DEPLOYMENT OF THE RDS-31 AND GMP-12GSD AT DIABLO CANYON POWER PLANT

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Why Change?

- Existing Instruments were aging
- Source term at DCPP is low and some areas of use were < 5mR/hr
- “Spiking” in low dose rate areas (not popular in the Control Room)
- Needed a SFP Bridge Replacement
- We had some $$

Challenges

- Familiarity/Training
- Multiple Configurations available via CswPro
- GMP-12GSD probe was relatively new
- Weak Point – Probe connector

Rock Solid Support

Applications

- SFP Bridge
- Area Monitoring
- Filter Monitoring
- Primary Steam Generators – Remote Surveys
- E Plan – Outdoor monitors (Informal)

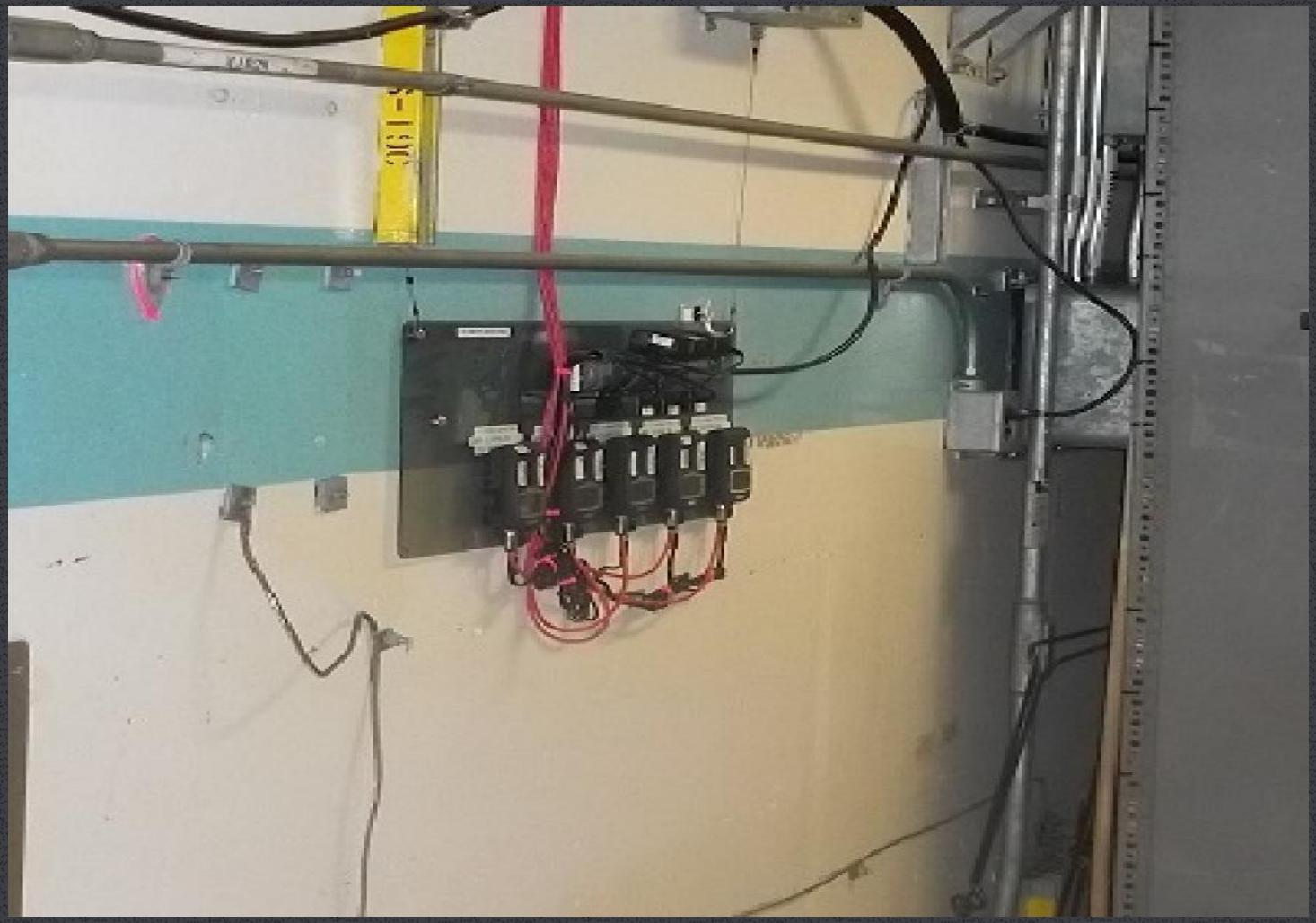
At Power Deployments

TeleTrak RDS	Wearer ID	In Date	RWPID	Name	WO	Cell Phone	Dose (mrem)	Rate (mrem/h)	Dose Thresh (mrem)	Rate Thresh (mrem/h
710874	334136	9/23/2015 7:0	out	BRE at south gate	08/31/2016	0	125.6	0.05	900000	5
710906	334121	9/16/2015 10:	out	BRE north east of whse A	08/31/2016	0	80.9	0.012	900000	5
710931	334125	9/16/2015 9:1	out	BRE north U1 main bank xfmrs	09/14/2016	0	68.2	0.007	900000	5
710900	334124	9/16/2015 8:1	out	BRE north west corner of I&C bldg	08/31/2016	0	67.1	0.009	900000	5
710909	334134	9/10/2015 6:4	out	BRE south west by gate 1	08/31/2016	0	73.2	0.011	9000000	5
710905	334117	9/15/2015 2:1	out	CMS relief valve shop	08/31/2016	0	107.8	0.007	90000000	5
710614	334088	2/9/2016 2:14:	out	ESE - A North of Shooting Range	01/27/2017	1	34.8	0.01	99999999	5
710635	334076	6/28/2016 8:5	out	MSB 1st floor Dosimetry	04/20/2017	0	0.7	0.011	99999999	5
710928	334130	9/28/2015 12:	out	pole east of ionics	09/03/2016	0	90.2	0.011	900000	5
710740	334120	6/28/2016 12:	out	Sim Bldg 2nd Floor North end	04/20/2017	0	0.7	0.008	90000000	5
710047	334008	6/28/2016 9:5	out	TM Bldg 2nd floor South end	04/20/2017	0	0.5	0.008	99999999	5
710959	334151	4/18/2016 12:0	1SFP	U-1 SFP Bridge ARM	09/29/2016	1	30.1	0.037	10000	10
710076	334039	6/28/2016 1:3	1sfp	U-1 SFP Bridge North	02/17/2017	0	31.4	0.238	900000	10
710645	334091	6/28/2016 1:3	1sfp	U-1 SFP Bridge South	02/17/2017	0	17.4	0.217	900000	10
710646	334093	5/21/2016 12:	aux	U-2 100 CVCS-2-8253	09/23/2016	1	25285.9	29.19	9999999	80
710077	334040	4/25/2016 11:	aux	U-2 100 Pen RWST Line	04/21/2017	0	1367.8	1.441	90000000	3
710072	334015	8/17/2015 1:3	2sfp	U-2 SFP Bridge ARM	08/05/2016	0			9999999	10
710615	334086	5/6/2016 4:14:	2sfp	U-2 SFP Bridge North	9/23/2016	0			100000	10
710625	334085	8/17/2015 1:3	2sfp	U-2 SFP Bridge South	08/05/2016	0			9999999	10
710066	334012	6/28/2016 8:0	sfp	U1 Weir Gate	01/20/2017	0	1.8	0.02	99999999	3
710640	334050	4/18/2016 11:	2sfp	U2 Weir Gate	09/23/2016	0	59.1	0.022	100000	3
710624	334060	4/21/2016 9:2	out	Whse B	04/20/2017	0	16.2	0.009	99999999	5

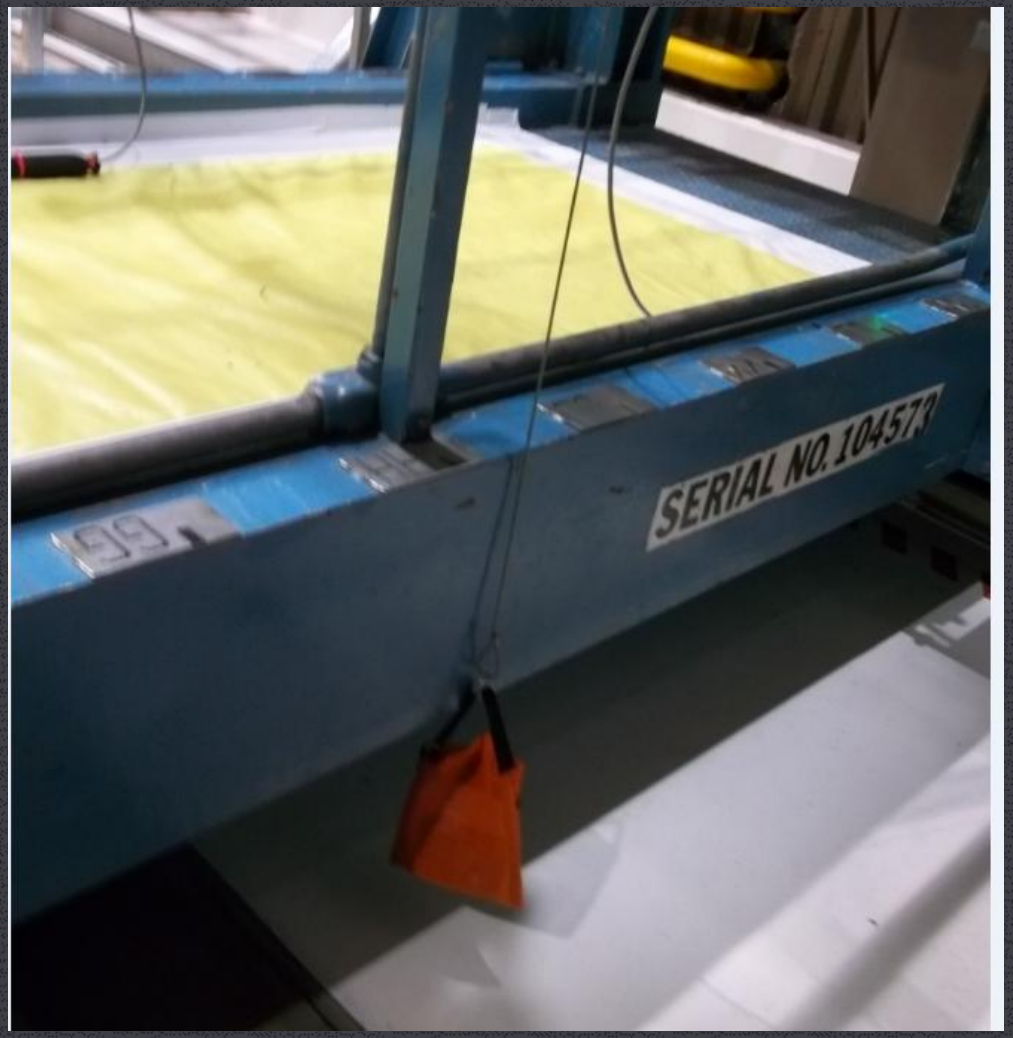
TeleTrak RDS Dual	Wearer ID	Cell Phone	Name	External Dose Rate (mrem/h)	External Dose Rate Thresh (mrem/h)	Internal Dose Rate (mrem/h)	Internal Dose Rat
710654	338061	334069	U-0 64 SRST Filters	16.63	21	1.05	999999
710933	338062	334137	U-0 85 RWRO Skid	226.2	345	0.086	10
710892	338064	334132	U-1 100 Pen L/D Corner	8.776	14	0.449	99999999
710621	338033	334057	U-1 100 RHR Pipenest Center GA	7.296	12	1.15	1000
710643	338034	334052	U-1 100 RHR Pipenest East OC	26.75	45	1.025	1000
710956	338039	334147	U-1 100 RHR Pipenest West OC	8.547	15	1.126	1000
710060	338017	334037	U-1 55 Waste Gas Surge Tank	0.018	3	0.015	99999999
710901	338005	334115	U-1 60 RHR Pp 1-1	16.87	24	3.129	80
710911	338063	334131	U-1 60 RHR Pp 1-2	28.63	45	2.932	999999
710018	338058	334003	U-1 64 GDT 1-1	0.005	3	0.013	99999999
710638	338027	334067	U-1 64 GDT 1-2	0.005	3	0.012	99999999
710971	338057	334161	U-1 64 GDT 1-3	0.004	3	0.013	99999999
710622	338001	334110	U-1 73 RHR HX 1-1	9.076	15	3.065	999999
710907	338031	334144	U-1 73 RHR HX 1-2	6.021	9	3.059	99999999
710984	338060	334146	U-1 85 LDHX ---------- (EP-RB14A)	61.12	3000	0.453	9999999
710639	338029	334074	U-1 85 Pen L/D Corner	70.12	100	0.465	99999999
710903	338043	334111	U-1 CVCS L/D Filter 1-1	44.01	25000	0.09	10
710968	338041	334153	U-1 CVCS L/D Filter 1-2	24010	50000	0.079	99999999
710875	338022	334128	U-1 NSSS Behind Sink	16.58	24	0.059	20
710097	338028	334022	U-1 SFP Trend	0.344	3	0.024	10
710115	338004	334027	U-2 100 Pen L/D Corner	4.088	6	0.396	500
710634	338036	334084	U-2 100 RHR pipenest center GA	8.107	14	0.42	100
710895	338002	334122	U-2 100 RHR pipenest east OC	20.79	35	0.477	100
710972	338037	334155	U-2 100 RHR pipenest west	14.5	24	0.444	100
710983	338059	99999999	U-2 55 Waste Gas Surge Tank	0.027	3	0.012	99999999
710043	338065	334006	U-2 60 RHR PP 2-1	20.07	35	0.278	99999999
710912	338007	334141	U-2 60 RHR PP 2-2	16.68	35	0.244	99999999
710656	338020	334070	U-2 64 GDT 2-1	0.004	3	0.018	99999999
710902	338016	334114	U-2 64 GDT 2-2	0.006	3	0.011	99999999
710046	338024	334007	U-2 64 GDT 2-3	0.006	3	0.011	99999999
710094	338056	334019	U-2 73 RHR HX 2-1	34.14	57	0.318	1000
710932	338026	334133	U-2 73 RHR HX 2-2	8.099	14	0.242	1000
710114	338066	334045	U-2 85 LDHX ---------- (EP-RB14A)	43.84	3000	0.056	99999999
710618	338003	334051	U-2 85 Pen L/D Corner	51.27	80	0.41	50
710132	338040	334031	U-2 CVCS L/D Filter 2-1	29.33	25000	0.094	10
710026	338044	334035	U-2 CVCS L/D Filter 2-2	9000	50000	0.078	99999999
710926	338067	334145	U-2 NSSS Behind Sink	16.97	24	0.09	20

Standard AC Power Board

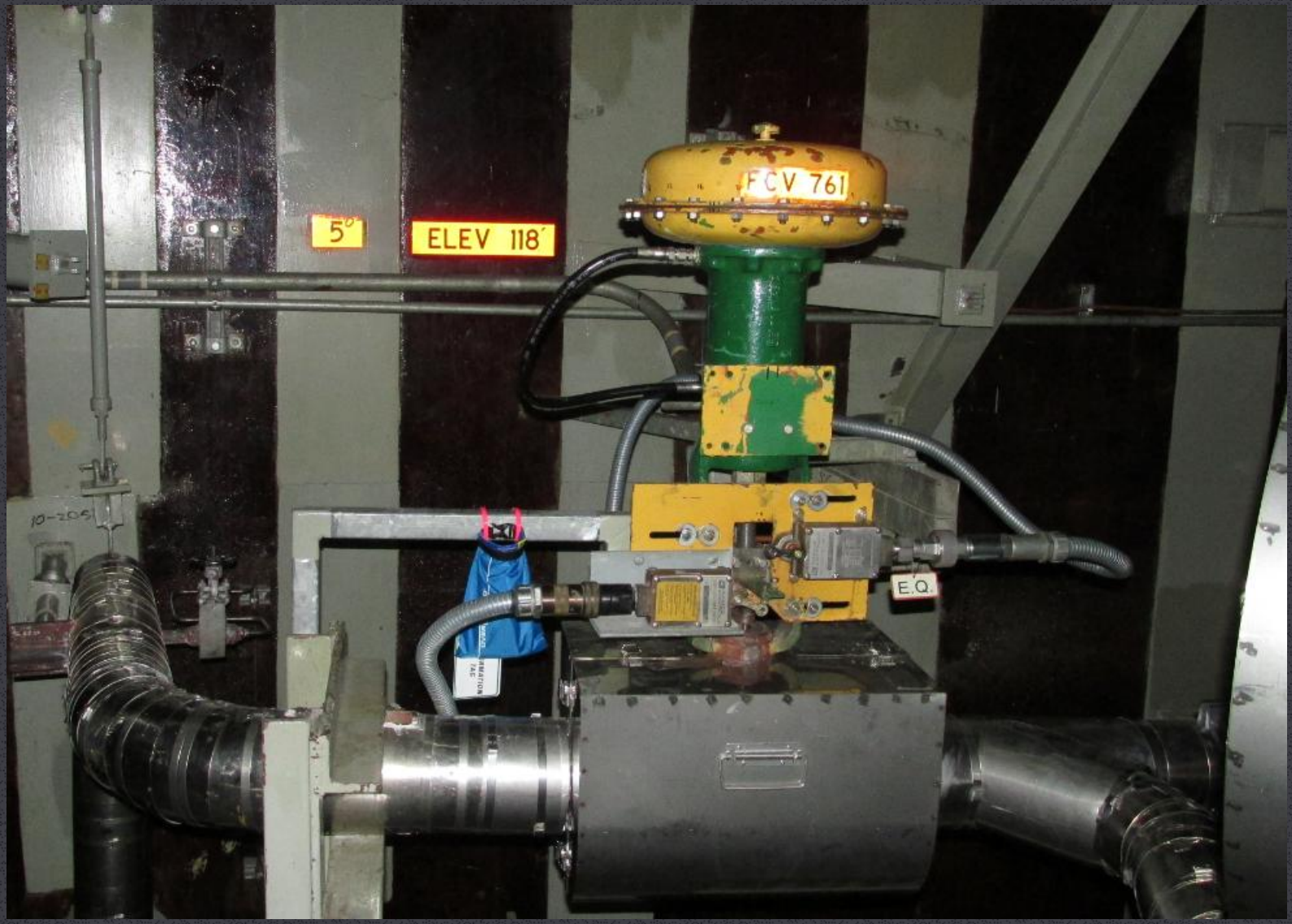
Standard AC Power Installation



Spent Fuel Pool Bridge



ARM/Trending – Dry Bag



Job Aid

RDS-31 Configurations

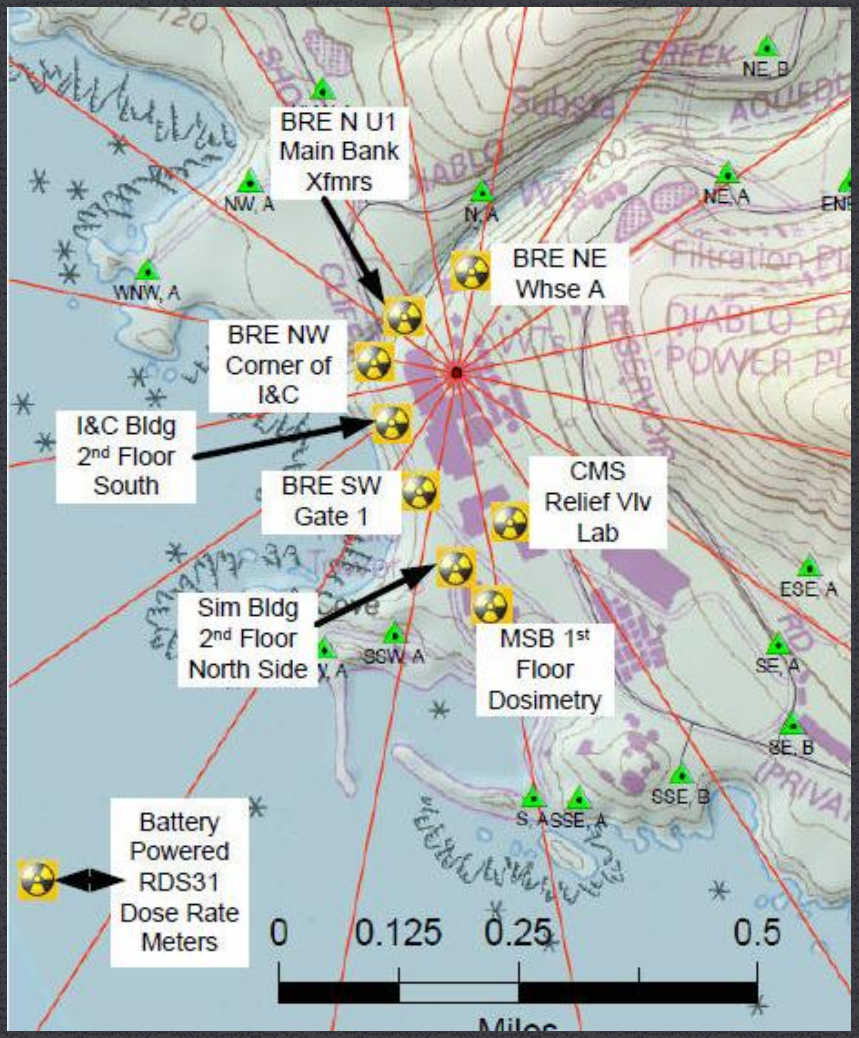
Labeling on RDS-31	Survey Meter with GMP-12 probe	Trending GMP-12 probe 110V converter	Trending (Dong Box)	Comp Measure	SFP Pendant, Bridge or Weir Gate	RE58 with GMP-12 Probe	Radio exclusion with or without GMP-12
Use GMP-12 Probe	X	X				X	May use GMP-12
Telemetry Disabled							X
Use A/C Power converter		X					
Use NiMH		X					
Alarms @ xx dose rate				fill in the blank	fill in the blank		
GMP-12 Probe alarms @ xx dose rate						fill in the blank	
Options set locally through RDS-31 Menu							
Telemetry transmit time xx secs	10 sec	10 sec	10 sec	10 sec	4 sec	10 sec	N/A
Rate Alarm set points	N/A	N/A	N/A	OM10.ID6	D-500	OM10.ID6	N/A

Survey with GMP-12 Probe	Used as AMP-100 replacement for survey with viewpoint capability. No A/C power, usually a temporary application
Trending with GMP-12 and A/C Power	Used as AMP-100 replacement for trending with A/C power e.g. Letdown Filters, GDT's
Trending (Dong Box)	Also used in out buildings for EP, can be used with box that contains lantern batteries. No Local Alarm function
Comp Measures	Like a dong box but alarms locally
SFP Pendant, Bridge ARM, Weir Gate	Used for Job Coverage in the SFP. 4 second transmit time and alarms locally.
RE-58	GMP-12 Probe run through PVC tube from outside the FME/CA. No external power, alarms locally.
Radio exclusion with GMP-12 option	For use in Radio Exclusion zones, e.g. Containment at power. No local alarm function or telemetry capability.
Battery usage	Rechargeable NiMH batteries are used with A/C power.
	Lithium batteries last longer (~2 months) Alkaline last about 2 weeks


RDS-31 Configurations
Trending (Dong Box)
Comp Measure
RDS-31iTx
CALIBRATION
RDS-31iTx

Outside Monitors

Outside Monitors



Solar Repeater

Battery Selection

Battery Type	Expected Battery Life	Comments
AA - NimH	> 1 year	Use ONLY for installations with the AC power cradle. (Rechargeable). Return to Bad PED bin at access if it loses charge and notify JXSH via email. (These will be evaluated for re-use)
AA - Alkaline	7 days	Use for short duration jobs and on SFP Bridge
6V - Alkaline	1 Battery = 3 months, 2 Batteries = 9 Months	Lantern batteries
1.2 V AA Lithium	1 month at 4 second transmit; 6 weeks at 30 second transmit; 8 weeks at 60 second transmit	Dispose of as Lithium battery (not with alkaline batteries)

Future Plans

- Adding the SD version of RDS and GMP
- Add a frisker probe for habitability in a assembly and outlying areas
- On-site field monitoring teams
- Install on our robot for surveys
- Drone????

Possible Improvements

- Csw Software – Add Telemetry Transmit setting
- Make the Alarm and Config file the same
- Put two mounting holes on the power cradle so they don’t spin when mounted
- ARM boxes – Thumbscrews or some other quick opening fasteners
- ARM boxes – put probe connection on the side or top

Questions?