Waging War on South East Asia’s Landscape:

The Effects of Ranch Hand and Arc Light Operations in South Vietnam

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“This month, March 2002, happens to be the fortieth anniversary of the public announcement by the Kennedy administration that they were sending U.S. pilots to bomb South Vietnam, that's U.S. bombing of South Vietnam. It was the initiation of chemical warfare to destroy food crops, driving huge numbers of people into concentration camps. Nobody was there except the U.S. and the South Vietnamese. And it was a U.S. war against South Vietnam, publicly announced. Not a peep of protest. You know, the war went on for years before a protest developed.” ¹ Noam Chomsky

Winning the war in Vietnam was a numbers game. The number of enemy bodies, munitions captured, food denied, and crops destroyed were the goals. From as early as 1962, this numbers game played out in South East Asia (SEA). Although battle damage assessments, BDA, provided evidence of impressive and sometimes inflated numbers from the battlefield, it often dealt with first order effects only. Second and third order effects were normally an afterthought discovered in after action reports or DOD studies of major operations. Many said that the US won Vietnam militarily but lost politically; how this occurred is worth further examination. The analysis of lengthy Vietnam air operations like Ranch Hand and Arc Light perhaps showed the irony of how winning can equal defeat. These air campaigns demonstrated how mesmerizing first order effects overshadowed the significance of second and third order effects. These campaigns were focused on the tactical and operational levels of war. However, it appeared that little thought was given to the strategic outcomes of the war. Every tactical and operational level objective did not complement the strategic end state. In the early part of the 21st century, this was the basis for Effects Based Operations, EBO. The EBO concept revolved around a conscientious plan that considered as many of the diplomatic, information, military, economic, and cultural effects as possible. EBO used measures of

effectiveness, MOE, to validate the tactical, operational, and strategic effectiveness of a campaign.

This article attempts to examine if the concept of EBO existed during the planning and assessments of operations in Vietnam. An examination of Ranch Hand and Arc Light showed how their first, second, and third order effects shaped tactical, operational, and strategic end states. Histories of these campaigns gave insight on what they achieved: 1) first order effects- battlefield damage, 2) second order effects- SEA public opinion, and finally 3) third order effects-US domestic effects. Their first order effects were fairly concrete and indisputable; however, the second and third order effects were more abstract. Analyzing second and third order effects revealed the complexity of estimating effects during planning and determining effects via battle damage assessments. The complexity of properly addressing them in hindsight suggested they were even more difficult to address during the planning phases of these campaigns. Finally, the analysis of these campaigns proved whether or not US planners were intentionally thinking and doing Effects Based Operations (EBO) or ignoring it.

**Ranch Hand Introduction**

Little is often said about the precision air bombardments of C-123s in SEA. How a United States Government self-proclaimed and highly successful precision air campaign could be overlooked? Why the Ranch Hand Herbicide Operations (RHHO) in SEA is not considered one of the USAF’s most successful campaigns? Ranch Hand claimed the first USAF combat casualties in South Vietnam, 3 crewmen, on February 2, 1962 when a C-123 crashed on a low level mission (small arms fire or sabotage
suspected), and it was undoubtedly one of the USAF’s longest air campaigns, starting in July 1961 and officially ending on January 7, 1971 when the last mission flew.²³

The mission of RHHO was attack of enemy strongholds throughout SEA.⁴ The original objectives and target criteria of RHHO was to: 1) “improve roadside and jungle visibility as an aid in aerial and ground surveillance of routes of enemy movement and supply, 2) to reduce ambush opportunities for the enemy, 3) and to aid in exposing enemy jungle areas.”⁵ These objectives and targeting criteria changed with time to include controversial crop destruction. At first, crop destruction was on limited scale, but then it became the main focus before being de-emphasized in 1968 and 1969.

**Ranch Hand History**

The first Ranch Hand aircraft participating in operation Trail Dust flew from January 12, 1962 through March 20, 1962. C-123s sprayed along Route 15, northeast of Saigon, and in the Ca Mau Peninsula. These initial flights were the Initial Operational Capabilities (IOC) of herbicide operations. The testing ended on March 20, 1962; agency guidance then followed. In April 1962, the Army evaluation team recommended up to one and one-half gallons per acre for herbicide operations. Next, the Ambassador and Commander, United States Military Assistance Command, Vietnam (COMUSMACV) exercised authority to conduct defoliation missions that did not include crop destruction. RHHO would be limited to clearing: 1) roadsides, 2) power lines, 3) railroads, 4) other lines of communication, 5) and areas adjacent to depots, airfields, and

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other field installations.\textsuperscript{6} Despite these guidelines, RHHO appeared to experience
mission creep early in the campaign. In August 1962, C-123s received the equipment
modifications in order to spray one and one-half gallons per acre, and approved
defoliation requests allowed spraying of 6 canals of the Ca Mau Peninsula. It was not
clear if the spray was used to destroy living organisms in the waterways or just around
the waterways; however, spraying canals appeared to deviate from the initial guidelines
delegated to COMUSMACV.

The IOC of Ranch Hand conducted between September 1962 and September
1963 convinced COMUSMACV that defoliation operations were effective against
insurgency and it was worth continuing.\textsuperscript{7} So in January 1964, the program expanded into
wetland areas, a major fishery and eventually, farm lands. From early July to July 22,
1964, the US sprayed the Delta region, defoliating Viet Cong (VC) safe havens such as
mangrove areas in the Go Cong Province. “Originally there was a natural aversion to
destruction of food resources. However, at the request of the Government of Vietnam
(GVN) and following extensive evaluation a decision was made to fly limited crop
destruction missions. The first crop denial missions were flown between the 21st and
23\textsuperscript{rd} of November in 1962, in Phuoc Long Province, with significant success. Several
more crop targets were sprayed between November 1962 and March 1963.”\textsuperscript{8} On March
20, 1963, the US Embassy, with COMUSMACV concurrence, requested the authority to

\begin{itemize}
\item \textsuperscript{6} Ibid., 7
\item \textsuperscript{7} Ibid., 8.
\item \textsuperscript{8} Ibid., 7-8.
\end{itemize}
approve crop destruction missions and on July 29, 1964, they received it. By July 1964, the US sprayed only 3,274 foodstuff acres.\(^9\)

On April 30, 1965, Project Swamp Fox, the largest operation to date, started. It focused on the Bac Lieu, Ba Xuyen, and Vinh Binh Provinces. At the same time, a series of four forest fire operations began.\(^{\text{Note }2}\) It appeared that MACV searched for an alternative to herbicide operations; however, forest fire operations failed miserably. Upon reevaluation of RHHO, COMUSMACV J2 concluded that defoliation was of considerable tactical value. In the summer and fall of 1965, new crop denial missions began in Kontum and Binh Dinh Provinces. On October 20, 1965, operations started in War Zone D.\(^{10}\) In December 1965, defoliation operations in Laos began. In 1966, defoliation operations increased. In January and February alone, C-123’s sprayed 263,800 gallons of chemicals.\(^{11}\)

There were other signs of expanding RHHO in 1965. The Air Force installed the A/A 45Y-1 Dispenser System on C-123s in order to increase the spray capability to three gallons of defoliant per acre.\(^{12}\) This modification seemed based on field recommendations of “more is better” rather than BDA or an analysis of herbicidal effects. In addition, by September 1967, the 834\(^{\text{th}}\) Air Division, parent organization of the 12\(^{\text{th}}\) ACS, reported that they needed 32 planes to meet COMUSMACV’s objectives over the following two years (at the time, there were only 19 aircraft in the AOR).\(^{13}\) This increase in equipment, munitions, and tactical application seemed to be in concert with the build

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\(^9\) Ibid., 10.
\(^{10}\) Ibid., 12.
\(^{11}\) Ibid., 13.
\(^{12}\) Ibid., 14.
\(^{13}\) Ibid., 17.
up of other US military assets in SEA. From 1968 to 1969, RHHO dramatically decreased; in these successive years only 5% of missions were crop destruction.\textsuperscript{14}

Ranch Hand’s history told a story of how herbicide operations became an increasingly weighted effort for MACV and Saigon without indisputable prove that it was effective. The commander’s weight of effort based on sound and well executed tactics should reasonably create valuable operational and strategic effects across the Instruments of Power, IOP, spectrum. An analysis of RHHO’s first, second, and third order effects showed how much of this spectrum MACV exploited during the nine years of herbicide operations. The first order effects reported in official after action reports were in terms of gallons of munitions sprayed and acres covered. These numbers were concrete; but, the effects on the enemy were less tangible. Ranch Hand assessments lacked Measures of Effectiveness, MOE. There were no discussions on numbers of VC inhabiting an area before spraying and how many remained after spraying. Perhaps the assumption was once a location was sprayed, the area was vacated. Logic dictates that the VC would find another safe haven in the rural countryside or look for shelter in larger towns or cities like Saigon after defoliant operations. The best case scenario was all VC retreating north of the 17th parallel; but of course, this was not the case. Therefore, the only way to completely expose the VC meant defoliating every square acre of South Vietnam, impossibility, or just destroying as much food stuffs as possible.

By 1965, the focus of RHHO shifted to crop destruction, a target set specifically prohibited in 1962 at the beginning of defoliation operations. This shift in Ranch Hand’s main effort suggested haphazard planning. In the expanding crop destruction campaign, it was questionable whether planners addressed the strategic or political effects of food

\textsuperscript{14} Ibid., 23.
denial. At this point, Ranch Hand shifted from a tactical operation to a strategic one. The tactical and operational application of exposing the enemy once allowed discrimination between VC and friendlies, however, food denial did not discriminate.

**RHHO First Order Effects**

Defoliation of SV was the first order effect of Ranch Hand. Reviews of the herbicide program in South Vietnam mainly focused on crop destruction effects. “Crop destruction missions have probably hurt the VC most. It has resulted in the destruction of their immediate food supply (as much as 70 to 80% of civilian production may go to VC in the area) and made it imperative they bring food in from other areas or move to new positions. In addition, when VC troops are required to move into a new area, the civilian populace are embittered because their own food supply must be used to feed the VC.”¹⁵ This was an assumption, on the part of MACV, about South Vietnamese (SV) and the VC. Words like “probably” did not exude measures of effectiveness or represent quantitative data points. Assuming an embittered civilian populace was to MACV’s advantage was a strategic oversight. Psychoanalyzing the South Vietnamese was guess work. Lack of food was only a fraction of the grievances that SV had. Among other things, VC taking their food, VC coercion, indiscriminate MACV forces, and destroyed crops embittered the SV. “Planners later declared the practice ineffectual against the resistance, and noted that it alienated people in the countryside.”¹⁶ Labeling SV civilian embitterment as a true MOE in order to validate Ranch Hand was a stretch.

On the other hand, there were reports of widespread food shortages. “A captured NVA combat support company commander reported that crop destruction operations

have caused both military and civilian food shortages, particularly vegetables. Another
document states that loss of crops is a significant and urgent problem and calls on various
districts to expedite rice collections to meet combat requirements.\textsuperscript{17} Despite the
enemy’s loss of food, work-arounds such as food preservation programs, harvesting
early, and wildlife preservation were effective delay tactics aligned with the Viet Minh’s
war strategy of a protracting an exhaustive war.

Ranch Hand assessments often described first order effects only in general terms.
“Defoliation missions caused almost as much trouble for the VC. These operations
destroy their safe havens, curtail their ambush activities, provide the environment for
better reconnaissance of VC movements and operations, and damages the moral of the
troops.”\textsuperscript{18} A more quantitative measure of herbicide battle damage might have been
whether or not RHHO achieved its original stated objectives. Intelligence and planners
alike should have relied on figures such as enemy killed or captured in defoliated
provinces, enemy killed or captured by friendly South Vietnamese, and enemy killed or
surrendered due to starvation. These concrete effects might have linked RHHO’s tactical,
operational, and strategic end states. Ranch Hand’s focus, tactical and operational
support of MACV troops, became a strategic campaign against the VC. Therefore,
MACV and Saigon found themselves waging total war against South Vietnam’s
landscape.

Perhaps Ranch Hand’s first order effects were beneficial in isolating the VC;
however, its cascading effects further alienated the SV civilians. The SV people also lost
their safe havens and moral. The defoliation forced the SV people from their hamlets to

\textsuperscript{17} Warren, “Review of the Herbicide Program,” 55.
\textsuperscript{18} Ibid., 56.
desolate, barren strips of land, and the squalor of Saigon. MACV misconstrued these over-inflated second order effects, the psychological effects of the VC and SV civilians, as exclusive positive outcomes that were helping win the war.

**RHHO Second Order Effects**

RHHO second order effects were the physical and psychological strain imposed upon non-combatants. The US commented on the VC official warning that sprays caused physical harm or in some cases death: “Propaganda of this type causes concern among the VC troops because of the suggested dangers associated with the spray. On the other hand, it sometimes tends to strengthen their motivation because they feel the poor civilians are being exposed to undue hardships.” This rhetoric suggested that there was no justification for the VC or the civilians to react the way they did. Justified or not, the second order effects were backlash. “Many of the civilians do not understand why the crops and trees are being defoliated. They can only see that their crops are destroyed. Added to that, the VC pour propaganda into their ears. Therefore, a number of people joined the VC because they had suffered from damage.”

It was hard to decipher if destroyed crops plus VC propaganda compounded the recruitment of civilian sympathizers or if these effects were mutually exclusive. The official US assessment of psychological effects focused on the VC rather than noncombatants. “Unfortunately, relevant and knowledgeable investigations into the psychological effects of crop destruction were found to be very meager.”

The justification for the way VC and civilians reacted was forecasted by allied and SV delegates. Several military and political officials involved in SEA shared

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19 Ibid., 57.
20 Ibid., 42.
reservations over defoliation operations. General O’Donnell, McGarr, Sir Robert Thompson (former Secretary of Defense of the Federation of Malaya, and State Department Officials, W. Averell Harriman and Roger Hitsman feared that innocent casualties (due to defoliation) would alienate potentially friendly people.21

More backlash representative of second order effects was guilt through association. The Republic of Vietnam (RVN) government established a board of claims involving accidental destruction of land and crops. This attempt to appease South Vietnamese civilians not only was self-admission that defoliation was particularly harmful to public opinion, but angered those whose claims were denied.22

**RHHO Third Order Effects**

RHHO third order effects were those experienced on the American domestic front, injured American and allied troops, innocent SV civilians, and their compensation. In the 1960s, the press and academia slowly began criticizing herbicide operations and labeling them total war against Vietnamese people. Jim G. Lucas’ article claimed that RHHO sprayed the friendly village of Cha La, Mekong delta. The Washington Post, using Lucas’ story declared herbicide operations unselective and nondiscriminatory. The legitimacy of Lucas’ story was in question.23 However, stories like these coined terms like “ecocide”. Perhaps, RHHO was one aspect of total war in Vietnam. Claims of this nature added to American dissent of herbicide operations in SEA. In “The Christian Century”, June, 1966, Dr. Mayer, Harvard Professor, wrote, “We base our case, therefore, on the undeviating pattern of past famines when we state that crop destruction

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22 Ibid., 115-16.
constitutes a war measure primarily if not exclusively directed at children, the elderly and pregnant and lactating women. In other words, our point is not that innocent bystanders will be hurt by such measures but that only bystanders will be hurt. The primary U.S. aim—to disable the Vietcong—will not be achieved and our proclaimed secondary aim—to win over the civilian population—is made a hollow mockery.”24

Those physically hurt were Vietnamese and Americans. The makers of defoliant agents did not gain the attention of protesters nationwide like those making napalm. However, napalm makers like Dow Chemical (who also made agent orange) met student and professor protests whenever they toured campuses recruiting graduates. Perhaps the instantaneous destructive power of napalm and the image of the young Vietnamese girl burned by the gel-like gasoline product overshadowed the slow, destructive agents that some claim caused ecocide and human suffering in SEA. The reverberations of this human suffrage were third order effects that the US still addresses today.

In the 1980s, the US government began paying US service personnel suffering from skin disorders and cancers associated with dioxins found in the herbicide agents. Department of Veterans Affairs compensated veterans for exposure to herbicides that caused ailments such as Hodgkin’s disease, respiratory problems, nerve disorders, prostate cancer, soft-tissue sarcoma, chloracne, and adult on-set diabetes.25 Active duty and retired personnel alike found themselves fighting the veteran administrations and USG for medical care and compensation they deserved. In the later part of the 20th century, allied countries like South Korea also sought compensation for the ill-effects of exposure to herbicides. Finally in 2002, the government of Vietnam filed a class action

25 Alan-Leach, “Agent Orange,”.
lawsuit against the companies that produced the agents; Vietnam estimated that over one million people still suffer from prolonged exposure to dioxins.26

From strictly a tactical or operational perspective, RHHO third order effects had no bearing on the outcome of the war. Strategically, the planners of Ranch Hand did not and, perhaps, could not concern themselves with the legacy of defoliation. “Here (referring to RHHO), too, the Americans have discovered that the military requirements of victory and the political ingredients to defeat often overlap in Vietnam.”27 Whether the US won or not, they would still have to deal with the socio-political ramifications of herbicide operations in SEA. What was important for planners to compartmentalize was that it was often combat operations’ third order effects that produced lasting legacies. The legacy of herbicide operations was the alienation of three different groups of people, US service men and women, coalition forces, and the Vietnamese, that ironically remain connected through the human tragedy of dealing with war effects that began over 45 years ago. This is a source of friction that still strains domestic and international relationships alike as the US slowly continues to normalize relations with Vietnam.

Ranch Hand was an operation executed with little loss of aircraft or aircrews. The precise and destructive nature was obvious on the intended targets. Despite this, it was evident that the tactical objectives did not achieve a desired strategic end state. This brought into question the meaning of precision; although targeting methods and munitions were designed and engineered for precision, their effects missed the strategic mark. Perhaps Ranch Hand was a unique case. Maybe other Vietnam air campaigns

demonstrated remarkably different results with respect to ordered effects. Will the examination of another SV campaign divulge similarities or differences in ordered effects, linkages between tactical, operational, and strategic end states, and mission focus? Arc Light was another SV air campaign that might answer these questions differently.

**ARC Light**

June 18, 1965 marked the first day of Arc Light operations. MACV used Arc Light to: 1) Inhibit enemy’s capability to wage war in the field by refusing his ability to preposition supplies and personnel, 2) degrade his capability in the field with saturation bombing, and 3) strike the enemy in order to suppress his ability to field a viable force, control contiguous terrain, and spoil his operations. Arc Light was Strategic Air Command’s (SAC) contribution to the tactical effort in SV. In a war that everyone wanted to participate in, SAC’s existence relied on the idea that the US could fight any opponent with its Cold War construction.

“The lessons learned from the American air campaigns in World War II told the airmen that the way to use strategic air power in Vietnam was to bomb the enemy’s war making capacity, understanding Korea to be an aberration in bombing doctrine. The American air chiefs believed that the Air Force’s approach to a possible strategic air war against the Soviet Union was adaptable to any type of conflict, to include a limited war in Vietnam.”

Like RHHO, how well did Arc Light link the tactical, operational, and strategic levels of war? The B-52’s tactical intent was delivery of overwhelming firepower to prevent unacceptable US casualties. The operational intent was the disruption of enemy

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operations and Lines of Communication, LOC. The strategy was attrition which was difficult to measure in SEA that lacked a brick and mortar infrastructure. Like RHHO, once munitions dropped the enemy disbursed. Often, there was nothing tangible to assess. MOE were difficult to calculate. Instead planners and commanders alike seemed to rely on the growing psychological effects, compounded over the years, which turned the B52 into a weapon of terror (at least from the perspective of the enemy). General William C. Westmoreland, commander of U.S. forces in South Vietnam, supported B-52 firepower and its ability to defeat the North Vietnamese.30 “Senior commanders in the field and at MACV have made known their convictions that the suppression effect of B-52s is ‘invaluable.’”31 Viet Cong base areas were the primary targets of B-52 pilots and bombardiers. However, B-52s gave direct tactical support to the Marine Corps during Operation Harvest Moon and the First Cavalry Division’s fight in the Ia Drang Valley.32 In 1966, 5,000 B-52 sorties dropped bombs at a rate of 8,000 tons each month. In 1967, SAC B-52 sorties increased to 9,700 concentrating on supply lines in the Ashau Valley. In 1968, the defense of Khe Sanh involved around-the-clock strikes accounting for 60,000 tons of bombs; supposedly, this saturation bombing was responsible for the NVA withdrawal of Khe Sanh. The number of bombs dropped and sorties flown was apparent, but BDA was difficult to assess. In 1969, emphasis was placed on harassment and disruption of enemy operations.

“Potential and actual enemy forces were hampered in South Vietnam, particularly around Saigon. SAC bombers also continued to hit enemy supply dumps, base areas, troop concentrations, and the infiltration network that supplied enemy

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32 “Arc Light.”
forces in the South. The number of sorties flown in support of Arc Light bombing operations declined from November 1969 through April 1970.\footnote{Ibid.}

To some degree, Arc Light’s emphasis mirrored RHRO’s initial objective of denial. However did Arc Lights planners make some of the same assessment mistakes as Ranch Hand? Did Arc Light planners ask what the reciprocal effects of saturating the SV landscape with 750 and 1000 pound bombs? Once the VC fled the field and lost supplies, did they find refuge in the hamlets and feed themselves through the extortion of indigenous SV? These were the battle damage questions Arc Light planners should have considered if they hoped to align effects with an achievable strategic end state. Arc Light’s assessment seemed to overlook the importance of this type of BDA. Major Gen Gordon’s End of Tour Report declared: “Accordingly, MACV looks upon the B52 as a principal means of achieving what present troop strength will not permit without risking unacceptable loss of lives, material, and territory. Thus, the B-52’s effectiveness cannot be expressed in terms of BDA.”\footnote{Blood, “End of Tour Report,” 41.} Either this campaign was truly not assessable or intelligence communities made no honest assessments in lieu of perceived effects from field commanders.

By 1968, under the “Bugle Note” employment concept, MACV directed B-52 strikes against time urgent targets. “The sorties go where the ‘action is.’”\footnote{Ibid., 40.} At this point in the war, SAC became a reactive force with 85-90% of its strikes done as Bugle Notes. Maj Gen Blood explained that Arc Light Strikes were difficult to assess:

“BDA is generally reported by the bomber crews in terms of secondary explosions observed. Since ARC LIGHT strikes are performed mostly by the short notice Bugle Note procedures, day or night, during all kinds of weather conditions, timely and accurate FAC (Forward Air Controller) BDA cannot
usually be obtained. Individual POW reports and post-strike data, however, have shown some strikes to have produced excellent results.”36

This suggested if no secondary explosions were witnessed by the crews from 30,000 ft, there were no reportable effects. Without quantitative MOEs, that essentially determine the value of an attrition based air campaign, a commander would find it difficult to impossible justifying it in terms of BDA.

**Arc Light First Order Effects**

An assessment of a mission flown by the 7th Bombardment Wing on June 18, 1965 typifies Arc Light BDA and first order effects.

COL Wagner conducted the operations portion of the formal critique of the combat mission, “Arc Light One.” He described the mission that involved thirty B-52 aircraft that would strike a saturation target in Binh Duang Province, South Vietnam. The time over target was 0700 local, Saigon time, June 18, 1965. The strike was aimed at a key Viet Cong secret base; the purpose was to thwart the Monsoon Offensive in an area north of Saigon. “Saturation area bombing techniques using beacon bombing procedures were utilized for this strike.”37

“The target selected for the first B-52 strike on June 18, 1965 was a typical Viet Cong jungle sanctuary, measuring two by four kilometers, in the Ben Cat Special Zone, Binh Duong Province, northwest of Saigon. From this area the VC had been launching attacks against traffic on nearby Route 13. Intelligence indicated that troops were massing there for a suspected offensive. The mission of 18 June was not an auspicious beginning. Two bombers collided during the refueling phase of the mission and crashed into the South China Sea off the Philippines. Another aborted prior to reaching the target. Twenty-seven B-52s reached the target, but one did not bomb because its bomb-bay doors malfunctioned. The tragedy of the lives lost and the destruction of the aircraft tended to overshadow

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36 Ibid.
37 Hinds, J. N. “Unit History: Third Air Division and 3960 Strategic Wing, Supporting Documents, Vol III.” K527.01V3, January-June 1965, IRIS No. 00509500, AFHRA.
all else, especially since ground reconnaissance teams could find little evidence that the strike had caused any VC casualties or significant damage to facilities.”

COL Wagner summated the mission as a success: “These teams (reconnaissance teams) discovered extensive VC training facilities, storage caches and fortifications hastily evacuated by the surprised VC.” The unit history summary of intelligence information pertaining to battle damage was less forthcoming:

“All BDA by the crews were not attempted due to the type of target presentation on the radar scope. The only battle assessment available was by other reconnaissance measures, but due to the overcast cloud condition the resulting film showed very little of the target area. BDA was determined by Photo Intelligence Section solely by method of cross hair displacement of the lead aircraft, with the exception of the first cell which bombed in IFR formation.”

Mr. Kipp suggested, despite the devastating first order effects of B-52s, the VC adapted to Mac’s bombing campaign in the South. The VC exercised more frequent movement, ensured wider dispersal when in bivouac, and dug deeper tunnels. One former VC platoon leader explained, "All of us, including our superiors, have been instructed to run as soon as we heard the roaring from the high sky... no matter how deep the tunnels. General Westmoreland has said that prisoners and defectors list the B-52 as the most feared of all weapons arrayed against them.” Like other ground generals, GEN Westmoreland inferred that perhaps the most important effect was the second order, psychological effects of the B-52.

**Arc Light Second Order Effects**

Arc Light second order effects were the ecological damage to SV and psychological torment to the VC. In some cases, Arc Light missions were conducted in

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38 Kipp, Robert M. “Counterinsurgency from 30,000 ft, the B-52 in Vietnam.” *Air University Review* January-February 1968.
39 Hinds, “Unit History,”.
40 Ibid.
41 Kipp, “Counterinsurgency,”.
conjunction with Commando Hunt V to wage war on terrain. Strikes targeted pass
 corridors and other decisive geographical features. Obliterating road systems and
 creating landslides was the main effort of some missions. Like Ranch Hand, Arc Light
 began to experience mission creep. RHHO started with the purpose of exposing the
 enemy, but then transformed into ecosystem destruction. Arc Light covered a spectrum
 of tactical CAS, operations against VC strongholds/HQs, and finally geography
 alteration. Despite all of their destructive power, these campaigns against terrain did
 little to stop the flow of men and supplies to the South.

“The continuous bombing leveled some of the terrain, making flat and barren
 areas that had been rugged, mountainous jungle. Intense bombing like that
 unleashed on the interdiction boxes pulverized the earth, facilitating rather than
 hindering North Vietnamese efforts at repair by providing ample supplies of
 gravel. Most often, however, the truck drivers simply wound their way around
 the craters and continued southward.”

Anecdotes and perceptions backed by ethnocentric mirroring helped Arc Light’s
 assessors describe the second order psychological effects. B-52 bombing effectiveness
 was measured by the surreal experience it created for friendly and enemy forces in and
 around the battlefield. B-52 bombing assessments included narratives from several
 involved in Arc Light. During Operation Harvest Moon, Major General L. W. Walt,
 Commander of the Third Marine Amphibious Force, described the effect of a B-52 strike
 as "awesome to behold"; he added: "The enemy has abandoned his prepared positions
 and much of his equipment in great confusion, and this is making our part of the job
 easier." Perhaps Major General F. C. Weyand, Commander of the First Field Force

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43 Kipp, “Counterinsurgency,”.
during Operation Attleboro, best summed up what the heavy bomber strikes meant to the infantry:

“These B-52 strikes are of incalculable value. . . They do tremendous damage to enemy installations and base facilities; they destroy enemy fortifications; and most of all they constitute a Sword of Damocles over the heads of VC field commanders that must enter into any of their plans that would call for massing units preparatory to a large scale attack.”

B52 BDA, to an extent was based on this type of mythological rational rather than quantifiable MOE. The fascination with B-52 firepower resulted in combat commanders mirroring the enemy in an image of them. “Probably the single most devastating effect of this raid (to the VC) is the knowledge that they no longer have any place where they are safe from U.S. airpower.” Here, the effect was described in terms of a comforting notion; MACV was comfortable with Arc Light’s saturation bombing perceived effects rather than hard data points.

**Arc Light Third Order Effects**

*South Vietnam was the most bombed country in the history of aerial warfare and “the bombing, among other things, fueled the noisiest elements at the fringe of the antiwar movement.”*

Arc Light’s third order effect was what the B-52 symbolized for the US and Vietnamese. Washington wanted a limited war in Vietnam. The Johnson administration wanted to fight in "cold blood" and with little noticeable impact on domestic culture.

“The Vietnam War did have a major impact on everyday life in America, and the Johnson administration was forced to consider domestic consequences of its decisions every

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44 Ibid.
45 Hinds, “Unit History,”
Students and professors around the nation protested the use of B-52s, mainly in Laos and North Vietnam. However, the attention that this aircraft received in the anti-war movement elevated it to cult status. The US, NVA, and even Cuban government adorned their anti-war and anti-American posters with symbols of B-52s dropping bombs. Even though Arc Light’s assessments showed little concrete evidence of countering the growing insurgency in South Vietnam, the aircraft designed to drop nuclear bombs on Russia gave the enemy an Achilles heal to attack; its presence in Vietnam represented American imperialism and domination. Tactically, Arc Light’s mission may have been profoundly successful for MACV, however, the mere existence of B52s over SV was a strategic victory for the NVG. Even better, if they shot one down, which they did on several occasions, it was as if they had just won the war.

**Conclusion:**

"After the war was won, there would be plenty of time to go ahead with democratic reforms." Ambassador Lodge to SV President Khanh, 1964.

The USAF’s lengthy air campaigns in SV involved high stakes. Since aircrews quickly adapted to some of the most hostile and heavily defended combat zones to date, Ranch Hand and Arc Light provided the tactical advantage of denial. Hiding places, food, and supplies were wiped out when found. The enemy did lose safe havens. However, this tactical advantage came at a strategic price. These air campaigns with their wide array of devastating effects literally changed the landscape of the entire country, especially South Vietnam. Ecocide was not far from the truth; the mission creep

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of these campaigns meant that planners lost sight of end states. The operations became
the purpose and sole means of influence for MACV and the administrations running the
war. The mind set that the US could worry about building a democracy after the war
only protracted these campaigns. Wiping the slate clean and starting from scratch has
always proved more difficult than doing a little remodeling while protecting the societal
and cultural foundations and frameworks. Recently in Iraq and Afghanistan, the US and
coalition forces embraced this approach while considering the cascading and
reverberating effects of combat operations. Building a democracy in Vietnam was the
end state and it had to occur in conjunction with and simultaneously to combat
operations. Although EBO rooted itself in the Desert Storm era, it was obvious the
planners of Ranch Hand and Arc Light did not follow its construct. Instead, the
operations diverged from their original intent destroying the very country the US tried to
save.
Note 1. (dəmˈokliːz) (KEY), in classical mythology, courtier at the court of Dionysius I. He so persistently praised the power and happiness of Dionysius that the tyrant, in order to show the precariousness of rank and power, gave a banquet and had a sword suspended above the head of Damocles by a single hair. Hence the expression “the sword of Damocles” to mean an ever-present peril.

Note 2. They involved burning forests rather than defoliating them to completely clear an area of organic matter. Sherwood Forest, Hot Tip I, Hot Tip II, and Pink Rose proved problematic because the forests simply would not burn.
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