

**PETROLEUM EXPLORATION UPPER SEPIK RIVER REGION 1953**

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2005



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## INTRODUCTION

In 1953 there was an upsurge in Petroleum Exploration in Australia and its Territories. A number of new Permit Areas were awarded and many a geologist found employment with established Exploration Companies. One Permit Area was awarded to a 'minnow'; 'Enterprise of New Guinea Gold and Petroleum Development'. The location was somewhat extraordinary – 500 miles up the Sepik River in New Guinea, in uncontrolled Territory adjacent the Irian Jayaian border. The Permit included the Thurnwald Range and extended to Telefomin. It was the year that the Telefon People at Telefomin massacred two Patrol Officers and two Native Policemen.

The Company was required to undertake Geological Exploration in the Permit Area or lose the Permit. It was having trouble securing the services of a Geologist.



<https://www.ezilon.com/maps/images/oceania/PapGuinea-physical-map.gif>

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## **WHY ME**

In a way I was the only one standing. I had undertaken the last major reconnaissance in Papua with reknown geologist, Frank Rickwood. A traverse up the Purari river to its source, overland to the headwaters of the Vilala River, and down that river to its mouth. I had review/revised the mapping of the Oroi structure adjacent to the Vilala River for the Australasian Petroleum Company, and mapped the Buna-Kokoda region for the CSIRO.

The suggestion I take an interest came from the Petroleum Division of the Bureau of Mineral Resources, which was the oversight body. I was attractive for the Company because I was acceptable to the regulator. I was thus able to negotiate a contract somewhat unusual for those times.

## **THE COMPANY**

I guess I can talk freely – they must all now be dead.

Enterprise operated out of a Solicitors Office in Collins St, Melbourne. It had a reputation as a share market manipulator. It had existed for some years operating a One Man gold mine at Edie Creek in New Guinea, and it had an office in an outbuilding in the miner's backyard in Wau, New Guinea.

When I joined, the Directors maintained they had proof that the Germans had found Petroleum in the Permit Area in 1908. During four years of Geological and Geophysical surveying , and attending Board Meetings, this statement was repeated many times, but I was never shown anything relevant. I had difficulty maintaining a straight face on these occasions.

The Directors had little idea of what was involved in Petroleum Exploration and Development, particularly about the level of investment involved.

The agreement was that I would have a free hand in the proposed undertaking and would operate independently of their current management in NG. The current manager, 'Bertie', would sign the cheques.

The Company's £5 shares were £105 on the Stock Exchange. The Directors announced they had secured the services of a Geologist and the shares fell to £50. The Directors said that the Investors know we were about to spend money and are getting out. I concluded the Directors were getting out.

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### **FIRST STEP**

The first step was a library search at the National Library, Canberra. It revealed that a Dr Leonard Schultz-Zena had made a border mapping visit to the Upper Sepik river in 1910. There was no mention of any activity related to oil research.

National Mapping, Canberra, produced a single run of War Time Tri-metregon Air Photographs along the Sepik River to the Border. Tri-metregon Photographs are taken with one camera looking vertically down and two others looking to the sides. From these I was able to prepare a map of sorts of the northern part of the Permit Area.

### **WAU**

The next step was to establish a base in Wau, NG. I expected that the current Company Manager might prove to be a bit of a problem. He had been the Company's presence in Wau for a number of years and suddenly there was a whole new ball game and level of activity.

Relationships were resolved quickly. The Company was to provide a furnished house in Wau. 'Bertie' had rented a dilapidated house that had not been occupied or cleaned in 12 months. There was a decomposed meat-pie in the oven. We moved into the Hotel and I advised the Company that the accommodation was unacceptable and if not corrected I would return to Australia. A bomb went off under 'Bertie' and in 3 days the Company had bought a 4 year old fully furnished house and we were installed. It took one month to finalise the purchase of a unit here in Merimbula!

Wau was a delight at 4000 ft on the Eastern Slopes of the Central Mountain Chain. Warm days and cool nights. It had a population of 250 Europeans and about 500 natives. It had a nine hole golf course and an Olympic sized swimming pool. No filtration or chorine, we simply changed the water. The airstrip had been established for gold mining. It had a grade of 1 in 12. Uphill landings and downhill takeoffs. No going around – the one who tried that ended up in a gully. There were two spectacular mishaps. A Bristol Freighter on a promotional visit landed and parked facing uphill. While the locals were explaining it should park across the slope, the plane ran backwards down the strip and broke its back dropping onto the road below. The Qantas office was on the main road adjacent to the strip about a quarter way from the top. On takeoff a motor cutout on a Gibbs Sepik Airways Tri-motor Junkers. The aircraft turned hard left and ploughed through the office. Qantas took the hint and moved to the top of the strip.

The town services were maintained by native prisoners – cats would disappear. One day a group of some 40 odd natives were waiting on the airstrip to be

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repatriated to the Highlands. Each had one or two cats. The lady airline agent announced that they could not take those cats on the aircraft. After a bit of chatter a number of small fires were started. They warmed those cats lightly and ate the lot!

Wau was subject to frequent small earthquakes. We would be woken by water lapping from side to side in the water tank outside the bedroom window. There must have been a fault down the middle of the road because while our house was going one way, Mrs Johnson's house on the other side would be going the other way.



Wau 1957

The prospector living in Wau had been part of a three man team that went gold prospecting by Sea-plane and had landed on the Upper August River in 1935. He said "We have left you a bit of a legacy – when Wild Men threatened us, we shot a couple"!

Anyway, with accommodation settled, everything began to fall in place. Our house belonged to a Changi POW, Jim Harridge. Jim, along with his brother Ted had just completed working out to hunt up equipment and supplies. They both proved to be outstanding and were with me for four surveys. It was the optimum time to head for the Upper Sepik. With enough river flow to enable us to reach the area and have good weather to enable us to move about. We were on our way in four weeks. We bought a ketch and hired a river boat and

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provisioned both. Our one problem was outboard motors. The only ones available were 5HP 'Seagulls' and 15HP 'Anzanis'.

The Bureau of Mineral Resources took the opportunity to send one of the two Wau resident Geologists, John Perry, with us. The NG Administration wanted to extend its influence, so we were to collect the Patrol Officer at Ambunti, Mert Brightwell and two native policemen. 'Bertie' came along for the ride. In all six Europeans, Sep Paterson, John Perry, Jim Harridge, Ted Harridge, Mert Brightwell and 'Bertie'. It actually worked out well and they all contributed in their own way.



The 'Ketch' anchored in Lae Harbour 1953

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### THE SEPIK

The population of the Sepik River is largely congregated between Angoram on the Lower Sepik and Ambunti on the Middle Sepik. It is a linguistic group. The natives are dark brown to black with frizzy to straight hair and are fairly tall. They are Melanesian and prior to Europeans had a Neolithic stone technology of axes and tools and weapons of bone and bamboo. Villages are sometimes quite large with a number of individual houses and with a central Men's House, richly painted and decorated, peak ended, House Tamberan. ([Haus Tamberan](#)) These houses contain many carvings in the form of ancestral figureens, tools, weapons and shields. The natives don't really have religious beliefs, but a belief in the spirits of ancestors, spells, charms and magic.

Agriculture is largely slash and burn, with one or two plantings, then the area is abandoned in favour of somewhere else. The crops are mostly Pandanus, Sago and Sweet Potatoe.

Administration control then extended to a few kilometres above Ambunti. Further upstream in Uncontrolled Territory a wild fearsome population was centred on the May river some 100 miles downstream of our destination.



Sep Paterson with Biake Natives on the Sepik River 1955

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Communal House Sepik River 1955



Native House Sepik River 1955

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Native Men Sepik River 1955



August River Native Men with some of the Company's Labourers

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Native House within the Permit Area 1955



Double Dugout Canoe August River 1955

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Native Villagers Sepik River 1955

Above the May River junction, settlement was sparse. Within the Permit Area there was only two groups of about 30 people each living on the Sepik River banks kilometres apart. Each group in one long dilapidated hut on stilts about 150 ft long, with no building adornments and with few sculptures. In each several respected ancestors were preserved by being smoked under the roof/ceiling.



Native House Upper Sepik River 1953

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### RIVER TRAVERSE

McGrath, Harridge and Bertie had recruited 65 native labourers between Angoram and Ambunti. Perry and myself joined the party by flying to Ambunti. Patrol Officer Brightwell also joined us at Ambunti.

The trip from Madang to the Permit Area took 10 days, with each night making camp and sleeping the native labour on the river bank. We managed to impale the Ketch on a submerged snag, having to unload onto the river bank, cut away the snag and patch the hull. We established our Base Camp at the mouth of the August River, which was the limit of safe traverse for the vessels. We purchased and towed three 50ft canoes from the 'Ambunti' areas. (Canoe Timber 'Erima' – Octomeles Sumatrana)



McGrath on Dugout Double Canoe with Anzani Outboard Motors 1955

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Perry and McGrath Double Canoe Sepik River 1955

### OBJECTIVES

The aim of this initial survey was to establish if the area had a Petroleum Potential and the extent of the area involved. Geologically we were looking for the presence of sedimentary rocks of a petroleum source and reservoir nature.

The western boundary of the Permit Area, in the northern part of the Permit, was the Sepik river flowing out of the mountains in a northerly direction through its own flood-plain before taking an easterly course. This was supposed to be the Irian Jayaian border. A tributary of the Sepik River, the August River, flowed out of the mountains parallel to the northerly flowing section of the Sepik. The distance between the rivers varied from 1 to 7 miles. The flood plains coalesced.

The August River had a number of tributaries flowing out of the foothills further to the east. It was in the banks of these tributaries that we would search and find sedimentary rocks./ Our efforts were therefore concentrated on traversing both the Sepik and August Rivers into the hills. Both rivers here were fast flowing and beyond the limits of the outboards; we had to cut through the rain forest.

An Australian Border Patrol Post with an airstrip, Green River, could be accessed from the Sepik River by means of a 5 hour trek on a series of logs through a swamp. We used this for emergencies and access.

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### **NATIVE LABOUR**

Once we passed the May River there was no doubt that our native labour would stick with us and not be inclined to take off for home. The May River people would eat them.

The natives on this initial survey were a bit apprehensive, being taken into unknown territory by Europeans with whom they were unfamiliar. We had to win their confidence. In that we were eventually successful. For the initial survey of 4 months 65 natives were recruited, and 60 of them returned with us on subsequent surveys. On later surveys the number of natives recruited increased to 100 and 92 of them made two trips with us.

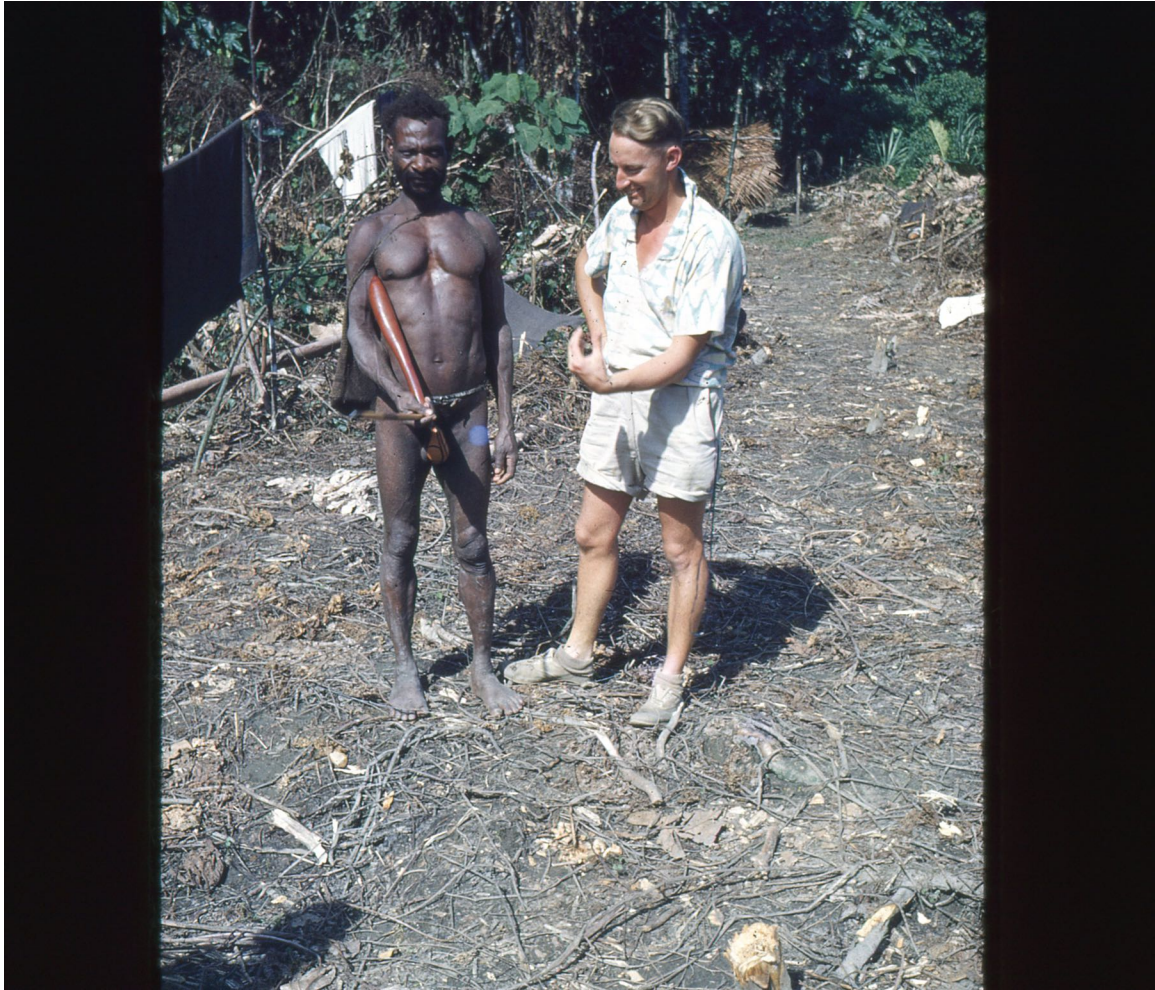
When in the Base Camp or in the major forward camps, in the organisation of the labour, three natives sole job was to supplement the native rations by hunting, fishing or trading. They were free to choose what to add to the rations. Bats, tree kangaroos, birds, snakes, crocodiles, fish, pigs, sweet potatoe and sago were added. When they decided on crocodiles we retained the skins. Crocodile tails were a frequent addition. It was so easy. I went along on one night hunt to operate the outboard motor on a 40 ft long canoe. The Croc's eyes would be spotted and held by spot light. The canoe was motored up to the croc and one native would blow the top of its head off with a shotgun. Immediately another native would harpoon it before it sank. Within three quarters of an hour we had six crocodiles in the bottom of the canoe and the mouths were going open and shut.

### **LOCAL NATIVES**

There were two distinct native groups living within the Permit Area. These were the Sepik River flood-plain people and the hill people living on the slopes of Maver Mountain.

The flood-plain people were tall for natives, placid, unadorned and undisturbed by our presence and in the main friendly. They regularly traded with us, visited with medical problems and accepted help and initiated visits into their long houses. They lived, however in fear of the hill people. The number of flood-plainers who had old arrow scars on their backs and buttocks was impressive.

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Sep Paterson with Native Tribesman Sepik River 1955

The hill people, the Miyanmin, were much shorter, decorated and aggressive. We never found their villages and were never taken to any. They did, however, trade with us, mostly I think, to see us dispatch a pig with a .303.

Two events firmed our relationship with both groups.

In the August River Base camp we established a store, a native building, built on stilts into which we unloaded our vessels. In a short time we were experiencing pilfering. We built a cage under the store and conducted a stake-out at night, catching a local getting through the roof. We put him in our cage and after a day of wailing we let him go, first giving him an exhibition of fire power. We blew the hell out of a tree buttress and some kerosene cans with .303 rifles, an Owen gun (i.e. machine gun), several shotguns and a revolver and present the native with a perforated kerosene can. The pilfering stopped.

As part of our traverse up the August River, Perry and myself, with 45 native carriers, established camp at the mouth of a tributary adjacent the Maver

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Mountain foothills. When we awoke next morning all the native labour, except our personal servants and one other, had taken fright during the night and headed back to our base camp. A party of 15 odd hill tribesmen appeared on the opposite bank with body paint and bows and arrows going “whoop, whoop”! To give the impression of a large party we had our three natives go around the back of our tents and appear in front of each of the tents. I collected some trade goods, red lap laps, a tomahawk, a slasher and made friendly gestures that they should come across the creek. Eventually one native advanced and with Perry covering me from the bank I met him in the middle of the creek. An extraordinary thing happened. This was a native I am absolutely sure had never seen or met a European. He held out his hand and shook mine. He took the presents and the party vanished. Fortunately we had caused the radio aerial to be erected the night before. We contacted the Base and arranged for Patrol officer Brightwell to bring the native labourers back. It took two days. When the hill people returned with a pig to trade, we were back to full strength.

In the course of our surveys we probed for recollection of the Dr Leonard Schultz-Zena visit in 1910 and the prospectors’ float plane in 1935. There was none. When communities have no written language, knowledge of events get lost!

### **RESULTS OF 1<sup>ST</sup> SURVEY**

From the base camp at the mouth of the August River to where the Sepik River exited Maver Mountain at Zweifel Gorge was 36 miles and the altitude rose from 110ft to 450ft. Since Schultze’s time, 1910, the river had a new channel in its flood-plain and now flowed 4 miles further west in Indonesian Territory.

Maver Mountain was found to be formed of metamorphic rocks so that the area of interest for petroleum exploration became the Sepik-August River flood-plain. Sedimentary strata was poorly exposed in the tributaries of the August River but further east these rocks were obscured by post Lower Miocene Volcanics. A thickness of 9320 feet of greywacke sandstone, sandstone, siltstone, mudstone and detrital limestone was measured, ranging in age from Upper Cretaceous to Pliocene. The ages were determined from foraminifera context by Dr M Gluegsner, Adelaide and by Dr I. Crespinand D.J. Belford, Canberra.

Though not very prospective, the occurrence of sediments was sufficient for the Company to retain the Permit Area and to proceed to the next stage, to arrive at a thickness of sediments beneath the Sepik/August River flood-plain.

### **GRAVITY SURVEYS**

To do this we had to resort to a Geophysical Method and the cheapest and easiest was to carryout a ground gravity survey. The object was to establish the

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gravitational field, which is influenced by the present rocks of different type and density within the immediate sub-surface. For the next two field seasons, each of 6 months, a Gravity Meter was read at intervals along traverses cut through the rainforest from the outcrop east of the August River and through the swamp between the August and Sepik Rivers. A Gravity Meter operates by registering the differences in the weight of a constant mass as the gravity is moved from place to place. An estimate of the thickness of sediments present beneath the alluvium can be established from the results.

Fortunately The Australasian Petroleum Company had a little used, state of the art, Worden Gravity Meter for sale. Basically it contains a tiny weight suspended from a helical spring cut from quartz. You can imagine it should be fairly delicate. I went to Port Moresby to collect it, but it was still in the field on the Fly River, so the Company offered me a ride in their Catalina to collect it. On the way back the Catalina landed on the Purari and Vilala Rivers. They were the two of the worst landings I have experienced, hitting the deck and bouncing into the air. I alternated between pushing the Gravity Meter through the floor and pulling it down from the ceiling. Before handing over the Bank Cheque I spent a day reading the meter at various locations around Port Moresby to see if it would give consistent readings. Surprisingly it did; I was impressed by its delicate robustness.

Before the next field trip, we took the opportunity to install a new Gardner-Denver Diesel in the Ketch and to buy a Tug-Boat in Sydney and sail it to Madang. We were also able to acquire 25HP Johnson Outboard Motors.

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Catalina VH-WWC New Guinea 1950s

We hired a Core Drill and Operator, the drill capable of taking samples to a depth of 1000 feet beneath the Alluvium. The Directors added the instruction that we continually search for evidence of German Oil Drilling. The Gravity survey lines offered the best chance of carrying out this task.

As a gravity survey requires position and relative height of observation, we employed surveyors, not our best experience. The first never got to working. Going up river we had to sleep some staff and native labour on the river bank. Our first surveyor resigned on the spot when a crocodile entered his tent during the night!

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McGrath in Dugout Canoe with Johnson Outboard Motor

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When working at the southern end of the flood plain we had an air drop of rice and other supplies by DC3. Our natives and locals reckoned it was a Cargo-Cult operation at its best.



QANTAS DC3 1955

## RESULTS

The gravity survey revealed a major gravity anomaly characterized by a marked north west decrease in gravity of 100 milligals. The gravity profile suggested a regional effect of about 60 milligals with the residual 40 milligals resulting from the presence of low density sedimentary rocks overlaying basement rocks of normal density. A thickness of 15,000 ft of sediment appeared likely in the western part of the area surveyed.

The results indicated that the sedimentary thickness within the Permit Area was only moderate, that a thicker section and thus the best prospects for petroleum exploration lay in Indonesian Territory!!

From my perspective, the work was definitive enough and with the Company running out of money and unlikely to raise some more capital, I left NG in 1958 for a more settled life.