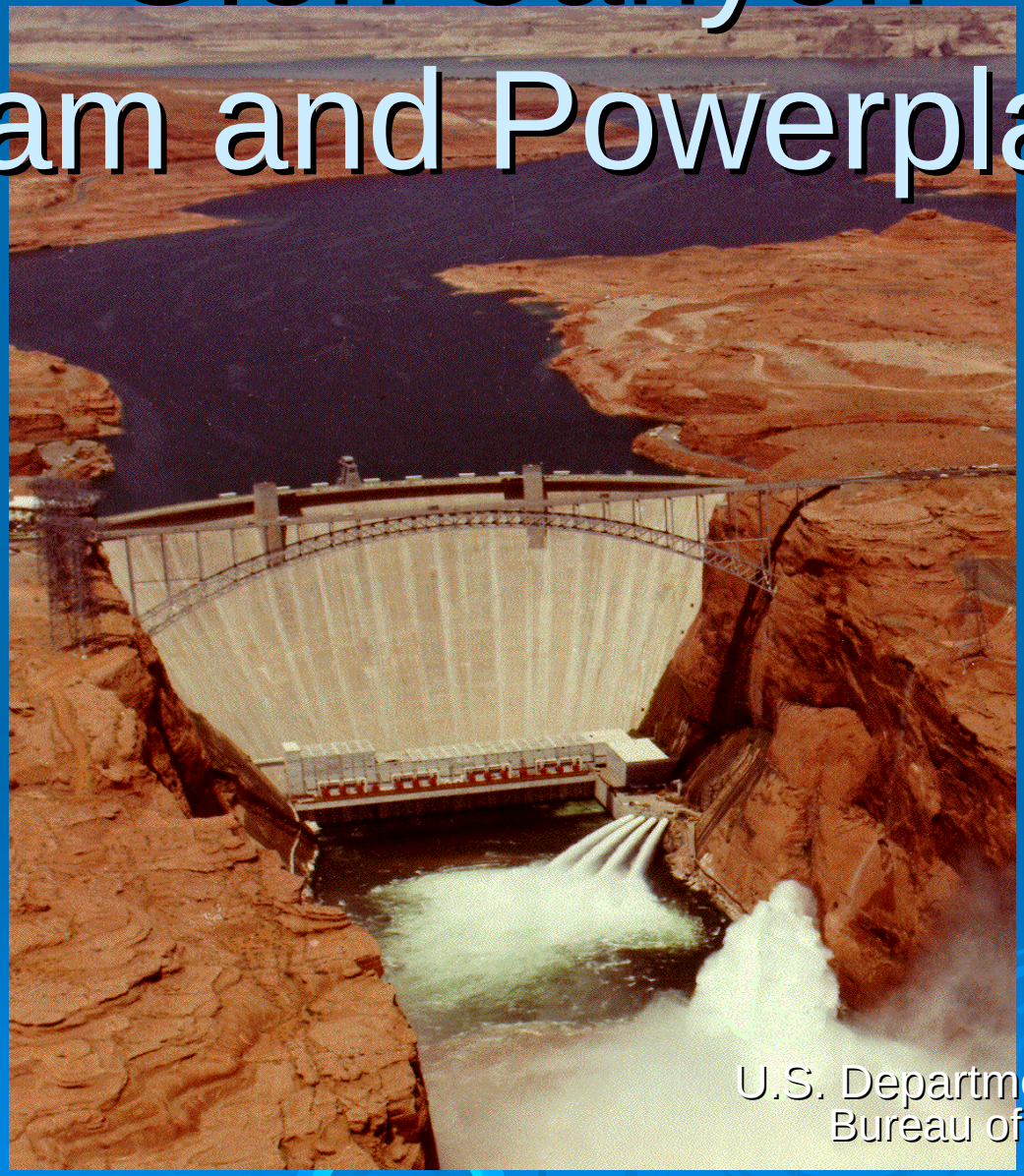
# Glen Canyon Dam and Powerplant



U.S. Department of the Interior
Bureau of Reclamation

March 30, 2004

# Unit Outage Plan and Strategy

# Glen Canyon Outage Schedule

- Schedule does not reflect any special Flow releases beyond 2004.
- Schedule does not reflect any TCD Construction.
- Reflects request from Western for no more than <u>one</u> Generator down in the months of June, July, and August.
- Schedule attempts to accomplish Maximum Availability.

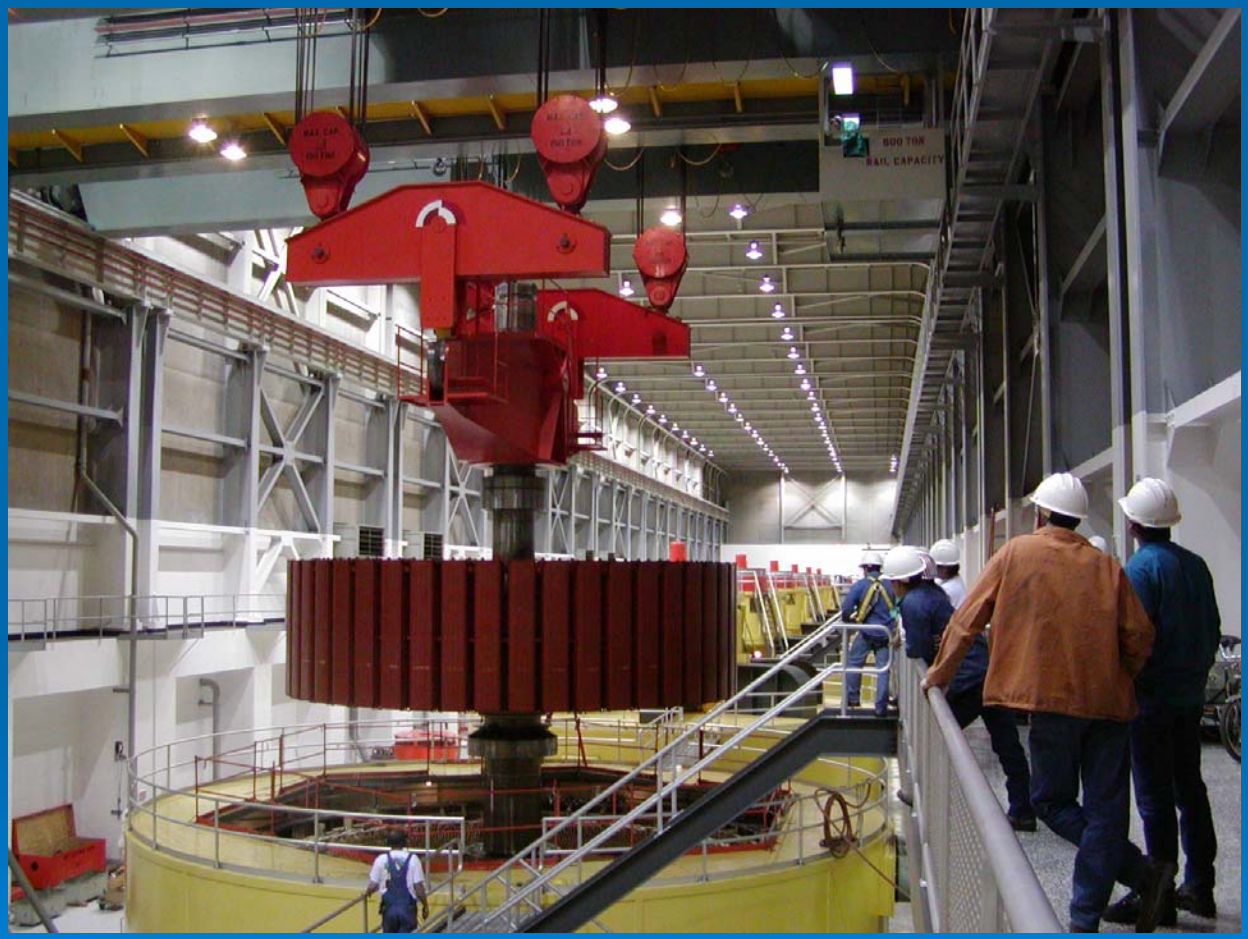
# Fixed Wheel Gate Maintenance

- 3 Week Unit Outage
- 1 Gate Per Year, Late Spring or Early Fall

# Penstock Recoating

- Two Units Remain
- 2 Month Outage
- Unit 4 Scheduled Sept. 2004 to Nov. 2004
- Unit 1 Scheduled Nov. 2004 to Jan. 2005

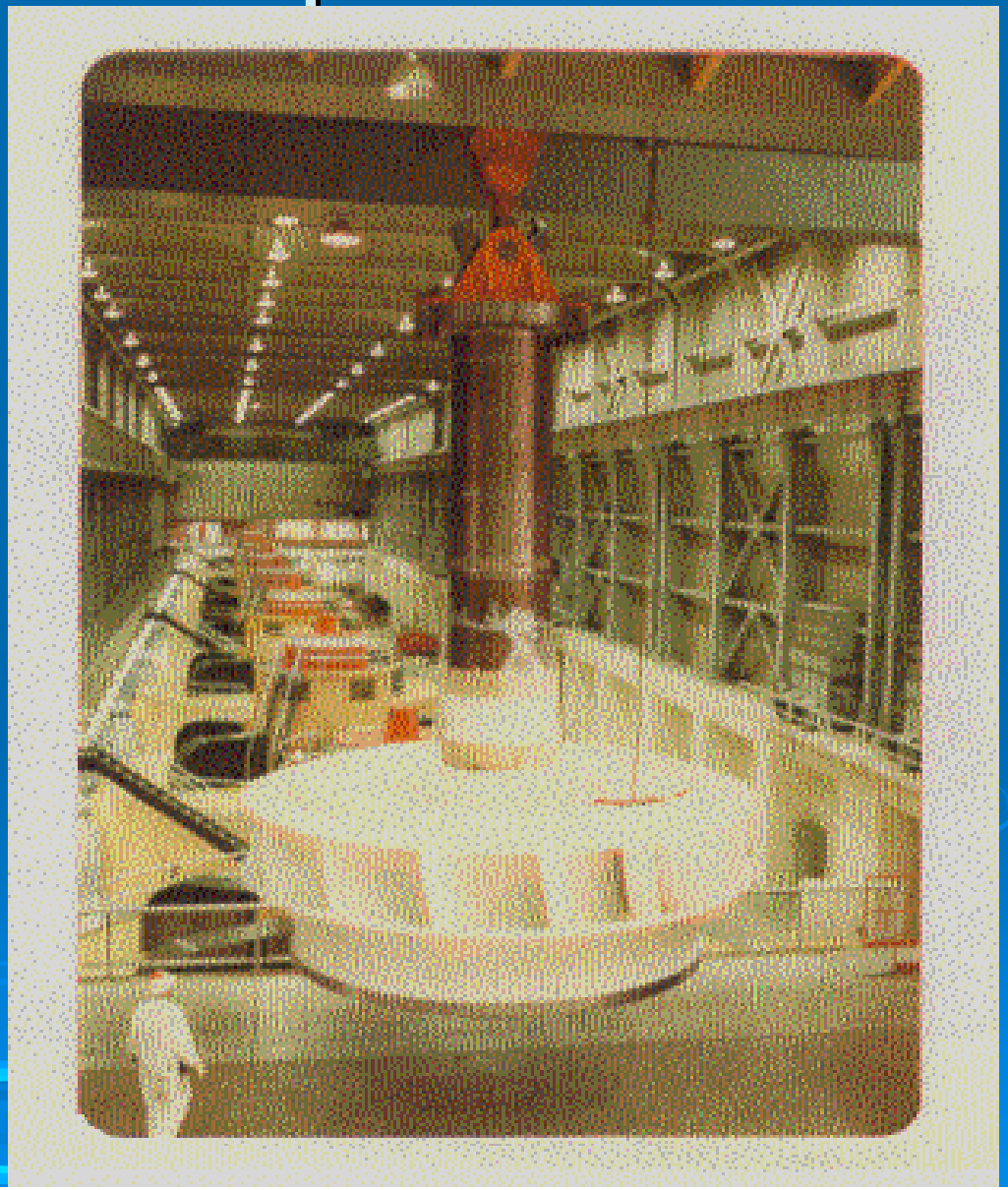
# Units 4 & 7 Rewinds




- 6 Month Outage
- Unit 4 Scheduled for Sept. 2004 – May 2005
- Unit 7 Scheduled for Sept. 2005 to May 2006

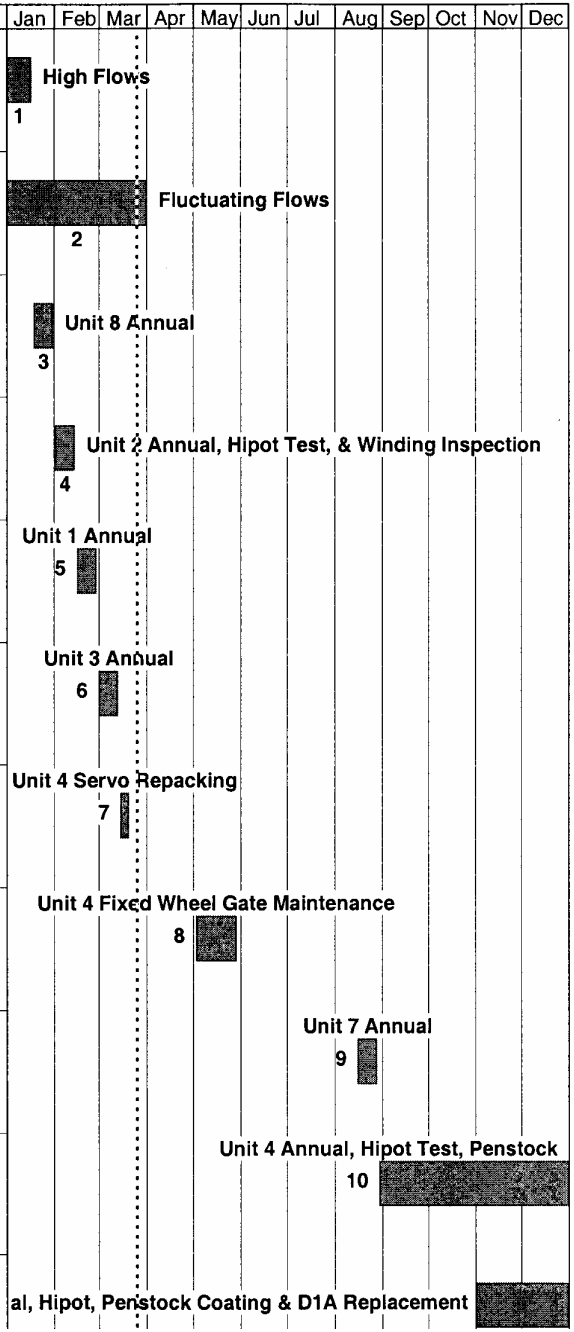
# Turbine Runner Replacements

- One Turbine Runner Replaced per year starting in September 2005.
- Unit 7 is scheduled first to correspond with the unit rewind.
- 6 month Unit Outage Required.
- Schedule Replacements per condition of existing runners.



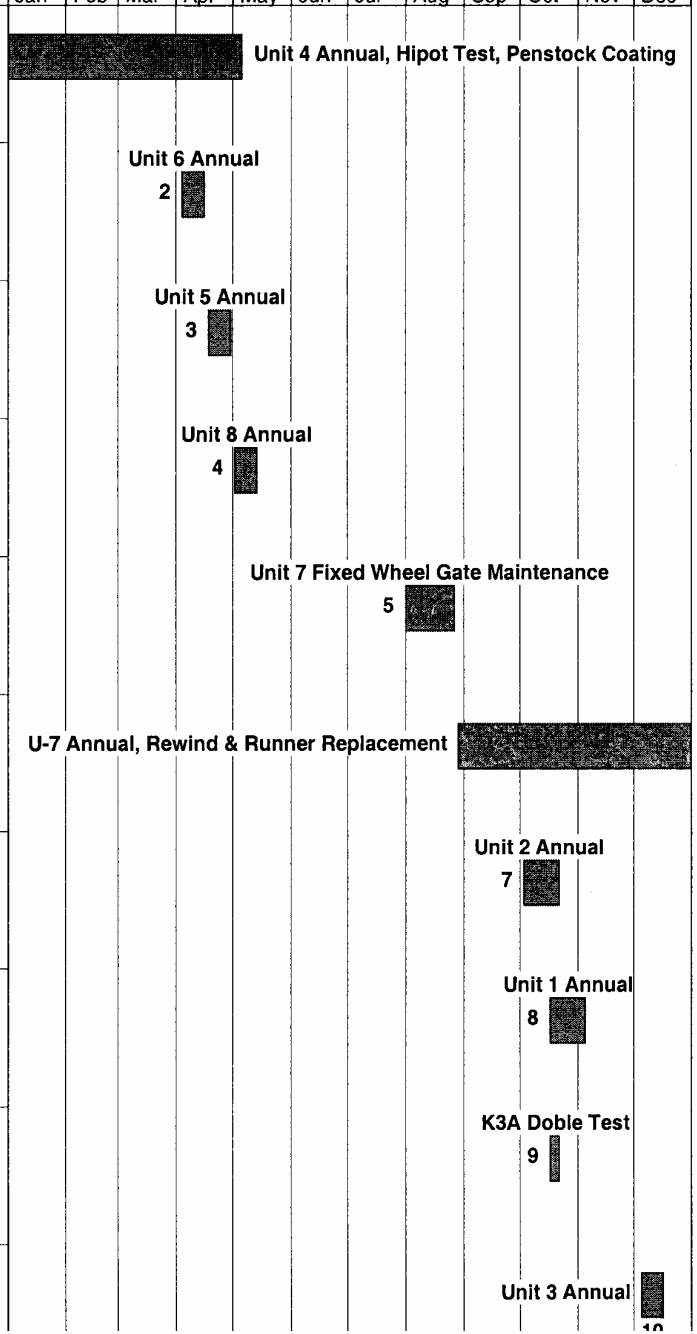
# Outage Schedule 2004

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | High Flows | 12 days | Thu 1/1/04 | Fri 1/16/04 |
| 2 | Fluctuating Flows | 65 days | Thu 1/1/04 | Wed 3/31/04 |
| 3 | Unit 8 Annual | 10 days | Mon 1/19/04 | Fri 1/30/04 |
| 4 | Unit 2 Annual, Hipot Test, & Winding Inspection | 10 days | Mon 2/2/04 | Fri 2/13/04 |
| 5 | Unit 1 Annual | 10 days | Mon 2/16/04 | Fri 2/27/04 |
| 6 | Unit 3 Annual | 10 days | Mon 3/1/04 | Fri 3/12/04 |
| 7 | Unit 4 Servo Repacking | 5 days | Mon 3/15/04 | Fri 3/19/04 |
| 8 | Unit 4 Fixed Wheel Gate Maintenance | 20 days | Mon 5/3/04 | Fri 5/28/04 |
| 9 | Unit 7 Annual | 10 days | Mon 8/16/04 | Fri 8/27/04 |
| 10 | Unit 4 Annual, Hipot Test, Penstock Coating, D4A Replacement, & Rewind | 180 days | Mon 8/30/04 | Thu 5/5/05 |
| 11 | U-1 Annual, Hipot, Penstock Coating & D1A Replacement | 45 days | Mon 11/1/04 | Fri 12/31/04 |



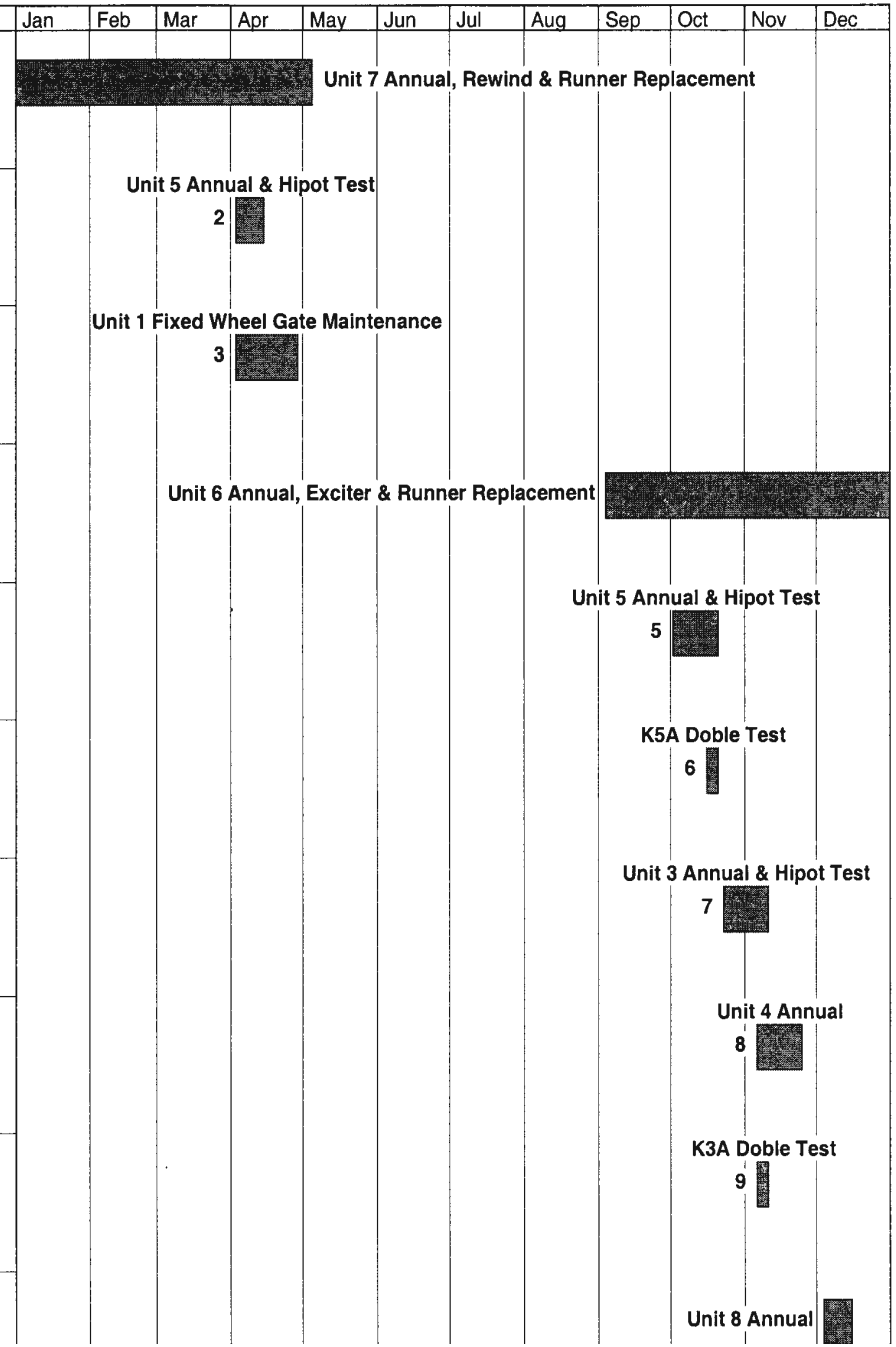
# Outage Schedule 2005

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | Unit 4 Annual, Hipot Test, Penstock Coating, D4A Replacement, & Rewind | 180 days | Mon 8/30/04 | Thu 5/5/05 |
| 2 | Unit 6 Annual | 10 days | Mon 4/4/05 | Fri 4/15/05 |
| 3 | Unit 5 Annual | 10 days | Mon 4/18/05 | Fri 4/29/05 |
| 4 | Unit 8 Annual | 10 days | Mon 5/2/05 | Fri 5/13/05 |
| 5 | Unit 7 Fixed Wheel Gate Maintenance | 20 days | Mon 8/1/05 | Fri 8/26/05 |
| 6 | U-7 Annual, Rewind & Runner Replacement | 180 days | Mon 8/29/05 | Thu 5/4/06 |
| 7 | Unit 2 Annual | 15 days | Mon 10/3/05 | Fri 10/21/05 |
| 8 | Unit 1 Annual | 15 days | Mon 10/17/05 | Fri 11/4/05 |
| 9 | K3A Doble Test | 5 days | Mon 10/17/05 | Fri 10/21/05 |
| 10 | Unit 3 Annual | 10 days | Mon 12/5/05 | Fri 12/16/05 |



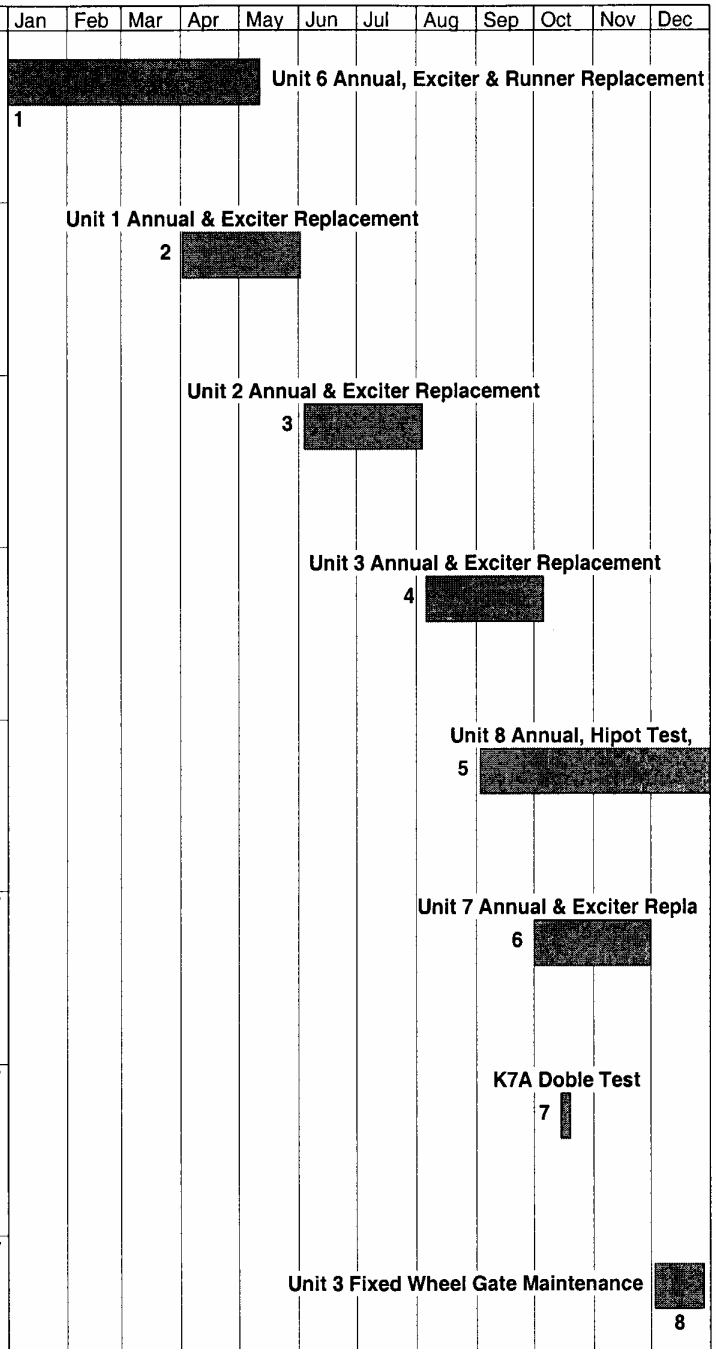
# Outage Schedule 2006

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | Unit 7 Annual, Rewind & Runner Replacement | 180 days | Mon 8/29/05 | Thu 5/4/06 |
| 2 | Unit 5 Annual & Hipot Test | 10 days | Mon 4/3/06 | Fri 4/14/06 |
| 3 | Unit 1 Fixed Wheel Gate Maintenance | 20 days | Mon 4/3/06 | Fri 4/28/06 |
| 4 | Unit 6 Annual, Exciter & Runner Replacement | 180 days | Mon 9/4/06 | Fri 5/11/07 |
| 5 | Unit 5 Annual & Hipot Test | 15 days | Mon 10/2/06 | Fri 10/20/06 |
| 6 | K5A Doble Test | 5 days | Mon 10/16/06 | Fri 10/20/06 |
| 7 | Unit 3 Annual & Hipot Test | 15 days | Mon 10/23/06 | Fri 11/10/06 |
| 8 | Unit 4 Annual | 15 days | Mon 11/6/06 | Fri 11/24/06 |
| 9 | K3A Doble Test | 5 days | Mon 11/6/06 | Fri 11/10/06 |
| 10 | Unit 8 Annual | 10 days | Mon 12/4/06 | Fri 12/15/06 |



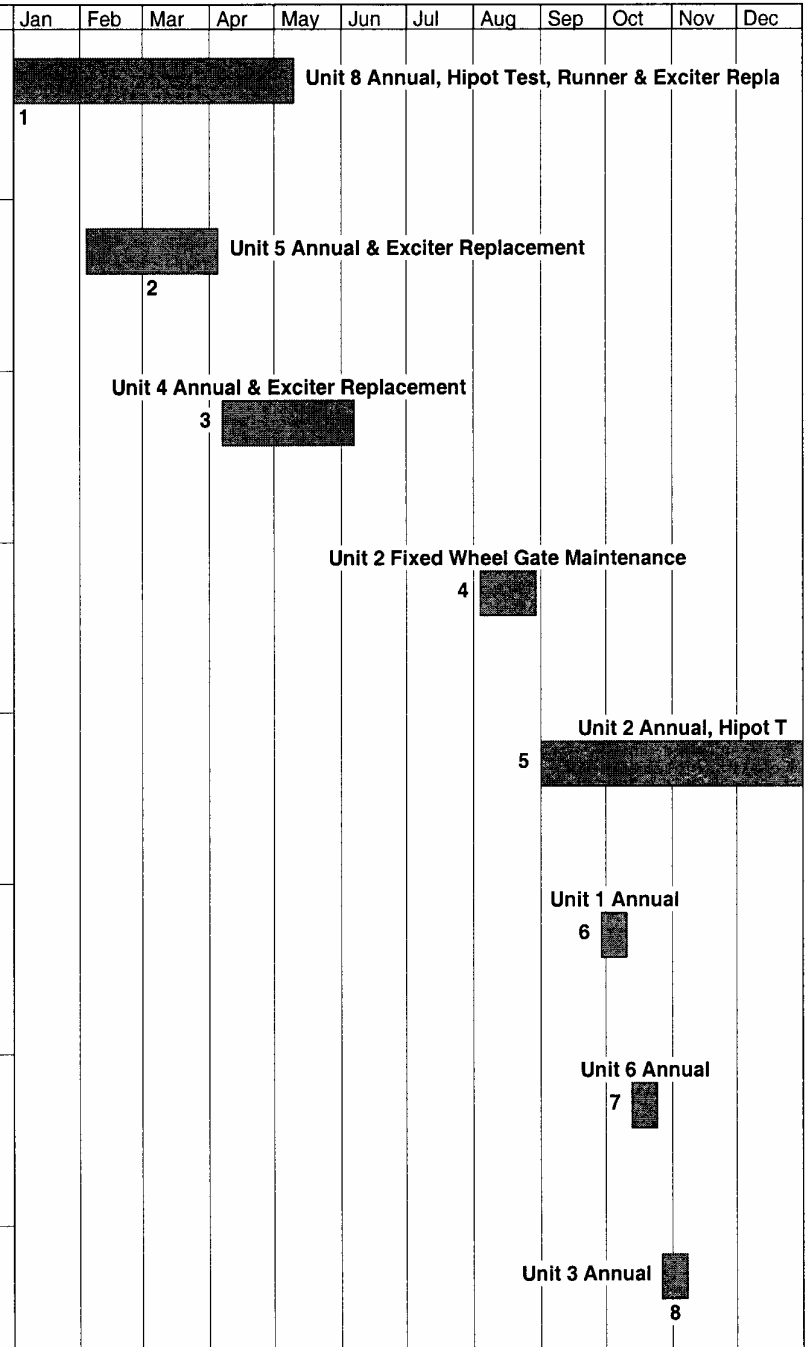
# Outage Schedule 2007

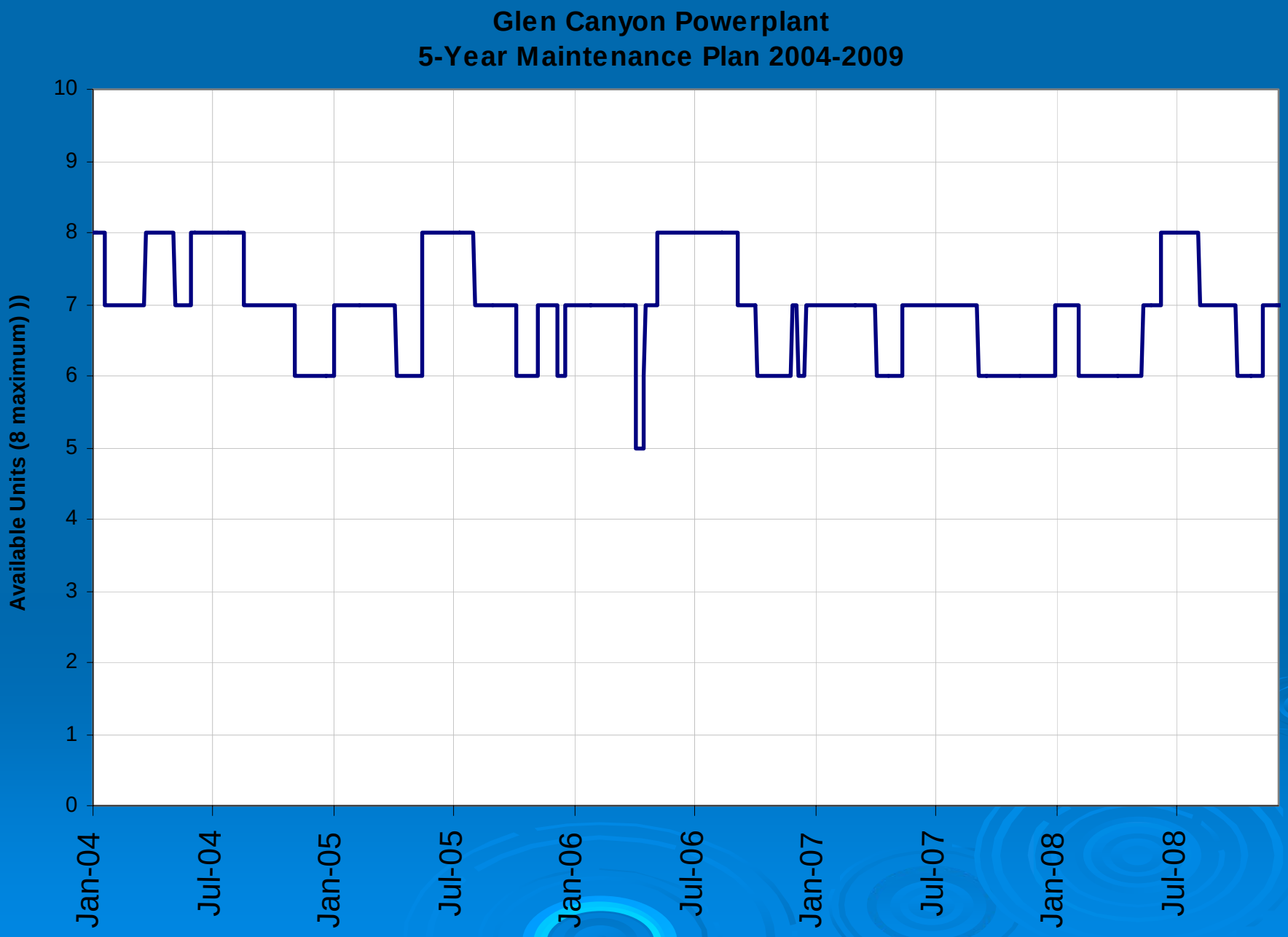
| ID | | Task Name | Duration | Start | Finish |
|---|---|---|---|---|---|
| 1 | | Unit 6 Annual, Exciter & Runner Replacement | 180 days | Mon 9/4/06 | Fri 5/11/07 |
| 2 | | Unit 1 Annual & Exciter Replacement | 45 days | Mon 4/2/07 | Fri 6/1/07 |
| 3 | | Unit 2 Annual & Exciter Replacement | 45 days | Mon 6/4/07 | Fri 8/3/07 |
| 4 | | Unit 3 Annual & Exciter Replacement | 45 days | Mon 8/6/07 | Fri 10/5/07 |
| 5 | | Unit 8 Annual, Hipot Test, Runner & Exciter Replacement | 180 days | Mon 9/3/07 | Fri 5/9/08 |
| 6 | | Unit 7 Annual & Exciter Replacement | 45 days | Mon 10/1/07 | Fri 11/30/07 |
| 7 | | K7A Doble Test | 5 days | Mon 10/15/07 | Fri 10/19/07 |
| 8 | | Unit 3 Fixed Wheel Gate Maintenance | 20 days | Mon 12/3/07 | Fri 12/28/07 |



# Outage Schedule 2008

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | Unit 8 Annual, Hipot Test, Runner & Exciter Replacement | 180 days | Mon 9/3/07 | Fri 5/9/08 |
| 2 | Unit 5 Annual & Exciter Replacement | 45 days | Mon 2/4/08 | Fri 4/4/08 |
| 3 | Unit 4 Annual & Exciter Replacement | 45 days | Mon 4/7/08 | Fri 6/6/08 |
| 4 | Unit 2 Fixed Wheel Gate Maintenance | 20 days | Mon 8/4/08 | Fri 8/29/08 |
| 5 | Unit 2 Annual, Hipot Test & Runner Replacement | 180 days | Mon 9/1/08 | Fri 5/8/09 |
| 6 | Unit 1 Annual | 10 days | Mon 9/29/08 | Fri 10/10/08 |
| 7 | Unit 6 Annual | 10 days | Mon 10/13/08 | Fri 10/24/08 |
| 8 | Unit 3 Annual | 10 days | Mon 10/27/08 | Fri 11/7/08 |




Glen Canyon Powerplant
5-Year Maintenance Plan 2004-2009
Available Units (8 maximum) ))
10
9
8
7
6
5
4
3
2
1
0
Jan-04
Jul-04
Jan-05
Jul-05
Jan-06
Jul-06
Jan-07
Jul-07
Jan-08
Jul-08

# Outage Schedule Final Points

- Reflects Major Budget Items for Replacement:
  1. Generator Rewinds (2001)
  2. Turbine Runner Replacements (2002)
  3. Generator Excitation Units (2000)
- If unable to perform Maintenance Activities then there should be an reasonable expectation that Forced Outages will increase and Unit Availability will decrease.
- Questions?