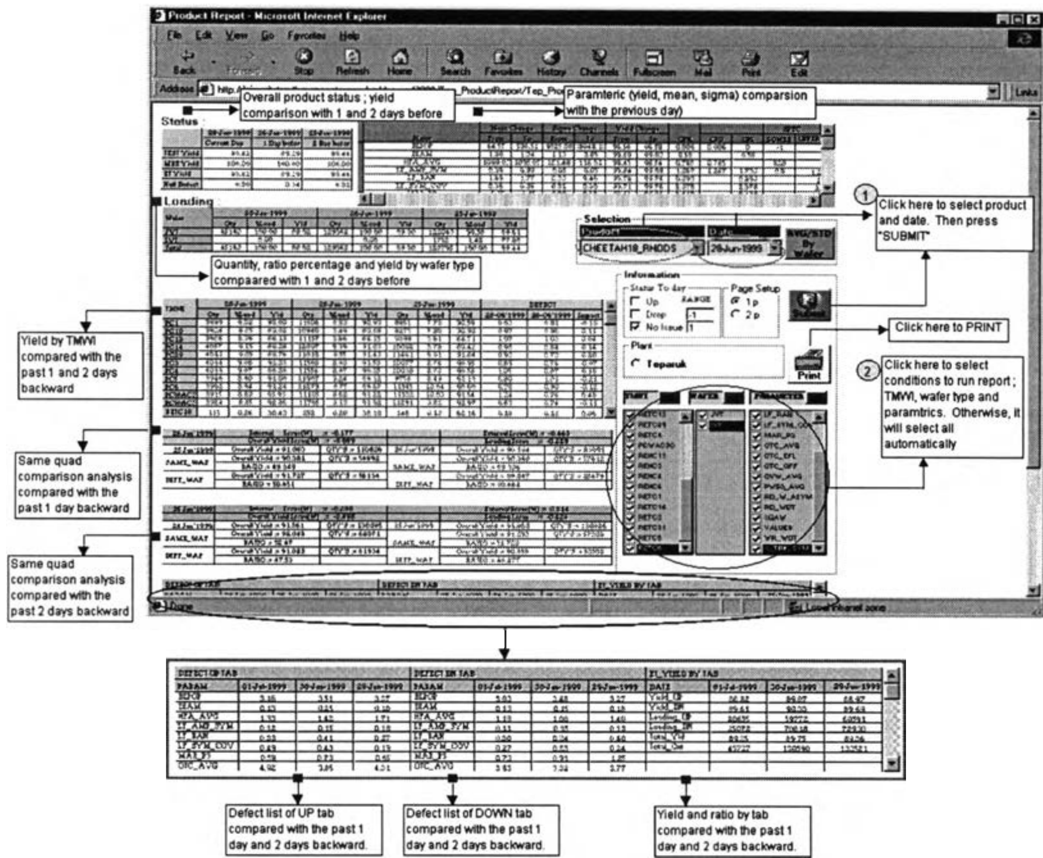


Figure 2 Product Report

2) POM-POM Quick Report: this report is contained yield and parametric performance of the selected product which reports day-to-day situation and previous week for comparison. In addition, yield by wafer type and yield by tab is shown in one page report.

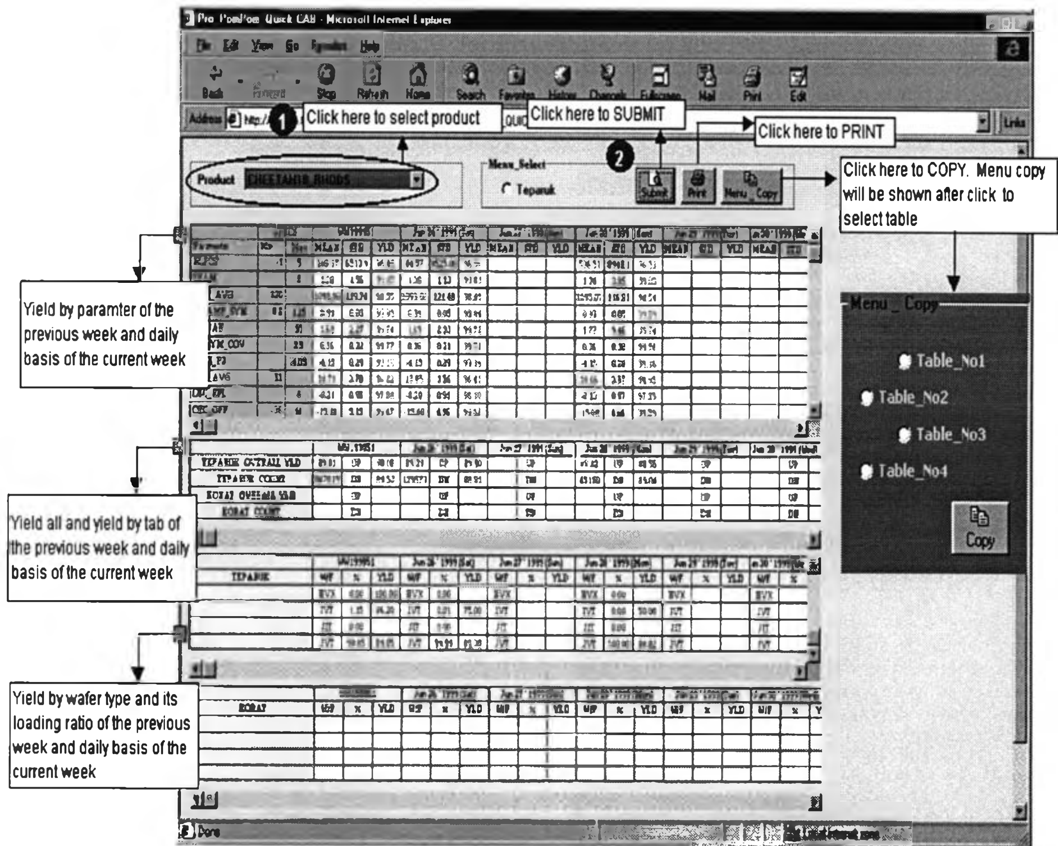


Figure 3 POM-POM Quick Report

3) Quick Sheet Report : This report is contained yield and parametric performance of the selected product which report day-to-day situation and previous week for comparison. Options are provided in this report; shift, TMWI wafer type and tabs added for selection.

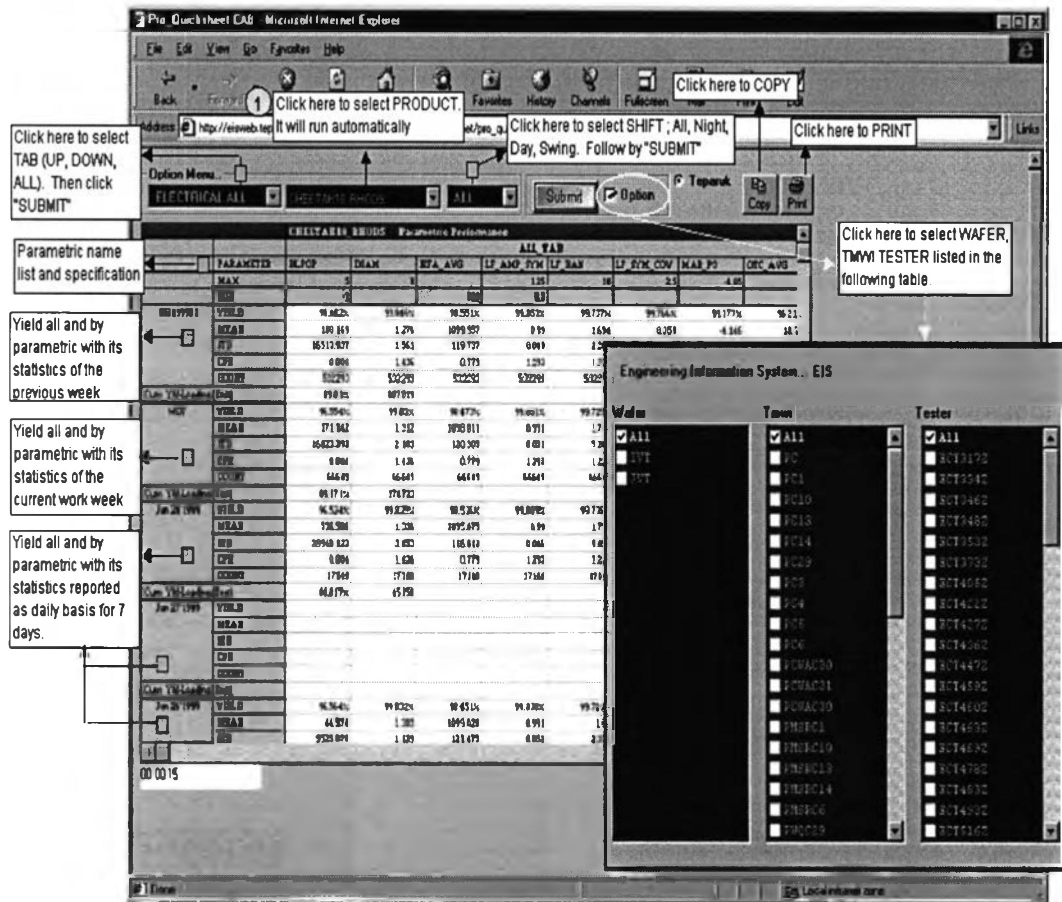


Figure 4 Quick Sheet Report

4. Daily Analysis Report Section: this section is graphic mode which contains six reports as following.

   1) Daily Analysis Report: this report presents daily yield for duration of 7 days. The parametric trend is shown as either defect pareto or statistics. This report is contained of four modes ; electric test yield, electric parametric defects, parametric statistic trend and electric null defects shown in figure 5(a), 5(b), 5(c) and 5(d) respectively.

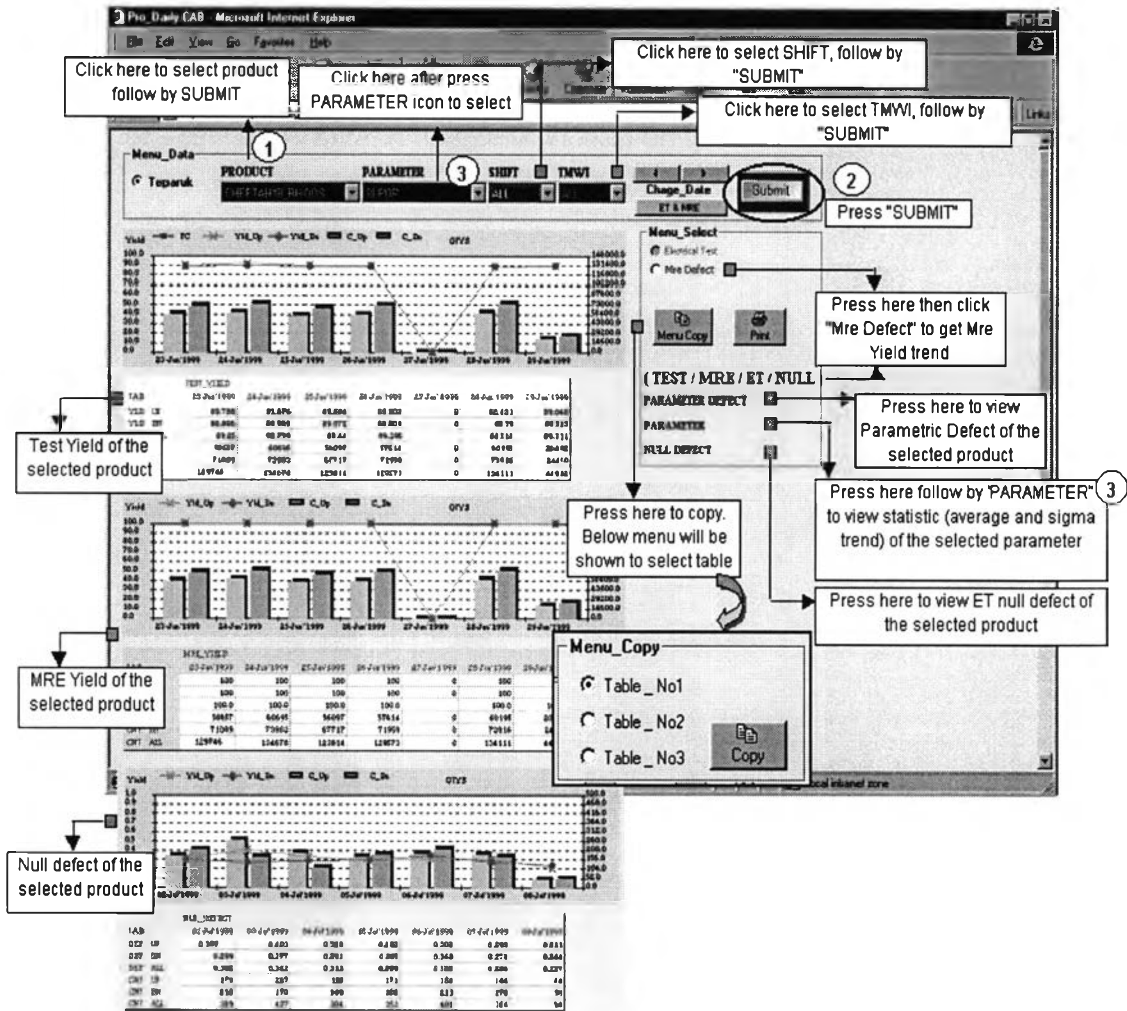
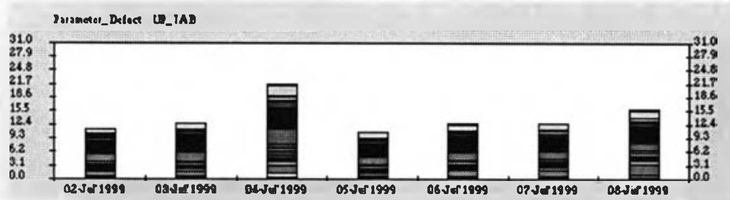


Figure 5(a) Electric yield, MRE yield and null defect trend



Menu_Select

Electrical Test

Mre Defect

Menu Copy

Print

(TEST / MRE / ET / NULL) YIELD

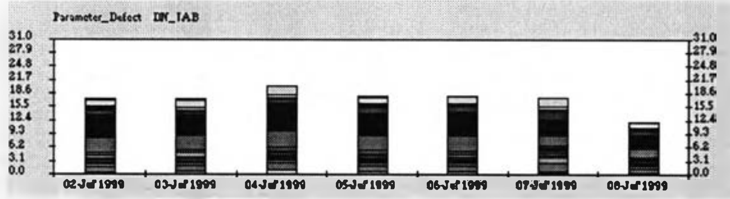
PARAMETER DEFECT

PARAMETER

NULL DEFECT

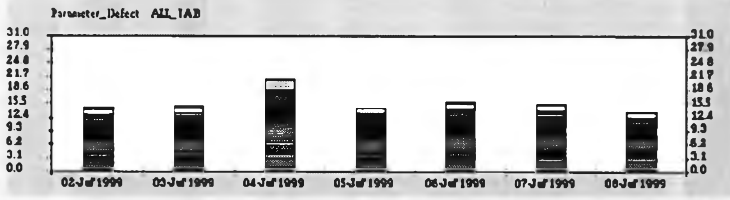
Parameter_Defect UP_TAB

PARAM	02-Jul'1999	03-Jul'1999	04-Jul'1999	05-Jul'1999	06-Jul'1999	07-Jul'1999	08-Jul'1999
BLPOP	3.287	3.753	3.989	3.739	3.349	3.324	3.132
DIAM	0.139	0.18	0.357	0.11	0.152	0.18	0.268
HPA_AVG	1.077	1.248	2.483	1.143	1.271	1.153	1.572
LP_AMP_SYM	0.174	0.124	0.286	0.131	0.152	0.141	0.11
LP_RAN	0.274	0.268	0.493	0.275	0.285	0.365	0.463
LP_SYM_COV	0.373	0.336	0.515	0.413	0.311	0.397	0.317



Parameter_Defect DN_TAB

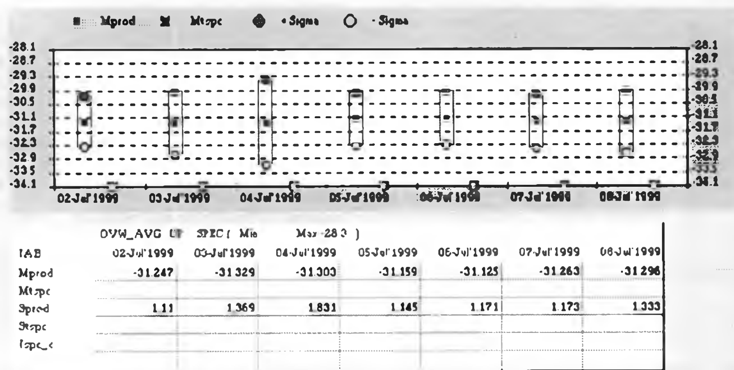
PARAM	02-Jul'1999	03-Jul'1999	04-Jul'1999	05-Jul'1999	06-Jul'1999	07-Jul'1999	08-Jul'1999
BLPOP	3.809	3.489	3.831	3.602	3.691	3.596	3.474
DIAM	0.178	0.261	0.235	0.207	0.196	0.271	0.163
HPA_AVG	1.497	1.527	1.868	1.477	1.672	1.752	1.079
LP_AMP_SYM	0.232	0.174	0.16	0.223	0.196	0.292	0.238
LP_RAN	0.34	0.455	0.459	0.395	0.286	0.555	0.326
LP_SYM_COV	0.324	0.29	0.374	0.298	0.243	0.38	0.251



Parameter_Defect ALL_TAB

PARAM	02-Jul'1999	03-Jul'1999	04-Jul'1999	05-Jul'1999	06-Jul'1999	07-Jul'1999	08-Jul'1999
BLPOP	3.564	3.623	3.943	3.66	3.557	3.478	3.3
DIAM	0.159	0.22	0.321	0.166	0.179	0.231	0.216
HPA_AVG	1.3	1.385	2.303	1.336	1.515	1.492	1.329
LP_AMP_SYM	0.204	0.149	0.249	0.184	0.179	0.227	0.173
LP_RAN	0.309	0.36	0.483	0.344	0.285	0.472	0.396
LP_SYM_COV	0.347	0.313	0.474	0.347	0.27	0.387	0.284

Figure 5(b) Electric parametric defect trend of up tab, down tab and combined tab



Menu_Select

Electrical Test

Mre Defect

Menu Copy

Print

(TEST / MRE / ET / NULL) YIELD

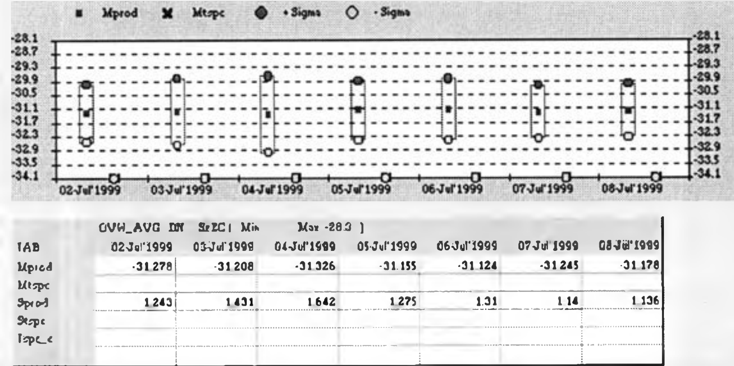
PARAMETER DEFECT

PARAMETER

NULL DEFECT

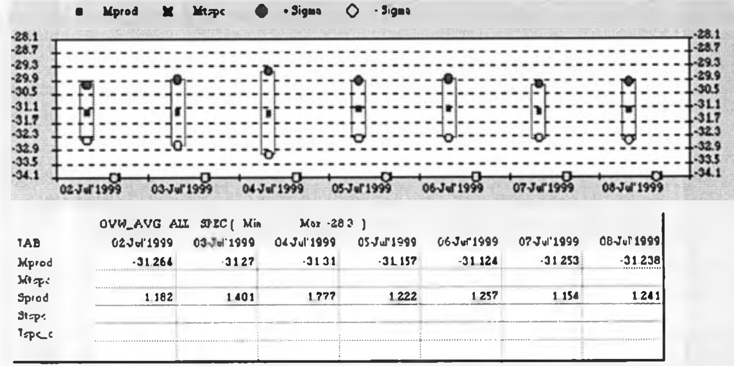
OVW_AVG UP SPEC(Min Max -28.3)

TAB	02-Jul'1999	03-Jul'1999	04-Jul'1999	05-Jul'1999	06-Jul'1999	07-Jul'1999	08-Jul'1999
Mprod	-31.247	-31 329	-31.303	-31.159	-31.125	-31 263	-31 296
Mtspc							
Sprod	1.11	1.369	1.831	1.145	1.171	1.173	1.333
Stspc							
Tspc_c							



OVW_AVG DN SPEC(Min Max -28.3)

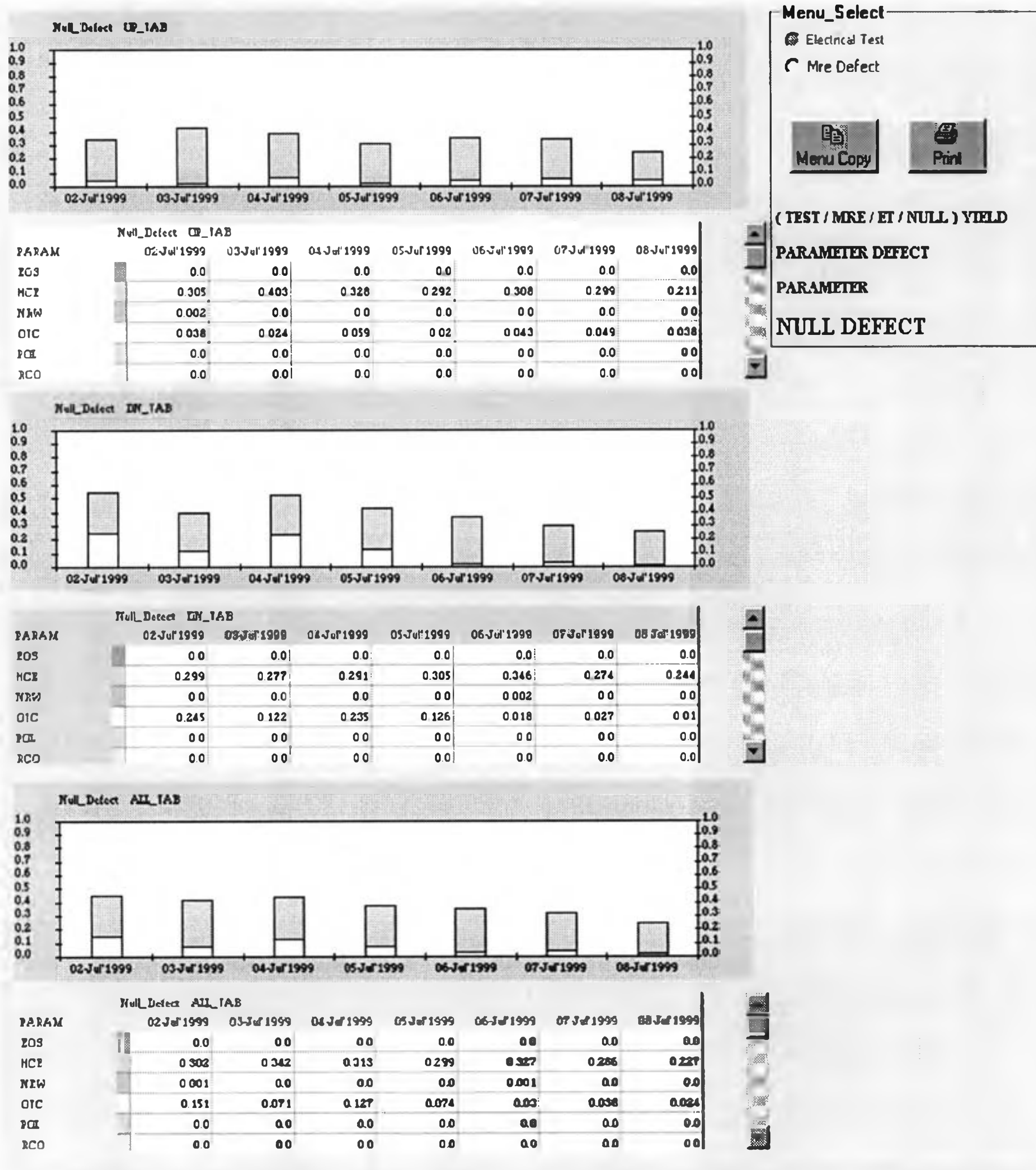
TAB	02-Jul'1999	03-Jul'1999	04-Jul'1999	05-Jul'1999	06-Jul'1999	07-Jul'1999	08-Jul'1999
Mprod	-31 278	-31 208	-31.326	-31.155	-31 124	-31 245	-31 178
Mtspc							
Sprod	1 243	1 431	1 642	1 275	1.31	1 14	1 136
Stspc							
Tspc_c							



OVW_AVG ALL SPEC(Min Max -28.3)

TAB	02-Jul'1999	03-Jul'1999	04-Jul'1999	05-Jul'1999	06-Jul'1999	07-Jul'1999	08-Jul'1999
Mprod	-31.264	-31 27	-31 31	-31.157	-31 124	-31 253	-31.238
Mtspc							
Sprod	1.182	1 401	1 777	1 222	1 257	1 154	1.241
Stspc							
Tspc_c							

Figure 5(c) Parametric trend of up tab, down tab and combined tabs of the selected parameter



Null_Defect UP_TAB

PARAM	02-Jul'1999	03-Jul'1999	04-Jul'1999	05-Jul'1999	06-Jul'1999	07-Jul'1999	08-Jul'1999
EOS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HCE	0.305	0.403	0.328	0.292	0.308	0.299	0.211
NEW	0.002	0.0	0.0	0.0	0.0	0.0	0.0
OIC	0.038	0.024	0.059	0.02	0.043	0.049	0.038
PCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ECO	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Null_Defect DN_TAB

PARAM	02-Jul'1999	03-Jul'1999	04-Jul'1999	05-Jul'1999	06-Jul'1999	07-Jul'1999	08-Jul'1999
EOS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HCE	0.299	0.277	0.291	0.305	0.346	0.274	0.244
NEW	0.0	0.0	0.0	0.0	0.002	0.0	0.0
OIC	0.245	0.122	0.235	0.126	0.018	0.027	0.01
PCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ECO	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Null_Defect ALL_TAB

PARAM	02-Jul'1999	03-Jul'1999	04-Jul'1999	05-Jul'1999	06-Jul'1999	07-Jul'1999	08-Jul'1999
EOS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HCE	0.302	0.342	0.313	0.299	0.327	0.286	0.227
NEW	0.001	0.0	0.0	0.0	0.001	0.0	0.0
OIC	0.151	0.071	0.127	0.074	0.03	0.036	0.024
PCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ECO	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 5(d) Null defect trend of up tab, down tab and combined tab of the selected product

2) Same Quad Analysis Report: this report is to identify the cause of problems either internal or external problems so that the responsible person can take actions appropriately.

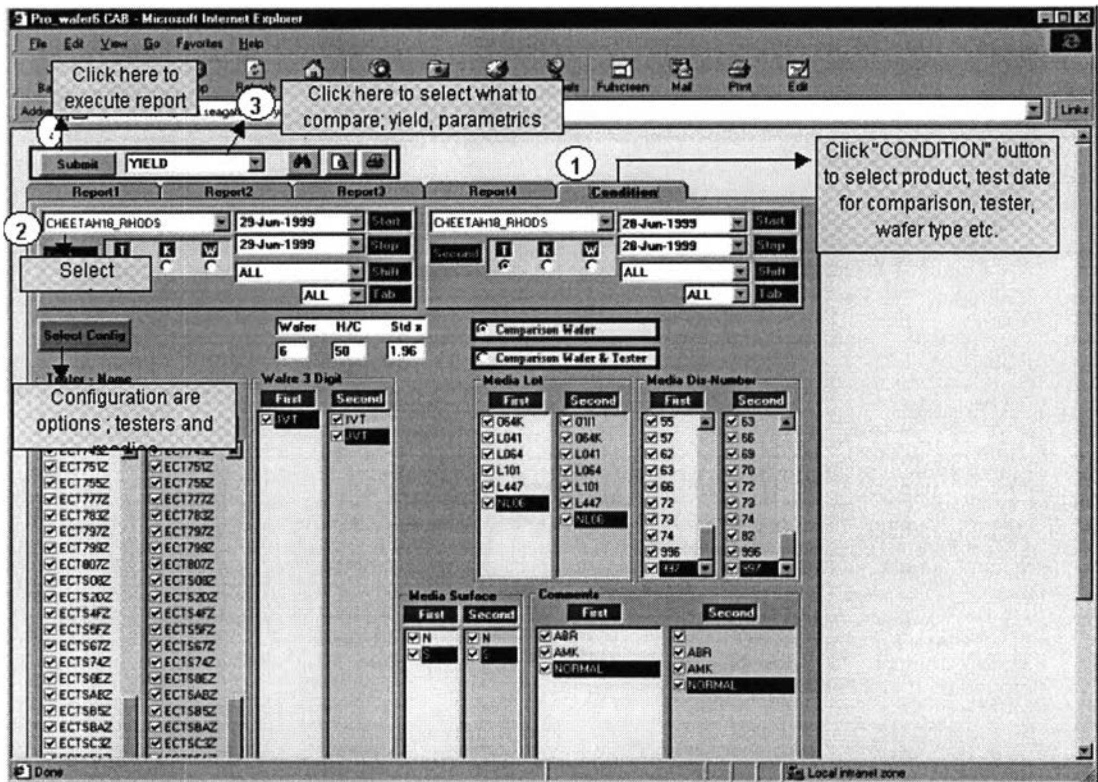


Figure 6(a) Products and test date to compare.
Configuration is option to select

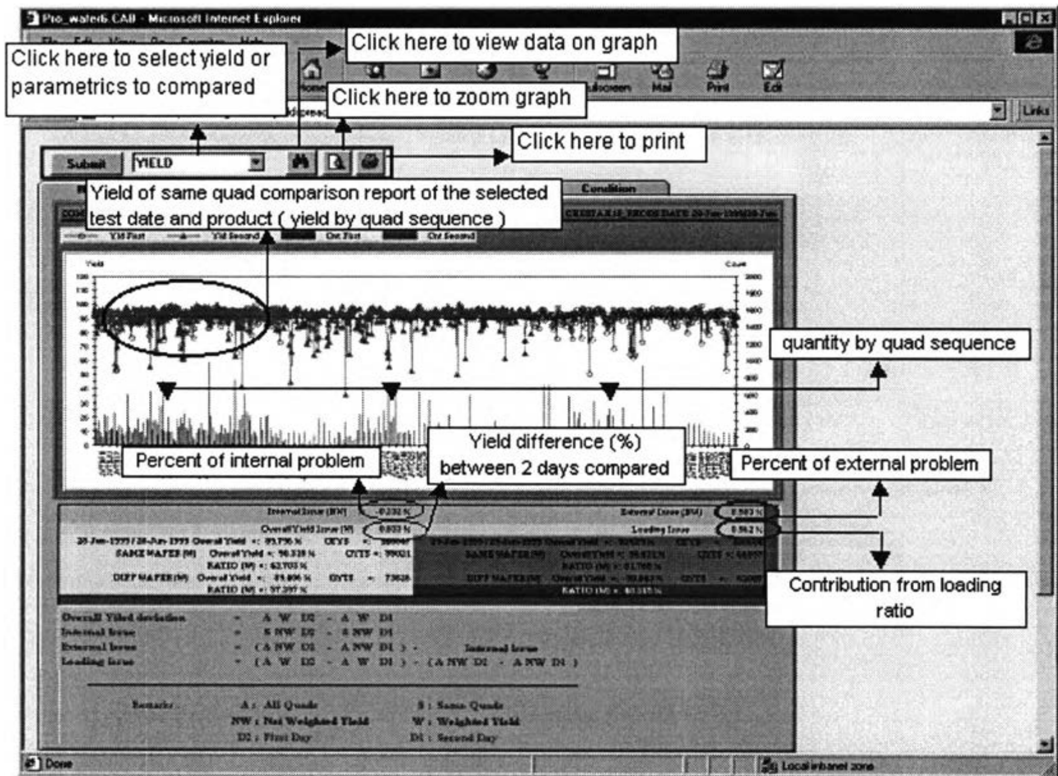


Figure 6(b) Same quad yield analysis report

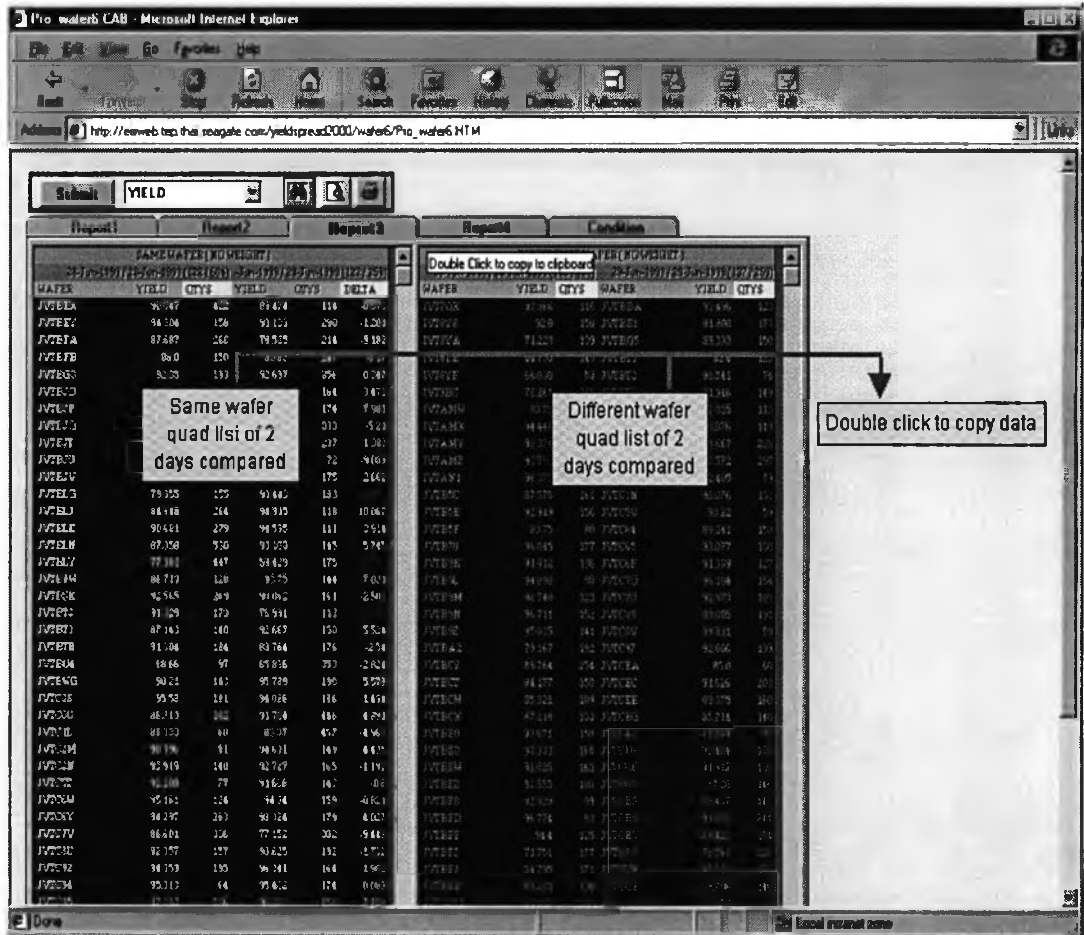


Figure 6(c) Same and different quad list of two test date compared

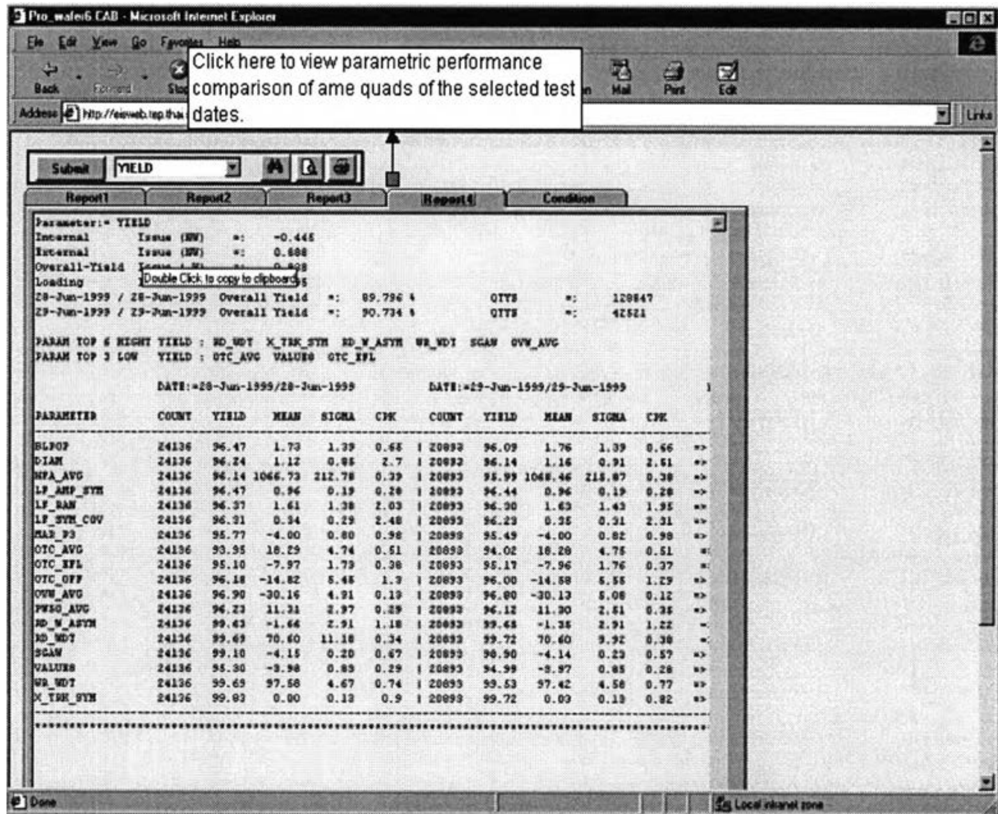


Figure 6(d) Parametric of same quads comparison

3) Wafer Analysis Report: it presents the yield trend daily basis of all wafer types built in that product. Yield by wafer type including quantity and loading ratio is presented. Yield by tab of each wafer type is another option to view.

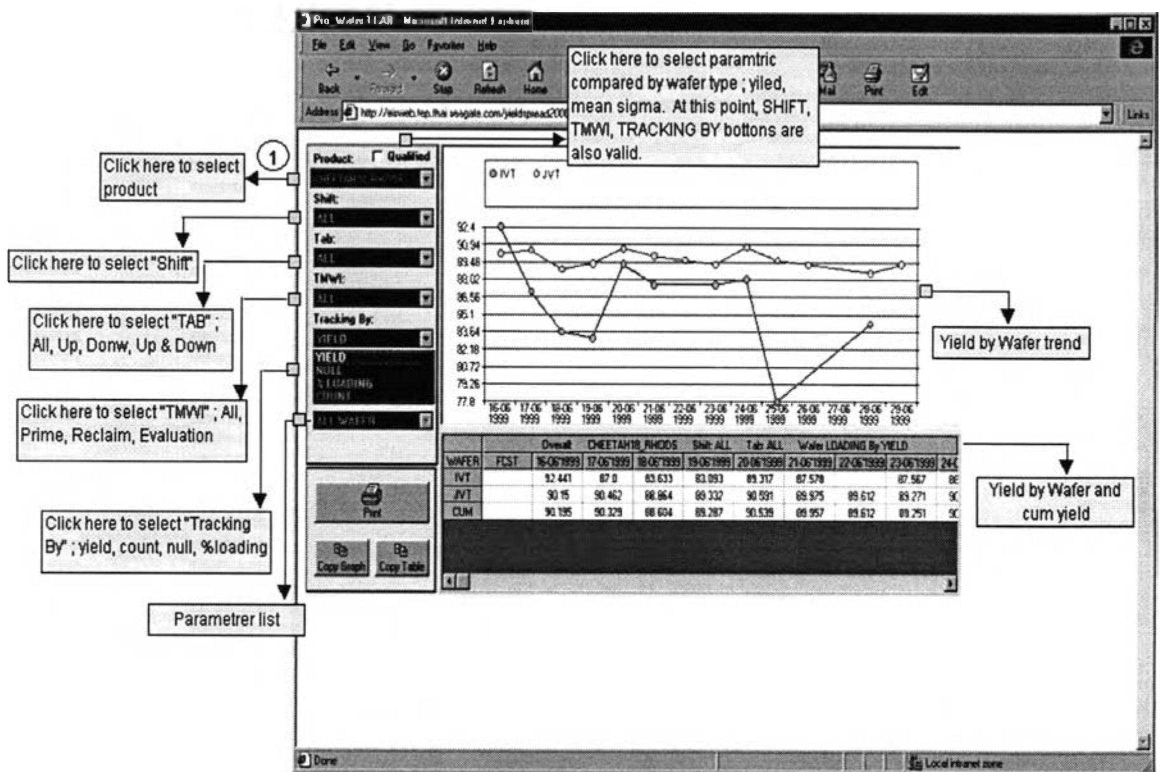


Figure 7 Wafer analysis report

4) Tester Analysis Report: this report presents the yield by tester including parametric statistics. This information is available for users and use for analysis in case of the occurrence of internal problems.

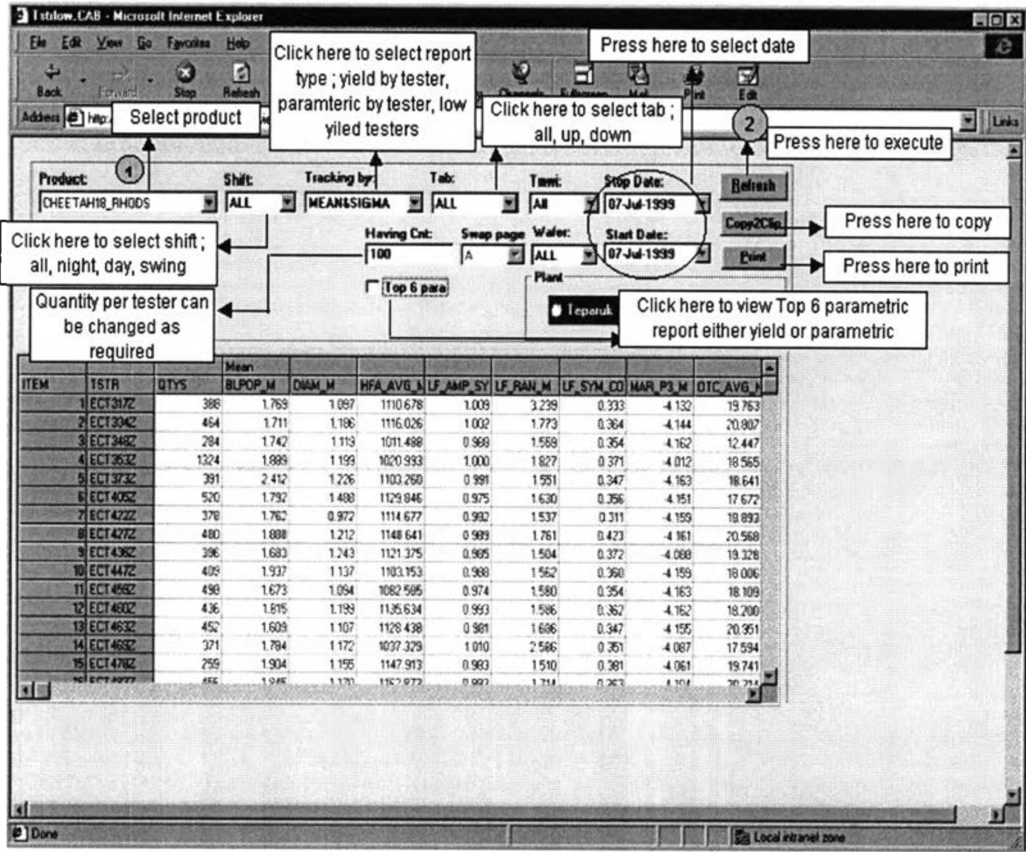


Figure 8 Tester analysis report; parametric performance by tester

5) TMWI Analysis Report: this report shows yield by assembly cell including quantity and loading ratio of each cell which will contribute to overall yield if it is high loading ratio due to its weight. It is useful if there is the occurrence of internal problems which users may reduce scope of problem by analyze the particular assembly cells.

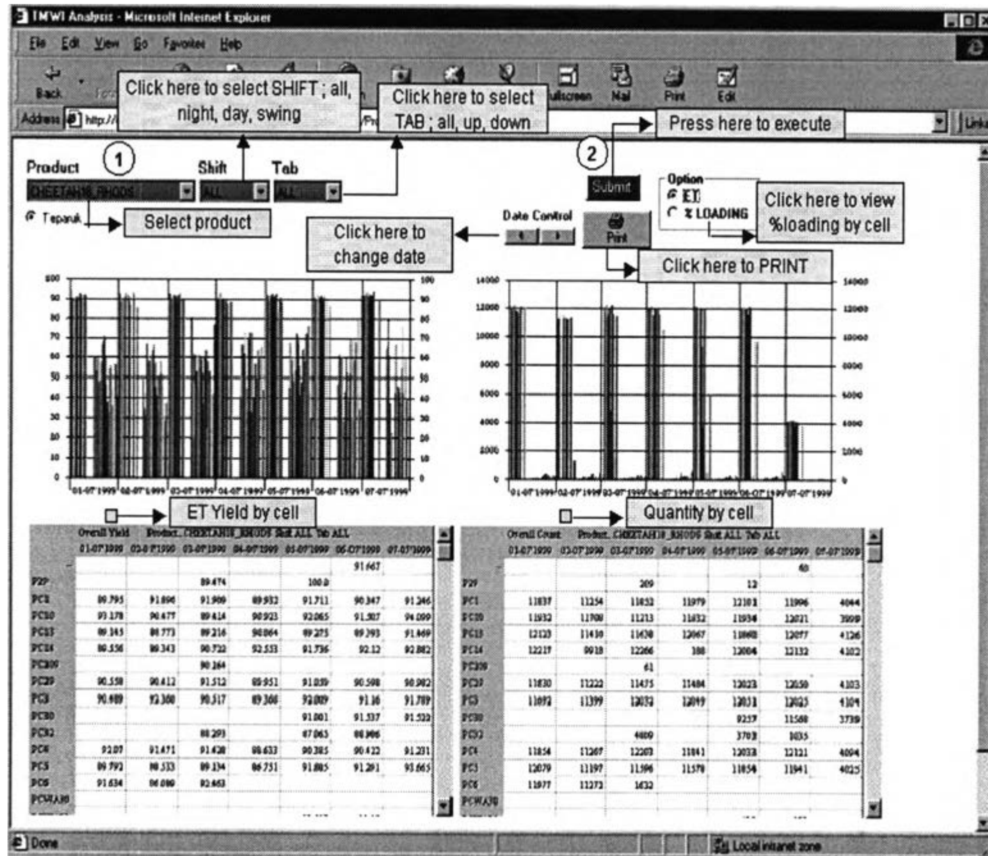


Figure 9 TMWI analysis report

6) Yield Analysis Report: this report contains daily yield trend information backwards two weeks. Users will see the yield consistency of that product and yield offset between tabs.

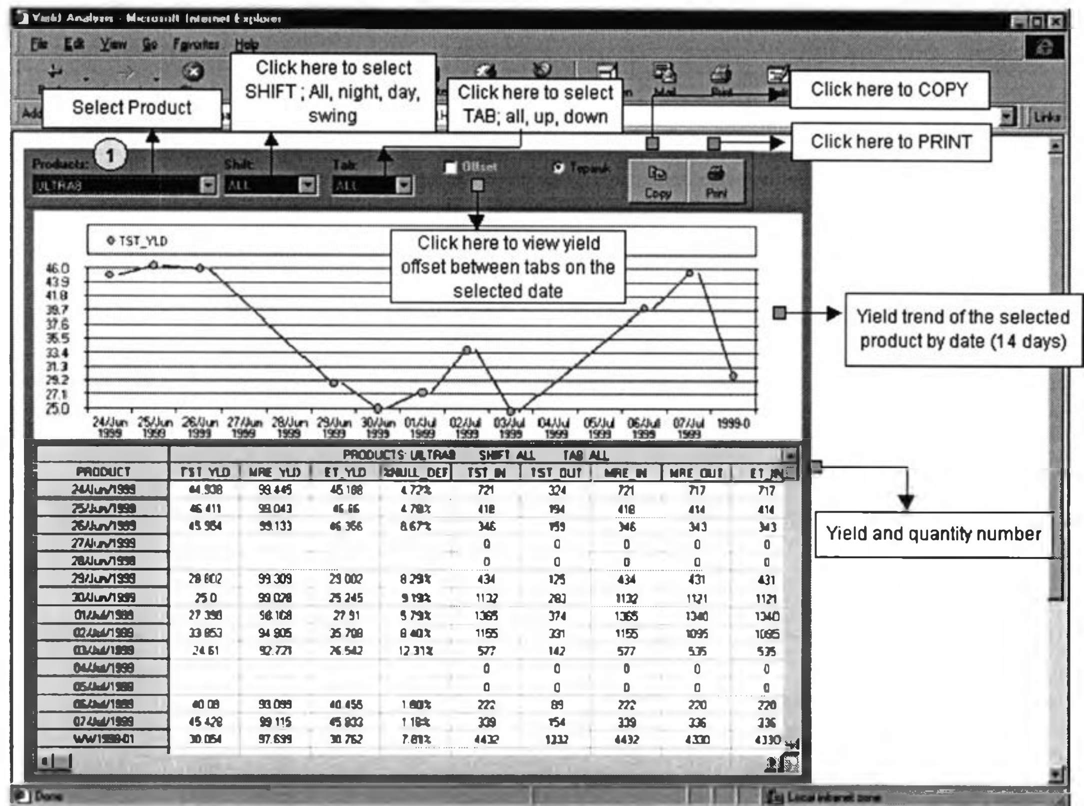


Figure 10(a) Yield analysis report; daily yield trend

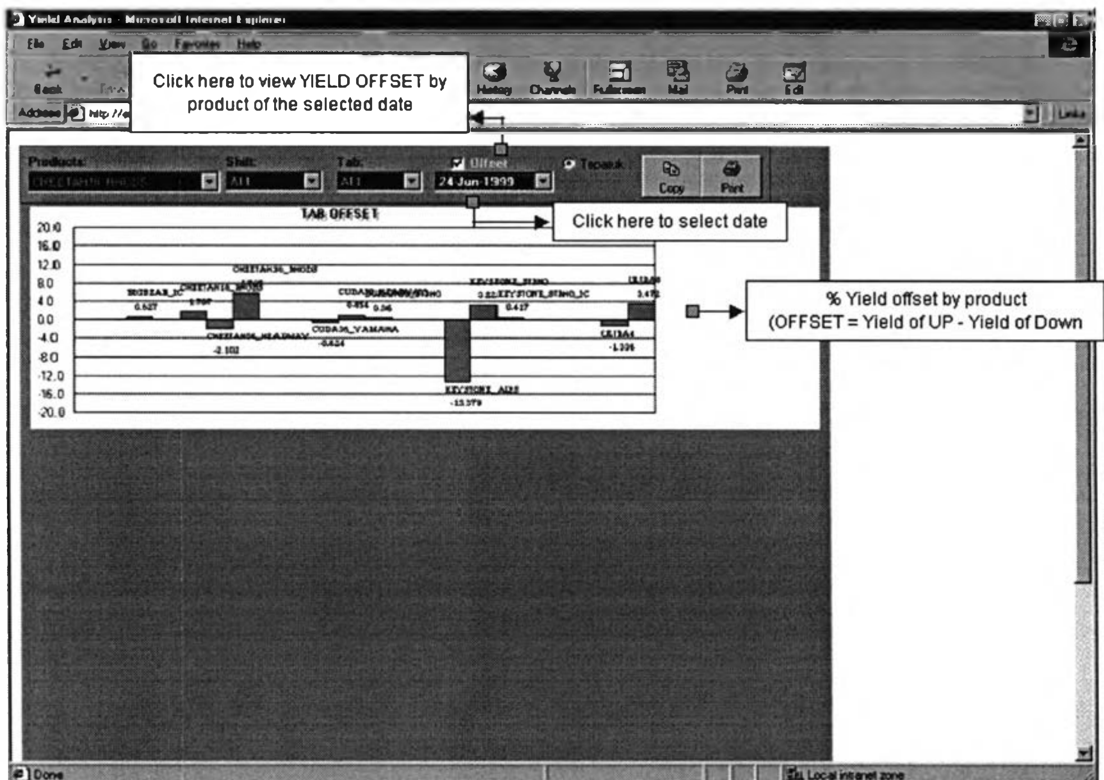


Figure 10(b) Yield analysis report; yield offset between tabs

Biography

Nuanthong Weerawanich was born on 31st May, 1965 in Songkla, Thailand. She graduated a Bachelor of Sciences in Industrial engineering from Prince of Songkla University in 1986. She has been worked in Seagate Technology (Thailand) Ltd. at the first place. She enrolled and argued in for a Master of Sciences in Engineering Management at Chulalongkorn University and University of Warwick. She is currently a New Product Development Manager of New Product Transfer Department, Seagate Technology (Thailand) Ltd.