



Scott Cameron RPM Pickering B

Pickering is an 8 unit 530 MW station on one site. Do to its size we run as two plants. (Pick A&B)





OPG's Radiation Protection Program

OPG's Radiation Protection uses a self protection model for most base work. During outages the RP organization will ramp up from about 20 techs per site to about 100 RP techs to support all contract workers and major outage campaigns. Currently there are about 4000 OPG nuclear staff that hold an RP qualification

RP qualified staff on Pickering B site are as follows:

397 green badge staff (ops, maintenance and RP techs)

978 yellow badge staff (ops & maintenance some support groups)

1123 orange 3,2,1 staff mostly support staff (eng, admin)



Site ALARA major improvements

- Organization and processes
 - 2018 ALARA plan for life extension (IP) , Strategic outage ALARA plans for each outage, Major outage work campaign ALARA plans
 - Engineering
 - Sub-micron filters, Ram ball replacement (COG R&D), (Mixed bed resin), Component replacement (COMS)
 - Tools
 - On-line tritium, Intermediate plastic suits, New shielding, Teledose
- Staff
- Training, procedures.... *AKA follow the rules..... what does that mean ?*



What is Human Performance within Radiation Protection

Behaviors + Results = HP

Training + Human Nature = Re

Re + (C - HP) + Md = ALARA HP
reducing error + understanding HP + managing defenses = lower CRE

[Aka: Individual + RP oversight + Organization & Processes = continuous ALARA performance improvement]

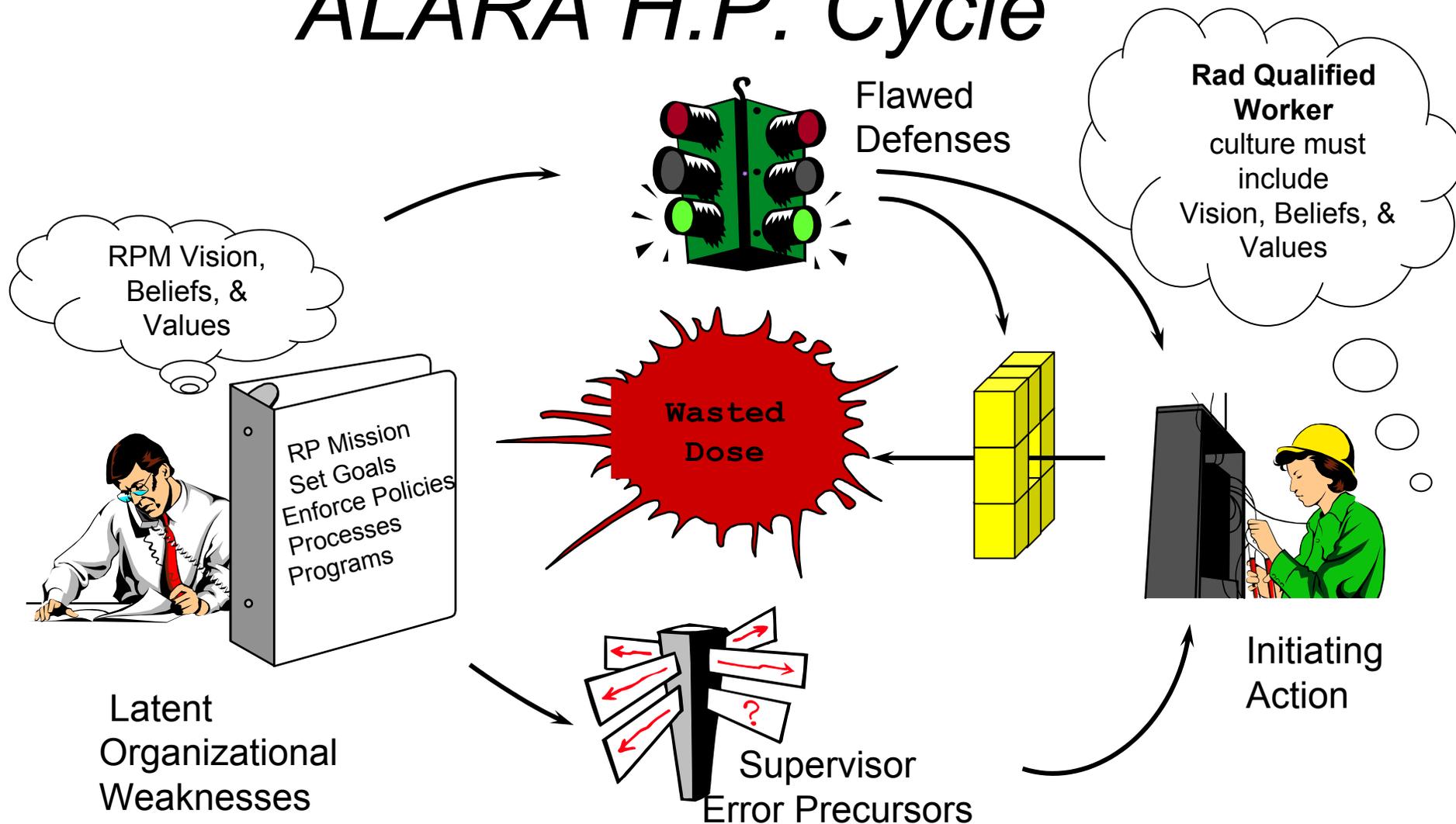


Good Enough. What is it?

- If we were 99% error-free, would that be “good enough”?
- In reality, you would be pretty upset with stuff being perfect only 99% of the time. Being 99% perfect every year means there would still be:
- 814,000 airplane crashes.
- 23,700,000,000 misrouted phone transactions.
- 270,000,000 incorrect credit card transactions.
- 200,000 wrong drug prescriptions.
- 5,000 incorrect surgeries *every week*.
- 20,000 lost pieces of mail *every hour*.
- 54,000 cheques lost *each night* by a single large bank.

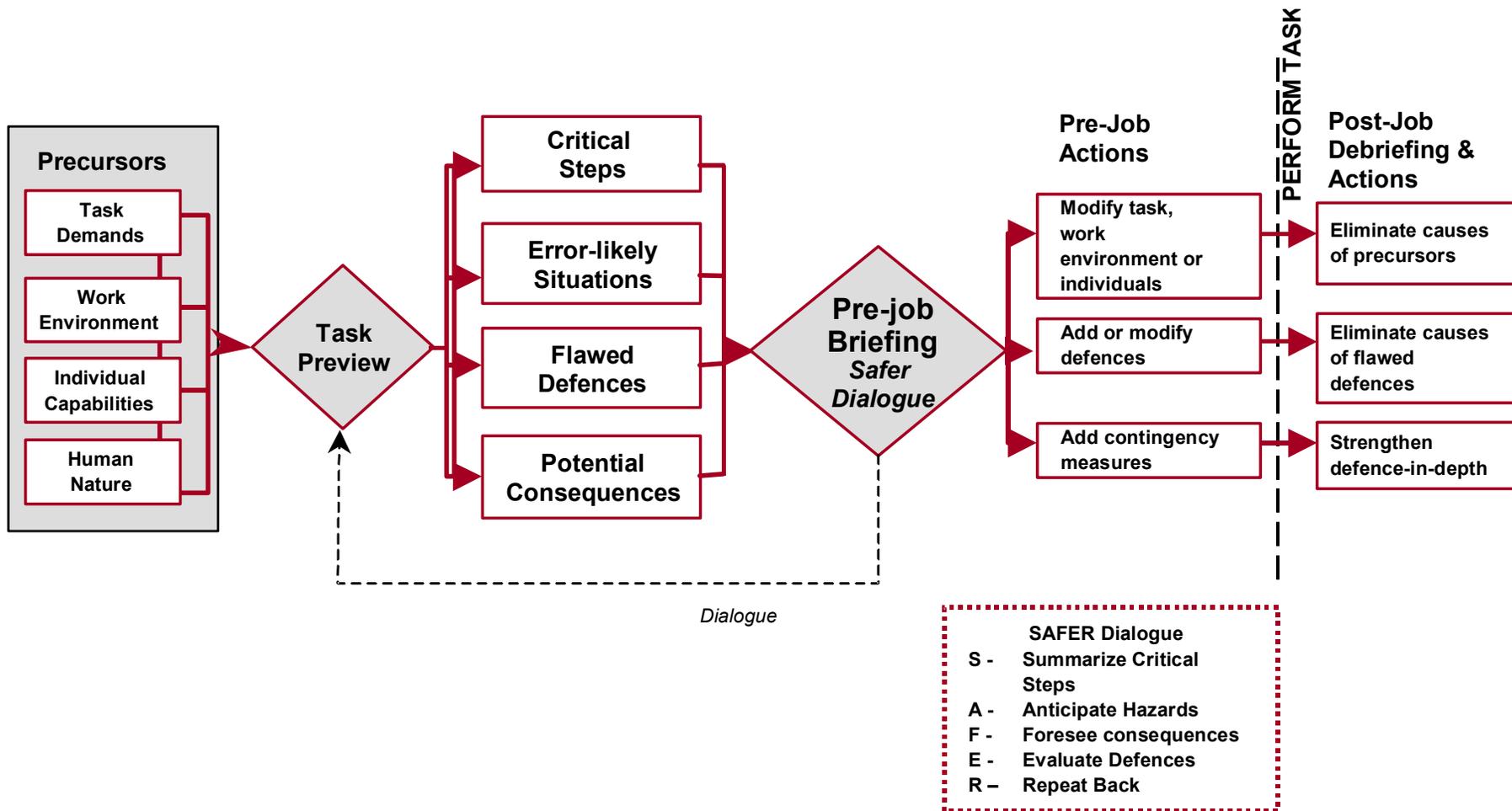


ALARA H.P. Cycle





RP Event Prevention Framework

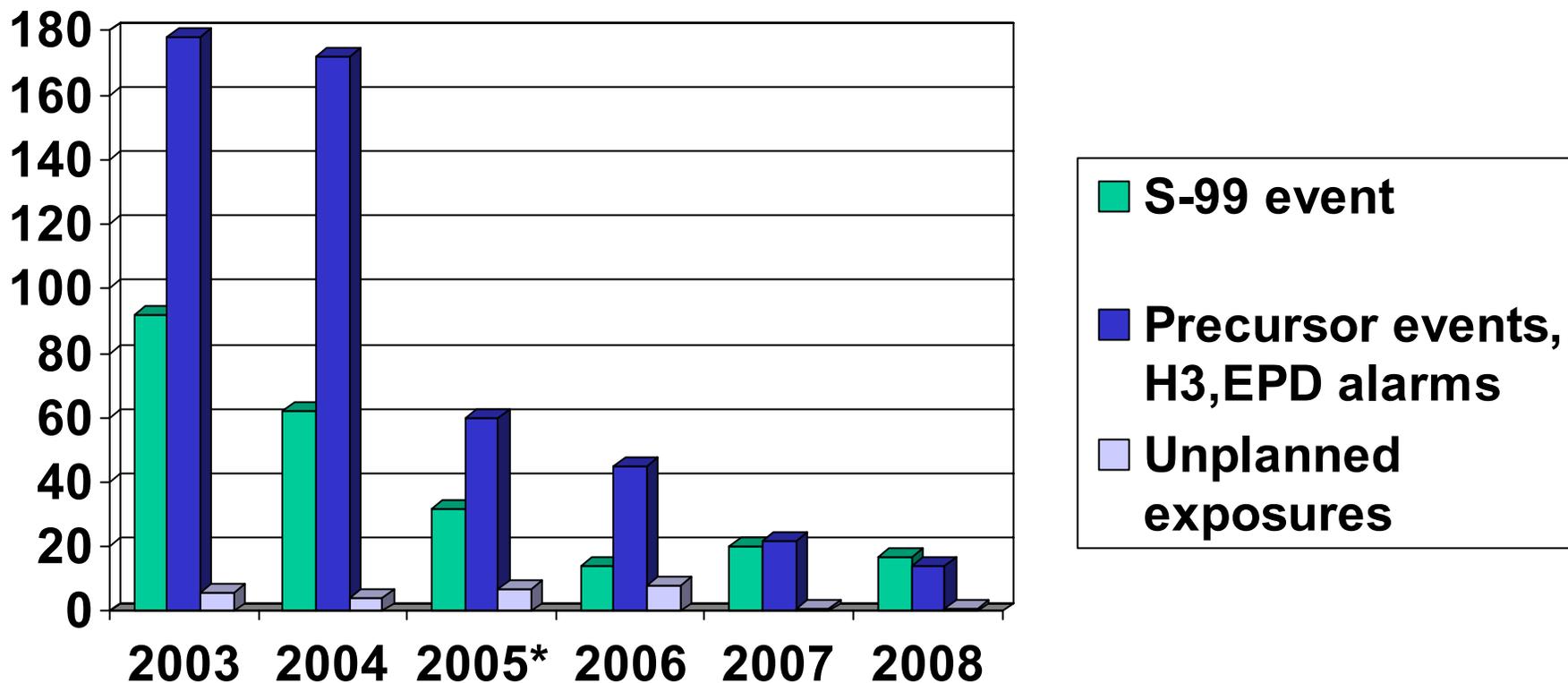


Supervisor Performance Model





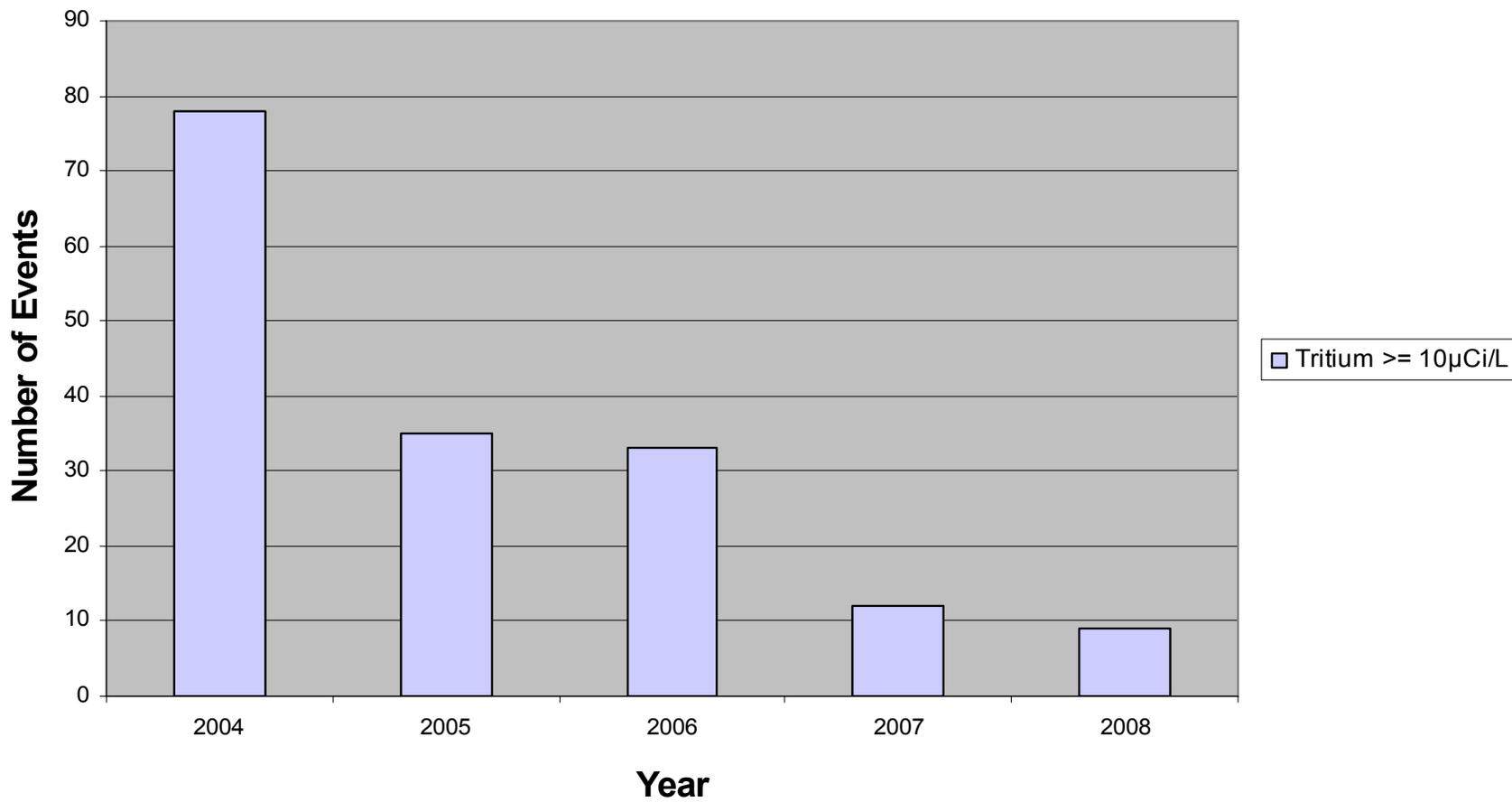
Pickering B Historical RP Human Performance Events



(*Human Performance became part of ALARA)



Unplanned Tritium Uptakes (Tritium $\geq 10\mu\text{Ci/L}$)





The Bottom Line

Raising worker awareness to human performance issues related to RP and follow-up on error precursors has lead to a reduction in RP events and overall station dose.

Felcher & Sons
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Office Lifestyles Program

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That style of coaching only changes a behavior not a culture.

- Drives RP issue event reporting underground
- Keeps that “RAD COP” alive and well
- Looks like the “cull the herd” management style
- Will never change a culture





RP Tech Coaching Modes

Step 1. Core Skills for Building Commitment

Fundamental Coaching Skills

Step 2. Facilitating Improved Performance

Initial Coaching Discussion

Step 3. Following Up To Support Improvement

Follow-up Coaching Discussion



Worker's Personal Vs. RP Practical Needs

Worker Personal Needs

- be listened to
- have input
- share ideas
- feel valued
- Vent, express concerns

RP Practical Needs

- Understand task
- Work a task with ALARA as one of the core drivers
- list ideas to support ALARA
- define a problem not a performance issue via SCR
- solve the RP problem with worker input but ensure they understand the issue



RP Key Principles for coaching staff

- Maintain or enhance workers self esteem
- Listen and respond with empathy
- Ask for help and encourage involvement
- Share thoughts, feelings and rationale
- Provide support without removing responsibility



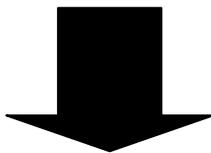
RP Coaching Improvement Path

Poor Performance or Work Habit Situation

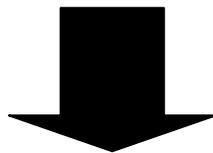
Initial Discussion (RP Tech)



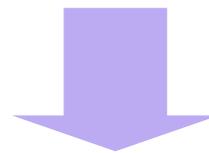
Follow Up Discussion (line)



**Reinforce
Complete**



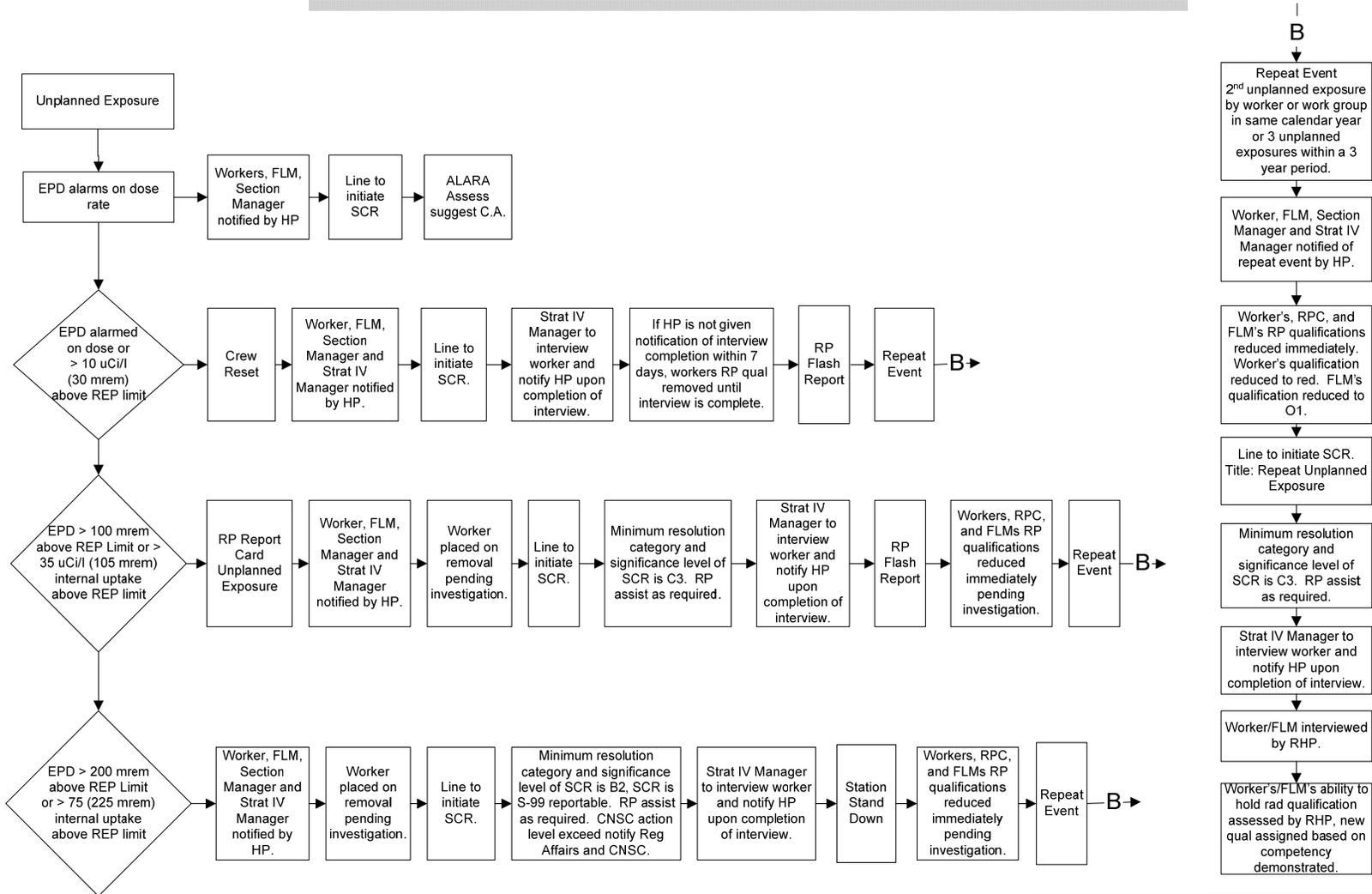
**Reinforce
Some**



**Lack of
Improvement
(RP event protocol)**



Protocol To Unplanned Exposures





Understanding the workforce culture and being able to identify the human performance issues associated with a self protection program will allow RP staff to properly coach staff to ensure ALARA is alive and well with each task completed

Thank you for your attention



QUESTIONS

