"A picture is worth a thousand words" is a familiar cliche. Southern California Edison Quality Assurance Organization is an environment which has made the words of that cliche come alive by using graphics to reflect the progress of a variety of QA Programs.

No longer is it necessary to use volumes of typed or printed material to see a clear and concise picture. Graphics are a Summary tool used at all levels of the organization.

A typical example of a QA program area that has utilized graphics is the Program Audit Assessment And Report Group. About 200 audits are issued per year reflecting various management evaluations with categories such as Security, Internal Security, Suppliers and Internal Organizations. Using a Master Audits Data Base to extract information; graphs can be produced to give management at a glance the progress of an auditing program.

Figure 1 is a typical example. A simple bar chart depicting audits completed to date. If the total audits completed do not reflect the audits originally scheduled this would give management a picture as to the number of audits scheduled, which months did not meet their completion date and the responsible department for not completing the schedule. Additionally, the graphs can show areas where improvement has been made.

The following is an example of SAS Code used to produce the graph:

```
%ZETA1S;
PROC FORMAT;
VALUE MONTHFMT 1='JAN'
  2='FEB'
  3='MAR'
  4='APR'
  5='MAY'
  6='JUN'
  7='JUL'
  8='AUG'
  9='SEP'
 10='OCT'
 11='NOV'
 12='DEC';

DATA ONE;
  INPUT MONTH TOTAL;
  CARDS;
  1 8
  2 12
  3 5
  4 14
  5 15
  6 9
  7 7
  8 10
  9 6
 10 14
 11 8
 12 17;
  PROC GCHART DATA=ONE;
    GOPTIONS NOTEXT82;
    AXISI LABEL=(H=.8 F=DUPLEX 'TOTAL')
      VALUE=(H=.8 F=SIMPLEX)
      ORIGIN=(10,65 PCT)
      LENGTH=20 PCT
      ORDER=0 TO 20 BY 10
      MINOR NONE;
    AXIS2 LABEL=(H=.8 F=DUPLEX 'MONTHS')
      VALUE=(H=.8 F=SIMPLEX)
      ORIGIN=(10,65 PCT)
      MINOR NONE;
    TITLE1 H=1.5 C=BLACK F=TRIPLEX
      'SITE AUDITS COMPLETED';
    TITLE2 H=1.5 C=BLACK F=TRIPLEX
      'AS OF DEC - 1986';
    PATTERN1 C=RED V=X4;
    FORMAT MONTH MONTHFMT. ;
    VBAR MONTH / SUMVAR=TOTAL
      RAXIS=AXIS1
      MAXIS=AXIS2
      DISCRETE
      NOHEADING NOLEGEND;
    RUN;
    %ZETA1E;
```
Figure 2 is another example showing Surveillances which were performed instead of an audit. Many times a Surveillance covers a single item or program requirement which can be performed quicker and easier instead of by an audit which is very formal.

Figure 2

The following is an example of the SAS Code used to produce the graph:

```
%ZETA1E;
PROC FORMAT;
VALUE MTHFMT 1='JAN'
2='FEB'
3='MAR'
4='APR'
5='MAY'
6='JUN';
DATA ONE;
   INPUT MTH TOTAL;
   CARDS;
   1 13
   2 10
   3 26
   4 15
   5 18
   6 8;
PROC GCHART DATA=ONE;
GOPTIONS NOTEXT82 VPOS=40 HPOS=60;
AXIS1 LABEL=(H=1.2 F=DUPLEX C=BLUE 'MONTHS')
VALUE=(H=1.2 F=DUPLEX C=BLUE)
MINOR=none;
AXIS2 LABEL=(H=1.2 F=DUPLEX C=BLUE 'MONTHS')
VALUE=(H=1.2 F=DUPLEX C=BLUE)
MINOR=NONE;
PATTERN1 C=RED V=X4;
TITLE1 C=BLACK H=2 F=TRIPLEX 'QA SURVEILLANCES ISSUED JAN - JUN 1986';
FORMAT MTH MTHFMT.;
HBAR MTH / SUMVAR=TOTAL
   RAXIS=AXIS2
   MAXIS=AXIS2
   DISCRETE
   NOHEADING
   NOLEGEND;
RUN;
%ZETA1E;
```

Figure 3 is an example showing document deficiencies discovered in an Audit Report or Surveillance that needs to be reviewed and evaluated further.

Figure 3

The following is an example of the SAS Code used to produce the graph:

```
%ZETA1S;
PROC FORMAT;
VALUE MTHFMT 1='JAN'
2='FEB'
3='MAR'
4='APR'
5='MAY'
6='JUN'
7='JUL'
8='AUG'
9='SEP'
10='OCT'
11='NOV'
12='DEC';
DATA ANN01;
   INPUT @1 XSYS $1.
      @3 YSYS $1.
   X Y SIZE STYLE $ TEXT $25.;
```
Figure 4 shows another important area within QAO, that being the area of training. The Quality Assurance Training System Master Data Base was developed to aid management in reflecting current status of an Engineer in terms of need for recertification or qualification or simply an annual review of the Fundamentals of QA. A simple graph as shown in Figure 4 can give management a glance at the progress of training.
The following is an example of the SAS Code used to produce the graph:

```sas
%TSO ALLOC DA(QAOT.USERFILE.SASDATA) FI(USERFILE) SHR;
PROC FORMAT;
  VALUE $GIDFMT '3'='SITE QA'
       '4'='QC'
       '5'='GO QA';
PROC FORMAT;
  VALUE CRSFMT 1='BS3'
                2='BS2'
                3='BS1'
                4='T.Q.A.M.'
                5='FUND. OF QA';
DATA SELECT;
  SET USERFILE.MASTER;
  PROC SORT; BY SSN;
  *;
DATA COURSE1(KEEP=COURSE1 GID)
  COURSE2(KEEP=COURSE2 GID)
  COURSE3(KEEP=COURSE3 GID)
  COURSE4(KEEP=COURSE4 GID)
  COURSE5(KEEP=COURSE5 GID);
SET SELECT;
  BY SSN;
  IF FIRST.SSN;
  LENGTH COURSE 2.;
  GID=SUBSTR(GROUPID,1,1);
  IF FUNDDATE NE . THEN COURSE5=5;
  IF TQAMDATE NE . THEN COURSE4=4;
  IF BS1DATE NE . THEN COURSE3=3;
  IF BS2DATE NE . THEN COURSE2=2;
  IF BS3DATE NE . THEN COURSE1=1;
RUN;
*;
```

**Figure 4**

The note function was used to place the % and text on the actual graph. An example is as follows:

```sas
NOTE M=(65,3) C=BLUE H=1.3 F=SIMPLEX 'QAOT SYSTEM';
LABEL GID='QA ORGANIZATIONS';
LABEL COURSE='COURSES';
RUN;
```
Figure 5 shows a simulated map of the U.S. reflecting where Nuclear Generating Facilities are located. Each Nuclear Facility is assigned to a U.S. Nuclear Regulatory Commission Region. The contrasting lines identify these regions. This exhibit can be helpful at a meeting with Nuclear Representatives or utilized by the new employee orientation program.

The following is an example of the SAS Code used to produce the graph:

```
%ZETAL5;
%TSO ALLOC DA(SALP.SASDATA')
FI(MASTER) SHR;
DATA MASTER;
  SET MASTER.MASTER;
  LENGTH REG 2.;
  REG=REGION;
  *;
  PROC SORT; BY STATE PLNTNAME;
  *;
DATA MASTER2;
  SET MASTER;
  BY STATE PLNTNAME;
  IF FIRST.PLNTNAME;
  PROC GMAP DATA=MASTER MAP=MAPS.US ALL;
  ID STATE;
  CHOROPLETH REG / COUTLINE=BLACK
    CEMPTY=BLACK
    DISCRETE;
  LEGEND1 LABEL=(H=1 F=DUPLEX)
    VALUE=(H=1 F=DUPLEX)
    SHAPE=BAR(3,2) ACROSS=5;
  LABEL REG='REGION';
  PATTERN1 V=M2X C=RED;
  PATTERN2 V=M2N45 C=GREEN;
  PATTERN3 V=M2N90 C=BLUE;
  PATTERN4 V=MIX C=CYAN;
  PATTERN5 V=M2N45 C=PURPLE;
TITLE1 C=BLACK F=TRIPLEX H=1.5
  'NUCLEAR POWER PLANTS'
TITLE2 C=BLACK F=TRIPLEX H=1.5
  'AND THEIR GEOGRAPHICAL LOCATION'
TITLE3 C=BLACK F=TRIPLEX H=1.5
  'REPRESENTED BY NRC REGION';
RUN;
%ZETAL5;
```

Figure 6 shows an example of a Title Page that management may want to include in a graphics presentation to identify the department and subject matter of the presentation.

The following is an example of the SAS Code used to produce the Title Page:

```
%ZETAL5;
PROC GSLIDE;
  GOPTIONS NOTEXT='82
    NOTE M=(5,75)PCT
      NOCHARACTERS NOCELL;
    C=BLUE H=.8
      F=XS\SWISS 'S';
    NOTE M=(9.5,78)PCT C=BLUE H=.8
      F=XS\SWISS 'C';
    NOTE M=(15.5,82)PCT C=BLUE H=.8
      F=XS\SWISS 'E';
    NOTE M=(20,75)PCT C=BLUE H=.5
      F=XS\SWISS 'SOUTHERN CALIFORNIA EDISON';
    NOTE M=(30,55)PCT C=RED H=.5
      F=XS\SWISS 'QUALITY ASSURANCE';
    NOTE M=(38,45)PCT C=RED H=.5
      F=XS\SWISS 'ORGANIZATION';
    NOTE M=(46,35)PCT C=RED H=.5
      F=XS\SWISS 'INFORMATION SYSTEMS';
    NOTE M=(7,10)PCT C=GREEN H=.4
      F=DUPLEX
      'QUALITY ASSURANCE';
    NOTE M=(5,5)PCT C=GREEN H=.4
      F=DUPLEX
      'SOUTHERN CALIFORNIA EDISON';
    NOTE M=70,7)PCT C=BLACK F=DUPLEX
      'SHIRLEY J. MCLELLAND';
RUN;
%ZETAL5;
```
The %ZETA Macro embedded within each program is a special Macro that is found on our own SAS V here at Southern California Edison. The Macro contains the following SAS Code:

```
%ZETAIS

%MACRO ZETAIS;
%TSO SASZETAI;
GOPTION COLORS=(BLACK,RED, GREEN,
BLUEx,MAGENTA, YELLOx,
CYAN PURPLE);
DEVICE=ZETAI ROTATE;
GOPTION HPOS=80 VPOS=32;
GOPTION NOCHARACTERS NOCIRCLEARC
NODASH NOFILL NOPIEFILL;
GOPTION NOPOLYGONFILL NOSYMBOL;
OPTION DEVICE=ZETAI;
%PUT ZETA Allocations complete;
%PUT Output will be routed to USERID.ZETA.DA
%PUT After your graphs have been created execute;
%PUT MACRO ZETAIE;
%MEND ZETAIS;

%ZETAIE;

%MACRO ZETAIE;
%TSO DSPRINT ZETA.DA A314J02;
%PUT Output has been routed to A314J02;
%TSO DELETE ZETA.DA;
%MEND ZETAIE;
```

This Macro is convenient when routing graphs to the device. Everything is already included within the Macro and as soon as the program is finished running the graphs will go immediately to the Device for printing.

Summary:

It is hopeful that this brief presentation has demonstrated the need for utilization of graphics as a Management tool to present a clear and concise picture of organizational progress.