



Hydro Modernization

Part 2: Asset Management

Commission Presentation

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Asset Management in Generation:

- Provides a systematic approach to manage assets
- Tracks asset condition
- Long term planning for capital and O&M work
- Optimizes outage planning
- Reduces the risk of forced outages

What is an Asset Strategy?

An Asset Strategy is a one-stop shop for information on an asset class or asset system



What do we have?

Summarizes asset boundaries, operating requirements, risk profile



How do we manage it? What is the condition?

O&M and replacement practices, spare parts strategy, risk mitigation strategies



How can we improve?

Improvement actions for processes, information, tools, resources



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Asset Strategy Progress

District Asset Management

Functional System

Generation ▼

Strategy Code / Description

All ▼

Strategy Status

All ▼

Strategy Category

All ▼

Criticality

All ▼



Completion by Strategy Meter

Section

Completion

Development

- ☐ Boundary diagram 89%
- ☐ Build WLC model 36%
- ☐ Define asset hierarchy standard 100%
- ☐ Define capability improvements 10%
- ☐ Define condition assessments 44%
- ☐ Define failure hierarchy 22%
- ☐ Define PM, CM, and monitoring practices 10%
- ☐ Define replacement and refurbishment practices 10%
- ☐ Define risk appetite 10%
- ☐ Define spares strategy 10%
- ☐ Document asset demographics 10%
- ☐ Document strategy intro and summary 10%
- ☐ Financial summary 10%
- ☐ Perform FMECA scoring 42%
- ☐ Strategy document approved 5%

Implementation

- ☐ Apply asset hierarchy in system(s) 99%
- ☐ Apply failure hierarchy in system 19%
- ☐ Build condition assessment structure in system 42%
- ☐ Build long range projects 8%
- ☐ Build strategy JPs and PMs 5%
- ☐ Populate asset details/specifications 44%
- ☐ Strategy implementation approved 5%
- ☐ Sync inventory system with spares strategy 5%

Total Strategies

73

Boundary Diagrams
Developed (D3)

65

Failure Hierarchies
Defined (D5)

16

Cond. Assessments
Implemented (I1)

31

Asset Hierarchies
Implemented (I1)

72

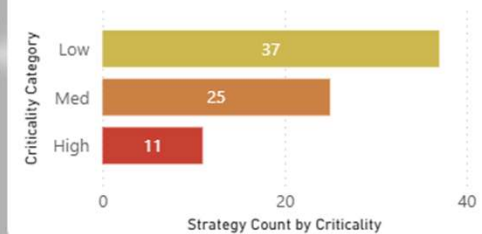
FMECA Scoring
Complete (D7)

31

View Criticality Details →

Count of Strategy by Criticality Category

Criticality ... ● Low ● Med ● High



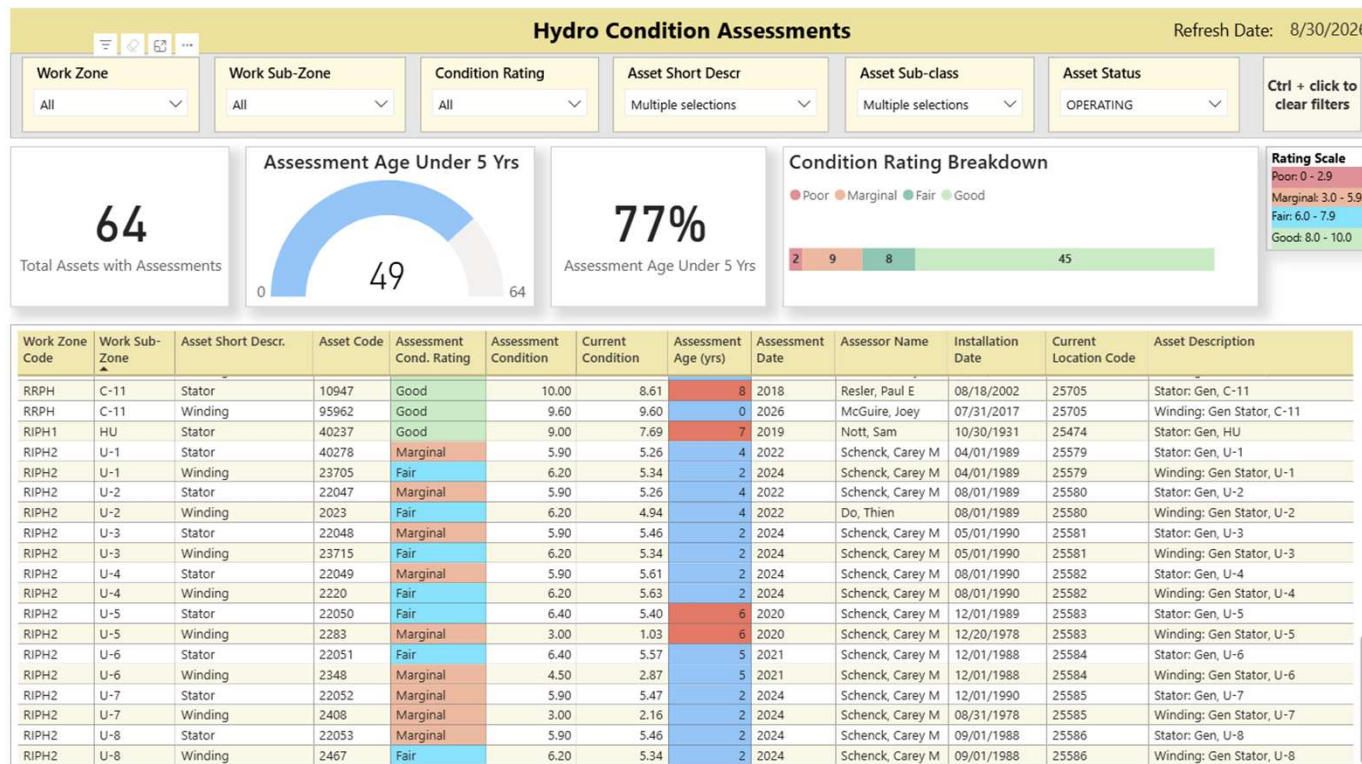
Remaining Tasks

Strategy Meter Description	Asset Strategy Code	Asset Strategy Name	Criticality	Criticality Category	Task Status
Define condition assessments	AMS416	Bridge Cranes	8	Low	1
Define failure hierarchy	AMS416	Bridge Cranes	8	Low	1
Define PM, CM, and monitoring practices	AMS416	Bridge Cranes	8	Low	1
Define replacement and refurbishment practices	AMS416	Bridge Cranes	8	Low	1
Define risk appetite	AMS416	Bridge Cranes	8	Low	1
Define spares strategy	AMS416	Bridge Cranes	8	Low	1
Document asset demographics	AMS416	Bridge Cranes	8	Low	1
Document strategy intro and summary	AMS416	Bridge Cranes	8	Low	1
Financial summary	AMS416	Bridge Cranes	8	Low	1
Perform FMECA scoring	AMS416	Bridge Cranes	8	Low	1
Strategy document approved	AMS416	Bridge Cranes	8	Low	1



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Condition Assessments



Assessed during:

- Pit stops
- Overhauls
- Rehabs

Industry standard hydroAMP

Incorporating additional inspections with strategy development

Stator example

Condition Prediction for Rocky Reach Generating Units

Good: 8-10
Fair: 6-7.9
Marginal: 3-5.9
Poor: 0-2.9

Work Sub-zone	Asset Short Description	Asset Cod	Installation Year	Assessment Year	Last Condition	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
C-5	Unit Ctrl Instr	100756	2023	2024	10	9.1	8.6	8.2	7.7	7.3	6.8	6.4	5.9	5.5	5	10	9.5	9.1	8.6	8.2	7.7	7.3	6.8	6.4	5.9	5.5
	Turbine	10259	1996	2023	7.8	7.2	7	6.8	6.6	6.4	6.2	6	5.8	5.6	5.4	5.2	5	4.8	4.6	10	9.8	9.6	9.4	9.2	9	8.8
	Excitation Sys	10281	1996	2024	7.1	6.7	6.6	6.4	6.2	6	5.9	5.7	5.5	5.3	5.2	10	9.8	9.7	9.5	9.3	9.1	9	8.8	8.6	8.4	8.3
	Governor HYD	91062	1996	2023	8	7.5	7.3	7.2	7	6.8	6.7	6.6	6.5	6.4	6.3	6.2	6.1	6	5.9	5.8	5.7	5.6	5.5	5.4	5.3	5.2
	Sator	10941	2006	2024	9.3	8.9	8.8	8.6	8.4	8.2	8.1	7.9	7.7	7.5	7.4	7.2	7	6.8	6.7	6.5	6.3	6.1	6	5.8	5.6	5.4
	Breaker, SF6	10292	1996	2024	8.4	7.1	9	8.3	7.7	7	6.3	5.7	5	4.3	3.7	10	9.3	8.7	8	7.3	6.7	6	5.3	4.7	4	3.3
	Runner Assembly	10448	1996	2023	9.5	8.9	8.7	8.5	8.3	8.1	7.9	7.7	7.5	7.3	7.1	6.9	6.7	6.5	6.3	10	9.8	9.6	9.4	9.2	9	8.8
	Winding	10930	2006	2024	9	8.3	8	7.7	7.3	7	6.7	6.3	6	5.7	5.3	5	4.7	4.3	4	10	9.7	9.3	9	8.7	8.3	8
	Winding	11040	2006	2024	9.5	8.8	8.5	8.1	7.8	7.4	7.1	6.7	6.4	6.1	5.7	5.4	5	4.7	4.3	10	9.7	9.3	9	8.6	8.3	7.9
	Transformer	12009	1996	2023	7.3	6.7	6.5	6.3	6.1	5.9	5.7	5.5	5.3	5.1	4.9	4.7	4.5	4.3	4.1	3.9	3.7	10	9.8	9.6	9.4	9.2
C-6	Unit Ctrl Instr	100757	2022	2024	10	9.1	8.6	8.2	7.7	7.3	6.8	6.4	5.9	5.5	5	4.6	4.1	3.6	10	9.5	9.1	8.6	8.2	7.7	7.3	6.8
	Turbine	10260	1996	2023	9.2	8.6	8.4	8.2	8	7.8	7.6	7.4	7.2	7	6.8	6.6	6.4	6.2	10	9.8	9.6	9.4	9.2	9	8.8	8.6
	Excitation Sys	10282	1996	2024	7.1	6.7	6.6	6.4	6.2	6	5.9	5.7	5.5	5.3	5.2	5	4.8	4.6	10	9.8	9.7	9.5	9.3	9.1	9	8.8
	Governor HYD	91063	1997	2023	8	7.5	7.3	7.2	7	6.8	6.7	6.5	6.3	6.2	6	9.9	9.7	9.6	9.4	9.2	9.1	8.9	8.7	8.6	8.4	8.2
	Sator	10942	2005	2024	9.5	9.1	9	8.8	8.6	8.4	8.3	8.1	7.9	7.7	7.6	7.4	7.2	7	6.9	6.7	6.5	6.3	6.2	6	5.8	5.6
	Breaker, SF6	10293	1995	2024	8.4	9	8.3	7.7	7	6.3	5.7	5	4.3	3.7	3	10	9.3	8.7	8	7.3	6.7	6	5.3	4.7	4	3.3
	Runner Assembly	10449	1996	2023	9.2	8.6	8.4	8.2	8	7.8	7.6	7.4	7.2	7	6.8	6.6	6.4	6.2	10	9.8	9.6	9.4	9.2	9	8.8	8.6
	Winding	10931	2005	2024	9	8.3	8	7.7	7.3	7	6.7	6.3	6	5.7	5.3	5	4.7	4.3	10	9.7	9.3	9	8.7	8.3	8	7.7
	Winding	11041	2005	2024	9.5	8.8	8.5	8.1	7.8	7.4	7.1	6.7	6.4	6.1	5.7	5.4	5	4.7	10	9.7	9.3	9	8.6	8.3	7.9	7.6
	Transformer	12010	1996	2023	8.3	7.7	7.5	7.3	7.1	6.9	6.7	6.5	6.3	6.1	5.9	5.7	5.5	5.3	5.1	4.9	4.7	4.5	4.3	10	9.8	9.6



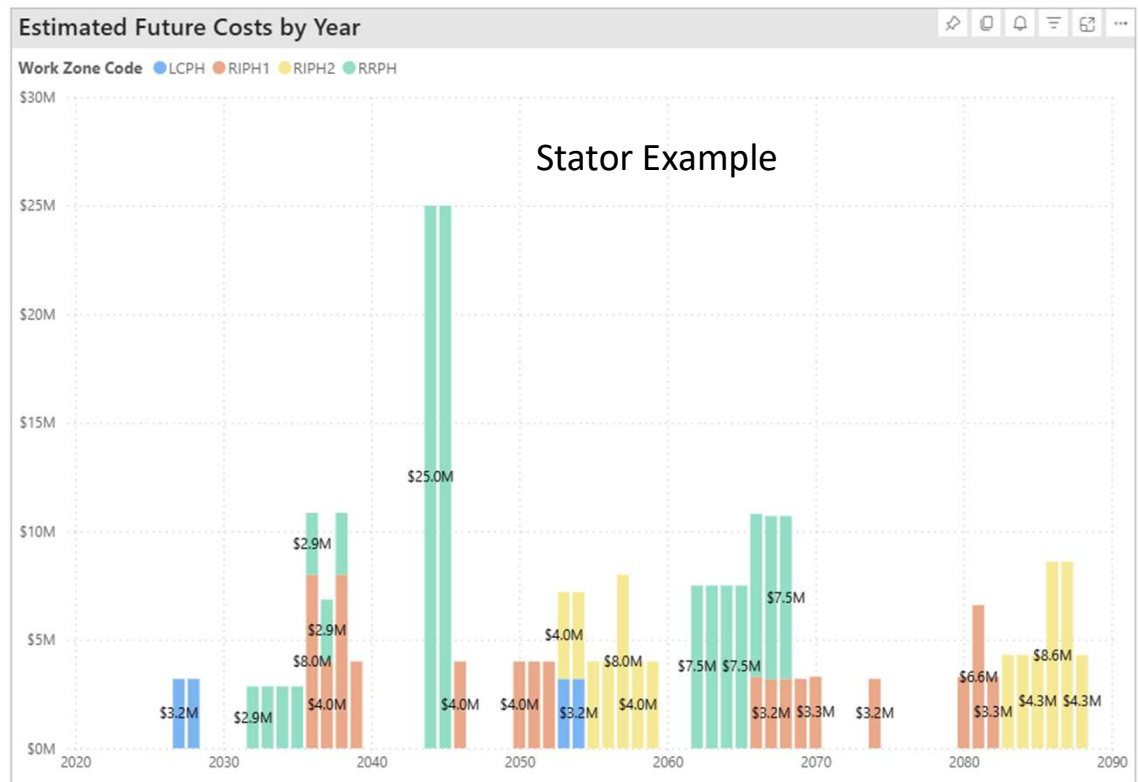
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Long-term Planning

Future replacements /
refurbishments built
during:

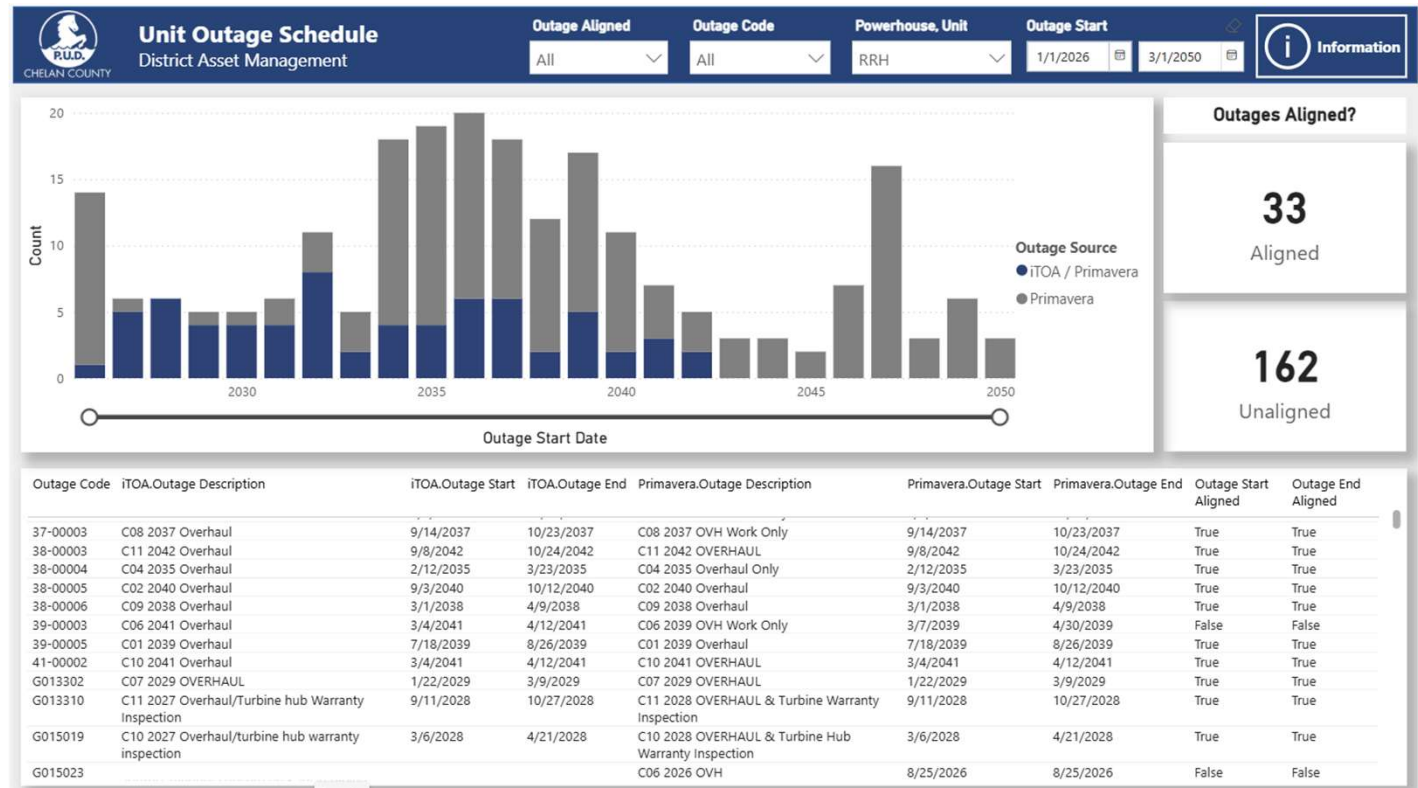
- Project turnover
- Strategy implementation

Engineering, and Plant
expertise

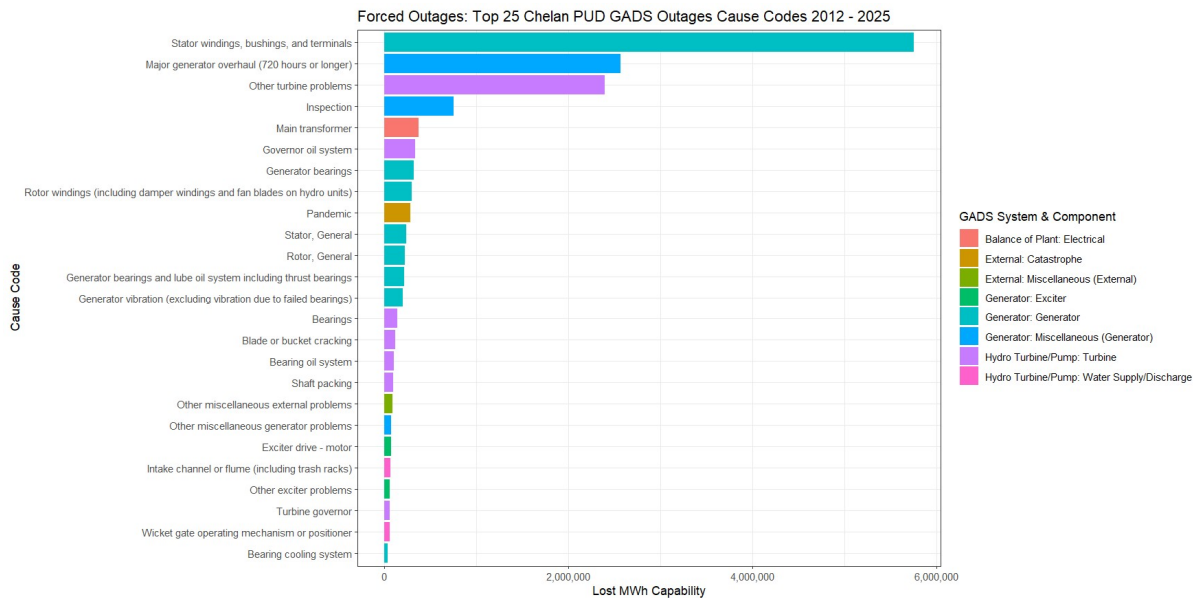


Outage Planning

- Coordinating outages in various systems
- Bundling projects by outage
- Planned into the future



Forced Outages



Failure Class: E1085 Pump Changed By: 57932 Changed Date: 09/08/2025 01:16 PM Attachments:

Entered By: 060915 Entered Date: 10/04/2021 10:20 AM Active? ☒

Level 1 (Problems) for E1085 1 - 1 of 1

Failure Code	Description	Type	Next Level Type	Active?
P0004	no longer	PROBLEM	COMPONENT	☒

New Row

Level 2 for P0004 1 - 5 of 5

Failure Code	Description	Type	Next Level Type	Active?
E1014	Motor	COMPONENT	CAUSE	☒
E1022	Bearing	COMPONENT	CAUSE	☒
E1085	Pump	COMPONENT	CAUSE	☒
E1194	Shaft	COMPONENT	CAUSE	☒
E1195	Column	COMPONENT	CAUSE	☒

New Row

Level 3 for E1194 1 - 5 of 5

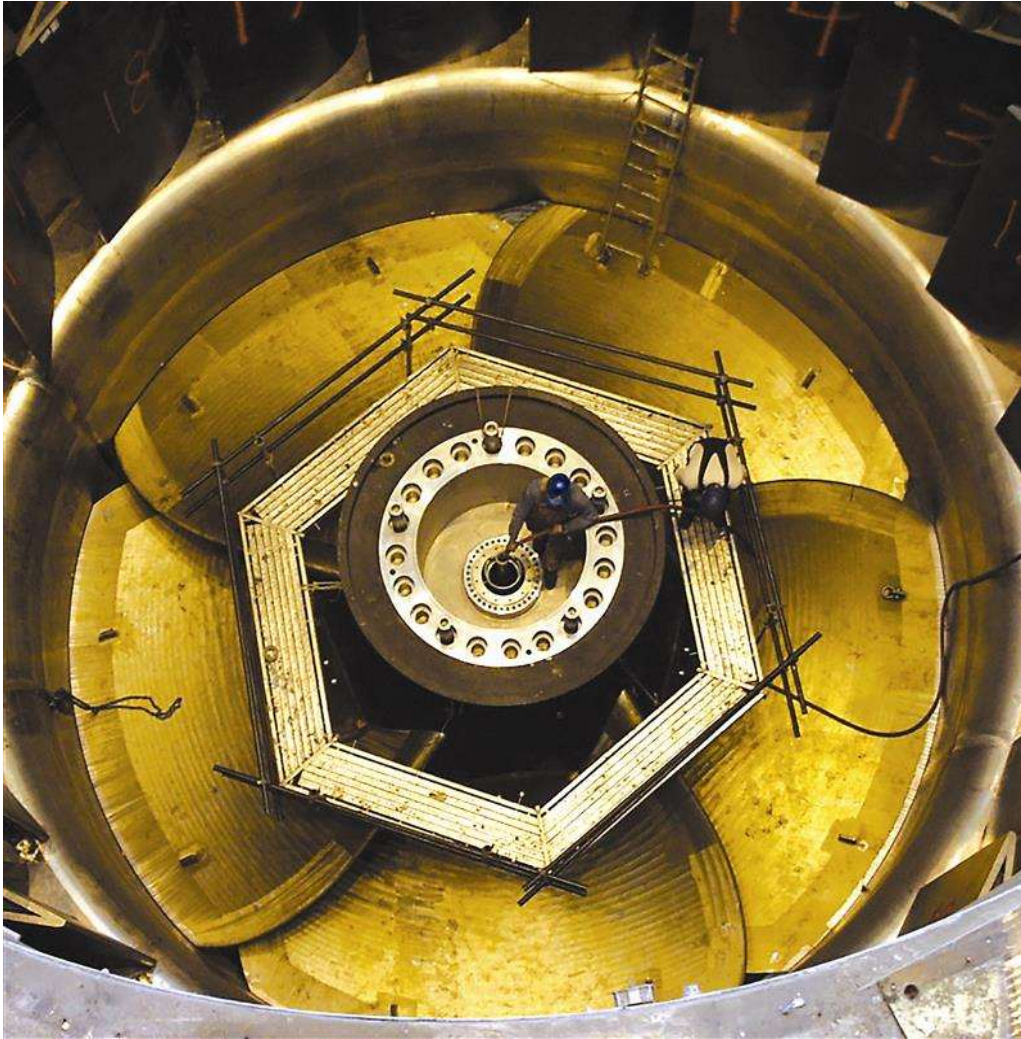
Failure Code	Description	Type	Next Level Type	Active?
C1001	Component Failure	CAUSE	MITIGATE	☒
C1002	Alignment	CAUSE	MITIGATE	☒
C1004	Worn or Loose	CAUSE	MITIGATE	☒
C1006	Elongated, Deformed	CAUSE	MITIGATE	☒
C1015	Excess Vibration	CAUSE	MITIGATE	☒

New Row

Level 4 for C1001 1 - 6 of 6

Failure Code	Description	Type	Next Level Type	Active?
M1018	Proactively Replace	MITIGATE		☐
M1020	Spare	MITIGATE		☐

Currently mapping Generating Availability Data System (GADS) codes to Maximo Failure Codes



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Questions?



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