

Business Case – Capital Expenditure

Liquids Management

Business Case Number 260

1 Project Approvals

TABLE 1: BUSINESS CASE – PROJECT APPROVALS

Prepared By	Anthony Jones, <i>Pipeline and Asset Management Engineer, APA Group</i>
Reviewed By	David Lukas, <i>Project Engineer, East Coast Grid Engineering, APA Group</i>
Approved By	Craig Bonar, <i>Manager East Coast Grid Engineering, APA Group</i>

2 Project Overview

TABLE 2: BUSINESS CASE – PROJECT OVERVIEW

Description of Issue/Project	<p>The upgrade of existing liquids management systems to the APA standard design</p> <ul style="list-style-type: none"> Liquids are to be removed from pipeline systems in accordance with Gas Safety Regulations There are two locations in need of upgrade; Brooklyn and Pakenham The implemented solution will be a low risk, low cost asset without the need of pressure vessels and other high maintenance equipment.
Options Considered	<p>The following options have been considered:</p> <ol style="list-style-type: none"> Option 1: Do Nothing Option Option 2: No alternative identified Option 3: Upgrade of existing liquids management systems
Proposed Solution	Upgrade of existing liquids management system to APA standard design.
Estimated Cost	\$400,000
Consistency with the National Gas Rules (NGR)	<p>The replacement of these assets complies with the new capital expenditure criteria in Rule 79 of the NGR because:</p> <ul style="list-style-type: none"> it is necessary to maintain and improve the safety of services and maintain the integrity of services (Rules 79(2)(c)(i) and (ii)); and it is such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services (Rule 79(1)(a)).
Stakeholder Engagement	<p>Energy Safe Victoria requires all gas companies to take all practical steps to minimize the threat of liquids in pipeline systems. All downstream stakeholders; networks, large consumers and volume tariff consumers will benefit from the removal of liquids in gas pipelines. The benefits are an improved gas quality which improves reliability and performance of gas appliances.</p>

3 Background

Pipeline systems usually contain liquids from various sources. These sources are from production, compressor seals and plant interruption events. These liquids are usually extracted at large stations and held in tanks until disposed appropriately.

The VTS has two remaining liquids management systems that are no longer fit for purpose. Older designs usually contain pressure vessels which require ongoing maintenance and internal inspections, whereas the new designs do

not. The new design has been installed in Euroa, Longford, Dandenong and Winchelsea. The two remaining stations of concern are Brookly and Pakenham.

The Pakenham station requires a liquids management system capable of handling mercury. Mercury has been identified in the gas processing system at Bass Gas. The Bass Gas sales pipeline terminates at Pakenham and the Pakenham liquid collector needs to be suitably designed to handle mercury.

The AER have previously approved similar projects as conforming capital expenditure.

4 Risk Assessment

TABLE 3: RISK RATING

Risk Area	Risk Level
Health and Safety	Moderate
Environment	Moderate
Operational	Low
Customers	Moderate
Reputation	Low
Compliance	Low
Financial	Low
Final Untreated Risk Rating	Moderate

The existing liquid management facilities are no longer fit for purpose and can lead to liquids remaining in the pipeline or spillage of liquids at the station.

5 Options Considered

5.1 Option 1 – Do Nothing

The Do Nothing option is not considered prudent given the Bass Gas plant that feeds the Pakenham site has previously injected mercury into their sales gas pipeline that ends at Pakenham.

The technical regulator, Energy Safe Victoria has reminded APA and other gas companies of the requirements under the Gas Safety Act and Regulations (see attached letter). The requirements are to implement all practical means of preventing liquid entry to the gas and to remove it.

The Australian Standard for gas quality AS4564 limits oils present in gas to a maximum of 20mL per TJ.

5.1.1 Cost/Benefit Analysis

The benefits of the Do Nothing option are little. The existing facilities utilise pressure vessels that require heavy maintenance and are not fit for handling mercury.

5.2 Summary of Cost/Benefit Analysis

The section should include a general overview of how the options compare and identify any options are not technically feasible.

TABLE 4: SUMMARY OF COST/BENEFIT ANALYSIS

Option	Benefits (Risk Reduction)	Costs
Option 1	Do Nothing	Indeterminate
Option 2	No alternative identified	
Option 3	Install Liquids management system	\$314,012

5.3 Proposed Solution

5.3.1 Install Liquids Management Standard design

The proposed solution is to replace the existing liquids management systems at Pakenham and Brooklyn with the APA standard design.

5.3.2 Why are we proposing this solution?

The Gas Safety (Gas Quality) Regulations 2007 section 6 - Quality of gas require:

- (1) The prescribed standard of quality for natural gas conveyed through a transmission pipeline or a distribution pipeline is set out in AS 4564.
- (2) The prescribed standard of quality for the supply or sale of natural gas supplied to a customer through a distribution pipeline is set out in AS 4564.

AS2885-1 4.1 (k) Basis of Selection requires: "For gas pipelines, the likelihood, extent and consequences of the formation of condensates and hydrates in the pipeline is established and prevention or mitigation measures are put in place to ensure the safe operation and integrity of the pipeline."

Energy Safe Victoria has sent a letter to all gas companies enforcing the need to implement measures to reduce the conveyance of liquids in gas pipeline systems.

The Pakenham liquids management system was designed to be temporary only. This system has remained in service for at least 10 years and does not meet functional requirements. The system was installed expediently to manage the enormous volume of liquids being injected from Bass Gas at the time. Whilst the volume of liquids being extracted at Pakenham is minimal, the existing facility is not fit for purpose and there remains a genuine need for liquid catchment capability from the Bass Gas station in the long term.

5.3.3 Consistency with the National Gas Rules

Consistent with the requirements of Rule 79 of the National Gas Rules, APA considers that the capital expenditure is:

- Prudent – The expenditure is necessary in order to improve the safety of services to personnel and is of a nature that a prudent service provider would incur.
- Efficient – The implemented solution will be the APA standard design without the need for pressure vessels and complex pressure regulation and safety devices.
- Consistent with accepted and good industry practice – Removing liquids from pipeline systems is required by the Gas Safety Regulations.

5.3.4 Forecast Cost Breakdown

The two locations are similar in nature to other recently completed works at Longford and Dandenong. The cost of each installation would be \$157,000.

TABLE 5: PROJECT COST ESTIMATE,

	Total
Internal Labour	44,859
Materials	25,714
Contracted Labour	86,433
Other Costs	0
Total	157,006

Appendix A – Energy Safe Victoria Directive

RECEIVED
28 MAR 2006

File
energysafe
VICTORIA

Re: DPM24

BY: _____

→ DW, CC
DY-to

27 March 2006

Ms Christine O'Reilly
Chief Executive Officer
GasNet Australia Pty Ltd
150 Crown Road
DANDENONG VIC 3175

Dear Christine

LIQUIDS IN GAS PIPELINES

Energy Safe Victoria (ESV) is concerned by the increase in incidents arising from the presence of hydrocarbon liquids in the Victorian gas transmission and distribution networks. While some liquids have been present in the gas supply system for many years, the extent and the movement of these liquids are now such that they pose a significant threat to the safe and secure supply and use of natural gas in Victoria.

Energy Safe Victoria (ESV) requires that all gas companies take all practicable steps to minimise the risks from these liquids to domestic, commercial and industrial consumers.

The liquids are present as a mixture of processing fluids, condensate liquids and compressor lubricating oils and may lie latent in systems until such time as gas usage and transportation velocities reach a level where they cause the liquids to be entrained in the gas stream and enter consumer appliances or slugs of liquid become mobile due to high gas velocities. Alternatively, routine pigging activities can shift liquids that have accumulated.

There have been recent examples where hydrocarbon liquids have appeared in industrial gas appliances resulting in significant disruption to their safe and stable operation with the potential for a major safety incident.

ESV recognises and welcomes the formation of an industry group to monitor and coordinate actions to minimise potential impacts on consumers. There is still, however, a continuing need to focus on both removing existing liquids and minimising any additional liquids that may enter gas transmission and distribution systems.

It is a requirement of ESV that all natural gas transmission and distribution companies put in place measures to manage the entry of liquids and continue to work together to prevent existing liquids from impacting on consumers.

It is also recognised by ESV that to comply with these requirements and to achieve the objective of minimising any impacts from liquids, significant additional short and longer term capital investment in existing and new gas systems may be required including:

www.energysafe.vic.gov.au

Energy Safe Victoria
20th St - 3rd Floor
Melbourne VIC 3000

Level 8 Building 2
4 Flinders Quay
Southbank VIC 3006

PO Box 822
Crown Street West
Melbourne VIC 3007

Phone: 03 9420 0700
Fax: 03 9420 2107
Web: www.energysafe.vic.gov.au



- Addition of filters/coalescers
- Where technically feasible use of dry seal compressors (ESV notes that GasNet has already committed to a dry seal installation program on selected compressors)
- Installation of temporary liquid traps during pigging operations
- Installation of purpose designed liquid traps and drains at consumer branches
- Installation of equipment to monitor and control hydrocarbon dewpoints
- Liquid removal facilities on industrial and domestic appliances

We remind you of your obligation under the Gas Safety Act to ensure that, as far as is reasonably practicable, risks to people and property are minimised. We also remind you of your obligation to comply with the Gas Safety (Gas Quality) Regulations and with the VENCorp Gas Quality Guidelines.

ESV's requirement, therefore is that all gas companies take all appropriate steps to prevent the entry of liquids into gas transmission and distribution networks and to manage the safety and supply security issues arising from liquids in gas networks on an ongoing basis.

Yours sincerely



Mike Ebdon
EXECUTIVE MANAGER, INFRASTRUCTURE SAFETY

File://www.vic.gov.au/infrastructure/safety/infrastructure-safety-act-2017-2018-2019-2020-2021-2022-2023-2024-2025-2026-2027-2028-2029-2030-2031-2032-2033-2034-2035-2036-2037-2038-2039-2040-2041-2042-2043-2044-2045-2046-2047-2048-2049-2050-2051-2052-2053-2054-2055-2056-2057-2058-2059-2060-2061-2062-2063-2064-2065-2066-2067-2068-2069-2070-2071-2072-2073-2074-2075-2076-2077-2078-2079-2080-2081-2082-2083-2084-2085-2086-2087-2088-2089-2090-2091-2092-2093-2094-2095-2096-2097-2098-2099-2100-2101-2102-2103-2104-2105-2106-2107-2108-2109-2110-2111-2112-2113-2114-2115-2116-2117-2118-2119-2120-2121-2122-2123-2124-2125-2126-2127-2128-2129-2130-2131-2132-2133-2134-2135-2136-2137-2138-2139-2140-2141-2142-2143-2144-2145-2146-2147-2148-2149-2150-2151-2152-2153-2154-2155-2156-2157-2158-2159-2160-2161-2162-2163-2164-2165-2166-2167-2168-2169-2170-2171-2172-2173-2174-2175-2176-2177-2178-2179-2180-2181-2182-2183-2184-2185-2186-2187-2188-2189-2190-2191-2192-2193-2194-2195-2196-2197-2198-2199-2200-2201-2202-2203-2204-2205-2206-2207-2208-2209-2210-2211-2212-2213-2214-2215-2216-2217-2218-2219-2220-2221-2222-2223-2224-2225-2226-2227-2228-2229-2230-2231-2232-2233-2234-2235-2236-2237-2238-2239-2240-2241-2242-2243-2244-2245-2246-2247-2248-2249-2250-2251-2252-2253-2254-2255-2256-2257-2258-2259-2260-2261-2262-2263-2264-2265-2266-2267-2268-2269-2270-2271-2272-2273-2274-2275-2276-2277-2278-2279-2280-2281-2282-2283-2284-2285-2286-2287-2288-2289-2290-2291-2292-2293-2294-2295-2296-2297-2298-2299-2300-2301-2302-2303-2304-2305-2306-2307-2308-2309-2310-2311-2312-2313-2314-2315-2316-2317-2318-2319-2320-2321-2322-2323-2324-2325-2326-2327-2328-2329-2330-2331-2332-2333-2334-2335-2336-2337-2338-2339-2340-2341-2342-2343-2344-2345-2346-2347-2348-2349-2350-2351-2352-2353-2354-2355-2356-2357-2358-2359-2360-2361-2362-2363-2364-2365-2366-2367-2368-2369-2370-2371-2372-2373-2374-2375-2376-2377-2378-2379-2380-2381-2382-2383-2384-2385-2386-2387-2388-2389-2390-2391-2392-2393-2394-2395-2396-2397-2398-2399-2400-2401-2402-2403-2404-2405-2406-2407-2408-2409-2410-2411-2412-2413-2414-2415-2416-2417-2418-2419-2420-2421-2422-2423-2424-2425-2426-2427-2428-2429-2430-2431-2432-2433-2434-2435-2436-2437-2438-2439-2440-2441-2442-2443-2444-2445-2446-2447-2448-2449-2450-2451-2452-2453-2454-2455-2456-2457-2458-2459-2460-2461-2462-2463-2464-2465-2466-2467-2468-2469-2470-2471-2472-2473-2474-2475-2476-2477-2478-2479-2480-2481-2482-2483-2484-2485-2486-2487-2488-2489-2490-2491-2492-2493-2494-2495-2496-2497-2498-2499-2500-2501-2502-2503-2504-2505-2506-2507-2508-2509-2510-2511-2512-2513-2514-2515-2516-2517-2518-2519-2520-2521-2522-2523-2524-2525-2526-2527-2528-2529-2530-2531-2532-2533-2534-2535-2536-2537-2538-2539-2540-2541-2542-2543-2544-2545-2546-2547-2548-2549-2550-2551-2552-2553-2554-2555-2556-2557-2558-2559-2560-2561-2562-2563-2564-2565-2566-2567-2568-2569-2570-2571-2572-2573-2574-2575-2576-2577-2578-2579-2580-2581-2582-2583-2584-2585-2586-2587-2588-2589-2590-2591-2592-2593-2594-2595-2596-2597-2598-2599-2600-2601-2602-2603-2604-2605-2606-2607-2608-2609-2610-2611-2612-2613-2614-2615-2616-2617-2618-2619-2620-2621-2622-2623-2624-2625-2626-2627-2628-2629-2630-2631-2632-2633-2634-2635-2636-2637-2638-2639-2640-2641-2642-2643-2644-2645-2646-2647-2648-2649-2650-2651-2652-2653-2654-2655-2656-2657-2658-2659-2660-2661-2662-2663-2664-2665-2666-2667-2668-2669-2670-2671-2672-2673-2674-2675-2676-2677-2678-2679-2680-2681-2682-2683-2684-2685-2686-2687-2688-2689-2690-2691-2692-2693-2694-2695-2696-2697-2698-2699-2700-2701-2702-2703-2704-2705-2706-2707-2708-2709-2710-2711-2712-2713-2714-2715-2716-2717-2718-2719-2720-2721-2722-2723-2724-2725-2726-2727-2728-2729-2730-2731-2732-2733-2734-2735-2736-2737-2738-2739-2740-2741-2742-2743-2744-2745-2746-2747-2748-2749-2750-2751-2752-2753-2754-2755-2756-2757-2758-2759-2760-2761-2762-2763-2764-2765-2766-2767-2768-2769-2770-2771-2772-2773-2774-2775-2776-2777-2778-2779-2780-2781-2782-2783-2784-2785-2786-2787-2788-2789-2790-2791-2792-2793-2794-2795-2796-2797-2798-2799-2800-2801-2802-2803-2804-2805-2806-2807-2808-2809-2810-2811-2812-2813-2814-2815-2816-2817-2818-2819-2820-2821-2822-2823-2824-2825-2826-2827-2828-2829-2830-2831-2832-2833-2834-2835-2836-2837-2838-2839-2840-2841-2842-2843-2844-2845-2846-2847-2848-2849-2850-2851-2852-2853-2854-2855-2856-2857-2858-2859-2860-2861-2862-2863-2864-2865-2866-2867-2868-2869-2870-2871-2872-2873-2874-2875-2876-2877-2878-2879-2880-2881-2882-2883-2884-2885-2886-2887-2888-2889-2890-2891-2892-2893-2894-2895-2896-2897-2898-2899-2900-2901-2902-2903-2904-2905-2906-2907-2908-2909-2910-2911-2912-2913-2914-2915-2916-2917-2918-2919-2920-2921-2922-2923-2924-2925-2926-2927-2928-2929-2930-2931-2932-2933-2934-2935-2936-2937-2938-2939-2940-2941-2942-2943-2944-2945-2946-2947-2948-2949-2950-2951-2952-2953-2954-2955-2956-2957-2958-2959-2960-2961-2962-2963-2964-2965-2966-2967-2968-2969-2970-2971-2972-2973-2974-2975-2976-2977-2978-2979-2980-2981-2982-2983-2984-2985-2986-2987-2988-2989-2990-2991-2992-2993-2994-2995-2996-2997-2998-2999-3000-3001-3002-3003-3004-3005-3006-3007-3008-3009-3010-3011-3012-3013-3014-3015-3016-3017-3018-3019-3020-3021-3022-3023-3024-3025-3026-3027-3028-3029-3030-3031-3032-3033-3034-3035-3036-3037-3038-3039-3040-3041-3042-3043-3044-3045-3046-3047-3048-3049-3050-3051-3052-3053-3054-3055-3056-3057-3058-3059-3060-3061-3062-3063-3064-3065-3066-3067-3068-3069-3070-3071-3072-3073-3074-3075-3076-3077-3078-3079-3080-3081-3082-3083-3084-3085-3086-3087-3088-3089-3090-3091-3092-3093-3094-3095-3096-3097-3098-3099-3100-3101-3102-3103-3104-3105-3106-3107-3108-3109-3110-3111-3112-3113-3114-3115-3116-3117-3118-3119-3120-3121-3122-3123-3124-3125-3126-3127-3128-3129-3130-3131-3132-3133-3134-3135-3136-3137-3138-3139-3140-3141-3142-3143-3144-3145-3146-3147-3148-3149-3150-3151-3152-3153-3154-3155-3156-3157-3158-3159-3160-3161-3162-3163-3164-3165-3166-3167-3168-3169-3170-3171-3172-3173-3174-3175-3176-3177-3178-3179-3180-3181-3182-3183-3184-3185-3186-3187-3188-3189-3190-3191-3192-3193-3194-3195-3196-3197-3198-3199-3200-3201-3202-3203-3204-3205-3206-3207-3208-3209-3210-3211-3212-3213-3214-3215-3216-3217-3218-3219-3220-3221-3222-3223-3224-3225-3226-3227-3228-3229-3230-3231-3232-3233-3234-3235-3236-3237-3238-3239-3240-3241-3242-3243-3244-3245-3246-3247-3248-3249-3250-3251-3252-3253-3254-3255-3256-3257-3258-3259-3260-3261-3262-3263-3264-3265-3266-3267-3268-3269-3270-3271-3272-3273-3274-3275-3276-3277-3278-3279-3280-3281-3282-3283-3284-3285-3286-3287-3288-3289-3290-3291-3292-3293-3294-3295-3296-3297-3298-3299-3300-3301-3302-3303-3304-3305-3306-3307-3308-3309-3310-3311-3312-3313-3314-3315-3316-3317-3318-3319-3320-3321-3322-3323-3324-3325-3326-3327-3328-3329-3330-3331-3332-3333-3334-3335-3336-3337-3338-3339-3340-3341-3342-3343-3344-3345-3346-3347-3348-3349-3350-3351-3352-3353-3354-3355-3356-3357-3358-3359-3360-3361-3362-3363-3364-3365-3366-3367-3368-3369-3370-3371-3372-3373-3374-3375-3376-3377-3378-3379-3380-3381-3382-3383-3384-3385-3386-3387-3388-3389-3390-3391-3392-3393-3394-3395-3396-3397-3398-3399-3400-3401-3402-3403-3404-3405-3406-3407-3408-3409-3410-3411-3412-3413-3414-3415-3416-3417-3418-3419-3420-3421-3422-3423-3424-3425-3426-3427-3428-3429-3430-3431-3432-3433-3434-3435-3436-3437-3438-3439-3440-3441-3442-3443-3444-3445-3446-3447-3448-3449-3450-3451-3452-3453-3454-3455-3456-3457-3458-3459-3460-3461-3462-3463-3464-3465-3466-3467-3468-3469-3470-3471-3472-3473-3474-3475-3476-3477-3478-3479-3480-3481-3482-3483-3484-3485-3486-3487-3488-3489-3490-3491-3492-3493-3494-3495-3496-3497-3498-3499-3500-3501-3502-3503-3504-3505-3506-3507-3508-3509-3510-3511-3512-3513-3514-3515-3516-3517-3518-3519-3520-3521-3522-3523-3524-3525-3526-3527-3528-3529-3530-3531-3532-3533-3534-3535-3536-3537-3538-3539-3540-3541-3542-3543-3544-3545-3546-3547-3548-3549-3550-3551-3552-3553-3554-3555-3556-3557-3558-3559-3560-3561-3562-3563-3564-3565-3566-3567-3568-3569-3570-3571-3572-3573-3574-3575-3576-3577-3578-3579-3580-3581-3582-3583-3584-3585-3586-3587-3588-3589-3590-3591-3592-3593-3594-3595-3596-3597-3598-3599-3600-3601-3602-3603-3604-3605-3606-3607-3608-3609-3610-3611-3612-3613-3614-3615-3616-3617-3618-3619-3620-3621-3622-3623-3624-3625-3626-3627-3628-3629-3630-3631-3632-3633-3634-3635-3636-3637-3638-3639-3640-3641-3642-3643-3644-3645-3646-3647-3648-3649-3650-3651-3652-3653-3654-3655-3656-3657-3658-3659-3660-3661-3662-3663-3664-3665-3666-3667-3668-3669-3670-3671-3672-3673-3674-3675-3676-3677-3678-3679-3680-3681-3682-3683-3684-3685-3686-3687-3688-3689-3690-3691-3692-3693-3694-3695-3696-3697-3698-3699-3700-3701-3702-3703-3704-3705-3706-3707-3708-3709-3710-3711-3712-3713-3714-3715-3716-3717-3718-3719-3720-3721-3722-3723-3724-3725-3726-3727-3728-3729-3730-3731-3732-3733-3734-3735-3736-3737-3738-3739-3740-3741-3742-3743-3744-3745-3746-3747-3748-3749-3750-3751-3752-3753-3754-3755-3756-3757-3758-3759-3760-3761-3762-3763-3764-3765-3766-3767-3768-3769-3770-3771-3772-3773-3774-3775-3776-3777-3778-3779-3780-3781-3782-3783-3784-3785-3786-3787-3788-3789-3790-3791-3792-3793-3794-3795-3796-3797-3798-3799-3800-3801-3802-3803-3804-3805-3806-3807-3808-3809-3810-3811-3812-3813-3814-3815-3816-3817-3818-3819-3820-3821-3822-3823-3824-3825-3826-3827-3828-3829-3830-3831-3832-3833-3834-3835-3836-3837-3838-3839-3840-3841-3842-3843-3844-3845-3846-3847-3848-3849-3850-3851-3852-3853-3854-3855-3856-3857-3858-3859-3860-3861-3862-3863-3864-3865-3866-3867-3868-3869-3870-3871-3872-3873-3874-3875-3876-3877-3878-3879-3880-3881-3882-3883-3884-3885-3886-3887-3888-3889-3890-3891-3892-3893-3894-3895-3896-3897-3898-3899-3900-3901-3902-3903-3904-3905-3906-3907-3908-3909-3910-3911-3912-3913-3914-3915-3916-3917-3918-3919-3920-3921-3922-3923-3924-3925-3926-3927-3928-3929-3930-3931-3932-3933-3934-3935-3936-3937-3938-3939-3940-3941-3942-3943-3944-3945-3946-3947-3948-3949-3950-3951-3952-3953-3954-3955-3956-3957-3958-3959-3960-3961-3962-3963-3964-3965-3966-3967-3968-3969-3970-3971-3972-3973-3974-3975-3976-3977-3978-3979-3980-3981-3982-3983-3984-3985-3986-3987-3988-3989-3990-3991-3992-3993-3994-3995-3996-3997-3998-3999-4000-4001-4002-4003-4004-4005-4006-4007-4008-4009-4010-4011-4012-4013-4014-4015-4016-4017-4018-4019-4020-4021-4022-4023-4024-4025-4026-4027-4028-4029-4030-4031-4032-4033-4034-4035-4036-4037-4038-4039-4040-4041-4042-4043-4044-4045-4046-4047-4048-4049-4050-4051-4052-4053-4054-4055-4056-4057-4058-4059-4060-4061-4062-4063-4064-4065-4066-4067-4068-4069-4070-4071-4072-4073-4074-4075-4076-4077-4078-4079-4080-4081-4082-4083-4084-4085-4086-4087-4088-4089-4090-4091-4092-4093-4094-4095-4096-4097-4098-4099-4100-4101-4102-4103-4104-4105-4106-4107-4108-4109-4110-4111-4112-4113-4114-4115-4116-4117-4118-4119-4120-4121-4122-4123-4124-4125-4126-4127-4128-4129-4130-4131-4132-4133-4134-4135-4136-4137-4138-4139-4140-4141-4142-4143-4144-4145-4146-4147-4148-4149-4150-4151-4152-4153-4154-4155-4156-4157-4158-4159-4160-4161-4162-4163-4164-4165-4166-4167-4168-4169-4170-4171-4172-4173-4174-4175-4176-4177-4178-4179-4180-4181-4182-4183-4184-4185-4186-4187-4188-4189-4190-4191-4192-4193-4194-4195-4196-4197-4198-4199-4200-4201-4202-4203-4204-4205-4206-4207-4208-4209-4210-4211-4212-4213-4214-4215-4216-4217-4218-4219-4220-4221-4222-4223-4224-4225-4226-4227-4228-4229-4230-4231-4232-4233-4234-4235-4236-4237-4238-4239-4240-4241-4242-4243-4244-4245-4246-4247-4248-4249-4250-4251-4252-4253-4254-4255-4256-4257-4258-4259-4260-4261-4262-4263-4264-4265-4266-4267-4268-4269-4270-4271-4272-4273-4274-4275-4276-4277-4278-4279-4280-4281-4282-4283-4284-4285-4286-4287-4288-4289-4290-4291-4292-4293-4294-4295-4296-4297-4298-4299-4300-4301-4302-4303-4304-4305-4306-4307-4308-4309-4310-4311-4312-4313-4314-4315-4316-4317-4318-4319-4320-4321-4322-4323-4324-4325-4326-4327-4328-4329-4330-4331-4332-4333-4334-4335-4336-4337-4338-4339-4340-4341-4342-4343-4344-4345-4346-4347-4348-4349-4350-4351-4352-4353-4354-4355-4356-4357-4358-4359-4360-4361-4362-4363-4364-4365-4366-4367-4368-4369-4370-4371-43

