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Intern Presentation

Marcela Campassi
Keenan Selman



About Me – Marcela Campassi



Major: Electrical Engineering
Minors: Artificial Intelligence and Mathematics
Graduate: Spring ’27
GPA: 3.86











Focus	My main focus at school has been sensor integration.
This summer	Supported uncertainty calculations for the WF3 24-month fuel cycle extension
Outside work	SI Leader/Mentor, ECE Ambassador, ECE Foundation Lab Mentor, Tau Beta Pi, CAVS Research Assistant

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About Me – Keenan Selman



Major: Electrical Engineering
Minor in Mathematics
Graduate: Spring ’27
GPA: 3.79











Focus

Concentration in Power & Energy Systems

This summer

Supported uncertainty calculations for the WF3 24-month fuel cycle extension

Outside work

Professional: Fire Protection System Design Contractor for Cordiner Consulting for 4+ years (Madison, MS).
Recreational: Land management/anything in the great outdoors

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EXPERIENCE

Site Visit: Grand Gulf

GRAND GULF

Nuclear Station



1 **Radial Well Walkdown**

Observed the walkdown for an upcoming HMI installation. Sat in on the closing discussion of the space constraints and structural considerations.

2 **Radiation Worker Training**

Completed required radiation safety training prior to entering controlled plant areas.

3 **Plant Tour**

Observed major plant systems and equipment to build a practical understanding of operational context and system interactions.

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THE MAIN PROJECT

24-Month Fuel Cycle Calculations

Recalculating instrument drift so setpoints maintain margin for a longer fuel cycle

Why This Matters

1. **Cost**

   Extending from an 18-month to a 24-month refueling interval means less money is spent on outages in the long term.

2. **Drift Increase**

   Instrument uncertainty accumulates between calibrations, so the drift term in each loop calculation increases.

3. **Maintaining Margin**

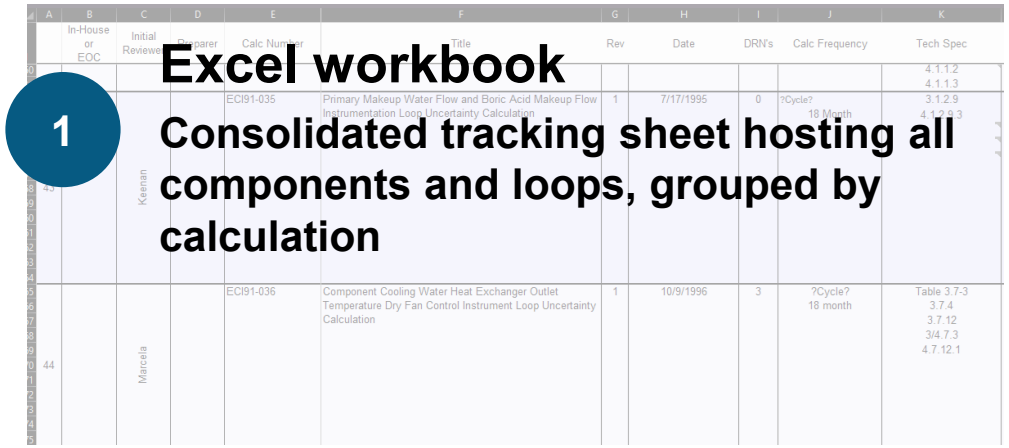
   Every affected setpoint calculation must be re-evaluated to confirm safety and operating margin is preserved.

4. **Regulatory Basis**

   The work supports the licensing case for operating the plant on the longer cycle.

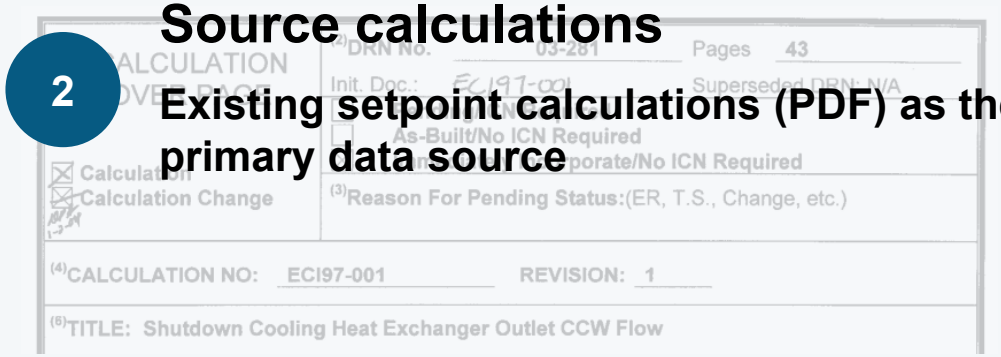
PROJECT

Tools & Information Navigation



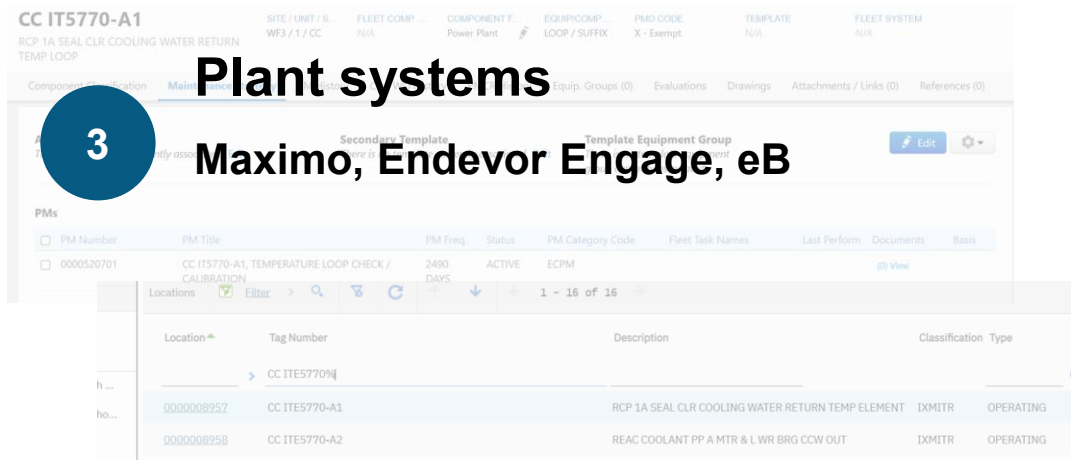
1 Excel workbook

Consolidated tracking sheet hosting all components and loops, grouped by calculation



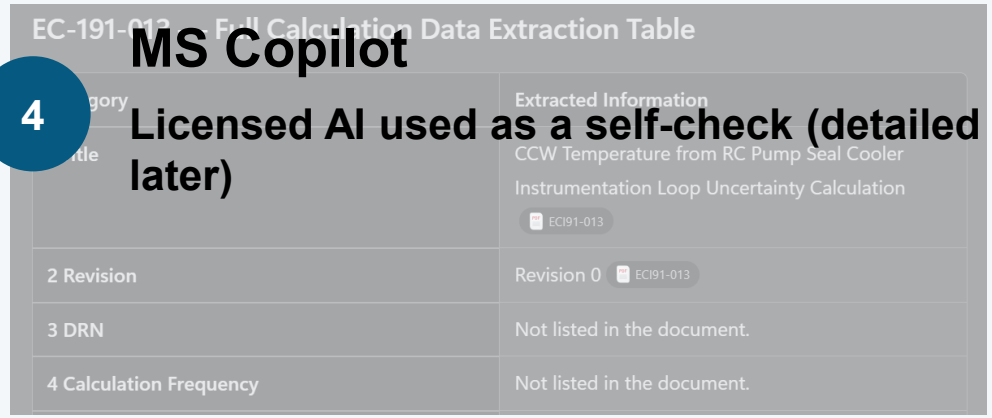
2 Source calculations

Existing setpoint calculations (PDF) as the primary data source



3 Plant systems

Maximo, Endevor Engage, eB



4 MS Copilot

Licensed AI used as a self-check (detailed later)

Phase A: Data Collection

1

Identify

Pull the affected calculation and confirm current revision and number of DRN’s

2

Extract

Read setpoints, margins, calculation frequency, inputs, system loops/components, etc.

3

Supplement

Retrieve PM numbers, frequencies, and manuals from

4

Record

Enter all info into the shared excel

5

Verify

Cross-check every entry against source documents and use the Copilot Agent as a self-check.

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Phase B: Producing the Document

IN PROGRESS

1
Format Document

Set up a new calculation document as the system of record

2
Transfer

Migrate all information from the old calc into the new document

3
Build Calculator

Created an Excel listing the existing calculations to drive a working calculator

4
Fact-Check

Go through all transferred information, verifying each entry

5
Validate References

Confirm each reference is still current; if one no longer exists, find the correct replacement

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AI Use:

“AI cannot do calculations like these.”

The Copilot Agent: How It Works

1

Input

Upload a calculation PDF to the agent

▶

2

Agent

A Copilot agent with detailed built-in instructions reads the document

▶

3

Output

Returns 17 target data points. Each data point includes the the page or section it came from

Why built this way

The instructions live inside the agent, so every run applies the same extraction rules. Requiring a page/section for each value makes the output checkable against the source rather than taken on trust.

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The Agent: 17 Data Points

What it pulls from each calculation:

Document

- Title
- Revision
- DRNs
- Calculation frequency
- Pages Total and Pages That are Actual Calculation
- Pages per Category

Technical

- Setpoints
- Margins
- Instrument Loops
- Components and Component Types
- Input/Output Calculation Numbers

Licensing & PM

- Tech Spec References
- FSAR References
- Associated PM Numbers
- PM number
- Maintenance or Calibration Procedures
- Safety Related (Page Only)

How we used it: *Extracted values were compared against the manual extraction—a fast, sourced second pass to catch what a human might miss.*

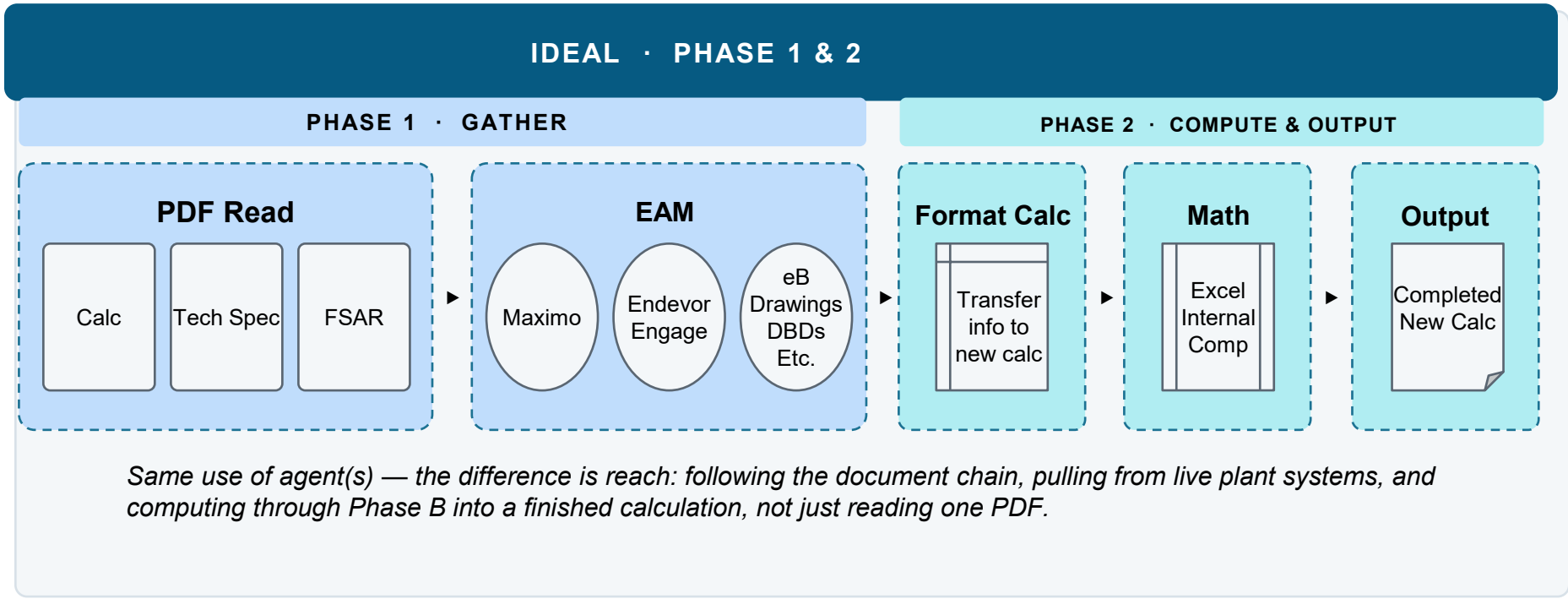
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AI Use:

“AI cannot do calculations like these.”

“How can we use AI to do more?”

Agent: Current vs. Ideal



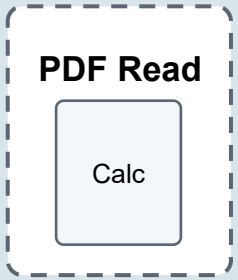
Same use of agent(s) — the difference is reach: following the document chain, pulling from live plant systems, and computing through Phase B into a finished calculation, not just reading one PDF.

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Agent: Current vs. Ideal

CURRENT · PHASE 1 ONLY

PHASE 1 · 17 Data Points



Reads a single calculation — one document, narrow scope, no downstream context.

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REFLECTION

Lessons Learned

1	**The hard part was navigation, not math**	Finding and confirming the right data across systems took more effort than the calculations themselves.
2	**Verification**	An entry is only useful once it is traced back to its source.
3	**Document everything**	Clear records make future work easier.
4	**Collaboration is key**	Working closely with others and communicating clearly helped the process go a lot smoother.

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Copilot AI: Pros and Cons

WHERE IT HELPED

- Second set of eyes
- Efficiency and scope
- Adaptable
- Sourcing and citing output

WHERE IT FELL SHORT

- Needs more horsepower
- Still needs manual verification
- Requires ongoing adjustments and modifications for improvement
- No substitute for engineering judgment and context

PERSPECTIVE

AI: Cautious vs Embracing

REASONS FOR CAUTION

- Unverified Accuracy
- Security Limits
- Requires Testing
- Lack of Understanding

REASONS TO EMBRACE

- Verifiable Tasks
- Self-Check
- Continuous Improvement
- Speed and Scope
- Path to Premier

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Risks and Mitigations

RISK	MITIGATION
Hallucinated or wrong data	Verify sources
Over-reliance on the tool	Human in the loop
Confidentiality / security	Follow guidelines
Untraceable results	Require citations in prompts

PREDICTED VALUE

Man-Hour Impact of AI

80

Hours per calc, manual

50

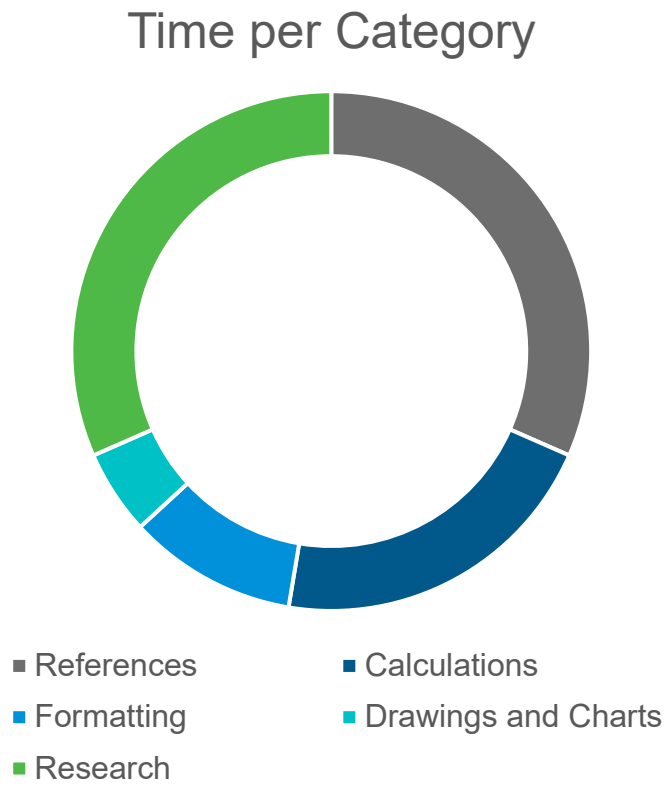
Hours per calc, with AI tools

4,410

Time saved (hours)

147

Calcs in scope



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Acknowledgements

Supervisors/Manager:
- Wesley Lottes
- Tori Robinson
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